# Removal Action Report for August 2009 through June 2010 Removal Action at Northwest Pipe and Casing Clackamas, Oregon

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*Prepared by*

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# ACRONYMS

| | |
|---|---|
| 5YR | Five Year Review |
| bgs | below ground surface |
| BS | blank spike |
| BTEX | aromatic compounds |
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act |
| CVOC | chlorinated volatile organic compounds |
| DEQ | Oregon Department of Environmental Quality |
| DNAPL | dense non-aqueous-phase liquid |
| DQOs | data quality objectives |
| EA | excavation area |
| ECL | Environmental Chemistry Laboratory |
| E & E | Ecology and Environment, Inc. |
| EES | Easements and Equitable Servitude |
| EQM | Environmental Quality Management, Inc. |
| EPA | United States Environmental Protection Agency |
| ERRS | Emergency and Rapid Response Services |
| GAC | granular activated carbon |
| GCW | groundwater monitoring well |
| HEM | Oil and Grease - Hexane Extractable Material |
| HPC | Hall Process Company |
| IC | institutional controls |
| LCS | laboratory control sample |
| LSI | Listing Site Inspection |
| LNAPL | light non-aqueous-phase liquid |
| mg/L | milligrams per liter |
| MNA | monitored natural attenuation |
| MS | matrix spike |
| MS/MSD | matrix spike / matrix spike duplicate |
| MW | monitoring well |
| NAPL | non-aqueous-phase liquid |
| NPL | National Priorities List |
| NWDC | Northwest Development Corporation |
| NWPC | Northwest Pipe and Casing |
| OIW | Oregon Iron Works |
| OSC | On-scene Coordinator |
| OSHA | Occupational Safety and Health Administration |
| OU | operable unit |

## *ACRONYMS (CONTINUED)*

| | |
|---|---|
| PA/SI | Preliminary Assessment / Site Investigation |
| PAH | polyaromatic hydrocarbon |
| PCB | polychlorinated biphenyls |
| PCE | tetrachloroethene, tetrachloroethylene |
| POLREP | pollution report |
| PPE | personal protective equipment |
| PRP | potentially responsible party |
| QA | quality assurance |
| QC | quality control |
| RA | Removal Action |
| RI/FS | Remedial Investigation / Feasibility Study |
| ROD | Record of Decision |
| RRF | relative response factor |
| RSD | relative standard deviation |
| RSE | Remedial System Evaluation |
| RPD | relative percent difference |
| RPM | Remedial Project Manager |
| SCBA | self-contained breathing apparatus |
| SFI | Supplemental Field Investigation |
| SSI | Superfund Site Inspection |
| SSSP | Site-Specific Sampling Plan |
| START | Superfund Technical Assessment and Response Team |
| SVOCS | semivolatile organic compounds |
| SWGM | sitewide groundwater monitoring |
| TCE | trichloroethene, trichloroethylene |
| TSS | Total Suspended Solids |
| TDD | Technical Direction Document |
| TPH | total petroleum hydrocarbons |
| ug/L, µg/L | micrograms per liter |
| VOCS | volatile organic compounds |
| WBZ | water bearing zone |
| WES | Clackamas County Water Environmental Services |
| $yd^3$ | cubic yard |

# EXECUTIVE SUMMARY

The United States Environmental Protection Agency (EPA) performed a Time-Critical Removal Action (RA) at the Northwest Pipe and Casing National Priorities List (Superfund) Site (NWPC) in Clackamas, Oregon. The RA began in August 2009 and was completed in June 2010. The RA was performed on the southern portion of the Site, Parcel B, to mitigate groundwater contamination. Soil containing high concentration contaminant source material was removed and replaced with backfill containing soil amendments expected to encourage biodegradation of the contaminants in groundwater. This action could be the final remedy at the Site. Post-removal groundwater monitoring has shown a significant decrease of the Site contaminants in the on-site monitoring wells, near the excavations, indicating the RA source removal and soil amendment application were an effective remedy to address groundwater contamination at the Site. However, additional monitoring will be required to determine the long-term effectiveness of the RA.

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# 1. INTRODUCTION

An RA was conducted pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. § 9601 *et seq.* by the EPA Region 10 Removal Program at the NWPC site starting in August of 2009 and finishing in June of 2010. The RA consisted of soil excavation in two contaminant source areas, unintentionally left in place after the 2001-2004 remedial action. The excavated soil was disposed of at an off-site waste disposal facility. The excavated areas were backfilled with new, clean rock and sand, and two soil amendments—zero-valent iron/organic carbon and chitin—and recapped with clean soil. Funding for the RA came from two sources: the Superfund and an NWPC Special Account established for cleaning up the Site, funded by previous potentially responsible parties (PRPs). This report describes the details of this RA.

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# 2. SITE DESCRIPTION AND BACKGROUND

NWPC has a long history of clean-up actions. It is currently owned by Clackamas County and is considered a desirable industrial property located approximately 20 miles southeast of Portland, Oregon. Oregon Iron Works (OIW) has leased and developed the property for use in testing street cars which are manufactured on OIW's complex adjacent to the NWPC site. The property has also been identified as a right-of-way for the new Sunrise Project.

The EPA Site ID is 10G8. The CERCLIS and Resource Conservation and Recovery Information System (RCRIS) numbers are ORD980988307. The Oregon State Waste ID is ORD987201126.

## 2.1 SITE LOCATION

NWPC is located at 9585 SE Mather Road in Clackamas, Oregon (Figure 2-1). The Site has been divided into two parcels for purposes of managing the site cleanup based on past operations and current ownership. Parcel A comprises the northern portion of the Site with the western half owned by Oregon Department of Transportation (ODOT) and the eastern half owned by Northwest Development Company (NWDC). The southern portion of the Site is owned by Clackamas County and has been designated as Parcel B. The Site is bounded by SE Lawnfield Road to the north and by SE Mather Road to the south. Industrial Way partially bisects the Site from north to south terminating at the boundary between Parcels A and B. Union Pacific Railroad tracks run along the western boundary of the Site, and Interstate 205 is located approximately 0.5 mile west of the Site. The vicinity of the Site consists primarily of light industrial and commercial properties with a small residential area approximately 0.5 mile south of the Site. The Oregon National Guard operates Camp Withycombe, which is located immediately southeast of the Site. The closest residence is located about 500 feet west of the Site. The city of Milwaukie is located approximately one mile north of the Site.

## 2.2 SITE PHYSICAL CHARACTERISTICS

The is relatively flat and lies within the lower Willamette River basin of western Oregon, in a north-south trending valley between Mount Talbert to the east and a low bluff to the west. The land is drained by Dean Creek and Mount Scott Creek, which both flow to the north-northwest, ultimately converging with the Willamette River. Surface water along the southern boundary of Camp Withycombe drains south to the Clackamas River, indicating that a surface water divide exists south of NWPC. The regional drainage pattern of the Clackamas River and topography suggest that the valley in which the Site lies may have been formerly occupied by the ancestral Clackamas River.

The Site is not within the Clackamas River floodplain, however it is susceptible to surface water ponding due to poor drainage (Weston 1998). The highest historical monthly rainfall occurs between November and January, with average monthly totals exceeding 5.5 inches (Weston 1998). Groundwater in the wet season is at or near the surface. On-site runoff generally drains into man-made ditches, on the eastern and western boundaries of the Site, which in turn flow into Dean Creek. As part of

the remedial action an on-site wetland was constructed which drains to the ditch on the eastern property boundary and then on to Dean Creek.

The Site is underlain by an upper water-bearing zone (WBZ) that overlies a silt confining layer above the Troutdale Aquifer. The upper WBZ extends to about 90 feet below the ground surface (bgs) and consists of three hydrogeologic zones (shallow, intermediate, and deep). The silt confining layer serves as a hydraulic barrier between the upper WBZ and the deeper aquifer which has been interpreted to potentially be equivalent to the Troutdale Aquifer. It is not known if the confining layer is continuous at the Site. There is evidence in a deep well that penetrates the confining layer that contamination may have migrated from the Site or an upgradient source to the lower aquifer. The city of Milwaukie has a well field in the Troutdale Aquifer located approximately 1.75 miles northwest of the Site.

## 2.3 SITE HISTORY, OPERATIONS AND OWNERSHIP

NWPC covers approximately 53 acres of land and, as noted earlier, was divided into two parcels (Parcels A and B) for the purposes of site management. NWPC's pipe manufacturing and storage operation operated at Parcel A (30.5 acres) from 1973 to 1985. The eastern lot of Parcel A is currently owned by NWDC and contains three commercial-use buildings.

Hall Process Company (HPC) acquired a majority of Parcel B (22.5 acres) in 1956 from Orling Lumber Company. Historical land use activities associated with lumber operations are poorly understood. The remaining portion of Parcel B (9.5 acres) was purchased jointly by Wayne Hall Sr. and Wayne Hall Jr. in 1968. Wayne Hall Jr. acquired (b) (6) interest in the tract sometime after 1972. Wayne Hall Jr. purchased HPC's interest in Parcel B and became the sole owner of the entire parcel.

HPC conducted pipe coating activities from 1956 to 1978. In 1978, HPC ceased operations and Wayne Hall Jr. leased the property and pipe coating facility to Northwest Pipe and Casing, which continued pipe coating operations until 1986. These operations entailed sandblasting with steel shot, spraying with primer, and covering the pipe with a coating material. A volatile organic compound (VOC)-based primer was used to help the coating adhere to the pipe. Coating materials included coal tar, coal tar epoxy, asphalt, polyethylene epoxy, and concrete. Various solvents were used in the maintenance of pipe coating machinery. During these years, contaminants released into the soil and groundwater were VOCs, polynuclear aromatic hydrocarbons (PAHs) and polychlorinated biphenyls (PCBs). Northwest Pipe and Casing declared bankruptcy in 1985.

In 1997, as part of a Consent Decree settlement, ownership of Parcel B was transferred from Wayne Hall Jr. to the Oregon Department of Environmental Quality (DEQ), acting as a trustee for EPA and the State. The property was purchased from these agencies by Clackamas County on October 5, 2005.

Clackamas County entered into lease negotiations with OIW in the spring of 2009, which included the construction of a lay-down yard and a proposed railroad spur. The lease was finalized in the fall of 2010. Under the final lease, the railroad spur was not constructed; however, a test track for street cars was approved and constructed in late 2010 on the southern half of Parcel B. Additionally, the Sunrise

Corridor Project is moving forward with the construction scheduled to begin in 2012. The Sunrise Project will link Interstate 205 (I-205) to Highway 224 and bisect the entire length of the NWPC site from the northwest corner on Parcel A to the southeast corner of Parcel B.

## 2.4 EPA REMEDIAL ACTIVITIES

In July 1986, EPA inspected the Site in response to a report of mishandling of waste from a former employee of Northwest Pipe and Casing Company. In September 1987, ODEQ conducted a Preliminary Assessment (PA) of the Site. In December 1989, EPA prepared a Superfund Site Inspection (SSI) report. The next year, EPA conducted a Listing Site Inspection (LSI) and documented off-site migration of contaminants in sediments and groundwater. On October 14, 1992, the Site was placed on the Superfund National Priorities List (NPL). Results of the investigations determined that elevated levels of inorganic compounds, VOCs and PAHs were present in surface soils. This finding led to the conclusion that waste debris was present below the ground surface and posed a potential impact to regional groundwater quality.

In 1993, EPA conducted a CERCLA RA on Parcel B to address immediate threats to human health based on exposure of trespassers and any on-site workers to contaminants on-site. This RA included installing perimeter fencing and warning signs, the demolition of vacant buildings, and the off-site disposal of debris.

### 2.4.1 Remedial Action

After completion of the RA, the EPA Remedial Program divided the Site into two operable units (OUs) to address soil (OU1) and groundwater contamination (OU2). The remedy for OU1 addressed the bulk of the soil contamination that was found on Parcel B. The remedy for OU2 addressed four groundwater plumes that extend beneath Parcels A and B.

Between 1996 and 1999, EPA prepared a Remedial Investigation and Feasibility Study (RI/FS) for the Site. Proposed plans for remedial action were made available to the public and a Record of Decision (ROD) for OU1 was issued on June 29, 2000 and a ROD for OU2 was issued on September 27, 2001.

The remedial action at the Site was performed between August 1, 2001, and September 8, 2004. The remedial action consisted of excavation and treatment of 32,010 tons of contaminated soil, installation of a groundwater treatment system consisting of groundwater circulating wells (GCWs) and monitoring wells (MWs), installation of a 2-foot cap of clean soil on the Site, and establishment of institutional controls to prohibit the use of groundwater at the Site. Most of the groundwater remedy infrastructure (GCWs, associated sheds, and MWs) is located on Parcel B.

The entire 32 acres of Parcel B was covered with the 2-foot-thick soil cap placed as part of the OU1 soil remedy. A 1-acre mitigation wetland, which drains north to Dean Creek (located less than 0.25 mile from the Site), was also created on the northeast portion of the parcel as part of the OU1 soil remedy. Gravel roads to access the equipment sheds were installed after the soil cap was completed.

The remedy for OU1 was completed in 2003. The remedy addressed the bulk of the soil contamination that was found on Parcel B. The remedial action included excavation, removal, treatment and capping of on-site soils (URS 2002 and 2004). Excavation and removal was conducted in six discrete excavation areas (EAs). EAs were located in areas where former plant footprints, buried piles or other site features occurred, and where significant contamination was present. In general, soil in these areas was excavated to a depth of 2 feet bgs; then it was either stockpiled on-site, treated and used as backfill or hauled off-site, treated and disposed at a Subtitle C or D landfill. All EAs were capped using specified material. EA06 addressed soil impacts associated with former Plant 3 and Plant 4.

The remedy for OU2 addressed the four groundwater plumes that extended beneath Parcels A and B in the upper WBZ.

At the time of the ROD, Plume 1 originated near former Plant 3 and was initially estimated to be 12 acres in size on Parcel B. Groundwater concentrations of tetrachloroethene (PCE) in the Plume 1 source area were as high as 11,000 micrograms per liter (µg/L). In the winter of 2007, it was determined that the southern extent of this plume was unknown and required further assessment.

Plume 2 was located in the southwest corner of the Site on Parcel B and was initially estimated to be 9 acres in size. The plume had no identifiable discrete source area but had PCE concentrations as high as 100 µg/L.

Plume 3 was located in the southeast corner of the Site on Parcel B and was initially estimated to be 3.5 acres in size. The plume had PCE concentrations as high as 630 µg/L.

Plume 4 was located in the northern portion of the Site on Parcel A and had PCE concentrations as high as 180 µg/L. Plumes 1 and 4 have become commingled and are estimated to be 20 acres in size.

The remedial action for OU2, in addition to the installation of 15 GCWs, included monitored natural attenuation (MNA) and institutional controls (ICs). The two primary functions of the GCW treatment system were to treat groundwater in plume source areas of the upper WBZ and to treat groundwater in the northern downgradient boundary to prevent off-site migration. Startup of the GCW treatment system was conducted in July 2003.

### 2.4.2 EPA Activities Performed after the Remedial Action

On September 22, 2006, the Five Year Report (5YR) was issued for the Site. The report concluded that the remedy was not functioning as intended.

A Remedial System Evaluation (RSE) was conducted on May 9, 2007. The report issued on September 27, 2007, recommended that actions to improve the system's effectiveness included better delineation of contaminant Plume 1, elimination of the operation of the GCWs, and implementation of in-situ bioremediation for VOCs.

Between November 2007 and June 2008, sitewide groundwater monitoring (SWGM) was performed. The report issued on July 15, 2009, provided better information on groundwater flow and the contaminant plumes.

A Supplemental Field Investigation (SFI) was performed in the fall of 2008 to fill in data gaps, prepare a more accurate conceptual site model, and determine if a coal-tar body contaminant source remained in site soils. The report issued on February 23, 2009, identified three dense non-aqueous-phase liquid (DNAPL) coal-tar bodies in the area of Plume 1. The coal-tar bodies were co-located with areas of high groundwater contamination, and there was evidence that many of the contaminants were migrating downward and laterally. The soil contamination began at approximately 6 feet bgs and penetrated to approximately 25 feet bgs. Analysis of the DNAPL fraction indicated it was primarily composed of PAHs and VOCs with some PCBs and metals, and that the composition of the DNAPL fraction was similar to that of coal tar used at the Site (Parametrix 2008). Analytical results indicated that elevated concentrations of chlorinated volatile organic compounds (CVOCs), aromatic compounds (BTEX), and naphthalene (benzoid) were present in both the DNAPL and aqueous fractions. The investigation also found that water quality parameters and dissolved gas data suggested that the geochemical conditions in Plume 1 were suitable for biotic and abiotic degradation of the VOCs, PCE, and trichloroethene (TCE).

In February 2009, the Region 10 Remedial Program, in conference with EPA Headquarters and the RSE contractor, concluded that no further effective action could be taken on the groundwater remedy until the coal-tar body was removed or otherwise treated.

In May 2009, Remedial Project Manager (RPM) Mark Ader contacted On-scene Coordinator (OSC) Kathy Parker and requested assistance in performing an RA at the Site to remove the soils containing the three DNAPL bodies and install soil amendments that would encourage biological degradation of VOCs and PAHs in the groundwater. A site visit was completed on June 18, 2009, with representatives from Clackamas County, DEQ, OIW, and contractors from Parametrix, Ecology and Environment (Superfund Technical Assessment and Response Team [START-3]) and Environmental Quality Management (EQM). Participants concluded that further site work was appropriate and that it was feasible to remove remaining soil contamination. One of the main topics discussed was the depth to groundwater which seasonally ranges from approximately 6 to 10 feet bgs. Considering the planned depth of the excavations were 25 feet bgs, the management of groundwater infiltration was a concern for the removal action. It was determined that groundwater infiltration would either have to be prevented or treated. After evaluation of potential alternatives, treatment was selected as the best option.

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# 3. REMOVAL ACTION DESCRIPTION

A Removal Action Memorandum was prepared by the OSC and RPM and signed by the acting Regional Division Director on July 28, 2009. The RA started on August 11, 2009, when EPA and its contractors used a small excavator to dig holes and look for contaminated soil around the proposed EAs to more accurately delineate the excavation boundaries.

Between September 1 and November 13, 2009, EPA, START-3 and ERRS performed the excavation work; treated excavation groundwater on-site, discharging it to the sewer; backfilled the area with amended, imported fill; and transported approximately two-thirds of the excavated soil off-site to a Subtitle D disposal facility. The remaining excavated soil was completely enclosed in Duraskrim sheet plastic and left on-site for later removal.

A Removal Action Memorandum Amendment to increase the RA cost ceiling was prepared and signed by acting Environmental Chemistry Laboratory (ECL) division director on May 27, 2010. Between June 1 and June 17, 2010, ERRS finished transporting the remaining stockpile of excavated soil off-site and installed a semi-permeable cap over EA1 to prevent the infiltration of groundwater which was causing significant groundwater mounding around the excavation and therefore changing the typical groundwater flow direction.

Appendix D contains all of the weekly POLREPs which were produced during the RA and which describe the activities performed on each day of site work. Section 5 of this report describes the removal activities in more detail.

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# 4. PROJECT ORGANIZATION, COSTS AND SCHEDULE

## 4.1 KEY ORGANIZATIONS AND ROLES

**EPA OSC:** The response was coordinated under the authority of OSC Kathy Parker. Additionally, OSCs Richard Franklin and Dan Heister assisted with contractor oversight.

**EPA RPM:** EPA RPM Mark Ader provided background on the Site, assisted with the implementation of the RA, and ensured the RA was consistent with the expected remedial design.

**EPA Quality Assurance Office:** Chemists in the EPA Region 10 Quality Assurance Office performed most of the Quality Assurance (QA) reviews on the laboratory data**.**

**START: Ecology and Environment, Inc. (E & E),** under an EPA Region 10 START-3 contract, provided on-site technical assistance, performed air monitoring, performed quality assurance (QA) reviews on the test pit soil assessment data, collected environmental samples, and documented site activities.

**ERRS: Environmental Quality Management, Inc.,** under an EPA Region 10 ERRS contract, was the clean-up contractor which performed the excavation work, waste handling and transport, and final site cleanup.

**Parametrix**, under an EPA Region 10 contract in support of the Remedial Program, advised on the history of previous EPA work on the Site, provided technical support during the RA, designed the soil amendment dosing and backfill layout, processed the RA analytical data and prepared figures and tables of that data, and performed the post-removal action groundwater monitoring sampling and assessment.

**Clackamas County** is the current owner of the property.

**DEQ** has been an integral part of the site management since before the Site was listed on the NPL. EPA and DEQ have a State Superfund Contract.

Clackamas County and DEQ will continue to manage the Site in accordance with the Consent Decree, Easements and Equitable Servitude (EES) and all other agreements that are currently in place for the Site.

**OIW** currently leases Parcel B, including the area excavated during this RA.

## 4.2 PROJECT COSTS

The initial extramural cost ceiling for this RA was $2,400,000. In a Removal Action Memorandum Amendment signed May 27, 2010, the ceiling was increased to $2,674,200. Of this amount, $1,200,000 came from the Special Account for NWPC. The remaining authorized extramural funding of $1,474,200 came from the EPA Region 10 Removal Program budget.

Of this funding, $140,000 was allocated for START costs. Work performed by Parametrix in support of this RA was funded separately by the NWPC Special Account.

Waste transport and disposal costs were approximately $546,970 for the fall 2009 work and $252,892 for the June 2010 work for a total of $806,863. The disposal of the remaining contaminated sludge and residue from the water treatment system cost approximately $18,000. The sewer permit cost $2,250 but no sewer discharge fees were charged.

## 4.3 CHRONOLOGY OF EVENTS

| | |
|---|---|
| July 28, 2009 | Removal Action Memorandum signed by acting Regional ECL Division Director Linda Anderson-Carnahan. |
| August 11 to 14, 2009 | EPA, START-3 and ERRS performed test pitting and soil assessment. |
| September 1, 2009 | EPA, START-3 and ERRS mobilized to the Site to start the excavation work. |
| September 9, 2009 | Initial POLREP written. |
| November 13, 2009 | EPA, START-3 and ERRS demobilized from Site leaving stockpile of excavated soil for later transport off-site. |
| May 27, 2010 | Removal Action Memorandum Amendment for Ceiling Increase signed by acting Regional ECL Division Director Lori Cohen. |
| June 1, 2010 | EPA, START-3 and ERRS mobilized to remove the remaining stockpile of excavated soil and install a semi-permeable cap over EA1. |
| June 17, 2010 | EPA, START-3 and ERRS demobilized from Site. |
| July 1, 2010 | Final POLREP (POLREP 14) written. |

# 5. REMOVAL ACTIVITIES

This RA consisted of the following activities:

- Test pitting and soil assessment to determine EAs;
- Site workers, equipment used, and decontamination procedures;
- Removal and replacement of the existing cap in the EAs;
- Excavation of two 25-foot-deep areas of soil contaminated with coal tar or organic solvents;
- Preparation and management of containment cells and waste stockpile;
- On-site treatment and off-site disposal of the groundwater pumped out of the excavations prior to backfilling;
- Backfilling, grading and capping of the excavations with imported fill and soil amendments;
- Transport of the excavated soil off-site to a Subtitle D disposal facility; and
- Sampling and monitoring to determine contaminant concentrations in soil left behind and in soil sent off-site, as well as for worker and public health and safety purposes.

## 5.1 TEST PITTING AND SOIL ASSESSMENT

The RA started on August 11, 2009 when EPA and its contractors used a small excavator to dig approximately thirty holes around the edges of the proposed EAs. Visual observations and the analytical results of samples taken from the holes were used to more accurately delineate the excavation boundaries which were determined to be two discrete EAs near former Plants 3 and 4 within Plume 1. The estimated quantity for both excavations was approximately 7,700 tons of contaminated soil (Figure 5-1).

## 5.2 SITE WORKERS, EQUIPMENT, AND DECONTAMINATION

Up to 18 site workers, including one or two START, up to 14 ERRS, and one or two EPA staff, worked on-site at on any one time. Equipment included one mini-excavator, three large excavators, numerous dump and haul trucks, two wheel loaders, one water truck, one dozer, one fuel truck, two ATVs, and two office trailers. At any time, there were both *clean* excavators and trucks and *dirty* excavators and trucks. Clean equipment was kept on clean soil and only hauled or handled clean material. Dirty equipment excavated, hauled or drove on contaminated soil.

Large rock was laid on the road exiting the Site to use as a wheel wash for dirty-haul trucks. At the end of the site work, the rock was scraped up and disposed of with the rest of the contaminated soil.

Figure 5-2 shows the layout of the components of the RA.

## 5.3 EXCAVATION OF CONTAMINATED SOIL

The existing cap for both EAs was removed and stockpiled on-site for later replacement. Slide shoring was used in EA1 which was divided into shoring sections made up of four or fewer excavation bays attached end-to-end from west to east with dimensions of either 15 or 21 feet long by 24 feet wide by 25 feet deep. Once all bays were installed in a shoring section, it was approximately 80 feet long by 24 feet wide and 25 feet deep (Figure 5-3.1). The slide shoring was removed as backfill was added to the excavations. Backfill consisted of clean, imported sand or gravel and soil amendment.

At the start of the RA, EA2 was anticipated to be approximately the size of EA1. However, after removing the overburden from the anticipated area of E 2, most of the contamination was seen to be in a smaller area along the north edge of the exposed area. Due to this change in site conditions, it was decided to modify EA2, resulting in a long narrow trench which extended from the northeast corner of EA1 to within approximately 40 feet of the eastern boundary of Parcel B. Trench shoring was used during this excavation instead of slide shoring because it was more appropriate for the new shape of EA2 and enabled the crew to work much faster. See Figure 5-3.2. EA2 was backfilled with clean fill and soil amendment, which created a wall to intercept contaminated groundwater flow and allowed for the migration of the amendment downgradient of the wall into Plume 1 to enhance biodegradation. The final dimensions of EA2 were 8 feet wide by 260 feet long by 25 feet deep. See Figures 5-3.2 and 5-3.4. Figure 5-3.3 shows the backfill profiles of both EAs. Section 5.5 of this report more fully describes the backfill, soil amendments, purpose, dosing and locations.

A total of 67,000 pounds of zero-valent iron and 20,000 pounds of chitin soil amendment were used in both EAs. Figures 5-3.1 and 5-3.4 show the layout and dosing, respectively.

## 5.4 GROUNDWATER TREATMENT AND DISPOSAL

For soil to be excavated, groundwater had to be continuously pumped out of the excavation area to the on-site groundwater treatment system which was constructed as part of the RA. The excavation created a preferential pathway for groundwater flow which dewatered the shallow groundwater around the excavations. The saturated soils that were removed from the excavation were placed in lined containment cells where they were allowed to dewater for several days. The water from the containment cells was also processed through the on-site groundwater treatment system. Treated groundwater was tested prior to being discharged to the Clackamas County wastewater treatment facility under permit obtained for the RA. The following is a timeline of the permitting, construction and discharges from the groundwater treatment system.

September 2, 2009, ERRS met with Clackamas County Water Environmental Services (WES) to determine whether the on-site treated water could be discharged to the local sewer. On September 15, 2009, after much discussion between WES, OSC, RPM, EPA attorney, ERRS and START, the OSC signed the wastewater discharge permit application and agreed to pay the $2250 application fee. After negotiating with the RPM, WES agreed to waive the volumetric wastewater

discharge fees. The wastewater discharge permit was approved on September 16, 2009, and WES delivered it to the Site along with an explanation of the reporting requirements: weekly reports were faxed or emailed to WES by the following Friday to include (1) a discharge report on their form, (2) meter log from the discharge meter, (3) daily average discharge volume, and (4) preliminary analytical sampling results. Printed final laboratory results were to be sent later when available.

The water treatment system was rented from Rain For Rent and designed by U.S. Filter. Figure 5-4 is a schematic of the layout of the components of the water treatment facility. The water treatment facility consisted of a two-stage pump system to move water from the bottom of the excavations to the ground surface and then to the water treatment facility: five 21,000-gallon holding tanks for contaminated water, a tank pump and metering system to add Chitosan flocculent in line, sand filters, cloth bag filters, pH adjustment equipment, two 5-ton granular activated carbon (GAC) treatment tanks, ten 21,000-gallon tanks for treated water, a volumetric meter and piping to gravity drain the water to the sewer intake, and numerous pipes and pumps to move the water through the treatment facility. Influent, effluent, and water from between the two GAC tanks were sampled periodically to verify the performance of the system. Sampling results indicated the system worked as designed and removed all of the VOCs, semi-VOCs (SVOCS), PCBs, total suspended solids (TSS), total cyanide, oil and grease–hexane extractable material (HEM), and metals from the influent without exceeding the capacity of the carbon in the GAC tanks.

On September 29, 2009, the initial analytical data from water treatment facility samples were sent to WES, who emailed an approval to discharge the current batch of treated water. The ERRS crew set up barricades around the manhole to the sewer intake, placed the discharge line securely in the intake hole, and set the manhole cover on top of the discharge line. The pipe crossing the road was protected with a road crossing pipe-plate. Weekly reports were made to WES advising them of the date and volume of water discharged on each day of discharge and providing them with the analytical results for samples of the discharged water. Treated water was discharged at approximately 100 gallons per minute on eight separate days between September 30, 2009, and October 28, 2010, for a total volume of 551,000 gallons. See Appendix G for the discharge reports, discharge permit, and discharge log.

On September 16, 2009, 1100 gallons of clear water from the 55-gallon drums left on-site after the remedial study were emptied into one of the dirty tanks and sent through the water treatment facility for treatment and disposal.

On October 1, 2009, dirty tank #1 was accidentally filled to over-flowing. Approximately 500 gallons of untreated groundwater spilled to the ground on the south and west sides of the tank and was absorbed before it could be pumped off. Sampling of the ground surface was performed on October 22, 2009 and it was determined that the cap in the affected area had not been contaminated with VOCs, SVOCs, PCBs or metals.

On October 13, 2009, a small leak from a valve in the pipe from the tanks of treated water to the discharge meter was discovered and closed. The volume of treated water accidentally discharged to the ground was estimated to be several hundred gallons. Analytical data from the affected tanks indicated the released water was

free of contaminants. For that reason, the soil surface affected by the leak was not sampled.

After excavation was complete, equipment used on-site was decontaminated with fresh water and the rinsate was sent to the water treatment facility. The last batch of treated water was discharged to the sewer on October 28, 2009. The water treatment facility was disassembled and cleaned on-site. The clean tanks were rinsed into the dirty tanks, and then the liquid and sludge in the dirty tanks was rinsed and consolidated into one dirty tank. On November 6, 2009, Clean Harbors pumped the 11,341 gallons of liquid and sludge in the final dirty tank into a vacuum truck and disposed of it off-site as non-hazardous waste at the Chemical Waste Management Subtitle D facility in Arlington, Oregon. PSC Environmental Services disposed of the remaining 3500 gallons of sludge as non-hazardous waste at the Wasco County Landfill. Sand from the sand filters was analyzed and disposed of with the excavated soil. The granular activated carbon from the two GAC tanks was analyzed, removed from the tanks, and returned to the vendor for reuse. Sampling results are discussed in more detail in Section 7.

## 5.5 BACKFILL OF EXCAVATIONS WITH AMENDED SOIL AND CAPPING

Backfill of both EAs consisted of sand mixed with equal parts of pea gravel from the base of the excavation at 25 feet to 22 feet bgs. Sand alone was used from 22 feet to 15 feet bgs. 3-inch minus rock was used from 15 feet to 6 feet bgs. The old overburden which had been stockpiled on-site at the beginning of the excavation was replaced at 6 feet to 2 feet depth. From the surface level to 2 feet bgs the old cap material was replaced. Lastly, a 6-inch-thick layer of sand, graded with a 1 percent slope toward the south for drainage and a 12 mil semi-permeable liner were placed on the surface of EA1 and covered with additional soil cap material to provide a hydraulic barrier. Figures 5-3.3 and 5-3.4 show the profile of backfill materials. Figure 5-5.1 shows the profile of the hydraulic barrier in EA1.

EA2 was not capped but was covered by at least 2 feet of compacted 2-inch minus crushed rock that was rolled in 6-inch lifts as part of the construction of the lay-down yard for OIW. Figure 5-5.2 shows the location of both EAs.

The seven farthest west and south excavation bays of EA1 were dosed with ChitoRem, a soil amendment made from the chitin in crab shells. ChitoRem was dug into the base of the excavation at a concentration of 0.3 percent (7 pounds per cubic yard of soil). The backfill in those bays was also dosed at a concentration of 0.3 percent from the base of the excavation (25 feet bgs) to 7 feet bgs.

The zero-valent iron and organic carbon soil amendment (“Daramend”) was dug into the base of all the other excavation bays in EA1 and dosed into the backfill at either 0.6 percent or 1 percent concentrations to intercept groundwater flowing through the EA. The backfill and 3 feet of soil below the base of EA2 were dosed at a rate of 1 percent with Daramend. Figure 5-3.1 shows the plan view of the soil amendment dosing for both EAs.

Residual coal tar and chlorinated solvents in soil remaining in the vicinity of the excavated areas will continue to act as a contaminant source of chlorinated solvents to groundwater in the long term. The soil amendments mixed into the backfill and at the bottom of the excavations will accelerate attenuation of the remaining

contaminants in the soil and in the groundwater reentering and downgradient from the excavated area by promoting reduced groundwater conditions and providing a source of organic carbon for indigenous microbial organisms.

## 5.6 PREPARATION AND MANAGEMENT OF CONTAINMENT CELLS AND WASTE STOCKPILE, WASTE SOIL TRANSPORT AND SOIL DISPOSAL

During excavation, contaminated soil was placed in one of 14 containment cells and dewatered, then tested for contaminants at levels of concern to the Subtitle D facility. It was then stockpiled on-site. It was transported off-site as nonhazardous waste by private trucking companies to the Subtitle D facility at the Wasco County Landfill. 16,670 tons of excavated soil was transported off-site by 525 30-yard trucks during the fall of 2009. The remaining 8,127 tons were transported off-site by 261 30-yard trucks during June of 2010. A total of 24,798 tons of excavated soil were transported off-site to the Wasco County Landfill. Appendix F contains the waste permits and logs. The 786 waste manifests for excavated soil are available in the EPA Region 10 Superfund Records Center NWPC Site File. After all contaminated soil was removed from the Site, the contractor back-bladed areas that were rutted by the heavy equipment and leveled the EAs and stockpiling areas. All disturbed areas were seeded with a mixture of grass seeds containing the following erosion control varieties: 50 percent perennial ryegrass, 35 percent annual ryegrass, and 15 percent creeping red fescue.

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# 6. POST-REMOVAL SITE CONTROLS

Groundwater monitoring was continued after the RA. Analytical results for groundwater samples collected in November 2008, prior to this RA, were compared to results for samples collected in December 2009, after the completion of this RA's excavation and soil amendment placement. For monitoring well MW-04, the groundwater results showed significant reductions in the concentrations of PCE (from 1,600 to <1.0 µg/L) and TCE (from 370 to 0.1 µg/L). Monitoring well MW-207, directly downgradient from EA1, showed even more substantial improvements during this time frame. The PCE dropped from 900 to 6.3 µg/L (see Figure 6-0) and the TCE dropped from 3,300 to 110 µg/L. At this monitoring well, degradation product cis-1,2-dichloroethene showed an increase from 1,080 to 8,700 µg/L. These changes in the contaminant concentrations in groundwater near the EAs indicate the RA source removal and soil amendment application appear to have been effective remedies to address groundwater contamination at the Site.

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# 7. SAMPLING AND MONITORING ACTIVITIES

Analytical testing was performed throughout the RA to confirm that waste soil and waste water met threshold requirements; that backfill was clean; that the soil cap was not re-contaminated by removal activities; and to determine the soil contamination remaining on-site in the EAs after performing the RA. Sampling and monitoring addressed the following general categories:

- Site contamination and test pit soil assessment;
- Disposal of excavated soil;
- Disposal of groundwater;
- Cap and backfill;
- Contaminants remaining in excavated areas;
- Performance of water treatment facility;
- Monitoring of air, dust, and weather;

A total of four Site-Specific Sampling Plans (SSSPs) were written to address the sampling and analysis requirements for the Site. One addressed the test pits and soil assessment sampling in August 2009. The other three addressed sampling for the water treatment facility, the containment cells and waste stock pile, and the excavations. A Sample Plan Alteration Form for the containment cell SSSP was prepared to capture the sampling requirements for the June 2010 sampling.

## 7.1 LABORATORIES

Over the course of the removal action, a total of 229 samples were collected and analyzed. In August 2009, 31 test pit samples and one trip blank were analyzed at TestAmerica in Tacoma, Washington.

During the September through November 2009 work, a total of 183 samples were collected. In general, excavation confirmation samples were sent to Contract Laboratory Program (CLP) laboratories (the organics analyses were performed at A4 Scientific Inc. in The Woodlands, Texas, and the metals analyses were performed at Liberty Analytical Corp in Cary, North Carolina).

The other samples were sent to non-CLP labs which provided faster turnaround times for preliminary results. The majority of the non-CLP samples went to Friedman & Bruya Inc. in Seattle, Washington. They subcontracted the Total Cyanide and the Oil and Grease–HEM analyses to either Am Test Inc. in Kirkland, Washington, or Aquatic Research, Inc., in Seattle. The pH samples were hand-delivered to a lab near the Site, Specialty Analytical in Clackamas, Oregon. Of these 183 samples, 38 were trip blanks, 22 were water samples, 115 were soil samples, 4 were rock samples and 4 were product samples. A4 Scientific, Inc. received 63 samples; Liberty Analytical Corp. received 7 water samples; Compuchem Labs in Cary, North Carolina received 2 water samples; Friedman & Bruya, Inc. received 118 samples; Am Test received 7 water samples; Aquatic Research received 1 water sample, and Specialty Analytical received 8 water samples.

During the June 2010 work, 1 trip blank and 4 soil samples were collected and sent to CLP labs for analysis. Silver Valley Labs Analytical in Kellogg, Idaho received 4 water samples for metals and Mitkem Laboratories in Warwick, Rhode Island received 5 water samples for organic analyses.

## 7.2 SITE CONTAMINATION AND TEST PITS

During the August 2009 test pit and soil assessment investigation, the exposed soil was inspected in the field for visual and olfactory evidence of contamination with coal tar or solvents. Thirty-one samples were collected and analyzed to verify the field observation results. The analytical results, presented in Figure 5-3.2, confirmed that the field observations were adequate for identifying site contaminants in the soil. The lab and field observation results were used to determine the footprints of EA1 and EA2.

During excavation of the two areas, additional samples of liquid, solid and product were collected and analyzed by off-site labs. On September 30, 2009, a sample was collected of the oily pool of liquid on the floor of EA1/Shoring System 3/Bay 2. The results showed detections of SVOCs and metals. On October 16, 2009, a sample was collected of the water being pumped out of the floor of EA2 at a location 125 feet west of the east excavation starting point. The results showed detections of VOCs and metals. On October 20, 2009, a water sample was collected from the floor of EA1/Shoring System 6/Bay 1 after the excavation had been pumped dry and allowed to refill from the surrounding groundwater. The results showed detections of SVOCs, VOCs and metals. Table 7-1 lists the concentrations of contaminants detected (Figure 5-3.1).

To determine where in EA2 soils needed to be excavated, the cap and overburden were removed and the exposed surface was visually inspected. Samples were collected of a dark gray soil and what appeared to be coal tar near the location of Test Pit 14. Lab results indicated the dark gray soil did not contain site contaminants, however the material that was suspected to be coal tar was found to be very high in SVOCs and total petroleum hydrocarbons (TPHs). A pipe was found at approximately five feet bgs on the west side of EA2, running north and south. A sample was collected of the sludge inside the pipe and lab results indicated the sludge contained VOCs, SVOCs, PCBs, metals, and TPHs. Table 7-2 lists the concentrations of contaminants detected in these samples.

Soil samples of the overburden removed from both EAs and stockpiled on-site were analyzed to determine if the material was clean enough to be reused as backfill. While lab analyses indicated the soil contained detectable levels of SVOCs, PCBs, and metals, the concentrations were below the appropriate action levels and the overburden was replaced during backfill. Table 7-2 lists the concentrations of contaminants detected.

To better understand the contaminant concentrations present in the groundwater from the EAs, five influent samples were collected on different days from the dirty tanks, after flocculent had been added. The first sample, collected on September 18, 2009, was analyzed only for metals to determine if the treatment system design would work on the concentrations of metals in the groundwater. The next three samples collected on September 22, October 2, and October 15, were analyzed only

for VOCs to have a comparison for the treated effluent. The final influent sample collected on October 26, 2009, was analyzed for the full suite of SVOCs, VOCs, PCBs, metals and TPHs to fully characterize the groundwater. The analytical data for these samples is presented in Table 7-3.

## 7.3 CONTAMINANT CELL SOIL

Prior to using the 14 containment cells to hold excavated soil, a seven-point composite sample of the cap under each cell was collected and analyzed for SVOCs, VOCs, PCBs, TPH, and metals in soil. After the containment cells were used and the liner and gravel bed had been removed, the cap under each cell was again sampled. The "Before Use" and "After Use" analytical results are shown in Tables 7-4, 7-5, 7-6 and indicate that while the cap is not contaminant-free, it was not more contaminated for any analyte after it was used to stage the excavated soil.

## 7.4 DISPOSAL OF EXCAVATED SOIL

A seven-point composite sample of excavated soil placed in containment cell #1 was collected on September 12, 2009, and analyzed by Friedman & Bruya lab for SVOCS, VOCs, PCBs, metals and TPH. The results showed that the soil did not exceed the maximum concentrations for toxicity characteristics listed in 40 CFR part 261.24 Table 1. (Total results were compared to 20 times the leachate limits in the table.) Based on those results, the soil was accepted by the Subtitle D waste disposal facility at Wasco County Landfill. Initially, after each containment cell was filled and closed, a six- or seven-point composite sample was collected from every cell and sent to the lab. On September 25, 2009, the Wasco landfill recommended sampling every eighth closed containment cell rather than every cell because the lab results showed consistently low levels of the contaminants that concerned them. The OSC directed the sampling crew to reduce the collection frequency for the remaining containment cell samples. A total of 22 containment cell composite samples were analyzed. In addition, one composite sample was collected of the waste stockpile on October 15, 2009, and analyzed. Tables 7-7, 7-8, 7-9 and 7-10 show the laboratory results for these samples. One field duplicate composite sample was collected on September 15, 2009, and showed acceptable duplicate precision.

After EPA and its contractors remobilized to the Site in June 2010, four composite samples were collected of the stockpile to confirm that the contaminant concentrations were still low enough to send the waste soil to a Subtitle D disposal facility. Those lab results are also listed in Tables 7-7, 7-8, 7-9 and 7-10.

## 7.5 DISPOSAL OF GROUNDWATER

Prior to discharge to the sewer, all groundwater treated on-site was analyzed at non-CLP labs by the laboratory methods required in the wastewater discharge permit. On seven different days, a total of eight effluent grab samples were collected from one of the tanks holding treated water and sent to Friedman & Bruya Laboratory in Seattle, Washington, for analysis of SVOCs by EPA method 625, VOCs by EPA method 624, PCBs by EPA method 608, Total Suspended Solids by SM Method 2540D, Oil and Grease - HEM by EPA method 1664 HEM, Total Cyanide by EPA method 335.4, metals by EPA method 200.8, and mercury by EPA method 1631E.

Friedman & Bruya subcontracted the Oil and Grease - HEM and Total Cyanide analyses to Am Test Laboratory in Kirkland, Washington. Each sample was also hand-delivered to Specialty Analytical Laboratory in Clackamas, Oregon for pH analysis by SM method 4500-H+ B.

The pH results for samples of the groundwater, after it had passed through the various stages of treatment, varied between 6.7 and 9.4. SVOCs and VOCs results were used to calculate and report Total Toxic Organics (TTO) to WES. No analyte results exceeded the discharge permit levels for any samples. Analytical results and permit levels are shown in Table 7-11.

## 7.6 CAP AND BACKFILL

Before any imported material was used as backfill in the excavations, a sample was collected and sent to Friedman & Bruya for analysis of SVOCs, VOCs, PCBs, metals, and TPH. One seven-point composite sample was collected of each aggregate rock size (1-inch minus and 3-inch minus), one grab sample was collected of the pea gravel, and one grab sample was collected of the washed sand. All analytical results, including non-detects, are shown in Table 7-12. The backfill was determined to be clean and all analytical results were significantly less than the Regional Screening Levels and ROD-based criteria.

On October 1, 2009, during operation of the on-site water treatment facility, approximately 500 gallons of untreated groundwater were spilled onto the cap. On October 22, 2009, four surface soil grab samples were collected in the affected area and one surface soil grab sample was collected from 50 feet away to serve as a background sample. Analytical results for these five samples are presented in Table 7-13 and indicate that while the cap is not contaminant-free, it was not more contaminated for any analyte due to the spill than the neighboring unaffected area of the cap.

## 7.7 CONTAMINANTS REMAINING IN EXCAVATED AREAS

33 grab soil samples were collected from the floor or exterior walls of EA1 and 22 grab soil samples were collected from EA2 to determine how much contamination would be left on-site after the completion of the RA. Figure 5-3.1 shows the location of each sample collected in EA1 and Figure 5-3.2 shows the location of each sample collected in EA2. Tables 7-14, 7-15, 7-16, and 7-17 present the VOC, SVOC, PCB, and TPH analytical results for these samples. All samples met ROD-based Criteria for Excavation for SVOCs, PCBs and TPH. However, as can be seen in Table 7-14, many samples exceeded the ROD-based Criteria for Excavation for TCE, PCE and vinyl chloride in both EAs.

The highest concentrations of contaminants left behind were 49,000 and 31,000 µg/kg of PCE at the wall in the northeast corner of the northeast bay of EA1 at 10 feet bgs and 25 feet bgs. These concentrations are an order of magnitude higher than any other PCE results in excavation confirmation samples. These samples were collected on October 10, 2009, prior to the start of the trench excavation in EA2 which eventually met up with EA1 at the northeast bay of EA1. The soil represented by these high results for PCE was most likely excavated when the west end of the EA2 trench was connected to EA1.

## 7.8 PERFORMANCE OF WATER TREATMENT FACILITY

The performance of the water treatment facility was periodically checked in various ways. The lab reports for contaminant concentrations in the effluent gave continual feedback on the effectiveness of the system. In addition, to confirm that the GAC tanks' capacity to remove contaminants from the groundwater was not being exceeded, samples were collected of the liquid leaving the first GAC tank and before entering the second GAC tank. One sample was collected on September 18, 2009, after starting up the system. A second sample was collected four days later to confirm the system was still working. A third sample was collected on October 2, 2009, after the first 50,000 gallons of treated water were discharged to the sewer. The last GAC check sample was collected on October 15, 2009, after another 215,000 gallons were discharged to the sewer. For all four samples, the laboratory results for VOCs, the primary indicator compounds for site contaminants, confirmed that the first GAC tank's capacity to remove contaminants had not been exceeded. Analytical results are presented in Table 7-18.

On October 27, 2009, after dismantling the water treatment facility, a grab sample of sand was collected from the inlet of the sand trap and two grab samples of GAC were collected from the first GAC tank. A grab sample of sediment was also collected from the bottom of dirty tank #1. All four samples were analyzed for SVOCs, VOCs, PCBs, metals and TPHs. Those analytical results are presented in Table 7-19.

## 7.9 MONITORING: DUST, AIR, WEATHER

No monitoring was performed during the August 2009 test pitting and soil assessment investigation.

### 7.9.1 Dust

For the September through November 2009 work, dust monitoring was performed at three stations on every day that it was not raining and that excavation work was being performed. The dates that monitoring was not performed were September 26 through October 3 and after October 12, 2009. Dust monitoring was performed every day of the June 2010 work. DataRAM 4 monitors were used to measure and record particulate concentrations at three stations each day. One station was placed near the excavation or soil loading work and the other two stations alternated locations depending on wind conditions during each day. For the June 2010 work, data corruption problems were encountered, however periodic manual logging of the instruments during the day preserved time-weighted average values. The particulate monitoring was used to monitor for chemicals of concern that were not volatile and therefore not detectable using AreaRAE instruments, particularly PCBs and metals. No exceedances were observed of the 10.0 mg/cubic meter threshold for nuisance dust.

### 7.9.2 Air Monitoring

Air monitoring for breathable oxygen, hydrogen sulfide gas, carbon monoxide gas, VOCs, and explosive vapors was conducted in the excavation whenever workers were in it, as weather conditions allowed. AreaRAE/PIDs were used for these

measurments in the cabs of the dirty excavator and in the mini-excavator on work days between September 15 and October 10, 2009. For the June 2010 site work, AreaRAEs were stationed around the Site and a roving MultiRAE Plus instrument was used to periodically check the performance of the stationary AreaRAEs.

### 7.9.3 Weather Monitoring

No on-site weather monitoring was performed during the fall 2009 removal work. For the June 2010 site work, a HazMatID weather station, an aerial balloon string, and meteorological reports were used to monitor changing weather conditions at the Site. Wind direction was a primary concern in order to determine where station monitoring instruments would be located at each day.

# 8. QUALITY ASSURANCE (QA) AND QUALITY CONTROL (QC)

QA/QC data are necessary to determine precision and accuracy and to demonstrate the absence of interferences and contamination of sampling equipment, glassware and reagents. Specific QC requirements for laboratory analyses are incorporated in the *Contract Laboratory Program Statement of Work for Organic Analyses* (EPA 2007a) and the *Contract Laboratory Program Statement of Work for Inorganic Analyses* (EPA 2007b). These QC requirements or equivalent requirements found in the analytical methods were followed for analytical work on the project. This section describes the QA/QC measures taken for the project and provides an evaluation of the usability of data presented in this report.

The Fall 2009 and June 2010 RA data from all the ERRS-subcontracted commercial laboratories and the CLP laboratories and the Winter 2009 groundwater monitoring data from the EPA Region 10 lab were reviewed and validated by EPA Region 10 Quality Assurance Office chemists. The August 2009 data from the START-subcontracted commercial laboratory were reviewed and validated by a START chemist. Table 8-1 presents the list of all samples collected along with their associated collection information such as sample name, matrix, date collected, lab name, chain of custody, and analyses requested.

All CLP sample analyses were validated following the Stage 2 or Stage 4 Validation Using Electronic and Manual (SV2EM or SV4EM) techniques as specified in the EPA's *Guidance for Labeling Externally Validated Laboratory Analytical data for Superfund Use*, EPA 540-R-08-05, January, 2009.

The following comments refer to the laboratory performance in meeting the Quality Control Specifications outlined in the technical specifications of the Contract Laboratory Program's (CLP) Statement of Work (SOW) for Multi-Media, Multi-Concentration Organic Analyses (SOM01.2), EPA National Guidelines for Organic Data Review and the EPA's *Guidance for Labeling Externally Validated Laboratory Analytical data for Superfund Use*, EPA 540-R-08-05, January, 2009. Some of the data quality elements were qualified using the reviewer's professional judgment.

Data qualifiers were applied as necessary according to the following guidance:

- EPA (2004) *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review*
- EPA (2008) *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review*

In the absence of other QC guidance, specific QC limits from analytical methods or Standard Operating Procedures were also utilized to apply qualifiers to the data.

## 8.1 SATISFACTION OF DATA QUALITY OBJECTIVES

The following EPA (EPA 2000b) guidance document was used to establish data quality objectives (DQOs) for this project:

- *Guidance for the Data Quality Objectives Process* (EPA QA/G-4), EPA/600/R-96/055.

The data quality achieved during the field work produced sufficient data that met the DQOs stated in the SSSPs. (See Appendix H.) A discussion of accomplished project objectives is presented in the following sections

## 8.2 QUALITY ASSURANCE AND QUALITY CONTROL SAMPLES

QC samples included matrix spike and matrix spike duplicate (MS/MSD) and blank spike (BS) samples for organic analyses at a rate of one MS/MSD and BS per 20 samples per matrix and MS/laboratory duplicate samples for appropriate inorganic analyses at a rate of one MS/duplicate per 20 samples per matrix.

## 8.3 PROJECT SPECIFIC DATA QUALITY OBJECTIVES

The laboratory data were reviewed to ensure that DQOs for the project were met. The following describes the laboratory's abilities to meet project DQOs for precision, accuracy and completeness and the field samplers' abilities to meet project DQOs for representativeness and comparability. The laboratory and the field samplers were able to meet DQOs for the project.

### 8.3.1 Precision

Precision measures the reproducibility of the sampling and analytical methodology. Laboratory and field precision is defined as the relative percent difference (RPD) between duplicate sample analyses. The laboratory duplicate samples or MS/MSD samples measure the precision of the analytical method. The RPD values were reviewed for all commercial laboratory samples. Samples failing to meet the required limits were qualified with J or UJ.

### 8.3.2 Accuracy

Accuracy indicates the conformity of the measurements to fact. Laboratory accuracy is defined as the laboratory control sample (LCS), matrix (MS) or surrogate (BS) spike percent recovery (%R) for all laboratory analyses. The MS and BS %R values were reviewed for all appropriate sample analyses. Samples failing to meet the required limits were qualified with J or UJ.

### 8.3.3 Completeness

Data completeness is defined as the percentage of usable data (usable data divided by the total possible data). All laboratory data were reviewed for data validation and usability. No sample results were rejected, therefore the project DQO for completeness was met.

### 8.3.4 Representativeness

Data representativeness expresses the degree to which sample data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point or environmental conditions. The number and selection of samples were determined in the field to account accurately for site variations and sample matrices. The DQO for representativeness was met.

### 8.3.5 Comparability

Comparability is a qualitative parameter expressing the confidence with which one data set can be compared to another. Data produced for this Site followed applicable field sampling techniques and specific analytical methodology. The DQO for comparability was met.

## 8.4 LABORATORY QUALITY ASSURANCE AND QUALITY CONTROL PARAMETERS

The laboratory data were also reviewed for holding times, temperatures, sample containers, laboratory blank samples, serial dilution analyses, and interference check sample analyses. These QA/QC parameters are summarized below. In general, the laboratory and field QA/QC parameters were considered acceptable.

### 8.4.1 Holding Times and Temperatures

With the exception of the pH samples, all holding time and temperature requirements were met. Since pH analyses were not conducted on-site, it was not possible to meet the 15-minute holding time. For that reason, all pH results are qualified HT (holding time) to advise the user that the results are estimates.

### 8.4.2 Laboratory Blanks

All laboratory blanks met the frequency criteria. Several samples showed blank contamination for analytes of interest. Sample results failing to meet the required limits were qualified with J.

### 8.4.3 Field Blanks

Approximately 40 trip blanks were collected over the course of this project. Several trip blanks showed blank contamination for cadmium, silver and methylene chloride. Sample results affected by these blanks were qualified U.

### 8.4.4 Serial Dilution

Serial dilution analyses were performed at a frequency of one per 20 samples per matrix, meeting QC frequency criteria. Percent differences are required to meet the acceptance criterion of <10%. Sample results affected by serial dilutions failing to meet the required limits were qualified with J or UJ.

### 8.4.5 Interference Check Samples

Interference check sample analyses were performed at a frequency of one per 20 samples per matrix, meeting QC frequency criteria. Recoveries are required to meet acceptance criteria of 80-120% or + 2xCRQL. Sample results affected by interference check sample analyses failing to meet the required limits were qualified with J or UJ.

### 8.4.6 Calibration

The frequency of analysis, percent relative standard deviations (%RSDs), percent recoveries, the correlation coefficient (r) of >0.995, the ion abundance, S/N ratios, retention times and chromatographic resolution criteria were met for most target compounds and surrogates.

Sample results for which the RRF did not meet acceptance criteria were qualified with R, as unusable.

Target compounds which were detected at concentrations that were over the calibration range of the instrument, and for which no dilution runs were analyzed, were qualified with J or UJ to advise the data user that they are estimates with a low bias.

# 9. COMMUNITY RELATIONS

The OSC periodically provided the public with updated information at the Site's website (http://www.epaosc.org/NWPC) including pollution reports documenting the progress of the RA and photographs of site activities. Community-relation documents, including the pollution reports and a screenshot of the website, are presented in Appendix C.

Several tours of the Site were given by the OSC. On September 10, 2009, the OSC provided a tour of the Site while activities were ongoing to a group of twenty high school students and two teachers from the nearby North Clackamas School District.

On October 15, 2009, the OSC gave a tour of the Site to the Army National Guard project manager of Camp Withycombe, located south of the Site.

On October 15, 2009, an advertisement was published in The Oregonian newspaper to inform the public that the Administrative Record was available for reading at both the Clackamas Corner Branch Library and the EPA Regional Superfund Records Center.

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# 10. SITE SAFETY

The OSC maintained ultimate authority and responsibility for site safety during the removal action. START and ERRS each developed site-specific health and safety plans (available in the Site file). Daily safety meetings were conducted at the beginning of each day of site work and attended by all personnel present, including the OSC, START, and ERRS. During the daily safety meetings, the crew discussed the planned activities for that day and any task-specific health and safety issues. The daily safety meeting also included a review of any health and safety issue from the previous day.

The physical hazards at the Site included, slips, trips, falls, overhead hazards from equipment, and wildlife (rodents, snakes and insects). The primary environmental hazard was weather extremes. The minimum level of personal protective equipment (PPE) for the Site was Level D, including steel-toed safety boots. When motorized equipment was used, workers on-site monitored the equipment's movement.

The primary chemical hazards associated with the Site were inhalation and direct contact exposure to VOCs and SVOCs. Site personnel working directly with these hazardous materials wore Level C PPE, including full-face, air-purifying respirators with multipurpose cartridges and chemical-resistant coveralls. During final cleanout of the sludge in dirty tank #1, self-contained breathing apparatus (SCBA) respirators were used by the workers entering the tank.

One near miss occurred when an ERRS worker standing on the small excavator at the bottom of a cell in EA1 was releasing the lowering cable from the large excavator to the mini-excavator. The cable caught on part of the machine casing and the mini-excavator was pulled off the ground and then dropped back down. No medical attention was necessary and no work time lost. The ERRS response manager discussed the incident with the affected worker and the other ERRS employees and then changed the procedure for releasing the cable to avoid a reoccurrence of the same problem.

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# 11. DIFFICULTIES ENCOUNTERED

During the planning for the removal action, there was concern that the high water table at the Site and the substantial depth of the excavations would make it impossible to manage the amount of water that would enter the excavation during the soil removal. The water treatment facility was designed to manage a large volume of groundwater. In actuality, less groundwater entered the excavation than was expected, and treatment of the volume of water produced was manageable. The size of the water treatment facility was large enough to keep up with production without being oversized.

A difficulty that was encountered during excavation was in the use of slide shoring. The panels and posts used in creating this type of shoring required assembly and disassembly for each excavation bay. To place each post, the excavator bucket was used to pound the steel post into the ground. Despite reinforcing the excavator buckets with welded-on plates, several buckets were damaged. In addition, the use of slide shoring was expensive, labor intensive, slow, and put workers at risk when they guided the plates into place and connected them. These difficulties were one of the reasons EA2 was excavated using trench boxes rather than slide shoring.

The other difficulty was encountered while pumping groundwater from the full 25-foot depth of each excavation. The rented pump did not have the power to draw the water up to the ground surface from that depth and also move it on to the water treatment facility. To address this difficulty, the water was pumped to a leak-proof containment area next to EA1 and then a second pump was rented to move the water out of the containment area and send it on to the water treatment facility.

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# 12. SUMMARY AND CONCLUSIONS

EPA completed a RA at NWPC on June 17, 2010. The RA was conducted following a request by the EPA Region 10 Remedial Program to assist with source removal at the Site to reduce groundwater contamination.

EPA and its START and ERRS contractors effectively addressed the contaminant sources by excavating and removing the contaminated soil and installing a wall of soil amendment to aid natural biodegradation of the remaining contamination in the soil and groundwater.

A total of 24,798 tons of contaminated soils were transported off-site to a Subtitle D facility. 551,000 gallons of contaminated water were removed from the Site, treated on-site and discharged to the sewer. 66,000 pounds of zero-valent iron and 20,000 pounds of chitin were included in the backfill to encourage natural biodegradation.

Analytical results of the soil samples collected at the completion of the RA indicated only one area still may be contaminated for TCE, PCE and vinyl chloride above ROD-based excavation criteria. Facilitated by the soil amendments, the remaining contaminants in soil and groundwater should continue to degrade through both natural and enhanced attenuation processes.

This RA could be the final remedy and no further action may be necessary except for monitoring groundwater.

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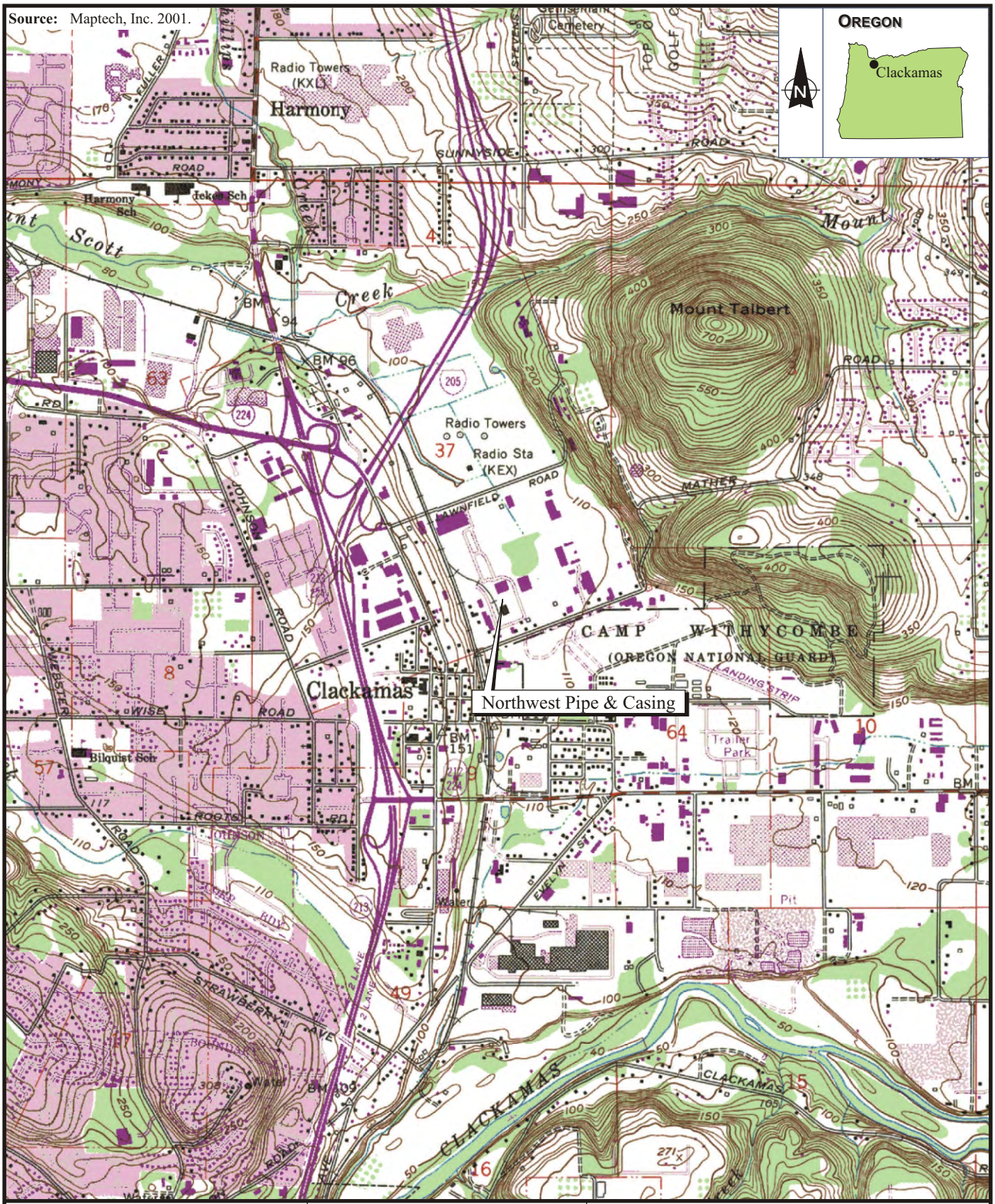
# FIGURES

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NORTHWEST PIPE & CASING
Clackamas, Oregon

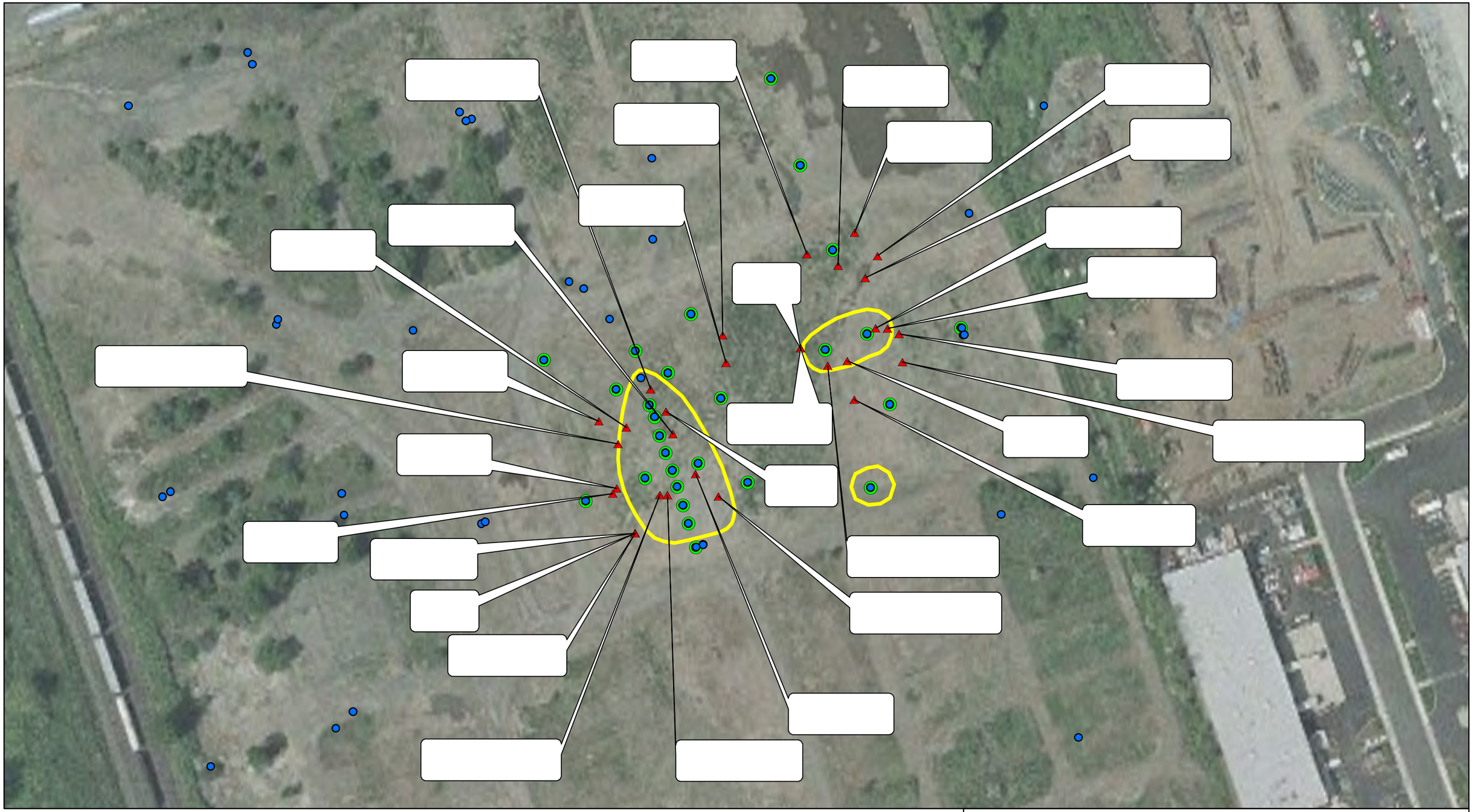
Figure 2-1

SITE LOCATION MAP

0 1000 2000
Approximate Scale in Feet

| Date: | Drawn by: | |
|---|---|---|
| 8-11-09 | AES | 10:START-3\09070014\fig 1 |

© Ecology & Environment, Inc. GIS Department Project #
L:\Portland\START_3_NW_Pipe\Maps\PDFs\Northwest_Pipe.mxd 08/20/2009



Well Locations

Test Pit Locations
(Approx. - Not Field-checked)

Borings

Coal Tar Body

Aerial image from ESRI 2000-2009

N

0 50 100 Feet

1 inch = 100 feet

**Figure 5-1 - Test Pit Locations**

**Clackamas County, Oregon**

L:\Buffalo\Northwest_Pipe_and_Casing\Maps\MXD\Working\FIG-1.mxd

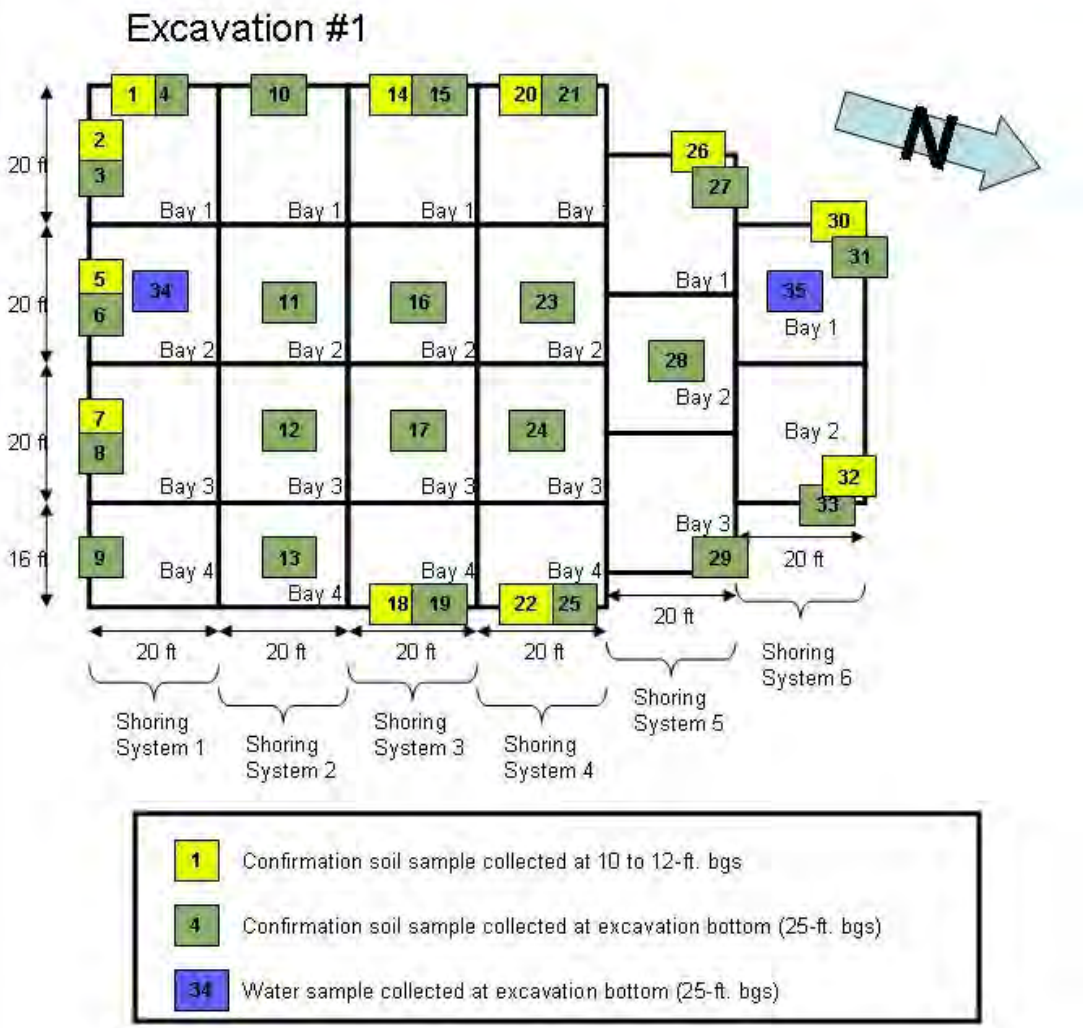
Source: Oregon Digital Orthophoto Quads, 2005

0 50 100 200 300 400 500 Feet

- Shoring Storage Area
- Excavation #1 Temporary Stockpiles
- Excavation #2 Temporary Stockpiles
- Imported Sand and Rock Temporary Stockpile
- Waste Soil Stockpile
- Excavation #1
- Excavation #2 - Trench
- Excavation #1 Shallow Surface Excavation
- Excavation #2 Shallow Surface Excavation
- Access Road
- Site Boundary
- GAC Groundwater Treatment System
- Contaminent Reduction Zone
- Support Zone
- Stockpiling Area
- Containment Cells

FIGURE 5-2
Site Layout
Northwest Pipe and Casing
Clackamas, OR

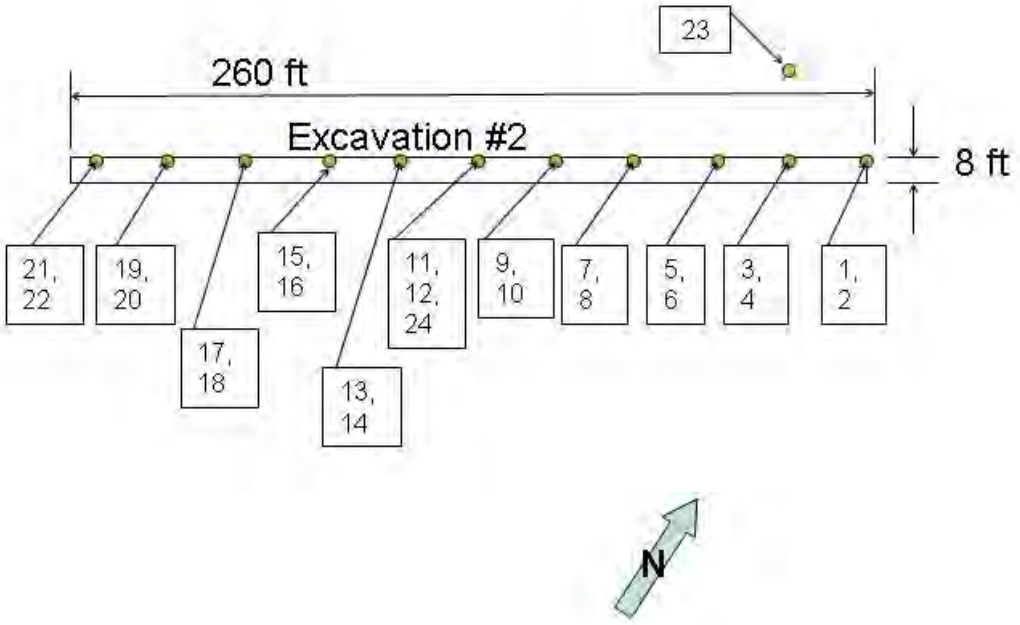
| Map Number | Sample I.D. | sample Number |
|---|---|---|
| 1 | E01S01B01 | 09090119 |
| 2 | E01S01B01 | 09090118 |
| 3 | E01S01B01 | 09090122 |
| 4 | E01S01B01 | 09090123 |
| 5 | E01S01B02 | 09090124 |
| 6 | E01S01B02 | 09090128 |
| 7 | E01S01B03 | 09090129 |
| 8 | E01S01B03 | 09090136 |
| 9 | E01S01B04 | 09090141 |
| 10 | E01S02B01 | 09090152 |
| 11 | E01S02B02 | 09090156 |
| 12 | E01S02B03f | 09090163 |
| 13 | E01S02B04f | 09090164 |
| 14 | E01S03B01W | 09090167 |
| 15 | E01S03B01W | 09090170 |
| 16 | E01S03B02f | 09090173 |
| 17 | E01S03B03f | 09090174 |
| 18 | E01S03B04W14 | 09100101 |
| 19 | E01S03B04W25 | 09100104 |
| 20 | E01S04B01W10 | 09100105 |
| 21 | E01S04B01W25 | 09100113 |
| 22 | E1SS4B4-12e | 09100116 |
| 23 | E1SS4B2 | 09100117 |
| 24 | E1SS4B3 | 09100118 |
| 25 | E1SS4B4-25e | 09100120 |
| 26 | E1SS5B1-10bW | 09100121 |
| 27 | E1SS5B1-25bW | 09100124 |
| 28 | E1SS5B2-25 | 09100128 |
| 29 | E1SS5B3-25be | 09100129 |
| 30 | E1SS6B1-10bW | 09100133 |
| 31 | E1SS6B1-25bW | 09100134 |
| 32 | E1SS6B2-10be | 09100135 |
| 33 | E1SS6B2-25be | 09100137 |
| 34 | E1S1B2 | 09090171 |
| 35 | E1S6B1-102009 | 09100190 |




**Northwest Pipe & Casing**

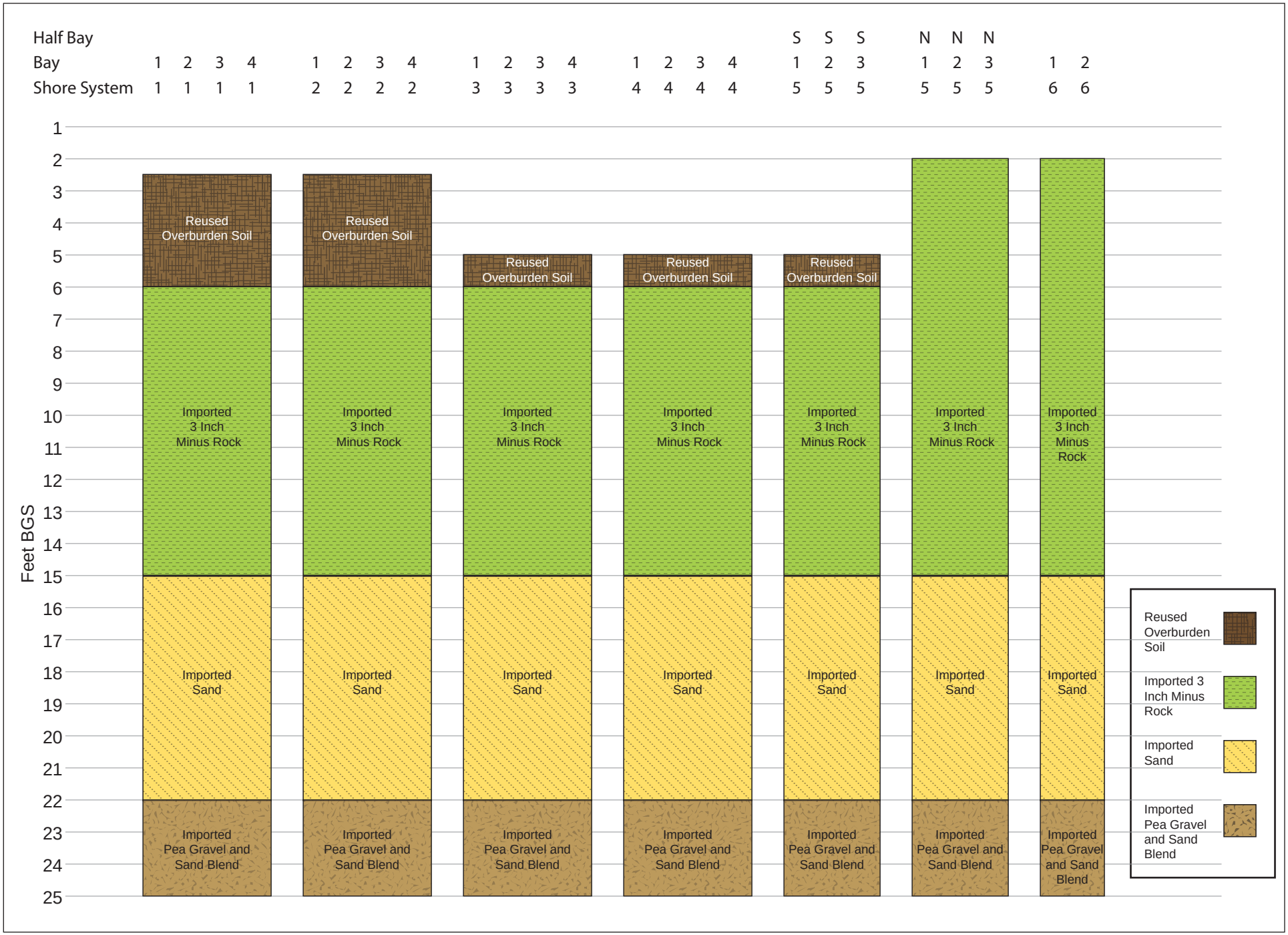
**Figure 5-3.1**
**Excavation Area 1**
**Confirmation Soil**
**Sample Locations**

| Map Number | Sample I.D. | Sample Number |
|---|---|---|
| 1 | E2-0-10-101409 | 09100140 |
| 2 | E2-0-25-101409 | 09100141 |
| 3 | E2-25-10-101409 | 09100154 |
| 4 | E2-25-25-101409 | 09100155 |
| 5 | E2-50-10-101509 | 09100157 |
| 6 | E2-50-25-101509 | 09100158 |
| 7 | E2-75-10-101509 | 09100159 |
| 8 | E2-75-25-101509 | 09100160 |
| 9 | E2-100-10-101509 | 09100167 |
| 10 | E2-100-25-101509 | 09100168 |
| 11 | E2-125-10-101609 | 09100169 |
| 12 | E2-125-25-101609 | 09100170 |
| 13 | E2-150-10-101609 | 09100171 |
| 14 | E2-150-25-101609 | 09100172 |
| 15 | E2-175-10-101609 | 09100174 |
| 16 | E2-175-25-101609 | 09100175 |
| 17 | E2-200-10-101909 | 09100178 |
| 18 | E2-200-25-101909 | 09100179 |
| 19 | E2-225-10-101909 | 09100183 |
| 20 | E2-225-25-101909 | 09100184 |
| 21 | E2-250-10-101909 | 09100185 |
| 22 | E2-250-25-101909 | 09100186 |
| 23 | E2BS-101409 | 09100156 |
| 24 | E2WS-125-101609 | 09100173 |




**Northwest Pipe & Casing**

**Figure 5-3.2**
**Excavation Area 2**
**Confirmation Soil**
**Sample Locations**




**Northwest Pipe & Casing 2009 Removal Action**

**Figure 5-3.3**

**Excavation Area 1 Backfill Profile**

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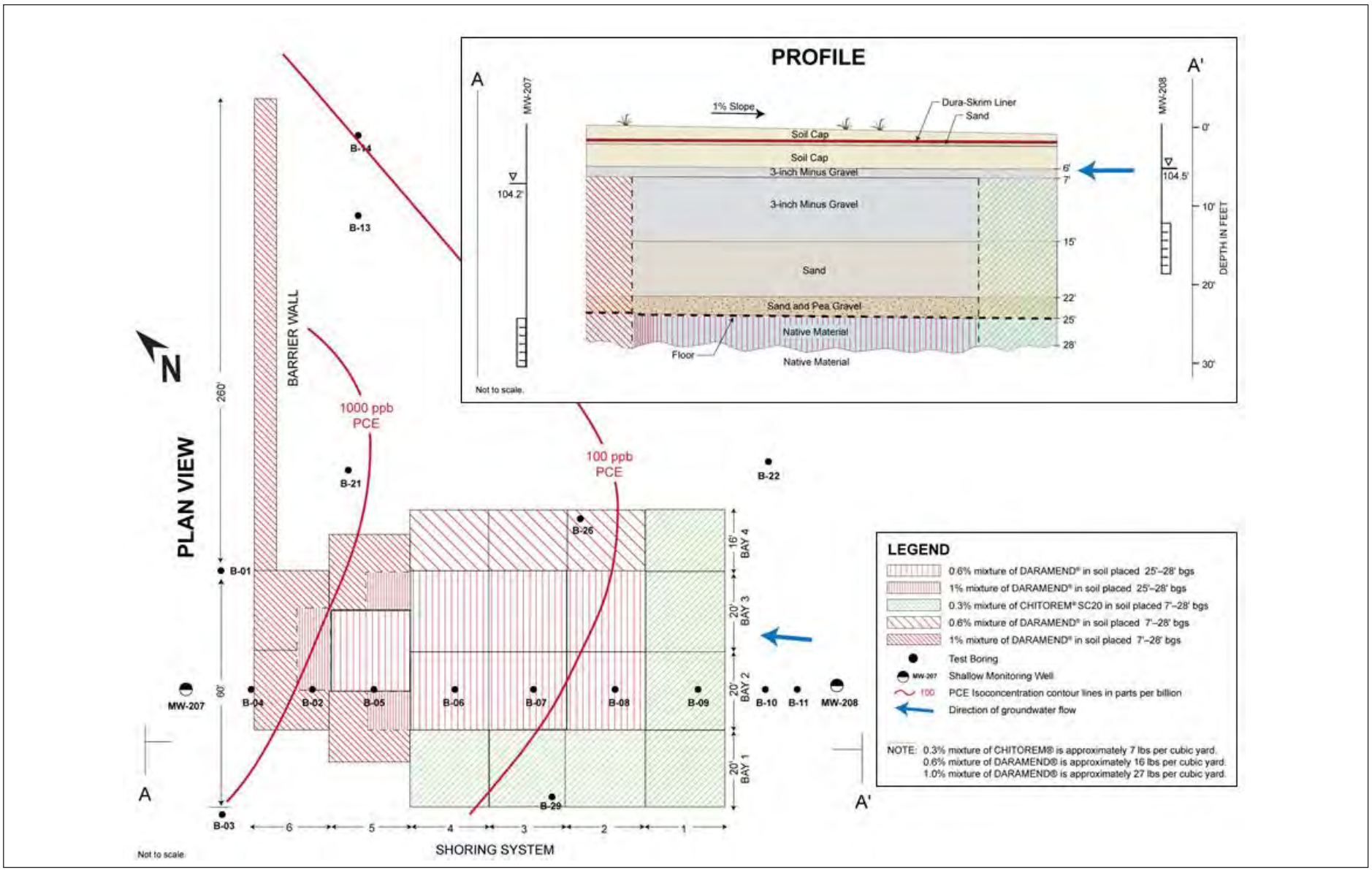


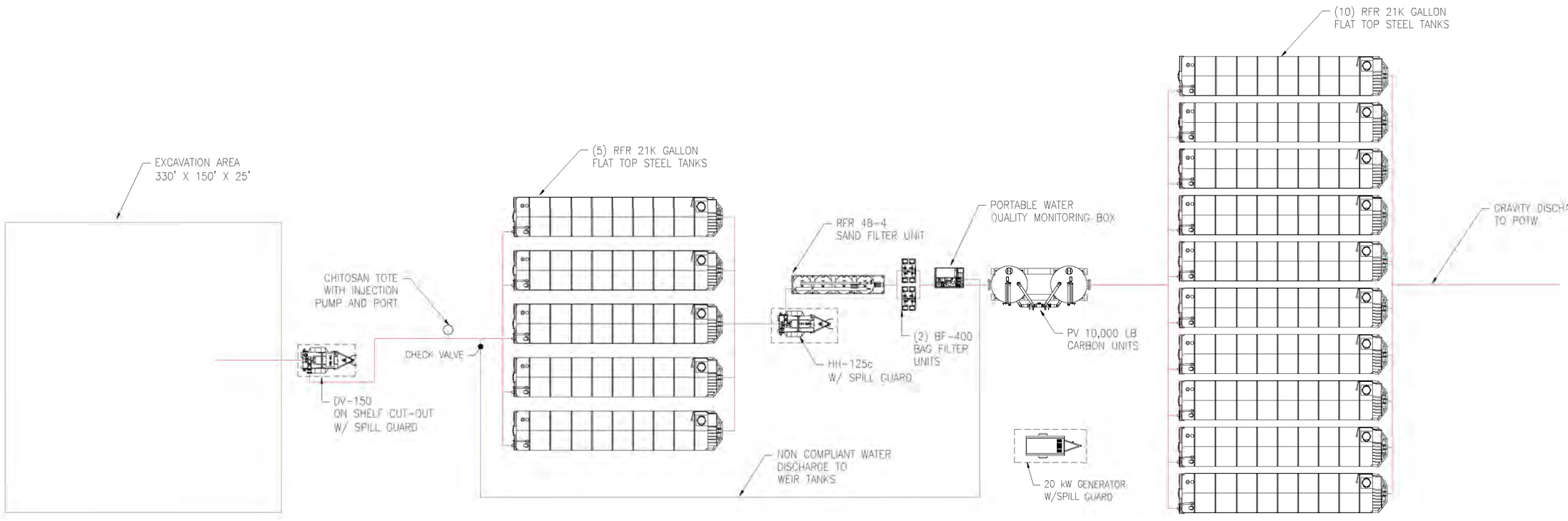

**Northwest Pipe & Casing**

**Figure 5-3.4**
**Soil Amendment Dosing**
**Profile and Plan Views**

| REV.NO. | DESCRIPTION | PREVIOUS DWG | BY | DATE |
|---|---|---|---|---|
| | | | | |

| ITEM | QTY. | REF. | DESCRIPTION |
|---|---|---|---|
| | | | |

21K GALLON STEEL TANKS MUST BE ARRAIGNED IN A LINEAR FASHION AS SHOWN. HOWEVER, ACTUAL AS-BUILT LAYOUT OF REMAINING FILTRATION COMPONENTS CAN VARY BASED ON SPECIFIC SITE CONDITIONS.




CONFIDENTIAL

PLAN VIEW

DATE: 8-27-09
SCALE: NOT TO SCALE
DESIGNED: K VAN FLEET
CHECKED:
DRAWN: K VAN FLEET
SHEET SIZE: D

UNOFFICIAL
CONCEPTUAL ONLY

500 GPM
NW PIPE CASING

Rain For Rent
Engineering
3404 STATE ROAD, P.O. BOX 2248 BAKERSFIELD, CA 93303

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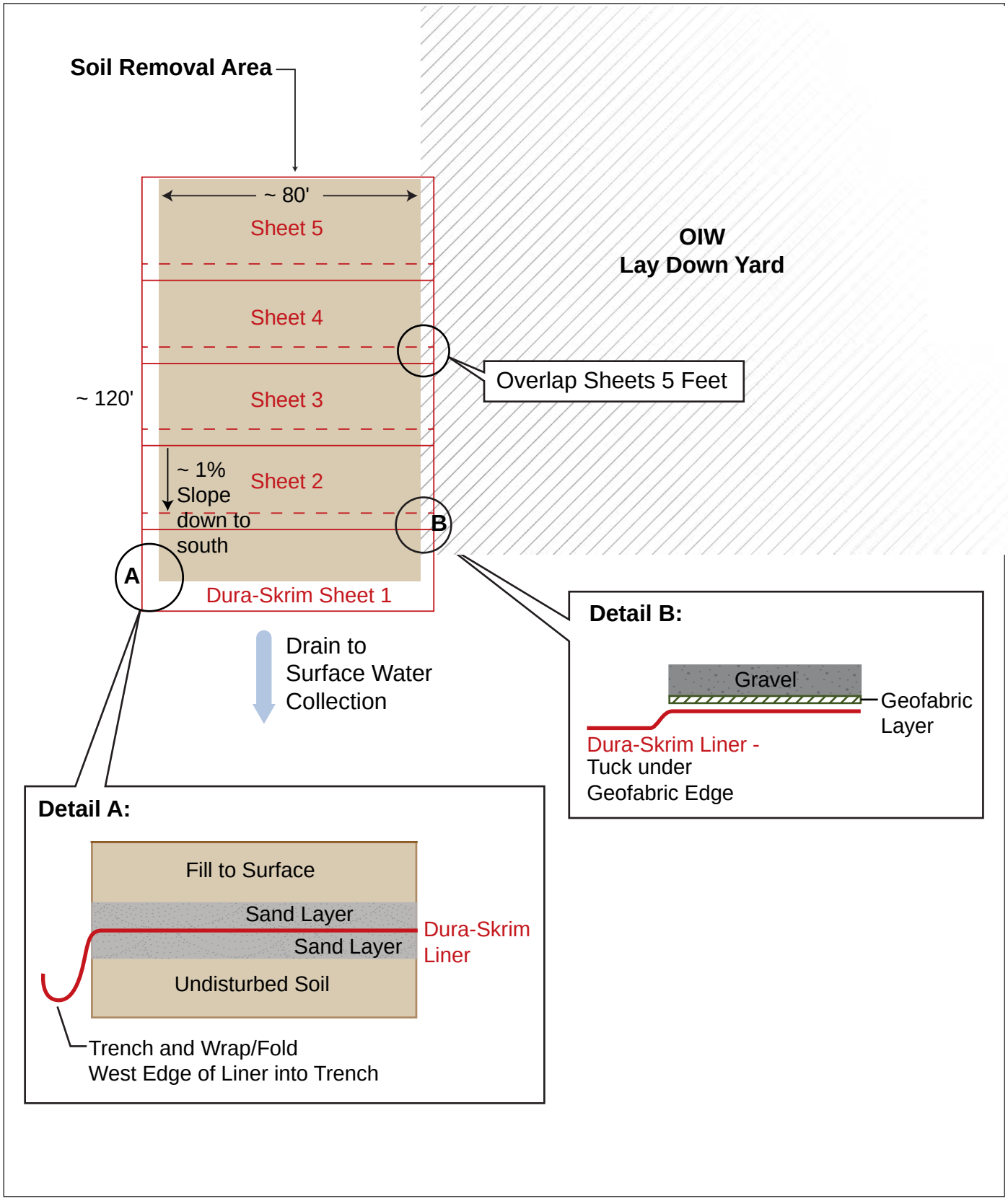



**Parametrix** 415-2328-007/048/SI01

**Figure 5-5.1**
**Hydraulic Barrier Schematic**
**Removal Action Report**

Northwest Pipe and Casing
Clackamas, Oregon

Parametrix DATE: April 12, 2011 FILE: NW_Pipe_RA_RemovalAreas.mxd

N

0 100 200

SCALE IN FEET

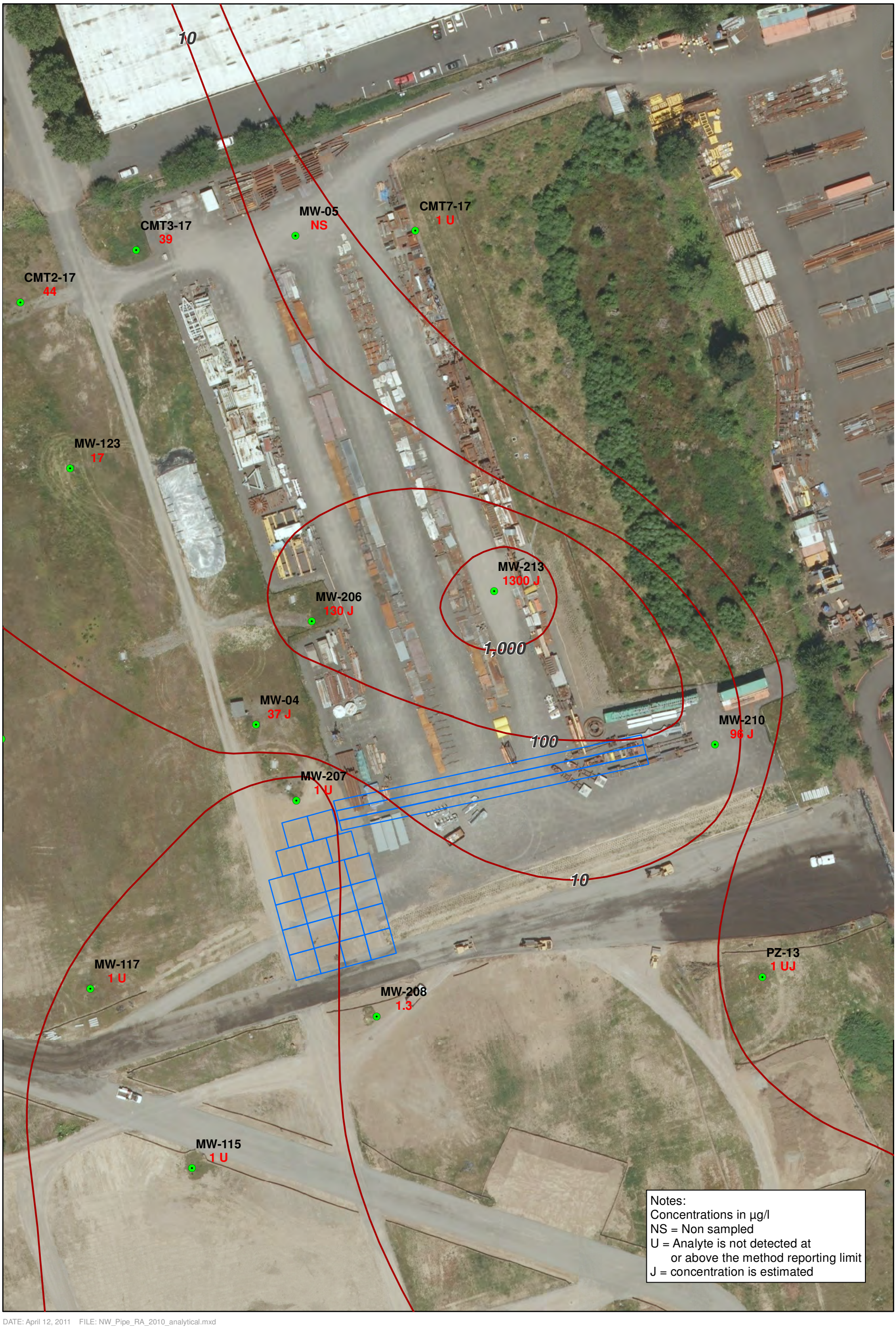
Removal Action Area

Excavation Area

Former Plants 3 and 4

**Figure 5-5.2**
**Removal Areas**

Removal Action Report
Northwest Pipe and Casing
Clackamas, Oregon




DATE: April 12, 2011 FILE: NW_Pipe_RA_2010_analytical.mxd

N

0 50 100

Scale in Feet

Well ID — MW-113

Concentration — 7.4

Monitoring Well

Isoconcentration Line

Removal Action Area

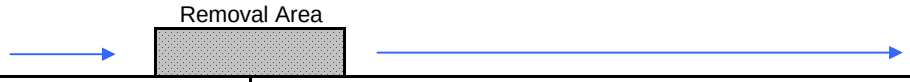
**Figure 6-0**
**PCE Concentrations in the Shallow WBZ**
Removal Action Report
Northwest Pipe and Casing
Clackamas, Oregon

# TABLES

## Table 6-1. PRSC GWM Results

Northwest Pipe and Casing Superfund Site, Clackamas Oregon

Chemicals of Concern in Groundwater Monitoring Wells Located Upgradient and Downgradient of the Removal Action / Soil Amendment Area




| | | Upgradient Wells | | | Downgradient Wells | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location | | Shallow WBZ | | | | | | | | | | | | | | | | |
| | | MW-208 | | | MW-207 | | | MW-04 | | MW-206 | | | MW-213 | MW-123 | | | CMT-7-17 | |
| Sample Date | Remedial Goal | Nov-08 | Dec-09 | Jul-10 | Nov-08 | Dec-09 | Jul-10 | Nov-08 | Dec-09 | Nov-08 | Dec-09 | Jul-10 | Jul-10 | Nov-08 | Jul-10 | | Nov-08 | Jul-10 |
| PCE | 1 | **11** | **7.1** | 2.5 U | **900** | **6.3** | 25 U | **1,600** | 1 U | **880** | **200 J** | **140** | **1,300 J** | **260** | **3.4 J** | | **2.9** | **4.4 J** |
| TCE | 1.6 | **13** | **2.8** | 5 U | **3,300** | **110** | 50 U | **370** | **4.1** | **270** | **56** | **52** | **770 J** | **99** | **4.4 J** | | **7.2** | **12** |
| Cis 1,2-DCE | -- | 32 | 6.8 | 5 U | 1,080 | 8,700 | 400 | 800 | 230 | 340 | 98 | 150 | 2,900 J | 210 | 260 | | 410 | 220 J |
| VC | 1 | **1.4** | 1 U | 3.4 J | 100 U | **59** | **55** | **20** | **4.2** | **9.3 J** | 1 U | 5 U | 25 U | 25 UJ | 2.5 U | | **78** | **18** |
| Naphthalene | -- | 34 | 7.2 | 40 | 180 J | 520 | 250 | 50 U | 1 U | 50 U | 1 U | 10 U | 50 UJ | 250 U | 5 UJ | | 0.5 U | 10 U |
| Location | | Intermediate WBZ | | | | | | | | | | | | | | | | |
| | | MW-209 | | | | | MW-18 | | | MW-205 | | | MW-214 | MW-124 | | MW-129 | | CMT-7-40 | |
| Sample Date | | Nov-08 | Dec-09 | Jul-10 | | | Nov-08 | Dec-09 | Jul-10 | Nov-08 | Dec-09 | Jul-10 | Jul-10 | Nov-08 | Jul-10 | Nov-08 | Jul-10 | Nov-08 | Jul-10 |
| PCE | 1 | **36** | **44 J** | **17** | | | 0.5 U | 1 U | **25** | **320** | **390 J** | **250** | **620** | **80.6** | **55** | **290** | **150** | **160** | **86** |
| TCE | 1.6 | **53** | **69** | **30** | | | 0.38 J | 2.5 | **82** | **100** | **140** | **87** | **700** | **40.6** | **46** | **220** | **95** | **93** | **52** |
| Cis 1,2-DCE | -- | 5.2 | 6.2 | 8.3 J | | | 120 | 58 | 190 | 51.2 | 62 | 83 | 140 J | 69 | 290 | 280 | 340 | 200 | 200 |
| VC | 1 | 0.5 U | 1 U | 2.5 U | | | 23 | 11 | 9.2 | 0.9 J | 1 U | 5 U | 5 U | **1.4** | 2.5 U | **5.4** | **8.2 J** | **13** | **9** |
| Naphthalene | -- | 0.5 U | 1 U | 5 U | | | 0.5 U | 1 U | 5 U | 5 U | 1 U | 10 U | 10 UJ | 5 U | 5 U | 0.5 U | 5 U | 0.5 U | 5 UJ |

Table 7-1. Miscellaneous Excavation Sampling.
All Contaminants in Water (ug/L) With at Least One Result Above RLs.

| Location Description | ROD Based Remedial Goals | Water in Excavation 1(SS3, Bay2) 25' bgs, near oily pool at center of bay | Water from pump in Excavation 2, 125' west of east end of excavation at 25'bgs | Water in Excavation1 (SS6 Bay1) 25' bgs- after pump out and groundwater recharge |
|---|---|---|---|---|
| Location ID | | E1S1B2 | E2WS-125-101609 | E1S6B-1102009 |
| Sample Name | | 09090171 | JBR73 | JBR84 |
| Sample Date | | 09/30/09 | 10/16/09 | 10/20/09 |
| **SVOCs** | | | | |
| 4-Methylphenol | -- | 1000 U | 50 U | 200 |
| Acenaphthene | -- | 1900 | 31 J | 220 |
| Anthracene | -- | 100 U | 50 U | 20 |
| Benz(a)anthracene | -- | 100 U | 50 U | 10 |
| Benzo(b) fluoranthene | -- | 100 U | 50 U | 2.8 J |
| Benzo(k) fluoranthene | -- | 100 UJ | 50 U | 0.88 J |
| Bis (2-ethylhexyl) phthalate | -- | 1000 U | 50 U | 1.3 J |
| Caprolactam | -- | -- | 54 | 5 U |
| Carbazole | -- | 250 | 50 U | 47 |
| Chrysene | -- | 100 U | 50 U | 8.9 |
| Dibenzofuran | -- | 730 | 50 U | 86 |
| Fluoranthene | -- | 760 | 50 U | 69 |
| Fluorene | -- | 660 | 50 U | 88 |
| Naphthalene | -- | 2100 | 21 J | 140 |
| Phenanthrene | -- | 1,800 | 24 J | 220 |
| Phenol | -- | 1000 U | 14 J | 39 |
| Pyrene | -- | 490 | 50 U | 48 |
| **VOCs** | | | | |
| 2-Butanone | -- | 1000 U | 10 U | 76 |
| Acetone | -- | 1000 U | 180 | 19 |
| cis-1,2-Dichloroethene | -- | 100 U | 240 | 520 |
| Ethylbenzene | -- | 100 U | 5 U | 8.6 |
| m,p-Xylene | -- | 200 U | 5 U | 13 |
| Naphthalene | -- | 2000 | -- | -- |
| o-Xylene | -- | 100 U | 5 U | 6.9 |
| Tetrachloroethene | 1 | 100 U | 170 | 140 |
| Toluene | -- | 100 U | 5 U | 9.8 |
| trans-1,2-Dichloroethene | -- | 100 U | 5 U | 2.3 J |

Table 7-1. Miscellaneous Excavation Sampling.
All Contaminants in Water (ug/L) With at Least One Result Above RLs.

| Location Description | ROD Based Remedial Goals | Water in Excavation 1(SS3, Bay2) 25' bgs, near oily pool at center of bay | Water from pump in Excavation 2, 125' west of east end of excavation at 25'bgs | Water in Excavation1 (SS6 Bay1) 25' bgs- after pump out and groundwater recharge |
|---|---|---|---|---|
| Location ID | | E1S1B2 | E2WS-125-101609 | E1S6B-1102009 |
| Sample Name | | 09090171 | JBR73 | JBR84 |
| Sample Date | | 09/30/09 | 10/16/09 | 10/20/09 |
| Trichloroethene | 1.6 | 100 U | 75 | 130 |
| Vinyl Chloride | 1 | 20 U | 2.9 J | 6.4 |
| **PCBs** | | | | |
| Total PCBs | -- | 0.4 | 4.5 | 4.5 |
| **Metals** | | | | |
| Arsenic | -- | 20.5 | 76.2 J+ | 4.8 J+ |
| Beryllium | -- | 40.3 | -- | -- |
| Cadmium | -- | 18.1 | 1.2 UJ | 5 U |
| Chromium | -- | 436 | 255 J | 9.3 J |
| Copper | -- | 1220 | 824 J | 20.8 J |
| Lead | -- | 292 | 67.5 J+ | 2.9 J+ |
| Mercury | -- | 1.9 | 0.34 | 0.2 U |
| Nickel | -- | 484 | 279 | 29.1 J |
| Selenium | -- | 13.4 | -- | -- |
| Thallium | -- | 10 U | -- | -- |
| Zinc | -- | 1840 | 942 | 39.7 J |

Table 7-2. Miscellaneous Excavation Sampling.
Soil and Product Samples With At Least One Result Above RLs for All Compounds.

