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NEAR SURFACE SOIL & GROUNDWATER QUALITY INVESTIGATION

With Hazardous Building Materials Survey

(FINAL VERSION)

Sound Battery
2310 East 11th Street
Tacoma WA 98421

Prepared for:

Mr. Marvin Dykman
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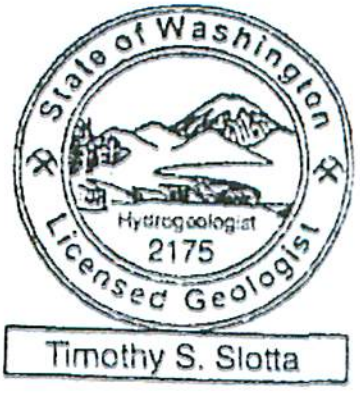
Signature of Preparer: _____

Signature of Licensed Hydrogeologist: _____ L.H.G. # 2175

September 7, 2011

Job # E2JK-DykmanTac-2



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With Hazardous Building Materials Survey

EnCo Environmental Corporation

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NEAR SURFACE SOIL & GROUNDWATER QUALITY INVESTIGATION

With Hazardous Building Materials Survey

Sound Battery
2310 East 11th Street
Tacoma WA 98421
County Tax Parcel Number 2275200770
Date of Report: September 7, 2011
Date of Field Work: July 18 & 19, 2011

1.0 EXECUTIVE SUMMARY

EnCo Environmental Corporation (**EnCo**) has completed the near surface soil sampling and limited groundwater sampling on the project site. The work focused on near surface soil sampling with extended depth soil sampling at areas likely impacted from past land use practices as defined in this report. Discrete groundwater samples were collected from two temporary groundwater monitoring wells that were installed and decommissioned on July 19th. As defined in the **EnCo** Work Plan for this investigation, groundwater samples were not collected from the existing four groundwater monitoring wells that were installed by others in 1997.

The work included sampling of 64 near surface soil assessment samples and 4 background soil samples for a total of 68 soil samples collected at 31 discrete locations on the above-referenced property (project site) as depicted in **APPENDIX A** as **FIGURE 5 – SOIL & GROUNDWATER PROBE LOCATIONS**. The soil and groundwater samples were collected beneath impervious surfaces inside and outside the building.

A total of 58 discrete soil samples of the 68 samples submitted and 2 discrete groundwater samples were submitted to a Washington accredited testing laboratory for analysis of pre-selected Chemicals of Concern (COCs) as presented in **SECTION 13.0**.

Soil

Two soil sample locations (4 discrete soil samples) were collected from an area that was assumed not affected from source(s) of the suspected or identified contamination. These samples were used for the purpose of establishing a background quality control check. The background soil samples were collected from an area that has the same basic characteristics as the medium of concern at the project, has not been reportedly influenced by suspect or known releases from the site, and has not been influenced by releases from other localized human activities. Specifically the background quality control check was used to confirm the extent, if any, of lead contamination in near

surface soil from battery manufacturing on the project site and from historical land use activities such as from the previous Asarco smelting operation in the region. The background soil samples were collected beneath the concrete slab of the original building.

Laboratory test results on soil samples exceed Washington Model Toxics Control Act (MTCA) Method "A" cleanup levels (CULs) for total lead (CUL = 1,000 milligrams per kilogram – mg/kg) at 12 discrete probehole locations (**7, 8, 15, 16, 17, 18, 19, 20, 25, 26, 27,** and **1WA**) as shown in **APPENDIX B** as **TABLE 4 – SOIL TEST RESULTS (MTCA EXCEEDANCES)**. Total lead concentrations on samples collected greater than about 2 feet below ground surface (bgs) exceed the MTCA Method "A" CUL at two probehole locations (**8 & 1WA**) as shown on **TABLE 5**. The concentration of total lead at sample number **8B** at 1.9 feet bgs is 1,070 mg/Kg. The concentrations of total lead at **1WAB** at 2 feet bgs and at **1WAD** at 6.3 feet bgs is 42,300 mg/kg and 1,030 mg/Kg, respectively.

Groundwater

Laboratory test results on groundwater samples exceed Washington MTCA Method "A" CUL for total lead (CUL = 15 micrograms per liter - ug/l) at probed monitoring well locations **1WA** and **2WA** as shown in **APPENDIX B** as **TABLE 3 – GROUNDWATER TEST RESULTS**. The concentration of **total lead** in groundwater at **1WA** and at **2WA** is 2,160 ug/l and 919 ug/l, respectively. The concentration of **dissolved lead** in groundwater using a 0.45 micro meter filter at **1WA** and at **2WA** is 13.1 ug/l and 18.9 ug/l, respectively. Dissolved lead from groundwater collected from **2WA** exceeds the MTCA method "A" CUL. The static surficial groundwater level measured on July 19th from the two temporary monitoring wells is about 6.4 feet bgs. The surficial groundwater appears to flow towards the northwest at a gradient of 0.0013 to 0.0015 ft/ft as depicted on **FIGURE 7 – SURFICIAL GROUNDWATER TABLE ELEVATIONS, GRADIENT & FLOW DIRECTION**.

Regulated Building Materials Survey

On April 26, 2011 Pacific Rim Environmental performed limited lead-based paint (LBP) screening on painted interior walls and bare wood beam roof structure components using a Niton X-Ray Fluorescence Spectrometer (XRF) instrument. LBP was identified by field screening on building components as listed below.

- White painted wood post 1
- White painted wood wall at door to second floor
- Green painted concrete wall in warehouse
- Red painted metal window frames in the warehouse
- Gray painted wood post
- White painted concrete walls in the original building

On July 18, 2011 Pacific Rim Environmental performed a Regulated Building Materials (RBM) survey on the interior and exterior segments of the building. The RBM survey was performed in preparation for future building demolition. RBMs were identified by observation, field screening and laboratory testing on the interior and exterior of the building as listed below.

Asbestos-Containing Materials

- Surface Materials
- Miscellaneous Materials

Lead-Based Paint

- White painted door and door jamb front office door
- White painted wood door jamb to lunch room
- White painted concrete interior wall and column west wall of pot room
- Bare concrete interior wall of south and southeast corner wall of pot room
- Red painted metal window frame south wall window pot room
- Red painted metal beam strap on second floor, northwest corner and warehouse center
- Red painted concrete floor center of pot room
- Brown pained metal, exterior post, warehouse entrance

Universal Wastes

- Fluorescent tubes and fixtures
- Mercury thermostat capsules
- PCB ballasts

The RBM surveys were prepared entirely by Pacific Rim Environmental of Seattle and the results, discussion, test results, conclusions, and recommendations of their surveys are not summarized in this **EnCo** report. The results and limitations for these two RBM surveys are attached in **APPENDIX C** as listed below.

- Limited Lead-Based Paint Testing – Pacific Rim Environmental – April 26, 2011
- Regulated Building Materials (RBM) Survey – Pacific Rim Environmental – August 3, 2011

2.0 BACKGROUND

Lead-acid battery manufacturing was reportedly started on the project site in 1946. More information pertaining to the historical conditions of interest on the project site can be found in a Phase I Environmental Site Assessment (ESA) report that was completed under contract with the Port of Tacoma on January 11, 2011 (Hart Crowser – 2011).

Several soil and groundwater investigations were completed on the project site from about 1991 to 1999. These assessments reported elevated concentrations of total lead in near surface soils in pervious areas located outside and adjacent to the building as defined in the GeoSystems Analysis, Inc. report (GSA – 2000). The extent and magnitude of exterior soil lead contamination was determined and subsequently followed up with a cleanup action (GSA – 2002). In summary the cleanup action was conducted on soil surfaces surrounding portions of the existing building in 2002, but no records of investigation or cleanup occurred within or beneath the building, building additions, concrete slabs, and bituminous asphalt surfaces.

EnCo was contacted by Mr. Marvin Dykman (landowner) for the purpose of investigating the quality of near surface soil and surficial groundwater at predetermined areas of concern beneath and contiguous to the building prior to a planned sale of the real property to the Port of Tacoma.

On April 26, 2011 Mr. Jonathan Kemp of **EnCo** performed a site visit with Mr. Marvin Dykman to observe the areas of concern beneath interior surfaces in order to assist in the preparation of a Work Plan for the soil and groundwater investigation. The site visit included observing areas inside the building where manufacturing of locomotive and automobile lead-acid batteries occurred and in outside areas covered with impervious surfaces including the permanently sealed floor drain/trench. A draft of the Work Plan was reviewed by Mr. Bill Evans, Licensed Geologist of the Port of Tacoma. The comments and requested updates were incorporated in the final Work Plan dated June 11, 2011.

3.0 PURPOSE

The purpose for performing the investigation was to determine total lead concentrations in near surface soil located beneath concrete slab floors and bituminous asphalt surfaces inside the original building and two additions and asphalt and concrete surfaces located outside and contiguous to the building. In addition pH was measured in selected soil samples (background, sulfuric acid storage area, and at the two probeholes affixed with temporary groundwater monitoring wells).

Near surface groundwater was assessed for pH, total lead and dissolved lead at the former (now permanently sealed) drain/trench inlet located inside the building and at the trench outlet which discharged outside to the ground surface near the southeast corner of the building near the east property boundary. Groundwater elevation data was also measured from the four existing monitoring wells (**MW-1** to **MW-4**) to determine the depth to groundwater, surficial groundwater flow direction, and gradient between the wells. Groundwater samples were not collected for analysis from the four existing wells per the competed **EnCo** Work Plan.

The limited investigation determined if near surface soil and the shallow, unconfined groundwater quality exceeds the MTCA Method “A” CUL for industrial property for the identified COC (total lead).

A RBM survey was also performed on interior and exterior surfaces of the building in preparation for future building demolition. The limited soil and groundwater quality investigation and RBM survey precludes regulatory permitting, demolishing the building, preparing a cleanup action plan, and completing a prescribed cleanup action on the project site.

4.0 SCOPE OF WORK

*The **SCOPE OF WORK** included performing the following work tasks:*

1. Obtained probed groundwater well and probehole Start Cards as required by the Washington Department of Ecology (ECOLOGY).

2. Contacted both the "1-800 DIG SAFE" utility identification hotline and a private utility locate service company to identify and mark with paint project site subsurface utilities in and adjacent to the building prior to disturbing any soil, asphalt, concrete, or landscaping within 10 feet of probehole locations.

3. Advanced 31 hydraulically-advanced soil probes (**Probe Holes SB {Sound Battery} SO1** – **SO27; WA1 – WA2;** and **SO1BG – SO2BG**) to depths that ranged from 2 feet bgs to 9 feet bgs. Soil samples were collected beneath an approximate 6-inch thick poured concrete slab, 3-inch thick bituminous asphalt surfaces, and an earthen-based surface beneath the former acid tank storage room. Two to five vertically-aligned soil samples were collected at each probehole location at depths that ranged from 0.4 foot t 8.5 feet bgs. Probeholes were filled with a bentonite seal and prepared bagged concrete mix to the top of impervious surfaces and to the ground surface at pervious surfaces immediately after sampling.

4. Installed 2 temporary groundwater monitoring wells down to a depth of about 9 feet bgs at the inlet and outlet of a former subsurface drain pipe/trench.

5. Collected a total of 64 near surface soil assessment samples.

6. Collected 4 background soil samples. The background soil samples were collected for the purpose of establishing an on-site background soil quality control check.

7. Collected a total of 2 surficial, unconfined groundwater samples.

8. Submitted 58 discrete soil samples and 2 groundwater samples to a Washington State accredited testing laboratory under standard Chain-of-Custody procedures for analysis of COCs as presented in **SECTION 13**. The remaining 10 collected soil samples were observed for texture and were not analyzed at the laboratory

because the test results from soils collected vertically above these 10 samples did not exceed 25 percent (250 mg/kg) of the MTCA Method "A" CUL for total lead (1,000 mg/kg) for industrial properties. The rationale for soil and groundwater sampling protocols and testing methods is defined in the **EnCo** Work Plan. The hazardous characteristics of soil were not determined at this time.

9. Collected probe apparatus wash water and excess soils and placed these wastes inside a 20-gallon, open top, metal drum for eventual off-site disposal by the landowner.

10. Compared the soil and groundwater laboratory COC test results to MTCA Method "A" CULs for industrial property.

11. Obtained the static water table elevation at the four existing monitoring wells **MW-1** to **MW-4**. Data collected from three of the four wells was used to determine the inferred, shallow-seated, groundwater table flow direction and gradient between the wells.

12. Performed a RBM survey on the building interior and exterior surfaces for Asbestos Containing Materials (ACM), LBP and Universal Wastes.

13. Prepared a hard copy and an electronic version (.pdf format) report of the soil and groundwater findings which includes project site and sample location figures, laboratory test results figure, data report with tables compared to MTCA Method "A" CULs, field procedures, log of probeholes, temporary monitoring well details, laboratory reports with Chain-of-Custody forms, and conclusions.

14. Submitted a hard copy and electronic version (.pdf format) report of the findings of the Pacific Rim Environmental RBM survey which includes technician observations and qualifications, bulk, chip, and core sampling procedures for suspect ACM and LBP, quantification of the estimated area for ACMs and LBP, number of PCB ballasts and mercury containing materials, written descriptions and logs of collected samples, a sample location map, analytical test results, laboratory test reports with Chain-of-Custody documentation, and conclusions.

5.0 SCHEDULE & WEATHER CONDITIONS

Soil and groundwater samples were probed and collected on July 18 and 19, 2011. Laboratory test results are documented by Friedman & Bruya, Inc. of Seattle in three reports dated August 5, 16, and 19, 2011. The initial date of discovery of soil and groundwater COCs that exceed MTCA "A" CULs on the project site occurred on August 5, 2011. This corresponds to the date of the first final accredited laboratory test report for the project.

Weather conditions consisted of mostly cloudy skies with dry conditions. Ambient air temperatures ranged between 52 degrees to 68 degrees Fahrenheit.

6.0 METHODOLOGY

The work effort followed standard operating procedures to ensure that the work resulted in data of sufficient quality to evaluate soil and groundwater quality in the environment at the points of compliance as defined in this report. The assessment was undertaken with the intent to comply with the substantive requirements of MTCA and its implementing regulations (Chapter 70.105D RCW and cleanup regulation Chapter 173-340 WAC, publication number 94-06). Sampling and analysis procedures generally followed ECOLOGY MTCA Chapter 173-340-820 WAC, Sampling and Analysis Plans.

The investigation generally followed the **Shallow Soil and Groundwater Sampling and Analysis Investigation with Hazardous (Regulated) Building Materials Survey Work Plan** prepared by **EnCo** on June 11, 2011.

The soil and groundwater investigation and RBM survey was undertaken voluntarily and solely by the landowner and was performed without order, decree, or oversight by ECOLOGY. The assessment did not enter into the Washington Voluntary Cleanup Program (VCP) at this time.

7.0 FIELD PROCEDURES

Media samples were collected in accordance with the requirements of compliance monitoring requirements specified in WAC 173-340-410, and addressed the protection of human health and safety, environmental receptors, performance, and confirmational sampling requirements. Field sampling procedures and probehole advancement techniques are presented in **APPENDIX C** (**SUPPORT DOCUMENTS**). Laboratory analytical methods, method detection limits, containers, preservative requirement and holding times are presented on **TABLES 6** and **7**, respectively. The field procedures for sampling and testing protocols undertaken followed acceptable industry practices. Probehole protocols followed ECOLOGY groundwater investigation well installation guidelines.

8.0 SAFETY & HEALTH

Personal Equipment

EnCo field sampling personnel met current health and safety training, including 40-hour HAZWOPER training with annual 8-hour refresher courses, site supervisor training, first-aid, and cardiopulmonary resuscitation. **EnCo** workers are trained and experienced in project management, site characterization, field sampling techniques, hazardous materials, personal safety measures, protective equipment selection, and health monitoring that met the requirements of WAC 296-62 and OSHA 1910.120. EnCo

employees followed the guidance presented in an abbreviated Safety and Health Plan that is presented in **APPENDIX C**.

EnCo personnel used safety Level D-Modified when performing the field work. Protective equipment included hard hats, nitrile and PVC gloves, safety glasses, ear protection, heavy coveralls, and rubber-lined, steel-shanked boots.

Utility Safety

The landowner and previous site investigations and assessments performed by other professionals provided information pertaining to suspect and reported toxic, hazardous, and/or dangerous substances in the environment on the project site. Public and private subsurface utility location companies and the landowner deemed safe the areas investigated prior to initiating subsurface exploration.

A private utility locate company magnetically identified subsurface utility pipes within about 10 feet of probehole locations as shown on **FIGURE 4 – PROJECT SITE PLAN**. Mapped utility locates are considered estimated; actual locations of utilities were not confirmed with a visual or mechanical inspection.

Waste Handling

Field sampling and decontaminating equipment and generated fluids were carefully handled, managed, and temporarily stored in a metal drum to minimize the potential for injury and the spread of toxic or hazardous substances on and off the project site.

Best Management Practices

Best Management Practices were not implemented on the project site because investigation techniques were determined not to affect surface water runoff.

9.0 KEY PERSONNEL

The project was managed and supervised by Mr. Jonathan Kemp of **EnCo**. Mr. Kemp performed the soil and groundwater sampling activities and required documentation. Geographic Information System (GIS) generated figures were prepared by Ian Brown of **EnCo**. Mr. Bill Evans, Licensed Geologist of the Port of Tacoma made two site visits during the field work portion of the investigation. Concrete coring was performed by Evergreen Concrete Cutting of Sumner. Soil probing and temporary well installation and decommissioning was performed by Pacific Northwest Probe and Drilling of Milton. This report was reviewed and stamped (cover page) by a Washington registered and licensed hydrogeologist (Mr. Timothy Slotta, L.H.G. of SD & C). Resumes of key individuals who worked on this project are presented in **APPENDIX C – SUPPORT DOCUMENTS**. Laboratory testing was performed by a Washington state accredited

laboratory (Friedman & Bruya, Inc. of Seattle). A professional land surveyor was not required for this project.

10.0 PROJECT SITE DESCRIPTION & IMPROVEMENTS

General Information

The 0.34-acre site is located within the jurisdictional boundaries of the City of Tacoma in Pierce County and the county tax parcel number is 2275200770. A **PARCEL** map is presented as **FIGURE 2**. The industrially developed project site is currently defined as real property currently known as 2310 East 11th Street in Tacoma Washington. A **VICINITY** map is presented as **FIGURE 1**.

The project site is currently occupied by one building comprised of a mixed one story and two story masonry structure with lower floors having 12 foot to 14 foot high ceilings. The footprint of the manufacturing building is about 4,900 square feet with an extra 1,225 square foot (35' by 35') addition located in the southwest corner and an extra 1,225 square foot metal-roofed open section addition located at the southeast corner. The landowner indicated that the original building was built on the eastern part of the parcel in the 1940's and it occupied about 2,450 square feet of space. Sound Battery reportedly occupied the project site in 1947. In 1960 a 2,450 square feet building addition was constructed contiguous to the west of the original industrial building. A color aerial is presented as **FIGURE 3 – AERIAL**.

11.0 TOPOGRAPHY, ELEVATION, & DRAINAGE

The project site is located in the former tideflats of Commencement Bay. The topography of the project site has been significantly altered from the original slope with the construction of the existing building, yard, and parking lot. The approximate altitude (not confirmed) of the project site ranges from 15 feet to 20 feet above mean sea level according to USGS maps, Google Maps, and historical reports. The terrain at the surface of the project site is level and appears to slightly slope downward in a northwesterly direction toward Commencement Bay. The slope ranges from about 0.0 percent to less than 1 percent across the site. Surface water on the site flows as sheet runoff into catch basins located along the East 11th Street. Based on review of readily available maps, the city stormwater system eventually flows into Commencement Bay.

12.0 GEOLOGY AND SOIL TYPE

Geologic Setting – Local

According to the Hart Crowser 2011 ESA report, soils beneath the project site are described in the monitoring well logs (GSA – 2002) as consisting of sand, gravel, and small to medium cobbles from the ground surface to 10 feet bgs that is underlain with gray sand and silt from 10 feet to 14 feet bgs.

Soil Type – Mapped

The project site lies in the **Puget Sound Lowland Ecoregion** (2 – Puget Lowlands). This region consists of broad rolling lowlands and is characterized by a mild maritime climate and flanks the intricately cut coastline of Puget Sound. It occupies a continental glacial trough and has many islands, peninsulas, and bays in the Puget Sound waterway. The last glacial event occurred approximately 10,000 years to 14,000 years ago when the terminus of the Vashon Stade was in the vicinity of Olympia Washington. The geomorphology of the Puget Sound Region, including the project site is typified by glacial outwash features (moraines) and drift uplands according to Kruckeberg – 1991.

According to researched resources, land forms within this region comprise a system of glacially and fluvially sculptured features. The native subsurface materials are non-glacial deposits, consisting of recent Alluvium from the Holocene period (Qal) containing silt, sand and gravel deposits in present-day stream channels, on flood plains, and on terraces. The area consists of reworked glacial flood deposits and loess. The area may include small alluvial fans and minor mass-wasting deposits that extend onto the flood plain from tributaries.

Soil Type – Observed

Based on limited investigation of soils observed in the field, the soils within the depths and locations explored consist of a 6-inch poured concrete slap and 2 to 3 – inch thick bituminous asphalt surfaces that overlays about 0.20 foot up to 3 feet bgs of grey brown sandy gravel (GP) with crushed rock fill underlain with grey medium to coarse well sorted sand (SW) with shells and clay spheres down to 9 feet bgs (bottom of probehole). Soil classifications were estimated using the Unified Soil Classification System. Soil stratigraphy is illustrated in the **Log of Probeholes** and the **Log of Temporary Monitoring Wells** in **APPENDIX C**.

The estimated soil characteristics given above are based on observations made in the field by the environmental scientist and were documented using field description procedures. Where a soil contact was observed to be a gradational or undulating, the discussion indicates the average contact depth. Information herein represents the approximate boundaries between soil types; in-situ transition may be gradual. Soil characteristics were obtained during sampling and were not confirmed with a Soil Scientist.

Groundwater Setting

Groundwater was encountered in the two temporary groundwater monitoring wells at 6.45 feet and 6.29 feet bgs as shown on the attached Groundwater Sample Data form in **APPENDIX C** and **TABLE 7 (TEMPORARY and EXISTING MONITORING WELL GROUNDWATER ELEVATIONS)**. The surficial groundwater appears to flow towards the northwest at a gradient of 0.0013 to 0.0015 ft/ft as depicted on **FIGURE 7 -**

SURFICIAL GROUNDWATER TABLE ELEVATIONS, GRADIENT & FLOW DIRECTION. Groundwater flow may be influenced by ocean tides which could change the groundwater flow, direction, and gradient significantly. According to the landowner, there are no public and no private production water wells on the project site.

13.0 SAMPLE MEDIA & LOCATIONS

Soil and groundwater samples were collected for this project. Soil probe locations were selected based on reported historical land use practices and previous site investigations. Judgmentally selected samples were collected at locations as presented in **TABLE 1** in **APPENDIX B**.

14.0 CHEMICALS OF CONCERN

Selected areas reported and/or suspected of contamination were investigated for the chemicals of concern (COCs) as listed below.

- Total Lead (Soil & Groundwater)
- Dissolved Lead (Groundwater)
- pH (Soil & Groundwater)

Laboratory parameters were selected based on:

- Products and raw materials historically used on the project site.
- Contaminants commonly found at acid-core lead battery manufacturing facilities.
- Observed areas of suspect contamination.

15.0 OBSERVATIONS

Selected digital photographs taken during the subsurface soil quality assessment are presented in the **PHOTOGRAPHIC LOG** as **APPENDIX F**. The first floor of the building is not actively used except for storage and warehousing. The second floor is occupied by a tenant which stores fittings and screw products.

Soil

Soils impacted with lead-acid battery casings were observed and ranged from 0.5 foot bgs to about 3 feet bgs at probehole locations **7, 8, 11, 16, 19,** and **1WA**. Soil impacted with battery casings generally consist of dark gray to brown gravely sand and sandy gravel fill. These soils emitted a moderate musty odor.

Groundwater

Purge water appearance in both temporary monitoring wells was brown to tan in color and was moderately turbid. There was no visual evidence of petroleum hydrocarbon sheens or product in the groundwater withdrawn from the wells. Groundwater was

encountered in the two temporary groundwater monitoring wells (**1WA** and **2WA**) at 6.45 feet and 6.29 feet bgs.

16.0 RESULTS

Laboratory test results and completed Chain-of-Custody forms for soil and groundwater samples are documented in **APPENDIX E** – **LABORATORY REPORTS.** Sample locations are depicted on **FIGURE 5 – SOIL and GROUNDWATER PROBE LOCATIONS**. Soil and groundwater test results with observed characteristics are presented in **TABLE 2 (SOIL)** and **TABLE 3 (GROUNDWATER).**

16.1 Soil Test Results

A total of 58 discrete soil samples of the 68 samples were submitted to a Washington accredited testing laboratory for analysis of pre-selected Chemicals of Concern (COCs) as presented in **SECTION 13.0**.

Laboratory test results from Freidman and Bruya on soil samples exceed MTCA Method "A" CUL for total lead at 12 discrete probehole locations (**7, 8, 15, 16, 17, 18, 19, 20, 25, 26, 27,** and **1WA**) as shown in **APPENDIX B** as **TABLE 4 – SOIL TEST RESULTS (MTCA EXCEEDANCES)**. Total lead concentrations on samples collected greater than about 2 feet bgs exceed the MTCA Method "A" CUL at two probehole locations (**8 & 1WA**) as shown on **TABLE 5**. The concentration of total lead at sample number **8B** at 1.9 feet bgs is 1,070 mg/kg. The concentrations of total lead at **1WAB** at 2 feet bgs and at **1WAD** at 6.3 feet bgs is 42,300 mg/kg and 1,030 mg/kg, respectively.

Background Soil Samples

A total of 4 soil grab samples were collected as a background quality control check. The background soil samples (**1BGA, 1BGB, 2BGA** and **2BGB**) reported less than 2 mg/kg total lead and pH levels ranged from 7.38 units to 7.79 units.

16.2 Groundwater Test Results

A total of 2 discrete groundwater samples were submitted to a Washington accredited testing laboratory for analysis of pre-selected Chemicals of Concern (COCs) as presented in **SECTION 13.0**.

Laboratory test results from Friedman and Bruya on groundwater samples exceed Washington MTCA Method "A" CUL for total lead at probed monitoring well locations **1WA** and **2WA** as shown in **APPENDIX B** as **TABLE 3 – GROUNDWATER TEST RESULTS**. The concentration of **total lead** in groundwater at **1WA** and at **2WA** is 2,160 ug/l and 919 ug/l, respectively. The concentration of **dissolved lead** in groundwater using a 0.45 micro meter filter at **1WA** and at **2WA** is 13.1 ug/l and 18.9 ug/l, respectively. Dissolved lead from groundwater collected from **2WA** exceeds the MTCA method "A" CUL.

17.0 OPINION

It is the opinion of this writer that the source of the lead contamination identified in soil and groundwater beneath the project site at the indicated locations is primarily from the former lead-acid battery manufacturing facility that started operations in 1946.

18.0 CONCLUSIONS

Laboratory test results on soil samples exceed MTCA Method "A" CUL for total lead at 12 discrete probehole locations (**7, 8, 15, 16, 17, 18, 19, 20, 25, 26, 27,** and **1WA**). These impacted soils were identified less than about 2 feet bgs and are located beneath the first and second addition and outside to the east of the original building. Total lead concentrations on samples collected greater than about 2 feet bgs exceed the MTCA Method "A" CUL at two probehole locations (**8 & 1WA**). The MTCA exceedances for lead at these two locations extend to at least 1.9 feet bgs and 6.3 feet bgs, respectively. The background soil samples (**1BGA, 1BGB, 2BGA** and **2BGB**) reported less than 2 mg/kg total lead and pH levels ranged from 7.38 units to 7.79 units.

Laboratory test results on groundwater samples exceed Washington MTCA Method "A" CUL for total lead at probed monitoring well locations **1WA** and **2WA** and for dissolved lead at **2WA**.

The static surficial groundwater level measured on July 19th from the two temporary monitoring wells is about 6.4 feet bgs. The surficial groundwater for one measured event appears to flow towards the northwest at a gradient of 0.0013 to 0.0015 ft/ft.

19.0 RECOMMEDATIONS

At the request of the client and the Port of Tacoma recommendations were not provided at this time. If the client wishes to proceed with obtaining permits for building demolition, preparing a cleanup action plan, or performing a cleanup action contact **EnCo** and we will prepare a cost estimate for these activities. It is suggested to retain copies of this report and all appendices in a personal file for at least seven years.

20.0 LIMITATIONS

The **OPINION**, **CONCLUSIONS** and **RECOMMENDATIONS** presented in this report are professional opinions based on the data collected and described in this report. They are intended only for the purpose, location, and project indicated. The **CONCLUSIONS** are based on the assumption that project site conditions do not deviate from those reported and observed during the investigation as described in this report. Any unusual or as yet unreported conditions that warrant environmental concern should be brought to the attention of **EnCo's** staff so that revisions to this report can be made.

This report is based, in part on unverified information supplied to **EnCo** by third-party sources. While efforts have been made to substantiate this third-party information,

EnCo cannot guarantee its completeness or accuracy. **EnCo's** staff members participating in this limited soil and groundwater investigation are environmental scientists and not attorneys. Therefore, it must be clear to all parties that this report does not offer any legal opinion, representation, or interpretation of environmental laws, rules, regulations, or policies of federal, state or local governmental agencies.

This report is intended for the sole use of the client and client-approved assigns. Any other parties that wish to read or use this report shall notify **EnCo** in writing by executing a Right to Rely form. **EnCo** will supply a blank form upon request. On the basis of the intended use of the report, **EnCo** may require that additional work be performed and that an updated report with updated conclusions be issued. Any use of information or any reliance on this report by parties outside this agreement is at such party's sole risk. Non-compliance with any of these requirements will release **EnCo** from any liability resulting from the use of this report by any unauthorized party.

EnCo's work was performed in accordance in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing under similar conditions in the area. No other warranty, expressed or implied, is made. **TERMS & CONDITIONS** which shall apply to the project site are presented in **APPENDIX D**.

21.0 REFERENCES

PROFESSIONAL SERVICE FIRMS, CONTRACTORS & LABORATORIES

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EnCo Environmental Corporation, Shallow Soil & Groundwater Sampling and Analysis with Hazardous Building Materials Survey, Work Plan (FINAL VERSION), Sound Battery, 2310 East 11th Street, Tacoma WA, June 11, 2011.

Friedman & Bruya, Inc, Seattle WA, Accredited testing laboratory for analyzing the collected media samples.

Pacific Northwest Probe & Drilling, Milton WA, Environmental Probing & Drilling Services for the project site.

Pacific Rim Environmental, Inc., Seattle WA, Limited Lead-Based Paint Testing, Sound Battery, 2310 East 11th Street, Tacoma WA, April 26, 2011.

Pacific Rim Environmental, Inc., Seattle WA, Regulated Building Materials Survey, Sound Battery, 2310 East 11th Street, Tacoma WA, August 3, 2011.

Mountain View Location Services, Bonney Lake WA, Private utility identification contractor for the project site.

REGULATIONS

Washington Department of Ecology, Olympia WA, Model Toxics Control Act, Statute and Regulation, Chapter 70.105D RCW, MTCA Cleanup Regulation, Chapter 173-340 WAC, Publication No. 94-06, Amended February 12, 2001, Revised November 2007.

REFERENCE BOOKS, MANUALS, AND OTHER DOCUMENTS

U.S. Environmental Protection Agency, Environmental Monitoring Systems Laboratory, Las Vegas NV, Characterization of Hazardous Waste Sites – A Methods Manual, Volume I1 – Available Sampling Methods, Second Edition, EPA/600/4-84/076, December 1984.

U.S. Environmental Protection Agency, Environmental Monitoring Systems Laboratory, Las Vegas NV, Characterization of Hazardous Waste Sites – A Methods Manual, Volume I1 – Available Sampling Methods, Second Edition, EPA/600/4-84/076, December 1984.

Washington Department of Ecology, Olympia WA, Model Toxics Control Act, Chapter 70.105D RCW and Cleanup Regulation Chapter 173-340 WAC, Publication No. 94-06, Amended February 12, 2001, Revised November 2007.

Washington State Department of Ecology, Olympia WA, Toxics Cleanup Program, Guidance on Sampling and Data Analysis Methods: Publication No. 94-49, January 1995.

Washington Department of Ecology, Toxic Cleanup Program, Olympia WA, Natural Background Soil Metals Concentrations in Washington State, Publication No. 94-115, October 1994.

Washington State Department of Ecology, Olympia WA, Toxics Cleanup Program, Guidance on Preparing Independent Remedial Action Reports Under the Model Toxics Control Act (MTCA) Chapter 70.105D RCW: Publication No. 94-18, March 9, 1994.

APPENDIX A

FIGURES

POB 1212
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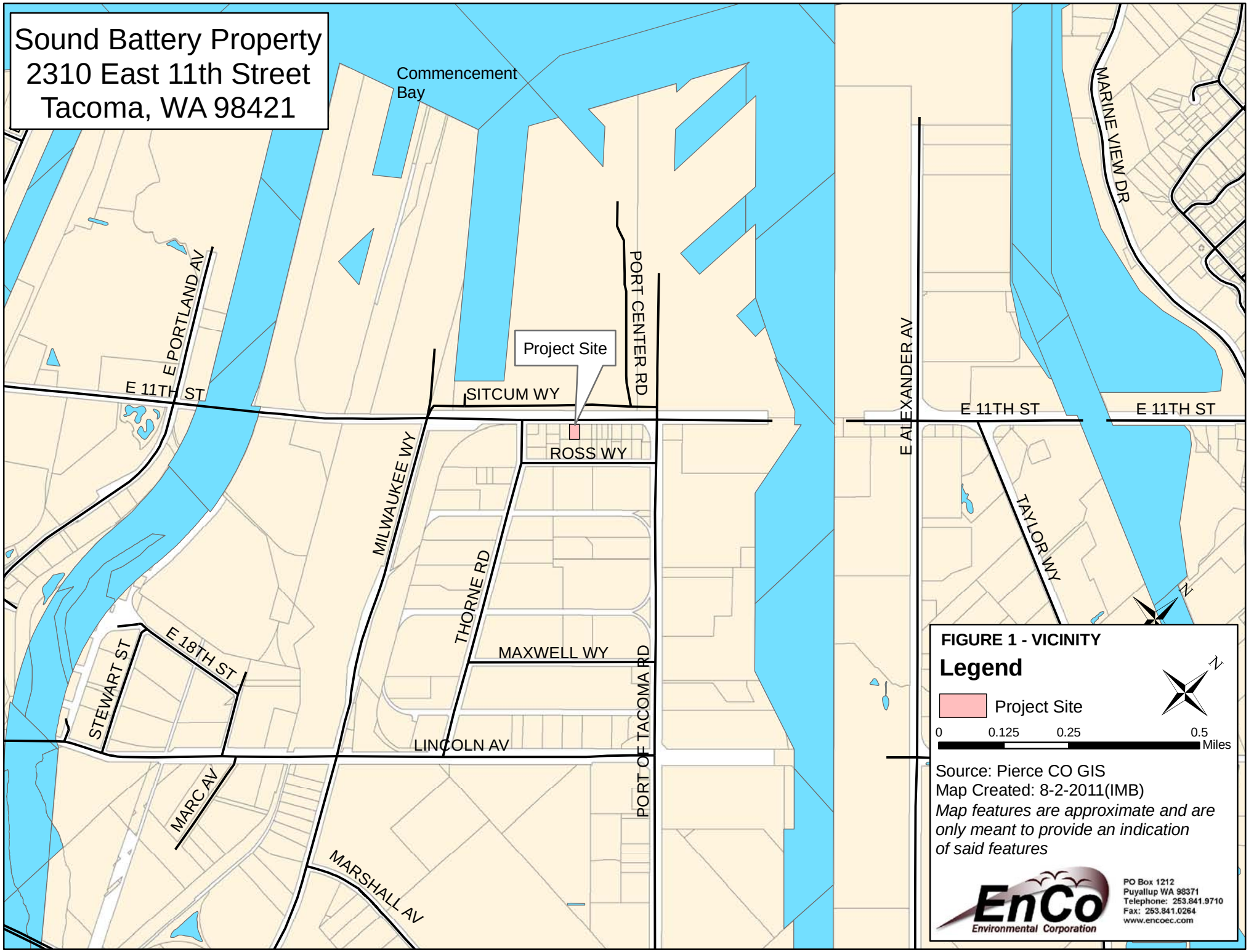
Telephone: 253.841.9710
www.encoec.com

LIST OF FIGURES

APPENDIX A FIGURES


Sound Battery Property
2310 East 11th Street
Tacoma, WA 98421
Commencement Bay
Project Site
E PORTLAND AV
E 11TH ST
SITCUM WY
PORT CENTER RD
ROSS WY
MILWAUKEE WY
THORNE RD
MAXWELL WY
PORT OF TACOMA RD
LINCOLN AV
E 18TH ST
STEWART ST
MARC AV
MARSHALL AV
E ALEXANDER AV
MARINE VIEW DR
TAYLOR WY
E 11TH ST
E 11TH ST
N
FIGURE 1 - VICINITY
Legend
Project Site
0
0.125
0.25
0.5
Miles
Source: Pierce CO GIS
Map Created: 8-2-2011(IMB)
Map features are approximate and are only meant to provide an indication of said features
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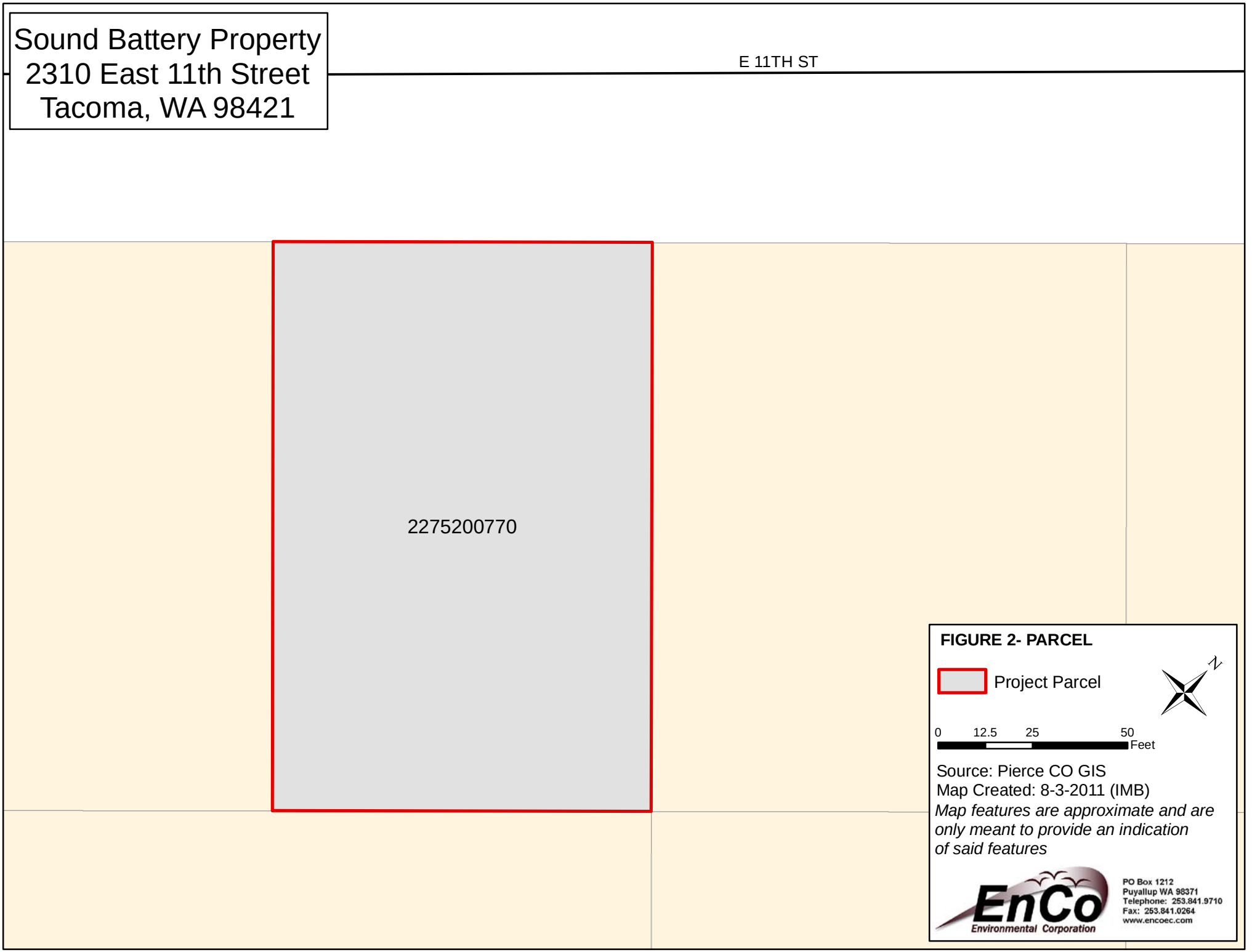
Sound Battery Property
2310 East 11th Street
Tacoma, WA 98421



Sound Battery Property
2310 East 11th Street
Tacoma, WA 98421

FIGURE 3- AERIAL (2010)

N

0 25 50 100 Feet

Source: Pierce CO GIS Google Earth
Map Created: 8-3-2011 (IMB)

Map features are approximate and are only meant to provide an indication of said features

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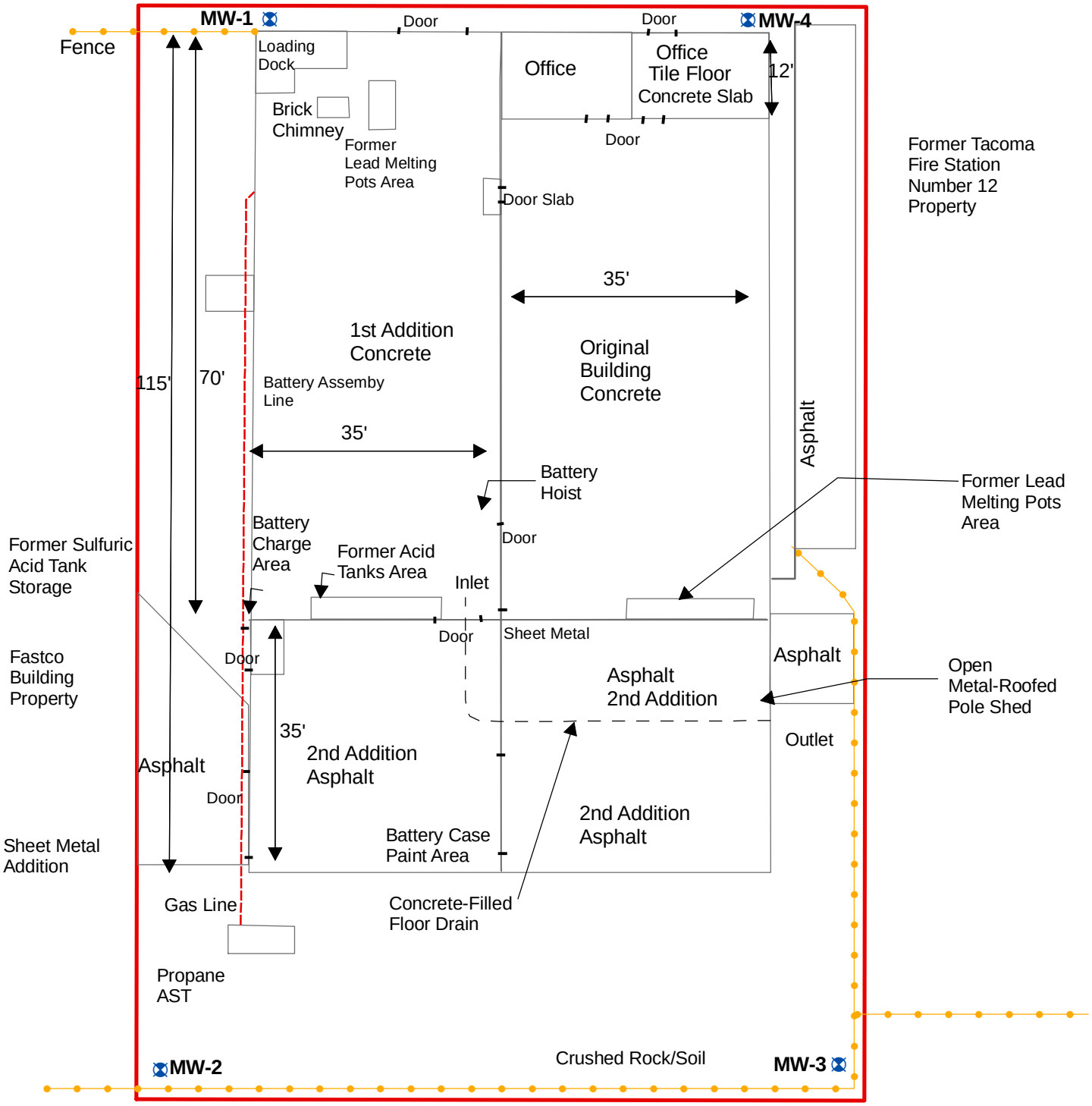
East 11th Street



Premier Transport Parking Area
(Formerly Collins)

Tax Parcel #: 2275200770
Total Acreage: 0.34
Jurisdiction: Tacoma
Map Created Date: August 10, 2011

Note: Depicted property boundaries are estimated and not professionally surveyed.