| Location Description | ROD Based Remedial Goals | ROD Based Criteria for Excavation | Regional Screening Levels - Industrial Soil | Surface Excavation Area 2, product sample | 7-point composite sample from stockpiled overburden from excav.#1 area, between approx. 2' bgs and 4' bgs. | COAL TAR material from Excavation #2 area near test pit 14 | SLUDGE material from pipe found in Excavation #2 area near test pit 14 | DARK GRAY SOIL found in Excavation #2 area near test pit 14. | Excavation #2 overburden (4' - 8' bgs) |
|---|---|---|---|---|---|---|---|---|---|
| Location ID | | | | Surface Excavation Area 2 | E1OB100809 | E2CT100909 | E2SL100909 | E2GS100909 | E2OB-101609 |
| Sample Name | | | | 09090126 | 09100126 | 09100130 | 09100131 | 09100132 | 09100176 |
| Sample Date | | | | 09/16/09 | 10/08/09 | 10/09/09 | 10/09/09 | 10/09/09 | 10/16/09 |
| **SVOCs, ug/kg** | | | | | | | | | |
| 2-Methylnaphthalene | -- | -- | -- | 340,000 | 300 U | 960,000 | 4,000 | 30 U | 30 U |
| Acenaphthene | -- | -- | 3.30E+07 | 2,700,000 | 300 U | 3,600,000 | 43,000 J | 30 U | 120 |
| Acetophenone | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Anthracene | -- | -- | 1.70E+08 | 6,700,000 | 300 U | 6,600,000 | 65,000 J | 30 U | 310 |
| Atrazine | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benz(a)anthracene | 2,500 | ***250,000*** | NA | **6,700,000** | 1,300 | **6,800,000** | 35,000 J | 30 U | 700 |
| Benzaldehyde | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo(a) pyrene | 250 | ***25,000*** | NA | **4,100,000** | 1,300 | **3,600,000** | 20,000 | 30 U | 720 |
| Benzo(b) fluoranthene | -- | -- | 2,100 | 4,700,000 | 1,600 | 4,600,000 | 28,000 | 37 | 890 |
| Benzo(g,h,i) perylene | -- | -- | -- | 1,500,000 | 960 | 1,500,000 | 9,600 | 30 U | 440 |
| Benzo(k) fluoranthene | 2,500 | ***250,000*** | NA | 190,000 J | 650 | **1,600,000** | 7,700 | 30 U | 350 |
| Carbazole | -- | -- | -- | 3,700,000 | 300 U | 4,000,000 | 20,000 | 30 U | 160 |
| Chrysene | 250,000 | ***25,000,000*** | NA | 6,200,000 | 1,400 | 5,900,000 | 31,000 | 33 | 820 |
| Dibenz(a,h) anthracene | 250 | ***25,000*** | NA | **530,000** | 300 U | **450,000** | 3,000 | 30 U | 120 |
| Dibenzofuran | -- | -- | -- | 1,400,000 | 300 U | 1,900,000 | 18,000 | 30 U | 59 |
| Fluoranthene | -- | -- | 2.20E+07 | 21,000,000 J | 2,400 | 21,000,000 J | 110,000 J | 57 | 1,800 |
| Fluorene | -- | -- | 2.20E+07 | 2,900 | 300 U | 3,400,000 | 32,000 | 30 U | 110 |
| Indeno (1,2,3-cd) pyrene | 2,500 | ***250,000*** | NA | **1,600,000** | 960 J | **1,700,000 J** | 11,000 J | 30 U | 460 |

Table 7-2. Miscellaneous Excavation Sampling.
Soil and Product Samples With At Least One Result Above RLs for All Compounds.

| Location Description | ROD Based Remedial Goals | ROD Based Criteria for Excavation | Regional Screening Levels - Industrial Soil | Surface Excavation Area 2, product sample | 7-point composite sample from stockpiled overburden from excav.#1 area, between approx. 2' bgs and 4' bgs. | COAL TAR material from Excavation #2 area near test pit 14 | SLUDGE material from pipe found in Excavation #2 area near test pit 14 | DARK GRAY SOIL found in Excavation #2 area near test pit 14. | Excavation #2 overburden (4' - 8' bgs) |
|---|---|---|---|---|---|---|---|---|---|
| Location ID | | | | Surface Excavation Area 2 | E1OB100809 | E2CT100909 | E2SL100909 | E2GS100909 | E2OB-101609 |
| Sample Name | | | | 09090126 | 09100126 | 09100130 | 09100131 | 09100132 | 09100176 |
| Sample Date | | | | 09/16/09 | 10/08/09 | 10/09/09 | 10/09/09 | 10/09/09 | 10/16/09 |
| Naphthalene | -- | -- | 18,000 | 580,000 | 300 U | 1,700,000 | 4,300 | 30 U | 30 U |
| Phenanthrene | -- | -- | -- | 2,0000,000 J | 820 | 22,000,000 J | 130,000 J | 30 U | 1,100 |
| Pyrene | -- | -- | 1.40E+07 | 16,000,000 | 2,500 | 17,000,000 J | 90,000 J | 60 | 1,500 |
| **VOCs, ug/kg** | | | | | | | | | |
| 1,2,4-Trimethylbenzene | | | | 500 U | 50 U | 500 U | 250 | 50 U | 50 U |
| 1,3,5-Trimethylbenzene | | | | 500 U | 50 U | 500 U | 120 | 50 U | 50 U |
| Naphthalene | | | | 71000 | 50 U | 41000 | 7600 | 50 U | 50 U |
| n-Propylbenzene | | | | 500 U | 50 U | 500 U | 57 | 50 U | 50 U |
| o-Xylene | | | | 500 U | 50 U | 500 U | 56 | 50 U | 50 U |
| Tetrachloroethene | | | | 650 | 52 | 250 U | 200 | 25 U | 25 U |
| **PCBs, ug/kg** | | | | | | | | | |
| Aroclor 1254 | -- | -- | 740 | 600 | 3,000 | 2,000 U | 18,000 | 500 | 3,700 |
| Total PCBs | 1000 | ***20,000*** | -- | 900 | 3,300 | 7,000 | 18,300 | 800 | 4,000 |
| **Metals, mg/kg** | | | | | | | | | |
| Arsenic | -- | -- | 1.6 | 1 U | 3.3 | 1 U | 2.39 | 1.76 | 2.51 |
| Barium | -- | -- | 1.90E+05 | -- | 93.2 | 1 U | 98.2 | 143 | 91.9 |
| Chromium | -- | -- | -- | 1 U | 18 | 1 U | 16.8 | 16 | 10.9 |
| Lead | -- | -- | 800 | 1 U | 11.4 | 1 U | 6.62 | 12.1 | 6.2 |
| Nickel | -- | -- | -- | 1.12 | -- | -- | -- | -- | -- |
| **TPH, mg/kg** | | | | | | | | | |
| Diesel Range Organics | | -- | -- | 100,000 | -- | 260,000 | 180 | 50 U | 170 |
| Lube Oil | | -- | -- | 96,000 | -- | 150,000 | 250 U | 250 U | 250 U |

**Table 7-3. On-Site Water Treatment Facility Influent Sampling.**
**All Contaminants in Water (ug/L).**

| Location ID | Wastewater Discharge Limitations | UT01091809 | UT02092109 | UT03100209 | UT03101509 | UT01102609 |
|---|---|---|---|---|---|---|
| Sample Name | | 09090131 | 09090147 | 09100109 | 09100164 | 09100200 |
| Sample Date | | 09/18/09 | 09/22/09 | 10/02/09 | 10/15/09 | 10/26/09 |
| Location Description | | Influent in Dirty Tank#1 | Influent in Dirty Tank#1 | Influent in Dirty Tank#3 | Influent in Dirty Tank#3 | Residual Water in Dirty Tank#1 |
| **SVOC** | | | | | | |
| 1,1'-Biphenyl | -- | | | | | -- |
| 1,2,4,5-Tetrachlorobenzene | -- | | | | | -- |
| 1,2,4-Trichlorobenzene | -- | | | | | 100 U |
| 1,2-Dichlorobenzene | -- | | | | | 100 U |
| 1,3-Dichlorobenzene | -- | | | | | 100 U |
| 1,4-Dichlorobenzene | -- | | | | | 100 U |
| 2,2'-Oxybis (1-chloropropane) | -- | | | | | -- |
| 2,3,4,6-Tetrachlorophenol | -- | | | | | -- |
| 2,4,5-Trichlorophenol | -- | | | | | 1000 U |
| 2,4,6-Trichlorophenol | -- | | | | | 1000 U |
| 2,4-Dichlorophenol | -- | | | | | 1000 U |
| 2,4-Dimethylphenol | -- | | | | | 1000 U |
| 2,4-Dinitrophenol | -- | | | | | 3000 U |
| 2,4-Dinitrotoluene | -- | | | | | 100 U |
| 2,6-Dinitrotoluene | -- | | | | | 100 U |
| 2-Chloronaphthalene | -- | | | | | 100 U |
| 2-Chlorophenol | -- | | | | | 1000 U |
| 2-Methylnaphthalene | -- | | | | | 260 |
| 2-Methylphenol | -- | | | | | 1000 U |
| 2-Nitroaniline | -- | | | | | 100 U |
| 2-Nitrophenol | -- | | | | | 1000 U |
| 3,3'-Dichlorobenzidine | -- | | | | | -- |
| 3-Nitroaniline | -- | | | | | 300 U |
| 4,6-Dinitro-2-methylphenol | -- | | | | | 300 U |
| 4-Bromophenyl phenyl ether | -- | | | | | 10 U |
| 4-Chloro-3-methylphenol | -- | | | | | 1000 U |
| 4-Chloroaniline | -- | | | | | 300 U |
| 4-Chlorophenyl phenyl ether | -- | | | | | 100 U |
| 4-Methylphenol | -- | | | | | 420 |
| 4-Nitroaniline | -- | | | | | 100 U |
| 4-Nitrophenol | -- | | | | | 1000 U |
| Acenaphthene | -- | | | | | 1300 |
| Acenaphthylene | -- | | | | | 100 U |
| Acetophenone | -- | | | | | -- |
| Anthracene | -- | | | | | 100 U |
| Atrazine | -- | | | | | -- |
| Benz(a)anthracene | -- | | | | | 100 U |
| Benzaldehyde | -- | | | | | -- |

**Table 7-3. On-Site Water Treatment Facility Influent Sampling.**
**All Contaminants in Water (ug/L).**

| Location ID | Wastewater Discharge Limitations | UT01091809 | UT02092109 | UT03100209 | UT03101509 | UT01102609 |
|---|---|---|---|---|---|---|
| Sample Name | | 09090131 | 09090147 | 09100109 | 09100164 | 09100200 |
| Sample Date | | 09/18/09 | 09/22/09 | 10/02/09 | 10/15/09 | 10/26/09 |
| Location Description | | Influent in Dirty Tank#1 | Influent in Dirty Tank#1 | Influent in Dirty Tank#3 | Influent in Dirty Tank#3 | Residual Water in Dirty Tank#1 |
| Benzo(a) pyrene | -- | | | | | 100 U |
| Benzo(b) fluoranthene | -- | | | | | 100 U |
| Benzo(g,h,i) perylene | -- | | | | | 100 U |
| Benzo(k) fluoranthene | -- | | | | | 100 U |
| Benzoic acid | -- | | | | | 10000 U |
| Benzyl Alcohol | -- | | | | | 100 U |
| Bis (2-chloroethoxy) methane | -- | | | | | 100 U |
| Bis (2-chloroethyl) ether | -- | | | | | 100 U |
| Bis (2-chloroisopropyl) ether | -- | | | | | 100 U |
| Bis (2-ethylhexyl) phthalate | -- | | | | | 1000 U |
| Butylbenzylphthalate | -- | | | | | 100 U |
| Caprolactam | -- | | | | | -- |
| Carbazole | -- | | | | | 140 |
| Chrysene | -- | | | | | 100 U |
| Dibenz(a,h) anthracene | -- | | | | | 100 U |
| Dibenzofuran | -- | | | | | 480 |
| Diethylphthalate | -- | | | | | 100 U |
| Dimethylphthalate | -- | | | | | 100 U |
| Di-n-butylphthalate | -- | | | | | 100 U |
| Di-n-octylphthalate | -- | | | | | 100 U |
| Fluoranthene | -- | | | | | 500 |
| Fluorene | -- | | | | | 460 |
| Hexachlorobenzene | -- | | | | | 10 U |
| Hexachlorobutadiene | -- | | | | | 100 U |
| Hexachlorocyclopentadiene | -- | | | | | 300 U |
| Hexachloroethane | -- | | | | | 10 U |
| Indeno (1,2,3-cd) pyrene | -- | | | | | 100 U |
| Isophorone | -- | | | | | 10 U |
| Naphthalene | -- | | | | | 820 |
| Nitrobenzene | -- | | | | | 10 U |
| N-Nitrosodi-n-propylamine | -- | | | | | 10 U |
| N-Nitrosodiphenylamine | -- | | | | | 10 U |
| Pentachlorophenol | -- | | | | | 1000 U |
| Phenanthrene | -- | | | | | 1200 |
| Phenol | -- | | | | | 1000 U |
| Pyrene | -- | | | | | 350 |
| **VOC** | | | | | | |
| 1,1,1,2-Tetrachloroethane | -- | | 1 U | 100 U | 1 U | 10 U |
| 1,1,1-Trichloroethane | -- | | 1 U | 1 U | 1 U | 10 U |

**Table 7-3. On-Site Water Treatment Facility Influent Sampling.**
**All Contaminants in Water (ug/L).**

| Location ID | Wastewater Discharge Limitations | UT01091809 | UT02092109 | UT03100209 | UT03101509 | UT01102609 |
|---|---|---|---|---|---|---|
| Sample Name | | 09090131 | 09090147 | 09100109 | 09100164 | 09100200 |
| Sample Date | | 09/18/09 | 09/22/09 | 10/02/09 | 10/15/09 | 10/26/09 |
| Location Description | | Influent in Dirty Tank#1 | Influent in Dirty Tank#1 | Influent in Dirty Tank#3 | Influent in Dirty Tank#3 | Residual Water in Dirty Tank#1 |
| 1,1,2,2-Tetrachloroethane | -- | 1 U | 1 U | 1 U | 1 U | 10 U |
| 1,1,2-Trichloro-1,2,2-Trifluoroethane | -- | -- | -- | -- | -- | -- |
| 1,1,2-Trichloroethane | -- | 1 U | 1 U | 1 U | 1 U | 10 U |
| 1,1-Dichloroethane | -- | 1 U | 100 U | 1 U | 1 U | 10 U |
| 1,1-Dichloroethene | -- | 1 U | 100 U | 1 U | 1 U | 10 U |
| 1,1-Dichloropropene | -- | 1 U | 1 U | 1 U | 1 U | 10 U |
| 1,2,3-Trichlorobenzene | -- | 1 U | 1 U | 1 U | 1 U | 10 U |
| 1,2,3-Trichloropropane | -- | 1 U | 1 U | 1 U | 1 U | 10 U |
| 1,2,4-Trichlorobenzene | -- | 1 U | 1 U | 1 U | 1 U | 10 U |
| 1,2,4-Trimethylbenzene | -- | 1 U | 100 U | 10 | 10 | |
| 1,2-Dibromo-3-chloropropane | -- | 1 U | 1 U | 1 U | 1 U | 10 U |
| 1,2-Dibromoethane | -- | 1 U | 100 U | 1 U | 1 U | 10 U |
| 1,2-Dichlorobenzene | -- | 1 U | 1 U | 1 U | 1 U | 10 U |
| 1,2-Dichloroethane | -- | 1 U | 1 U | 1 U | 1 U | 10 U |
| 1,2-Dichloropropane | -- | 1 U | 100 U | 1 U | 1 U | 10 U |
| 1,3,5-Trimethylbenzene | -- | 1 U | 1.6 | 2.3 | 10 U | |
| 1,3-Dichlorobenzene | -- | 1 U | 100 U | 1 U | 1 U | 10 U |
| 1,3-Dichloropropane | -- | 1 U | 100 U | 1 U | 1 U | 10 U |
| 1,4-Dichlorobenzene | -- | 1 U | 100 U | 1 U | 1 U | 10 U |
| 1,4-Dioxane | -- | -- | -- | -- | -- | -- |
| 2,2-Dichloropropane | -- | 1 U | 100 U | 1 U | 1 U | 10 U |
| 2-Butanone | -- | 10 U | 10 U | 10 U | 10 U | 100 U |
| 2-Chlorotoluene | -- | 1 U | 1 U | 1 U | 1 U | 10 U |
| 2-Hexanone | -- | 10 U | 10 U | 10 U | 10 U | 100 U |
| 4-Chlorotoluene | -- | 1 U | 1 U | 1 U | 1 U | 10 U |
| 4-Isopropyltoluene | -- | 1 U | 100 U | 1 U | 1 U | 10 U |
| 4-Methyl-2-pentanone | -- | 10 U | 1000 U | 10 U | 10 U | 100 U |
| Acetone | -- | 10 U | 1000 U | 10 U | 10 U | 100 U |
| Benzene | -- | 1 U | 100 U | 1 U | 1 U | 10 U |
| Bromobenzene | -- | 1 U | 100 U | 1 U | 1 U | 10 U |
| Bromochloromethane | -- | -- | -- | -- | -- | -- |
| Bromodichloromethane | -- | 1 U | 100 U | 1 U | 1 U | 10 U |
| Bromoform | -- | 1 U | 100 U | 1 U | 1 U | 10 U |
| Bromomethane | -- | 1 U | 100 U | 1 U | 1 U | 10 U |
| Carbon disulfide | -- | -- | -- | -- | -- | -- |
| Carbon tetrachloride | -- | 1 U | 1 U | 1 U | 1 U | 10 U |
| Chlorobenzene | -- | 1 U | 100 U | 1 U | 1 U | 10 U |
| Chloroethane | -- | 1 U | 100 U | 1 U | 1 U | 10 U |
| Chloroform | -- | 1 U | 100 U | 2.1 | 10 U | |

**Table 7-3. On-Site Water Treatment Facility Influent Sampling.**
**All Contaminants in Water (ug/L).**

| Location ID | Wastewater Discharge Limitations | UT01091809 | UT02092109 | UT03100209 | UT03101509 | UT01102609 |
|---|---|---|---|---|---|---|
| Sample Name | | 09090131 | 09090147 | 09100109 | 09100164 | 09100200 |
| Sample Date | | 09/18/09 | 09/22/09 | 10/02/09 | 10/15/09 | 10/26/09 |
| Location Description | | Influent in Dirty Tank#1 | Influent in Dirty Tank#1 | Influent in Dirty Tank#3 | Influent in Dirty Tank#3 | Residual Water in Dirty Tank#1 |
| Chloromethane | -- | | 1.1 | 100 U | 1 U | 10 U |
| cis-1,2-Dichloroethene | -- | | 110 | 120 | 410 | 610 |
| cis-1,3-Dichloropropene | -- | | 1 U | 1 U | 1 U | 10 U |
| Cyclohexane | -- | | -- | -- | -- | -- |
| Dibromochloromethane | -- | | 1 U | 100 U | 1 U | 10 U |
| Dibromomethane | -- | | 1 U | 100 U | 1 U | 10 U |
| Dichlorodifluoromethane | -- | | 1 U | 100 U | 1 U | 10 U |
| Ethylbenzene | -- | | 3.5 | 100 U | 11 | 10 U |
| Hexachlorobutadiene | -- | | 1 U | 1 U | 1 U | 10 U |
| Isopropylbenzene | -- | | 1 U | 100 U | 1 U | 10 U |
| m,p-Xylene | -- | | 3.4 | 200 U | 17 | 20 U |
| Methyl acetate | -- | | -- | -- | -- | -- |
| Methyl tert butyl ether | -- | | 1 U | 100 U | 1 U | 10 U |
| Methylcyclohexane | -- | | -- | -- | -- | -- |
| Methylene chloride | -- | | 5 U | 500 U | 5 U | 110 J |
| Naphthalene | -- | | 1 U | 410 E | 1200 | 1000 |
| n-Propylbenzene | -- | | 1 U | 100 U | 1 U | 10 U |
| o-Xylene | -- | | 2.1 | 100 U | 7.7 | 10 U |
| sec-Butylbenzene | -- | | 1 U | 100 U | 1 U | 10 U |
| Styrene | -- | | 1 U | 100 U | 1 U | 10 U |
| tert-Butylbenzene | -- | | 1 U | 1 U | 1 U | 10 U |
| Tetrachloroethene | -- | | 41 | 150 | 180 | 17 |
| Toluene | -- | | 1 U | 2.1 | 28 | 10 U |
| trans-1,2-Dichloroethene | -- | | 1 U | 100 U | 1.9 | 10 U |
| trans-1,3-Dichloropropene | -- | | 1 U | 1 U | 1 U | 10 U |
| Trichloroethene | -- | | 35 | 100 U | 610 | 66 |
| Trichlorofluoromethane | -- | | 1 U | 100 U | 1 U | 10 U |
| Vinyl Chloride | -- | | 4 | 20 U | 6.4 | 2 U |
| **PCBs** | | | | | | |
| Aroclor 1016 | -- | | | | | 0.1 U |
| Aroclor 1221 | -- | | | | | 0.1 U |
| Aroclor 1232 | -- | | | | | 0.1 U |
| Aroclor 1242 | -- | | | | | 0.1 U |
| Aroclor 1248 | -- | | | | | 0.1 U |
| Aroclor 1254 | -- | | | | | 0.1 U |
| Aroclor 1260 | -- | | | | | 0.1 U |
| Aroclor 1262 | -- | | | | | -- |
| Aroclor 1268 | -- | | | | | -- |
| Total PCBs | -- | | | | | 0.4 |

**Table 7-3. On-Site Water Treatment Facility Influent Sampling.**
**All Contaminants in Water (ug/L).**

| Location ID | Wastewater Discharge Limitations | UT01091809 | UT02092109 | UT03100209 | UT03101509 | UT01102609 |
|---|---|---|---|---|---|---|
| Sample Name | | 09090131 | 09090147 | 09100109 | 09100164 | 09100200 |
| Sample Date | | 09/18/09 | 09/22/09 | 10/02/09 | 10/15/09 | 10/26/09 |
| Location Description | | Influent in Dirty Tank#1 | Influent in Dirty Tank#1 | Influent in Dirty Tank#3 | Influent in Dirty Tank#3 | Residual Water in Dirty Tank#1 |
| **METALS** | | | | | | |
| Antimony | -- | -- | | | | -- |
| Arsenic | 160 | 1.4 | | | | 19.5 |
| Barium | -- | -- | | | | 1580 |
| Beryllium | -- | -- | | | | -- |
| Cadmium | 240 | 1 U | | | | 3.49 |
| Chromium | 2,700 | 1 U | | | | 110 |
| Copper | 3,840 | 2.79 | | | | -- |
| Lead | 810 | 1 U | | | | 84.3 |
| Mercury | 3.5 | 0.2 U | | | | 0.5 |
| Nickel | 2,450 | 2.42 | | | | -- |
| Selenium | -- | -- | | | | 10 U |
| Silver | 560 | 1 U | | | | 10 U |
| Thallium | -- | -- | | | | -- |
| Zinc | 2,610 | 5.22 | | | | -- |
| **TPH** | | | | | | |
| Diesel Range Organics | -- | | | | | 16000 |
| Lube Oil | -- | | | | | 790 |

**Table 7-4. Containment Cell Area Before and After Use.**
**Sampling Results With At Least One Result Above RLs for Semi-Volatile Organic Compounds (SVOCs) in Soil (µg/kg).**

| Cell # | Before Use or After | Location ID | Sample Name | 2-Methylnaphthalene | Acenaphthene | Anthracene | Benzo(a) pyrene | Benzo(b) fluoranthene | Benzo(g,h,i) perylene | Benzo(k) fluoranthene | Carbazole | Chrysene | Dibenz(a,h) anthracene | Dibenzofuran | Fluoranthene | Fluorene | Indeno (1,2,3-cd) pyrene | Naphthalene | Phenanthrene | Pyrene |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ROD Based Remedial Goals | | -- | -- | -- | 250 | -- | -- | 2,500 | -- | 250,000 | 250 | -- | -- | -- | 2,500 | -- | -- | -- |
| | | ROD Based Criteria for Excavation | | -- | -- | -- | **25,000** | -- | -- | **250,000** | -- | **25,000,000** | **25,000** | -- | -- | -- | **250,000** | -- | -- | -- |
| | | Regional Screening Levels - Industrial Soil | | -- | 3.30E+07 | 1.70E+08 | NA | 2,100 | -- | NA | -- | NA | NA | -- | 2.20E+07 | 2.20E+07 | NA | 18,000 | -- | 1.40E+07 |
| 1 | Before Use | CC01090809 | 09090101 | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U |
| 1 | After Use | CC01102009 | 09100191 | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U |
| 2 | Before Use | CC02090809 | 09090102 | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U |
| 2 | After Use | CC02101909 | 09100188 | 30 U | 87 | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 37 | 30 U | 30 U | 420 | 34 | 30 U | 30 U | 100 | 320 |
| 3 | Before Use | CC03090809 | 09090103 | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U |
| 3 | After Use | CC03101409 | 09100143 | 30 U | 30 U | 41 | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 130 | 50 | 30 U | 30 U | 210 | 94 |
| 4 | Before Use | CC04090809 | 09090104 | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 51 | 30 U | 30 U | 30 U | 30 U | 38 |
| 4 | After Use | CC04101409 | 09100144 | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 77 | 30 U | 30 U | 30 U | 85 | 60 |
| 5 | Before Use | CC05090809 | 09090105 | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U |
| 5 | After Use | CC05101409 | 09100145 | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U |
| 6 | Before Use | CC06090809 | 09090106 | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U |
| 6 | After Use | CC06101409 | 09100146 | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 75 | 30 U | 30 U | 30 U | 60 | 55 |
| 7 | Before Use | CC07090809 | 09090107 | 30 U | 30 U | 30 U | 30 U | 42 | 30 U | 30 U | 30 U | 33 | 30 U | 30 U | 70 | 30 U | 30 U | 30 U | 30 U | 56 |
| 7 | After Use | CC07101409 | 09100147 | 250 | 100 | 7500 J | 30 U | 30 U | 30 U | 30 U | 4400 J | 100 | 30 U | 1600 | 1700 | 6600 J | 30 U | 83 | 20000 J | 530 |
| 8 | Before Use | CC08090809 | 09090108 | 30 U | 58 | 140 | 700 | 1100 | 520 | 450 | 79 | 750 | 180 | 30 U | 70 | 39 | 570 | 30 U | 590 | 1200 |
| 8 | After Use | CC08102809 | 09100207 | 30 U | 93 | 210 | 1100 | 1600 | 750 | 610 | 130 | 1200 | 220 | 30 U | 2400 | 61 | 820 J | 30 U | 1000 | 2100 |
| *9 | Before Use | CC09090809 | 09090109 | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U |
| 10 | Before Use | CC10090809 | 09090110 | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U |
| 10 | After Use | CC10101409 | 09100152 | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 57 | 30 U | 30 U | 30 U | 61 | 42 |
| 11 | Before Use | CC11090809 | 09090111 | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U |
| 11 | After Use | CC11101409 | 09100151 | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 62 | 30 U | 30 U | 30 U | 70 | 47 |
| 12 | Before Use | CC12090809 | 09090112 | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U |
| 12 | After Use | CC12101409 | 09100150 | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U |
| 13 | Before Use | CC13090809 | 09090113 | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U |
| 13 | After Use | CC13101409 | 09100149 | 30 U | 140 | 53 | 30 U | 30 U | 30 U | 30 U | 30 U | 56 | 30 U | 86 | 530 | 140 | 30 U | 30 U | 850 | 380 |
| 14 | Before Use | CC14090809 | 09090114 | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U |
| 14 | After Use | CC14101409 | 09100148 | 30 U | 76 | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 30 U | 55 | 210 | 65 | 30 U | 30 U | 290 | 160 |

**Table 7-4. Containment Cell Area Before and After Use.**
**Sampling Results With At Least One Result Above RLs for Semi-Volatile Organic Compounds (SVOCs) in Soil (µg/kg).**

| Cell # | Before Use or After | Location ID | Sample Name | 2-Methylnaphthalene | Acenaphthene | Anthracene | Benzo(a) pyrene | Benzo(b) fluoranthene | Benzo(g,h,i) perylene | Benzo(k) fluoranthene | Carbazole | Chrysene | Dibenz(a,h) anthracene | Dibenzofuran | Fluoranthene | Fluorene | Indeno (1,2,3-cd) pyrene | Naphthalene | Phenanthrene | Pyrene |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ROD Based Remedial Goals | | -- | -- | -- | 250 | -- | -- | 2,500 | -- | 250,000 | 250 | -- | -- | -- | 2,500 | -- | -- | -- |
| | | ROD Based Criteria for Excavation | | -- | -- | -- | **25,000** | -- | -- | **250,000** | -- | **25,000,000** | **25,000** | -- | -- | -- | **250,000** | -- | -- | -- |
| | | Regional Screening Levels - Industrial Soil | | -- | 3.30E+07 | 1.70E+08 | NA | 2,100 | -- | NA | -- | NA | NA | -- | 2.20E+07 | 2.20E+07 | NA | 18,000 | -- | 1.40E+07 |

Note: *Cell#9 not sampled after use.

**Table 7-5. Containment Cell Area Before and After Use.**
**Sampling Results With At Least One Result Above RLs for Metals in Soil (mg/kg).**

| Cell # | Before Use or After | Location ID | Sample Name | Antimony | Arsenic | Barium | Chromium | Copper | Lead | Nickel | Zinc |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ROD Based Remedial Goals | | -- | -- | -- | -- | -- | -- | -- | -- |
| | | ROD Based Criteria for Excavation | | -- | -- | -- | -- | -- | -- | -- | -- |
| | | Regional Screening Levels - Industrial Soil | | 410 | 1.6 | 1.90E+05 | -- | -- | 800 | -- | 310,000 |
| 1 | Before Use | CC01090809 | 09090101 | 5 UJ | 2.93 | -- | 11.1 | 10.8 | 9.55 | 8.9 | 34.3 |
| 1 | After Use | CC01102009 | 09100191 | -- | 1.22 | 54.7 | 6.54 | -- | 3.93 | -- | -- |
| 2 | Before Use | CC02090809 | 09090102 | 5 UJ | 2.17 | -- | 11.7 | -- | 7.83 | 7.66 | 30.7 |
| 2 | After Use | CC02101909 | 09100188 | -- | 1 U | 41.8 | 6.09 | -- | 2.77 | -- | -- |
| 3 | Before Use | CC03090809 | 09090103 | 5 UJ | 1.79 | -- | 11.6 | 10.2 | 6.96 | 9.09 | 28.6 |
| 3 | After Use | CC03101409 | 09100143 | 1 U | 2.24 | 83.2 | 9.69 | 10.2 | 7.4 | 8.43 | 28.2 |
| 4 | Before Use | CC04090809 | 09090104 | 5 UJ | 3.09 | -- | 11.9 | 11.7 | 10.4 | 9.99 | 36.6 |
| 4 | After Use | CC04101409 | 09100144 | 1 U | 1.53 | 74.6 | 8.2 | 8.43 | 5.45 | 7.24 | 22.8 |
| 5 | Before Use | CC05090809 | 09090105 | 5 UJ | 2.63 | -- | 11.5 | 12.1 | 7.5 | 10.2 | 33.1 |
| 5 | After Use | CC05101409 | 09100145 | 1 U | 2.37 | 79.4 | 12.4 | 10.8 | 6.42 | 8.47 | 27.7 |
| 6 | Before Use | CC06090809 | 09090106 | 5 UJ | 3 | -- | 14.4 | 10.5 | 9.02 | 7.87 | 30.6 |
| 6 | After Use | CC06101409 | 09100146 | 1 U | 1 U | 41 | 6.64 | 5.21 | 3.2 | 4.74 | 20.2 |
| 7 | Before Use | CC07090809 | 09090107 | 5 UJ | 3.22 | -- | 12.7 | 12 | 8.38 | 8.99 | 33.1 |
| 7 | After Use | CC07101409 | 09100147 | 4.29 | 3.35 | 98.2 | 10.2 | 11.1 | 6.88 | 8.07 | 32.7 |
| 8 | Before Use | CC08090809 | 09090108 | 5 UJ | 5.65 | -- | 11.1 | 17.3 | 11.4 | 12.2 | 46.3 |
| 8 | After Use | CC08102809 | 09100207 | 1 U | 4.73 | 110 | 12 | 19.2 | 9.87 | 14.7 | 45.8 |
| *9 | Before Use | CC09090809 | 09090109 | 5 UJ | 1.85 | -- | 9.7 | 9.94 | 6.05 | 8.56 | 30 |
| 10 | Before Use | CC10090809 | 09090110 | 5 UJ | 2.18 | -- | 11.2 | 11.6 | 6.59 | 8.42 | 31.4 |
| 10 | After Use | CC10101409 | 09100152 | 1 U | 1.09 | 47.9 | 5.85 | 7.12 | 3.83 | 4.98 | 21.5 |
| 11 | Before Use | CC11090809 | 09090111 | 5 UJ | 2.07 | -- | 9.86 | 9.47 | 7.51 | 7.25 | 29.6 |
| 11 | After Use | CC11101409 | 09100151 | 1 U | 1.53 | 65.5 | 8.1 | 9.26 | 5.09 | 8.48 | 25.7 |
| 12 | Before Use | CC12090809 | 09090112 | 5 UJ | 1.46 | -- | 9.04 | 9.61 | 4.12 | 9.38 | 27.7 |
| 12 | After Use | CC12101409 | 09100150 | 1 U | 1 U | 32.4 | 5.1 | 3.81 | 2.47 | 3.52 | 17.2 |
| 13 | Before Use | CC13090809 | 09090113 | 5 UJ | 1.7 | -- | 10.9 | 10 | 5.35 | 8.96 | 28.8 |
| 13 | After Use | CC13101409 | 09100149 | 1 U | 1.14 | 60.6 | 8.62 | 9.91 | 3.61 | 9.58 | 24.3 |
| 14 | Before Use | CC14090809 | 09090114 | 5 UJ | 1.68 | -- | 10.2 | 10.4 | 6.58 | 8.96 | 28.5 |
| 14 | After Use | CC14101409 | 09100148 | 1.41 | 1.56 | 60.6 | 7.16 | 9.71 | 3.97 | 9.18 | 23.1 |

Note: * Containment Cell #9 was not sampled after use.

**Table 7-6. Containment Cell Area - Before and After Use.**
**Sampling Results With At Least One Result Above RLs for VOCs, PCBs, and TPH in Soil.**

| Cell # | Before Use or After | Location ID | Sample Name | VOC: Tetrachloro-ethene, ug/kg | PCB: Aroclor 1254, ug/kg | Total PCBs, ug/kg | TPH: Diesel Range Organics, mg/kg | TPH: Lube Oil, mg/kg |
|---|---|---|---|---|---|---|---|---|
| | | ROD Based Remedial Goals | | 7 | -- | 1000 | -- | -- |
| | | ROD Based Criteria for Excavation | | **39** | -- | **20,000** | -- | -- |
| | | Regional Screening Levels - Industrial Soil | | NA | 740 | -- | -- | -- |
| 1 | Before Use | CC01090809 | 09090101 | 25 U | 100 U | 350 | 50 U | 250 U |
| 1 | After Use | CC01102009 | 09100191 | 25 U | 100 U | 350 | 50 U | 250 U |
| 2 | Before Use | CC02090809 | 09090102 | 25 U | 100 U | 350 | 50 U | 250 U |
| 2 | After Use | CC02101909 | 09100188 | **46** | 100 U | 350 | 50 U | 250 U |
| 3 | Before Use | CC03090809 | 09090103 | 25 U | 100 U | 350 | 50 U | 250 U |
| 3 | After Use | CC03101409 | 09100143 | 25 U | 100 U | 350 | 50 U | 250 U |
| 4 | Before Use | CC04090809 | 09090104 | 25 U | 100 U | 350 | 50 U | 250 U |
| 4 | After Use | CC04101409 | 09100144 | 25 U | 100 U | 350 | 50 U | 250 U |
| 5 | Before Use | CC05090809 | 09090105 | 25 U | 200 | 500 | 50 U | 250 U |
| 5 | After Use | CC05101409 | 09100145 | 25 U | 100 | 400 | 50 U | 250 U |
| 6 | Before Use | CC06090809 | 09090106 | 25 U | 100 U | 350 | 50 U | 250 U |
| 6 | After Use | CC06101409 | 09100146 | 25 U | 100 U | 350 | 50 U | 250 U |
| 7 | Before Use | CC07090809 | 09090107 | 25 U | 100 U | 350 | 50 U | 250 U |
| 7 | After Use | CC07101409 | 09100147 | 25 U | 100 | 400 | 50 U | 250 U |
| 8 | Before Use | CC08090809 | 09090108 | 25 U | 61000 | **61300** | 50 U | 250 U |
| 8 | After Use | CC08102809 | 09100207 | **42** | 23000 | **23300** | 50 U | 250 U |
| *9 | Before Use | CC09090809 | 09090109 | 25 U | 500 | 800 | 50 U | 250 U |
| 10 | Before Use | CC10090809 | 09090110 | 25 U | 100 | 400 | 50 U | 250 U |
| 10 | After Use | CC10101409 | 09100152 | 25 U | 100 U | 350 | 50 U | 250 U |
| 11 | Before Use | CC11090809 | 09090111 | 25 U | 700 | 1000 | 50 U | 250 U |
| 11 | After Use | CC11101409 | 09100151 | 25 U | 100 U | 350 | 50 U | 250 U |
| 12 | Before Use | CC12090809 | 09090112 | 25 U | 100 U | 350 | 50 U | 250 U |
| 12 | After Use | CC12101409 | 09100150 | 25 U | 100 U | 350 | 50 U | 250 U |
| 13 | Before Use | CC13090809 | 09090113 | 25 U | 200 | 500 | 50 U | 250 U |
| 13 | After Use | CC13101409 | 09100149 | 25 U | 100 U | 350 | 50 U | 250 U |
| 14 | Before Use | CC14090809 | 09090114 | 25 U | 100 U | 350 | 50 U | 250 U |
| 14 | After Use | CC14101409 | 09100148 | 25 U | 100 U | 350 | 50 U | 250 U |

Note: * Containment Cell #9 was not sampled after use.

**Table 7-7. Containment Cells and Waste Stockpile.**
**Sampling Results With At Least One Result Above RLs for Volatile Organic Compounds (VOCs) in Soil (µg/kg).**

| Location ID | Sample Name | 1,2,4-Trimethylbenzene | 1,3,5-Trimethylbenzene | 4-Isopropyltoluene | Ethylbenzene | Isopropylbenzene | m,p-Xylene | Methylene chloride | Naphthalene | o-Xylene | sec-Butylbenzene | Tetrachloroethene | Toluene |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Waste Disposal Criteria | | | | | | | | | | | | 10000 | |
| ROD Based Remedial Goal | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 7 | -- |
| ROD Based Criteria for Excavation | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 39 | -- |
| Regional Screening Levels - Industrial Soil | | 2,600 | 10,000,000 | -- | 27,000 | -- | 2,700,000 | 53,000 | 18,000 | 1.90E+07 | -- | NA | 450,000,000 |
| CC01091209 | 09090115 | 50 U | 50 U | 50 U | 50 U | 50 U | 100 U | 500 UJ | 9000 | 50 U | 50 U | 25 U | 50 U |
| CC02091509 | 09090120 | 50 U | 50 U | 50 U | 50 U | 50 U | 100 U | 500 UJ | 5100 | 50 U | 50 U | 25 U | 50 U |
| CC02091509 | 09090121 | 50 U | 50 U | 50 U | 50 U | 50 U | 100 U | 500 UJ | 2500 | 50 U | 50 U | 25 U | 50 U |
| CC03091609 | 09090125 | 87 | 50 U | 50 U | 50 U | 50 U | 100 U | 500 U | 20000 | 50 U | 50 U | **46** | 50 U |
| CC04091609 | 09090127 | 140 | 50 U | 50 U | 83 | 50 U | 240 | 500 U | 32000 | 110 | 50 U | **76** | 50 U |
| CC05091709 | 09090130 | 100 | 50 U | 50 U | 50 U | 50 U | 100 U | 500 U | 5100 | 50 U | 50 U | 25 U | 50 U |
| CC06091709 | 09090135 | 130 | 50 U | 50 U | 55 | 50 U | 150 | 7600 | 17000 | 56 | 50 U | **110** | 50 U |
| CC07091809 | 09090139 | 50 U | 50 U | 50 U | 50 U | 50 U | 100 U | 500 U | 770 | 50 U | 50 U | 25 U | 50 U |
| CC08091909 | 09090140 | 50 U | 50 U | 50 U | 50 U | 50 U | 100 U | 500 U | 2100 | 50 U | 50 U | **62** | 50 U |
| CC11092209 | 09090151 | 50 U | 50 U | 50 U | 50 U | 50 U | 100 U | 500 U | 680 J | 50 U | 50 U | 30 | 50 U |
| CC12092309 | 09090153 | 500 U | 500 U | 500 U | 500 U | 500 U | 1000 U | 5000 U | 63000 | 500 U | 500 U | **490** | 500 U |
| CC13092309 | 09090154 | 500 U | 500 U | 500 U | 500 U | 500 U | 1000 U | 5000 U | 93000 | 500 U | 500 U | 250 U | 500 U |
| CC14092309 | 09090157 | 500 U | 500 U | 500 U | 500 U | 500 U | 1000 U | 5000 UJ | 57000 | 500 U | 500 U | **270** | 500 U |
| CC01092409 | 09090159 | 500 U | 500 U | 500 U | 500 U | 500 U | 1000 U | 5000 U | 55000 | 500 U | 500 U | **640** | 500 U |
| CC02092409 | 09090161 | 500 U | 500 U | 500 U | 500 U | 500 U | 1000 U | 5000 U | 22000 | 500 U | 500 U | **420** | 500 U |
| CC03092409 | 09090163 | 500 U | 500 U | 500 U | 500 U | 500 U | 1000 U | 5000 U | 20000 | 500 U | 500 U | **1000** | 500 U |
| CC06092809 | 09090169 | 500 U | 500 U | 500 U | 500 U | 500 U | 1000 U | 5000 U | 34000 | 500 U | 500 U | 250 U | 500 U |
| CC01100109 | 09100102 | 750 | 510 | 500 U | 500 U | 560 | 1000 | 5000 U | 48000 | 540 | 500 U | **2600** | 500 U |
| CC01100309 | 09100111 | 190 | 72 | 74 | 50 U | 66 | 100 | 500 U | 3800 | 58 | 84 | 38 | 50 U |
| CC08100709 | 09100122 | 72 | 50 U | 50 U | 50 U | 50 U | 100 U | 500 U | 3600 | 50 U | 50 U | **40** | 50 U |
| WSSP101509 | 09100165 | 50 U | 50 U | 50 U | 52 | 50 U | 100 U | 790 J | 150 | 50 U | 50 U | **8800** | 92 |
| | JCGR3 | -- | -- | -- | 4.5 U | 4.5 U | 4.5 U | 4.5 U | -- | 4.5 U | -- | 4.5 U | 4.5 U |
| | JCGR4 | -- | -- | -- | 6.4 U | 6.4 U | 6.4 U | 6.4 U | -- | 6.4 U | -- | 6.4 U | 6.4 U |
| | JCGR5 | -- | -- | -- | 5.4 U | 5.4 U | 5.4 U | 5.4 U | -- | 5.4 U | -- | 5.4 U | 5.4 U |
| | JCGR6 | -- | -- | -- | 6.2 U | 6.2 U | 6.2 U | 6.2 U | -- | 6.2 U | -- | 6.2 U | 6.2 U |

**Table 7-8. Containment Cells and Waste Stockpile.**
**Sampling Results With At Least One Result Above RLs for Semi-Volatile Organic Compounds (SVOCs) in Soil (µg/kg).**

| Location ID | Sample Name | 2-Methylnaphthalene | Acenaphthene | Acenaphthylene | Anthracene | Benz(a) anthracene | Benzo(a) pyrene | Benzo(b) fluoranthene | Benzo(g,h,i) perylene | Benzo(k) fluoranthene | Carbazole | Chrysene | Dibenz(a,h) anthracene | Dibenzofuran | Fluoranthene | Fluorene | Indeno (1,2,3-cd) pyrene | Naphthalene | Phenanthrene | Pyrene |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Waste Disposal Criteria | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| ROD Based Remedial Goals | | -- | -- | -- | -- | 2,500 | 250 | -- | -- | 2,500 | -- | 250,000 | 250 | -- | -- | -- | 2,500 | -- | -- | -- |
| ROD Based Criteria for Excavation | | -- | -- | -- | -- | 250,000 | 25,000 | -- | -- | 250,000 | -- | 2.50E+07 | 25,000 | -- | -- | -- | 250,000 | -- | -- | -- |
| Regional Screening Levels - Industrial Soil | | -- | 3.30E+07 | -- | 1.70E+08 | NA | NA | 2,100 | -- | NA | -- | NA | NA | -- | 2.20E+07 | 2.20E+07 | NA | 18,000 | -- | 1.40E+07 |
| CC01091209 | 09090115 | 2300 | 34000 | 170 | 6300 | 3700 | 1200 | 1900 | 530 | 750 | 2900 | 3300 | 150 | 18000 | 42000 | 21000 | 610 | 4100 | 70000 J | 23000 |
| CC02091509 | 09090120 | 5200 | 89000 | 3000 U | 32000 | 12000 | 3900 | 5000 | 3000 U | 3000 UJ | 15000 | 11000 | 3000 U | 50000 | 120000 | 69000 | 3000 U | 5300 | 250000 | 81000 |
| CC02091509 | 09090121 | 5100 | 99000 | 3000 U | 20000 | 16000 | 6400 J | 8400 | 3100 | 3500 | 8100 | 15000 | 3000 U | 50000 | 140000 | 60000 | 3000 | 5900 | 230000 | 100000 |
| CC03091609 | 09090125 | 11000 | 110000 | 3000 U | 25000 | 15000 | 5500 | 6800 | 3000 U | 3000 UJ | 8600 | 14000 | 3000 U | 55000 | 140000 | 67000 | 3000 U | 17000 | 250000 | 96000 |
| CC04091609 | 09090127 | 17000 | 140000 | 300 U | 24000 | 16000 | 2700 | 4300 | 400 | 1800 J | 7900 | 14000 | 300 U | 75000 | 170000 | 95000 | 490 | 17000 | 330000 | 120000 |
| CC05091709 | 09090130 | 3000 | 46000 | 300 U | 24000 | 5800 | 1300 | 1800 | 350 | 830 | 8100 | 6500 | 300 U | 27000 | 60000 | 43000 | 360 | 3500 | 170000 | 40000 |
| CC06091709 | 09090135 | 6700 | 72000 | 300 U | 9900 | 8600 | 1600 | 2500 | 350 | 1100 | 3300 | 7200 | 300 U | 36000 | 88000 | 45000 | 390 | 6100 | 170000 | 62000 |
| CC07091809 | 09090139 | 1900 | 61000 | 300 U | 11000 | 7400 | 1300 | 1900 | 310 | 980 J | 3300 | 6400 | 300 U | 29000 | 79000 | 40000 | 340 | 780 | 140000 | 54000 |
| CC08091909 | 09090140 | 1700 | 17000 | 300 U | 2300 | 2500 | 1000 | 1400 | 470 | 630 J | 740 | 2700 | 300 U | 8600 | 22000 | 10000 | 470 | 1200 | 37000 | 15000 |
| CC11092209 | 09090151 | 30 U | 240 | 30 U | 59 | 66 | 30 U | 30 U | 30 U | 30 U | 30 U | 60 | 30 U | 140 | 600 | 200 | 30 U | 30 U | 1000 | 410 |
| CC12092309 | 09090153 | 43000 | 280000 | 3000 U | 50000 | 23000 | 4900 | 7000 | 3000 UJ | 3800 | 23000 | 21000 | 3000 UJ | 140000 | 280000 | 170000 | 3000 UJ | 59000 | 560000 J | 180000 |
| CC13092309 | 09090154 | 68000 | 390000 | 3000 U | 110000 | 33000 | 6200 | 9400 | 3000 U | 4400 | 51000 | 29000 | 3000 U | 210000 | 390000 | 280000 | 3000 U | 100000 | 900000 J | 260000 |
| CC14092309 | 09090157 | 20000 | 160000 | 3000 U | 51000 | 16000 | 4800 | 6800 | 3000 U | 3100 | 23000 | 16000 | 3000 U | 85000 | 170000 | 110000 | 3000 U | 34000 | 390000 | 120000 |
| CC01092409 | 09090159 | 22000 | 140000 J | 3000 U | 24000 | 15000 | 3000 | 4500 | 3000 U | 3000 U | 9900 | 14000 | 3000 U | 86000 | 180000 | 99000 | 3000 U | 32000 | 340000 | 120000 |
| CC02092409 | 09090161 | 11000 | 88000 | 3000 U | 11000 | 8200 | 1900 | 2700 | 3000 U | 1300 J | 3500 | 7100 | 3000 U | 39000 J | 93000 | 44000 J | 530 | 15000 | 170000 | 63000 |
| CC03092409 | 09090163 | 10000 | 91000 | 3000 U | 10000 | 8200 | 3000 U | 3000 U | 3000 U | 3000 U | 3700 | 7200 | 3000 U | 43000 | 92000 | 50000 | 3000 U | 14000 | 180000 | 64000 |
| CC06092809 | 09090169 | 20000 | 150000 | 3000 U | 22000 | 12000 | 3000 U | 3000 U | 3000 U | 3000 U | 9100 | 10000 | 3000 U | 78000 | 150000 | 83000 | 3000 U | 37000 | 290000 | 98000 |
| CC01100109 | 09100102 | 19000 | 130000 | 3000 U | 16000 | 9700 | 3000 U | 3000 U | 3000 U | 3000 UJ | 7300 | 9400 | 3000 U | 67000 | 130000 | 75000 | 3000 U | 28000 | 210000 J | 83000 |
| CC01100309 | 09100111 | 3000 U | 38000 | 3000 U | 5500 | 4300 | 3000 U | 3000 U | 3000 U | 3000 UJ | 3000 U | 3400 | 3000 U | 17000 | 46000 | 19000 | 3000 U | 3000 U | 81000 | 31000 |
| CC08100709 | 09100122 | 4400 | 39000 | 300 U | 5300 | 4000 | 3000 U | 3000 U | 430 | 3000 UJ | 3000 U | 3400 | 300 U | 19000 | 46000 | 22000 | 3000 U | 3400 | 86000 | 29000 |
| WSSP101509 | 09100165 | 310 | 13000 | 300 U | 7700 | 17000 | 15000 | 18000 | 9100 | 5900 | 2500 | 20000 | 2500 | 3900 | 55000 J | 5900 | 9200 | 300 U | 28000 | 47000 J |
| | JCGR3 | 200 U | 54 J | 200 U | 200 U | 200 U | 200 U | 200 U | 200 U | 200 U | 200 U | 200 U | 200 U | 200 U | 110 J | 200 U | 200 U | 200 U | 55 J | 120 J |
| | JCGR4 | 220 U | 300 | 220 U | 170 J | 410 | 310 | 400 | 150 J | 180 J | 220 U | 470 | 69 J | 100 J | 1700 | 130 J | 140 J | 220 U | 790 | 1400 |
| | JCGR5 | 200 U | 87 J | 200 U | 56 J | 55 J | 55 J | 200 U | 200 U | 200 U | 200 U | 61 J | 200 U | 200 U | 450 | 49 J | 200 U | 200 U | 240 | 340 |
| | JCGR6 | 220 U | 360 | 220 U | 79 J | 93 J | 93 J | 59 J | 220 U | 63 J | 220 U | 95 J | 220 U | 120 J | 640 | 130 J | 220 U | 220 U | 480 | 470 |

**Table 7-9. Containment Cells and Waste Stockpile.**
**Sampling Results With At Least One Result Above RLs**
**for Polychlorinated Biphenyls (PCBs) and Total Petroleum Hydrocarbons (TPH) in Soil.**

| Location ID | Sample Name | PCB: Aroclor 1254, ug/kg | Total PCBs, ug/kg | TPH: Diesel Range Organics, mg/kg | TPH: Lube Oil, mg/kg |
|---|---|---|---|---|---|
| Waste Disposal Criteria | | -- | -- | -- | -- |
| ROD Based Remedial Goals | | -- | 1,000 | -- | -- |
| ROD Based Criteria for Excavation | | -- | 20,000 | -- | -- |
| Regional Screening Levels - Industrial Soil | | 740 | -- | -- | -- |
| CC01091209 | 09090115 | 1100 | 1400 | 1100 | 250 U |
| CC02091509 | 09090120 | 2900 | 3200 | 1100 | 340 |
| CC02091509 | 09090121 | 2600 | 2900 | 1300 | 360 |
| CC03091609 | 09090125 | 1900 | 2200 | 1600 | 250 U |
| CC04091609 | 09090127 | 1500 | 1800 | 2400 | 380 |
| CC05091709 | 09090130 | 1800 | 2100 | 2100 | 440 |
| CC06091709 | 09090135 | 1400 | 1700 | 2200 | 450 |
| CC07091809 | 09090139 | 1600 | 1900 | 1400 | 250 U |
| CC08091909 | 09090140 | 1100 | 1400 | 310 | 250 U |
| CC09092109 | 09090144 | 1400 | 1700 | -- | -- |
| CC10092109 | 09090146 | 800 | 1100 | -- | -- |
| CC11092209 | 09090151 | 100 U | 350 | 50 | 250 |
| CC12092309 | 09090153 | 2200 | 2500 | 5500 | 650 |
| CC13092309 | 09090154 | 1300 | 1600 | 8000 | 830 |
| CC14092309 | 09090157 | 1300 | 1600 | 2600 | 370 |
| CC01092409 | 09090159 | 900 | 1200 | 5000 | 660 |
| CC02092409 | 09090161 | 1500 | 1800 | 1200 | 250 U |
| CC03092409 | 09090163 | 800 | 1100 | 1200 | 250 U |
| CC06092809 | 09090169 | 600 | 900 | 2300 | 250 U |
| CC01100109 | 09100102 | 1100 | 1400 | 3300 | 320 |
| CC01100309 | 09100111 | 600 | 900 | 770 | 250 U |
| CC08100709 | 09100122 | 600 | 900 | -- | -- |
| WSSP101509 | 09100165 | 2700 | 3000 | 480 | 1500 |
| | JCGR3 | 73 | -- | -- | -- |
| | JCGR4 | 120 | -- | -- | -- |

**Table 7-10. Containment Cells and Waste Stockpile.**
**Sampling Results With At Least One Result Above RLs for Metals in Soil (mg/kg).**

| Location ID | Sample Name | Antimony | Arsenic | Barium | Chromium | Copper | Lead | Nickel | Zinc |
|---|---|---|---|---|---|---|---|---|---|
| Waste Disposal Criteria | | -- | 100 | 2000 | 100 | -- | 100 | **--** | **--** |
| CC01091209 | 09090115 | 5 U | 3.7 | -- | 13.4 | 16.9 | 4.49 | 11.1 | 33.3 |
| CC02091509 | 09090120 | 5 U | 1.47 | -- | 5.54 | 10.4 | 3.27 | 5.16 | 17 |
| CC02091509 | 09090121 | 5 U | 2.83 | -- | 10.9 | 17.3 | 6.17 | 8.44 | 30.8 |
| CC03091609 | 09090125 | 5 U | 2.45 | -- | 8.51 | 13.8 | 5.5 | 7.2 | 25.9 |
| CC04091609 | 09090127 | 5 U | 1.86 | -- | 5.59 | 10.4 | 3.91 | 5.4 | 17.7 |
| CC05091709 | 09090130 | 1 U | 3.44 | -- | 15.8 | 18.7 | 7.98 | 11.7 | 44.1 |
| CC06091709 | 09090135 | 1 U | 2.01 | -- | 7.1 | 12.3 | 3.99 | 8.34 | 24.6 |
| CC07091809 | 09090139 | 1.94 | 2.85 | -- | 7.02 | 16.8 | 4.69 | 7.47 | 28.4 |
| CC08091909 | 09090140 | 1.28 | 3.41 | -- | 26.5 | 17.2 | 6.99 | 10.9 | 36.8 |
| CC09092109 | 09090144 | 5 U | -- | -- | -- | -- | 8.88 | -- | -- |
| CC10092109 | 09090146 | 5 U | 2.49 | -- | 12 | 15.8 | 4.54 | 10.5 | 35.6 |
| CC11092209 | 09090151 | 5 U | 2.16 | -- | 7.85 | 15.2 | 2.85 | 10.6 | 28.5 |
| CC12092309 | 09090153 | 5 U | 3.66 | -- | 12.9 | 18.1 | 5.99 | 11.2 | 38.6 |
| CC13092309 | 09090154 | 5 U | 2.33 | -- | 10.4 | 16.1 | 6.74 | 10.2 | 35.4 |
| CC14092309 | 09090157 | 5 U | 5.99 | -- | 19.4 | 29.1 | 13.5 | 21 | 38.6 |
| CC01092409 | 09090159 | 5 U | 2.14 | -- | 8.75 | 13.1 | 3.95 | 7.86 | 29.6 |
| CC02092409 | 09090161 | 5 U | 3.32 | -- | 12.9 | 15 | 6.86 | 9.88 | 39 |
| CC03092409 | 09090163 | 5 U | 2.89 | -- | 11.3 | 15 | 5.19 | 9.26 | 36.3 |
| CC06092809 | 09090169 | 5 U | 1.97 | -- | 7.92 | 14.1 | 3.48 | 9.51 | 28.2 |
| CC01100109 | 09100102 | -- | 1.41 | 40 | 5.37 | -- | 2.19 | -- | -- |
| CC01100309 | 09100111 | -- | 1.93 | 55.1 | 7.5 | -- | 4.25 | -- | -- |
| CC08100709 | 09100122 | -- | 2.59 | 70.4 | 19.8 | -- | 4.4 | -- | -- |
| WSSP101509 | 09100165 | -- | 3.18 | 105 | 19.2 | -- | 8.03 | -- | -- |
| | MJCGR3 | 7 U | 2.0 | 98 | 16.9 | 35.8 | 4.5 | 12.9 | 52.1 |
| | MJCGR4 | 7 U | 2.7 | 137 | 19.2 | 38.9 | 6.2 | 12.8 | 60.1 |
| | MJCGR5 | 7 U | 3.3 | 161 | 22.5 | 30.4 | 7.5 | 19.0 | 60.4 |
| | MJCGR6 | 7 U | 2.7 | 121 | 16.6 | 38.0 | 6.0 | 12.8 | 56.6 |

**Table 7-11. On-Site Water Treatment Facility Effluent Sampling.**
**All Contaminants in Water.**

| Location ID | Wastewater Discharge Limitations | TT02092209 | TT08092409 | TT10100209 | TT06100509 |
|---|---|---|---|---|---|
| Sample Name | | 09090149 | 09090162 | 09100107 | 09100114 |
| Sample Date | | 09/22/09 | 09/24/09 | 10/02/09 | 10/02/09 |
| Location Description | | Water Treatment Facility Effluent Tank | Water Treatment Facility Effluent, Tanks #8 and #9 | Water Treatment Facility Effluent, Tank #10 | Water Treatment Facility Effluent, Tank #6 |
| **SVOC, ug/L** | | | | | |
| 1,1'-Biphenyl | -- | -- | -- | -- | -- |
| 1,2,4,5-Tetrachlorobenzene | -- | -- | -- | -- | -- |
| 1,2,4-Trichlorobenzene | -- | 1 U | 1 U | 1 U | 1 U |
| 1,2-Dichlorobenzene | -- | 1 U | 1 U | 1 U | 1 U |
| 1,3-Dichlorobenzene | -- | 1 U | 1 U | 1 U | 1 U |
| 1,4-Dichlorobenzene | -- | 1 U | 1 U | 1 U | 1 U |
| 2,2'-Oxybis (1-chloropropane) | -- | -- | -- | -- | -- |
| 2,3,4,6-Tetrachlorophenol | -- | -- | -- | -- | -- |
| 2,4,5-Trichlorophenol | -- | 10 U | 10 U | 10 U | 10 U |
| 2,4,6-Trichlorophenol | -- | 10 U | 10 U | 10 U | 10 U |
| 2,4-Dichlorophenol | -- | 10 U | 10 U | 10 U | 10 U |
| 2,4-Dimethylphenol | -- | 10 U | 10 U | 10 U | 10 U |
| 2,4-Dinitrophenol | -- | 30 U | 30 U | 30 U | 30 U |
| 2,4-Dinitrotoluene | -- | 1 U | 1 U | 1 U | 1 U |
| 2,6-Dinitrotoluene | -- | 1 U | 17 | 1 U | 1 U |
| 2-Chloronaphthalene | -- | 1 U | 1 U | 1 U | 1 U |
| 2-Chlorophenol | -- | 10 U | 10 U | 10 U | 10 U |
| 2-Methylnaphthalene | -- | 1 U | 1 U | 1 U | 1 U |
| 2-Methylphenol | -- | 10 U | 10 U | 10 U | 10 U |
| 2-Nitroaniline | -- | 1 U | 1 U | 1 U | 1 U |
| 2-Nitrophenol | -- | 10 U | 10 U | 10 U | 10 U |
| 3,3'-Dichlorobenzidine | -- | -- | -- | -- | -- |
| 3-Nitroaniline | -- | 3 U | 3 U | 3 U | 3 U |
| 4,6-Dinitro-2-methylphenol | -- | 30 U | 30 U | 30 U | 30 U |
| 4-Bromophenyl phenyl ether | -- | 1 U | 1 U | 1 U | 1 U |
| 4-Chloro-3-methylphenol | -- | 10 U | 10 U | 10 U | 10 U |
| 4-Chloroaniline | -- | 3 U | 3 U | 3 U | 3 U |
| 4-Chlorophenyl phenyl ether | -- | 1 U | 1 U | 1 U | 1 U |
| 4-Methylphenol | -- | 10 U | 10 U | 10 U | 10 U |
| 4-Nitroaniline | -- | 10 U | 10 U | 10 U | 10 U |
| 4-Nitrophenol | -- | 10 U | 10 U | 10 U | 10 U |
| Acenaphthene | -- | 1 U | 1 U | 1 U | 1 U |
| Acenaphthylene | -- | 1 U | 1 U | 1 U | 1 U |
| Acetophenone | -- | -- | -- | -- | -- |
| Anthracene | -- | 1 U | 1 U | 1 U | 1 U |
| Atrazine | -- | -- | -- | -- | -- |
| Benz(a)anthracene | -- | 1 U | 1 U | 1 U | 1 U |
| Benzaldehyde | -- | -- | -- | -- | -- |

**Table 7-11. On-Site Water Treatment Facility Effluent Sampling.**
**All Contaminants in Water.**

| Location ID | Wastewater Discharge Limitations | TT02092209 | TT08092409 | TT10100209 | TT06100509 |
|---|---|---|---|---|---|
| Sample Name | | 09090149 | 09090162 | 09100107 | 09100114 |
| Sample Date | | 09/22/09 | 09/24/09 | 10/02/09 | 10/02/09 |
| Location Description | | Water Treatment Facility Effluent Tank | Water Treatment Facility Effluent, Tanks #8 and #9 | Water Treatment Facility Effluent, Tank #10 | Water Treatment Facility Effluent, Tank #6 |
| Benzo(a) pyrene | -- | 1 U | 1 U | 1 U | 1 U |
| Benzo(b) fluoranthene | -- | 1 U | 1 U | 1 U | 1 U |
| Benzo(g,h,i) perylene | -- | 1 U | 1 U | 1 U | 1 U |
| Benzo(k) fluoranthene | -- | 1 U | 1 U | 1 UJ | 1 UJ |
| Benzoic acid | -- | 100 U | 100 U | 100 U | 100 U |
| Benzyl Alcohol | -- | 1 U | 1 U | 1 U | 1 U |
| Bis (2-chloroethoxy) methane | -- | 1 U | 1 U | 1 U | 1 U |
| Bis (2-chloroethyl) ether | -- | 1 U | 1 U | 1 U | 1 U |
| Bis (2-chloroisopropyl) ether | -- | 1 U | 1 U | 1 U | 1 U |
| Bis (2-ethylhexyl) phthalate | -- | 10 U | 10 U | 10 U | 10 U |
| Butylbenzylphthalate | -- | 1 U | 1 U | 1 U | 1 U |
| Caprolactam | -- | -- | -- | -- | -- |
| Carbazole | -- | 1 U | 1 U | 1 U | 1 U |
| Chrysene | -- | 1 U | 1 U | 1 U | 1 U |
| Dibenz(a,h) anthracene | -- | 1 U | 1 U | 1 U | 1 U |
| Dibenzofuran | -- | 1 U | 1 U | 1 U | 1 U |
| Diethylphthalate | -- | 1 U | 1 U | 1 U | 1 U |
| Dimethylphthalate | -- | 1 U | 1 U | 1 U | 1 U |
| Di-n-butylphthalate | -- | 1 U | 1 U | 1 U | 1 U |
| Di-n-octylphthalate | -- | 1 U | 1 U | 1 U | 1 U |
| Fluoranthene | -- | 1 U | 1 U | 1 U | 1 U |
| Fluorene | -- | 1 U | 1 U | 1 U | 1 U |
| Hexachlorobenzene | -- | 1 U | 1 U | 1 U | 1 U |
| Hexachlorobutadiene | -- | 1 U | 1 U | 1 U | 1 U |
| Hexachlorocyclopentadiene | -- | 3 U | 3 U | 3 U | 3 U |
| Hexachloroethane | -- | 1 U | 1 U | 1 U | 1 U |
| Indeno (1,2,3-cd) pyrene | -- | 1 U | 1 U | 1 U | 1 U |
| Isophorone | -- | 1 U | 1 U | 1 U | 1 U |
| Naphthalene | -- | 1 U | 1 U | 1 U | 1 U |
| Nitrobenzene | -- | 1 U | 1 U | 1 U | 1 U |
| N-Nitrosodi-n-propylamine | -- | 1 U | 1 U | 1 U | 1 U |
| N-Nitrosodiphenylamine | -- | 1 U | 1 U | 1 U | 1 U |
| Pentachlorophenol | -- | 10 U | 10 U | 10 U | 10 U |
| Phenanthrene | -- | 1 U | 1 U | 1 U | 1 U |
| Phenol | -- | 10 U | 10 U | 10 U | 10 U |
| Pyrene | -- | 1 U | 1 U | 1 U | 1 U |
| **VOC, ug/L** | | | | | |
| 1,1,1,2-Tetrachloroethane | -- | 1 U | 1 U | 1 U | 1 U |
| 1,1,1-Trichloroethane | -- | 1 U | 1 U | 1 U | 1 U |

**Table 7-11. On-Site Water Treatment Facility Effluent Sampling.**
**All Contaminants in Water.**

| Location ID | Wastewater Discharge Limitations | TT02092209 | TT08092409 | TT10100209 | TT06100509 |
|---|---|---|---|---|---|
| Sample Name | | 09090149 | 09090162 | 09100107 | 09100114 |
| Sample Date | | 09/22/09 | 09/24/09 | 10/02/09 | 10/02/09 |
| Location Description | | Water Treatment Facility Effluent Tank | Water Treatment Facility Effluent, Tanks #8 and #9 | Water Treatment Facility Effluent, Tank #10 | Water Treatment Facility Effluent, Tank #6 |
| 1,1,2,2-Tetrachloroethane | -- | 1 U | 1 U | 1 U | 1 U |
| 1,1,2-Trichloro-1,2,2-Trifluoroethane | -- | -- | -- | -- | -- |
| 1,1,2-Trichloroethane | -- | 1 U | 1 U | 1 U | 1 U |
| 1,1-Dichloroethane | -- | 1 U | 1 U | 1 U | 1 U |
| 1,1-Dichloroethene | -- | 1 U | 1 U | 1 U | 1 U |
| 1,1-Dichloropropene | -- | 1 U | 1 U | 1 U | 1 U |
| 1,2,3-Trichlorobenzene | -- | 1 U | 1 U | 1 U | 1 U |
| 1,2,3-Trichloropropane | -- | 1 U | 1 U | 1 U | 1 U |
| 1,2,4-Trichlorobenzene | -- | 1 U | 1 U | 1 U | 1 U |
| 1,2,4-Trimethylbenzene | -- | 1 U | 1 U | 1 U | 1 U |
| 1,2-Dibromo-3-chloropropane | -- | 1 U | 1 U | 1 U | 1 U |
| 1,2-Dibromoethane | -- | 1 U | 1 U | 1 U | 1 U |
| 1,2-Dichlorobenzene | -- | 1 U | 1 U | 1 U | 1 U |
| 1,2-Dichloroethane | -- | 1 U | 1 U | 1 U | 1 U |
| 1,2-Dichloropropane | -- | 1 U | 1 U | 1 U | 1 U |
| 1,3,5-Trimethylbenzene | -- | 1 U | 1 U | 1 U | 1 U |
| 1,3-Dichlorobenzene | -- | 1 U | 1 U | 1 U | 1 U |
| 1,3-Dichloropropane | -- | 1 U | 1 U | 1 U | 1 U |
| 1,4-Dichlorobenzene | -- | 1 U | 1 U | 1 U | 1 U |
| 1,4-Dioxane | -- | -- | -- | -- | -- |
| 2,2-Dichloropropane | -- | 1 U | 1 U | 1 U | 1 U |
| 2-Butanone | -- | 10 U | 10 UJ | 10 U | 10 U |
| 2-Chlorotoluene | -- | 1 U | 1 U | 1 U | 1 U |
| 2-Hexanone | -- | 10 U | 10 U | 10 U | 10 U |
| 4-Chlorotoluene | -- | 1 U | 1 U | 1 U | 1 U |
| 4-Isopropyltoluene | -- | 1 U | 1 U | 1 U | 1 U |
| 4-Methyl-2-pentanone | -- | 10 U | 10 U | 10 U | 10 U |
| Acetone | -- | 10 U | 10 U | 10 U | 10 U |
| Benzene | -- | 1 U | 1 U | 1 U | 1 U |
| Bromobenzene | -- | 1 U | 1 U | 1 U | 1 U |
| Bromochloromethane | -- | -- | -- | -- | -- |
| Bromodichloromethane | -- | 1 U | 1 U | 1 U | 1 U |
| Bromoform | -- | 1 U | 1 U | 1 U | 1 U |
| Bromomethane | -- | 1 U | 1 U | 1 U | 1 U |
| Carbon disulfide | -- | -- | -- | -- | -- |
| Carbon tetrachloride | -- | 1 U | 1 U | 1 U | 1 U |
| Chlorobenzene | -- | 1 U | 1 U | 1 U | 1 U |
| Chloroethane | -- | 1 U | 1 U | 1 U | 1 U |
| Chloroform | -- | 1 U | 1 U | 1 U | 1 U |

**Table 7-11. On-Site Water Treatment Facility Effluent Sampling.**
**All Contaminants in Water.**

| Location ID | Wastewater Discharge Limitations | TT02092209 | TT08092409 | TT10100209 | TT06100509 |
|---|---|---|---|---|---|
| Sample Name | | 09090149 | 09090162 | 09100107 | 09100114 |
| Sample Date | | 09/22/09 | 09/24/09 | 10/02/09 | 10/02/09 |
| Location Description | | Water Treatment Facility Effluent Tank | Water Treatment Facility Effluent, Tanks #8 and #9 | Water Treatment Facility Effluent, Tank #10 | Water Treatment Facility Effluent, Tank #6 |
| Chloromethane | -- | 1 U | 1 U | 1 U | 1 U |
| cis-1,2-Dichloroethene | -- | 1 U | 1 U | 1 U | 1 U |
| cis-1,3-Dichloropropene | -- | 1 U | 1 U | 1 U | 1 U |
| Cyclohexane | -- | -- | -- | -- | -- |
| Dibromochloromethane | -- | 1 U | 1 U | 1 U | 1 U |
| Dibromomethane | -- | 1 U | 1 U | 1 U | 1 U |
| Dichlorodifluoromethane | -- | 1 U | 1 U | 1 U | 1 U |
| Ethylbenzene | -- | 1 U | 1 U | 1 U | 1 U |
| Hexachlorobutadiene | -- | 1 U | 1 U | 1 U | 1 U |
| Isopropylbenzene | -- | 1 U | 1 U | 1 U | 1 U |
| m,p-Xylene | -- | 2 U | 2 U | 2 U | 2 U |
| Methyl acetate | -- | -- | -- | -- | -- |
| Methyl tert butyl ether | -- | 1 U | 1 U | 1 U | 1 U |
| Methylcyclohexane | -- | -- | -- | -- | -- |
| Methylene chloride | -- | 5 U | 5 U | 5 U | 5 U |
| Naphthalene | -- | 1 U | 1 U | 1 U | 1 U |
| n-Propylbenzene | -- | 1 U | 1 U | 1 U | 1 U |
| o-Xylene | -- | 1 U | 1 U | 1 U | 1 U |
| sec-Butylbenzene | -- | 1 U | 1 U | 1 U | 1 U |
| Styrene | -- | 1 U | 1 U | 1 U | 1 U |
| tert-Butylbenzene | -- | 1 U | 1 U | 1 U | 1 U |
| Tetrachloroethene | -- | 1 U | 1 U | 1 U | 1 U |
| Toluene | -- | 1 U | 1 U | 1 U | 1 U |
| trans-1,2-Dichloroethene | -- | 1 U | 1 U | 1 U | 1 U |
| trans-1,3-Dichloropropene | -- | 1 U | 1 U | 1 U | 1 U |
| Trichloroethene | -- | 1 U | 1 U | 1 U | 1 U |
| Trichlorofluoromethane | -- | 1 U | 1 U | 1 U | 1 U |
| Vinyl Chloride | -- | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| **PCBs, ug/L** | | | | | |
| Aroclor 1016 | -- | 0.1 U | 0.1 U | 0.1 U | 0.1 U |
| Aroclor 1221 | -- | 0.1 U | 0.1 U | 0.1 U | 0.1 U |
| Aroclor 1232 | -- | 0.1 U | 0.1 U | 0.1 U | 0.1 U |
| Aroclor 1242 | -- | 0.1 U | 0.1 U | 0.1 U | 0.1 U |
| Aroclor 1248 | -- | 0.1 U | 0.1 U | 0.1 U | 0.1 U |
| Aroclor 1254 | -- | 0.1 U | 0.1 U | 0.1 U | 0.1 U |
| Aroclor 1260 | -- | 0.1 U | 0.1 U | 0.1 U | 0.1 U |
| Aroclor 1262 | -- | -- | -- | -- | -- |
| Aroclor 1268 | -- | -- | -- | -- | -- |
| Total PCBs | -- | 0.4 | 0.4 | 0.4 | 0.4 |

**Table 7-11. On-Site Water Treatment Facility Effluent Sampling.**
**All Contaminants in Water.**

| Location ID | Wastewater Discharge Limitations | TT02092209 | TT08092409 | TT10100209 | TT06100509 |
|---|---|---|---|---|---|
| Sample Name | | 09090149 | 09090162 | 09100107 | 09100114 |
| Sample Date | | 09/22/09 | 09/24/09 | 10/02/09 | 10/02/09 |
| Location Description | | Water Treatment Facility Effluent Tank | Water Treatment Facility Effluent, Tanks #8 and #9 | Water Treatment Facility Effluent, Tank #10 | Water Treatment Facility Effluent, Tank #6 |
| **METALS, ug/L** | | | | | |
| Antimony | -- | -- | -- | -- | -- |
| Arsenic | 160 | 23.7 | 18.1 | 5.01 | 10.7 |
| Barium | -- | -- | -- | -- | -- |
| Beryllium | -- | -- | -- | -- | -- |
| Cadmium | 240 | 1 U | 1 U | 1 U | 1 U |
| Chromium | 2,700 | 1 U | 1 U | 1 U | 1 U |
| Copper | 3,840 | 5 U | 5 U | 1.45 | 1.37 |
| Lead | 810 | 1 U | 1 U | 1 U | 1 U |
| Mercury | 3.5 | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| Nickel | 2,450 | 1.61 | 1.59 | 3.37 | 3.24 |
| Selenium | -- | -- | -- | -- | -- |
| Silver | 560 | 1 U | 1 U | 1 U | 1 U |
| Thallium | -- | -- | -- | -- | -- |
| Zinc | 2,610 | 5 U | 5 U | 1 U | 7.17 |
| **INORGANICS** | | | | | |
| pH | 5.5-11.5 | 9.4 HT * | 8.9 HT | 8.2 HT | 7.3 HT |
| TSS, mg/L | -- | 10 U | -- | -- | -- |
| Oil and Grease - HEM, mg/L | 100 | 1 U | 1 U | 2 U | 1 U |
| Total Cyanide, mg/L | 1.2 | 0.005 U | 0.005 U | 0.010 U | 0.005 U |

*sample# 09090132

**Table 7-11. On-Site Water Treatment Facility Effluent Sampling.**
**All Contaminants in Water.**

| Location ID | Wastewater Discharge Limitations | TT10101209 | TT06101509 | TT10101909 | TT06102209 |
|---|---|---|---|---|---|
| Sample Name | | 09100138 | 09100162 | 09100180 | 09100192 |
| Sample Date | | 10/12/09 | 10/15/09 | 10/19/09 | 10/22/09 |
| Location Description | | Water Treatment Facility Effluent, Tank #10 | Water Treatment Facility Effluent, Tank #6 | Water Treatment Facility Effluent, Tank #10 | Water Treatment Facility Effluent, Tank #6 |
| **SVOC, ug/L** | | | | | |
| 1,1'-Biphenyl | -- | -- | -- | -- | -- |
| 1,2,4,5-Tetrachlorobenzene | -- | -- | -- | -- | -- |
| 1,2,4-Trichlorobenzene | -- | 5 U | 1 U | 1 U | 1 U |
| 1,2-Dichlorobenzene | -- | 5 U | 1 U | 1 U | 1 U |
| 1,3-Dichlorobenzene | -- | 5 U | 1 U | 1 U | 1 U |
| 1,4-Dichlorobenzene | -- | 5 U | 1 U | 1 U | 1 U |
| 2,2'-Oxybis (1-chloropropane) | -- | -- | -- | -- | -- |
| 2,3,4,6-Tetrachlorophenol | -- | -- | -- | -- | -- |
| 2,4,5-Trichlorophenol | -- | 50 U | 10 U | 10 U | 10 U |
| 2,4,6-Trichlorophenol | -- | 50 U | 10 U | 10 U | 10 U |
| 2,4-Dichlorophenol | -- | 50 U | 10 U | 10 U | 10 U |
| 2,4-Dimethylphenol | -- | 50 U | 10 U | 10 U | 10 U |
| 2,4-Dinitrophenol | -- | 5 U | 30 U | 30 U | 30 U |
| 2,4-Dinitrotoluene | -- | 50 U | 1 U | 1 U | 1 U |
| 2,6-Dinitrotoluene | -- | 15 U | 1 U | 1 U | 1 U |
| 2-Chloronaphthalene | -- | 5 U | 1 U | 1 U | 1 U |
| 2-Chlorophenol | -- | 50 U | 10 U | 10 U | 10 U |
| 2-Methylnaphthalene | -- | 5 U | 1 U | 1 U | 1 U |
| 2-Methylphenol | -- | 50 U | 10 U | 10 U | 10 U |
| 2-Nitroaniline | -- | 5 U | 1 U | 1 U | 1 U |
| 2-Nitrophenol | -- | 50 U | 10 U | 10 U | 10 U |
| 3,3'-Dichlorobenzidine | -- | -- | -- | -- | -- |
| 3-Nitroaniline | -- | 5 U | 3 U | 3 U | 3 U |
| 4,6-Dinitro-2-methylphenol | -- | 150 U | 30 U | 30 U | 30 U |
| 4-Bromophenyl phenyl ether | -- | 5 U | 1 U | 1 U | 1 U |
| 4-Chloro-3-methylphenol | -- | 50 U | 10 U | 10 U | 10 U |
| 4-Chloroaniline | -- | 15 U | 3 U | 3 U | 3 U |
| 4-Chlorophenyl phenyl ether | -- | 5 U | 1 U | 1 U | 1 U |
| 4-Methylphenol | -- | 50 U | 10 U | 10 U | 10 U |
| 4-Nitroaniline | -- | 50 U | 10 U | 10 U | 10 U |
| 4-Nitrophenol | -- | 5 U | 10 U | 10 U | 10 U |
| Acenaphthene | -- | 150 U | 1 U | 1 U | 1 U |
| Acenaphthylene | -- | 5 U | 1 U | 1 U | 1 U |
| Acetophenone | -- | -- | -- | -- | -- |
| Anthracene | -- | 5 U | 1 U | 1 U | 1 U |
| Atrazine | -- | -- | -- | -- | -- |
| Benz(a)anthracene | -- | 50 U | 1 U | 1 U | 1 U |
| Benzaldehyde | -- | -- | -- | -- | -- |

**Table 7-11. On-Site Water Treatment Facility Effluent Sampling.**
**All Contaminants in Water.**

| Location ID | Wastewater Discharge Limitations | TT10101209 | TT06101509 | TT10101909 | TT06102209 |
|---|---|---|---|---|---|
| Sample Name | | 09100138 | 09100162 | 09100180 | 09100192 |
| Sample Date | | 10/12/09 | 10/15/09 | 10/19/09 | 10/22/09 |
| Location Description | | Water Treatment Facility Effluent, Tank #10 | Water Treatment Facility Effluent, Tank #6 | Water Treatment Facility Effluent, Tank #10 | Water Treatment Facility Effluent, Tank #6 |
| Benzo(a) pyrene | -- | 5 U | 1 U | 1 U | 1 U |
| Benzo(b) fluoranthene | -- | 5 U | 1 U | 1 U | 1 U |
| Benzo(g,h,i) perylene | -- | 5 U | 1 U | 1 U | 1 U |
| Benzo(k) fluoranthene | -- | 5 U | 1 U | 1 U | 1 U |
| Benzoic acid | -- | 500 U | 100 U | 100 UJ | 100 U |
| Benzyl Alcohol | -- | 5 U | 1 U | 1 U | 1 U |
| Bis (2-chloroethoxy) methane | -- | 5 U | 1 U | 1 U | 1 U |
| Bis (2-chloroethyl) ether | -- | 5 U | 1 U | 1 U | 1 U |
| Bis (2-chloroisopropyl) ether | -- | 5 U | 1 U | 1 U | 1 U |
| Bis (2-ethylhexyl) phthalate | -- | 50 U | 10 U | 10 U | 10 U |
| Butylbenzylphthalate | -- | 5 U | 1 U | 1 U | 1 U |
| Caprolactam | -- | -- | -- | -- | -- |
| Carbazole | -- | 5 U | 1 U | 1 U | 1 U |
| Chrysene | -- | 5 U | 1 U | 1 U | 1 U |
| Dibenz(a,h) anthracene | -- | 5 U | 1 U | 1 U | 1 U |
| Dibenzofuran | -- | 5 U | 1 U | 1 U | 1 U |
| Diethylphthalate | -- | 5 U | 1 U | 1 U | 1 U |
| Dimethylphthalate | -- | 5 U | 1 U | 1 U | 1 U |
| Di-n-butylphthalate | -- | 5 U | 1 U | 1 U | 1 U |
| Di-n-octylphthalate | -- | 5 U | 1 U | 1 U | 1 U |
| Fluoranthene | -- | 5 U | 1.1 | 1.3 | 1 U |
| Fluorene | -- | 5 U | 1 U | 1 U | 1 U |
| Hexachlorobenzene | -- | 5 U | 1 U | 1 U | 1 U |
| Hexachlorobutadiene | -- | 5 U | 1 U | 1 U | 1 U |
| Hexachlorocyclopentadiene | -- | 15 U | 3 U | 3 U | 3 U |
| Hexachloroethane | -- | 5 U | 1 U | 1 U | 1 U |
| Indeno (1,2,3-cd) pyrene | -- | 5 U | 1 U | 1 U | 1 U |
| Isophorone | -- | 5 U | 1 U | 1 U | 1 U |
| Naphthalene | -- | 5 U | 1 U | 1 U | 1 U |
| Nitrobenzene | -- | 5 U | 1 U | 1 U | 1 U |
| N-Nitrosodi-n-propylamine | -- | 5 U | 1 U | 1 U | 1 U |
| N-Nitrosodiphenylamine | -- | 5 U | 1 U | 1 U | 1 U |
| Pentachlorophenol | -- | 50 U | 10 U | 10 U | 10 U |
| Phenanthrene | -- | 5 U | 1 U | 1.1 | 1 U |
| Phenol | -- | 50 U | 10 U | 10 U | 10 U |
| Pyrene | -- | 5 U | 1 U | 1.1 | 1 U |
| **VOC, ug/L** | | | | | |
| 1,1,1,2-Tetrachloroethane | -- | 1 U | 1 U | 1 U | 1 U |
| 1,1,1-Trichloroethane | -- | 1 U | 1 U | 1 U | 1 U |

**Table 7-11. On-Site Water Treatment Facility Effluent Sampling.**
**All Contaminants in Water.**

| Location ID | Wastewater Discharge Limitations | TT10101209 | TT06101509 | TT10101909 | TT06102209 |
|---|---|---|---|---|---|
| Sample Name | | 09100138 | 09100162 | 09100180 | 09100192 |
| Sample Date | | 10/12/09 | 10/15/09 | 10/19/09 | 10/22/09 |
| Location Description | | Water Treatment Facility Effluent, Tank #10 | Water Treatment Facility Effluent, Tank #6 | Water Treatment Facility Effluent, Tank #10 | Water Treatment Facility Effluent, Tank #6 |
| 1,1,2,2-Tetrachloroethane | -- | 1 U | 1 U | 1 U | 1 U |
| 1,1,2-Trichloro-1,2,2-Trifluoroethane | -- | -- | -- | -- | -- |
| 1,1,2-Trichloroethane | -- | 1 U | 1 U | 1 U | 1 U |
| 1,1-Dichloroethane | -- | 1 U | 1 U | 1 U | 1 U |
| 1,1-Dichloroethene | -- | 1 U | 1 U | 1 U | 1 U |
| 1,1-Dichloropropene | -- | 1 U | 1 U | 1 U | 1 U |
| 1,2,3-Trichlorobenzene | -- | 1 U | 1 U | 1 U | 1 U |
| 1,2,3-Trichloropropane | -- | 1 U | 1 U | 1 U | 1 U |
| 1,2,4-Trichlorobenzene | -- | 1 U | 1 U | 1 U | 1 U |
| 1,2,4-Trimethylbenzene | -- | 1 U | 1 U | 1 U | 1 U |
| 1,2-Dibromo-3-chloropropane | -- | 1 U | 1 U | 1 U | 1 U |
| 1,2-Dibromoethane | -- | 1 U | 1 U | 1 U | 1 U |
| 1,2-Dichlorobenzene | -- | 1 U | 1 U | 1 U | 1 U |
| 1,2-Dichloroethane | -- | 1 U | 1 U | 1 U | 1 U |
| 1,2-Dichloropropane | -- | 1 U | 1 U | 1 U | 1 U |
| 1,3,5-Trimethylbenzene | -- | 1 U | 1 U | 1 U | 1 U |
| 1,3-Dichlorobenzene | -- | 1 U | 1 U | 1 U | 1 U |
| 1,3-Dichloropropane | -- | 1 U | 1 U | 1 U | 1 U |
| 1,4-Dichlorobenzene | -- | 1 U | 1 U | 1 U | 1 U |
| 1,4-Dioxane | -- | -- | -- | -- | -- |
| 2,2-Dichloropropane | -- | 1 U | 1 U | 1 U | 1 U |
| 2-Butanone | -- | 10 U | 10 U | 10 U | 10 U |
| 2-Chlorotoluene | -- | 1 U | 1 U | 1 U | 1 U |
| 2-Hexanone | -- | 10 U | 10 U | 10 U | 10 U |
| 4-Chlorotoluene | -- | 1 U | 1 U | 1 U | 1 U |
| 4-Isopropyltoluene | -- | 1 U | 1 U | 1 U | 1 U |
| 4-Methyl-2-pentanone | -- | 10 U | 10 U | 10 U | 10 U |
| Acetone | -- | 10 U | 10 U | 10 U | 10 U |
| Benzene | -- | 1 U | 1 U | 1 U | 1 U |
| Bromobenzene | -- | 1 U | 1 U | 1 U | 1 U |
| Bromochloromethane | -- | -- | -- | -- | -- |
| Bromodichloromethane | -- | 1 U | 1 U | 1 U | 1 U |
| Bromoform | -- | 1 U | 1 U | 1 U | 1 U |
| Bromomethane | -- | 1 U | 1 U | 1 U | 1 U |
| Carbon disulfide | -- | -- | -- | -- | -- |
| Carbon tetrachloride | -- | 1 U | 1 U | 1 U | 1 U |
| Chlorobenzene | -- | 1 U | 1 U | 1 U | 1 U |
| Chloroethane | -- | 1 U | 1 U | 1 U | 1 U |
| Chloroform | -- | 1 U | 1 U | 1 U | 1 U |

**Table 7-11. On-Site Water Treatment Facility Effluent Sampling.**
**All Contaminants in Water.**

| Location ID | Wastewater Discharge Limitations | TT10101209 | TT06101509 | TT10101909 | TT06102209 |
|---|---|---|---|---|---|
| Sample Name | | 09100138 | 09100162 | 09100180 | 09100192 |
| Sample Date | | 10/12/09 | 10/15/09 | 10/19/09 | 10/22/09 |
| Location Description | | Water Treatment Facility Effluent, Tank #10 | Water Treatment Facility Effluent, Tank #6 | Water Treatment Facility Effluent, Tank #10 | Water Treatment Facility Effluent, Tank #6 |
| Chloromethane | -- | 1 U | 1 U | 1 U | 1 U |
| cis-1,2-Dichloroethene | -- | 1 U | 1 U | 1 U | 1 U |
| cis-1,3-Dichloropropene | -- | 1 U | 1 U | 1 U | 1 U |
| Cyclohexane | -- | -- | -- | -- | -- |
| Dibromochloromethane | -- | 1 U | 1 U | 1 U | 1 U |
| Dibromomethane | -- | 1 U | 1 U | 1 U | 1 U |
| Dichlorodifluoromethane | -- | 1 U | 1 U | 1 U | 1 U |
| Ethylbenzene | -- | 1 U | 1 U | 1 U | 1 U |
| Hexachlorobutadiene | -- | 1 U | 1 U | 1 U | 1 U |
| Isopropylbenzene | -- | 1 U | 1 U | 1 U | 1 U |
| m,p-Xylene | -- | 2 U | 2 U | 2 U | 2 U |
| Methyl acetate | -- | -- | -- | -- | -- |
| Methyl tert butyl ether | -- | 1 U | 1 U | 1 U | 1 U |
| Methylcyclohexane | -- | -- | -- | -- | -- |
| Methylene chloride | -- | 5 U | 5 U | 5 U | 5 U |
| Naphthalene | -- | 1 U | 1 U | 1 U | 1 U |
| n-Propylbenzene | -- | 1 U | 1 U | 1 U | 1 U |
| o-Xylene | -- | 1 U | 1 U | 1 U | 1 U |
| sec-Butylbenzene | -- | 1 U | 1 U | 1 U | 1 U |
| Styrene | -- | 1 U | 1 U | 1 U | 1 U |
| tert-Butylbenzene | -- | 1 U | 1 U | 1 U | 1 U |
| Tetrachloroethene | -- | 1 U | 1 U | 1 U | 1 U |
| Toluene | -- | 1 U | 1 U | 1 U | 1 U |
| trans-1,2-Dichloroethene | -- | 1 U | 1 U | 1 U | 1 U |
| trans-1,3-Dichloropropene | -- | 1 U | 1 U | 1 U | 1 U |
| Trichloroethene | -- | 1 U | 1 U | 1 U | 1 U |
| Trichlorofluoromethane | -- | 1 U | 1 U | 1 U | 1 U |
| Vinyl Chloride | -- | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| **PCBs, ug/L** | | | | | |
| Aroclor 1016 | -- | 0.1 U | 0.1 U | 0.1 U | 100 U |
| Aroclor 1221 | -- | 0.1 U | 0.1 U | 0.1 U | 100 U |
| Aroclor 1232 | -- | 0.1 U | 0.1 U | 0.1 U | 100 U |
| Aroclor 1242 | -- | 0.1 U | 0.1 U | 0.1 U | 100 U |
| Aroclor 1248 | -- | 0.1 U | 0.1 U | 0.1 U | 100 U |
| Aroclor 1254 | -- | 0.1 U | 0.1 U | 0.1 U | 100 U |
| Aroclor 1260 | -- | 0.1 U | 0.1 U | 0.1 U | 100 U |
| Aroclor 1262 | -- | -- | -- | -- | -- |
| Aroclor 1268 | -- | -- | -- | -- | -- |
| Total PCBs | -- | 0.4 | 0.4 | 0.4 | 350 |

**Table 7-11. On-Site Water Treatment Facility Effluent Sampling.**
**All Contaminants in Water.**

| Location ID | Wastewater Discharge Limitations | TT10101209 | TT06101509 | TT10101909 | TT06102209 |
|---|---|---|---|---|---|
| Sample Name | | 09100138 | 09100162 | 09100180 | 09100192 |
| Sample Date | | 10/12/09 | 10/15/09 | 10/19/09 | 10/22/09 |
| Location Description | | Water Treatment Facility Effluent, Tank #10 | Water Treatment Facility Effluent, Tank #6 | Water Treatment Facility Effluent, Tank #10 | Water Treatment Facility Effluent, Tank #6 |
| **METALS, ug/L** | | | | | |
| Antimony | -- | -- | -- | -- | -- |
| Arsenic | 160 | 6.02 | 2.61 | 1.31 | 1 U |
| Barium | -- | -- | -- | -- | -- |
| Beryllium | -- | -- | -- | -- | -- |
| Cadmium | 240 | 1 U | 1 U | 1 U | 1 U |
| Chromium | 2,700 | 1.49 | 1.33 | 1.61 | 2.15 |
| Copper | 3,840 | 1.14 | 1.98 | 3.02 | 3.88 |
| Lead | 810 | 1 U | 1 U | 1 U | 1 U |
| Mercury | 3.5 | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| Nickel | 2,450 | 12.3 | 12.8 | 10.1 | 7.5 |
| Selenium | -- | -- | -- | -- | -- |
| Silver | 560 | 1 U | 1 U | 1 U | 1 U |
| Thallium | -- | -- | -- | -- | -- |
| Zinc | 2,610 | 16.6 | 17.3 | 18.7 | 28.1 |
| **INORGANICS** | | | | | |
| pH | 5.5-11.5 | 6.7 HT | 7.6 HT | 6.9 HT | 6.8 HT |
| TSS, mg/L | -- | -- | -- | -- | 21 |
| Oil and Grease - HEM, mg/L | 100 | 1.5 | 2.0 | 1.5 | 1 U |
| Total Cyanide, mg/L | 1.2 | 0.005 U | 0.005 | 0.006 | 0.005 U |

**Table 7-12. Backfill.**
**All Sampling Results for All Analytes in Soil.**

| Description | ROD Based Remedial Goals | ROD Based Criteria for Excavating Soil | Regional Screening Levels - Industrial Soil | Three-inch-minus aggregate rock backfill, seven point composite sample | One-inch-minus aggregate rock backfill, seven point composite sample | Pea gravel backfill, grab sample | Washed sand backfill, grab sample |
|---|---|---|---|---|---|---|---|
| Location ID | | | | BF01091209 | BF02091209 | BF03091909 | BF04092509 |
| Sample Name | | | | 09090116 | 09090117 | 09090142 | 09090165 |
| Sample Date | | | | 09/12/09 | 09/12/09 | 09/19/09 | 09/25/09 |
| **SVOCs, ug/kg** | | | | | | | |
| 1,2,4-Trichlorobenzene | -- | -- | -- | 30 U | 30 U | 30 U | 30 U |
| 1,2-Dichlorobenzene | -- | -- | -- | 30 U | 30 U | 30 U | 30 U |
| 1,3-Dichlorobenzene | -- | -- | -- | 30 U | 30 U | 30 U | 30 U |
| 1,4-Dichlorobenzene | -- | -- | -- | 30 U | 30 U | 30 U | 30 U |
| 2,2'-Oxybis (1-chloropropane) | -- | -- | -- | -- | -- | -- | -- |
| 2,3,4,6-Tetrachlorophenol | -- | -- | -- | -- | -- | -- | -- |
| 2,4,5-Trichlorophenol | -- | -- | -- | 300 U | 300 U | 300 U | 300 U |
| 2,4,6-Trichlorophenol | -- | -- | -- | 300 U | 300 U | 300 U | 300 U |
| 2,4-Dichlorophenol | -- | -- | -- | 300 U | 300 U | 300 U | 300 U |
| 2,4-Dimethylphenol | -- | -- | -- | 300 U | 300 U | 300 U | 300 U |
| 2,4-Dinitrophenol | -- | -- | -- | 900 U | 900 U | 900 U | 900 U |
| 2,4-Dinitrotoluene | -- | -- | -- | 30 U | 30 U | 30 U | 30 U |
| 2,6-Dinitrotoluene | -- | -- | -- | 30 U | 30 U | 30 U | 30 U |
| 2-Chloronaphthalene | -- | -- | -- | 30 U | 30 U | 30 U | 30 U |
| 2-Chlorophenol | -- | -- | -- | 300 U | 300 U | 300 U | 300 U |
| 2-Methylnaphthalene | -- | -- | -- | 30 U | 30 U | 30 U | 30 U |
| 2-Methylphenol | -- | -- | -- | 300 U | 300 U | 300 U | 300 U |
| 2-Nitroaniline | -- | -- | -- | 30 U | 30 U | 30 U | 30 U |
| 2-Nitrophenol | -- | -- | -- | 300 U | 300 U | 300 U | 300 U |
| 3,3'-Dichlorobenzidine | -- | -- | -- | -- | -- | -- | -- |
| 3-Nitroaniline | -- | -- | -- | 900 U | 900 U | 900 U | 900 U |
| 4,6-Dinitro-2-methylphenol | -- | -- | -- | 900 U | 900 U | 900 U | 900 U |
| 4-Bromophenyl phenyl ether | -- | -- | -- | 30 U | 30 U | 30 U | 30 U |
| 4-Chloro-3-methylphenol | -- | -- | -- | 300 U | 300 U | 300 U | 300 U |
| 4-Chloroaniline | -- | -- | -- | 3000 U | 3000 U | 3000 U | 3000 U |
| 4-Chlorophenyl phenyl ether | -- | -- | -- | 30 U | 30 U | 30 U | 30 U |
| 4-Methylphenol | -- | -- | -- | 600 U | 600 U | 300 U | 300 U |
| 4-Nitroaniline | -- | -- | -- | 900 U | 900 U | 900 U | 900 U |
| 4-Nitrophenol | -- | -- | -- | 300 U | 300 U | 300 U | 300 U |

**Table 7-12. Backfill.**
**All Sampling Results for All Analytes in Soil.**

| Location ID | | | | BF01091209 | BF02091209 | BF03091909 | BF04092509 |
|---|---|---|---|---|---|---|---|
| Sample Name | | | | 09090116 | 09090117 | 09090142 | 09090165 |
| Sample Date | | | | 09/12/09 | 09/12/09 | 09/19/09 | 09/25/09 |
| Acenaphthene | -- | -- | 3.30E+07 | 30 U | 30 U | 30 U | 30 U |
| Acenaphthylene | -- | -- | -- | 30 U | 30 U | 30 U | 30 U |
| Acetophenone | -- | -- | -- | -- | -- | -- | -- |
| Anthracene | -- | -- | 1.70E+08 | 30 U | 30 U | 30 U | 30 U |
| Atrazine | -- | -- | -- | -- | -- | -- | -- |
| Benz(a)anthracene | 2,500 | 250,000 | 2,100 | 30 U | 30 U | 30 U | 30 U |
| Benzaldehyde | -- | -- | -- | -- | -- | -- | -- |
| Benzo(a) pyrene | 250 | 25,000 | 210 | 30 U | 30 U | 30 U | 30 U |
| Benzo(b) fluoranthene | -- | -- | 2,100 | 30 U | 30 U | 30 U | 30 U |
| Benzo(g,h,i) perylene | -- | -- | -- | 30 U | 30 U | 30 U | 30 U |
| Benzo(k) fluoranthene | 2,500 | 250,000 | 21,000 | 30 U | 30 U | 30 U | 30 U |
| Benzoic acid | -- | -- | -- | 3000 U | 3000 U | 3000 U | 3000 U |
| Benzyl Alcohol | -- | -- | -- | 30 U | 30 U | 30 U | 30 U |
| Bis (2-chloroethoxy) methane | -- | -- | -- | 30 U | 30 U | 30 U | 30 U |
| Bis (2-chloroethyl) ether | -- | -- | -- | 30 U | 30 U | 30 U | 30 U |
| Bis (2-chloroisopropyl) ether | -- | -- | -- | 30 U | 30 U | 30 U | 30 U |
| Bis (2-ethylhexyl) phthalate | -- | -- | -- | 300 U | 300 U | 300 U | 300 U |
| Butylbenzylphthalate | -- | -- | -- | 30 U | 30 U | 30 U | 30 U |
| Caprolactam | -- | -- | -- | -- | -- | -- | -- |
| Carbazole | -- | -- | -- | 30 U | 30 U | 30 U | 30 U |
| Chrysene | 250,000 | 2.5E+07 | 210,000 | 30 U | 30 U | 30 U | 30 U |
| Dibenz(a,h) anthracene | 250 | 25,000 | 210 | 30 U | 30 U | 30 U | 30 U |
| Dibenzofuran | -- | -- | -- | 30 U | 30 U | 30 U | 30 U |
| Diethylphthalate | -- | -- | -- | 30 U | 30 U | 30 U | 30 U |
| Dimethylphthalate | -- | -- | -- | 30 U | 30 U | 30 U | 30 U |
| Di-n-butylphthalate | -- | -- | -- | 30 U | 30 U | 30 U | 30 U |
| Di-n-octylphthalate | -- | -- | -- | 30 U | 30 U | 30 U | 30 U |
| Fluoranthene | -- | -- | 2.20E+07 | 30 U | 30 U | 30 U | 30 U |
| Fluorene | -- | -- | 2.20E+07 | 30 U | 30 U | 30 U | 30 U |
| Hexachlorobenzene | -- | -- | -- | 30 U | 30 U | 30 U | 30 U |
| Hexachlorobutadiene | -- | -- | -- | 30 U | 30 U | 30 U | 30 U |
| Hexachlorocyclopentadiene | -- | -- | -- | 90 U | 90 U | 90 U | 90 U |
| Hexachloroethane | -- | -- | -- | 30 U | 30 U | 30 U | 30 U |
| Indeno (1,2,3-cd) pyrene | 2,500 | 250,000 | 2,100 | 30 U | 30 U | 30 U | 30 U |
| Isophorone | -- | -- | -- | 30 U | 30 U | 30 U | 30 U |
| Naphthalene | -- | -- | 18,000 | 30 U | 30 U | 30 U | 30 U |
| Nitrobenzene | -- | -- | -- | 30 U | 30 U | 30 U | 30 U |
| N-Nitrosodi-n-propylamine | -- | -- | -- | 30 U | 30 U | 30 U | 30 U |
| N-Nitrosodiphenylamine | -- | -- | -- | 30 U | 30 U | 30 U | 30 U |
| Pentachlorophenol | -- | -- | 9,000 | 300 U | 300 U | 300 U | 300 U |
| Phenanthrene | -- | -- | -- | 30 U | 30 U | 30 U | 30 U |
| Phenol | -- | -- | -- | 300 U | 300 U | 300 U | 300 U |

**Table 7-12. Backfill.**
**All Sampling Results for All Analytes in Soil.**

| Location ID | | | | BF01091209 | BF02091209 | BF03091909 | BF04092509 |
|---|---|---|---|---|---|---|---|
| Sample Name | | | | 09090116 | 09090117 | 09090142 | 09090165 |
| Sample Date | | | | 09/12/09 | 09/12/09 | 09/19/09 | 09/25/09 |
| Pyrene | -- | -- | 1.40E+07 | 30 U | 30 U | 30 U | 30 U |
| **VOCs, ug/kg** | | | | | | | |
| 1,1,1,2-Tetrachloroethane | -- | -- | 9.3E+03 | 50 U | 50 U | 50 U | 50 U |
| 1,1,1-Trichloroethane | -- | -- | 3.8E+08 | 50 U | 50 U | 50 U | 50 U |
| 1,1,2,2-Tetrachloroethane | -- | -- | 2.8E+03 | 50 U | 50 U | 50 U | 50 U |
| 1,1,2-Trichloro-1,2,2-Trifluoroethane | -- | -- | | -- | -- | -- | -- |
| 1,1,2-Trichloroethane | -- | -- | 5.3E+03 | 50 U | 50 U | 50 U | 50 U |
| 1,1-Dichloroethane | -- | -- | 1.7E+04 | 50 U | 50 U | 50 U | 50 U |
| 1,1-Dichloroethene | -- | -- | 1.1E+06 | 50 U | 50 U | 50 U | 50 U |
| 1,1-Dichloropropene | -- | -- | -- | 50 U | 50 U | 50 U | 50 U |
| 1,2,3-Trichlorobenzene | -- | -- | 4.9E+05 | 250 U | 250 U | 250 U | 250 U |
| 1,2,3-Trichloropropane | -- | -- | 9.5E+02 | 50 U | 50 U | 50 UJ | 50 U |
| 1,2,4-Trichlorobenzene | -- | -- | 9.9E+04 | 250 U | 250 U | 250 U | 250 U |
| 1,2,4-Trimethylbenzene | -- | -- | 2.6E+03 | 50 U | 50 U | 50 U | 50 U |
| 1,2-Dibromo-3-chloropropane | -- | -- | 6.9E+02 | 50 U | 50 U | 50 U | 50 U |
| 1,2-Dibromoethane | -- | -- | 1.7E+02 | 50 U | 50 U | 50 U | 50 U |
| 1,2-Dichlorobenzene | -- | -- | 9.8E+06 | 50 U | 50 U | 50 U | 50 U |
| 1,2-Dichloroethane | -- | -- | 2.2E+03 | 50 U | 50 U | 50 U | 50 U |
| 1,2-Dichloropropane | -- | -- | 4.5E+03 | 50 U | 50 U | 50 U | 50 U |
| 1,3,5-Trimethylbenzene | -- | -- | 1.0E+07 | 50 U | 50 U | 50 U | 50 U |
| 1,3-Dichlorobenzene | -- | -- | -- | 50 U | 50 U | 50 U | 50 U |
| 1,3-Dichloropropane | -- | -- | 2.0E+07 | 50 U | 50 U | 50 U | 50 U |
| 1,4-Dichlorobenzene | -- | -- | 1.2E+04 | 50 U | 50 U | 50 U | 50 U |
| 1,4-Dioxane | -- | -- | 1,60,000 | -- | -- | -- | -- |
| 2,2-Dichloropropane | -- | -- | -- | 50 U | 50 U | 50 U | 50 U |
| 2-Butanone | -- | -- | -- | 500 U | 500 U | 500 U | 500 U |
| 2-Chlorotoluene | -- | -- | -- | 50 U | 50 U | 50 U | 50 U |
| 2-Hexanone | -- | -- | 1.4E+06 | 500 U | 500 U | 500 U | 500 U |
| 4-Chlorotoluene | -- | -- | -- | 50 U | 50 U | 50 U | 50 U |
| 4-Isopropyltoluene | -- | -- | -- | 50 U | 50 U | 50 U | 50 U |
| 4-Methyl-2-pentanone | -- | -- | -- | 500 U | 500 U | 500 U | 500 U |
| Acetone | -- | -- | 6.3E+08 | 500 U | 500 U | 500 UJ | 500 U |
| Benzene | -- | -- | 5.4E+03 | 30 U | 30 U | 30 U | 30 U |
| Bromobenzene | -- | -- | 1.8E+06 | 50 U | 50 U | 50 U | 50 U |
| Bromochloromethane | -- | -- | -- | -- | -- | -- | -- |
| Bromodichloromethane | -- | -- | 1.4E+03 | 50 U | 50 U | 50 U | 50 U |
| Bromoform | -- | -- | 2.2E+05 | 50 U | 50 U | 50 U | 50 U |
| Bromomethane | -- | -- | 3.2E+04 | 500 U | 500 U | 500 U | 500 U |
| Carbon disulfide | -- | -- | 3.7E+06 | -- | -- | -- | -- |
| Carbon tetrachloride | -- | -- | 3.0E+03 | 50 U | 50 U | 50 U | 50 U |
| Chlorobenzene | -- | -- | 1.4E+06 | 50 U | 50 U | 50 U | 50 U |
| Chloroethane | -- | -- | -- | 500 U | 500 U | 500 U | 500 U |
| Chloroform | -- | -- | 1.5E+03 | 50 U | 50 U | 50 U | 50 U |

**Table 7-12. Backfill.**
**All Sampling Results for All Analytes in Soil.**

| Location ID | | | | BF01091209 | BF02091209 | BF03091909 | BF04092509 |
|---|---|---|---|---|---|---|---|
| Sample Name | | | | 09090116 | 09090117 | 09090142 | 09090165 |
| Sample Date | | | | 09/12/09 | 09/12/09 | 09/19/09 | 09/25/09 |
| Chloromethane | -- | -- | 5.0E+05 | 50 U | 50 U | 50 U | 50 U |
| cis-1,2-Dichloroethene | -- | -- | 1.0E+07 | 50 U | 50 U | 50 U | 50 U |
| cis-1,3-Dichloropropene | -- | -- | -- | 50 U | 50 U | 50 U | 50 U |
| Cyclohexane | -- | -- | -- | -- | -- | -- | -- |
| Dibromochloromethane | -- | -- | 3.3E+03 | 50 U | 50 U | 50 U | 50 U |
| Dibromomethane | -- | -- | 1.1E+05 | 50 U | 50 U | 50 U | 50 U |
| Dichlorodifluoromethane | -- | -- | 7.8E+05 | 500 U | 500 U | 500 U | 500 U |
| Ethylbenzene | -- | -- | 2.7E+04 | 50 U | 50 U | 50 U | 50 U |
| Hexachlorobutadiene | -- | -- | 2.2E+04 | 250 U | 250 U | 250 U | 250 U |
| Isopropylbenzene | -- | -- | -- | 50 U | 50 U | 50 U | 50 U |
| m,p-Xylene | -- | -- | 2.7E+06 | 100 U | 100 U | 100 U | 100 U |
| Methyl acetate | -- | -- | 1.0E+09 | -- | -- | -- | -- |
| Methyl tert-butyl ether | -- | -- | 2.2E+06 | 50 U | 50 U | 50 U | 50 U |
| Methylcyclohexane | -- | -- | -- | -- | -- | -- | -- |
| Methylene chloride | -- | -- | 5.3E+04 | 500 UJ | 500 UJ | 500 U | 500 U |
| Naphthalene | -- | -- | 1.8E+04 | 50 U | 50 U | 50 U | 50 U |
| n-Propylbenzene | -- | -- | -- | 50 U | 50 U | 50 U | 50 U |
| o-Xylene | -- | -- | 1.9E+07 | 50 U | 50 U | 50 U | 50 U |
| sec-Butylbenzene | -- | -- | -- | 50 U | 50 U | 50 U | 50 U |
| Styrene | -- | -- | 3.6E+08 | 50 U | 50 U | 50 U | 50 U |
| tert-Butylbenzene | -- | -- | -- | 50 U | 50 U | 50 U | 50 U |
| Tetrachloroethene | 7 | 39 | 2.6E+03 | 25 U | 25 U | 25 U | 25 U |
| Toluene | -- | -- | 4.5E+08 | 50 U | 50 U | 50 U | 50 U |
| trans-1,2-Dichloroethene | -- | -- | 6.9E+05 | 50 U | 50 U | 50 U | 50 U |
| trans-1,3-Dichloropropene | -- | -- | -- | 50 U | 50 U | 50 U | 50 U |
| Trichloroethene | 13 | 40 | 1.4E+04 | 30 U | 30 U | 30 U | 30 U |
| Trichlorofluoromethane | -- | -- | 3.4E+06 | 500 U | 500 U | 500 U | 500 U |
| Vinyl Chloride | 0.1 | 9 | 1.7E+03 | 50 U | 50 U | 50 U | 50 U |
| **PCBs, ug/kg** | | | | | | | |
| Aroclor 1016 | -- | -- | 21,000 | 100 U | 100 U | 100 U | 100 U |
| Aroclor 1221 | -- | -- | 540 | 100 U | 100 U | 100 U | 100 U |
| Aroclor 1232 | -- | -- | 540 | 100 U | 100 U | 100 U | 100 U |
| Aroclor 1242 | -- | -- | 740 | 100 U | 100 U | 100 U | 100 U |
| Aroclor 1248 | -- | -- | 740 | 100 U | 100 U | 100 U | 100 U |
| Aroclor 1254 | -- | -- | 740 | 100 U | 100 U | 100 U | 100 U |
| Aroclor 1260 | -- | -- | 740 | 100 U | 100 U | 100 U | 100 U |
| Aroclor 1262 | -- | -- | -- | -- | -- | -- | -- |
| Aroclor 1268 | -- | -- | -- | -- | -- | -- | -- |
| Total PCBs | 1000 | 20000 | -- | -- | -- | -- | -- |
| **Metals, mg/kg** | | | | | | | |
| Antimony | -- | -- | 410 | 5 U | 5 U | 1 U | 5 U |
| Arsenic | -- | -- | 1.6 | 1 U | 1 U | 1 U | 1.24 |
| Barium | -- | -- | 1.90E+05 | -- | -- | -- | -- |
| Beryllium | -- | -- | 2,000 | 1 U | 1 U | 1 U | 1 U |

**Table 7-12. Backfill.**
**All Sampling Results for All Analytes in Soil.**

| Location ID | | | | BF01091209 | BF02091209 | BF03091909 | BF04092509 |
|---|---|---|---|---|---|---|---|
| Sample Name | | | | 09090116 | 09090117 | 09090142 | 09090165 |
| Sample Date | | | | 09/12/09 | 09/12/09 | 09/19/09 | 09/25/09 |
| Cadmium | -- | -- | 800 | 1 U | 1 U | 1 U | 1 U |
| Chromium | -- | -- | -- | 3.79 | 3.32 | 1.33 | 8.4 |
| Copper | -- | -- | -- | 16.8 | 12.3 | 2.29 | 10.7 |
| Lead | -- | -- | 800 | 1.42 | 1.41 | 1 U | 1.52 |
| Mercury | -- | -- | 34 | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| Nickel | -- | -- | -- | 16.7 | 18.4 | 3.05 | 7.67 |
| Selenium | -- | -- | 5,300 | 1 U | 1 U | 1 U | 1 U |
| Silver | -- | -- | 5,300 | 1 U | 1 U | 1 U | 1 U |
| Thallium | -- | -- | -- | 1 U | 1 U | 1 U | 1 U |
| Zinc | -- | -- | 310,000 | 9.39 | 10.4 | 2.11 | 20.9 |
| **TPH, mg/kg** | | | | | | | |
| Diesel Range Organics | -- | -- | -- | 50 U | 50 U | 50 U | 50 U |
| Lube Oil | -- | -- | -- | 250 U | 250 U | 250 U | 250 U |

**Table 7-13. Water Treatment Facility Spill Area.**
**Soil Sampling Results With at Least One Result Above the RL or with a ROD-Based Action Level for All Contaminants.**

| Location Description | ROD Based Remedial Goal | ROD Based Criteria for Excavating Soils | Regional Screening Levels - Industrial Soil | Background: 50'S, 50'W of SW Corner Tank1 | Spill Area: 6'N, 7'W of SW Corner Tank1 | Spill Area: 9'N, 5'E of SW Corner Tank1 | Spill Area: 2'S, 6'E of SW Corner Tank1 | Spill Area: 3'S, 20'E of SW Corner Tank1 |
|---|---|---|---|---|---|---|---|---|
| Location ID | | | | UTBG-102209 | UT01-SP1-102209 | UT01-SP2-102209 | UT01-SP3-102209 | UT01-SP4-102209 |
| Sample Name | | | | JBR3 | JBR88 | JBR89 | JBR91 | JBR92 |
| Sample Date | | | | 10/22/09 | 10/22/09 | 10/22/09 | 10/22/09 | 10/22/09 |
| **SVOCs, ug/kg** | | | | | | | | |
| Benz(a)anthracene | 2,500 | 250,000 | 2,100 | 200 U | 220 U | 210 U | 200 U | 220 U |
| Benzo(a) pyrene | 250 | 25,000 | 210 | 200 U | 220 U | 210 U | 200 U | 220 U |
| Benzo(k) fluoranthene | 2,500 | 250,000 | 21,000 | 200 U | 220 U | 210 U | 200 U | 220 U |
| Chrysene | 250,000 | 25,000,000 | 210,000 | 200 U | 220 U | 210 U | 200 U | 220 U |
| Dibenz(a,h) anthracene | 250 | 25,000 | 210 | 200 U | 220 U | 210 U | 200 U | 220 U |
| Fluoranthene | -- | -- | 2.20E+07 | 200 U | 130 J | 110 J | 200 U | 37 J |
| Indeno (1,2,3-cd) pyrene | 2,500 | 250,000 | 2,100 | 200 UJ | 220 UJ | 210 UJ | 200 UJ | 220 UJ |
| Phenanthrene | -- | -- | -- | 200 U | 85 J | 210 U | 200 U | 220 U |
| Phenol | -- | -- | -- | 200 U | 250 | 210 U | 200 U | 220 U |
| Pyrene | -- | -- | 1.40E+07 | 46J | 110 J | 120 J | 200 U | 47 J |
| **VOCs, ug/kg** | | | | | | | | |
| Tetrachloroethene | 7 | 39 | 2,600 | 7.1 U | 8 U | 7.6 U | 6.9 U | 7.9 U |
| Trichloroethene | 13 | 40 | 14,000 | 7.1 U | 8 U | 7.6 U | 6.9 U | 7.9 U |
| Vinyl Chloride | 0.1 | 9 | 1,700 | 7.1 U | 8 U | 7.6 U | 6.9 U | 7.9 U |
| **PCBs, ug/kg** | | | | | | | | |
| Aroclor 1254 | -- | -- | 740 | 50 | 46 | 120 | 12 J | 28 J |
| Total PCBs | 1000 | 20,000 | -- | 206 | 218 | 284 | 164 | 200 |
| **Metals, mg/kg** | | | | | | | | |
| Arsenic | | | 1.6 | 3.2 | 1.8 | 1.4 | 0.52 J | 1.5 |
| Chromium | | | -- | 18.1 | 12.7 | 11.3 | 4.4 | 15.4 |
| Copper | | | -- | 32.5 | 37.2 | 34.3 | 13.7 | 39 |
| Lead | | | 800 | 7.7 | 5.6 | 5.4 | 2.5 | 5.1 |
| Nickel | | | -- | 19.5 | 17 | 16 | 6.3 | 20.6 |
| Zinc | | | 310,000 | 51.8 | 47.3 | 53.2 | 23.9 | 45.7 |

**Table 7-14. Excavation Confirmation Sampling.**
**Voltaile Organic Compounds (VOCs) in Soil (µg/kg) with at Least One Result Above the RLs.**

| Location ID | Sample Name | Acetone | Benzene | Carbon tetrachloride | Chloroform | cis-1,2-Dichloroethene | Ethylbenzene | Isopropylbenzene | m,p-Xylene | Methylene chloride | Naphthalene | o-Xylene | Tetrachloroethene | Toluene | trans-1,2-Dichloroethene | Trichloroethene | Vinyl Chloride |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROD Based Remedial Goal | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 7 | -- | -- | 13 | 0.1 |
| ROD Based Criteria - for Excavating Soils | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **39** | -- | -- | **40** | **9** |
| Regional Screening Level - Industrial Soil | | 6.30E+08 | 5,400 | 3,000 | 1,500 | 1.0E+07 | 27,000 | -- | 2.7E+06 | 53,000 | 18,000 | 1.90E+07 | 2,600 | 4.5E+08 | 6.9E+05 | 14,000 | 1,700 |
| E01S01B01 | 09090118 | 500 U | 30 U | 50 U | 50 U | 50 U | 50 U | 50 U | 100 U | 500 UJ | 13000 | 50 U | 25 U | 50 U | 50 U | 30 U | 50 U |
| E01S01B01 | 09090119 | 500 U | 30 U | 50 U | 50 U | 50 U | 50 U | 50 U | 100 U | 500 UJ | 160 | 50 U | 25 U | 50 U | 50 U | 30 U | 50 U |
| E01S01B01 | 09090122 | 500 U | 30 U | 50 U | 50 U | 50 U | 50 U | 50 U | 100 U | 500 UJ | 1300 | 50 U | 25 U | 50 U | 50 U | 30 U | 50 U |
| E01S01B01 | 09090123 | 500 U | 30 U | 50 U | 50 U | 50 U | 50 U | 50 U | 100 U | 500 UJ | 1800 | 50 U | 25 U | 50 U | 50 U | 30 U | 50 U |
| E01S01B02 | 09090124 | 500 U | 30 U | 50 U | 50 U | 50 U | 50 U | 50 U | 100 U | 500 U | 2100 | 50 U | 25 U | 50 U | 50 U | 30 U | 50 UJ |
| E01S01B02 | 09090128 | 500 U | 30 U | 50 U | 50 U | 50 U | 50 U | 50 U | 100 U | 500 U | 4600 | 50 U | 25 U | 50 U | 50 U | 30 U | 50 UJ |
| E01S01B03 | 09090129 | 500 U | 30 U | 50 U | 50 U | 50 U | 50 U | 50 U | 100 U | 500 U | 2000 | 50 U | 25 U | 50 U | 50 U | 30 U | 50 U |
| E01S01B03 | 09090136 | 500 U | 30 U | 50 U | 50 U | 50 U | 50 U | 50 U | 100 U | 500 U | 140 | 50 U | 25 U | 50 U | 50 U | 30 U | 50 U |
| E01S01B04 | 09090141 | 500 UJ | 30 U | 50 U | 50 U | 50 U | 50 U | 50 U | 100 U | 500 U | 8300 | 50 U | 25 U | 50 U | 50 U | 30 U | 50 U |
| E01S02B01 | 09090152 | 5000 U | 300 U | 500 U | 500 U | 500 U | 500 U | 500 U | 1000 U | 5000 U | 85000 | 500 U | 2500 U | 500 U | 500 U | 300 U | 500 U |
| E01S02B02 | JBR27 | 19 U | 9.7 U | 9.7 U | 9.7 U | 19 | 29 | 9.7 U | 48 | 9.7 U | -- | 16 | **150** | 9.7 J | 9.7 U | **85** | 9.7 U |
| E01S02B03f | JBR28 | 16 U | 8.1 U | 8.1 U | 8.1 U | 19 | 8.3 | 8.1 U | 13 | 8.1 U | -- | 4.5 J | **300** | 1.7 J | 8.1 U | 24 | 8.1 U |
| E01S02B04f | JBR29 | 16 U | 7.9 U | 7.9 U | 7.9 U | 89 | 58 | 7.9 U | 84 | 7.9 U | -- | 41 | **2000** | 14 | 7.9 U | **84** | 7.9 U |
| E01S03B01w | JBR30 | 13 U | 6.6 U | 6.6 UJ | 6.6 U | 6.6 U | 6.6 U | 6.6 U | 6.6 U | 6.6 UJ | -- | 6.6 U | 6.6 U | 6.6 U | 6.6 U | 6.6 U | 6.6 U |
| E01S03B01w | JBR32 | 11 U | 5.3 U | 5.3 UJ | 5.3 U | 5.3 U | 5.3 U | 5.3 U | 5.3 U | 5.3 UJ | -- | 5.3 U | 5.3 U | 5.3 U | 5.3 U | 5.3 U | 5.3 U |
| E01S03B02f | JBR33 | 14 U | 1.8 J | 7.1 U | 7.1 U | 25 | 45 | 7.1 U | 62 | 11 | -- | 35 | **92** | 6.1 J | 7.1 U | 19 | 7.1 U |
| E01S03B03f | JBR34 | 12 U | 5.9 U | 5.9 UJ | 5.9 U | 75 | 17 | 5.9 U | 21 | 9 J | -- | 14 | **140** | 2.4 J | 5.9 U | 34 | 5.9 U |
| E01S03B04W14 | JBR36 | 14 U | 8.1 | 6.8 UJ | 6.8 U | 420 | 1000 | 14 | 1000 | 11 J | -- | 590 | **2800** | 110 | 3.2 J | **75** | **45** |
| E01S03B04W25 | JBR37 | 13 U | 6.6 U | 6.6 UJ | 6.6 U | 98 | 21 | 6.6 U | 27 | 7.9 J | -- | 15 | **250** | 2.3 J | 6.6 U | 37 | 6.6 U |
| E01S04B01W10 | JBR38 | 13 U | 6.3 U | 6.3 U | 6.3 U | 6.3 U | 6.3 U | 6.3 U | 6.3 U | 6.3 U | -- | 6.3 U | 6.3 U | 6.3 U | 6.3 U | 6.3 U | 6.3 U |
| E01S04B01W25 | JBR40 | 13 U | 6.3 U | 6.3 U | 6.3 U | 4.5 J | 6.3 U | 6.3 U | 6.3 U | 6.3 U | -- | 6.3 U | 6.3 U | 6.3 U | 6.3 U | 6.3 U | 6.3 U |
| E1SS4B2 | JBR42 | 12 U | 6.2 U | 6.2 UJ | 6.2 U | 14 | 6.9 | 6.2 U | 6.1 J | 6.2 UJ | -- | 5.3 J | **43** | 6.2 U | 6.2 U | 10 | 6.2 U |
| E1SS4B3 | JBR43 | 13 U | 6.3 U | 6.3 UJ | 6.3 U | 38 | 16 | 6.3 U | 20 | 6.3 UJ | -- | 15 | **54** | 1.7 J | 6.3 U | **62** | 1.3 J |
| E1SS4B4-12e | JBR41 | 14 U | 6.8 U | 6.8 U | 6.8 U | 93 | 1.4 J | 6.8 U | 6.8 U | 6.8 U | -- | 6.8 U | 15 | 6.8 U | 6.8 U | 3.2 J | **29** |
| E1SS4B4-25e | JBR45 | 13 U | 6.4 U | 6.4 U | 6.4 U | 25 | 6.4 U | 6.4 U | 6.4 U | 6.4 U | -- | 6.4 U | 8.3 | 6.4 U | 6.4 U | 6.4 U | 2.7 J |
| E1SS5B1-10nw | JBR46 | 13 U | 6.6 U | 6.6 U | 6.6 U | 6.6 U | 6.6 U | 6.6 U | 6.6 U | 6.6 U | -- | 6.6 U | 6.6 U | 6.6 U | 6.6 U | 6.6 U | 6.6 U |
| E1SS5B1-25nw | JBR47 | 12 U | 6.2 U | 6.2 UJ | 6.2 U | 6.9 | 6.2 U | 6.2 U | 6.2 U | 6.2 UJ | -- | 6.2 U | 6.4 | 6.2 U | 6.2 U | 2.4 J | 6.2 U |
| E1SS5B2-25 | JBR49 | 12 U | 5.8 U | 5.8 UJ | 5.8 U | 25 | 19 | 1.3 J | 23 | 4.3 J | -- | 17 | **85** | 2.1 J | 5.8 U | 20 | 5.8 U |
| E1SS5B3-25ne | JBR50 | 12 U | 6.2 U | 6.2 U | 6.2 U | 190 | 810 | 13 | 1000 | 9.3 | -- | 770 | **4000** | 36 | 6.2 U | **66** | 6.2 U |
| E1SS6B1-10nw | JBR51 | 16 U | 8 U | 8 UJ | 8 U | 5.9 J | 8 U | 8 U | 8 U | 27 J | -- | 8 U | **46** | 8 U | 8 U | 2.7 J | 8 U |
| E1SS6B1-25nw | JBR52 | 12 U | 6.2 U | 6.2 UJ | 6.2 U | 310 | 6.2 U | 6.2 U | 6.2 U | 9.9 J | -- | 6.2 U | **490** | 3 J | 6.2 U | **250** | 6.2 U |
| E1SS6B2-10ne | JBR53 | 13 U | 6.3 U | 110 J | 18 | 82 | 160 | 6.3 U | 640 | 11 J | -- | 73 | **31000** | 790 | 6.3 U | **160** | 6.3 U |
| E1SS6B2-25ne | JBR55 | 12 U | 6.1 U | 6.1 U | 19 | 300 J | 800 | 5.4 J | 870 | 11 | -- | 530 | **49000** | 20 | 6.1 U | **860** | **20** |
| E2-0-10-101409 | JBR56 | 25 | 7.3 U | 7.3 U | 7.3 U | 7.3 U | 7.3 U | 7.3 U | 7.3 U | 14 | -- | 7.3 U | 7.3 U | 7.3 U | 7.3 U | 7.3 U | 7.3 U |
| E2-0-25-101409 | JBR57 | 10 J | 6.8 U | 6.8 U | 6.8 U | 100 | 8.9 | 6.8 U | 18 | 8.8 | -- | 9.3 | **4400** | 2.5 J | 6.8 U | **49** | 3.1 J |
| E2-100-10-101509 | JBR66 | 33 | 6.9 U | 6.9 U | 6.9 U | 4.4 J | 6.9 U | 6.9 U | 6.9 U | 23 | -- | 6.9 U | 6.1 J | 6.9 U | 6.9 U | 2 J | 6.9 U |

**Table 7-14. Excavation Confirmation Sampling.**
**Voltaile Organic Compounds (VOCs) in Soil (µg/kg) with at Least One Result Above the RLs.**

| Location ID | Sample Name | Acetone | Benzene | Carbon tetrachloride | Chloroform | cis-1,2-Dichloroethene | Ethylbenzene | Isopropylbenzene | m,p-Xylene | Methylene chloride | Naphthalene | o-Xylene | Tetrachloroethene | Toluene | trans-1,2-Dichloroethene | Trichloroethene | Vinyl Chloride |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROD Based Remedial Goal | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 7 | -- | -- | 13 | 0.1 |
| ROD Based Criteria - for Excavating Soils | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **39** | -- | -- | **40** | **9** |
| Regional Screening Level - Industrial Soil | | 6.30E+08 | 5,400 | 3,000 | 1,500 | 1.0E+07 | 27,000 | -- | 2.7E+06 | 53,000 | 18,000 | 1.90E+07 | 2,600 | 4.5E+08 | 6.9E+05 | 14,000 | 1,700 |
| E2-100-25-101509 | JBR67 | 11 U | 5.7 U | 5.7 U | 5.7 U | 3.5 J | 5.7 U | 5.7 U | 5.7 U | 5.7 U | -- | 5.7 U | 15 | 5.7 U | 5.7 U | 2.5 J | 5.7 U |
| E2-125-10-101609 | JBR69 | 12 U | 6.1 U | 6.1 U | 6.1 U | 20 | 6.1 U | 6.1 U | 6.1 U | 6.1 U | -- | 6.1 U | 17 | 6.1 U | 6.1 U | 4 J | 6.1 U |
| E2-125-25-101609 | JBR70 | 22 | 6.5 U | 6.5 U | 6.5 U | 1.8 J | 6.5 U | 6.5 U | 6.5 U | 6.5 U | -- | 6.5 U | 3.2 J | 6.5 U | 6.5 U | 6.5 U | 6.5 U |
| E2-150-10-101609 | JBR71 | 11 U | 5.4 U | 5.4 U | 5.4 U | 2 J | 5.4 U | 5.4 U | 5.4 U | 5.4 U | -- | 5.4 U | 5.4 U | 5.4 U | 5.4 U | 5.4 U | 5.4 U |
| E2-150-25-101609 | JBR72 | 13 U | 6.3 U | 6.3 UJ | 6.3 U | 2.2 J | 6.3 U | 6.3 U | 6.3 U | 6.3 UJ | -- | 6.3 U | 5.3 J | 6.3 U | 6.3 U | 6.3 U | 6.3 UJ |
| E2-175-10-101609 | JBR74 | 14 U | 6.8 U | 6.8 U | 6.8 U | 43 | 6.8 U | 6.8 U | 6.8 U | 6.8 U | -- | 6.8 U | 22 | 6.8 U | 6.8 U | 18 | 6.8 U |
| E2-175-25-101609 | JBR75 | 13 U | 6.7 U | 6.7 U | 6.7 U | 7.1 | 6.7 U | 6.7 U | 6.7 U | 19 | -- | 6.7 U | 8.1 | 6.7 U | 6.7 U | 3.5 J | 6.7 U |
| E2-200-10-101909 | JBR76 | 11 U | 5.5 U | 5.5 U | 5.5 U | 25 | 2.4 J | 5.5 U | 6.7 | 5.5 U | -- | 1.6 J | 5.7 | 5.5 U | 5.5 U | 5.4 J | 5.5 UJ |
| E2-200-25-101909 | JBR77 | 12 U | 5.9 U | 5.9 U | 5.9 U | 27 | 15 | 5.9 U | 48 | 13 | -- | 10 | **640** | 2 J | 5.9 U | 8.9 | 5.9 U |
| E2-225-10-101909 | JBR79 | 13 | 6 U | 6 U | 6 U | 7.8 | 6 U | 6 U | 6 U | 13 | -- | 6 U | **58** | 6 U | 6 U | 9.4 | 6 U |
| E2-225-25-101909 | JBR80 | 12 U | 6.1 U | 6.1 U | 6.1 U | 20 | 6.1 U | 6.1 U | 6.1 U | 6.1 U | -- | 6.1 U | **650** | 6.1 U | 6.1 U | 19 | 6.1 U |
| E2-250-10-101909 | JBR81 | 5.1 J | 6.8 U | 6.8 U | 6.8 U | 20 | 6.8 U | 6.8 U | 6.8 UJ | 6.8 U | -- | 6.8 U | **1600** | 6.8 U | 6.8 U | 18 | 6.8 U |
| E2-250-25-101909 | JBR82 | 8.2 J | 7.8 U | 7.8 U | 7.8 U | 7.3 J | 7.8 U | 7.8 U | 7.8 UJ | 7.8 U | -- | 7.8 U | 25 | 7.8 U | 7.8 U | 1.8 J | 7.8 U |
| E2-25-10-101409 | JBR59 | 11 J | 8 U | 8 U | 8 U | 200 | 14 | 8 U | 29 | 4.3 J | -- | 13 | **280** | 5.3 J | 8 U | **70** | 3.9 J |
| E2-25-25-101409 | JBR60 | 7.8 J | 7.5 U | 7.5 U | 7.5 U | 39 | 7.5 U | 7.5 U | 7.5 U | 12 | -- | 7.5 U | 14 | 7.5 U | 7.5 U | 2.8 J | 7.5 U |
| E2-50-10-101509 | JBR62 | 10 J | 6.9 U | 6.9 U | 6.9 U | 150 | 6.9 U | 6.9 U | 6.9 U | 6.8 J | -- | 6.9 U | 16 | 6.9 U | 6.9 U | 5.6 J | 2.8 J |
| E2-50-25-101509 | JBR63 | 14 U | 6.8 U | 6.8 U | 6.8 U | 130 | 6.8 U | 6.8 U | 6.8 U | 6.8 J | -- | 6.8 U | 17 | 6.8 U | 6.8 U | 6.9 | 1.7 J |
| E2-75-10-101509 | JBR64 | 17 U | 8.4 U | 8.4 U | 8.4 U | 1900 | 8.4 U | 8.4 U | 1.8 J | 9 | -- | 1.9 J | **460 J** | 3.6 J | 6.8 J | **240 J** | **99** |
| E2-75-25-101509 | JBR65 | 12 U | 5.8 U | 5.8 U | 5.8 U | 5.7 J | 5.8 U | 5.8 U | 5.8 U | 17 | -- | 5.8 U | 5.8 U | 5.8 U | 5.8 U | 5.8 U | 5.8 U |
| E2BS-101409 | JBR61 | 7.4 J | 6.8 U | 6.8 U | 6.8 U | 6.8 U | 6.8 U | 6.8 U | 6.8 U | 9.6 | -- | 6.8 U | 6.8 U | 6.8 U | 6.8 U | 6.8 U | 6.8 U |

**Table 7-15. Excavation Confirmation Sampling.**
**Semi-Volatile Organic Compounds (SVOCs) in Soil (µg/kg) with at Least One Result Above the RLs.**

| Location ID | Sample Name | 1,1'-Biphenyl | 2-Methylnaphthalene | 2-Nitroaniline | 4-Chloro-3-methylphenol | 4-Nitrophenol | Acenaphthene | Acetophenone | Anthracene | Benz(a)anthracene | Benzo(a) pyrene | Benzo(b) fluoranthene | Benzo(g,h,i) perylene | Benzo(k) fluoranthene | Bis (2-ethylhexyl) phthalate | Carbazole | Chrysene | Dibenz(a,h) anthracene | Dibenzofuran | Di-n-octylphthalate | Fluoranthene | Fluorene | Indeno (1,2,3-cd) pyrene | Naphthalene | Phenanthrene | Phenol | Pyrene |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROD Based Remedial Goals | | -- | -- | -- | -- | -- | -- | -- | -- | 2,500 | 250 | -- | -- | 2,500 | -- | -- | 250,000 | 250 | -- | -- | -- | -- | 2,500 | -- | -- | -- | -- |
| ROD Based Criteria for Excavating Soil | | -- | -- | -- | -- | -- | -- | -- | -- | **250,000** | **25,000** | -- | -- | **250,000** | -- | -- | **2.5E+07** | **25,000** | -- | -- | -- | -- | **250,000** | -- | -- | -- | -- |
| Regional Screening Levels - Industrial Soil | | -- | -- | -- | -- | -- | 3.30E+07 | -- | 1.70E+08 | NA | NA | 2,100 | -- | NA | -- | -- | NA | NA | -- | -- | 2.20E+07 | 2.20E+07 | NA | 18,000 | -- | -- | 1.40E+07 |
| E01S01B01 | 09090118 | -- | 4100 | 300 U | 3000 U | 3000 U | 14000 | -- | 16000 | 14000 | 2200 | 3500 | 350 | 1600 | 3000 U | 5800 | 11000 | 300 U | 75000 | 300 U | 170000 | 80000 | 420 | 7400 | 310000 | 3000 U | 110000 |
| E01S01B01 | 09090119 | -- | 300 U | 300 U | 3000 U | 3000 U | 4600 | -- | 11000 | 7500 | 1100 | 1800 | 300 U | 950 | 3000 U | 990 | 6100 | 300 U | 26000 | 300 U | 96000 | 35000 | 300 U | 300 U | 130000 | 3000 U | 59000 |
| E01S01B01 | 09090122 | -- | 760 | 30 U | 300 U | 300 U | 9300 | -- | 1400 | 1100 | 210 | 320 | 50 | 140 J | 300 U | 470 | 930 | 30 U | 5000 | 30 U | 13000 | 5900 | 57 | 470 | 23000 | 300 U | 8400 |
| E01S01B01 | 09090123 | -- | 1100 | 30 U | 300 U | 300 U | 12000 | -- | 1800 | 1500 | 370 | 520 | 120 | 240 J | 300 U | 630 | 1300 | 40 | 6500 | 30 U | 16000 | 7500 | 130 | 630 | 29000 | 300 U | 11000 |
| E01S01B02 | 09090124 | -- | 3000 U | 3000 U | 30000 U | 3000 U | 76000 | -- | 12000 | 9600 | 3000 U | 3000 U | 3000 U | 3000 U | 30000 U | 3200 | 8300 | 3000 U | 32000 | 3000 U | 96000 | 45000 | 3000 U | 3000 U | 170000 | 30000 U | 67000 |
| E01S01B02 | 09090128 | -- | 4500 | 3000 U | 30000 U | 30000 U | 44000 | -- | 6500 | 5600 | 3000 U | 3000 U | 3000 U | 3000 U | 30000 U | 3000 U | 4800 | 3000 U | 22000 | 3000 U | 54000 | 27000 | 3000 U | 3500 | 100000 | 30000 U | 37000 |
| E01S01B03 | 09090129 | -- | 2900 | 300 U | 3000 U | 3000 U | 50000 | -- | 26000 | 6200 | 1300 | 1900 | 310 | 820 | 3000 U | 10000 | 5400 | 300 U | 30000 | 300 U | 66000 | 49000 | 340 | 2400 | 190000 | 3000 U | 45000 |
| E01S01B03 | 09090136 | -- | 30 U | 30 U | 300 U | 300 U | 370 | -- | 92 | 88 | 30 U | 30 U | 30 U | 30 U | 300 U | 34 | 81 | 30 U | 210 | 30 U | 860 | 300 | 30 U | 30 U | 1500 | 300 U | 600 |
| E01S01B04 | 09090141 | -- | 3400 | 300 U | 3000 U | 3000 U | 31000 | -- | 3000 | 2800 | 470 | 760 | 300 U | 350 J | 3000 U | 1000 | 2400 | 300 U | 16000 | 300 U | 34000 | 17000 | 300 U | 4200 | 67000 | 3000 U | 23000 |
| E01S02B01 | 09090152 | -- | 45000 | 300 | 3000 U | 3000 U | 340000 | -- | 60000 | 28000 | 5600 | 8100 | 960 | 4200 | 3000 U | 37000 | 25000 | 360 | 170000 | 300 U | 330000 | 200000 | 1200 | 81000 | 680000 | 3000 U | 230000 |
| E01S02B02 | JBR27 | 6800 | 17000 | 12000 U | 6200 U | 12000 U | 120000 | 6200 U | 14000 | 10000 | 1500 J | 2300 J | 6200 U | 2300 J | 6200 U | 5700 J | 8400 | 6200 U | 54000 | 6200 U | 110000 | 64000 | 6200 U | 24000 | 240000 | 6200 U | 82000 |
| E01S02B03f | JBR28 | 1900 | 3200 | 420 U | 220 U | 420 U | 33000 | 220 U | 3400 | 3200 J | 590 | 1000 | 130 J | 340 | 220 U | 840 | 2900 | 220 U | 15000 | 220 U | 37000 | 17000 | 160 J | 3600 | 72000 | 220 U | 26000 |
| E01S02B04f | JBR29 | 6800 | 18000 | 12000 U | 6100 U | 12000 U | 140000 | 6100 U | 16000 | 11000 | 1800 J | 2600 J | 6100 U | 1200 J | 6100 U | 5500 J | 8600 | 6100 U | 55000 | 6100 U | 120000 | 66000 | 6100 U | 24000 | 250000 | 6100 U | 81000 |
| E01S03B01w | JBR30 | 200 U | 200 U | 400 U | 200 U | 400 U | 200 U | 200 U | 200 U | 200 U | 200 UJ | 200 UJ | 200 UJ | 200 UJ | 200 U | 200 U | 200 U | 200 UJ | 200 U | 200 U | 200 U | 200 U | 200 UJ | 200 U | 200 U | 200 U | 200 U |
| E01S03B01w | JBR32 | 360 | 720 | 370 U | 190 U | 370 U | 5000 | 190 U | 940 | 710 | 100 J | 130 J | 190 U | 120 J | 190 U | 300 | 610 | 190 U | 2700 | 190 U | 7500 | 3200 | 190 U | 600 | 13000 | 190 U | 4800 |
| E01S03B02f | JBR33 | 2600 J | 6200 | 11000 U | 5300 U | 11000 U | 41000 | 5300 U | 5900 | 3600 J | 5300 U | 5300 U | 5300 U | 5300 U | 5300 U | 2000 J | 3400 J | 5300 U | 20000 | 5300 U | 46000 | 23000 | 5300 U | 7900 | 85000 | 5300 U | 30000 |
| E01S03B03f | JBR34 | 1300 | 3600 J | 400 U | 210 U | 400 U | 28000 | 210 U | 2500 | 2400 | 370 | 440 | 65 J | 420 | 210 U | 960 | 2000 | 210 U | 13000 | 7.6 J | 28000 | 14000 | 92 J | 4600 J | 54000 | 210 U | 19000 |
| E01S03B04W14 | JBR36 | 11000 | 23000 | 10000 U | 5200 U | 10000 U | 150000 | 5200 U | 15000 | 14000 | 2400 J | 5000 J | 5200 U | 5500 | 5200 U | 6600 | 12000 | 5200 U | 73000 | 5200 U | 140000 | 82000 | 5200 U | 29000 | 310000 | 5200 U | 110000 |
| E01S03B04W25 | JBR37 | 980 | 2200 | 410 U | 210 U | 410 U | 15000 | 210 U | 1700 | 1500 | 240 | 270 | 210 U | 340 | 210 U | 650 | 1300 | 210 U | 7300 | 210 U | 16000 | 7800 | 58 J | 2600 | 30000 | 210 U | 11000 |
| E01S04B01W10 | JBR38 | 220 UJ | 220 U | 420 U | 220 U | 420 U | 220 U | 220 U | 220 U | 220 U | 220 UJ | 220 UJ | 220 UJ | 220 UJ | 220 UJ | 220 UJ | 220 U | 220 UJ | 220 UJ | 220 UJ | 220 U | 220 UJ | 220 UJ | 220 U | 220 U | 220 U | 220 U |
| E01S04B01W25 | JBR40 | 200 U | 200 U | 390 U | 200 U | 390 U | 200 U | 200 U | 200 U | 200 U | 200 UJ | 200 UJ | 200 UJ | 200 UJ | 200 U | 200 U | 200 U | 200 UJ | 200 U | 200 U | 200 U | 200 U | 200 UJ | 200 U | 200 U | 200 U | 200 U |
| E1SS4B2 | JBR42 | 800 J | 1900 | 410 U | 210 U | 410 U | 15000 | 210 U | 1900 | 1700 | 290 | 320 | 62 J | 320 | 210 UJ | 710 | 1400 | 210 U | 7400 | 210 UJ | 17000 | 8200 | 88 J | 2000 | 31000 | 210 U | 12000 |
| E1SS4B3 | JBR43 | 1000 | 2400 | 390 U | 200 U | 390 U | 17000 | 200 U | 2100 | 1900 | 300 | 470 | 69 J | 320 | 200 U | 760 | 1600 | 200 U | 8500 | 200 U | 19000 | 9400 | 120 J | 2600 | 35000 | 200 U | 14000 |
| E1SS4B4-12e | JBR41 | 140 J | 310 | 430 U | 220 U | 430 U | 2400 | 220 U | 270 | 310 | 48 J | 84 J | 220 UJ | 110 J | 220 U | 82 J | 260 | 220 UJ | 1200 | 220 U | 3000 | 1400 | 220 UJ | 310 | 5600 | 220 U | 2300 |
| E1SS4B4-25e | JBR45 | 430 | 990 | 390 U | 200 U | 390 U | 7500 | 200 U | 750 | 740 | 120 J | 160 J | 200 U | 180 J | 200 U | 300 | 630 | 200 U | 3800 | 200 U | 8000 | 4300 | 200 U | 970 | 16000 | 200 U | 6400 |
| E1SS5B1-10nw | JBR46 | 220 U | 220 U | 430 U | 220 U | 430 U | 180 J | 220 U | 90 J | 93 J | 220 UJ | 220 UJ | 220 UJ | 220 UJ | 220 U | 220 U | 90 J | 220 UJ | 220 U | 220 U | 920 | 160 J | 220 UJ | 220 U | 610 | 220 U | 700 |
| E1SS5B1-25nw | JBR47 | 29 J | 49 J | 400 U | 210 U | 400 U | 570 | 61 J | 270 | 660 | 470 | 620 | 260 | 240 | 190 J | 110 J | 680 | 210 U | 250 | 210 U | 2000 | 310 | 330 | 58 J | 1500 | 210 U | 1600 |
| E1SS5B2-25 | JBR49 | 990 | 2400 | 390 U | 200 U | 390 U | 17000 | 200 U | 1700 | 1700 | 270 | 540 | 71 J | 150 J | 54 J | 660 | 1300 | 200 U | 8000 | 200 U | 20000 | 9100 | 110 J | 2800 | 36000 J | 200 U | 12000 |
| E1SS5B3-25ne | JBR50 | 13000 | 32000 | 10000 U | 5000 | 10000 | 200000 | 5000 U | 21000 | 17000 | 2800 | 4600 J | 5000 U | 1700 J | 5000 U | 7900 | 15000 | 5000 U | 92000 | 5000 U | 200000 | 100000 | 5000 U | 47000 | 390000 J | 5000 U | 130000 |
| E1SS6B1-10nw | JBR51 | 230 U | 230 U | 450 U | 230 U | 450 U | 79 J | 230 U | 230 U | 230 U | 230 UJ | 230 UJ | 230 UJ | 230 UJ | 230 U | 230 U | 230 U | 230 UJ | 230 U | 230 U | 100 J | 230 U | 230 UJ | 230 U | 180 J | 230 U | 88 J |
| E1SS6B1-25nw | JBR52 | 210 U | 210 U | 420 U | 210 U | 420 U | 140 J | 210 U | 210 U | 210 U | 210 U | 210 U | 210 U | 210 U | 210 U | 210 U | 210 U | 210 U | 72 J | 210 U | 290 | 95 J | 210 U | 210 U | 400 | 210 U | 220 |
| E1SS6B2-10ne | JBR53 | 210 U | 210 U | 410 U | 210 U | 410 U | 210 U | 210 U | 210 U | 210 U | 210 UJ | 210 UJ | 210 UJ | 210 UJ | 210 U | 210 U | 210 U | 210 UJ | 210 U | 210 U | 210 U | 210 U | 210 UJ | 210 U | 48 J | 210 U | 210 U |
| E1SS6B2-25ne | JBR55 | 6900 | 16000 | 12000 U | 5800 U | 1900 J | 150000 | 5800 U | 13000 | 11000 | 5800 U | 2200 J | 5800 U | 1200 J | 5800 U | 4400 J | 9500 | 5800 U | 53000 | 5800 U | 180000 | 61000 | 5800 U | 20000 | 330000 | 5800 U | 81000 |
| E2-0-10-101409 | JBR56 | 230 U | 230 U | 450 U | 230 U | 450 U | 230 U | 230 U | 230 U | 230 U | 230 U | 230 U | 230 U | 230 U | 230 U | 230 U | 230 U | 230 U | 230 U | 230 U | 230 U | 230 U | 230 UJ | 230 U | 230 U | 230 U | 230 U |
| E2-0-25-101409 | JBR57 | 600 | 1800 | 430 U | 220 U | 430 U | 14000 | 220 U | 1700 | 1400 | 230 | 150 J | 220 U | 280 | 220 U | 470 | 1200 | 220 U | 4900 | 220 U | 12000 | 6100 | 220 UJ | 2000 | 24000 | 220 U | 9500 |
| E2-100-10-101509 | JBR66 | 220 U | 220 U | 420 U | 220 U | 420 U | 220 U | 220 U | 220 U | 220 U | 220 U | 220 U | 220 U | 220 U | 220 U | 220 U | 220 U | 220 U | 220 U | 220 U | 220 U | 220 U | 220 U | 220 U | 220 U | 220 U | 220 U |
| E2-100-25-101509 | JBR67 | 210 U | 210 U | 410 U | 210 U | 410 U | 210 U | 210 U | 210 U | 210 U | 210 UJ | 210 UJ | 210 UJ | 210 UJ | 210 U | 210 U | 210 U | 210 UJ | 210 U | 210 U | 88 J | 210 U | 210 UJ | 210 U | 210 U | 210 U | 77 J |
| E2-125-10-101609 | JBR69 | 220 U | 220 U | 430 U | 220 U | 430 U | 220 U | 220 U | 220 U | 220 U | 220 UJ | 220 UJ | 220 UJ | 220 UJ | 220 U | 220 U | 220 U | 220 UJ | 220 U | 220 U | 220 U | 220 U | 220 UJ | 220 U | 220 U | 130 J | 220 U |
| E2-125-25-101609 | JBR70 | 210 U | 210 U | 410 U | 210 U | 410 U | 290 | 210 U | 42 J | 54 J | 210 UJ | 210 UJ | 210 UJ | 210 UJ | 210 U | 210 U | 60 J | 210 UJ | 100 J | 210 U | 460 | 140 J | 210 UJ | 210 U | 540 | 94 J | 330 |
| E2-150-10-101609 | JBR71 | 190 U | 190 U | 370 U | 190 U | 370 U | 190 U | 190 U | 190 U | 190 UJ | 190 UJ | 190 UJ | 190 UJ | 190 UJ | 190 U | 190 U | 190 UJ | 190 UJ | 190 U | 190 U | 190 UJ | 190 U | 190 UJ | 190 U | 190 U | 130 J | 190 UJ |
| E2-150-25-101609 | JBR72 | 210 U | 210 U | 410 U | 210 U | 410 U | 210 U | 210 U | 210 U | 210 U | 210 U | 210 U | 210 U | 210 U | 210 U | 210 U | 210 U | 210 UJ | 210 U | 210 U | 210 U | 210 U | 210 UJ | 210 U | 210 U | 74 J | 210 U |
| E2-175-10-101609 | JBR74 | 220 U | 220 U | 420 U | 220 U | 420 U | 220 U | 62 J | 220 U | 220 U | 220 UJ | 220 UJ | 220 UJ | 220 UJ | 220 U | 220 U | 220 U | 220 UJ | 220 U | 220 U | 220 U | 220 U | 220 UJ | 220 U | 77 J | 170 J | 220 U |
| E2-175-25-101609 | JBR75 | 220 U | 220 U | 430 U | 220 U | 430 U | 350 | 67 J | 36 J | 48 J | 220 UJ | 220 UJ | 220 UJ | 220 UJ | 220 U | 220 U | 57 J | 220 UJ | 150 J | 220 U | 460 | 240 | 220 UJ | 220 U | 730 | 170 J | 290 |
| E2-200-10-101909 | JBR76 | 190 U | 190 U | 370 U | 190 U | 370 U | 190 U | 47 J | 190 U | 190 U | 190 UJ | 190 UJ | 190 UJ | 190 UJ | 190 U | 190 U | 190 U | 190 UJ | 190 U | 190 U | 190 U | 190 U | 190 UJ | 190 U | 190 U | 130 J | 190 U |
| E2-200-25-101909 | JBR77 | 210 U | 210 U | 400 U | 210 U | 400 U | 210 U | 63 J | 210 U | 210 U | 210 UJ | 210 UJ | 210 UJ | 210 UJ | 210 U | 210 U | 210 U | 210 UJ | 210 U | 210 U | 210 U | 210 U | 210 UJ | 210 U | 210 U | 140 J | 210 U |
| E2-225-10-101909 | JBR79 | 89 J | 51 J | 410 U | 210 U | 410 U | 1600 | 61 J | 350 | 300 | 210 UJ | 210 UJ | 210 UJ | 210 UJ | 210 U | 68 J | 250 | 210 UJ | 930 | 210 U | 3700 | 1100 | 210 UJ | 210 U | 5400 | 160 J | 2200 |
| E2-225-25-101909 | JBR80 | 210 U | 210 U | 410 U | 210 U | 410 U | 50 J | 42 J | 210 U | 210 U | 210 UJ | 210 UJ | 210 UJ | 210 UJ | 210 U | 210 U | 210 U | 210 UJ | 210 U | 210 U | 180 J | 45 J | 210 UJ | 210 U | 250 | 120 J | 120 J |
| E2-250-10-101909 | JBR81 | 190 U | 190 U | 370 U | 190 U | 370 U | 190 U | 190 U | 190 U | 190 U | 190 UJ | 190 UJ | 190 UJ | 190 UJ | 190 U | 190 U | 190 U | 190 UJ | 190 U | 190 U | 190 U | 190 U | 190 UJ | 190 U | 190 U | 74 J | 190 U |

**Table 7-15. Excavation Confirmation Sampling.**
**Semi-Volatile Organic Compounds (SVOCs) in Soil (µg/kg) with at Least One Result Above the RLs.**

| Location ID | Sample Name | 1,1'-Biphenyl | 2-Methylnaphthalene | 2-Nitroaniline | 4-Chloro-3-methylphenol | 4-Nitrophenol | Acenaphthene | Acetophenone | Anthracene | Benz(a)anthracene | Benzo(a) pyrene | Benzo(b) fluoranthene | Benzo(g,h,i) perylene | Benzo(k) fluoranthene | Bis (2-ethylhexyl) phthalate | Carbazole | Chrysene | Dibenz(a,h) anthracene | Dibenzofuran | Di-n-octylphthalate | Fluoranthene | Fluorene | Indeno (1,2,3-cd) pyrene | Naphthalene | Phenanthrene | Phenol | Pyrene |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROD Based Remedial Goals | | -- | -- | -- | -- | -- | -- | -- | -- | 2,500 | 250 | -- | -- | 2,500 | -- | -- | 250,000 | 250 | -- | -- | -- | -- | 2,500 | -- | -- | -- | -- |
| ROD Based Criteria for Excavating Soil | | -- | -- | -- | -- | -- | -- | -- | -- | **250,000** | **25,000** | -- | -- | **250,000** | -- | -- | **2.5E+07** | **25,000** | -- | -- | -- | -- | **250,000** | -- | -- | -- | -- |
| Regional Screening Levels - Industrial Soil | | -- | -- | -- | -- | -- | 3.30E+07 | -- | 1.70E+08 | NA | NA | 2,100 | -- | NA | -- | -- | NA | NA | -- | -- | 2.20E+07 | 2.20E+07 | NA | 18,000 | -- | -- | 1.40E+07 |
| E2-250-25-101909 | JBR82 | 220 U | 220 U | 420 U | 220 U | 420 U | 220 U | 220 U | 220 U | 220 U | 220 UJ | 220 UJ | 220 UJ | 220 UJ | 220 U | 220 U | 220 U | 220 UJ | 220 U | 220 U | 220 U | 220 U | 220 UJ | 220 U | 220 U | 100 J | 220 U |
| E2-25-10-101409 | JBR59 | 790 | 2500 | 440 U | 230 U | 440 U | 20000 | 230 U | 2200 | 1900 | 300 | 240 | 230 U | 370 | 230 U | 600 | 1500 | 230 U | 6600 | 230 U | 15000 | 8800 | 100 J | 2500 | 33000 | 230 U | 13000 |
| E2-25-25-101409 | JBR60 | 53 J | 130 J | 420 U | 220 U | 420 U | 1300 | 220 U | 140 J | 110 J | 220 U | 220 U | 220 U | 220 U | 220 U | 52 J | 110 J | 220 U | 480 | 220 U | 1200 | 620 | 220 UJ | 100 J | 2400 | 220 U | 940 |
| E2-50-10-101509 | JBR62 | 200 U | 200 U | 400 U | 200 U | 400 U | 200 U | 200 U | 200 U | 200 U | 200 UJ | 200 UJ | 200 UJ | 200 UJ | 200 U | 200 U | 200 U | 200 UJ | 200 U | 200 U | 200 U | 200 U | 200 UJ | 200 U | 200 U | 200 U | 200 U |
| E2-50-25-101509 | JBR63 | 210 U | 210 U | 410 U | 210 U | 410 U | 210 U | 210 U | 210 U | 210 U | 210 U | 210 U | 210 U | 210 U | 210 U | 210 U | 210 U | 210 U | 210 U | 210 U | 210 U | 210 U | 210 UJ | 210 U | 210 U | 210 U | 210 U |
| E2-75-10-101509 | JBR64 | 58 J | 48 J | 450 U | 230 U | 450 U | 1500 | 230 U | 190 J | 140 J | 230 U | 230 U | 230 U | 230 U | 230 U | 90 J | 130 J | 230 U | 510 | 230 U | 1500 | 540 | 230 UJ | 73 J | 3000 | 230 U | 1200 |
| E2-75-25-101509 | JBR65 | 210 U | 210 U | 410 U | 210 U | 410 U | 210 U | 210 U | 210 U | 210 U | 210 UJ | 210 UJ | 210 UJ | 210 UJ | 210 U | 210 U | 210 U | 210 UJ | 210 U | 210 U | 210 U | 210 U | 210 UJ | 210 U | 210 U | 210 U | 210 U |
| E2BS-101409 | JBR61 | 2100 U | 2100 U | 4000 U | 2100 U | 4000 U | 480 J | 2100 U | 1300 J | 8000 | 7200 | 5600 | 3900 | 5200 | 2100 U | 360 J | 9000 | 2100 U | 2100 U | 2100 U | 13000 | 2100 U | 5000 J | 2100 U | 3800 | 2100 U | 13000 |

**Table 7-16. Excavation Confirmation Sampling.**
**Polychlorinated Biphenyls (PCBs) in Soil (µg/kg) with at Least One Result Above the RLs.**

| Location ID | Sample Name | Aroclor 1254 | Total PCBs |
|---|---|---|---|
| ROD Based Remdial Goals | | -- | 1000 |
| ROD Based Criteria for Excavation | | -- | **20,000** |
| Regional Screening Levels - Industrial Soil | | 740 | -- |
| E01S01B04 | 09090141 | 420 | 720 |
| E01S02B01 | 09090152 | 1300 | 1600 |
| E01S02B02 | JBR27 | 1700 | 1864 |
| E01S02B03f | JBR28 | 1700 | 1868 |
| E01S02B04f | JBR29 | 520 J | 696 |
| E01S03B01w | JBR30 | 40 UJ | 180 |
| E01S03B01w | JBR32 | 37 U | 167 |
| E01S03B02f | JBR33 | 140 | 296 |
| E01S03B03f | JBR34 | 150 | 314 |
| E01S03B04W14 | JBR36 | 890 | 1054 |
| E01S03B04W25 | JBR37 | 77 | 241 |
| E01S04B01W10 | JBR38 | 42 U | 189 |
| E01S04B01W25 | JBR40 | 39 U | 176 |
| E1SS4B2 | JBR42 | 120 | 252 |
| E1SS4B3 | JBR43 | 120 | 252 |
| E1SS4B4-12e | JBR41 | 33 U | 149 |
| E1SS4B4-25e | JBR45 | 33 U | 149 |
| E1SS5B1-10nw | JBR46 | 33 U | 149 |
| E1SS5B2-25 | JBR49 | 160 | 316 |
| E1SS5B3-25ne | JBR50 | 890 J | 1050 |
| E1SS6B1-10nw | JBR51 | 46 U | 207 |
| E1SS6B1-25nw | JBR52 | 71 | 235 |
| E1SS6B2-10ne | JBR53 | 290 | 454 |
| E1SS6B2-25ne | JBR55 | 730 | 882 |
| E2-0-10-101409 | JBR56 | 45 U | 203 |
| E2-0-25-101409 | JBR57 | 43 U | 194 |
| E2-100-10-101509 | JBR66 | 42 U | 189 |
| E2-100-25-101509 | JBR67 | 40 J | 200 |
| E2-125-10-101609 | JBR69 | 43 U | 194 |
| E2-125-25-101609 | JBR70 | 94 | 258 |
| E2-150-10-101609 | JBR71 | 37 U | 167 |
| E2-150-25-101609 | JBR72 | 41 U | 185 |
| E2-175-10-101609 | JBR74 | 43 U | 194 |
| E2-175-25-101609 | JBR75 | 200 | 372 |
| E2-200-10-101909 | JBR76 | 37 U | 167 |
| E2-200-25-101909 | JBR77 | 25 J | 185 |
| E2-225-10-101909 | JBR79 | 41 U | 185 |
| E2-225-25-101909 | JBR80 | 40 J | 204 |
| E2-250-10-101909 | JBR81 | 37 U | 167 |
| E2-250-25-101909 | JBR82 | 42 U | 189 |
| E2-25-10-101409 | JBR59 | 44 U | 198 |
| E2-25-25-101409 | JBR60 | 43 U | 194 |
| E2-50-10-101509 | JBR62 | 39 U | 176 |
| E2-50-25-101509 | JBR63 | 40 U | 180 |
| E2-75-10-101509 | JBR64 | 45 U | 203 |
| E2-75-25-101509 | JBR65 | 41 U | 185 |
| E2BS-101409 | JBR61 | 2600 | 2760 |

**Table 7-17. Excavation Confirmation Sampling.**
**Total Petroleum Hydrocarbons (TPH) - Diesel Range in Soil (mg/kg)**
**with at Least One Result Above the RLs.**

| Location ID | Sample Name | Diesel Range Organics | Lube Oil |
|---|---|---|---|
| ROD Based Remedial Goals | | -- | -- |
| ROD Based Criteria for Excavation | | | |
| Regional Screening Levels - Industrial Soil | | -- | -- |
| E01S01B01 | 09090118 | 3500 | 470 |
| E01S01B01 | 09090119 | 1000 | 250 U |

**Table 7-18. On-Site Water Treatment Facility GAC Effluent Sampling.**
**Summary of All Contaminants in Water Produced by First Granular Activated Carbon Tank (µg/L).**

| Location ID | Wastewater Discharge Limitations | IF091809 | IF092209 | IF100209 | IF101509 |
|---|---|---|---|---|---|
| Sample Name | | 09090137 | 09090148 | 09100108 | 09100163 |
| Sample Date | | 09/18/09 | 09/22/09 | 10/02/09 | 10/15/09 |
| Location Description | | Effluent From GAC Tank#1 | Effluent From GAC Tank#1 | Effluent From GAC Tank#1 | Effluent From GAC Tank#1 |
| **SVOC, ug/L** | | | | | |
| 1,1'-Biphenyl | -- | -- | | | |
| 1,2,4,5-Tetrachlorobenzene | -- | -- | | | |
| 1,2,4-Trichlorobenzene | -- | 1 U | | | |
| 1,2-Dichlorobenzene | -- | 1 U | | | |
| 1,3-Dichlorobenzene | -- | 1 U | | | |
| 1,4-Dichlorobenzene | -- | 1 U | | | |
| 2,2'-Oxybis (1-chloropropane) | -- | -- | | | |
| 2,3,4,6-Tetrachlorophenol | -- | -- | | | |
| 2,4,5-Trichlorophenol | -- | 10 U | | | |
| 2,4,6-Trichlorophenol | -- | 10 U | | | |
| 2,4-Dichlorophenol | -- | 10 U | | | |
| 2,4-Dimethylphenol | -- | 10 U | | | |
| 2,4-Dinitrophenol | -- | 30 U | | | |
| 2,4-Dinitrotoluene | -- | 1 U | | | |
| 2,6-Dinitrotoluene | -- | 1 U | | | |
| 2-Chloronaphthalene | -- | 1 U | | | |
| 2-Chlorophenol | -- | 10 U | | | |
| 2-Methylnaphthalene | -- | 1 U | | | |
| 2-Methylphenol | -- | 10 U | | | |
| 2-Nitroaniline | -- | 1 U | | | |
| 2-Nitrophenol | -- | 10 U | | | |
| 3,3'-Dichlorobenzidine | -- | -- | | | |
| 3-Nitroaniline | -- | 3 U | | | |
| 4,6-Dinitro-2-methylphenol | -- | 30 U | | | |
| 4-Bromophenyl phenyl ether | -- | 1 U | | | |
| 4-Chloro-3-methylphenol | -- | 10 U | | | |
| 4-Chloroaniline | -- | 3 U | | | |
| 4-Chlorophenyl phenyl ether | -- | 1 U | | | |
| 4-Methylphenol | -- | 10 U | | | |
| 4-Nitroaniline | -- | 10 U | | | |
| 4-Nitrophenol | -- | 10 U | | | |
| Acenaphthene | -- | 1 U | | | |
| Acenaphthylene | -- | 1 U | | | |
| Acetophenone | -- | -- | | | |
| Anthracene | -- | 1 U | | | |
| Atrazine | -- | -- | | | |
| Benz(a)anthracene | -- | 1 U | | | |
| Benzaldehyde | -- | -- | | | |
| Benzo(a) pyrene | -- | 1 U | | | |

**Table 7-18. On-Site Water Treatment Facility GAC Effluent Sampling.**
**Summary of All Contaminants in Water Produced by First Granular Activated Carbon Tank (µg/L).**

| Location ID | Wastewater Discharge Limitations | IF091809 | IF092209 | IF100209 | IF101509 |
|---|---|---|---|---|---|
| Sample Name | | 09090137 | 09090148 | 09100108 | 09100163 |
| Sample Date | | 09/18/09 | 09/22/09 | 10/02/09 | 10/15/09 |
| Location Description | | Effluent From GAC Tank#1 | Effluent From GAC Tank#1 | Effluent From GAC Tank#1 | Effluent From GAC Tank#1 |
| Benzo(b) fluoranthene | -- | 1 U | | | |
| Benzo(g,h,i) perylene | -- | 1 U | | | |
| Benzo(k) fluoranthene | -- | 1 U | | | |
| Benzoic acid | -- | 100 U | | | |
| Benzyl Alcohol | -- | 1 U | | | |
| Bis (2-chloroethoxy) methane | -- | 1 U | | | |
| Bis (2-chloroethyl) ether | -- | 1 U | | | |
| Bis (2-chloroisopropyl) ether | -- | 1 U | | | |
| Bis (2-ethylhexyl) phthalate | -- | 10 U | | | |
| Butylbenzylphthalate | -- | 1 U | | | |
| Caprolactam | -- | -- | | | |
| Carbazole | -- | 1 U | | | |
| Chrysene | -- | 1 U | | | |
| Dibenz(a,h) anthracene | -- | 1 U | | | |
| Dibenzofuran | -- | 1 U | | | |
| Diethylphthalate | -- | 1 U | | | |
| Dimethylphthalate | -- | 1 U | | | |
| Di-n-butylphthalate | -- | 1 U | | | |
| Di-n-octylphthalate | -- | 1 U | | | |
| Fluoranthene | -- | 1 U | | | |
| Fluorene | -- | 1 U | | | |
| Hexachlorobenzene | -- | 1 U | | | |
| Hexachlorobutadiene | -- | 1 U | | | |
| Hexachlorocyclopentadiene | -- | 3 U | | | |
| Hexachloroethane | -- | 1 U | | | |
| Indeno (1,2,3-cd) pyrene | -- | 1 U | | | |
| Isophorone | -- | 1 U | | | |
| Naphthalene | -- | 1 U | | | |
| Nitrobenzene | -- | 1 U | | | |
| N-Nitrosodi-n-propylamine | -- | 1 U | | | |
| N-Nitrosodiphenylamine | -- | 1 U | | | |
| Pentachlorophenol | -- | 10 U | | | |
| Phenanthrene | -- | 1 U | | | |
| Phenol | -- | 10 U | | | |
| Pyrene | -- | 1 U | | | |
| **VOC, ug/L** | | | | | |
| 1,1,1,2-Tetrachloroethane | -- | 1 U | 1 U | 1 U | 1 U |
| 1,1,1-Trichloroethane | -- | 1 U | 1 U | 1 U | 1 U |
| 1,1,2,2-Tetrachloroethane | -- | 1 U | 1 U | 1 U | 1 U |
| 1,1,2-Trichloro-1,2,2-Trifluoroethane | -- | -- | -- | -- | -- |

**Table 7-18. On-Site Water Treatment Facility GAC Effluent Sampling.**
**Summary of All Contaminants in Water Produced by First Granular Activated Carbon Tank (µg/L).**

| Location ID | Wastewater Discharge Limitations | IF091809 | IF092209 | IF100209 | IF101509 |
|---|---|---|---|---|---|
| Sample Name | | 09090137 | 09090148 | 09100108 | 09100163 |
| Sample Date | | 09/18/09 | 09/22/09 | 10/02/09 | 10/15/09 |
| Location Description | | Effluent From GAC Tank#1 | Effluent From GAC Tank#1 | Effluent From GAC Tank#1 | Effluent From GAC Tank#1 |
| 1,1,2-Trichloroethane | -- | 1 U | 1 U | 1 U | 1 U |
| 1,1-Dichloroethane | -- | 1 U | 1 U | 1 U | 1 U |
| 1,1-Dichloroethene | -- | 1 U | 1 U | 1 U | 1 U |
| 1,1-Dichloropropene | -- | 1 U | 1 U | 1 U | 1 U |
| 1,2,3-Trichlorobenzene | -- | 1 U | 1 U | 1 U | 1 U |
| 1,2,3-Trichloropropane | -- | 1 U | 1 U | 1 U | 1 U |
| 1,2,4-Trichlorobenzene | -- | 1 U | 1 U | 1 U | 1 U |
| 1,2,4-Trimethylbenzene | -- | 1 U | 1 U | 1 U | 1 U |
| 1,2-Dibromo-3-chloropropane | -- | 1 U | 1 U | 1 U | 1 U |
| 1,2-Dibromoethane | -- | 1 U | 1 U | 1 U | 1 U |
| 1,2-Dichlorobenzene | -- | 1 U | 1 U | 1 U | 1 U |
| 1,2-Dichloroethane | -- | 1 U | 1 U | 1 U | 1 U |
| 1,2-Dichloropropane | -- | 1 U | 1 U | 1 U | 1 U |
| 1,3,5-Trimethylbenzene | -- | 1 U | 1 U | 1 U | 1 U |
| 1,3-Dichlorobenzene | -- | 1 U | 1 U | 1 U | 1 U |
| 1,3-Dichloropropane | -- | 1 U | 1 U | 1 U | 1 U |
| 1,4-Dichlorobenzene | -- | 1 U | 1 U | 1 U | 1 U |
| 1,4-Dioxane | -- | -- | -- | -- | -- |
| 2,2-Dichloropropane | -- | 1 U | 1 U | 1 U | 1 U |
| 2-Butanone | -- | 10 U | 10 U | 10 U | 10 U |
| 2-Chlorotoluene | -- | 1 U | 1 U | 1 U | 1 U |
| 2-Hexanone | -- | 10 U | 10 U | 10 U | 10 U |
| 4-Chlorotoluene | -- | 1 U | 1 U | 1 U | 1 U |
| 4-Isopropyltoluene | -- | 1 U | 1 U | 1 U | 1 U |
| 4-Methyl-2-pentanone | -- | 10 U | 10 U | 10 U | 10 U |
| Acetone | -- | 10 U | 10 U | 10 U | 10 U |
| Benzene | -- | 1 U | 1 U | 1 U | 1 U |
| Bromobenzene | -- | 1 U | 1 U | 1 U | 1 U |
| Bromochloromethane | -- | -- | -- | -- | -- |
| Bromodichloromethane | -- | 1 U | 1 U | 1 U | 1 U |
| Bromoform | -- | 1 U | 1 U | 1 U | 1 U |
| Bromomethane | -- | 1 U | 1 U | 1 U | 1 U |
| Carbon disulfide | -- | -- | -- | -- | -- |
| Carbon tetrachloride | -- | 1 U | 1 U | 1 U | 1 U |
| Chlorobenzene | -- | 1 U | 1 U | 1 U | 1 U |
| Chloroethane | -- | 1 U | 1 U | 1 U | 1 U |
| Chloroform | -- | 1 U | 1 U | 1 U | 1 U |
| Chloromethane | -- | 1 U | 1 U | 1 U | 1 U |
| cis-1,2-Dichloroethene | -- | 1 U | 1 U | 1 U | 1 U |
| cis-1,3-Dichloropropene | -- | 1 U | 1 U | 1 U | 1 U |
| Cyclohexane | -- | -- | -- | -- | -- |
| Dibromochloromethane | -- | 1 U | 1 U | 1 U | 1 U |

**Table 7-18. On-Site Water Treatment Facility GAC Effluent Sampling.**
**Summary of All Contaminants in Water Produced by First Granular Activated Carbon Tank (µg/L).**

| Location ID | Wastewater Discharge Limitations | IF091809 | IF092209 | IF100209 | IF101509 |
|---|---|---|---|---|---|
| Sample Name | | 09090137 | 09090148 | 09100108 | 09100163 |
| Sample Date | | 09/18/09 | 09/22/09 | 10/02/09 | 10/15/09 |
| Location Description | | Effluent From GAC Tank#1 | Effluent From GAC Tank#1 | Effluent From GAC Tank#1 | Effluent From GAC Tank#1 |
| Dibromomethane | -- | 1 U | 1 U | 1 U | 1 U |
| Dichlorodifluoromethane | -- | 1 U | 1 U | 1 U | 1 U |
| Ethylbenzene | -- | 1 U | 1 U | 1 U | 1 U |
| Hexachlorobutadiene | -- | 1 U | 1 U | 1 U | 1 U |
| Isopropylbenzene | -- | 1 U | 1 U | 1 U | 1 U |
| m,p-Xylene | -- | 2 U | 2 U | 2 U | 2 U |
| Methyl acetate | -- | -- | -- | -- | -- |
| Methyl tert butyl ether | -- | 1 U | 1 U | 1 U | 1 U |
| Methylcyclohexane | -- | -- | -- | -- | -- |
| Methylene chloride | -- | 5000 U | 5 U | 5000 U | 5 U |
| Naphthalene | -- | 1 U | 1 U | 1 U | 1 U |
| n-Propylbenzene | -- | 1 U | 1 U | 1 U | 1 U |
| o-Xylene | -- | 1 U | 1 U | 1 U | 1 U |
| sec-Butylbenzene | -- | 1 U | 1 U | 1 U | 1 U |
| Styrene | -- | 1 U | 1 U | 1 U | 1 U |
| tert-Butylbenzene | -- | 1 U | 1 U | 1 U | 1 U |
| Tetrachloroethene | -- | 1 U | 1 U | 1 U | 1 U |
| Toluene | -- | 1 U | 1 U | 1 U | 1 U |
| trans-1,2-Dichloroethene | -- | 1 U | 1 U | 1 U | 1 U |
| trans-1,3-Dichloropropene | -- | 1 U | 1 U | 1 U | 1 U |
| Trichloroethene | -- | 1 U | 1 U | 1 U | 1 U |
| Trichlorofluoromethane | -- | 1 U | 1 U | 1 U | 1 U |
| Vinyl Chloride | -- | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| **PCBs, ug/L** | | | | | |
| Aroclor 1016 | -- | 0.1 U | | | |
| Aroclor 1221 | -- | 0.1 U | | | |
| Aroclor 1232 | -- | 0.1 U | | | |
| Aroclor 1242 | -- | 0.1 U | | | |
| Aroclor 1248 | -- | 0.1 U | | | |
| Aroclor 1254 | -- | 0.1 U | | | |
| Aroclor 1260 | -- | 0.1 U | | | |
| Aroclor 1262 | -- | -- | | | |
| Aroclor 1268 | -- | -- | | | |
| Total PCBs | -- | 0.4 | | | |
| **METALS, ug/L** | | | | | |
| Antimony | -- | -- | | | |
| Arsenic | 160 | 25 | | | |
| Barium | -- | -- | | | |
| Beryllium | -- | -- | | | |

**Table 7-18. On-Site Water Treatment Facility GAC Effluent Sampling.**
**Summary of All Contaminants in Water Produced by First Granular Activated Carbon Tank (µg/L).**

| Location ID | Wastewater Discharge Limitations | IF091809 | IF092209 | IF100209 | IF101509 |
|---|---|---|---|---|---|
| Sample Name | | 09090137 | 09090148 | 09100108 | 09100163 |
| Sample Date | | 09/18/09 | 09/22/09 | 10/02/09 | 10/15/09 |
| Location Description | | Effluent From GAC Tank#1 | Effluent From GAC Tank#1 | Effluent From GAC Tank#1 | Effluent From GAC Tank#1 |
| Cadmium | 240 | 1 U | | | |
| Chromium | 2,700 | 11.2 | | | |
| Copper | 3,840 | 110 | | | |
| Lead | 810 | 55 | | | |
| Mercury | 3.5 | 0.2 U | | | |
| Nickel | 2,450 | 27.6 | | | |
| Selenium | -- | -- | | | |
| Silver | 560 | 1 U | | | |
| Thallium | -- | -- | | | |
| Zinc | 2,610 | 1260 | | | |
| **INORGANICS** | | | | | |
| Total Cyanide, mg/L | | 0.005 U | | | |
| Oil and Grease - HEM, mg/L | | 3.0 | | | |
| | | | | | |

**Table 7-19. On-Site Water Treatment Facility Solid Sampling.**
**All Contaminants in Sediment and Filter Media.**

| Location ID | Wastewater Discharge Limitations | UT01-SED-102609 | GAC1-MID-102709 | GAC1-TOP-102709 | SF102709 |
|---|---|---|---|---|---|
| Sample Name | | 09100202 | 09100205 | 09100204 | 09100203 |
| Sample Date | | 10/26/09 | 10/27/09 | 10/27/09 | 10/27/09 |
| Location Description | | Sediment From Dirty Tank#1 | GAC from 60 Inches Below Inlet of GAC Tank #1 | GAC from Inlet of GAC Tank #1 | Sand from Inlet of Upstream Sand Trap |
| **SVOC, ug/kg** | | | | | |
| 1,1'-Biphenyl | -- | -- | -- | -- | -- |
| 1,2,4,5-Tetrachlorobenzene | -- | -- | -- | -- | -- |
| 1,2,4-Trichlorobenzene | -- | 30000 U | 300 U | 300 U | 3000 U |
| 1,2-Dichlorobenzene | -- | 30000 U | 300 U | 300 U | 3000 U |
| 1,3-Dichlorobenzene | -- | 30000 U | 300 U | 300 U | 3000 U |
| 1,4-Dichlorobenzene | -- | 30000 U | 300 U | 300 U | 3000 U |
| 2,2'-Oxybis (1-chloropropane) | -- | -- | -- | -- | -- |
| 2,3,4,6-Tetrachlorophenol | -- | -- | -- | -- | -- |
| 2,4,5-Trichlorophenol | -- | 300000 U | 3000 U | 3000 U | 30000 U |
| 2,4,6-Trichlorophenol | -- | 300000 U | 3000 U | 3000 U | 30000 U |
| 2,4-Dichlorophenol | -- | 300000 U | 3000 U | 3000 U | 30000 U |
| 2,4-Dimethylphenol | -- | 300000 U | 3000 U | 3000 U | 30000 U |
| 2,4-Dinitrophenol | -- | 900000 U | 9000 U | 9000 U | 90000 U |
| 2,4-Dinitrotoluene | -- | 30000 U | 300 U | 300 U | 3000 U |
| 2,6-Dinitrotoluene | -- | 30000 U | 300 U | 300 U | 3000 U |
| 2-Chloronaphthalene | -- | 30000 U | 300 U | 300 U | 3000 U |
| 2-Chlorophenol | -- | 300000 U | 3000 U | 3000 U | 30000 U |
| 2-Methylnaphthalene | -- | 310000 | 10000 | 23000 | 120000 |
| 2-Methylphenol | -- | 300000 U | 3000 U | 3000 U | 30000 U |
| 2-Nitroaniline | -- | 30000 U | 300 U | 300 U | 3000 U |
| 2-Nitrophenol | -- | 300000 U | 3000 U | 3000 U | 30000 U |
| 3,3'-Dichlorobenzidine | -- | -- | -- | -- | -- |
| 3-Nitroaniline | -- | 900000 U | 9000 U | 9000 U | 90000 U |
| 4,6-Dinitro-2-methylphenol | -- | 900000 U | 9000 U | 9000 U | 90000 U |
| 4-Bromophenyl phenyl ether | -- | 30000 U | 300 U | 300 U | 3000 U |
| 4-Chloro-3-methylphenol | -- | 300000 U | 3000 U | 3000 U | 30000 U |
| 4-Chloroaniline | -- | 3000 U | 30000 U | 30000 U | 300000 U |
| 4-Chlorophenyl phenyl ether | -- | 30000 U | 300 U | 300 U | 3000 U |
| 4-Methylphenol | -- | 300000 U | 51000 J | 130000 J | 30000 U |
| 4-Nitroaniline | -- | 900000 U | 9000 U | 9000 U | 90000 U |
| 4-Nitrophenol | -- | 300000 U | 3000 U | 3000 U | 30000 U |
| Acenaphthene | -- | 2300000 | 62000 J | 130000 J | 1100000 J |
| Acenaphthylene | -- | 30000 U | 300 U | 300 U | 3000 U |
| Acetophenone | -- | -- | -- | -- | -- |

**Table 7-19. On-Site Water Treatment Facility Solid Sampling.**
**All Contaminants in Sediment and Filter Media.**

| Location ID | Wastewater Discharge Limitations | UT01-SED-102609 | GAC1-MID-102709 | GAC1-TOP-102709 | SF102709 |
|---|---|---|---|---|---|
| Sample Name | | 09100202 | 09100205 | 09100204 | 09100203 |
| Sample Date | | 10/26/09 | 10/27/09 | 10/27/09 | 10/27/09 |
| Location Description | | Sediment From Dirty Tank#1 | GAC from 60 Inches Below Inlet of GAC Tank #1 | GAC from Inlet of GAC Tank #1 | Sand from Inlet of Upstream Sand Trap |
| Anthracene | -- | 240000 | 720 | 1900 | 100000 |
| Atrazine | -- | -- | -- | -- | -- |
| Benz(a)anthracene | -- | 200000 | 300 U | 300 U | 85000 |
| Benzaldehyde | -- | -- | -- | -- | -- |
| Benzo(a) pyrene | -- | 30000 U | 300 U | 300 U | 14000 |
| Benzo(b) fluoranthene | -- | 30000 U | 300 U | 300 U | 22000 |
| Benzo(g,h,i) perylene | -- | 30000 U | 300 U | 300 U | 3000 U |
| Benzo(k) fluoranthene | -- | 30000 U | 300 U | 300 U | 10000 |
| Benzoic acid | -- | 3000 U | 30000 U | 30000 U | 300000 U |
| Benzyl Alcohol | -- | 30000 U | 8200 | 14000 | 3000 U |
| Bis (2-chloroethoxy) methane | -- | 30000 U | 300 U | 300 U | 3000 U |
| Bis (2-chloroethyl) ether | -- | 30000 U | 300 U | 300 U | 3000 U |
| Bis (2-chloroisopropyl) ether | -- | 30000 U | 300 U | 300 U | 3000 U |
| Bis (2-ethylhexyl) phthalate | -- | 300000 U | 3000 U | 3000 U | 30000 U |
| Butylbenzylphthalate | -- | 30000 U | 300 U | 300 U | 3000 U |
| Caprolactam | -- | -- | -- | -- | -- |
| Carbazole | -- | 64000 | 2500 | 6200 | 24000 |
| Chrysene | -- | 170000 | 300 U | 300 U | 74000 |
| Dibenz(a,h) anthracene | -- | 30000 U | 300 U | 300 U | 3000 U |
| Dibenzofuran | -- | 1100000 | 13000 | 31000 | 470000 |
| Diethylphthalate | -- | 30000 U | 300 U | 300 U | 3000 U |
| Dimethylphthalate | -- | 30000 U | 300 U | 300 U | 3000 U |
| Di-n-butylphthalate | -- | 30000 U | 300 U | 560 | 3000 U |
| Di-n-octylphthalate | -- | 30000 U | 300 U | 300 U | 3000 U |
| Fluoranthene | -- | 2400000 | 3000 | 7600 | 1100000 J |
| Fluorene | -- | 1200000 | 14000 | 33000 | 540000 |
| Hexachlorobenzene | -- | 30000 U | 300 U | 300 U | 3000 U |
| Hexachlorobutadiene | -- | 30000 U | 300 U | 300 U | 3000 U |
| Hexachlorocyclopentadiene | -- | 90000 U | 900 U | 900 U | 9000 U |
| Hexachloroethane | -- | 30000 U | 300 U | 300 U | 3000 U |
| Indeno (1,2,3-cd) pyrene | -- | 30000 U | 300 U | 300 U | 3300 J |
| Isophorone | -- | 30000 U | 590 | 720 | 3000 U |
| Naphthalene | -- | 350000 | 40000 | 90000 J | 100000 |
| Nitrobenzene | -- | 30000 U | 300 U | 300 U | 3000 U |
| N-Nitrosodi-n-propylamine | -- | 30000 U | 300 U | 300 U | 3000 U |
| N-Nitrosodiphenylamine | -- | 30000 U | 300 U | 300 U | 3000 U |

**Table 7-19. On-Site Water Treatment Facility Solid Sampling.**
**All Contaminants in Sediment and Filter Media.**

| Location ID | Wastewater Discharge Limitations | UT01-SED-102609 | GAC1-MID-102709 | GAC1-TOP-102709 | SF102709 |
|---|---|---|---|---|---|
| Sample Name | | 09100202 | 09100205 | 09100204 | 09100203 |
| Sample Date | | 10/26/09 | 10/27/09 | 10/27/09 | 10/27/09 |
| Location Description | | Sediment From Dirty Tank#1 | GAC from 60 Inches Below Inlet of GAC Tank #1 | GAC from Inlet of GAC Tank #1 | Sand from Inlet of Upstream Sand Trap |
| Pentachlorophenol | -- | 300000 U | 3000 U | 3000 U | 30000 U |
| Phenanthrene | -- | 4900000 | 19000 | 48000 | 2300000 J |
| Phenol | -- | 300000 U | 14000 | 46000 | 30000 U |
| Pyrene | -- | 1600000 | 1800 | 4400 | 750000 J |
| **VOC, ug/kg** | | | | | |
| 1,1,1,2-Tetrachloroethane | -- | 50 U | 50 U | 50 U | 500 U |
| 1,1,1-Trichloroethane | -- | 50 U | 50 U | 50 U | 500 U |
| 1,1,2,2-Tetrachloroethane | -- | 50 U | 50 U | 50 U | 500 U |
| 1,1,2-Trichloro-1,2,2-Trifluoroethane | -- | -- | -- | -- | -- |
| 1,1,2-Trichloroethane | -- | 50 U | 50 U | 50 U | 500 U |
| 1,1-Dichloroethane | -- | 50 U | 50 U | 50 U | 500 U |
| 1,1-Dichloroethene | -- | 50 U | 50 U | 50 U | 500 U |
| 1,1-Dichloropropene | -- | 50 U | 50 U | 50 U | 500 U |
| 1,2,3-Trichlorobenzene | -- | 250 U | 250 U | 250 U | 2500 U |
| 1,2,3-Trichloropropane | -- | 50 U | 50 U | 50 U | 500 U |
| 1,2,4-Trichlorobenzene | -- | 250 U | 250 U | 250 U | 2500 U |
| 1,2,4-Trimethylbenzene | -- | 530 | 50 U | 150 | 1800 |
| 1,2-Dibromo-3-chloropropane | -- | 50 U | 50 U | 50 U | 500 U |
| 1,2-Dibromoethane | -- | 50 U | 50 U | 50 U | 500 U |
| 1,2-Dichlorobenzene | -- | 50 U | 50 U | 50 U | 500 U |
| 1,2-Dichloroethane | -- | 50 U | 50 U | 50 U | 500 U |
| 1,2-Dichloropropane | -- | 50 U | 50 U | 50 U | 500 U |
| 1,3,5-Trimethylbenzene | -- | 330 | 50 U | 50 U | 500 U |
| 1,3-Dichlorobenzene | -- | 50 U | 50 U | 50 U | 500 U |
| 1,3-Dichloropropane | -- | 50 U | 50 U | 50 U | 500 U |
| 1,4-Dichlorobenzene | -- | 50 U | 50 U | 50 U | 500 U |
| 1,4-Dioxane | -- | -- | -- | -- | -- |
| 2,2-Dichloropropane | -- | 50 U | 50 U | 50 U | 500 U |
| 2-Butanone | -- | 500 U | 1000 | 540 | 5000 U |
| 2-Chlorotoluene | -- | 50 U | 50 U | 50 U | 500 U |
| 2-Hexanone | -- | 500 U | 500 U | 500 U | 5000 U |
| 4-Chlorotoluene | -- | 50 U | 50 U | 50 U | 500 U |
| 4-Isopropyltoluene | -- | 50 U | 50 U | 50 U | 500 U |
| 4-Methyl-2-pentanone | -- | 500 U | 500 U | 500 U | 5000 U |

**Table 7-19. On-Site Water Treatment Facility Solid Sampling.**
**All Contaminants in Sediment and Filter Media.**

| Location ID | Wastewater Discharge Limitations | UT01-SED-102609 | GAC1-MID-102709 | GAC1-TOP-102709 | SF102709 |
|---|---|---|---|---|---|
| Sample Name | | 09100202 | 09100205 | 09100204 | 09100203 |
| Sample Date | | 10/26/09 | 10/27/09 | 10/27/09 | 10/27/09 |
| Location Description | | Sediment From Dirty Tank#1 | GAC from 60 Inches Below Inlet of GAC Tank #1 | GAC from Inlet of GAC Tank #1 | Sand from Inlet of Upstream Sand Trap |
| Acetone | -- | 500 U | 1200 | 500 U | 5000 U |
| Benzene | -- | 30 U | 30 U | 30 U | 300 U |
| Bromobenzene | -- | 50 U | 50 U | 50 U | 500 U |
| Bromochloromethane | -- | -- | -- | -- | -- |
| Bromodichloromethane | -- | 50 U | 50 U | 50 U | 500 U |
| Bromoform | -- | 50 U | 50 U | 50 U | 500 U |
| Bromomethane | -- | 500 U | 500 U | 500 U | 5000 U |
| Carbon disulfide | -- | -- | -- | -- | -- |
| Carbon tetrachloride | -- | 50 U | 50 U | 50 U | 500 U |
| Chlorobenzene | -- | 50 U | 50 U | 50 U | 500 U |
| Chloroethane | -- | 500 U | 500 UJ | 500 UJ | 5000 UJ |
| Chloroform | -- | 50 U | 50 U | 50 U | 500 U |
| Chloromethane | -- | 50 U | 50 U | 50 U | 500 U |
| cis-1,2-Dichloroethene | -- | 4600 | 1700 | 5700 | 2200 |
| cis-1,3-Dichloropropene | -- | 50 U | 50 U | 50 U | 500 U |
| Cyclohexane | -- | -- | -- | -- | -- |
| Dibromochloromethane | -- | 50 U | 50 U | 50 U | 500 U |
| Dibromomethane | -- | 50 U | 50 U | 50 U | 500 U |
| Dichlorodifluoromethane | -- | 500 U | 500 U | 500 U | 5000 U |
| Ethylbenzene | -- | 160 | 50 U | 50 U | 500 U |
| Hexachlorobutadiene | -- | 250 U | 250 U | 250 U | 2500 U |
| Isopropylbenzene | -- | 50 U | 50 U | 50 U | 500 U |
| m,p-Xylene | -- | 220 | 100 U | 100 U | 1000 U |
| Methyl acetate | -- | -- | -- | -- | -- |
| Methyl tert butyl ether | -- | 50 U | 50 U | 50 U | 500 U |
| Methylcyclohexane | -- | -- | -- | -- | -- |
| Methylene chloride | -- | 500 U | 500 U | 500 U | 5000 U |
| Naphthalene | -- | 56 | 120 J | 280 E | 88000 J |
| n-Propylbenzene | -- | 50 U | 50 U | 50 U | 500 U |
| o-Xylene | -- | 360 | 50 U | 50 U | 1500 |
| sec-Butylbenzene | -- | 50 U | 50 U | 50 U | 500 U |
| Styrene | -- | 50 U | 50 U | 50 U | 500 U |
| tert-Butylbenzene | -- | 50 U | 50 U | 50 U | 500 U |
| Tetrachloroethene | -- | 25 U | 130 | 690 | 250 U |
| Toluene | -- | 50 U | 50 U | 50 U | 500 U |
| trans-1,2-Dichloroethene | -- | 50 U | 50 U | 50 U | 500 U |

**Table 7-19. On-Site Water Treatment Facility Solid Sampling.**
**All Contaminants in Sediment and Filter Media.**

| Location ID | Wastewater Discharge Limitations | UT01-SED-102609 | GAC1-MID-102709 | GAC1-TOP-102709 | SF102709 |
|---|---|---|---|---|---|
| Sample Name | | 09100202 | 09100205 | 09100204 | 09100203 |
| Sample Date | | 10/26/09 | 10/27/09 | 10/27/09 | 10/27/09 |
| Location Description | | Sediment From Dirty Tank#1 | GAC from 60 Inches Below Inlet of GAC Tank #1 | GAC from Inlet of GAC Tank #1 | Sand from Inlet of Upstream Sand Trap |
| trans-1,3-Dichloropropene | -- | 50 U | 50 U | 50 U | 500 U |
| Trichloroethene | -- | 30 U | 370 | 1500 | 300 U |
| Trichlorofluoromethane | -- | 500 U | 500 UJ | 500 UJ | 5000 UJ |
| Vinyl Chloride | -- | 50 U | 95 | 210 | 500 U |
| **PCBs** | | | | | |
| Aroclor 1016 | -- | 100 U | 100 U | 100 U | 100 U |
| Aroclor 1221 | -- | 100 U | 100 U | 100 U | 100 U |
| Aroclor 1232 | -- | 100 U | 100 U | 100 U | 100 U |
| Aroclor 1242 | -- | 100 U | 100 U | 100 U | 100 U |
| Aroclor 1248 | -- | 100 U | 100 U | 100 U | 100 U |
| Aroclor 1254 | -- | 6000 | 100 | 200 | 3700 |
| Aroclor 1260 | -- | 100 U | 100 U | 100 U | 100 U |
| Aroclor 1262 | -- | -- | -- | -- | -- |
| Aroclor 1268 | -- | -- | -- | -- | -- |
| Total PCBs | -- | 6300 | 400 | 500 | 4000 |
| **Metals, mg/kg** | | | | | |
| Antimony | -- | -- | 1 U | 1 U | 1 U |
| Arsenic | 160 | 7.02 | 1.02 | 1 U | 3.06 |
| Barium | -- | 165 | 31.4 | 74 | 84.2 |
| Beryllium | -- | -- | 1 U | 1 U | 1 U |
| Cadmium | 240 | 1 U | 1 U | 1 U | 1 U |
| Chromium | 2,700 | 20.4 | 5.36 | 9.43 | 10.6 |
| Copper | 3,840 | -- | 24.5 | 47.1 | 21.3 |
| Lead | 810 | 10.2 | 1 U | 1 U | 6.09 |
| Mercury | 3.5 | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| Nickel | 2,450 | -- | 13.6 | 15.9 | 9.64 |
| Selenium | -- | 1 U | 1 U | 1 U | 1 U |
| Silver | 560 | 1 U | 1 U | 1 U | 1 U |
| Thallium | -- | -- | 1 U | 1 U | 1 U |
| Zinc | 2,610 | -- | 66.2 | 126 | 55.4 |
| **TPH, mg/kg** | | | | | |
| Diesel Range Organics | -- | 16000 | 1800 | 2700 | 19000 |
| Lube Oil | -- | 2800 | 250 U | 250 U | 2000 |

**Table 8-1. Summary of Analyses.**



| Location ID | Sample No. | CLP # | Date | Time | Location | Sample Type | No. of Containers | Location Type | Matrix | Laboratory | F&B Laboratory Work Order Number | SDG | VOCs 8260 | SVOCs 8270 | PCBs 8082 | NWTP H-Dx | Hg | Priority 13 Metals | RCRA Metals | Total Suspended Solids | pH | Hg 245.1 / 1631 | Metals * 200.8 | TSS 160.2 | VOCs 624 | SVOCs 625 | PCBs 608 | Cyanide 335.3 | Total Oil& Grease 1664 | Total Toxic Organics | CLP VOA | CLP SVOA | CLP PCB Aroclors | CLP Pesticide/ PCBs | CLP Total Metals / Hg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TP-1 | 09080401 | | 8/12/2009 | | Test Pit 1, 15ft deep | Grab | | Test Pits | soil | America Tacoma | | | 18-Aug | 20-Aug | | 20-Aug | | | | | | | | | | | | | | | | | | | |
| TP-2 | 09080402 | | 8/12/2009 | | Test Pit 2, 14.5ft deep | Grab | | Test Pits | soil | America Tacoma | | | 18-Aug | 20-Aug | | 20-Aug | | | | | | | | | | | | | | | | | | | |
| TP-3 | 09080403 | | 8/12/2009 | | Test Pit 3, 14.5ft deep | Grab | | Test Pits | soil | America Tacoma | | | 18-Aug | 20-Aug | | 20-Aug | | | | | | | | | | | | | | | | | | | |
| TP-4 | 09080404 | | 8/12/2009 | | Test Pit 4, 15ft deep | Grab | | Test Pits | soil | America Tacoma | | | 18-Aug | 20-Aug | | 20-Aug | | | | | | | | | | | | | | | | | | | |
| TP-5 | 09080405 | | 8/12/2009 | | Test Pit 5, 10ft deep | Grab | | Test Pits | soil | America Tacoma | | | 18-Aug | 20-Aug | | 20-Aug | | | | | | | | | | | | | | | | | | | |
| TP-5 | 09080406 | | 8/12/2009 | | Test Pit 5, 17ft deep | Grab | | Test Pits | soil | America Tacoma | | | 18-Aug | 20-Aug | | 20-Aug | | | | | | | | | | | | | | | | | | | |
| TP-6 | 09080407 | | 8/13/2009 | | Test Pit 6, 18ft deep | Grab | | Test Pits | soil | America Tacoma | | | 18-Aug | 20-Aug | | 20-Aug | | | | | | | | | | | | | | | | | | | |
| TP-7 | 09080408 | | 8/13/2009 | | Test Pit 7, 13ft deep | Grab | | Test Pits | soil | America Tacoma | | | 18-Aug | 20-Aug | | 20-Aug | | | | | | | | | | | | | | | | | | | |
| TP-7 | 09080409 | | 8/13/2009 | | Test Pit 7, 13ft deep, dup | Grab | | Test Pits | soil | America Tacoma | | | 18-Aug | 20-Aug | | 20-Aug | | | | | | | | | | | | | | | | | | | |
| TP-7 | 09080410 | | 8/13/2009 | | Test Pit 7, 13ft deep, water | Grab | | Test Pits | water | America Tacoma | | | 18-Aug | 20-Aug | | 20-Aug | | | | | | | | | | | | | | | | | | | |
| TP-8 | 09080411 | | 8/13/2009 | | Test Pit 8, 10ft deep | Grab | | Test Pits | soil | America Tacoma | | | 18-Aug | 20-Aug | | 20-Aug | | | | | | | | | | | | | | | | | | | |
| TP-9 | 09080412 | | 8/13/2009 | | Test Pit 9, 11ft deep | Grab | | Test Pits | soil | America Tacoma | | | 18-Aug | 20-Aug | | 20-Aug | | | | | | | | | | | | | | | | | | | |
| TP-10 | 09080413 | | 8/13/2009 | | Test Pit 10, 15ft deep | Grab | | Test Pits | soil | America Tacoma | | | 18-Aug | 20-Aug | | 20-Aug | | | | | | | | | | | | | | | | | | | |
| TP-11 | 09080414 | | 8/13/2009 | | Test Pit 11, 15ft deep | Grab | | Test Pits | soil | America Tacoma | | | 18-Aug | 20-Aug | | 20-Aug | | | | | | | | | | | | | | | | | | | |
| TP-12 | 09080415 | | 8/13/2009 | | Test Pit 12, 15ft deep | Grab | | Test Pits | soil | America Tacoma | | | 18-Aug | 20-Aug | | 20-Aug | | | | | | | | | | | | | | | | | | | |
| TP-13 | 09080416 | | 8/13/2009 | | Test Pit 13, 16ft deep | Grab | | Test Pits | soil | America Tacoma | | | 18-Aug | 20-Aug | | 20-Aug | | | | | | | | | | | | | | | | | | | |
| TP-27 | 09080417 | | 8/14/2009 | | Test Pit 27, 11ft deep | Grab | | Test Pits | soil | America Tacoma | | | 18-Aug | 20-Aug | | 20-Aug | | | | | | | | | | | | | | | | | | | |
| CC01090809 | 09090101 | - | 9/8/2009 | 13:15 | Soil at the bottom of containment cell #1 | Seven-point composite | 2 | Miscellaneous | soil | Friedman & Bruya | | - | X | X | X | X | X | X | | | | | | | | | | | | | | | | |
| CC03090809 | 09090103 | - | 9/8/2009 | 13:20 | Soil at the bottom of containment cell #3 | Seven-point composite | 2 | Miscellaneous | soil | Friedman & Bruya | | - | X | X | X | X | X | X | | | | | | | | | | | | | | | | |
| CC04090809 | 09090104 | - | 9/8/2009 | 13:22 | Soil at the bottom of containment cell #4 | Seven-point composite | 2 | Miscellaneous | soil | Friedman & Bruya | | - | X | X | X | X | X | X | | | | | | | | | | | | | | | | |
| CC05090809 | 09090105 | - | 9/8/2009 | 13:30 | Soil at the bottom of containment cell #5 | Seven-point composite | 2 | Miscellaneous | soil | Friedman & Bruya | | - | X | X | X | X | X | X | | | | | | | | | | | | | | | | |
| CC06090809 | 09090106 | - | 9/8/2009 | 13:35 | Soil at the bottom of containment cell #6 | Seven-point composite | 2 | Miscellaneous | soil | Friedman & Bruya | | - | X | X | X | X | X | X | | | | | | | | | | | | | | | | |
| CC07090809 | 09090107 | - | 9/8/2009 | 13:40 | Soil at the bottom of containment cell #7 | Seven-point composite | 2 | Miscellaneous | soil | Friedman & Bruya | | - | X | X | X | X | X | X | | | | | | | | | | | | | | | | |
| CC08090809 | 09090108 | - | 9/8/2009 | 13:30 | Soil at the bottom of containment cell #8 | Seven-point composite | 2 | Miscellaneous | soil | Friedman & Bruya | | - | X | X | X | X | X | X | | | | | | | | | | | | | | | | |
| CC09090809 | 09090109 | - | 9/8/2009 | 13:25 | Soil at the bottom of containment cell #9 | Seven-point composite | 2 | Miscellaneous | soil | Friedman & Bruya | | - | X | X | X | X | X | X | | | | | | | | | | | | | | | | |
| CC10090809 | 09090110 | - | 9/8/2009 | 13:30 | Soil at the bottom of containment cell #10 | Seven-point composite | 2 | Miscellaneous | soil | Friedman & Bruya | | - | X | X | X | X | X | X | | | | | | | | | | | | | | | | |
| CC11090809 | 09090111 | - | 9/8/2009 | 13:35 | Soil at the bottom of containment cell #11 | Seven-point composite | 2 | Miscellaneous | soil | Friedman & Bruya | | - | X | X | X | X | X | X | | | | | | | | | | | | | | | | |
| CC12090809 | 09090112 | - | 9/8/2009 | 13:40 | Soil at the bottom of containment cell #12 | Seven-point composite | 2 | Miscellaneous | soil | Friedman & Bruya | | - | X | X | X | X | X | X | | | | | | | | | | | | | | | | |
| CC13090809 | 09090113 | - | 9/8/2009 | 13:15 | Soil at the bottom of containment cell #13 | Seven-point composite | 2 | Miscellaneous | soil | Friedman & Bruya | | - | X | X | X | X | X | X | | | | | | | | | | | | | | | | |
| CC02090809 | 09090114 | - | 9/8/2009 | 13:15 | Soil at the bottom of containment cell #2 | Seven-point composite | 2 | Miscellaneous | soil | Friedman & Bruya | | - | X | X | X | X | X | X | | | | | | | | | | | | | | | | |
| CC14090809 | 09090114 | - | 9/8/2009 | 13:20 | Soil at the bottom of containment cell #14 | Seven-point composite | 2 | Miscellaneous | soil | Friedman & Bruya | | - | X | X | X | X | X | X | | | | | | | | | | | | | | | | |
| CC01091209 | 09090115 | - | 9/12/2009 | 15:02 | Containment cell #1. Source: Bay #1 of Shoring System #1 of Excavation #1 | Seven-point composite | 2 | Waste Soil Characterization | soil | Friedman & Bruya | 909135 | - | 14-Sep | 15-Sep | 14-Sep | 14-Sep | 14-Sep | 14-Sep | | | | | | | | | | | | | | | | |
| BF01091209 | 09090116 | - | 9/12/2009 | 15:00 | Backfill Pile #1 - 3-inch Minus Import Aggregate | Seven-point composite | 3 | Miscellaneous | rock | Friedman & Bruya | 909135 | - | 14-Sep | 14-Sep | 14-Sep | 14-Sep | 14-Sep | 14-Sep | | | | | | | | | | | | | | | | |

**Table 8-1. Summary of Analyses.**



| Location ID | Sample No. | CLP # | Date | Time | Location | Sample Type | No. of Containers | Location Type | Matrix | Laboratory | F&B Laboratory Work Order Number | SDG | VOCs 8260 | SVOCs 8270 | PCBs 8082 | NWTP H-Dx | Hg | Priority 13 Metals | RCRA Metals | Total Suspended Solids | pH | Hg 245.1 / 1631 | Metals * 200.8 | TSS 160.2 | VOCs 624 | SVOCs 625 | PCBs 608 | Cyanide 335.3 | Total Oil& Grease 1664 | Total Toxic Organics | CLP VOA | CLP SVOA | CLP PCB Aroclors | CLP Pesticide/ PCBs | CLP Total Metals / Hg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BF02091209 | 09090117 | - | 9/12/2009 | 15:10 | Backfill Pile #2 - 1-Inch Minus Import Aggregate | Seven-point composite | 3 | Miscellaneous | rock | Friedman & Bruya | 909135 | - | 14-Sep | 14-Sep | 14-Sep | 14-Sep | 14-Sep | 14-Sep | | | | | | | | | | | | | | | | | |
| E01S01B01 | 09090118 | - | 9/14/2009 | 10:50 | Excavation 1, Shoring System 1, Bay 1, South side wall at 12-feet bgs. Strong creosote odor, silvery gray irridescent sheen. | Grab sample | 3 | Confirmation Sample | soil | Friedman & Bruya | 909154 | - | X | X | | X | | | | | | | | | | | | | | | | | | | |
| E01S01B01 | 09090119 | - | 9/14/2009 | 9:52 | Excavation 1, Shoring System 1, Bay 1, West side wall at 12-feet bgs. Strong creosote odor, silvery gray irridescent sheen. | Grab sample | 3 | Confirmation Sample | soil | Friedman & Bruya | 909154 | - | X | X | | X | | | | | | | | | | | | | | | | | | | |
| CC02091509 | 09090120 | - | 9/15/2009 | 15:06 | Containment cell #2. Source: Bay #1 of Shoring System #1 of Excavation #1 | Seven-point composite | 2 | Waste Soil Characterization | soil | Friedman & Bruya | 909161 | - | 16-Sep | 17-Sep | 17-Sep | 16-Sep | 16-Sep | 17-Sep | | | | | | | | | | | | | | | | | |
| CC02091509 | 09090121 | - | 9/15/2009 | 16:07 | DUPLICATE OF 09090121 CC #2. Source: Bay #1 of Shoring System #1 of Excavation #1 | Seven-point composite | 2 | Waste Soil Characterization | soil | Friedman & Bruya | 909161 | - | 16-Sep | 17-Sep | 17-Sep | 16-Sep | 16-Sep | 17-Sep | | | | | | | | | | | | | | | | | |
| E01S01B01 | 09090122 | - | 9/15/2009 | 15:50 | Excavation 1, Shoring System 1, Bay 1, South side wall at 25-feet bgs. Strong creosote odor, silvery gray irridescent sheen. | Grab sample | 3 | Confirmation Sample | soil | Friedman & Bruya | 909161 | - | 16-Sep | 17-Sep | | | | | | | | | | | | | | | | | | | | | |
| E01S01B01 | 09090123 | - | 9/15/2009 | 16:10 | Excavation 1, Shoring System 1, Bay 1, West side wall at 25-feet bgs. Strong creosote odor, silvery gray irridescent sheen. | Grab sample | 3 | Confirmation Sample | soil | Friedman & Bruya | 909161 | - | 16-Sep | 17-Sep | | | | | | | | | | | | | | | | | | | | | |
| E01S01B02 | 09090124 | - | 9/16/2009 | 11:25 | Excavation 1, Shoring System 1, Bay 2, South side wall at 10 feet bgs. Faint creosote and diesel odor, silver and black streaked sheen. | Grab sample | 6 | Confirmation Sample | soil | Friedman & Bruya | 909175 | - | 27-Sep | 26-Sep | | | | | | | | | | | | | | | | | | | | | |
| CC03091609 | 09090125 | - | 9/16/2009 | 14:42 | Containment Cell #3, 6 point composite sample, CC03091609 | Composite sample | 2 | Confirmation Sample | soil | Friedman & Bruya | 909175 | - | 17-Sep | 17-Sep | 17-Sep | 17-Sep | 18-Sep | 17-Sep | | | | | | | | | | | | | | | | | |
| Surface excavation are | 09090126 | - | 9/16/2009 | 14:50 | Surface Excavation Area 2, product sample | Grab sample | 2 | Miscellaneous | soil | Friedman & Bruya | 909175 | - | 17-Sep | 17-Sep | 17-Sep | 17-Sep | 18-Sep | 17-Sep | | | | | | | | | | | | | | | | | |
| CC04091609 | 09090127 | - | 9/16/2009 | 16:25 | Containment Cell #4, 6 point composite sample, CC04091609 | Composite sample | 2 | Waste Soil Characterization | soil | Friedman & Bruya | 909175 | - | 17-Sep | 17-Sep | 17-Sep | 17-Sep | 18-Sep | 17-Sep | | | | | | | | | | | | | | | | | |
| E01S01B02 | 09090128 | - | 9/16/2009 | 16:40 | Excavation 1, Shoring System 1, Bay 2, South side wall at 25 feet bgs. Strong creosote odor, silvery irridescent sheen. | Grab sample | 2 | Confirmation Sample | soil | Friedman & Bruya | 909175 | - | 27-Sep | 26-Sep | | | | | | | | | | | | | | | | | | | | | |
| E01S01B03 | 09090129 | - | 9/17/2009 | 9:25 | Excavation 1, Shoring System 1, Bay 3, South side wall at 10 feet bgs. Strong creosote odor. | Grab sample | 3 | Confirmation Sample | soil | Friedman & Bruya | 909185 | - | 18-Sep | 18-Sep | | | | | | | | | | | | | | | | | | | | | |
| CC05091709 | 09090130 | - | 9/17/2009 | 9:55 | Containment Cell #5, 6 point composite sample, CC05091709 | Composite sample | 6 | Waste Soil Characterization | soil | Friedman & Bruya | 909185 | - | 18-Sep | 18-Sep | 18-Sep | 21-Sep | 21-Sep | 22-Sep | | | | | | | | | | | | | | | | | |
| UT01091809 | 09090131 | - | 9/18/2009 | 8:30 | Untreated Tank water sample, slight surface sheen, and faint oily odor | Grab sample | 11 | Water Treatment System Sample | water | Friedman & Bruya | 909201 | - | | | | | | | | | | 22-Sep | 22-Sep | | | | | | | | | | | |
| TT01091809 | 09090132 | - | 9/18/2009 | 9:00 | Treated Tank water sample, no odor, no sheen. | Grab sample | 11 | Water Treatment System Sample | water | Friedman & Bruya | NA | - | | | | | | | | | X | | | | | | | | | | | | | |
| TB01WT | 09090133 | - | 9/18/2009 | 18:00 | Trip Blank | Grab sample | 1 | Trip Blank | water | Friedman & Bruya | 909185 | - | 18-Sep | | | | | | | | | | | | | | | | | | | | | |
| TB02WT | 09090134 | - | 9/18/2009 | 18:00 | Trip Blank | Grab sample | 1 | Trip Blank | water | Friedman & Bruya | 909201 | - | | | | | | | | | | | | 21-Sep | | | | | | | | | |
| CC06091709 | 09090135 | - | 9/18/2009 | 17:30 | Containment Cell #6, 6 point composite sample, CC06091709 | Composite sample | 2 | Waste Soil Characterization | soil | Friedman & Bruya | 909185 | - | 18-Sep | 18-Sep | 18-Sep | 21-Sep | 21-Sep | 22-Sep | | | | | | | | | | | | | | | | | |
| E01S01B03 | 09090136 | - | 9/18/2009 | 17:34 | Excavation 1, Shoring System 1, Bay 3, South side wall at 25 feet bgs. Strong creosote odor, silvery irridescent sheen. | Grab sample | 2 | Confirmation Sample | soil | Friedman & Bruya | 909185 | - | 18-Sep | 18-Sep | | | | | | | | | | | | | | | | | | | | | |
| IF091809 | 09090137 | - | 9/18/2009 | 8:51 | Intermediate Tank (One Carbon Filter), clear, no odor. | Grab sample | 11 | Water Treatment System Sample | water | Friedman & Bruya | 909201 | - | | | | | | | | | | 22-Sep | 22-Sep | 22-Sep | 21-Sep | 21-Sep | 21-Sep | 21-Sep | 21-Sep | X | | | | | |
| TB03WT | 09090138 | - | 9/18/2009 | 8:00 | Trip Blank | Grab sample | 1 | Trip Blank | water | Friedman & Bruya | NA | - | X | | | | | | | | | | | | | | | | | | | | | |
| CC07091809 | 09090139 | - | 9/18/2009 | 14:28 | Containment Cell #7, 6 point composite sample, CC07091809 | Composite sample | 2 | Waste Soil Characterization | soil | Friedman & Bruya | 909201 | - | 21-Sep | 21-Sep | 21-Sep | 21-Sep | 21-Sep | 22-Sep | | | | | | | | | | | | | | | | | |