Map Source: GSA 1997 & Hart Crowser 2011

FIGURE 4: Project Site Plan
Sound Battery Property
2310 East 11th Street, Tacoma WA

Sound Battery Property Bounday
Groundwater Monitoring Well (MW1-4) (GeoSystems Analysis, 1997)

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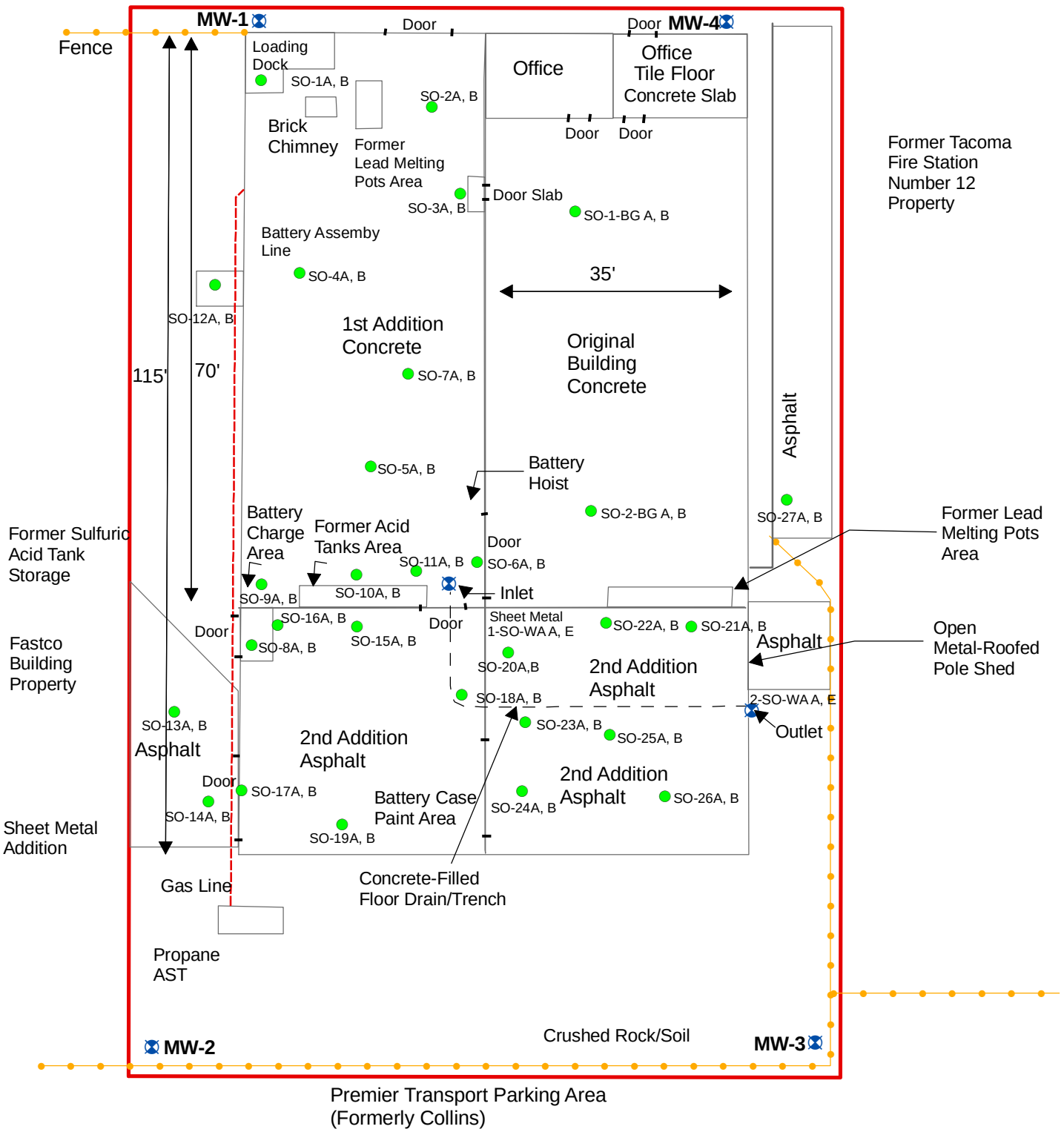
0 5 10 20 Feet



Tax Parcel #: 2275200770
Total Acreage: 0.34
Jurisdiction: Tacoma
Map Created Date: August 8, 2011

Note: Depicted property boundaries are estimated and not professionally surveyed.

Map Source: GSA 1997 & Hart Crowser 2011

FIGURE 5: Soil and Groundwater Probe Locations
Sound Battery Property
2310 East 11th Street, Tacoma, WA

Sound Battery Property Bounday
Soil Sample Locations
Groundwater Monitoring Well (MW-1-4) (GeoSystems Analysis, 1997)
Groundwater Monitoring Well Samples (2011)

0 5 10 20 Feet

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East 11th Street

MW-1

MW-4

Fence

Loading Dock

Door

Door

Office

Office
Tile Floor
Concrete Slab

Door

Door

Door

Brick Chimney

Battery Assembly Line

Door

1st Addition Concrete

Original Building Concrete

Former Tacoma
Fire Station
Number 12
Property

Asphalt

Fastco
Building
Property

Asphalt

Door

Asphalt

Door

Gas Line

Propane AST

Inlet

1-SO-WA A, E

Door

1-SO-WA A, E

Outlet

2-SO-WA A, E

2nd Addition Asphalt

2nd Addition Asphalt

Crushed Rock/Soil

Fence

Fence

MW-2

MW-3

Premier Transport Parking Area
(Formerly Collins)

COC	SO-1A (0.5')	SO-1B (1.5')
Total Pb	84.6	

SO-1A, B

COC	SO-2A (0.5')	SO-2B (2.0')
Total Pb	200	

SO-2A, B

COC	SO-3A (0.5')	SO-3B (2.0')
Total Pb	241	

SO-3A, B

COC	SO-1-BG-A (0.5')	SO-1-BG-B (2.5')
Total Pb	1.69	1.59
pH	7.63	7.38

SO-1-BG A, B

COC	SO-4A (0.5')	SO-4B (1.5')
Total Pb	75.1	

SO-4A, B

COC	SO-12A (1.0')	SO-12B (2.0')
Total Pb	112	

SO-12A, B

COC	SO-7A (1.0')	SO-7B (2.0')
Total Pb	1150	4.34

SO-7A, B

COC	SO-5A (1.0')	SO-5B (2.0')
Total Pb	358	12.8

SO-5A, B

COC	SO-11A (0.5')	SO-11B (1.5')
Total Pb	462	1.35

SO-11A, B

COC	SO-9A (0.5')	SO-9B (1.5')
Total Pb	46.9	

SO-9A, B

COC	SO-10A (1.0')	SO-10B (2.0')
Total Pb	37	

SO-10A, B

COC	SO-2BG-A (1.0')	SO-2-BG-B (2.5')
Total Pb	1.52	1.44
PH	7.66	7.79

SO-2-BG A, B

COC	SO-6A (0.5')	SO-6B (1.5')
Total Pb	385	16.2

SO-6A, B

COC	SO-21A (0.5')	SO-21B (1.5')
Total Pb	210	

SO-21A, B

COC	SO-22A (0.5')	SO-22B (1.8')
Total Pb	453	6.26

SO-22A, B

COC	SO-27A (0.5')	SO-27B (2.0')
Total Pb	24500	3.11

SO-27A, B

COC	SO-20A (0.5')	SO-20B (1.5')
Total Pb	28800	55.8

SO-20A,B

COC	SO-8A (0.5')	SO-8B (1.9')
Total Pb	2950	1070
pH	5.46	4.27

SO-8A, B

COC	SO-15A (1.0')	SO-15B (2.0)
Total Pb	1660	284

SO-15A, B

SO-16A, B

COC	SO-16A (1.0')	SO-16B (2.0')
Total Pb	7070	36.3

SO-16B

COC	SO-23A (0.5')	SO-23B (1.5')
Total Pb	600	307

SO-23A, B

COC	SO-25A (0.5')	SO-25B (1.5')
Total Pb	2400	112

SO-25A, B

COC	SO-13A (0.5')	SO-13B (1.5')
Total Pb	601	94.9

SO-13A, B

COC	SO-18A (1.0')	SO-18B (2.0)
Total Pb	30900	364

SO-18A, B

COC	SO-17A (0.5')	SO-17B (1.5')
Total Pb	5240	273

SO-17A, B

COC	SO-24A (0.5')	SO-24B (1.9')
Total Pb	17.8	

SO-24A, B

COC	SO-26A (0.75')	SO-26B (2.0')
Total Pb	2880	2.44

SO-26A, B

COC	SO-19A (0.5')	SO-19B (1.8')
Total Pb	15500	2.02

SO-19A, B

COC	SO-14A (1.0')	SO-14B (2.0)
Total Pb	83.8	

SO-14A, B

COC	2WA
Total Pb	919
Dissolved Pb	18.9
pH	4.91

COC	2-SO-WA-A (0.5')	2-SO-WA-B (1.5')	2-SO-WA-C (2.0')	2-SO-WA-D (6.4')	2-SO-WA-E (8.6')
Total Pb	8.79	1.9	1.76	2.03	395
pH	7.65	8.03	7.9	7.08	4.3

COC	1WA
Total Pb	2160
Dissolved Pb	13.1
pH	6.76

COC	1-SO-WA-A (0.4')	1-SO-WA-B (2.0')	1-SO-WA-C (4.0')	1-SO-WA-D (6.3')	1-SO-WA-E (8.5')
Total Pb	38300	42300	195	1030	20.9
pH	4.17	3.98	4.85	3.9	6.74

Sound Battery Property Boundary

Soil Sample Locations

Gas Line

Fence

Groundwater Monitoring Well Sample (2011)

Groundwater Monitoring Well (MW 1-4) (GeoSystems Analysis, 1997)

Soil Test Results

Sample Depth

COC	SO-8A (0.5')	SO-8B (1.9')
Total Pb	2950	1070
pH	5.46	4.27

Test results plotted in the red bold boxes and red text exceed MTCA Method "A" cleanup levels (CULs) for the chemical of concern.(1000 mg/Kg)
Test results plotted in the black boxes and black text do not exceed MTCA Method "A" CULs. Sample numbers without result boxes do not exceed MTCA "A" CULs.

Groundwater Test Results

COC	Units	1WA
Total Pb	µg/L	2160
Dissolved Pb	µg/L	13.1
pH	unit	6.76

Test results plotted in the blue bold boxes and blue text exceed MTCA Method "A" cleanup levels (CULs) for the chemical of concern.15 µg/L

COC-Chemical of Concern
mg/Kg=milligrams per kilogram
Pb-Total Lead
pH-units
µg/L-micro grams per liter

The location of property boundaries, sample locations, structures, and buildings are considered approximate and are subject to variation. Drawing to approximate scale; dimensions herin are deemed reliable. The diagram does not depict all subsurface utilities

Map Size= 18" X 24"

N

0 2.5 5 10 15 20
Feet

Source: Pierce CO GIS
Map Created: 8-10-2011 (IMB)

FIGURE 6:
Soil and Groundwater Test Results

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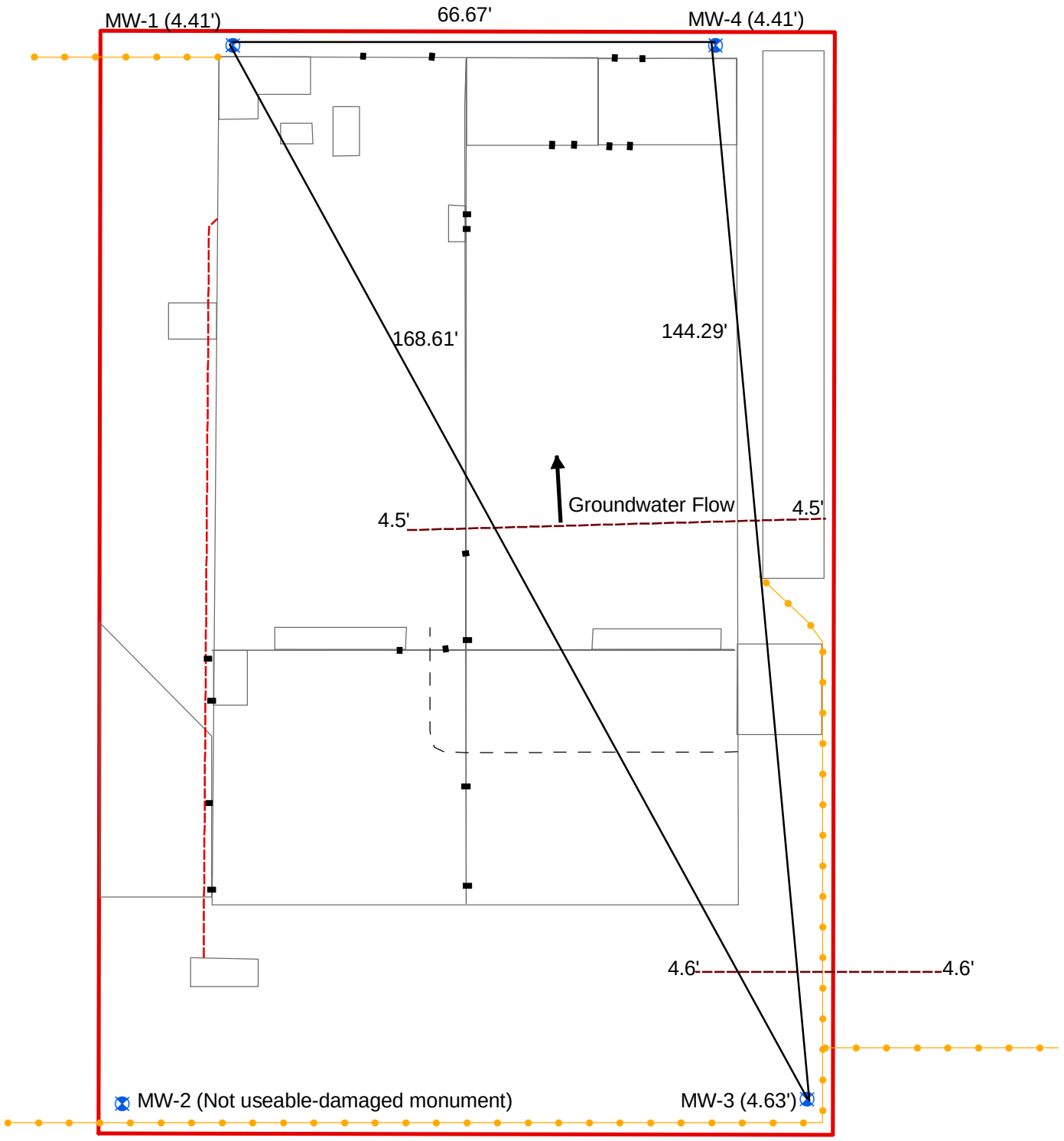

Premier Transport Parking Area
(Formerly Collins)

Sound Battery Property Bounday

Monitoring Well Location and Number (GeoSystems Analysis, 1997)

MW-3 (4.63') Static Groundwater elevation

Approximate direction of groundwater flow

---4.5'-- Surficial groundwater elevation contour

0 5 10 20 Feet

Map Size 8.5 X 11

FIGURE 7: Surficial Groundwater Table Elevations, Gradient & Flow Direction- July 2011

Sound Battery Property
2310 East 11th Street, Tacoma WA

Notes:
Groundwater measurements made on 7.19.2011
The groundwater flows in a estimated northwest direction at a gradient of 0.0013 to 0.0015 ft/ft
Contour drawn using the straight line interpolation method
Distances between monitoring wells were measured using the diagram prepared by Hart Crowser-January 2011
Groundwater data and contours created by Tim Slotta, Licensed Hydrogeologist, SD & C, Inc. on August 16, 2011
Figure drawn by Ian Brown, EnCo

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Source: Pierce CO GIS
Map Created: 8-17-2011 (IMB)

APPENDIX B

TABLES

LIST OF TABLES

APPENDIX B TABLES

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TABLE 1 Soil & Groundwater Sample Locations		
Sample Location	**Matrix**	**Location Description**
1BG	SOIL	Background Quality Control #1, North, Original Building
2BG	SOIL	Background Quality Control #2, South, Original Building
1 SO	SOIL	Raised Loading Dock, First Addition
2 SO	SOIL	Center – North, First Addition
3 SO	SOIL	West of Concrete Slab at Door, First Addition
4 SO	SOIL	Battery Assembly Area, First Addition
5 SO	SOIL	Center - South, First Addition
6 SO	SOIL	West of Doorway near Drain Inlet, SE Corner, First Addition
7 SO	SOIL	Center, First Addition
8 SO	SOIL	Sulfuric Acid Tank Room, NW Corner of Second Addition
9 SO	SOIL	Battery Charge Area, Southwest Corner, First Addition
10 SO	SOIL	Sulfuric Acid Tank Storage Slab, West, First Addition
11 SO	SOIL	Sulfuric Acid Tank Storage Slab, East, First Addition
12 SO	SOIL	Concrete Slab, Former Bag House Collector, West of First Addition
13 SO	SOIL	Asphalt Surface, North End, West of Second Addition
14 SO	SOIL	Asphalt Surface, South End, West of Second Addition
15 SO	SOIL	Center North Wall, Second Addition
16 SO	SOIL	NW Corner, North Wall, Second Addition
17 SO	SOIL	Doorway, SW Corner, Second Addition
18 SO	SOIL	Elbow of Floor Drain Pipe, Second Addition
19 SO	SOIL	Battery Case Painting Area, Center South, Second Addition
20 SO	SOIL	North Wall, Center, Second Addition
21 SO	SOIL	North Wall, NE Corner, Second Addition
22 SO	SOIL	North Wall, Center - East, Second Addition
23 SO	SOIL	South of Floor Drain Trench, West, Second Addition
24 SO	SOIL	Battery Swing Hoist, Center - South, Second Addition
25 SO	SOIL	South of Floor Drain Trench, East, Second Addition
26 SO	SOIL	SE Corner, Second Addition
27 SO	SOIL	Asphalt Surface, East of Flowerbed, East of Original Building
1SO/WA	GROUND WATER & SOIL	Inlet of Sealed Floor Drain Trench, First Addition
2SO/WA	GROUND WATER & SOIL	Outlet Discharge of Sealed Floor Drain Trench, Second Addition

TABLE 2 - SOIL TEST RESULTS						
Sound Battery (SB) Sample Number = SB-SO:			**1BGA**	**1BGB**	**2BGA**	**2BGB**
Sample Depth in feet (bgs)			0.5	2.5	1.0	2.5
Sample Collection Date			7.18.11	7.18.11	7.18.11	7.18.11
Compliance Sample Type			Background	Background	Background	Background
Field Screening (Odor)			None	None	None	None
Soil Color & Texture			Grey Sand with Shells	Grey Sand	Grey Sand with Shells	Grey Sand with Shells
Hydrogeologic Zone			Vadose	Vadose	Vadose	Vadose
Moisture			Slight Moist	Dry	Dry	Dry
Chemicals of Concern	**MTCA "A"**	**Units**				
Heavy Metals (Total)	CUL	mg/kg				
Lead (Pb) - Industrial Properties	**1,000**		1.69	1.59	1.52	1.44
Conventional Pollutants	Corrosive	Units				
pH - Hazardous Waste	**<2.0/ >12.5**		7.63	7.38	7.66	7.79

TABLE 2 - SOIL TEST RESULTS						
Sound Battery (SB) Sample Number = SB-SO:			**1A**	**1B**	**2A**	**2B**
Sample Depth in feet (bgs)			0.5	1.5	0.5	2.0
Sample Collection Date			7.18.11	7.18.11	7.18.11	7.18.11
Compliance Sample Type			Assessment	Assessment	Assessment	Assessment
Field Screening (Odor)			Musty	Musty	None	None
Soil Color & Texture			Grey Sand with Shells, Fill	Grey Sand with Shells	Grey Sand with Gravel and Shells, Fill	Grey Sand with Shells
Hydrogeologic Zone			Vadose	Vadose	Vadose	Vadose
Moisture			Dry	Dry	Dry	Dry
Chemicals of Concern	**MTCA "A"**	**Units**				
Heavy Metals (Total)	CUL	mg/kg				
Lead (Pb) - Industrial Properties	**1,000**		84.6	NA	200	NA
Conventional Pollutants	Corrosive	Units				
pH - Hazardous Waste	**<2.0/ >12.5**		NA	NA	NA	NA

TABLE 2 - SOIL TEST RESULTS						
Sound Battery (SB) Sample Number = SB-SO:			**3A**	**3B**	**4A**	**4B**
Sample Depth in feet (bgs)			0.5	2.0	0.5	1.5
Sample Collection Date			7.18.11	7.18.11	7.18.11	7.18.11
Compliance Sample Type			Assessment	Assessment	Assessment	Assessment
Field Screening (Odor)			None	None	Musty	None
Soil Color & Texture			Grey Sand with Gravel, Fill	Grey Sand with Shells and Clay	Grey Sand with Gravel, Fill	Grey Sand
Hydrogeologic Zone			Vadose	Vadose	Vadose	Vadose
Moisture			Dry	Dry	Dry	Dry
Chemicals of Concern	**MTCA "A"**	**Units**				
Heavy Metals (Total)	CUL	mg/kg				
Lead (Pb) - Industrial Properties	**1,000**		241	NA	75.1	NA
Conventional Pollutants	Corrosive	Units				
pH - Hazardous Waste	**<2.0/ >12.5**		NA	NA	NA	NA

TABLE 2 - SOIL TEST RESULTS						
Sound Battery (SB) Sample Number = SB-SO:			**5A**	**5B**	**6A**	**6B**
Sample Depth in feet (bgs)			1.0	2.0	0.5	1.5
Sample Collection Date			7.18.11	7.18.11	7.18.11	7.18.11
Compliance Sample Type			Assessment	Assessment	Assessment	Assessment
Field Screening (Odor)			Musty	None	Musty	None
Soil Color & Texture			Grey Sand with Shells	Grey Sand with Shells	Grey Sand	Grey Sand
Hydrogeologic Zone			Vadose	Vadose	Vadose	Vadose
Moisture			Dry	Dry	Dry	Dry
Chemicals of Concern	**MTCA "A"**	**Units**				
Heavy Metals (Total)	CUL	mg/kg				
Lead (Pb) - Industrial Properties	**1,000**		358	12.8	385	16.2
Conventional Pollutants	Corrosive	Units				
pH - Hazardous Waste	**<2.0/ >12.5**		NA	NA	NA	NA

TABLE 2 - SOIL TEST RESULTS						
Sound Battery (SB) Sample Number = SB-SO:			**7A**	**7B**	**8A**	**8B**
Sample Depth in feet (bgs)			1.0	2.0	0.5	1.9
Sample Collection Date			7.18.11	7.18.11	7.18.11	7.18.11
Compliance Sample Type			Assessment	Assessment	Assessment	Assessment
Field Screening (Odor)			Musty	Musty	Musty	None
Soil Color & Texture			Grey Sand w Shells & Battery Casings, Fill	Grey Sand with Shells and Clay	Grey Sand w Gravel & Battery Casings, Fill	Grey Sand with Shells
Hydrogeologic Zone			Vadose	Vadose	Vadose	Vadose
Moisture			Dry	Dry	Dry	Dry
Chemicals of Concern	**MTCA "A"**	**Units**				
Heavy Metals (Total)	CUL	mg/kg				
Lead (Pb) - Industrial Properties	**1,000**		**1,150**	4.34	**2,950**	**1,070**
Conventional Pollutants	Corrosive	Units				
pH - Hazardous Waste	**<2.0/ >12.5**		NA	NA	5.46	4.27

TABLE 2 - SOIL TEST RESULTS						
Sound Battery (SB) Sample Number = SB-SO:			**9A**	**9B**	**10A**	**10B**
Sample Depth in feet (bgs)			0.5	1.5	1.0	2.0
Sample Collection Date			7.18.11	7.18.11	7.18.11	7.18.11
Compliance Sample Type			Assessment	Assessment	Assessment	Assessment
Field Screening (Odor)			Musty	None	Musty	None
Soil Color & Texture			Grey Sand with Gravel, Fill	Grey Sand with Gravel and Shells	Grey Sand with Shells	Grey Sand with Gravel and Shells
Hydrogeologic Zone			Vadose	Vadose	Vadose	Vadose
Moisture			Dry	Dry	Slight Moist	Dry
Chemicals of Concern	**MTCA "A"**	**Units**				
Heavy Metals (Total)	CUL	mg/kg				
Lead (Pb) - Industrial Properties	**1,000**		46.9	NA	37	NA
Conventional Pollutants	Corrosive	Units				
pH - Hazardous Waste	**<2.0/ >12.5**		NA	NA	NA	NA

TABLE 2 - SOIL TEST RESULTS						
Sound Battery (SB) Sample Number = SB-SO:			**11A**	**11B**	**12A**	**12B**
Sample Depth in feet (bgs)			0.5	1.5	1.0	2.0
Sample Collection Date			7.18.11	7.18.11	7.18.11	7.18.11
Compliance Sample Type			Assessment	Assessment	Assessment	Assessment
Field Screening (Odor)			Musty	None	None	None
Soil Color & Texture			Grey Sand w Shell & Battery Casings, Fill	Grey Sand	Grey Sand with Gravel and Shells, Fill	Grey Sand with Gravel and Shells
Hydrogeologic Zone			Vadose	Vadose	Vadose	Vadose
Moisture			Slight Moist	Dry	Dry	Dry
Chemicals of Concern	**MTCA "A"**	**Units**				
Heavy Metals (Total)	CUL	mg/kg				
Lead (Pb) - Industrial Properties	**1,000**		462	1.35	112	NA
Conventional Pollutants	Corrosive	Units				
pH - Hazardous Waste	**<2.0/ >12.5**		NA	NA	NA	NA

TABLE 2 - SOIL TEST RESULTS						
Sound Battery (SB) Sample Number = SB-SO:			**13A**	**13B**	**14A**	**14B**
Sample Depth in feet (bgs)			0.5	1.5	1.0	2.0
Sample Collection Date			7.18.11	7.18.11	7.18.11	7.18.11
Compliance Sample Type			Assessment	Assessment	Assessment	Assessment
Field Screening (Odor)			Musty	None	Musty	Musty
Soil Color & Texture			Grey Sand with Gravel, Fill	Grey Sand	Grey Sand with Gravel and Shells, Fill	Grey Sand with Gravel and Shells
Hydrogeologic Zone			Vadose	Vadose	Vadose	Vadose
Moisture			Dry	Dry	Slight Moist	Dry
Chemicals of Concern	**MTCA "A"**	**Units**				
Heavy Metals (Total)	CUL	mg/kg				
Lead (Pb) - Industrial Properties	**1,000**		601	94.9	83.8	NA
Conventional Pollutants	Corrosive	Units				
pH - Hazardous Waste	**<2.0/ >12.5**		NA	NA	NA	NA

TABLE 2 - SOIL TEST RESULTS						
Sound Battery (SB) Sample Number = SB-SO:			**15A**	**15B**	**16A**	**16B**
Sample Depth in feet (bgs)			1.0	2.0	1.0	2.0
Sample Collection Date			7.18.11	7.18.11	7.18.11	7.18.11
Compliance Sample Type			Assessment	Assessment	Assessment	Assessment
Field Screening (Odor)			Musty	None	Musty	None
Soil Color & Texture			Grey Sand with Shell and Clay	Grey Sand with Shells and Wood	Grey Sand w Gravel, Shell, Battery, Fill	Grey Sand with Gravel and Shells, Fill
Hydrogeologic Zone			Vadose	Vadose	Vadose	Vadose
Moisture			Dry	Dry	Slight Moist	Dry
Chemicals of Concern	**MTCA "A"**	**Units**				
Heavy Metals (Total)	CUL	mg/kg				
Lead (Pb) - Industrial Properties	**1,000**		**1,660**	284	**7,070**	36.3
Conventional Pollutants	Corrosive	Units				
pH - Hazardous Waste	**<2.0/ >12.5**		NA	NA	NA	NA

TABLE 2 - SOIL TEST RESULTS						
Sound Battery (SB) Sample Number = SB-SO:			**17A**	**17B**	**18A**	**18B**
Sample Depth in feet (bgs)			0.5	1.5	1.0	2.0
Sample Collection Date			7.18.11	7.18.11	7.18.11	7.18.11
Compliance Sample Type			Assessment	Assessment	Assessment	Assessment
Field Screening (Odor)			Musty	Musty	Musty	None
Soil Color & Texture			Grey Sand with Gravel and Wood and Shells, Fill	Grey Sand with Gravel and Shells, Fill	Grey Sand with Gravel and Shells, Fill	Grey Sand
Hydrogeologic Zone			Vadose	Vadose	Vadose	Vadose
Moisture			Slight Moist	Dry	Slight Moist	Dry
Chemicals of Concern	**MTCA "A"**	**Units**				
Heavy Metals (Total)	CUL	mg/kg				
Lead (Pb) - Industrial Properties	**1,000**		**5,240**	273	**30,900**	364
Conventional Pollutants	Corrosive	Units				
pH - Hazardous Waste	**<2.0/ >12.5**		NA	NA	NA	NA

TABLE 2 - SOIL TEST RESULTS						
Sound Battery (SB) Sample Number = SB-SO:			**19A**	**19B**	**20A**	**20B**
Sample Depth in feet (bgs)			0.5	1.8	0.5	1.5
Sample Collection Date			7.18.11	7.18.11	7.18.11	7.18.11
Compliance Sample Type			Assessment	Assessment	Assessment	Assessment
Field Screening (Odor)			Musty	None	Musty	None
Soil Color & Texture			Grey Sand w Shells & Battery Casings, Fill	Grey Sand with Shells	Grey Sand with Gravel, Fill	Grey Sand with Clay
Hydrogeologic Zone			Vadose	Vadose	Vadose	Vadose
Moisture			Dry	Dry	Slight Moist	Slight Moist
Chemicals of Concern	**MTCA "A"**	**Units**				
Heavy Metals (Total)	CUL	mg/kg				
Lead (Pb) - Industrial Properties	**1,000**		**15,500**	2.02	**28,800**	55.8
Conventional Pollutants	Corrosive	Units				
pH - Hazardous Waste	**<2.0/ >12.5**		NA	NA	NA	NA

TABLE 2 - SOIL TEST RESULTS						
Sound Battery (SB) Sample Number = SB-SO:			**21A**	**21B**	**22A**	**22B**
Sample Depth in feet (bgs)			0.5	1.5	0.5	1.8
Sample Collection Date			7.18.11	7.18.11	7.19.11	7.19.11
Compliance Sample Type			Assessment	Assessment	Assessment	Assessment
Field Screening (Odor)			Musty	None	Musty	None
Soil Color & Texture			Grey Sand with Clay	Grey Sand with Clay	Grey Sand with Gravel, Fill	Grey Sand with Clay
Hydrogeologic Zone			Vadose	Vadose	Vadose	Vadose
Moisture			Dry	Dry	Dry	Slight Moist
Chemicals of Concern	**MTCA "A"**	**Units**				
Heavy Metals (Total)	CUL	mg/kg				
Lead (Pb) - Industrial Properties	**1,000**		210	NA	453	6.26
Conventional Pollutants	Corrosive	Units				
pH - Hazardous Waste	**<2.0/ >12.5**		NA	NA	NA	NA

TABLE 2 - SOIL TEST RESULTS						
Sound Battery (SB) Sample Number = SB-SO:			**23A**	**23B**	**24A**	**24B**
Sample Depth in feet (bgs)			0.5	1.5	0.5	1.9
Sample Collection Date			7.18.11	7.18.11	7.18.11	7.18.11
Compliance Sample Type			Assessment	Assessment	Assessment	Assessment
Field Screening (Odor)			Musty	None	None	None
Soil Color & Texture			Grey Sand	Grey Sand	Grey Sand with Shells	Grey Sand with Gravel and Shells
Hydrogeologic Zone			Vadose	Vadose	Vadose	Vadose
Moisture			Slight Moist	Slight Moist	Dry	Dry
Chemicals of Concern	**MTCA "A"**	**Units**				
Heavy Metals (Total)	CUL	mg/kg				
Lead (Pb) - Industrial Properties	**1,000**		600	307	17.8	NA
Conventional Pollutants	Corrosive	Units				
pH - Hazardous Waste	**<2.0/ >12.5**		NA	NA	NA	NA

TABLE 2 - SOIL TEST RESULTS						
Sound Battery (SB) Sample Number = SB-SO:			**25A**	**25B**	**26A**	**26B**
Sample Depth in feet (bgs)			0.5	1.5	0.75	2.0
Sample Collection Date			7.19.11	7.19.11	7.19.11	7.19.11
Compliance Sample Type			Assessment	Assessment	Assessment	Assessment
Field Screening (Odor)			None	None	None	None
Soil Color & Texture			Grey Sand with Gravel, Fill	Grey Sand with Shells	Grey Sand with Shells and Clay	Grey Sand
Hydrogeologic Zone			Vadose	Vadose	Vadose	Vadose
Moisture			Slight Moist	Slight Moist	Dry	Dry
Chemicals of Concern	**MTCA "A"**	**Units**				
Heavy Metals (Total)	CUL	mg/kg				
Lead (Pb) - Industrial Properties	**1,000**		**2,400**	112	**2,880**	2.44
Conventional Pollutants	Corrosive	Units				
pH - Hazardous Waste	**<2.0/ >12.5**		NA	NA	NA	NA

TABLE 2 - SOIL TEST RESULTS						
Sound Battery (SB) Sample Number = SB-SO:			**27A**	**27B**	**1WA-A**	**1WA-B**
Sample Depth in feet (bgs)			0.5	2.0	0.4	2.0
Sample Collection Date			7.19.11	7.19.11	7.19.11	7.19.11
Compliance Sample Type			Assessment	Assessment	Assessment	Assessment
Field Screening (Odor)			Musty	Musty	Musty	Musty
Soil Color & Texture			Grey Sand with Wood, Fill	Grey Sand with Shells	Grey Sand w Gravel & Battery Casings, Fill	Grey Sand w Gravel & Battery Casings, Fill
Hydrogeologic Zone			Vadose	Vadose	Vadose	Vadose
Moisture			Slight Moist	Dry	Dry	Slight Moist
Chemicals of Concern	**MTCA "A"**	**Units**				
Heavy Metals (Total)	CUL	mg/kg				
Lead (Pb) - Industrial Properties	**1,000**		**24,500**	3.11	**38,300**	**42,300**
Conventional Pollutants	Corrosive	Units				
pH - Hazardous Waste	**<2.0/ >12.5**		NA	NA	4.17	3.98

TABLE 2 - SOIL TEST RESULTS						
Sound Battery (SB) Sample Number = SB-SO:			**1WA-C**	**1WA-D**	**1WA-E**	**2WA-A**
Sample Depth in feet (bgs)			4.0	6.3	8.5	0.5
Sample Collection Date			7.19.11	7.19.11	7.19.11	7.19.11
Compliance Sample Type			Assessment	Assessment	Assessment	Assessment
Field Screening (Odor)			Musty	Musty	None	Musty
Soil Color & Texture			Grey Sand	Grey Sand	Grey Sand	Grey Sand with Shells, Fill
Hydrogeologic Zone			Vadose	Smear	Saturated	Vadose
Moisture			Moist	Moist	Wet	Dry
Chemicals of Concern	**MTCA "A"**	**Units**				
Heavy Metals (Total)	CUL	mg/kg				
Lead (Pb) - Industrial Properties	**1,000**		195	**1,030**	20.9	8.79
Conventional Pollutants	Corrosive	Units				
pH - Hazardous Waste	**<2.0/ >12.5**		4.85	3.90	6.74	7.65

TABLE 2 - SOIL TEST RESULTS						
Sound Battery (SB) Sample Number = SB-SO:			**2WA-B**	**2WA-C**	**2WA-D**	**2WA-E**
Sample Depth in feet (bgs)			1.5	2.0	6.3	8.5
Sample Collection Date			7.19.11	7.19.11	7.19.11	7.19.11
Compliance Sample Type			Assessment	Assessment	Assessment	Assessment
Field Screening (Odor)			Musty	Musty	None	None
Soil Color & Texture			Grey Sand with Gravel and Shells	Grey Sand with Clay	Grey Sand	Grey Sand
Hydrogeologic Zone			Vadose	Vadose	Smear	Saturated
Moisture			Dry	Dry	Very Moist	Wet
Chemicals of Concern	**MTCA "A"**	**Units**				
Heavy Metals (Total)	CUL	mg/kg				
Lead (Pb) - Industrial Properties	**1,000**		1.90	1.76	2.03	395
Conventional Pollutants	Corrosive	Units				
pH - Hazardous Waste	**<2.0/ >12.5**		8.03	7.90	7.08	4.30

NOTES FOR SOIL TEST RESULTS – TABLE 2
Sound Battery
Tacoma WA
Field Work – July 2011

1. Sample Number **SB-SO** refers to Sound Battery (SB) – Soil Sample (S0).
2. 1BGA represents background sample number "1A".
3. NA = Not analyzed for the listed Chemical of Concern.
4. The table lists only those Chemicals of Concern that were detected over the respective Method Detection Limit.
5. bgs = below ground surface in feet.
6. Samples were collected by Mr. Jonathan Kemp of **EnCo** on date specified on the attached Chain-of-Custody forms.
7. Compliance Sample Type: Background = Background Quality Control Check, Assessment = Field investigation to determine soil quality.
8. All samples were collected as discrete grabs.
9. MTCA "A" = Model Toxics Control Act, RCW 70.105D, Cleanup Regulation Chapter 173-340 WAC, Publication No. 94-06, Amended February 12, 2001, Revised November 2007, Method "A" Cleanup Level (CULs) For Industrial Properties – Soil, Table 745-1.
10. CUL = Cleanup Level for Chemical of Concern according to MTCA regulations.
11. Concentrations highlighted in **RED** or **BOLD** text exceed or are equal to the indicated MTCA Method "A" CULs for Industrial Properties – Soil. The MTCA exceedance presented in this table does not necessarily mean that the soil must be restored to these levels at the project site. The level of restoration depends on the remedy selected in WAC 173, 340 – 350 through 173, 340 – 390.
12. mg/kg = milligrams per kilogram which is approximately equal to parts per million.
13. < = less than, > = greater than.
14. In some instances retests or duplicates were performed on the same sample number. The results presented on the TABLE reflect the highest concentration of the detected Chemical of Concern.
15. Sample locations are depicted on **FIGURE 5** and sample laboratory test results are depicted on **FIGURE 6**.
16. pH = A waste is considered a hazardous waste according to 40CFR 261.31 – 261.33 and Washington Dangerous Waste Regulations, Chapter 173-303, Publication 92-91 Amended January 2005 if it is characterized as being corrosive, which is defined as having a pH of less than 2.0 units or greater than 12.5 units.

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TABLE 3 - GROUNDWATER TEST RESULTS								
Sound Battery (SB) Sample Number = SB:			**1WA**	**2WA**	**MW-1**	**MW-2**	**MW-3**	**MW-4**
Sample Collection Date			7.19.11	7.19.11	7.19.11	7.19.11	7.19.11	7.19.11
Static Water Level in Feet (bgs)			6.45	6.29	-	-	-	-
Static Water Level from TOC			7.72	7.84	6.07	9.81	9.2	5.93
Compliance Sample Type			Assessment	Assessment	Assessment	Assessment	Assessment	Assessment
Field Screening (Visual)			Light Tan Turbid	Tan Turbid				
Field Screening (Odor)			None	None	-	-	-	-
Location on the Project Site			Drain Inlet	Drain Outlet	NW	SW	SE	NE
Chemicals of Concern	**MTCA "A"**	**Units**						
Heavy Metals	CUL	µg/l						
Total Lead	**15**		**2,160**	**919**	NA	NA	NA	NA
Dissolved Lead	**15**		13.1	**18.9**	NA	NA	NA	NA
Conventional Pollutants	Corrosive							
pH - Hazardous Waste	**<2.0/ >12.5**	Units	6.76	4.91	NA	NA	NA	NA

NOTES FOR GROUNDWATER TEST RESULTS – TABLE 3
Sound Battery
Tacoma WA
Field Work July – 2011

1. Sample Number **SB – GW** refers to Sound Battery (SB) – Groundwater Sample (GW)
2. NA = Not analyzed for the listed Chemical of Concern.
3. bgs = below ground surface in feet.
4. Samples were collected by Mr. Jonathan Kemp of **EnCo** on date specified on the attached Chain-of-Custody forms.
5. Compliance Sample Type: Assessment = Field investigation to determine groundwater quality.
6. All samples were collected as discrete grabs.
7. MTCA "A" = Model Toxics Control Act, RCW 70.105D, Cleanup Regulation Chapter 173-340 WAC, Publication No. 94-06, Revised November 2007, Method "A" Cleanup Level (CULs) For Ground Water, Table 720-1.
8. CUL = Cleanup Level for Chemical of Concern according to MTCA regulations.
9. Concentrations highlighted in **BLUE** or **BOLD** text exceed or are equal to the indicated MTCA Method "A" CULs for Groundwater. The MTCA exceedance presented in this table does not necessarily mean that the groundwater must be restored to these levels at the project site. The level of restoration depends on the remedy selected in WAC 173, 340 – 350 through 173, 340 – 390.
10. ug/l = micrograms per liter which is approximately equal to parts per billion.
11. < = less than, > = greater than
12. In some instances retests or duplicates were performed on the same sample number. The results presented on the TABLE reflect the highest concentration of the detected Chemical of Concern.
13. Sample locations are depicted on **FIGURE 5** and sample test results are depicted on **FIGURE 6**.
14. pH = A liquid waste including water is considered a hazardous waste according to 40CFR 261.31 – 261.33 and Washington Dangerous Waste Regulations, Chapter 173-303, Publication 92-91 Amended January 2005 if it is characterized as being corrosive, which is defined as having a pH of less than 2.0 units or greater than 12.5 units.