**Table 8-1. Summary of Analyses.**



| Location ID | Sample No. | CLP # | Date | Time | Location | Sample Type | No. of Containers | Location Type | Matrix | Laboratory | F&B Laboratory Work Order Number | SDG | VOCs 8260 | SVOCs 8270 | PCBs 8082 | NWTP H-Dx | Hg | Priority 13 Metals | RCRA Metals | Total Suspended Solids | pH | Hg 245.1 / 1631 | Metals * 200.8 | TSS 160.2 | VOCs 624 | SVOCs 625 | PCBs 608 | Cyanide 335.3 | Total Oil& Grease 1664 | Total Toxic Organics | CLP VOA | CLP SVOA | CLP PCB Aroclors | CLP Pesticide/ PCBs | CLP Total Metals / Hg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CC08091909 | 09090140 | - | 9/19/2009 | 9:45 | Containment Cell #8, 6 point composite sample, CC08091909 | Composite sample | 2 | Waste Soil Characterization | soil | Friedman & Bruya | 909204 | - | 21-Sep | 21-Sep | 21-Sep | 22-Sep | 21-Sep | 22-Sep | | | | | | | | | | | | | | | | | |
| E01S01B04 | 09090141 | - | 9/19/2009 | 9:45 | Excavation 1, Shoring System 1, Bay 4, South side wall at 25 feet bgs. Slight creosote odor, silvery irridescent sheen. | Grab sample | 2 | Confirmation Sample | soil | Friedman & Bruya | 909204 | - | 21-Sep | 21-Sep | 21-Sep | | | | | | | | | | | | | | | | | | | |
| BF03091909 | 09090142 | - | 9/19/2009 | 13:30 | Pea Gravel backfill stockpile #1 | Grab sample | 2 | Miscellaneous | rock | Friedman & Bruya | 909204 | - | 21-Sep | 21-Sep | 21-Sep | 22-Sep | 21-Sep | 22-Sep | | | | | | | | | | | | | | | | | |
| TB04WT | 09090143 | - | 9/19/2009 | 14:00 | Trip Blank | Grab sample | 1 | Trip Blank | water | Friedman & Bruya | 909204 | - | 21-Sep | | | | | | | | | | | | | | | | | | | | | | |
| CC09092109 | 09090144 | - | 9/21/2009 | 9:45 | Containment Cell #9, 6 point composite sample, CC09092109 | Composite sample | 2 | Waste Soil Characterization | soil | Friedman & Bruya | 909211 | - | 22-Sep | 22-Sep | 22-Sep | 22-Sep | 22-Sep | 22-Sep | | | | | | | | | | | | | | | | | |
| TB05WT | 09090145 | | 9/21/2009 | 18:00 | Trip Blank | Grab sample | 2 | Trip Blank | water | Friedman & Bruya | 909211 | | 22-Sep | 22-Sep | | | | | | | | | | | | | | | | | | | | | |
| CC10092109 | 09090146 | | 9/21/2009 | 16:30 | Containment Cell #10, 6 point composite sample, CC10092109 | Composite sample | 2 | Waste Soil Characterization | soil | Friedman & Bruya | 909211 | | 22-Sep | 22-Sep | 22-Sep | 22-Sep | 22-Sep | 22-Sep | | | | | | | | | | | | | | | | | |
| UT02092109 | 09090147 | | 9/22/2009 | 7:38 | Untreated Tank water sample, slight surface sheen, and faint oily odor | Grab sample | 3 | Water Treatment System Sample | water | Friedman & Bruya | 909227 | | | | | | | | | | | | | | 23-Sep | | | | | | | | | | |
| IF092209 | 09090148 | | 9/22/2009 | 7:42 | Intermediate filter between carbon vessels | Grab sample | 2 | Water Treatment System Sample | water | Friedman & Bruya | 909227 | | | | | | | | | | | | | | 23-Sep | | | | | | | | | | |
| TT02092209 | 09090149 | | 9/22/2009 | 7:45 | Treated Tank water sample, slight rusty odor. | Grab sample | 11 | Water Treatment System Sample | water | Friedman & Bruya | 909227 | | | | | | | | | | 23-Sep | 24-Sep | 24-Sep | 23-Sep | 23-Sep | 23-Sep | 23-Sep | 28-Sep | 24-Sep | X | | | | | | |
| TB06WT | 09090150 | | 9/22/2009 | 9:00 | Trip Blank | Grab sample | 2 | Trip Blank | water | Friedman & Bruya | 909227 | | 23-Sep | | | | | | | | | | | | | | | | | | | | | | |
| CC11092209 | 09090151 | | 9/22/2009 | 12:45 | Containment Cell #11, 6 point composite sample, CC11092209 | Composite sample | 2 | Waste Soil Characterization | soil | Friedman & Bruya | 909227 | | 26-Sep | 23-Sep | 23-Sep | 23-Sep | 24-Sep | 24-Sep | | | | | | | | | | | | | | | | | |
| E01S02B01 | 09090152 | | 9/22/2009 | 11:00 | Excavation 1, SS02, Bay 01, west sidewall at 25', strong creosote odor | Grab sample | 2 | Confirmation Sample | soil | Friedman & Bruya | 909227 | | 26-Sep | 23-Sep | 23-Sep | | | | | | | | | | | | | | | | | | | | | |
| CC12092309 | 09090153 | | 9/23/2009 | 9:45 | Containment Cell #12, 6 point composite sample, CC12092309 | Composite sample | 2 | Waste Soil Characterization | soil | Friedman & Bruya | 909243 | | 25-Sep | 25-Sep | 24-Sep | 24-Sep | 24-Sep | 24-Sep | | | | | | | | | | | | | | | | | |
| CC13092309 | 09090154 | | 9/23/2009 | 10:45 | Containment Cell #13, 6 point composite sample, CC13092309 | Composite sample | 2 | Waste Soil Characterization | soil | Friedman & Bruya | 909243 | | 25-Sep | 24-Sep | 24-Sep | 24-Sep | 24-Sep | 24-Sep | | | | | | | | | | | | | | | | | |
| TB07WT | 09090155 | | 9/23/2009 | 11:00 | Trip Blank | Grab sample | 2 | Trip Blank | water | Friedman & Bruya | 909243 | | 24-Sep | | | | | | | | | | | | | | | | | | | | | | |
| E01S02B02 | 09090156 | JBR27 | 9/23/2009 | 16:55 | Excavation 1, SS02, Bay 02, floor sample, slight creosote odor, silver color | Grab sample | 2 | Confirmation Sample | soil | A4 Scientific (CLP Lab) | | JBR27 | X | X | X | | | | | | | | | | | | | | X | X | | X | |
| CC14092309 | 09090157 | | 9/23/2009 | 12:45 | Containment Cell #14, 6 point composite sample, CC14092309 | Composite sample | 2 | Waste Soil Characterization | soil | Friedman & Bruya | 909243 | | 25-Sep | 25-Sep | 24-Sep | 24-Sep | 24-Sep | 24-Sep | | | | | | | | | | | | | | | | | |
| TB08WT | 09090158 | ~~JBR27~~JBRA7 | 9/23/2009 | 13:00 | Trip Blank | Grab sample | 2 | Trip Blank | water | A4 Scientific (CLP Lab) | | JBR27 | X | | | | | | | | | | | | | | | | | | | | | | |
| CC01092409 | 09090159 | | 9/24/2009 | 8:55 | Containment Cell #01, 6 point composite sample, CC01092409 | Composite sample | 4 | Waste Soil Characterization | soil | Friedman & Bruya | 909252 | | 27-Sep | 26-Sep | 25-Sep | 25-Sep | 28-Sep | 28-Sep | | | | | | | | | | | | | | | | | |
| TB09WT | 09090160 | | 9/24/2009 | 9:18 | Trip Blank | Grab sample | 2 | Trip Blank | water | Friedman & Bruya | 909252 | | 25-Sep | | | | | | | | | | | | | | | | | | | | | | |
| CC02092409 | 09090161 | | 9/24/2009 | 10:24 | Containment Cell #02, 6 point composite sample, CC02092409 | Composite sample | 2 | Waste Soil Characterization | soil | Friedman & Bruya | 909252 | | 27-Sep | 26-Sep | 25-Sep | 25-Sep | 28-Sep | 28-Sep | | | | | | | | | | | | | | | | | |
| TT08092409 | 09090162 | | 9/24/2009 | 11:30 | treated water from tanks # 8 and 9 | Composite sample | 11 | Water Treatment System Sample | water | Friedman & Bruya | 909252 | | | | | | | | | | 24-Sep | 28-Sep | 25-Sep | 28-Sep | 25-Sep | 28-Sep | 25-Sep | 28-Sep | 28-Sep | X | | | | | | |
| E01S02B03f | 09090163 | JBR28 | 9/25/2009 | 7:45 | Excavation 1, SS02, Bay 03, floor sample, slight creosote odor, silver gray color | Grab sample | 3 | Confirmation Sample | soil | A4 Scientific (CLP Lab) | 909252 | JBR27 | 27-Sep | 26-Sep | 25-Sep | 25-Sep | 28-Sep | 28-Sep | | | | | | | | | | | | | X | 26-Sep | | 26-Sep | |
| E01S02B04f | 09090164 | JBR29 | 9/25/2009 | 7:48 | Excavation 1, SS02, Bay 04, floor sample, slight creosote odor, silver gray color | Grab sample | 3 | Confirmation Sample | soil | A4 Scientific (CLP Lab) | | JBR27 | | | | | | | | | | | | | | | | | | 27-Sep | 26-Sep | | 26-Sep | |
| BF04092509 | 09090165 | - | 9/25/2009 | 15:15 | Import washed sand backfill stockpile #1 | Grab sample | 2 | Miscellaneous | rock | Friedman & Bruya | 909278 | - | 29-Sep | 29-Sep | 29-Sep | 30-Sep | 29-Sep | 30-Sep | | | | | | | | | | | | | | | | | |
| TB10WT | 09090166 | | 9/25/2009 | 15:30 | Trip Blank | Grab sample | 2 | Trip Blank | water | Friedman & Bruya | 909278 | | X | | | | | | | | | | | | | | | | | | | | | | |
| E01S03B01w | 09090167 | JBR30 | 9/28/2009 | 11:15 | Excavation 1, SS03, Bay 01, wall sample from 13-ft bgs, no odor or staining noted | Grab sample | 3 | Confirmation Sample | soil | A4 Scientific (CLP Lab) | | JBR30 | | | | | | | | | | | | | | | | | | 1-Oct | 2-Oct | 2-Oct | | |
| TB11WT | 09090168 | JBR31 | 9/28/2009 | 11:45 | Trip Blank | Grab sample | 2 | Trip Blank | water | A4 Scientific (CLP Lab) | | JBR31 | | | | | | | | | | | | | | | | | | 1-Oct | | | | |
| CC06092809 | 09090169 | | 9/28/2009 | 10:24 | Containment Cell #06, 7 point composite sample, CC06092809 | Composite sample | 2 | Waste Soil Characterization | soil | Friedman & Bruya | 909278 | | 29-Sep | 29-Sep | 29-Sep | 30-Sep | 29-Sep | 30-Sep | | | | | | | | | | | | | | | | | |

**Table 8-1. Summary of Analyses.**



| Location ID | Sample No. | CLP # | Date | Time | Location | Sample Type | No. of Containers | Location Type | Matrix | Laboratory | F&B Laboratory Work Order Number | SDG | VOCs 8260 | SVOCs 8270 | PCBs 8082 | NWTP H-Dx | Hg | Priority 13 Metals | RCRA Metals | Total Suspended Solids | pH | Hg 245.1 / 1631 | Metals * 200.8 | TSS 160.2 | VOCs 624 | SVOCs 625 | PCBs 608 | Cyanide 335.3 | Total Oil& Grease 1664 | Total Toxic Organics | CLP VOA | CLP SVOA | CLP PCB Aroclors | CLP Pesticide/ PCBs | CLP Total Metals / Hg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| E01S03B01w | 09090170 | JBR32 | 9/29/2009 | 13:00 | Excavation 1, SS03, Bay 01, wall sample from 25-ft bgs, creosote odor, silver gray color | Grab sample | 3 | Confirmation Sample | soil | A4 Scientific (CLP Lab) | | JBR30 | | | | | | | | | | | | | | | | | | | 1-Oct | 2-Oct | 2-Oct | | |
| E1S1B2 | 09090171 | | 9/30/2009 | 13:15 | Water from bottom (25') of Excavation 1, Shoring System 3, Bay 2. From oily pool near center of bay | Grab sample | 7 | Water in Excavation | water | Friedman & Bruya | 910001 | | 30-Sep | 30-Sep | 30-Sep | | 30-Sep | 30-Sep | | | | | | | | | | | | | | | | | |
| TB12WT | 09090172 | | 9/30/2009 | 13:40 | Trip Blank | Grab sample | 2 | Trip Blank | water | Friedman & Bruya | 910001 | | 30-Sep | | | | | | | | | | | | | | | | | | | | | | |
| E01S03B02f | 09090173 | JBR33 | 9/30/2009 | 15:25 | Excavation 1, SS03, Bay 02, floor sample from 25-ft bgs, creosote odor, silver gray color | Grab sample | 3 | Confirmation Sample | soil | A4 Scientific (CLP Lab) | | JBR30 | | SOIL - Confirmation CLP Lab | | | | | | | | | | | | | | | | 3-Oct | 3-Oct | 3-Oct | | |
| E01S03B03f | 09090174 | JBR34 | 9/30/2009 | 15:35 | Excavation 1, SS03, Bay 03, floor sample from 25-ft bgs, creosote odor, silver gray color | Grab sample | 3 | Confirmation Sample | soil | A4 Scientific (CLP Lab) | | JBR30 | | SOIL - Confirmation CLP Lab | | | | | | | | | | | | | | | | 3-Oct | 4-Oct | 3-Oct | | |
| TB13WT | 09090175 | JBR35 | 9/30/2009 | 15:55 | Trip Blank | Trip Blank | 2 | Trip Blank | water | A4 Scientific (CLP Lab) | | JBR31 | | SOIL - Confirmation CLP Lab | | | | | | | | | | | | | | | | 2-Oct | | | | |
| E01S03B04W14 | 09100101 | JBR36 | 10/1/2009 | 10:30 | Excavation 1, SS03, Bay 04, eastern wall sample from 14-ft bgs, creosote odor, silvery-black color | Grab sample | 3 | Confirmation Sample | soil | A4 Scientific (CLP Lab) | | JBR30 | | | | | | | | | | | | | | | | 3-Oct | 3-Oct | 3-Oct | | |
| CC01100109 | 09100102 | -- | 10/1/2009 | 10:50 | Containment Cell #011, 7 point composite sample, CC06092809 | Composite sample | 2 | Waste Soil Characterization | soil | Friedman & Bruya | 910019 | -- | 2-Oct | 3-Oct | 2-Oct | 2-Oct | 2-Oct | 2-Oct | | | | | | | | | | | | | | | | |
| TB14WT | 09100103 | -- | 10/1/2009 | 11:00 | Trip Blank | Trip Blank | 2 | Trip Blank | water | Friedman & Bruya | 910019 | -- | 2-Oct | | | | | | | | | | | | | | | | | | | | | |
| E01S03B04W25 | 09100104 | JBR37 | 10/1/2009 | 15:00 | Excavation 1, SS03, Bay 04, eastern wall sample from 25-ft bgs, creosote odor, silvery-black color | Grab sample | 3 | Confirmation Sample | soil | A4 Scientific (CLP Lab) | | JBR30 | | | | | | | | | | | | | | | | 3-Oct | 3-Oct | 3-Oct | | |
| E01S04B01W10 | 09100105 | JBR38 | 10/2/2009 | 7:00 | Excavation 1, SS04, Bay 01, western wall sample from 10-ft bgs. Collected by Jason Coury, EQM. | Grab sample | 3 | Confirmation Sample | soil | A4 Scientific (CLP Lab) | | JBR38 | | | E1SS4B1-10w | | | | | | | | | | | | | | 8-Oct | 7-Oct | 6-Oct | | |
| TB15WT | 09100106 | JBR39 | 10/2/2009 | 10:45 | Trip Blank | Trip Blank | 2 | Trip Blank | water | A4 Scientific (CLP Lab) | | JBR39 | | | | | | | | | | | | | | | | X | | | | | |
| TT10100209 | 09100107 | -- | 10/2/2009 | 13:35 | Treated Tank water sample from Tank #10. (NOTE: pH delivered to Spec. Analytical 10/2/09). | Grab sample | 11 | Water Treatment System Sample | water | Friedman & Bruya | 910036 | -- | | | | | | | | | 2-Oct | 6-Oct | 6-Oct | 5-Oct | 5-Oct | 6-Oct | 5-Oct | 5-Oct | 6-Oct | X | | | | |
| IF100209 | 09100108 | -- | 10/2/2009 | 14:00 | Intermed. Filter sample collected between the 2 GAC units. | Grab sample | 4 | Water Treatment System Sample | water | Friedman & Bruya | 910036 | -- | 5-Oct | | | | | | | | | | | | | | | | | | | | | |
| UT03100209 | 09100109 | -- | 10/2/2009 | 14:10 | Untreated Tank water sample from Tank #3. Water was pumped to tank 10/2/09. Surface sheen, and oily odor | Grab sample | 4 | Water Treatment System Sample | water | Friedman & Bruya | 910036 | -- | 5-Oct | | | | | | | | | | | | | | | | | | | | | |
| TB16WT | 09100110 | -- | 10/2/2009 | 14:30 | Trip Blank | Trip Blank | 2 | Trip Blank | water | Friedman & Bruya | 910036 | -- | 5-Oct | | | | | | | | | | | | | | | | | | | | | |
| CC01100309 | 09100111 | -- | 10/3/2009 | 10:25 | Containment Cell #01, 7 point composite sample, CC01100309 | Composite sample | 2 | Waste Soil Characterization | soil | Friedman & Bruya | 910038 | -- | 5-Oct | 5-Oct | 5-Oct | 5-Oct | 6-Oct | | 6-Oct | | | | | | | | | | | | | | | |
| TB17WT | 09100112 | -- | 10/3/2009 | 10:30 | Trip Blank | Trip Blank | 2 | Trip Blank | water | Friedman & Bruya | 910038 | -- | 6-Oct | | | | | | | | | | | | | | | | | | | | | |
| E01S04B01W25 | 09100113 | JBR40 | 10/3/2009 | 10:45 | Excavation 1, SS04, Bay 01, western wall sample from 25-ft bgs. | Grab sample | 3 | Confirmation Sample | soil | A4 Scientific (CLP Lab) | | JBR38 | | | E1SS4B1-25w | | | | | | | | | | | | | | 8-Oct | 8-Oct | 7-Oct | | |
| TT06100509 | 09100114 | -- | 10/5/2009 | 14:50 | Treated Tank water sample from Tank #6. (NOTE: pH delivered to Spec. Analytical 10/5/09). | Grab sample | 11 | Water Treatment System Sample | water | Friedman & Bruya | 910051 | -- | | | | | | | | | 5-Oct | 5-Oct | 5-Oct | 6-Oct | 5-Oct | 5-Oct | 5-Oct | 7-Oct | 8-Oct | X | | | | |
| TB18WT | 09100115 | -- | 10/5/2009 | 15:10 | Trip Blank | Trip Blank | 2 | Trip Blank | water | Friedman & Bruya | 910051 | -- | 5-Oct | | | | | | | | | | | | | | | | | | | | | |
| E1SS4B4-12e | 09100116 | JBR41 | 10/6/2009 | 10:30 | Excavation 1, SS04, Bay 04, eastern wall sample from 12-ft bgs. | Grab sample | 3 | Confirmation Sample | soil | A4 Scientific (CLP Lab) | | JBR38 | | | | | | | | | | | | | | | | 8-Oct | 8-Oct | 7-Oct | | |
| E1SS4B2 | 09100117 | JBR42 | 10/6/2009 | 10:45 | Excavation 1, SS04, Bay 02, center of floor at 25-ft bgs. | Grab sample | 3 | Confirmation Sample | soil | A4 Scientific (CLP Lab) | | JBR38 | | | | | | | | | | | | | | | | 8-Oct | 8-Oct | 7-Oct | | |
| E1SS4B3 | 09100118 | JBR43 | 10/6/2009 | 10:55 | Excavation 1, SS04, Bay 03, center of floor at 25-ft bgs. | Grab sample | 3 | Confirmation Sample | soil | A4 Scientific (CLP Lab) | | JBR38 | | | | | | | | | | | | | | | | 9-Oct | 8-Oct | 7-Oct | | |
| TB19WT | 09100119 | JBR44 | 10/6/2009 | 11:15 | Trip Blank | Trip Blank | 2 | Trip Blank | water | A4 Scientific (CLP Lab) | | JBR39 | | | | | | | | | | | | | | | | X | | | | | |
| E1SS4B4-25e | 09100120 | JBR45 | 10/6/2009 | 13:30 | Excavation 1, SS04, Bay 04, eastern wall sample from 25-ft bgs. | Grab sample | 3 | Confirmation Sample | soil | A4 Scientific (CLP Lab) | | JBR38 | | | | | | | | | | | | | | | | 8-Oct | 8-Oct | 7-Oct | | |

**Table 8-1. Summary of Analyses.**



| Location ID | Sample No. | CLP # | Date | Time | Location | Sample Type | No. of Containers | Location Type | Matrix | Laboratory | F&B Laboratory Work Order Number | SDG | VOCs 8260 | SVOCs 8270 | PCBs 8082 | NWTPH-Dx | Hg | Priority 13 Metals | RCRA Metals | Total Suspended Solids | pH | Hg 245.1 / 1631 | Metals * 200.8 | TSS 160.2 | VOCs 624 | SVOCs 625 | PCBs 608 | Cyanide 335.3 | Total Oil& Grease 1664 | Total Toxic Organics | CLP VOA | CLP SVOA | CLP PCB Aroclors | CLP Pesticide/ PCBs | CLP Total Metals / Hg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| E1SS5B1-10nw | 09100121 | JBR46 | 10/6/2009 | 16:20 | Excavation 1, SS05, Bay 01, northwestern corner sample from 10-ft bgs. | Grab sample | 3 | Confirmation Sample | soil | A4 Scientific (CLP Lab) | | JBR38 | | | | | | | | | | | | | | | | | | | 8-Oct | 8-Oct | 7-Oct | | |
| CC08100709 | 09100122 | -- | 10/7/2009 | 13:45 | Containment Cell #08, 7 point composite sample, CC08100709 | Composite sample | 2 | Waste Soil Characterization | soil | Friedman & Bruya | 910082 | -- | 9-Oct | 8-Oct | 8-Oct | 8-Oct | 9-Oct | | 8-Oct | | | | | | | | | | | | | | | | |
| TB20WT | 09100123 | -- | 10/7/2009 | 14:00 | Trip Blank | Trip Blank | 2 | Trip Blank | water | Friedman & Bruya | 910082 | -- | 8-Oct | | | | | | | | | | | | | | | | | | | | | | |
| E1SS5B1-25nw | 09100124 | JBR47 | 10/8/2009 | 13:10 | Excavation 1, Shoring system 5, Bay 1, northwestern corner sample from 25-ft bgs. | Grab sample | 3 | Confirmation Sample | soil | A4 Scientific (CLP Lab) | | JBR47 | | | | | | | | | | | | | | | | | | | 11-Oct | 12-Oct | 12-Oct | | |
| TB21WT | 09100125 | JBR48 | 10/8/2009 | 13:30 | Trip Blank | Trip Blank | 2 | Trip Blank | water | A4 Scientific (CLP Lab) | | JBR39 | | | | | | | | | | | | | | | | | | | X | | | | |
| E1OB100809 | 09100126 | -- | 10/8/2009 | 14:45 | 7-point composite sample from stockpiled overburden from excav.#1 area, between approx. 2' bgs and 4' bgs. | Composite sample | 2 | Miscellaneous | soil | Friedman & Bruya | 910109 | -- | 12-Oct | 16-Oct | 13-Oct | | 14-Oct | | 13-Oct | | | | | | | | | | | | | | | | |
| TB22WT | 09100127 | -- | 10/8/2009 | 14:55 | Trip Blank | Trip Blank | 2 | Trip Blank | water | Friedman & Bruya | 910109 | -- | 12-Oct | | | | | | | | | | | | | | | | | | | | | | |
| E1SS5B2-25 | 09100128 | JBR49 | 10/9/2009 | 10:35 | Excavation 1, Shoring system 5, Bay 2, floor sample from 25-ft bgs. | Grab sample | 3 | Confirmation Sample | soil | A4 Scientific (CLP Lab) | | JBR47 | | | | | | | | | | | | | | | | | | | 12-Oct | 12-Oct | 12-Oct | | |
| E1SS5B3-25ne | 09100129 | JBR50 | 10/9/2009 | 10:50 | Excavation 1, Shoring system 5, Bay 3, northeastern corner sample from 25-ft bgs. | Grab sample | 3 | Confirmation Sample | soil | A4 Scientific (CLP Lab) | | JBR47 | | | | | | | | | | | | | | | | | | | 12-Oct | 12-Oct | 12-Oct | | |
| E2CT100909 | 09100130 | -- | 10/9/2009 | 11:00 | COAL TAR material from Excavation #2 area near test pit 14 | Grab sample | 2 | Miscellaneous | product | Friedman & Bruya | 910109 | -- | 12-Oct | 16-Oct | 12-Oct | 13-Oct | 14-Oct | | 13-Oct | | | | | | | | | | | | | | | | |
| E2SL100909 | 09100131 | -- | 10/9/2009 | 11:05 | SLUDGE material from pipe found in Excavation #2 area near test pit 14 | Grab sample | 2 | Miscellaneous | product | Friedman & Bruya | 910109 | -- | 12-Oct | 16-Oct | 13-Oct | 12-Oct | 14-Oct | | 13-Oct | | | | | | | | | | | | | | | | |
| E2GS100909 | 09100132 | -- | 10/9/2009 | 11:15 | DARK GRAY SOIL found in Excavation #2 area near test pit 14. | Grab sample | 2 | Miscellaneous | soil | Friedman & Bruya | 910109 | -- | 12-Oct | 16-Oct | 13-Oct | 12-Oct | 14-Oct | | 13-Oct | | | | | | | | | | | | | | | | |
| E1SS6B1-10nw | 09100133 | JBR51 | 10/9/2009 | 16:10 | Excavation 1, Shoring system 6, Bay 1, northwestern corner sample from 10-ft bgs. | Grab sample | 3 | Confirmation Sample | soil | A4 Scientific (CLP Lab) | | JBR51 | | | | | | | | | | | | | | | | | | | X | X | X | | |
| E1SS6B1-25nw | 09100134 | JBR52 | 10/10/2009 | 13:45 | Excavation 1, Shoring system 6, Bay 1, northwestern corner sample from 25-ft bgs. | Grab sample | 3 | Confirmation Sample | soil | A4 Scientific (CLP Lab) | | JBR51 | | | | | | | | | | | | | | | | | | | X | X | X | | |
| E1SS6B2-10ne | 09100135 | JBR53 | 10/10/2009 | 17:00 | Excavation 1, Shoring system 6, Bay 2, northeastern corner sample from 10-ft bgs. | Grab sample | 3 | Confirmation Sample | soil | A4 Scientific (CLP Lab) | | JBR51 | | | | | | | | | | | | | | | | | | | X | X | X | | |
| TB23WT | 09100136 | JBR54 | 10/12/2009 | 11:00 | Trip Blank | Trip Blank | 2 | Trip Blank | water | A4 Scientific (CLP Lab) | | JBR54 | | | | | | | | | | | | | | | | | | | X | | | | |
| E1SS6B2-25ne | 09100137 | JBR55 | 10/12/2009 | 12:00 | Excavation 1, Shoring system 6, Bay 2, northeastern corner sample from 25-ft bgs. | Grab sample | 3 | Confirmation Sample | soil | A4 Scientific (CLP Lab) | | JBR51 | | | | | | | | | | | | | | | | | | | X | X | X | | |
| TT10101209 | 09100138 | -- | 10/12/2009 | 13:30 | Treated Tank water sample from Tank #10 (representative of tanks #10, 11, 12, 13). pH delivered to Spec. Analytical 10/12/09. | Grab sample | 11 | Water Treatment System Sample | water | Friedman & Bruya | 910112 | -- | | | | | | | | | | 14-Oct | 13-Oct | 14-Oct | 13-Oct | 13-Oct | 13-Oct | 14-Oct | 13-Oct | X | | | | | |
| TB24WT | 09100139 | -- | 10/12/2009 | 13:50 | Trip Blank | Trip Blank | 2 | Trip Blank | water | Friedman & Bruya | 910112 | -- | 13-Oct | | | | | | | | | | | | | | | | | | | | | | |
| E2-0-10-101409 | 09100140 | JBR56 | 10/14/2009 | 10:00 | Excavation #2, east end at 10' bgs. | Grab sample | 3 | Confirmation Sample | soil | A4 Scientific (CLP Lab) | | JBR51 | | | | | | | | | | | | | | | | | | | X | X | X | | |
| E2-0-25-101409 | 09100141 | JBR57 | 10/14/2009 | 10:10 | Excavation #2, east end at 25' bgs. | Grab sample | 3 | Confirmation Sample | soil | A4 Scientific (CLP Lab) | | JBR51 | | | | | | | | | | | | | | | | | | | X | X | X | | |
| TB25WT | 09100142 | JBR58 | 10/14/2009 | 10:25 | Trip Blank | Trip Blank | 2 | Trip Blank | water | A4 Scientific (CLP Lab) | | JBR54 | | | | | | | | | | | | | | | | | | | X | | | | |
| CC03101409 | 09100143 | | 10/14/2009 | 11:25 | Soil at bottom of Containment Cell #3 | Composite sample | 2 | Miscellaneous | soil | Friedman & Bruya | 910139 | | 16-Oct | 16-Oct | 16-Oct | 15-Oct | 16-Oct | 16-Oct | | | | | | | | | | | | | | | | | |
| CC04101409 | 09100144 | | 10/14/2009 | 11:30 | Soil at bottom of Containment Cell #4 | Composite sample | 2 | Miscellaneous | soil | Friedman & Bruya | 910139 | | 16-Oct | 16-Oct | 16-Oct | 15-Oct | 16-Oct | 16-Oct | | | | | | | | | | | | | | | | | |
| CC05101409 | 09100145 | | 10/14/2009 | 11:35 | Soil at bottom of Containment Cell #5 | Composite sample | 2 | Miscellaneous | soil | Friedman & Bruya | 910139 | | 16-Oct | 16-Oct | 16-Oct | 15-Oct | 16-Oct | 16-Oct | | | | | | | | | | | | | | | | | |
| CC06101409 | 09100146 | | 10/14/2009 | 11:40 | Soil at bottom of Containment Cell #6 | Composite sample | 2 | Miscellaneous | soil | Friedman & Bruya | 910139 | | 16-Oct | 16-Oct | 16-Oct | 15-Oct | 16-Oct | 16-Oct | | | | | | | | | | | | | | | | | |
| CC07101409 | 09100147 | | 10/14/2009 | 11:42 | Soil at bottom of Containment Cell #7 | Composite sample | 2 | Miscellaneous | soil | Friedman & Bruya | 910139 | | 16-Oct | 16-Oct | 16-Oct | 15-Oct | 16-Oct | 16-Oct | | | | | | | | | | | | | | | | | |
| CC14101409 | 09100148 | | 10/14/2009 | 11:45 | Soil at bottom of Containment Cell #14 | Composite sample | 2 | Miscellaneous | soil | Friedman & Bruya | 910139 | | 16-Oct | 19-Oct | 16-Oct | 15-Oct | 16-Oct | 16-Oct | | | | | | | | | | | | | | | | | |

**Table 8-1. Summary of Analyses.**



| Location ID | Sample No. | CLP # | Date | Time | Location | Sample Type | No. of Containers | Location Type | Matrix | Laboratory | F&B Laboratory Work Order Number | SDG | VOCs 8260 | SVOCs 8270 | PCBs 8082 | NWTP H-Dx | Hg | Priority 13 Metals | RCRA Metals | Total Suspended Solids | pH | Hg 245.1 / 1631 | Metals * 200.8 | TSS 160.2 | VOCs 624 | SVOCs 625 | PCBs 608 | Cyanide 335.3 | Total Oil& Grease 1664 | Total Toxic Organics | CLP VOA | CLP SVOA | CLP PCB Aroclors | CLP Pesticide/ PCBs | CLP Total Metals / Hg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CC13101409 | 09100149 | | 10/14/2009 | 11:50 | Soil at bottom of Containment Cell #13 | Composite sample | 2 | Miscellaneous | soil | Friedman & Bruya | 910139 | | 16-Oct | 16-Oct | 16-Oct | 15-Oct | 16-Oct | 16-Oct | | | | | | | | | | | | | | | | | |
| CC12101409 | 09100150 | | 10/14/2009 | 11:55 | Soil at bottom of Containment Cell #12 | Composite sample | 2 | Miscellaneous | soil | Friedman & Bruya | 910139 | | 16-Oct | 16-Oct | 16-Oct | 15-Oct | 16-Oct | 16-Oct | | | | | | | | | | | | | | | | | |
| CC11101409 | 09100151 | | 10/14/2009 | 12:00 | Soil at bottom of Containment Cell #11 | Composite sample | 2 | Miscellaneous | soil | Friedman & Bruya | 910139 | | 16-Oct | 16-Oct | 16-Oct | 15-Oct | 16-Oct | 16-Oct | | | | | | | | | | | | | | | | | |
| CC10101409 | 09100152 | | 10/14/2009 | 12:10 | Soil at bottom of Containment Cell #10 | Composite sample | 2 | Miscellaneous | soil | Friedman & Bruya | 910139 | | 16-Oct | 16-Oct | 16-Oct | 15-Oct | 16-Oct | 16-Oct | | | | | | | | | | | | | | | | | |
| TB26WT | 09100153 | | 10/14/2009 | 12:20 | Trip Blank | Trip Blank | 2 | Trip Blank | water | Friedman & Bruya | 910139 | | 15-Oct | | | | | | | | | | | | | | | | | | | | | |
| E2-25-10-101409 | 09100154 | JBR59 | 10/14/2009 | 12:45 | Excavation #2, 25' west of east end at 10' bgs. | Grab sample | 3 | Confirmation Sample | soil | A4 Scientific (CLP Lab) | | JBR51 | | | | | | | | | | | | | | | | | | | X | X | X | | |
| E2-25-25-101409 | 09100155 | JBR60 | 10/14/2009 | 12:55 | Excavation #2, 25' west of east end at 25' bgs. | Grab sample | 3 | Confirmation Sample | soil | A4 Scientific (CLP Lab) | | JBR51 | | | | | | | | | | | | | | | | | | | X | X | X | | |
| E2BS-101409 | 09100156 | JBR61 | 10/14/2009 | 13:05 | Excavation #2: black soil in pit sidewall 7' bgs, 25' west and 32' north of east end of excavation 2. | grab sample | 3 | Confirmation Sample | soil | A4 Scientific (CLP Lab) | | JBR51 | | | | | | | | | | | | | | | | | | | X | X | X | | |
| E2-50-10-101509 | 09100157 | JBR62 | 10/15/2009 | 9:40 | Excavation #2, 50' west of east end at 10' bgs. | Grab sample | 3 | Confirmation Sample | soil | A4 Scientific (CLP Lab) | | JBR51 | | | | | | | | | | | | | | | | | | | X | X | X | | |
| E2-50-25-101509 | 09100158 | JBR63 | 10/15/2009 | 9:50 | Excavation #2, 50' west of east end at 25' bgs. | Grab sample | 3 | Confirmation Sample | soil | A4 Scientific (CLP Lab) | | JBR51 | | | | | | | | | | | | | | | | | | | X | X | X | | |
| E2-75-10-101509 | 09100159 | JBR64 | 10/15/2009 | 10:00 | Excavation #2, 75' west of east end at 10' bgs. | Grab sample | 3 | Confirmation Sample | soil | A4 Scientific (CLP Lab) | | JBR51 | | | | | | | | | | | | | | | | | | | X | X | X | | |
| E2-75-25-101509 | 09100160 | JBR65 | 10/15/2009 | 10:10 | Excavation #2, 75' west of east end at 25' bgs. | Grab sample | 3 | Confirmation Sample | soil | A4 Scientific (CLP Lab) | | JBR51 | | | | | | | | | | | | | | | | | | | X | X | X | | |
| TB27WT | 09100161 | JBR68 | 10/15/2009 | 10:30 | Trip Blank | Trip Blank | 2 | Trip Blank | water | A4 Scientific (CLP Lab) | | JBR68 | | | | | | | | | | | | | | | | | | | X | | | | |
| TT06101509 | 09100162 | -- | 10/15/2009 | 11:05 | Treated Tank water sample from Tank #6 (representative of tanks #6, 7, 8, 9). (NOTE: pH delivered to Spec. Analytical 10/15/09). | Grab sample | 11 | Water Treatment System Sample | water | Friedman & Bruya | 910156 | -- | | | | | | | | | 16-Oct | 19-Oct | 16-Oct | 16-Oct | 16-Oct | 16-Oct | 16-Oct | 20-Oct | 20-Oct | X | | | | | |
| IF101509 | 09100163 | -- | 10/15/2009 | 11:15 | Intermed. Filter sample collected between the 2 GAC units. | Grab sample | 4 | Water Treatment System Sample | water | Friedman & Bruya | 910156 | -- | 16-Oct | | | | | | | | | | | | | | | | | | | | | |
| UT03101509 | 09100164 | -- | 10/15/2009 | 11:20 | Untreated Tank water sample from Tank #3. Water was pumped to tank 10/15/09. Surface sheen, and oily odor | Grab sample | 4 | Water Treatment System Sample | water | Friedman & Bruya | 910156 | -- | 16-Oct | | | | | | | | | | | | | | | | | | | | | |
| WSSP101509 | 09100165 | -- | 10/15/2009 | 11:30 | Waste soil stockpile - grab sample from NW corner. | Grab sample | 2 | Waste Soil Characterization | soil | Friedman & Bruya | 910156 | -- | 19-Oct | 16-Oct | 16-Oct | 16-Oct | 16-Oct | | 16-Oct | | | | | | | | | | | | | | | |
| TB28WT | 09100166 | | 10/15/2009 | 11:40 | Trip Blank | Trip Blank | 2 | Trip Blank | water | Friedman & Bruya | 910156 | | 16-Oct | | | | | | | | | | | | | | | | | | | | | |
| E2-100-10-101509 | 09100167 | JBR66 | 10/15/2009 | 15:25 | Excavation #2, 100' west of east end at 10' bgs. | Grab sample | 3 | Confirmation Sample | soil | A4 Scientific (CLP Lab) | | JBR66 | | | | | | | | | | | | | | | | | | | X | X | X | | |
| E2-100-25-101509 | 09100168 | JBR67 | 10/15/2009 | 15:40 | Excavation #2, 100' west of east end at 25' bgs. | Grab sample | 3 | Confirmation Sample | soil | A4 Scientific (CLP Lab) | | JBR66 | | | | | | | | | | | | | | | | | | | X | X | X | | |
| E2-125-10-101609 | 09100169 | JBR69 | 10/16/2009 | 10:00 | Excavation #2, 125' west of east end at 10' bgs. | Grab sample | 3 | Confirmation Sample | soil | A4 Scientific (CLP Lab) | | JBR66 | | | | | | | | | | | | | | | | | | | X | X | X | | |
| E2-125-25-101609 | 09100170 | JBR70 | 10/16/2009 | 10:15 | Excavation #2, 125' west of east end at 25' bgs. | Grab sample | 3 | Confirmation Sample | soil | A4 Scientific (CLP Lab) | | JBR66 | | | | | | | | | | | | | | | | | | | X | X | X | | |
| E2-150-10-101609 | 09100171 | JBR71 | 10/16/2009 | 12:50 | Excavation #2, 150' west of east end at 10' bgs. | Grab sample | 3 | Confirmation Sample | soil | A4 Scientific (CLP Lab) | | JBR66 | | | | | | | | | | | | | | | | | | | X | X | X | | |
| E2-150-25-101609 | 09100172 | JBR72 | 10/16/2009 | 13:00 | Excavation #2, 150' west of east end at 25' bgs. | Grab sample | 3 | Confirmation Sample | soil | A4 Scientific (CLP Lab) | | JBR66 | | | | | | | | | | | | | | | | | | | X | X | X | | |
| E2WS-125-101609 | 09100173 | JBR73 | 10/16/2009 | 13:15 | Water Sample from Excavation #2, collected from pump located approx. 125' west of east end at bottom (25' bgs). | Grab sample | 8 (2 amber, 2 poly pres., 4 VOA) | Water in Excavation | water | Compuchem Labs (CLP Lab) | | JBR68 | | | | | | | | | | | | | | | | | | | X | X | X | | |
| E2WS-125-101609M | 09100173 | MJBR85 | 10/16/2009 | 13:15 | Water Sample from Excavation #2, collected from pump located approx. 125' west of east end at bottom (25' bgs). | Grab sample | 2 poly HNO3-pres. | Water in Excavation | water | Liberty Analytical (CLP Lab) | | MJBR85 | | | | | | | | | | | | | | | | | | | | | | | X |
| E2-175-10-101609 | 09100174 | JBR74 | 10/16/2009 | 14:30 | Excavation #2, 175' west of east end at 10' bgs. | Grab sample | 3 | Confirmation Sample | soil | A4 Scientific (CLP Lab) | | JBR66 | | | | | | | | | | | | | | | | | | | X | X | X | | |

**Table 8-1. Summary of Analyses.**



| Location ID | Sample No. | CLP # | Date | Time | Location | Sample Type | No. of Containers | Location Type | Matrix | Laboratory | F&B Laboratory Work Order Number | SDG | VOCs 8260 | SVOCs 8270 | PCBs 8082 | NWTP H-Dx | Hg | Priority 13 Metals | RCRA Metals | Total Suspended Solids | pH | Hg 245.1 / 1631 | Metals * 200.8 | TSS 160.2 | VOCs 624 | SVOCs 625 | PCBs 608 | Cyanide 335.3 | Total Oil& Grease 1664 | Total Toxic Organics | CLP VOA | CLP SVOA | CLP PCB Aroclors | CLP Pesticide/ PCBs | CLP Total Metals / Hg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| E2-175-25-101609 | 09100175 | JBR75 | 10/16/2009 | 14:40 | Excavation #2, 175' west of east end at 25' bgs. | Grab sample | 3 | Confirmation Sample | soil | A4 Scientific (CLP Lab) | | JBR66 | | | | | | | | | | | | | | | | | | | X | X | X | | |
| E2OB-101609 | 09100176 | -- | 10/16/2009 | 14:50 | Excavation #2 overburden (4' - 8' bgs) | Grab sample | 2 | Miscellaneous | soil | Friedman & Bruya | 910169 | JBR66 | 19-Oct | 19-Oct | 19-Oct | 19-Oct | 19-Oct | | 19-Oct | | | | | | | | | | | | | | | | |
| TB29WT | 09100177 | -- | 10/16/2009 | 15:00 | Trip Blank | Trip Blank | 2 | Trip Blank | water | Friedman & Bruya | 910169 | JBR66 | 19-Oct | | | | | | | | | | | | | | | | | | | | | | |
| E2-200-10-101909 | 09100178 | JBR76 | 10/19/2009 | 9:20 | Excavation #2, 200' west of east end at 10' bgs. | Grab sample | 3 | Confirmation Sample | soil | A4 Scientific (CLP Lab) | | JBR66 | | | | | | | | | | | | | | | | | | | X | X | X | | |
| E2-200-25-101909 | 09100179 | JBR77 | 10/19/2009 | 9:35 | Excavation #2, 200' west of east end at 25' bgs. | Grab sample | 3 | Confirmation Sample | soil | A4 Scientific (CLP Lab) | | JBR66 | | | | | | | | | | | | | | | | | | | X | X | X | | |
| TT10101909 | 09100180 | -- | 10/19/2009 | 10:15 | Treated Tank water sample from Tank #10 (representative of tanks #10, 11, 12, 13). (NOTE: pH delivered to Spec. Analytical 10/19/09). | Grab sample | 11 | Water Treatment System Sample | water | Friedman & Bruya | 910181 | | | | | | | | | | X | 21-Oct | 21-Oct | 21-Oct | 20-Oct | 20-Oct | 20-Oct | 20-Oct | 20-Oct | X | | | | | | |
| TB30WT | 09100181 | -- | 10/19/2009 | 10:30 | Trip Blank | Trip Blank | 2 | Trip Blank | water | Friedman & Bruya | 910181 | | 20-Oct | | | | | | | | | | | | | | | | | | | | | | |
| TB31WT | 09100182 | JBR78 | 10/19/2009 | 10:45 | Trip Blank | Trip Blank | 2 | Trip Blank | water | A4 Scientific (CLP Lab) | | JBR68 | | | | | | | | | | | | | | | | | | | X | | | | |
| E2-225-10-101909 | 09100183 | JBR79 | 10/19/2009 | 11:25 | Excavation #2, 225' west of east end at 10' bgs. | Grab sample | 3 | Confirmation Sample | soil | A4 Scientific (CLP Lab) | | JBR66 | | | | | | | | | | | | | | | | | | | X | X | X | | |
| E2-225-25-101909 | 09100184 | JBR80 | 10/19/2009 | 11:30 | Excavation #2, 225' west of east end at 25' bgs. | Grab sample | 3 | Confirmation Sample | soil | A4 Scientific (CLP Lab) | | JBR66 | | | | | | | | | | | | | | | | | | | X | X | X | | |
| E2-250-10-101909 | 09100185 | JBR81 | 10/19/2009 | 15:35 | Excavation #2, 250' west of east end at 10' bgs. | Grab sample | 3 | Confirmation Sample | soil | A4 Scientific (CLP Lab) | | JBR66 | | | | | | | | | | | | | | | | | | | X | X | X | | |
| E2-250-25-101909 | 09100186 | JBR82 | 10/19/2009 | 15:45 | Excavation #2, 250' west of east end at 25' bgs. | Grab sample | 3 | Confirmation Sample | soil | A4 Scientific (CLP Lab) | | JBR66 | | | | | | | | | | | | | | | | | | | X | X | X | | |
| TB32WT | 09100187 | JBR83 | 10/19/2009 | 16:30 | Trip Blank | Trip Blank | 2 | Trip Blank | water | A4 Scientific (CLP Lab) | | JBR68 | | | | | | | | | | | | | | | | | | | X | | | | |
| CC02101909 | 09100188 | -- | 10/19/2009 | 16:00 | Soil at bottom of Containment Cell #2 | Composite sample | 2 | Miscellaneous | soil | Friedman & Bruya | 910193 | | 21-Oct | 26-Oct | 26-Oct | 22-Oct | 26-Oct | 23-Oct | | | | | | | | | | | | | | | | | |
| TB33WT | 09100189 | -- | 10/19/2009 | 16:30 | Trip Blank | Trip Blank | 2 | Trip Blank | water | Friedman & Bruya | 910193 | | 21-Oct | | | | | | | | | | | | | | | | | | | | | | |
| E1S6B1-102009 | 09100190 | JBR84 | 10/20/2009 | 10:15 | Water from bottom (25') of Excavation 1, Shoring System 6, Bay 1. Excavation had been pumped out, and recharged from surrounding areas. | Grab sample | 8 (4 VOA, 1 amber SVOC, 1 amber PCB, 2 poly metals HNO3) | Water in Excavation | water | Compuchem Labs (CLP Lab) | | JBR68 | | | | | | | | | | | | | | | | | | | X | X | X | | |
| E1S6B1-102009 | 09100190 | MJBR86 | 10/20/2009 | 10:15 | Water from bottom (25') of Excavation 1, Shoring System 6, Bay 1. Excavation had been pumped out, and recharged from surrounding areas. | Grab sample | 8 (4 VOA, 1 amber SVOC, 1 amber PCB, 2 poly metals HNO3) | Water in Excavation | water | Liberty Analytical (CLP Lab) | | MJBR85 | | | | | | | | | | | | | | | | | | | | | | | X |
| CC01102009 | 09100191 | -- | 10/20/2009 | 13:45 | Soil at bottom of Containment Cell #1 | Composite sample | 2 | Miscellaneous | soil | Friedman & Bruya | 910193 | | 21-Oct | 26-Oct | 26-Oct | 22-Oct | 26-Oct | 23-Oct | | | | | | | | | | | | | | | | | |
| TT06102209 | 09100192 | -- | 10/22/2009 | 10:45 | Treated Tank water sample from Tank #6 (representative of tanks #6, 7, 8, 9). (NOTE: pH delivered to Spec. Analytical 10/22/09). | Grab sample | 11 | Water Treatment System Sample | water | Friedman & Bruya | 910222 | -- | | | | | | | | | X | 26-Oct | 23-Oct | 23-Oct | 23-Oct | 26-Oct | 23-Oct | 23-Oct | 23-Oct | X | | | | | | |
| TB34WT | 09100193 | -- | 10/22/2009 | 10:50 | Trip Blank | Trip Blank | 2 | Trip Blank | water | Friedman & Bruya | 910222 | -- | 23-Oct | | | | | | | | | | | | | | | | | | | | | | |
| UT01-SP1-102209 | 09100194 | JBR88 | 10/22/2009 | 14:00 | Untreated water tank #1 spill area: 6' N and 7'W of SW corner of Tank #1 | Grab sample | 4 (1 VOA, 1 SVOC, 1 PCB, 1 metals) | Miscellaneous | soil | A4 Scientific (CLP Lab) | | JBR66 | | | | | | | | | | | | | | | | | | | X | X | X | | |
| UT01-SP1-102209 | 09100194 | MJBR88 | 10/22/2009 | 14:00 | Untreated water tank #1 spill area: 6' N and 7'W of SW corner of Tank #1 | Grab sample | 4 (1 VOA, 1 SVOC, 1 PCB, 1 metals) | Miscellaneous | soil | Liberty Analytical (CLP Lab) | | MJBR88 | | | | | | | | | | | | | | | | | | | | | | | X |
| UT01-SP2-102209 | 09100195 | JBR89 | 10/22/2009 | 14:10 | Untreated water tank #1 spill area: 9' N and 5' E of SW corner of Tank #1 | Grab sample | 4 (1 VOA, 1 SVOC, 1 PCB, 1 metals) | Miscellaneous | soil | A4 Scientific (CLP Lab) | | JBR66 | | | | | | | | | | | | | | | | | | | X | X | X | | |
| UT01-SP2-102209 | 09100195 | MJBR89 | 10/22/2009 | 14:10 | Untreated water tank #1 spill area: 9' N and 5' E of SW corner of Tank #1 | Grab sample | 4 (1 VOA, 1 SVOC, 1 PCB, 1 metals) | Miscellaneous | soil | Liberty Analytical (CLP Lab) | | MJBR88 | | | | | | | | | | | | | | | | | | | | | | | X |
| UT01-SP3-102209 | 09100196 | JBR91 | 10/22/2009 | 14:20 | Untreated water tank #1 spill area: 2' S and 6' E of SW corner of Tank #1 | Grab sample | 4 (1 VOA, 1 SVOC, 1 PCB, 1 metals) | Miscellaneous | soil | A4 Scientific (CLP Lab) | | JBR66 | | | | | | | | | | | | | | | | | | | X | X | X | | |

**Table 8-1. Summary of Analyses.**



| Location ID | Sample No. | CLP # | Date | Time | Location | Sample Type | No. of Containers | Location Type | Matrix | Laboratory | F&B Laboratory Work Order Number | SDG | VOCs 8260 | SVOCs 8270 | PCBs 8082 | NWTP H-Dx | Hg | Priority 13 Metals | RCRA Metals | Total Suspended Solids | pH | Hg 245.1 / 1631 | Metals * 200.8 | TSS 160.2 | VOCs 624 | SVOCs 625 | PCBs 608 | Cyanide 335.3 | Total Oil& Grease 1664 | Total Toxic Organics | CLP VOA | CLP SVOA | CLP PCB Aroclors | CLP Pesticide/ PCBs | CLP Total Metals / Hg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| UT01-SP3-102209 | 09100196 | MJBR91 | 10/22/2009 | 14:20 | Untreated water tank #1 spill area: 2' S and 6' E of SW corner of Tank #1 | Grab sample | 4 (1 VOA, 1 SVOC, 1 PCB, 1 metals) | Miscellaneous | soil | Liberty Analytical (CLP Lab) | | MJBR88 | | | | | | | | | | | | | | | | | | | | | | | X |
| UT01-SP4-102209 | 09100197 | JBR92 | 10/22/2009 | 14:30 | Untreated water tank #1 spill area: 3' S and 20' E of SW corner of Tank #1 | Grab sample | 4 (1 VOA, 1 SVOC, 1 PCB, 1 metals) | Miscellaneous | soil | A4 Scientific (CLP Lab) | | JBR66 | | | | | | | | | | | | | | | | | | | X | X | X | | |
| UT01-SP4-102209 | 09100197 | MJBR92 | 10/22/2009 | 14:30 | Untreated water tank #1 spill area: 3' S and 20' E of SW corner of Tank #1 | Grab sample | 4 (1 VOA, 1 SVOC, 1 PCB, 1 metals) | Miscellaneous | soil | Liberty Analytical (CLP Lab) | | MJBR88 | | | | | | | | | | | | | | | | | | | | | | | X |
| UTBG-102209 | 09100198 | JBR93 | 10/22/2009 | 14:40 | Background soil sample collected 50' S and 50' W of SW corner of Tank #1 | Grab sample | 4 (1 VOA, 1 SVOC, 1 PCB, 1 metals) | Miscellaneous | soil | A4 Scientific (CLP Lab) | | JBR66 | | | | | | | | | | | | | | | | | | | X | X | X | | |
| UTBG-102209 | 09100198 | MJBR93 | 10/22/2009 | 14:40 | Background soil sample collected 50' S and 50' W of SW corner of Tank #1 | Grab sample | 4 (1 VOA, 1 SVOC, 1 PCB, 1 metals) | Miscellaneous | soil | Liberty Analytical (CLP Lab) | | MJBR88 | | | | | | | | | | | | | | | | | | | | | | | X |
| TB35WT | 09100199 | JBR94 | 10/22/2009 | 15:00 | Trip Blank | Trip Blank | 2 | Trip Blank | water | A4 Scientific (CLP Lab) | | JBR68 | | | | | | | | | | | | | | | | | | | X | | | | |
| UT01102609 | 09100200 | -- | 10/26/2009 | 10:50 | Final water from Untreated Tank #1 | Grab sample | 10 | Water Treatment System Sample | water | Friedman & Bruya | 910243 | -- | 27-Oct | 27-Oct | 27-Oct | 27-Oct | 28-Oct | 27-Oct | | | 27-Oct | | | 28-Oct | | | | | | | | | | | |
| TB36WT | 09100201 | -- | 10/26/2009 | 11:00 | Trip Blank | Trip Blank | 2 | Trip Blank | water | Friedman & Bruya | 910243 | -- | 27-Oct | | | | | | | | | | | | | | | | | | | | | | |
| UT01-SED-102609 | 09100202 | -- | 10/26/2009 | 12:45 | Sediment from bottom of Untreated Tank #1 | Grab sample | 4 | Miscellaneous | soil | Friedman & Bruya | 910243 | -- | 28-Oct | 27-Oct | 27-Oct | 27-Oct | 28-Oct | 27-Oct | | | | | | | | | | | | | | | | | |
| SF102709 | 09100203 | -- | 10/27/2009 | 14:30 | Sample from inlet (upstream portion) of sand filter, taken from upstream vessel. | Grab sample | 2 | Miscellaneous | soil | Friedman & Bruya | 910252 | -- | 28-Oct | 28-Oct | 28-Oct | 28-Oct | 28-Oct | 28-Oct | | | | | | | | | | | | | | | | | |
| GAC1-TOP-102709 | 09100204 | -- | 10/27/2009 | 15:00 | Granular carbon from inlet area of GAC vessel #1 (upstream vessel) | Grab sample | 2 | Miscellaneous | product | Friedman & Bruya | 910252 | -- | 29-Oct | 28-Oct | 28-Oct | 28-Oct | 28-Oct | 28-Oct | | | | | | | | | | | | | | | | | |
| GAC1-MID-102709 | 09100205 | -- | 10/27/2009 | 15:15 | Granular carbon from 60 inches below inlet area of GAC vessel #1 (upstream vessel) | Grab sample | 2 | Miscellaneous | product | Friedman & Bruya | 910252 | -- | 29-Oct | 28-Oct | 28-Oct | 28-Oct | 28-Oct | 28-Oct | | | | | | | | | | | | | | | | | |
| TB37WT | 09100206 | -- | 10/27/2009 | 15:30 | Trip Blank | Trip Blank | 2 | Trip Blank | water | Friedman & Bruya | 910252 | -- | 28-Oct | | | | | | | | | | | | | | | | | | | | | | |
| CC08102809 | 09100207 | -- | 10/28/2009 | 13:00 | Soil at bottom of Containment Cell #8 (used as de-con containment) | Composite sample | 2 | Miscellaneous | soil | Friedman & Bruya | 910265 | -- | 30-Oct | 29-Oct | 29-Oct | 29-Oct | 30-Oct | 30-Oct | | | | | | | | | | | | | | | | | |
| TB38WT | 09100208 | -- | 10/28/2009 | 13:20 | Trip Blank | Trip Blank | 2 | Trip Blank | water | Friedman & Bruya | 910265 | -- | 29-Oct | | | | | | | | | | | | | | | | | | | | | | |
| | 10244100 | JCGR3 | 6/17/2010 | 10:35 | Soil under stockpile | 6 point composite | | | soil | MitKem | | JCGR3 | | | | | | | | | | | | | | | | | | | 26-Jun | 1-Jul | 4-Jul | | |
| | 10244100 | MJCGR3 | 6/17/2010 | 10:35 | Soil under stockpile | 6 point composite | | | soil | SVL | | MJCGR3 | | | | | | | | | | | | | | | | | | | | | | | 8-Jul |
| | 10244101 | JCGR4 | 6/17/2010 | 10:00 | Soil under stockpile | 6 point composite | | | soil | MitKem | | JCGR3 | | | | | | | | | | | | | | | | | | | 26-Jun | 1-Jul | 4-Jul | | |
| | 10244101 | MJCGR4 | 6/17/2010 | 10:00 | Soil under stockpile | 6 point composite | | | soil | SVL | | MJCGR3 | | | | | | | | | | | | | | | | | | | | | | | 8-Jul |
| | 10244103 | JCGR5 | 6/17/2010 | 9:30 | Soil under stockpile | 6 point composite | | | soil | MitKem | | JCGR3 | | | | | | | | | | | | | | | | | | | 26-Jun | 1-Jul | 4-Jul | | |
| | 10244103 | MJCGR5 | 6/17/2010 | 9:30 | Soil under stockpile | 6 point composite | | | soil | SVL | | MJCGR3 | | | | | | | | | | | | | | | | | | | | | | | 8-Jul |
| | 10244102 | JCGR6 | 6/17/2010 | 10:20 | Soil under stockpile | 6 point composite | | | soil | MitKem | | JCGR3 | | | | | | | | | | | | | | | | | | | 26-Jun | 1-Jul | 4-Jul | | |
| | 10244102 | MJCGR6 | 6/17/2010 | 10:20 | Soil under stockpile | 6 point composite | | | soil | SVL | | MJCGR3 | | | | | | | | | | | | | | | | | | | | | | | 8-Jul |
| | | JCGR7 | 6/17/2010 | | Trip Blank | blank | | Trip Blank | water | MitKem | | JCGR3 | | | | | | | | | | | | | | | | | | | 20-Jun | | | | |

## Notes

*Acronyms and Abbreviations*

RG – Remedial Goal. Record of Decision based cleanup levels (EPA 2005)
GW – Groundwater
RSL – Regional Screening Levels (EPA 2010)
RL - Reporting Limit
SO – Soil
NA – Non-aqueous phase liquid
-- – Not analyzed or calculated.

*Qualifiers*

J – The analyte was positively identified. The associated numerical result is an estimate.
JN – There is evidence that the analyte is present. The associated numerical result is an estimate.
J+ – The result is an estimated quantity, but the result may be biased high.
N – There is evidence the analyte is present in this sample.
R – The data are unusable for all purposes.
U – The analyte was analyzed for but not detected at or above the reporting limit.
UJ – The analyte was not detected at or above the reporting limit. The associated numerical value is an estimate of the quantitation limit of the analyte in this sample.
UB – Result qualified as undetected due to a concentration less than 5 times the concentration detected in a QC blank.

Units

mg/kg – Milligrams per kilogram
mg/L – Milligrams per liter
SU – Standard units
µg/kg – Micrograms per kilogram
µg/L – Micrograms per liter

*Location Type Abbreviations*

CC - Containment Cell
CS – Confirmation soil sample
BF – Backfill
BS – Background soil sample of the protective cap
EF – Effluent water sample
E – Grab sample from excavation (water, soil, or product)
FM – Filter media
GAC - grannular activated carbon
IF – Influent water sample
IT – Intermediate filter treatment sample
SF - Sand filter
SP – Cap samples from spill area
ST – Stockpile soil sample
TT - treated tank
UTBG - Under the water treatment tank background soil sample
UT - Untreated tank water sample
WSSP - Waste Storage Stockpile, northwest corner

*Actions*

Shaded cell – Analyte detected above the method reporting limit (MRL)
**Bolded result** – Analyted detected above the ROD Excavation Criteria

*Notes*

Total PCBs were calculated by adding half of the MRL for non-detects to detected analytical results. If the Total PCB value is not shaded the value includes no detected results above individual MRLs.

The analytical results provided in this table include data collected from October through November 2009 as part of the EPA Removal Action event.

The remediation goals for tetrachloroethene, trichloroethene, and vinyl choride were calculated using linear equilibrium soil/water partition equations. These values represent prevention of migration of soil contaminants to groundwater that would result in exposure to a future off-site resident through direct contact (ingestion, inhalation, dermal contact) that would result in excess lifetime cancer risk greater than 1E-06 for individual carcinogens or 1E-05 for additive carcinogens or a hazard index equal to 1.

EPA 2001. Record of Decision for the Groundwater Operable Unit. Northwest Pipe and Casing Superfund Site, Clackamas, Oregon.

EPA 2010. United States Environmental Protection Agency Regional Screening Levels (RSL) Summary Table. May

# APPENDIX A

## Photographic Documentation

Photo 1: Removing cap from Excavation Area 1

Direction: S Date: 9/4/2009 Photo by: JP

Photo 2: Shaping containment cells

Direction: S Date: 9/4/2009 Photo by: JP

Photo 3: Delivery of slide shoring

Direction: N Date: 9/8/2009 Photo by: JP

Photo 4: Rock placed at site exit for dry wheel wash

Direction: SW Date: 9/8/2009 Photo by: JP

Photo 5: Performing modified percolation test

Direction: NW Date: 9/9/2009 Photo by: JP

Photo 6: Laying bottom layers for containment cells

Direction: NE Date: 9/9/2009 Photo by: JP

Photo 7: Excavation Area 1, fenced for safety

Direction: N Date: 9/10/2009 Photo by: JP

Photo 8: Installing sliding shoring in Excavation Area 1, Bay 1, SS1

Direction: NE Date: 9/9/2009 Photo by: JP

Photo 9: Water Treatment Facility, sand filters in foreground

Direction: S Date: 9/10/2009 Photo by: JP

Photo 10: Lowering mini-excavator into EA1, SS1, Bay2

Direction: E Date: 9/16/2009 Photo by: JP

Photo 11: EA1, SS1, Bay1

Direction: N Date: 9/16/2009 Photo by: JP

Photo 12: EA1, SS1, Bay1&2-- safety scaffolding in background

Direction: W Date: 9/16/2009 Photo by: JP

Photo 13: EA1, SS1, Bay1- Miniexcavator and pumping bucket.

Direction: NW Date: 9/16/2009 Photo by: JP

Photo 14: Excavated soil in containment cells and covered for rain.

Direction: NW Date: 9/17/2009 Photo by: KP

Photo 15: Excavating EA1, SS1, Bay4

Direction: E Date: 9/18/2009 Photo by: KP

Photo 16: Covering excavated soil in containment cells for rain.

Direction: NW Date: 9/18/2009 Photo by: KP

Photo 17: EA1, SS1 - climbing out of excavation

Direction: SE Date: 9/18/2009 Photo by: KP

Photo 18: Clean imported backfill - sand, gravel, rock

Direction: N Date: 9/25/2009 Photo by: KP

Photo 19: Backfilling EA1, SS3, Bay1 with sand

Direction: SE Date: 10/3/2208 Photo by: MA

Photo 20: EA1, SS3, Bay1 with partially backfilled

Direction: E Date: 10/3/2008 Photo by: MA

Photo 21: Loading trucks with excavated soil from containment cells

Direction: NE Date: 9/28/2008 Photo by: MA

Photo 22: Loading trucks with excavated soil from stockpile

Direction: N Date: 9/30/2008 Photo by: MA

Photo 23: Stockpiled excavated soil, covered for rain

Direction: W Date: 9/28/2008 Photo by: MA

Photo 24: Excavating EA1, SS3 and backfilling EA1, SS2

Direction: N Date: 9/28/2008 Photo by: MA

Photo 25: EA1, SS2 - Wetting backfill lifts to compact

Direction: E Date: 9/28/2008 Photo by: MA

Photo 26: Excavating EA1, SS3, B2

Direction: E Date: 9/28/2008 Photo by: MA

Photo 27: Excavating EA1, SS3, B2

Direction: E Date: 9/28/2008 Photo by: MA

Photo 28: Wetting backfill in EA1, SS1

Direction: W Date: 9/25/2009 Photo by: KP

Photo 29: Sampling in EA1

Direction: S Date: 9/19/2009 Photo by: JP

Photo 30: Oil floating on water at bottom of EA1, SS2, B1 excavation

Direction: E Date: 9/21/2009 Photo by: JP

Photo 31: Escape ladders in EA1

Direction: SE Date: 9/21/2009 Photo by: MA

Photo 32:Lowering Mini-excavator in to EA1, SS2, B1

Direction: SE Date: 9/21/2009 Photo by: MA

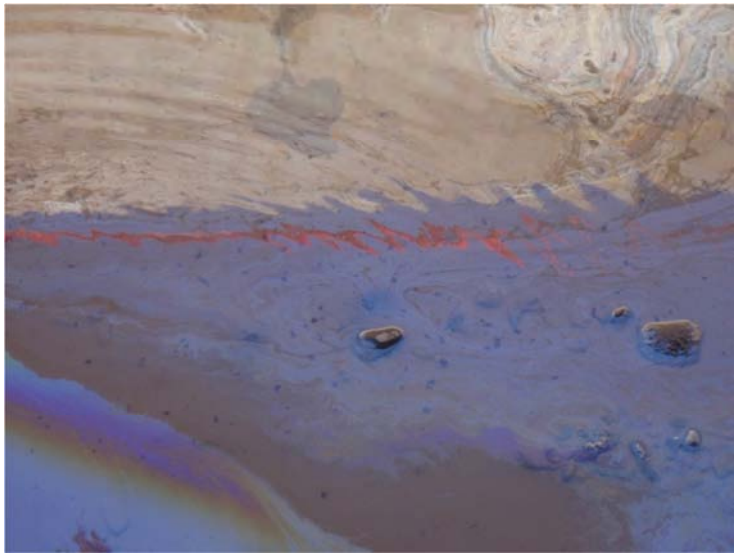


Photo 33: Oil floating on water at bottom of EA1, SS2, B1 excavation
Direction: E Date: 9/21/2009 Photo by: MA

Photo 34: Oil floating on water at bottom of EA1, SS2, B1 excavation
Direction: N Date: 9/21/2009 Photo by: MA

Photo 35: Oil floating on water at bottom of EA1, SS2 excavation
Direction: N Date: 9/23/2009 Photo by: JP

Photo 36: Oil floating on water at bottom of EA1, SS2 excavation
Direction: E Date: 9/23/2009 Photo by: JP

Photo 37: Excavation Area 1, Shoring Systems 1 and 2 excavated
Direction: SE Date: 9/24/2009 Photo by: KP

Photo 38: Mini-excavator at bottom of EA1, SS2 excavation
Direction: E Date: 9/24/2009 Photo by: JP

Photo 39: Loading trucks with clean fill sand
Direction: N Date: 9/25/2009 Photo by: KP

Photo 40: EA1, SS2
Direction: E Date: 9/24/2009 Photo by: KP

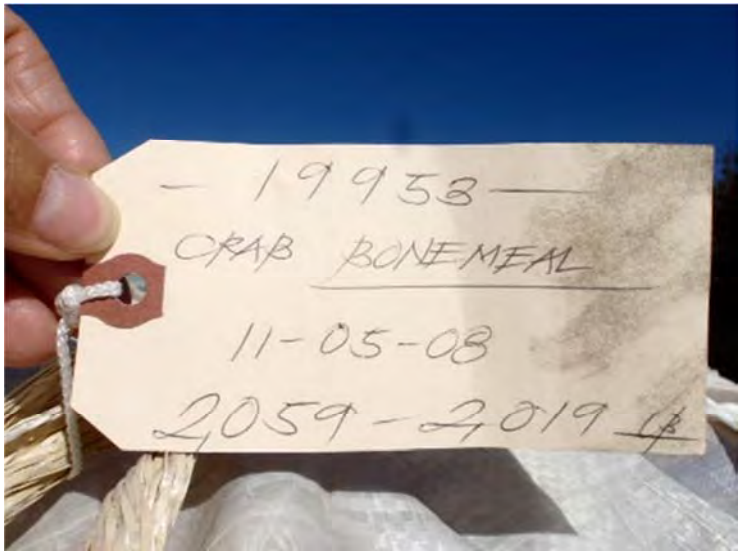



Photo 41: Label on 1-ton bag of Chitin Soil Amendment

Direction: SE Date: 9/25/2009 Photo by: KP

Photo 42: Four 1-ton bags of Chitin Soil Amendment

Direction: SE Date: : 9/25/2009 Photo by: KP

Photo 43: Removing slide shoring from EA1, SS1

Direction: E Date: 9/26/2009 Photo by: KP

Photo 44: Wetting backfill in EA1, SS1

Direction: E Date: : 9/25/2009 Photo by: KP

Photo 45: EA1, SS1 partially backfilled with sand and chitin amendment
Direction: E Date: : 9/25/2009 Photo by: KP

Photo 46: EA1, SS1 starting to add gravel backfill and chitin amendment
Direction: E Date: 9/26/2009 Photo by: KP

Photo 47: Dumping clean sand in EA1, SS1
Direction: NE Date: 9/26/2009 Photo by: KP

Photo 48: Oil floating on water at bottom of EA1, SS2
Direction: E Date: 9/26/2009 Photo by: KP

Photo 49: Removing slide shoring posts from EA1, SS1

Direction: S Date: 9/26/2009 Photo by: KP

Photo 50: Oregon Iron Works newly laid lay-down yard north of EA1

Direction: NE Date: 9/26/2009 Photo by: KP

Photo 51: Removing slide shoring form EA1, SS1

Direction: W Date: 9/26/2009 Photo by: KP

Photo 52: Three piles of different sizes of clean backfill

Direction: W Date: 9/26/2009 Photo by: KP

Photo 53: Oil floating on water at bottom of EA1

Direction: E Date: 9/26/2009 Photo by: KP

Photo 54: Removing slide shoring form EA1, SS1

Direction: E Date: 9/26/2009 Photo by: KP

Photo 55: Pump bucket in bottom of EA1, SS4, B1; exit ladder

Direction: E Date: 10/6/2009 Photo by: KP

Photo 56: Loader transferring excavated soil

Direction: NW Date: 9/28/2009 Photo by: JP

Photo 57: Containment cells covered for rain

Direction: SW Date: 9/28/2009 Photo by: JP

Photo 58: Water Treatment Facility

Direction: NW Date: 9/28/2009 Photo by: JP

Photo 59:Five untreated 21,000 gallon tanks in foreground, GAC tanks

Direction: W Date: 10/6/2009 Photo by: KP

Photo 60: Backfilling EA1, SS3. Finishing EA1, SS4 excavation

Direction: E Date: 10/6/2009 Photo by: KP

Photo 61: Label on bag of Daramend

Direction: NA Date: 10/9/2009 Photo by: KP

Photo 62: Cleaning slide shoring posts prior to next use

Direction: S Date: 10/6/2009 Photo by: KP

Photo 63: Alternate reinforced excavator buckets

Direction: E Date: 10/6/2009 Photo by: KP

Photo 64: MW207, OIW lay-down yard in background

Direction: NE Date: 10/6/2009 Photo by: KP

Photo 65: Starting excavation of EA1, SS5, B1

Direction: SW Date: 10/6/2009 Photo by: KP

Photo 66: Measuring Daramend into Excavator bucket

Direction: SW Date: 10/6/2009 Photo by: KP

Photo 67: Backfilling EA1, SS3

Direction: SW Date: 10/6/2009 Photo by: KP

Photo 68: Treated Water discharge line to sewer

Direction: S Date: 10/7/2009 Photo by: KP

Photo 69: Treated water discharge meter

Direction: S Date: 10/7/2009 Photo by: KP

Photo 70: Treated water tanks and manifolded lines

Direction: N Date: 10/7/2009 Photo by: KP

Photo 71: Untreated water tanks and drums left from previous site work.

Direction: E Date: 10/7/2009 Photo by: KP

Photo 72: Sample collection tube in treated water tank.

Direction: E Date: 10/7/2009 Photo by: KP

Photo 73: Excavating EA1, SS5, B2

Direction: SW Date: 10/7/2009 Photo by: KP

Photo 74: Removing overburden from EA2.

Direction: E Date: 10/8/2009 Photo by: KP

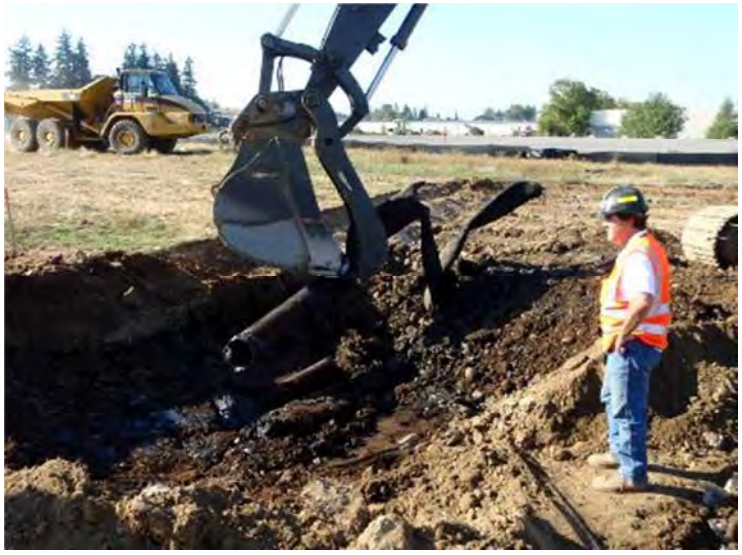


Photo 75: Pipe and coal tar found in EA2.

Direction: NW Date: 10/8/2009 Photo by: KP

Photo 76: Removing overburden from EA2.

Direction: SW Date: 10/8/2009 Photo by: KP

Photo 77: Excavating EA1, SS5, B3

Direction: W Date: 10/8/2009 Photo by: KP

Photo 78: Pouring Daramand into backfill for EA1, SS4.

Direction: W Date: 10/8/2009 Photo by: KP

Photo 79: North edge of EA1, SS6 and MW207

Direction: E Date: 10/10/2009 Photo by: KP

Photo 80: Pipe and coal tar in EA2.

Direction: NW Date: 10/9/2009 Photo by: KP

Photo 81: Water in bottom of Excavation EA1, SS5, B1.

Direction: NE Date: 10/9/2009 Photo by: KP

Photo 82: Excavating and installing shoring in EA1, SS6, B1

Direction: N Date: 10/9/2009 Photo by: KP

Photo 83: ERRS crew positioning slide shoring panel, MW207 in background

Direction: N Date: 10/9/2009 Photo by: KP

Photo 84: Three excavators positioning slide shoring in EA1, SS6

Direction: NW Date: 10/9/2009 Photo by: KP

Photo 85: Three excavators positioning slide shoring in EA1, SS6

Direction: SE Date: 10/9/2009 Photo by: KP

Photo 86: Pipe and coal tar removed from EA2

Direction: N Date: 10/9/2009 Photo by: KP

Photo 87: Cap removed from EA2 and piled on site for replacement

Direction: SE Date: 10/9/2009 Photo by: KP

Photo 88: Backfill and Daramend in EA1, SS5

Direction: E Date: 10/10/2009 Photo by: KP

Photo 89:Overburden removed from EA1

Direction: SE Date: 10/10/2009 Photo by: KP

Photo 90: Water Treatment System flocculant addition tank and pump

Direction: E Date: 10/10/2009 Photo by: KP

Photo 91: EA1, picture taken from top of Water Treatment tanks

Direction: E Date: 10/10/2009 Photo by: KP

Photo 92: Sheen on water at bottom of EA1,SS6,B1

Direction UNK: Date: 10/14/2009 Photo by: KP

Photo 93: Removing overburden from EA2

Direction: SW Date: 10/10/2009 Photo by: KP

Photo 94: Pipes found in EA2

Direction: UNK Date: 10/10/2009 Photo by: KP

Photo 95:Overburden removed from EA2

Direction: SW Date: 10/12/2009 Photo by: KP

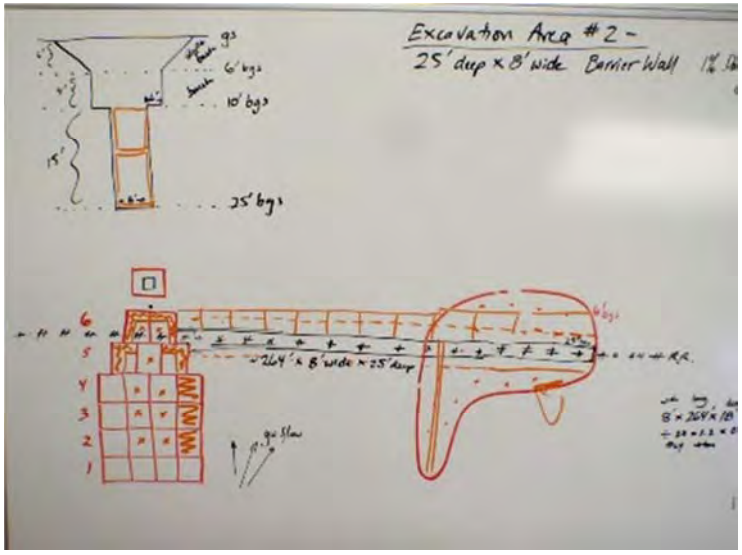



Photo 96: Planning excavation foot print and backfill for EA2.

Direction: NA Date: 10/12/2009 Photo by: KP

Photo 97:Overview of site looking south from top of Untreated tanks

Direction: S Date: 10/14/2009 Photo by: KP

Photo 98: Crew working on EA2

Direction: E Date: 10/14/2009 Photo by: KP

Photo99: Trench shoring box in EA2, OIW laydown yard in background

Direction: N Date: 10/14/2009 Photo by: KP

Photo 100: Starting trench for EA2.

Direction: W Date: 10/14/2009 Photo by: KP

Photo 101: Trench box for EA2

Direction: W Date: 10/14/2009 Photo by: KP

Photo 102: Starting trench in EA2.

Direction: SW Date: 10/14/2009 Photo by: KP

Photo 103: Measuring depth of excavation of trench in EA2

Direction: E Date: 10/14/2009 Photo by: KP

Photo 10: Collecting soil sample from excavator bucket in EA2

Direction: SW Date: 10/14/2009 Photo by: KP

Photo 105: Bottom and sides of excavation in EA2

Direction: UNK Date: 10/14/2009 Photo by: KP

Photo 106: First trench box placed in EA2.

Direction: SW Date: 10/14/2009 Photo by: KP

Photo 107: Excavating EA2 trench

Direction: NW Date: 10/15/2009 Photo by: KP

Photo 108: First trench box placed in EA2

Direction: SW Date: 10/14/2009 Photo by: KP

Photo 109: Collecting sample from bucket in EA2.

Direction: SW Date: 10/14/2009 Photo by: KP

Photo 110: Backfilling trench in EA2.

Direction: SW Date: 10/14/2009 Photo by: KP

Photo 111: Cobble and water in bottom of EA2 trench

Direction: W Date: 10/14/2009 Photo by: KP

Photo 112: Pumping water out of EA2 trench

Direction: W Date: 10/14/2009 Photo by: KP

Photo 113: Backfilling EA2 trench

Direction: E Date: 10/16/2009 Photo by: KP

Photo 114: Pumping water out of EA2 trench

Direction: E Date: 10/14/2009 Photo by: KP

Photo 115: Covering waste soil stockpile for rain

Direction: W Date: 10/14/2009 Photo by: KP

Photo 116: Sheen on water in EA2 trench

Direction: S Date: 10/14/2009 Photo by: KP

Photo 117: Backfilling EA2 trench

Direction: E Date: 10/16/2009 Photo by: KP

Photo 118: Mixing backfill in EA2 trench

Direction: NE Date: 10/16/2009 Photo by: KP

Photo 119: Mixing and compacting backfill in EA2 trench

Direction: N Date: 9/10/2009 Photo by: JP

Photo 120: Equipment working on EA2 trench

Direction: NE Date: 9/9/2009 Photo by: JP

Photo 121: Trench box in EA2 trench

Direction: E Date: 10/16/2009 Photo by: JP

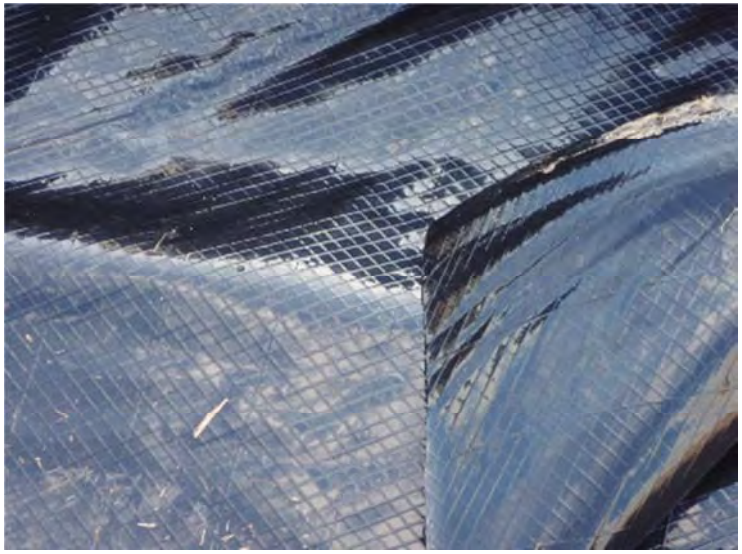


Photo 122: Liner material

Direction: NE Date: 9/9/2009 Photo by: JP

Photo 123: Cardboard Recycling at Command Post

Direction: S Date: 10/16/2009 Photo by: JP

Photo 124: Stockpiled waste soil covered for the winter

Direction: NE Date: 9/9/2009 Photo by: JP

Photo 125: Stockpiled waste soil opened up for loading and removal

Direction: W Date: 6/3/2010 Photo by: EN

Photo 126: Loading waste soil onto haul trucks

Direction: E Date: 6/3/2010 Photo by: TA

Photo 127: Preparing waste soil for removal

Direction: SW Date: 6/6/2010 Photo by: EN

Photo 128: Command Post

Direction: NW Date: 6/6/2010 Photo by: EN

Photo 129: Air monitoring station during June 2010 work

Direction: N Date: 6/7/2010 Photo by: EN

Photo 130: Loading haul trucks

Direction: NW Date: 6/3/2010 Photo by: EN

Photo 131: Standing water on cap south of EA1 and EA2

Direction: NW Date: 6/6/2010 Photo by: TA

Photo 132: Standing water on cap south of EA1 and EA2

Date: 6/6/2010 Direction: NW Date: 6/6/2010

Photo 133: OIW silt fence and sprinkler

Direction: W Date: 6/6/2010 Photo by: EN

Photo 134: Final graded cap over EA1 after installation of membrane

Direction: E Date: 6/22/2010 Photo by: JP

Photo 135: OIW graded berm between command post and area of stockpile

Direction: N Date: 6/22/2010 Photo by: JP

Photo 136: Final graded cap over EA1 after installation of membrane

Direction: N Date: 6/22/2010 Photo by: JP

# APPENDIX B

## Action Memorandum

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10 Emergency Response Unit
1200 Sixth Avenue. Suite 900
Seattle, Washington 98101-3140

**MEMORANDUM**

DATE: July 28, 2009

SUBJECT: Approval and Funding for a Time Critical Removal Action at the Northwest Pipe and Casing/ Hall Processing Company Site (NWPC Site) and Request for a 2 Million Dollar Exemption

FROM: Kathy Parker, On-Scene Coordinator
Mark Ader, Remedial Project Manager

TO: Daniel D. Opalski, Director
Office of Environmental Cleanup

THRU: Chris D. Field, Manager
Emergency Response Unit

SITE ID: 10G8

## I. PURPOSE

The purpose of this Action Memorandum is to request and document approval of the proposed time-critical removal action described herein for the NWPC Site located in Clackamas County at 9585 Mather Road, Clackamas, Oregon 97015. (See figure 1.)

This Removal Action consists of the excavation of contaminated soil that is interfering with the groundwater remedy that was implemented during the 2003 Remedial Action. This Action Memorandum also documents approval for an exemption to the two million dollar limit on removal actions established under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This action meets the criteria for initiating a removal action under the National Contingency Plan (NCP), 40 C.F.R. §300.415.

## II. SITE CONDITIONS AND BACKGROUND

The CERCLIS and RCRIS ID number is ORD980988307. The Oregon State Waste ID is ORD987201126.



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## II.A. Site Description

### II.A.1. Removal site evaluation

Pipe-coating businesses, run by the Hall Process Company and Northwest Pipe and Casing Company, operated on the southern part of the 53 acre property from 1956 to 1985. During the pipe-coating operations, contaminants were released at the Site into the soil and groundwater. These contaminants included volatile organic compounds (VOCs), polynuclear aromatic hydrocarbons (PAHs) and polychlorinated biphenyls (PCBs).

Remedial Action (RA) at the Site, which was divided into an Operable Unit (OU) for soil and an OU for groundwater, was performed between August 1, 2001 and September 8, 2004. The RA consisted of soil excavation and treatment of 32,010 tons of contaminated soil and installation of a two foot cap of clean soil on a portion of the Site, installation of a groundwater treatment system consisting of groundwater circulating wells (GCWs) and monitoring wells, and institutional controls to prohibit the use of groundwater at the Site.

In 2006, the Five Year Review (FYR) of the Site concluded that the groundwater remedy was not functioning as designed. As a follow up to the FYR, EPA Region 10 requested that the EPA Headquarters Remedial System Evaluation (RSE) contractor conduct an analysis of the remedy. The findings established that the groundwater treatment system should be shut down and additional site characterization of the main plume be completed to help determine the southern boundary of the plume. A site wide groundwater monitoring event was conducted in November 2007. During this event a non-aqueous phase liquid (NAPL) was discovered in monitoring well MW-207 located within the Plume 1 source area (Parametrix, 2007). Analysis indicated the sample contained PAHs and VOCs with some PCBs and metals; and that the composition of the dense non-aqueous phase liquid (DNAPL) fraction was similar to that of coal tar which was used at the Site (Parametrix, 2008). (See Table 1.)

Based on the RSE recommendations and the discovery of DNAPL in MW-207, in the fall of 2008, a Supplemental Focused Field Investigation (SFFI) was completed. The SFFI identified three DNAPL bodies, a main body and two smaller bodies within the Plume 1 Source Area. These DNAPL bodies are presumably composed of coal tars. See Figures 2 and 3 and Tables 2, 3 and 4.

Analytical results for soils collected within the DNAPL bodies indicate relatively high concentrations of chlorinated volatile organic compounds (CVOCs), naphthalene, and BTEX (benzene, toluene, ethylbenzene, xylene). In general, CVOCs and BTEX concentrations in subsurface soil are limited in extent both laterally and vertically within the DNAPL bodies. However, naphthalene concentrations in subsurface soil are more

pervasive throughout the DNAPL bodies, with detectable concentrations up to 65 feet below ground surface (bgs).

In February 2009, the Region held a conference call with Headquarters and the RSE contractor to discuss the findings, especially considering their previous recommendations and how the discovery of the DNAPL bodies, referred to as coal tar bodies, would affect the groundwater remedy. The RSE contractor indicated that no further effective action could be taken on the groundwater remedy until the coal tar bodies, determined to be sources of soil contamination, were removed or otherwise treated.

In May 2009, the EPA Region 10 Remedial Program requested assistance from the Removal Program in removing the major source of soil contamination remaining at the Site so that a new groundwater remedy could be implemented.

On June 18, 2009, a Removal Assessment site visit was conducted by EPA On Scene Coordinator (OSC) Kathy Parker, EPA Remedial Program Manager (RPM) Mark Ader, Oregon Department of Environmental Quality (ODEQ) Project Manager Debbie Bailey and contractors from Environmental Quality Management, Ecology and Environment and Parametrix. All participants concluded that further site work is necessary to remove remaining soil contamination before the Remedial Action groundwater remedy is expected to be effective.

### II.A.2. Physical Location

The Site is located at 9585 SE Mather Road, Clackamas, Oregon 97015, approximately 20 miles southeast of Portland. The Site is bounded to the north by SE Lawnfield Road and to the south by SE Mather Road. There are railroad tracks along the western boundary of the site. Interstate 205 is located approximately one half mile west of the site. The precise location is 45.4149 Latitude; -122.5200 Longitude. See the Site Vicinity Map in Figure 1.

The Site is situated among land consisting primarily of light industrial and commercial properties. The closest residence is located 500 feet west of the Site. There is a small residential area approximately one half mile south of the Site. The City of Milwaukie is located approximately one mile north of the Site.

Groundwater in the wet season is at or near the surface. On-Site runoff generally drains into manmade ditches on the eastern and western boundaries of the Site, which in turn flow into Dean Creek. As part of the remedial action an on-Site wetland was constructed which drains to the ditch on the eastern property boundary and then to Dean Creek. There are no known threatened or endangered species or critical habitat on the Site.

### II.A.3. Site Characteristics

Parcel B of the Site is expected to be used for a railroad spur and laydown yard by an adjoining business by the fall of 2009. Future light industrial development is anticipated or future road construction might be conducted. Parcel A is currently used by the Oregon Department of Transportation (ODOT) for multiple light industrial purposes and by Northwest Development Company (NDC) for warehouses and offices. The two previous EPA Removal Actions performed at the Site involved removal of buildings and debris and are unrelated to the issuance of this Removal Action and therefore will not apply toward the time or dollar ceilings for this Removal Action.

### II.A.4. Release or threatened release into the environment of a hazardous substance, or pollutant or contaminant

The substances known to be on-site include tetrachloroethene (PCE), trichloroethene (TCE), 1,2, cis-dichlorothene, PCBs, vinyl chloride (VC), naphthalene and other polycyclic aromatic hydrocarbons. See Tables 2, 3 and 4 for concentrations and locations of chemical contaminants at the Site. These substances are potential hazardous substances, pollutants, or contaminants as defined by sections 101(14) and 101(33) of CERCLA, as amended, 42 U.S.C. §9601(14) and (33). Other hazardous substances may also be on-site.

The 2008 Focused Field Investigation describes the details of the type, locations and concentrations of groundwater and soil contaminants currently believed to be on the Site. Figures 2 and 3 summarize the current shallow PCE and Napthalene concentration plumes plotted on an aerial photograph of the Site.

### II.A.5. NPL Status

The Site was finalized on the National Priorities List (NPL) on October 14, 1992.

### II.A.6. Maps, pictures, and other graphic representations

Refer to imbedded and attached figures, maps and tables.

## II.B. Other Actions to Date

### II.B.1. Previous Actions

There are no known government or private actions that have been undertaken in the past that have not been previously discussed. (See section II.A.1)

### II.B.2. Current actions

Current actions at the Site include monitoring and maintenance of the soil cap and mitigated wetland, monitoring of the groundwater plumes pending the completion of the source removal discussed in this action memorandum at which time a revision of the groundwater remedy is anticipated, and institutional controls.

## II.C. State and Local Authorities' Roles

### II.C.1. State and Local Actions to Date

ODEQ, and EPA have worked together on cleaning up this Site. ODEQ's ongoing co-management role at the Site is carried out on behalf of the State of Oregon, one of the settling plaintiffs along with the United States in each the four Consent Decrees at the Site.

### II.C.2. Potential for Continued State/Local Response

EPA and ODEQ currently have a State Superfund Contract for this Site. Clackamas County Development Agency, current owner of Parcel B at the Site, ODEQ and EPA will continue to manage Parcel B of the Site in accordance with the PPA, NWPC Consent Decree and all other agreements that are currently in place for the Site. ODEQ will also continue to co-manage the Site with EPA to ensure that ODOT and NDC continue to comply with the Consent Decrees they entered into and with institutional controls at the Site. All entities are committed to staying engaged in the process of developing this property for beneficial use to the community.

On July 20, 2009, ODEQ sent EPA a letter concurring with this proposed Removal Action. Funding will be provided primarily by the Special Account that was created with the monetary Settlement that resulted from the Consent Decrees between EPA, ODEQ and responsible parties.

### II.C.3. Tribal Interests

On July 15, 2009, EPA consulted with the Grande Ronde Tribe and the Siletz Tribe to determine if they had any concerns about the proposed Removal Action. Neither Tribe expressed any environmental or cultural resources concerns related to the Removal Action for EPA to consider.

## III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

The current conditions at this Site meet the following factors which indicate that the Site is a threat to the public health or welfare or the environment, and a removal action is appropriate under section 300.415(b)(2) of the NCP. Any or all of these factors may be present at a site, and any one of these factors may determine the appropriateness of a

removal action.

**III.A. The availability of other appropriate federal or state response mechanisms to respond to the release (300.415(b)(2)(vii)).**

The funds received from the Settlement between EPA, ODEQ, and the PRPs were deposited into a Special Account. These funds are to be used to carry out response actions at the Site. Funds have been set aside in this account to partially fund this time-critical removal action as a response action at the Site. No other federal or state agency has the additional funds or resources to conduct the proposed removal action.

**III.B. Other situations or factors that may pose threats to public health or welfare of the United States or the environment (300.415(b)(2)(viii)).**

The residual source of DNAPL in subsurface soils is a chronic source of dissolved hazardous substances to the groundwater underlying the Site. As long as the residual saturation of DNAPL in soil remains, the DNAPL will percolate downward through the subsurface. The slow rates of dissolution will continue to feed the groundwater plume for an indeterminate period, thus increasing the potential for contamination to migrate toward down gradient drinking water supplies. The total time and cost for eventual cleanup will increase the longer the residual source of DNAPL in subsurface soils remains unaddressed. By contrast, directly addressing the DNAPL source areas will contribute to a more effective solution in terms of total cost and cleanup time. Further, a railroad spur is proposed to be constructed over the residual DNAPL. While the railroad spur is expected to have a positive economic impact, the disruption to the railroad spur if the spur has to be removed at a later date to allow the DNAPL sources to be removed would likely cause an undue financial hardship on the project sponsor, Oregon Iron Works.

| Group | Contaminant | Maximum Detected Concentration | Remedial Goal |
|---|---|---|---|
| VOCs | Tetrachloroethene (PCE) | 370,000 µg/kg | 7 µg/kg |
| | Trichloroethene (TCE) | NA | 13 µg/kg |
| | Vinyl Chloride | NA | 0.1 µg/kg |
| PAHs | Benzo(a)anthracene | 950,000 µg/kg | 2,500 µg/kg |
| | Benzo(b)fluoranthene | 800,000 µg/kg | 2,500 µg/kg |
| | Benzo(k)fluoranthene | 530,000 µg/kg | 2,500 µg/kg |
| | Benzo(a)pyrene | 410,000 µg/kg | 250 µg/kg |
| | Chrysene | 2,100,000 µg/kg | 250,000 µg/kg |
| | Dibenz(a,h)anthracene | 89,000 µg/kg | 250 µg/kg |
| | Indeno(1,2,3-cd)pyrene | 250,000 µg/kg | 2,500 µg/kg |
| PCBs | Total PCBs | 870 mg/kg | 1 mg/kg |

Until the three coal tar bodies are removed from the soil at the Site, enabling effective implementation of the Remedial Action for groundwater, contaminant plumes will continue to spread in the groundwater and potentially threaten down gradient wells.

## IV. ENDANGERMENT DETERMINATION

Actual or threatened releases of hazardous substances from this Site, if not addressed by implementing the response action selected in this Action Memorandum, may present an imminent and substantial endangerment to public health, or welfare, or the environment.

## V. PROPOSED ACTIONS AND ESTIMATED COSTS

### V. A. Proposed Action

### V.A.1. Proposed Action Description

*DNAPL Source Areas*
EPA will excavate an estimated 4,500 tons of contaminated subsurface soil from three DNAPL source areas. The final depth and width of excavations will be determined by visual observation, field screening instruments, and laboratory analyses using the contaminant cleanup concentrations specified in the ROD. The excavated soil will be segregated on-site by hazard class and disposal method, and shipped off-site for disposal at approved hazardous waste and municipal waste facilities, as appropriate. A soil modifier will be placed in the bottom of the excavations to enhance biological degradation of residual contaminants. The excavations will be backfilled with clean soil and the top two feet of fill material will be placed to achieve the ROD barrier specifications. Groundwater intrusion into the excavations will be prevented by freeze-shoring. Any collected groundwater, surface water, or leachate will be analyzed and disposed in an appropriate manner. Disturbed areas will be graded to facilitate surface water drainage and will be revegetated with appropriate plant materials. See Figures 4 and 5.

*Best-Management Practices (BMPs):*
Temporary Best Management Practices (BMPs) will be employed throughout construction for control of erosion, fugitive dust, and storm water management, and to minimize and to avoid adverse impacts on wildlife and their habitats. Dust and particulate concentrations at the Site will be monitored with particulate monitors and the results used to modify work practices if particulate levels exceed the on-Site action level of 10 ppm and Site boundary action level of 3 ppm.

*Assessment and characterization of known and suspected hazardous wastes and potentially contaminated soils:*
Known and suspected hazardous compounds in soil, including VOCs, PAHs, and total

PCBs will be identified by sampling soil during excavation. The samples will be assessed using a combination of fast turn around laboratory analysis and field screening. Field screening methodology will include direct visual observations as well as headspace measurement with field meters and/or field test kits. These sample results will be used to determine whether additional soil excavation is necessary. After the limits of the excavations have been established, confirmation soil samples will be collected from the bottom and sides of the excavations and submitted for laboratory analyses. Samples for waste profiling will be collected from excavated soil stockpiles and submitted for analyses at a fixed laboratory.

For consistency, this Removal Action will use the Remedial Cleanup Goals (RGs) for the soil excavation action levels. Groundwater cleanup will not be addressed by this Removal Action.

| Group | **Contaminant** | **Remedial Goal** |
|---|---|---|
| VOCs | Tetrachloroethene (PCE) | 7 µg/kg |
| | Trichloroethene (TCE) | 13 µg/kg |
| | Vinyl Chloride | 0.1 µg/kg |
| PAHs | Benzo(a)anthracene | 2,500 µg/kg |
| | Benzo(b)fluoranthene | 2,500 µg/kg |
| | Benzo(k)fluoranthene | 2,500 µg/kg |
| | Benzo(a)pyrene | 250 µg/kg |
| | Chrysene | 250,000 µg/kg |
| | Dibenz(a,h)anthracene | 250 µg/kg |
| | Indeno(1,2,3-cd)pyrene | 2,500 µg/kg |
| PCBs | Total PCBs | 1 mg/kg |

**(Regional Screening Levels from the July 7, 2008 "Regional Screening Levels for Chemical Contaminants of Concern at Superfund Sites")**

*Excavation of contaminated material and packaging, labeling, transportation, and disposal of hazardous and non-hazardous wastes:*
This proposed action will require off-site disposal of hazardous waste. To minimize the costs for disposal, all waste materials and excavated contaminated soils will be segregated by hazard class and disposal method. Excavated soils will be assessed using visual observations, field screening data, and/or laboratory results and placed in one of three categories of stockpiles: hazardous waste, non-hazardous solid waste, or soil with contaminant levels below cleanup goals suitable for on-site backfilling. Temporary stockpile cells will be constructed in a designated area of the Site. Each cell will hold approximately 300 cubic yards of soil. The cells will have edge supports (such as hay bales or concrete ecology blocks) and will be lined with plastic sheeting to allow for dewatering with containment of the water and to prevent migration of contaminated material from the stockpiles. Each stockpile will be covered with plastic sheeting until transported off-Site for disposal or used as fill material on Site if appropriate. Each

individual stockpile within the designated area will be given a unique, consecutive number for identification.

If laboratory testing indicates the waste in a cell exhibits any of the RCRA characteristics, it will be disposed of at an approved hazardous waste facility.
If the analysis of the waste in a containment cell indicates it does not exhibit any of the RCRA characteristics, it will be transported to a non-hazardous waste facility.

Wastes will be appropriately packaged for off-Site disposal at a RCRA-permitted facility and in accordance with CERCLA's Off-Site Disposal Rule. Off-site shipments of hazardous waste will be tracked with hazardous waste manifests. Off-site shipments of non-hazardous materials will be similarly tracked with bills-of-lading.

Water collected from the excavation dewatering and soil stockpile drainage will be contained in temporary storage tanks. The water from the tanks will be sampled and analyzed at a fixed laboratory. Depending on the analytical results, the water may be treated by an on-Site water treatment system and then tested to determine the contaminants remaining in the water after treatment. Depending on the analytical results for the concentrations of contaminants remaining in the treated water, the water will be disposed of either by injecting into the storm water system or the sewer system or transported off-site to an approved hazardous waste facility.

*Post removal Site controls:*
The need for any post-removal site control activities (e.g., maintenance of fences, signs) will be determined by the EPA Region 10 Remedial Program (Program), and will be managed by the Program pursuant to the Site RODs. The Program will also determine the need for specific institutional controls, and if needed, such controls will be managed by the Program pursuant to the Site RODs.

### V.A.2. Contribution to remedial performance

The proposed removal action is integral to, and consistent with, the long-term groundwater treatment remedy. If future actions are required, the proposed removal action will likely not impede those actions based upon available information.

### V.A.3. Description of alternative technologies

There are no other implementable or cost effective technologies that have been identified for the Site. Removal of waste and soil is a standard technology for these contaminants. On-Site and off-Site thermal desorption of the contaminants present at the Site were considered to attempt to reduce transport, disposal and fill costs. However, factors such as the types of contaminants, the percentage of groundwater in the soil, and permitting issues for air emissions from the thermal desorption process resulted in that technology not being implementable or cost effective at this Site.

Also considered was surrounding the contaminated soil with an impervious layer. However, the depth of the contamination makes that option difficult to implement and therefore not cost-effective. It would also have the undesirable result of requiring long term operation and maintenance of the impervious layer.

### V.A.4. Engineering Evaluation/Cost Analysis (EE/CA)

This proposed action is for a time-critical removal action, therefore an EE/CA is not required.

### V.A.5. Applicable or relevant and appropriate requirements (ARARs)

ARARs are defined in CERCLA Section 121 and the NCP [40 CFR Part 300]. Applicable" requirements are those cleanup standards and other environmental protection requirements promulgated under federal or state law that specifically address a hazardous substance, pollutant, contaminant, location, response action, or other circumstance at a site. While not applicable to a particular circumstance at a CERCLA site, "relevant and appropriate" requirements address problems or situations sufficiently similar to those encountered at a site that their use is well suited to the site.

Oregon Environmental Cleanup Rules (OAR 340-102) and TSCA Risk-Based Option for PCB Remediation (40 CFR 761.61) were considered during the development of the RGs and are described in the ROD.

**Oregon Solid Waste Management Rules (OAR 340-093 through -097)** are applicable to the treatment and disposal of solid waste from the Site. Section 340 093-0170 is applicable to the disposal of cleanup materials contaminated with hazardous substances that are not in themselves hazardous substances, such as petroleum contaminated soil. Such material must be disposed only in landfills meeting the RCRA Subpart D design criteria and that have been authorized to receive this type of material by ODEQ. Section 340 093-0190 is applicable to the disposal of special wastes, including construction and demolition debris and oil wastes. Solidified coal tar, to the extent it is not deemed a hazardous waste, and construction and demolition wastes from the Site will be placed in a landfill approved for handling such special wastes.

**Oregon Hazardous Wastes Management Rules (OAR 340-100 through -120)** are applicable to soil at the Site which exhibits a characteristic of hazardous wastes. Based on the RI data and history of past facility operations, soil at the Site does not contain state-only or listed hazardous wastes. However, some soil at the Site may exceed the Toxicity Characteristic Leaching Procedure (TCLP) concentration of 0.7 mg/L of PCE and therefore exhibit the toxicity characteristic for PCE. EPA will conduct additional tests on the suspected soil to verify the TCLP presumption prior to transporting the soil to a disposal facility. RCRA TCLP waste sent off-Site will comply with the Oregon RCRA

rules pertaining to the generation, transportation and treatment, storage and disposal of hazardous waste.

**Oregon General Emission Standards for Particulate Matter (OAR 340-208-0100 through - 0210)** is applicable to visible emissions and nuisance conditions from the selected soil remedy. The Site is located in a designated Special Control Area. Consequently, dust generated from earthwork or other disturbance of on-Site soils must meet a nuisance condition standard for fugitive emissions traceable directly to a specific source. In addition, opacity and particulate matter concentration standards are applicable to vehicle emissions on-site. Dust and particulate concentrations at the Site will be monitored with particulate monitors and the results used to modify work practices if dust levels are found to exceed the on-site action level of 10 ppm or the Site boundary action level of 3 ppm.

**Oregon Water Quality Management Plan (OAR 340-041)** is applicable to the management of storm water run-off from the Site. Site water production and run-off will be controlled with freeze-shoring, ditching, pumping, on-site storage in tanks, discharge to the municipal sewer, straw bales, silt fences or other BMPs.

**Clackamas County Publicly Owned Treatment Works (POTW)** discharge limits will apply to batch discharges of treated Site water to the county sewer.

### V.A.6. Project Schedule

It is expected that project implementation will begin in August 2009 and will take approximately eight weeks to complete. Three weeks are needed to install the freeze-shoring and freeze the perimeter of the excavation areas. Excavation will begin after shoring is in place and is expected to last five weeks.

### V.B. Estimated Costs

| **2009 Removal Action Extramural Costs**: | |
|---|---|
| Extramural Costs | |
| ERRS (up to $900,000 from the regional allowance with remaining funds from the Special Account for the Northwest Pipe and Casing Site) | $2,060,000 |
| START (from the Special Account for the Northwest Pipe and Casing Site) | $100,000 |
| Subtotal of Extramural Costs | $2,160,000 |
| Extramural Costs Contingency (From Special Account) | $240,000 |
| TOTAL REMOVAL ACTION PROJECT CEILING | $2,400,000 |

Note: Up to $2.4 million will be used from the Special Account if regional allowance funds are

not available.

## VI. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

If the proposed removal action should be delayed or not taken, hazardous substances will remain as potential human health and ecological threats and hazardous substances will remain a continuing source of solid and dissolved-phase contaminants. Contamination may spread from the Site soil and groundwater to the Troutdale aquifer which serves as a municipal water supply.