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TABLE 4 - SOIL TEST RESULTS (MTCA EXCEEDANCES)						
Sound Battery (SB) Sample Number = SB-SO:			**7A**	**8A**	**8B**	**15A**
Sample Depth in feet (bgs)			1.0	0.5	1.9	1.0
Sample Collection Date			7.18.11	7.18.11	7.18.11	7.18.11
Compliance Sample Type			Assessment	Assessment	Assessment	Assessment
Field Screening (Odor)			Musty	Musty	None	Musty
Soil Color & Texture			Grey Sand with Shells, Fill	Grey Sand with Gravel, Fill	Grey Sand with Shells	Grey Sand with Shell and Clay
Hydrogeologic Zone			Vadose	Vadose	Vadose	Vadose
Moisture			Dry	Dry	Dry	Dry
Chemicals of Concern	**MTCA "A"**	**Units**				
Heavy Metals (Total)	CUL	mg/kg				
Lead (Pb) - Industrial Properties	**1,000**		**1,150**	**2,950**	**1,070**	**1,660**
Conventional Pollutants	**Corrosive**	Units				
pH - Hazardous Waste	**<2.0 / >12.5**		NA	5.46	4.27	NA

TABLE 4 - SOIL TEST RESULTS (MTCA EXCEEDANCES)						
Sound Battery (SB) Sample Number = SB-SO:			**16A**	**17A**	**18A**	**19A**
Sample Depth in feet (bgs)			1.0	0.5	1.0	0.5
Sample Collection Date			7.18.11	7.18.11	7.18.11	7.18.11
Compliance Sample Type			Assessment	Assessment	Assessment	Assessment
Field Screening (Odor)			Musty	Musty	Musty	Musty
Soil Color & Texture			Grey Sand with Gravel and Shells, Fill	Grey Sand with Gravel and Wood and Shells, Fill	Grey Sand with Gravel and Shells, Fill	Grey Sand w Shells & Battery Casings, Fill
Hydrogeologic Zone			Vadose	Vadose	Vadose	Vadose
Moisture			Slight Moist	Slight Moist	Slight Moist	Dry
Chemicals of Concern	**MTCA "A"**	**Units**				
Heavy Metals (Total)	CUL	mg/kg				
Lead (Pb) - Industrial Properties	**1,000**		**7,070**	**5,240**	**30,900**	**15,500**
Conventional Pollutants	**Corrosive**	Units				
pH - Hazardous Waste	**<2.0 / >12.5**		NA	NA	NA	NA

TABLE 4 - SOIL TEST RESULTS (MTCA EXCEEDANCES)						
Sound Battery (SB) Sample Number = SB-SO:			**20A**	**25A**	**26A**	**27A**
Sample Depth in feet (bgs)			0.5	0.5	0.75	0.5
Sample Collection Date			7.18.11	7.19.11	7.19.11	7.19.11
Compliance Sample Type			Assessment	Assessment	Assessment	Assessment
Field Screening (Odor)			Musty	None	None	Musty
Soil Color & Texture			Grey Sand with Gravel, Fill	Grey Sand with Gravel, Fill	Grey Sand with Shells and Clay	Grey Sand with Wood, Fill
Hydrogeologic Zone			Vadose	Vadose	Vadose	Vadose
Moisture			Slight Moist	Slight Moist	Dry	Slight Moist
Chemicals of Concern	**MTCA "A"**	**Units**				
Heavy Metals (Total)	CUL	mg/kg				
Lead (Pb) - Industrial Properties	**1,000**		**28,800**	**2,400**	**2,880**	**24,500**
Conventional Pollutants	**Corrosive**	Units				
pH - Hazardous Waste	**<2.0 / >12.5**		NA	NA	NA	NA

TABLE 4 - SOIL TEST RESULTS (MTCA EXCEEDANCES)					
Sound Battery (SB) Sample Number = SB-SO:			**1WA-A**	**1WA-B**	**1WA-D**
Sample Depth in feet (bgs)			0.4	2.0	6.3
Sample Collection Date			7.19.11	7.19.11	7.19.11
Compliance Sample Type			Assessment	Assessment	Assessment
Field Screening (Odor)			Musty	Musty	Musty
Soil Color & Texture			Grey Sand w Gravel & Battery Casings, Fill	Grey Sand w Gravel & Battery Casings, Fill	Grey Sand
Hydrogeologic Zone			Vadose	Vadose	Smear
Moisture			Dry	Slight Moist	Moist
Chemicals of Concern	**MTCA "A"**	**Units**			
Heavy Metals (Total)	CUL	mg/kg			
Lead (Pb) - Industrial Properties	**1,000**		**38,300**	**42,300**	**1,030**
Conventional Pollutants	**Corrosive**	Units			
pH - Hazardous Waste	**<2.0 / >12.5**		4.17	3.98	3.90

TABLE 5 - SOIL TEST RESULTS (MTCA EXCEEDANCES >2 Feet bgs)					
Sound Battery (SB) Sample Number = SB-SO:			**8B**	**1WA-B**	**1WA-D**
Sample Depth in feet (bgs)			1.9	2.0	6.3
Sample Collection Date			7.18.11	7.19.11	7.19.11
Compliance Sample Type			Assessment	Assessment	Assessment
Field Screening (Odor)			None	Musty	Musty
Soil Color & Texture			Grey Sand with Shells	Grey Sand w Gravel & Battery Casings, Fill	Grey Sand
Hydrogeologic Zone			Vadose	Vadose	Smear
Moisture			Dry	Slight Moist	Moist
Chemicals of Concern	**MTCA "A"**	**Units**			
Heavy Metals (Total)	CUL	mg/kg			
Lead (Pb) - Industrial Properties	**1,000**		**1,070**	**42,300**	**1,030**
Conventional Pollutants	Corrosive	Units			
pH - Hazardous Waste	**<2.0/>12.5**		4.27	3.98	3.90

TABLE 6

Analytical Methods, Method Reporting Limits, Containers, Preservatives, and Holding Times – SOIL

Chemicals of Concern	Laboratory Method	MRL (undiluted)	Bottle Size & Type	Preservative	Holding Time
Heavy Metals					
Total Lead (Pb)	EPA 200.8	1.0 mg/KG	4 oz. glass jar, wide mouth, Teflon-lined lid Is it Teflon?	Ice <4°C	6 months
Conventional Pollutants					
pH	EPA 9045D	0.05 units	4 oz. glass jar, wide mouth, Teflon-lined lid	Ice <4°C	14 Days

TABLE 7

Analytical Methods, Method Reporting Limits, Containers, Preservatives, and Holding Times – GROUNDWATER

Chemicals of Concern	Laboratory Method	MRL (undiluted)	Bottle Size & Type	Preservative	Holding Time
Heavy Metals					
Total Lead (Pb)	EPA 200.8	1 ug/L	500 mL Poly	Ice <4°C HNO3 to pH <2	6 months
Dissolved Lead (Pb)	EPA 200.8	1 ug/L	500 mL Poly	Ice <4°C HNO3 to pH <2	6 months
Conventional Pollutants					
pH	EPA 9040C	0.05 units	500 ml Plastic	Ice <4°C	24 Hours

EnCo Environmental Corporation

TABLE 8 TEMPORARY & EXISTING MONITORING WELL GROUNDWATER ELEVATIONS Sound Battery, Tacoma WA Date Measured: July 19, 2011									
Location[1]	**Ground Surface[2]**	**TOC[3 & 11]**	**Ground Surface to TOC[4]**	**SWL[5]**	**Depth to Water BGS[6]**	**Static Water Elevation[7]**	**Screen Interval[8]**	**Is SWL in Screen Interval?**	**BOC[9]**
SB 1WA	-	-	+1.27'	7.72'	6.45'	-	4' to 9'	Yes	9'
SB 2WA	-	-	+1.55'	7.84'	6.29'	-	4' to 9'	Yes	9'
MW – 1	-	10.48'	-	6.07'	-	4.41'	9' to 14'	No	14'
MW – 2	-	14.12' Error[10]	-	9.81' Error[10]	-	4.31' Error[10]	9' to 14'	No	14'
MW – 3	-	13.83'	-	9.20'	-	4.63'	9' to 14'	No	14'
MW – 4	-	10.34'	-	5.93'	-	4.41'	9' to 14'	No	14'

Footnotes:

1 Location = Refer to **FIGURE 5** (**APPENDIX A)** for existing and temporary monitoring well locations
2 Ground Surface = Surveyed elevation (feet) at the ground surface of the well monument or bore/probe hole
3 TOC = Top of Casing elevation surveyed at the north rim (**MSL**)
4 Ground Surface to TOC = Measured or surveyed distance in feet (+ stickup – flush mount) from TOC at north rim to the ground surface
5 SWL = Static Water Level measurement in feet from the TOC at the north rim
6 Depth to Water BGS = Depth of groundwater below ground surface
7 Static Water Elevation = Elevation of the surficial groundwater static water level (**MSL**)
8 Screen Interval = Interval of the well screen in feet below ground surface
9 BOC = Bottom of Casing elevation from TOC to the bottom of well/probehole (Includes 0.275' added to field measurement to compensate for the Solonist water level probe)
10 Error = The MW-2 monument was damaged; the former cleanup contractor lifted the riser out of the ground about 1 foot
11 The given elevation at the TOC for MW-1 to MW-4 was obtained from GeoSystems (Table 5 in their 10.23.98 report)

APPENDIX C

SUPPORT DOCUMENTS

PACIFIC RIM ENVIRONMENTAL, INC.
SEATTLE www.pacrimenv.com ANCHORAGE

Limited Lead-based Paint Testing
PacRim #14423

On April 26, 2011, Todd P. Carter of Pacific Rim Environmental, Inc. (PacRim) performed limited lead-based paint (LBP) testing at Sound Battery in Tacoma, WA. The inspection and testing was limited to painted interior wall and roof structure components. The testing was performed using a Niton XRF device. Field inspection, data collection, and report generation were performed according to the following Scope of Work:

1. XRF testing of suspect lead-based paints (LBP) using Niton XLp-303A portable XRF device.
2. Written descriptions of testing combinations and painted component locations
3. Prepare final written report including: Sample descriptions, condition, locations, analytical results, and recommendations.

All requirements for the NITON XRF usage contained in the Performance Characteristics Sheet for the specific XRF were followed.

Limited Lead-Based Paint Screening

A limited investigation for lead-based paint at the aforementioned building was conducted on April 26, 2011 using a NITON X-Ray Fluorescence Spectrometer (XRF) model XLp-303A, serial number 7029.

Lead-based paint was identified on the following components.

- **White painted wood post 1**
- **White painted wood wall at door to 2nd floor**
- **Green painted concrete wall in warehouse**
- **Red painted metal window frames in warehouse**
- **Gray painted wood post**
- **White painted concrete walls in original building**

(See attached XRF Data Sheets)

It is important to keep in mind that although the EPA/HUD standard uses a criterion of 5,000 parts per million dry weight or 1.00 milligrams per square centimeter (1.00 mg/cm^2) for lead-based paint, there still may be lead present in those results reported as negative. In the event that lead is present, Federal OSHA and Washington State Department of Labor & Industries regulations will still apply, since neither agency has established a concentration of lead in paint below which the lead in construction standards do not apply. Workers wearing respiratory protection and who have received proper training in the handling of lead contaminated materials must be used for any construction activities (including manual scraping, manual/power sanding, heat gun applications, general cleanup, and demolition) that affect a paint film containing lead.

If you have any questions regarding this project, please contact our office at 206-244-8965.

Respectfully,

Todd P. Carter
WA State Lead Inspector

Corporate Office
6510 Southcenter Blvd., Ste. #4
Seattle, WA 98188
Phone: (206) 244-8965
Fax: (206) 244-9096

Anchorage Office
Phone (907) 569-8081
www.pacrimenv.com

XRF DATA SHEETS

Client:	**ENCO** P.O. Box 1212 Puyallup, WA	*XRF Serial #:* *Inspection Date:* *Inspection By:*	**XLP303A-7029** **26-Apr-2011** **Matt DeDominces**
Project:	**Sound Battery** 2310 East 11th Street Tacoma, WA	*PRE Job#:*	**14423**

PRE#	Test #	Substrate	Component / Side	Description / Location	Color	Result	Pbc mg/cm2
1	1383	*First calibration check*				Positive	1.1
2	1384	*First calibration check*				Positive	1.1
3	1385	*First calibration check*				Positive	1
4	1386	Wood	Post	Post 1 from west side	Whitish-Natural	Positive	3.5
5	1387	Wood	Post	Post 1 from west side	Whitish-Natural	Negative	0.01
6	1388	Wood	Post	Post 1 from west side	Whitish-Natural	Negative	0.5
7	1389	Concrete	Wall	Wall A by garage door	Green	Negative	0.12
8	1390	Concrete	Wall	Wall A, right of garage door	Green	Negative	0.08
9	1391	Concrete	Wall	Wall A, left of garage door	Green	Negative	0.07
10	1392	Wood	Wall	Wall B, door to upstairs	White	Positive	3.4
11	1393	Wood	Door	Wall B, warehouse	Brown	Negative	0.03
12	1394	Concrete	Wall	Wall B in warehouse, west	Green	Null	0.17
13	1395	Concrete	Wall	Wall B in warehouse, east	Green	Negative	0.18
14	1396	Concrete	Wall	Wall C, warehouse	Green	Negative	0.3
15	1397	Concrete	Wall	Wall C, warehouse	Green	Positive	3.4
16	1398	Concrete	Wall	Wall B, warehouse	Green	Negative	0.8

Client:	**ENCO** P.O. Box 1212 Puyallup, WA	*XRF Serial #:* *Inspection Date:* *Inspection By:*	**XLP303A-7029** **26-Apr-2011** **Matt DeDominces**
Project:	**Sound Battery** 2310 East 11th Street Tacoma, WA	*PRE Job#:*	**14423**

PRE#	Test #	Substrate	Component / Side	Description / Location	Color	Result	Pbc mg/cm2
17	1399	Concrete	Wall	Wall B, warehouse	Green	Negative	0.4
18	1400	Concrete	Wall	Wall C, warehouse, center	Gray	Negative	0.3
19	1401	Concrete	Wall	Wall C, warehouse, south	Green	Negative	0.22
20	1402	Concrete	Wall	Wall D, warehouse, east	Green	Negative	0.18
21	1403	Metal	Frame	Wall D, warehouse, window 5	Red	Positive	7.2
22	1404	Concrete	Wall	Wall C, center	Acid	Negative	0.02
23	1405	Concrete	Wall	Wall D, center	Green	Negative	0.22
24	1406	Concrete	Wall	Wall D, west side	Green	Negative	0.27
25	1407	Wood	Post	Post 2 from west	Natural	Negative	0.05
26	1408	Wood	Post	Post 3 from west	Natural	Negative	0.17
27	1409	Wood	Post	Post 4 from west	Gray	Positive	1.7
28	1410	Wood	Post	Post 3 from west	Natural	Negative	0.09
29	1411	Wood	Main beam	West end warehouse	Natural	Negative	0.02
30	1412	Wood	Deck ceiling	Roof deck boards, west	Natural	Negative	0.01
31	1413	Wood	Beam 1	Left beam, warehouse	Natural	Negative	0.04
32	1414	Wood	Beam 5	Left, warehouse	Natural	Negative	0.01
33	1415	Wood	Beam 9	Left, warehouse	Natural	Negative	0
34	1416	Wood	Deck ceiling boards	Center, warehouse	Natural	Negative	0.01
35	1417	Wood	Beam 14	Left side warehouse	Natural	Negative	0.01
36	1418	Wood	Deck ceiling boards	Left side warehouse	Natural	Negative	0.03
37	1419	Wood	Beam 14	Right side warehouse	Natural	Negative	0.01
38	1420	Wood	Deck ceiling boards	Right side warehouse, east	Natural	Negative	0.01

Client:	**ENCO** P.O. Box 1212 Puyallup, WA	*XRF Serial #:* *Inspection Date:* *Inspection By:*	**XLP303A-7029** **26-Apr-2011** **Matt DeDominces**
Project:	**Sound Battery** 2310 East 11th Street Tacoma, WA	*PRE Job#:*	**14423**

PRE#	Test #	Substrate	Component / Side	Description / Location	Color	Result	Pbc mg/cm2
39	1421	Wood	Beam 10	Right side warehouse, center	Natural	Negative	0.01
40	1422	Wood	Deck ceiling boards	Right side warehouse, center	Natural	Negative	0.02
41	1423	Wood	Beam 6	Right side warehouse, center	Natural	Negative	0.01
42	1424	Wood	Deck ceiling boards	Right side warehouse, center	Natural	Negative	0.04
43	1425	Wood	Beam 2	Right side warehouse, west	Natural	Negative	0.01
44	1426	Wood	Deck ceiling boards	Right side warehouse, west	Natural	Negative	0.01
45	1427	Concrete	Wall	Warehouse, wall A, south	Green	Negative	0.1
46	1428	Concrete	Wall	Warehouse, wall D, west	Green	Negative	0.12
47	1429	Metal	Frame	Warehouse, wall D, window 1	Red	Positive	3.1
48	1430	Wood	Beam 1	Original building, west side	Natural	Negative	0.01
49	1431	Wood	Deck ceiling boards	Original building, west	Natural	Negative	0.02
50	1432	Concrete	Wall	Wall D	White	Negative	0.09
51	1433	Wood	Beam 4	Original building, center	Natural	Negative	0.01
52	1434	Wood	Deck ceiling boards	Original building, center	Natural	Negative	0.02
53	1435	Wood	Beam 6	Original building, center	Natural	Negative	0.01
54	1436	Wood	Deck ceiling boards	Original building, center	Natural	Negative	0.01
55	1437	Wood	Beam 8	Original building, east	Natural	Negative	0.04
56	1438	Wood	Deck ceiling boards	Original building, east	Natural	Negative	0.02
57	1439	Wood	Ceiling lead pot vents	Original building, east	Natural	Negative	0.08
58	1440	Metal	O-ring to vent	Original building, east	Metal	Negative	0.04
59	1441	Metal	O-ring to vent	Original building, east	Metal	Negative	0.1
60	1442	Concrete	Wall	Original building, wall C	White	Negative	0.5

Client:	**ENCO** P.O. Box 1212 Puyallup, WA	*XRF Serial #:* *Inspection Date:* *Inspection By:*	**XLP303A-7029** **26-Apr-2011** **Matt DeDominces**
Project:	**Sound Battery** 2310 East 11th Street Tacoma, WA	*PRE Job#:*	**14423**

PRE#	Test #	Substrate	Component / Side	Description / Location	Color	Result	Pbc mg/cm2
61	1443	Concrete	Wall	Original building, wall B, center	White	Positive	1.7
62	1444	Concrete	Wall	Original building, wall B, center	White	Negative	0.1
63	1445	Concrete	Wall	Original building, wall B, center	White	Positive	1.4
64	1446	Metal	Frame	Original building, wall B, window 2	Red	Positive	18.3
65	1447	Concrete	Wall	Original building, wall B, center left	White	Negative	0.4
66	1448	Concrete	Wall	Original building, wall B, center left	White	Negative	0.7
67	1449	Concrete	Wall	Original building, wall B, east end	white	Positive	2.1
68	1450	Concrete	Wall	Original building, wall B, east end	white	Positive	6.9
69	1451	Concrete	Wall	Original building, wall B, east corner	Concrete	Positive	1.2
70	1452	Concrete	Wall	Original building, wall B, east corner	White	Positive	4.8
71	1453	Concrete	Wall	Original building, wall B, east corner	White	Positive	4.9
72	1454	Concrete	Wall	Original building, wall B, east corner	White	Negative	0.3
73	1455	Concrete	Wall	Original building, wall B, east corner	White	Positive	1.7
74	1456	Concrete	Sill	Original building, wall B, window 3	White	Positive	4.7
75	1457	Concrete	Wall	Original building, wall C	Green	Negative	0.22
76	1458	Concrete	Wall	Original building, wall C	Natural	Negative	0.6
77	1459	Concrete	Wall	Original building, wall C, 2' from north corner	White	Positive	19.7
78	1460	Concrete	Wall	Original building, wall C, 2' from north corner	White	Negative	0.2
79	1461	Concrete	Wall	Original building, wall C, 2' from north corner	White	Negative	0.6
80	1462	Concrete	Wall	Original building, wall C, 8' from north corner	White	Positive	7
81	1463	Concrete	Wall	Original building, wall C, center	White	Negative	0.26
82	1464	Concrete	Wall	Original building, wall D, east	White	Negative	0.12

Client:	**ENCO** P.O. Box 1212 Puyallup, WA	*XRF Serial #:* *Inspection Date:* *Inspection By:*	**XLP303A-7029** **26-Apr-2011** **Matt DeDominces**
Project:	**Sound Battery** 2310 East 11th Street Tacoma, WA	*PRE Job#:*	**14423**

PRE#	Test #	Substrate	Component / Side	Description / Location	Color	Result	Pbc mg/cm2
83	1465	Concrete	Wall	Original building, wall D, east	White	Negative	0.15
84	1466	Concrete	Wall	Original building, wall D, east	White	Negative	0.06
85	1467	Concrete	Wall	Original building, wall D, west	White	Negative	0.16
86	1468	Wood	Wall	Original building, office 1, wall A	White	Negative	0.25
87	1469	Wood	Wall	Original building, office 1, wall D	Natural	Negative	0.02
88	1470	Wood	Wall	Original building, office 2, wall B	Natural	Negative	0.01
89	1471	Concrete	Wall	Original building, wall B, locker room	Blue	Negative	0.13
90	1472	Wood	Wall	Original building, wall A, locker room	Blue	Negative	0.14
91	1473	*Last calibration check*				Positive	1.1
92	1474	*Last calibration check*				Positive	1.1
93	1475	*Last calibration check*				Positive	1.1

Report By: **Amy German**
Report Date: **27-Apr-2011**

NITON XRF PERFORMANCE CHARACTERISTICS

Performance Characteristic Sheet

EFFECTIVE DATE: **September 24, 2004** **EDITION NO.: 1**

MANUFACTURER AND MODEL:

Make: *Niton LLC*
Tested Model: *XLp 300*
Source: ^{109}Cd
Note: This PCS is also applicable to the equivalent model variations indicated below, for the Lead-in-Paint K+L variable reading time mode, in the XLi and XLp series:

XLi 300A, XLi 301A, XLi 302A and XLi 303A.
XLp 300A, XLp 301A, XLp 302A and XLp 303A.
XLi 700A, XLi 701A, XLi 702A and XLi 703A.
XLp 700A, XLp 701A, XLp 702A, and XLp 703A.

Note: The XLi and XLp versions refer to the shape of the handle part of the instrument. The differences in the model numbers reflect other modes available, in addition to Lead-in-Paint modes. The manufacturer states that specifications for these instruments are identical for the source, detector, and detector electronics relative to the Lead-in-Paint mode.

FIELD OPERATION GUIDANCE

OPERATING PARAMETERS:

Lead-in-Paint K+L variable reading time mode.

XRF CALIBRATION CHECK LIMITS:

0.8 to 1.2 mg/cm^2 (inclusive)

The calibration of the XRF instrument should be checked using the paint film nearest 1.0 mg/cm^2 in the NIST Standard Reference Material (SRM) used (e.g., for NIST SRM 2579, use the 1.02 mg/cm^2 film).

If readings are outside the acceptable calibration check range, follow the manufacturer's instructions to bring the instruments into control before XRF testing proceeds.

SUBSTRATE CORRECTION:

For XRF results using Lead-in-Paint K+L variable reading time mode, substrate correction is <u>not</u> needed for:

Brick, Concrete, Drywall, Metal, Plaster, and Wood

INCONCLUSIVE RANGE OR THRESHOLD:

K+L MODE READING DESCRIPTION	SUBSTRATE	THRESHOLD (mg/cm^2)
Results not corrected for substrate bias on any substrate	Brick	1.0
	Concrete	1.0
	Drywall	1.0
	Metal	1.0
	Plaster	1.0
	Wood	1.0

BACKGROUND INFORMATION

EVALUATION DATA SOURCE AND DATE:

This sheet is supplemental information to be used in conjunction with Chapter 7 of the HUD *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing* ("HUD Guidelines"). Performance parameters shown on this sheet are calculated from the EPA/HUD evaluation using archived building components. Testing was conducted in August 2004 on 133 testing combinations. The instruments that were used to perform the testing had new sources; one instrument's was installed in November 2003 with 40 mCi initial strength, and the other's was installed June 2004 with 40 mCi initial strength.

OPERATING PARAMETERS:

Performance parameters shown in this sheet are applicable only when properly operating the instrument using the manufacturer's instructions and procedures described in Chapter 7 of the HUD Guidelines.

SUBSTRATE CORRECTION VALUE COMPUTATION:

Substrate correction is not needed for brick, concrete, drywall, metal, plaster or wood when using Lead-in-Paint K+L variable reading time mode, the normal operating mode for these instruments. If substrate correction is desired, refer to Chapter 7 of the HUD Guidelines for guidance on correcting XRF results for substrate bias.

EVALUATING THE QUALITY OF XRF TESTING:

Randomly select ten testing combinations for retesting from each house or from two randomly selected units in multifamily housing. Use the K+L variable time mode readings.

Conduct XRF retesting at the ten testing combinations selected for retesting.

Determine if the XRF testing in the units or house passed or failed the test by applying the steps below.

Compute the Retest Tolerance Limit by the following steps:

Determine XRF results for the original and retest XRF readings. Do not correct the original or retest results for substrate bias. In single-family housing a result is defined as the average of three readings. In multifamily housing, a result is a single reading. Therefore, there will be ten original and ten retest XRF results for each house or for the two selected units.

Calculate the average of the original XRF result and retest XRF result for each testing combination.

Square the average for each testing combination.

Add the ten squared averages together. Call this quantity C.

Multiply the number C by 0.0072. Call this quantity D.

Add the number 0.032 to D. Call this quantity E.

Take the square root of E. Call this quantity F.

Multiply F by 1.645. The result is the Retest Tolerance Limit.

Compute the average of all ten original XRF results.

Compute the average of all ten re-test XRF results.

Find the absolute difference of the two averages.

If the difference is less than the Retest Tolerance Limit, the inspection has passed the retest. If the difference of the overall averages equals or exceeds the Retest Tolerance Limit, this procedure should be repeated with ten new testing combinations. If the difference of the overall averages is equal to or greater than the Retest Tolerance Limit a second time, then the inspection should be considered deficient.

Use of this procedure is estimated to produce a spurious result approximately 1% of the time. That is, results of this procedure will call for further examination when no examination is warranted in approximately 1 out of 100 dwelling units tested.

TESTING TIMES:

For the Lead-in-Paint K+L variable reading time mode, the instrument continues to read until it is moved away from the testing surface, terminated by the user, or the instrument software indicates the reading is complete. The following table provides testing time information for this testing mode. The times have been adjusted for source decay, normalized to the initial source strengths as noted above. Source strength and type of substrate will affect actual testing times. At the time of testing, the instruments had source strengths of 26.6 and 36.6 mCi.

Testing Times Using K+L Reading Mode (Seconds)

	All Data			Median for laboratory-measured lead levels (mg/cm^2)		
Substrate	25^{th} Percentile	Median	75^{th} Percentile	Pb < 0.25	0.25 ≤ Pb<1.0	1.0 ≤ Pb
Wood Drywall	4	11	19	11	15	11
Metal	4	12	18	9	12	14
Brick Concrete Plaster	8	16	22	15	18	16

CLASSIFICATION RESULTS:

XRF results are classified as positive if they are greater than or equal to the threshold, and negative if they are less than the threshold.

DOCUMENTATION:

A document titled *Methodology for XRF Performance Characteristic Sheets* provides an explanation of the statistical methodology used to construct the data in the sheets, and provides empirical results from using the recommended inconclusive ranges or thresholds for specific XRF instruments. For a copy of this document call the National Lead Information Center Clearinghouse at 1-800-424-LEAD.

This XRF Performance Characteristic Sheet was developed by the Midwest Research Institute (MRI) and QuanTech, Inc., under a contract between MRI and the XRF manufacturer. HUD has determined that the information provided here is acceptable when used as guidance in conjunction with Chapter 7, Lead-Based Paint Inspection, of HUD's *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing*.

PERSONNEL CERTIFICATION

STATE OF WASHINGTON

Department of Commerce

Lead-Based Paint Program

Matthew R. De Dominces

Has fulfilled the certification requirements of Washington Administrative code (WAC) 365-230 and has been certified to conduct lead-based paint activities pursuant to WAC 365-230-200 as a:

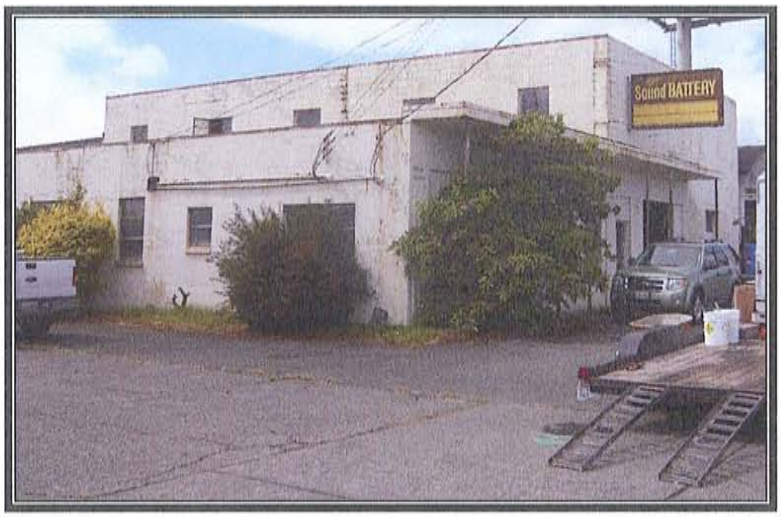
Inspector

Certification #	Issuance Date	Expiration Date
6277	12/8/2010	12/8/2013

PACIFIC RIM ENVIRONMENTAL, INC.
SEATTLE www.pacrimenv.com ANCHORAGE

Regulated Building Material Survey

Sound Battery
2310 E. 11th Street
Tacoma, WA



Performed for:

ENCO
P.O. Box 1212
Puyallup, WA 98371

Prepared By:

Todd P. Carter, AHERA Inspector
CTED Lead Risk Assessor

Date Prepared: 08/03/2011
PRE#: 14463

Corporate Office
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Seattle, WA 98188
Phone: (206) 244-8965
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Phone (907) 569-8081
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Table of Contents

Section 1.0 Scope of Work
Sound Battery – 2310 East 11th Street, Tacoma, WA

On July 18th, 2011 Pacific Rim Environmental (PacRim) performed a regulated building material survey at the Commercial Building located at 2310 East 11th Street, Tacoma, WA.

Site: The site is occupied by an approximately 4,865 square foot, two-story building, masonry and wood-framed.

Limitations: The electrical panel power boxes will need to be checked for transite backings on the breaker switches when power is turned off.

Field inspection, data collection, and report generation were performed according to the following **Scope of Work**:

Asbestos-Containing Materials (ACM)

1. Bulk sampling and analysis of suspect asbestos-containing materials (ACM).
2. Analysis of suspect ACM by a NVLAP accredited laboratory.
3. Quantity estimates of ACM.
4. Written report including recommendations based on the technician's observations, abatement (removal) cost estimates, sample descriptions, and sample location.
5. Statement of Compliance with W.A.C. 296-62-07721 Sign-off form.

Lead-Based Paints (LBP)

6. Perform limited screening of suspect lead-based paints using XRF.
7. Written report including: Sample descriptions, conditions, locations, analytical results, and recommendations.

Universal Waste Inventory

8. Inspect and inventory lights and equipment to identify fixture and lamp type to determine presence of PCB and/or mercury.

The survey was intended to identify possible asbestos-containing materials (ACM) on the interior and exterior of the building. This inspection covered only those areas, which were exposed and/or physically accessible to the inspector. Materials uncovered during the course of demolition, renovation, or maintenance activities that are not identified in this inspection report must be presumed to contain asbestos until PLM analysis proves that this material is not asbestos-containing.

This survey is not intended for, nor should be used as a design specification. The Asbestos in Schools Hazard Amendment and Reauthorization Act (ASHARA), effective November 20, 1990, expanded accreditation requirements to apply to persons who work with asbestos in public and commercial buildings as well as schools. Specifically, ASHARA expanded the Toxic Substances Control Act (TSCA) Section 206 (a) (1) and (3) to require accreditation for any person who designs or conducts a response action with respect to friable ACM in a building. TSCA Section 207 provides for civil penalties of $5,000 for each day of a violation for not employing accredited individuals to design and conduct response actions. Sampling of suspect asbestos-containing materials was conducted as prescribed in 40 CFR 763.86.

Suspect asbestos-containing materials within the structure were identified and classified as a surfacing material, thermal system insulation, or miscellaneous materials. Surfacing materials are those, which are either spray applied or troweled-on for acoustical, decorative, or fireproofing purposes. Thermal system insulation (TSI) is insulation used to inhibit heat transfer or to prevent condensation on pipes, boilers, tanks, ducts and various other components. Miscellaneous materials include all other materials not included in the above categories such as floor tile, ceiling tile, roofing felt, cementitious materials, wallboard systems and products such as caulking, mastics and putties.

A total of twenty-seven (27) samples were collected and submitted for PLM laboratory analysis. Fifteen (15) of these samples were found to contain greater than 1% asbestos.

Section 2.0 Survey Narrative
Sound Battery – 2310 East 11th Street, Tacoma, WA

Bulk samples collected were submitted for sample analysis in accordance with method EPA-600/R-93/116: "Method for the Determination of Asbestos in Bulk building Materials". Analyses were performed in Pacific Rim Environmental Inc.'s NVLAP Accredited Laboratory (Lab Code 101631-0). Materials are positive for asbestos if they are found to contain greater than 1% or 1% asbestos.

Thermal Systems Insulation (TSI)

No suspect asbestos-containing TSI was identified on the subject Property.

If during the course of wall, ceiling or floor demolition, any TSI materials that are not listed in this report are uncovered, sampling ***must*** be performed prior to disturbing these materials.

Surface Materials

Suspect asbestos-containing **surfacing on wall** was identified on the west and south exterior walls. The material was sampled two times and found to contain ***1-3% Chrysotile asbestos***. (Sample # 14 & 16)

Suspect asbestos-containing **surfacing on wall** was identified on the north exterior wall. The material was sampled and no asbestos was detected. (Sample # 15)

If during the course of wall, ceiling or floor demolition, any surfacing materials not identified in this report are uncovered, sampling ***must*** be performed prior to disturbing these materials.

Miscellaneous Materials

Suspect asbestos-containing **CAB** was identified at the first rack in the main area – 1, west side. The material was sampled and found to contain ***60-65% Chrysotile asbestos***. (Sample #01)

Suspect asbestos-containing **window putty** was identified at the main area – 1, south and north interior wall and 2nd floor north and south wall. The material was sampled and no asbestos was detected. (Sample #02, 03, 17 & 18)

Suspect asbestos-containing **sealant at concrete seams** was identified at the main area – 1, center of floor. The material was sampled and found to contain ***1-3% Chrysotile asbestos***. (Sample #04)

Suspect asbestos-containing **sealant at concrete seams** was identified at the pot room, west end of floor. The material was sampled and no asbestos was detected. (Sample #05)

Suspect asbestos-containing **window putty** was identified at the Pot Room north wall exterior and interior and west wall exterior. The material was sampled and found to contain ***1-3% Chrysotile asbestos***. (Sample #06, 12 & 13)

Suspect asbestos-containing **window putty** was identified at the 2nd floor, north wall window 2. The material was sampled and found to contain ***<1% Chrysotile asbestos***. (Sample #19)

Suspect asbestos-containing **9 x 9 floor tile and associated mastic** was identified in the 2nd office. The material was sampled and found to contain ***5-7% Chrysotile asbestos in the tile and 7-10% Chrysotile asbestos in the mastic***. (Sample #09)

Suspect asbestos-containing **16x16 ceiling tiles** was identified in office 1. The material was sampled and no asbestos was detected. (Sample #10)

Suspect asbestos-containing **sealant** was identified at the exterior west wall of office 1. The material was sampled and no asbestos was detected. (Sample #11)

Miscellaneous Materials - continue

Suspect asbestos-containing **silver coat, rolled roofing and tar** was identified on the Pot roof, warehouse roof and addition sheet metal roof. The material was sampled and found to contain **1-3% Chrysotile asbestos in the tar** and **1-3% Chrysotile asbestos in the roofing**. (Sample #20, 22, 24, 25, & 26)

Suspect asbestos-containing **seam sealant** was identified on the Pot roof, and addition sheet metal roof. The material was sampled and found to contain **1-3% Chrysotile asbestos in the tar.** (Sample #21, & 27)

Suspect asbestos-containing **seam sealant** was identified at the warehouse roof. The material was sampled and no asbestos was detected. (Sample #23)

If during the course of wall, ceiling or floor demolition, any miscellaneous materials that are not listed in this report are uncovered, sampling ***must*** be performed prior to disturbing these materials.

Section 3.0 Asbestos Abatement Cost Estimate
Sound Battery – 2310 East 11th Street, Tacoma, WA

The following abatement costs are "best-effort" estimates and are based on current industry averages. The following estimates are subject to many variables beyond the control of PRE. Such variables include, but are not limited to: project duration, contractor work schedule, hours of work allowed by the owner, contractor performance, regulatory agency interpretation of changing regulations, logistics of removal of material and miscellaneous delays. The estimate is meant only as a guideline to assist in the selection of an abatement contractor and may not reflect the actual final costs of asbestos removal. They do not include owner costs such as abatement project oversight and monitoring for compliance to law, and compliance to project plans and/or specifications. These estimates assume that adequate, professional plans and specifications are prepared. Generally, abatement costs are minimized by professional project management as well as utilizing the same asbestos abatement contractor to remove all asbestos containing materials during a single project. It is in no way intended to serve as, or replace, a comprehensive abatement specification. Estimates include permitting, removal and disposal.

CAB (Main area 1)	25 Sq. Ft.	@	$125.00 Lump Sum	$ 125.00
Sealant in concrete (Main area 1)	90 Ln. Ft.	@	$ 3.00 Ln. Ft.	$ 270.00
Window Putty (Pot Room and 2nd floor window 2)	11 Windows	@	$100.00 Each	$ 1,100.00
9x9 Tile and Mastic (Office 2)	500 Sq. Ft.	@	$ 2.00 Sq. Ft.	$ 1,000.00
Surfacing (Exterior walls)	6300 Sq. Ft.	@	$ 5.00 Sq. Ft.	$31,500.00
Silver Coat, Rolled Roof and Tar (Pot Roof, Warehouse Roof and Addition Sheet Metal Roof)	6240 Sq. Ft.	@	$ 2.00 Sq. Ft.	$12,480.00
Seam and Edge Sealant (Pot Roof and Addition Sheet Metal Roof)	400 Ln. Ft.	@	$ 2.00 Ln. Ft.	$ 800.00
			TOTAL	**$47,275 .00**

Section 4.0 Statement of Compliance
Sound Battery – 2310 East 11th Street, Tacoma, WA

In accordance with W.A.C. 296-62-07721 and PSCAA Regulation III, Article 4, Pacific Rim Environmental, Inc. performed an asbestos survey of the subject structure located at 2310 East 11th Street, Tacoma, WA. Should employees or contract personnel encounter any suspect asbestos-containing materials (ACM) it is their responsibility to:

1. Contact a representative of the owner.
2. Consult the inspection report to determine whether or not the suspect material contains asbestos.
3. If the suspect material does not appear in the inspection report, then that material was not sampled and must be presumed to contain asbestos until proven otherwise by sampling and PLM analysis.
4. Ensure that all employees and contractors are informed and advised of the location and type of materials that contain asbestos.

The following asbestos-containing materials were identified at the subject property:

- CAB (Main Area 1)
- Sealant in Concrete (Main Area 1)
- Window Putty (Pot Room and 2nd floor north wall window 2)
- 9x9 Tile and Mastic (office 2)
- Surfacing (Exterior walls)
- Silver Coat, Rolled Roof and Tar (Pot Roof, Warehouse Roof and Addition Sheet Metal Roof)
- Seam and Edge Sealant (Pot Roof and Addition Sheet Metal Roof)

I Hereby Attest:

The inspection report has been made available to me. I will inform all subcontractors of the location and types of materials containing asbestos. I am authorized to sign on behalf of my company.

Contractor:	_____	Owner's Rep:	_____
Signature:	_____	Signature:	_____
Print Name:	_____	Print Name:	_____
Title:	_____	Title:	_____
Date:	_____	Date:	_____

Section 5.0 Lead-Based Paint Screening Summary
Sound Battery – 2310 East 11th Street, Tacoma, WA

The inspection and testing performed on the interior and exterior painted surfaces of the subject Property did identify lead-based paint concentrations at or above the EPA/HUD standard of 1.0 mg/m^2

Lead-based Paint was identified in detectable concentrations on the following components:

White painted wood door and door jamb front office door.

White painted wood door jamb to lunch room.

White painted concrete interior wall and column west wall of pot room.

Bare concrete interior wall of south & southeast corner wall of pot room

Red painted metal window frame south wall window pot room.

Red painted metal beam strap 2nd floor, northwest corner & warehouse center.

Red painted concrete floor center of pot room.

Brown painted metal, exterior post, warehouse entrance.

The XRF sample results are provided in Appendix D.

The only state rules or regulations that currently apply to lead-based paints are WAC 296-155-17603 Scope* and WAC 296-155-17607 Permissible Exposure Limit**. The WAC code states that if lead is detectable in the workplace in any quantity, initial air monitoring must be performed on employees doing demolition, renovation or remodeling work in areas found to have materials containing lead. Also, workers performing lead removal must be trained in accordance with WAC 296-155-17625.

The EPA/HUD standard uses a criterion of 5,000 parts per million (PPM) dry weight or 1.0 milligrams per square centimeter (1.0 mg/cm2) for lead-based paint. However, if lead is detected in any concentration, Federal OSHA and Washington State Department of Labor and Industries regulations will still apply, since neither agency has established a concentration of lead in paint below which the lead in construction standards do not apply.

Section 6.0 Universal Waste Inventory
Sound Battery – 2310 East 11th Street, Tacoma, WA

Universal Waste Rules

The Universal Waste Rule (UWR) establishes alternative, streamlined waste management standards in place of most of the Dangerous Waste Regulations, Chapter 173-303 WAC, except for, WAC 173-303-050, 173-303-145 and 173-303-960.

The following lamp types may be characterized as universal waste: fluorescent tubes, high intensity discharge (HID) lamps (mercury vapor, metal halide, high pressure sodium) and compact fluorescent.

The following Universal Waste was identified:

- **Fluorescent tubes and fixtures**

  Approximately 62 four-foot fluorescent tubes

  Approximately 25 eight-foot fluorescent tubes

- **Mercury Thermostat Capsule**

  Two thermostat capsules

- **PCB Ballasts**

  Approximately 88 PCB ballasts

The universal waste must be removed and properly disposed of or recycled prior to building demolition.

Disposal of individual lamps is not regulated. However disposal of large quantities of lamps is subject to dangerous waste regulations (WAC 173-303) and the waste stream must be subjected to TCLP (Toxicity Characteristic Leaching Procedure) analysis to determine the amount of mercury that could leach out of the waste. The TCLP limit for mercury is 0.2 mg/L.

PCBs belong to a broad family of organic chemicals known as chlorinated hydrocarbons. PCBs are produced by the combination of one or more chlorine atoms and a biphenyl molecule. PCBs range in consistency from heavy oily liquids to waxy solids. Prior to 1979, PCBs were widely used in electrical equipment such as transformers, capacitors, switches, and voltage regulators.

A copy of the Washington State Department of Ecology *Universal Waste Rule for Dangerous Waste Lamps WAC 173-303-573*, Publication # 00-04-020 is provided in Appendix F.

A copy of the Universal Waste General Rule is provided in Appendix G.

Appendix A: **Asbestos Sample Summary**

Pacific Rim Environmental, Inc

Asbestos Summary

Project Name / Address: Sound Battery, 2310 E 11th ST, Tacoma, WA

Project ID	Sample #	Sample Location	AHERA Category	Sample Description	Asbestos Type/%	Approximate Quant.
14463	01	At first rack in main area-1, west side	Miscellaneous	CAB	Chrysotile 60-65%	25 Sq. Ft.
14463	02	Main area-1, south wall, window 5	Miscellaneous	window putty (interior)	None Detected	N/A
14463	03	Main area-1, north wall, interior window 2	Miscellaneous	window putty (interior)	None Detected	N/A
14463	04	Main area-1, center of floor	Miscellaneous	sealant at concrete seams	Chrysotile 1-3%	90 Lin. Ft.
14463	05	Pot room, west end of floor	Miscellaneous	sealant at concrete seams	None Detected	N/A
14463	06	Pot room, north side window 4	Miscellaneous	window putty (interior)	Chrysotile 1-3%	11 windows
14463	07	Pot room, southwest corner	Miscellaneous	red floor covering	None Detected (both layers)	N/A
14463	08	Sht metal addition, window 2	Miscellaneous	window putty	None Detected	N/A
14463	09	Office 2	Miscellaneous	9x9 tile and mastic	Layer 1 (Tile): Chrysotile 5-7%, Layer 2 (Mastic): Chrysotile 7-10%	500 Sq. Ft.
14463	10	Office 1	Miscellaneous	16x16 ceiling tile	None Detected	N/A
14463	11	Exterior west wall at office 1 entrance	Miscellaneous	sealant	None Detected	N/A
14463	12	North wall exterior, window 4	Miscellaneous	window putty	Chrysotile 1-3%	See sample #06

Project ID	Sample #	Sample Location	AHERA Category	Sample Description	Asbestos Type/%	Approximate Quant.
14463	13	West wall exterior, window 4	Miscellaneous	window putty	Chrysotile 1-3%	See sample #06
14463	14	West wall exterior	Surfacing	surfacing on wall	Chrysotile 1-3%	6,300 Sq. Ft.
14463	15	North wall exterior	Surfacing	surfacing on wall	None Detected	N/A
14463	16	South wall exterior	Surfacing	surfacing on wall	Chrysotile 1-3%	See sample #14
14463	17	South exterior, bottom window 3	Miscellaneous	window putty	None Detected	N/A
14463	18	2nd Floor, north wall, window 4	Miscellaneous	window putty	None Detected	N/A
14463	19	2nd Floor, north wall, window 2	Miscellaneous	window putty	Chrysotile <1%	See sample #06
14463	20	Pot roof	Miscellaneous	silver coat and tar	Layer 1: None Detected, Layer 2 (Tar): Chrysotile 3-5%	2,100 Sq. Ft.
14463	21	Pot roof	Miscellaneous	seam sealant	Layers 1 & 3: None Detected, Layer 2 (Tar): Chrysotile 1-3%	200 Sq. Ft.
14463	22	Warehouse roof	Miscellaneous	silver coat and tar	Layer 1: None Detected, Layer 2 (Tar material): Chrysotile 1-3%	2,800 Sq. Ft.
14463	23	Warehouse roof	Miscellaneous	seam sealant	None Detected	N/A
14463	24	Pot roof	Miscellaneous	rolled roof and silver coat	Layers 1 & 3: None Detected, Layer 2 (Roofing): Chrysotile 1-3%	See sample #20
14463	25	Warehouse roof	Miscellaneous	silver coat and rolled roof	Layers 1 & 3: None Detected, Layer 2 (Roofing): Chrysotile 1-3%	See sample #22
14463	26	Addition sht metal, back area	Miscellaneous	silver coat and rolled roof	Layer 1: None Detected, Layer 2 (Roofing): Chrysotile 1-3%	1,340 Sq. Ft.
14463	27	Addition sht metal, back area	Miscellaneous	sealant on edges	Chrysotile 1-3%	200 Sq. Ft.

Appendix B: **Bulk Sample Analysis Report**

PACIFIC RIM ENVIRONMENTAL, INC.
SEATTLE www.pacrimenv.com ANCHORAGE

BULK SAMPLE ANALYSIS REPORT

CLIENT:	Enco Environmental Corporation	PRE # :	14463
	P.O. Box 1212	REPORT # :	2011-07-206
	Puyallup, WA 98371	DATE RECEIVED :	07/18/2011
		ANALYST :	William F. Golloway
PROJECT:	Sound Battery	DATE ANALYZED :	07/20/2011 & 07/21/11
	2310 E. 11th St.	REPORT BY :	Dai Le
	Tacoma, WA	REPORT DATE :	07/22/2011
		TURNAROUND:	3 Days
SAMPLE DATE:	07/18/2011	PAGE :	1 of 6

Attached are the results of analysis of 27 bulk samples submitted for asbestos identification: lab ID #2011-07-206 through 2011-07-232.

Samples were analyzed in accordance with method EPA-600/R-93/116: "Method for the Determination of Asbestos in Bulk Building Materials".

Unless otherwise noted, samples were inhomogeneous; subsamples of components were analyzed to achieve representative analysis. Separate layers of layered samples are analyzed and reported separately. Unless otherwise stated, asbestos content was quantified by calibrated visual estimation (CVES). CVES concentrations are reported in 2 to 3 percent ranges for fiber concentrations ranging from 1-10%, and 5 percent ranges for concentrations greater than 10%. Samples in which asbestos was not observed are reported as "none detected".

Limitations and Uncertainty:

Factors such as sample quality, sample size, interfering matrix material, fiber size, and fiber concentration contribute to the uncertainty of asbestos concentration measurements in bulk materials. Relative errors exceeding 100% may occur in samples containing <1-10% asbestos. Relative errors are typically below 30% in samples with greater than 10% asbestos, and approach zero as the asbestos concentration approaches 100%.

Asbestos fibers with diameters below approximately 0.25 micrometers are not detectable by PLM. These extremely fine fibers may occur in such products as floor tile, adhesives, and cement products. This limitation can be overcome, however, by the use of alternate analytical methods, such as Transmission Electron Microscopy (TEM).

This report cannot be represented by the client to claim product endorsement by NVLAP or any agency of the U.S. Government. Test results pertain only to the samples submitted for analysis.

NVLAP Accredited LAB #: 101631-0
Samples submitted by: PRE

Reports Reviewed By: _____
Approved Signatory

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Pacific Rim Environmental, Inc.
BULK SAMPLE ANALYSIS REPORT

CLIENT:	Enco Environmental Corporation	PRE # :	14463
	P.O. Box 1212	REPORT # :	2011-07-206
	Puyallup, WA 98371	DATE RECEIVED :	07/18/2011
PROJECT:	Sound Battery	ANALYST :	William F. Golloway
	2310 E. 11th St.	DATE ANALYZED :	07/20/2011 & 07/21/11
	Tacoma, WA	REPORT BY :	Dai Le
SAMPLE DATE:	07/18/2011	REPORT DATE :	07/22/2011
TURNAROUND:	3 Days	PAGE :	2 of 6

Field/Lab ID Number	Sample Location and Description	Asbestos Type(s) / %	Other Material(s)	Date Analyzed
01 2011-07-206	**At first rack in main area-1, west side (CAB).** White, fibrous insulation material with black surface residue.	**Chrysotile 60-65%**	Fibrous Glass (10-15%), Cellulose (<1%), Binder, Soot.	07/20/11
02 2011-07-207	**Main area-1, south wall, window 5 (window putty).** Light gray, brittle window putty material.	None Detected	Cellulose (<1%), Binder, Mineral Aggregate, Paint.	07/20/11
03 2011-07-208	**Main area-1, north wall, interior window 2 (window putty).** Green-painted, light grayish-brown, brittle window putty with brown surface residue.	None Detected	Cellulose (<1%), Binder, Mineral Aggregate, Paint, Ash.	07/20/11
04 2011-07-209	**Main area-1, center of floor (sealant at concrete seams).** Red-painted, black tar material.	**Chrysotile 1-3%**	Cellulose (7-10%), Tar, Mineral Aggregate, Paint.	07/20/11
05 2011-07-210	**Pot room, west end of floor (sealant at concrete seams).** Red-painted, black tar material.	None Detected	Cellulose (7-10%), Tar, Paint, Mineral Aggregate.	07/20/11
06 2011-07-211	**Pot room, north side window 4 (window putty).** White, brittle putty with gray surface residue.	**Chrysotile 1-3%**	Cellulose (<1%), Binder, Mineral Aggregate.	07/20/11

Pacific Rim Environmental, Inc.
BULK SAMPLE ANALYSIS REPORT

CLIENT:	Enco Environmental Corporation	PRE # :	14463
	P.O. Box 1212	REPORT # :	2011-07-206
	Puyallup, WA 98371	DATE RECEIVED :	07/18/2011
PROJECT:	Sound Battery	ANALYST :	William F. Golloway
	2310 E. 11th St.	DATE ANALYZED :	07/20/2011 & 07/21/11
	Tacoma, WA	REPORT BY :	Dai Le
SAMPLE DATE:	07/18/2011	REPORT DATE :	07/22/2011
TURNAROUND:	3 Days	PAGE :	3 of 6

Field/Lab ID Number	Sample Location and Description	Asbestos Type(s) / %	Other Material(s)	Date Analyzed
07 2011-07-212	**Pot room, southwest corner (red floor covering).** Red-painted, gray cement material (layer 1) on black tar material with red gravel (layer 2).	**Layer 1** (Cement material): None Detected **Layer 2** (Tar material): None Detected	**Layer 1:** Mineral Aggregate, Cement Binder, Paint. **Layer 2:** Cellulose (5-7%), Tar, Mineral Aggregate.	07/20/11
08 2011-07-213	**Sheet metal addition, window 2 (window putty).** Gray, brittle window putty.	None Detected	Cellulose (<1%), Binder, Mineral Aggregate.	07/20/11
09 2011-07-214	**Office 2 (9x9 tile and mastic).** Light gray floor tile with green, pink, brown, white, and yellow splotches (layer 1) and black tar mastic (layer 2).	**Layer 1** (Tile): **Chrysotile 5-7%** **Layer 2** (Mastic): **Chrysotile 7-10%**	**Layer 1:** Mineral Aggregate, Binder. **Layer 2:** Cellulose (<1%), Tar, Mineral Aggregate.	07/20/11
10 2011-07-215	**Office 1 (16x16 ceiling tile).** Brown, fibrous material with gray surface residue.	None Detected	Cellulose (85-90%), Binder.	07/20/11
11 2011-07-216	**Exterior west wall at office 1 entrance (sealant at front porch to wall).** Black tar clump with pale green and white paint.	None Detected	Cellulose (10-15%), Animal Hair (<1%), Tar, Mineral Aggregate.	07/20/11
12 2011-07-217	**North wall exterior, window 4 (window putty).** Brown-painted, white to light gray-brown, brittle window putty.	**Chrysotile 1-3%**	Cellulose (<1%), Binder, Mineral Aggregate, Paint.	07/20/11

Pacific Rim Environmental, Inc.
BULK SAMPLE ANALYSIS REPORT

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	P.O. Box 1212	REPORT # :	2011-07-206
	Puyallup, WA 98371	DATE RECEIVED :	07/18/2011
PROJECT:	Sound Battery	ANALYST :	William F. Golloway
	2310 E. 11th St.	DATE ANALYZED :	07/20/2011 & 07/21/11
	Tacoma, WA	REPORT BY :	Dai Le
SAMPLE DATE:	07/18/2011	REPORT DATE :	07/22/2011
TURNAROUND:	3 Days	PAGE :	4 of 6

Field/Lab ID Number	Sample Location and Description	Asbestos Type(s) / %	Other Material(s)	Date Analyzed
13 2011-07-218	**West wall exterior, window 4 (window putty).** Brown-painted, light grayish-brown, brittle window putty.	**Chrysotile 1-3%**	Cellulose (<1%), Binder, Mineral Aggregate, Paint.	07/20/11
14 2011-07-219	**West wall exterior (surfacing on wall).** White-painted, white, chalky texture material.	**Chrysotile 1-3%**	Cellulose (<1%), Binder, Mineral Aggregate, Paint.	07/20/11
15 2011-07-220	**North wall exterior (surfacing on wall).** White-painted, gray cement material.	None Detected	Cellulose (<1%), Mineral Aggregate, Binder, Paint.	07/20/11
16 2011-07-221	**South wall exterior (surfacing on wall).** White-painted, white, chalky texture material.	**Chrysotile 1-3%**	Cellulose (<1%), Binder, Mineral Aggregate, Paint.	07/20/11
17 2011-07-222	**South exterior, bottom window 3 (window putty).** Brown-painted, light gray, brittle window putty.	None Detected	Cellulose (<1%), Binder, Mineral Aggregate, Paint.	07/20/11
18 2011-07-223	**2nd Floor, north wall, window 4, interior (window putty).** White, brittle window putty with gray surface residue.	None Detected	Cellulose (<1%), Binder, Mineral Aggregate.	07/20/11
19 2011-07-224	**2nd Floor, south wall, window 2, interior (window putty).** White, brittle window putty with gray paint.	**Chrysotile <1%**	Cellulose (<1%), Binder, Mineral Aggregate, Paint.	07/20/11

Pacific Rim Environmental, Inc.
BULK SAMPLE ANALYSIS REPORT

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	P.O. Box 1212	REPORT # :	2011-07-206
	Puyallup, WA 98371	DATE RECEIVED :	07/18/2011
PROJECT:	Sound Battery	ANALYST :	William F. Golloway
	2310 E. 11th St.	DATE ANALYZED :	07/20/2011 & 07/21/11
	Tacoma, WA	REPORT BY :	Dai Le
SAMPLE DATE:	07/18/2011	REPORT DATE :	07/22/2011
TURNAROUND:	3 Days	PAGE :	5 of 6

Field/Lab ID Number	Sample Location and Description	Asbestos Type(s) / %	Other Material(s)	Date Analyzed
20 2011-07-225	**Pot roof (silver coat and tar).** Silver paint/coating (layer 1) on black tar material (layer 2).	**Layer 1** (Paint): None Detected **Layer 2** (Tar): **Chrysotile 3-5%**	**Layer 1:** Binder, Mineral Aggregate. **Layer 2:** Cellulose (<1%), Tar, Mineral Aggregate.	07/20/11
21 2011-07-226	**Pot roof (seam sealant).** Tar on white paint (layer 1) on tar on green paint (layer 2) on white to light gray, brittle and chalky material (layer 3).	**Layers 1** (Tar): None Detected **Layer 2** (Tar): **Chrysotile 1-3%** **Layer 3** (Gray material): None Detected	**Layer 1:** Cellulose (10-15%), Tar, Mineral Aggregate, Paint. **Layer 2:** Cellulose (<1%), Tar, Mineral Aggregate, Paint. **Layer 3:** Cellulose (<1%), Binder, Mineral Aggregate.	07/21/11
22 2011-07-227	**Warehouse roof (silver coat and tar).** Silver-paint/coating (layer 1) with black tar material (layer 2).	**Layer 1** (Paint/coating): None Detected **Layer 2** (Tar material): **Chrysotile 1-3%**	**Layer 1:** Cellulose (<1%), Binder, Mineral Aggregate. **Layer 2:** Cellulose (<1%), Synthetics (10-15%), Tar, Mineral Aggregate.	07/21/11
23 2011-07-228	**Warehouse roof (seam sealant).** Black tar material.	None Detected	Cellulose (7-10%), Tar, Mineral Aggregate.	07/21/11
24 2011-07-229	**Pot roof (rolled roof and silver coat).** Silver coating (layer 1) on black tar roofing (layer 2) on black tar roofing (layer 3).	**Layers 1** (Coating): None Detected **Layer 2** (Roofing): **Chrysotile 1-3%** **Layer 3** (Roofing): None Detected	**Layer 1:** Cellulose (<1%), Binder, Mineral Aggregate. **Layer 2:** Cellulose (<1%), Fiberglass (7-10%), Tar, Mineral Aggregate. **Layer 3:** Cellulose (20-25%), Tar, Mineral Aggregate.	07/21/11

Pacific Rim Environmental, Inc.
BULK SAMPLE ANALYSIS REPORT

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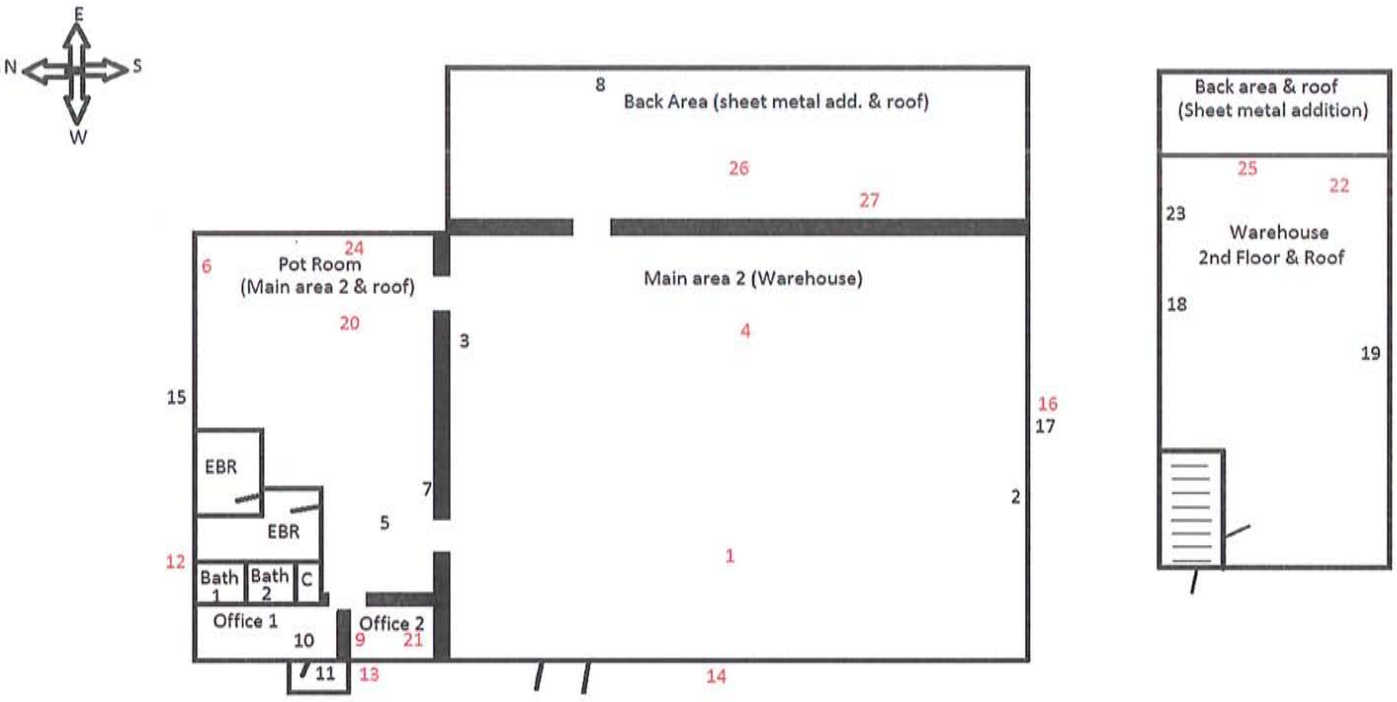
PROJECT:	Sound Battery	ANALYST :	William F. Golloway
	2310 E. 11th St.	DATE ANALYZED :	07/20/2011 & 07/21/11
	Tacoma, WA	REPORT BY :	Dai Le
SAMPLE DATE:	07/18/2011	REPORT DATE :	07/22/2011
TURNAROUND:	3 Days	PAGE :	6 of 6

Field/Lab ID Number	Sample Location and Description	Asbestos Type(s) / %	Other Material(s)	Date Analyzed
25 2011-07-230	**Warehouse roof (silver coat and rolled roof).** Silver coating (layer 1) on black tar roofing (layer 2) on black tar roofing (layer 3) on black tar roofing (layer 4).	**Layers 1** (Coating): None Detected **Layer 2** (Roofing): **Chrysotile 1-3%** **Layer 3** (Roofing): None Detected **Layer 4** (Roofing): None Detected	**Layer 1:** Cellulose (<1%), Mineral Aggregate, Binder. **Layer 2:** Cellulose (<1%), Synthetics (3-5%), Tar, Mineral Aggregate. **Layer 3:** Cellulose (30-35%), Tar, Mineral Aggregate. **Layer 4:** Cellulose (30-35%), Tar, Mineral Aggregate.	07/21/11
26 2011-07-231	**Addition sheet metal, back area (silver coat and rolled roof).** Silver coating (layer 1) on black tar roofing (layer 2).	**Layers 1** (Coating): None Detected **Layer 2** (Roofing): **Chrysotile 1-3%**	**Layer 1:** Cellulose (<1%), Mineral Aggregate, Binder. **Layer 2:** Cellulose (20-25%), Synthetics (3-5%), Tar, Mineral Aggregate.	07/21/11
27 2011-07-232	**Addition sheet metal, back area (sealant on edges).** Black tar material with gray surface hue and silver coat residue.	**Chrysotile 1-3%**	Cellulose (7-10%), Fiberglass (<1%), Tar, Mineral Aggregate, Adhesive.	07/21/11

Appendix C: **Sample Location Drawings**



Sample #	Sample Location	Sample Description
01	**At first rack in main area-1, west side**	**CAB**
02	Main area-1, south wall, window 5	window putty
03	Main area-1, north wall, interior window 2	window putty
04	**Main area-1, center of floor**	**sealant at concrete seams**
05	Pot room, west end of floor	sealant at concrete seams
06	**Pot room, north side window 4**	**window putty**
07	Pot room, southwest corner	red floor covering
08	Sheet metal addition, window 2	window putty
09	**Office 2**	**9x9 tile and mastic**
10	Office 1	16x16 ceiling tile
11	Exterior west wall at office 1 entrance	sealant
12	**North wall exterior, window 4**	**window putty**
13	**West wall exterior, window 4**	**window putty**
14	**West wall exterior**	**surfacing on wall**
15	North wall exterior	surfacing on wall
16	**South wall exterior**	**surfacing on wall**
17	South exterior, bottom window 3	window putty
18	2nd Floor, north wall, window 4	window putty

Red = Sample positive for asbestos.

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Project #: 14463
Drawing #: 01
Sampling Date: 7/18/2011
Drawing By: Dai Le
Drawing Not To Scale

Sample #	Sample Location	Sample Description
19	2nd Floor, north wall, window 2	window putty
20	**Pot roof**	**silver coat and tar**
21	**Pot roof**	**seam sealant**
22	**Warehouse roof**	**silver coat and tar**
23	Warehouse roof	seam sealant
24	**Pot roof**	**rolled roof and silver coat**
25	**Warehouse roof**	**silver coat and rolled roof**
26	**Addition sheet metal, back area**	**silver coat and rolled roof**
27	**Addition sheet metal, back area**	**sealant on edges**

Red = Sample positive for asbestos.

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Project #: 14463
Drawing #: 01
Sampling Date: 7/18/2011
Drawing By: Dai Le
Drawing Not To Scale

Appendix D: **XRF Data Sheets**

Client:	**Enco Environmental Corporation** P.O. Box 1212 Puyallup, WA 98371	*XRF Serial #:* *Inspection Date:* *Inspection By:*	**XLP303A-7029** **18-Jul-2011** **Todd Carter**
Project:	**Sound Battery** 2310 E. 11th St. Tacoma, WA	*PRE Job#:*	**14463**

PRE#	Test #	Substrate	Component / Side	Description / Location	Color	Result	Pbc mg/cm2
1	363	*First calibration check*				Positive	1
2	364	*First calibration check*				Negative	0.9
3	365	*First calibration check*				Positive	1.2
4	366	Concrete	Exterior wall	Front of office building	Ivory	Negative	-0.41
5	367	Concrete	Exterior wall	Front of office building	Ivory	Negative	0.03
6	368	Wood	Door jamb	Front office door	White	Positive	3
7	369	Wood	Door	Front office door	White	Positive	5.4
8	370	Concrete	Exterior sill	Front office windows	Ivory	Negative	0.15
9	371	Concrete	Exterior wall CMU	Front of waehouse	Ivory	Negative	0.07
10	372	Concrete	Floor	Electrical room	Red	Negative	0.8
11	373	Concrete	Interior wall east	Front corner waehouse	Green	Negative	0.2
12	374	Concrete	Interior wall north	Front of waehouse	Green	Negative	0.1
13	375	Concrete	Interior column	Warehouse at breaker	Green	Negative	0.18
14	376	Wood	Door jamb	Door to lunch room	White	Positive	7.5
15	377	Concrete	Interior wall	Bathroom	Blue	Negative	0.19
16	378	Concrete	Interior column	West wall pot room	White	Positive	3
17	379	Concrete	Interior wall	West wall pot room	White	Positive	1.9

Client:	**Enco Environmental Corporation** P.O. Box 1212 Puyallup, WA 98371	*XRF Serial #:* *Inspection Date:* *Inspection By:*	**XLP303A-7029** **18-Jul-2011** **Todd Carter**
Project:	**Sound Battery** 2310 E. 11th St. Tacoma, WA	*PRE Job#:*	**14463**

PRE#	Test #	Substrate	Component / Side	Description / Location	Color	Result	Pbc mg/cm2
18	380	Concrete	Interior wall	South wall pot room	White	Negative	0.3
19	381	Concrete	Interior wall	South wall pot room	Bare	Positive	1.5
20	382	Concrete	Interior wall	Southeast corner, pot room	Bare	Positive	2.2
21	383	Concrete	Interior wall	**South wall pot room**	White	Negative	0.11
22	384	Concrete	Interior wall	South wall pot room	White	Negative	0.15
23	385	Concrete	Interior wall	South wall pot room	Green	Negative	0.12
24	386	Concrete	Interior wall	West wall pot room	White	Negative	0.21
25	387	Concrete	Interior CMU wall	North wall metal addition	Green	Negative	0.11
26	388	Concrete	Tank pad	Acid tank area	Yellow	Negative	0.05
27	389	Concrete	Floor	Southwest corner acid tank area	Red	Negative	0.16
28	390	Concrete	Exterior wall	South wall pot room	Yellow	Negative	0.17
29	391	Metal	Window frame	South wall window pot room	Red	Positive	6.8
30	392	Metal	Window frame	South wall metal addition	Bare	Negative	0.04
31	393	Concrete	Exterior wall	West wall warehouse	Ivory	Negative	0.3
32	394	Concrete	Exterior sill	West wall window warehouse	Ivory	Negative	0.29
33	395	Metal	Window frame	West wall window warehouse	Red	Negative	0.03
34	396	Metal	Window frame	West wall window warehouse	Red	Negative	0.03
35	397	Wood	6x6 post	Metal addition mezzanine	Red	Negative	0.06
36	398	Wood	Stair tread	Stairs to 2nd floor	Red	Negative	0.6
37	399	Wood	Post 6x8	2nd floor	Bare	Negative	0
38	400	Wood	Roof beams	2nd floor	Bare	Negative	0
39	401	Wood	2x6 T&G roof	2nd floor	Bare	Negative	0
40	402	Metal	Beam strap	2nd floor, northwest corner	Red	Positive	2.5

Client: **Enco Environmental Corporation**
P.O. Box 1212
Puyallup, WA 98371

Project: **Sound Battery**
2310 E. 11th St.
Tacoma, WA

XRF Serial #: **XLP303A-7029**
Inspection Date: **18-Jul-2011**
Inspection By: **Todd Carter**

PRE Job#: **14463**

PRE#	Test #	Substrate	Component / Side	Description / Location	Color	Result	Pbc mg/cm2
41	403	Concrete	Interior CMU wall	2nd floor, east wall	Bare	Negative	0.01
42	404	Wood	8x8 post	Warehouse center	Bare	Negative	0.08
43	405	Wood	8x8 post	Warehouse center	Bare	Negative	0.09
44	406	Wood	8x8 post	South end waehouse center	Black	Negative	0.23
45	407	Concrete	Floor	Center of pot room	Red	Positive	2.3
46	408	Concrete	Floor	Center of pot room	Bare	Negative	0.3
47	409	Metal	Exterior post	Warehouse entrance	Brown	Positive	9.7
48	410	Wood	Beam main	Warehouse center	Bare	Negative	0.01
49	411	Wood	Beam cross	Warehouse center	Bare	Negative	0.02
50	412	Metal	Beam strap	Warehouse center	Red	Positive	1.6
51	413	*Last calibration check*				Positive	1.1
52	414	*Last calibration check*				Positive	1.1
53	415	*Last calibration check*				Positive	1.1

Report By: **Dai Le**
Report Date: **21-Jul-2011**

Appendix E: **XRF Performance Characteristic Sheet**

Performance Characteristic Sheet

EFFECTIVE DATE: **September 24, 2004** **EDITION NO.: 1**

MANUFACTURER AND MODEL:

Make: *Niton LLC*
Tested Model: *XLp 300*
Source: ^{109}Cd
Note: This PCS is also applicable to the equivalent model variations indicated below, for the Lead-in-Paint K+L variable reading time mode, in the XLi and XLp series:

XLi 300A, XLi 301A, XLi 302A and XLi 303A.
XLp 300A, XLp 301A, XLp 302A and XLp 303A.
XLi 700A, XLi 701A, XLi 702A and XLi 703A.
XLp 700A, XLp 701A, XLp 702A, and XLp 703A.

Note: The XLi and XLp versions refer to the shape of the handle part of the instrument. The differences in the model numbers reflect other modes available, in addition to Lead-in-Paint modes. The manufacturer states that specifications for these instruments are identical for the source, detector, and detector electronics relative to the Lead-in-Paint mode.

FIELD OPERATION GUIDANCE

OPERATING PARAMETERS:

Lead-in-Paint K+L variable reading time mode.

XRF CALIBRATION CHECK LIMITS:

0.8 to 1.2 mg/cm^2 (inclusive)

The calibration of the XRF instrument should be checked using the paint film nearest 1.0 mg/cm^2 in the NIST Standard Reference Material (SRM) used (e.g., for NIST SRM 2579, use the 1.02 mg/cm^2 film).

If readings are outside the acceptable calibration check range, follow the manufacturer's instructions to bring the instruments into control before XRF testing proceeds.

SUBSTRATE CORRECTION:

For XRF results using Lead-in-Paint K+L variable reading time mode, substrate correction is <u>not</u> needed for:

Brick, Concrete, Drywall, Metal, Plaster, and Wood

INCONCLUSIVE RANGE OR THRESHOLD:

K+L MODE READING DESCRIPTION	SUBSTRATE	THRESHOLD (mg/cm^2)
Results not corrected for substrate bias on any substrate	Brick	1.0
	Concrete	1.0
	Drywall	1.0
	Metal	1.0
	Plaster	1.0
	Wood	1.0

BACKGROUND INFORMATION

EVALUATION DATA SOURCE AND DATE:

This sheet is supplemental information to be used in conjunction with Chapter 7 of the HUD *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing* ("HUD Guidelines"). Performance parameters shown on this sheet are calculated from the EPA/HUD evaluation using archived building components. Testing was conducted in August 2004 on 133 testing combinations. The instruments that were used to perform the testing had new sources; one instrument's was installed in November 2003 with 40 mCi initial strength, and the other's was installed June 2004 with 40 mCi initial strength.

OPERATING PARAMETERS:

Performance parameters shown in this sheet are applicable only when properly operating the instrument using the manufacturer's instructions and procedures described in Chapter 7 of the HUD Guidelines.

SUBSTRATE CORRECTION VALUE COMPUTATION:

Substrate correction is not needed for brick, concrete, drywall, metal, plaster or wood when using Lead-in-Paint K+L variable reading time mode, the normal operating mode for these instruments. If substrate correction is desired, refer to Chapter 7 of the HUD Guidelines for guidance on correcting XRF results for substrate bias.

EVALUATING THE QUALITY OF XRF TESTING:

Randomly select ten testing combinations for retesting from each house or from two randomly selected units in multifamily housing. Use the K+L variable time mode readings.

Conduct XRF retesting at the ten testing combinations selected for retesting.

Determine if the XRF testing in the units or house passed or failed the test by applying the steps below.

Compute the Retest Tolerance Limit by the following steps:

Determine XRF results for the original and retest XRF readings. Do not correct the original or retest results for substrate bias. In single-family housing a result is defined as the average of three readings. In multifamily housing, a result is a single reading. Therefore, there will be ten original and ten retest XRF results for each house or for the two selected units.

Calculate the average of the original XRF result and retest XRF result for each testing combination.

Square the average for each testing combination.

Add the ten squared averages together. Call this quantity C.

Multiply the number C by 0.0072. Call this quantity D.

Add the number 0.032 to D. Call this quantity E.

Take the square root of E. Call this quantity F.

Multiply F by 1.645. The result is the Retest Tolerance Limit.

Compute the average of all ten original XRF results.

Compute the average of all ten re-test XRF results.

Find the absolute difference of the two averages.

If the difference is less than the Retest Tolerance Limit, the inspection has passed the retest. If the difference of the overall averages equals or exceeds the Retest Tolerance Limit, this procedure should be repeated with ten new testing combinations. If the difference of the overall averages is equal to or greater than the Retest Tolerance Limit a second time, then the inspection should be considered deficient.

Use of this procedure is estimated to produce a spurious result approximately 1% of the time. That is, results of this procedure will call for further examination when no examination is warranted in approximately 1 out of 100 dwelling units tested.

TESTING TIMES:

For the Lead-in-Paint K+L variable reading time mode, the instrument continues to read until it is moved away from the testing surface, terminated by the user, or the instrument software indicates the reading is complete. The following table provides testing time information for this testing mode. The times have been adjusted for source decay, normalized to the initial source strengths as noted above. Source strength and type of substrate will affect actual testing times. At the time of testing, the instruments had source strengths of 26.6 and 36.6 mCi.

Testing Times Using K+L Reading Mode (Seconds)						
	All Data			Median for laboratory-measured lead levels (mg/cm^2)		
Substrate	25^{th} Percentile	Median	75^{th} Percentile	Pb < 0.25	0.25 ≤ Pb<1.0	1.0 ≤ Pb
Wood Drywall	4	11	19	11	15	11
Metal	4	12	18	9	12	14
Brick Concrete Plaster	8	16	22	15	18	16

CLASSIFICATION RESULTS:

XRF results are classified as positive if they are greater than or equal to the threshold, and negative if they are less than the threshold.

DOCUMENTATION:

A document titled *Methodology for XRF Performance Characteristic Sheets* provides an explanation of the statistical methodology used to construct the data in the sheets, and provides empirical results from using the recommended inconclusive ranges or thresholds for specific XRF instruments. For a copy of this document call the National Lead Information Center Clearinghouse at 1-800-424-LEAD.

This XRF Performance Characteristic Sheet was developed by the Midwest Research Institute (MRI) and QuanTech, Inc., under a contract between MRI and the XRF manufacturer. HUD has determined that the information provided here is acceptable when used as guidance in conjunction with Chapter 7, Lead-Based Paint Inspection, of HUD's *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing.*

Appendix F: **Universal Waste Rule WAC 173-303-573**

WASHINGTON STATE DEPARTMENT OF ECOLOGY

Focus

Universal Waste Rule for Dangerous Waste Lamps WAC 173-303-573

Background

The Universal Waste Rule (UWR) establishes alternative, streamlined waste management standards in place of most of the Dangerous Waste Regulations, Chapter 173-303 WAC, except for, WAC 173-303-050, 173-303-145 and 173-303-960. Universal wastes are certain dangerous wastes that are frequently generated, and that are able to be managed appropriately under less stringent regulatory requirements. The Universal Waste Rule for batteries and mercury-containing thermostats has been in place in Washington State since 1998. For more information on the original UWR, refer to Ecology publication number 98-407 (Revised).

In June 2000, Ecology added lamps that are dangerous waste to the UWR. This rule replaces the "Interim Policy on Waste Management of Spent Fluorescent Light Tubes," dated January 30, 1995.

Universal Waste Categories of Lamps

The types of lamps that may be universal waste include:

- Fluorescent tubes
- High density (HID) lamps (mercury vapor, metal halide, high pressure sodium)
- Compact fluorescent
- Neon lamps[1]
- Any other lamps that are dangerous waste

[1] *"Neon" lamp manufacturers do not always use the inert gas neon, some are manufactured using mercury and phosphor powder.*

June 2000

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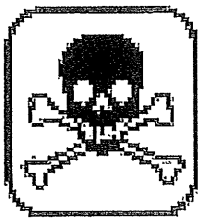
Publication # 00-04-020

Why Do We Care About Lamps?

Nationally, about 600 million lamps are disposed of annually, most to solid waste disposal facilities, including landfills and solid waste incinerators. In fluorescent lamps, mercury is the main concern and is present in lamps primarily in vapor form.

- The average mercury content in a fluorescent tube manufactured in 1999 is approximately 12 milligrams.
- Pre-1999 manufactured fluorescent tubes can have from 15 to 50 milligrams.
- High intensity discharge lamps may contain up to 250 milligrams, depending on the lamp wattage.

During solid waste handling and disposal many lamps break releasing mercury vapor and potentially exposing solid waste handlers to inhalation of those vapors. Solid waste incineration of mercury containing lamps also releases the mercury into the atmosphere. Mercury in the atmosphere is eventually deposited back to the earth.



Health & Environmental Hazards of Mercury

- Health risk from inhalation or absorption
- Causes neurological disorders
- Persistent, bioaccumulative and toxic
- Major cause of contaminated fish advisories

Some lamps may also contain lead in the glass and lead solder used in the lamp base. Lead is a toxic metal that may leach from solid waste landfills into the ground water. Manufacturers are eliminating the lead by using nonleaded glass and solders in newer lamps.

How to Know if a Lamp is Dangerous Waste

Lamps are known to designate as dangerous waste because of their mercury and/or lead content. Lamps may be assumed to be dangerous waste, they may be "book designated" using manufacturers' information, or they may be designated through sampling and testing.

Certain "green" lamps are available that contain less mercury and do not designate as dangerous waste. Ask your lamp manufacturer for data sheets to use when making waste determinations for these lamps. Check with your local health department, solid waste agency, or landfill for recycling or disposal options.

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Should Fluorescent Lamps Still be Used?

YES! Fluorescent tubes use one-quarter of the energy used by incandescent lamps for the same amount of light and last as much as ten times longer than incandescent bulbs. Compact fluorescent lamps last far longer than conventional tubes. The lamps used for lighting streets, playfields, and parking lots should also be selected for energy conservation. Energy conservation reduces mercury emissions from fossil fuel burning power plants. Using less electricity – which we can do by using energy-saving lighting – is the best protection for health and the environment.

Who is Affected by the UWR for Lamps?

- Regulated generators of dangerous waste (Medium Quantity and Large Quantity Generators)
- Businesses that generate or accumulate dangerous waste lamps in regulatedquantities (this category may include commercial building/property owners that maintain the lighting for tenants)
- Businesses that provide collection and management services (e.g., lighting contractors)

Regulated generators of dangerous waste generate over 220 pounds of total dangerous waste per month or batch (or 2.2 pounds of extremely hazardous waste), or accumulate greater than 2,200 pound of dangerous waste (or 2.2 pounds of extremely hazardous waste) at any time. As a point of reference, four (4), four-foot long, linear fluorescent tubes equal approximately 2.2 pounds. It would take about 400 of those tubes to equal 220 pounds and approximately 4,000 of those tubes to equal 2,200 pounds.

***NOTE:** Small Quantity Generators (SQGs) are exempt from the UWR (they are subject to WAC 173-303-070(8)) and can manage dangerous waste lamps as SQG dangerous waste. Households are also exempt from the rule. Local governments and/or landfills, however, may restrict disposal by SQGs and households. (If a SQG generates dangerous waste lamps in quantities that would put them into a higher generator category, they should choose to manage those lamps as universal waste to retain their SQG status.*

Under the UWR, there are small quantity handlers, large quantity handlers, transporters and destination facilities.

- Handlers are the generators of the universal waste or businesses that receive and collect universal waste before shipping to another handler or to a destination facility.
- Transporters transport the lamps between handlers, or to a destination facility.
- Destination facilities recycle the lamps, or provide treatment, storage and disposal to a dangerous waste landfill.

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NOTE: Businesses that generate and manage dangerous wastes and universal wastes are considered both a dangerous waste generator, and a universal waste handler.

Significant Benefits

Benefits for managing dangerous waste lamps as universal waste include:

- Waste is not counted toward waste generation totals to determine generator status.
- Waste is not reported on the Dangerous Waste Annual Report.
- Waste does not need to be manifested when sent off-site.
- Accumulation time limit for universal waste is increased to one year.

What is the Difference Between the 1998 UWR and the UWR with Lamps?

There is one significant difference regarding when a lamp handler becomes a large quantity handler, subject to more requirements:

Handler Type	Pre-2000 Rule	New Rule with Lamps
Small Quantity Handler	Accumulate less than 11,000 pounds of Universal Waste	Accumulate less than 2,200 pounds of lamps, or less than 11,000 pounds of total universal waste, including lamps.
Large Quantity Handler	Accumulate 11,000 or more pounds of Universal Waste	Accumulate 2,200 or more pounds of dangerous waste lamps or 11,000 pounds of total universal waste (including lamps)

Is On-Site Lamp Crushing to Reduce Volume Allowed?

Universal waste lamp handlers and transporters cannot dispose of or treat universal waste lamps. **This prohibition on treatment includes lamp crushing**. Lamp crushing is considered a treatment-by-generator activity, subject to full regulation under the *Dangerous Waste Regulations.* Crushed lamps must be managed as dangerous waste unless they are shown to be non-dangerous through the designation process.

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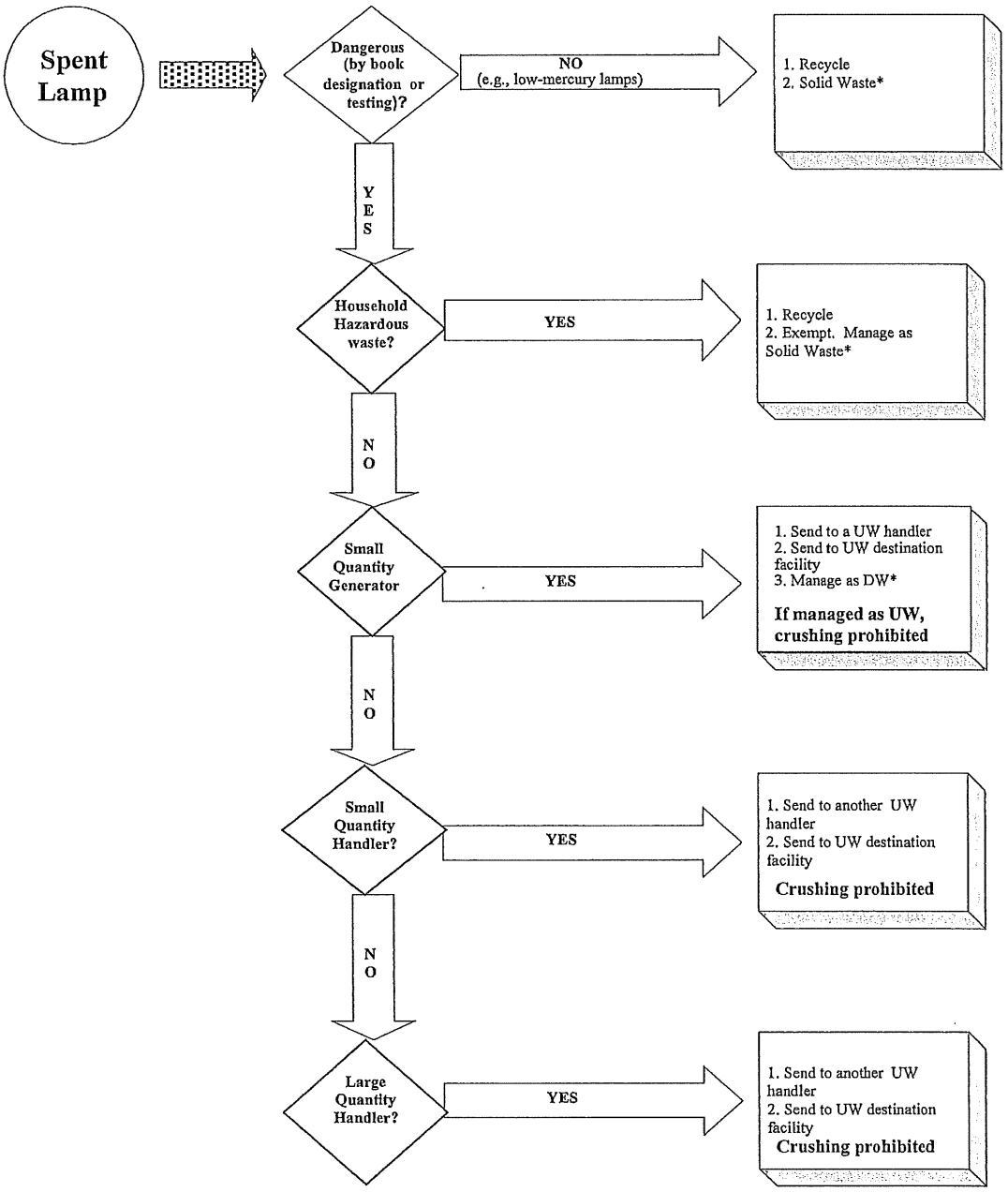
Attachment 1

GENERATOR MANAGEMENT OPTIONS FOR WASTE LAMPS



*Check with local health department, solid waste agency or solid waste landfill operator

Attachment 2
UNIVERSAL WASTE LAMP MANAGEMENT REQUIREMENTS

NOTE: Small Quantity Generators (SQGs) are exempt from the UWR (they are subject only to WAC 173-303-070 (8)) and can manage dangerous waste lamps as SQG dangerous waste. Households are also exempt from the rule. Local governments and/or landfills, however, may restrict disposal by SQGs and households. (If a SQG generates dangerous waste lamps in quantities that would put them into a higher generator category, then they should choose to manage those lamps as universal waste to retain their SQG status.)