## VII. OUTSTANDING POLICY ISSUES

None.

## VIII. EXEMPTION FROM STATUTORY LIMITS

The removal activities subject to this Removal Action Memorandum are necessary to ensure the protection of human health by preventing or reducing potential human exposure to contaminants remaining at the Site. Previous remedial efforts have reduced exposures through such means as removal of soil and capping of contaminants in place. This removal action is necessary to ensure the continued protection of human health by reinforcing previous measures taken at the Site. The costs associated with this Removal Action Memorandum are expected to exceed the statutory limit of $2 million as established by CERCLA Section 104(c)(1). Although, as noted in EPA's *Consolidated Guidance on the Establishment, Management and Use of CERCLA Special Accounts (October 4, 2002)*, CERCLA Section 122(b) special accounts are not subject to the $2 million statutory limit set by CERCLA Section 104(c)(1), as a conservative approach, this Removal Action Memorandum seeks to use the exemptions of Section 104(c)(1)(A). Section 104(c)(1)(A) authorizes exemptions where EPA can make the finding that continued response action is otherwise appropriate and consistent with the remedial action to be taken. The removal activities subject to this Removal Action Memorandum qualify for this particular exemption. In support of this exemption, EPA has made the finding (see Section V.A.2, above) that the activities proposed in this Removal Action Memorandum are consistent with the anticipated remedial action to be taken.

## VIII. ENFORCEMENT

No enforcement issues remain since the Consent Decrees and Settlements between EPA, ODEQ and the responsible parties have already occurred.

## IX. RECOMMENDATION

This decision document presents the selected Removal Action for the NWPC Site located at 9585 Mather Road, Clackamas County, Oregon, developed in accordance with CERCLA, as amended, and not inconsistent with the NCP. This decision is based on the administrative record for the Site.

Conditions at the Site meet the NCP Section 300.415(b)(2) criteria for a removal and we recommend your approval of the proposed removal action. The total project extramural ceiling if approved will be $2,400,000. Of this, as much as $900,000 may come from the Regional Removal Allowance.

## X. APPROVAL / DISAPPROVAL

APPROVAL:

Lindy Anderson-Graham for 7/28/09

Daniel D. Opalski, Director
Office of Environmental Cleanup

Date

DISAPPROVAL:

Daniel D. Opalski, Director
Office of Environmental Cleanup

Date

EPA Concurrences:

| Name | Mary Stroh Queitzsch | Deb Yamamoto | Chris Field |
|---|---|---|---|
| | Office of Regional Counsel | Remedial Program Manager | Removal Program Manager |
| Signature | Mary Stroh Queitzsch | Deb Yamamoto | |
| Date | 7-28/2009 | 7/28/09 | 7/28/09 |

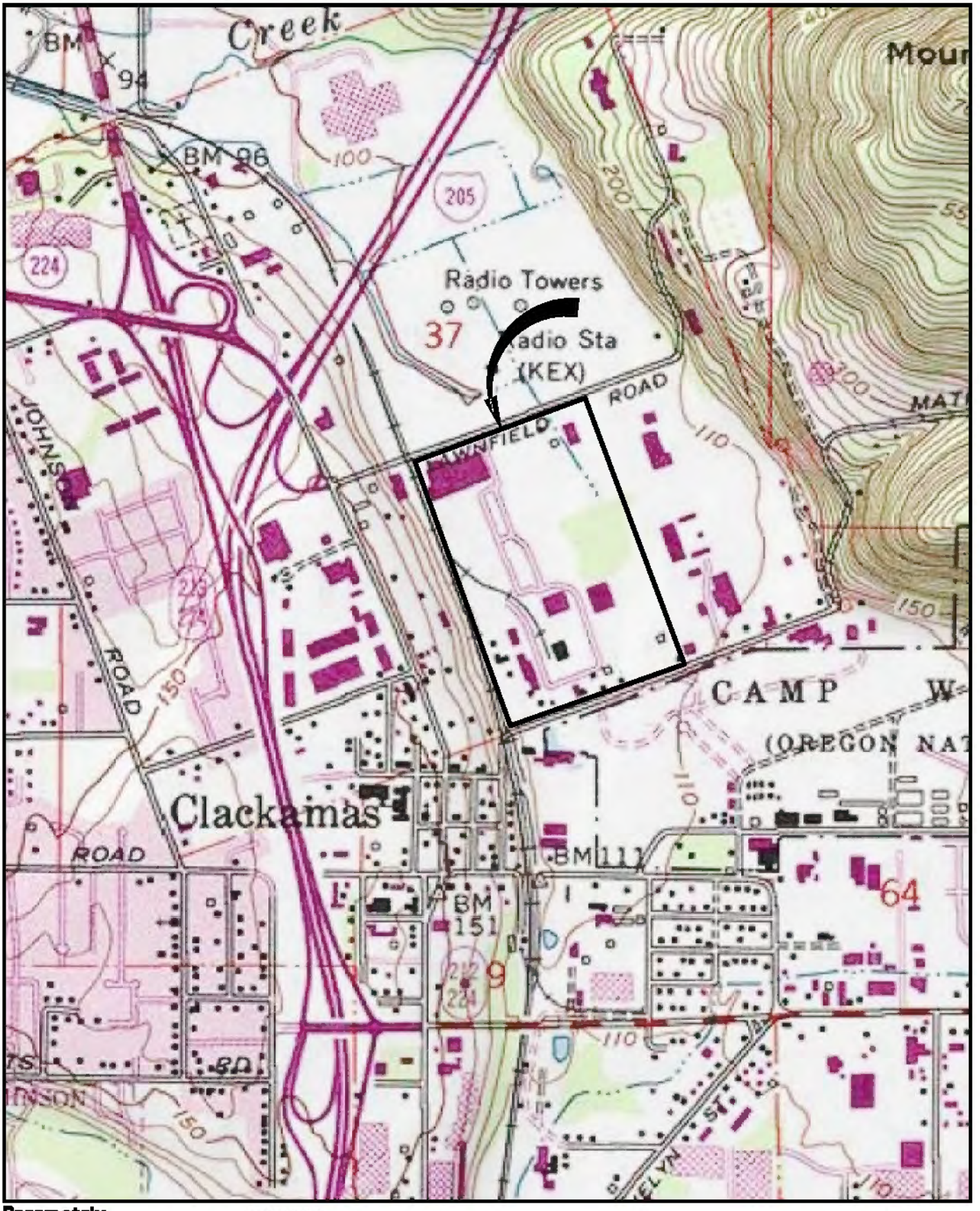
# Tables and Figures for
# 2009 Northwest Pipe and Casing Removal Action Memorandum

Figures:

Figure 1. Site vicinity map
Figure 2. Site features map showing Remedial Excavations, current soil contamination areas, Naphthalene concentrations at monitoring wells and bore holes
Figure 3. Aerial photograph showing current shallow PCE plume
Figure 4. Aerial photograph showing proposed excavation areas and proposed Oregon Iron Works lay-down yard, lower figure showing cross-sectional depth contamination for excavation area A
Figure 5. Aerial photograph showing proposed excavation areas, lower figure showing cross-sectional depth contamination for excavation area B

Tables:

Table 1. Summary of Analytical Results for Well MW207
Table 2. Summary of 2008 PAHs in subsurface soil
Table 3. Summary of 2008 VOCs in subsurface soils
Talbe 4. 2008 Groundwater Contamination Concentrations
Table 5. Maximum soil contamination concentrations
Table 6. Cleanup levels: comparison of regional screening levels to remedial goals

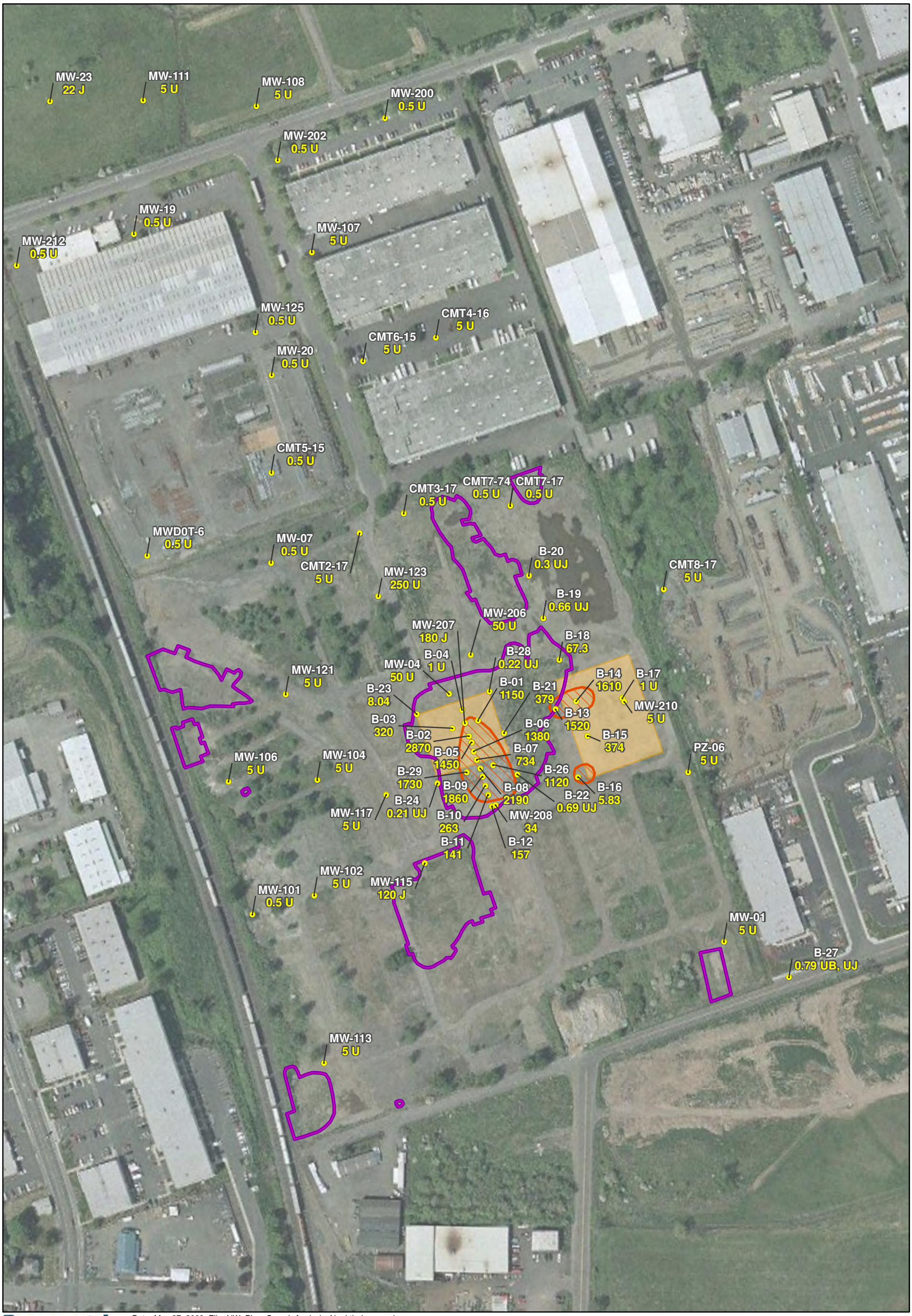



**Parametrix** DATE: May 18, 2006 FILE: PO2328007CF-08

0 N 1000'

SCALE IN FEET

**Figure 1**




Parametrix

Date: May 27, 2009 File: NW_Pipe_SampleAnalysis_Naphthalene.mxd

N

0 100 200

Feet

- Well Location ID and Naphthalene Sample Value
- Excavation Areas
- CoalBodies
- Plants 3 and 4 (Historic)

# NW Pipe DRAFT

Portland, Oregon

**Figure 2**

**NOTES:**
Qualifier
J = Estimated Concentration
U = Not Detected At or Above the Method Reporting Limit
Units
µg/L = Microgram per Liter
Acronyms
PCE = Tetrachloroethene
WBZ = Water Bearing Zone

MW-23 0.5 U
MW-111 1.1 J
MW-108 0.9
SE Lawnfield Rd
MW-202 2.4
MW-200 0.67
MW-212 0.5 U
MW-19 46
MW-107 0.5 U
MW-125 75
SE Industrial Way
MW-20 8
CMT6-15 52
CMT4-16 0.4 J
CMT5-15 12
MWD0T-6 0.5 U
1.0
MW-07 0.5 U
CMT2-17 70
CMT3-17 36
CMT7-17 2.9
CMT8-17 6.3
10
MW-123 260
B-20 35.8
MW-121 40
B-19 1290
MW-206 880
1000
MW-207 900
MW-04 1600
1000
B-18 6250
B-23 483
B-28 3830
B-04 49.8
MW-106 11
B-03 1880
B-01 1100
B-13 550
B-14 620
B-14 645
MW-104 4.9
B-02 214
B-21 7090
B-17 57.2
B-05 272
B-06 72.8
B-07 61.6
B-15 135
MW-210 130
B-29 15.4
B-26 149
MW-117 98
B-24 12.8
B-29 17
B-09 62.9
100
10
B-22 41.4
B-10 6.25
B-08 147
B-16 6.11
PZ-06 0.4 J
MW-101 17
MW-102 5.5
MW-208 11
B-11 4.6
B-12 13.6
1.0
MW-115 0.7 J
10
MW-113 0.3 J
MW-01 84
B-27 0.35 UJ
1.0
SE Mather Rd

Parametrix Date: 02/23/09 File: NW_Pipe_Casing_ReportWorking.mxd

N

0 100 200

Scale in Feet

**Legend**

- Boring
- CMT Well
- Shallow Piezometer
- Shallow WBZ Well
- Isoconcentration Line µg/L

Figure 3

**PCE Isoconcentration Map**
**Shallow WBZ**

NW Pipe and Casing
Portland, Oregon

**Table 1.**

**Summary of Analytical Results for the DNAPL and Aqueous Fractions from Well MW-207**

| Group | Analyte | DNAPL Fraction | | | Aqueous Fraction | | |
|---|---|---|---|---|---|---|---|
| VOCs | 1,1,2 TCA | mg/kg | N/A | | µg/L | 1.3 | |
| | (1-Methyl ethyl)-benzene | | N/A | | | 4.0 | |
| | 1-Methy-4-(1-methyle thyl)-benzene | | 44 | J | | 3.0 | U |
| | 1,2,4-Trimethylbenzene | | 1,031 | J | | 135 | |
| | 1,3,5-Trimethylbenzene | | 200 | J | | 24.9 | |
| | 1,1 DCE | | N/A | | | 3.0 | |
| | cis-1,2 DCE | | 710 | J | | 522 | |
| | trans-1,2 DCE | | N/A | | | 3.3 | |
| | Benzene | | N/A | | | 1.2 | |
| | Carbon Tetrachloride | | N/A | | | 1.0 | U |
| | Ethylbenzene | | 252 | J | | 102 | |
| | MP-Xylene | | 362 | J | | 126 | J |
| | sec-Butylbenzene | | 59 | J | | N/A | |
| | n-Butylbenzene | | 84 | J | | 1 | |
| | o-Xylene | | 254 | J | | 98.4 | J |
| | Naphthalene | | 21,000 | J | | 377 | |
| | Propylbenzene | | 121 | J | | 14.5 | |
| | Tetrachloroethene | | 1,100 | J | | 2570 | |
| | Toluene | | N/A | | | 25.5 | |
| | Trans-1,3-Dichloropropene | | N/A | | | 3.0 | J |
| | Trichloroethene | | 99 | J | | 343 | |
| | Trichloromethane | | 148 | UJ | | 5.1 | |
| | Vinyl Chloride | | 296 | UJ | | 23.4 | |
| PAHs | 9H-Fluorene | mg/kg | 38,000 | | µg/L | 1,000 | J |
| | Acenaphthene | | 86,000 | | | 2,400 | J |
| | Acenaphthylene | | 180 | | | 50 | UJ |
| | Anthracene | | 5,600 | | | 200 | J |
| | Benzo(a)anthracene | | 6,100 | | | 61 | J |
| | Benxo(a)pyrene | | 1,000 | | | 50 | UJ |
| | Benzo(g,h,i)perylene | | 170 | | | 50 | UJ |
| | Benzo[b]fluoranthene | | 1,100 | | | 50 | UJ |
| | Benzo[k]fluoranthene | | 920 | | | 50 | UJ |
| | Chrysene | | 4,100 | | | 65 | J |
| | Dibenzo[a,h]anthracene | | 92 | | | 50 | UJ |
| | Fluoranthene | | 83,000 | | | 1,200 | J |
| | Indeno(1,2,3-cd)pyrene | | 200 | | | 50 | UJ |
| | Naphthalene | | 20,000 | | | 2,200 | J |
| | Naphthalene, 2-methyl- | | 12,000 | | | 480 | J |
| | Phenanthrene | | 170,000 | | | 3,100 | J |
| | Pyrene | | 53,000 | | | 890 | J |

| Group | Analyte | DNAPL Fraction | | | Aqueous Fraction | | |
|---|---|---|---|---|---|---|---|
| **PCBs** | PCB-1254 | mg/kg | 120 | | µg/L | 9.5 | |
| **Metals** | Arsenic | mg/kg | 38 | UJ | µg/L | 2,000 | U |
| | Barium | | 1.5 | | | 132 | |
| | Cadmium | | 2.6 | U | | 1,000 | |
| | Chromium | | 8.5 | U | | 10,000 | U |
| | Copper | | 28.3 | | | 43,000 | |
| | Manganese | | 4.0 | J | | 3,520 | |
| | Lead | | 21 | U | | 17,000 | |
| | Zinc | | 4.3 | U | | 65 | |

U = not detected at or above its respective method reporting limit (MRL)

J = quantity is estimated

N/A = not analyzed

Table 2 Summary of PAHs in Subsurface Soil
Supplemental Field Investigation, Fall 2008
Units in micrograms per kilogram

| Test Boring | Sample Name | Depth | Sample Rank | Ace-naphthene | Ace-naphthylene | Anthracene | Benzo(a) anthracene | Benzo(a) pyrene | Benzo(b) fluoranthene | Benzo(g,h,i) perylene | Benzo(k) fluoranthene | Chrysene | Dibenz(a,h) anthracene | Fluoranthene | Fluorene | Indeno (1,2,3-cd) pyrene | Naphthalene | Phenanthrene | Pyrene |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cleanup Goals | | | | -- | -- | -- | 2,500 | 250 | 2,500 | -- | 2,500 | 250,000 | 250 | -- | -- | 2,500 | -- | -- | -- |
| B-02 | B-02-SS-25.0 | 25 | 3 | 6820 J | 32.7 J | 1270 J | 737 J | 109 J | 100 J | 19.3 J | 121 J | 633 J | 12 J | 7770 J | 4370 J | 20.7 J | 458 J | 15800 J | 6550 J |
| B-05 | B-05-SS-14.0 | 14 | 4 | 25300 J | 96 J | 4750 J | 3290 J | 527 J | 544 J | 112 J | 602 J | 2840 J | 75.3 J | 27200 J | 11500 J | 115 J | 551 J | 58500 J | 26400 J |
| B-06 | B-06-SS-14.0 | 14 | 4 | 272000 | 6.67 U | 31100 | 21000 | 4050 | 3640 | 865 | 3920 | 19200 | 443 | 200000 | 121000 | 937 | 75700 | 415000 | 170000 |
| B-07 | B-07-SS-15.0 | 15 | 4 | 432000 J | 1730 J | 66100 J | 40100 J | 6070 J | 6200 J | 1160 J | 6730 J | 35000 J | 733 J | 371000 J | 251000 J | 1290 J | 81300 | 752000 J | 300000 J |
| | B-07-SS-25.0 | 25 | 4 | 123000 J | 316 J | 16200 J | 8730 J | 1280 J | 1450 J | 245 J | 1530 J | 7830 J | 162 J | 118000 J | 57500 J | 260 J | 89600 | 236000 J | 65300 J |
| B-08 | B-08-SS-14.0 | 14 | 4 | 9530 J | 50.7 J | 4130 J | 947 J | 125 J | 147 J | 20.7 J | 119 J | 853 J | 12.7 J | 10900 J | 5870 J | 22 J | 30300 | 27700 J | 7000 J |
| | B-08-SS-24.0 | 24 | 4 | 146000 J | 374 J | 21200 J | 11600 J | 1440 J | 1610 J | 253 J | 1560 J | 10300 J | 173 J | 141000 J | 73000 J | 293 J | 66300 | 271000 J | 88200 J |
| B-09 | B-09-SS-18.0 | 18 | 3 | 51300 J | 174 J | 8170 J | 4950 J | 674 J | 861 J | 69.3 J | 805 J | 4250 J | 52 J | 52700 J | 28700 J | 82.7 J | 4200 | 118000 J | 40800 J |
| B-10 | B-10-SS-20.0 | 20 | 3 | 10.7 | 6.67 U | 6.7 UJ | 3.3 UJ | 0.67 UJ | 6.67 U | 2 UJ | 1.3 UJ | 3.3 UJ | 2 UJ | 39.3 | 7.33 | 2 UJ | 5 UJ | 46.7 | 23.3 |
| B-11 | B-11-SS-20.0 | 20 | 4 | 3590 | 17.3 | 594 | 423 | 48 | 68 | 7.33 | 62 | 361 | 5.3 UJ | 3240 | 2180 | 8 | 778 | 8580 | 2890 |
| B-13 | B-13-SS-15.0 | 15 | 4 | 97700 | 158 | 10800 | 6130 | 1000 | 1110 | 159 | 1150 | 5690 | 96.7 | 81700 | 34500 | 166 | 27000 | 163000 | 60300 |
| | B-13-SS-8.0 | 8 | 0 | 5680 | 6.67 U | 969 | 457 | 162 | 157 | 58 | 163 | 471 | 29.3 | 4260 | 2600 | 58.7 | 665 | 9430 | 3240 |
| B-14 | B-14-SS-13.0 | 13 | 4 | 14400 | 40.7 | 1630 | 997 | 147 | 155 | 26.7 | 165 | 864 | 20 | 9430 | 6190 | 32 | 1280 | 22500 | 7900 |
| | B-14-SS-25.0 | 25 | 0 | 764 | 2.7 UJ | 109 | 44 | 9.33 | 8.67 | 4.7 UJ | 8.67 | 42 | 2.7 UJ | 461 | 292 | 3.3 UJ | 513 | 1190 | 423 |
| B-29 | B-29-SS-19.0 | 19 | 4 | 152000 | 66.7 U | 20100 | 12500 | 1830 | 2410 | 249 | 1970 | 10900 | 188 | 164000 | 76000 | 313 | 115000 | 317000 | 93000 |

Table 3 Summary of VOCs in Subsurface Soils
Supplemental Investigaiton, Fall 2008
Units in micrograms per kilogram

| Test Boring | Sample Name | Depth | Sample Rank | CVOCs | | | | | | | | | | Naphthalene | BTEX | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1,1,1-Trichloroethane | 1,1,2-Trichloroethane | 1,1-Dichloroethane | 1,1-Dichloroethene | 1,2-Dichloroethane | cis-1,2-Dichloroethene | trans-1,2-Dichloroethene | PCE | TCE | VC | | Benzene | Toluene | Ethyl-benzene | m,p-Xylene | o-Xylene |
| Cleanup Goals | | | | -- | -- | -- | -- | -- | -- | -- | 7 | 13 | 0.1 | -- | -- | -- | -- | -- | -- |
| B-01 | B-01-SS-15.0 | 12 | 0 | 10 UJ | 10 UJ | 10 UJ | 10 UJ | 10 UJ | 10 UJ | 1 UJ | 10 UJ | 10 UJ | 10 UJ | 1.6 UJ | 10 UJ | 10 UJ | 10 UJ | 20 UJ | 10 UJ |
| B-02 | B-02-SS-25.0 | 25 | 3 | 10 UJ | 10 UJ | 10 UJ | 10 UJ | 10 UJ | 10 UJ | 1 UJ | 10 UJ | 10 UJ | 10 UJ | 458 J | 10 UJ | 10 UJ | 1.4 UJ | 3.3 UJ | 10 UJ |
| B-03 | B-03-SS-65.0 | 63 | 0 | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 1 UJ | 10 U | 10 U | 10 U | 2.7 UJ | 10 U | 10 U | 10 U | 20 U | 10 U |
| B-05 | B-05-SS-14.0 | 14 | 4 | 10 UJ | 10 UJ | 10 UJ | 10 UJ | 10 UJ | 10 UJ | 1 UJ | 10 UJ | 10 UJ | 10 UJ | 551 J | 10 UJ | 10 UJ | 1.1 UJ | 20 UJ | 10 UJ |
| | B-05-SS-25.0 | 25 | 1 | 10 UJ | 10 UJ | 10 UJ | 10 UJ | 10 UJ | 10 UJ | 1 UJ | 10 UJ | 10 UJ | 10 UJ | 2.2 UJ | 10 UJ | 10 UJ | 10 UJ | 20 UJ | 10 UJ |
| | B-05-SS-45.0 | 45 | 0 | 10 UJ | 10 UJ | 10 UJ | 10 UJ | 10 UJ | 10 UJ | 1 UJ | 10 UJ | 10 UJ | 10 UJ | 1.6 UJ | 10 UJ | 10 UJ | 10 UJ | 20 UJ | 10 UJ |
| | B-05-SS-65.0 | 65 | 0 | 10 UJ | 10 UJ | 10 UJ | 10 UJ | 10 UJ | 10 UJ | 1 UJ | 10 UJ | 10 UJ | 10 UJ | 1.7 UJ | 10 UJ | 10 UJ | 10 UJ | 20 UJ | 10 UJ |
| B-06 | B-06-SS-14.0 | 14 | 4 | 10 U | 10 U | 10 U | 2.4 UJ | 10 U | 1620 | 10 U | 7280 | 574 | 4 UJ | 75700 | 10 | 83 | 2930 | 2990 | 2330 |
| B-07 | B-07-SS-15.0 | 15 | 4 | 10 U | 10 U | 10 U | 10 U | 10 U | 8.2 UJ | 1 U | 49.3 | 3.3 UJ | 10 U | 81300 | 10 U | 5.8 UJ | 39.6 | 64.6 | 31.5 |
| | B-07-SS-25.0 | 25 | 4 | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 1 U | 81.7 | 10 U | 10 U | 89600 | 10 U | 1.8 UJ | 33.8 | 53.6 | 29.1 |
| B-08 | B-08-SS-14.0 | 14 | 4 | 10 U | 10 U | 10 U | 10 U | 10 U | 23.9 | 1 U | 53.6 | 43.2 | 10 U | 30300 | 0.4 UJ | 12.7 | 24.6 | 36.7 | 7.6 UJ |
| | B-08-SS-24.0 | 24 | 4 | 10 U | 10 U | 10 U | 2.2 UJ | 10 U | 494 | 5 U | 402 | 505 | 7.6 UJ | 66300 | 4.4 UJ | 25 | 367 | 477 | 52.6 |
| B-09 | B-09-SS-18.0 | 18 | 3 | 10 U | 10 U | 10 U | 10 U | 10 U | 5.2 UJ | 1 U | 5.2 UJ | 4.9 UJ | 0.91 UJ | 4200 | 0.52 UJ | 10 U | 8.7 UJ | 24.3 | 7.6 UJ |
| B-10 | B-10-SS-20.0 | 20 | 3 | 10 U | 10 U | 10 U | 10 U | 10 U | 8.7 UJ | 1 U | 10 U | 10 U | 10 U | 5 UJ | 10 U | 10 U | 10 U | 20 U | 10 U |
| B-11 | B-11-SS-20.0 | 20 | 4 | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 1 U | 1.5 UJ | 10 U | 10 U | 778 | 10 U | 10 U | 0.85 UJ | 3.3 UJ | 2.1 UJ |
| B-13 | B-13-SS-15.0 | 15 | 4 | 10 U | 10 U | 10 U | 10 U | 10 U | 40.2 | 1 U | 554 | 20.8 | 0.78 UJ | 27000 | 10 U | 8.4 UJ | 1.9 UJ | 7.1 UJ | 2 UJ |
| | B-13-SS-25.0 | 25 | 0 | 10 UJ | 10 UJ | 10 UJ | 10 UJ | 10 UJ | 10 UJ | 1 UJ | 10 UJ | 10 UJ | 10 UJ | 1.5 UJ | 10 UJ | 10 UJ | 10 UJ | 20 UJ | 10 UJ |
| | B-13-SS-45.0 | 45 | 0 | 10 UJ | 10 UJ | 10 UJ | 10 UJ | 10 UJ | 10 UJ | 1 UJ | 10 UJ | 10 UJ | 10 UJ | 1.4 UJ | 10 UJ | 10 UJ | 10 UJ | 20 UJ | 10 UJ |
| | B-13-SS-8.0 | 8 | 0 | 10 U | 10 U | 10 U | 10 U | 10 U | 14.7 | 5 U | 1.3 UJ | 10 U | 6.3 UJ | 665 | 10 U | 10 U | 10 U | 20 U | 10 U |
| B-14 | B-14-SS-13.0 | 13 | 4 | 10 U | 10 U | 10 U | 10 U | 10 U | 66.7 | 1 U | 310 | 12.9 | 3.4 UJ | 1280 | 10 U | 4.1 UJ | 3.8 UJ | 9.3 UJ | 3.9 UJ |
| | B-14-SS-25.0 | 25 | 0 | 10 U | 10 U | 10 U | 10 U | 10 U | 10.4 | 1 U | 8.5 UJ | 10 U | 10 U | 513 | 10 U | 10 U | 10 U | 20 U | 10 U |
| | B-14-SS-45.0 | 45 | 0 | 10 UJ | 10 UJ | 10 UJ | 10 UJ | 10 UJ | 10 UJ | 1 UJ | 10 UJ | 10 UJ | 10 UJ | 104 J | 10 UJ | 10 UJ | 10 UJ | 20 UJ | 10 UJ |
| | B-14-SS-64.0 | 64 | 0 | 10 UJ | 10 UJ | 10 UJ | 10 UJ | 10 UJ | 10 UJ | 1 UJ | 10 UJ | 10 UJ | 10 UJ | 1.5 UJ | 10 UJ | 10 UJ | 10 UJ | 20 UJ | 10 UJ |
| B-17 | B-17-SS-65.0 | 65 | 0 | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 1 U | 10 U | 10 U | 10 U | 4.7 UJ | 10 U | 10 U | 10 U | 20 U | 10 U |
| B-29 | B-29-SS-19.0 | 19 | 4 | 10 U | 0.98 UJ | 10 U | 10 U | 10 U | 40.8 | 2500 U | 42.6 | 5.3 UJ | 0.91 UJ | 115000 | 0.94 UJ | 3.7 UJ | 28.9 | 57.4 | 29.8 |

Table 4 2008 Groundwater Contamination Concentrations

| Test Boring | Sample Name | Depth (in feet) | PCE (µg/L) | TCE (µg/L) | VC (µg/L) | cis-1,2-Dichloroethene (µg/L) | Naphthalene (µg/L) | Ethylbenzene (µg/L) |
|---|---|---|---|---|---|---|---|---|
| Remedial Goals[1] | | | 1.0 | 1.6 | 1.0 | -- | -- | -- |
| Restoration Goals[1] | | | 5.0 | 5.0 | 2.0 | -- | -- | -- |
| Regional Screening Levels[2] | | | 0.11 | 1.7 | 0.016 | 370 | 0.14 | 1.5 |
| B-01 | B-01-GW-27.0 | 27 | 1100 | 165 | 13.4 | 574 | 1150 | 7.76 |
| | B-01-GW-47.0 | 47 | 142 | 32 | 4.34 | 315 | 1280 | 8.68 |
| | B-01-GW-65.0 | 65 | 125 | 19.2 | 6.08 | 114 | 470 | 4.38 |
| B-02 | B-02-GW-27.0 | 27 | 214 | 122 | 103 | 1100 | 2870 | 115 |
| | B-02-GW-46.0 | 46 | 119 | 53.1 | 5.67 | 140 | 2580 | 43.7 |
| | B-02-GW-65.0 | 65 | 69.3 | 21.3 | 4.24 | 49.4 | 1760 | 18.5 |
| B-03 | B-03-GW-27.0 | 27 | 1880 | 769 | 16.4 | 1220 | 320 | 2.13 |
| | B-03-GW-47.0 | 47 | 105 | 74.5 | 5.33 | 122 | 590 | 2.31 |
| | B-03-GW-65.0 | 65 | 13 | 16.9 | 1 U | 49.3 | 50.1 | 0.46 UJ |
| B-04 | B-04-GW-27.0 | 27 | 49.8 | 9.57 | 4.48 | 148 | 1 U | 1 U |
| | B-04-GW-47.0 | 47 | 64 | 87.1 | 12 | 960 | 1.05 | 1 U |
| | B-04-GW-65.0 | 65 | 26.6 | 15 | 1 U | 7.67 | 0.766 | 1 U |
| B-05 | B-05-GW-27.0 | 27 | 272 | 168 | 63.3 | 714 | 1450 | 36.5 |
| | B-05-GW-47.0 | 47 | 231 | 83.8 | 3.18 | 91.7 | 1150 | 17 |
| | B-05-GW-65.0 | 65 | 83.2 | 28.5 | 0.95 UJ | 29.4 | 728 | 10.6 |
| B-06 | B-06-GW-27.0 | 27 | 72.8 | 159 | 35 | 467 | 1380 | 22.2 |
| | B-06-GW-47.0 | 47 | 110 | 144 | 4.2 UJ | 82.2 | 667 | 11.7 |
| | B-06-GW-65.0 | 65 | 22 | 23.8 | 0.61 UJ | 18.9 | 451 | 3.83 |
| B-07 | B-07-GW-27.0 | 27 | 61.6 | 71.2 | 35.4 | 129 | 734 | 17.4 |
| | B-07-GW-47.0 | 47 | 81.6 | 107 | 2.7 UJ | 56.3 | 1340 | 7.75 |
| | B-07-GW-65.0 | 65 | 28.7 | 17.6 | 5 U | 6.8 | 1320 | 4.6 UJ |
| B-08 | B-08-GW-27.0 | 27 | 147 | 230 | 16.6 | 296 | 2190 | 25.4 |
| B-09 | B-09-GW-27.0 | 27 | 62.9 | 76.8 | 8.15 | 92.1 | 1860 | 18.2 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| B-10 | B-10-GW-27.0 | 27 | 6.25 | 33.5 | 9.2 | 98.2 | 263 | 2.2 UJ |
| B-11 | B-11-GW-27.0 | 27 | 4.6 | 38.2 | 5.74 | 109 | 141 | 0.7 UJ |
| B-12 | B-12-GW-27.0 | 27 | 13.6 | 39 | 1.43 | 34.2 | 157 | 0.64 UJ |
| | B-12-GW-47.0 | 47 | 6.26 | 23.9 | 1 U | 2.98 | 9.49 | 0.1 UJ |
| | B-12-GW-65.0 | 65 | 1 U | 3.77 | 1 U | 0.54 UJ | 0.49 UJ | 0.21 UJ |
| B-13 | B-13-GW-27.0 | 27 | 550 | 157 | 54.2 | 873 | 14600 | 5.73 |
| | B-13-GW-47.0 | 47 | 127 | 12 | 1 U | 21.1 | 621 | 1.4 |
| | B-13-GW-65.0 | 65 | 14.3 | 1.23 | 1 U | 1.24 | 164 | 0.3 UJ |
| B-14 | B-14-GW-27.0 | 27 | 620 | 38.8 | 25 U | 76 | 1610 | 7 UJ |
| | B-14-GW-27.0-FD | 27 | 645 | 48 | 25 U | 80.5 | 1470 | 7 UJ |
| | B-14-GW-47.0 | 47 | 2860 | 95.5 | 25 U | 46.8 | 1570 | 14 UJ |
| | B-14-GW-64.0 | 64 | 1140 | 22.4 | 1 U | 5.01 | 762 | 7.21 |
| B-15 | B-15-GW-27.0 | 27 | 135 | 70.8 | 2.55 | 81.1 | 374 | 0.32 UJ |
| | B-15-GW-47.0 | 47 | 12.2 | 8.12 | 1 U | 13.4 | 127 | 0.25 UJ |
| | B-15-GW-65.0 | 65 | 2.69 | 1.71 | 1 U | 3.28 | 67.3 | 1 U |
| B-16 | B-16-GW-27.0 | 27 | 6.11 | 1 U | 1 U | 1 U | 5.83 | 0.24 UJ |
| | B-16-GW-45.0 | 45 | 1 U | 2.9 | 1 U | 0.6 UJ | 0.92 UJ | 0.1 UJ |
| B-17 | B-17-GW-27.0 | 27 | 57.2 | 19.3 | 1.22 | 8.08 | 1 U | 0.1 UJ |
| | B-17-GW-47.0 | 47 | 3.02 | 0.62 UJ | 1 U | 1 U | 0.24 UJ | 0.11 UJ |
| B-18 | B-18-GW-27.0 | 27 | 6250 | 1220 | 129 | 7650 | 67.3 | 0.7 UJ |
| | B-18-GW-47.0 | 47 | 100 | 14.3 | 1.59 | 130 | 21.8 | 0.13 UJ |
| | B-18-GW-65.0 | 65 | 57.7 | 51.6 | 3.78 | 112 | 96.6 | 0.12 UJ |
| B-19 | B-19-GW-27.0 | 27 | 1290 | 988 | 6.23 | 3280 | 0.66 UJ | 0.12 UJ |
| | B-19-GW-47.0 | 47 | 1140 | 174 | 10.2 | 231 | 0.49 UJ | 0.1 UJ |
| | B-19-GW-65.0 | 65 | 41.6 | 7.17 | 1 U | 10.9 | 0.31 UJ | 0.1 UJ |
| B-20 | B-20-GW-27.0 | 27 | 35.8 | 45.9 | 2.33 | 230 | 0.3 UJ | 1 U |
| | B-20-GW-47.0 | 47 | 523 | 227 | 21 | 448 | 1 U | 0.1 UJ |
| | B-20-GW-65.0 | 65 | 424 | 69.2 | 4.72 | 463 | 1 U | 1 U |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | B-20-GW-65.0-FD | 65 | 165 | 86.9 | 6.52 | 164 | 0.23 UJ | 1 U |
| B-21 | B-21-GW-27.0 | 27 | 7090 | 184 | 35.4 | 136 | 379 | 12.2 |
| | B-21-GW-47.0 | 47 | 240 | 10.1 | 1 U | 6.08 | 1140 | 24.7 |
| B-22 | B-22-GW-27.0 | 27 | 41.4 | 7.98 | 1 U | 6.65 | 0.69 UJ | 1 U |
| | B-22-GW-47.0 | 47 | 8.91 | 13.1 | 1 U | 6.65 | 46.9 | 0.71 UJ |
| | B-22-GW-64.0 | 64 | 12 | 2.23 | 1 U | 1 U | 820 | 2.69 |
| B-23 | B-23-GW-27.0 | 27 | 483 | 121 | 1.68 | 158 | 8.04 | 1 U |
| | B-23-GW-47.0 | 47 | 36.4 | 6.07 | 1 U | 5.38 | 1.59 | 1 U |
| | B-23-GW-65.0 | 65 | 6.54 | 1.74 | 1 U | 1 U | 1.03 | 1 U |
| B-24 | B-24-GW-27.0 | 27 | 12.8 | 69.4 | 20.7 | 192 | 0.21 UJ | 0.11 UJ |
| | B-24-GW-47.0 | 47 | 45 | 80.9 | 2.71 | 41.4 | 0.41 UJ | 0.14 UJ |
| | B-24-GW-65.0 | 65 | 1.04 | 3.29 | 1 U | 2.01 | 0.5 UJ | 0.19 UJ |
| B-26 | B-26-GW-27.0 | 27 | 149 | 318 | 30.8 | 1050 | 1120 | 4.69 |
| B-27 | B-27-GW-27.0 | 27 | 0.35 UJ | 1.46 | 1 U | 1.78 | 0.79 UB, UJ | 1 U |
| | B-27-GW-47.0 | 47 | 1 U | 0.56 UJ | 1 U | 1 U | 0.9 UB, UJ | 0.12 UJ |
| | B-27-GW-65.0 | 65 | 1 U | 1 U | 1 U | 1 U | 0.75 UB, UJ | 0.12 UJ |
| B-28 | B-28-GW-27.0 | 27 | 3830 | 342 | 7.91 | 123 | 0.22 UJ | 0.23 UJ |
| | B-28-GW-47.0 | 47 | 378 | 96.9 | 1.37 | 13.1 | 0.73 UJ | 0.32 UJ |
| B-29 | B-29-GW-27.0 | 27 | 17 | 13.2 | 3.28 | 13.6 | 1730 | 23.1 |
| | B-29-GW-27.0-FD | 27 | 15.4 | 14.7 | 4.06 | 15.2 | 1820 | 25.4 |

Notes:

µg/l = micrograms per liter

U = not detected at or above the method reporting limit

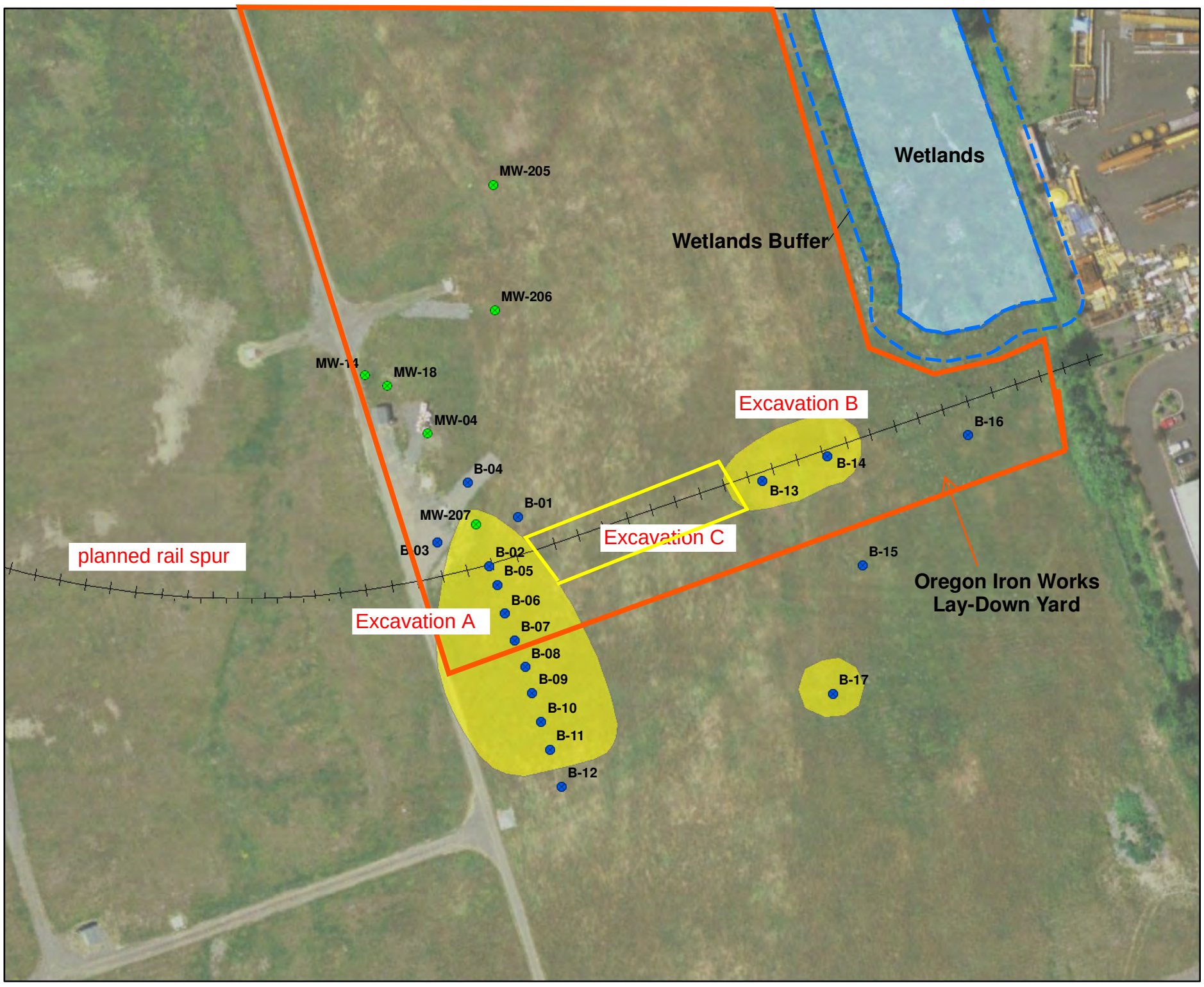
UJ = The analyte was not detected at or above the reported estimated result

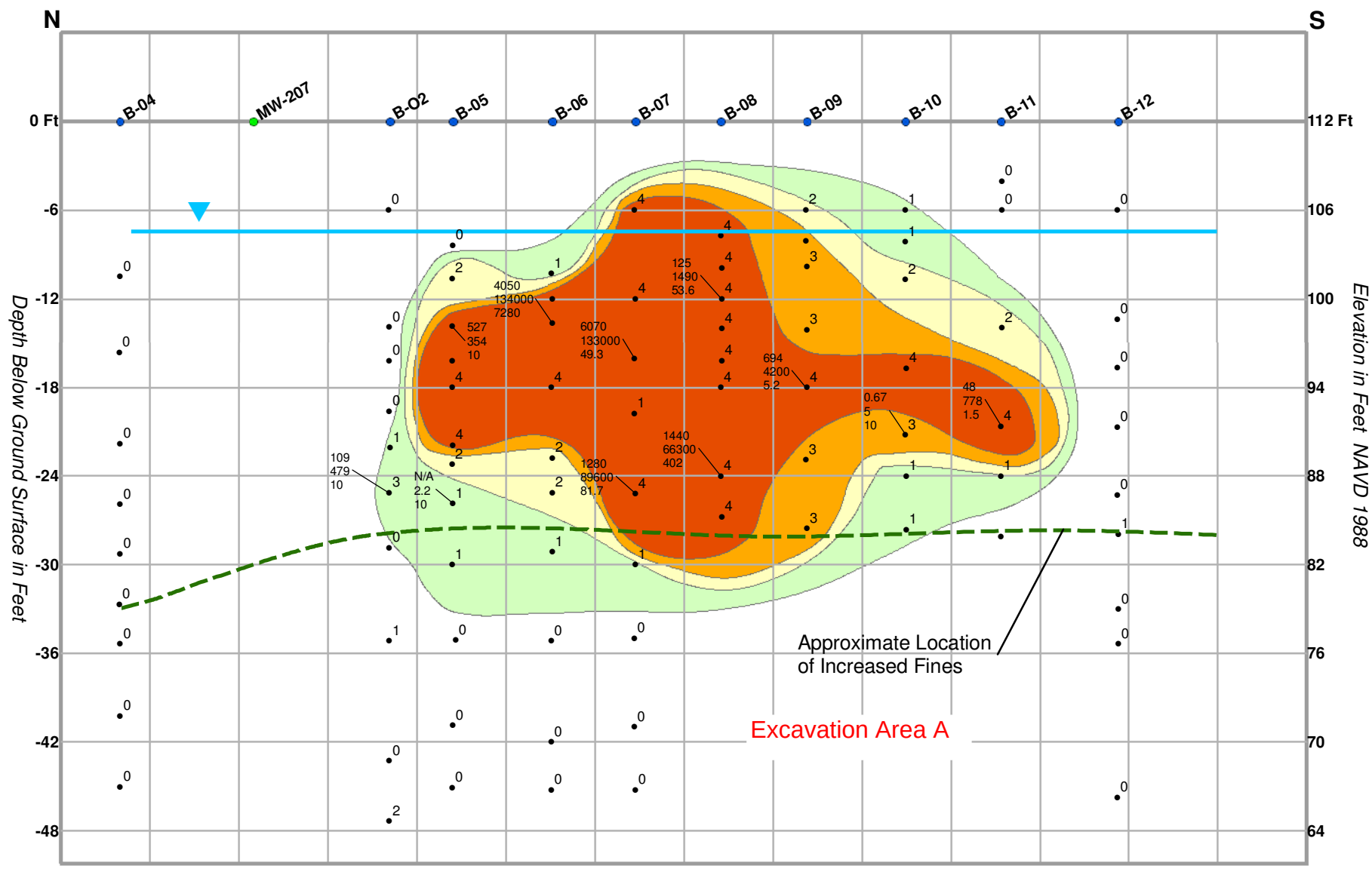
UB = Analyte was detected in a QC blank. The sample result is less than five times the blank concentration and is possibly due to cross-contamination. The analyte is considered not detected.

-- = not applicable

1 = Remedial Goals and Restoration Goals from *Northwest Pipe and Casing Company - OU2 Record of Decision, September 2001*

2 = Regional Screening Levels from *EPA Regional Screening Level Table (RSL) Master, April 2009*




Parametrix

N

0 50 100 150

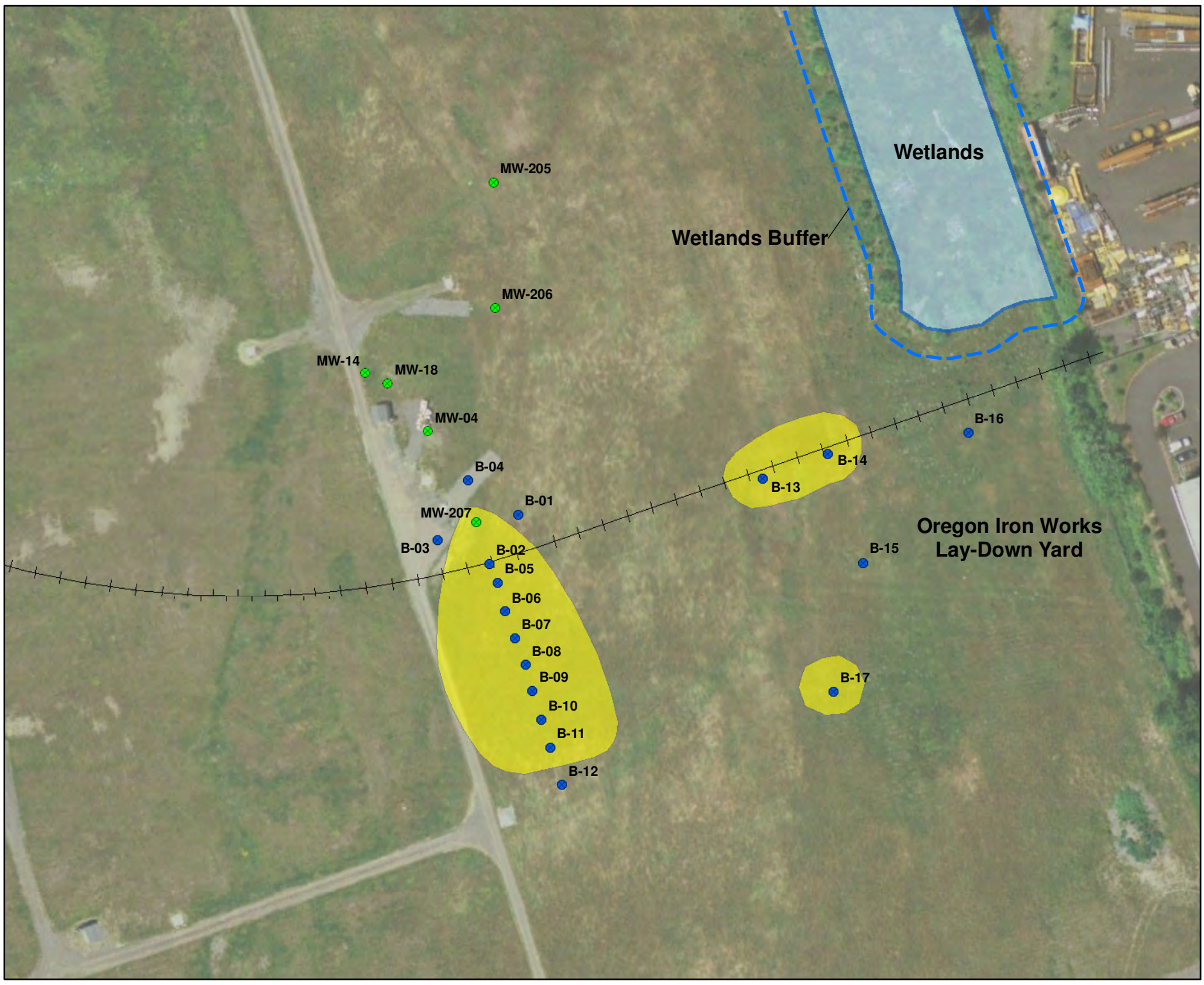
Feet

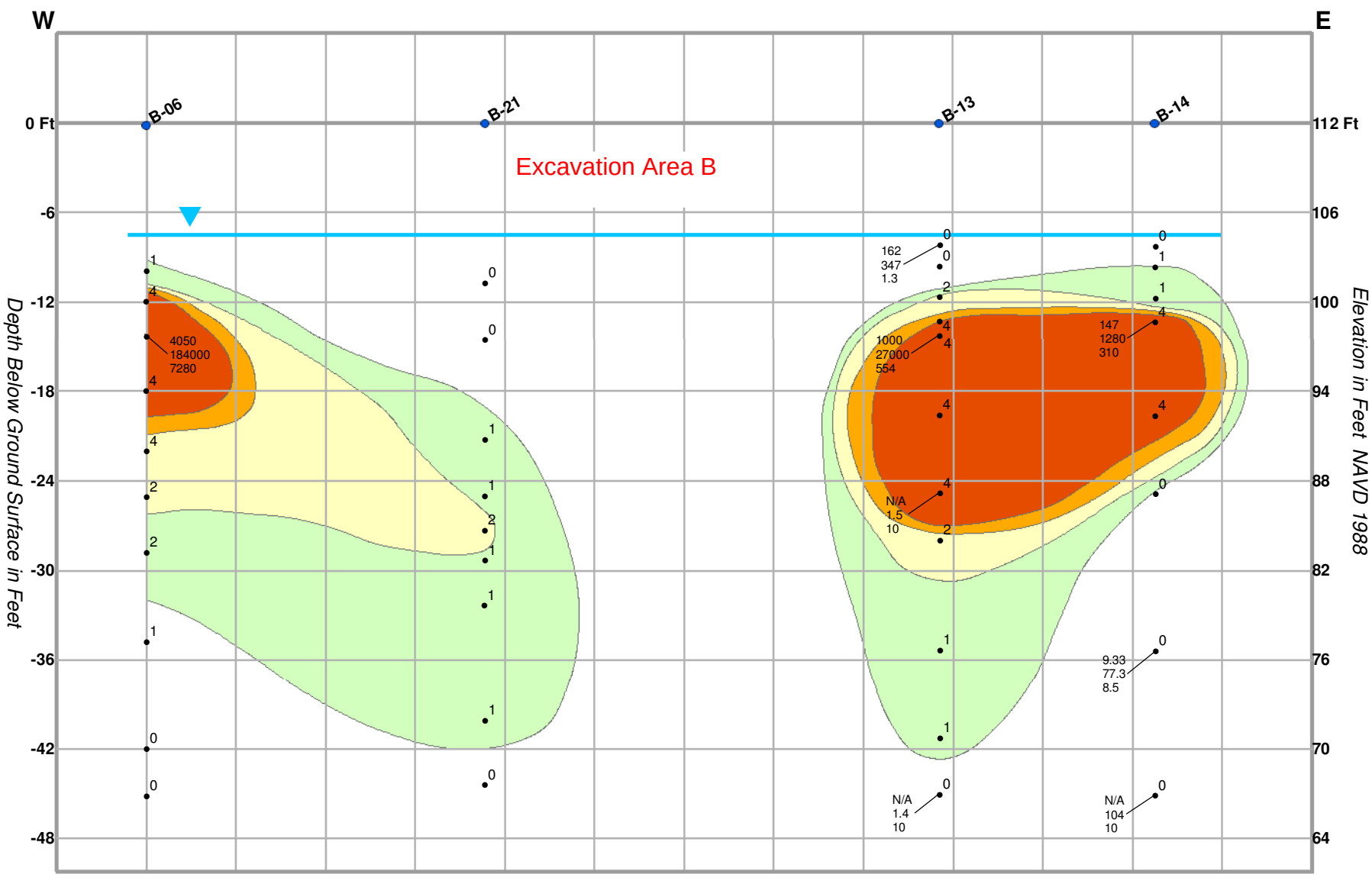
- Sonic Boring
- Existing Monitoring Well
- Coal Tar Body

0 No Impact
1 Naphthalene Odor
2 Sheen
3 Coal Tar Globuals
4 DNAPL

**NW Pipe Casing**
Portland, Oregon
June 17, 2009

Figure 4




Parametrix

N

0 50 100 150

Feet

Sonic Boring

Existing Monitoring Well

Coal Tar Body

0 No Impact
1 Naphthalene Odor
2 Sheen
3 Coal Tar Globuals
4 DNAPL

**NW Pipe Casing**

Portland, Oregon

June 17, 2009

Figure 5

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue, Suite 900
Seattle, WA 98101-3140

OFFICE OF
ENVIRONMENTAL CLEANUP

MAY 2 8 2010

**MEMORANDUM**

SUBJECT: Ceiling Increase Amendment to the Action Memorandum for Conduct of the Removal Action at the Northwest Pipe and Casing/Hall Processing Company Site, Clackamas, Clackamas County, Oregon

FROM: Richard Franklin, On-Scene Coordinator
Emergency Response Unit

Mark Ader, Remedial Project Manager
Site Cleanup Unit 2

THRU: Chris D. Field, Unit Manager
Emergency Response Unit

TO: Daniel D. Opalski, Director
Office of Environmental Cleanup

## I. PURPOSE

The purpose of this amendment to the Action Memorandum is to request and document approval of a total project ceiling increase of $274,200 to complete the ongoing time-critical removal action at the Northwest Pipe and Casing/Hall Processing Company (NWPC) Site, Clackamas, Clackamas County, Oregon. If the increase is approved, the total project ceiling will change from $2,400,000 to $2,674,200.

## II. SITE CONDITIONS AND BACKGROUND

The original Action Memorandum was approved on July 28, 2009, and a copy of the memorandum is attached. The original Action Memorandum was a "special circumstance" due to the $2 million exemption.

The removal action at Northwest Pipe and Casing was initiated by EPA on August 11, 2009. An estimated 16,672 tons of dense non-aqueous phase liquid (DNAPL) contaminated subsurface soil were excavated from three DNAPL source areas. Also during excavation, 511,100 gallons of groundwater, 3,500 gallons of sediment and sludge, and 11,500 gallons of sediment water were collected. Analytical data from composite samples collected from excavated soil, sediment, and sludge, showed contaminants below action levels for the site

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(based on landfill disposal requirements), and that these media could be disposed in a RCRA-permitted Subtitle D landfill. Subsequently, most of the soil was disposed of off-site at a RCRA-permitted Subtitle D facility. The sediment, sludge, and sediment water was also shipped to and disposed at the Subtitle D facility. Collected groundwater was treated with an on-site water treatment system and discharged through a permit to the local Publically Owned Treatment Works (POTW). After excavation was completed, all of the excavation cells were backfilled with clean soil and amendments to facilitate bioremediation of groundwater, and then capped with fill material.

Although most of the removal tasks were completed in 2009, the removal action was not able to be finalized due to an unexpected increase in costs as well as delays from inclement weather toward the end of the removal project schedule. There were substantive increases in costs due to three items: 1) the unexpected discovery and subsequent excavation of a larger area and volume of DNAPL-contaminated soils (over 6,000 tons); 2) an unanticipated but needed increase and dosage of soil amendments; and 3) changes made in shoring the excavation (changed from freeze shoring to slide shoring). An estimated 7,000 cubic yards of soil remains stockpiled on-site beneath a protective barrier because inclement weather prevented the cost-effective transport and disposal of the soil last year. The project cost contingency did not provide for the increase in soil amendments, shoring changes, or the increased volume, handling and disposing of excavated soils. Remaining funding was inadequate to provide for completion of the removal action.

More recently, after the excavation cells in Excavation Area 1 were backfilled, it was determined that rainwater was seeping through the current surface cap, infiltrating groundwater, and causing a change in the groundwater gradient. This has caused the subsurface amendments to move in the wrong direction and is inconsistent with the desired remedy.

The proposed funding increase for this action will provide for transportation and disposal of the additional stockpiled soil; the installation of a semi-permeable cap over Excavation Area 1 in order to re-establish groundwater gradient and correct flow of soil amendments; and the completion of the original removal action. If the ceiling increase is not approved, the objectives of the original Action Memorandum will not be achieved.

## III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

The threats to public health or welfare or the environment are not different from those addressed in the original Action Memorandum.

## IV. ENDANGERMENT DETERMINATION

The endangerment determination has not changed from the original Action Memorandum.

## V. EXEMPTION FROM STATUTORY LIMITS

The site conditions continue to meet the consistency exemption criteria specified in the original Action Memorandum. The proposed removal action is appropriate and consistent with the long-term groundwater treatment strategy for the NWPC Superfund Site.

## VI. PROPOSED ACTIONS AND ESTIMATED COSTS

### A. Proposed Action Description

An estimated 7,000 tons of DNAPL contaminated soil will be appropriately packaged for off-site disposal at a RCRA-permitted Subtitle D facility and in accordance with CERCLA's Off-Site Disposal Rule. Once removed, the area where the contaminated soil was stockpiled will be sampled to ensure all contaminated soil has been removed. Although the original removal action plan was to re-grade and hydroseed disturbed areas to facilitate surface water run-off, re-grading and surface restoration will be performed by Oregon Iron Works (OIW) due to their re-use and site construction plans.

Clackamas County purchased the NWPC property for redevelopment from the Oregon Department of Environmental Quality (ODEQ), who held the property in trust for EPA. Clackamas County has signed a lease with OIW to utilize the land for a laydown yard, RR spur and street car test track. OIW will begin construction of the street car test track to be able to fulfill requirements of contracts in place with prospective purchasers of the street cars. As part of the street car test track construction, OIW will re-grade and control surface water on site. They will also hydro-seed disturbed areas. OIW-proposed construction activities include laying down ballast rock, constructing a rail spur and maintenance building. EPA will install a semi-permeable cap of silty clay over Excavation Area 1 and seed it in order to prevent infiltration of rainwater into the groundwater. This will allow the previous groundwater gradient to reestablish itself, thereby causing the preferred flow of subsurface amendments and correct bioremediation effect. Clackamas County Development Agency will provide for Post-Removal Site Control activities such as the implementation of a waste management plan and maintenance of the site's soil cap. During the removal, Best Management Practices (BMPs) will be employed to control short-term clean-up impacts such as erosion, fugitive dust, and storm water management.

### B. Project Schedule

If approved, the project is expected to begin within two weeks of approval of this request and response activities are expected to be completed within three weeks thereafter.

C. Estimated Costs

The current ceiling and proposed ceiling increase are shown below.

| Project Ceiling Increase Estimate | Current Ceiling | Proposed Increase | Proposed Ceiling |
|---|---|---|---|
| **Extramural Costs** | | | |
| Regional Removal Allowance Costs<br>ERRS (Construction, equipment, and material) | $2,060,000 | $188,500 | $2,248,500 |
| Other Extramural Costs Not Funded from the Regional Allowance<br>START | $ 100,000 | $ 40,000 | $ 140,000 |
| Extramural Cost Contingency (20%) | $ 240,000 | $ 45,700 | $ 285,700 |
| Subtotal Extramural Costs and Contingency | $ | $ | $ |
| **TOTAL REMOVAL ACTION PROJECT CEILING** | $2,400,000 | $274,200 | $2,674,200 |

## VII. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

The consequences of delaying or not taking the removal action have not changed from the original Action Memorandum.

## VIII. OUTSTANDING POLICY ISSUES

The outstanding policy issues have not changed from the original Action Memorandum.

## IX. ENFORCEMENT

The enforcement issues have not changed from the original Action Memorandum.

## X. RECOMMENDATION

Conditions at the Site meet the NCP section 300.415(b) criteria for a removal and the CERCLA section 104(c) consistency exemption from the $2 million limitation and I recommend your approval of a ceiling increase of $ 274,200. The total project ceiling if approved will be $ 2,674,200, of which an estimated $ 274,200 will be funded from the FY10 Regional removal allowance.

Approval: ✓ Disapproval: _____

Signature: _____, Acting Director, ECL

Date: 5/27/10

Attachments: 1) Original Action Memorandum for Conduct of the NWPC Removal Action, NWPC
2) NWPC Removal Action 2009 site features overview

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10 Emergency Response Unit
1200 Sixth Avenue. Suite 900
Seattle, Washington 98101-3140

**MEMORANDUM**

DATE: July 28, 2009

SUBJECT: Approval and Funding for a Time Critical Removal Action at the Northwest Pipe and Casing/ Hall Processing Company Site (NWPC Site) and Request for a 2 Million Dollar Exemption

FROM: Kathy Parker, On-Scene Coordinator
Mark Ader, Remedial Project Manager

TO: Daniel D. Opalski, Director
Office of Environmental Cleanup

THRU: Chris D. Field, Manager
Emergency Response Unit

SITE ID: 10G8

## I. PURPOSE

The purpose of this Action Memorandum is to request and document approval of the proposed time-critical removal action described herein for the NWPC Site located in Clackamas County at 9585 Mather Road, Clackamas, Oregon 97015. (See figure 1.)

This Removal Action consists of the excavation of contaminated soil that is interfering with the groundwater remedy that was implemented during the 2003 Remedial Action. This Action Memorandum also documents approval for an exemption to the two million dollar limit on removal actions established under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This action meets the criteria for initiating a removal action under the National Contingency Plan (NCP), 40 C.F.R. §300.415.

## II. SITE CONDITIONS AND BACKGROUND

The CERCLIS and RCRIS ID number is ORD980988307. The Oregon State Waste ID is ORD987201126.



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## II.A. Site Description

### II.A.1. Removal site evaluation

Pipe-coating businesses, run by the Hall Process Company and Northwest Pipe and Casing Company, operated on the southern part of the 53 acre property from 1956 to 1985. During the pipe-coating operations, contaminants were released at the Site into the soil and groundwater. These contaminants included volatile organic compounds (VOCs), polynuclear aromatic hydrocarbons (PAHs) and polychlorinated biphenyls (PCBs).

Remedial Action (RA) at the Site, which was divided into an Operable Unit (OU) for soil and an OU for groundwater, was performed between August 1, 2001 and September 8, 2004. The RA consisted of soil excavation and treatment of 32,010 tons of contaminated soil and installation of a two foot cap of clean soil on a portion of the Site, installation of a groundwater treatment system consisting of groundwater circulating wells (GCWs) and monitoring wells, and institutional controls to prohibit the use of groundwater at the Site.

In 2006, the Five Year Review (FYR) of the Site concluded that the groundwater remedy was not functioning as designed. As a follow up to the FYR, EPA Region 10 requested that the EPA Headquarters Remedial System Evaluation (RSE) contractor conduct an analysis of the remedy. The findings established that the groundwater treatment system should be shut down and additional site characterization of the main plume be completed to help determine the southern boundary of the plume. A site wide groundwater monitoring event was conducted in November 2007. During this event a non-aqueous phase liquid (NAPL) was discovered in monitoring well MW-207 located within the Plume 1 source area (Parametrix, 2007). Analysis indicated the sample contained PAHs and VOCs with some PCBs and metals; and that the composition of the dense non-aqueous phase liquid (DNAPL) fraction was similar to that of coal tar which was used at the Site (Parametrix, 2008). (See Table 1.)

Based on the RSE recommendations and the discovery of DNAPL in MW-207, in the fall of 2008, a Supplemental Focused Field Investigation (SFFI) was completed. The SFFI identified three DNAPL bodies, a main body and two smaller bodies within the Plume 1 Source Area. These DNAPL bodies are presumably composed of coal tars. See Figures 2 and 3 and Tables 2, 3 and 4.

Analytical results for soils collected within the DNAPL bodies indicate relatively high concentrations of chlorinated volatile organic compounds (CVOCs), naphthalene, and BTEX (benzene, toluene, ethylbenzene, xylene). In general, CVOCs and BTEX concentrations in subsurface soil are limited in extent both laterally and vertically within the DNAPL bodies. However, naphthalene concentrations in subsurface soil are more

pervasive throughout the DNAPL bodies, with detectable concentrations up to 65 feet below ground surface (bgs).

In February 2009, the Region held a conference call with Headquarters and the RSE contractor to discuss the findings, especially considering their previous recommendations and how the discovery of the DNAPL bodies, referred to as coal tar bodies, would affect the groundwater remedy. The RSE contractor indicated that no further effective action could be taken on the groundwater remedy until the coal tar bodies, determined to be sources of soil contamination, were removed or otherwise treated.

In May 2009, the EPA Region 10 Remedial Program requested assistance from the Removal Program in removing the major source of soil contamination remaining at the Site so that a new groundwater remedy could be implemented.

On June 18, 2009, a Removal Assessment site visit was conducted by EPA On Scene Coordinator (OSC) Kathy Parker, EPA Remedial Program Manager (RPM) Mark Ader, Oregon Department of Environmental Quality (ODEQ) Project Manager Debbie Bailey and contractors from Environmental Quality Management, Ecology and Environment and Parametrix. All participants concluded that further site work is necessary to remove remaining soil contamination before the Remedial Action groundwater remedy is expected to be effective.

### II.A.2. Physical Location

The Site is located at 9585 SE Mather Road, Clackamas, Oregon 97015, approximately 20 miles southeast of Portland. The Site is bounded to the north by SE Lawnfield Road and to the south by SE Mather Road. There are railroad tracks along the western boundary of the site. Interstate 205 is located approximately one half mile west of the site. The precise location is 45.4149 Latitude; -122.5200 Longitude. See the Site Vicinity Map in Figure 1.

The Site is situated among land consisting primarily of light industrial and commercial properties. The closest residence is located 500 feet west of the Site. There is a small residential area approximately one half mile south of the Site. The City of Milwaukie is located approximately one mile north of the Site.

Groundwater in the wet season is at or near the surface. On-Site runoff generally drains into manmade ditches on the eastern and western boundaries of the Site, which in turn flow into Dean Creek. As part of the remedial action an on-Site wetland was constructed which drains to the ditch on the eastern property boundary and then to Dean Creek. There are no known threatened or endangered species or critical habitat on the Site.

### II.A.3. Site Characteristics

Parcel B of the Site is expected to be used for a railroad spur and laydown yard by an adjoining business by the fall of 2009. Future light industrial development is anticipated or future road construction might be conducted. Parcel A is currently used by the Oregon Department of Transportation (ODOT) for multiple light industrial purposes and by Northwest Development Company (NDC) for warehouses and offices. The two previous EPA Removal Actions performed at the Site involved removal of buildings and debris and are unrelated to the issuance of this Removal Action and therefore will not apply toward the time or dollar ceilings for this Removal Action.

### II.A.4. Release or threatened release into the environment of a hazardous substance, or pollutant or contaminant

The substances known to be on-site include tetrachloroethene (PCE), trichloroethene (TCE), 1,2, cis-dichlorothene, PCBs, vinyl chloride (VC), naphthalene and other polycyclic aromatic hydrocarbons. See Tables 2, 3 and 4 for concentrations and locations of chemical contaminants at the Site. These substances are potential hazardous substances, pollutants, or contaminants as defined by sections 101(14) and 101(33) of CERCLA, as amended, 42 U.S.C. §9601(14) and (33). Other hazardous substances may also be on-site.

The 2008 Focused Field Investigation describes the details of the type, locations and concentrations of groundwater and soil contaminants currently believed to be on the Site. Figures 2 and 3 summarize the current shallow PCE and Napthalene concentration plumes plotted on an aerial photograph of the Site.

### II.A.5. NPL Status

The Site was finalized on the National Priorities List (NPL) on October 14, 1992.

### II.A.6. Maps, pictures, and other graphic representations

Refer to imbedded and attached figures, maps and tables.

## II.B. Other Actions to Date

### II.B.1. Previous Actions

There are no known government or private actions that have been undertaken in the past that have not been previously discussed. (See section II.A.1)

### II.B.2. Current actions

Current actions at the Site include monitoring and maintenance of the soil cap and mitigated wetland, monitoring of the groundwater plumes pending the completion of the source removal discussed in this action memorandum at which time a revision of the groundwater remedy is anticipated, and institutional controls.

## II.C. State and Local Authorities' Roles

### II.C.1. State and Local Actions to Date

ODEQ, and EPA have worked together on cleaning up this Site. ODEQ's ongoing co-management role at the Site is carried out on behalf of the State of Oregon, one of the settling plaintiffs along with the United States in each the four Consent Decrees at the Site.

### II.C.2. Potential for Continued State/Local Response

EPA and ODEQ currently have a State Superfund Contract for this Site. Clackamas County Development Agency, current owner of Parcel B at the Site, ODEQ and EPA will continue to manage Parcel B of the Site in accordance with the PPA, NWPC Consent Decree and all other agreements that are currently in place for the Site. ODEQ will also continue to co-manage the Site with EPA to ensure that ODOT and NDC continue to comply with the Consent Decrees they entered into and with institutional controls at the Site. All entities are committed to staying engaged in the process of developing this property for beneficial use to the community.

On July 20, 2009, ODEQ sent EPA a letter concurring with this proposed Removal Action. Funding will be provided primarily by the Special Account that was created with the monetary Settlement that resulted from the Consent Decrees between EPA, ODEQ and responsible parties.

### II.C.3. Tribal Interests

On July 15, 2009, EPA consulted with the Grande Ronde Tribe and the Siletz Tribe to determine if they had any concerns about the proposed Removal Action. Neither Tribe expressed any environmental or cultural resources concerns related to the Removal Action for EPA to consider.

## III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

The current conditions at this Site meet the following factors which indicate that the Site is a threat to the public health or welfare or the environment, and a removal action is appropriate under section 300.415(b)(2) of the NCP. Any or all of these factors may be present at a site, and any one of these factors may determine the appropriateness of a

removal action.

**III.A. The availability of other appropriate federal or state response mechanisms to respond to the release (300.415(b)(2)(vii)).**

The funds received from the Settlement between EPA, ODEQ, and the PRPs were deposited into a Special Account. These funds are to be used to carry out response actions at the Site. Funds have been set aside in this account to partially fund this time-critical removal action as a response action at the Site. No other federal or state agency has the additional funds or resources to conduct the proposed removal action.

**III.B. Other situations or factors that may pose threats to public health or welfare of the United States or the environment (300.415(b)(2)(viii)).**

The residual source of DNAPL in subsurface soils is a chronic source of dissolved hazardous substances to the groundwater underlying the Site. As long as the residual saturation of DNAPL in soil remains, the DNAPL will percolate downward through the subsurface. The slow rates of dissolution will continue to feed the groundwater plume for an indeterminate period, thus increasing the potential for contamination to migrate toward down gradient drinking water supplies. The total time and cost for eventual cleanup will increase the longer the residual source of DNAPL in subsurface soils remains unaddressed. By contrast, directly addressing the DNAPL source areas will contribute to a more effective solution in terms of total cost and cleanup time. Further, a railroad spur is proposed to be constructed over the residual DNAPL. While the railroad spur is expected to have a positive economic impact, the disruption to the railroad spur if the spur has to be removed at a later date to allow the DNAPL sources to be removed would likely cause an undue financial hardship on the project sponsor, Oregon Iron Works.

| Group | Contaminant | Maximum Detected Concentration | Remedial Goal |
|---|---|---|---|
| VOCs | Tetrachloroethene (PCE) | 370,000 µg/kg | 7 µg/kg |
| | Trichloroethene (TCE) | NA | 13 µg/kg |
| | Vinyl Chloride | NA | 0.1 µg/kg |
| PAHs | Benzo(a)anthracene | 950,000 µg/kg | 2,500 µg/kg |
| | Benzo(b)fluoranthene | 800,000 µg/kg | 2,500 µg/kg |
| | Benzo(k)fluoranthene | 530,000 µg/kg | 2,500 µg/kg |
| | Benzo(a)pyrene | 410,000 µg/kg | 250 µg/kg |
| | Chrysene | 2,100,000 µg/kg | 250,000 µg/kg |
| | Dibenz(a,h)anthracene | 89,000 µg/kg | 250 µg/kg |
| | Indeno(1,2,3-cd)pyrene | 250,000 µg/kg | 2,500 µg/kg |
| PCBs | Total PCBs | 870 mg/kg | 1 mg/kg |

Until the three coal tar bodies are removed from the soil at the Site, enabling effective implementation of the Remedial Action for groundwater, contaminant plumes will continue to spread in the groundwater and potentially threaten down gradient wells.

## IV. ENDANGERMENT DETERMINATION

Actual or threatened releases of hazardous substances from this Site, if not addressed by implementing the response action selected in this Action Memorandum, may present an imminent and substantial endangerment to public health, or welfare, or the environment.

## V. PROPOSED ACTIONS AND ESTIMATED COSTS

### V. A. Proposed Action

### V.A.1. Proposed Action Description

*DNAPL Source Areas*
EPA will excavate an estimated 4,500 tons of contaminated subsurface soil from three DNAPL source areas. The final depth and width of excavations will be determined by visual observation, field screening instruments, and laboratory analyses using the contaminant cleanup concentrations specified in the ROD. The excavated soil will be segregated on-site by hazard class and disposal method, and shipped off-site for disposal at approved hazardous waste and municipal waste facilities, as appropriate. A soil modifier will be placed in the bottom of the excavations to enhance biological degradation of residual contaminants. The excavations will be backfilled with clean soil and the top two feet of fill material will be placed to achieve the ROD barrier specifications. Groundwater intrusion into the excavations will be prevented by freeze-shoring. Any collected groundwater, surface water, or leachate will be analyzed and disposed in an appropriate manner. Disturbed areas will be graded to facilitate surface water drainage and will be revegetated with appropriate plant materials. See Figures 4 and 5.

*Best-Management Practices (BMPs):*
Temporary Best Management Practices (BMPs) will be employed throughout construction for control of erosion, fugitive dust, and storm water management, and to minimize and to avoid adverse impacts on wildlife and their habitats. Dust and particulate concentrations at the Site will be monitored with particulate monitors and the results used to modify work practices if particulate levels exceed the on-Site action level of 10 ppm and Site boundary action level of 3 ppm.

*Assessment and characterization of known and suspected hazardous wastes and potentially contaminated soils:*
Known and suspected hazardous compounds in soil, including VOCs, PAHs, and total

PCBs will be identified by sampling soil during excavation. The samples will be assessed using a combination of fast turn around laboratory analysis and field screening. Field screening methodology will include direct visual observations as well as headspace measurement with field meters and/or field test kits. These sample results will be used to determine whether additional soil excavation is necessary. After the limits of the excavations have been established, confirmation soil samples will be collected from the bottom and sides of the excavations and submitted for laboratory analyses. Samples for waste profiling will be collected from excavated soil stockpiles and submitted for analyses at a fixed laboratory.

For consistency, this Removal Action will use the Remedial Cleanup Goals (RGs) for the soil excavation action levels. Groundwater cleanup will not be addressed by this Removal Action.

| Group | **Contaminant** | **Remedial Goal** |
|---|---|---|
| VOCs | Tetrachloroethene (PCE) | 7 µg/kg |
| | Trichloroethene (TCE) | 13 µg/kg |
| | Vinyl Chloride | 0.1 µg/kg |
| PAHs | Benzo(a)anthracene | 2,500 µg/kg |
| | Benzo(b)fluoranthene | 2,500 µg/kg |
| | Benzo(k)fluoranthene | 2,500 µg/kg |
| | Benzo(a)pyrene | 250 µg/kg |
| | Chrysene | 250,000 µg/kg |
| | Dibenz(a,h)anthracene | 250 µg/kg |
| | Indeno(1,2,3-cd)pyrene | 2,500 µg/kg |
| PCBs | Total PCBs | 1 mg/kg |

**(Regional Screening Levels from the July 7, 2008 "Regional Screening Levels for Chemical Contaminants of Concern at Superfund Sites")**

*Excavation of contaminated material and packaging, labeling, transportation, and disposal of hazardous and non-hazardous wastes:*
This proposed action will require off-site disposal of hazardous waste. To minimize the costs for disposal, all waste materials and excavated contaminated soils will be segregated by hazard class and disposal method. Excavated soils will be assessed using visual observations, field screening data, and/or laboratory results and placed in one of three categories of stockpiles: hazardous waste, non-hazardous solid waste, or soil with contaminant levels below cleanup goals suitable for on-site backfilling. Temporary stockpile cells will be constructed in a designated area of the Site. Each cell will hold approximately 300 cubic yards of soil. The cells will have edge supports (such as hay bales or concrete ecology blocks) and will be lined with plastic sheeting to allow for dewatering with containment of the water and to prevent migration of contaminated material from the stockpiles. Each stockpile will be covered with plastic sheeting until transported off-Site for disposal or used as fill material on Site if appropriate. Each

individual stockpile within the designated area will be given a unique, consecutive number for identification.

If laboratory testing indicates the waste in a cell exhibits any of the RCRA characteristics, it will be disposed of at an approved hazardous waste facility.
If the analysis of the waste in a containment cell indicates it does not exhibit any of the RCRA characteristics, it will be transported to a non-hazardous waste facility.

Wastes will be appropriately packaged for off-Site disposal at a RCRA-permitted facility and in accordance with CERCLA's Off-Site Disposal Rule. Off-site shipments of hazardous waste will be tracked with hazardous waste manifests. Off-site shipments of non-hazardous materials will be similarly tracked with bills-of-lading.

Water collected from the excavation dewatering and soil stockpile drainage will be contained in temporary storage tanks. The water from the tanks will be sampled and analyzed at a fixed laboratory. Depending on the analytical results, the water may be treated by an on-Site water treatment system and then tested to determine the contaminants remaining in the water after treatment. Depending on the analytical results for the concentrations of contaminants remaining in the treated water, the water will be disposed of either by injecting into the storm water system or the sewer system or transported off-site to an approved hazardous waste facility.

*Post removal Site controls:*
The need for any post-removal site control activities (e.g., maintenance of fences, signs) will be determined by the EPA Region 10 Remedial Program (Program), and will be managed by the Program pursuant to the Site RODs. The Program will also determine the need for specific institutional controls, and if needed, such controls will be managed by the Program pursuant to the Site RODs.

### V.A.2. Contribution to remedial performance

The proposed removal action is integral to, and consistent with, the long-term groundwater treatment remedy. If future actions are required, the proposed removal action will likely not impede those actions based upon available information.

### V.A.3. Description of alternative technologies

There are no other implementable or cost effective technologies that have been identified for the Site. Removal of waste and soil is a standard technology for these contaminants. On-Site and off-Site thermal desorption of the contaminants present at the Site were considered to attempt to reduce transport, disposal and fill costs. However, factors such as the types of contaminants, the percentage of groundwater in the soil, and permitting issues for air emissions from the thermal desorption process resulted in that technology not being implementable or cost effective at this Site.

Also considered was surrounding the contaminated soil with an impervious layer. However, the depth of the contamination makes that option difficult to implement and therefore not cost-effective. It would also have the undesirable result of requiring long term operation and maintenance of the impervious layer.

### V.A.4. Engineering Evaluation/Cost Analysis (EE/CA)

This proposed action is for a time-critical removal action, therefore an EE/CA is not required.

### V.A.5. Applicable or relevant and appropriate requirements (ARARs)

ARARs are defined in CERCLA Section 121 and the NCP [40 CFR Part 300]. Applicable" requirements are those cleanup standards and other environmental protection requirements promulgated under federal or state law that specifically address a hazardous substance, pollutant, contaminant, location, response action, or other circumstance at a site. While not applicable to a particular circumstance at a CERCLA site, "relevant and appropriate" requirements address problems or situations sufficiently similar to those encountered at a site that their use is well suited to the site.

Oregon Environmental Cleanup Rules (OAR 340-102) and TSCA Risk-Based Option for PCB Remediation (40 CFR 761.61) were considered during the development of the RGs and are described in the ROD.

**Oregon Solid Waste Management Rules (OAR 340-093 through -097)** are applicable to the treatment and disposal of solid waste from the Site. Section 340 093-0170 is applicable to the disposal of cleanup materials contaminated with hazardous substances that are not in themselves hazardous substances, such as petroleum contaminated soil. Such material must be disposed only in landfills meeting the RCRA Subpart D design criteria and that have been authorized to receive this type of material by ODEQ. Section 340 093-0190 is applicable to the disposal of special wastes, including construction and demolition debris and oil wastes. Solidified coal tar, to the extent it is not deemed a hazardous waste, and construction and demolition wastes from the Site will be placed in a landfill approved for handling such special wastes.

**Oregon Hazardous Wastes Management Rules (OAR 340-100 through -120)** are applicable to soil at the Site which exhibits a characteristic of hazardous wastes. Based on the RI data and history of past facility operations, soil at the Site does not contain state-only or listed hazardous wastes. However, some soil at the Site may exceed the Toxicity Characteristic Leaching Procedure (TCLP) concentration of 0.7 mg/L of PCE and therefore exhibit the toxicity characteristic for PCE. EPA will conduct additional tests on the suspected soil to verify the TCLP presumption prior to transporting the soil to a disposal facility. RCRA TCLP waste sent off-Site will comply with the Oregon RCRA

rules pertaining to the generation, transportation and treatment, storage and disposal of hazardous waste.

**Oregon General Emission Standards for Particulate Matter (OAR 340-208-0100 through - 0210)** is applicable to visible emissions and nuisance conditions from the selected soil remedy. The Site is located in a designated Special Control Area. Consequently, dust generated from earthwork or other disturbance of on-Site soils must meet a nuisance condition standard for fugitive emissions traceable directly to a specific source. In addition, opacity and particulate matter concentration standards are applicable to vehicle emissions on-site. Dust and particulate concentrations at the Site will be monitored with particulate monitors and the results used to modify work practices if dust levels are found to exceed the on-site action level of 10 ppm or the Site boundary action level of 3 ppm.

**Oregon Water Quality Management Plan (OAR 340-041)** is applicable to the management of storm water run-off from the Site. Site water production and run-off will be controlled with freeze-shoring, ditching, pumping, on-site storage in tanks, discharge to the municipal sewer, straw bales, silt fences or other BMPs.

**Clackamas County Publicly Owned Treatment Works (POTW)** discharge limits will apply to batch discharges of treated Site water to the county sewer.

### V.A.6. Project Schedule

It is expected that project implementation will begin in August 2009 and will take approximately eight weeks to complete. Three weeks are needed to install the freeze-shoring and freeze the perimeter of the excavation areas. Excavation will begin after shoring is in place and is expected to last five weeks.

### V.B. Estimated Costs

| **2009 Removal Action Extramural Costs**: | |
|---|---|
| Extramural Costs | |
| ERRS (up to $900,000 from the regional allowance with remaining funds from the Special Account for the Northwest Pipe and Casing Site) | $2,060,000 |
| START (from the Special Account for the Northwest Pipe and Casing Site) | $100,000 |
| Subtotal of Extramural Costs | $2,160,000 |
| Extramural Costs Contingency (From Special Account) | $240,000 |
| TOTAL REMOVAL ACTION PROJECT CEILING | $2,400,000 |

Note: Up to $2.4 million will be used from the Special Account if regional allowance funds are

not available.

## VI. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

If the proposed removal action should be delayed or not taken, hazardous substances will remain as potential human health and ecological threats and hazardous substances will remain a continuing source of solid and dissolved-phase contaminants. Contamination may spread from the Site soil and groundwater to the Troutdale aquifer which serves as a municipal water supply.

## VII. OUTSTANDING POLICY ISSUES

None.

## VIII. EXEMPTION FROM STATUTORY LIMITS

The removal activities subject to this Removal Action Memorandum are necessary to ensure the protection of human health by preventing or reducing potential human exposure to contaminants remaining at the Site. Previous remedial efforts have reduced exposures through such means as removal of soil and capping of contaminants in place. This removal action is necessary to ensure the continued protection of human health by reinforcing previous measures taken at the Site. The costs associated with this Removal Action Memorandum are expected to exceed the statutory limit of $2 million as established by CERCLA Section 104(c)(1). Although, as noted in EPA's *Consolidated Guidance on the Establishment, Management and Use of CERCLA Special Accounts (October 4, 2002)*, CERCLA Section 122(b) special accounts are not subject to the $2 million statutory limit set by CERCLA Section 104(c)(1), as a conservative approach, this Removal Action Memorandum seeks to use the exemptions of Section 104(c)(1)(A). Section 104(c)(1)(A) authorizes exemptions where EPA can make the finding that continued response action is otherwise appropriate and consistent with the remedial action to be taken. The removal activities subject to this Removal Action Memorandum qualify for this particular exemption. In support of this exemption, EPA has made the finding (see Section V.A.2, above) that the activities proposed in this Removal Action Memorandum are consistent with the anticipated remedial action to be taken.

## VIII. ENFORCEMENT

No enforcement issues remain since the Consent Decrees and Settlements between EPA, ODEQ and the responsible parties have already occurred.

## IX. RECOMMENDATION

This decision document presents the selected Removal Action for the NWPC Site located at 9585 Mather Road, Clackamas County, Oregon, developed in accordance with CERCLA, as amended, and not inconsistent with the NCP. This decision is based on the administrative record for the Site.

Conditions at the Site meet the NCP Section 300.415(b)(2) criteria for a removal and we recommend your approval of the proposed removal action. The total project extramural ceiling if approved will be $2,400,000. Of this, as much as $900,000 may come from the Regional Removal Allowance.

## X. APPROVAL / DISAPPROVAL

APPROVAL:

Lindy Anderson-Graham for 7/28/09

Daniel D. Opalski, Director
Office of Environmental Cleanup

Date

DISAPPROVAL:

Daniel D. Opalski, Director
Office of Environmental Cleanup

Date

EPA Concurrences:

| Name | Mary Stroh Queitzsch | Deb Yamamoto | Chris Field |
|---|---|---|---|
| | Office of Regional Counsel | Remedial Program Manager | Removal Program Manager |
| Signature | Mary Stroh Queitzsch | Deb Yamamoto | |
| Date | 7-28/2009 | 7/28/09 | 7/28/09 |

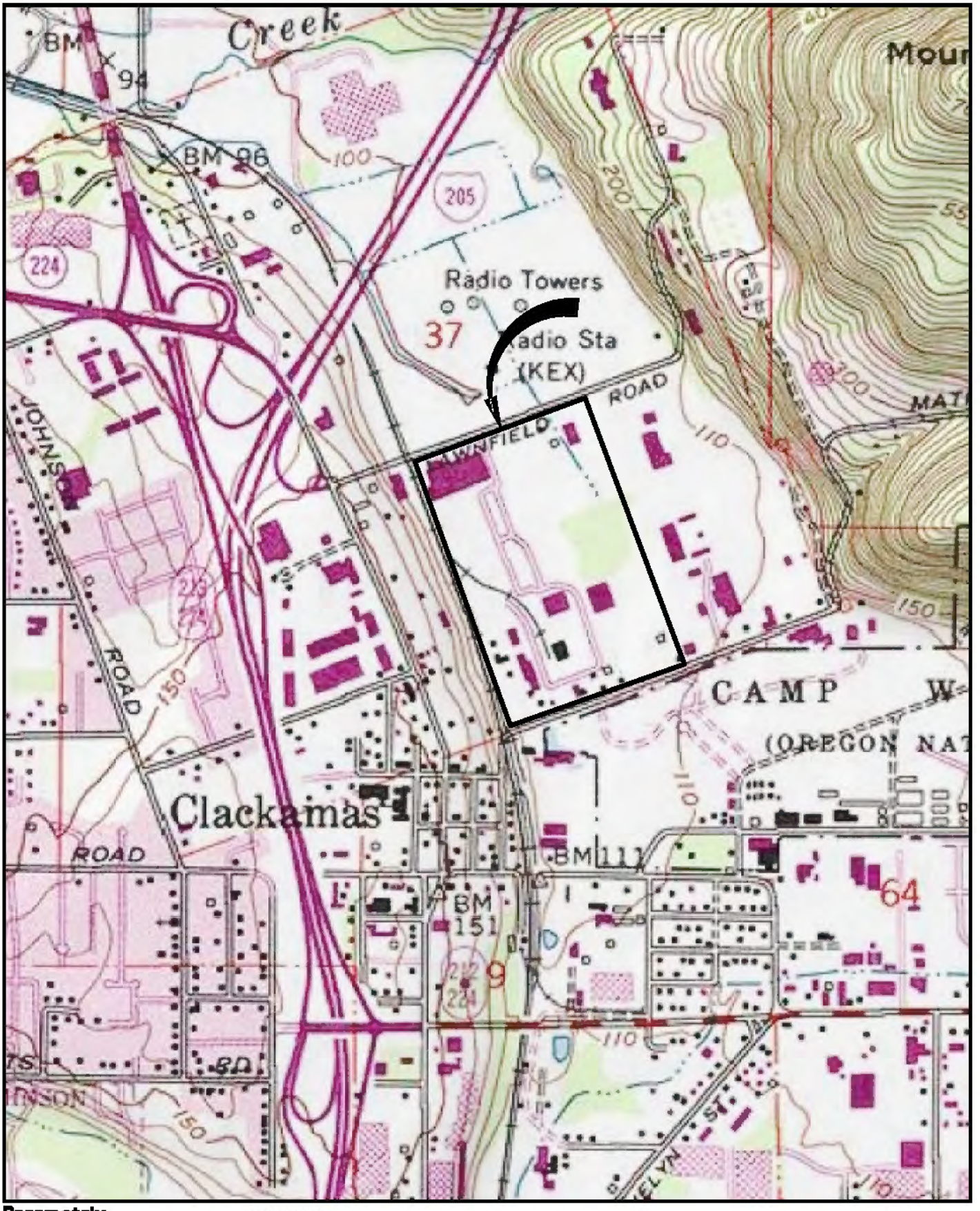
# Tables and Figures for
# 2009 Northwest Pipe and Casing Removal Action Memorandum

Figures:

Figure 1. Site vicinity map
Figure 2. Site features map showing Remedial Excavations, current soil contamination areas, Naphthalene concentrations at monitoring wells and bore holes
Figure 3. Aerial photograph showing current shallow PCE plume
Figure 4. Aerial photograph showing proposed excavation areas and proposed Oregon Iron Works lay-down yard, lower figure showing cross-sectional depth contamination for excavation area A
Figure 5. Aerial photograph showing proposed excavation areas, lower figure showing cross-sectional depth contamination for excavation area B

Tables:

Table 1. Summary of Analytical Results for Well MW207
Table 2. Summary of 2008 PAHs in subsurface soil
Table 3. Summary of 2008 VOCs in subsurface soils
Talbe 4. 2008 Groundwater Contamination Concentrations
Table 5. Maximum soil contamination concentrations
Table 6. Cleanup levels: comparison of regional screening levels to remedial goals

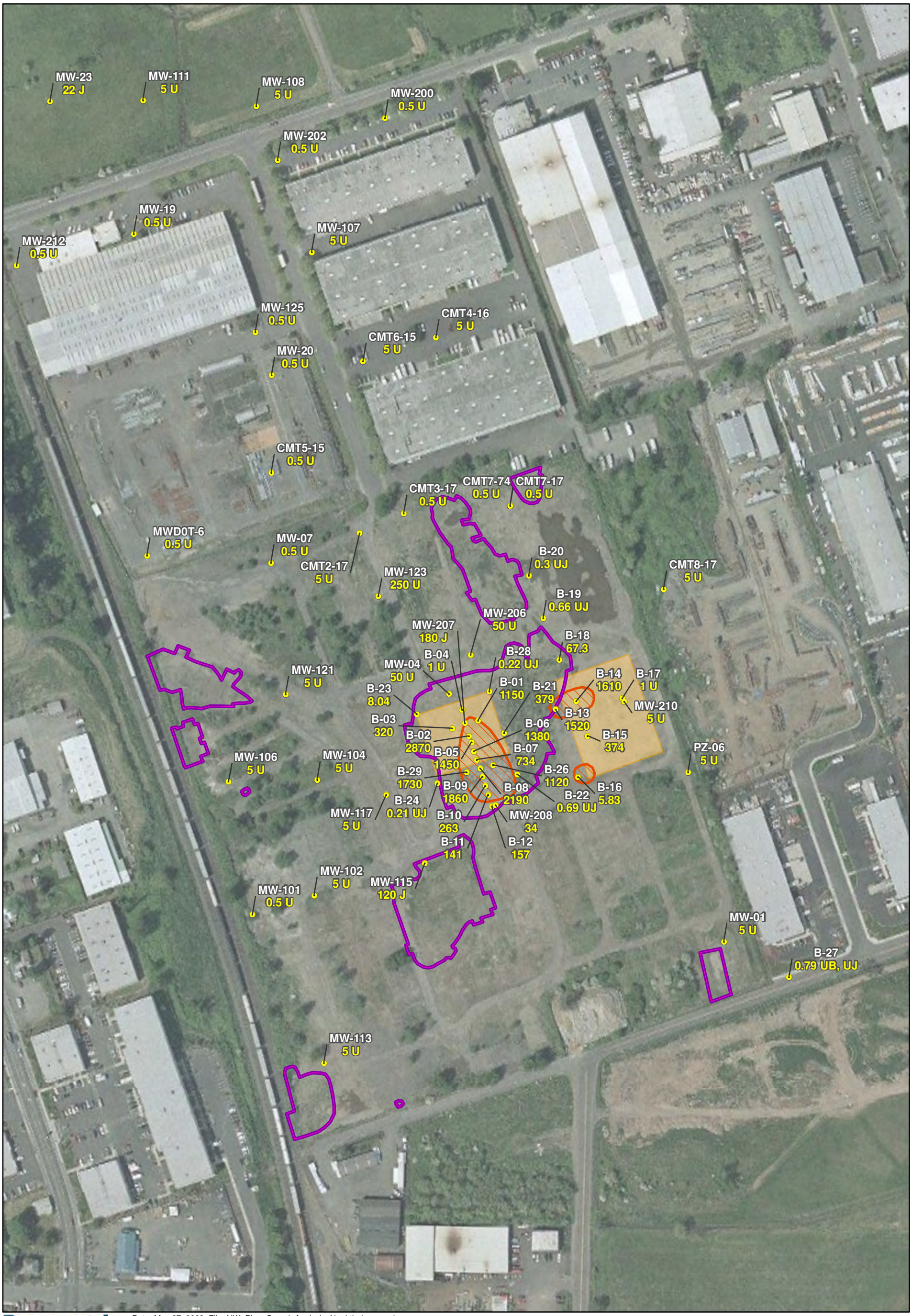



**Parametrix** DATE: May 18, 2006 FILE: PO2328007CF-08

0 N 1000'

SCALE IN FEET

**Figure 1**




Parametrix

Date: May 27, 2009 File: NW_Pipe_SampleAnalysis_Naphthalene.mxd

N

0 100 200

Feet

- Well Location ID and Naphthalene Sample Value
- Excavation Areas
- CoalBodies
- Plants 3 and 4 (Historic)

# NW Pipe DRAFT

Portland, Oregon

**Figure 2**

**NOTES:**
Qualifier
J = Estimated Concentration
U = Not Detected At or Above the Method Reporting Limit
Units
µg/L = Microgram per Liter
Acronyms
PCE = Tetrachloroethene
WBZ = Water Bearing Zone

MW-23 0.5 U
MW-111 1.1 J
MW-108 0.9
SE Lawnfield Rd
MW-202 2.4
MW-200 0.67
MW-212 0.5 U
MW-19 46
MW-107 0.5 U
MW-125 75
SE Industrial Way
MW-20 8
CMT6-15 52
CMT4-16 0.4 J
CMT5-15 12
MWD0T-6 0.5 U
1.0
MW-07 0.5 U
CMT2-17 70
CMT3-17 36
CMT7-17 2.9
CMT8-17 6.3
10
MW-123 260
B-20 35.8
MW-121 40
B-19 1290
MW-206 880
1000
MW-207 900
MW-04 1600
1000
B-18 6250
B-23 483
B-28 3830
B-04 49.8
MW-106 11
B-03 1880
B-01 1100
B-13 550
B-14 620
B-14 645
MW-104 4.9
B-02 214
B-21 7090
B-17 57.2
B-05 272
B-06 72.8
B-07 61.6
B-15 135
MW-210 130
B-29 15.4
B-26 149
MW-117 98
B-24 12.8
B-29 17
B-09 62.9
100
10
B-22 41.4
B-10 6.25
B-08 147
B-16 6.11
PZ-06 0.4 J
MW-101 17
MW-102 5.5
MW-208 11
B-11 4.6
B-12 13.6
1.0
MW-115 0.7 J
10
MW-113 0.3 J
MW-01 84
B-27 0.35 UJ
1.0
SE Mather Rd

Parametrix Date: 02/23/09 File: NW_Pipe_Casing_ReportWorking.mxd

N

0 100 200

Scale in Feet

**Legend**

- Boring
- CMT Well
- Shallow Piezometer
- Shallow WBZ Well
- Isoconcentration Line µg/L

Figure 3

**PCE Isoconcentration Map**
**Shallow WBZ**

NW Pipe and Casing
Portland, Oregon

**Table 1.**

**Summary of Analytical Results for the DNAPL and Aqueous Fractions from Well MW-207**

| Group | Analyte | DNAPL Fraction | | | Aqueous Fraction | | |
|---|---|---|---|---|---|---|---|
| VOCs | 1,1,2 TCA | mg/kg | N/A | | µg/L | 1.3 | |
| | (1-Methyl ethyl)-benzene | | N/A | | | 4.0 | |
| | 1-Methy-4-(1-methyle thyl)-benzene | | 44 | J | | 3.0 | U |
| | 1,2,4-Trimethylbenzene | | 1,031 | J | | 135 | |
| | 1,3,5-Trimethylbenzene | | 200 | J | | 24.9 | |
| | 1,1 DCE | | N/A | | | 3.0 | |
| | cis-1,2 DCE | | 710 | J | | 522 | |
| | trans-1,2 DCE | | N/A | | | 3.3 | |
| | Benzene | | N/A | | | 1.2 | |
| | Carbon Tetrachloride | | N/A | | | 1.0 | U |
| | Ethylbenzene | | 252 | J | | 102 | |
| | MP-Xylene | | 362 | J | | 126 | J |
| | sec-Butylbenzene | | 59 | J | | N/A | |
| | n-Butylbenzene | | 84 | J | | 1 | |
| | o-Xylene | | 254 | J | | 98.4 | J |
| | Naphthalene | | 21,000 | J | | 377 | |
| | Propylbenzene | | 121 | J | | 14.5 | |
| | Tetrachloroethene | | 1,100 | J | | 2570 | |
| | Toluene | | N/A | | | 25.5 | |
| | Trans-1,3-Dichloropropene | | N/A | | | 3.0 | J |
| | Trichloroethene | | 99 | J | | 343 | |
| | Trichloromethane | | 148 | UJ | | 5.1 | |
| | Vinyl Chloride | | 296 | UJ | | 23.4 | |
| PAHs | 9H-Fluorene | mg/kg | 38,000 | | µg/L | 1,000 | J |
| | Acenaphthene | | 86,000 | | | 2,400 | J |
| | Acenaphthylene | | 180 | | | 50 | UJ |
| | Anthracene | | 5,600 | | | 200 | J |
| | Benzo(a)anthracene | | 6,100 | | | 61 | J |
| | Benxo(a)pyrene | | 1,000 | | | 50 | UJ |
| | Benzo(g,h,i)perylene | | 170 | | | 50 | UJ |
| | Benzo[b]fluoranthene | | 1,100 | | | 50 | UJ |
| | Benzo[k]fluoranthene | | 920 | | | 50 | UJ |
| | Chrysene | | 4,100 | | | 65 | J |
| | Dibenzo[a,h]anthracene | | 92 | | | 50 | UJ |
| | Fluoranthene | | 83,000 | | | 1,200 | J |
| | Indeno(1,2,3-cd)pyrene | | 200 | | | 50 | UJ |
| | Naphthalene | | 20,000 | | | 2,200 | J |
| | Naphthalene, 2-methyl- | | 12,000 | | | 480 | J |
| | Phenanthrene | | 170,000 | | | 3,100 | J |
| | Pyrene | | 53,000 | | | 890 | J |

| Group | Analyte | DNAPL Fraction | | | Aqueous Fraction | | |
|---|---|---|---|---|---|---|---|
| **PCBs** | PCB-1254 | mg/kg | 120 | | µg/L | 9.5 | |
| **Metals** | Arsenic | mg/kg | 38 | UJ | µg/L | 2,000 | U |
| | Barium | | 1.5 | | | 132 | |
| | Cadmium | | 2.6 | U | | 1,000 | |
| | Chromium | | 8.5 | U | | 10,000 | U |
| | Copper | | 28.3 | | | 43,000 | |
| | Manganese | | 4.0 | J | | 3,520 | |
| | Lead | | 21 | U | | 17,000 | |
| | Zinc | | 4.3 | U | | 65 | |

U = not detected at or above its respective method reporting limit (MRL)

J = quantity is estimated

N/A = not analyzed

Table 2 Summary of PAHs in Subsurface Soil
Supplemental Field Investigation, Fall 2008
Units in micrograms per kilogram

| Test Boring | Sample Name | Depth | Sample Rank | Ace-naphthene | Ace-naphthylene | Anthracene | Benzo(a) anthracene | Benzo(a) pyrene | Benzo(b) fluoranthene | Benzo(g,h,i) perylene | Benzo(k) fluoranthene | Chrysene | Dibenz(a,h) anthracene | Fluoranthene | Fluorene | Indeno (1,2,3-cd) pyrene | Naphthalene | Phenanthrene | Pyrene |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cleanup Goals | | | | -- | -- | -- | 2,500 | 250 | 2,500 | -- | 2,500 | 250,000 | 250 | -- | -- | 2,500 | -- | -- | -- |
| B-02 | B-02-SS-25.0 | 25 | 3 | 6820 J | 32.7 J | 1270 J | 737 J | 109 J | 100 J | 19.3 J | 121 J | 633 J | 12 J | 7770 J | 4370 J | 20.7 J | 458 J | 15800 J | 6550 J |
| B-05 | B-05-SS-14.0 | 14 | 4 | 25300 J | 96 J | 4750 J | 3290 J | 527 J | 544 J | 112 J | 602 J | 2840 J | 75.3 J | 27200 J | 11500 J | 115 J | 551 J | 58500 J | 26400 J |
| B-06 | B-06-SS-14.0 | 14 | 4 | 272000 | 6.67 U | 31100 | 21000 | 4050 | 3640 | 865 | 3920 | 19200 | 443 | 200000 | 121000 | 937 | 75700 | 415000 | 170000 |
| B-07 | B-07-SS-15.0 | 15 | 4 | 432000 J | 1730 J | 66100 J | 40100 J | 6070 J | 6200 J | 1160 J | 6730 J | 35000 J | 733 J | 371000 J | 251000 J | 1290 J | 81300 | 752000 J | 300000 J |
| | B-07-SS-25.0 | 25 | 4 | 123000 J | 316 J | 16200 J | 8730 J | 1280 J | 1450 J | 245 J | 1530 J | 7830 J | 162 J | 118000 J | 57500 J | 260 J | 89600 | 236000 J | 65300 J |
| B-08 | B-08-SS-14.0 | 14 | 4 | 9530 J | 50.7 J | 4130 J | 947 J | 125 J | 147 J | 20.7 J | 119 J | 853 J | 12.7 J | 10900 J | 5870 J | 22 J | 30300 | 27700 J | 7000 J |
| | B-08-SS-24.0 | 24 | 4 | 146000 J | 374 J | 21200 J | 11600 J | 1440 J | 1610 J | 253 J | 1560 J | 10300 J | 173 J | 141000 J | 73000 J | 293 J | 66300 | 271000 J | 88200 J |
| B-09 | B-09-SS-18.0 | 18 | 3 | 51300 J | 174 J | 8170 J | 4950 J | 674 J | 861 J | 69.3 J | 805 J | 4250 J | 52 J | 52700 J | 28700 J | 82.7 J | 4200 | 118000 J | 40800 J |
| B-10 | B-10-SS-20.0 | 20 | 3 | 10.7 | 6.67 U | 6.7 UJ | 3.3 UJ | 0.67 UJ | 6.67 U | 2 UJ | 1.3 UJ | 3.3 UJ | 2 UJ | 39.3 | 7.33 | 2 UJ | 5 UJ | 46.7 | 23.3 |
| B-11 | B-11-SS-20.0 | 20 | 4 | 3590 | 17.3 | 594 | 423 | 48 | 68 | 7.33 | 62 | 361 | 5.3 UJ | 3240 | 2180 | 8 | 778 | 8580 | 2890 |
| B-13 | B-13-SS-15.0 | 15 | 4 | 97700 | 158 | 10800 | 6130 | 1000 | 1110 | 159 | 1150 | 5690 | 96.7 | 81700 | 34500 | 166 | 27000 | 163000 | 60300 |
| | B-13-SS-8.0 | 8 | 0 | 5680 | 6.67 U | 969 | 457 | 162 | 157 | 58 | 163 | 471 | 29.3 | 4260 | 2600 | 58.7 | 665 | 9430 | 3240 |
| B-14 | B-14-SS-13.0 | 13 | 4 | 14400 | 40.7 | 1630 | 997 | 147 | 155 | 26.7 | 165 | 864 | 20 | 9430 | 6190 | 32 | 1280 | 22500 | 7900 |
| | B-14-SS-25.0 | 25 | 0 | 764 | 2.7 UJ | 109 | 44 | 9.33 | 8.67 | 4.7 UJ | 8.67 | 42 | 2.7 UJ | 461 | 292 | 3.3 UJ | 513 | 1190 | 423 |
| B-29 | B-29-SS-19.0 | 19 | 4 | 152000 | 66.7 U | 20100 | 12500 | 1830 | 2410 | 249 | 1970 | 10900 | 188 | 164000 | 76000 | 313 | 115000 | 317000 | 93000 |