REQUIREMENTS	SMALL QUANTITY HANDLER	LARGE QUANTITY HANDLER	UW TRANSPORTER	UW DESTINATION FACILITY
Notification and EPA I.D.#	Not required	YES	Not required	YES
Immediately contain by placing in a container any lamps showing evidence of leakage, damage, etc.	YES	YES	YES	Regulated as a TSD or 24 hour recycler (WAC 173-303-140; 173-303-141; 173-303-280 through 173-303-525; 173-303-600 through –173-303-695; 173-303-800 through 173-303-840. OR, If a 24 hour recycler, WAC 173-303-120 (4)(c) 
Containerize in closed, structurally sound, compatible containers	YES	YES	YES	
Cardboard/fiber containers may be used (inside storage only)	YES	YES		
Container label required: "Waste Lamps", or "Universal Waste Lamps"	YES	YES		
Track length of time since waste lamp generation. Acceptable methods of proof: date on label, inventory system, etc.	YES	YES		
Response to Releases - Contain releases; determine if DW; if so, manage as specified in Chapter 173-303, WAC	YES	YES	YES	
Prohibited from disposing of Universal Waste	YES	YES	YES	
Treatment (includes crushing) prohibited	YES	YES	YES	
Accumulation Time Limit	One year (longer if proved necessary for proper management)	One year (longer if proved necessary for proper management)	10 days or less at UW transfer facility, otherwise becomes UW handler	
Employee Training	Inform appropriate employees of proper handling and emergency procedures	Ensure appropriate employees are thoroughly familiar with proper handling and emergency procedures	Not required under rule, but recommended	
Tracking of Waste Shipments	Recommended, but not required	Keep records (invoice, manifest, etc.) for 3 years of all shipments received and all shipments sent off-site	If UW is hazardous material under 49CFR171.8, describe in shipping papers per 49CFR Part 172	Keep records (invoice, manifest, etc.)for 3 years of all shipments received
Exporting	EPA Acknowledgment of Consent form from receiving country	EPA Acknowledgment of Consent form from receiving country	EPA Acknowledgment of Consent form must accompany shipment	EPA Acknowledgment of Consent form must accompany shipment
If UW is hazardous material under 49CFR171.8, follow applicable Dept. of Transportation regulations in 49CFR Part 171-180	If self-transporting, defined as a Universal Waste Transporter	If self-transporting, defined as a Universal Waste Transporter	YES	If self-transporting, defined as a Universal Waste Transporter

Attachment 3

FREQUENTLY ASKED QUESTIONS ABOUT UNIVERSAL WASTE LAMPS

Q What types of lamps are included in the UW rule?

A The rule includes, but is not limited to, fluorescent tubes, compact fluorescent, mercury vapor, metal halide, high-pressure sodium and neon lamps. The rule targets those lamps that are frequently used by businesses, institutions, government and utilities, and that are known to have hazardous properties that may cause them to be a dangerous waste, such as mercury and lead. Other types of lamps, such as incandescent, may also have hazardous properties, such as lead in the lamp base, that can cause them to be dangerous waste and as such could be managed as universal waste.

Q What is the difference between a generator and a handler under the UW rule?

A Under the universal waste rule a generator of universal waste is also considered a handler. A handler can be the generator of the lamp, or a business that receives, collects and then sends lamps on to another handler, or to a destination facility.

Q What does the UW rule mean for regulated generators of dangerous waste (medium quantity and large quantity generators)?

A Regulated generators of dangerous waste that also generate dangerous waste lamps should begin managing those lamps as universal waste. The benefits of managing the lamps as universal waste include no counting, no manifesting, no reporting on annual reports, and a longer accumulation time. The January 1995 policy on fluorescent tubes is being replaced by the universal waste rule, so regulated generators no longer have the option of sending their dangerous waste fluorescent tubes to a Municipal Solid Waste landfill.

Q A business doesn't generate any other dangerous waste, but they do have a lot of fluorescent lamps that get changed out – how does the UW rule affect them?

A The affect of the rule on the business depends on a few things. The first is whether or not the lamps are dangerous waste. If the lamps are dangerous waste, then the number of lamps generated and the local regulations for business lamp disposal will affect that business. For such a business, the quantity of dangerous waste lamps generated is going to determine their regulatory status. If the business generates more than 220 pounds of lamps at one time or during one month or accumulates more than 2,200 pounds of lamps at any time, then they would become a regulated dangerous waste generator unless they manage the lamps under the universal waste rule. If the business generates less than 220 pounds of dangerous waste lamps, then they would be considered a small quantity generator (SQG) and subject to the less stringent small quantity generator regulations found at WAC 173-303-070(8). They could choose to manage the lamps as universal waste, or choose to manage the lamps as SQG dangerous waste. The business should check with their local health department, solid waste agency or landfill operator for requirements.

Q A business is currently a small quantity generator (SQG) of dangerous waste, how does the UW rule affect them?

A A business that generates dangerous waste at the small quantity generator level may be affected by the rule. If, in addition to other dangerous wastes they generate, they generate or accumulate dangerous waste lamps in quantities that may push them over the SQG quantity exclusion limits, then they should manage those lamps as universal waste to retain their SQG status. If a business generates dangerous wastes, including dangerous waste lamps, under the SQG

quantity exclusion limits, then they may manage the lamps as SQG dangerous waste. The business should check with their local health department, solid waste agency or landfill operator for requirements.

Q Are manufacturers making lamps that are non-dangerous waste?

A The major lamp manufacturers are producing lamps that pass both the federal Toxicity Characteristic Leaching Procedure (TCLP) test and Ecology's static acute fish toxicity test for state criteria. Check with the lamp manufacturer, your local lamp distributor, or lighting contractor for more information on specific lamp models.

Q Can those non-dangerous waste lamps be managed as solid waste or do they need to be managed as universal waste?

A The universal waste rule only requires that dangerous waste lamps be managed as universal waste. Lamp models that have been shown to be non-dangerous waste would be eligible for disposal to a Municipal Solid Waste landfill, subject to local regulations and landfill operator approval. Of course, the non-dangerous waste lamps still have recyclable components, including glass and the aluminum end caps and metal bases. Additionally, these types of "green" lamps still contain mercury, and pass the TCLP not simply because of the lower mercury content, but because there are other unique lamp components or additives that aid in binding up the mercury so that it doesn't leach during the TCLP test. The manufacturers have all stated that removal of the unique components or additives will generally cause these lamps to fail the TCLP. As always, Ecology recommends recycling over disposal.

Q Will on-site lamp crushing to reduce volume space be allowed under the UW rule?

A No, Ecology did not include an on-site lamp crushing management option in the final universal waste rule. During the rule development, it was determined that the as-proposed performance-based lamp crushing standards were not enough to ensure that uncontrolled releases of mercury and other hazardous constituents would not occur from the use of lamp crushing units currently on the market. Because of this, Ecology could not ensure that handlers would be crushing lamps properly and in a way that did not release mercury or other hazardous constituents into the environment. To address this issue, Ecology would need to add layers of complexity to the universal waste rule in explaining such requirements as engineering controls and maintenance schedules. Adding more complex language and requirements would conflict with the purpose of the universal waste management system.

Q What happens if a universal waste lamp handler mismanages universal wastes?

A The universal waste rule is a subset of the full dangerous waste regulations, and a handler that mismanages universal waste is subject to enforcement. A handler that receives universal waste from others and mismanages the waste would be held liable for the actual regulatory violation, but the other handlers would also be responsible for that mismanagement under our state cleanup law, the Model Toxics Control Act. Since universal wastes are still dangerous wastes, persons remain liable under dangerous waste and cleanup regulations for remediation of any releases from universal waste management.

Q Can a handler of universal waste lamps self-transport universal wastes to another handler or destination facility?

A Yes, that handler may self-transport, but in doing so, must meet the UW transporter requirements.

Q Is a Hazardous Waste Manifest needed if a UW lamp handler chooses to send their UW lamps to a destination facility located in a state that hasn't adopted the universal waste rule for lamps?

A If those lamps are considered hazardous waste in the state the destination facility is located, then a Hazardous Waste Manifest would be required by the receiving state. Additionally, interstate transport of UW lamps may take the lamps through states that have not adopted the universal waste rule for lamps. Those states that have not adopted the universal waste rule for lamps may require a Hazardous Waste Manifest for the portion of the trip those lamps are in their state. Check with the destination facility and/or the states the lamps will travel through to be sure of the requirements.

Q Can I be a generator and a handler?

A Yes, a business that generates dangerous waste, (for example, a flammable solvent) and that generates and manages their universal waste would be considered both a dangerous waste generator and a universal waste handler. A handler of universal waste could also become a generator of dangerous waste. For example, a universal waste handler of lamps may have some lamps break, releasing mercury. The residue from the spill would most likely designate as a dangerous waste and would need managed as such. Residues from such spills could not continue to be managed as universal waste.

Attachment 4

SERVICES DIRECTORY FOR LAMPS AND BALLASTS

The Department of Ecology does not assume any liability for the accuracy or completeness of this information. A listing of a firm in this directory does not constitute a recommendation.

Name of Company	City	State	Phone	E-Mail Address	SERVICE
Able Clean-Up Technologies	Spokane	WA	(509) 466-5255	ksilverh2o@email.msn.com	Transportation of lamps and ballasts
Advanced Environmental Solutions	Seattle	WA	(206) 652-2323	justin@advenvironmental.com	Equipment & containers
Big Sky Industrial	Spokane	WA	(509) 624-4949	bigsky@iea.com	Arrange for ballast disposal
Creative Environmental Technologies	Tacoma	WA	(888) 627-3347, (253) 627-3347	ceti@cetinw.com	Arrange for lamp and ballast transportation
Earth Protection Services	Lake Oswego	OR	(503) 620-2466 (800) 588-7190	earthpro@cyberhighway.net	Lamp recycling and ballast management
Eastern Environmental Technologies	Port Chester	NY	(800) 808-PCBS	eet@erols.com	Lamp recycling and ballast management
Eco Lights NW	Seattle	WA	(206) 343-1247	amyf@totalreclaim.com	Full service lamp recycler and ballast management
Envirotech Systems	Seattle	WA	(800) 922-9395	envsys1@aol.com	Arrange for lamp recycling and ballast disposal
Evergreen Environmental	Aberdeen	WA	(360) 533-6141	LarryM@olynet.com	Arrange for ballast disposal
FBN Enterprises	Kirkland	WA	(425) 820-8115		Arrange for lamp and ballast reycling or disposal
Foss Environmental Services	Seattle	WA	(206) 768-1426	seattleinfo@foss.com	Transportation of lamps and ballasts
Lighting Resources	Phoenix	AZ	(800) 572-9253	ben@voidnet.com	Lamp recycling and ballast management
MCS Environmental	Spokane	WA	(509) 924-9236	mcsspok@ez.eznet	Arrange for lamp and ballast recycling or disposal
Mercury Technologies of Minnesota	Pine City	MN	(800) 864-3821	merctech@ecenet.com	Lamp recycling and ballast management
Midwest Recycling & Recovery Services	Dubuque	IA	(800) 311-9636		Arrange for lamp and ballast recycling or disposal
NSSI Recovery Services	Houston	TX	(713) 641-0391	rdgallagher@nssihouston.com	Limited lamp and ballast disposal services
Nu-Life Industries	Aldergrove	BC	(604) 857-5588	info@nulife-ind.com	Lamp recycling and non-PCB ballast management
Onyx Environmental Services, LLC	Tukwila	WA	(206) 241-3900 or (800) 334-2387	jim_beck@wastemanagement.com	Transportation of lamps and ballasts

Name of Company	City	State	Phone	E-Mail Address	SERVICE
Philip Services	Renton	WA	(425) 227-0311 or (800) 228-7872	londamay@philip-serv.com	Transportation of lamps and ballasts
Philip Services	Washougal	WA	(800) 547-2436	londamay@philip-serv.com	Transportation of lamps and ballasts
Phoenix Environmental	Fife	WA	(253) 779-8474		Limited t\ansportation of lamps and ballasts
Prezant Associates	Seattle	WA	(206) 368-4252 or (206) 281-8858	prezant@prezant.com	Industrial hygiene, safety and health consulting
Recyclights West LLC	Glendora Las Vegas	CA NV	(626) 335-3042 (702) 633-7900	recwest@aol.com	Lamp recycling at Las Vegas facility – no ballast management
Romic Environmental	Tacoma	WA	(253) 229-6569	gregc@romic.com	Transportation of lamps and ballasts to CA facility
RTW	University Place	WA	(253) 566-5819	mthinc@foxinternet.net	Arrange for lamp and ballast recycling or disposal
Safety Kleen, Auburn	Auburn	WA	(206) 939-2022		Transportation of lamps and ballasts
Safety Kleen, Lynnwood	Lynnwood	WA	(425) 775-7030		Transportation of lamps and ballasts
Safety Kleen, Pasco	Pasco	WA	(509) 547-8771	mikekendall@safetykleen.com	Transportation of lamps and ballasts
Safety Kleen, Spokane	Spokane	WA	(509) 928-8353	DavidBlackham@safetykleen.com	Transportation of lamps and ballasts
Superior Special Services (formerly Salesco Systems)	Phoenix	AZ	(800) 368-9095	mdezelon@ssusa.com	Lamp recycling and ballast management
Van Waters & Rogers, Kent	Kent	WA	(800) 909-4897	kraen.troutman@dwr-inc.com	Arrange for lamp recycling and ballast management
Van Waters & Rogers, Spokane	Spokane	WA	(800) 909-4897	ietxp@vwr-inc.com	Arrange for lamp recycling and ballast management
WasteXpress	Portland	OR	(503) 224-3206	wastex@easystreet.com	Transportation of lamps and ballasts

Appendix G: **Universal Waste Rule Fact Sheet**

Universal Waste Rule

Fact Sheet January 1999

Introduction

The US EPA finalized the Universal Waste Rule (UWR) in the May 11, 1995 Federal Register. Many states have since adopted it.

Universal Waste (UW) is a general descriptive term used to describe wastes that are generated by a large, diverse population. Businesses as well as unregulated households generate UW. This term is intended to be broad so that a wider range of wastes may be managed under the reduced requirements of the UWR. The UWR is intended to promote recycling as well as the proper disposal of wastes, if recycling is not a viable option by easing certain regulatory requirements.

The UWR's reduced management requirements will encourage UW collection programs. These programs may include the collection of household waste. The collection of household UW will keep these wastes out of the municipal waste streams.

Types of Universal Waste

The following wastes constitute the three categories of UW that may be managed under the UWR.

Unused Pesticides

This category includes hazardous waste pesticides that are either suspended and recalled under Section 6 of the Federal Insecticide, fungicide and Rodenticide Act (FIFRA), or collected in waste pesticide programs.

Mercury-containing Thermostats

This category includes all mercury-containing thermostats that fail the Toxicity Characteristic Leaching Procedure (TCLP).

Spent Batteries

This category includes all hazardous waste batteries such as nickel-cadmium batteries. Spent lead-acid batteries may also fall under this category. The handler has the option of managing spent lead-acid batteries as hazardous waste or universal waste.

Definitions

Battery- This device consists of one or more electrically connected electrochemical cells which is designed to receive, store, and deliver electric energy. An electrochemical cell consists of an anode, cathode, and electrolyte. A device is also considered a battery if it is intact, unbroken, and all of the electrolyte has been removed.

Mercury-containing thermostat- This temperature control device contains metallic mercury in an ampule attached to a bimetal sensing element and a mercury-containing ampule that has been removed from the device in compliance with the UWR.

Large Quantity Handler of Universal Waste (LQHUW)- This handler manages any of the three types of UW. A LQHUW collects greater than or equal to 5,000 kg. of the total accumulation of UW at any one given time, not by each type. A LQHUW may receive UW from other handlers and foreign destinations.

Small Quantity Handler of Universal Waste (SQHUW)- This handler manages any of the three types of UW. A SQHUW collects less than 5000 kg. of the total accumulation of UW at any one given time, not by each type. A SQHUW may receive UW from other handlers and foreign destinations.

Destination Facility- This handler may either treat, dispose of, or recycle UW. The owner of a destination facility receives Uws from transporters, SQHUW, and LQHUW. If storage of the waste is necessary prior to recycling then the destination facility must comply with haz waste storage facility provisions. If the handler is storing UW prior to recycling or is storing or treating UW before disposal, the facility must obtain a hazardous waste installation and operation permit prior to building the destination facility.

Transfer Facility- This transportation-related facility includes; loading docks, parking areas, storage areas, and other similar areas where shipments of UWs are held during the normal course of transportation.

Transporter- This handler engages in the off-site transfer of UW by air, rail, highway or water. This handler may transport UW from one UW handler to another, to destination facilities, or to foreign destinations.

Requirements for Handlers of Universal Waste

Conditionally Exempt Small Quantity Generator (CESQG)- A CESQG (generates £100 kg of hazardous waste per month) has the option of handling its UW under the UWR or under the CESQG requirements in the regs. It should be noted that CESQGs must ensure delivery of their hazardous waste to a permitted facility.

Storage Time Limits

Small Quantity Handler of Universal Waste (SQHUW). A SQHUW may store UW on-site for up to one year. If greater than one year is required, the handler must prove that the UW has a feasible recycling market.

Large Quantity Handler of Universal Waste (LQHUW). A LQHUW may store UW on-site for up to one year. If greater than one year is needed, the handler must prove that the UW has a feasible recycling market.

Transporter of Universal Waste. This handler may store UW at a transfer facility for up to ten days before delivering it to a LQHUW, a SQHUW, or a destination facility.

Destination Facility. A hazardous waste installation and operation permit for storage is required for facilities that store UW prior to recycling. If a facility is intended to be used for disposal of UW, then that facility must be permitted for hazardous waste disposal.

Packaging & Labeling

The labeling requirements are identical for LQHUW and SQHUW. In addition to the requirements listed below, each container or outer container must be labeled with the date the material became a waste; the date when it was received from another handler; or some other method that identifies when the waste was received or generated. The containers should **never** be labeled "HAZARDOUS WASTE." The other general guidelines are as follows:

Universal Waste Batteries. Each battery or container holding batteries must be marked, "Universal Waste Battery(ies)" or "Waste Battery(ies)" or "Used Battery(ies)."

Universal Waste Mercury- Containing Thermostats. The containers must be labeled, "Universal Waste - Mercury Thermostat(s)" or "Waste Mercury Thermostat(s)" or "Used Mercury Thermostat(s)."

Universal Waste Canceled Pesticides. The containers must be marked either, "Universal Waste - Pesticide(s)" or "Waste - Pesticide(s)." Containers other than original packaging may be used.

Universal Waste Recalled Pesticides. Tanks or containers holding the recalled pesticides must be marked with the original FIFRA label that would be required under FIFRA if the pesticide were a product.

Containers

Universal Waste Unused Pesticides. Pesticides are allowed to be stored in containers other than original packaging containers provided that:

- The container remains closed;
- The container is structurally sound;

- The container is compatible with the pesticide;and
- The container lacks evidence of leakage, spillage, or damage that could cause leakage. If the above conditions cannot be met then the pesticides must be over packed.

Universal Waste Batteries. Storing UW batteries in containers is considered proper management. The containers must meet the following criteria:

- The container must be closed;
- The container must be structurally sound;
- The container must be compatible with the contents of the battery; and
- The container must lack evidence of leakage, spillage, or damage that could cause leakage.

If the above conditions cannot be met then the batteries must be over packed.

Universal Waste Thermostats. Storing leaking and non-leaking UW thermostats in containers is considered proper management. The containers must meet the following criteria:

- The container must be closed;
- The container must be structurally sound;
- The container must be compatible with the contents of the thermostat; and
- The container must lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions.

If the above conditions cannot be met then the thermostats must be over packed.

Transportation

SQHUW. This handler may transport its UW to another UW handler to a destination facility or to a foreign location.

LQHUW. This handler may transport its UW to another UW handler to a destination facility or to a foreign location.

Transporter of Universal Waste. A transporter must comply with all applicable U.S. D.O.T. regulations that would be applicable to the UW if it were being transported as a product (hazardous material). A UW handler or a destination facility may qualify as a transporter if self-transporting is involved. These handlers must also comply with all applicable U.S. D.O.T. regulations.

Destination Facility. This facility may transport its UW to another destination facility, to a UW handler or to a foreign destination.

Rejected Shipments. If a handler sends a shipment of UW to another handler or to a destination facility and the shipment is rejected, the originating handler shall either:

- Receive the waste back when notified that the shipment was rejected; or
- Agree with the receiving handler on a destination facility to which the shipment will be sent.

A UW handler may reject a shipment that was received from another handler. If a handler rejects a shipment or a portion of a shipment, the originating handler shall be notified of the rejected shipment. Reshipment of the load should be discussed. The handler shall:

- Send the shipment back to the originating handler; or
- Send the shipment to another destination facility, if agreed to by both parties.

The owner or operator of a destination facility may reject a shipment or a portion of a shipment. If the owner or operator rejects it, the shipper shall be notified of the rejection. Reshipment must be discussed. The owner or operator shall:

- Send the shipment back to the original shipper; or
- Send the shipment to another destination facility, if agreed to by both parties.

Required Analysis

SQHUW AND LQHUW. A SQHUW and a LQHUW must evaluate wastes that are not covered by the UWR. The UWR only applies to the mercury-containing ampules and batteries, not the casings. If a SQHUW or a LQHUW separate the casings from the batteries or ampules, they must characterize them for hazardous constituents. If leaks or spills occur, the batteries and ampules may still be managed as UWs as long as they are contained. The casings, residues, and any other related wastes must be characterized for hazardous waste constituents. If any of these wastes exhibit any characteristic, then they are fully regulated as hazardous waste under all applicable regulations.

Destination Facility. This facility is subject to full hazardous waste regulation under state and federal hazardous waste regulations for treatment, storage, and disposal facilities. Included in the facility requirements is a waste analysis plan.

Training

SQHUW. This handler must inform all employees that manage UW of proper handling and emergency procedures appropriate to the type(s) of UW handled at the facility.

LQHUW. This handler must ensure that all employees are thoroughly familiar with proper waste handling and emergency procedures related to his/ her job during business hours and emergencies.

Transporter of Universal Waste. A transporter must follow all applicable U.S. D.O.T. requirements found in 40 CFR parts 171 through 180.

Destination Facility. A destination facility must follow the training requirements for storage facilities, if the facility does not require a storage permit. If the UW(s) must be stored before recycling, then storage permit requirements apply.

Recordkeeping

Manifests are not required for all handlers of UW.

SQHUW. This handler is not required to keep records.

LQHUW. This handler must record all shipments received or shipped. Logs, invoices, bills of lading, manifests, or other shipping documents constitute acceptable forms of records. They must be maintained for at least three years. The shipping/receiving records should include:

- The name and address of the originating UW handler or foreign shipper from whom the UW was sent;
- The quantity of each type of UW received; and
- The date of receipt of the shipment of UW.

Destination Facility. Operators of this facility must keep the same records for receipt of UW shipments as those kept by LQHUW.

Notification

The notification requirements apply to all three types of UW. Handlers who are accumulating recalled pesticides only and have notified EPA under the Federal Fungicide, Insecticide and Rodenticide Act (FIFRA) are not required to renotify again under the UWR.

SQHUW. This handler is not required to notify state EPA (in authorized states) or regional US EPA of its activity or to obtain an EPA identification number.

LQHUW. This handler is required to notify state EPA (in authorized states) or regional US EPA of its activity one time. The company must receive an EPA identification number.

Destination facility. A destination facility is required to notify state EPA (in authorized states) or regional US EPA of its UW activity.

The following must be included:

- Name and mailing address
- Name and business phone number of the person at the site who should be contacted about the activity.
- A statement indicating that the generator accumulates greater that 5,000 kg. of UW and the types of UW accumulating.

Transporter. This handler is also not required to obtain an EPA identification number.

Response to Releases

All UW handlers must immediately contain any release of UW and any associated residues. These wastes must be characterized by using TCLP analysis. Failure to contain any UW release constitutes illegal disposal. Any release above the reportable quantity (RQ) requires reporting under Comprehensive Environmental Response Compensation & Liability Act (CERCLA).

Imports of Universal Waste

UW that is imported from another country must be managed, upon entry into the United States, in compliance with the appropriate UW requirements for transporters, handlers, or destination facilities.

Land Disposal Restrictions (LDRs)

The following are LDR requirements:

- Prohibition on accumulating prohibited wastes directly on the land;
- Wastes must meet the treatment standards prior to land disposal;
- Prohibition on dilution; and
- Prohibition on waste accumulation except for purposes of accumulating quantities sufficient for proper recovery, treatment, or disposal.

Each handler and transporter of universal waste must comply with all LDR requirements except for administrative requirements. Destination facilities must additionally comply with the administrative requirements.

For certain wastes, the treatment standard requires recycling. For example, cadmium-containing batteries with cadmium concentrations above 1 ppm and lead-containing batteries with lead concentrations above 5 ppm as well as mercury-containing wastes like thermostats with mercury concentrations above .2 ppm must be recycled. For these specific wastes, any other treatment process followed by land disposal is forbidden. Any residues, casings, etc., may follow other LDR treatment standards.

Acceptable UW Management Practices

Handlers are generally not allowed to treat UW batteries or thermostats without obtaining a Part B Hazardous Waste Installation and Operation Permit. However; they may conduct the following activities provided that they comply with the UWR. If the following criteria are not adhered to, then handlers are managing hazardous waste.

Universal Waste Batteries

- Sort batteries by type;
- Mix types in containers;
- Discharge batteries to remove the electric charge;
- Regenerate batteries;
- Disassemble batteries or battery packs into individual batteries;
- Remove electrolyte; and
- Remove batteries from discarded consumer products.

Universal Waste Mercury-containing Thermostats

Handlers may remove mercury- containing ampules from the thermostats provided that:

- The ampules are removed in a manner designed to prevent breakage;
- The ampules are removed only over or in a containment device (tray or pan sufficient to contain any mercury released from an ampule in case of breakage);
- A mercury clean-up system is available to immediately transfer any mercury resulting from spills or leaks from broken ampules, from the containment device to a container;
- Any mercury resulting from spills or leaks is immediately transferred from broken ampules from the containment device into non-leaking containers. The containers must be in good condition and closed upon placement of the spill material;
- The area in which ampules are removed is well-ventilated and monitored to ensure compliance with applicable OSHA exposure levels for mercury;
- The employees removing ampules are thoroughly familiar with proper waste mercury handling and emergency procedures, including transfer of mercury from containment devices to appropriate containers;
- Removed ampules are stored in closed, non- leaking containers that are in good condition; and Removed ampules are packed in containers with packing materials adequate to prevent breakage during storage, handling, and transportation.

Universal Waste Pesticides

No treatment is allowed by handlers.

Petitions for Including Other Wastes

A petition may be made to add a hazardous waste to some state's UWR. The petition must usually answer the following:

- Why the waste or category of waste is appropriate for being classified as a UW;
- How management practices for the waste or category of waste will be improved; and
- How the addition of this waste will improve the hazardous waste program under RCRA;

The petitioner should attach a statement of the need and justification for the subject of the petition, consisting of any supporting tests, studies and other information including:

- The petitioner's name and address;
- A statement of the petitioner's interest in the subject of the petition; and
- A description of the subject of the petition, including suggested regulatory language.

If you have any questions concerning the petition process please call your state's hazardous waste division.

Table 1
Universal Waste System vs. RCRA

SQHUW	LQHUW	SQG	LQG
Accumulation accumulates < 5,000 kg. Of UW at any time	Accumulates 5,000 kg. Of UW at any given time	Generates between 100 and 1,000 kg./month of hazardous waste	Generates 1,000 kg./month of hazardous waste
Handler status on a yearly basis	Handler status on a yearly basis	Generator status on a monthly basis	Generator status on a monthly basis
Storage time limit may store UW for up to one year	May store UW for up to one year	May accumulate hazardous waste for up to 180 days	May accumulate hazardous waste for up to 90 days.
Notification - No notification requirement	Notification - Required	Notification - Required	Notification - Required
Transportation - Any transporter	Transportation - Any transporter	Transportation - hazardous waste transporter	Transportation - hazardous waste transporter
Manifesting - No manifesting	Manifesting - No manifesting	Manifesting - Required	Manifesting - Required
Training - Employees who manage UW must be informed of proper handling and emergency procedures	Training - Requirement similar to SQG requirements in the HW regs	Training	Training - Training program required
Labeling - Do not label hazardous waste	Labeling - Do not label hazardous waste	Labeling - Label hazardous waste	Labeling - Label hazardous waste

This page was updated on 23-Mar-2009

Performance Characteristic Sheet

EFFECTIVE DATE: **September 24, 2004** **EDITION NO.: 1**

MANUFACTURER AND MODEL:

Make: *Niton LLC*
Tested Model: *XLp 300*
Source: ^{109}Cd
Note: This PCS is also applicable to the equivalent model variations indicated below, for the Lead-in-Paint K+L variable reading time mode, in the XLi and XLp series:

XLi 300A, XLi 301A, XLi 302A and XLi 303A.
XLp 300A, XLp 301A, XLp 302A and XLp 303A.
XLi 700A, XLi 701A, XLi 702A and XLi 703A.
XLp 700A, XLp 701A, XLp 702A, and XLp 703A.

Note: The XLi and XLp versions refer to the shape of the handle part of the instrument. The differences in the model numbers reflect other modes available, in addition to Lead-in-Paint modes. The manufacturer states that specifications for these instruments are identical for the source, detector, and detector electronics relative to the Lead-in-Paint mode.

FIELD OPERATION GUIDANCE

OPERATING PARAMETERS:

Lead-in-Paint K+L variable reading time mode.

XRF CALIBRATION CHECK LIMITS:

0.8 to 1.2 mg/cm^2 (inclusive)

The calibration of the XRF instrument should be checked using the paint film nearest 1.0 mg/cm^2 in the NIST Standard Reference Material (SRM) used (e.g., for NIST SRM 2579, use the 1.02 mg/cm^2 film).

If readings are outside the acceptable calibration check range, follow the manufacturer's instructions to bring the instruments into control before XRF testing proceeds.

SUBSTRATE CORRECTION:

For XRF results using Lead-in-Paint K+L variable reading time mode, substrate correction is <u>not</u> needed for:

Brick, Concrete, Drywall, Metal, Plaster, and Wood

INCONCLUSIVE RANGE OR THRESHOLD:

K+L MODE READING DESCRIPTION	SUBSTRATE	THRESHOLD (mg/cm^2)
Results not corrected for substrate bias on any substrate	Brick	1.0
	Concrete	1.0
	Drywall	1.0
	Metal	1.0
	Plaster	1.0
	Wood	1.0

BACKGROUND INFORMATION

EVALUATION DATA SOURCE AND DATE:

This sheet is supplemental information to be used in conjunction with Chapter 7 of the HUD *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing* ("HUD Guidelines"). Performance parameters shown on this sheet are calculated from the EPA/HUD evaluation using archived building components. Testing was conducted in August 2004 on 133 testing combinations. The instruments that were used to perform the testing had new sources; one instrument's was installed in November 2003 with 40 mCi initial strength, and the other's was installed June 2004 with 40 mCi initial strength.

OPERATING PARAMETERS:

Performance parameters shown in this sheet are applicable only when properly operating the instrument using the manufacturer's instructions and procedures described in Chapter 7 of the HUD Guidelines.

SUBSTRATE CORRECTION VALUE COMPUTATION:

Substrate correction is not needed for brick, concrete, drywall, metal, plaster or wood when using Lead-in-Paint K+L variable reading time mode, the normal operating mode for these instruments. If substrate correction is desired, refer to Chapter 7 of the HUD Guidelines for guidance on correcting XRF results for substrate bias.

EVALUATING THE QUALITY OF XRF TESTING:

Randomly select ten testing combinations for retesting from each house or from two randomly selected units in multifamily housing. Use the K+L variable time mode readings.

Conduct XRF retesting at the ten testing combinations selected for retesting.

Determine if the XRF testing in the units or house passed or failed the test by applying the steps below.

Compute the Retest Tolerance Limit by the following steps:

Determine XRF results for the original and retest XRF readings. Do not correct the original or retest results for substrate bias. In single-family housing a result is defined as the average of three readings. In multifamily housing, a result is a single reading. Therefore, there will be ten original and ten retest XRF results for each house or for the two selected units.

Calculate the average of the original XRF result and retest XRF result for each testing combination.

Square the average for each testing combination.

Add the ten squared averages together. Call this quantity C.

Multiply the number C by 0.0072. Call this quantity D.

Add the number 0.032 to D. Call this quantity E.

Take the square root of E. Call this quantity F.

Multiply F by 1.645. The result is the Retest Tolerance Limit.

Compute the average of all ten original XRF results.

Compute the average of all ten re-test XRF results.

Find the absolute difference of the two averages.

If the difference is less than the Retest Tolerance Limit, the inspection has passed the retest. If the difference of the overall averages equals or exceeds the Retest Tolerance Limit, this procedure should be repeated with ten new testing combinations. If the difference of the overall averages is equal to or greater than the Retest Tolerance Limit a second time, then the inspection should be considered deficient.

Use of this procedure is estimated to produce a spurious result approximately 1% of the time. That is, results of this procedure will call for further examination when no examination is warranted in approximately 1 out of 100 dwelling units tested.

TESTING TIMES:

For the Lead-in-Paint K+L variable reading time mode, the instrument continues to read until it is moved away from the testing surface, terminated by the user, or the instrument software indicates the reading is complete. The following table provides testing time information for this testing mode. The times have been adjusted for source decay, normalized to the initial source strengths as noted above. Source strength and type of substrate will affect actual testing times. At the time of testing, the instruments had source strengths of 26.6 and 36.6 mCi.

Testing Times Using K+L Reading Mode (Seconds)						
	All Data			Median for laboratory-measured lead levels (mg/cm^2)		
Substrate	25^{th} Percentile	Median	75^{th} Percentile	Pb < 0.25	0.25 ≤ Pb<1.0	1.0 ≤ Pb
Wood Drywall	4	11	19	11	15	11
Metal	4	12	18	9	12	14
Brick Concrete Plaster	8	16	22	15	18	16

CLASSIFICATION RESULTS:

XRF results are classified as positive if they are greater than or equal to the threshold, and negative if they are less than the threshold.

DOCUMENTATION:

A document titled *Methodology for XRF Performance Characteristic Sheets* provides an explanation of the statistical methodology used to construct the data in the sheets, and provides empirical results from using the recommended inconclusive ranges or thresholds for specific XRF instruments. For a copy of this document call the National Lead Information Center Clearinghouse at 1-800-424-LEAD.

This XRF Performance Characteristic Sheet was developed by the Midwest Research Institute (MRI) and QuanTech, Inc., under a contract between MRI and the XRF manufacturer. HUD has determined that the information provided here is acceptable when used as guidance in conjunction with Chapter 7, Lead-Based Paint Inspection, of HUD's *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing.*

Appendix H: **Inspector / Laboratory Certifications**

Certificate of Completion

This is to certify that

Matthew R. DeDominces

has satisfactorily completed
4 hours of refresher training as an

Asbestos Building Inspector

to comply with the training requirements of
TSCA Title II / 40 CFR 763 (AHERA)

110107
Certificate Number

Instructor

EPA Provider Cert. Number: 1085

ARGUS PACIFIC
TRAINING • CONSULTING

Jan 5, 2011
Date(s) of Training

Exam Score: NA

Expiration Date: Jan 5, 2012

Argus Pacific, Inc. • 1900 W. Nickerson, Suite 315 • Seattle, Washington • 98119 • 206.285.3373 • fax 206.285.3927

STATE OF WASHINGTON

Department of Commerce

Lead-Based Paint Program

Matthew R. De Dominces

Has fulfilled the certification requirements of Washington Administrative code (WAC) 365-230 and has been certified to conduct lead-based paint activities pursuant to WAC 365-230-200 as a:

Inspector

Certification #	Issuance Date	Expiration Date
6277	12/8/2010	12/8/2013

STATE OF WASHINGTON

Department of Commerce

Lead-Based Paint Program

Matthew R. De Dominces

Has fulfilled the certification requirements of Washington Administrative code (WAC) 365-230 and has been certified to conduct lead-based paint activities pursuant to WAC 365-230-200 as a:

Inspector

Certification #	Issuance Date	Expiration Date
6277	12/8/2010	12/8/2013

Certificate of Completion

This is to certify that

Matthew R. DeDominces

has satisfactorily completed
4 hours of refresher training as an

Asbestos Building Inspector

to comply with the training requirements of
TSCA Title II / 40 CFR 763 (AHERA)

110107
Certificate Number

Instructor

EPA Provider Cert. Number: 1085

ARGUS PACIFIC
TRAINING • CONSULTING

Jan 5, 2011
Date(s) of Training

Exam Score: NA

Expiration Date: Jan 5, 2012

Argus Pacific, Inc. • 1900 W. Nickerson, Suite 315 • Seattle, Washington • 98119 • 206.285.3373 • fax 206.285.3927

STATE OF WASHINGTON

Department of Community, Trade and Economic Development
Lead-Based Paint Program

Todd P. Carter

Has fulfilled the certification requirements of Washington Administrative code (WAC) 365-230 and has been certified to conduct lead-based paint activities pursuant to WAC 365-230-200 as a:

Risk Assessor

Certification #	Issuance Date	Expiration Date
0340	4/8/2009	4/10/2012

Certificate of Completion

This is to certify that

Todd P. Carter

has satisfactorily completed
4 hours of refresher training as an

Asbestos Building Inspector

to comply with the training requirements of
TSCA Title II / 40 CFR 763 (AHERA)

112065
Certificate Number

Instructor
EPA Provider Cert. Number: 1085

ARGUS PACIFIC
TRAINING • CONSULTING

May 25, 2011
Date(s) of Training
Exam Score: NA
Expiration Date: May 24, 2012

Argus Pacific, Inc. • 1900 W. Nickerson, Suite 315 • Seattle, Washington • 98119 • 206.285.3373 • fax 206.285.3927

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 101631-0

Pacific Rim Environmental, Inc.

Tukwila, WA

is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:

BULK ASBESTOS FIBER ANALYSIS

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).

2011-04-01 through 2012-03-31

Effective dates

DEPARTMENT OF COMMERCE ★ UNITED STATES OF AMERICA ★

Sally S. Bruce

For the National Institute of Standards and Technology

National Voluntary Laboratory Accreditation Program

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

Pacific Rim Environmental, Inc.
6510 Southcenter Boulevard
Suite #4
Tukwila, WA 98188
Mr. William F. Golloway
Phone: 206-244-8965 Fax: 206-244-9096
E-Mail: fgolloway@pacrimenv.com

BULK ASBESTOS FIBER ANALYSIS (PLM) **NVLAP LAB CODE 101631-0**

NVLAP Code	*Designation / Description*
18/A01	EPA-600/M4-82-020: Interim Method for the Determination of Asbestos in Bulk Insulation Samples

2011-04-01 through 2012-03-31
Effective dates

For the National Institute of Standards and Technology

PACIFIC RIM ENVIRONMENTAL, INC.
SEATTLE www.pacrimenv.com ANCHORAGE

August 8, 2011

Jonathan Kemp
ENCO
PO Box 1212
Puyallup, WA 98371

RE: Lead Testing Results – Sound Battery - PacRim# 14463

Dear Sir,

Pacific Rim Environmental, Inc. (PacRim) collected five (5) lead bulk samples from the former Sound Battery manufacturing facility located at 2310 East 11th Street in Tacoma, WA.

The samples were collected from the original wood beams and posts in the warehouse and pot room. The bulk samples were collected to determine if the battery manufacturing operations have resulted in lead contamination of the exposed wooden structural components.

The samples were collected by cutting a small section of the beam or post material using a new razor knife and placed in a sealable sample container. Each sample was given a unique identification number and submitted to the laboratory under chain-of-custody procedures.

The sample results indicate that lead dust is present on the wooden structural components tested. The depositional lead is present in the form of settled dust primarily on the horizontal surfaces. The results are summarized below in Table A. Refer to Appendix for laboratory analysis report.

TABLE A

Sample Number	Sample Location	Sample Description	Sample Result
L-1	South end of Warehouse	Painted Post	1.09
L-2	Center of Warehouse	Main Beam	9.19
L-3	Center of Warehouse	Floor Joist	15.6
L-4	Pot Room	Main Beam	0.601
L-5	Pot Room	Floor Joist	0.784

The presence of lead in the settled dust and paint coatings on the wooden structural components will trigger compliance with the Washington State Department of Ecology Dangerous Waste Regulations WAC 173-303 only if these components are designated as a waste material.

The wooden components would be exempt from these regulations should they be re-used or recycled. Should the owner wish to re-use these wooden components for residential construction purposes, the exterior surfaces should be thoroughly cleaned using HEPA vacuums to remove and collect all settled dust containing lead.

Use of appropriate personal protective equipment (PPE) and respiratory protection is advised during any activity that disturbs the lead-based paint (LBP) or lead-containing settled dust.

If you have any questions regarding this project, please contact our office and reference PacRim# 14463.

Respectfully,

Todd P. Carter
Operations Manager
Pacific Rim Environmental, Inc.

Appendix A

Lead Bulk Sample Analysis Report

EMC LABS, INC.

9830 South 51st Street, Suite B-109 / PHOENIX, ARIZONA 85044 / 480-940-5294 or 800-362-3373 / FAX 480-893-1726
emclab@emclabs.com

LEAD (Pb) IN PAINT CHIP SAMPLES
EMC SOP METHOD #L01/1 EPA SW-846 METHOD 7420

EMC LAB #:	L42517	**DATE RECEIVED:**	07/20/11
CLIENT:	Pacific Rim Environmental	**REPORT DATE:**	07/25/11
		DATE OF ANALYSIS:	07/25/11
CLIENT ADDRESS:	6510 Southcenter Blvd. #4 Tukwila, WA 98188	**P.O. NO.:**	
PROJECT NAME:	Sound Battery	**PROJECT NO.:**	14463

EMC # L42517-	SAMPLE DATE /11	CLIENT SAMPLE #	DESCRIPTION	REPORTING LIMIT (%Pb by weight)	%Pb BY WEIGHT
1	07/18	L-1	Lead Paint	0.084	1.09#*
2	07/18	L-2	Lead Paint	0.037	9.19#*
3	07/18	L-3	Lead Paint	0.54	15.6#*^
4	07/18	L-4	Lead Paint	0.071	0.601#*
5	07/18	L-5	Lead Paint	0.077	0.784#*

^ = Dilution Factor Changed * = Excessive Substrate May Bias Sample Results **BRL** = Below Reportable Limits # = Very Small Amount Of Sample Submitted, May Affect Result

This report applies to the standards or procedures identified and to the samples tested only. The test results are not necessarily indicative or representative of the qualities of the lot from which the sample was taken or of apparently identical or similar products, nor do they represent an ongoing quality assurance program unless so noted. Unless otherwise noted, all quality control analyses for the samples noted above were within acceptable limits.

Where it is noted that a sample with excessive substrate was submitted for laboratory analysis, such analysis may be biased. The lead content of such sample may, in actuality, be greater than reported. EMC makes no warranty, express or implied, as to the accuracy of the analysis of samples noted to have been submitted with excessive substrate. Resampling is recommended in such situations to verify original laboratory results.

ANALYST: Jason Thompson

QA COORDINATOR: Kurt Kettler

Rev. 11/30/08

FIELD PROCEDURES

NEAR SURFACE SOIL & GROUNDWATER
SAMPLING AND ANALYSIS INVESTIGATION

Sound Battery
2310 East 11th Street
Tacoma WA 98421

Date of Field Work: July 18 & 19, 2011

1.0 PURPOSE

The purpose for documenting probehole and monitoring well installation techniques and sampling and testing protocols is to specify the Quality Assurance procedures that were used to ensure that sample collecting, handling, documenting, transporting to the laboratory, and analytical test methods resulted in data of sufficient quality to evaluate near surface conditions at the indicated locations on the project site.

The procedures presented in this document do not include the field work associated with Regulated Building Materials (RBM) survey. Field activities for the RBM survey are documented in the report prepared by Pacific Rim Environmental, Inc. that is included in the appendix to the report.

2.0 KEY PERSONNEL

A principal environmental scientist at **EnCo** was the project manager for this project. The environmental scientist is a Washington State Certified Site Assessor with over twenty-five years of experience in laboratory management, environmental media sampling, investigations, and project site cleanup work. An **EnCo** employee created the project site figures.

The field crew consisted of the **EnCo** project manager, two, well-trained, contracted hydraulic probe operators (Pacific Northwest Probe and Drilling), and a contracted professional concrete cutting operator (Evergreen Concrete Cutting, Inc.). The RBM survey included hiring a contracted AHERA accredited building inspector and a Washington State Department of Commerce certified lead inspector (Pacific Rim Environmental, Inc.).

Both private and public utility location companies provided in-field location and marking of surface and sub-surface utilities prior to performing any subsurface work. A Washington State licensed hydrogeologist was contracted to prepare the surficial groundwater gradient and flow direction figure. The licensed hydrogeologist will also

review subsurface geologic conditions and the hydrogeologic data referenced in the report.

The Washington Department of Ecology (ECOLOGY) has accredited the analytical testing laboratory used during this project. The laboratory contracted for this project was Friedman & Bruya, Inc. of Seattle, Washington. References to the test methods calibration procedures, data validation, internal quality control checks, performance standards, system audits, preventative maintenance, precision, and accuracy are part of the standard protocols of the referenced testing laboratory.

3.0 SAFETY & HEALTH

The landowner provided access to the project site and information pertaining to known or suspected hazardous and toxic substances on the property. An abbreviated site Safety and Health Plan (SHP) presented in **APPENDIX C** was used for **EnCo** employees who worked in the "hot zone" on the project site. The SHP was reviewed with **EnCo** staff prior to performing field activities. **EnCo** personnel directly involved with handling contaminated media had a minimum of 48 hours of hazardous materials, safety, and health training that meets the requirements of WAC 296-62 and OSHA 1910.120. **EnCo** employees attend an annual 8-hour refresher training for Hazardous Waste Operations and Emergency Response which complies with OSHA 29 CFR 1910.120 for **EnCo** field employees.

EnCo personnel in close contact with contaminated media used safety Level D-Modified when collecting media samples and when decontaminating sampling equipment. Protective equipment included wearing a hard hat, nitrile and PVC gloves, safety glasses, moldable ear protection, coveralls, and rubber-lined, steel-shanked boots.

Sampling personnel did not handle potentially hazardous and toxic substances without personal protection, did not use permanent marking pens when testing for volatile organic compounds, wear/apply fragrances, chew gum, eat food, or smoke cigarettes/cigars during the field work. Care was taken to minimize negative impacts to samples from exhaust generated from internal combustion engines. This was accomplished by collecting the discrete soil samples from the sealed liners and collecting groundwater from battery operated pumps when internal combustion engines were not operating. Sampling equipment was stored in clean, covered containers or zip lock bags to prevent contamination prior to use. Hands were routinely washed with non-phosphate, laboratory grade, detergent followed with a distilled water rinse and wiped dry with clean paper towels at each discrete sample location.

Both private and public utility location companies were contacted and these outfits provided in-field identification and marking of surface and sub-surface utilities prior to performing any subsurface work. Both public and private subsurface utility locate companies deemed safe the areas to be investigated and sampled prior to initiating concrete cutting, drilling, probing, digging, and/or excavation activities. Field sampling

equipment was carefully handled to minimize the potential for injury and the spread of hazardous and toxic substances.

4.0 SOIL PROBING

Prior to probing the contractor reportedly completed the Notice of Intent to Construct a Monitoring/Resource Well forms (Start Cards). These forms under state law must be submitted by the contractor to the appropriate regulatory agency (ECOLOGY).

Probeholes were hydraulically advanced with a vehicle-mounted probe rig. The compact AMS PowerProbe 9500D / 9100P was affixed to a Bob Cat Model No. 463 with rubber tires. The probe device consists of a Geoprobe macro pore system with steel rods affixed at the bottom with a 2 foot long, 2 inch, outside diameter (OD) hollow steel rod used to hold the inserted liners for continuous sampling. Liners consist of new, PVC/acetate materials and are 2.8' long and 1.5 inch OD.

Up to five vertically-aligned soil samples were collected to assess the vertical trend of contamination, with most probeholes consisting of two, vertically-aligned soil samples. Limited lateral-oriented soil samples were collected to assess the horizontal trend of contamination as depicted on the probehole location figure (**FIGURE 5**). Samples were screened in the field using visual and olfactory evidence. The vertical and horizontal extent of contamination at every probehole was not defined due to time and budget constraints.

Dual tube sampling was used for collecting undisturbed soil samples with the hydraulically advanced PowerProbe™ unit through the probehole. With the AMS dual tube tooling system, both discrete and continuous depth samples are possible. The 2 - inch OD diameter steel external direct push extension (drive spoon) acts as the sampler body and cases the probehole to minimize the chance of cross contamination while displacing soils during direct push penetration. The internal direct push hollow extension rod was attached to a 1½ - inch OD diameter, clean acetate liner which was inserted into the external direct push extension. Both are simultaneously driven into the soil to fill the liner. The internal string was then removed to recover the sample. The plastic liner was split open laterally with a clean sharp blade for observation and sample collection. Soil samples were collected from the inserted acetate liners at pre-determined measured depths that were measured and then marked along the outside of the liner. When possible, samples were taken from undisturbed areas within the collection device.

The AMS PowerProbe ^{TM} mechanism is further described below.

- The dual tube sampler is pushed to the depth where soil sampling is to begin.
- Once at the desired depth the internal direct push extension attached to the internal drive tip is removed.

- A plastic liner was added with a liner grabber, internal and external direct push extensions, thread protector cap, and direct push extension drive head.
- The direct push extensions are pushed simultaneously approximately to the same length as the liner that was inserted.
- The liner with sample in the internal extension rod was removed and placed on a level surface such as a portable table.
- Continuous or specific depth sampling was conducted by repeating the previous three steps to the maximum desired depth.
- The liner was carefully removed from the direct push extension device and sliced open vertically with a clean knife to expose the undisturbed soil plug.
- The depth of the soil sample was measured and marked on the liner and documented on the field form.
- A discrete soil sample was collected directly from the split opened liner and placed into an appropriate sample jar for analysis. Soil texture was determined after laboratory sample collection. Digital photographs were taken on select samples for inclusion into the photographic log.

After discrete samples were collected each probehole was decommissioned according to the State of Washington probehole closure protocol. Each probehole (including the removed temporary monitoring wells) was filled from the bottom to about six inches below ground surface with 3/8 inch bentonite plug. The bentonite plug was slightly hydrated in place by adding clean tap water from the ground surface. An approximate 4-inch thick layer of crushed asphalt mixed with at least 10 percent bentonite was poured to the ground surface in the probehole annulus above the bentonite pellet plug with bituminous asphalt surfaces. The surface of the concrete/bentonite layer was hand-packed with a heavy metal hammer. An approximate 4-inch to 6-inch thick layer of mixed Sacrete was poured to the ground surface in the probehole annulus above the bentonite pellet plug with concrete slab surfaces. The surface of the concrete/bentonite layer was troweled level. A **LOG OF PROBEHOLES** is presented in **APPENDIX C**.

Soils were logged based on visual classification of the liner samples and probe rig response to approximate the subsurface stratification. Excess probed soil was placed into a DOT 17h, 25-gallon, metal drum with an open lid. The excess soils placed in the drum are stored inside the building and will be disposed of when the identified contaminated soil is remediated.

5.0 MONITORING WELL MATERIALS AND INSTALLATION

The temporary groundwater monitoring well materials consist of new ¾-inch, nominal diameter, Schedule 40, flush-threaded, PVC pipe. No solvent glues were used during installation. Manufacturer-slotted 0.01-inch well screen was installed at the bottom of boreholes converted to monitoring wells. Attached to the well screen and extending above the ground surface was a ¾-inch, nominal-diameter, solid stem, riser PVC pipe.

The probehole annulus was not packed with sand and bentonite prior to sampling because the installed monitoring wells were temporary. After groundwater sampling the wells were pulled out of the ground. A bentonite chip plug was installed in the borehole annulus from the bottom of the probehole to about 6 inches bgs. A 4-inch to 6-inch thick cement (Sacrete) layer was installed to the ground surface in the borehole annulus above the bentonite chip plug. The **LOG OF TEMPORARY MONITORING WELLS** and monitoring well construction details are described on **HYDRAULICALLY PROBED MONITORING WELL CONSTRUCTION DETAILS** in **APPENDIX C**.

6.0 MONITORING WELL DEVELOPMENT

The static water level and bottom of casing measurements were made using a Solinst Model # 101 water level meter. The meter cable is graduated into 1/100 foot intervals. The volume of standing water in each well was calculated by using the measured static water level and the measured depth of groundwater in the well down to the bottom of the well. The wells were developed immediately after installation by withdrawing at least 4 volumes of standing water out of each well with a Geotech GeoSub peristaltic pump. The pump was powered using a 12-Volt, marine, deep cycle, lead acid battery affixed to a DC flow rate controller.

Purge water was collected in a 5-gallon pail and the volume collected was noted on a field form. The purged groundwater was poured from the pails into the 25-gallon metal drum used to contain excess probe soils from the liners and other generated waste materials such as gloves, labels, and paper towels. The temporary monitoring wells were not professionally land surveyed for elevations and locations at this time.

7.0 SAMPLE LOCATION & TESTING RATIONALE

7.1 Number of Samples Collected

The total number of media (soil and groundwater) samples collected is presented in the attached report. Samples were designated using a unique alphanumeric number. The number of samples collected was determined by a combination of many factors as listed below:

- Reviewing previous remediation investigations, sample test results, and cleanup activities performed on the project site (GeoSystems Analysis, Inc. 1998 – 2002).

- The recognized environmental conditions identified during a 2011 Phase I ESA (Hart Crowser – 2011).
- To investigate, to a limited degree, the vertical and horizontal trends of suspect soil and groundwater lead contamination due to historical land use practices (acid core lead battery manufacturing).
- Observed areas of suspect contamination.
- Observed texture and characteristics of soil in the sampling liners.
- Review and comments made by technical personnel from the Port of Tacoma.

7.2 Chemicals of Concern

Selected areas reported and/or suspected of contamination were investigated for the chemicals of concern (COCs) as listed below.

- Total Lead (Soil & Groundwater)
- Dissolved Lead (Groundwater)
- pH (Soil & Groundwater)

Laboratory parameters were selected based on:

- Products and raw materials historically used on the project site.
- Contaminants commonly found at acid-core lead battery manufacturing facilities.
- Observed areas of suspect contamination.

7.3 Sample Locations

Sample locations were selected based on reported historical land use practices related to the former lead battery manufacturing processes, waste disposal activities, and bulk chemical storage areas. Sample locations were deemed at a safe distance from indentified utilities, buildings, landscaping, and other structures. Judgmentally selected samples were collected at locations presented on **FIGURE 5**. Judgmental and randomly selected samples were collected at several locations as listed below:

- Beneath the concrete slab of the first addition located west of the main building
- Beneath the bituminous asphalt surface of the second addition located south of the main building
- Beneath bituminous asphalt surfaces west and east of the building.
- Beneath the front loading dock, lead melting pots, assembly and battery charge area, acid tank storage areas, and the battery case painting area.
- Adjacent to the sealed floor drain / trench in the second addition.

Background Soil Samples

Two soil sample locations (4 discrete soil samples) were collected from an area that was assumed not affected from source(s) of the suspected or identified contamination. These samples were used for the purpose of establishing a background quality control check. The background soil samples were collected from an area that has the same

basic characteristics as the medium of concern at the project, has not been reportedly influenced by suspect or known releases from the site, and has not been influenced by releases from other localized human activities. Specifically the background quality control check was used to confirm the extent, if any, of lead contamination in near surface soil from battery manufacturing on the project site and from historical land use activities such as from the previous Asarco smelting operation in the region. The background soil samples were collected beneath the concrete slab of the original building.

7.4 Media Sampled

Soil

Soil samples were collected from beneath concrete slabs, bituminous asphalt, former acid tanks, adjacent to the sealed floor drain / trench, and other recognized environmental conditions.

Groundwater

One round of groundwater samples were collected from two temporarily installed groundwater monitoring wells. The monitoring wells were installed near the inlet and outlet of the former drain / trench in the second addition.

8.0 SAMPLING & ANALYSIS

8.1 SAMPLE DOCUMENTATION

Information pertaining to each sample and location was entered into a field logbook and onto a media sample form immediately after collection. The field notes contain information such as a unique identification number, person collecting the sample, depth interval, location, time, date, appearance, odor, texture, and other observed characteristics. Media samples were designated with a unique number using the following format:

Soil Samples: SB – SO – 1A – 0.5’

SB: Project Site = Sound Battery
SO: Sample Media (**SOIL**)
1A: Sample Number 1A
0.5’: Depth Below Ground Surface in Feet

Water Samples: SB – WA -1

SB: Project Site = Sound Battery
WA: Sample Media (**WATER**)
1: Sample Number

Sample locations were labeled in field with spray paint and were then hand sketched onto a project site map on the same day of sampling. Each sample location was manually measured to convenient benchmarks using a Leica laser distance meter. The benchmarks used to measure in the sample locations were the north, east, south and west walls of the building. We estimated the location of building, doors, structures, and utilities and generated a site map by using other consultants maps (Hart Crowser & GeoSystems Analysis). These figures were used to place our measurements onto a to-scale project site plan. The data depicted on all figures shall be considered accurate only to the degree permitted by the data sources and implied by the measuring methods.

8.2 SOIL SAMPLING

Soil samples were collected and analyzed in accordance with the sampling requirements of WAC 173-340-410. Soil quality was determined by collecting two types of compliance samples: **Background** and **Assessment**.

Grab soil samples were collected for this project. Each sample was obtained in accordance with appropriate sampling protocol including labeling, packaging, preserving, bottle type, holding time, transporting, and delivering under standard Chain-of-Custody procedures. Each jar was properly labeled with a project name, sample location, chemicals of concern, date, time, preservation requirement, sampler initials, and type of sample.

Soil samples were carefully placed into clean, 4 ounce, borosilicate glass jars with steel-lined screw-top lids. The outside surface of each sample container was wiped clean with a clean paper towel, placed into a clean zip lock bag or other suitable container, and placed into insulated plastic coolers. Cubed ice was placed into the cooler to preserve samples during transport to the analytical testing laboratory. Soil samples were delivered to the accredited laboratory by a common carrier within the required holding time for the COCs.

Non-volatile chemicals such as heavy metals and pH were collected with clean stainless steel spoons after the sampling liners were split open with a clean knife. The depth of each soil sample was measured and marked on the outside surface of each liner prior to sample withdrawal. A soil sample was carefully removed from the liners and placed into clean glass jars. The lids were secured tightly, placed in a clean zip-lock bag, and placed in a cooler with cubed ice.

8.3 GROUNDWATER SAMPLING

Groundwater samples were collected and analyzed in accordance with the sampling requirements of WAC 173-340-410. Water quality was determined by collecting one type of compliance sample: **Assessment**.

Grab soil samples were collected for this project. Each sample was obtained in accordance with appropriate sampling protocol including labeling, packaging, preserving, bottle type, holding time, transporting, and delivering under standard Chain-of-Custody procedures. Each jar was properly labeled with a project name, sample location, chemicals of concern, date, time, preservation requirement, sampler initials, and type of sample.

Groundwater from the wells was sampled immediately after development by suction pumping with a Geotech GeoSub peristaltic pump. The pump was powered using a 12-Volt, marine, deep cycle, lead acid battery affixed to a DC flow rate controller.

Groundwater samples were collected into clean, 500 ml, plastic, narrow mouth bottles with proper preservative and sealed with screw-top lids. Dissolved lead samples were collected by inserting a 0.45 micro meter filter onto a new 10 cc plastic syringe and then forcing the water through the filter into the sample bottle. The outside surface of each sample container was wiped clean with a clean paper towel, placed into a clean zip lock bag or other suitable container, and placed into insulated plastic coolers. Cubed ice was placed into the cooler to preserve samples during transport to the analytical testing laboratory. Groundwater samples were delivered to the accredited laboratory by a common carrier within the required holding time for the COCs.

9.0 CLEANING PROCEDURES

An easily accessible area was provided at the project site where cleaning, sampling and monitoring equipment was stationed (front loading dock). Sampling equipment was cleaned prior to and at the completion of the work with an Alconox soap solution followed by tap water and distilled water rinses. These procedures were performed to reduce the potential for cross contamination between discrete sample locations. The working end of the hand tools were cleaned by scraping adhering soil from the tools and washing with an Alconox soap solution. A tap water rinse followed with a distilled water rinse was performed before use at each discrete sample location. Municipal tap water was used for cleaning procedures and bottled distilled water was purchased at a local department store.

Cleaning fluids were visually inspected after decontaminating the sampling tools. The cleaning fluids did not appear to be grossly contaminated (no odor or sheen) and were disposed of in the parking lot north of the building (away from sample locations). Probing equipment and down-hole sampling equipment was cleaned prior to and at the completion of the field exploration with tap water and Alconox detergent. Hollow steel downhole sampling devices were hand washed with soapy water followed by a clean tap water rinse between samples. Downhole cleaning fluids, purge water, and soils remaining in the liners after sample collection were placed into a 25-gallon DOT 17h 25-gallon open-ended drum to be disposed of at a later date.

10.0 MAP PLOTTING

A professional land surveyor was not contracted for this project. Site features, structures, buildings, landscaping, probeholes, temporary monitoring wells, and known subsurface utilities were measured in the field using a Leica laser distance meter for the purpose of creating approximate “to-scale” site plan and sample location figure. Plotted data depicted on all figures are considered accurate only to the degree permitted by the data sources and implied by the measuring methods.

Sample Form: Soil (SO)/Sediment (SD)/Residue RS)/Sludge(SL)

Sample Location Reference:

ST (i.e. Sound Transit) -SO (Soil) – 1A - 14' (depth bgs) 08.12.11

Sample Number: _____ Time: _____ Date: _____ Sheet ___ of ___
Media: _____ Project Name: _____Project #: _____
Source: ☐Pile ☐Trench ☐Drum ☐Basin ☐Auger Cuttings ___☐Split Spoon ID __ ☐Liner ID__
Type: ☐Surface ☐Bottom ☐Wall (N E S W)_☐Under Slab ☐Under Asphalt
Moisture: Wet, Very Moist, Moist, Slight Moist, Dry ☐Sheen Test: _____ ☐Water Sheen: _____
Zone: ☐Saturated ☐Smear/Capillary ☐Vadose ☐Aquitard (Top/Under) ☐Water Depth: _____
Compliance: ☐Profile ☐Performance ☐Confirm ☐Background ☐Stockpile ☐Assessment
☐QC ☐Protection ☐Removed ☐Future Removal ☐Left-In-Place _____
Sample Type: ☐Grab ☐Composite **Coarse**: Very Dense/Dense/Loose **Fines**: Soft/Stiff/Hard
Odor: Gas/Diesel/Fuel Oil/Motor Oil/Solvent/Musty/Septic/None **Strength**: Strong/Moderate/ Slight
Organic Vapor (*10.2*, *11.7*): Empty Bag: ____ Headspace in Bag: _____ Ground Surface: _____
Organic Vapor: Breathing Zone: _____ Cutting/Auger Flight/Liner ____ Probe Hole Void:_____
PID Lamp 9.8/10.6/11.7 **Cal Date:** _____**Equipment**: ☐Drill ☐Probe ☐Spoon ☐Trier ☐Syringe
Problems: _____ ☐Decon Station
☐**Vertical** Sample _____
☐**Horizontal** Sample ___
Chemical ☐See C-O-C ☐None ☐VOC ☐BTEX
☐Gas ☐Diesel/Oil ☐cPAH ☐PCB ☐Metals
Sample Waste ☐Drum ☐ Off-Site Disposal
Sampler: ☐JK ☐ ___ Total Bottle #:__

Layer	Color	Texture
Length of soil in spoon/liner:		

Sample Form: Soil (SO)/Sediment (SD)/Residue (RS)/Sludge(SL)

Sample Location Reference:

ST (i.e. Sound Transit) -SO (Soil) – 1A - 14' (depth bgs) 08.12.11

Sample Number: _____ Time: _____ Date: _____ Sheet ___ of ___
Media: _____ Project Name: _____Project #: _____
Source: ☐Pile ☐Trench ☐Drum ☐Basin ☐Auger Cuttings ___☐Split Spoon ID __ ☐Liner ID__
Type: ☐Surface ☐Bottom ☐Wall (N E S W)_☐Under Slab ☐Under Asphalt
Moisture: Wet, Very Moist, Moist, Slight Moist, Dry ☐Sheen Test: _____ ☐Water Sheen: _____
Zone: ☐Saturated ☐Smear/Capillary ☐Vadose ☐Aquitard (Top/Under) ☐Water Depth: _____
Compliance: ☐Profile ☐Performance ☐Confirm ☐Background ☐Stockpile ☐Assessment
☐QC ☐Protection ☐Removed ☐Future Removal ☐Left-In-Place _____
Sample Type: ☐Grab ☐Composite **Coarse**: Very Dense/Dense/Loose **Fines**: Soft/Stiff/Hard
Odor: Gas/Diesel/Fuel Oil/Motor Oil/Solvent/Musty/Septic/None **Strength**: Strong/Moderate/ Slight
Organic Vapor (*10.2*, *11.7*): Empty Bag: ____ Headspace in Bag: _____ Ground Surface: _____
Organic Vapor: Breathing Zone: _____ Cutting/Auger Flight/Liner ____ Probe Hole Void:_____
PID Lamp 9.8/10.6/11.7 **Cal Date:** _____**Equipment**: ☐Drill ☐Probe ☐Spoon ☐Trier ☐Syringe
Problems: _____ ☐Decon Station
☐**Vertical** Sample _____
☐**Horizontal** Sample ___
Chemical ☐See C-O-C ☐None ☐VOC ☐BTEX
☐Gas ☐Diesel/Oil ☐cPAH ☐PCB ☐Metals
Sample Waste ☐Drum ☐ Off-Site Disposal
Sampler: ☐JK ☐ ____ Total Bottle #:__

Layer	Color	Texture
Length of soil in spoon/liner:		

Groundwater Well / Piezometer Sample Form

☐ Final QC

❑ Well Identification and Job Number	Well #: SB 1-WA	Date: 7.19.2011	Job #: E2JK-DykmanTac-2
❑ Well Install Date & Reference Location on Project Site	Inlet to abandoned trench drain inside building		Well installed on 7.19.2011
❑ Project Site Contact Person	Person: Marvin Dykman / Bill Evans		Telephone:
❑ Project Site Location Address	2310 East 11th Street, Tacoma WA, PN 2275200770		
❑ Sampler(s) and Company	Sampler(s): Jonathan M. Kemp		Company: EnCo Environmental Corp
❑ Laboratory	Freidman & Bruya, Seattle		Telephone:
❑ Driller/Prober	Pacific Northwest Probe & Drill, Milton		Telephone:
❑ Weather and Barometer Reading (Rising / Falling)	Cloudy, 58 degrees, no rain, falling barometer		
❑ Security Condition of Well ☒ New Well	☐ Bolted	☐ Locked	☐ Capped
❑ Well Casing Material and Diameter	**PVC**, screw type, no glues		Well Size: ¾"
❑ Type of Well	☐ Permanent ☒ Temporary		Date Removed: 7.19.2011
❑ Filtered in Field	☒ Yes 0.45 um on a syringe		☐ No
❑ Photos Taken	☒ Yes		☐ No
❑ Ice In Cooler	☒ Yes		☐ No
❑ Chain of Custody Seal on Sample Container	☐ Yes		☒ No
❑ Length and Diameter of Tubing Placed in Well	Length: 10 feet		ID Diameter: 0.25"
❑ Parameters (See Chain-of-Custody Form)	Total and Dissolved Lead and pH		
❑ Depth to Static Water from TOC (ft) @ North Rim	7.72 feet		☒ Water in Well
❑ Ground Surface to TOC (ft) @ North Rim (+ or -)	+1.27 feet		Stick Up
❑ Depth to Water from Ground Surface	6.45 feet		
❑ Well Screen Interval bgs	9 feet to 4 feet		☒ Sampled in Screen Interval
❑ Bottom of Casing from TOC @ North Rim	9 feet		
❑ Sediment in Bottom	☐ Yes ☐ No ☒ Unknown		
❑ Was TOC Land Surveyed to a Benchmark	☐ Yes ☒ No		
❑ Elevation at Ground Surface (MSL)	N/A		
❑ Elevation at TOC @ North Rim	N/A		
❑ Elevation at SWL (MSL)	N/A		
❑ Benchmark and Elevation	N/A		
❑ Immiscible Layers (observed or interphase meter)	Top: None Observed		Bottom: Unknown
❑ Tidal Influence	High Tide: -		Low Tide: -
❑ Purge & Sampling Equipment	**Purge**: GeoTech Peristaltic Pump		**Sampling**: Same as purge
❑ Purge Date and Time	Date: 7.19.11 Purge Time: 10:25 - 10:55		Date: 7.19.11 Sample Time:10:55
❑ Purge/Sampling Rate (seconds per 1 cup – 8 ounces)	Purge Rate:		Sampling Rate:
❑ Purge/Sampling Rate (minutes per 1 gallon – gpm)	Purge Rate: ¼ gallon per minute		Sampling Rate: Same as purge
❑ VOC Sampling Rate (seconds per 1 cup)			VOC Sampling Rate: N/A
❑ Well Diameter, Standing Water Depth, & 4 Volumes	1", 9.0 – 7.72 = 1.28'		4 Volumes: 0.21 gallon
❑ Borehole Diameter and 4 Volumes (gallons)	Borehole Diameter: 3"		4 Volumes: 1.9 gallons
❑ Purge Water Volume and Disposal	Purge Volume: 4 gallons		Disposal: On-site drum
❑ Organic Vapor Instrument & Reading (Well Casing)	N/A		
❑ Well Yield	☒ High	☐ Medium	☐ Low
❑ Purge Water Appearance:	**INITIAL**: Brown gray, turbid		**END**: Tan, light turbid
❑ pH, Conductivity, DO, ORP Meter Calibration	Calibration Date: N/A	Buffer Expiration Date:	Field Test Instrument:
❑ Stability Temperature Degrees C (field) 1, 2, 3			
❑ Stability Conductivity µS/cm³ (field) 1, 2, 3			
❑ Stability pH units (field) 1, 2, 3			
❑ Stability DO mg/L (field) 1, 2, 3			
❑ Stability ORP mV (field) 1, 2, 3			
❑ **Start** Sample Appearance, Odor, and Sheens			
❑ **Finish** Sample Appearance, Odor, and Sheens	Light tan with light turbidity Filtered Sample was clear		
❑ Sample Temperature (Degrees C):	**Start:**		**Finish:**
❑ Sample Conductivity µS/cm³ (field):	**Start:**		**Finish:**
❑ Sample pH (field):	**Start:**		**Finish:**
❑ Sample Dissolved Oxygen (mg/L)			
❑ Sample Oxidation Reduction Potential			
❑ Sample Ferrous Iron Field Kit Test Result (mg/L)			
❑			
❑ Gasket and Monument Condition	Well removed after sampling		
❑ Maintenance Requirements	None, well properly decommissioned		

Updated on 07.22.11

Groundwater Well / Piezometer Sample Form

☐ **Final QC**

❑ Well Identification and Job Number	Well #: SB 2-WA	Date: 7.19.2011	Job #: E2JK-DykmanTac-2
❑ Well Install Date & Reference Location on Project Site	Outlet to abandoned trench drain outside building		Well installed 7.19.2011
❑ Project Site Contact Person	Person: Marvin Dykman / Bill Evans		Telephone:
❑ Project Site Location Address	2310 East 11th Street, Tacoma WA, PN 2275200770		
❑ Sampler(s) and Company	Sampler(s): Jonathan M. Kemp		Company: EnCo Environmental Corp
❑ Laboratory	Freidman & Bruya, Seattle		Telephone:
❑ Driller/Prober	Pacific Northwest Probe & Drill, Milton		Telephone:
❑ Weather and Barometer Reading (Rising / Falling)	Cloudy, 58 degrees, no rain, falling barometer		
❑ Security Condition of Well ☒ New Well	☐ Bolted	☐ Locked	☐ Capped
❑ Well Casing Material and Diameter	**PVC**, screw type, no glues		Well Size: ¾"
❑ Type of Well	☐ Permanent ☒ Temporary		Date Removed: 7.19.2011
❑ Filtered in Field	☒ Yes 0.45 um on a syringe		☐ No
❑ Photos Taken	☒ Yes		☐ No
❑ Ice In Cooler	☒ Yes		☐ No
❑ Chain of Custody Seal on Sample Container	☐ Yes		☒ No
❑ Length and Diameter of Tubing Placed in Well	Length: 10 feet		ID Diameter: 0.25"
❑ Parameters (See Chain-of-Custody Form)	Total and Dissolved Lead and pH		
❑ Depth to Static Water from TOC (ft) @ North Rim	7.84 feet		☒ Water in Well
❑ Ground Surface to TOC (ft) @ North Rim (+ or -)	+1.55 feet		Stick Up
❑ Depth to Water from Ground Surface	6.29 feet		
❑ Well Screen Interval bgs	9 feet to 4 feet		☒ Sampled in Screen Interval
❑ Bottom of Casing from TOC @ North Rim	9 feet		
❑ Sediment in Bottom	☐ Yes ☐ No ☒ Unknown		
❑ Was TOC Land Surveyed to a Benchmark	☐ Yes ☒ No		
❑ Elevation at Ground Surface (MSL)	N/A		
❑ Elevation at TOC @ North Rim	N/A		
❑ Elevation at SWL (MSL)	N/A		
❑ Benchmark and Elevation	N/A		
❑ Immiscible Layers (observed or interphase meter)	Top: None Observed		Bottom: Unknown
❑ Tidal Influence	High Tide: -		Low Tide: -
❑ Purge & Sampling Equipment	**Purge**: GeoTech Peristaltic Pump		**Sampling**: Same as purge
❑ Purge Date and Time	Date: 7.19.11 Purge Time: 9:30 to 10:00		Date: 7.19.11 Sample Time:10:05
❑ Purge/Sampling Rate (seconds per 1 cup – 8 ounces)	Purge Rate:		Sampling Rate:
❑ Purge/Sampling Rate (minutes per 1 gallon – gpm)	Purge Rate: ¼ gallon per minute		Sampling Rate: Same as purge
❑ VOC Sampling Rate (seconds per 1 cup)			VOC Sampling Rate: N/A
❑ Well Diameter, Standing Water Depth, & 4 Volumes	1", 9.0 – 7.84 = 1.16'		4 Volumes: 0.19 gallon
❑ Borehole Diameter and 4 Volumes (gallons)	Borehole Diameter: 3"		4 Volumes: 1.7 gallons
❑ Purge Water Volume and Disposal	Purge Volume: 4 gallons		Disposal: On-site drum
❑ Organic Vapor Instrument & Reading (Well Casing)	N/A		
❑ Well Yield	☒ High	☐ Medium	☐ Low
❑ Purge Water Appearance:	**INITIAL**: Brown gray, turbid		**END**: Tan, light turbid to clear
❑ pH, Conductivity, DO, ORP Meter Calibration	Calibration Date: N/A	Buffer Expiration Date:	Field Test Instrument:
❑ Stability Temperature Degrees C (field) 1, 2, 3			
❑ Stability Conductivity µS/cm^3 (field) 1, 2, 3			
❑ Stability pH units (field) 1, 2, 3			
❑ Stability DO mg/L (field) 1, 2, 3			
❑ Stability ORP mV (field) 1, 2, 3			
❑ **Start** Sample Appearance, Odor, and Sheens			
❑ **Finish** Sample Appearance, Odor, and Sheens	Light tan with light turbidity Filtered Sample was clear		
❑ Sample Temperature (Degrees C):	**Start:**		**Finish:**
❑ Sample Conductivity µS/cm^3 (field):	**Start:**		**Finish:**
❑ Sample pH (field):	**Start:**		**Finish:**
❑ Sample Dissolved Oxygen (mg/L)			
❑ Sample Oxidation Reduction Potential			
❑ Sample Ferrous Iron Field Kit Test Result (mg/L)			
❑			
❑ Gasket and Monument Condition	Well removed after sampling		
❑ Maintenance Requirements	None, well properly decommissioned		

Updated on 07.22.11

Groundwater Well / Piezometer Sample Form

☐ Final QC

❑	Well Identification and Job Number	Well #: MW-1	Date: 7.19.2011	Job #: E2JK-DykmanTac-2
❑	Well Install Date & Reference Location on Project Site	NW corner, outside, near East 11th Street		Well installed in 1997
❑	Project Site Contact Person	Person: Marvin Dykman / Bill Evans		Telephone:
❑	Project Site Location Address	2310 East 11th Street, Tacoma WA, PN 2275200770		
❑	Sampler(s) and Company	Sampler(s): Jonathan M. Kemp		Company: EnCo Environmental Corp
❑	Laboratory	Unknown		Telephone:
❑	Driller/Prober	Unknown		Telephone:
❑	Weather and Barometer Reading (Rising / Falling)	Cloudy, 58 degrees, no rain, falling barometer		
❑	Security Condition of Well ☐ New Well	☒ Bolted	☐ Locked	☒ Capped
❑	Well Casing Material and Diameter	**PVC**		2”
❑	Type of Well	☒ Permanent ☐ Temporary		Date Removed: N/A
❑	Filtered in Field	☐ N/A		☐ No
❑	Photos Taken	☐ Yes		☒ No
❑	Ice In Cooler	☐ Yes		☐ No
❑	Chain of Custody Seal on Sample Container	☐ Yes		☐ No
❑	Length and Diameter of Tubing Placed in Well	Length:		ID Diameter:
❑	Parameters (See Chain-of-Custody Form)	Static water level only		
❑	Depth to Static Water from TOC (ft) @ North Rim	6.07 feet		☒ Water in Well
❑	Ground Surface to TOC (ft) @ North Rim (+ or -)	Not measured		Flush Mount
❑	Depth to Water from Ground Surface	Unknown		
❑	Well Screen Interval bgs (GeoSystems)	14 feet to 9 feet		☐ Sampled in Screen Interval
❑	Bottom of Casing from TOC @ North Rim	14 feet (GeoSystems)		
❑	Sediment in Bottom	☐ Yes ☐ No ☒ Unknown		
❑	Was TOC Professionally Surveyed to a Benchmark	☐ Yes ☐ No ☒ Unknown		
❑	Elevation at Ground Surface (MSL)	Unknown		
❑	Elevation at TOC @ North Rim	10.48 (GeoSystems – Table 5 in 10.23.98 report)		
❑	Elevation at SWL (MSL or Assumed)	10.48 – 6.07 = **4.41’ MSL**		
❑	Benchmark and Elevation (GeoSystems)	City of Tacoma NGVD29 Elev		
❑	Immiscible Layers (observed or interphase meter)	Top: None Observed		Bottom: Unknown
❑	Tidal Influence	High Tide: -		Low Tide: -
❑	Purge & Sampling Equipment	**Purge**: N/A		**Sampling**: N/A
❑	Purge Date and Time	Date: Purge Time:		Date: Sample Time: SWL @ 4:00
❑	Purge/Sampling Rate (seconds per 1 cup – 8 ounces)	Purge Rate:		Sampling Rate:
❑	Purge/Sampling Rate (minutes per 1 gallon – gpm)	Purge Rate:		Sampling Rate:
❑	VOC Sampling Rate (seconds per 1 cup)			VOC Sampling Rate: N/A
❑	Well Diameter, Standing Water Depth, & 4 Volumes	2”		4 Volumes:
❑	Borehole Diameter and 4 Volumes (gallons)	Borehole Diameter:		4 Volumes:
❑	Purge Water Volume and Disposal	Purge Volume: None		Disposal:
❑	Organic Vapor Instrument & Reading (Well Casing)	N/A		
❑	Well Yield	☒ High	☐ Medium	☐ Low
❑	Purge Water Appearance:	**INITIAL**:		**END**:
❑	pH, Conductivity, DO, ORP Meter Calibration	Calibration Date: N/A	Buffer Expiration Date:	Field Test Instrument:
❑	Stability Temperature Degrees C (field) 1, 2, 3			
❑	Stability Conductivity µS/cm^3 (field) 1, 2, 3			
❑	Stability pH units (field) 1, 2, 3			
❑	Stability DO mg/L (field) 1, 2, 3			
❑	Stability ORP mV (field) 1, 2, 3			
❑	**Start** Sample Appearance, Odor, and Sheens			
❑	**Finish** Sample Appearance, Odor, and Sheens			
❑	Sample Temperature (Degrees C):	**Start:**		**Finish:**
❑	Sample Conductivity µS/cm^3 (field):	**Start:**		**Finish:**
❑	Sample pH (field):	**Start:**		**Finish:**
❑	Sample Dissolved Oxygen (mg/L)			
❑	Sample Oxidation Reduction Potential			
❑	Sample Ferrous Iron Field Kit Test Result (mg/L)			
❑				
❑	Gasket and Monument Condition	Poor, water in monument over well cap, not leaking		
❑	Maintenance Requirements	Water cleaned out, Mr. Dykman to seal covers and bolt		

Updated on 07.22.11

Groundwater Well / Piezometer Sample Form

☐ Final QC

❑ Well Identification and Job Number	Well #: MW-2	Date: 7.19.2011	Job #: E2JK-DykmanTac-2	
❑ Well Install Date & Reference Location on Project Site	SW corner, outside, near Fasco Distributors		Well installed in 1997	
❑ Project Site Contact Person	Person: Marvin Dykman / Bill Evans		Telephone:	
❑ Project Site Location Address	2310 East 11th Street, Tacoma WA, PN 2275200770			
❑ Sampler(s) and Company	Sampler(s): Jonathan M. Kemp		Company: EnCo Environmental Corp	
❑ Laboratory	Unknown		Telephone:	
❑ Driller/Prober	Unknown		Telephone:	
❑ Weather and Barometer Reading (Rising / Falling)	Cloudy, 58 degrees, no rain, falling barometer			
❑ Security Condition of Well ☐ New Well	☐ Bolted	☐ Locked	☒ Capped	
❑ Well Casing Material and Diameter	**PVC**		2”	
❑ Type of Well	☒ Permanent ☐ Temporary		Date Removed: N/A	
❑ Filtered in Field	☐ N/A		☐ No	
❑ Photos Taken	☐ Yes		☒ No	
❑ Ice In Cooler	☐ Yes		☐ No	
❑ Chain of Custody Seal on Sample Container	☐ Yes		☐ No	
❑ Length and Diameter of Tubing Placed in Well	Length:		ID Diameter:	
❑ Parameters (See Chain-of-Custody Form)	Static water level only			
❑ Depth to Static Water from TOC (ft) @ North Rim	9.81 feet		☒ Water in Well	
❑ Ground Surface to TOC (ft) @ North Rim (+ or -)	Not measured		Stick Up	
❑ Depth to Water from Ground Surface	Unknown			
❑ Well Screen Interval bgs (GeoSystems)	14 feet to 9 feet		☐ Sampled in Screen Interval	
❑ Bottom of Casing from TOC @ North Rim	14 feet (GeoSystems)			
❑ Sediment in Bottom	☐ Yes ☐ No ☒ Unknown			
❑ Was TOC Professionally Surveyed to a Benchmark	☐ Yes ☐ No ☒ Unknown			
❑ Elevation at Ground Surface (MSL)	Unknown			
❑ Elevation at TOC @ North Rim	14.12 (GeoSystems – Table 5 in 10.23.98 report)			
❑ Elevation at SWL (MSL or Assumed)	14.12 – 9.81 = **4.31’ MSL (Damaged: Stick Up Lifted Up!)**			
❑ Benchmark and Elevation (GeoSystems)	City of Tacoma NGVD29 Elev			
❑ Immiscible Layers (observed or interphase meter)	Top: None Observed		Bottom: Unknown	
❑ Tidal Influence	High Tide: -		Low Tide: -	
❑ Purge & Sampling Equipment	**Purge**: N/A		**Sampling**: N/A	
❑ Purge Date and Time	Date: Purge Time:		Date: Sample Time: SWL @ 4:40	
❑ Purge/Sampling Rate (seconds per 1 cup – 8 ounces)	Purge Rate:		Sampling Rate:	
❑ Purge/Sampling Rate (minutes per 1 gallon – gpm)	Purge Rate:		Sampling Rate:	
❑ VOC Sampling Rate (seconds per 1 cup)			VOC Sampling Rate: N/A	
❑ Well Diameter, Standing Water Depth, & 4 Volumes	2”		4 Volumes:	
❑ Borehole Diameter and 4 Volumes (gallons)	Borehole Diameter:		4 Volumes:	
❑ Purge Water Volume and Disposal	Purge Volume: None		Disposal:	
❑ Organic Vapor Instrument & Reading (Well Casing)	N/A			
❑ Well Yield	☒ High	☐ Medium	☐ Low	
❑ Purge Water Appearance:	**INITIAL**:		**END**:	
❑ pH, Conductivity, DO, ORP Meter Calibration	Calibration Date: N/A	Buffer Expiration Date:	Field Test Instrument:	
❑ Stability Temperature Degrees C (field) 1, 2, 3				
❑ Stability Conductivity µS/cm^3 (field) 1, 2, 3				
❑ Stability pH units (field) 1, 2, 3				
❑ Stability DO mg/L (field) 1, 2, 3				
❑ Stability ORP mV (field) 1, 2, 3				
❑ **Start** Sample Appearance, Odor, and Sheens				
❑ **Finish** Sample Appearance, Odor, and Sheens				
❑ Sample Temperature (Degrees C):	**Start:**		**Finish:**	
❑ Sample Conductivity µS/cm^3 (field):	**Start:**		**Finish:**	
❑ Sample pH (field):	**Start:**		**Finish:**	
❑ Sample Dissolved Oxygen (mg/L)				
❑ Sample Oxidation Reduction Potential				
❑ Sample Ferrous Iron Field Kit Test Result (mg/L)				
❑				
❑ Gasket and Monument Condition	Poor, Concrete seal lifted out of the ground ~ 1’			
❑ Maintenance Requirements	Fix the seal or decommission the well			

Updated on 07.22.11

Groundwater Well / Piezometer Sample Form

☐ **Final QC**

❑ Well Identification and Job Number	Well #: MW-3	Date: 7.19.2011	Job #: E2JK-DykmanTac-2
❑ Well Install Date & Reference Location on Project Site	SE corner, outside, near Tacoma Fire Station		Well installed in 1997
❑ Project Site Contact Person	Person: Marvin Dykman / Bill Evans		Telephone:
❑ Project Site Location Address	2310 East 11th Street, Tacoma WA, PN 2275200770		
❑ Sampler(s) and Company	Sampler(s): Jonathan M. Kemp		Company: EnCo Environmental Corp
❑ Laboratory	Unknown		Telephone:
❑ Driller/Prober	Unknown		Telephone:
❑ Weather and Barometer Reading (Rising / Falling)	Cloudy, 58 degrees, no rain, falling barometer		
❑ Security Condition of Well ☐ New Well	☐ Bolted	☐ Locked	☒ Capped
❑ Well Casing Material and Diameter	**PVC**		2”
❑ Type of Well	☒ Permanent ☐ Temporary		Date Removed: N/A
❑ Filtered in Field	☐ N/A		☐ No
❑ Photos Taken	☐ Yes		☒ No
❑ Ice In Cooler	☐ Yes		☐ No
❑ Chain of Custody Seal on Sample Container	☐ Yes		☐ No
❑ Length and Diameter of Tubing Placed in Well	Length:		ID Diameter:
❑ Parameters (See Chain-of-Custody Form)	Static water level only		
❑ Depth to Static Water from TOC (ft) @ North Rim	9.20 feet		☒ Water in Well
❑ Ground Surface to TOC (ft) @ North Rim (+ or -)	Not measured		Stick Up
❑ Depth to Water from Ground Surface	Unknown		
❑ Well Screen Interval bgs (GeoSystems)	14 feet to 9 feet		☐ Sampled in Screen Interval
❑ Bottom of Casing from TOC @ North Rim	14 feet (GeoSystems)		
❑ Sediment in Bottom	☐ Yes ☐ No ☒ Unknown		
❑ Was TOC Professionally Surveyed to a Benchmark	☐ Yes ☐ No ☒ Unknown		
❑ Elevation at Ground Surface (MSL)	Unknown		
❑ Elevation at TOC @ North Rim	13.83 (GeoSystems – Table 5 in 10.23.98 report)		
❑ Elevation at SWL (MSL or Assumed)	13.83 – 9.20 = **4.63’ MSL**		
❑ Benchmark and Elevation (GeoSystems)	City of Tacoma NGVD29 Elev		
❑ Immiscible Layers (observed or interphase meter)	Top: None Observed		Bottom: Unknown
❑ Tidal Influence	High Tide: -		Low Tide: -
❑ Purge & Sampling Equipment	**Purge**: N/A		**Sampling**: N/A
❑ Purge Date and Time	Date: Purge Time:		Date: Sample Time: SWL @ 4:25
❑ Purge/Sampling Rate (seconds per 1 cup – 8 ounces)	Purge Rate:		Sampling Rate:
❑ Purge/Sampling Rate (minutes per 1 gallon – gpm)	Purge Rate:		Sampling Rate:
❑ VOC Sampling Rate (seconds per 1 cup)			VOC Sampling Rate: N/A
❑ Well Diameter, Standing Water Depth, & 4 Volumes	2”		4 Volumes:
❑ Borehole Diameter and 4 Volumes (gallons)	Borehole Diameter:		4 Volumes:
❑ Purge Water Volume and Disposal	Purge Volume: None		Disposal:
❑ Organic Vapor Instrument & Reading (Well Casing)	N/A		
❑ Well Yield	☒ High	☐ Medium	☐ Low
❑ Purge Water Appearance:	**INITIAL**:		**END**:
❑ pH, Conductivity, DO, ORP Meter Calibration	Calibration Date: N/A	Buffer Expiration Date:	Field Test Instrument:
❑ Stability Temperature Degrees C (field) 1, 2, 3			
❑ Stability Conductivity µS/cm^3 (field) 1, 2, 3			
❑ Stability pH units (field) 1, 2, 3			
❑ Stability DO mg/L (field) 1, 2, 3			
❑ Stability ORP mV (field) 1, 2, 3			
❑ **Start** Sample Appearance, Odor, and Sheens			
❑ **Finish** Sample Appearance, Odor, and Sheens			
❑ Sample Temperature (Degrees C):	**Start:**		**Finish:**
❑ Sample Conductivity µS/cm^3 (field):	**Start:**		**Finish:**
❑ Sample pH (field):	**Start:**		**Finish:**
❑ Sample Dissolved Oxygen (mg/L)			
❑ Sample Oxidation Reduction Potential			
❑ Sample Ferrous Iron Field Kit Test Result (mg/L)			
❑			
❑ Gasket and Monument Condition	Fair, rusty, capped and sealed		
❑ Maintenance Requirements	None		