Table 3 Summary of VOCs in Subsurface Soils
Supplemental Investigaiton, Fall 2008
Units in micrograms per kilogram

| Test Boring | Sample Name | Depth | Sample Rank | CVOCs | | | | | | | | | | Naphthalene | BTEX | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1,1,1-Trichloroethane | 1,1,2-Trichloroethane | 1,1-Dichloroethane | 1,1-Dichloroethene | 1,2-Dichloroethane | cis-1,2-Dichloroethene | trans-1,2-Dichloroethene | PCE | TCE | VC | | Benzene | Toluene | Ethyl-benzene | m,p-Xylene | o-Xylene |
| Cleanup Goals | | | | -- | -- | -- | -- | -- | -- | -- | 7 | 13 | 0.1 | -- | -- | -- | -- | -- | -- |
| B-01 | B-01-SS-15.0 | 12 | 0 | 10 UJ | 10 UJ | 10 UJ | 10 UJ | 10 UJ | 10 UJ | 1 UJ | 10 UJ | 10 UJ | 10 UJ | 1.6 UJ | 10 UJ | 10 UJ | 10 UJ | 20 UJ | 10 UJ |
| B-02 | B-02-SS-25.0 | 25 | 3 | 10 UJ | 10 UJ | 10 UJ | 10 UJ | 10 UJ | 10 UJ | 1 UJ | 10 UJ | 10 UJ | 10 UJ | 458 J | 10 UJ | 10 UJ | 1.4 UJ | 3.3 UJ | 10 UJ |
| B-03 | B-03-SS-65.0 | 63 | 0 | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 1 UJ | 10 U | 10 U | 10 U | 2.7 UJ | 10 U | 10 U | 10 U | 20 U | 10 U |
| B-05 | B-05-SS-14.0 | 14 | 4 | 10 UJ | 10 UJ | 10 UJ | 10 UJ | 10 UJ | 10 UJ | 1 UJ | 10 UJ | 10 UJ | 10 UJ | 551 J | 10 UJ | 10 UJ | 1.1 UJ | 20 UJ | 10 UJ |
| | B-05-SS-25.0 | 25 | 1 | 10 UJ | 10 UJ | 10 UJ | 10 UJ | 10 UJ | 10 UJ | 1 UJ | 10 UJ | 10 UJ | 10 UJ | 2.2 UJ | 10 UJ | 10 UJ | 10 UJ | 20 UJ | 10 UJ |
| | B-05-SS-45.0 | 45 | 0 | 10 UJ | 10 UJ | 10 UJ | 10 UJ | 10 UJ | 10 UJ | 1 UJ | 10 UJ | 10 UJ | 10 UJ | 1.6 UJ | 10 UJ | 10 UJ | 10 UJ | 20 UJ | 10 UJ |
| | B-05-SS-65.0 | 65 | 0 | 10 UJ | 10 UJ | 10 UJ | 10 UJ | 10 UJ | 10 UJ | 1 UJ | 10 UJ | 10 UJ | 10 UJ | 1.7 UJ | 10 UJ | 10 UJ | 10 UJ | 20 UJ | 10 UJ |
| B-06 | B-06-SS-14.0 | 14 | 4 | 10 U | 10 U | 10 U | 2.4 UJ | 10 U | 1620 | 10 U | 7280 | 574 | 4 UJ | 75700 | 10 | 83 | 2930 | 2990 | 2330 |
| B-07 | B-07-SS-15.0 | 15 | 4 | 10 U | 10 U | 10 U | 10 U | 10 U | 8.2 UJ | 1 U | 49.3 | 3.3 UJ | 10 U | 81300 | 10 U | 5.8 UJ | 39.6 | 64.6 | 31.5 |
| | B-07-SS-25.0 | 25 | 4 | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 1 U | 81.7 | 10 U | 10 U | 89600 | 10 U | 1.8 UJ | 33.8 | 53.6 | 29.1 |
| B-08 | B-08-SS-14.0 | 14 | 4 | 10 U | 10 U | 10 U | 10 U | 10 U | 23.9 | 1 U | 53.6 | 43.2 | 10 U | 30300 | 0.4 UJ | 12.7 | 24.6 | 36.7 | 7.6 UJ |
| | B-08-SS-24.0 | 24 | 4 | 10 U | 10 U | 10 U | 2.2 UJ | 10 U | 494 | 5 U | 402 | 505 | 7.6 UJ | 66300 | 4.4 UJ | 25 | 367 | 477 | 52.6 |
| B-09 | B-09-SS-18.0 | 18 | 3 | 10 U | 10 U | 10 U | 10 U | 10 U | 5.2 UJ | 1 U | 5.2 UJ | 4.9 UJ | 0.91 UJ | 4200 | 0.52 UJ | 10 U | 8.7 UJ | 24.3 | 7.6 UJ |
| B-10 | B-10-SS-20.0 | 20 | 3 | 10 U | 10 U | 10 U | 10 U | 10 U | 8.7 UJ | 1 U | 10 U | 10 U | 10 U | 5 UJ | 10 U | 10 U | 10 U | 20 U | 10 U |
| B-11 | B-11-SS-20.0 | 20 | 4 | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 1 U | 1.5 UJ | 10 U | 10 U | 778 | 10 U | 10 U | 0.85 UJ | 3.3 UJ | 2.1 UJ |
| B-13 | B-13-SS-15.0 | 15 | 4 | 10 U | 10 U | 10 U | 10 U | 10 U | 40.2 | 1 U | 554 | 20.8 | 0.78 UJ | 27000 | 10 U | 8.4 UJ | 1.9 UJ | 7.1 UJ | 2 UJ |
| | B-13-SS-25.0 | 25 | 0 | 10 UJ | 10 UJ | 10 UJ | 10 UJ | 10 UJ | 10 UJ | 1 UJ | 10 UJ | 10 UJ | 10 UJ | 1.5 UJ | 10 UJ | 10 UJ | 10 UJ | 20 UJ | 10 UJ |
| | B-13-SS-45.0 | 45 | 0 | 10 UJ | 10 UJ | 10 UJ | 10 UJ | 10 UJ | 10 UJ | 1 UJ | 10 UJ | 10 UJ | 10 UJ | 1.4 UJ | 10 UJ | 10 UJ | 10 UJ | 20 UJ | 10 UJ |
| | B-13-SS-8.0 | 8 | 0 | 10 U | 10 U | 10 U | 10 U | 10 U | 14.7 | 5 U | 1.3 UJ | 10 U | 6.3 UJ | 665 | 10 U | 10 U | 10 U | 20 U | 10 U |
| B-14 | B-14-SS-13.0 | 13 | 4 | 10 U | 10 U | 10 U | 10 U | 10 U | 66.7 | 1 U | 310 | 12.9 | 3.4 UJ | 1280 | 10 U | 4.1 UJ | 3.8 UJ | 9.3 UJ | 3.9 UJ |
| | B-14-SS-25.0 | 25 | 0 | 10 U | 10 U | 10 U | 10 U | 10 U | 10.4 | 1 U | 8.5 UJ | 10 U | 10 U | 513 | 10 U | 10 U | 10 U | 20 U | 10 U |
| | B-14-SS-45.0 | 45 | 0 | 10 UJ | 10 UJ | 10 UJ | 10 UJ | 10 UJ | 10 UJ | 1 UJ | 10 UJ | 10 UJ | 10 UJ | 104 J | 10 UJ | 10 UJ | 10 UJ | 20 UJ | 10 UJ |
| | B-14-SS-64.0 | 64 | 0 | 10 UJ | 10 UJ | 10 UJ | 10 UJ | 10 UJ | 10 UJ | 1 UJ | 10 UJ | 10 UJ | 10 UJ | 1.5 UJ | 10 UJ | 10 UJ | 10 UJ | 20 UJ | 10 UJ |
| B-17 | B-17-SS-65.0 | 65 | 0 | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 1 U | 10 U | 10 U | 10 U | 4.7 UJ | 10 U | 10 U | 10 U | 20 U | 10 U |
| B-29 | B-29-SS-19.0 | 19 | 4 | 10 U | 0.98 UJ | 10 U | 10 U | 10 U | 40.8 | 2500 U | 42.6 | 5.3 UJ | 0.91 UJ | 115000 | 0.94 UJ | 3.7 UJ | 28.9 | 57.4 | 29.8 |

Table 4 2008 Groundwater Contamination Concentrations

| Test Boring | Sample Name | Depth (in feet) | PCE (µg/L) | TCE (µg/L) | VC (µg/L) | cis-1,2-Dichloroethene (µg/L) | Naphthalene (µg/L) | Ethylbenzene (µg/L) |
|---|---|---|---|---|---|---|---|---|
| Remedial Goals[1] | | | 1.0 | 1.6 | 1.0 | -- | -- | -- |
| Restoration Goals[1] | | | 5.0 | 5.0 | 2.0 | -- | -- | -- |
| Regional Screening Levels[2] | | | 0.11 | 1.7 | 0.016 | 370 | 0.14 | 1.5 |
| B-01 | B-01-GW-27.0 | 27 | 1100 | 165 | 13.4 | 574 | 1150 | 7.76 |
| | B-01-GW-47.0 | 47 | 142 | 32 | 4.34 | 315 | 1280 | 8.68 |
| | B-01-GW-65.0 | 65 | 125 | 19.2 | 6.08 | 114 | 470 | 4.38 |
| B-02 | B-02-GW-27.0 | 27 | 214 | 122 | 103 | 1100 | 2870 | 115 |
| | B-02-GW-46.0 | 46 | 119 | 53.1 | 5.67 | 140 | 2580 | 43.7 |
| | B-02-GW-65.0 | 65 | 69.3 | 21.3 | 4.24 | 49.4 | 1760 | 18.5 |
| B-03 | B-03-GW-27.0 | 27 | 1880 | 769 | 16.4 | 1220 | 320 | 2.13 |
| | B-03-GW-47.0 | 47 | 105 | 74.5 | 5.33 | 122 | 590 | 2.31 |
| | B-03-GW-65.0 | 65 | 13 | 16.9 | 1 U | 49.3 | 50.1 | 0.46 UJ |
| B-04 | B-04-GW-27.0 | 27 | 49.8 | 9.57 | 4.48 | 148 | 1 U | 1 U |
| | B-04-GW-47.0 | 47 | 64 | 87.1 | 12 | 960 | 1.05 | 1 U |
| | B-04-GW-65.0 | 65 | 26.6 | 15 | 1 U | 7.67 | 0.766 | 1 U |
| B-05 | B-05-GW-27.0 | 27 | 272 | 168 | 63.3 | 714 | 1450 | 36.5 |
| | B-05-GW-47.0 | 47 | 231 | 83.8 | 3.18 | 91.7 | 1150 | 17 |
| | B-05-GW-65.0 | 65 | 83.2 | 28.5 | 0.95 UJ | 29.4 | 728 | 10.6 |
| B-06 | B-06-GW-27.0 | 27 | 72.8 | 159 | 35 | 467 | 1380 | 22.2 |
| | B-06-GW-47.0 | 47 | 110 | 144 | 4.2 UJ | 82.2 | 667 | 11.7 |
| | B-06-GW-65.0 | 65 | 22 | 23.8 | 0.61 UJ | 18.9 | 451 | 3.83 |
| B-07 | B-07-GW-27.0 | 27 | 61.6 | 71.2 | 35.4 | 129 | 734 | 17.4 |
| | B-07-GW-47.0 | 47 | 81.6 | 107 | 2.7 UJ | 56.3 | 1340 | 7.75 |
| | B-07-GW-65.0 | 65 | 28.7 | 17.6 | 5 U | 6.8 | 1320 | 4.6 UJ |
| B-08 | B-08-GW-27.0 | 27 | 147 | 230 | 16.6 | 296 | 2190 | 25.4 |
| B-09 | B-09-GW-27.0 | 27 | 62.9 | 76.8 | 8.15 | 92.1 | 1860 | 18.2 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| B-10 | B-10-GW-27.0 | 27 | 6.25 | 33.5 | 9.2 | 98.2 | 263 | 2.2 UJ |
| B-11 | B-11-GW-27.0 | 27 | 4.6 | 38.2 | 5.74 | 109 | 141 | 0.7 UJ |
| B-12 | B-12-GW-27.0 | 27 | 13.6 | 39 | 1.43 | 34.2 | 157 | 0.64 UJ |
| | B-12-GW-47.0 | 47 | 6.26 | 23.9 | 1 U | 2.98 | 9.49 | 0.1 UJ |
| | B-12-GW-65.0 | 65 | 1 U | 3.77 | 1 U | 0.54 UJ | 0.49 UJ | 0.21 UJ |
| B-13 | B-13-GW-27.0 | 27 | 550 | 157 | 54.2 | 873 | 14600 | 5.73 |
| | B-13-GW-47.0 | 47 | 127 | 12 | 1 U | 21.1 | 621 | 1.4 |
| | B-13-GW-65.0 | 65 | 14.3 | 1.23 | 1 U | 1.24 | 164 | 0.3 UJ |
| B-14 | B-14-GW-27.0 | 27 | 620 | 38.8 | 25 U | 76 | 1610 | 7 UJ |
| | B-14-GW-27.0-FD | 27 | 645 | 48 | 25 U | 80.5 | 1470 | 7 UJ |
| | B-14-GW-47.0 | 47 | 2860 | 95.5 | 25 U | 46.8 | 1570 | 14 UJ |
| | B-14-GW-64.0 | 64 | 1140 | 22.4 | 1 U | 5.01 | 762 | 7.21 |
| B-15 | B-15-GW-27.0 | 27 | 135 | 70.8 | 2.55 | 81.1 | 374 | 0.32 UJ |
| | B-15-GW-47.0 | 47 | 12.2 | 8.12 | 1 U | 13.4 | 127 | 0.25 UJ |
| | B-15-GW-65.0 | 65 | 2.69 | 1.71 | 1 U | 3.28 | 67.3 | 1 U |
| B-16 | B-16-GW-27.0 | 27 | 6.11 | 1 U | 1 U | 1 U | 5.83 | 0.24 UJ |
| | B-16-GW-45.0 | 45 | 1 U | 2.9 | 1 U | 0.6 UJ | 0.92 UJ | 0.1 UJ |
| B-17 | B-17-GW-27.0 | 27 | 57.2 | 19.3 | 1.22 | 8.08 | 1 U | 0.1 UJ |
| | B-17-GW-47.0 | 47 | 3.02 | 0.62 UJ | 1 U | 1 U | 0.24 UJ | 0.11 UJ |
| B-18 | B-18-GW-27.0 | 27 | 6250 | 1220 | 129 | 7650 | 67.3 | 0.7 UJ |
| | B-18-GW-47.0 | 47 | 100 | 14.3 | 1.59 | 130 | 21.8 | 0.13 UJ |
| | B-18-GW-65.0 | 65 | 57.7 | 51.6 | 3.78 | 112 | 96.6 | 0.12 UJ |
| B-19 | B-19-GW-27.0 | 27 | 1290 | 988 | 6.23 | 3280 | 0.66 UJ | 0.12 UJ |
| | B-19-GW-47.0 | 47 | 1140 | 174 | 10.2 | 231 | 0.49 UJ | 0.1 UJ |
| | B-19-GW-65.0 | 65 | 41.6 | 7.17 | 1 U | 10.9 | 0.31 UJ | 0.1 UJ |
| B-20 | B-20-GW-27.0 | 27 | 35.8 | 45.9 | 2.33 | 230 | 0.3 UJ | 1 U |
| | B-20-GW-47.0 | 47 | 523 | 227 | 21 | 448 | 1 U | 0.1 UJ |
| | B-20-GW-65.0 | 65 | 424 | 69.2 | 4.72 | 463 | 1 U | 1 U |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | B-20-GW-65.0-FD | 65 | 165 | 86.9 | 6.52 | 164 | 0.23 UJ | 1 U |
| B-21 | B-21-GW-27.0 | 27 | 7090 | 184 | 35.4 | 136 | 379 | 12.2 |
| | B-21-GW-47.0 | 47 | 240 | 10.1 | 1 U | 6.08 | 1140 | 24.7 |
| B-22 | B-22-GW-27.0 | 27 | 41.4 | 7.98 | 1 U | 6.65 | 0.69 UJ | 1 U |
| | B-22-GW-47.0 | 47 | 8.91 | 13.1 | 1 U | 6.65 | 46.9 | 0.71 UJ |
| | B-22-GW-64.0 | 64 | 12 | 2.23 | 1 U | 1 U | 820 | 2.69 |
| B-23 | B-23-GW-27.0 | 27 | 483 | 121 | 1.68 | 158 | 8.04 | 1 U |
| | B-23-GW-47.0 | 47 | 36.4 | 6.07 | 1 U | 5.38 | 1.59 | 1 U |
| | B-23-GW-65.0 | 65 | 6.54 | 1.74 | 1 U | 1 U | 1.03 | 1 U |
| B-24 | B-24-GW-27.0 | 27 | 12.8 | 69.4 | 20.7 | 192 | 0.21 UJ | 0.11 UJ |
| | B-24-GW-47.0 | 47 | 45 | 80.9 | 2.71 | 41.4 | 0.41 UJ | 0.14 UJ |
| | B-24-GW-65.0 | 65 | 1.04 | 3.29 | 1 U | 2.01 | 0.5 UJ | 0.19 UJ |
| B-26 | B-26-GW-27.0 | 27 | 149 | 318 | 30.8 | 1050 | 1120 | 4.69 |
| B-27 | B-27-GW-27.0 | 27 | 0.35 UJ | 1.46 | 1 U | 1.78 | 0.79 UB, UJ | 1 U |
| | B-27-GW-47.0 | 47 | 1 U | 0.56 UJ | 1 U | 1 U | 0.9 UB, UJ | 0.12 UJ |
| | B-27-GW-65.0 | 65 | 1 U | 1 U | 1 U | 1 U | 0.75 UB, UJ | 0.12 UJ |
| B-28 | B-28-GW-27.0 | 27 | 3830 | 342 | 7.91 | 123 | 0.22 UJ | 0.23 UJ |
| | B-28-GW-47.0 | 47 | 378 | 96.9 | 1.37 | 13.1 | 0.73 UJ | 0.32 UJ |
| B-29 | B-29-GW-27.0 | 27 | 17 | 13.2 | 3.28 | 13.6 | 1730 | 23.1 |
| | B-29-GW-27.0-FD | 27 | 15.4 | 14.7 | 4.06 | 15.2 | 1820 | 25.4 |

Notes:

µg/l = micrograms per liter

U = not detected at or above the method reporting limit

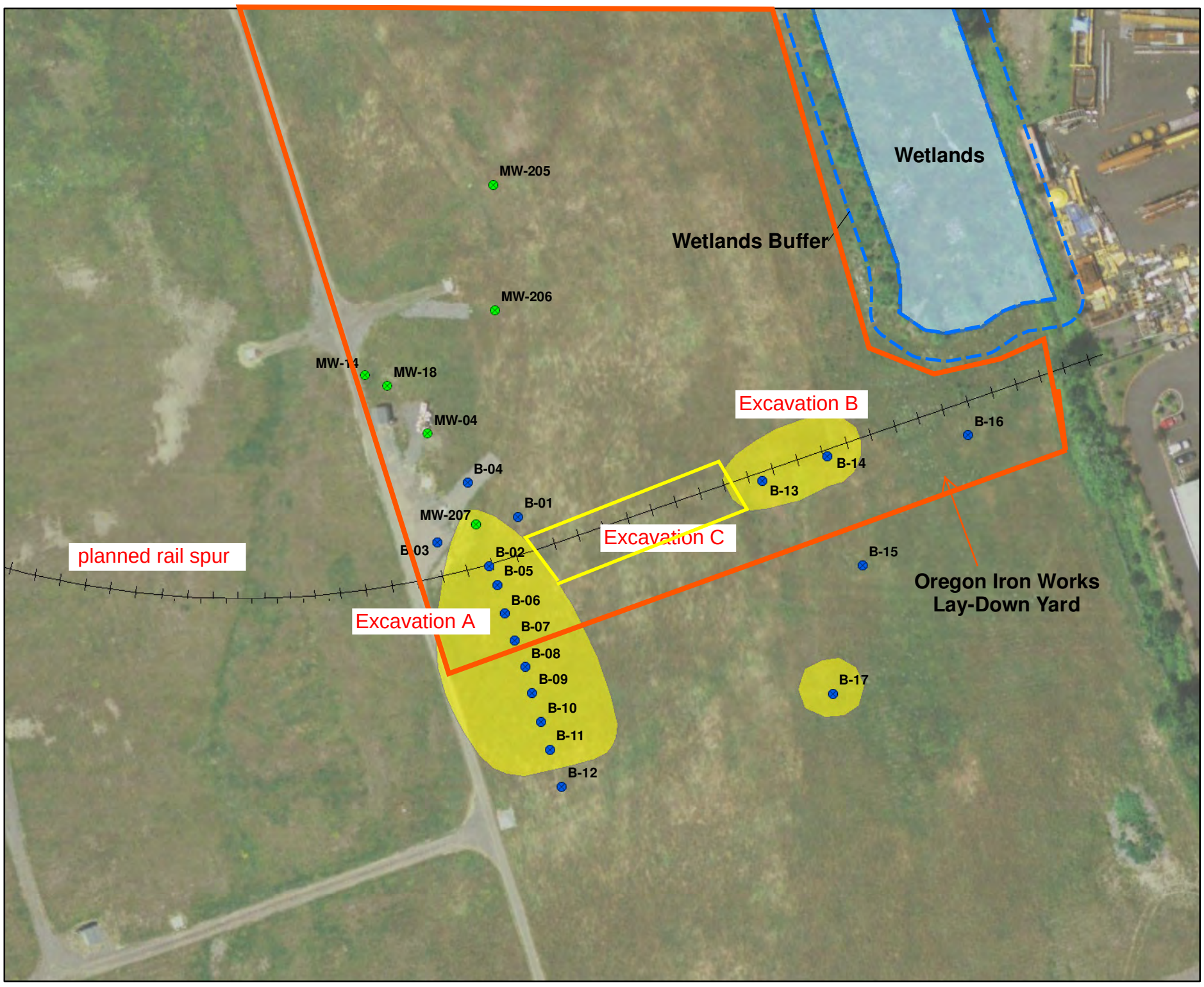
UJ = The analyte was not detected at or above the reported estimated result

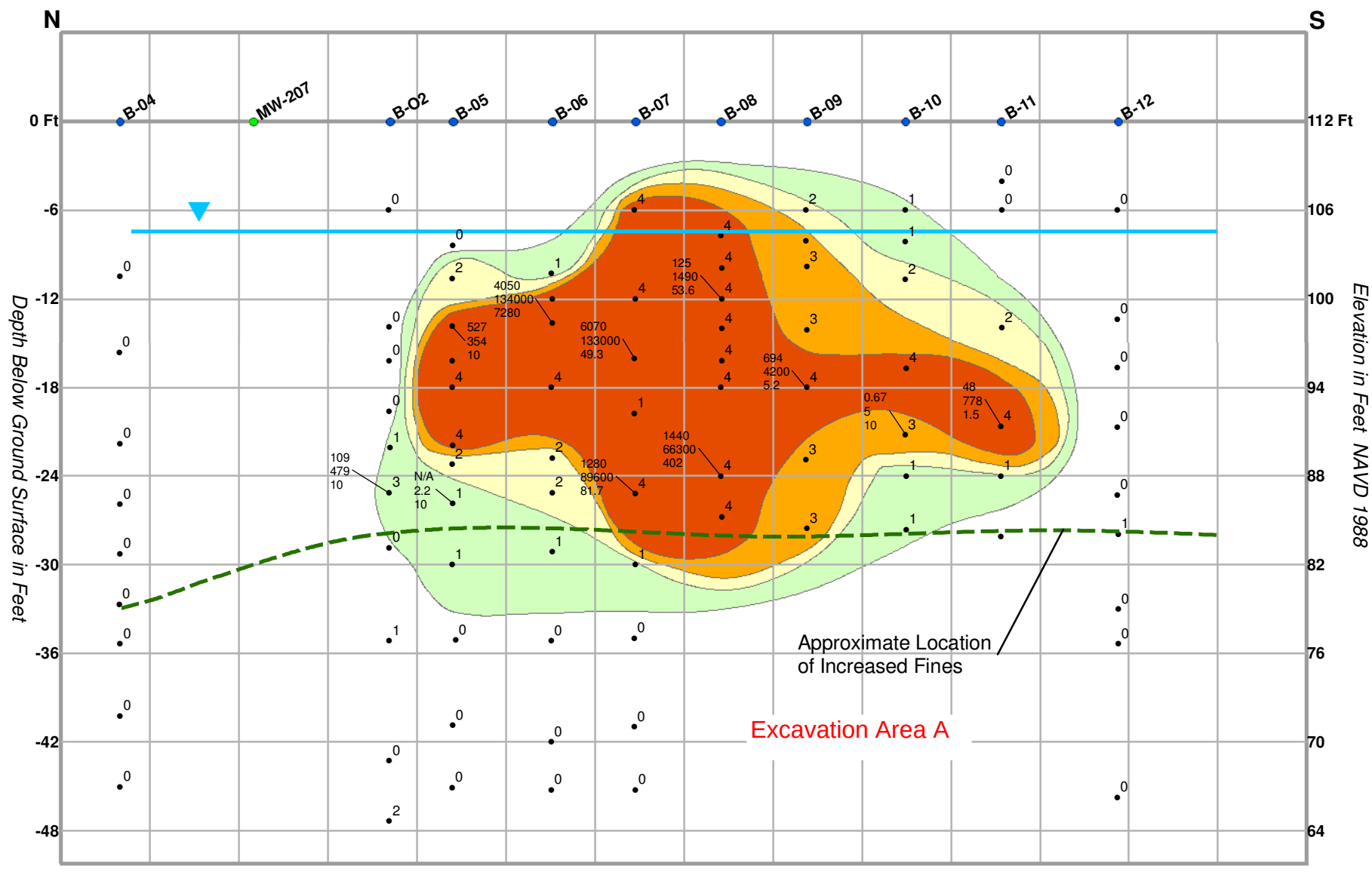
UB = Analyte was detected in a QC blank. The sample result is less than five times the blank concentration and is possibly due to cross-contamination. The analyte is considered not detected.

-- = not applicable

1 = Remedial Goals and Restoration Goals from *Northwest Pipe and Casing Company - OU2 Record of Decision, September 2001*

2 = Regional Screening Levels from *EPA Regional Screening Level Table (RSL) Master, April 2009*




Parametrix

N

0 50 100 150

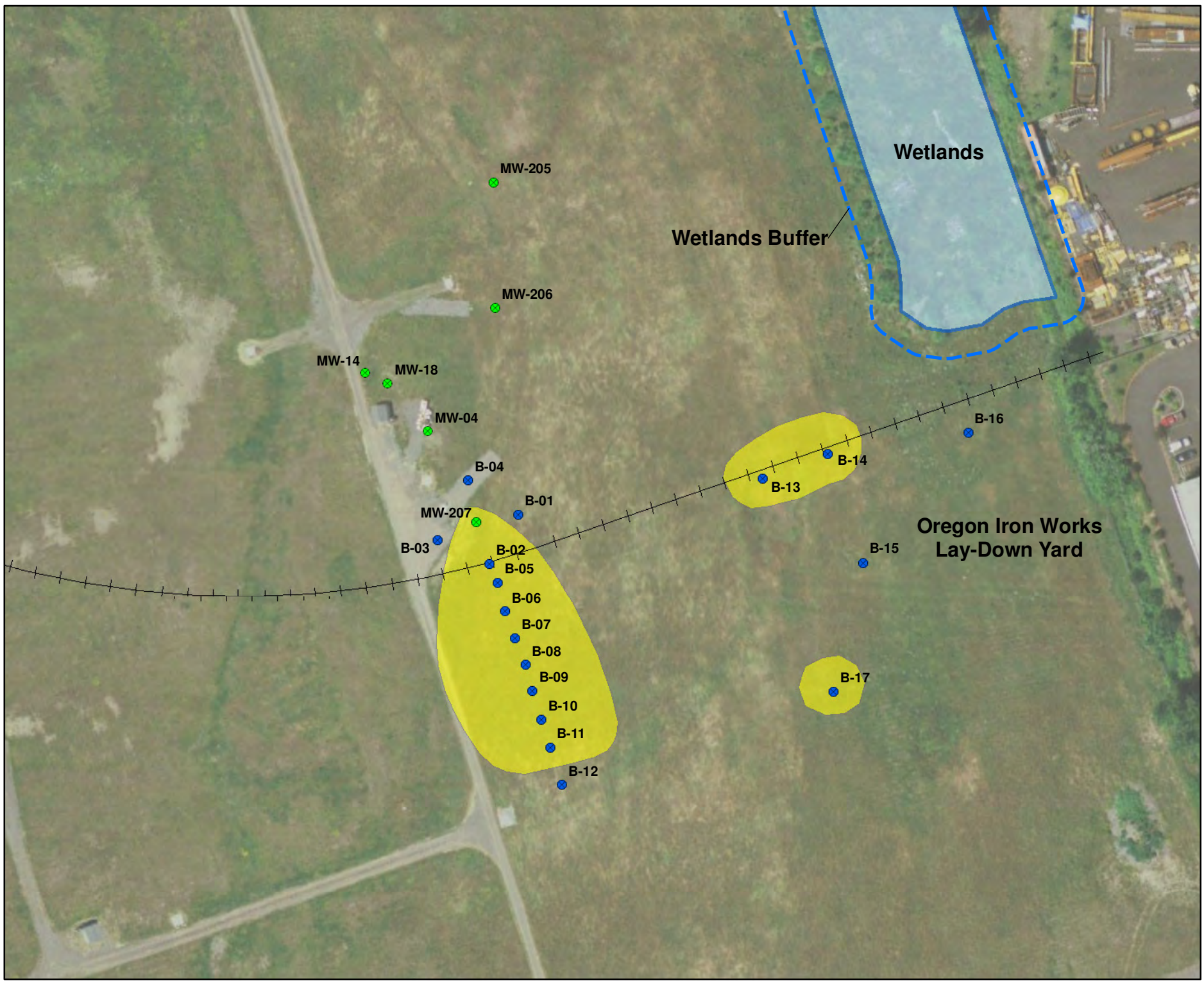
Feet

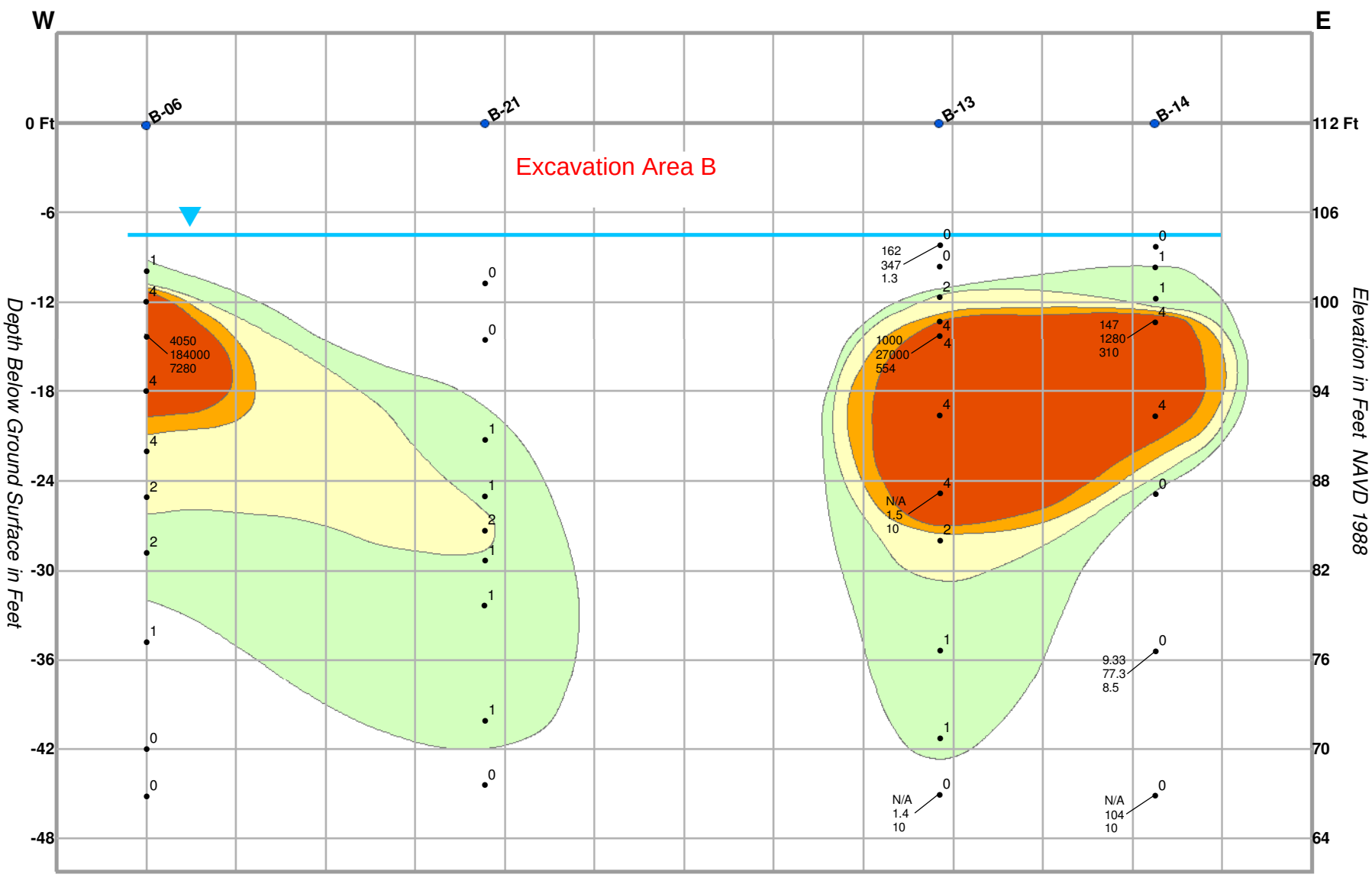
- Sonic Boring
- Existing Monitoring Well
- Coal Tar Body

0 No Impact
1 Naphthalene Odor
2 Sheen
3 Coal Tar Globuals
4 DNAPL

**NW Pipe Casing**
Portland, Oregon
June 17, 2009

Figure 4




Parametrix

N

0 50 100 150

Feet

Sonic Boring

Existing Monitoring Well

Coal Tar Body

0 No Impact
1 Naphthalene Odor
2 Sheen
3 Coal Tar Globuals
4 DNAPL

**NW Pipe Casing**

Portland, Oregon

June 17, 2009

Figure 5

L:\Buffalo\Northwest_Pipe_and_Casing\Maps\MXD\Working\FIG-1.mxd

Source: Oregon Digital Orthophoto Quads, 2005

0 130 260 520 Feet

N W E S

Figure 1
Site Layout
Northwest Pipe and Casing
Clackamas, OR

- Site Boundary
- Excavation #1
- Excavation #2 - Trench
- Excavation #2 Shallow Surface Excavation
- Excavation #1 Temporary Stockpiles
- Excavation #2 Temporary Stockpiles
- Imported Sand and Rock Temporary Stockpile
- Waste Soil Stockpile
- Shoring Storage Area
- Access Road
- GAC Groundwater Treatment System
- Contaminent Reduction Zone
- Support Zone
- Stockpiling Area
- Containment Cells

# APPENDIX C

## Health and Safety Plan

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10 Emergency Response Unit
1200 Sixth Avenue, Suite 900
Seattle, Washington 98101-3140

UMBRELLA SAFETY PLAN for: NORTHWEST PIPE & CASING (NWP&C)
For individual company or agency safety plans, refer to attached Appendices

Name and Date Prepared by: Jim Petersen, 9/11/09

A. SITE DESCRIPTIONS:

Date: 8/31/09 to 10/31/09 Location: 9585 SE Mather Road, Clackamas, OR 97015
Hazards: Excavation; Heavy Equipment; Chemical
Area Affected: Removal activities will only affect the southern half of the area within the site boundary fence.
Surrounding Population: 5,736 in the Town of Clackamas (Source: City-Data, Retrieved on 9/8/2009)
Topography: Flat
Weather Conditions: The removal project will run from late August to early October. Variable weather conditions from hot sunny days to cool rainy days can be expected.

Additional Conditions: _____

B. ENTRY OBJECTIVES:

The objective of the initial entry to the contaminated area is to (describe actions, tasks to be accomplished; i.e., identify contaminated soil; monitor conditions, etc.)
1. Excavate two hot spots by removing soil to approximately 25-ft. depth; 2. characterize and dispose of contaminated soil; 3. pump groundwater from excavation and excavated soil stockpiles, treat to appropriate cleanup standards and discharge as appropriate (POTW, NPDES, and/or on-site re-injection)

C. ON SITE ORGANIZATION AND COORIDINATION: The following personnel are designated to carry out the stated job functions on site. (Note: One person may carry out more than one job function.)

OSC: Kathy Parker-USEPA
Site Safety Officer: Jason Coury- EQM (ERRS)
START RM: Jim Petersen-E&E, Inc. (START)
ERRS RM: Jason Coury-EQM (ERRS)
FCA: Pam Marcyes (EQM)
FEDERAL AGENCY REPS: Mark Ader, USEPA
STATE AGENCY REPS: Debbie Bailey - Oregon DEQ
LOCAL AGENCY REPS: Ed Gilmore – Clackamas County Water Environmental Service; Ken Itel - Clackmas Development Agency (county)
CONTRACTORS: Phionix Corporation (T&D coordinator); DP Nicholi (shoring); Rain For Rent (water tanks and treatment system); Siemens (water treatment).

All personnel arriving or departing the site should log in and out with the Site Safety Officer. All activities on site must be cleared through the OSC.

D. ON SITE CONTROL.

Jason Coury has been designated to coordinate access control and security on site.
A safe perimeter has been established at (distance or description of controlled area).
Fenced site boundary. Oregon Iron Works and their contractors are currently working on NWP&C Parcel B to the north of the removal area. A silt fence provides a barrier between the removal project and the Oregon Iron Works operations.
No unauthorized person should be within this area.

The onsite Command Post and staging area have been established at the support area on the asphalt pad at the Mather Road entrance to the site.

The prevailing wind conditions are Variable; generally to the east but may blow in any direction. This location is GENERALLY upwind OR CROSSWIND from the Exclusion zone.

Control boundaries have been established and the Exclusion zone (the contaminated area) Hotline, Contamination Reduction Zone, and Support Zone (clean area) have been designated as follows: (describe boundaries and/or attach map of controlled area).
See map at Attachment A

These boundaries are identified by: (marking of zone, i.e. red boundary tape – hotline, Traffic cones – Support Zone) Exclusion Zone – red snow fence.

E. HAZARD EVALUATION

The following substances (s) are known or suspected to be on site. The primary hazards of each are identified.

| Substance Involved | Concentrations (if known) | Primary Hazards |
|---|---|---|
| Tetrachloroethylene (PCE) | Vapor concentration: not known | Causes irritated eyes, skin, nose, throat, respiratory system, nausea, flush face/neck, dizziness, incoordination, headache, drowsiness, skin erythema, liver damage. It is also a potential occupational carcinogen. |
| Vinyl Chloride | Vapor concentration: not known | Lassitude (weakness, exhaustion); abdominal pain, gastrointestinal bleeding; enlarged liver; pallor or cyanosis of extremities; liquid: frostbite; [potential occupational carcinogen] |
| Naphthalene | Vapor concentration: not known | Causes irritated eyes, headache, confusion, excitement, malaise, nausea, vomiting, abdominal pain, irritated bladder, profuse sweating, jaundice, hematuria, renal shutdown, dermatitis, optical neuritis, corneal damage. |
| PCBs | Concentration not known | potential occupational carcinogen |

| | | |
|---|---|---|
| PAHs/SVOCs | Concentration not known | |

The following additional hazards are expected on site: Heavy equipment traffic; open excavations; overhead loads (shoring system and water treatment system installation).

---

Hazardous substance information forms(s) for the involved substance (s) have been completed and are attached.

F. PERSONAL PROTECTIVE EQUIPMENT

Based on evaluation of potential hazards, the following levels of personal protection have been designated for the applicable work areas of tasks.

| Location | Job Function | Level of Protection |
|---|---|---|
| Exclusion zone | Excavation; stockpiling; backfilling; | A B C D√ Other |
| | dewatering; | A B C D√ Other |
| | Sampling | A B C D√ Other |
| | | A B C D Other |
| Contamination | Personal + equipment | A B C D√ Other |
| Reduction zone | decontamination, | A B C D Other |
| | Water treatment | A B C D√ Other |
| | | A B C D Other |

Specific protective equipment for each level of protection is as follows:

Level A Fully-encapsulating suit
SCBA

Level B Splash gear (type)

Level C Splash gear (type)
Full-face canister resp.

Level D hard hat, steel toe boots
safety glasses, high-visibility vest. For personnel working in excavation full-face respirator* is required.

Other: *respirator to include organic vapor+particulate cartridges. Respirator and continuous monitoring is required for equipment operators and other personnel who are working within the excavation(s); downgrade to limited Level D PPE may be authorized by Site Safety Officer if warranted by atmospheric monitoring and site conditions.

The following protective clothing materials are required for the involved substance IF ACTION LEVELS ARE EXCEEDED AND UPGRADE TO LEVEL C IS REQUIRED.

| Substance | Material |
|---|---|
| PCE, Naphthalene | Tyvek |

If air-purifying respirators are authorized, _ORGANIC VAPOR w/P-100__(filtering medium) is the appropriate canister for use with the involved substance and concentrations, a competent individual has determined that all criteria for using this type of respiratory protection have been set.

NO CHANGES TO THE SPECIFIED LEVELS OF PROTECTION SHALL BE MADE WITHOUT THE APPROVAL OF THE SITE SAFETY OFFICER AND THE ON OSC

## G: ON SITE WORK PLANS

Work parties consisting of ___ persons will perform the following tasks:

| | (name) | (function) |
|---|---|---|
| On Site Coordinator | _Kathy Parker_____ | ____Determine work to be performed |
| Work Party # 1 | _Jason Coury (EQM) | ___Soil excavation/shoring,_____<br>___Water treatment system operation,<br>___soil stockpiling/off-site transportation |
| Work Party # 2 | Jim Petersen (E&E) | ____water and soil sampling |
| Rescue Team (required for entries to IDLH environments) | _____ | _The removal project as planned does not involve entry to IDLH environments. If the workzone is identified as an IDLH environment, work will be halted and until control measures are put in place. |
| Decontamination Team: | _____ | _Work team members will be responsible for their own personal and equipment decontamination_____ |

The work parties were briefed on the contents of this plan at the site on their first day of work.

## H. COMMUNICATION PROCEDURES

Channel ____1_____ has been designated as the radio frequency for personnel in the exclusion zone. All other onsite communications will use channel 2..
Personnel in the exclusion zone should remain in constant radio communication or within sight of the Team Leader. Any failure of radio communication requires an evaluation of whether personnel should leave the exclusion zone

Three horn blasts on truck horn is the emergency signal to indicate that all personnel should leave the exclusion zone. In addition, a loud hailer is available if required.

The following standard hand signals will be used in case of failure of radio communications:

Hand gripping throat…….....Out of air, can't breathe
Grip partner's wrist or

Both hands around waist……...Leave area immediately
Hands on top of head…….Need assistance
Thumbs up……OK, I am all right, I understand
Thumbs down……No, negative

Telephone communication to the Command Post should be established as soon as practicable. The phone number is ___503-657-2087_____

## I. DECONTAMINATION PROCEDURES

Personnel and equipment leaving the exclusion zone shall be thoroughly decontaminated. The standard level ___D_____decontamination protocol shall be used with the following decontamination stations: (1) _vehicle tire wash (2) _boot wash_____
(3)_____ (4) _____ (5) _____
(6)_____ (7) _____ (8) _____
(9)_____ (10) _____Other_____

Emergency decontamination will include the following stations: For disposable equipment and PPE, render unusable bag, and dispose in designated site waste bin. When non-disposable clothing is utilized, decon with Alconox and water prior to reuse. Respirators should be cleaned/disinfected daily using alcohol wipes. _____

The following decontamination equipment is required: boot wash basins, plastic liners, Alconox, scrub brushes, towels, detergent and water) will be used as the decontamination solution:

## J. SITE SAFETY AND HEALTH PLAN

**1:** _Jason Coury is the designated Site Safety Officer and is directly responsible to the OSC for safety recommendations on site.

**2.** Emergency Medical Care.

9-1-1 responding ambulance/fire__are the qualified EMTs on site.

Medical facility names
Kaiser Sunnyside Medical Center __at 10180 SE Sunnyside Road, Clackamas OR 97015_____phone:_503-652-2880_is located __7__ minutes from this location.

Sunnyside Med. Center and Clackamas County Sherriff and local fire department was contacted at ___8/6/09 (time) and briefed on the situation, the potential hazards, and the substance involved. A map of alternative routes to Sunnyside Medical Center is available at the Command Post.

Local ambulance service is available from _Noble Care Inc.__at phone#_503-742-1692_____
Their response time is _____minutes. Whenever possible, arrangements should be made for onsite standby.

First-aid equipment is available on site at the following locations:

First aid kit Field offices in the support area.
Emergency eye wash Field offices in the support area.
Emergency shower N/A

Emergency medical information for substances present:

| Substance | Exposure Symptoms | First-aid Instructions |
|---|---|---|
| PCE/VC/NAPHTHALENE | Irritation eyes, skin, nose, throat, respiratory system; nausea; flush face, neck; dizziness, incoordination; headache, drowsiness; skin erythema (skin redness). | Eye: Irrigate immediately. Skin: Soap wash promptly. Breathing: Respiratory support (move to fresh air). Swallow: Medical attention immediately. |

List of emergency phone numbers:

| Agency/Facility | Phone # | Contact |
|---|---|---|
| Police | 911 | |
| Fire | 911 | |
| Hospital | 503-652-2880 | |
| Airport | 503-944-7000 | |
| Public Health Advisor | 503-655-8479 | Marti Franc (Public Heath Manager of Clackamas County) |

**3.** Environmental Monitoring:

The following environmental mentoring instrument shall be used on site (cross out if not applicable) at the specified intervals.

Combustible Gas Indicator – **continuous**/hourly/daily/other (MULTI-RAE)
O2 Monitor . – **Continuous**/hourly/daily/other (MULTI-RAE)
Other: Photo Ionization Detector – **continuous**/hourly/daily/other (MULTI-RAE)

**4**. Emergency Procedures (should be modified as required for incident)

The following standard emergency procedures will be used by onsite personnel. The site Safety Officer shall be notified of any onsite emergencies and be responsible for ensuring that the appropriate procedures are followed.

Personnel Injury in the Exclusion Zone: Upon notification of an injury in the Exclusion Zone, the designated, the designated emergency signal THREE HORN BLASTS, shall be sounded. All site personnel shall assemble at the decontamination line. The rescue team will enter the Exclusion Zone. (if required) to remove the injured person to the hotline. The Site Safety officer and OSC should evaluate the nature of the injury, and the affected person should be decontaminated to the extent possible prior to movement to the Support Zone. The onsite EMT

shall initiate the appropriate first aid, and contact should be made for an ambulance and with the designated medical facility (if required) persons shall reenter the Exclusion Zone until the cause of the injury or symptoms is determined.

Personnel Injury in the Support Zone: Upon notification of an injury in the Support Zone, the On Site Coordinator and site Safety Officer will assess the nature of the injury. If the cause of the injury or loss of the injured person does not affect the performance of site personnel, operations may continue, with the onsite EMT initiating the appropriate first aid and necessary follow-up as stated above. If the injury increases the risk to others, the designated emergency signal, Three horn blasts on truck horn, shall be sounded and all site personnel shall move to the decontamination line for further instructions. Activities on site will stop until the added risk is removed or minimized.

Fire/Explosion: Upon notification of a fire or explosion on site, the designated emergency signal shall be sounded and all personnel assembled at the decontamination line. The fire department shall be alerted and all personnel moved to a safe distance from the involved area.

Personal protective Equipment: If any site worker experiences a failure of alteration of protective equipment that affects the protection factor, that person and his/her buddy, shall immediately leave the exclusion zone. Reentry shall not be permitted until the equipment has been repaired or replaced.

Other Equipment Failure If any other equipment on site fails to operate properly, the On Site Facilitator and the Site Safety Officer shall be notified and then determine the effect of this failure on continuing operations on site. If the failure affects the safety pf personnel or prevents completion of the Work Plan tasks, all personnel shall leave the Exclusion Zone until the situation is evaluated and appropriate actions taken.

The following emergency escape routes are designated for use in those situations where egress from the Exclusion Zone cannot occur through the decontamination line. Describe alternate routes to leave area in emergencies. Follow main North-South gravel road that bisects the site to the southern (Mather Road) entrance to the site near Support Area to Southern Offsite Meeting Location. Or, if nature of emergency prevents exiting southern gate, proceed to the Northern (Alternate) Offsite Meeting Location outside of the northern site entry gate.

In all situations, when an onsite emergency results in evacuation of the Exclusion Zone, personnel shall not reenter until:

1: The conditions resulting in the emergency have been corrected.
2: The hazards have been reassessed.
3: The Site Safety Plan has been reviewed.
4: Site personnel have been briefed on any changes in the Site Safety Plan.

**5.** The following personal monitoring will be in effect on site:

Personal exposure sampling: (describe any personal sampling programs being carried out on site personnel. This would include use of sampling pumps, air monitors, etc) _Dust is monitored every day on site at three locations – downwind near MW 211, at MW 209 next to the access

road, and at the support zone. DataRAMs are used to record the data every minute and the data are downloaded daily. Multi RAE meter with a photo-ionization detector (PID) with a minimum 10.6-eV lamp; Oxygen meter (percent oxygen in air); and Lower Explosive Limit (LEL, reading percent of LEL in air) meter.

Medical monitoring: The expected air temperature will be (40~90$^{o}$F). If it is determined that stress monitoring is required (mandatory over 70 F) the following procedures shall be followed: (Describe procedures in effect, i.e., monitoring body temperatures, body weight, and pulse rate. See Attachment B. Expected required PPL level for removal is Level D. However, if site conditions warrant an upgrade to Level C PPE (Tyvek and full-faced respirators) then continuous monitoring will be implemented.

All site personnel have read the above plan and are familiar with its provisions.
(Sign and date)

Site Safety Officer _____

On Scene Coordinator _____

Other Site Personnel _____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

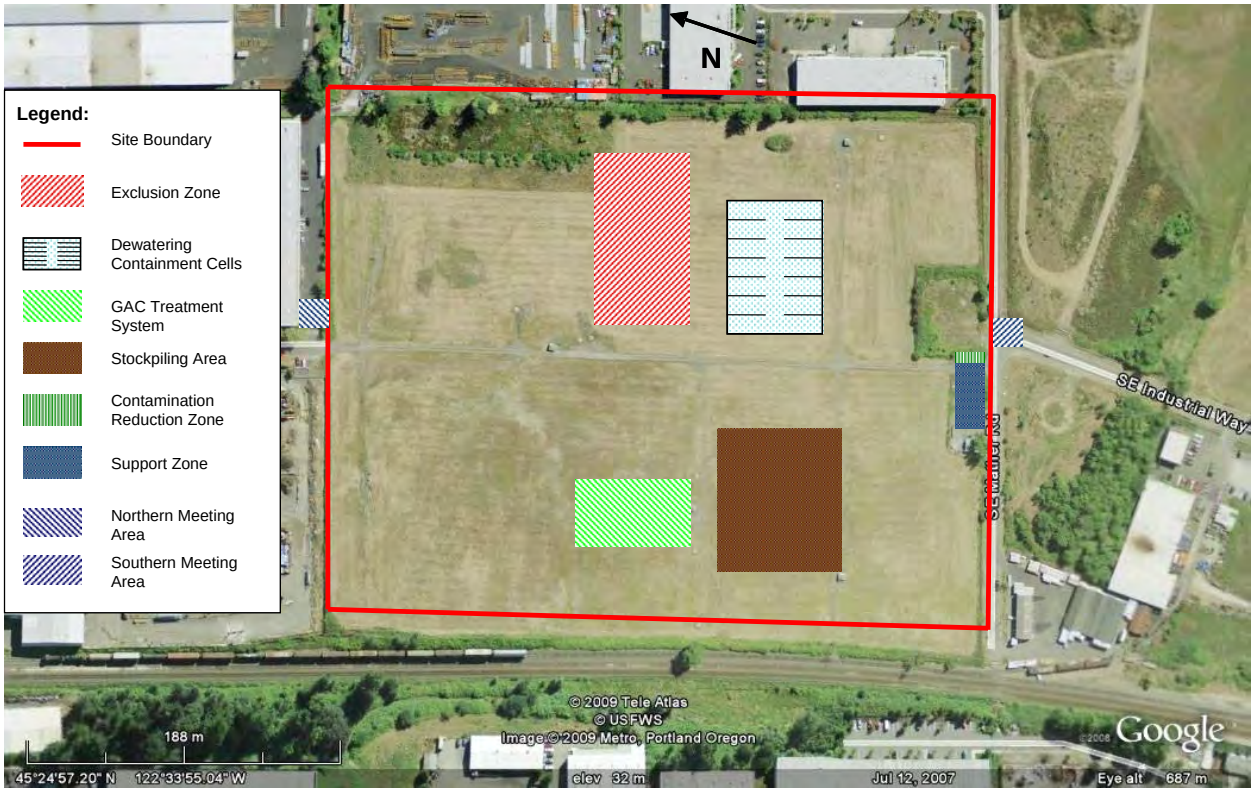
_____

_____

_____

# Attachment A

# Map of Control Areas


Legend:
Site Boundary
Exclusion Zone
Dewatering Containment Cells
GAC Treatment System
Stockpiling Area
Contamination Reduction Zone
Support Zone
Northern Meeting Area
Southern Meeting Area
N
SE Industrial Way
SE Meldrum St
© 2009 Tele Atlas
© USFWS
Image © 2009 Metro, Portland Oregon
188 m
45°24'57.20" N 122°33'55.04" W
elev 32 m
Jul 12, 2007
Eye alt 687 m
Google

# Attachment B

# Medical Monitoring Checklist

# Vital Signs Monitoring Checklist

Name_____ Employee Number:_____

Date:_____ Incident Location:_____

Birth Date:_____ Age:__

Medications:_____ Allergies:_____

| Entry | First | | Second | | Third | |
|---|---|---|---|---|---|---|
| | Pre | Post | Pre | Post | Pre | Post |
| Level of PPE (A, B, C, D, amended?) | | | | | | |
| Time | | | | | | |
| Mental Status | | | | | | |
| Weight (lbs.) | | | | | | |
| Pulse | | | | | | |
| Respirations (<24 per minute) | | | | | | |
| Blood Pressure (Systolic / Diastolic) | | | | | | |
| Temperature (°F) | | | | | | |
| TLD Badge | | | | | | |

**Pre-Entry Exclusion (per NFPA 471 Chap. 8-3):**

1. Pulse> 70% age-predicted heart rate (see table)
2. BP> 105 mm Hg diastolic (lower)
3. °F < 97.0 or > 99.5
4. Respirations > 24/min
5. Questions/Observations:
    a. Medications within the last 72 hours:_____.
    b. Alcohol within the last 24 hours: Yes / No

| Pre-Entry Pulse | |
|---|---|
| Age | 70% |
| 20-25 | 140 |
| 25-30 | 136 |
| 30-35 | 132 |
| 35-40 | 128 |
| 40-45 | 125 |
| 45-50 | 122 |
| 50-55 | 119 |
| 55-60 | 116 |

| Post-Entry Pulse | |
|---|---|
| Age | 85% |
| 20-25 | 170 |
| 25-30 | 165 |
| 30-35 | 160 |
| 35-40 | 155 |

c. Symptoms of fever, nausea, vomiting, diarrhea, cough in last 24 hours: Yes / No

d. Consumed 8-16 ounces of water or diluted activity drink : Yes / No

| | |
|---|---|
| 40-45 | 152 |
| 45-50 | 148 |
| 50-55 | 144 |
| 55-60 | 141 |

6. Other considerations for exclusion: broken skin, altered mental status, heavy alcohol intake in 72 hours or any alcohol in 6 hours, pregnancy, history of heat injury, medication* or conditions that could contribute to dehydration.

*Benadryl , Actifed, and other antihistimines can reduce the ability to sweat—such medications may or may not be the basis for medical exclusion from an entry in PPE

**Post-Entry Conditions Requiring Follow-Up and/or Potential Medical Treatment:**

1. Post-entry weight loss of > 3%
2 °F> 101
3. Pulse> 85% age-predicted heart rate at 10 minutes (see table)

Nausea, vomiting, altered mental status, or respiratory, cardiac or dermatological complaints

# Attachment C

# EQM Health and Safety Plan

# Attachment D

# Ecology and Environment Health and Safety Plan

# APPENDIX D

## Community Involvement Documents

Lyons community rallies to support soldier injured in Iraq HOW WE LIVE, E1

ripcity

Blazers lose to Phoenix 110-104, but Oden hits double double SPORTS, C1

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OCTOBER 15, 2009

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## Northwest Pipe and Casing Superfund Site Documents Available for Review

Clackamas, OR -- During Fall 2009, the U.S. Environmental Protection Agency (EPA) is cleaning up approximately 15,000 tons of contaminated soil at the Northwest Pipe and Casing Superfund Site on SE Mather Road. The subsurface soil is being removed because it contains coal tar and other hazardous substances, and is a continuing source of contamination to groundwater.

The Administrative Record containing documents related to the cleanup is available for review at:

Clackamas Corner Branch Library
11750 SE 82nd Avenue, Suite D
Clackamas, Oregon 97015
(503) 722-6222

EPA Records Center
1200 6th Avenue Suite 900
Seattle, WA 98101
(206) 553-4494

For more information about the cleanup, please contact: On-Scene Coordinator Kathy Parker at 206-321-3796, parker.kathy@epa.gov; or visit www.epaosc.org/nwpc

EPA
United States Environmental Protection Agency

# Northwest Pipe and Casing Superfund Site Documents Available for Review

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# APPENDIX E

## Pollution Reports

# Northwest Pipe and Casing

**Clackamas, OR - EPA Region X**
**POLREP #1 - Initial Polrep - Test Pits**

**On-Scene Coordinator - Kathy Parker, OSC**
**Time-Critical - Removal Action**
**Start Date: 8/12/2009**

**9/4/2009**
**Pollution Report (POLREP) #1**

## Site Description

Pipe-coating businesses, run by the Hall Process Company and Northwest Pipe and Casing Company, operated on the southern part of the 53 acre property from 1956 to 1985. During the pipe-coating operations, contaminants were released at the Site into the soil and groundwater. These contaminants included volatile organic compounds (VOCs), polynuclear aromatic hydrocarbons (PAHs) and polychlorinated biphenyls (PCBs).

Remedial Action (RA) at the Site, which was divided into an Operable Unit (OU) for soil and an OU for groundwater, was performed between August 1, 2001 and September 8, 2004. The RA consisted of soil excavation and treatment of 32,010 tons of contaminated soil and installation of a two foot cap of clean soil on a portion of the Site, installation of a groundwater treatment system consisting of groundwater circulating wells (GCWs) and monitoring wells, and institutional controls to prohibit the use of groundwater at the Site.

In 2006, the Five Year Review (FYR) of the Site concluded that the groundwater remedy was not functioning as designed. As a follow up to the FYR, EPA Region 10 requested that the EPA Headquarters Remedial System Evaluation (RSE) contractor conduct an analysis of the remedy. The findings established that the groundwater treatment system should be shut down and additional site characterization of the main plume be completed to help determine the southern boundary of the plume. A site wide groundwater monitoring event was conducted in November 2007. During this event a non-aqueous phase liquid (NAPL) was discovered in monitoring well MW-207 located within the Plume 1 source area (Parametrix, 2007). Analysis indicated the sample contained PAHs and VOCs with some PCBs and metals; and that the composition of the dense non-aqueous phase liquid (DNAPL) fraction was similar to that of coal tar which was used at the Site (Parametrix, 2008). (See Table 1.)

Based on the RSE recommendations and the discovery of DNAPL in MW-207, in the fall of 2008, a Supplemental Focused Field Investigation (SFFI) was completed. The SFFI identified three DNAPL bodies, a main body and two smaller bodies within the Plume 1 Source Area. These DNAPL bodies are presumably composed of coal tars. See Figures 2 and 3 and Tables 2, 3 and 4.
Analytical results for soils collected within the DNAPL bodies indicate relatively high concentrations of chlorinated volatile organic compounds (CVOCs), naphthalene, and BTEX (benzene, toluene, ethylbenzene, xylene). In general, CVOCs and BTEX concentrations in subsurface soil are limited in extent both laterally and vertically within the DNAPL bodies. However, naphthalene concentrations in subsurface soil are more pervasive throughout the DNAPL bodies, with detectable concentrations up to 65 feet below ground surface (bgs).

In February 2009, the Region held a conference call with Headquarters and the RSE contractor to discuss the findings, especially considering their previous recommendations and how the discovery of the DNAPL bodies, referred to as coal tar bodies, would affect the groundwater remedy. The RSE contractor indicated that no further effective action could be taken on the groundwater remedy until the coal tar bodies, determined to be sources of soil contamination, were removed or otherwise treated.

In May 2009, the EPA Region 10 Remedial Program requested assistance from the Removal Program in removing the major source of soil contamination remaining at the Site so that a new groundwater remedy could be implemented.

On June 18, 2009, a Removal Assessment site visit was conducted by EPA On Scene Coordinator (OSC) Kathy Parker, EPA Remedial Program Manager (RPM) Mark Ader, Oregon Department of Environmental Quality (ODEQ) Project Manager Debbie Bailey and contractors from Environmental Quality Management, Ecology and Environment and Parametrix. All participants concluded that further site work is necessary to remove remaining soil contamination before the Remedial Action groundwater remedy is expected to be effective.

The Removal Action Memo was signed on July 28, 2009.

## Current Activities

This Initial Polrep covers the period from 8/12/2009 through 8/30/2009.

On 08/12/2009, OSC Kathy Parker, RPM Mark Ader, ERRS, START and Parametrix started work on site by digging tests pits with an excavator to determine the boundaries for chemical contamination of the soil by source material (rather than contamination of the soil by chemicals carried in by groundwater). The excavator dug 27 test pits over three days and the exposed soil was visibly assessed for visible oil and organic solvent odor. Soil samples were collected from 17 of the test pits and sent to TestAmerica Tacoma for lab analysis by SW846 Methods 8260B, 8270C, and NWTPH- Diesel. One ground water sample was also collected and submitted to provide information for designing an on-site ground water treatment system for dewatering the excavation area. The water sample was analysed for pH, TSS, Cyanide, Flashpoint, Oil and Grease, Arsenic, Cadmium, Chromiu, Copper, Lead, Nickel, Silver, Zinc, Mercury, NWTPH- Diesel and by Methods 8260B and 8270C.

Test pits were dug by first removing the 2 feet of clean soil cap and setting that in an isolated pile. The next four feet (variable) of clean overburden was dug up and set in a second pile. Lastly, contaminated soil was dug up and set on a large sheet of visqeen. Each test pit was backfilled in reverse order (including burying the visqueen with the contaminated soil) and then marked with a labelled stake. The ground surface was marked with a spray-painted green line around the edge of soil contamination and included a three foot buffer to account of the width of the shoring.

Each test pit was GPSed. The locations were plotted on an aerial photograph of the map and labelled with the test pit name and analytical results for two indicator compounds - naphthalene and PCE - and the physical description indicating whether odor or visible contamination was detected.

## Planned Removal Actions

The Removal Action will be continued and the excavation crew mobilized to the site on 9/1/2009.

## Next Steps

Plan shoring of excavations and contract with a shoring supplier.
Plan water treatment system for dewatering of groundwater from excavations.
Detemine action levels for soil and water waste disposal.
Write Sampling plan for treated water, waste soil, excavation closure.
Contract with suppliers for gravel, heavy equipment, fuel, lab.
Discuss sharing the site with Oregon Iron Works contractors.

## Key Issues

Note on costs:
ERRS costs are through 8/30/09 and do not include pending.
START costs are through 8/22/09 and do not include pending.
EPA costs - both direct and indirect - will not be summarized until the Final Removal Report is completed.

## Cost Information through 9/4/2009

| | Budgeted | Total To Date | Remaining | % Remaining |
|---|---|---|---|---|
| **Extramural Costs** | | | | |
| ERRS - Cleanup Contractor | $2,060,000.00 | $23,872.00 | $2,036,128.00 | 98.84% |
| START | $100,000.00 | $7,101.00 | $92,899.00 | 92.90% |
| **Intramural Costs** | | | | |
| **Total Site Costs** | $2,160,000.00 | $30,973.00 | $2,129,027.00 | 98.57% |

The above accounting of expenditures is an estimate based on figures known to the OSC at the time this report was written. The OSC does not necessarily receive specific figures on final payments made to any contractor(s). Other financial data which the OSC must rely upon may not be entirely up-to-date. The cost accounting provided in this report does not necessarily represent an exact monetary figure which the government may include in any claim for cost recovery.

Disposition Of Wastes Summary

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# Northwest Pipe and Casing

**Clackamas, OR - EPA Region X**
**POLREP #2 - First week of Site Work**

**On-Scene Coordinator - Kathy Parker, OSC** **9/4/2009**
**Time-Critical - Removal Action** **Pollution Report (POLREP) #2**
**Start Date: 8/12/2009**

## Current Activities

This Polrep covers Site work performed from Tuesday 9/1/2009 through Thursday 9/3/2009.

9/1/09 Tuesday
ERRS and EPA mobilized 8 personnel and equipment to the site. Space on the pavement was cleared of brush and debris in preparation for delivery of a second office trailer. A new power transformer was brought in to replace the damaged one at the site. Signage was posted. Bulldozer started creating 200 cubic yard containment cells for contaminated soil.

9/2/09 Wednesday
7am Safety meeting. 9 ERRS, START and OSC Parker on-site. Office trailer was delivered and set up. Power was connected in the afternoon to both office trailers. Met with Clackamas county and Oregon Iron Works to create agreements on the logistics of sharing the site while they are preparing it for their laydown yard. OSC Parker emailed the ERRS project schedule to stakeholders. Met with DP Nicholi on-site to discuss final slide-shoring design. Put up high visibility construction fence between the contamination zone and the support zone. Haul truck arrived. Planned for sampling. ERRS met with Clackamas county to get permit and water meter for using nearby fire hydrant as site water supply for dust suppression.

Thursday 9/3/09
7am Safety meeting. 8 ERRS, START, OSC Parker and RPM Ader on-site. Finished creating the 14 containment cells. Started removing the two foot cap off excavation area #1. Received 1 inch minus rock and started laying the rock to reinforce the current road and create a truck turn around road. ERRS met with the water treatment supplier to discuss final design for on-site water treatment system. Discussed water discharge issues with Clackamas County Water Environmental Services. Met with RPM to discuss removal action tasks with respect to consistency with the long term cleanup plan. Phone lines got connected to the office trailers.

## Planned Removal Actions

Excavate contaminated soil, backfill and cap to specifications.

## Next Steps

1. Draft sampling plan
2. Draft decision tree for disposal of treated excavation water based on analytical data
3. Draft decision tree for segregation of excavated contaminated soil based on analytical data
4. Install on-site water treatment system
5. Design layout of and install slide shoring
6. Excavate contaminated soil
7. Backfill excavations with adequate compaction
8. Cap excavations with specified capping material

## Key Issues

1. Adequate treatment and cost effective, appropriate disposal of ground water from dewatered excavation soil and excavation pits
2. Safety of crew around deep excavations
3. Adequate control of contamination spread

Note on costs:
ERRS costs are through 9/3/09 and do not include pending.
START costs are through 9/3/09 and do not include pending.
EPA costs - both direct and indirect - will not be summarized until the Final Removal Report is completed.

## Cost Information through 9/4/2009

| | Budgeted | Total To Date | Remaining | % Remaining |
|---|---|---|---|---|
| **Extramural Costs** | | | | |
| ERRS - Cleanup Contractor | $2,060,000.00 | $50,027.00 | $2,009,973.00 | 97.57% |
| START | $100,000.00 | $13,318.00 | $86,682.00 | 86.68% |

| | | | | |
|---|---|---|---|---|
| **Intramural Costs** | | | | |
| **Total Site Costs** | $2,160,000.00 | $63,345.00 | $2,096,655.00 | 97.07% |

The above accounting of expenditures is an estimate based on figures known to the OSC at the time this report was written. The OSC does not necessarily receive specific figures on final payments made to any contractor(s). Other financial data which the OSC must rely upon may not be entirely up-to-date. The cost accounting provided in this report does not necessarily represent an exact monetary figure which the government may include in any claim for cost recovery.

Disposition Of Wastes Summary

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# Northwest Pipe and Casing

**Clackamas, OR - EPA Region X**
**POLREP #3 - Continuation of Action - Second Week of Site work**

**On-Scene Coordinator - Kathy Parker, OSC** **9/12/2009**
**Time-Critical - Removal Action** **Pollution Report (POLREP) #3**
**Start Date: 8/12/2009**

## Current Activities

This Polrep covers Site work performed from Friday 9/4/09 through Friday 9/11/09. Work on site began at 7am and generally ended at 5:30pm.

Friday 9/4/09
On-site today:
OSC Parker, 2 START, 6 ERRS. Safety Meeting at 7 am.
Discussions on waste water disposal issues continued with EPA attorney and Clackamas WES.
ERRS work included:
* finishing clearing the two foot of clean cap off excavation area 1,
* created dry wheel wash with 2 to 4 inch Gabian rock,
* placing orange construction fence on the road side of the excavation,
* shaping overburden stockpile,
* watering the site for dust control and rinsing the pavement,
* setting up satellite dish internet system.
Crew off-site at 3:30pm.

Saturday 9/5/09 - no site work

Sunday 9/6/09 - no site work

Monday 9/7/09 - no site work, ERRS checked the site for theft and vanadalism

Tuesday 9/8/09 Sunny and cool (high 60F)
On-site today: OSC Parker, RPM Ader, OSC Franklin, 2 START, 11 ERRS. Safety Meeting at 7 am.
ERRS work included:
* water tanks and groundwater treatment system components started arriving on site and assembly commenced,
* slide shoring components started arriving on-site,
* started lining the containment cells with 8 mil reinforced liner, 6 oz geofabric and a 6 inch layer of rock,
* Water truck watered site to control dust due to on-site operations,
START collected composite soil samples from the 14 containment cells,
OSC Parker and RPM Ader met With Doug Tull of Oregon Iron Works to discuss the work they are doing on-site and how they should manage the monitoring well heads,
Clackamas county Water Environmental Services arrived on-site to discuss obtaining a sewer permit for treated groundwater,
OSC and RPM contacted EPA attorney to discuss waste water disposal issues.

Wednesday 9/9/09 cold in the morning, sunny, warm and humid in the afternoon
On-site today: OSC Parker, 2 START, 11 ERRS. Safety Meeting at 7 am.
OSC Parker measured the excavations relative to the test pits and bore holes, sketched possible shoring scenarios and discussed shoring layout with shoring supplier and ERRS RM. Final shoring and excavation plan entails starting excavation up-gradient at southwest end of Excavation Area 1.
Discussions on waste water disposal issues continued with EPA attorney, Clackamas WES, ODEQ rep, and other R10 OSCs. ERRS performed perc test on northwest corner of AOC with 2000 gallons clean water from fire hydrant, discharging the water at 400 gallons per minute. Water covered approx. 2000 square feet and had fully drained into the ground without ponding within 10 minutes after discharge was completed.
ERRS work included putting the shoring together, adding rock to the containment cells, continuing to assemble the water treatment system and fill the sand filters, and widening the site roads near excavation area 1.
START performed dust monitoring with Datarams near the excavation work and at two locations near the site perimeter. No exceedances to site action levels were recorded.

Thursday 9/10/09 Dry, low was around 60F, high in the upper 90's F.
On-site today: OSC Parker, 2 START, 11 ERRS. Safety Meeting at 7 am where DP Nicholi rep discussed shoring installation safety concerns.
Discussions on waste water disposal issues continued with other OSCs, EPA attorney, Clackamas WES, and International Wood Products which controls the property in front of the recommended sewer intake.
Site security patrol frequency increased starting this day.
Tour conducted on-site by OSC Parker, START and ERRS RM for 20 high school students and two teachers from North Clackamas school district.
ERRS started excavation and shoring installation in Excavation Area 1/Shore System 1/Bay 1.
ERRS work included

* continuing to assemble the water treatment system,
* unloading and filling the carbon filters with 20 supersacks of granular activated carbon,
* and widening the site roads near excavation area 1.
Crew left site at 630pm.
START performed dust monitoring with Datarams near the excavation work and at two locations near the site perimeter. No exceedances to site action levels were recorded.

Friday 9/11/09 Dry, low was 59F, high 93F.
On-site today:
OSC Parker, 2 START, 11 ERRS. Safety Meeting at 7 am.
Discussions on waste water disposal issues continued with EPA attorney and Clackamas WES.
Discussions continued Parametrix on soil amendment and dosing rate.
Umbrella HASP was drafted to unify the various companies' site Health and Safety Plans.
ERRS work included
*continuing to excavate and install shoring in Excavation Area 1/Shore System 1/Bay 1,
*continuing to assemble the water treatment system,
*continuing to water for dust suppression,
*conditioning the carbon filters with water,
*monitoring the excavated soil in containment cell 1,
*installing the excavation pump in a fuel containment cell,
*trenching, installing and covering the suction pipe where it crosses the on-site road,
*installing a road crossing for the sewer pipe where it leaves the AOC, crosses Mather Road and enters the sewer through the road manhole.
START performed dust monitoring with Datarams near the excavation work and at two locations near the site perimeter. No exceedances to site action levels were recorded.

## Planned Removal Actions
Excavate contaminated soil, backfill and cap to specifications.

## Next Steps
1. Draft sampling plan
2. Draft decision tree for disposal of treated excavation water based on analytical data
3. Draft decision tree for segregation of excavated contaminated soil based on analytical data
4. Finish testing of on-site water treatment system
5. Design layout of and install slide shoring
6. Excavate contaminated soil
7. Backfill excavations with adequate compaction
8. Cap excavations with specified capping material

## Key Issues
1. Adequate treatment and cost effective, appropriate disposal of ground water from dewatered excavation soil and excavation pits
2. Safety of crew around deep excavations
3. Adequate control of contamination spread

Note on costs:
ERRS costs are through 9/11/09 and do not include pending.
START costs are through 9/11/09 and do not include pending.
EPA costs - both direct and indirect - will not be summarized until the Final Removal Report is completed.

## Cost Information through 9/12/2009

| | Budgeted | Total To Date | Remaining | % Remaining |
|---|---|---|---|---|
| **Extramural Costs** | | | | |
| ERRS - Cleanup Contractor | $2,060,000.00 | $101,899.00 | $1,958,101.00 | 95.05% |
| START | $100,000.00 | $39,056.85 | $60,943.15 | 60.94% |
| **Intramural Costs** | | | | |
| **Total Site Costs** | $2,160,000.00 | $140,955.85 | $2,019,044.15 | 93.47% |

The above accounting of expenditures is an estimate based on figures known to the OSC at the time this report was written. The OSC does not necessarily receive specific figures on final payments made to any contractor(s). Other financial data which the OSC must rely upon may not be entirely up-to-date. The cost accounting provided in this report does not necessarily represent an exact monetary figure which the government may include in any claim for cost recovery.

Disposition Of Wastes Summary

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# Northwest Pipe and Casing

**Clackamas, OR - EPA Region X**
**POLREP #4 - Continuation of Site Work - Week 3**

**On-Scene Coordinator - Kathy Parker, OSC** **9/12/2009**
**Time-Critical - Removal Action** **Pollution Report (POLREP) #4**
**Start Date: 8/12/2009**

## Current Activities

This Polrep covers Site work performed from Saturday 9/12/09 through Friday 9/18/09. Work on site began at 7am and ended at 5:30pm unless otherwise noted.

Saturday 9/12/09 Dry, hot (90sF)
On-site today: OSC Parker, 2 START, 11 ERRS. Safety Meeting at 7 am.
Excavation:
* Continued to excavate and install shoring in Excavation Area 1/Shore System 1/Bay 1.

Containment Cells:
* Containment cell 1 and two rock backfill piles sampled and samples shipped to lab.

Water Treatment System:
* Pumped clean water through the Water Treatment System to test for leaks. Sand filter system overpressured and required repair. Supplier gave overview of system to crew.

Other work:
* Watered roads for dust suppression,
* PID calibrated and used in dirty Excavator.
* No action level exceedances recorded by Dataram monitoring dust near the excavation work and at two locations near the site perimeter.
Site work ended at 430pm

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Sunday 9/13/09 - no site work, some showers

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Monday 9/14/09 dry, high at 80F 47%
On-site today: OSC Parker, 2 START, 11 ERRS. Safety Meeting at 7 am.
Excavation:
* Continued to excavate and install shoring in Excavation Area 1/Shore System 1/Bay 1. The large cobbles in the ground are slowing down installation of the posts. Crew is working on developing a faster way to get the posts into the ground.
* Excavation samples collected from west and south side walls, 12' bgs in bay 1; submitted to lab.

Containment Cells:
* Containment cell #1 sampled and samples shipped to lab.

Water Treatment System:
* Water treatment system - pumped approximately 1500 gallons of water that had collected over the weekend from excavation into tank 2. Flocculant pump didn't work, so supplier was called in and repaired it.

Other work:
* Watered roads for dust suppression.
* No action level exceedances recorded by Dataram monitoring dust near the excavation work and at two locations near the site perimeter.
* PID calibrated and used in dirty Excavator.
OSC discussed waste water disposal issues with EPA attorney. WES brought the finished wastewater discharge permit for review and OSC Parker signed and submitted the application.

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Tuesday 9/15/09
On-site today: OSC Parker, 2 START, 11 ERRS. Safety Meeting at 7 am.
Excavation:
* Continued to excavate and install shoring in Excavation Area 1/Shore System 1/Bay 1. Crew implemented new techniques for speeding up post and panel installation, including putting a miniexcavator in the excavation to clear the sides for shoring.
* Excavation samples collected from west and south side walls, 25' bgs in bay 1; submitted to lab.

Containment Cells:
* Containment cell #2 sampled in duplicate and samples shipped to lab.

Water Treatment System:
* Main ground-level pump could not pull water from the full 25 foot depth of the excavation so a trash pump was connected to the end of the intake hose to assist the pump in getting water out of the excavation. Difficult to prime, start and keep intake clear.
* Water treatment system: pumped approximately 2000 gallons of water that had collected over night from excavation into tank 2. Flocculant pump is working but rate of pumping has decreased so flocculant dosing was reset to a reduced rate.

Other work:

* Watered roads for dust suppression.
* No action level exceedances recorded by Dataram monitoring dust near the excavation work and at two locations near the site perimeter.
* PID calibrated and used in dirty Excavator.
* OSC Parker met with International Wood Products warehouse manager to discuss our use of the sewer intake in front of their property. Their main concern had to do keeping their billing separate from ours.
* Clackamas county delivered approved wastewater discharge permit to site and explained their reporting requirements. (Weekly reports faxed or emailed to WES by following Friday: 1) discharge report form, 2) meter log, 3) daily average discharge volume, 4) preliminary analytical results. Hard copy final results to follow later as we get them.)

_____

Wednesday 9/16/09
On-site today: OSC Parker, 2 START, 11 ERRS. Safety Meeting at 7 am. Started raining at noon.
Excavation:
* Installed scaffolding around excavation as a fence/grab rail for worker safety.
* Started and finished excavation and shoring in Excavation Area 1/Shore System 1/Bay 2.
* Started excavation and shoring in Excavation Area 1/Shore System 1/Bay 3.
* Two excavation samples collected from south side wall, 10" and 25' bgs in bay 2; submitted to lab.

Containment Cells:
* Containment cells #3 and #4 closed, sampled and sent to lab. Started filling cell #5.
* Covered containment cells with sheet plastic due to rain.
* Received lab results for soil samples taken from containment cell bases prior to start of use: cell #8 had one detect of PCB: 61ppm Arochlor 1254.

Water Treatment System:
* Main ground-level pump replaced with a submersible pump and generator to push water from the bottom of the 25 foot depth of the excavation. Leaving it in place in bay #1 for both shoring systems #1 and #2.
* Water treatment system: pumped approximately 2500 gallons of water that had collected over night from excavation into tank 2. To dirty tank #2 added 1100 gallons from the clear water in drums left on site after remedial study. Now holding 4900 gallons.

Other work:
* Watered roads for dust suppression.
* No action level exceedances recorded by Dataram monitoring dust near the excavation work and at two locations near the site perimeter.
* PIDs calibrated and used in dirty Excavator and Miniexcavator.
* OSC discussed soil amendment and data deliverables with Parametrix.

_____

Thursday 9/17/09
On-site today: OSC Parker, RPM Ader, 2 START, 11 ERRS. Raining. Sunny by noon. Safety Meeting at 7 am.
* Finished excavation and shoring in Excavation Area 1/Shore System 1/Bay 3.
* Two excavation samples collected from south side wall, 10" and 25' bgs in bay 3; submitted to lab.

Containment Cells:
* Finished filling containment cells #5 and #6 and started filling cell # 7.
* Containment cells #5 sampled and shipped to lab.

Water Treatment System:
*Finished filling dirty tank #2 and started filling dirty tank #3.

Other work:
* Watered roads for dust suppression.
* No action level exceedances recorded by Dataram monitoring dust near the excavation work and at two locations near the site perimeter.
* PID calibrated and used in dirty Excavator and miniexcavator.
One excavator inoperable due to broken cylinder. Repaired on site overnight.

_____

Friday 9/18/09
On-site today: OSC Parker, RPM Ader, 2 START, 11 ERRS. Safety Meeting at 7 am.
ODEQ Baily visited site.
Excavation:
* Started excavation and shoring in Excavation Area 1/Shore System 1/Bay 4.

Containment Cells:
* Finished filling containment cell #7 and started filling cells #8 and #9.
* Containment cell #6 and #7 sampled and shipped to lab.
* Covered containment cells with sheet plastic in anticipation of rain.

Water Treatment System:
* Tank#2: This is the first dirty tank (capacity 21,000 gallons) and had accumulated 20,000 gallons groundwater from the excavation. START inspected the upper two feet of water column in tank #2 with a clear bailer then ERRS pumped tank #2 through the water treatment system to two clean tanks (#6, #7).
* Collected water samples from dirty tank, from spigot between the two carbon filters and from clean tank #7. OSC decided not to have water samples from clean tank analyzed because they were diluted by a large but undetermined amount of clean water from the system pressure test. Intermediate treated water sample was sent to lab for analysis by NPDES methods. Untreated water sample also sent for analysis but only for metals. This information will be used if the treated sample shows metals content requiring modification of the water treatment system for metals. pH sample sent to local lab for immediate analysis.
* Continued to fill dirty tank #3.

Other work:
* Watered roads for dust suppression.
* No action level exceedances recorded by Dataram monitoring dust near the excavation work and at two locations near the site perimeter.

* PID calibrated and used in dirty Excavator.
* Sampling plan for excavation areas written, finalized and signed by RPM and QAC. Final signed pdf sent to R10 QA office to set up lab for CLP analyses (for 8270, 8260, and PCBs).

## Planned Removal Actions

Excavate contaminated soil, backfill and cap to specifications.

## Next Steps

1. Draft sampling plan for waters and waste disposal
2. Draft decision tree for disposal of treated excavation water based on analytical data
3. Draft decision tree for segregation of excavated contaminated soil based on analytical data
4. Design layout of and install slide shoring
5. Excavate contaminated soil
6. Backfill excavations with adequate compaction
7. Include soil amendment in backfill
8. Cap excavations with specified capping material

## Key Issues

1. Adequate treatment and cost effective, appropriate disposal of ground water from dewatered excavation soil and excavation pits
2. Safety of crew around deep excavations
3. Adequate control of contamination spread

Note on costs:
ERRS costs are through 9/18/09 and do not include pending.
START costs are through 9/18/09 and include pending.
EPA costs - both direct and indirect - will not be summarized until the Final Removal Report is completed.

## Cost Information through 9/12/2009

| | Budgeted | Total To Date | Remaining | % Remaining |
|---|---|---|---|---|
| **Extramural Costs** | | | | |
| ERRS - Cleanup Contractor | $2,060,000.00 | $259,735.00 | $1,800,265.00 | 87.39% |
| START | $100,000.00 | $54,651.81 | $45,348.19 | 45.35% |
| **Intramural Costs** | | | | |
| **Total Site Costs** | $2,160,000.00 | $314,386.81 | $1,845,613.19 | 85.45% |

The above accounting of expenditures is an estimate based on figures known to the OSC at the time this report was written. The OSC does not necessarily receive specific figures on final payments made to any contractor(s). Other financial data which the OSC must rely upon may not be entirely up-to-date. The cost accounting provided in this report does not necessarily represent an exact monetary figure which the government may include in any claim for cost recovery.

Disposition Of Wastes Summary

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# Northwest Pipe and Casing

**Clackamas, OR - EPA Region X**
**POLREP #5 - Continuation of Site Work - Week 4**

**On-Scene Coordinator - Kathy Parker, OSC** **9/30/2009**
**Time-Critical - Removal Action** **Pollution Report (POLREP) #5**
**Start Date: 8/12/2009**

## Current Activities

This Polrep covers Site work performed from Saturday 9/19/09 through Friday 9/25/09. Work on site began at 7am and ended at 5:30pm unless otherwise noted.

Saturday 9/19/09
On-site today: OSC Parker, 2 START, 12 ERRS. Safety Meeting at 7 am.
Excavation:
* Finished excavating and installing shoring in Excavation Area 1/Shore System 1/Bay4. Sample collected from 25 feet bgs south wall and shipped to F&B lab with a trip blank for VOAs.
* Started excavating and installing shoring in Excavation Area 1/Shore System 2/Bay1.
* Pea gravel backfill pile sampled and shipped to F&B lab.

Containment Cells:
* Containment cell 7 closed. Start filling cells 8 and 9.
* Containment cell 8 sampled and shipped to F&B lab.
* Covered all containment cells containing soil with sheet plastic.

Water Treatment System:
* Continued filling dirty tanks 2 and 3 from excavation.

Other work:
* Watered roads for dust suppression.
* Added three inch minus rock to haul truck roads to reduce damage to site from wet conditions.
* PID calibrated and used in dirty Excavator and miniexcavator.
* No action level exceedances recorded by Dataram monitoring dust near the excavation work and at two locations near the site perimeter.
* OSC and START PM met to discuss revised scope of work to stay within START budget.
* Polrep #4 written, posted and emailed.
* Water sampling plan drafted and reviewed.
* Site secured for Sunday off.
Site work ended at 430pm

Sunday 9/20/09 - no site work, some showers

Monday 9/21/09
On-site today: RPM Ader, 2 START, 12 ERRS. Safety Meeting at 7 am.
Excavation:
* Continued excavating and installing shoring and scaffolding in Excavation Area 1/Shore System 2/Bay1.
Containment Cells:
* Containment cells 8 and 9 closed. Start filling cell 10.
* Containment cells 9 and 10 sampled and shipped to F&B lab with a trip blank.
* Removed sheet plastic from all containment cells containing soil to allow it to dry o

Water Treatment System:
* Continued filling dirty tanks 2 and 3 from excavation.

Other work:
* Watered roads for dust suppression.
* PID calibrated and used in dirty Excavator and miniexcavator.
* No action level exceedances recorded by Dataram monitoring dust near the excavation work and at two locations near the site perimeter.
* Water sampling plan signed.

Tuesday 9/22/09
On-site today: RPM Ader, 2 START, 12 ERRS. Safety Meeting at 7 am.
Excavation:
* Finished excavating and installing shoring in Excavation Area 1/Shore System 2/Bay1. Sample collected from 25 feet bgs west wall and shipped to F&B lab with a trip blank for VOAs.
* Started excavating and installing shoring in Excavation Area 1/Shore System 2/Bay2.

Containment Cells:
* Filled and closed containment cell 11, sampled and shipped to F&B lab with a trip blank.
* Started to stock pile contaminated soil from containment cells 1 to 6 for subtitle D disposal.

Water Treatment System:

* Continued filling dirty tanks 2 and 3 from excavation.
* Sent dirty water from tanks 1 to 3 through the water treatment system into clean holding tanks 6 to 9.
* Sampled treated water from holding tank #7, untreated water from holding tank #1 and a carbon filter sample and shipped to F&B lab.

Other work:
* Watered roads for dust suppression.
* PID calibrated and used in dirty Excavator and miniexcavator.
* No action level exceedances recorded by Dataram monitoring dust near the excavation work and at two locations near the site perimeter.

Wednesday 9/23/09
On-site today: OSC Parker, 1 START, 12 ERRS. Safety Meeting at 7 am.
Excavation:
* Finished excavating and installing shoring in Excavation Area 1/Shore System 2/Bay2. Sample collected from 25 feet bgs excavation floor and shipped to CLP lab with a trip blank for VOAs.
* Started excavating and installing shoring in Excavation Area 1/Shore System 2/Bay3.

Containment Cells:
* Filled and closed containment cells 12, 13, 14; sampled and 3 soils shipped to F&B lab with a trip blank.
* Continued to stock pile contaminated soil - from containment cells 7 to 9 - for subtitle D disposal.

Water Treatment System:
* Continued filling dirty tanks 1 to 3 from excavation.
* Sent dirty water from tanks 1 to 3 through the water treatment system into clean holding tanks 6 to 9.

Other work:
* Watered roads for dust suppression.
* PID calibrated and used in dirty Excavator and miniexcavator.
* No action level exceedances recorded by Dataram monitoring dust near the excavation work and at two locations near the site perimeter.
* Amendment backfill design planned with OSC, RPM, Parametrix, CDM, and site crew to include adding a chitin amendment to certain parts of thee backfilled volumes. Chitin ordered for local supplier.
* Discussed type of backfill material and compaction requirements for the excavation with Oregon Iron Works and Harris Group.

Thursday 9/24/09
On-site today: OSC Parker, 1 START, 13 ERRS. Safety Meeting at 7 am.
Excavation:
* Finished excavating and installing shoring in Excavation Area 1/Shore System 2/Bay3.
* Started excavating and installing shoring in Excavation Area 1/Shore System 2/Bay4.

Containment Cells:
* Filled and closed containment cells 1 to 3; sampled and 3 soils shipped to F&B lab with a trip blank.
* Continued to stock pile contaminated soil - from containment cells 6 to 9 - for subtitle D disposal.

Water Treatment System:
* Continued filling dirty tanks 1 and 2 from excavation.
* Sent dirty water from tanks 1 to 3 through the water treatment system into clean holding tanks 6 to 9.
* Collected a composite sample from treated water holding tanks #8 and #9 and shipped to F&B lab

Other work:
* Watered roads for dust suppression.
* PID calibrated and used in dirty Excavator and miniexcavator.
* No action level exceedances recorded by Dataram monitoring dust near the excavation work and at two locations near the site perimeter.
* Received 7 one ton bags of Chitin amendment (crab bone meal) from local supplier.
* Discussed type of backfill material and compaction requirements for the excavation with Oregon Iron Works, Harris Group, Geodesign, and Clackamas County. Agreed to use clean sand and pea gravel between 25 and 15 feet bgs and three inch minus between 15 and 6 feet bgs.
* Final ERRS funding agreement reached between Removal Manager and RPM and that information transmitted to regional EPA Purchasing Officer.

Friday 9/25/09
On-site today: OSC Parker, 2 START, 14 ERRS. Safety Meeting at 7 am.
Excavation:
* Finished excavating and installing shoring in Excavation Area 1/Shore System 2/Bay4. Samples collected from 25 feet bgs excavation floor in bays 1/2/3 and 1/2/4; shipped to CLP lab.
* Started backfilling Excavation Area 1/Shore System 1 with pea gravel, sand, three inch minus rock, and chitin at 7 pounds per cubic yard of backfill, including digging the chitin three feet deep into the excavation floor.

Containment Cells:
* Filled and closed containment cells 1 to 3; sampled and 3 soils shipped to F&B lab with a trip blank.
* Continued to stock pile contaminated soil - from containment cells 9 to 14 - for subtitle D disposal.
* Loaded and shipped out 26 truck loads (707 tons) of excavation soil to Subtitle D landfill.

Water Treatment System:
* Continued filling dirty tanks 1 to 3 from excavation.
* Sent dirty water from tanks 1 to 3 through the water treatment system into clean holding tanks 10 to 11.
* Collected a composite sample from treated water holding tanks #8 and #9 and shipped to F&B lab

Other work:
* Watered roads for dust suppression.
* PID calibrated and used in dirty Excavator and miniexcavator.
* No action level exceedances recorded by Dataram monitoring dust near the excavation work and at two locations near the site perimeter.
* Collected sand backfill sample and sent to F&B lab for analysis.
* Conference call with OSC, START PM and START supervisor to settle on scope of START tasks.
* Discussions with subtitle D landfill indicated containment cell sampling can be reduced to testing just one cell out of eight rather than every cell. OSCs directed site crew to sample every 4th or 5th cell for the next week to verify the analytical results continue to be consistent.

## Planned Removal Actions
Excavate contaminated soil, backfill and cap to specifications.

## Next Steps
1. Excavate contaminated soil and transport to appropriate landfill.
2. Backfill excavations with adequate compaction
3. Include soil amendment in backfill
4. Cap excavations with specified capping material
5. Design layout of and install slide shoring for excavation area 2

## Key Issues
1. Safety of crew around deep excavations
2. Adequate control of contamination spread

Note on costs:
ERRS costs are through 9/25/09 and do not include pending.
START costs are through 9/25/09 and include pending.
EPA costs - both direct and indirect - will not be summarized until the Final Removal Report is completed.

## Cost Information through 9/30/2009

| | Budgeted | Total To Date | Remaining | % Remaining |
|---|---|---|---|---|
| **Extramural Costs** | | | | |
| ERRS - Cleanup Contractor | $2,060,000.00 | $335,349.00 | $1,724,651.00 | 83.72% |
| START | $100,000.00 | $63,252.66 | $36,747.34 | 36.75% |
| **Intramural Costs** | | | | |
| **Total Site Costs** | $2,160,000.00 | $398,601.66 | $1,761,398.34 | 81.55% |

The above accounting of expenditures is an estimate based on figures known to the OSC at the time this report was written. The OSC does not necessarily receive specific figures on final payments made to any contractor(s). Other financial data which the OSC must rely upon may not be entirely up-to-date. The cost accounting provided in this report does not necessarily represent an exact monetary figure which the government may include in any claim for cost recovery.

Disposition Of Wastes Summary

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# Northwest Pipe and Casing

**Clackamas, OR - EPA Region X**
**POLREP #6 - Continuation of Site Work - Week 5**

**On-Scene Coordinator - Kathy Parker, OSC** **9/30/2009**
**Time-Critical - Removal Action** **Pollution Report (POLREP) #6**
**Start Date: 8/12/2009**

## Current Activities

This Polrep covers Site work performed from Saturday 9/26/09 through Friday 10/2/09. Work on site began at 7am and ended at 5:30pm unless otherwise noted.

Saturday 9/26/09
On-site today: OSC Parker, 1 START, 14 ERRS. Safety Meeting at 7 am.
Excavation:
* Excavation Area 1/Shore System 1: dug the chitin into a three foot depth of soil at the bottom of the excavation. Finished removing shoring and backfilling with pea gravel, sand, three inch minus rock, and chitin at 7 pounds per cubic yard. Watered each three foot lift of sand.
*Started moving the shoring to Excavation Area 1/Shore System 3/Bay 1.

Containment Cells:
Covered containment cells and stock piles with sheet plastic to protect from rain over the weekend.

Water Treatment System:
* Continued filling dirty tanks 1 to 3 from excavation

Other work:
* Industrial Hygienist performed a safety audit and provided site crew with recommendations for improving safety on the site. RM made immediate changes where hazards had been identified (e.g. moving the Portapotty out of the swing radius of the excavator arm and the refueling station farther from the garbage dumpster). OSC and RM assembled a list of tasks to address the remaining recommendations.
* PID calibrated and used in dirty Excavator and miniexcavator.
* No dust suppression or monitoring performed due to rainy weather.

Sunday 9/27/09 - no site work

Monday 9/28/09
On-site today: OSC Heister, 1 START, 14 ERRS. Safety Meeting at 7 am.
Excavation:
* Started excavating and installing shoring in Excavation Area 1/Shore System 3/Bay1. Sample collected from 13 feet bgs wall and shipped to F&B lab with a trip blank for VOAs.
* Flushed the floor of Excavation Area 1/Shore System 2 with water and pumped it out.
Containment Cells:
* Continued to fill containment cells 4 to 7.
* Containment cell 6 sampled and shipped to F&B lab with a trip blank.
* Loaded and shipped out 32 truck loads (1024 tons) of excavation soil to Subtitle D landfill.

Water Treatment System:
* Continued filling dirty tanks 1 to 3 from excavation.
* Sent water through the water treatment system to holding tanks 10 and 11.

Other work:
* PID calibrated and used in dirty Excavator and miniexcavator.
* No dust suppression or monitoring performed due to rainy weather.

Tuesday 9/29/09 cool and rainy
On-site today: OSC Franklin, 1 START, 14 ERRS. Safety Meeting at 7 am.
Excavation:
* Continued excavating and installing shoring in Excavation Area 1/Shore System 3/Bay1. Sample collected from 25 feet bgs wall and shipped to F&B lab with a trip blank for VOAs.
* Started excavating and installing shoring in Excavation Area 1/Shore System 3/Bay 2
* Excavation Area 1/Shore System 2: flushed bottom of excavation with clean water, pumped out dirty water and started backfilling with chitin and Daramend amended soil.

Containment Cells:
* Continued to add soil to containment cells #7, #8, and #9.
* Loaded and shipped out 34 truck loads (1088 tons) of excavation soil to Subtitle D landfill.

Water Treatment System:
* Continued filling dirty tanks 1, 2 and 3 from excavation.
* Sent dirty water from tanks 1 to 3 through the water treatment system into clean holding tanks #10 and #11.
*Forwarded analytical data from water treatment systems samples to Clackamas county Water Environmental Services who looked at the data and emailed an approval to discharge the current batch of treated water. Site crew set up barricades around the manhole to the sewer intake, placed the discharge line securely in the intake hole and set the manhole cover on

top of the discharge line.

Other work:
* PID calibrated and used in dirty Excavator and miniexcavator.
* No dust suppression or monitoring performed due to rainy weather.

Wednesday 9/30/09 cool and rainy
On-site today: OSC Franklin, 1 START, 14 ERRS. Safety Meeting at 7 am.
Excavation:
* Excavation Area 1/Shore System 3/Bay2: Finished excavating and installing shoring, collected soil sample from the floor at 25 feet bgs.
* Excavation Area 1/Shore System 3/Bay3: Finished excavating and installing shoring, collected soil sample from the floor at 25 feet bgs.
* Excavation Area 1/Shore System 3/Bay4: started excavating and installing shoring.
* Two samples shipped to CLP lab with a trip blank for VOAs.
* Excavation Area 1/Shore System 2: continued removing shoring and backfilling with chitin and Daramend amended pea gravel, sand and rock.

Containment Cells:
* Continued adding soil to containment cells #10 and #11.
* 39 truck loads of contaminated soil taken to Subtitle D landfill.

Water Treatment System:
* Continued filling dirty tanks #1, #2 and #3.
* Pumped dirty water from dirty tanks #1, #2 and #3 through the water treatment system to clean tanks #10, #11, #12 and #13.
* At 7:30am, started treated water flowing from treated water holding tanks 6 through 9 to the sewer intake at approximately 100 gallons a minute. 40,100 gallons of water was discharged until it ceases to flow at around 2pm. The current plan is to discharge slowly and only during daylight hours.

Other work:
* PID calibrated and used in dirty Excavator and miniexcavator.
* No dust suppression or monitoring performed due to rainy weather.

Thursday 10/1/09 cool and rainy
On-site today: OSC Franklin, 1 START, 14 ERRS. Safety Meeting at 7 am.
Excavation:
* Excavation Area 1/Shore System 3/Bay4: finished excavating and installing shoring. Sampled at 10 feet bgs and 25 feet bgs on eastern wall.
* Excavation Area 1/Shore System 4/Bay1: started excavating and installing shoring
* Excavation Area 1/Shore System 2: continued removing shoring and backfilling with chitin and Daramend amended pea gravel, sand and rock.

Containment Cells:.
* Continued adding soil to containment cells #11 through #14.
* Sampled containment cell #11 and shipped to CLP lab with a trip blank.
* 37 truck loads of contaminated soil taken to Subtitle D landfill.

Water Treatment System:
* Continued filling dirty tanks #1, #2 and #3.
* Pumped dirty water from dirty tanks #1, #2 and #3 through the water treatment system to clean tanks #10, #11, #12 and #13.

Other work:
* No dust control or dust monitoring performed due to rainy weather.
* PID calibrated and used in dirty Excavator and miniexcavator.

Friday 10/2/09 cool and rainy
On-site today: OSC Franklin, 1 START, 14 ERRS. Safety Meeting at 7 am.
Excavation:
* Excavation Area 1/Shore System 4/Bay1: continued excavating and installing shoring. Sampled at 10 feet bgs and 25 feet bgs on western wall.
* Excavation Area 1/Shore System 2: finished backfilling with chitin and Daramend amended pea gravel, sand and rock.

Containment Cells:.
* Continued adding soil to containment cells #13, #14 and #1.
* 28 truck loads of contaminated soil taken to Subtitle D landfill.

Water Treatment System:
* Continued filling dirty tanks #1, #2 and #3. Approximately 500 gallons overflowed from tank #2, spilling onto the soil west of tanks #1 - #3 and south of tank #1.
* Sampled treated water tank #10 which represents treated water tanks #10, #11, #12 and #13.
* Collected samples of untreated water from tank #3 and between the two carbon filters.
* Pumped dirty water from dirty tanks #1, #2 and #3 through the water treatment system to clean tanks #6, #7, #8 and #9.
* Discharged 11,400 gallons treated water to the POTW sewer intake.

Other work:
* No dust control or dust monitoring performed due to rainy weather.
* PID calibrated and used in dirty Excavator and miniexcavator.

## Planned Removal Actions
Excavate contaminated soil, backfill and cap to specifications.

## Next Steps
1. Excavate contaminated soil and transport to appropriate landfill.
2. Backfill excavations with adequate compaction
3. Include soil amendment in backfill
4. Cap excavations with specified capping material
5. Design layout of and install slide shoring for excavation area 2

## Key Issues
1. Safety of crew around deep excavations
2. Adequate control of contamination spread

Note on costs:
ERRS costs are through 10/2/09 and do not include pending.
START costs are through 10/2/09 and include pending.
EPA costs - both direct and indirect - will not be summarized until the Final Removal Report is completed.

## Cost Information through 9/30/2009

| | Budgeted | Total To Date | Remaining | % Remaining |
|---|---|---|---|---|
| **Extramural Costs** | | | | |
| ERRS - Cleanup Contractor | $2,060,000.00 | $568,872.00 | $1,491,128.00 | 72.38% |
| START | $100,000.00 | $67,596.69 | $32,403.31 | 32.40% |
| **Intramural Costs** | | | | |
| **Total Site Costs** | $2,160,000.00 | $636,468.69 | $1,523,531.31 | 70.53% |

The above accounting of expenditures is an estimate based on figures known to the OSC at the time this report was written. The OSC does not necessarily receive specific figures on final payments made to any contractor(s). Other financial data which the OSC must rely upon may not be entirely up-to-date. The cost accounting provided in this report does not necessarily represent an exact monetary figure which the government may include in any claim for cost recovery.

Disposition Of Wastes Summary

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# Northwest Pipe and Casing

**Clackamas, OR - EPA Region X**
**POLREP #7 - Continuation of Site work - week 6**

**On-Scene Coordinator - Kathy Parker, OSC** **10/9/2009**
**Time-Critical - Removal Action** **Pollution Report (POLREP) #7**
**Start Date: 8/12/2009**

## Current Activities

This Polrep covers Site work performed from Saturday 10/3/09 through Thursday 10/8/09. Work on site began at 7am and ended at 5:30pm unless otherwise noted.

Saturday 10/3/09 cool and rainy
On-site today: OSC Franklin, 14 ERRS. Safety Meeting at 7 am.
Excavation:
* Excavation Area 1/Shore System 4/ Bay 2: finished installing shoring and excavating.
* Excavation Area 1/Shore System 4/ Bay 3: started installing shoring and excavating.
* Excavation Area 1/Shore System 3: started removing shoring and backfilling with pea gravel, sand, 3 inch minus rock, chitin and iron amendment.
Containment Cells:
*Continued adding soil to containment cells #13, #14, #1, #2, #3

Water Treatment System:
* Pumped dirty water through water treatment system from tanks #1, #2 and #3 to tanks #6, #7, #8, and #9.

Other work:
No dust suppression performed because it rained most of the day.
Secured site for Sunday off.

Sunday 10/4/09 - no site work

Monday 10/5/09
On-site today: OSC Franklin and OSC Parker, 1 START, 14 ERRS. Safety Meeting at 7 am.
Excavation:
* Continued excavating and installing shoring in Excavation Area 1/Shore System 4/Bay3.
* Started excavating and installing shoring in Excavation Area 1/Shore System 4/Bay4
* Continued removing shoring and backfilling Excavation Area 1/Shore System 3 with pea gravel, sand, three inch minus rock, chitin and iron soil amendment.
Containment Cells:
* Continued to fill containment cells 4 to 6.
* Loaded and shipped out 16 truck loads of excavation soil to Subtitle D landfill.

Water Treatment System:
* Continued filling dirty tanks 1 to 3 from excavation.
* Pumped water from tanks 1, 2 and 3 through treatment system into tanks 6 through 9, 14, and 15.
* Sampled treated water in tank 6 representing tanks 6 through 9, 14 and 15.