Updated on 07.22.11

Groundwater Well / Piezometer Sample Form

☐ Final QC

❑ Well Identification and Job Number	Well #: MW-4	Date: 7.19.2011	Job #: E2JK-DykmanTac-2
❑ Well Install Date & Reference Location on Project Site	NE corner, outside, near East 11th Street		Well installed in 1997
❑ Project Site Contact Person	Person: Marvin Dykman / Bill Evans	Telephone:	
❑ Project Site Location Address	2310 East 11th Street, Tacoma WA, PN 2275200770		
❑ Sampler(s) and Company	Sampler(s): Jonathan M. Kemp	Company: EnCo Environmental Corp	
❑ Laboratory	Unknown	Telephone:	
❑ Driller/Prober	Unknown	Telephone:	
❑ Weather and Barometer Reading (Rising / Falling)	Cloudy, 58 degrees, no rain, falling barometer		
❑ Security Condition of Well ☐ New Well	☐ Bolted	☐ Locked	☒ Capped
❑ Well Casing Material and Diameter	**PVC**	2”	
❑ Type of Well	☒ Permanent ☐ Temporary	Date Removed: N/A	
❑ Filtered in Field	☐ N/A	☐ No	
❑ Photos Taken	☐ Yes	☒ No	
❑ Ice In Cooler	☐ Yes	☐ No	
❑ Chain of Custody Seal on Sample Container	☐ Yes	☐ No	
❑ Length and Diameter of Tubing Placed in Well	Length:	ID Diameter:	
❑ Parameters (See Chain-of-Custody Form)	Static water level only		
❑ Depth to Static Water from TOC (ft) @ North Rim	5.93 feet	☒ Water in Well	
❑ Ground Surface to TOC (ft) @ North Rim (+ or -)	Not measured	Flush Mount	
❑ Depth to Water from Ground Surface	Unknown		
❑ Well Screen Interval bgs (GeoSystems)	14 feet to 9 feet	☐ Sampled in Screen Interval	
❑ Bottom of Casing from TOC @ North Rim	14 feet (GeoSystems)		
❑ Sediment in Bottom	☐ Yes ☐ No ☒ Unknown		
❑ Was TOC Professionally Surveyed to a Benchmark	☐ Yes ☐ No ☒ Unknown		
❑ Elevation at Ground Surface (MSL)	Unknown		
❑ Elevation at TOC @ North Rim	10.34 (GeoSystems – Table 5 in 10.23.98 report)		
❑ Elevation at SWL (MSL or Assumed)	10.34 – 5.93 = **4.41’ MSL**		
❑ Benchmark and Elevation (GeoSystems)	City of Tacoma NGVD29 Elev		
❑ Immiscible Layers (observed or interphase meter)	Top: None Observed	Bottom: Unknown	
❑ Tidal Influence	High Tide: -	Low Tide: -	
❑ Purge & Sampling Equipment	**Purge**: N/A	**Sampling**: N/A	
❑ Purge Date and Time	Date: Purge Time:	Date: Sample Time: SWL @ 4:15	
❑ Purge/Sampling Rate (seconds per 1 cup – 8 ounces)	Purge Rate:	Sampling Rate:	
❑ Purge/Sampling Rate (minutes per 1 gallon – gpm)	Purge Rate:	Sampling Rate:	
❑ VOC Sampling Rate (seconds per 1 cup)		VOC Sampling Rate: N/A	
❑ Well Diameter, Standing Water Depth, & 4 Volumes	2”	4 Volumes:	
❑ Borehole Diameter and 4 Volumes (gallons)	Borehole Diameter:	4 Volumes:	
❑ Purge Water Volume and Disposal	Purge Volume: None	Disposal:	
❑ Organic Vapor Instrument & Reading (Well Casing)	N/A		
❑ Well Yield	☒ High	☐ Medium	☐ Low
❑ Purge Water Appearance:	**INITIAL**:	**END**:	
❑ pH, Conductivity, DO, ORP Meter Calibration	Calibration Date: N/A	Buffer Expiration Date:	Field Test Instrument:
❑ Stability Temperature Degrees C (field) 1, 2, 3			
❑ Stability Conductivity µS/cm^3 (field) 1, 2, 3			
❑ Stability pH units (field) 1, 2, 3			
❑ Stability DO mg/L (field) 1, 2, 3			
❑ Stability ORP mV (field) 1, 2, 3			
❑ **Start** Sample Appearance, Odor, and Sheens			
❑ **Finish** Sample Appearance, Odor, and Sheens			
❑ Sample Temperature (Degrees C):	**Start:**	**Finish:**	
❑ Sample Conductivity µS/cm^3 (field):	**Start:**	**Finish:**	
❑ Sample pH (field):	**Start:**	**Finish:**	
❑ Sample Dissolved Oxygen (mg/L)			
❑ Sample Oxidation Reduction Potential			
❑ Sample Ferrous Iron Field Kit Test Result (mg/L)			
❑			
❑ Gasket and Monument Condition	Poor, water in monument over well cap, not leaking		
❑ Maintenance Requirements	Water cleaned out, Mr. Dykman to seal covers and bolt		

HYDRAULICALLY PROBED MONITORING WELL CONSTRUCTION DETAILS (Temporary Wells) Sound Battery – Tacoma WA	
ITEM	**1WA & 2WA**
Probe Rig	AMS Power Probe, Model 9100P, Bobcat, Model No. 463 with rubber tires
Probe & Sampling	Geoprobe macro pore system with steel rods affixed at the bottom with a 2 foot long, 2 inch outside diameter (OD) hollow steel rod for inserted liners for continuous sampling. Liners are new, PVC/Acetate, 2.8' long and 1.5 inch OD
Surface Type	Stickup riser, about 1.5 foot above the ground/floor surface
Well Monument	None, well was temporary and was removed after sampling
Casing Top Cap	n/a
Casing Type & Interval	Total length = 4', new PVC, ¾" OD, TOC to 4' bgs
Screen Type & Interval	Total length = 5', new PVC, 0.01" slot, ¾" OD, 4' to 9' bgs
Sump	None
End Cap	PVC
Bottom of Probehole/Well	9 feet
Joint Type	Screw threads, no glues
Surface Seal Grout & Interval	Sacrete from ground surface to 6" bgs
Seal Type & Interval	3/8' bentonite chips from 6" bgs to 9' bgs
Screen Filter Interval	None, well was temporary and was removed after sampling

Note: Additional information on monitoring well and probehole details is presented on the **LOG OF PROBEHOLES** and **LOG OF TEMPORARY MONITORING WELLS** in **APPENDIX C**.

LOG OF PROBEHOLE for SB-SO-1WA

PROJECT SITE: Sound Battery | PROJECT No. E2JK-DykmanTac-2

ADDRESS: 2310 East 11th Street, Tacoma WA | PROJECT: Near Surface Soil & Groundwater Investigation

Sample No.	Stratification (ft)	Sample Type	Recovery (%)	Blow Counts	OVM-PID (ppm)	USCS Symbol	Elevation (ft)	Water Depth (ft)	Sample Depth (bgs)	Probe Depth (bgs)	Soil Description (color, texture, moisture, structure)	Monitoring Well Details
	0 - 25									0	Bituminous asphalt surface	Stickup +1.5'
	0 - 3									0	Sandy gravel, 1/4, with battery parts, dry, loose, Fill	0 - 4' Riser
1A		Grab	37			GP			0.4		Sandy gravel, 1/4, with battery parts, dry, loose, Fill	
										1		
1B		Grab	37			GP			2	2	Sandy gravel, 1/4, with battery parts, moist, loose, Fill	
										3		
	3 - 9										Grey medium to coarse sand, moist, loose	
1C		Grab	100			SW			4	4	Grey medium to coarse sand, moist, loose	4' - 9' Screen
										5		
										6		
1D		Grab	100			SW	6.45		6.3	Water	Grey medium to coarse sand, very moist, loose	Water
										7		
										8		
1E		Grab	100			SW			8.5		Grey medium to coarse sand, saturated, loose	
										9	Bottom of Temporary Well	Bottom
										10		
										11		
										12		
										13		
										14		
										15		

Elevation: Assumed:
Given at: Not Surveyed
Benchmark: n/a
Notes: More Well Details in Appendix C
Temporary Well Removed 7.19.11

EnCo Environmental Corporation
P.O. Box 1212
Puyallup WA 98371
253.841.9710

Probing/Drilling Date: July 19, 2011
Groundwater Sampling Date: July 19, 2011
Rig Type: AMS PowerProbe, Geoprobe System
Operator: Carlos at NW Probe
Logged By: JK Checked By: GK

LOG OF PROBEHOLE for SB-SO-2WA

PROJECT SITE: Sound Battery | PROJECT No. E2JK-DykmanTac-2

ADDRESS: 2310 East 11th Street, Tacoma WA | PROJECT: Near Surface Soil & Groundwater Investigation

Sample No.	Stratification (ft)	Sample Type	Recovery (%)	Blow Counts	OVM-PID (ppm)	USCS Symbol	Elevation (ft)	Water Depth (ft)	Sample Depth (bgs)	Probe Depth (bgs)	Soil Description (color, texture, moisture, structure)	Monitoring Well Details
	0-.25									0	Bituminous asphalt surface	Stickup +1.5'
	0-.2									0	Sandy gravel, 1/2, dry, loose, Fill	0 - 4' Riser
	.2-1.6										Grey medium to coarse sand with shells, dry, loose	
2A		Grab	66			SW			0.5		Grey medium to coarse sand with shells, dry, loose	
										1		
2B		Grab	66			SW			1.5		Grey medium to coarse sand with gravel, 1/8, and shells, dry, loose	
2C	1.6-9	Grab	66			SW			2	2	Grey medium to coarse sand with clay spheres, dry, loose	
										3		
										4		4' - 9' Screen
										5		
										6		
2D		Grab	100			SW	6.3		6.3	Water	Grey medium to coarse sand, very moist, loose	Water
										7		
										8		
2E		Grab	100			SW			8.5		Grey medium to coarse sand, saturated, loose	
										9	Bottom of Temporary Well	Bottom
										10		
										11		
										12		
										13		
										14		
										15		

Elevation: Assumed:
Given at: Not Surveyed
Benchmark: n/a
Notes: More Well Details in Appendix C
Temporary Well Removed 7.19.11

EnCo Environmental Corporation
P.O. Box 1212
Puyallup WA 98371
253.841.9710

Probing/Drilling Date: July 19, 2011
Groundwater Sampling Date: July 19, 2011
Rig Type: AMS PowerProbe, Geoprobe System
Operator: Carlos at NW Probe
Logged By: JK Checked By: GK

LOG OF PROBEHOLES for SO - 1 to SO - 27 & 1 - 2 BG												3
PROJECT SITE: Sound Battery											PROJECT No. E2JK-DykmanTac-2	
ADDRESS: 2310 East 11th Street, Tacoma WA											PROJECT: Near Surface Soil & Groundwater Investigation	
Sample No.	Stratification (ft)	Sample Type	Recovery (%)	Blow Counts	OVM-PID (ppm)	USCS Symbol	Elevation (ft)	Water Depth (ft)	Sample Depth (bgs)	Probe Depth (bgs)	Soil Description (color, texture, moisture, structure)	Monitoring Well Details
	0-.25 to .5									0	Bituminous asphalt or concrete slab surface	
	0 - 0.2 to 1.4									0	Grey brown sandy gravel with crushed rock, 1/8 to 3/4, dry, loose, Fill	
A		Grab	75			GP			0.5		Grey brown sandy gravel with crushed rock, 1/8 to 3/4, dry, loose, Fill	
										1		
B		Grab	75			GP			1.5		Grey brown sandy gravel with crushed rock, 1/8 to 3/4, dry, loose, Fill	
	1.4 - 3										Grey medium to coarse sand with shells, dry, loose	
B		Grab	75			SW				2		
B		Grab	75			SW			2.5		Grey medium to coarse sand with shells, dry, loose	
										3	Bottom of Probeholes	
										4		
										5		
										6		
										7		
										8		
										9		
										10		
										11		
										12		
										13		
										14		
										15		

Elevation: Assumed:	EnCo Environmental Corporation	Probing/Drilling Date: July 18 & 19, 2011
Given at: Not Surveyed	P.O. Box 1212	Groundwater Sampling Date: N/A
Benchmark: n/a	Puyallup WA 98371	Rig Type: AMS PowerProbe, Geoprobe System
Note: More Probehole Details in Appendix C	253.841.9710	Operator: Carlos at NW Probe
Soil descriptions are estimated	Page 3 of 3	Logged By: JK Checked By: GK

LOG OF PROBEHOLES & MONITORING WELLS

1. Ft = Feet
2. Stratification = Depth bgs in feet where soil layer was observed in liner / spoon
3. BGS = Below ground surface
4. Sample type: Grab or Comp (composite) as noted on the log
5. Recovery % = Percent recovery of soil in the soil sampling device
6. USCS = Unified Soil Classification System
7. Water depth = Measured depth of surficial groundwater static water level in feet bgs
8. Elevation: surveyed elevation in feet from the referenced benchmark (assumed or MSL): n/a
9. MSL = elevation in feet above Mean Sea Level
10. Sample depth = depth bgs of the collected sample
11. Probe depth: profiled depth interval bgs of probehole or monitoring well
12. n/a = not applicable

UNIFIED SOIL CLASSIFICATION SYSTEM (From ASTM D-2488 & 2487-90)				
MAJOR DIVISIONS			GROUP SYMBOL	TYPICAL DESCRIPTION
Coarse-Grained Soils (more than 50% retained on No. 200 sieve) [Use Dual Symbols for 5 – 12% Fines (i.e. GP – GM)]	Gravels (more than 50% of coarse fraction retained on No. 4 sieve)	Clean Gravels (less than 5% fines)	GW	Well-Graded Gravels, Gravel-Sand Mixtures, Little or No Fines
			GP	Poorly-Graded Gravels, Gravel-Sand Mixtures
		Gravels with Fines (more than 12% fines)	GM	Silty Gravels, Gravel-Sand-Silt Mixtures
			GC	Clayey Gravels, Gravel-Sand-Clay Mixtures
	Sands (50% or more of coarse fraction passes the No. 4 sieve)	Clean Sands (less than 5% fines)	SW	Well-Graded Sands, Gravelly Sands, Little or No Fines
			SP	Poorly-Graded Sand, Gravelly Sands, Little or No Fines
		Sands with Fines (more than 12% fines)	SM	Silty Sands, Sand-Silt Mixtures
			SC	Clayey Sands, Sand-Clay Mixtures
Fine-Grained Soils (50% or more passes the No. 200 sieve)	Silts and Clays (liquid limit less than 50)	Inorganic	ML	Inorganic Silts and Very Fine Sands, Rock Flour, Silty or Clayey Fine Sands or Clayey Silts with Slight Plasticity
			CL	Inorganic Clays of Low to Medium Plasticity, Gravelly Clays, Sandy Clays, Silty Clays, Lean Clays
		Organic	OL	Organic Silts and Organic Silty Clays of Low Plasticity
	Silts and Clays (liquid limit 50 or more)	Inorganic	CH	Inorganic Clays of Medium to High Plasticity, Sandy Fat Clay, Gravelly Fat Clay
			MH	Inorganic Silts, Micaceous or Diatomaceous Fine Sands or Silty Soils, Elastic Silt
		Organic	OH	Organic Clays of Medium to High Plasticity, Organic Silts
Highly Organic Soils	Primarily organic matter, dark in color, and organic odor		PT	Peat, Humus, Swamp Soils with High Organic Content (See D 4427-02)

PROJECT SITE SAFETY PLAN

Date: 7/1819/11 Arrival Time: 7 AM
Leave Time:5 PM Hours on Site: 10 hrs

Project Site: **Sound Battery**
Address: **2310 East 11th Street**
Tacoma WA 98421

EMERGENCY NUMBERS

Hospital: Tacoma General Hopital, 911, Non Emergency: 253.403.1000
Ambulance: Tri Med, 911, Non Emergency: 253.573.0580
Police: Tacoma Police Department, 911, Non Emergency: 253.798.4721
Poison Control Center: 1.800.222.1222

Nearest Hospital: Tacoma General Hospital, 315 Martin Luther King Jr. Way, Tacoma WA 98405

Direction to Hospital: Go NE on East 11th toward Port of Tacoma Road, Turn right onto Port of Tacoma Road, Turn right on N Frontage Road, Merge onto WA-509 via ramp on the left to Tacoma City Center, Merge onto 1-705 via ramp to Schuster Pdwy/Ruston, Turn right onto South Statdium Way, Turn left onto Division Avenue, Turn left onto South K Streeet/Martin Luther King Jr. Way, the hospital is on the right.

Project Site Description: Former Lead Acid Battery Manufacturer

Wind direction: From the West

Approximate wind speed: <10 MPH

Weather Conditions: Foggy AM then Cloudy PM with ambiant air temperatures ranging from 52 to 68 degrees F, no rainfall

Scope and Objective of Work: Near surface soil and groundwater investigation for lead in soil and water

Training Requirements: OSHA 1910.120 Hazardous Site Investigations, 40 hour training with annual 8 hour refresher, Health and Safety Debriefing for EnCo employees

Independent Contractors: NW Probe, Evergreen Concrete Cutting, Pacific Rim Environmental, Mountain View Locating Services, LLC

Washington Department of Ecology Inspector: N/A

Was the "Buddy" System Used? ☐ Yes ☒ No Only one EnCo employee was on the project site

First Aid Equipment: Compact first aid kit

PPE Requirements: Safety vest, coverall, steel-toed boot, Latex/Nitrile glove, ear plug, hard hat, safety glasses

Medical Monitoring Requirements: Not required

Chemicals of Concern: Lead

Sampling Matrix: ☐ Air ☒ Ground water ☐ Residues ☐ Sediment ☒ Soil ☐ Surface water

TABLE 1
KNOWN CHEMICAL HAZARDS

Parameter	PEL/TLV	STEL	Route of Exposure	Acute Symptoms	Odor Threshold	Odor Description
Lead	50 ug/m3	30 ug/m3 Action Level	Inhalation of dust or dirt	Anemic Coma / Seizure	None	Metallic, sweet

Footnotes for Table 1:

PEL = Permissible exposure level
TLV = Threshold level value
STEL = Short term exposure level
IDLH = Immediately dangerous to life and health
ppm = part per million
ug/m^3 = micrograms per cubic meter
mg/m^3 = milligrams per cubic meter

Routes of Chemical Exposure: ☒ Inhalation ☒ Dermal ☐ Ingestion ☐ No Exposure

Overall Risk of Chemical Exposure:

☐ Serious ☐ Moderate
☒ Low ☐ Unknown

Physical Hazards:

☐ Explosion:
☐ Confined Space:
☒ Noise: Probing and hammering and concrete cutting
☐ Heat/cold stress:
☐ Other: (specify)

Is a Confined/Enclosed Space Entry Permit Required: No

Overall Risk from Physical Hazards:

☐ Serious ☐ Moderate
☒ Low ☐ Unknown

Air Monitoring: ☐ Yes ☒ No **Result**:

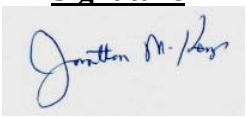
Type of Air Monitoring Instrument Used: N/A

Radiation Monitoring: ☐ Yes ☒ No **Result**:

Other Equipment Required: Geoprobe unit for probing, concrete cutting, and XRF for lead surface testing

SIGNATURE STATEMENT

EnCo personnel have read and understand the information presented in this Project Site Safety Plan.

Title	Name (print)	Signature	Date
Site Safety Officer			
Project Team Leader			
Technician #1			
Technician #2			
Other:			

PO Box 1212
Puyallup WA 98371
Telephone: 253.841.9710
www.encoec.com

RESUME

Jonathan M. Kemp

WORK EXPERIENCE

EnCo Environmental Corporation, Puyallup WA, President — November 1995 to Present

- Delineated, classified, and categorized over 150 wetlands and 80 streams (stream typing) and water bodies. Designed, mitigated, restored, and created wetlands that have met or exceeded jurisdictional governmental agency performance standards.
- Performed over 250 Environmental Site Assessments at complex industrial sites. Remediated 12 contaminated sites to a No Further Action status. Interpreted lab results, validated data, & coordinated disposal of contaminated materials with certified contractors.
- Performed UST assessments, prepared stormwater erosion and sediment control plans, and collected air, soil, soil gas, sediment, water samples on over 30 sites in Washington. Obtained diverse environmental and SEPA permits for public and private parties.

Timson & Peters, Inc., Farmingdale ME, Associate — September 1992 to October 1995

- Performed 6 remedial investigations, over 75 Phase I ESAs, and 25 Phase II ESAs at heavy industrial sites including shoe factories. Performed 15 underground storage tank (UST) closures at service stations and heavy industrial sites.
- Obtained stormwater permits, recommended best management practices, prepared stormwater pollution prevention plans, collected stormwater samples, and completed discharge monitoring reports at industrial facilities.

Terracon Environmental, Inc., Omaha NE, Project Manager — December 1988 to July 1992

- Performed over 50 hydrogeological studies and remediation services to UST owners, utility companies, solid waste disposal facilities, manufacturers, transportation firms, and other business entities. Experienced with Geo-Probe field investigation techniques.
- Performed wetland and stream surveys and stormwater permit related activities at several highway projects and heavy industrial plants.

Midwest Laboratories, Inc., Omaha NE, Client Services — March 1985 to December 1988

- Marketed environmental and food laboratory testing services to over 500 clients. Negotiated contracts with local, state, and federal government agencies (EPA, Department of Health, Department of Defense, Corps of Engineers, and numerous City and County governments). Managed field sampling activities at landfills, industrial sites, and wastewater treatment plants using specialized equipment. Prepared field work sampling and analysis plans.

EDUCATION

- South Dakota State University, Brookings SD
  Bachelor of Science Degree (3 Majors) – Wildlife & Fisheries Science, Biology, & Environmental Management, Minor in Chemistry
  September 1972 to December 1976; GPA: 3.3

CONTINUING EDUCATION AND TRAINING

- Professional Wetland Scientist, Society of Wetland Scientists, Certification #2110, Expires 2016
- The Wildlife Society, Board Member #1 – 2011
- Amphibian Identification & Design Workshops (WDFW) – February 2008 & April 2009
- Wetland Delineation and Practicum – 48 hours of training in Washington
- Wetland Specialist for King, Pierce, Thurston, Lewis, Mason, Snohomish, and Kitsap Counties
- Society of Wetland Scientists, Hydric Soil Indicators – 2009
- Certified pocket gopher surveyor (WDFW) – 2010
- Washington Wetland Rating System Training, Coastal Training Program – 2005 & 2008
- Certified Washington UST Site Assessor #32-US-32004237
- Personal Protection and Safety for Hazardous Waste Sites Course - OSHA 29 CFR Part 1910.10
- 40 hours plus annual 8-hour refresher courses
- Lead Awareness and Drug Lab Supervisor and Decontamination Worker

RESUME

Ian Brown-GIS Specialist

Ian Brown has a Master of Arts degree from the University at Albany-SUNY where he studied Public Policy and Planning. He also has a Bachelor of Science degree from Muskingum University where he studied Conservation Science. Ian brings five years of GIS experience working with local governments and non-profits to develop maps and analyze the subsequent data.

WORK EXPERIENCE

EnCo Environmental Corporation, Puyallup WA, GPS/GIS Specialist **August 2011 to Present**

- Develop maps illustrating natural features such as wetlands, streams, soil types, recognized environmental conditions and priority habitats and species as well as the built environment, including zoning, streetscapes, and utilities. Maps are created utilizing GPS units and from publicly available GIS data from government sources. He utilizes ESRI's ArcMap 9.3x in conjunction with Adobe Illustrator design software to provide technical information in a way that is understandable and visually appealing.

City of Sammamish, Sammamish WA, Park Planning Intern **April 2010 to July 2011**

- Used GIS and GPS to design and develop bike map for distribution to city residents
- Created and analyzed road layers into a spatial database to show bicycle street infrastructure

City of Redmond, Redmond WA, Planner II **June 2009 to Dec 2010**

- Used Network Analyst to create and analyze a safe ¼ mile walking radius from all city parks
- Updated all park maps and analyzed current trail and parcel information to reflect current attributes
- Created 50 maps for PARCC plan for public document
- Synthesized data and determined funding availability for local parks

Adirondack Mountain Club, Albany NY, Land Use Planner **March 2007 to July 2008**

- Completed an extensive parcel based GIS assessment of 3 million acres of private lands within the Catskill and Adirondack Mountains, using ecological criteria (proximity to roads, wetlands, endangered species, etc.) to create a spatial database and develop a weighted system to score each individual parcel
- Used GIS and MS Access to create 115 maps to show available parcels for acquisition
- Developed 30 multi-use trail routes for implementation in the Adirondack and Catskill Mountains

EDUCATION

- SUNY-University at Albany: Rockefeller College of Public Affairs and Policy, Albany, NY
  Masters of Arts Degree- Public Policy (Environmental Policy)
  August 2005-December 2006
- Muskingum University, New Concord, OH
  Bachelor of Science Degree- Conservation Science
  August 1999-May 2003

CONTINUING EDUCATION, TRAINING, LICENSES, & AFFILIATIONS

- Certificate of Grant Writing Essentials- Seattle Central Community College- 2006
- Proficient in ArcGIS software, including ArcMap, ArcView, ArcEditor, ArcInfo, and ArcCatalog
- Proficient using GPS tools
- Proficient in Adobe Photoshop, Illustrator, and InDesign
- Proficient with Microsoft Office package

APPENDIX D

TERMS & CONDITIONS

TERMS & CONDTIONS

Sound Battery
Tacoma WA

The report has been prepared in accordance with generally accepted professional consulting practices for the nature and conditions of the work completed at the time of the performed work. The performed work is based on conditions that existed at the time of the investigation. It must be recognized that the performed **SCOPE OF WORK** was not designed to provide information on all types of soil (surface and/or subsurface), soil gas or vapor, sediment, surface water, and/or groundwater contamination risks that may exist at the project site. The work was limited to the media type specifically addressed in the attached report (soil and groundwater). Guarantees cannot be made that the project site is free of contamination which would be considered as having an adverse environmental impact, particularly where contamination is localized, under or in close proximity to existing buildings, foundations, slabs, structures, or utilities hidden from view, or at concentrations below standard laboratory analytical method detection or reporting limits.

Based on the reasonably attainable information that was obtained, every activity, business, land use, structure, utility, and/or building on the project site or on contiguous property cannot be determined without performing more detailed historical research. The types of land use activity identified in the attached report were obtained from researched sources and are assumed to be accurate to the best of attainable knowledge.

Site conditions, both surface and subsurface, may be affected as a result of natural processes or human influence. The information presented in the attached report applies only to the locations investigated on the project site. Contaminants may be present in areas that were not sampled, tested, screened, or surveyed or may migrate to areas that showed no signs of contamination at the time they were investigated.

The opinions and findings expressed in this report are based upon data obtained by **EnCo** from samples collected at the indicated locations, observations, and from information provided to **EnCo** by the client or interviewed personnel and should not be relied upon to represent conditions at later dates. The concentrations of each chemical of concern presented in the report are based on the attached laboratory reports. This report does not reflect any variations in subsurface stratigraphy, geohydrology, or contaminant distribution, which may occur between sample locations or across the project site. Actual surface and/or subsurface conditions may vary and may not become evident without further investigation.

In the event that changes in the nature, usage, or configuration of the project site or nearby properties are made the conclusions and closing statements contained in the attached report may not be valid. Conclusions drawn by others from the results of this

investigation should recognize the limitations of the methods used. If variations appear evident, it will be necessary for our firm to re-evaluate the conclusions presented in the report. The attached report is not meant to represent a legal opinion.

EnCo's staff members participating in this limited soil assessment are environmental scientists and not attorneys. Therefore, it must be clear to all parties that this report does not offer any legal opinion, representation, or interpretation of environmental laws, rules, regulations, or policies of federal, state or local governmental agencies. **EnCo's** work was performed in accordance in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing under similar conditions in the area. No other warranty or guarantee, whether expressed or implied, is made or offered.

APPENDIX E

LABORATORY REPORTS

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Charlene Morrow, M.S.
Yelena Aravkina, M.S.
Bradley T. Benson, B.S.
Kurt Johnson, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
TEL: (206) 285-8282
FAX: (206) 283-5044
e-mail: fbi@isomedia.com

August 5, 2011

Jon Kemp, Project Manager
Enco Environmental Corporation
PO Box 1212
Puyallup, WA 98371

Dear Mr. Kemp:

Included are the results from the testing of material submitted on July 19, 2011 from the E2JK-Dykman TAC-2, F&BI 107237 project. There are 78 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
ENC0805R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on July 19, 2011 by Friedman & Bruya, Inc. from the Enco Environmental Corporation E2JK-Dykman TAC-2, F&BI 107237 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Enco Environmental Corporation
107237-01	SB-SO-1WA-A-0.40
107237-02	SB-SO-1WA-B-2-0
107237-03	SB-SO-1BG-A-0.50
107237-04	SB-SO-1BGB-2.5
107237-05	SB-SO-2BG-A-1.0
107237-06	SB-SO-2BG-B-2.5
107237-07	SB-SO-1A-0.50
107237-08	SB-SO-1B-1.5
107237-09	SB-SO-2A-0.50
107237-10	SB-SO-2B-2.0
107237-11	SB-SO-3A-0.50
107237-12	SB-SO-3B-2.0
107237-13	SB-SO-2WA-A-0.50
107237-14	SB-SO-2WA-B-1.5
107237-15	SB-SO-2WA-C-2.0
107237-16	SB-SO-4A-0.50
107237-17	SB-SO-4B-1.5
107237-18	SB-SO-5A-1.0
107237-19	SB-SO-5B-2.0
107237-20	SB-SO-6A-0.50
107237-21	SB-SO-6B-1.5
107237-22	SB-SO-7A-1.0
107237-23	SB-SO-7B-2.0
107237-24	SB-SO-8A-0.50
107237-25	SB-SO-8B-1.9
107237-26	SB-SO-25B-1.5
107237-27	SB-WA-1WA
107237-28	SB-WA-2WA
107237-29	SB-SO-9A-0.50
107237-30	SB-SO-9B-1.5
107237-31	SB-SO-10A-1.0
107237-32	SB-SO-10B-2.0
107237-33	SB-SO-11A-0.50
107237-34	SB-SO-11B-1.5
107237-35	SB-SO-12A-1.0
107237-36	SB-SO-12B-2.0
107237-37	SB-SO-13A-0.50
107237-38	SB-SO-13B-1.5

Laboratory ID	Enco Environmental Corporation
107237-39	SB-SO-14A-1.0
107237-40	SB-SO-14B-2.0
107237-41	SB-SO-15A-1.0
107237-42	SB-SO-15B-2.0
107237-43	SB-SO-16A-1.0
107237-44	SB-SO-16B-2.0
107237-45	SB-SO-17A-0.50
107237-46	SB-SO-17B-1.5
107237-47	SB-SO-18A-1.0
107237-48	SB-SO-18B-2.0
107237-49	SB-SO-26B-2.0
107237-50	SB-SO-19A-0.50
107237-51	SB-SO-19B-1.8
107237-52	SB-SO-20A-0.50
107237-53	SB-SO-20B-1.5
107237-54	SB-SO-21A-0.50
107237-55	SB-SO-21B-1.5
107237-56	SB-SO-22A-0.50
107237-57	SB-SO-22B-1.8
107237-58	SB-SO-24A-0.50
107237-59	SB-SO-24B-1.9
107237-60	SB-SO-27A-0.50
107237-61	SB-SO-27B-2.0
107237-62	SB-SO-25A-0.50
107237-63	SB-SO-26A-0.75
107237-64	SB-SO-23A-0.5
107237-65	SB-SO-23B-1.5

All quality control requirements were acceptable.

Date of Report: 08/05/11
Date Received: 07/19/11
Project: E2JK-Dykman TAC-2, F&BI 107237
Date Extracted: 07/27/11
Date Analyzed: 07/27/11

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR pH USING EPA METHOD 9045D

Sample ID Laboratory ID	pH
SB-SO-1BG-A-0.50 107237-03	7.63
SB-SO-1BGB-2.5 107237-04	7.38
SB-SO-2BG-A-1.0 107237-05	7.66
SB-SO-2BG-B-2.5 107237-06	7.79
SB-SO-8A-0.50 107237-24	5.46
SB-SO-8B-1.9 107237-25	4.27

Date of Report: 08/05/11
Date Received: 07/19/11
Project: E2JK-Dykman TAC-2, F&BI 107237
Date Extracted: NA
Date Analyzed: 07/19/11

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR pH USING EPA METHOD 9040C

Sample ID Laboratory ID	pH
SB-WA-1WA 107237-27	6.76
SB-WA-2WA 107237-28	4.91

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-1WA-A-0.40	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	07/25/11	Lab ID:	107237-01 x10
Date Analyzed:	07/26/11	Data File:	107237-01 x10.048
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	97	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	38,300

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-1WA-B-2-0	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	07/25/11	Lab ID:	107237-02 x10
Date Analyzed:	07/26/11	Data File:	107237-02 x10.061
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	100	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	42,300

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-1BG-A-0.50	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	07/25/11	Lab ID:	107237-03
Date Analyzed:	07/26/11	Data File:	107237-03.057
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	104	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	1.69

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-1BGB-2.5	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	07/25/11	Lab ID:	107237-04
Date Analyzed:	07/26/11	Data File:	107237-04.058
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	106	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	1.59

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-2BG-A-1.0	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	07/25/11	Lab ID:	107237-05
Date Analyzed:	07/26/11	Data File:	107237-05.059
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	101	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	1.52

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-2BG-B-2.5	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	07/25/11	Lab ID:	107237-06
Date Analyzed:	07/26/11	Data File:	107237-06.060
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	108	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	1.44

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-1A-0.50	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	07/25/11	Lab ID:	107237-07
Date Analyzed:	07/26/11	Data File:	107237-07.064
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	106	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	84.6

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-2A-0.50	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	07/25/11	Lab ID:	107237-09
Date Analyzed:	07/26/11	Data File:	107237-09.065
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	107	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	200

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-3A-0.50	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	07/25/11	Lab ID:	107237-11
Date Analyzed:	07/26/11	Data File:	107237-11.066
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	102	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	241

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-2WA-A-0.50	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	07/25/11	Lab ID:	107237-13
Date Analyzed:	07/26/11	Data File:	107237-13.067
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	102	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	8.79

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-2WA-B-1.5	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	07/25/11	Lab ID:	107237-14
Date Analyzed:	07/26/11	Data File:	107237-14.068
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	103	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	1.90

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-2WA-C-2.0	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	07/25/11	Lab ID:	107237-15
Date Analyzed:	07/26/11	Data File:	107237-15.069
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	104	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	1.76

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-4A-0.50	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	07/25/11	Lab ID:	107237-16
Date Analyzed:	07/26/11	Data File:	107237-16.070
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	104	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	75.1

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-5A-1.0	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	07/25/11	Lab ID:	107237-18
Date Analyzed:	07/26/11	Data File:	107237-18.071
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	105	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	358

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-5B-2.0	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	08/01/11	Lab ID:	107237-19
Date Analyzed:	08/03/11	Data File:	107237-19.027
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	94	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	12.8

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-6A-0.50	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	07/25/11	Lab ID:	107237-20
Date Analyzed:	07/26/11	Data File:	107237-20.072
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	101	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	385

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-6B-1.5	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	08/01/11	Lab ID:	107237-21
Date Analyzed:	08/03/11	Data File:	107237-21.028
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	93	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	16.2

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-7A-1.0	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	07/25/11	Lab ID:	107237-22
Date Analyzed:	07/26/11	Data File:	107237-22.074
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	104	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	1,150

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-7B-2.0	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	08/01/11	Lab ID:	107237-23
Date Analyzed:	08/03/11	Data File:	107237-23.029
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	92	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	4.34

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-8A-0.50	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	07/25/11	Lab ID:	107237-24
Date Analyzed:	07/26/11	Data File:	107237-24.075
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	104	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	2,950

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-8B-1.9	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	08/01/11	Lab ID:	107237-25
Date Analyzed:	08/03/11	Data File:	107237-25.030
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	92	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	1,070

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-25B-1.5	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	07/25/11	Lab ID:	107237-26
Date Analyzed:	07/26/11	Data File:	107237-26.076
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	107	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	112

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-9A-0.50	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	07/25/11	Lab ID:	107237-29
Date Analyzed:	07/26/11	Data File:	107237-29.077
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	105	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	46.9

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-10A-1.0	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	07/25/11	Lab ID:	107237-31
Date Analyzed:	07/26/11	Data File:	107237-31.078
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	106	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	37.0

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-11A-0.50	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	07/25/11	Lab ID:	107237-33
Date Analyzed:	07/28/11	Data File:	107237-33.051
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	97	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	462

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-11B-1.5	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	08/01/11	Lab ID:	107237-34
Date Analyzed:	08/03/11	Data File:	107237-34.031
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	96	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	1.35

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-12A-1.0	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	07/25/11	Lab ID:	107237-35
Date Analyzed:	07/28/11	Data File:	107237-35.055
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	99	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	112

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-13A-0.50	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	07/25/11	Lab ID:	107237-37
Date Analyzed:	07/28/11	Data File:	107237-37.056
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	96	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	601

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-13B-1.5	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	08/01/11	Lab ID:	107237-38
Date Analyzed:	08/03/11	Data File:	107237-38.032
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	92	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	94.9

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-14A-1.0	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	07/25/11	Lab ID:	107237-39
Date Analyzed:	07/28/11	Data File:	107237-39.057
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	96	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	83.8

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-15A-1.0	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	07/25/11	Lab ID:	107237-41
Date Analyzed:	07/28/11	Data File:	107237-41.058
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	92	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	1,660

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-15B-2.0	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	08/01/11	Lab ID:	107237-42
Date Analyzed:	08/03/11	Data File:	107237-42.033
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	93	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	284

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-16A-1.0	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	07/25/11	Lab ID:	107237-43
Date Analyzed:	07/28/11	Data File:	107237-43.059
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	90	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	7,070

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-16B-2.0	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	08/01/11	Lab ID:	107237-44
Date Analyzed:	08/03/11	Data File:	107237-44.034
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	93	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	36.3

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-17A-0.50	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	07/25/11	Lab ID:	107237-45
Date Analyzed:	07/28/11	Data File:	107237-45.060
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	92	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	5,240

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-17B-1.5	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	08/01/11	Lab ID:	107237-46
Date Analyzed:	08/03/11	Data File:	107237-46.035
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	91	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	273

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-18A-1.0	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	07/25/11	Lab ID:	107237-47
Date Analyzed:	07/28/11	Data File:	107237-47.061
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	88	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	29,700 ve

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-18A-1.0	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	07/25/11	Lab ID:	107237-47 x10
Date Analyzed:	07/28/11	Data File:	107237-47 x10.073
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	91	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	30,900

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-18B-2.0	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	08/01/11	Lab ID:	107237-48
Date Analyzed:	08/03/11	Data File:	107237-48.038
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	92	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	364

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-26B-2.0	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	08/01/11	Lab ID:	107237-49
Date Analyzed:	08/03/11	Data File:	107237-49.039
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	92	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	2.44

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-19A-0.50	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	07/25/11	Lab ID:	107237-50
Date Analyzed:	07/28/11	Data File:	107237-50.062
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	88	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	14,700 ve

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-19A-0.50	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	07/25/11	Lab ID:	107237-50 x10
Date Analyzed:	07/28/11	Data File:	107237-50 x10.074
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	88	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	15,500

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-19B-1.8	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	08/01/11	Lab ID:	107237-51
Date Analyzed:	08/03/11	Data File:	107237-51.040
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	94	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	2.02

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-20A-0.50	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	07/25/11	Lab ID:	107237-52
Date Analyzed:	07/28/11	Data File:	107237-52.063
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	83	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	28,800 ve

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-20A-0.50	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	07/25/11	Lab ID:	107237-52 x10
Date Analyzed:	07/28/11	Data File:	107237-52 x10.076
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	89	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	28,400

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-20B-1.5	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	08/01/11	Lab ID:	107237-53
Date Analyzed:	08/03/11	Data File:	107237-53.041
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	92	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	55.8

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-21A-0.50	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	07/25/11	Lab ID:	107237-54
Date Analyzed:	07/28/11	Data File:	107237-54.066
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	93	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	210

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-22A-0.50	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	07/25/11	Lab ID:	107237-56
Date Analyzed:	07/28/11	Data File:	107237-56.067
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	91	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	453

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-22B-1.8	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	08/01/11	Lab ID:	107237-57
Date Analyzed:	08/03/11	Data File:	107237-57.042
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	94	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	6.26

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-24A-0.50	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	07/25/11	Lab ID:	107237-58
Date Analyzed:	07/28/11	Data File:	107237-58.068
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	94	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	17.8

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-27A-0.50	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	07/25/11	Lab ID:	107237-60
Date Analyzed:	07/28/11	Data File:	107237-60.069
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	86	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	22,600 ve

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-27A-0.50	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	07/25/11	Lab ID:	107237-60 x10
Date Analyzed:	07/28/11	Data File:	107237-60 x10.077
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	91	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	24,500

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-27B-2.0	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	08/01/11	Lab ID:	107237-61
Date Analyzed:	08/03/11	Data File:	107237-61.043
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	96	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	3.11

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-25A-0.50	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	07/25/11	Lab ID:	107237-62
Date Analyzed:	07/28/11	Data File:	107237-62.070
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	91	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	2,400

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-26A-0.75	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	07/25/11	Lab ID:	107237-63
Date Analyzed:	07/28/11	Data File:	107237-63.071
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	93	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	2,880

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-23A-0.5	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	07/25/11	Lab ID:	107237-64
Date Analyzed:	07/28/11	Data File:	107237-64.072
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	93	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	600

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-23B-1.5	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	08/01/11	Lab ID:	107237-65
Date Analyzed:	08/03/11	Data File:	107237-65.023
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	93	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	307

Analysis For Total Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	Enco Environmental Corporation
Date Received:	Not Applicable	Project:	E2JK-Dykman TAC-2
Date Extracted:	07/25/11	Lab ID:	I1-508 mb
Date Analyzed:	07/26/11	Data File:	I1-508 mb.046
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	100	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	<1

Analysis For Total Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	Enco Environmental Corporation
Date Received:	Not Applicable	Project:	E2JK-Dykman TAC-2
Date Extracted:	07/25/11	Lab ID:	I1-509 mb
Date Analyzed:	07/28/11	Data File:	I1-509 mb.081
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	96	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	<1

Analysis For Total Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	Enco Environmental Corporation
Date Received:	Not Applicable	Project:	E2JK-Dykman TAC-2
Date Extracted:	08/01/11	Lab ID:	I1-536 mb
Date Analyzed:	08/03/11	Data File:	I1-536 mb.021
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	91	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	<1

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	SB-WA-1WA	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	07/29/11	Lab ID:	107237-27
Date Analyzed:	07/29/11	Data File:	107237-27.055
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	121	60	125

Analyte:	Concentration ug/L (ppb)
Lead	13.1

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	SB-WA-2WA	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	07/29/11	Lab ID:	107237-28
Date Analyzed:	07/29/11	Data File:	107237-28.056
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	119	60	125

Analyte:	Concentration ug/L (ppb)
Lead	18.9

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	Enco Environmental Corporation
Date Received:	Not Applicable	Project:	E2JK-Dykman TAC-2
Date Extracted:	07/29/11	Lab ID:	I1-529 mb
Date Analyzed:	07/29/11	Data File:	I1-529 mb.032
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	107	60	125

Analyte:	Concentration ug/L (ppb)
Lead	<1

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-WA-1WA	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	07/26/11	Lab ID:	107237-27
Date Analyzed:	07/28/11	Data File:	107237-27.082
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	97	60	125

Analyte:	Concentration ug/L (ppb)
Lead	2,160

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-WA-2WA	Client:	Enco Environmental Corporation
Date Received:	07/19/11	Project:	E2JK-Dykman TAC-2
Date Extracted:	07/26/11	Lab ID:	107237-28
Date Analyzed:	07/28/11	Data File:	107237-28.083
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	103	60	125