Other work:
* PID calibrated and used in dirty Excavator and miniexcavator.
* No dust control measures taken as soil was still wet from the previous week's rain. Dust monitoring performed and no exceedances noted.

Tuesday 10/6/09
On-site today: OSC Parker, 1 START, 14 ERRS. Safety Meeting at 7 am.
Excavation:
* Continued excavating and installing shoring in Excavation Area 1/Shore System 4/Bay4.
* Started excavating and installing shoring in Excavation Area 1/Shore System 5/Bay 1
* Continued backfilling Excavation Area 1/Shore System 3 with chitin and Daramend amended soil.
* 4 Samples collected: Excavation Area 1/Shore System 4/Bay 2 floor, Excavation Area 1/Shore System 4/Bay 3 floor and Excavation Area 1/Shore System 4/Bay 4 at 12 feet bgs and 25 feet bgs on east wall. Shipped to CLP lab.
Containment Cells:
* Continued to add soil to containment cells 7 to 9.
* Loaded and shipped out 32 truck loads (1024 tons) of excavation soil to Subtitle D landfill.
* Spread the wettest soil out on sheet plastic to dry during the drier weather.

Water Treatment System:
* Continued filling dirty tanks 1, 2 and 3 from excavation.

Other work:
* PID calibrated and used in dirty Excavator and miniexcavator.
* Dust control performed. Dust monitoring indicated no exceedances.

Wednesday 10/7/09
On-site today: OSC Parker, 1 START, 14 ERRS. Safety Meeting at 7 am.
Also on-site today: RPM Ader, ODEQ Debbie Bailey and Parametrix Eric Roth
Excavation:

* Continued excavating and installing shoring in Excavation Area 1/Shore System 5/Bay1.
Sample collected from 25 feet bgs excavation floor and shipped to CLP lab with a trip blank for VOAs.
* Started excavating and installing shoring in Excavation Area 1/Shore System 5/Bay2.
* Finished backfilling Excavation Area 1/Shore System 3 with chitin and Daramend amended soil and started backfilling Excavation Area 1/Shore System 4.
Containment Cells:
* Continued adding contaminated soil to containment cells 9, 10, 11, 12, and 13.
* Continued to spread out wet contaminated soil in stockpile to dry with the dry weather.
* Loaded and shipped out 27 truck loads (864 tons) of excavation soil to Subtitle D landfill.

Water Treatment System:
* Continued filling dirty tanks 1, 2 and 3 from excavation.
* Replaced 3 inch submersible pump in the excavation area with a 4 inch submersible pump to keep up with water flow into the excavation from the surrounding area.
* At 7:30am, started treated water flowing from treated water holding tanks 10 through 13 to the sewer intake at approximately 100 gallons a minute. ERRS walked the line to inspect for leaks. 68,500 gallons of water was discharged until the tanks were completely emptied at around 4pm.

Other work:
* PID calibrated and used in dirty Excavator and miniexcavator.
* Dust control performed. Dust monitoring indicated no exceedances.
* RPM Ader, ODEQ Debbie Bailey and Parametrix Eric Roth onsite to assist in determining shoring layout for excavation area 2. OSC made the decision to remove the two foot cap over a large area around excavation area 2 to inspect underlying soil for visible signs of solvent spills and coal tar. Shoring layout will be decided after inspection of the soil.

Thursday 10/8/09
On-site today: OSC Parker, 1 START, 14 ERRS. Safety Meeting at 7 am.
Excavation:
* Continued excavating and installing shoring in Excavation Area 1/Shore System 5/Bay2. Sample collected from 25 feet bgs excavation floor and shipped to CLP lab with a trip blank for VOAs.
* Started excavating and installing shoring in Excavation Area 1/Shore System 5/Bay3.
* Continued backfilling Excavation Area 1/Shore System 4 with chitin and Daramend amended soil.
* Cleared two foot cap of excavation area 2 and found coal tar and pipes between Test Pit (TP14) and TP24 at 2.5 feet bgs to 5 feet bgs. Excavator followed the trench southward. Moved contaminated soil from this trench into an isolated containment cell until we determine whether to include it with the soil from excavation area 1.

Containment Cells:
* Continued adding contaminated soil to containment cells.
* Continued to spread out wet contaminated soil in stockpile to dry with the dry weather.
* Loaded and shipped out 29 truck loads of excavation soil to Subtitle D landfill.

Water Treatment System:
* Continued filling dirty tanks 1 through 3 from excavation.
* At 7:30am, started treated water flowing from treated water holding tanks 6 through 9 and 14 and 15 to the sewer intake at approximately 100 gallons a minute. ERRS walked the line to inspect for leaks. The water meter quit working after about an hour of discharge. Discharged volume was calculated to be 90,000 gallons of water, determined by the height of water in the tanks before and after discharge.

Other work:
* PID calibrated and used in dirty Excavator and miniexcavator.
* Dust control performed. Dust monitoring indicated no exceedances.
* Collected a 7 point composite from the overburden pile from Excavation Area 1. Shipped out the next day to F&B lab for SVOC, VOC, PCB and metals.

## Planned Removal Actions
Excavate contaminated soil, backfill and cap to specifications.

## Next Steps
1. Excavate contaminated soil and transport to appropriate landfill.
2. Backfill excavations with adequate compaction
3. Include soil amendment in backfill
4. Cap excavations with specified capping material
5. Design layout of and install slide shoring for excavation area 2

## Key Issues
1. Safety of crew around deep excavations
2. Adequate control of contamination spread

Note on costs:
ERRS costs are through 10/8/09 and do not include pending.
START costs are through 10/8/09 and include pending.
EPA costs - both direct and indirect - will not be summarized until the Final Removal Report is completed.

## Cost Information through 10/9/2009

| | Budgeted | Total To Date | Remaining | % Remaining |
|---|---|---|---|---|
| **Extramural Costs** | | | | |

| | | | | |
|---|---|---|---|---|
| ERRS - Cleanup Contractor | $2,100,000.00 | $632,455.00 | $1,467,545.00 | 69.88% |
| START | $100,000.00 | $56,335.00 | $43,665.00 | 43.67% |
| **Intramural Costs** | | | | |
| **Total Site Costs** | $2,200,000.00 | $688,790.00 | $1,511,210.00 | 68.69% |

The above accounting of expenditures is an estimate based on figures known to the OSC at the time this report was written. The OSC does not necessarily receive specific figures on final payments made to any contractor(s). Other financial data which the OSC must rely upon may not be entirely up-to-date. The cost accounting provided in this report does not necessarily represent an exact monetary figure which the government may include in any claim for cost recovery.

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# Northwest Pipe and Casing

**Clackamas, OR - EPA Region X**
**POLREP #8 - Continuation of Site Work - Week 7**

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**On-Scene Coordinator - Kathy Parker, OSC** **10/16/2009**
**Time-Critical - Removal Action** **Pollution Report (POLREP) #8**
**Start Date: 8/12/2009**

## Current Activities

This Polrep covers Site work performed from Friday 10/9/09 through Thursday 10/15/09. Work on site began at 7am and ended at 5:30pm unless otherwise noted.

Friday 10/9/09
On-site today: OSC Parker, 1 START, 14 ERRS. Safety Meeting at 7 am.
Excavation:
* Continued excavating and installing shoring in Excavation Area 1/Shore System 5/Bay3.
* Three samples collected from 25 feet bgs excavation floor in bays 1/5/2 floor, 1/5/3 floor, and 1/6/1 10 feet bgs and shipped to CLP lab with a trip blank for VOAs.
* Started excavating and installing shoring in Excavation Area 1/Shore System 6/Bay1.
* Continued backfilling Excavation Area 1/Shore System 4 with chitin and Daramend amended soil.
* Excavation Area 2: continued to excavate down to 4 feet bgs. Pulled out additional conduit at southeast edge of excavation. Parametrix observed excavation in afternoon.
Samples collected of coal tar, sludge from a pipe and dark gray soil in Excavation Area 2 and submitted to F&B lab.

Containment Cells:
* Continued to stock pile contaminated soil for subtitle D disposal.
* Finished hauling 27 loads of contaminated soil off-site to Subtitle D landfill. 322 total loads (10,604 tons) hauled off-site to date.

Water Treatment System:
* Continued filling dirty tanks 1 through 3 from excavation.
* Pumped water from tanks 1, 2 and 3 through treatment system into tanks 10 through 13.

Other work:
* Watered roads for dust suppression.
* PID calibrated and used in dirty Excavator and miniexcavator.
* No action level exceedances recorded by Dataram monitoring dust near the excavation work and at two locations near the site perimeter.
* 25-ton haul truck broke a drive line during backfill operations and partially blocked access to the excavation and can't be moved until Monday.

Saturday 10/10/09
On-site today: OSC Parker, 13 ERRS. Safety Meeting at 7 am.
Excavation:
* Finished excavating and installing shoring in Excavation Area 1/Shore System 6/Bay1.
* Two samples collected from 1/6/1 at 25 feet bgs excavation floor and 1/6/2 at 10 feet bgs and shipped to CLP lab with a trip blank for VOAs.
* Started excavating and installing shoring in Excavation Area 1/Shore System 6/Bay2.
* Started backfilling Excavation Area 1/Shore System 5 with chitin and Daramend amended soil.
* Excavation Area 2: continued to excavate down to 6 feet bgs.

Containment Cells:
* Continued to stock pile contaminated soil for subtitle D disposal.

Water Treatment System:
* Continued filling dirty tanks 1 through 3 from excavation.
* Pumped water from tanks 1, 2 and 3 through treatment system into tanks 10 through 13.

Other work:
* Watered roads for dust suppression.
* PID calibrated and used in dirty Excavator and miniexcavator.
* No action level exceedances recorded by Dataram monitoring dust near the excavation work and at two locations near the site perimeter.

Sunday 10/11/09 - no site work

Monday 10/12/09
Cold
On-site today: OSC Parker, 1 START, 14 ERRS. Safety Meeting at 7 am. (2 ERRS demobbed mid-day.)
Excavation:
* Finished excavating and installing shoring in Excavation Area 1/Shore System 6/Bay2.
* Two samples collected from 1/6/1 at 25 feet bgs excavation floor and 1/6/2 at 10 feet bgs and shipped to CLP lab with a trip blank for VOAs.
* Finished backfilling Excavation Area 1/Shore System 5 with chitin and Daramend amended soil.
* Excavation Area 2: finished excavating down to 6 feet bgs. OSC, START and ERRS dug test pits with shovels looking for solvent smell. Smell only detected in two areas – TP14 and TP23. Those areas will be excavated further.
Containment Cells:
* Continued stock piling contaminated soil for subtitle D disposal and cover pile with plastic.

Water Treatment System:
* Continued filling dirty tanks 1 through 4 from excavation.
* Pumped water from tanks 1, 2 and 3 through treatment system into tanks 10 through 13.
* Sampled tank 10 as representative of tanks 10 through 13 and sent sample to F&B lab and Specialty lab for pH.

Other work:
* No dust suppression or monitoring as rain and wind were expected.
* Started deconning damaged haul truck.
* Discussed revised plan for Excavation Area 2 shoring layout with RPM, ODEQ, ERRS, START and Parametrix and ordered four 8'x20'x8' trench boxes for delivery tomorrow.

Tuesday 10/13/09
Cold
On-site today: OSC Parker, 12 ERRS. Safety Meeting at 7 am.
Excavation:
* Finished excavating and installing shoring in Excavation Area 1/Shore System 6/Bay2.
* Received four 8'x8'x20' trench boxes.
* Started excavating 20 foot wide x 10 foot deep bench and ramp for haul trucks in Excavation Area 2.
* Cleaned and demobbed part of one slide rail shoring system.

Containment Cells:
* Moved soil from containment cells 3 through 7 and 10 through 14 to the larger stockpile of subtitle D soil
* Continued stock piling contaminated soil for subtitle D disposal and covered pile with sheet plastic.

Water Treatment System:
* Continued filling dirty tanks 1 through 4 from excavation.
* Continued to treat water from 1 through 4 and pump into clean tanks 6 through 9.
* Discovered small leak from clean tanks due to valve not completely closed. Rusty water from the tanks leaked to soil surface near discharge meter.

Other work:
* PID calibrated and used in dirty Excavator and miniexcavator.
* No dust suppression or monitoring as rain and wind were expected.
* Site tour for Removal Manager Chris Field and Calvin Terada.
* Demobed damaged haul truck and received replacement truck.

Wednesday 10/14/09
On-site today: OSC Parker, RPM Ader, 1 START, 12 ERRS. Safety Meeting at 7 am.
Excavation:
*Started excavation of eight foot wide, twenty five foot deep trench in Excavation Area 2 at TP17, the far eastern edge, moving westward. Created a ramp for trucks to enter the excavation for loading out soil.
* Calculated backfill proportions for a 0.8% to 1% Daramend wall and started backfilling the Excavation Area 2 trench in twenty linear foot sections with pea gravel, sand and three inch minus rock.
*Finished deconning and demobing one slide rail shoring system.

Containment Cells:
* Continued to stock pile contaminated soil for subtitle D disposal and cover pile with plastic.
* Finished moving soil from containment cells 3 through 7 and 10 through 14 to the larger stockpile of subtitle D soil and removed the rock and liners.
*Sampled the floors of cleared out containment cells 3 through 7 and 10 through 14 and sent the ten samples to F&B lab.
*Covered soil in remaining containment cells and stockpile with sheet plastic and sandbags to shed rain.

Water Treatment System:
* Set up Excavation Area 2 pump to send ground water into Excavation Area 1 shoring system 6.
* Continued filling dirty tanks 1 through 4 from Excavation Areas 1 and 2.
* Treated dirty water and filled clean tanks 6 through 9.

Other work:
* No dust suppression or monitoring as rain and wind were expected.

Thursday 10/15/09
On-site today: OSC Parker, 1 START, 12 ERRS, 1 Parametrix. Safety Meeting at 7 am.
Excavation:
* Continued to excavate and back fill with amended soil the eight foot wide, twenty five foot deep trench in Excavation Area 2, moving westward.

Containment Cells:
* Continued to stock pile contaminated soil for subtitle D disposal and cover pile with plastic.

Water Treatment System:
* Continued filling dirty tanks 1 through 4 from both excavations and treated water to clean tanks 6 through 9.
* Discharged tanks 10 through 13 to POTW sewer intake.
* Collected water samples from intermediate filter, clean (tanks 6-9), and dirty tanks and sent to F&G lab.

Other work:
* No dust suppression or monitoring as rain and wind were expected.
* OSC Parker gave a site tour to Art Arroyo, Army National Guard project manager of a large Camp Withycombe construction job across Mather Road from the site.
* Parametrix measured the water levels at wells north and south of excavation area 1 and diagramed the current water depths to determine the effect pumping groundwater out of Excavation area 1 has had on the water table.

## Planned Removal Actions

Excavate contaminated soil, backfill and cap to specifications.

## Next Steps

1. Excavate contaminated soil and transport to appropriate landfill.
2. Backfill excavations with adequate compaction
3. Include soil amendment in backfill
4. Cap excavations with specified capping material

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# Northwest Pipe and Casing

**Clackamas, OR - EPA Region X**
**POLREP #9 - Continuation of Site Work - Week 8**

**On-Scene Coordinator - Kathy Parker, OSC** **11/30/2009**
**Time-Critical - Removal Action** **Pollution Report (POLREP) #9**
**Start Date: 8/12/2009**

## Current Activities

This Polrep covers Site work performed from Friday 10/16/09 through Saturday 10/24/09. Work on site began at 7am and ended at 5:30pm unless otherwise noted.

Friday 10/16/09
On-site today: OSC Parker, 1 START, 12 ERRS. Safety Meeting at 7 am.
Excavation:
* Continued to excavate and back fill with amended soil the eight foot wide, twenty five foot deep trench in Excavation Area 2, moving westward.
* Collected six soil samples from trench walls and one ground water sample from the trench. Also collected one sample of overburden removed from Excavation Area #2.

Containment Cells:
* Graded and replaced cap on containment cells 3 through 7and 9 through 14.

Water Treatment System:
* Continued filling dirty tanks 1 through 4 from both excavations and treated water to clean tanks 6 through 15.
* Sampled tanks 6 though 9.

Other work:
* Secured the site for two days without site work.
* No dust control performed due to rain.

Saturday 10/17/09 – 2 ERRS pumped and treated groundwater.

Sunday 10/18/09 – 2 ERRS pumped and treated groundwater.

Monday 10/19/09
On-site today: RPM Ader, 1 START, 13 ERRS. Safety Meeting at 7 am.
Excavation:
* Continued to excavate and back fill with amended soil the eight foot wide, twenty five foot deep trench in Excavation Area 2, moving westward.
* Collected six soil samples from trench walls

Containment Cells:
* Graded and replaced cap on containment cells 2 and 9.
* Started again hauling contaminated soil off-site to Subtitle D landfill - 29 loads.
* Collected soil sample from bottom of containment cell #2.

Water Treatment System:
* Continued filling dirty tanks 1 through 4 from both excavations and treated water to clean tanks 6 through 15.
* Collected sample of treated water from tank #10.

Other work:
* No dust control performed due to rain.
* Deconned two inch submersible pump and associated hoses.

Tuesday 10/20/09
On-site today: RPM Ader, 1 START, 13 ERRS. Safety Meeting at 7 am.
Excavation:
* Continued to excavate and back fill with amended soil the eight foot wide, twenty five foot deep trench in Excavation Area 2, moving westward.
* Started backfilling shoring system #1/ bay #2.
* Collected sample of groundwater in the bottom of Excavation Area #1/Shore System 6/ Bay #1.

Containment Cells:
* Graded and replaced cap on containment cell 1.
* Hauled contaminated soil off-site to Subtitle D landfill - 36 loads.
* Collected soil sample from bottom of containment cell #1.

Water Treatment System:
* Continued filling dirty tanks 1 through 4 from both excavations and treated water to clean tanks 6 through 15.
* Discharged 103,700 gallons of treated water to the POTW.

Other work:
* No dust control performed due to rain.
* Deconned 30 ton Haul Truck.

Wednesday 10/21/09
On-site today: OSC Franklin, 12 ERRS. Safety Meeting at 7 am.
Excavation:
* Continued to excavate and back fill with amended soil the eight foot wide, twenty five foot deep trench in Excavation Area #2, moving westward.
* Started to backfill larger area of Excavation Area #2 with clean cap.
* Finished backfilling Shoring System #1/ Bay #2.

Containment Cells:
* Hauled contaminated soil off-site to Subtitle D landfill - 36 loads.

Water Treatment System:
* Continued filling dirty tanks 1 through 3 from both excavations and treated water to clean tanks 6 through 9.
* Cleaned tanks #14 and #15 and demobilized.
* Discharged 72,000 gallons of treated water from tanks #10 through 13 to the POTW.

Other work:
* No dust control performed due to rain.

Thursday 10/22/09
On-site today: OSC Franklin, 1 START, 12 ERRS. Safety Meeting at 7 am.
Excavation:
* Pumped standing water out of excavation area 1/shore system6/bay1.
* Finished backfilling Excavation Area #2 to grade with two feet of clean cap.
* Started backfilling Excavation Area #1 with overburden and cap material.

Containment Cells:
* Loaded out 32 truck loads of soil to subtitle D landfill

Water Treatment System:
* Continued filling dirty tanks 1 and 2 and filling tanks 6 through 9 with treated water.
* Cleaned tanks #3 and #4, rinsing water and sediment into tank #1.
* Collected treated water sample from tank #6.
* Collected one background and three soil samples from the spill area near water treatment tank #1.

Other work:
* No dust control performed due to rain
* L150 Loader demobilized.

Friday 10/23/09
On-site today: OSC Franklin, 1 START, 11 ERRS. Safety Meeting at 7 am.
Excavation:
* Pumped standing water out of Excavation Area 1/Shore System6/Bay1 and finished backfilling the bay with amended rock and sand.
* Continued backfilling Excavation Area #1 with overburden and cap material.
* Started backfilling Excavation Area #1 with overburden and cap material.

Containment Cells:
* Loaded out 33 truck loads of soil to subtitle D landfill.
* Covered contaminated soil stockpile with visqueen.

Water Treatment System:
* Continued filling dirty tanks 1 and 2.
* Cleaned tank #2, rinsing water and sediment into tank #1.
* Continued filling tanks #6 through 11 with treated water.
* Collected treated water sample from tank #6.
* Collected one background soil and three soil samples from the spill area near water treatment tank #1.

Other work:
* No dust control performed due to rain
* Demobilized one load of slide rail shoring, 45kw generator and four inch submersible pump.

Saturday 10/24/09
On-site today: OSC Franklin, 5 ERRS. Safety Meeting at 7 am.
* Continued backfilling Excavation Area #1 with cap material.

Water Treatment System:
* Cleaned tanks #12 and #13, rinsing water into tank #11.

Other work:
* No dust control performed due to rain
* Secured site for Sunday off.

## Planned Removal Actions
Excavate contaminated soil, backfill and cap to specifications.

## Next Steps
1. Excavate contaminated soil and transport to appropriate landfill.
2. Backfill excavations with adequate compaction
3. Include soil amendment in backfill
4. Cap excavations with specified capping material

## Cost Information through 11/30/2009

| | Budgeted | Total To Date | Remaining | % Remaining |
|---|---|---|---|---|
| **Extramural Costs** | | | | |
| ERRS - Cleanup Contractor | $2,100,000.00 | $1,221,552.00 | $878,448.00 | 41.83% |
| START | $100,000.00 | $76,061.06 | $23,938.94 | 23.94% |
| **Intramural Costs** | | | | |
| **Total Site Costs** | $2,200,000.00 | $1,297,613.06 | $902,386.94 | 41.02% |

The above accounting of expenditures is an estimate based on figures known to the OSC at the time this report was written. The OSC does not necessarily receive specific figures on final payments made to any contractor(s). Other financial data which the OSC must rely upon may not be entirely up-to-date. The cost accounting provided in this report does not necessarily represent an exact monetary figure which the government may include in any claim for cost recovery.

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# Northwest Pipe and Casing

**Clackamas, OR - EPA Region X**
**POLREP #10 - Continuation of Site Work - Week 9**

**On-Scene Coordinator - Kathy Parker, OSC** **11/30/2009**
**Time-Critical - Removal Action** **Pollution Report (POLREP) #10**
**Start Date: 8/12/2009**

## Current Activities

This Polrep covers Site work performed from Sunday 10/25/09 through Saturday 10/31/09. Work on site began at 7am and ended at 5:30pm unless otherwise noted.

Sunday 10/25/09 – no site work.

Monday 10/26/09
On-site today: OSC Parker, 1 START, 10 ERRS. Safety Meeting at 7 am. Work ended at 420pm
Excavation:
* Continued backfilling Excavation Area #1 with rock and cap material.

Containment Cells:
* Finished loading out contaminated soil to Wasko landfill – 36 loads.
* Covered contaminated soil stockpile with visqueen at day's end.

Water Treatment System:
* Back-flushed sand filters into tank #2.
* Pumped water in tank #2 down to sediment line over to tank #1.
* Collected water and sediment samples from tank #1.

Other work:
Deconned a 25 ton Haul Truck.
Demobilized tanks #12 and #13.

Tuesday 10/27/09
On-site today: OSC Parker, 1 START, 10 ERRS. Safety Meeting at 7:30 am. Work ended at 5pm
Excavation:
* Continued backfilling Excavation Area #1 with rock and cap material.
* Shaped road over Excavation Area #1 to make it a straight north-south line and dug a ditch to the wetland to drain Excavation Area #2.

Containment Cells:
* Started shaping contaminated soil stockpile.
* Covered with visqueen at day's end.

Water Treatment System:
* Pumped the last water through the water treatment system and discharged treated water from tanks #6 through 11 to POTW.
* Started disassembling water treatment system.
* Moved sand filters to containment cell #8 to decon.
* Sampled sediment from sand filter inlet.
* Sampled carbon from GAC vessel #1 inlet and 60 inches below inlet.

Wednesday 10/28/09
On-site today: OSC Franklin, 1 START, 8 ERRS. Safety Meeting at 7:30 am. Work ended at 5pm
Excavation:
* Finished backfilling Excavation Area #1 with rock and cap material.

Containment Cells:
* Finished shaping contaminated soil stockpile and covered with visqueen and sandbags to hold down the visqueen.
* Sampled soil at bottom of containment cell #8.

Water Treatment System:
* Started to dismantle water treatment system and clean tanks #6 through 11 and 2.

Other work:
Deconned a second 25 ton Haul truck, the 330 Excavator and two excavator buckets.

Thursday 10/29/09
On-site today: OSC Franklin, 8 ERRS. Safety Meeting at 7:30 am. Work ended at 5pm.
Containment Cells:
* Continued making sandbags to hold down the visqueen.

Water Treatment System:
*Finished dismantling water treatment system and cleaning all tanks.

Other work:

* Deconned and demobilized 330 Excavator and three portable toilets and handwash station.

Friday 10/30/09
On-site today: OSC Franklin, 6 ERRS. Safety Meeting at 7:30 am. Work ended at 5pm.
Other work:
* Continued making sandbags to hold down the visqueen.
*Cleaned and demobilized: office trailer, two gators, 1000 gallon fuel tank, service truck, satellite internet dish.
* Cleaned radios and moved remaining office equipment into smaller permanent office trailer.

## Planned Removal Actions

Excavate contaminated soil, backfill and cap to specifications.

## Next Steps

1. Excavate contaminated soil and transport to appropriate landfill.
2. Backfill excavations with adequate compaction
3. Include soil amendment in backfill
4. Cap excavations with specified capping material

## Cost Information through 11/30/2009

| | Budgeted | Total To Date | Remaining | % Remaining |
|---|---|---|---|---|
| **Extramural Costs** | | | | |
| ERRS - Cleanup Contractor | $2,100,000.00 | $1,423,951.00 | $676,049.00 | 32.19% |
| START | $100,000.00 | $76,061.06 | $23,938.94 | 23.94% |
| **Intramural Costs** | | | | |
| **Total Site Costs** | $2,200,000.00 | $1,500,012.06 | $699,987.94 | 31.82% |

The above accounting of expenditures is an estimate based on figures known to the OSC at the time this report was written. The OSC does not necessarily receive specific figures on final payments made to any contractor(s). Other financial data which the OSC must rely upon may not be entirely up-to-date. The cost accounting provided in this report does not necessarily represent an exact monetary figure which the government may include in any claim for cost recovery.

Disposition Of Wastes Summary

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# Northwest Pipe and Casing

**Clackamas, OR - EPA Region X**
**POLREP #11 - Continuation of Site Work - Week 10**

**On-Scene Coordinator - Kathy Parker, OSC** **11/30/2009**
**Time-Critical - Removal Action** **Pollution Report (POLREP) #11**
**Start Date: 8/12/2009**

## Current Activities

This Polrep covers Site work performed from Sunday 11/1/09 through Friday 11/6/09.

Sunday 11/1/09 – no site work.

Monday 11/2/09
On-site today: 6 ERRS. Safety Meeting at 7:30am. Work ended at 5pm
* Started grading site with Low Ground Pressure D6 Dozer for better surface water drainage.
* Continued to fill sand bags to hold visqueen on stockpile of contaminated soil.
* Continued to demobilize water treatment system tanks.
* Demobilized 20 foot storage container.

Tuesday 11/3/09
On-site today: 6 ERRS. Safety Meeting at 7:30am. Work ended at 5pm
* Continued grading site with Low Ground Pressure D6 Dozer for better surface water drainage.
* Loaded two EQM trucks with small office equipment and demobilized.
* Continued to demobilize water treatment system tanks.
* Received 200' by 204', reinforced, 6-mil, one-piece liner to cover stockpiled contaminated soil.

Wednesday 11/4/09
On-site today: 6 ERRS. Safety Meeting at 7:30am. Work ended at 5pm
* Continued grading site with Low Ground Pressure D6 Dozer for better surface water drainage.
* Covered stockpiled contaminated soil with 200' by 204', reinforced, 6-mil, one-piece liner and secured perimeter of liner with berm of clean soil and roped sand bags.
* Continued to demobilize water treatment system tanks.

Thursday 11/5/09
On-site today: 7 ERRS. Safety Meeting at 7:30am. Work ended at noon.
* Finished grading site with Low Ground Pressure D6 Dozer for better surface water drainage.
* Deconned and demobed 460 Excavator.
* Prepared tank #1 to be pumped with vacuum truck.

Friday 11/6/09
On-site today: 4 ERRS. Safety Meeting at 7:30am. Work ended at 5pm
* Loaded two additional trucks with small office equipment and demobilized.
* Deconned and demobed L90 Loader, D6 LGP Dozer, 2000 gallon Water Truck, remaining portable toilets and handwash station.
* Cleaned permanent officer trailer and storage container.
* Pumped 11,500 gallons of sediment water from tank #1 using three vacuum trucks and sent the waste to Arlington landfill for processing and disposal.

## Next Steps

1. Demobilize remaining tank and equipment.
2. Cover stockpiled contaminated soil until it can be transported to appropriate landfill.
3. Grade and seed bare areas.

## Cost Information through 11/30/2009

| | Budgeted | Total To Date | Remaining | % Remaining |
|---|---|---|---|---|
| **Extramural Costs** | | | | |
| ERRS - Cleanup Contractor | $2,100,000.00 | $1,466,393.00 | $633,607.00 | 30.17% |
| START | $100,000.00 | $76,061.06 | $23,938.94 | 23.94% |
| **Intramural Costs** | | | | |
| **Total Site Costs** | $2,200,000.00 | $1,542,454.06 | $657,545.94 | 29.89% |

The above accounting of expenditures is an estimate based on figures known to the OSC at the time this report was written. The OSC does not necessarily receive specific figures on final payments made to any contractor(s). Other financial data which the OSC must rely upon may not be entirely up-to-date. The cost accounting provided in this report does not necessarily represent an exact monetary figure which the government may include in any claim for cost recovery.

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# Northwest Pipe and Casing

**Clackamas, OR - EPA Region X**
**POLREP #12 - End of 2009 Site Work and Demobilization**

Printer Friendly Version

**On-Scene Coordinator - Kathy Parker, OSC** **11/30/2009**
**Time-Critical - Removal Action** **Pollution Report (POLREP) #12**
**Start Date: 8/12/2009**

## Current Activities

This Polrep covers Site work performed from Sunday 11/8/09 through Friday 11/13/09.

Sunday 11/8/09 – no site work.

Monday 11/9/09 – no site work.

Tuesday 11/10/09 – no site work.

Wednesday 11/11/09
On-site today: 5 ERRS. Safety Meeting at 7:30am. Work ended at 5pm
* Mobilized SCBA, pressure washer, 460 Excavator, Water Truck and Forklift to site.
* Moved carbon out of GAC vessels and into cubic yard bags. Cleaned GAC vessels.

Thursday 11/12/09
On-site today: 5 ERRS. Safety Meeting at 7:30am. Work ended at noon.
* Demobilized GAC vessels.
* Level B entry into tank #1 to control vacuum truck hoses and remove sediment and water from tank. Three vacuum truck loads or sediment and water taken to Arlington landfill.
* Deconned 460 Excavator and Water Truck.
* Demobilized tank #1, Forklift, GAC vessels, pipe manifold and trench plates supporting GAC vessels.
* Returned water meter to Clackamas county.

Friday 11/13/09
On-site today: 5 ERRS. Safety Meeting at 7:30am. Work ended at 5pm
* Demobilized 460 Excavator, Water Truck, small equipment and crew.
* Secured the site for the winter.
This was the last day of site work for 2009.

## Next Steps

Amend Action Memo and Task Order to transport remaining excavated soil off-site to appropriate landfill.
Grade and seed bare areas.

All POLREP's for this site

# Northwest Pipe and Casing

**Clackamas, OR - EPA Region X**
**POLREP #13 - Resumption of Work**

Printer Friendly Version

**On-Scene Coordinator - Richard Franklin, OSC** **6/15/2010**
**Time-Critical - Removal Action** **Pollution Report (POLREP) #13**
**Start Date: 6/2/2010**

## Site Description

Pipe-coating businesses, run by the Hall Process Company and Northwest Pipe and Casing Company, operated on the southern part of the 53 acre site from 1956 to 1985. During the pipe-coating operations, volatile organic compounds (VOCs), polynuclear aromatic hydrocarbons (PAHs) and polychlorinated biphenyls (PCBs) were released at the Site into the soil and groundwater. The site was eventually listed on the National Priorities List (NPL) on October 1992, and remedial activities were performed between August 2001 and September 2004. However, during the site Five Year Review in 2006, a groundwater remedy emplaced during the Remedial Action was found to not be functioning properly. After further site characterization, DNAPL was found to be in one of the site groundwater monitoring wells, and coal tar bodies were also discovered in subsurface soils.

Due to the discovery of coal tar bodies and DNAPL, the EPA Region 10 Remedial Program requested assistance from the EPA Removal Program in order to remove the source of soil contamination so that a new groundwater remedy could be implemented. Further contaminated soil removal was deemed necessary before the Remedial Action groundwater remedy could be effective.

The removal Action Memo was signed on July 28, 2009 and removal site activities began on August 12, 2009. However, site work was halted in November 2009 due to an unexpected increase in costs as well as delays from the onset of significant precipitation towards the end of the removal schedule. Increases in costs were due to several issues: 1) an unexpected increase in the volume of dense non-aqueous phase liquid (DNAPL) impacted soil at the site, 2) the need for an increase in subsurface soil amendments, 3) a change from freeze shoring applications to standard metal frame shoring, and 4) an increase in rainfall and concommitant increase in saturation levels of site soils and weight of excavated material. This additional weight significantly increased transportation and disposal costs. In order to better manage these costs, site work was halted until June 2010.

Work conducted through the fall of 2009 is described in detail in individual POLREPS on this website. For further site history, please previous site POLREPS.

## Current Activities

This POLREP covers site activities beginning on June 1, 2010 through June 15, 2010.

On June 1, 2010 EPA, ERRS, and START mobilized to the site and set up equipment and command posts in order to resume work. Planned worked consisted of trucking contaminated stockpiled soil off-site for disposal in a municipal RCRA Subtitle D landfill.

On June 2 through June 14, 2010 loading and trucking of stockpiled soil to the landfill began on June 2. ERRS transfered contaminated soils from the stockpile to contracted dump truck haulers using an excavator. START monitored potential emissions from transfer work, including air monitoring for volatile organic compounds, carbon monoxide, hydrogen sulfide, explosive vapors, breathable oxygen, and total particulates.

A total of 230 loads of contaminated soil (6,933.7 tons) was transported to the IWASCO landfill near The Dalles, Oregon between June 2 through June 11.

On June 9, 2010 ERRS begins to pump and remove ponded water near the northeastern border with Oregon Iron Works. Ponded water was associated with potentially raising the water table in the middle of the site and altering the natural hydraulic gradients.

On June 11, 2010, silt fencing was erected around areas where additional soil capping will occur. Additional low permeability soil capping is required in order to deter infiltrating groundwater that may be affecting hydraulic gradient movements per the Action Memorandum Addendum signed May 27, 2010.

START is planning to collect confirmation soil samples on June 16, 2010 to determine if any cross-contamination from the stockpile to surficial soils occurred even though a liner membrane was emplaced below the stockpile.

## Planned Removal Actions

There are no further removal actions planned for this site.

## Next Steps

1. Complete loading, hauling and disposal of stockpiled soil to landfill.
2. Determine if cross-contamination from the stockpile to surface soils underneath the stockpile footprint has occurred.
3. Apply additional low permeability geotextile and soil cap on an area about 125 by 80 square feet over Excavation Area #1 to deter infiltrating groundwater and allow natural groundwater gradient movements.
4. Demob from the site.

## Key Issues

Additional water weight added to the soil stockpile due to heavy precipitation during fall 2009 and spring 2010 has resulted in significant increased transportation and disposal costs.

| web sites | regional web sites | profile | bulletins | images | documents | POLREPs | contacts | links |

# Northwest Pipe and Casing

**Clackamas, OR - EPA Region X**
**POLREP #14 - Final POLREP**

**On-Scene Coordinator - Richard Franklin, OSC** **7/1/2010**
**Time-Critical - Removal Action** **Pollution Report (POLREP) #14**
**Start Date: 6/2/2010** **Completion Date: 6/23/2010**

## Site Description

The Northwest Pipe and Casing site is an NPL site located on the eastern edge of Portland, in the town of Clackamas, Clackamas County, Oregon. The 53-acre site was home to a pipe-treating operation from 1956 to 1985, during which time volatile organic compounds (VOCs), polynuclear aromatic hydrocarbons (PAHs) and polychlorinated biphenyls (PCBs) were released into the soil and groundwater. The site was eventually listed on the National Priorities List (NPL) on October 1992, and remedial activities were performed between August 2001 and September 2004. A groundwater remedy emplaced during the Remedial Action was later found not to be functioning properly. Furthermore, DNAPL was found in one of the site groundwater monitoring wells, and coal tar bodies were also discovered in subsurface soils. Due to the discovery of coal tar bodies and DNAPL, the EPA Region 10 Remedial Program requested assistance from the EPA Removal Program in order to remove the source of soil contamination so that a new groundwater remedy could be implemented.

Removal site activities began on August 12, 2009. However, site work was halted in November 2009 due to an unexpected increase in costs as well as delays from the onset of significant precipitation towards the end of the removal schedule. It was anticipated that removal activities would re-start in the Spring or Summer of 2010.

On June 1, 2010, EPA, the ERRS and START contractors re-mobilized to the site and set up equipment and command posts in order to resume removal work, which consisted of trucking contaminated, stockplied soil to a RCRA Subtitle D municipal landfill near The Dalles, Oregon. From June 3 through June 11, 2010, a total of 230 truck loads of contaminated soil (6,933.7 tons) was transported to the lWASCO landfill. ERRS transferred contaminated soils from the stockpile to contracted dump truck haulers using an excavator. START monitored potential emissions from transfer work, including air monitoring for volatile organic compounds, carbon monoxide, hydrogen sulfide, explosive vapors, breathable oxygen, and total particulates. ERRS kept dust and particulates low by regularly spraying water on site roads.

For further site history, please previous site POLREPS.

## Current Activities

Site activities, such as trucking of stockpiled contaminated soil and air monitoring continued on June 14, 2010. Also on this date, trucking of contaminated soil to the landfill was completed, with a total of 262 truck loads and 8,126.23 tons of soil transported offsite and disposed of during this 2010 removal action. The total amount of soil transported and disposed for the entire removal action (2009-2010) was 787 truck loads and 24,797.58 tons.

As planned, installation of a new semi-permeable cap over Excavation Area No. 1 (EA1) also began on June 14. However, a small portion of EA1 could not be addressed or have the semi-permeable cap installed, as Oregon Iron Works (OIW) had laid down a large, packed, gravel equipment laydown yard adjacent to, and overlapping the top of EA1. The laydown years overlapped EA1 by several feet from the east to the west, and the entire length of EA1 north to south. ERRS began work on the remaining EA1 area by excavating the previously installed cap and removing over 4 feet of material. A 6-inch sand base was then laid down, which was next overlain by overlapping and sealed sheets of a semi-permeable, 12-mil geomembrane material. This material was in turn overlain by two feet of silty clay, and finally two feet of the previously removed soil cap material. The slope of the semi-permeable cap (geomembrane material and overlying silty clay) was 1.5% to the south. The final surface area dimensions of the installed semi-permeable cap were 110' by 80'.

On June 16-17, ERRS worked to re-grade and re-dress all previous work areas and roads from work completed in 2009 and 2010 in order to restore the site soil cap. ERRS filled in and smoothed out the base of the now removed soil stockpile area, as well as other low areas and ruts. Fill material included site cap soils that OIW had previously excavated during their construction activites. ERRS also overseeded and watered all graded and restored areas with a mix of northwest grass seed.

Also during this week, OIW began construction of its test track facilities by laying down rail ballast along the planned rail route. EPA coordinated daily work efforts with OIW and their contractors in order to efficiently accomplish site removal goals.

On June 17, 2010, START collected three composite confirmation soil samples from the base of the stockpile area to determine if any cross-contamination from the stockpile to surficial soils occurred, even though a liner membrane was emplaced below the stockpile. Samples were sent to EPA CLP labs for VOCs, SVOCs, metals, mercury, PCB, and TPH analysis.

## Planned Removal Actions

None. EPA, START, and ERRS contractors demobilized from the site on June 23, 2010.

## Next Steps

Further site activities will remain under oversight of the EPA Remedial Program in conjunction with ODEQ, the Clackamas County Development Agency, and OIW.

## Key Issues

Continued rain during this action continued to add additional water weight to the soil stockpile, which resulted in significantly

increased transportation and disposal costs.

The site is being re-used by OIW, who plans to construct an electric rail car manufacturing and test track facility.

## Cost Information through 7/1/2010

| | Budgeted | Total To Date | Remaining | % Remaining |
|---|---|---|---|---|
| **Extramural Costs** | | | | |
| ERRS - Cleanup Contractor | $2,520,000.00 | $2,488,344.89 | $31,655.11 | 1.26% |
| START | $130,000.00 | $120,500.00 | $9,500.00 | 7.31% |
| **Intramural Costs** | | | | |
| **Total Site Costs** | $2,650,000.00 | $2,608,844.89 | $41,155.11 | 1.55% |

The above accounting of expenditures is an estimate based on figures known to the OSC at the time this report was written. The OSC does not necessarily receive specific figures on final payments made to any contractor(s). Other financial data which the OSC must rely upon may not be entirely up-to-date. The cost accounting provided in this report does not necessarily represent an exact monetary figure which the government may include in any claim for cost recovery.

Disposition Of Wastes Summary

Add Waste Stream



Questions or Comments?
ERT Software Support: 800-999-6990 - Email: ERTSupport@epa.gov
Security and Privacy Policy

# APPENDIX F

## Soil Disposal Documentation

405792

WORK ORDER NO. _____

DOCUMENT NO. 294741 STRAIGHT BILL OF LADING

TRANSPORTER 1 CLEAN HARBORS ENV. SVCS. INC VEHICLE ID # _____

EPA ID # MAD039322250 TRANS. 1 PHONE (800) 483-3718

TRANSPORTER 2 _____ VEHICLE ID # _____

EPA ID # _____ TRANS. 2 PHONE _____

| DESIGNATED FACILITY | SHIPPER USEPA - REGION 10 NW PIPE AND CASING CO: SUPERFUND SITE |
|---|---|
| CHEMICAL WASTE MANAGEMENT | |
| FACILITY EPA ID # ORD089452353 | SHIPPER EPA ID # ORB 980988307 |
| ADDRESS 17629 CEDAR SPRINGS LANE | ADDRESS 9585 MATHER ROAD |
| CITY ARLINGTON STATE OR ZIP 97812 | CITY CLACKAMAS STATE OR ZIP 97015 |

| CONTAINERS NO. & SIZE | TYPE | HM | DESCRIPTION OF MATERIALS | TOTAL QUANTITY | UNIT WT/VOL |
|---|---|---|---|---|---|
| 001 | TT | | A. NON-HAZARDOUS NON-D.O.T. REGULATED (WATER, SEDIMENT) | ~~5000~~ 4393 11-6-09 | G |
| | | | B. | | |
| | | | C. | | |
| | | | D. | | |
| | | | E. | | |
| | | | F. | | |
| | | | G. | | |
| | | | H. | | |

SPECIAL HANDLING INSTRUCTIONS
LINE A: PROFILE# OR297828 PO#: WO90117142

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

Driver changed Total Quantity - CD 11/6/09

| | | | |
|---|---|---|---|
| SHIPPER | PRINT Caleb Palmer | SIGN | DATE 11-6-09 |
| TRANSPORTER 1 | PRINT E.D JOHNSON | SIGN | DATE 11-6-09 |
| TRANSPORTER 2 | PRINT | SIGN | DATE |
| RECEIVED BY | PRINT | SIGN | DATE 11/6/09 |

3

CHI 107

1369

**Chemical Waste Management Of The Northwest**

17629 Cedar Springs Lane
Arlington, Oregon 97812
541-454-2643
EPA I.D.# ORD088452353

8.4

LOAD NO. 405792

MANIFEST DOC. NO. 294741

50 Gallon washout
175

GROSS 73900 lb

W-TARE 37000 lb
NET 36900 lb
12:33 PM 6 NOV 2009
Vehicle ID 1365

NET 18.45 TON
2:06 PM
Vehicle ID 1365

4393G

GENERATOR Region 10 - NW Pipe & Casing

CleanHarbors
ENVIRONMENTAL SERVICES®

1-800-444-4244

# Drum/Bulk Load Tracking Form



Driver: Ed Johnson

EMP ID #: 014093

Tractor: 1369 Trailer: T020

Roll off drop: #1 #2 Liners #

Roll off p-up: #1 #2

Bulk Generator: Manifest #:

| Date: | Work Order | Activity Code | Start Time: | End Time: | Gallons Count | Comments: |
|---|---|---|---|---|---|---|
| 11/6 09 | | | 0600 | 0630 | [illegible] | 015 |
| / / | | | 0630 | 0900 | | 079 / & 022-3 030 .5 |
| / / | | | 0900 | 1200 | | 082 |
| / / | | | 1200 | 1430 | | 083 033- 1-5 058 .5 039 .5 |
| / / | | | | | | |
| / / | | | 1430 | 2030 | | 060 |
| / / | | | 2030 | 2100 | | 042 |
| / / | | | | | | |
| / / | | | | | | |
| / / | | | | | | |
| / / | | | | | | |
| / / | | | | | 36,900g | |
| / / | | | | | 4393 g | |
| / / | | | | | | |
| / / | | | | | | |
| / / | | | | | | |
| / / | | | | | | |
| / / | | | | | | |
| / / | | | | | | |
| / / | | | | | | |

er must specify AM or PM in Time Boxes

ns only: All demurrage must have a separate signed Driver Demurrage Form (CHI136A)

only: Signature verifies arrival and departure times and authorizes demurrage charges to be billed

applicable according to your quote.

tomer signature: Print name:

ers signature: Date:

Rev 11/04

405794

WORK ORDER NO. _____

DOCUMENT NO. 294742 **STRAIGHT BILL OF LADING**

TRANSPORTER 1 CLEAN HARBORS ENV. SVCS, INC VEHICLE ID # _____

EPA ID # MAD 039322250 TRANS. 1 PHONE (800) 483-3718

TRANSPORTER 2 _____ VEHICLE ID # _____

EPA ID # _____ TRANS. 2 PHONE _____

| DESIGNATED FACILITY | SHIPPER |
|---|---|
| CHEMICAL WASTE MANAGEMENT, NW | ~~US EPA - REGION 10~~ NW PIPE AND CASING CO - SUPERFUND SITE |
| FACILITY EPA ID # ORD 089452353 | SHIPPER EPA ID # ORD 980988307 |
| ADDRESS 17629 CEDAR SPRINGS LANE | ADDRESS ~~9505~~ 9505 MATHER ROAD |
| CITY ARLINGTON STATE OR ZIP 97812 | CITY CLACKAMAS STATE OR ZIP 97015 |

| CONTAINERS NO. & SIZE | TYPE | HM | DESCRIPTION OF MATERIALS | TOTAL QUANTITY | UNIT WT/VOL |
|---|---|---|---|---|---|
| 001 | TT | | A. NON-HAZARDOUS, NON-D.O.T. REGULATED (SEDIMENT, WATER) | 5000 | G |
| | | | B. | 4322 | G (W) |
| | | | C. | | |
| | | | D. | | |
| | | | E. | | |
| | | | F. | | |
| | | | G. | | |
| | | | H. | | |

SPECIAL HANDLING INSTRUCTIONS
LINE A: PROFILE # ORD 297828 PO: W090117140

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

Driver changed Total Quantity - D 11/06/09

| | PRINT | SIGN | DATE |
|---|---|---|---|
| SHIPPER | X Caleb Palmer | Caleb Palmer | 11/6/09 |
| TRANSPORTER 1 | Richard Smith | | 11/6/09 |
| TRANSPORTER 2 | | | |
| RECEIVED BY | Janice Strand | 3 Janice Strand | 11/6/09 |

CHI 107

PAW

**Chemical Waste Management Of The Northwest**

17629 Cedar Springs Lane
Arlington, Oregon 97812
541-454-2643
EPA ID # ORD089452953

0.7

LOAD NO. 405744

MANIFEST DOC. NO. 294742

75 gallons washout

GROSS 73400 lb
TARE 35800 lb
NET 37600 lb
1:54 PM 6 NOV 2009
Vehicle ID P26

NET 18.80 TON
2:41 PM
Vehicle ID P26

4322G

GENERATOR Clean Harbors

Page # _____ of _____

Clean Harbors
ENVIRONMENTAL SERVICES

Bulk Load Worksheet

1-800-444-4244

15035 T

| | | | |
|---|---|---|---|
| Run #: | Sales Order #: 7I2591408 | Tractor #: P-26 | Trailer #: [illegible] |
| Job Date: 11-6-9 | Customer / Generator Name: Pipe & Casing Co. | | |
| Expected Arrival Time: | Address: Clackamas, Or. | | |
| Start Odometer: 295295 | Manifest #: 294742 | | Gallons/Pounds/Tons: 5000 / 4322 |
| End Odometer: 295596 | Container Drop: # | # | # # |
| Employee ID#: 014035 | Container Pick Up: # | # | # # |
| Driver Name: Richard Smith | | | Total Number of Liners Used: |

Please Use Military Hrs for Start/End Times

| Activity Code | Start Time | End Time | Reason Code | Hours (H) | Minutes (M) | Comments: |
|---|---|---|---|---|---|---|
| 6015 | 6:30 | 7:00 | | | 30 | |
| 079 | 7:00 | 10:00 | | 3 | | |
| 082 | 10:00 | 13:15 | | 3 | 15 | |
| 083 | 13:15 | 14:45 | | 1 | 30 | |
| 060 | 14:45 | 18:00 | | 3 | 15 | |
| 042 | 18:00 | 18:30 | | | 30 | |

Customer's signature verifies arrival and departure times and authorizes any demurrage charges to be billed by Clean Harbors when applicable as outlined in your quote or contract.

Customer's Signature: _____ Date: _____

Driver's Signature: [signature] Date: 11/6/9

P27 405795

WORK ORDER NO. _____

DOCUMENT NO. 294745 STRAIGHT BILL OF LADING

TRANSPORTER 1 CLEAN HARBORS ENV. SVCS. INC. VEHICLE ID # _____

EPA ID # MAD 039322250 TRANS. 1 PHONE (800) 483-3718

TRANSPORTER 2 _____ VEHICLE ID # _____

EPA ID # _____ TRANS. 2 PHONE _____

| | |
|---|---|
| DESIGNATED FACILITY CHEMICAL WASTE MANAGEMENT, NW | SHIPPER US EPA-REGION 10 NW PIPE AND CASING CO. SUPERFUND SITE |
| FACILITY EPA ID # ORD089452353 | SHIPPER EPA ID # ORD980988307 |
| ADDRESS 17629 CEDAR SPRINGS LANE | ADDRESS 9585 MATHER ROAD |
| CITY ARLINGTON STATE OR ZIP 97812 | CITY CLACKAMAS STATE OR ZIP 97015 |

| CONTAINERS NO. & SIZE | TYPE | HM | DESCRIPTION OF MATERIALS | TOTAL QUANTITY | UNIT WT/VOL |
|---|---|---|---|---|---|
| 001 | TT | | A. NON-HAZARDOUS NON-D.O.T. REGULATED (WATER SEDIMENT) | 2500 | G |
| | | | B. | | |
| | | | C. | | |
| | | | D. | | |
| | | | E. | | |
| | | | F. | | |
| | | | G. | | |
| | | | H. | | |

SPECIAL HANDLING INSTRUCTIONS
LINE A: PROFILE # OR297828 PO-W090117141

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

| | PRINT | SIGN | DATE |
|---|---|---|---|
| SHIPPER | Caleb Palmer Caleb | Caleb Palmer | 11/6/09 |
| TRANSPORTER 1 | James J. Bowdre | James J. Bowdre | 11.6.09 |
| TRANSPORTER 2 | | | |
| RECEIVED BY | Jullie Mikkalo | Jullie Mikkalo | 11-6-09 |

3

CHI 107

**Chemical Waste Management Of The Northwest**

17629 Cedar Springs Lane
Arlington, Oregon 97812
541-454-2643
EPA I.D.# ORD089452353

9.1

LOAD NO. 405795 TI25914

MANIFEST DOC. NO. 294745

100G Washout

NO RADIO

GROSS 61100 lb

W-TARE 37200 lb
NET 23900 lb
2:02 PM 6 NOV 2009
Vehicle ID P27

NET 11.35 TON
2:58 PM
Vehicle ID P27

2626 G

GENERATOR Clean Harbors

**WASTE DISPOSAL LOG**
**Non-Hazardous (Subtitle D)**

**NW PIPE CASING**
**Clackamas, Oregon**

**WASTE CONNECTIONS**
**Permit No. 2042-09-068**

| Date | Man. No. | Net Weight | Accum. Weight | Transp. Cost | Disposal Cost | Cost Per Load | Accum. Cost | Daily Sub-Total | | Ticket No. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Tons | Cost | |
| 9/25/09 | 1 | 32.37 | 32.37 | $545 | $517 | $1,062 | $1,062 | | | |
| 9/25/09 | 2 | 32.52 | 64.89 | $547 | $520 | $1,067 | $2,129 | | | |
| 9/25/09 | 3 | 31.81 | 96.70 | $535 | $508 | $1,044 | $3,173 | | | |
| 9/25/09 | 4 | 32.35 | 129.05 | $544 | $517 | $1,061 | $4,234 | | | |
| 9/25/09 | 5 | 32.73 | 161.78 | $551 | $523 | $1,074 | $5,308 | | | |
| 9/25/09 | 6 | 30.69 | 192.47 | $517 | $490 | $1,007 | $6,315 | | | |
| 9/25/09 | 7 | 33.16 | 225.63 | $558 | $530 | $1,088 | $7,403 | | | |
| 9/25/09 | 8 | 26.93 | 252.56 | $453 | $430 | $884 | $8,286 | | | |
| 9/25/09 | 9 | 31.43 | 283.99 | $529 | $502 | $1,031 | $9,318 | | | |
| 9/25/09 | 10 | 32.25 | 316.24 | $543 | $515 | $1,058 | $10,376 | | | |
| 9/25/09 | 11 | 31.20 | 347.44 | $525 | $499 | $1,024 | $11,400 | | | |
| 9/25/09 | 12 | 33.37 | 380.81 | $562 | $533 | $1,095 | $12,494 | | | |
| 9/25/09 | 13 | 32.71 | 413.52 | $551 | $523 | $1,073 | $13,568 | | | |
| 9/25/09 | 14 | 33.65 | 447.17 | $566 | $538 | $1,104 | $14,672 | | | |
| 9/25/09 | 15 | 33.51 | 480.68 | $564 | $535 | $1,099 | $15,771 | | | |
| 9/25/09 | 16 | 32.15 | 512.83 | $541 | $514 | $1,055 | $16,826 | | | |
| 9/25/09 | 17 | 31.36 | 544.19 | $528 | $501 | $1,029 | $17,855 | | | |
| 9/25/09 | 18 | 31.88 | 576.07 | $537 | $509 | $1,046 | $18,901 | | | |
| 9/25/09 | 19 | 32.24 | 608.31 | $543 | $515 | $1,058 | $19,959 | | | |
| 9/25/09 | 20 | 32.60 | 640.91 | $549 | $521 | $1,070 | $21,028 | | | |
| 9/25/09 | 21 | 31.16 | 672.07 | $524 | $498 | $1,022 | $22,051 | | | |
| 9/25/09 | 22 | 33.17 | 705.24 | $558 | $530 | $1,088 | $23,139 | **705** | **$23,139** | |
| 9/28/09 | 23 | 31.69 | 736.93 | $533 | $506 | $1,040 | $24,179 | | | |
| 9/28/09 | 24 | 29.97 | 766.90 | $504 | $479 | $983 | $25,162 | | | |
| 9/28/09 | 25 | 35.05 | 801.95 | $590 | $560 | $1,150 | $26,312 | | | |
| 9/28/09 | 26 | 30.60 | 832.55 | $515 | $489 | $1,004 | $27,316 | | | |
| 9/28/09 | 27 | 33.56 | 866.11 | $565 | $536 | $1,101 | $28,417 | | | |
| 9/28/09 | 28 | 29.48 | 895.59 | $496 | $471 | $967 | $29,384 | | | |
| 9/28/09 | 29 | 30.27 | 925.86 | $509 | $484 | $993 | $30,377 | | | |
| 9/28/09 | 30 | 31.44 | 957.30 | $529 | $502 | $1,032 | $31,409 | | | |
| 9/28/09 | 31 | 25.79 | 983.09 | $434 | $412 | $846 | $32,255 | | | |
| 9/28/09 | 32 | 32.09 | 1,015.18 | $540 | $513 | $1,053 | $33,308 | | | |
| 9/28/09 | 33 | 30.80 | 1,045.98 | $518 | $492 | $1,011 | $34,319 | | | |
| 9/28/09 | 34 | 31.15 | 1,077.13 | $524 | $498 | $1,022 | $35,341 | | | |
| 9/28/09 | 35 | 31.60 | 1,108.73 | $532 | $505 | $1,037 | $36,377 | | | |
| 9/28/09 | 36 | 30.81 | 1,139.54 | $519 | $492 | $1,011 | $37,388 | | | |
| 9/28/09 | 37 | 32.57 | 1,172.11 | $548 | $520 | $1,069 | $38,457 | | | |
| 9/28/09 | 38 | 33.62 | 1,205.73 | $566 | $537 | $1,103 | $39,560 | | | |
| 9/28/09 | 39 | 32.27 | 1,238.00 | $543 | $516 | $1,059 | $40,619 | | | |
| 9/28/09 | 40 | 30.05 | 1,268.05 | $506 | $480 | $986 | $41,605 | | | |
| 9/28/09 | 41 | 31.23 | 1,299.28 | $526 | $499 | $1,025 | $42,629 | | | |
| 9/28/09 | 42 | 31.38 | 1,330.66 | $528 | $501 | $1,030 | $43,659 | | | |
| 9/28/09 | 43 | 28.69 | 1,359.35 | $483 | $458 | $941 | $44,600 | | | |
| 9/28/09 | 44 | 33.71 | 1,393.06 | $567 | $539 | $1,106 | $45,706 | | | |
| 9/28/09 | 45 | 30.77 | 1,423.83 | $518 | $492 | $1,010 | $46,716 | | | |
| 9/28/09 | 46 | 31.73 | 1,455.56 | $534 | $507 | $1,041 | $47,757 | | | |
| 9/28/09 | 47 | 32.82 | 1,488.38 | $552 | $524 | $1,077 | $48,834 | | | |
| 9/28/09 | 48 | 31.05 | 1,519.43 | $523 | $496 | $1,019 | $49,852 | | | |
| 9/28/09 | 49 | 32.25 | 1,551.68 | $543 | $515 | $1,058 | $50,911 | | | |
| 9/28/09 | 50 | 32.11 | 1,583.79 | $540 | $513 | $1,054 | $51,964 | | | |
| 9/28/09 | 51 | 30.37 | 1,614.16 | $511 | $485 | $996 | $52,961 | | | |
| 9/28/09 | 52 | 32.79 | 1,646.95 | $552 | $524 | $1,076 | $54,036 | | | |
| 9/28/09 | 53 | 32.72 | 1,679.67 | $551 | $523 | $1,074 | $55,110 | | | |

**WASTE DISPOSAL LOG**
**Non-Hazardous (Subtitle D)**

**NW PIPE CASING**
**Clackamas, Oregon**

**WASTE CONNECTIONS**
**Permit No. 2042-09-068**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 9/28/09 | 54 | 33.69 | 1,713.36 | $567 | $538 | $1,105 | $56,215 | **1008** | **$33,076** |
| 9/29/09 | 55 | 32.51 | 1,745.87 | $547 | $520 | $1,067 | $57,282 | | |
| 9/29/09 | 56 | 33.57 | 1,779.44 | $565 | $536 | $1,101 | $58,383 | | |
| 9/29/09 | 57 | 32.31 | 1,811.75 | $544 | $516 | $1,060 | $59,444 | | |
| 9/29/09 | 58 | 32.60 | 1,844.35 | $549 | $521 | $1,070 | $60,513 | | |
| 9/29/09 | 59 | 32.73 | 1,877.08 | $551 | $523 | $1,074 | $61,587 | | |
| 9/29/09 | 60 | 31.54 | 1,908.62 | $531 | $504 | $1,035 | $62,622 | | |
| 9/29/09 | 61 | 28.70 | 1,937.32 | $483 | $459 | $942 | $63,563 | | |
| 9/29/09 | 62 | 33.07 | 1,970.39 | $557 | $528 | $1,085 | $64,648 | | |
| 9/29/09 | 63 | 31.51 | 2,001.90 | $530 | $504 | $1,034 | $65,682 | | |
| 9/29/09 | 64 | 32.52 | 2,034.42 | $547 | $520 | $1,067 | $66,749 | | |
| 9/29/09 | 65 | 28.43 | 2,062.85 | $478 | $454 | $933 | $67,682 | | |
| 9/29/09 | 66 | 28.72 | 2,091.57 | $483 | $459 | $942 | $68,624 | | |
| 9/29/09 | 67 | 32.56 | 2,124.13 | $548 | $520 | $1,068 | $69,693 | | |
| 9/29/09 | 68 | 35.07 | 2,159.20 | $590 | $560 | $1,151 | $70,843 | | |
| 9/29/09 | 69 | 27.70 | 2,186.90 | $466 | $443 | $909 | $71,752 | | |
| 9/29/09 | 70 | 32.10 | 2,219.00 | $540 | $513 | $1,053 | $72,805 | | |
| 9/29/09 | 71 | 28.32 | 2,247.32 | $477 | $453 | $929 | $73,735 | | |
| 9/29/09 | 72 | 31.61 | 2,278.93 | $532 | $505 | $1,037 | $74,772 | | |
| 9/29/09 | 73 | 32.30 | 2,311.23 | $544 | $516 | $1,060 | $75,831 | | |
| 9/29/09 | 74 | 27.77 | 2,339.00 | $467 | $444 | $911 | $76,743 | | |
| 9/29/09 | 75 | 33.50 | 2,372.50 | $564 | $535 | $1,099 | $77,842 | | |
| 9/29/09 | 76 | 33.60 | 2,406.10 | $565 | $537 | $1,102 | $78,944 | | |
| 9/29/09 | 77 | 26.28 | 2,432.38 | $442 | $420 | $862 | $79,806 | | |
| 9/29/09 | 78 | 34.36 | 2,466.74 | $578 | $549 | $1,127 | $80,934 | | |
| 9/29/09 | 79 | 32.76 | 2,499.50 | $551 | $524 | $1,075 | $82,009 | | |
| 9/29/09 | 80 | 28.79 | 2,528.29 | $485 | $460 | $945 | $82,953 | | |
| 9/29/09 | 81 | 33.41 | 2,561.70 | $562 | $534 | $1,096 | $84,049 | | |
| 9/29/09 | 82 | 28.77 | 2,590.47 | $484 | $460 | $944 | $84,993 | | |
| 9/29/09 | 83 | 30.74 | 2,621.21 | $517 | $491 | $1,009 | $86,002 | | |
| 9/29/09 | 84 | 32.38 | 2,653.59 | $545 | $517 | $1,062 | $87,064 | | |
| 9/29/09 | 85 | 32.19 | 2,685.78 | $542 | $514 | $1,056 | $88,120 | | |
| 9/29/09 | 86 | 35.11 | 2,720.89 | $591 | $561 | $1,152 | $89,272 | | |
| 9/29/09 | 87 | 32.45 | 2,753.34 | $546 | $519 | $1,065 | $90,337 | | |
| 9/29/09 | 88 | 30.67 | 2,784.01 | $516 | $490 | $1,006 | $91,343 | **1071** | **$35,128** |
| 9/30/09 | 89 | 33.80 | 2,817.81 | $569 | $540 | $1,109 | $92,452 | | |
| 9/30/09 | 90 | 33.50 | 2,851.31 | $564 | $535 | $1,099 | $93,551 | | |
| 9/30/09 | 91 | 31.46 | 2,882.77 | $529 | $503 | $1,032 | $94,584 | | |
| 9/30/09 | 92 | 33.60 | 2,916.37 | $565 | $537 | $1,102 | $95,686 | | |
| 9/30/09 | 93 | 30.79 | 2,947.16 | $518 | $492 | $1,010 | $96,696 | | |
| 9/30/09 | 94 | 30.30 | 2,977.46 | $510 | $484 | $994 | $97,690 | | |
| 9/30/09 | 95 | 28.09 | 3,005.55 | $473 | $449 | $922 | $98,612 | | |
| 9/30/09 | 96 | 32.02 | 3,037.57 | $539 | $512 | $1,051 | $99,663 | | |
| 9/30/09 | 97 | 31.28 | 3,068.85 | $526 | $500 | $1,026 | $100,689 | | |
| 9/30/09 | 98 | 32.50 | 3,101.35 | $547 | $519 | $1,066 | $101,755 | | |
| 9/30/09 | 99 | 32.77 | 3,134.12 | $552 | $524 | $1,075 | $102,830 | | |
| 9/30/09 | 100 | 33.39 | 3,167.51 | $562 | $534 | $1,096 | $103,926 | | |
| 9/30/09 | 101 | 31.16 | 3,198.67 | $524 | $498 | $1,022 | $104,948 | | |
| 9/30/09 | 102 | 33.28 | 3,231.95 | $560 | $532 | $1,092 | $106,040 | | |
| 9/30/09 | 103 | 33.95 | 3,265.90 | $571 | $543 | $1,114 | $107,154 | | |
| 9/30/09 | 104 | 32.19 | 3,298.09 | $542 | $514 | $1,056 | $108,210 | | |
| 9/30/09 | 105 | 31.00 | 3,329.09 | $522 | $495 | $1,017 | $109,227 | | |
| 9/30/09 | 106 | 31.61 | 3,360.70 | $532 | $505 | $1,037 | $110,265 | | |
| 9/30/09 | 107 | 32.99 | 3,393.69 | $555 | $527 | $1,082 | $111,347 | | |
| 9/30/09 | 108 | 30.51 | 3,424.20 | $513 | $488 | $1,001 | $112,348 | | |

**WASTE DISPOSAL LOG** **NW PIPE CASING** **WASTE CONNECTIONS**
**Non-Hazardous (Subtitle D)** **Clackamas, Oregon** **Permit No. 2042-09-068**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 9/30/09 | 109 | 32.05 | 3,456.25 | $539 | $512 | $1,052 | $113,400 | | | |
| 9/30/09 | 110 | 32.10 | 3,488.35 | $540 | $513 | $1,053 | $114,453 | | | |
| 9/30/09 | 111 | 31.92 | 3,520.27 | $537 | $510 | $1,047 | $115,500 | | | |
| 9/30/09 | 112 | 28.95 | 3,549.22 | $487 | $463 | $950 | $116,450 | | | |
| 9/30/09 | 113 | 28.38 | 3,577.60 | $478 | $454 | $931 | $117,381 | | | |
| 9/30/09 | 114 | 30.98 | 3,608.58 | $521 | $495 | $1,016 | $118,398 | | | |
| 9/30/09 | 115 | 33.27 | 3,641.85 | $560 | $532 | $1,092 | $119,489 | | | |
| 9/30/09 | 116 | 31.86 | 3,673.71 | $536 | $509 | $1,045 | $120,534 | | | |
| 9/30/09 | 117 | 32.66 | 3,706.37 | $550 | $522 | $1,072 | $121,606 | | | |
| 9/30/09 | 118 | 33.64 | 3,740.01 | $566 | $538 | $1,104 | $122,710 | | | |
| 9/30/09 | 119 | 31.10 | 3,771.11 | $523 | $497 | $1,020 | $123,730 | | | |
| 9/30/09 | 120 | 30.75 | 3,801.86 | $518 | $491 | $1,009 | $124,739 | | | |
| 9/30/09 | 121 | 34.43 | 3,836.29 | $579 | $550 | $1,130 | $125,869 | | | |
| 9/30/09 | 122 | 32.28 | 3,868.57 | $543 | $516 | $1,059 | $126,928 | | | |
| 9/30/09 | 123 | 32.49 | 3,901.06 | $547 | $519 | $1,066 | $127,994 | | | 39431 |
| 9/30/09 | 124 | 33.27 | 3,934.33 | $560 | $532 | $1,092 | $129,085 | | | 39429 |
| 9/30/09 | 125 | 33.79 | 3,968.12 | $569 | $540 | $1,109 | $130,194 | | | 39430 |
| 9/30/09 | 126 | 32.18 | 4,000.30 | $542 | $514 | $1,056 | $131,250 | | | 39434 |
| 9/30/09 | 127 | 32.49 | 4,032.79 | $547 | $519 | $1,066 | $132,316 | **1249** | **$40,972** | 39432 |
| 10/1/09 | 128 | 32.14 | 4,064.93 | $541 | $514 | $1,055 | $133,370 | | | 39446 |
| 10/1/09 | 129 | 32.30 | 4,097.23 | $544 | $516 | $1,060 | $134,430 | | | 39445 |
| 10/1/09 | 130 | 33.39 | 4,130.62 | $562 | $534 | $1,096 | $135,526 | | | 39455 |
| 10/1/09 | 131 | 31.19 | 4,161.81 | $525 | $498 | $1,023 | $136,549 | | | 39450 |
| 10/1/09 | 132 | 30.83 | 4,192.64 | $519 | $493 | $1,012 | $137,561 | | | 39457 |
| 10/1/09 | 133 | 27.98 | 4,220.62 | $471 | $447 | $918 | $138,479 | | | 39453 |
| 10/1/09 | 134 | 32.17 | 4,252.79 | $541 | $514 | $1,055 | $139,534 | | | 39456 |
| 10/1/09 | 135 | 33.42 | 4,286.21 | $562 | $534 | $1,097 | $140,631 | | | 39461 |
| 10/1/09 | 136 | 30.67 | 4,316.88 | $516 | $490 | $1,006 | $141,637 | | | 39460 |
| 10/1/09 | 137 | 31.13 | 4,348.01 | $524 | $497 | $1,021 | $142,658 | | | 39463 |
| 10/1/09 | 138 | 26.36 | 4,374.37 | $444 | $421 | $865 | $143,523 | | | 39468 |
| 10/1/09 | 139 | 32.70 | 4,407.07 | $550 | $523 | $1,073 | $144,596 | | | 39465 |
| 10/1/09 | 140 | 32.54 | 4,439.61 | $548 | $520 | $1,068 | $145,664 | | | 39466 |
| 10/1/09 | 141 | 32.75 | 4,472.36 | $551 | $523 | $1,075 | $146,738 | | | 39472 |
| 10/1/09 | 142 | 32.19 | 4,504.55 | $542 | $514 | $1,056 | $147,794 | | | 39469 |
| 10/1/09 | 143 | 32.04 | 4,536.59 | $539 | $512 | $1,051 | $148,846 | | | 39475 |
| 10/1/09 | 144 | 33.31 | 4,569.90 | $561 | $532 | $1,093 | $149,938 | | | 39481 |
| 10/1/09 | 145 | 32.54 | 4,602.44 | $548 | $520 | $1,068 | $151,006 | | | 39483 |
| 10/1/09 | 146 | 32.31 | 4,634.75 | $544 | $516 | $1,060 | $152,066 | | | 39488 |
| 10/1/09 | 147 | 33.03 | 4,667.78 | $556 | $528 | $1,084 | $153,150 | | | 39491 |
| 10/1/09 | 148 | 32.23 | 4,700.01 | $542 | $515 | $1,057 | $154,207 | | | 39501 |
| 10/1/09 | 149 | 32.02 | 4,732.03 | $539 | $512 | $1,051 | $155,258 | | | 39505 |
| 10/1/09 | 150 | 31.48 | 4,763.51 | $530 | $503 | $1,033 | $156,291 | | | 39506 |
| 10/1/09 | 151 | 31.95 | 4,795.46 | $538 | $511 | $1,048 | $157,339 | | | 39507 |
| 10/1/09 | 152 | 32.84 | 4,828.30 | $553 | $525 | $1,077 | $158,417 | | | 39519 |
| 10/1/09 | 153 | 29.24 | 4,857.54 | $492 | $467 | $959 | $159,376 | | | 39508 |
| 10/1/09 | 154 | 31.98 | 4,889.52 | $538 | $511 | $1,049 | $160,425 | | | 39509 |
| 10/1/09 | 155 | 30.46 | 4,919.98 | $513 | $487 | $999 | $161,425 | | | 39511 |
| 10/1/09 | 156 | 31.58 | 4,951.56 | $531 | $505 | $1,036 | $162,461 | | | 39516 |
| 10/1/09 | 157 | 30.73 | 4,982.29 | $517 | $491 | $1,008 | $163,469 | | | 39517 |
| 10/1/09 | 158 | 33.07 | 5,015.36 | $557 | $528 | $1,085 | $164,554 | | | 39518 |
| 10/1/09 | 159 | 32.63 | 5,047.99 | $549 | $521 | $1,071 | $165,625 | | | 39520 |
| 10/1/09 | 160 | 31.97 | 5,079.96 | $538 | $511 | $1,049 | $166,673 | | | 39527 |
| 10/1/09 | 161 | 32.97 | 5,112.93 | $555 | $527 | $1,082 | $167,755 | | | 39524 |
| 10/1/09 | 162 | 31.65 | 5,144.58 | $533 | $506 | $1,038 | $168,794 | | | 39525 |
| 10/1/09 | 163 | 32.27 | 5,176.85 | $543 | $516 | $1,059 | $169,852 | | | 39529 |

**WASTE DISPOSAL LOG**
**Non-Hazardous (Subtitle D)**

**NW PIPE CASING**
**Clackamas, Oregon**

**WASTE CONNECTIONS**
**Permit No. 2042-09-068**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 10/1/09 | 164 | 27.69 | 5,204.54 | $466 | $442 | $909 | $170,761 | **1172** | **$38,445** | 39535 |
| 10/2/09 | 165 | 32.10 | 5,236.64 | $540 | $513 | $1,053 | $171,814 | | | 39544 |
| 10/2/09 | 166 | 34.41 | 5,271.05 | $579 | $550 | $1,129 | $172,943 | | | 39545 |
| 10/2/09 | 167 | 31.82 | 5,302.87 | $536 | $508 | $1,044 | $173,987 | | | 39563 |
| 10/2/09 | 168 | 33.71 | 5,336.58 | $567 | $539 | $1,106 | $175,093 | | | 39577 |
| 10/2/09 | 169 | 31.91 | 5,368.49 | $537 | $510 | $1,047 | $176,140 | | | 39569 |
| 10/2/09 | 170 | 28.82 | 5,397.31 | $485 | $461 | $946 | $177,086 | | | 39568 |
| 10/2/09 | 171 | 31.43 | 5,428.74 | $529 | $502 | $1,031 | $178,117 | | | 39576 |
| 10/2/09 | 172 | 32.48 | 5,461.22 | $547 | $519 | $1,066 | $179,183 | | | 39572 |
| 10/2/09 | 173 | 29.62 | 5,490.84 | $499 | $473 | $972 | $180,154 | | | 39579 |
| 10/2/09 | 174 | 31.89 | 5,522.73 | $537 | $510 | $1,046 | $181,201 | | | 39580 |
| 10/2/09 | 175 | 27.22 | 5,549.95 | $458 | $435 | $893 | $182,094 | | | 39581 |
| 10/2/09 | 176 | 31.09 | 5,581.04 | $523 | $497 | $1,020 | $183,114 | | | 39583 |
| 10/2/09 | 177 | 31.97 | 5,613.01 | $538 | $511 | $1,049 | $184,163 | | | 39585 |
| 10/2/09 | 178 | 31.84 | 5,644.85 | $536 | $509 | $1,045 | $185,208 | | | 39613 |
| 10/2/09 | 179 | 30.55 | 5,675.40 | $514 | $488 | $1,002 | $186,210 | | | 39592 |
| 10/2/09 | 180 | 32.63 | 5,708.03 | $549 | $521 | $1,071 | $187,280 | | | 39601 |
| 10/2/09 | 181 | 33.69 | 5,741.72 | $567 | $538 | $1,105 | $188,386 | | | 39602 |
| 10/2/09 | 182 | 31.94 | 5,773.66 | $538 | $510 | $1,048 | $189,434 | | | 39616 |
| 10/2/09 | 183 | 28.85 | 5,802.51 | $486 | $461 | $947 | $190,380 | | | 39618 |
| 10/2/09 | 184 | 31.52 | 5,834.03 | $530 | $504 | $1,034 | $191,415 | | | 39625 |
| 10/2/09 | 185 | 31.04 | 5,865.07 | $522 | $496 | $1,018 | $192,433 | | | 39637 |
| 10/2/09 | 186 | 32.45 | 5,897.52 | $546 | $519 | $1,065 | $193,498 | | | 39636 |
| 10/2/09 | 187 | 30.38 | 5,927.90 | $511 | $485 | $997 | $194,494 | | | 39634 |
| 10/2/09 | 188 | 31.87 | 5,959.77 | $536 | $509 | $1,046 | $195,540 | | | 39635 |
| 10/2/09 | 189 | 27.61 | 5,987.38 | $465 | $441 | $906 | $196,446 | | | 39638 |
| 10/2/09 | 190 | 32.29 | 6,019.67 | $543 | $516 | $1,059 | $197,505 | | | 39639 |
| 10/2/09 | 191 | 34.69 | 6,054.36 | $584 | $554 | $1,138 | $198,644 | | | 39656 |
| 10/2/09 | 192 | 33.92 | 6,088.28 | $571 | $542 | $1,113 | $199,756 | **884** | **$28,996** | 39655 |
| 10/5/09 | 193 | 32.61 | 6,120.89 | $549 | $521 | $1,070 | $200,826 | | | 39673 |
| 10/5/09 | 194 | 31.85 | 6,152.74 | $536 | $509 | $1,045 | $201,871 | | | 39675 |
| 10/5/09 | 195 | 33.33 | 6,186.07 | $561 | $533 | $1,094 | $202,965 | | | 39677 |
| 10/5/09 | 196 | 31.64 | 6,217.71 | $533 | $506 | $1,038 | $204,003 | | | 39684 |
| 10/5/09 | 197 | 31.69 | 6,249.40 | $533 | $506 | $1,040 | $205,043 | | | 39699 |
| 10/5/09 | 198 | 25.83 | 6,275.23 | $435 | $413 | $847 | $205,890 | | | 39688 |
| 10/5/09 | 199 | 31.64 | 6,306.87 | $533 | $506 | $1,038 | $206,928 | | | 39697 |
| 10/5/09 | 200 | 33.50 | 6,340.37 | $564 | $535 | $1,099 | $208,028 | | | 39683 |
| 10/5/09 | 201 | 32.04 | 6,372.41 | $539 | $512 | $1,051 | $209,079 | | | 39696 |
| 10/5/09 | 202 | 30.49 | 6,402.90 | $513 | $487 | $1,000 | $210,079 | | | 39698 |
| 10/5/09 | 203 | 31.42 | 6,434.32 | $529 | $502 | $1,031 | $211,110 | | | 39701 |
| 10/5/09 | 204 | 33.28 | 6,467.60 | $560 | $532 | $1,092 | $212,202 | | | 39715 |
| 10/5/09 | 205 | 31.50 | 6,499.10 | $530 | $503 | $1,034 | $213,235 | | | 39707 |
| 10/5/09 | 206 | 26.66 | 6,525.76 | $449 | $426 | $875 | $214,110 | | | 39704 |
| 10/5/09 | 207 | 32.68 | 6,558.44 | $550 | $522 | $1,072 | $215,182 | | | 39712 |
| 10/5/09 | 208 | 34.21 | 6,592.65 | $576 | $547 | $1,122 | $216,305 | **508** | **$16,548** | 39713 |
| 10/6/09 | 209 | 32.06 | 6,624.71 | $540 | $512 | $1,052 | $217,357 | | | 39785 |
| 10/6/09 | 210 | 31.51 | 6,656.22 | $530 | $504 | $1,034 | $218,391 | | | 39784 |
| 10/6/09 | 211 | 31.75 | 6,687.97 | $534 | $507 | $1,042 | $219,432 | | | 39783 |
| 10/6/09 | 212 | 31.54 | 6,719.51 | $531 | $504 | $1,035 | $220,467 | | | 39793 |
| 10/6/09 | 213 | 32.32 | 6,751.83 | $544 | $516 | $1,060 | $221,528 | | | 39792 |
| 10/6/09 | 214 | 30.89 | 6,782.72 | $520 | $494 | $1,014 | $222,541 | | | 39799 |
| 10/6/09 | 215 | 31.04 | 6,813.76 | $522 | $496 | $1,018 | $223,559 | | | 39800 |
| 10/6/09 | 216 | 32.65 | 6,846.41 | $549 | $522 | $1,071 | $224,631 | | | 39803 |
| 10/6/09 | 217 | 30.39 | 6,876.80 | $511 | $486 | $997 | $225,628 | | | 39804 |
| 10/6/09 | 218 | 31.98 | 6,908.78 | $538 | $511 | $1,049 | $226,677 | | | 39805 |

**WASTE DISPOSAL LOG**
**Non-Hazardous (Subtitle D)**

**NW PIPE CASING**
**Clackamas, Oregon**

**WASTE CONNECTIONS**
**Permit No. 2042-09-068**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 10/6/09 | 219 | 32.31 | 6,941.09 | $544 | $516 | $1,060 | $227,737 | | | 39812 |
| 10/6/09 | 220 | 31.57 | 6,972.66 | $531 | $504 | $1,036 | $228,773 | | | 39809 |
| 10/6/09 | 221 | 34.95 | 7,007.61 | $588 | $559 | $1,147 | $229,920 | | | 39810 |
| 10/6/09 | 222 | 32.05 | 7,039.66 | $539 | $512 | $1,052 | $230,971 | | | 39815 |
| 10/6/09 | 223 | 32.47 | 7,072.13 | $546 | $519 | $1,065 | $232,037 | | | 39816 |
| 10/6/09 | 224 | 32.29 | 7,104.42 | $543 | $516 | $1,059 | $233,096 | | | 39843 |
| 10/6/09 | 225 | 32.45 | 7,136.87 | $546 | $519 | $1,065 | $234,161 | | | 39846 |
| 10/6/09 | 226 | 32.03 | 7,168.90 | $539 | $512 | $1,051 | $235,212 | | | 39848 |
| 10/6/09 | 227 | 31.42 | 7,200.32 | $529 | $502 | $1,031 | $236,242 | | | 39852 |
| 10/6/09 | 228 | 31.20 | 7,231.52 | $525 | $499 | $1,024 | $237,266 | | | 39857 |
| 10/6/09 | 229 | 30.96 | 7,262.48 | $521 | $495 | $1,016 | $238,282 | | | 39866 |
| 10/6/09 | 230 | 31.73 | 7,294.21 | $534 | $507 | $1,041 | $239,323 | | | 39867 |
| 10/6/09 | 231 | 31.46 | 7,325.67 | $529 | $503 | $1,032 | $240,355 | | | 39865 |
| 10/6/09 | 232 | 30.01 | 7,355.68 | $505 | $480 | $985 | $241,340 | | | 39868 |
| 10/6/09 | 233 | 30.47 | 7,386.15 | $513 | $487 | $1,000 | $242,340 | | | 39872 |
| 10/6/09 | 234 | 31.95 | 7,418.10 | $538 | $511 | $1,048 | $243,388 | | | 39869 |
| 10/6/09 | 235 | 31.77 | 7,449.87 | $535 | $508 | $1,042 | $244,430 | | | 39876 |
| 10/6/09 | 236 | 32.25 | 7,482.12 | $543 | $515 | $1,058 | $245,488 | | | 39873 |
| 10/6/09 | 237 | 31.43 | 7,513.55 | $529 | $502 | $1,031 | $246,520 | | | 39878 |
| 10/6/09 | 238 | 32.20 | 7,545.75 | $542 | $515 | $1,056 | $247,576 | | | 39896 |
| 10/6/09 | 239 | 34.27 | 7,580.02 | $577 | $548 | $1,124 | $248,700 | | | 39897 |
| 10/6/09 | 240 | 33.04 | 7,613.06 | $556 | $528 | $1,084 | $249,784 | **1020** | **$33,480** | 39908 |
| 10/7/09 | 241 | 31.87 | 7,644.93 | $536 | $509 | $1,046 | $250,830 | | | 39921 |
| 10/7/09 | 242 | 32.72 | 7,677.65 | $551 | $523 | $1,074 | $251,904 | | | 39927 |
| 10/7/09 | 243 | 31.53 | 7,709.18 | $531 | $504 | $1,034 | $252,938 | | | 39930 |
| 10/7/09 | 244 | 32.99 | 7,742.17 | $555 | $527 | $1,082 | $254,021 | | | 39928 |
| 10/7/09 | 245 | 31.48 | 7,773.65 | $530 | $503 | $1,033 | $255,053 | | | 39935 |
| 10/7/09 | 246 | 32.97 | 7,806.62 | $555 | $527 | $1,082 | $256,135 | | | 39933 |
| 10/7/09 | 247 | 32.28 | 7,838.90 | $543 | $516 | $1,059 | $257,194 | | | 39936 |
| 10/7/09 | 248 | 30.54 | 7,869.44 | $514 | $488 | $1,002 | $258,196 | | | 39944 |
| 10/7/09 | 249 | 31.56 | 7,901.00 | $531 | $504 | $1,035 | $259,232 | | | 39949 |
| 10/7/09 | 250 | 32.42 | 7,933.42 | $546 | $518 | $1,064 | $260,296 | | | 39954 |
| 10/7/09 | 251 | 31.97 | 7,965.39 | $538 | $511 | $1,049 | $261,344 | | | 39961 |
| 10/7/09 | 252 | 32.52 | 7,997.91 | $547 | $520 | $1,067 | $262,411 | | | 39975 |
| 10/7/09 | 253 | 33.25 | 8,031.16 | $560 | $531 | $1,091 | $263,502 | | | 39976 |
| 10/7/09 | 254 | 31.58 | 8,062.74 | $531 | $505 | $1,036 | $264,538 | | | 40001 |
| 10/7/09 | 255 | 32.25 | 8,094.99 | $543 | $515 | $1,058 | $265,597 | | | 40010 |
| 10/7/09 | 256 | 32.75 | 8,127.74 | $551 | $523 | $1,075 | $266,671 | | | 40011 |
| 10/7/09 | 257 | 32.57 | 8,160.31 | $548 | $520 | $1,069 | $267,740 | | | 40012 |
| 10/7/09 | 258 | 30.85 | 8,191.16 | $519 | $493 | $1,012 | $268,752 | | | 40018 |
| 10/7/09 | 259 | 30.93 | 8,222.09 | $521 | $494 | $1,015 | $269,767 | | | 40019 |
| 10/7/09 | 260 | 32.88 | 8,254.97 | $553 | $525 | $1,079 | $270,846 | | | 40023 |
| 10/7/09 | 261 | 33.11 | 8,288.08 | $557 | $529 | $1,086 | $271,932 | | | 40027 |
| 10/7/09 | 262 | 31.63 | 8,319.71 | $532 | $505 | $1,038 | $272,970 | | | 40030 |
| 10/7/09 | 263 | 32.04 | 8,351.75 | $539 | $512 | $1,051 | $274,021 | | | 40037 |
| 10/7/09 | 264 | 34.54 | 8,386.29 | $581 | $552 | $1,133 | $275,154 | | | 40040 |
| 10/7/09 | 265 | 31.70 | 8,417.99 | $534 | $507 | $1,040 | $276,194 | | | 40060 |
| 10/8/09 | 266 | 34.03 | 8,452.02 | $573 | $544 | $1,117 | $277,311 | | | 40061 |
| 10/8/09 | 267 | 33.31 | 8,485.33 | $561 | $532 | $1,093 | $278,404 | **872** | **$28,619** | 40065 |
| 10/8/09 | 268 | 33.72 | 8,519.05 | $568 | $539 | $1,106 | $279,510 | | | 40090 |
| 10/8/09 | 269 | 32.08 | 8,551.13 | $540 | $513 | $1,053 | $280,563 | | | 40084 |
| 10/8/09 | 270 | 32.28 | 8,583.41 | $543 | $516 | $1,059 | $281,622 | | | 40085 |
| 10/8/09 | 271 | 30.67 | 8,614.08 | $516 | $490 | $1,006 | $282,628 | | | 40095 |
| 10/8/09 | 272 | 32.85 | 8,646.93 | $553 | $525 | $1,078 | $283,706 | | | 40092 |
| 10/8/09 | 273 | 32.44 | 8,679.37 | $546 | $518 | $1,064 | $284,770 | | | 40096 |

**WASTE DISPOSAL LOG**
**Non-Hazardous (Subtitle D)**

**NW PIPE CASING**
**Clackamas, Oregon**

**WASTE CONNECTIONS**
**Permit No. 2042-09-068**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 10/8/09 | 274 | 30.71 | 8,710.08 | $517 | $491 | $1,008 | $285,778 | | | 40099 |
| 10/8/09 | 275 | 31.29 | 8,741.37 | $527 | $500 | $1,027 | $286,804 | | | 40100 |
| 10/8/09 | 276 | 32.46 | 8,773.83 | $546 | $519 | $1,065 | $287,869 | | | 40105 |
| 10/8/09 | 277 | 31.61 | 8,805.44 | $532 | $505 | $1,037 | $288,906 | | | 40109 |
| 10/8/09 | 278 | 32.94 | 8,838.38 | $554 | $526 | $1,081 | $289,987 | | | 40112 |
| 10/8/09 | 279 | 32.37 | 8,870.75 | $545 | $517 | $1,062 | $291,049 | | | 40111 |
| 10/8/09 | 280 | 32.76 | 8,903.51 | $551 | $524 | $1,075 | $292,124 | | | 40119 |
| 10/8/09 | 281 | 33.27 | 8,936.78 | $560 | $532 | $1,092 | $293,216 | | | 40120 |
| 10/8/09 | 282 | 33.16 | 8,969.94 | $558 | $530 | $1,088 | $294,304 | | | 40133 |
| 10/8/09 | 283 | 32.37 | 9,002.31 | $545 | $517 | $1,062 | $295,366 | | | 40146 |
| 10/8/09 | 284 | 31.47 | 9,033.78 | $530 | $503 | $1,033 | $296,398 | | | 40159 |
| 10/8/09 | 285 | 31.26 | 9,065.04 | $526 | $500 | $1,026 | $297,424 | | | 40160 |
| 10/8/09 | 286 | 32.27 | 9,097.31 | $543 | $516 | $1,059 | $298,483 | | | 40163 |
| 10/8/09 | 287 | 32.96 | 9,130.27 | $555 | $527 | $1,081 | $299,564 | | | 40166 |
| 10/8/09 | 288 | 32.65 | 9,162.92 | $549 | $522 | $1,071 | $300,635 | | | 40167 |
| 10/8/09 | 289 | 31.63 | 9,194.55 | $532 | $505 | $1,038 | $301,673 | | | 40172 |
| 10/8/09 | 290 | 30.23 | 9,224.78 | $509 | $483 | $992 | $302,665 | | | 40173 |
| 10/8/09 | 291 | 30.21 | 9,254.99 | $508 | $483 | $991 | $303,656 | | | 40185 |
| 10/8/09 | 292 | 33.03 | 9,288.02 | $556 | $528 | $1,084 | $304,740 | | | 40187 |
| 10/8/09 | 293 | 33.13 | 9,321.15 | $558 | $529 | $1,087 | $305,827 | | | 40206 |
| 10/8/09 | 294 | 33.52 | 9,354.67 | $564 | $536 | $1,100 | $306,927 | | | 40212 |
| 10/8/09 | 295 | 33.90 | 9,388.57 | $571 | $542 | $1,112 | $308,039 | **903** | **$29,635** | 40207 |
| 10/9/09 | 296 | 32.32 | 9,420.89 | $544 | $516 | $1,060 | $309,099 | | | 40224 |
| 10/9/09 | 297 | 32.42 | 9,453.31 | $546 | $518 | $1,064 | $310,163 | | | 40225 |
| 10/9/09 | 298 | 33.56 | 9,486.87 | $565 | $536 | $1,101 | $311,264 | | | 40226 |
| 10/9/09 | 299 | 0.00 | 9,486.87 | $0 | $0 | $0 | $311,264 | | | |
| 10/9/09 | 300 | 31.12 | 9,517.99 | $524 | $497 | $1,021 | $312,285 | | | 40236 |
| 10/9/09 | 301 | 33.59 | 9,551.58 | $565 | $537 | $1,102 | $313,387 | | | 40231 |
| 10/9/09 | 302 | 31.30 | 9,582.88 | $527 | $500 | $1,027 | $314,414 | | | 40238 |
| 10/9/09 | 303 | 32.28 | 9,615.16 | $543 | $516 | $1,059 | $315,473 | | | 40240 |
| 10/9/09 | 304 | 30.81 | 9,645.97 | $519 | $492 | $1,011 | $316,484 | | | 40242 |
| 10/9/09 | 305 | 33.42 | 9,679.39 | $562 | $534 | $1,097 | $317,581 | | | 40250 |
| 10/9/09 | 306 | 32.64 | 9,712.03 | $549 | $522 | $1,071 | $318,652 | | | 40260 |
| 10/9/09 | 307 | 34.87 | 9,746.90 | $587 | $557 | $1,144 | $319,796 | | | 40270 |
| 10/9/09 | 308 | 32.30 | 9,779.20 | $544 | $516 | $1,060 | $320,856 | | | 40269 |
| 10/9/09 | 309 | 32.33 | 9,811.53 | $544 | $517 | $1,061 | $321,916 | | | 40272 |
| 10/9/09 | 310 | 30.87 | 9,842.40 | $520 | $493 | $1,013 | $322,929 | | | 40280 |
| 10/9/09 | 311 | 32.69 | 9,875.09 | $550 | $522 | $1,073 | $324,002 | | | 40287 |
| 10/9/09 | 312 | 31.41 | 9,906.50 | $529 | $502 | $1,031 | $325,032 | | | 40306 |
| 10/9/09 | 313 | 31.21 | 9,937.71 | $525 | $499 | $1,024 | $326,056 | | | 40303 |
| 10/9/09 | 314 | 30.78 | 9,968.49 | $518 | $492 | $1,010 | $327,066 | | | 40300 |
| 10/9/09 | 315 | 31.29 | 9,999.78 | $527 | $500 | $1,027 | $328,093 | | | 40302 |
| 10/9/09 | 316 | 33.03 | 10,032.81 | $556 | $528 | $1,084 | $329,176 | | | 40310 |
| 10/9/09 | 317 | 31.74 | 10,064.55 | $534 | $507 | $1,041 | $330,218 | | | 40316 |
| 10/9/09 | 318 | 32.46 | 10,097.01 | $546 | $519 | $1,065 | $331,283 | | | 40314 |
| 10/9/09 | 319 | 33.00 | 10,130.01 | $555 | $527 | $1,083 | $332,366 | | | 40420 |
| 10/9/09 | 320 | 32.57 | 10,162.58 | $548 | $520 | $1,069 | $333,434 | | | 40315 |
| 10/9/09 | 321 | 32.13 | 10,194.71 | $541 | $513 | $1,054 | $334,488 | | | 40421 |
| 10/9/09 | 322 | 33.65 | 10,228.36 | $566 | $538 | $1,104 | $335,592 | | | 40349 |
| 10/9/09 | 323 | 32.64 | 10,261.00 | $549 | $522 | $1,071 | $336,663 | **872** | **$28,624** | 40378 |
| 10/19/09 | 324 | 31.79 | 10,292.79 | $535 | $508 | $1,043 | $337,706 | | | 40795 |
| 10/19/09 | 325 | 32.56 | 10,325.35 | $548 | $520 | $1,068 | $338,775 | | | 40809 |
| 10/19/09 | 326 | 30.76 | 10,356.11 | $518 | $492 | $1,009 | $339,784 | | | 40799 |
| 10/19/09 | 327 | 32.23 | 10,388.34 | $542 | $515 | $1,057 | $340,841 | | | 40794 |
| 10/19/09 | 328 | 30.10 | 10,418.44 | $507 | $481 | $988 | $341,829 | | | 40798 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 10/19/09 | 329 | 31.47 | 10,449.91 | $530 | $503 | $1,033 | $342,862 | | | 40801 |
| 10/19/09 | 330 | 32.56 | 10,482.47 | $548 | $520 | $1,068 | $343,930 | | | 40800 |
| 10/19/09 | 331 | 32.02 | 10,514.49 | $539 | $512 | $1,051 | $344,980 | | | 40804 |
| 10/19/09 | 332 | 30.13 | 10,544.62 | $507 | $481 | $989 | $345,969 | | | 40808 |
| 10/19/09 | 333 | 31.09 | 10,575.71 | $523 | $497 | $1,020 | $346,989 | | | 40803 |
| 10/19/09 | 334 | 30.57 | 10,606.28 | $514 | $489 | $1,003 | $347,992 | | | 40810 |
| 10/19/09 | 335 | 29.32 | 10,635.60 | $493 | $469 | $962 | $348,954 | | | 40845 |
| 10/19/09 | 336 | 32.84 | 10,668.44 | $553 | $525 | $1,077 | $350,032 | | | 40834 |
| 10/19/09 | 337 | 32.96 | 10,701.40 | $555 | $527 | $1,081 | $351,113 | | | 40825 |
| 10/19/09 | 338 | 32.49 | 10,733.89 | $547 | $519 | $1,066 | $352,179 | | | 40870 |
| 10/19/09 | 339 | 31.50 | 10,765.39 | $530 | $503 | $1,034 | $353,212 | | | 40871 |
| 10/19/09 | 340 | 31.48 | 10,796.87 | $530 | $503 | $1,033 | $354,245 | | | 40875 |
| 10/19/09 | 341 | 31.85 | 10,828.72 | $536 | $509 | $1,045 | $355,290 | | | 40884 |
| 10/19/09 | 342 | 31.20 | 10,859.92 | $525 | $499 | $1,024 | $356,314 | | | 40877 |
| 10/19/09 | 343 | 32.14 | 10,892.06 | $541 | $514 | $1,055 | $357,368 | | | 40893 |
| 10/19/09 | 344 | 34.16 | 10,926.22 | $575 | $546 | $1,121 | $358,489 | | | 40907 |
| 10/19/09 | 345 | 31.23 | 10,957.45 | $526 | $499 | $1,025 | $359,514 | | | 40885 |
| 10/19/09 | 346 | 30.44 | 10,987.89 | $512 | $486 | $999 | $360,513 | | | 40886 |
| 10/19/09 | 347 | 31.58 | 11,019.47 | $531 | $505 | $1,036 | $361,549 | | | 40887 |
| 10/19/09 | 348 | 31.81 | 11,051.28 | $535 | $508 | $1,044 | $362,592 | | | 40890 |
| 10/19/09 | 349 | 32.51 | 11,083.79 | $547 | $520 | $1,067 | $363,659 | | | 40908 |
| 10/19/09 | 350 | 28.40 | 11,112.19 | $478 | $454 | $932 | $364,591 | | | 40905 |
| 10/19/09 | 351 | 32.65 | 11,144.84 | $549 | $522 | $1,071 | $365,662 | | | 40909 |
| 10/19/09 | 352 | 30.85 | 11,175.69 | $519 | $493 | $1,012 | $366,674 | **915** | **$30,011** | 40913 |
| 10/20/09 | 353 | 27.40 | 11,203.09 | $461 | $438 | $899 | $367,573 | | | 40952 |
| 10/20/09 | 354 | 31.68 | 11,234.77 | $533 | $506 | $1,039 | $368,613 | | | 40929 |
| 10/20/09 | 355 | 32.65 | 11,267.42 | $549 | $522 | $1,071 | $369,684 | | | 40928 |
| 10/20/09 | 356 | 32.06 | 11,299.48 | $540 | $512 | $1,052 | $370,736 | | | 40932 |
| 10/20/09 | 357 | 29.88 | 11,329.36 | $503 | $477 | $980 | $371,716 | | | 40931 |
| 10/20/09 | 358 | 31.35 | 11,360.71 | $528 | $501 | $1,029 | $372,745 | | | 40935 |
| 10/20/09 | 359 | 29.74 | 11,390.45 | $501 | $475 | $976 | $373,721 | | | 40944 |
| 10/20/09 | 360 | 31.70 | 11,422.15 | $534 | $507 | $1,040 | $374,761 | | | 40936 |
| 10/20/09 | 361 | 31.20 | 11,453.35 | $525 | $499 | $1,024 | $375,784 | | | 40939 |
| 10/20/09 | 362 | 32.10 | 11,485.45 | $540 | $513 | $1,053 | $376,838 | | | 40941 |
| 10/20/09 | 363 | 27.88 | 11,513.33 | $469 | $446 | $915 | $377,752 | | | 40947 |
| 10/20/09 | 364 | 31.81 | 11,545.14 | $535 | $508 | $1,044 | $378,796 | | | 40943 |
| 10/20/09 | 365 | 33.03 | 11,578.17 | $556 | $528 | $1,084 | $379,880 | | | 40948 |
| 10/20/09 | 366 | 31.16 | 11,609.33 | $524 | $498 | $1,022 | $380,902 | | | 40951 |
| 10/20/09 | 367 | 35.65 | 11,644.98 | $600 | $570 | $1,170 | $382,072 | | | 40960 |
| 10/20/09 | 368 | 32.43 | 11,677.41 | $546 | $518 | $1,064 | $383,136 | | | 40959 |
| 10/20/09 | 369 | 32.77 | 11,710.18 | $552 | $524 | $1,075 | $384,211 | | | 40970 |
| 10/20/09 | 370 | 31.47 | 11,741.65 | $530 | $503 | $1,033 | $385,244 | | | 40976 |
| 10/20/09 | 371 | 31.08 | 11,772.73 | $523 | $497 | $1,020 | $386,263 | | | 40983 |
| 10/20/09 | 372 | 31.05 | 11,803.78 | $523 | $496 | $1,019 | $387,282 | | | 40984 |
| 10/20/09 | 373 | 31.50 | 11,835.28 | $530 | $503 | $1,034 | $388,316 | | | 40988 |
| 10/20/09 | 374 | 31.94 | 11,867.22 | $538 | $510 | $1,048 | $389,363 | | | 40987 |
| 10/20/09 | 375 | 31.78 | 11,899.00 | $535 | $508 | $1,043 | $390,406 | | | 40992 |
| 10/20/09 | 376 | 32.38 | 11,931.38 | $545 | $517 | $1,062 | $391,469 | | | 40991 |
| 10/20/09 | 377 | 31.85 | 11,963.23 | $536 | $509 | $1,045 | $392,514 | | | 40996 |
| 10/20/09 | 378 | 29.92 | 11,993.15 | $504 | $478 | $982 | $393,495 | | | 41001 |
| 10/20/09 | 379 | 32.41 | 12,025.56 | $545 | $518 | $1,063 | $394,559 | | | 41002 |
| 10/20/09 | 380 | 27.91 | 12,053.47 | $470 | $446 | $916 | $395,474 | | | 41005 |
| 10/20/09 | 381 | 32.46 | 12,085.93 | $546 | $519 | $1,065 | $396,539 | | | 41008 |
| 10/20/09 | 382 | 32.39 | 12,118.32 | $545 | $518 | $1,063 | $397,602 | | | 41007 |
| 10/20/09 | 383 | 34.10 | 12,152.42 | $574 | $545 | $1,119 | $398,721 | | | 41009 |

**WASTE DISPOSAL LOG**
**Non-Hazardous (Subtitle D)**

**NW PIPE CASING**
**Clackamas, Oregon**

**WASTE CONNECTIONS**
**Permit No. 2042-09-068**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 10/20/09 | 384 | 28.54 | 12,180.96 | $480 | $456 | $936 | $399,657 | | | 41017 |
| 10/20/09 | 385 | 33.54 | 12,214.50 | $564 | $536 | $1,100 | $400,758 | | | 41015 |
| 10/20/09 | 386 | 32.76 | 12,247.26 | $551 | $524 | $1,075 | $401,833 | | | 41014 |
| 10/20/09 | 387 | 33.54 | 12,280.80 | $564 | $536 | $1,100 | $402,933 | | | 41016 |
| 10/20/09 | 388 | 31.67 | 12,312.47 | $533 | $506 | $1,039 | $403,972 | **1137** | **$37,298** | 41019 |
| 10/21/09 | 389 | 31.74 | 12,344.21 | $534 | $507 | $1,041 | $405,014 | | | 41032 |
| 10/21/09 | 390 | 31.09 | 12,375.30 | $523 | $497 | $1,020 | $406,034 | | | 41034 |
| 10/21/09 | 391 | 33.05 | 12,408.35 | $556 | $528 | $1,084 | $407,118 | | | 41033 |
| 10/21/09 | 392 | 32.12 | 12,440.47 | $541 | $513 | $1,054 | $408,172 | | | 41039 |
| 10/21/09 | 393 | 30.47 | 12,470.94 | $513 | $487 | $1,000 | $409,172 | | | 41040 |
| 10/21/09 | 394 | 32.04 | 12,502.98 | $539 | $512 | $1,051 | $410,223 | | | 41051 |
| 10/21/09 | 395 | 31.54 | 12,534.52 | $531 | $504 | $1,035 | $411,258 | | | 41048 |
| 10/21/09 | 396 | 31.97 | 12,566.49 | $538 | $511 | $1,049 | $412,307 | | | 41050 |
| 10/21/09 | 397 | 29.30 | 12,595.79 | $493 | $468 | $961 | $413,268 | | | 41056 |
| 10/21/09 | 398 | 33.34 | 12,629.13 | $561 | $533 | $1,094 | $414,362 | | | 41053 |
| 10/21/09 | 399 | 32.14 | 12,661.27 | $541 | $514 | $1,055 | $415,416 | | | 41057 |
| 10/21/09 | 400 | 32.82 | 12,694.09 | $552 | $524 | $1,077 | $416,493 | | | 41508 |
| 10/21/09 | 401 | 32.05 | 12,726.14 | $539 | $512 | $1,052 | $417,545 | | | 41060 |
| 10/21/09 | 402 | 35.17 | 12,761.31 | $592 | $562 | $1,154 | $418,699 | | | 41071 |
| 10/21/09 | 403 | 33.52 | 12,794.83 | $564 | $536 | $1,100 | $419,798 | | | 41067 |
| 10/21/09 | 404 | 30.79 | 12,825.62 | $518 | $492 | $1,010 | $420,809 | | | 41073 |
| 10/21/09 | 405 | 34.04 | 12,859.66 | $573 | $544 | $1,117 | $421,925 | | | 41119 |
| 10/21/09 | 406 | 31.36 | 12,891.02 | $528 | $501 | $1,029 | $422,954 | | | 41079 |
| 10/21/09 | 407 | 31.96 | 12,922.98 | $538 | $511 | $1,049 | $424,003 | | | 41086 |
| 10/21/09 | 408 | 31.11 | 12,954.09 | $524 | $497 | $1,021 | $425,024 | | | 41085 |
| 10/21/09 | 409 | 29.78 | 12,983.87 | $501 | $476 | $977 | $426,001 | | | 41088 |
| 10/21/09 | 410 | 32.43 | 13,016.30 | $546 | $518 | $1,064 | $427,065 | | | 41090 |
| 10/21/09 | 411 | 30.91 | 13,047.21 | $520 | $494 | $1,014 | $428,079 | | | 41091 |
| 10/21/09 | 412 | 32.37 | 13,079.58 | $545 | $517 | $1,062 | $429,141 | | | 41094 |
| 10/21/09 | 413 | 32.41 | 13,111.99 | $545 | $518 | $1,063 | $430,204 | | | 41102 |
| 10/21/09 | 414 | 31.08 | 13,143.07 | $523 | $497 | $1,020 | $431,224 | | | 41106 |
| 10/21/09 | 415 | 31.83 | 13,174.90 | $536 | $509 | $1,044 | $432,268 | | | 41103 |
| 10/21/09 | 416 | 28.79 | 13,203.69 | $485 | $460 | $945 | $433,213 | | | 41104 |
| 10/21/09 | 417 | 32.83 | 13,236.52 | $553 | $525 | $1,077 | $434,290 | | | 41109 |
| 10/21/09 | 418 | 32.78 | 13,269.30 | $552 | $524 | $1,076 | $435,366 | | | 41113 |
| 10/21/09 | 419 | 32.13 | 13,301.43 | $541 | $513 | $1,054 | $436,420 | | | 41110 |
| 10/21/09 | 420 | 31.69 | 13,333.12 | $533 | $506 | $1,040 | $437,460 | | | 41120 |
| 10/21/09 | 421 | 33.44 | 13,366.56 | $563 | $534 | $1,097 | $438,557 | | | 41116 |
| 10/21/09 | 422 | 32.16 | 13,398.72 | $541 | $514 | $1,055 | $439,612 | | | 41117 |
| 10/21/09 | 423 | 31.12 | 13,429.84 | $524 | $497 | $1,021 | $440,633 | | | 41123 |
| 10/21/09 | 424 | 31.49 | 13,461.33 | $530 | $503 | $1,033 | $441,666 | **1149** | **$37,694** | 41121 |
| 10/22/09 | 425 | 32.82 | 13,494.15 | $552 | $524 | $1,077 | $442,743 | | | 41129 |
| 10/22/09 | 426 | 31.88 | 13,526.03 | $537 | $509 | $1,046 | $443,789 | | | 41130 |
| 10/22/09 | 427 | 31.07 | 13,557.10 | $523 | $496 | $1,019 | $444,808 | | | 41133 |
| 10/22/09 | 428 | 31.39 | 13,588.49 | $528 | $502 | $1,030 | $445,838 | | | 41138 |
| 10/22/09 | 429 | 31.77 | 13,620.26 | $535 | $508 | $1,042 | $446,881 | | | 41153 |
| 10/22/09 | 430 | 31.83 | 13,652.09 | $536 | $509 | $1,044 | $447,925 | | | 41140 |
| 10/22/09 | 431 | 31.57 | 13,683.66 | $531 | $504 | $1,036 | $448,961 | | | 41145 |
| 10/22/09 | 432 | 33.43 | 13,717.09 | $563 | $534 | $1,097 | $450,058 | | | 41148 |
| 10/22/09 | 433 | 31.15 | 13,748.24 | $524 | $498 | $1,022 | $451,080 | | | 41150 |
| 10/22/09 | 434 | 34.12 | 13,782.36 | $574 | $545 | $1,119 | $452,199 | | | 41149 |
| 10/22/09 | 435 | 28.90 | 13,811.26 | $486 | $462 | $948 | $453,147 | | | 41159 |
| 10/22/09 | 436 | 33.02 | 13,844.28 | $556 | $528 | $1,083 | $454,231 | | | 41169 |
| 10/22/09 | 437 | 33.22 | 13,877.50 | $559 | $531 | $1,090 | $455,321 | | | 41171 |
| 10/22/09 | 438 | 31.17 | 13,908.67 | $525 | $498 | $1,023 | $456,343 | | | 41177 |