Analyte:	Concentration ug/L (ppb)
Lead	919

Analysis For Total Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	Enco Environmental Corporation
Date Received:	Not Applicable	Project:	E2JK-Dykman TAC-2
Date Extracted:	07/26/11	Lab ID:	I1-517 mb
Date Analyzed:	07/28/11	Data File:	I1-517 mb.025
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	95	60	125

Analyte:	Concentration ug/L (ppb)
Lead	<1

Date of Report: 08/05/11
Date Received: 07/19/11
Project: E2JK-Dykman TAC-2, F&BI 107237

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR pH BY METHOD 9045D

Laboratory Code: 107237-03 (Duplicate)

Analyte	Sample Result	Duplicate Result	Relative Percent Difference	Acceptance Criteria
pH	7.63	7.98	4	0-20

Date of Report: 08/05/11
Date Received: 07/19/11
Project: E2JK-Dykman TAC-2, F&BI 107237

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR pH BY METHOD 9040C

Laboratory Code: 107237-28 (Duplicate)

Analyte	Sample Result	Duplicate Result	Relative Percent Difference	Acceptance Criteria
pH	4.91	4.97	1	0-20

Date of Report: 08/05/11
Date Received: 07/19/11
Project: E2JK-Dykman TAC-2, F&BI 107237

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL METALS USING EPA METHOD 200.8

Laboratory Code: 107237-01 x10 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Lead	mg/kg (ppm)	50	38,300	4,075 b	0 b	65-126	200 b

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Lead	mg/kg (ppm)	50	100	81-120

Date of Report: 08/05/11
Date Received: 07/19/11
Project: E2JK-Dykman TAC-2, F&BI 107237

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL METALS USING EPA METHOD 200.8

Laboratory Code: 107237-33 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Lead	mg/kg (ppm)	50	462	292 b	211 b	65-126	32 b

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Lead	mg/kg (ppm)	50	97	81-120

Date of Report: 08/05/11
Date Received: 07/19/11
Project: E2JK-Dykman TAC-2, F&BI 107237

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL METALS USING EPA METHOD 200.8

Laboratory Code: 107237-65 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Lead	mg/kg (ppm)	50	307	72 b	88 b	65-126	20 b

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Lead	mg/kg (ppm)	50	115	81-120

Date of Report: 08/05/11
Date Received: 07/19/11
Project: E2JK-Dykman TAC-2, F&BI 107237

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR DISSOLVED METALS USING EPA METHOD 200.8

Laboratory Code: 107322-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Lead	ug/L (ppb)	10	<1	100	97	76-125	3

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Lead	ug/L (ppb)	10	104	67-135

Date of Report: 08/05/11
Date Received: 07/19/11
Project: E2JK-Dykman TAC-2, F&BI 107237

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL METALS USING EPA METHOD 200.8

Laboratory Code: 107323-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Lead	ug/L (ppb)	10	9.33	105 b	103 b	76-125	2 b

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Lead	ug/L (ppb)	10	111	67-135

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

A1 – More than one compound of similar molecule structure was identified with equal probability.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte indicated may be due to carryover from previous sample injections.

d - The sample was diluted. Detection limits may be raised due to dilution.

ds - The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.

dv - Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.

fb - Analyte present in the blank and the sample.

fc – The compound is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.

ht - Analysis performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

j – The result is below normal reporting limits. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.

jr - The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the compound indicated is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc – The sample was received in a container not approved by the method. The value reported should be considered an estimate.

pr – The sample was received with incorrect preservation. The value reported should be considered an estimate.

ve - Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

107237

SAMPLE CHAIN OF CUSTODY

AP 07/19/11

BI2 ~~BOS~~

Page # 1 of 5

Send Report To Jonathan M. Kemp

Company EnCo Environmental Corp

Address PO Box 1212

City, State, ZIP Puyallup WA 98374

Phone # 253.841.9710 Fax # 253-841.0264

SAMPLERS (signature) Jonathan M Kemp

PROJECT NAME/NO. E23rd-Dykman Tac - 2

PO#

REMARKS

TURNAROUND TIME
~~X~~ Standard (2 Weeks)
☐ RUSH
~~Rush charges authorized by~~

SAMPLE DISPOSAL
~~X~~ Dispose after 30 days
☐ Return samples
☐ Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by8260	SVOCs by 8270	HFS	ANALYSES REQUESTED: Lead	Dissolved Lead	TPH				Notes
SB-SO-1WA-A-0.40 SB-SO-1WA-B-2.0'	01 02	7.19.11 7.19.11	10:15 10:30	Grab-Soil Grab-Soil	1 LTPB 1 VTPB													Hold all "B" SAMPLES as Noted on Form
SB-SO-1BG-A-0.50'	03	7.18.11	9:55	Grab Soil	1							X		X				
SB-SO-1BG-B-2.5'	04	7.18	10:00									X		X				~~Hold~~ Run
SB-SO-2BG-A-1.0'	05	7.18	10:10									X		X				
SB-SO-2BG-B-2.5'	06	7.18	10:15									X		X				~~Hold~~ Run
SB-SO-1A-0.50'	07	7.18	2:00									X						
SB-SO-1B-1.5'	08	7.18	2:05									X						Hold
SB-SO-2A-0.50'	09	7.18	10:20									X						
SB-SO-2B-2.0'	10	7.18	10:25									X						Hold
SB-SO-3A-0.50'	11	7.18	10:32									X						
SB-SO-3B-2.0'	12	7.18	10:35									X						Hold
* SB-SO-2SA-0.50	62	7.19	8:20									X						(Moved to page 6)

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Jonathan M. Kemp	Jonathan M. Kemp	EnCo Environmental	7.19.11	2:30 PM
Received by:		William Meder	Postal Express	7/18/11	2:35 PM
Relinquished by:					
Received by:		Nhan Phan	FedEx	7/19/11	1540

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

107237

SAMPLE CHAIN OF CUSTODY

AP 07/19/11

Page # 2 of 5 BI2 ~~BOQ~~

Send Report To: EnCo Environmental Corp
Company: Jonathan M. Kemp
Address: PoBox 1212
City, State, ZIP: Puyallup WA 98374
Phone #: 253.841.9710 Fax #: 253.841.0264
jkemp@encoec.com

SAMPLERS (signature): Jonathan M. Kemp
PROJECT NAME/NO.: EEJK - Dykman Tac-2
PO#:
REMARKS:

TURNAROUND TIME
☒ Standard (2 Weeks)
☐ RUSH
~~Rush charges authorized by~~

SAMPLE DISPOSAL
☒ Dispose after 30 days
☐ Return samples
☐ Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by8260	SVOCs by 8270	HFS	Total Lead	pH					Notes
SB-SO-2WA-A-0.50'	13	7.19	9:30	Grab Soil	1 - 4oz T													
SB-SO-2WA-B-1.5'	14	7.19	9:45	Grab Soil	1 - 4oz T													
SB-SO-2WA-C-2.0'	15	7.19	9:55	Grab Soil	1 - 4oz T													
SB-SO-4A-0.50'	16	7.18.11	10:45	Grab Soil	1							✓						
SB-SO-4B-1.5'	17	7.18	10:52									✓						Hold
SB-SO-5A-1.0'	18	7.18	10:56									✓						
SB-SO-5B-2.0'	19	7.18	11:02									✓						Hold
SB-SO-6A-0.50'	20	7.18	11:12									✓						
SB-SO-6B-1.5'	21	7.18	11:17									✓						Hold
SB-SO-7A-1.0'	22	7.18	11:25									✓						
SB-SO-7B-2.0'	23	7.18	11:29									✓						Hold
SB-SO-8A-0.50'	24	7.18	2:21									✓	✓					
SB-SO-8B-1.9'	25	7.18	2:25									✓	✓					Run pH Hold Lead
SB-SO-2SB-1.5'	26	7.19	8:22									X						Hold

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: Jonathan M. Kemp	Jonathan M. Kemp	EnCo Environmental	7.19.11	2:30 ~~1~~ p.m
Received by:	William Weber	Postal Express	7/19/11	2:35
Relinquished by:				
Received by: Nhan Phan	Nhan Phan	FeBI	7/19/11	1540

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

107237

SAMPLE CHAIN OF CUSTODY

AP 07/19/11

Page # 3 of 5 BI-2

Send Report To Jonathan M. Kemp

Company Eng Environmental Corporation

Address PO Box 1212

City, State, ZIP Puyallup WA 98374

Phone #253.841.9710 Fax #253.841.0264

SAMPLERS (signature) Jonathan M/day

PROJECT NAME/NO. EJSK-Dykeman Tac-2

PO#

REMARKS

TURNAROUND TIME
- [x] Standard (2 Weeks)
- [ ] RUSH
- Rush charges authorized by

SAMPLE DISPOSAL
- [x] Dispose after 30 days
- [ ] Return samples
- [ ] Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by8260	SVOCs by 8270	HFS	Total Lead	Dissolved Lead	Field Filtered	Notes
SB-WA-1WA	27A-C	7.09	10:55	Grabwater	3										
SB-WA-2WA	28A-C	7.09	10:05	Grabwater	3										
SB-SO-9A-0.50'	29	7.18.11	11:44	Grab-Soil	1							✓			
SB-SO-9B-1.5'	30	7.18	11:51									✓			Hold
SB-SO-10A-1.0'	31	7.18	11:56									✓			
SB-SO-10B-2.0'	32	7.18	12:02									✓			Hold
SB-SO-11A-0.50'	33	7.18	1:45									✓			
SB-SO-11B-1.5'	34	7.18	1:55									✓			Hold
SB-SO-12A-1.0'	35	7.18	2:36									✓			
SB-SO-12B-2.0'	36	7.18	2:46									✓			Hold
SB-SO-13A-0.50'	37	7.18	3:05									✓			
SB-SO-13B-1.5'	38	7.18	3:10									✓			Hold
* SB-SO-26A-0.75'	63	7.19	8:10									✓			(Moved to page 6)

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: Jonathan M/day	Jonathan M. Kemp	Eng Environmental	7-19-11	2:30 p.m
Received by:	William Weber	Postal Express	7/19/11	2:35
Relinquished by:				
Received by:	Nhan Phan	FeBI	7/19/4	1540

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
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Fax (206) 283-5044

107237

SAMPLE CHAIN OF CUSTODY

AP 07/19/11

BI 2

Page # 4 of 5

Send Report To Jonathan M. Kemp

Company Eng Environmental Corp

Address PO Box 1212

City, State, ZIP Puyallup WA 98374

Phone # 253.841.9710 Fax # 253.841.0264

SAMPLERS (signature) Jonathan M. Kemp

PROJECT NAME/NO. E25R - Dykman Tac-2

PO#

REMARKS

TURNAROUND TIME
- [x] Standard (2 Weeks)
- [ ] RUSH
- ~~Rush charges~~ authorized by

SAMPLE DISPOSAL
- [x] Dispose after 30 days
- [ ] Return samples
- [ ] Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by8260	SVOCs by 8270	HFS	THL Low	HP					Notes
SB-50-14A-1.0'	39	7.18.11	12:54	Grab-Soil	1							✓						
SB-50-14B-2.0'	40	7.18	1:00									✓						Hold
SB-50-15A-1.0'	41	7.18	12:23									✓						
SB-50-15B-2.0'	42	7.18	12:28									✓						Hold
SB-50-16A-1.0'	43	7.18	1:03									✓						
SB-50-16B-2.0'	44	7.18	1:06									✓						Hold
SB-50-17A-0.50'	45	7.18	1:10									✓						
SB-50-17B-1.5'	46	7.18	1:24									✓						Hold
SB-50-18A-1.0'	47	7.18	12:15									✓						
SB-50-18B-2.0'	48	7.18	12:18									✓						Hold
SB-~~50~~-26B-2.0'	49	7.19	8:12									✓						Hold

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: Jonathan M. Kemp	Jonathan M. Kemp	Eng Environmental	7-19-11	2:30 P.M
Received by:	William Weber	Postal Express	7/19/11	2:35 P.M
Relinquished by:				
Received by:	Nhan Phan	FeBI	7/19/11	1540

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

107237

SAMPLE CHAIN OF CUSTODY

AP 07/19/11

BF2 5 of 5

Page # _____ of _____

Send Report To Jonathan M. Kemp

Company Erlo Environmental Corp

Address PO Box 1212

City, State, ZIP Puyallup WA 98371

Phone # 253 841-9710 Fax # 253 841-0264

SAMPLERS (signature) Jonathan M Kemp

PROJECT NAME/NO. E2 for Dykeman Trac-1

PO#

REMARKS

TURNAROUND TIME
- [x] Standard (2 Weeks)
- [ ] RUSH _____
- Rush charges authorized by _____

SAMPLE DISPOSAL
- [x] Dispose after 30 days
- [ ] Return samples
- [ ] Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by8260	SVOCs by 8270	HFS	Total Lead	pH					Notes
SB-50-19A - 0.50'	50	7.18.11	1:29	GrabSoil	1							✓						
SB-50-19B - 1.8'	51	7.18	1:36	"	"							✓						Hold
SB-50-20A - 0.50'	52	7.18	4:00	"	"							✓						
SB-50-20B - 1.5'	53	7.18	4:05	"	"							✓						Hold
SB-50-21A - 0.50'	54	7.18	4:10	"	"							✓						
SB-50-21B - 1.5'	55	7.18	4:13	"	"							✓						Hold
SB-50-22A - 0.50'	56	7.19.11	8:30	"	"							✓						
SB-50-22B - 1.8'	57	7.19	8:32	"	"							✓						Hold
SB-50-24A - 0.50	58	7.18	4:35	"	"							✓						
SB-50-24B - 1.9'	59	7.18	4:50	"	"							✓						Hold
SB-50-27A - 0.50	60	7.19	8:40	"	"							✓						
SB-50-27B - 1.8'	61	7.19	8:42	"	"							✓						Hold B

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Jonathan M Kemp	Jonathan M Kemp	Erlo Env. Corp	7-19-11	2:30pm
Received by:		William Weber	Postal Express	7/19/11	2:35 PM
Relinquished by:					
Received by:		Nhan Phan	FedEx	7/19/11	1540

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

FORMS\COC\COC.DOC

107237

SAMPLE CHAIN OF CUSTODY

AP 07/19/11

BI2 ~~B02~~

Page # 6 of 6

Send Report To O

Company EnCO

Address

City, State, ZIP

Phone # Fax #

SAMPLERS *(signature)*

PROJECT NAME/NO. | PO #

REMARKS

* coc generated in lab.

TURNAROUND TIME
- ☐ Standard (2 Weeks)
- ☐ RUSH

Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Dispose after 30 days
- ☐ Return samples
- ☐ Will call with instructions

Sample ID	Lab ID	Date	Time	Sample Type	# of containers	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260	SVOCs by 8270	HFS	T-Lead					Notes
SB-50-25A-0.5O	62	7/19	0820	1	Soil							X					From page 1
SB-50-26A 0.75'	63	7-19-	0810	1	Soil.							X					From page 3
SB-50-23A-0.5'	64	7/18	04:21	1	Soil							⊗					⊗-pr TK 7/20/11
SB-50-23B-1.5'	65	7/18	0425	1	Soil												MC

ANALYSES REQUESTED

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

FORMS\COC\COC.DOC

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	see others COC				→
Received by:		Nhan Pham	FeBT	7/19/11	1540
Relinquished by:					
Received by:					

Samples received at 4 °C

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Charlene Morrow, M.S.
Yelena Aravkina, M.S.
Bradley T. Benson, B.S.
Kurt Johnson, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
TEL: (206) 285-8282
FAX: (206) 283-5044
e-mail: fbi@isomedia.com

August 16, 2011

Jon Kemp, Project Manager
Enco Environmental Corporation
PO Box 1212
Puyallup, WA 98371

Dear Mr. Kemp:

Included are the results from the testing of material submitted on August 8, 2011 from the E2JK-Dykman Tac-2, F&BI 108100 project. There are 11 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
ENC0816R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on August 8, 2011 by Friedman & Bruya, Inc. from the Enco Environmental Corporation E2JK-Dykman Tac-2, F&BI 108100 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Enco Environmental Corporation
108100-01	SB-SO-1WA-C-4'
108100-02	SB-SO-1WA-D-6.33'
108100-03	SB-SO-1WA-E-8.5'
108100-04	SB-SO-2WA-D-6'4"
108100-05	SB-SO-2WA-E-8'6"

All quality control requirements were acceptable.

Date of Report: 08/16/11
Date Received: 08/08/11
Project: E2JK-Dykman Tac-2, F&BI 108100
Date Extracted: 08/15/11
Date Analyzed: 08/15/11

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR pH USING EPA METHOD 9045D

Sample ID Laboratory ID	pH
SB-SO-1WA-C-4' 108100-01	4.85
SB-SO-1WA-D-6.33' 108100-02	3.90
SB-SO-1WA-E-8.5' 108100-03	6.74
SB-SO-2WA-D-6'4" 108100-04	7.08
SB-SO-2WA-E-8'6" 108100-05	4.30

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-1WA-C-4'	Client:	Enco Environmental Corporation
Date Received:	08/08/11	Project:	E2JK-Dykman Tac-2, F&BI 108100
Date Extracted:	08/11/11	Lab ID:	108100-01
Date Analyzed:	08/11/11	Data File:	108100-01.030
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	93	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	195

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-1WA-D-6.33'	Client:	Enco Environmental Corporation
Date Received:	08/08/11	Project:	E2JK-Dykman Tac-2, F&BI 108100
Date Extracted:	08/11/11	Lab ID:	108100-02
Date Analyzed:	08/11/11	Data File:	108100-02.031
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	93	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	1,030

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-1WA-E-8.5'	Client:	Enco Environmental Corporation
Date Received:	08/08/11	Project:	E2JK-Dykman Tac-2, F&BI 108100
Date Extracted:	08/11/11	Lab ID:	108100-03
Date Analyzed:	08/11/11	Data File:	108100-03.032
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	93	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	20.9

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-2WA-D-6'4"	Client:	Enco Environmental Corporation
Date Received:	08/08/11	Project:	E2JK-Dykman Tac-2, F&BI 108100
Date Extracted:	08/11/11	Lab ID:	108100-04
Date Analyzed:	08/11/11	Data File:	108100-04.033
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	92	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	2.03

Analysis For Total Metals By EPA Method 200.8

Client ID:	SB-SO-2WA-E-8'6"	Client:	Enco Environmental Corporation
Date Received:	08/08/11	Project:	E2JK-Dykman Tac-2, F&BI 108100
Date Extracted:	08/11/11	Lab ID:	108100-05
Date Analyzed:	08/11/11	Data File:	108100-05.034
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	94	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	395

Analysis For Total Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	Enco Environmental Corporation
Date Received:	Not Applicable	Project:	E2JK-Dykman Tac-2, F&BI 108100
Date Extracted:	08/11/11	Lab ID:	I1-560 mb
Date Analyzed:	08/11/11	Data File:	I1-560 mb.011
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	94	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	<1

Date of Report: 08/16/11
Date Received: 08/08/11
Project: E2JK-Dykman Tac-2, F&BI 108100

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR pH BY METHOD 9045D

Laboratory Code: 108100-01 (Duplicate)

Analyte	Sample Result	Duplicate Result	Relative Percent Difference	Acceptance Criteria
pH	4.85	5.07	4	0-20

Date of Report: 08/16/11
Date Received: 08/08/11
Project: E2JK-Dykman Tac-2, F&BI 108100

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL METALS USING EPA METHOD 200.8

Laboratory Code: 108137-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Lead	mg/kg (ppm)	50	2.58	108	110	65-126	2

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Lead	mg/kg (ppm)	50	110	81-120

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

A1 – More than one compound of similar molecule structure was identified with equal probability.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte indicated may be due to carryover from previous sample injections.

d - The sample was diluted. Detection limits may be raised due to dilution.

ds - The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.

dv - Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.

fb - Analyte present in the blank and the sample.

fc – The compound is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.

ht - Analysis performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

j – The result is below normal reporting limits. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.

jr - The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the compound indicated is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc – The sample was received in a container not approved by the method. The value reported should be considered an estimate.

pr – The sample was received with incorrect preservation. The value reported should be considered an estimate.

ve - Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

108100

SAMPLE CHAIN OF CUSTODY

ME 08-08-11

1 | CI2

Send Report To Jonathan Kemp
Company EnCo Environmental Corp
Address PO Box 1212
City, State, ZIP Puyallup WA 98371
Phone # 253.841.9710 Fax # 253.841.0264

SAMPLERS (signature) Jonathan M Kemp
PROJECT NAME/NO. ESTR Dykeman T4C-2
PO #
REMARKS

Page # _____ of _____

TURNAROUND TIME
☒ Standard (2 Weeks)
☐ RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
☒ Dispose after 30 days
☐ Return samples
☐ Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260	SVOCs by 8270	HFS	Total Lead Pb					Lab ID	Notes
SB-SO-1WA-C-4'		7.19.11	10:33	Soil Gab	1 40z							✓	✓				01	
SB-SO-1WA-D-6.33'		7.19.11	10.35									✓	✓				02	
SB-SO-1WA-E-8.5'		7.19.11	10:38									✓	✓				03	
SB-SO-2WA-D-6'4"		7.19.11	10:00									✓	✓				04	
SB-SO-2WA-E-8'6"		7.19.11	10:10									✓	✓				05	

Samples received at 6 °C

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

FORMS\COC\COC.DOC

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Jonathan M Kemp	Jonathan M. Kemp	EnCo Env. Corp	8/8/11	10:15
Received by:		RICHARD NELSON	POSTAL	8-8-11	1015
Relinquished by:					
Received by:		DO VO	F+BI	8-8-11	12.30

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Charlene Morrow, M.S.
Yelena Aravkina, M.S.
Bradley T. Benson, B.S.
Kurt Johnson, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
TEL: (206) 285-8282
FAX: (206) 283-5044
e-mail: fbi@isomedia.com

August 19, 2011

Jon Kemp, Project Manager
Enco Environmental Corporation
PO Box 1212
Puyallup, WA 98371

Dear Mr. Kemp:

Included are the additional results from the testing of material submitted on July 19, 2011 from the E2JK-Dykman TAC-2, F&BI 107237 project. There are 6 pages included in this report.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
ENC0819R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on July 19, 2011 by Friedman & Bruya, Inc. from the Enco Environmental Corporation E2JK-Dykman TAC-2, F&BI 107237 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Enco Environmental Corporation
107237-01	SB-SO-1WA-A-0.40
107237-02	SB-SO-1WA-B-2.0
107237-03	SB-SO-1BG-A-0.50
107237-04	SB-SO-1BG-B-2.5
107237-05	SB-SO-2BG-A-1.0
107237-06	SB-SO-2BG-B-2.5
107237-07	SB-SO-1A-0.50
107237-08	SB-SO-1B-1.5
107237-09	SB-SO-2A-0.50
107237-10	SB-SO-2B-2.0
107237-11	SB-SO-3A-0.50
107237-12	SB-SO-3B-2.0
107237-13	SB-SO-2WA-A-0.50
107237-14	SB-SO-2WA-B-1.5
107237-15	SB-SO-2WA-C-2.0
107237-16	SB-SO-4A-0.50
107237-17	SB-SO-4B-1.5
107237-18	SB-SO-5A-1.0
107237-19	SB-SO-5B-2.0
107237-20	SB-SO-6A-0.50
107237-21	SB-SO-6B-1.5
107237-22	SB-SO-7A-1.0
107237-23	SB-SO-7B-2.0
107237-24	SB-SO-8A-0.50
107237-25	SB-SO-8B-1.9
107237-26	SB-SO-25B-1.5
107237-27	SB-WA-1WA
107237-28	SB-WA-2WA
107237-29	SB-SO-9A-0.50
107237-30	SB-SO-9B-1.5
107237-31	SB-SO-10A-1.0
107237-32	SB-SO-10B-2.0
107237-33	SB-SO-11A-0.50
107237-34	SB-SO-11B-1.5
107237-35	SB-SO-12A-1.0
107237-36	SB-SO-12B-2.0
107237-37	SB-SO-13A-0.50
107237-38	SB-SO-13B-1.5

CASE NARRATIVE (continued)

Laboratory ID	Enco Environmental Corporation
107237-39	SB-SO-14A-1.0
107237-40	SB-SO-14B-2.0
107237-41	SB-SO-15A-1.0
107237-42	SB-SO-15B-2.0
107237-43	SB-SO-16A-1.0
107237-44	SB-SO-16B-2.0
107237-45	SB-SO-17A-0.50
107237-46	SB-SO-17B-1.5
107237-47	SB-SO-18A-1.0
107237-48	SB-SO-18B-2.0
107237-49	SB-SO-26B-2.0
107237-50	SB-SO-19A-0.50
107237-51	SB-SO-19B-1.8
107237-52	SB-SO-20A-0.50
107237-53	SB-SO-20B-1.5
107237-54	SB-SO-21A-0.50
107237-55	SB-SO-21B-1.5
107237-56	SB-SO-22A-0.50
107237-57	SB-SO-22B-1.8
107237-58	SB-SO-24A-0.50
107237-59	SB-SO-24B-1.9
107237-60	SB-SO-27A-0.50
107237-61	SB-SO-27B-2.0
107237-62	SB-SO-25A-0.50
107237-63	SB-SO-26A-0.75
107237-64	SB-SO-23A-0.5
107237-65	SB-SO-23B-1.5

All quality control requirements were acceptable.

Date of Report: 08/19/11
Date Received: 07/19/11
Project: E2JK-Dykman TAC-2, F&BI 107237
Date Extracted: 08/15/11 and 08/18/11
Date Analyzed: 08/15/11 and 08/18/11

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR pH USING EPA METHOD 9045D

Sample ID Laboratory ID	pH
SB-SO-1WA-A-0.40 107237-01	4.17
SB-SO-1WA-B-2.0 107237-02	3.98
SB-SO-2WA-A-0.50 107237-13	7.65
SB-SO-2WA-B-1.5 107237-14	8.03
SB-SO-2WA-C-2.0 107237-15	7.90

Date of Report: 08/19/11
Date Received: 07/19/11
Project: E2JK-Dykman TAC-2, F&BI 107237

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR pH BY METHOD 9045D

Laboratory Code: 108100-01 (Duplicate)

Analyte	Sample Result	Duplicate Result	Relative Percent Difference	Acceptance Criteria
pH	4.85	5.07	4	0-20

Date of Report: 08/19/11
Date Received: 07/19/11
Project: E2JK-Dykman TAC-2, F&BI 107237

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR pH BY METHOD 9045D

Laboratory Code: 107237-13 (Duplicate)

Analyte	Sample Result	Duplicate Result	Relative Percent Difference	Acceptance Criteria
pH	7.65	7.96	4	0-20

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

A1 – More than one compound of similar molecule structure was identified with equal probability.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte indicated may be due to carryover from previous sample injections.

d - The sample was diluted. Detection limits may be raised due to dilution.

ds - The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.

dv - Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.

fb - Analyte present in the blank and the sample.

fc – The compound is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.

ht - Analysis performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

j – The result is below normal reporting limits. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.

jr - The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the compound indicated is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc – The sample was received in a container not approved by the method. The value reported should be considered an estimate.

pr – The sample was received with incorrect preservation. The value reported should be considered an estimate.

ve - Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

107237

SAMPLE CHAIN OF CUSTODY

AP 07/19/11

BI2 ~~BOS~~

Page # 1 of 5

Send Report To Jonathan M. Kemp

Company EnCo Environmental Corp

Address PO Box 1212

City, State, ZIP Puyallup WA 98374

Phone # 253.841.9710 Fax # 253-841.0264

SAMPLERS (signature) Jonathan M. Kemp

PROJECT NAME/NO. F250-Dykman Tac - 2

PO#

REMARKS

TURNAROUND TIME
- ~~X~~ Standard (2 Weeks)
- ☐ RUSH
- ~~Rush charges authorized~~ by

SAMPLE DISPOSAL
- ~~X~~ Dispose after 30 days
- ☐ Return samples
- ☐ Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by8260	SVOCs by 8270	HFS	~~XT~~ Lead	Dissolved Lead	~~TPH~~	pH			Notes
SB-SO-1WA-A-0.40 SB-SO-1WA-B-2.0'	01 02	7.19.11 7.19.11	10:15 10:30	Gab-Soil Gab-Soil	1 VTPH										(X)			Hold all "B" SAMPLES on Hold on Form
SB-SO-1BG-A-0.50'	03	7.18.11	9:55	Gab Soil	1							X		X				
SB-SO-1BG-B-2.5'	04	7.18	10:00									X		X				~~Hold~~ Run
SB-SO-2BG-A-1.0'	05	7.18	10.10									X		X				
SB-SO-2BG-B-2.5'	06	7.18	10:15									X		X				~~Hold~~ Run
SB-SO-1A-0.50'	07	7.18	2:00									X						
SB-SO-1B-1.5'	08	7.18	2:05									X						Hold
SB-SO-2A-0.50'	09	7.18	10:20									X						
SB-SO-2B-2.0'	10	7.18	10:25									X						Hold
SB-SO-3A-0.50'	11	7.18	10:32									X						
SB-SO-3B-2.0'	12	7.18	10:35									X						Hold
* SB-SO-2SA-0.50'	62	7.19	8:20									X						(moved to page 6)

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Jonathan M. Kemp	Jonathan M. Kemp	EnCo Environmental	7.19.11	2:30 PM
Received by:		William Weber	Postal Express	7/19/11	2:35 PM
Relinquished by:					
Received by:	Nhan Phan	Nhan Phan	FedEx	7/19/11	1540

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

107237

SAMPLE CHAIN OF CUSTODY

AP 07/19/11

Page # 2 of 5 BI2 ~~BOQ~~

Send Report To: EnCo Environmental Corp
Company: Jonathan M. Kemp
Address: PO Box 1212
City, State, ZIP: Puyallup WA 98374
Phone #: 253.841.9710 Fax #: 253.841.0284
jkemp@encoec.com

SAMPLERS (signature): Jonathan M. Kemp
PROJECT NAME/NO.: EZJK - Dykman Tac-2
PO#:
REMARKS:

TURNAROUND TIME
☒ Standard (2 Weeks)
☐ RUSH
~~Rush charges authorized by~~

SAMPLE DISPOSAL
☒ Dispose after 30 days
☐ Return samples
☐ Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	ANALYSES REQUESTED: TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by8260	SVOCs by 8270	HFS	Total Lead	PH	PCB @ 1				Notes
SB-SO-2WA-0.5' SB-SO-2WA-B-1.5' SB-SO-2WA-C-2.0'	13 14 15	7.19 7.19 7.19	9:30 9:45 9:55	Grab Soil Grab Soil Grab Soil	1 - 4oz jar 1 - 4oz jar 1 - 4oz jar													
SB-SO-4A-0.50'	16	7.18	10:45	Grab Soil	1							✓						
SB-SO-4B-1.5'	17	7.18	10:52									✓						Hold
SB-SO-5A-1.0'	18	7.18	10:56									✓						
SB-SO-5B-2.0'	19	7.18	11:02									✓						Hold
SB-SO-6A-0.50'	20	7.18	11:12									✓						
SB-SO-6B-1.5'	21	7.18	11:17									✓						Hold
SB-SO-7A-1.0'	22	7.18	11:25									✓						
SB-SO-7B-2.0'	23	7.18	11:29									✓						Hold
SB-SO-8A-0.50'	24	7.18	2:21									✓	✓					
SB-SO-8B-1.5'	25	7.18	2:25									✓	✓					Run PH, Hold Lead
SB-SO-2SB-1.5'	26	7.19	8:22									X						Hold

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: Jonathan M. Kemp	Jonathan M. Kemp	EnCo Environmental	7.19.11	2:30 ~~1~~ p.m
Received by:	William Weber	Postal Express	7/19/11	2:35
Relinquished by:				
Received by:	Nhan Phan	FEBI	7/19/11	1540

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SAMPLE CHAIN OF CUSTODY

AP 07/19/11

Page # 3 of 5 BI2

Send Report To Jonathan M Kemp

Company Envi Environmental Corporation

Address PO Box 1212

City, State, ZIP Puyallup WA 98374

Phone # 253.841.9710 Fax # 253.841.0264

SAMPLERS (*signature*) Jonathan M Kemp

PROJECT NAME/NO. E2SK-Dykman Tac-2

PO# ?

REMARKS

TURNAROUND TIME
- [x] Standard (2 Weeks)
- [ ] RUSH

~~Rush charges~~ authorized by

SAMPLE DISPOSAL
- [x] Dispose after 30 days
- [ ] Return samples
- [ ] Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by8260	SVOCs by 8270	HFS	Total Lead	pH	Dissolved Lead	(Field Filtered)			Notes
SB-WA-1WA	27A-C	7-19	10:55	Grabwater	3													
SB-WA-2WA	28A-C	7-19	10:05	Grabwater	3													
SB-SO-9A-0.50'	29	7-18-11	11:44	Grab-Soil	1							✓						
SB-SO-9B-1.5'	30	7-18	11:51	↓	↓							✓						Hold
SB-SO-10A-1.0'	31	7-18	11:56	↓	↓							✓						
SB-SO-10B-2.0'	32	7-18	12:02	↓	↓							✓						Hold
SB-SO-11A-0.50'	33	7-18	1:45	↓	↓							✓						
SB-SO-11B-1.5'	34	7-18	1:55	↓	↓							✓						Hold
SB-SO-12A-1.0'	35	7-18	2:36	↓	↓							✓						
SB-SO-12B-2.0'	36	7-18	2:46	↓	↓							✓						Hold
SB-SO-13A-0.50'	37	7-18	3:05	↓	↓							✓						
SB-SO-13B-1.5'	38	7-18	3:10	↓	↓							✓						Hold
* ~~SB-SO-26A-0.75'~~	~~62~~	~~7-19~~	~~8:10~~									✓						(Moved to page 6)

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Fax (206) 283-5044

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Jonathan M Kemp	Jonathan M. Kemp	Envi Environmental	7-19-11	2:30 pm
Received by:	[signature]	William Weber	Postal Express	7/19/11	2:35
Relinquished by:					
Received by:	[signature]	Nhan Phan	FeBI	7/19/11	1540

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SAMPLE CHAIN OF CUSTODY AP 07/19/11

BI 2

Page # 4 of 5

Send Report To Jonathan M. Kemp

Company Eng & Environmental Corp

Address PO Box 1212

City, State, ZIP Puyallup WA 98374

Phone # 253.841.9708 Fax # 253.841.0264

SAMPLERS (signature) Jonathan M Kemp

PROJECT NAME/NO. EESK - Dykman Tac-2 → PO#

REMARKS

TURNAROUND TIME
- [x] Standard (2 Weeks)
- [ ] RUSH
- ~~Rush charges~~ authorized by

SAMPLE DISPOSAL
- [x] Dispose after 30 days
- [ ] Return samples
- [ ] Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by8260	SVOCs by 8270	HFS	THH Lead	pH					Notes
SB-50-14A-1.0'	39	7.18.11	12:54	Grab-Soil	1							✓						
SB-50-14B-20'	40	7.18	1:00									✓						Hold
SB-50-15A-1.0'	41	7.18	12:23									✓						
SB-50-15B-20'	42	7.18	12:28									✓						Hold
SB-50-16A-1.0'	43	7.18	1:03									✓						
SB-50-16B-20'	44	7.18	1:06									✓						Hold
SB-50-17A-0.50'	45	7.18	1:10									✓						
SB-50-17B-1.5'	46	7.18	1:24									✓						Hold
SB-50-18A-1.0'	47	7.18	12:15									✓						
SB-50-18B-20'	48	7.18	12:18									✓						Hold
SB-~~50~~-26B-2.0'	49	7.19	8:12									✓						Hold

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: Jonathan M Kemp	Jonathan M Kemp	Eng & Environmental	7-19-11	2:30 P.M
Received by:	William Weber	Postal Express	7/19/11	2:35 PM
Relinquished by:				
Received by: Nhan Phan	Nhan Phan	Fe B I	7/19/11	1540

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Seattle, WA 98119-2029
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SAMPLE CHAIN OF CUSTODY

AP 07/19/11

BF 2 5 of 5

Page # 5 of 5

Send Report To Jonathan M. Kemp

Company Erlo Environmental Corp

Address PO Box 1212

City, State, ZIP Puyallup WA 98371

Phone # 253 841-9710 Fax # 253 841-0264

SAMPLERS (signature) Jonathan M/Kemp

PROJECT NAME/NO. E2 for Dykeman Tract-1

PO#

REMARKS

TURNAROUND TIME
- [x] Standard (2 Weeks)
- [ ] RUSH
- Rush charges authorized by

SAMPLE DISPOSAL
- [x] Dispose after 30 days
- [ ] Return samples
- [ ] Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by8260	SVOCs by 8270	HFS	Total Lead	PH					Notes
SB-50-19A - 0.50'	50	7.18.11	1:29	Grab Soil	1							✓						
SB-50-19B - 1.8'	51	7.18	1:36	"	"							✓						Hold
SB-50-20A - 0.50'	52	7.18	4:00	"	"							✓						
SB-50-20B - 1.5'	53	7.18	4:05	"	"							✓						Hold
SB-50-21A - 0.50'	54	7.18	4:10	"	"							✓						
SB-50-21B - 1.5'	55	7.18	4:13	"	"							✓						Hold
SB-50-22A - 0.50'	56	7.19.11	8:30	"	"							✓						
SB-50-22B - 1.8'	57	7.19	8:32	"	"							✓						Hold
SB-50-24A - 0.50	58	7.18	4:35	"	"							✓						
SB-50-24B - 1.9'	59	7.18	4:40	"	"							✓						Hold
SB-50-27A - 0.50	60	7.19	8:40	"	"							✓						Hold B

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Jonathan M/Kemp	Jonathan M. Kemp	Erlo Env. Corp	7-19-11	2:30pm
Received by:		William Weber	Postal Express	7/19/11	2:35 PM
Relinquished by:					
Received by:		Khan Phan	FedEx	7/19/11	1540

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

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SAMPLE CHAIN OF CUSTODY

AP 07/19/11

BI2 B02

Page # 6 of 6

Send Report To O

Company EnCO

Address

City, State, ZIP

Phone # Fax #

SAMPLERS (signature)

PROJECT NAME/NO. | PO #

REMARKS

* coc generated in lab.

TURNAROUND TIME
- ☐ Standard (2 Weeks)
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Dispose after 30 days
- ☐ Return samples
- ☐ Will call with instructions

Sample ID	Lab ID	Date	Time	Sample Type	# of containers	ANALYSES REQUESTED: TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260	SVOCs by 8270	HFS	T-Lead					Notes
SB-50-25A-0.5'	62	7/19	0820	1	Soil							X					From page 1
SB-50-26A 0.75'	63	7-19-	0810	1	Soil.							X					From page 3
SB-50-23A-0.5'	64	7/18	0421	1	Soil							⊗					⊗-pr TK 7/20/11 MK
SB-50-23B-1.5'	65	7/18	0425	1	Soil												

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: See others COC				→
Received by: [signature]	Nhan Pham	FeBT	7/19/11	1540
Relinquished by:				
Received by:				

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

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Samples received at 4 °C

APPENDIX F

PHOTOGRAPHIC LOG

☐ QC

Photo 1
Facing Northeast
Project Site
Sound Battery Sign

Photo 2
Facing East
Project Site
Utility Check Markings
East 11th Street—Left

Photo 3
Facing Southeast
Project Site
Inlet to Floor Drain
Water Sample 2WA
Soil Sample 6

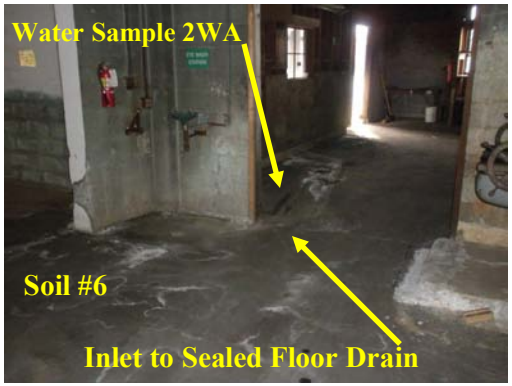

Photo 4
Facing Northwest
Project Site
First Addition
Storage Area
Soils 1, 4, 5, & 7

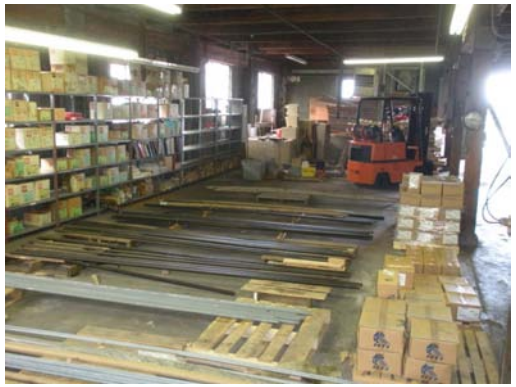

Photo 5
Facing North
Project Site
Third Addition
Pole Roof
Soils 20 to 26

EnCo Environmental Corporation

Photo 6
Facing Northwest
Project Site
Third Addition
Pole Roof
Sealed Floor Drain
Soils 20 to 23

Photo 7
Facing Northwest
Project Site
Second Addition
Asphalt Patch
West of Building
Soils 13 & 14

Photo 8
Facing West
Project Site
First Addition
Hazardous Building
Materials Survey
Lead XRF Testing
Ceiling Supports

Photo 9
Facing West
Project Site
First Addition
Hazardous Building
Materials Survey
XRF Testing
Structure Timber

Photo 10
Facing East
Project Site
Original Building
Front Door
Hazardous Building
Materials Survey
Sample of Caulking

EnCo Environmental Corporation

Photo 11
Top View
Project Site
Concrete Coring
Typical
Water was Vacuumed
Off-Site Disposal

Photo 12
Facing West
Project Site
Second Addition
Concrete Coring
Typical
Water was Vacuumed
Off-Site Disposal

Photo 13
Top View
Project Site
First Addition
Soil Sample 2
6" Concrete Core
Typical

Photo 14
Top View
Project Site
First Addition
Soil Sample 2
Core Removed
Sub Slab View
Typical

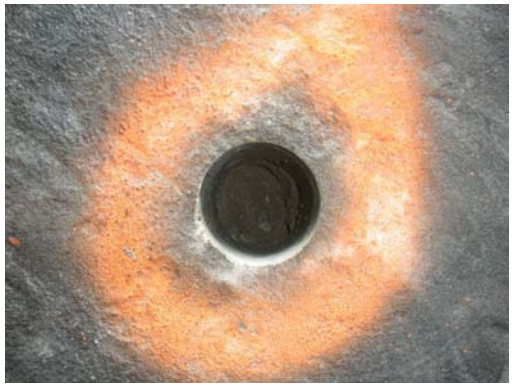

Photo 15
Facing North
Project Site
Third Addition
Soil Sample 22
Hydraulic Probing
Typical

EnCo Environmental Corporation

Photo 16
Facing East
Project Site
Second Addition
Soil Sample 8
Hand Jack Hammer
With Steel Soil Probe
Beneath Acid Vessel
Wooden Platform

Photo 17
Facing Southeast
Project Site
Second Addition
Soil Sample 8 Area
Acid Vessel Wooden
Platform
Acid Crystals on Top

Photo 18
Top View
Project Site
Third Addition
Asphalt Surface
Soil Sample 25
Acetate Liner for
Discrete Soil Sampling
Typical

Photo 19
Top View
Project Site
First Addition
Soil Sample Table
Sample Log In

Photo 20
Top View
Project Site
First Addition
Soil Sample Table
Sample Log In

Photo 21
Facing North
Project Site
Water Sample WA-2
North of Drain Outlet
3/4 Inch Diameter Well
Peristaltic Pump
Waste Collection Pail
Typical

Photo 22
Top View
Project Site
After Soil Sample
Bentonite Chip Seal
Typical

Photo 23
Facing Southeast
Project Site
Soil Sample 10
Acid Storage Area
After Soil Sample
Sacrete Top Seal
Typical

Photo 24
Facing East
Project Site
Water Sample 1WA
NE of Drain Inlet

Photo 25
Top View
Project Site
Original Building
Soil Sample 1BG
Background #1
Sacrete Top Seal
Typical

EnCo Environmental Corporation

Photo 26
Top View
Project Site
MW - 4
Monument Full of
Surface Water
Water Was Removed
Well Sealed w Cap

Photo 27
Facing Southeast
Project Site
Decontamination Station
Loading Dock
Front of Building

Photo 28
Top View
Project Site
Concrete Coring
Waste Sludge
Disposed of Off-Site

Photo 29
Top View
Project Site
First Addition
Waste Collection Drum
Left On-Site

Photo 30
Top View
Project Site
Bentonite Chips
Typical

EnCo Environmental Corporation