**WASTE DISPOSAL LOG**
**Non-Hazardous (Subtitle D)**

**NW PIPE CASING**
**Clackamas, Oregon**

**WASTE CONNECTIONS**
**Permit No. 2042-09-068**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 10/22/09 | 439 | 31.72 | 13,940.39 | $534 | $507 | $1,041 | $457,384 | | | 41186 |
| 10/22/09 | 440 | 32.29 | 13,972.68 | $543 | $516 | $1,059 | $458,444 | | | 41183 |
| 10/22/09 | 441 | 32.86 | 14,005.54 | $553 | $525 | $1,078 | $459,522 | | | 41185 |
| 10/22/09 | 442 | 31.59 | 14,037.13 | $532 | $505 | $1,036 | $460,558 | | | 41188 |
| 10/22/09 | 443 | 30.82 | 14,067.95 | $519 | $493 | $1,011 | $461,569 | | | 41190 |
| 10/22/09 | 444 | 30.59 | 14,098.54 | $515 | $489 | $1,004 | $462,573 | | | 41198 |
| 10/22/09 | 445 | 30.29 | 14,128.83 | $510 | $484 | $994 | $463,567 | | | 41199 |
| 10/22/09 | 446 | 31.99 | 14,160.82 | $538 | $511 | $1,050 | $464,617 | | | 41202 |
| 10/22/09 | 447 | 31.45 | 14,192.27 | $529 | $503 | $1,032 | $465,648 | | | 41205 |
| 10/22/09 | 448 | 31.46 | 14,223.73 | $529 | $503 | $1,032 | $466,681 | | | 41213 |
| 10/22/09 | 449 | 28.60 | 14,252.33 | $481 | $457 | $938 | $467,619 | | | 41212 |
| 10/22/09 | 450 | 32.46 | 14,284.79 | $546 | $519 | $1,065 | $468,684 | | | 41214 |
| 10/22/09 | 451 | 33.01 | 14,317.80 | $556 | $527 | $1,083 | $469,767 | | | 41218 |
| 10/22/09 | 452 | 32.01 | 14,349.81 | $539 | $512 | $1,050 | $470,817 | | | 41226 |
| 10/22/09 | 453 | 31.74 | 14,381.55 | $534 | $507 | $1,041 | $471,859 | | | 41227 |
| 10/22/09 | 454 | 33.00 | 14,414.55 | $555 | $527 | $1,083 | $472,941 | | | 41230 |
| 10/22/09 | 455 | 31.33 | 14,445.88 | $527 | $501 | $1,028 | $473,969 | | | 41231 |
| 10/22/09 | 456 | 30.97 | 14,476.85 | $521 | $495 | $1,016 | $474,985 | **1016** | **$33,319** | 41229 |
| 10/23/09 | 457 | 32.98 | 14,509.83 | $555 | $527 | $1,082 | $476,068 | | | 41240 |
| 10/23/09 | 458 | 33.05 | 14,542.88 | $556 | $528 | $1,084 | $477,152 | | | 41245 |
| 10/23/09 | 459 | 32.95 | 14,575.83 | $555 | $527 | $1,081 | $478,233 | | | 41246 |
| 10/23/09 | 460 | 31.13 | 14,606.96 | $524 | $497 | $1,021 | $479,254 | | | 41251 |
| 10/23/09 | 461 | 30.64 | 14,637.60 | $516 | $490 | $1,005 | $480,260 | | | 41249 |
| 10/23/09 | 462 | 30.89 | 14,668.49 | $520 | $494 | $1,014 | $481,273 | | | 41250 |
| 10/23/09 | 463 | 31.44 | 14,699.93 | $529 | $502 | $1,032 | $482,305 | | | 41255 |
| 10/23/09 | 464 | 32.92 | 14,732.85 | $554 | $526 | $1,080 | $483,385 | | | 41256 |
| 10/23/09 | 465 | 28.88 | 14,761.73 | $486 | $462 | $948 | $484,332 | | | 41258 |
| 10/23/09 | 466 | 31.71 | 14,793.44 | $534 | $507 | $1,040 | $485,373 | | | 41264 |
| 10/23/09 | 467 | 32.76 | 14,826.20 | $551 | $524 | $1,075 | $486,448 | | | 41267 |
| 10/23/09 | 468 | 31.42 | 14,857.62 | $529 | $502 | $1,031 | $487,479 | | | 41272 |
| 10/23/09 | 469 | 34.51 | 14,892.13 | $581 | $551 | $1,132 | $488,611 | | | 41279 |
| 10/23/09 | 470 | 34.20 | 14,926.33 | $576 | $547 | $1,122 | $489,733 | | | 41280 |
| 10/23/09 | 471 | 32.61 | 14,958.94 | $549 | $521 | $1,070 | $490,803 | | | 41284 |
| 10/23/09 | 472 | 30.65 | 14,989.59 | $516 | $490 | $1,006 | $491,808 | | | 41286 |
| 10/23/09 | 473 | 31.27 | 15,020.86 | $526 | $500 | $1,026 | $492,834 | | | 41289 |
| 10/23/09 | 474 | 30.61 | 15,051.47 | $515 | $489 | $1,004 | $493,839 | | | 41304 |
| 10/23/09 | 475 | 32.45 | 15,083.92 | $546 | $519 | $1,065 | $494,903 | | | 41307 |
| 10/23/09 | 476 | 31.72 | 15,115.64 | $534 | $507 | $1,041 | $495,944 | | | 41310 |
| 10/23/09 | 477 | 30.65 | 15,146.29 | $516 | $490 | $1,006 | $496,950 | | | 41305 |
| 10/23/09 | 478 | 31.61 | 15,177.90 | $532 | $505 | $1,037 | $497,987 | | | 41324 |
| 10/23/09 | 479 | 29.93 | 15,207.83 | $504 | $478 | $982 | $498,969 | | | 41311 |
| 10/23/09 | 480 | 33.09 | 15,240.92 | $557 | $529 | $1,086 | $500,055 | | | 41312 |
| 10/23/09 | 481 | 32.90 | 15,273.82 | $554 | $526 | $1,079 | $501,134 | | | 41315 |
| 10/23/09 | 482 | 31.43 | 15,305.25 | $529 | $502 | $1,031 | $502,165 | | | 41317 |
| 10/23/09 | 483 | 33.55 | 15,338.80 | $565 | $536 | $1,101 | $503,266 | | | 41322 |
| 10/23/09 | 484 | 33.54 | 15,372.34 | $564 | $536 | $1,100 | $504,366 | | | 41323 |
| 10/23/09 | 485 | 32.63 | 15,404.97 | $549 | $521 | $1,071 | $505,437 | | | 41338 |
| 10/23/09 | 486 | 31.54 | 15,436.51 | $531 | $504 | $1,035 | $506,472 | | | 41339 |
| 10/23/09 | 487 | 28.52 | 15,465.03 | $480 | $456 | $936 | $507,408 | | | 41332 |
| 10/23/09 | 488 | 32.72 | 15,497.75 | $551 | $523 | $1,074 | $508,481 | | | 41336 |
| 10/23/09 | 489 | 33.16 | 15,530.91 | $558 | $530 | $1,088 | $509,569 | **1054** | **$34,584** | 41337 |
| 10/26/09 | 490 | 32.71 | 15,563.62 | $551 | $523 | $1,073 | $510,642 | | | 41357 |
| 10/26/09 | 491 | 31.22 | 15,594.84 | $525 | $499 | $1,024 | $511,667 | | | 41354 |
| 10/26/09 | 492 | 32.75 | 15,627.59 | $551 | $523 | $1,075 | $512,741 | | | 41359 |
| 10/26/09 | 493 | 29.64 | 15,657.23 | $499 | $474 | $972 | $513,714 | | | 41361 |

**WASTE DISPOSAL LOG** **NW PIPE CASING** **WASTE CONNECTIONS**
**Non-Hazardous (Subtitle D)** **Clackamas, Oregon** **Permit No. 2042-09-068**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 10/26/09 | 494 | 31.46 | 15,688.69 | $529 | $503 | $1,032 | $514,746 | | | 41362 |
| 10/26/09 | 495 | 31.10 | 15,719.79 | $523 | $497 | $1,020 | $515,766 | | | 41367 |
| 10/26/09 | 496 | 33.11 | 15,752.90 | $557 | $529 | $1,086 | $516,853 | | | 41366 |
| 10/26/09 | 497 | 31.25 | 15,784.15 | $526 | $499 | $1,025 | $517,878 | | | 41369 |
| 10/26/09 | 498 | 29.41 | 15,813.56 | $495 | $470 | $965 | $518,843 | | | 41374 |
| 10/26/09 | 499 | 31.02 | 15,844.58 | $522 | $496 | $1,018 | $519,861 | | | 41378 |
| 10/26/09 | 500 | 30.23 | 15,874.81 | $509 | $483 | $992 | $520,853 | | | 41379 |
| 10/26/09 | 501 | 32.12 | 15,906.93 | $541 | $513 | $1,054 | $521,906 | | | 41382 |
| 10/26/09 | 502 | 32.46 | 15,939.39 | $546 | $519 | $1,065 | $522,971 | | | 41388 |
| 10/26/09 | 503 | 31.63 | 15,971.02 | $532 | $505 | $1,038 | $524,009 | | | 41392 |
| 10/26/09 | 504 | 30.64 | 16,001.66 | $516 | $490 | $1,005 | $525,014 | | | 42425 |
| 10/26/09 | 505 | 29.45 | 16,031.11 | $496 | $471 | $966 | $525,981 | | | 41434 |
| 10/26/09 | 506 | 30.81 | 16,061.92 | $519 | $492 | $1,011 | $526,992 | | | 41436 |
| 10/26/09 | 507 | 32.51 | 16,094.43 | $547 | $520 | $1,067 | $528,058 | | | 41439 |
| 10/26/09 | 508 | 33.27 | 16,127.70 | $560 | $532 | $1,092 | $529,150 | | | 41462 |
| 10/26/09 | 509 | 31.75 | 16,159.45 | $534 | $507 | $1,042 | $530,192 | | | 41444 |
| 10/26/09 | 510 | 32.92 | 16,192.37 | $554 | $526 | $1,080 | $531,272 | | | 41445 |
| 10/26/09 | 511 | 30.78 | 16,223.15 | $518 | $492 | $1,010 | $532,282 | | | 41446 |
| 10/26/09 | 512 | 32.52 | 16,255.67 | $547 | $520 | $1,067 | $533,349 | | | 41449 |
| 10/26/09 | 513 | 28.39 | 16,284.06 | $478 | $454 | $931 | $534,280 | | | 41452 |
| 10/26/09 | 514 | 31.00 | 16,315.06 | $522 | $495 | $1,017 | $535,297 | | | 41458 |
| 10/26/09 | 515 | 32.82 | 16,347.88 | $552 | $524 | $1,077 | $536,374 | | | 41454 |
| 10/26/09 | 516 | 33.22 | 16,381.10 | $559 | $531 | $1,090 | $537,464 | | | 41464 |
| 10/26/09 | 517 | 31.84 | 16,412.94 | $536 | $509 | $1,045 | $538,509 | | | 41463 |
| 10/26/09 | 518 | 31.99 | 16,444.93 | $538 | $511 | $1,050 | $539,558 | | | 41465 |
| 10/26/09 | 519 | 33.45 | 16,478.38 | $563 | $535 | $1,097 | $540,656 | | | 41468 |
| 10/26/09 | 520 | 32.27 | 16,510.65 | $543 | $516 | $1,059 | $541,714 | | | 41478 |
| 10/26/09 | 521 | 32.78 | 16,543.43 | $552 | $524 | $1,076 | $542,790 | | | 41565 |
| 10/26/09 | 522 | 34.06 | 16,577.49 | $573 | $544 | $1,118 | $543,907 | | | 41473 |
| 10/26/09 | 523 | 33.36 | 16,610.85 | $561 | $533 | $1,095 | $545,002 | | | 41477 |
| 10/26/09 | 524 | 31.71 | 16,642.56 | $534 | $507 | $1,040 | $546,042 | | | 41481 |
| 10/26/09 | 525 | 28.29 | 16,670.85 | $476 | $452 | $928 | $546,971 | **1140** | **$37,401** | 41497 |
| | | **16,670.85** | | | | **$546,971** | | | **$546,971** | |

***24 HOUR EMERGENCY RESPONSE, CALL (877) 577-2669 ***

# SHIPPING PAPER

Lading Manifest: 169936-09

| | |
|---|---|
| | DELIVERY DATE 11/12/09 \| JOB # 1057498 |
| SHIPPER / CUSTOMER: US EPA REGION 10/NW PIPE ATTN: KATHY PARKER, FOSC | POINT OF CONTACT: KATHY PARKER |
| ADDRESS: 9585 SE HATHER ROAD | PHONE #: (425)673-4900 |
| CITY, STATE, ZIP: CLACKAMAS OR 97015 | |
| CARRIER / TRANSPORTER: PACIFIC POWER VAC LLC | PHONE #: (503)261-9800 |
| CONSIGNEE / FACILITY: Wasco County Landfill Inc. | POINT OF CONTACT |
| ADDRESS: 2550 Steele Road | PHONE #: (541)296-4082 |
| CITY, STATE, ZIP: The Dalles , OR 97058 | |

| HM | US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number) | Containers No. | Containers Type | Total Quantity | UOM |
|---|---|---|---|---|---|
| A | MATERIAL NOT REGULATED BY DOT | 1 | TT | 3500 | G |
| B | | | | | |
| C | | | | | |
| D | | | | | |

Special Handling Instruction and Additional Information:

a) 2042-09-068-08 - WATER AND SEDIMENT - DIR01 (1)

Placards Provided YES_____ NO_____

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

| | | MONTH | DAY | YEAR |
|---|---|---|---|---|
| (SHIPPER) PRINT OR TYPE NAME: x MARK CONWAY | SIGNATURE: x Mark Conway | 11 | 12 | 09 |
| (CARRIER/TRANSPORTER) PRINT OR TYPE NAME: x Tim Chalupa | SIGNATURE: x | 11 | 12 | 09 |
| (CONSIGNEE/FACILITY) PRINT OR TYPE NAME: x Linda Miller | SIGNATURE: x Linda Miller CONSIGNEE | 11 | 12 | 09 |

WASTE CONNECTIONS INC.
*Connect with the Future®*

# SPECIAL WASTE PERMIT

- The generator must determine if the waste is hazardous or dangerous before completing a permit application.
- The special waste permit application must be in the name of the generator of the waste and signed by an authorized representative who is responsible for the accuracy of all information submitted.
- Recertification is required for on-going special waste streams prior to the expiration date.
- A copy of the approved special waste permit must be shown to the gatehouse attendant upon delivery at the facility.

**DISPOSAL SITE:** **CRC _____ FINLEY BUTTES _____ WASCO _____X____**

***- To be completed by disposal company -***

Second Amendment

Generator: USEPA Region 10 – NW Pipe and Casing Superfund Site in Clackamas OR

Customer: PSC Environmental Services attn: Diana L. McGee

Waste: Soils from cleanup operations. Basis for non-hazardous determination was soil analyses: TPH-Dx, TPH-Ox, Total Metals, VOCs, SVOCs, and PCBs.

Instructions: This permit is valid for one year from the date of issuance. Please provide a copy of this permit to the landfill scale house attendant with each load.

Date: September 23, 2009

Permit No: 2042-09-068

Expiration date: September 23, 2010

New/Recert: New

Previous No: NA

Landfill report: Not a DEQ Approved ADC. Report as Non-Counting Contaminated Cleanup Material and Manage as MSW.

Environmental approval:

P.O. Box 61726 • 501 SE Columbia Shores Blvd., Suite 350 • Vancouver, WA 98666 • 360.695.4858 (WA) • 503.288.7844 (OR) • Fax 360.695.5091

# REPRESENTATIVE SAMPLE CERTIFICATION

**INSTRUCTIONS:** This form must be completed in order to determine the acceptability of the waste described in the Special Waste Permit Application for disposal at a municipal solid waste landfill. Analytical data for certain wastes is required for an adequate assessment of waste composition and regulatory status. This form is used to certify that the analytical data presented was derived from testing a *representative* sample, which reflects the physical characteristics and chemical components in the same proportion as the *total* waste stream. A representative sample may be obtained using methods specified in federal (40 CFR Part 261, Appendix I) or state regulations.

**SECTION A: DESCRIBE SAMPLING POINT OR LOCATION**

☒ Pile ☐ In-ground ☐ Pit bottom ☐ Drum ☐ Other: _____

**SECTION B: SAMPLING METHOD**

☐ I have obtained a representative sample of the waste material described in the attached special waste permit application according to the sampling methods specified in 40 CFR Part 261.

☒ I have obtained a representative sample of the waste material described in the attached special waste permit application by an equivalent method.

**SECTION C: REPRESENTATIVE DATA CERTIFICATION**

Generators' name: US EPA Region 10

Waste type: Soil

Date sample collected: 9-16-09

Samplers' name: Jim Petersen

Samplers' employer: Ecology & Environment (EPA START Contractor)

**SECTION D: REPRESENTATIVE SAMPLE CERTIFICATION**

I hereby certify that the analytical data presented was derived from testing a representative sample taken in accordance with one of the methods listed in Section A of this form.

Kathy Parker — *Name*

*Authorized representative's signature*

OSC — *Title*

9/21/2009 — *Date*

# WASTE CERTIFICATION STATEMENT

I hereby certify that all information contained herein is true and correct, and the material described is properly identified, classified, packaged, labeled, and prepared as indicated. I certify this waste is not hazardous or dangerous as defined by the U.S. EPA, the state, or province of origin. I certify this waste does not contain any regulated radioactive materials. I certify that all samples used for this analysis are representative of the materials described herein. I will notify the company if there is a change in the composition of, or process generating this waste stream.

Kathy Parker
*Name* (print)

OSC
*Title*

*Authorized representative's signature*

9/21/2009
*Date*

Form EC1004200

# REPRESENTATIVE SAMPLE CERTIFICATION

**INSTRUCTIONS:** This form must be completed in order to determine the acceptability of the waste described in the Special Waste Permit Application for disposal at a municipal solid waste landfill. Analytical data for certain wastes is required for an adequate assessment of waste composition and regulatory status. This form is used to certify that the analytical data presented was derived from testing a *representative* sample, which reflects the physical characteristics and chemical components in the same proportion as the *total* waste stream. A representative sample may be obtained using methods specified in federal (40 CFR Part 261, Appendix I) or state regulations.

**SECTION A: DESCRIBE SAMPLING POINT OR LOCATION**

☒ Pile ☐ In-ground ☐ Pit bottom ☐ Drum ☐ Other: _____

**SECTION B: SAMPLING METHOD**

☐ I have obtained a representative sample of the waste material described in the attached special waste permit application according to the sampling methods specified in 40 CFR Part 261.

☒ I have obtained a representative sample of the waste material described in the attached special waste permit application by an equivalent method.

**SECTION C: REPRESENTATIVE DATA CERTIFICATION**

Generators' name: US EPA Region 10

Waste type: Soil

Date sample collected: 9-16-09

Samplers' name: Jim Pedersen

Samplers' employer: Ecology & Environment (EPA START Contractor)

**SECTION D: REPRESENTATIVE SAMPLE CERTIFICATION**

I hereby certify that the analytical data presented was derived from testing a representative sample taken in accordance with one of the methods listed in Section A of this form.

_____ _____

*Name* *Authorized representative's signature*

_____ _____

*Title* *Date*

# APPENDIX G

## Water Disposal Documentation

**A Clackamas County**
**Service District No. 1**
15941 S. Agnes, Bldg. B
Oregon City, OR 97045
503-557-2833

# Industrial Wastewater Discharge Permit - Section 1

**1. Applicant Business Name:**

*U.S. EPA Northwest Pipe & Casing Site*

**2. Address of Premises Discharging Wastewater:**

Street *9585 SE Mather Road*

City *Clackamas* State *OR* Zip *97015*

**3. Assessor's Map and Tax Lot Number:** *22 E09 AB00 100*
22 E09A B100 101, 2209A 008 00

**4. Mailing Address (if different from above): E**

Street *U.S. EPA Region 10 / 1200 6th Ave.*

City *Seattle* State *WA* Zip *98101*

**Permit No.** *01K-065-D*
**Initial** ☒ **Renewal** ☐
**SIU** ☒ **Non-SIU** ☐
**SIC No.** *N/A*
**EPA Category** *N/A*
**Billing Responsibility**
District ☒
**Treatment Plant**
*Kellogg Creek WPCP*

**5. Persons to be Contacted About This Permit:**

| | | | | | |
|---|---|---|---|---|---|
| (Primary) Name | *Jim Peterson* | Title | *Ecology & Environment, Inc.* | Phone | *503-547-3964 (c)* |
| (Alternate) Name | *Mark Ader* | Title | *U.S. EPA On-Scene Coord.* | Phone | *206-553-1849* |
| (Billing) Name | | Title | *Environmental Quality Mgt., Inc* | Phone | *425-673-2900* |

**6. Method Used to Compute Industrial Monthly Sewer Service Charges:**

☐ Metered Water Consumption
☒ Volume of Wastewater Discharge
☐ Wastewater Strength
☐ Other _____

**7. Authorization and Fees:**

The above named applicant is hereby authorized to discharge wastewater to the public sewer subject to said applicant's compliance with the District's Rules and Regulations, appropriate City Ordinance's, any applicable provisions of Federal or State law or regulation, and in accordance with the discharge limitations, monitoring requirements, and other conditions set forth herein, including the payment of all fees and charges as set forth below.

**Annual Permit Fee** $ ***2,250.00***

This permit is granted in accordance with the application filed on *September 8, 2009* in the office of the Clackamas County Water Environment Services, and in conformity with plans, specifications, and other data submitted in support of the above application, all of which are filed with and considered as part of this permit:

**8. Effective Date** *September 14, 2009* **Expiration Date** *September 13, 2014*

**9. City's Representative**

**Signature** _____ **Date** _____

**10. District's Representative**

**Signature** _____ **Date** 9/15/09

**Clackamas County**
**Service District No. 1**
15941 S. Agnes, Bldg. B
Oregon City, OR 97045
503-557-2833

# Industrial Wastewater Discharge Permit - Section 2a

**Business Name** *U.S. EPA Northwest Pipe & Casing Site* **Permit No.** *01K-065-D*

**11. Wastewater Discharge Limitations**

The Industrial User shall comply with the discharge limitations and sampling requirements specified below by the effective date of this permit.

1. Below is a listing of local discharge limits derived from the District's Rules & Regulations and include limits for daily maximums. The limit for every pollutant is applicable at the Point of Compliance as shown on the sampling location map in Section 2c.

| Parameter | Local Limit (mg/L) | Sample Type |
|---|---|---|
| Average Flow | ------ | Meter |
| Total Oil & Grease* (see Note e) | 100 | Grab |
| Non Polar Oil & Grease | 100 | Grab |
| Polar Oil & Grease | 300 | Grab |
| pH | 5.5 – 11.5 s.u. | Grab |
| Arsenic | 0.16 | Grab |
| Cadmium | 0.24 | Grab |
| Chromium | 2.77 | Grab |
| Copper | 3.84 | Grab |
| Lead | 0.81 | Grab |
| Mercury | 0.0035 | Grab |
| Nickel | 2.45 | Grab |
| Silver | 0.56 | Grab |
| Zinc | 2.61 | Grab |
| Cyanide | 1.20 | Grab |
| TSS | N/A | Grab |
| TTO (see Note f) | 2.13 | Grab |

* If total Oil & Grease is greater than 100 mg/L, then have the laboratory fractionate the sample to determine polar and non-polar concentrations.

2. Until this permit expires or is modified or revoked, the permittee is authorized to construct, modify, or operate a wastewater collection and disposal system and discharge to the District's sewerage system adequately treated wastewaters only from the authorized point established in Section 2c and only in conformance with all the requirements, limitations, and conditions set forth in this permit.

3. Wastewater samples will be analyzed by methods specified in CFR 40 Part 136.

**Clackamas County**
**Service District No. 1**
15941 S. Agnes, Bldg. B
Oregon City, OR 97045
**503-557-2833**

# Industrial Wastewater Discharge Permit - Section 2b

**Business Name** *U.S. EPA Northwest Pipe & Casing Site* **Permit No.** *01K-065-D*

**11. Wastewater Discharge Limitations (continued)**

The Industrial user shall comply with the discharge limitations and sampling requirements specified below by the effective date of this permit.

4. NOTES:

a) The permittee shall comply with all other applicable regulations and standards contained in the District's Rules & Regulations. This permit does not relieve the permittee from responsibility for compliance with any other applicable federal, state, local law, rule, standard, ordinance, order, judgment, or decree.

b) Should analysis reveal the presence of pollutants other than those listed on Section 4a in quantities greater than 0.10 mg/L, the permittee shall analyze for those pollutants. The permittee is responsible for continuous compliance with all the limits listed in 11.1.

c) No discharge of potentially toxic or harmful materials other than those listed above is permitted unless specifically approved by the District.

d) The permittee shall have or construct monitoring facilities approved by the Clackamas County Service District No. 1 to be used for the monitoring of wastewater discharges.

e) Oil and Grease shall be determined by EPA Method 1664

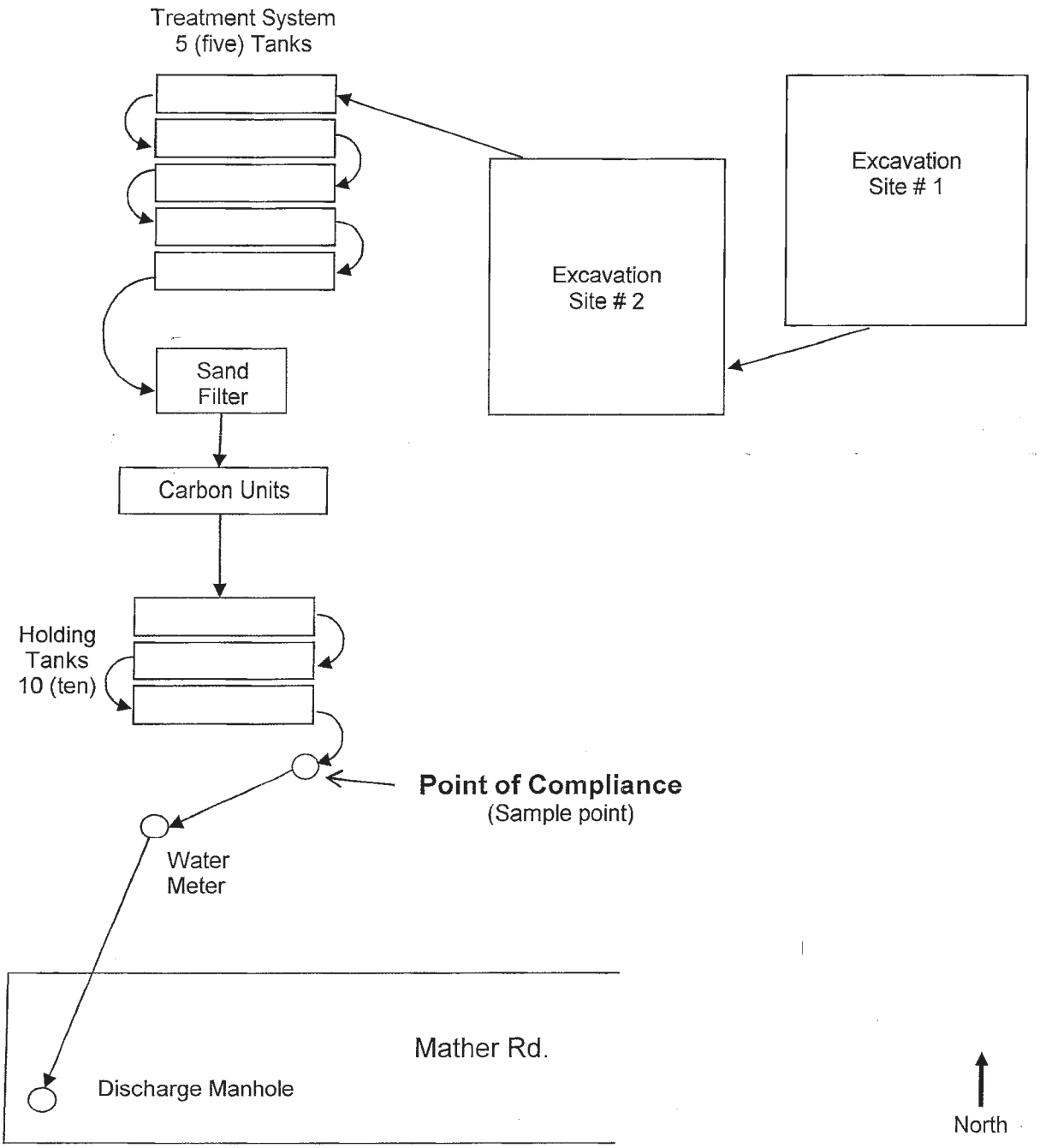
f) Total Toxic Organics shall be determined by EPA Method 608, 624, and 625.

**Clackamas County**
**Service District No. 1**
15941 S. Agnes, Bldg. B
Oregon City, OR 97045
503-557-2833

# Industrial Wastewater Discharge Permit - Section 2c

**Business Name** *U.S. EPA Northwest Pipe & Casing Site* **Permit No.** *01K-065-D*

**11. Wastewater Discharge Limitations (continued)**



**Clackamas County**
**Service District No. 1**
15941 S. Agnes, Bldg. B
Oregon City, OR 97045
503-557-2833

# Industrial Wastewater Discharge Permit - Section 3

**Business Name** *U.S. EPA Northwest Pipe & Casing Site* **Permit No.** *01K-065-D*

**12. Special Conditions**

1. If required by the District, all process wastewater shall receive pretreatment before discharge to the public sewer system in order to meet local and federal discharge standards.

2. The permittee shall establish and comply with written standards, operating instructions, and employee training to ensure the proper and safe handling of all chemicals used on the premises and the proper operation of pollution control equipment. Such documentation shall be made available to the District upon request.

3. The permittee shall operate and maintain all pollution control facilities. A log detailing all maintenance, including preventive maintenance, performed on the pollution control and monitoring equipment shall be kept and made available to the District upon request.

4. The permittee shall provide monitoring of all industrial wastewater discharged to the public sewer using a flow-proportional sampling device and closed sample container used for this purpose. Sampled effluent shall be collected and analyzed in accordance with this permit and 40 CFR 136. Sampling of batch discharges shall be by grab sample.

5. Any other environmental control permits issued to the permittee shall be made available to the District upon request and included by reference as part of this permit.

6. If the permittee experiences an accidental spill or an upset as defined in Section 14(U), the permittee shall:

    a) Immediately take action to stop, contain and clean up the unauthorized discharge, and correct the problem.

    b) Immediately call the Source Control Coordinator at 503-557-2833 and the Kellogg Creek Treatment Plant at 503-794-8050. In the event the Source Control Coordinator cannot be reached, the permittee shall notify the Water Environment Services Office at 503-742-4567.

    c) Within five (5) days, submit a detailed written report to the District describing the breakdown, the actual quantity and quality of resultant waste discharges, the corrective action taken, the steps taken to prevent a recurrence, and any other pertinent information.

7. Compliance with (6) above shall not relieve the permittee of responsibility for maintaining continuous compliance with the conditions of this permit or for the resulting liability for its failure to comply.

8. The permittee shall evaluate the complete laboratory analysis of each batch prior to discharging the collected wastewater to the District's sanitary sewer.

**Clackamas County**
**Service District No. 1**
15941 S. Agnes, Bldg. B
Oregon City, OR 97045
503-557-2833

# Industrial Wastewater Discharge Permit - Section 4a

**Business Name** *U.S. EPA Northwest Pipe & Casing Site* **Permit No.** *01K-065-D*

**13. Reporting Requirements**

1) The Periodic Compliance Report (Continuous Requirements):

Samples to be taken from the Point of Compliance prior to discharge into the sanitary sewer.

| Pollutant or Parameter | Type of Sample | Frequency | Reporting Requirements |
|---|---|---|---|
| Flow | Meter | Per Batch | Report due by the last day of the following week being sampled |
| Oil & Grease | Grab | 1 Sample/Batch | " |
| pH | Grab | 1 Sample/Batch | " |
| Arsenic | Grab | 1 Sample/Batch | " |
| Cadmium | Grab | 1 Sample/Batch | " |
| Chromium | Grab | 1 Sample/Batch | " |
| Copper | Grab | 1 Sample/Batch | " |
| Lead | Grab | 1 Sample/Batch | " |
| Mercury | Grab | 1 Sample/Batch | " |
| Nickel | Grab | 1 Sample/Batch | " |
| Silver | Grab | 1 Sample/Batch | " |
| Zinc | Grab | 1 Sample/Batch | " |
| Cyanide | Grab | 1 Sample/Batch | " |
| TSS | Grab | 1 Sample/Batch | " |
| TTO | Grab | 1 Sample/Batch | " |

**Clackamas County**
**Service District No. 1**
15941 S. Agnes, Bldg. B
Oregon City, OR 97045
503-557-2833

# Industrial Wastewater Discharge Permit - Section 4b

**Business Name** *U.S. EPA Northwest Pipe & Casing Site* **Permit No.** *01K-065-D*

**13. Reporting Requirements**

2) The Periodic Compliance Report shall consist of the following:

   a) A signed District Discharge Certification Report Form.

   b) Copies of all laboratory results, including the analytical methods used, the date sampled, the date analyzed, and a copy of the Chain-of-Custody Form.

   c) Water meter readings.

   d) calculations of daily flow averages.

3) If the permittee monitors any pollutant more frequently than required by this permit at the Point of Compliance, the results of such monitoring shall be submitted to the District. Monitoring reports shall be signed and sworn to by a principal executive officer or his/her designee.

4) The permittee shall notify the District 30 days prior to any planned changes to these wastewater discharges, including, but not limited to, addition or deletion of wastestreams contributory to any sampling point, long-term changes in the relative flow of the component wastestreams, or a change in process or materials that may cause a change in the category of the industry.

5) All reports shall be submitted to the following:

Source Control
Clackamas County Service District No. 1
15941 S. Agnes, Bldg. B
Oregon City, OR 97045

Clackamas County
**Service District No. 1**
15941 S. Agnes, Bldg. B
Oregon City, OR 97045
503-557-2833

# Industrial Wastewater Discharge Permit - Section 5

**Business Name** *U.S. EPA Northwest Pipe & Casing Site* **Permit No.** *01K-065-D*

**14. Standard Conditions:**

A. **General.** The Industrial User shall comply with all the general prohibitive discharge standards contained in Section 3 of the District's Rules and Regulations.

B. **Right of Entry.** The Industrial User shall allow the District or its representatives, exhibiting proper credentials and identification, to enter upon the premises of the User, at all reasonable hours, for the purposes of inspection, sampling, or records inspection and copying. The right of entry is to the Industrial User's entire premises and includes, but is not limited to, access to those portions of the premises that contain facilities for sampling , measuring, treating, transporting or other wise handling wastes, for storing records, reports or documents relating to pretreatment, sampling, and discharging wastes.

C. **Records Retention.** The Industrial User shall retain and preserve for no less than three (3) years, any records, books, documents, memoranda, reports, correspondence and any all summaries thereof, relating to monitoring, sampling and chemical analysis made by or in behalf of the user in connection with its discharge.

This period of retention shall be extended during the course of any unresolved litigation regarding the Industrial User or the District or when requested by DEQ or the EPA.

D. **Confidential Information.** Except for data determined to be confidential under Section 4.9 of the District's Rules and Regulations, all reports required by this permit shall be available for public inspection at the office of Water Environment Services of Clackamas County. Under no circumstances can wastewater effluent data be claimed or held to be confidential information.

E. **Recording of Results.** For each measurement or sample taken pursuant to the requirements of this permit, the user shall record the following information:

- The exact place, date, and time of sampling;
- The name of the person who collected the sample;
- The type of sample(s) collected;
- The dates the analyses were performed;
- The person(s) who performed the analysis;
- The analytical techniques or methods used;
- The results of all required analysis;
- The quality assurance and quality control laboratory procedures followed.

All sampling and analytical methods used to meet the monitoring requirements specified in this permit shall, unless otherwise approved in writing by the District within, conform to the Guidelines Establishing Test Procedures for the Analysis of Pollutants as specified in 40 CFR, Part 136.

F. **Resampling Requirement.** If the results of the permittee's wastewater analysis indicate that a violation has occurred, the permittee must notify the District within 24 hours of becoming aware of the noncompliance. The permittee must also repeat the sampling and submit the analysis to the District within 30 days after becoming aware of the violation.

G. **Dilution.** No Industrial User shall increase the use of potable or process water or, in anyway, attempt to dilute a discharge as a partial or complete substitute for adequate treatment to achieve compliance with the limitations contained in this permit.

H. **Proper disposal of Pretreatment Sludges and Spent Chemicals.** The disposal of sludges and spent chemicals generated shall be done in accordance with Section 405 of the Clean Water Act and Subtitles C and D of the Resource Conservation and Recovery Act.

I. **Imposition of Civil Penalties.** In accordance with Section 4.10 of the District's Rules and Regulations, the District may impose civil penalties including, but not limited to fines, damages, modification or revocation of permit and/or cessation of services when any Industrial User (1) fails to factually report the wastewater constituents or characteristics; (2) refuses reasonable access to the user's premises by representatives of the District for the purpose inspection or monitoring; and (3) violates any condition or provision of its permit, with District's Rules and Regulations Ordinance, any rule adopted pursuant hereto, or any final judicial order entered with respect thereto.

**Clackamas County**
**Service District No. 1**
15941 S. Agnes, Bldg. B
Oregon City, OR 97045
503-557-2833

# Industrial Wastewater Discharge Permit - Section 5

**Business Name** *U.S. EPA Northwest Pipe & Casing Site* **Permit No.** *01K-065-D*

J. **Certification and Signatory Requirements.** In accordance with 40 CFR 403.12, all reports required by this permit shall be signed and certified by a principal executive officer of the industrial user or his designee. If the responsible corporate official changes, the District is to be notified as required in 40 CFR 403.12 (l)(4).

K. **Permit Modifications.** The District reserves the right to amend this permit in order to assure compliance with applicable laws and regulations. This permit may be modified with 30 days prior written notification, in whole or in part for causes including, but not limited to: (1) preventing violation(s) of the District's NPDES permit; (2) incorporating new or revised federal, state or local pretreatment standards or requirements; (3) upon receiving information indicating the permitted discharge poses a threat to the District's collection and treatment system, POTW personnel, receiving waters and sludge; (4) correcting typographical or other errors in the permit; and (5) any significant change in volume of a permitted discharge.

L. **Permit Revocation.** An industrial wastewater permit may be revoked at any time for the following reasons:

- Violation of any terms or conditions of this permit or the District's Rules and Regulations;
- Failure to notify the District of significant changes to the wastewater prior to the changed discharge;
- Falsifying self-monitoring reports;
- Tampering with monitoring equipment
- Refusing to allow the District timely access to the facility premises and records;
- Failure to meet effluent limitations;
- Failure to pay fines;
- Failure to pay user charges;
- Failure to meet compliance schedules;
- Failure to provide advance notice of the transfer of a permitted facility.

M. **Limitation on Permit Transfer.** Wastewater discharge permits are issued to a specific user for a specific operation and are not assignable to another user or transferable to any other location without the prior written approval of the District and provision of a copy of the existing permit to the new owner or operator. Sale of a user shall obligate the purchaser to seek prior written approval of the District for continued discharge to the sewerage system.

N. **Property Rights.** The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any invasion of personal rights, nor any infringement of Federal, State or local regulations.

O. **Accidental Spill Prevention Plan (ASPP).** Each Discharger shall provide protection from the accidental discharge of prohibited substances or other substances regulated by the District's Rules and Regulations. Where necessary, facilities to prevent accidental discharge of such substances shall be provided and maintained by the Discharger, at the Discharger's own cost and expense. Detailed plans showing such facilities and operating procedures to provide this protection shall be submitted to the District for review and shall be approved by the District for review. In accordance with 40 CFR 403.8(f)(2)(v), dischargers are to be evaluated every two years by the District as to the need for an Accidental Spill Prevention Plan (ASPP).

P. **Liability.** The District, its officers, agents or employees shall not sustain any liability due to the issuance of this permit or the construction or maintenance of facilities resulting from this permit.

Q. **Severability.** The provisions of this permit are severable, and if any provisions of this permit or the application of any provision of this permit to any circumstances is held invalid, the application of such provision to other circumstances and the remainder of this permit shall not be affected.

R. **Bypass or Diversion.** The diversion or bypass (the intentional diversion of wastestreams) from any portion of a permittee's treatment facility to maintain compliance with the terms and conditions of this permit is prohibited except "... if the bypass is unavoidable to prevent loss of life, personal injury or severe property damage and there are no feasible alternatives" (40 CFR 403.17).

The permittee shall immediately notify the District in writing of each such diversion or bypass, in accordance with the procedure specified in Section 4.10.6 of the Rules and Regulations.

**Clackamas County**
**Service District No. 1**
15941 S. Agnes, Bldg. B
Oregon City, OR 97045
503-557-2833

# Industrial Wastewater Discharge Permit-Section 5

**Business Name** *U.S. EPA Northwest Pipe & Casing Site* **Permit No.** *01K-065-D*

S. **Notification of Slug Load.** If the permittee is unable to comply with all conditions of this permit due to a breakdown of equipment or facilities, an accident caused by human error or negligence, or any other causes such as an act of nature, the permittee shall follow the procedures outlined in the Special Conditions Section of this permit.

T. **Continuous Compliance.** Compliance with (S) above shall not relieve the permittee from responsibility to maintain continuous compliance with the conditions of this permit or the resulting liability for its failure to comply.

U. **Upset.** The District's Rules and Regulations defines an upset as an exceptional incident in which an industrial user unintentionally and temporarily is in a state of noncompliance with the District's Ordinance, due to factors beyond the reasonable control of the industrial user and excluding noncompliance to the extent caused by operational error, improperly designed or inadequate treatment facilities, lack of preventative maintenance or careless or improper operation thereof.

An upset will constitute an affirmative defense to an action brought for noncompliance with applicable pretreatment standards if the conditions stated in the Federal Regulations 40 CFR 403.16(c) and in the District's Rules and Regulations are met.

V. **Hazardous Waste Notification.** The industrial user shall notify the District, the POTW, the EPA Regional Waste Management Division Director, and State hazardous waste authorities in writing of any discharge into the POTW of a substance, which, if otherwise disposed of, would be a hazardous waste under 40 CFR Part 261. Such notification must include the name of the hazardous waste as set forth in 40 CFR Part 261, the EPA hazardous waste number and the type of discharge (continuous, batch, or other). If the industrial user discharges more than 100 kilograms of such waste per calendar month to the POTW, the notification shall also contain the following information to the extent such information is known and readily available to the industrial user: an identification of the hazardous constituents contained in the wastes; an estimation of the mass and concentration of such constituents in the wastestream discharged during that calendar month; and an estimation of the mass of constituents in the wastestream expected to be discharged during the following 12 months.

W. **Toxics Reopening.** If a toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established under Section 307(a) of the Federal Clean Water Act (PL95-217, as amended) for toxic pollutants present in the permittee's discharge, and such standard or prohibition is more stringent than limits upon these pollutants in this permit, this permit shall be revised or modified in accordance with the toxic effluent standard or prohibition, and the permittee shall be so notified.

X. **Duty to Reapply.** If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must submit an application for a new permit at least 90 days before the expiration date of this permit.

Y. **Representative Sampling.** Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge. All samples shall be taken at the monitoring points specified in this permit and, unless otherwise specified, before the effluent joins or is diluted by any other wastestream, body of water or substance. All equipment used for sampling and analysis must be routinely calibrated, inspected and maintained to ensure its accuracy. Monitoring points shall not be changed without notification to and the approval of the District.

| Date | Water Treatment | | | | | | Discharge | | Comments |
|---|---|---|---|---|---|---|---|---|---|
| | Meter Start | Meter Stop | Tank No. | Vol (gal) | Meter Start | Meter Stop | Tank No. | Volume (gal) | |
| 9/28/09 | | | | | | | | | |
| 9/30/09 | 726920 | 727311 | 6, 7, 8, 9 | 39,100 | | | | | |
| 10/1/09 | | | | | | | | | |
| 10/2/09 | 727311 | 727425 | 6, 7, 8, 9 | 11,400 | | | | | |
| 10/3/09 | | | | | | | | | |
| 10/4/09 | | | | | | | | | Average daily flow is 25,250 gallons |
| 10/5/09 | | | | | | | | | |
| 10/6/09 | | | | | | | | | |
| 10/7/09 | 727425 | 728110 | 10,11,12,13 | 68,500 | | | | | Start discharging at 0825 hours |
| 10/8/09 | 728110 | —— | 6,7,8,9,14,15 | 90,000 | | | | | Start discharging at 0745 hours / Meter Broke |
| 10/9/09 | | | | | | | | | |
| 10/10/09 | | | | | | | | | |
| 10/11/09 | | | | | | | | | Average daily flow is 79,250 gallons |
| 10/12/09 | | | | | | | | | |
| 10/13/09 | | | | | | | | | |
| 10/14/09 | | | | | | | | | |
| 10/15/09 | 0036820 | 0037394 | 10,11,12,13 | 57,400 | | | | | Replaced with new meter |
| 10/16/09 | | | | | | | | | |
| 10/17/09 | | | | | | | | | |
| 10/18/09 | | | | | | | | | Average daily flow is 57,400 gallons |
| 10/19/09 | | | | | | | | | |
| 10/20/09 | 0037394 | 0038431 | 6,7,8,9,14,15 | 103,700 | | | | | |
| 10/21/09 | | | | | | | | | |
| 10/22/09 | 0038431 | 0039151 | 10,11,12,13 | 72,000 | | | | | |
| 10/23/09 | | | | | | | | | |
| 10/24/09 | | | | | | | | | |
| 10/25/09 | | | | | | | | | Average daily flow is 87,850 gallons |
| 10/26/09 | | | | | | | | | |
| 10/27/09 | | | | | | | | | |
| 10/28/09 | 0039151 | 0040241 | 6,7,8,9,10,11 | 109,000 | | | | | Last day of discharge |
| 10/29/09 | | | | | | | | | |
| 10/30/09 | | | | | | | | | |
| 10/31/09 | | | | | | | | | |
| 11/1/09 | | | | | | | | | Average daily flow is 109,000 gallons |
| | | | | **551,100** | | | | | |

WATER ENVIRONMENT SERVICES
*Beyond* clean water.

Water Quality Protection
Surface Water Management
Wastewater Collection & Treatment
Michael S. Kuenzi, P.E.
Director

# DISCHARGE CERTIFICATION REPORT

Industrial Users permitted to discharge wastewater regulated under Federal and local standards must submit a periodic " Discharge Certification Report" to comply with the conditions of their permit.

Report Due: 10/2/09

To: Source Control
Water Environment Services
15941 S. Agnes Rd., Bldg. B
Oregon City, OR 97045

Facility Name: *U.S. EPA – Northwest Pipe & Casing Site*

Address: *9585 SE Mather Road*
*Clackamas, OR 97015*

Reporting Period (From) 9/28/09 (To) 10/2/09

**Certification Statement: I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.**

Signature _____ Date 10/2/09

Title Project Manager

**WATER TREATMENT DISCHARGE LOG TO POTW**

**NW PIPE CASING**
**Clackamas, Oregon**

| Date | Water Treatment | | | | | | Discharge | | Comments |
|---|---|---|---|---|---|---|---|---|---|
| | Meter Start | Meter Stop | Tank No. | Vol (gal) | Meter Start | Meter Stop | Tank No. | Volume | |
| 9/28/09 | | | | | | | | | |
| 9/30/09 | 726920 | 727311 | 6, 7, 8, 9 | 39,100 | | | | | |
| 10/1/09 | | | | | | | | | |
| 10/2/09 | 727311 | 727425 | 6, 7, 8, 9 | 11,400 | | | | | |
| 10/3/09 | | | | | | | | | |
| 10/4/09 | | | | | | | | | |
| 10/5/09 | | | | | | | | | |
| 10/6/09 | | | | | | | | | |
| 10/7/09 | | | | | | | | | |
| 10/8/09 | | | | | | | | | |
| 10/9/09 | | | | | | | | | |
| 10/10/09 | | | | | | | | | |
| 10/11/09 | | | | | | | | | |
| 10/12/09 | | | | | | | | | |
| 10/13/09 | | | | | | | | | |
| 10/14/09 | | | | | | | | | |
| 10/15/09 | | | | | | | | | |
| 10/16/09 | | | | | | | | | |
| 10/17/09 | | | | | | | | | |
| 10/18/09 | | | | | | | | | |
| 10/19/09 | | | | | | | | | |
| 10/20/09 | | | | | | | | | |
| | | | | | | | | | |
| **Total Gallons** | | | | **50,500** | | | | | |

## Specialty Analytical

**Date:** *25-Sep-09*

| | | | |
|---|---|---|---|
| **CLIENT:** | Environmental Quality Management, Inc. | **Client Sample ID:** | 0909-0162 |
| **Lab Order:** | 0909164 | **Collection Date:** | 9/24/2009 11:30:00 AM |
| **Project:** | Site # 0908 / No: 0907-09/22/09-0009 | | |
| **Lab ID:** | 0909164-01 | **Matrix:** | AQUEOUS |

| Analyses | Result | Limit | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **PH** | | **SM 4500-H+ B** | | | | Analyst: **en** |
| pH | 8.9 | | HT | | 1 | 9/24/2009 |

**Am Test Inc.**
13600 NE 126TH PL
Suite C
Kirkland, WA 98034
(425) 885-1664
www.amtestlab.com

AMTEST LABORATORIES

*Professional Analytical Services*

## ANALYSIS REPORT

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Attention: Michael Erdahl
Project #: 909227
PO Number: A-103

Date Received: 09/23/09
Date Reported: 9/28/09

AMTEST Identification Number 09-A015731
Client Identification TT02092205
Sampling Date 09/22/09, 07:45
All results reported on an as received basis.

### Conventionals

| PARAMETER | RESULT | UNITS | Q | D.L. | METHOD | ANALYST | DATE |
|---|---|---|---|---|---|---|---|
| Total Cyanide | < 0.005 | mg/l | | 0.005 | EPA 335.4 | TS | 09/28/09 |
| Total Oil and Grease | < 1 | mg/l | | 1.0 | EPA 1664 | MO | 09/24/09 |

Aaron W. Young
Laboratory Manager

## Analysis For Total Metals By EPA Method 200.8

| | | | |
|---|---|---|---|
| Client ID: | 0909-0162 TT08092409 | Client: | EQM, Inc. |
| Date Received: | 09/25/09 | Project: | EP-S7-06-02 Site 0908, F&BI 909252 |
| Date Extracted: | 09/25/09 | Lab ID: | 909252-04 |
| Date Analyzed: | 09/25/09 | Data File: | 909252-04.027 |
| Matrix: | Water | Instrument: | ICPMS1 |
| Units: | ug/L (ppb) | Operator: | btb |

| Internal Standard: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Germanium | 90 | 60 | 125 |
| Indium | 85 | 60 | 125 |
| Holmium | 92 | 60 | 125 |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Chromium | <1 |
| Nickel | 1.59 |
| Copper | <5 |
| Zinc | <5 |
| Arsenic | 18.1 |
| Silver | <1 |
| Cadmium | <1 |
| Lead | <1 |

Date of Report: 09/28/09
Date Received: 09/25/09
Project: EP-S7-06-02 Site 0908, F&BI 909252
Date Extracted: 09/25/09
Date Analyzed: 09/25/09

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR PCBs AS AROCLORS USING METHOD 608 MODIFIED**

Results Reported as ug/L (ppb)

| Sample ID<br>Laboratory ID | Aroclor 1221 | 1232 | 1016 | 1242 | 1248 | 1254 | 1260 | Surrogate (% Rec.)<br>(Limit 61-132) |
|---|---|---|---|---|---|---|---|---|
| 0909-0162 TT08092409<br>909252-04 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 77 |
| Method Blank | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 80 |

Date of Report: 09/28/09
Date Received: 09/25/09
Project: EP-S7-06-02 Site 0908, F&BI 909252
Date Analyzed: 09/28/09

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL SUSPENDED SOLIDS BY METHOD 2540D**

Results Reported as mg/L (ppm)

| Sample ID<br>Laboratory ID | Total Suspended Solids |
|---|---|
| 0909-0162 TT08092409<br>909252-04 | <10 |
| Method Blank | <10 |

## Analysis For Semivolatile Compounds By Method 625 Modified

| | | | |
|---|---|---|---|
| Client Sample ID: | 0909-0162 TT08092409 | Client: | EQM, Inc. |
| Date Received: | 09/25/09 | Project: | EP-S7-06-02 Site 0908, F&BI 909252 |
| Date Extracted: | 09/25/09 | Lab ID: | 909252-04 |
| Date Analyzed: | 09/28/09 | Data File: | 092806.D |
| Matrix: | Water | Instrument: | GCMS3 |
| Units: | ug/L (ppb) | Operator: | YA |

| Recovery: | Limit: | Lower Limit: | UpperSurrogates: | % |
|---|---|---|---|---|
| 2-Fluorophenol | 80 | 30 | 118 | |
| Phenol-d6 | 62 | 30 | 118 | |
| Nitrobenzene-d5 | 94 | 10 | 180 | |
| 2-Fluorobiphenyl | 90 | 40 | 130 | |
| 2,4,6-Tribromophenol | 64 | 16 | 116 | |
| Terphenyl-d14 | 86 | 30 | 144 | |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Phenol | <10 | 3-Nitroaniline | <3 |
| Bis(2-chloroethyl) ether | <1 | Acenaphthene | <1 |
| 2-Chlorophenol | <10 | 2,4-Dinitrophenol | <30 |
| 1,3-Dichlorobenzene | <1 | Dibenzofuran | <1 |
| 1,4-Dichlorobenzene | <1 | 2,4-Dinitrotoluene | <1 |
| 1,2-Dichlorobenzene | <1 | 4-Nitrophenol | <10 |
| Benzyl alcohol | <1 | Diethyl phthalate | <1 |
| Bis(2-chloroisopropyl) ether | <1 | Fluorene | <1 |
| 2-Methylphenol | <10 | 4-Chlorophenyl phenyl ether | <1 |
| Hexachloroethane | <1 | N-Nitrosodiphenylamine | <1 |
| N-Nitroso-di-n-propylamine | <1 | 4-Nitroaniline | <10 |
| 4-Methylphenol | <10 | 4,6-Dinitro-2-methylphenol | <30 |
| Nitrobenzene | <1 | 4-Bromophenyl phenyl ether | <1 |
| Isophorone | <1 | Hexachlorobenzene | <1 |
| 2-Nitrophenol | <10 | Pentachlorophenol | <10 |
| 2,4-Dimethylphenol | <10 | Phenanthrene | <1 |
| Benzoic acid | <100 | Anthracene | <1 |
| Bis(2-chloroethoxy)methane | <1 | Carbazole | <1 |
| 2,4-Dichlorophenol | <10 | Di-n-butyl phthalate | <1 |
| 1,2,4-Trichlorobenzene | <1 | Fluoranthene | <1 |
| Naphthalene | <1 | Pyrene | <1 |
| Hexachlorobutadiene | <1 | Benzyl butyl phthalate | <1 |
| 4-Chloroaniline | <3 | Benz(a)anthracene | <1 |
| 4-Chloro-3-methylphenol | <10 | Chrysene | <1 |
| 2-Methylnaphthalene | <1 | Bis(2-ethylhexyl) phthalate | <10 |
| Hexachlorocyclopentadiene | <3 | Di-n-octyl phthalate | <1 |
| 2,4,6-Trichlorophenol | <10 | Benzo(a)pyrene | <1 |
| 2,4,5-Trichlorophenol | <10 | Benzo(b)fluoranthene | <1 |
| 2-Chloronaphthalene | <1 | Benzo(k)fluoranthene | <1 |
| 2-Nitroaniline | <1 | Indeno(1,2,3-cd)pyrene | <1 |
| Dimethyl phthalate | <1 | Dibenz(a,h)anthracene | <1 |
| Acenaphthylene | <1 | Benzo(g,h,i)perylene | <1 |
| 2,6-Dinitrotoluene | 17 | | |

## Analysis For Volatile Compounds By Method 624 Modified

| | | | |
|---|---|---|---|
| Client Sample ID: | 0909-0162 TT08092409 | Client: | EQM, Inc. |
| Date Received: | 09/25/09 | Project: | EP-S7-06-02 Site 0908, F&BI 909252 |
| Date Extracted: | 09/25/09 | Lab ID: | 909252-04 |
| Date Analyzed: | 09/25/09 | Data File: | 092515.D |
| Matrix: | Water | Instrument: | GCMS5 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 111 | 65 | 127 |
| Toluene-d8 | 106 | 69 | 127 |
| 4-Bromofluorobenzene | 88 | 77 | 156 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <1 |
| Chloromethane | <1 | Tetrachloroethene | <1 |
| Vinyl chloride | <0.2 | Dibromochloromethane | <1 |
| Bromomethane | <1 | 1,2-Dibromoethane (EDB) | <1 |
| Chloroethane | <1 | Chlorobenzene | <1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <1 |
| Acetone | <10 | 1,1,1,2-Tetrachloroethane | <1 |
| 1,1-Dichloroethene | <1 | m,p-Xylene | <2 |
| Methylene chloride | <5 | o-Xylene | <1 |
| Methyl t-butyl ether (MTBE) | <1 | Styrene | <1 |
| trans-1,2-Dichloroethene | <1 | Isopropylbenzene | <1 |
| 1,1-Dichloroethane | <1 | Bromoform | <1 |
| 2,2-Dichloropropane | <1 | n-Propylbenzene | <1 |
| cis-1,2-Dichloroethene | <1 | Bromobenzene | <1 |
| Chloroform | <1 | 1,3,5-Trimethylbenzene | <1 |
| 2-Butanone (MEK) | <10 ca | 1,1,2,2-Tetrachloroethane | <1 |
| 1,2-Dichloroethane (EDC) | <1 | 1,2,3-Trichloropropane | <1 |
| 1,1,1-Trichloroethane | <1 | 2-Chlorotoluene | <1 |
| 1,1-Dichloropropene | <1 | 4-Chlorotoluene | <1 |
| Carbon tetrachloride | <1 | tert-Butylbenzene | <1 |
| Benzene | <1 | 1,2,4-Trimethylbenzene | <1 |
| Trichloroethene | <1 | sec-Butylbenzene | <1 |
| 1,2-Dichloropropane | <1 | p-Isopropyltoluene | <1 |
| Bromodichloromethane | <1 | 1,3-Dichlorobenzene | <1 |
| Dibromomethane | <1 | 1,4-Dichlorobenzene | <1 |
| 4-Methyl-2-pentanone | <10 | 1,2-Dichlorobenzene | <1 |
| cis-1,3-Dichloropropene | <1 | 1,2-Dibromo-3-chloropropane | <1 |
| Toluene | <1 | 1,2,4-Trichlorobenzene | <1 |
| trans-1,3-Dichloropropene | <1 | Hexachlorobutadiene | <1 |
| 1,1,2-Trichloroethane | <1 | Naphthalene | <1 |
| 2-Hexanone | <10 | 1,2,3-Trichlorobenzene | <1 |

Date of Report: 09/28/09
Date Received: 09/25/09
Project: EP-S7-06-02 Site 0908, F&BI 909252
Date Extracted: 09/25/09
Date Analyzed: 09/28/09

**RESULTS FROM THE ANALYSIS OF THE WATER SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E**

Results Reported as ug/L (ppb)

| Sample ID<br>Laboratory ID | Total Mercury |
|---|---|
| 0909-0162 TT08092409<br>909252-04 | <0.2 |
| Method Blank | <0.2 |

WATER ENVIRONMENT SERVICES
*Beyond* clean water.

Water Quality Protection
Surface Water Management
Wastewater Collection & Treatment
Michael S. Kuenzi, P.E.
Director

# DISCHARGE CERTIFICATION REPORT

Industrial Users permitted to discharge wastewater regulated under Federal and local standards must submit a periodic " Discharge Certification Report" to comply with the conditions of their permit.

Report Due: October 16, 2009

To: Source Control
Water Environment Services
15941 S. Agnes Rd., Bldg. B
Oregon City, OR 97045

Facility Name: *U.S. EPA – Northwest Pipe & Casing Site*

Address: *9585 SE Mather Road*
*Clackamas, OR 97015*

Reporting Period (From) 10-4-09 (To) 10-10-09

**Certification Statement: I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.**

Signature _____ Date 10-14-09

Title Project Manager

| Date | Water Treatment | | | | | | Discharge | | Comments |
|---|---|---|---|---|---|---|---|---|---|
| | Meter Start | Meter Stop | Tank No. | Vol (gal) | Meter Start | Meter Stop | Tank No. | Volume (gal) | |
| 9/28/09 | | | | | | | | | |
| 9/30/09 | 726920 | 727311 | 6, 7, 8, 9 | 39,100 | | | | | |
| 10/1/09 | | | | | | | | | |
| 10/2/09 | 727311 | 727425 | 6, 7, 8, 9 | 11,400 | | | | | |
| 10/3/09 | | | | | | | | | |
| 10/4/09 | | | | | | | | | Average daily flow is 25,250 gallons |
| 10/5/09 | | | | | | | | | |
| 10/6/09 | | | | | | | | | |
| 10/7/09 | 727425 | 728110 | 10,11,12,13 | 68,500 | | | | | Start discharging at 0825 hours |
| 10/8/09 | 728110 | —— | 6,7,8,9,14,15 | 90,000 | | | | | Start discharging at 0745 hours / Meter Broke |
| 10/9/09 | | | | | | | | | |
| 10/10/09 | | | | | | | | | |
| 10/11/09 | | | | | | | | | Average daily flow is 79,250 gallons |
| 10/12/09 | | | | | | | | | |
| 10/13/09 | | | | | | | | | |
| 10/14/09 | | | | | | | | | |
| 10/15/09 | | | | | | | | | |
| 10/16/09 | | | | | | | | | |
| 10/17/09 | | | | | | | | | |
| 10/18/09 | | | | | | | | | |
| 10/19/09 | | | | | | | | | |
| 10/20/09 | | | | | | | | | |
| | | | | | | | | | |
| | | | | 209,000 | | | | | |

WATER ENVIRONMENT SERVICES
*Beyond* clean water.

Water Quality Protection
Surface Water Management
Wastewater Collection & Treatment
Michael S. Kuenzi, P.E.
Director

# DISCHARGE CERTIFICATION REPORT

Industrial Users subject to "No Discharge" requirements for processes regulated under Federal and local standards must submit a periodic "No Discharge Certification Report" to comply with the conditions of this permit.

Report Due: 10-23-09

To:

Source Control
Water Environment Services
15941 S. Agnes Ave., Building B
Oregon City, OR 97045

Facility Name: *U.S. EPA – Northwest Pipe & Casing Site*

Address: *9585 SE Mather Road*
*Clackamas, OR 97015*

Reporting Period (From) 10-11-09 (To) 10-17-09

Based on my inquiry of the person or persons directly responsible for environmental compliance, I certify that, to the best of my knowledge and belief, no discharges of any regulated wastewaters occurred since filing of the last report.

I have personally examined and am familiar with the information submitted in this report and any attachments. Based on my inquiry of those individuals immediately responsible for obtaining the information reported herein, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment.

Signature _____ Date 10-22-09

Title Project Manager

| Date | Water Treatment | | | | | | Discharge | | Comments |
|---|---|---|---|---|---|---|---|---|---|
| | Meter Start | Meter Stop | Tank No. | Vol (gal) | Meter Start | Meter Stop | Tank No. | Volume (gal) | |
| 9/28/09 | | | | | | | | | |
| 9/30/09 | 726920 | 727311 | 6, 7, 8, 9 | 39,100 | | | | | |
| 10/1/09 | | | | | | | | | |
| 10/2/09 | 727311 | 727425 | 6, 7, 8, 9 | 11,400 | | | | | |
| 10/3/09 | | | | | | | | | |
| 10/4/09 | | | | | | | | | Average daily flow is 25,250 gallons |
| 10/5/09 | | | | | | | | | |
| 10/6/09 | | | | | | | | | |
| 10/7/09 | 727425 | 728110 | 10,11,12,13 | 68,500 | | | | | Start discharging at 0825 hours |
| 10/8/09 | 728110 | —— | 6,7,8,9,14,15 | 90,000 | | | | | Start discharging at 0745 hours / Meter Broke |
| 10/9/09 | | | | | | | | | |
| 10/10/09 | | | | | | | | | |
| 10/11/09 | | | | | | | | | Average daily flow is 79,250 gallons |
| 10/12/09 | | | | | | | | | |
| 10/13/09 | | | | | | | | | |
| 10/14/09 | | | | | | | | | |
| 10/15/09 | 0036820 | 0037394 | 10,11,12,13 | 57,400 | | | | | Replaced with new meter |
| 10/16/09 | | | | | | | | | |
| 10/17/09 | | | | | | | | | |
| 10/18/09 | | | | | | | | | Average daily flow is 57,400 gallons |
| 10/19/09 | | | | | | | | | |
| 10/20/09 | 0037394 | 0038431 | 6,7,8,9,14,15 | 103,700 | | | | | |
| 10/21/09 | | | | | | | | | |
| 10/22/09 | | | | | | | | | |
| 10/23/09 | | | | | | | | | |
| 10/24/09 | | | | | | | | | |
| 10/25/09 | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | 370,100 | | | | | |

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

October 14, 2009

Jason Coury, Project Manager
EQM, Inc.
6825 216th St. SW St. J
Lynnwood, WA 98036

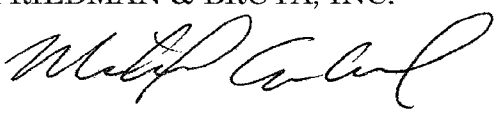
Dear Mr. Coury:

Included are the results from the testing of material submitted on October 13, 2009 from the EP-S7-06-02 Site 0908, F&BI 910112 project. There are 19 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 should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
c: Jim Petersen, Bryce Robbert, Mark Ader, Kathy Parker, earoth@paramatrix.com

EQM1014R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on October 13, 2009 by Friedman & Bruya, Inc. from the EQM, Inc. EP-S7-06-02 Site 0908, F&BI 910112 project. Samples were logged in under the laboratory ID's listed below.

| Laboratory ID | EQM, Inc. |
|---|---|
| 910112-01 | 0910-0138 TT10101209 |
| 910112-02 | 0910-0139 TB24WT |

The analysis of water samples by Method 624 Modified followed the practices described by EPA Method 8260C.

The analysis of water samples by Method 625 Modified followed the practices described by EPA Method 8270D.

The analysis of water samples by Method 608 Modified followed the practices described by EPA Method 8082A.

Sample 0910-0138 TT01101209 were sent to Amtest for cyanide and oil and grease analyses. The report generated by Amtest will be forwarded to your office upon receipt.

The 625 surrogate phenol-d6 and several laboratory contol sample and laboratory control sample duplicate analytes failed the acceptance criteria. The sample was analyzed on an instrument that has not run sufficient water samples to establish in house control limits. The compounds that failed below the default acceptance criteria fell within typical recoveries for the compounds. Therefore, the data were considered acceptable.

All other quality control requirements were acceptable.

## Analysis For Total Metals By EPA Method 200.8

| | | | |
|---|---|---|---|
| Client ID: | 0910-0138 TT10101209 | Client: | EQM, Inc. |
| Date Received: | 10/13/09 | Project: | EP-S7-06-02 Site 0908, F&BI 910112 |
| Date Extracted: | 10/13/09 | Lab ID: | 910112-01 |
| Date Analyzed: | 10/13/09 | Data File: | 910112-01.041 |
| Matrix: | Water | Instrument: | ICPMS1 |
| Units: | ug/L (ppb) | Operator: | btb |

| Internal Standard: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Germanium | 98 | 60 | 125 |
| Indium | 91 | 60 | 125 |
| Holmium | 99 | 60 | 125 |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Chromium | 1.49 |
| Nickel | 12.3 |
| Copper | 1.14 |
| Zinc | 16.6 |
| Arsenic | 6.02 |
| Silver | <1 |
| Cadmium | <1 |
| Lead | <1 |

## Analysis For Total Metals By EPA Method 200.8

| | | | |
|---|---|---|---|
| Client ID: | Method Blank | Client: | EQM, Inc. |
| Date Received: | Not Applicable | Project: | EP-S7-06-02 Site 0908, F&BI 910112 |
| Date Extracted: | 10/13/09 | Lab ID: | I9-426 mb |
| Date Analyzed: | 10/13/09 | Data File: | I9-426 mb.034 |
| Matrix: | Water | Instrument: | ICPMS1 |
| Units: | ug/L (ppb) | Operator: | btb |

| Internal Standard: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Germanium | 86 | 60 | 125 |
| Indium | 95 | 60 | 125 |
| Holmium | 105 | 60 | 125 |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Chromium | <1 |
| Nickel | <1 |
| Copper | <1 |
| Zinc | <1 |
| Arsenic | <1 |
| Silver | <1 |
| Cadmium | <1 |
| Lead | <1 |

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 10/14/09
Date Received: 10/13/09
Project: EP-S7-06-02 Site 0908, F&BI 910112
Date Extracted: 10/13/09
Date Analyzed: 10/14/09

**RESULTS FROM THE ANALYSIS OF THE WATER SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E**

Results Reported as ug/L (ppb)

| Sample ID<br>Laboratory ID | Total Mercury |
|---|---|
| 0910-0138 TT10101209<br>910112-01 | <0.2 |
| Method Blank | <0.2 |

## Analysis For Volatile Compounds By Method 624

| | | | |
|---|---|---|---|
| Client Sample ID: | 0910-0138 TT10101209 | Client: | EQM, Inc. |
| Date Received: | 10/13/09 | Project: | EP-S7-06-02 Site 0908, F&BI 910112 |
| Date Extracted: | 10/13/09 | Lab ID: | 910112-01 |
| Date Analyzed: | 10/13/09 | Data File: | 101308.D |
| Matrix: | Water | Instrument: | GCMS5 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 100 | 65 | 127 |
| Toluene-d8 | 100 | 69 | 127 |
| 4-Bromofluorobenzene | 98 | 77 | 156 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <1 |
| Chloromethane | <1 | Tetrachloroethene | <1 |
| Vinyl chloride | <0.2 | Dibromochloromethane | <1 |
| Bromomethane | <1 | 1,2-Dibromoethane (EDB) | <1 |
| Chloroethane | <1 | Chlorobenzene | <1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <1 |
| Acetone | <10 | 1,1,1,2-Tetrachloroethane | <1 |
| 1,1-Dichloroethene | <1 | m,p-Xylene | <2 |
| Methylene chloride | <5 | o-Xylene | <1 |
| Methyl t-butyl ether (MTBE) | <1 | Styrene | <1 |
| trans-1,2-Dichloroethene | <1 | Isopropylbenzene | <1 |
| 1,1-Dichloroethane | <1 | Bromoform | <1 |
| 2,2-Dichloropropane | <1 | n-Propylbenzene | <1 |
| cis-1,2-Dichloroethene | <1 | Bromobenzene | <1 |
| Chloroform | <1 | 1,3,5-Trimethylbenzene | <1 |
| 2-Butanone (MEK) | <10 | 1,1,2,2-Tetrachloroethane | <1 |
| 1,2-Dichloroethane (EDC) | <1 | 1,2,3-Trichloropropane | <1 |
| 1,1,1-Trichloroethane | <1 | 2-Chlorotoluene | <1 |
| 1,1-Dichloropropene | <1 | 4-Chlorotoluene | <1 |
| Carbon tetrachloride | <1 | tert-Butylbenzene | <1 |
| Benzene | <1 | 1,2,4-Trimethylbenzene | <1 |
| Trichloroethene | <1 | sec-Butylbenzene | <1 |
| 1,2-Dichloropropane | <1 | p-Isopropyltoluene | <1 |
| Bromodichloromethane | <1 | 1,3-Dichlorobenzene | <1 |
| Dibromomethane | <1 | 1,4-Dichlorobenzene | <1 |
| 4-Methyl-2-pentanone | <10 | 1,2-Dichlorobenzene | <1 |
| cis-1,3-Dichloropropene | <1 | 1,2-Dibromo-3-chloropropane | <1 |
| Toluene | <1 | 1,2,4-Trichlorobenzene | <1 |
| trans-1,3-Dichloropropene | <1 | Hexachlorobutadiene | <1 |
| 1,1,2-Trichloroethane | <1 | Naphthalene | <1 |
| 2-Hexanone | <10 | 1,2,3-Trichlorobenzene | <1 |

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

## Analysis For Volatile Compounds By EPA Method 8260C

| | | | |
|---|---|---|---|
| Client Sample ID: | 0910-0139 TB24WT | Client: | EQM, Inc. |
| Date Received: | 10/13/09 | Project: | EP-S7-06-02 Site 0908, F&BI 910112 |
| Date Extracted: | 10/13/09 | Lab ID: | 910112-02 |
| Date Analyzed: | 10/13/09 | Data File: | 101307.D |
| Matrix: | Water | Instrument: | GCMS5 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 99 | 65 | 127 |
| Toluene-d8 | 100 | 69 | 127 |
| 4-Bromofluorobenzene | 98 | 77 | 156 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <1 |
| Chloromethane | <1 | Tetrachloroethene | <1 |
| Vinyl chloride | <0.2 | Dibromochloromethane | <1 |
| Bromomethane | <1 | 1,2-Dibromoethane (EDB) | <1 |
| Chloroethane | <1 | Chlorobenzene | <1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <1 |
| Acetone | <10 | 1,1,1,2-Tetrachloroethane | <1 |
| 1,1-Dichloroethene | <1 | m,p-Xylene | <2 |
| Methylene chloride | <5 | o-Xylene | <1 |
| Methyl t-butyl ether (MTBE) | <1 | Styrene | <1 |
| trans-1,2-Dichloroethene | <1 | Isopropylbenzene | <1 |
| 1,1-Dichloroethane | <1 | Bromoform | <1 |
| 2,2-Dichloropropane | <1 | n-Propylbenzene | <1 |
| cis-1,2-Dichloroethene | <1 | Bromobenzene | <1 |
| Chloroform | <1 | 1,3,5-Trimethylbenzene | <1 |
| 2-Butanone (MEK) | <10 | 1,1,2,2-Tetrachloroethane | <1 |
| 1,2-Dichloroethane (EDC) | <1 | 1,2,3-Trichloropropane | <1 |
| 1,1,1-Trichloroethane | <1 | 2-Chlorotoluene | <1 |
| 1,1-Dichloropropene | <1 | 4-Chlorotoluene | <1 |
| Carbon tetrachloride | <1 | tert-Butylbenzene | <1 |
| Benzene | <1 | 1,2,4-Trimethylbenzene | <1 |
| Trichloroethene | <1 | sec-Butylbenzene | <1 |
| 1,2-Dichloropropane | <1 | p-Isopropyltoluene | <1 |
| Bromodichloromethane | <1 | 1,3-Dichlorobenzene | <1 |
| Dibromomethane | <1 | 1,4-Dichlorobenzene | <1 |
| 4-Methyl-2-pentanone | <10 | 1,2-Dichlorobenzene | <1 |
| cis-1,3-Dichloropropene | <1 | 1,2-Dibromo-3-chloropropane | <1 |
| Toluene | <1 | 1,2,4-Trichlorobenzene | <1 |
| trans-1,3-Dichloropropene | <1 | Hexachlorobutadiene | <1 |
| 1,1,2-Trichloroethane | <1 | Naphthalene | <1 |
| 2-Hexanone | <10 | 1,2,3-Trichlorobenzene | <1 |

## Analysis For Volatile Compounds By EPA Method 8260C and 624

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | EQM, Inc. |
| Date Received: | NA | Project: | EP-S7-06-02 Site 0908, F&BI 910112 |
| Date Extracted: | 10/13/09 | Lab ID: | 091470 mb |
| Date Analyzed: | 10/13/09 | Data File: | 101306.D |
| Matrix: | Water | Instrument: | GCMS5 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 99 | 65 | 127 |
| Toluene-d8 | 100 | 69 | 127 |
| 4-Bromofluorobenzene | 99 | 77 | 156 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <1 |
| Chloromethane | <1 | Tetrachloroethene | <1 |
| Vinyl chloride | <0.2 | Dibromochloromethane | <1 |
| Bromomethane | <1 | 1,2-Dibromoethane (EDB) | <1 |
| Chloroethane | <1 | Chlorobenzene | <1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <1 |
| Acetone | <10 | 1,1,1,2-Tetrachloroethane | <1 |
| 1,1-Dichloroethene | <1 | m,p-Xylene | <2 |
| Methylene chloride | <5 | o-Xylene | <1 |
| Methyl t-butyl ether (MTBE) | <1 | Styrene | <1 |
| trans-1,2-Dichloroethene | <1 | Isopropylbenzene | <1 |
| 1,1-Dichloroethane | <1 | Bromoform | <1 |
| 2,2-Dichloropropane | <1 | n-Propylbenzene | <1 |
| cis-1,2-Dichloroethene | <1 | Bromobenzene | <1 |
| Chloroform | <1 | 1,3,5-Trimethylbenzene | <1 |
| 2-Butanone (MEK) | <10 | 1,1,2,2-Tetrachloroethane | <1 |
| 1,2-Dichloroethane (EDC) | <1 | 1,2,3-Trichloropropane | <1 |
| 1,1,1-Trichloroethane | <1 | 2-Chlorotoluene | <1 |
| 1,1-Dichloropropene | <1 | 4-Chlorotoluene | <1 |
| Carbon tetrachloride | <1 | tert-Butylbenzene | <1 |
| Benzene | <1 | 1,2,4-Trimethylbenzene | <1 |
| Trichloroethene | <1 | sec-Butylbenzene | <1 |
| 1,2-Dichloropropane | <1 | p-Isopropyltoluene | <1 |
| Bromodichloromethane | <1 | 1,3-Dichlorobenzene | <1 |
| Dibromomethane | <1 | 1,4-Dichlorobenzene | <1 |
| 4-Methyl-2-pentanone | <10 | 1,2-Dichlorobenzene | <1 |
| cis-1,3-Dichloropropene | <1 | 1,2-Dibromo-3-chloropropane | <1 |
| Toluene | <1 | 1,2,4-Trichlorobenzene | <1 |
| trans-1,3-Dichloropropene | <1 | Hexachlorobutadiene | <1 |
| 1,1,2-Trichloroethane | <1 | Naphthalene | <1 |
| 2-Hexanone | <10 | 1,2,3-Trichlorobenzene | <1 |

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 10/14/09
Date Received: 10/13/09
Project: EP-S7-06-02 Site 0908, F&BI 910112
Date Analyzed: 10/14/09

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL SUSPENDED SOLIDS BY METHOD 2540D**

Results Reported as mg/L (ppm)

| Sample ID<br>Laboratory ID | Total Suspended Solids |
|---|---|
| 0910-0138 TT10101209<br>910112-01 | 22 |
| Method Blank | <10 |

## Analysis For Semivolatile Compounds By Method 625

| | | | |
|---|---|---|---|
| Client Sample ID: | 0910-0138 TT10101209 | Client: | EQM, Inc. |
| Date Received: | 10/13/09 | Project: | EP-S7-06-02 Site 0908, F&BI 910112 |
| Date Extracted: | 10/13/09 | Lab ID: | 910112-01 |
| Date Analyzed: | 10/13/09 | Data File: | 101318.D |
| Matrix: | Water | Instrument: | GCMS6 |
| Units: | ug/L (ppb) | Operator: | YA |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 58 | 50 | 150 |
| Phenol-d6 | 37 vo | 50 | 150 |
| Nitrobenzene-d5 | 85 | 50 | 150 |
| 2-Fluorobiphenyl | 86 | 50 | 150 |
| 2,4,6-Tribromophenol | 91 | 50 | 150 |
| Terphenyl-d14 | 90 | 50 | 150 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Phenol | <50 | 3-Nitroaniline | <5 |
| Bis(2-chloroethyl) ether | <5 | Acenaphthene | <150 |
| 2-Chlorophenol | <50 | 2,4-Dinitrophenol | <5 |
| 1,3-Dichlorobenzene | <5 | Dibenzofuran | <5 |
| 1,4-Dichlorobenzene | <5 | 2,4-Dinitrotoluene | <50 |
| 1,2-Dichlorobenzene | <5 | 4-Nitrophenol | <5 |
| Benzyl alcohol | <5 | Diethyl phthalate | <5 |
| Bis(2-chloroisopropyl) ether | <5 | Fluorene | <5 |
| 2-Methylphenol | <50 | 4-Chlorophenyl phenyl ether | <5 |
| Hexachloroethane | <5 | N-Nitrosodiphenylamine | <5 |
| N-Nitroso-di-n-propylamine | <5 | 4-Nitroaniline | <50 |
| 4-Methylphenol | <50 | 4,6-Dinitro-2-methylphenol | <150 |
| Nitrobenzene | <5 | 4-Bromophenyl phenyl ether | <5 |
| Isophorone | <5 | Hexachlorobenzene | <5 |
| 2-Nitrophenol | <50 | Pentachlorophenol | <50 |
| 2,4-Dimethylphenol | <50 | Phenanthrene | <5 |
| Benzoic acid | <500 | Anthracene | <5 |
| Bis(2-chloroethoxy)methane | <5 | Carbazole | <5 |
| 2,4-Dichlorophenol | <50 | Di-n-butyl phthalate | <5 |
| 1,2,4-Trichlorobenzene | <5 | Fluoranthene | <5 |
| Naphthalene | <5 | Pyrene | <5 |
| Hexachlorobutadiene | <5 | Benzyl butyl phthalate | <5 |
| 4-Chloroaniline | <15 | Benz(a)anthracene | <50 |
| 4-Chloro-3-methylphenol | <50 | Chrysene | <5 |
| 2-Methylnaphthalene | <5 | Bis(2-ethylhexyl) phthalate | <50 |
| Hexachlorocyclopentadiene | <15 | Di-n-octyl phthalate | <5 |
| 2,4,6-Trichlorophenol | <50 | Benzo(a)pyrene | <5 |
| 2,4,5-Trichlorophenol | <50 | Benzo(b)fluoranthene | <5 |
| 2-Chloronaphthalene | <5 | Benzo(k)fluoranthene | <5 |
| 2-Nitroaniline | <5 | Indeno(1,2,3-cd)pyrene | <5 |
| Dimethyl phthalate | <5 | Dibenz(a,h)anthracene | <5 |
| Acenaphthylene | <5 | Benzo(g,h,i)perylene | <5 |
| 2,6-Dinitrotoluene | <15 | | |

## Analysis For Semivolatile Compounds By Method 625

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | EQM, Inc. |
| Date Received: | NA | Project: | EP-S7-06-02 Site 0908, F&BI 910112 |
| Date Extracted: | 10/13/09 | Lab ID: | 091510mb |
| Date Analyzed: | 10/13/09 | Data File: | 101317.D |
| Matrix: | Water | Instrument: | GCMS6 |
| Units: | ug/L (ppb) | Operator: | YA |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 52 | 50 | 150 |
| Phenol-d6 | 36 vo | 50 | 150 |
| Nitrobenzene-d5 | 89 | 50 | 150 |
| 2-Fluorobiphenyl | 91 | 50 | 150 |
| 2,4,6-Tribromophenol | 86 | 50 | 150 |
| Terphenyl-d14 | 97 | 50 | 150 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Phenol | <50 | 3-Nitroaniline | <5 |
| Bis(2-chloroethyl) ether | <5 | Acenaphthene | <150 |
| 2-Chlorophenol | <50 | 2,4-Dinitrophenol | <5 |
| 1,3-Dichlorobenzene | <5 | Dibenzofuran | <5 |
| 1,4-Dichlorobenzene | <5 | 2,4-Dinitrotoluene | <50 |
| 1,2-Dichlorobenzene | <5 | 4-Nitrophenol | <5 |
| Benzyl alcohol | <5 | Diethyl phthalate | <5 |
| Bis(2-chloroisopropyl) ether | <5 | Fluorene | <5 |
| 2-Methylphenol | <50 | 4-Chlorophenyl phenyl ether | <5 |
| Hexachloroethane | <5 | N-Nitrosodiphenylamine | <5 |
| N-Nitroso-di-n-propylamine | <5 | 4-Nitroaniline | <50 |
| 4-Methylphenol | <50 | 4,6-Dinitro-2-methylphenol | <150 |
| Nitrobenzene | <5 | 4-Bromophenyl phenyl ether | <5 |
| Isophorone | <5 | Hexachlorobenzene | <5 |
| 2-Nitrophenol | <50 | Pentachlorophenol | <50 |
| 2,4-Dimethylphenol | <50 | Phenanthrene | <5 |
| Benzoic acid | <500 | Anthracene | <5 |
| Bis(2-chloroethoxy)methane | <5 | Carbazole | <5 |
| 2,4-Dichlorophenol | <50 | Di-n-butyl phthalate | <5 |
| 1,2,4-Trichlorobenzene | <5 | Fluoranthene | <5 |
| Naphthalene | <5 | Pyrene | <5 |
| Hexachlorobutadiene | <5 | Benzyl butyl phthalate | <5 |
| 4-Chloroaniline | <15 | Benz(a)anthracene | <50 |
| 4-Chloro-3-methylphenol | <50 | Chrysene | <5 |
| 2-Methylnaphthalene | <5 | Bis(2-ethylhexyl) phthalate | <50 |
| Hexachlorocyclopentadiene | <15 | Di-n-octyl phthalate | <5 |
| 2,4,6-Trichlorophenol | <50 | Benzo(a)pyrene | <5 |
| 2,4,5-Trichlorophenol | <50 | Benzo(b)fluoranthene | <5 |
| 2-Chloronaphthalene | <5 | Benzo(k)fluoranthene | <5 |
| 2-Nitroaniline | <5 | Indeno(1,2,3-cd)pyrene | <5 |
| Dimethyl phthalate | <5 | Dibenz(a,h)anthracene | <5 |
| Acenaphthylene | <5 | Benzo(g,h,i)perylene | <5 |
| 2,6-Dinitrotoluene | <15 | | |

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 10/14/09
Date Received: 10/13/09
Project: EP-S7-06-02 Site 0908, F&BI 910112
Date Extracted: 10/13/09
Date Analyzed: 10/13/09

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES**
**FOR PCBs AS AROCLORS**
**USING METHOD 608**

Results Reported as ug/L (ppb)

| Sample ID<br>Laboratory ID | Aroclor 1221 | 1232 | 1016 | 1242 | 1248 | 1254 | 1260 | Surrogate (% Rec.)<br>(Limit 61-132) |
|---|---|---|---|---|---|---|---|---|
| 0910-0138 TT10101209<br>910112-01 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 84 |
| Method Blank | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 79 |

Date of Report: 10/14/09
Date Received: 10/13/09
Project: EP-S7-06-02 Site 0908, F&BI 910112

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL METALS USING EPA METHOD 200.8

Laboratory Code: 910096-03 (Duplicate)

| Analyte | Reporting Units | Sample Result | Duplicate Result | Relative Percent Difference | Acceptance Criteria |
|---|---|---|---|---|---|
| Chromium | ug/L (ppb) | 1.92 | 1.98 | 3 | 0-20 |
| Nickel | ug/L (ppb) | 1.16 | 1.24 | 7 | 0-20 |
| Copper | ug/L (ppb) | 1.98 | 2.14 | 8 | 0-20 |
| Zinc | ug/L (ppb) | 3.54 | 3.35 | 6 | 0-20 |
| Arsenic | ug/L (ppb) | 51.2 | 52.8 | 3 | 0-20 |
| Silver | ug/L (ppb) | <1 | <1 | nm | 0-20 |
| Cadmium | ug/L (ppb) | <1 | <1 | nm | 0-20 |
| Lead | ug/L (ppb) | <1 | <1 | nm | 0-20 |

Laboratory Code: 910096-03 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result | Percent Recovery MS | Acceptance Criteria |
|---|---|---|---|---|---|
| Chromium | ug/L (ppb) | 20 | 1.92 | 78 | 50-150 |
| Nickel | ug/L (ppb) | 20 | 1.16 | 72 | 50-150 |
| Copper | ug/L (ppb) | 20 | 1.98 | 73 | 50-150 |
| Zinc | ug/L (ppb) | 50 | 3.54 | 75 | 50-150 |
| Arsenic | ug/L (ppb) | 10 | 51.2 | 91 b | 50-150 |
| Silver | ug/L (ppb) | 5 | <1 | 95 | 50-150 |
| Cadmium | ug/L (ppb) | 5 | <1 | 97 | 50-150 |
| Lead | ug/L (ppb) | 10 | <1 | 103 | 50-150 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Chromium | ug/L (ppb) | 20 | 96 | 70-130 |
| Nickel | ug/L (ppb) | 20 | 93 | 70-130 |
| Copper | ug/L (ppb) | 20 | 95 | 70-130 |
| Zinc | ug/L (ppb) | 50 | 94 | 70-130 |
| Arsenic | ug/L (ppb) | 10 | 75 | 70-130 |
| Silver | ug/L (ppb) | 5 | 95 | 70-130 |
| Cadmium | ug/L (ppb) | 5 | 96 | 70-130 |
| Lead | ug/L (ppb) | 10 | 96 | 70-130 |

Date of Report: 10/14/09
Date Received: 10/13/09
Project: EP-S7-06-02 Site 0908, F&BI 910112

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Laboratory Code: 910078-01 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result | Percent Recovery MS | Percent Recovery MS | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Mercury | ug/L (ppb) | 0.5 | <0.2 | 100 | 106 | 50-150 | 6 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Mercury | ug/L (ppb) | 0.5 | 111 | 70-130 |

Date of Report: 10/14/09
Date Received: 10/13/09
Project: EP-S7-06-02 Site 0908, F&BI 910112

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260C AND 624

Laboratory Code: 910112-01 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result | Percent Recovery MS | Acceptance Criteria |
|---|---|---|---|---|---|
| Dichlorodifluoromethane | ug/L (ppb) | 50 | <1 | 99 | 50-150 |
| Chloromethane | ug/L (ppb) | 50 | <1 | 91 | 26-167 |
| Vinyl chloride | ug/L (ppb) | 50 | <0.2 | 108 | 35-159 |
| Bromomethane | ug/L (ppb) | 50 | <1 | 98 | 24-165 |
| Chloroethane | ug/L (ppb) | 50 | <1 | 107 | 19-172 |
| Trichlorofluoromethane | ug/L (ppb) | 50 | <1 | 114 | 32-165 |
| Acetone | ug/L (ppb) | 50 | <10 | 85 | 29-148 |
| 1,1-Dichloroethene | ug/L (ppb) | 50 | <1 | 103 | 34-149 |
| Methylene chloride | ug/L (ppb) | 50 | <5 | 91 | 64-126 |
| Methyl t-butyl ether (MTBE) | ug/L (ppb) | 50 | <1 | 96 | 57-134 |
| trans-1,2-Dichloroethene | ug/L (ppb) | 50 | <1 | 102 | 65-131 |
| 1,1-Dichloroethane | ug/L (ppb) | 50 | <1 | 100 | 59-132 |
| 2,2-Dichloropropane | ug/L (ppb) | 50 | <1 | 110 | 58-137 |
| cis-1,2-Dichloroethene | ug/L (ppb) | 50 | <1 | 100 | 64-134 |
| Chloroform | ug/L (ppb) | 50 | <1 | 102 | 59-135 |
| 2-Butanone (MEK) | ug/L (ppb) | 50 | <10 | 89 | 47-162 |
| 1,2-Dichloroethane (EDC) | ug/L (ppb) | 50 | <1 | 105 | 67-133 |
| 1,1,1-Trichloroethane | ug/L (ppb) | 50 | <1 | 106 | 59-142 |
| 1,1-Dichloropropene | ug/L (ppb) | 50 | <1 | 105 | 65-127 |
| Carbon tetrachloride | ug/L (ppb) | 50 | <1 | 111 | 55-145 |
| Benzene | ug/L (ppb) | 50 | <1 | 98 | 71-120 |
| Trichloroethene | ug/L (ppb) | 50 | <1 | 100 | 71-121 |
| 1,2-Dichloropropane | ug/L (ppb) | 50 | <1 | 102 | 75-125 |
| Bromodichloromethane | ug/L (ppb) | 50 | <1 | 113 | 61-142 |
| Dibromomethane | ug/L (ppb) | 50 | <1 | 106 | 65-133 |
| 4-Methyl-2-pentanone | ug/L (ppb) | 50 | <10 | 106 | 65-140 |
| cis-1,3-Dichloropropene | ug/L (ppb) | 50 | <1 | 112 | 55-146 |
| Toluene | ug/L (ppb) | 50 | <1 | 99 | 68-131 |
| trans-1,3-Dichloropropene | ug/L (ppb) | 50 | <1 | 117 | 63-141 |
| 1,1,2-Trichloroethane | ug/L (ppb) | 50 | <1 | 104 | 63-143 |
| 2-Hexanone | ug/L (ppb) | 50 | <10 | 108 | 55-158 |
| 1,3-Dichloropropane | ug/L (ppb) | 50 | <1 | 104 | 77-124 |
| Tetrachloroethene | ug/L (ppb) | 50 | <1 | 104 | 71-130 |
| Dibromochloromethane | ug/L (ppb) | 50 | <1 | 117 | 61-143 |
| 1,2-Dibromoethane (EDB) | ug/L (ppb) | 50 | <1 | 107 | 76-128 |
| Chlorobenzene | ug/L (ppb) | 50 | <1 | 101 | 72-118 |
| Ethylbenzene | ug/L (ppb) | 50 | <1 | 101 | 74-122 |
| 1,1,1,2-Tetrachloroethane | ug/L (ppb) | 50 | <1 | 111 | 74-129 |
| m,p-Xylene | ug/L (ppb) | 100 | <2 | 99 | 72-127 |
| o-Xylene | ug/L (ppb) | 50 | <1 | 102 | 67-134 |
| Styrene | ug/L (ppb) | 50 | <1 | 103 | 72-127 |
| Isopropylbenzene | ug/L (ppb) | 50 | <1 | 102 | 66-138 |
| Bromoform | ug/L (ppb) | 50 | <1 | 120 | 63-135 |
| n-Propylbenzene | ug/L (ppb) | 50 | <1 | 105 | 68-133 |
| Bromobenzene | ug/L (ppb) | 50 | <1 | 102 | 75-120 |
| 1,3,5-Trimethylbenzene | ug/L (ppb) | 50 | <1 | 103 | 73-126 |
| 1,1,2,2-Tetrachloroethane | ug/L (ppb) | 50 | <1 | 104 | 65-137 |
| 1,2,3-Trichloropropane | ug/L (ppb) | 50 | <1 | 104 | 66-135 |
| 2-Chlorotoluene | ug/L (ppb) | 50 | <1 | 102 | 63-132 |
| 4-Chlorotoluene | ug/L (ppb) | 50 | <1 | 104 | 63-133 |
| tert-Butylbenzene | ug/L (ppb) | 50 | <1 | 104 | 66-135 |
| 1,2,4-Trimethylbenzene | ug/L (ppb) | 50 | <1 | 103 | 73-127 |
| sec-Butylbenzene | ug/L (ppb) | 50 | <1 | 102 | 66-134 |
| p-Isopropyltoluene | ug/L (ppb) | 50 | <1 | 104 | 72-131 |
| 1,3-Dichlorobenzene | ug/L (ppb) | 50 | <1 | 101 | 65-127 |
| 1,4-Dichlorobenzene | ug/L (ppb) | 50 | <1 | 101 | 65-121 |
| 1,2-Dichlorobenzene | ug/L (ppb) | 50 | <1 | 101 | 64-129 |
| 1,2-Dibromo-3-chloropropane | ug/L (ppb) | 50 | <1 | 113 | 53-151 |
| 1,2,4-Trichlorobenzene | ug/L (ppb) | 50 | <1 | 103 | 64-132 |
| Hexachlorobutadiene | ug/L (ppb) | 50 | <1 | 103 | 53-140 |
| Naphthalene | ug/L (ppb) | 50 | <1 | 108 | 40-166 |
| 1,2,3-Trichlorobenzene | ug/L (ppb) | 50 | <1 | 102 | 58-152 |

Date of Report: 10/14/09
Date Received: 10/13/09
Project: EP-S7-06-02 Site 0908, F&BI 910112

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260C AND 624

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ug/L (ppb) | 50 | 103 | 103 | 27-138 | 0 |
| Chloromethane | ug/L (ppb) | 50 | 92 | 92 | 49-125 | 0 |
| Vinyl chloride | ug/L (ppb) | 50 | 104 | 105 | 53-131 | 1 |
| Bromomethane | ug/L (ppb) | 50 | 94 | 96 | 62-125 | 2 |
| Chloroethane | ug/L (ppb) | 50 | 101 | 102 | 52-127 | 1 |
| Trichlorofluoromethane | ug/L (ppb) | 50 | 107 | 108 | 75-128 | 1 |
| Acetone | ug/L (ppb) | 50 | 83 | 83 | 32-177 | 0 |
| 1,1-Dichloroethene | ug/L (ppb) | 50 | 99 | 100 | 68-131 | 1 |
| Methylene chloride | ug/L (ppb) | 50 | 89 | 106 | 56-136 | 17 |
| Methyl t-butyl ether (MTBE) | ug/L (ppb) | 50 | 95 | 97 | 66-140 | 2 |
| trans-1,2-Dichloroethene | ug/L (ppb) | 50 | 100 | 100 | 71-128 | 0 |
| 1,1-Dichloroethane | ug/L (ppb) | 50 | 98 | 99 | 74-118 | 1 |
| 2,2-Dichloropropane | ug/L (ppb) | 50 | 107 | 110 | 73-130 | 3 |
| cis-1,2-Dichloroethene | ug/L (ppb) | 50 | 97 | 99 | 74-126 | 2 |
| Chloroform | ug/L (ppb) | 50 | 100 | 99 | 76-118 | 1 |
| 2-Butanone (MEK) | ug/L (ppb) | 50 | 89 | 89 | 57-138 | 0 |
| 1,2-Dichloroethane (EDC) | ug/L (ppb) | 50 | 101 | 101 | 77-118 | 0 |
| 1,1,1-Trichloroethane | ug/L (ppb) | 50 | 102 | 103 | 77-123 | 1 |
| 1,1-Dichloropropene | ug/L (ppb) | 50 | 103 | 103 | 75-122 | 0 |
| Carbon tetrachloride | ug/L (ppb) | 50 | 110 | 110 | 76-126 | 0 |
| Benzene | ug/L (ppb) | 50 | 96 | 96 | 77-121 | 0 |
| Trichloroethene | ug/L (ppb) | 50 | 100 | 98 | 74-119 | 2 |
| 1,2-Dichloropropane | ug/L (ppb) | 50 | 100 | 100 | 77-121 | 0 |
| Bromodichloromethane | ug/L (ppb) | 50 | 112 | 112 | 77-129 | 0 |
| Dibromomethane | ug/L (ppb) | 50 | 106 | 104 | 79-121 | 2 |
| 4-Methyl-2-pentanone | ug/L (ppb) | 50 | 103 | 102 | 65-135 | 1 |
| cis-1,3-Dichloropropene | ug/L (ppb) | 50 | 110 | 110 | 79-129 | 0 |
| Toluene | ug/L (ppb) | 50 | 97 | 97 | 86-118 | 0 |
| trans-1,3-Dichloropropene | ug/L (ppb) | 50 | 115 | 114 | 90-128 | 1 |
| 1,1,2-Trichloroethane | ug/L (ppb) | 50 | 102 | 102 | 89-114 | 0 |
| 2-Hexanone | ug/L (ppb) | 50 | 106 | 106 | 74-136 | 0 |
| 1,3-Dichloropropane | ug/L (ppb) | 50 | 101 | 102 | 89-113 | 1 |
| Tetrachloroethene | ug/L (ppb) | 50 | 101 | 101 | 86-121 | 0 |
| Dibromochloromethane | ug/L (ppb) | 50 | 114 | 115 | 89-128 | 1 |
| 1,2-Dibromoethane (EDB) | ug/L (ppb) | 50 | 106 | 105 | 90-118 | 1 |
| Chlorobenzene | ug/L (ppb) | 50 | 99 | 99 | 86-118 | 0 |
| Ethylbenzene | ug/L (ppb) | 50 | 99 | 100 | 87-119 | 1 |
| 1,1,1,2-Tetrachloroethane | ug/L (ppb) | 50 | 109 | 110 | 86-124 | 1 |
| m,p-Xylene | ug/L (ppb) | 100 | 96 | 97 | 88-121 | 1 |
| o-Xylene | ug/L (ppb) | 50 | 99 | 100 | 83-120 | 1 |
| Styrene | ug/L (ppb) | 50 | 101 | 100 | 85-119 | 1 |
| Isopropylbenzene | ug/L (ppb) | 50 | 99 | 99 | 83-120 | 0 |
| Bromoform | ug/L (ppb) | 50 | 119 | 119 | 77-119 | 0 |
| n-Propylbenzene | ug/L (ppb) | 50 | 101 | 101 | 85-121 | 0 |
| Bromobenzene | ug/L (ppb) | 50 | 99 | 101 | 88-117 | 2 |
| 1,3,5-Trimethylbenzene | ug/L (ppb) | 50 | 99 | 101 | 88-119 | 2 |
| 1,1,2,2-Tetrachloroethane | ug/L (ppb) | 50 | 101 | 101 | 88-119 | 0 |
| 1,2,3-Trichloropropane | ug/L (ppb) | 50 | 101 | 101 | 85-120 | 0 |
| 2-Chlorotoluene | ug/L (ppb) | 50 | 99 | 100 | 86-119 | 1 |
| 4-Chlorotoluene | ug/L (ppb) | 50 | 101 | 101 | 86-120 | 0 |
| tert-Butylbenzene | ug/L (ppb) | 50 | 102 | 102 | 77-121 | 0 |
| 1,2,4-Trimethylbenzene | ug/L (ppb) | 50 | 100 | 101 | 85-119 | 1 |
| sec-Butylbenzene | ug/L (ppb) | 50 | 99 | 100 | 85-119 | 1 |
| p-Isopropyltoluene | ug/L (ppb) | 50 | 100 | 100 | 87-119 | 0 |
| 1,3-Dichlorobenzene | ug/L (ppb) | 50 | 99 | 98 | 85-118 | 1 |
| 1,4-Dichlorobenzene | ug/L (ppb) | 50 | 99 | 98 | 85-119 | 1 |
| 1,2-Dichlorobenzene | ug/L (ppb) | 50 | 99 | 99 | 81-117 | 0 |
| 1,2-Dibromo-3-chloropropane | ug/L (ppb) | 50 | 114 | 113 | 62-136 | 1 |
| 1,2,4-Trichlorobenzene | ug/L (ppb) | 50 | 101 | 100 | 75-129 | 1 |
| Hexachlorobutadiene | ug/L (ppb) | 50 | 99 | 102 | 74-132 | 3 |
| Naphthalene | ug/L (ppb) | 50 | 104 | 104 | 66-135 | 0 |
| 1,2,3-Trichlorobenzene | ug/L (ppb) | 50 | 100 | 101 | 70-133 | 1 |

Date of Report: 10/14/09
Date Received: 10/13/09
Project: EP-S7-06-02 Site 0908, F&BI 910112

## QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL SUSPENDED SOLIDS BY METHOD 2540D

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| TSS | mg/L | 50 | 108 | 106 | 67-128 | 2 |

Date of Report: 10/14/09
Date Received: 10/13/09
Project: EP-S7-06-02 Site 0908, F&BI 910112

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR SEMIVOLATILES BY METHOD 625

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Phenol | ug/L (ppb) | 75 | 35 vo | 38 vo | 70-130 | 8 |
| 2-Chlorophenol | ug/L (ppb) | 75 | 83 | 90 | 70-130 | 8 |
| 1,4-Dichlorobenzene | ug/L (ppb) | 50 | 79 | 84 | 70-130 | 6 |
| Benzyl alcohol | ug/L (ppb) | 50 | 75 | 80 | 70-130 | 6 |
| N-Nitroso-di-n-propylamine | ug/L (ppb) | 50 | 84 | 92 | 70-130 | 9 |
| 1,2,4-Trichlorobenzene | ug/L (ppb) | 50 | 82 | 89 | 70-130 | 8 |
| Naphthalene | ug/L (ppb) | 50 | 85 | 91 | 70-130 | 7 |
| 4-Chloroaniline | ug/L (ppb) | 50 | 50 vo | 59 vo | 70-130 | 17 |
| 4-Chloro-3-methylphenol | ug/L (ppb) | 75 | 80 | 87 | 70-130 | 8 |
| 2-Methylnaphthalene | ug/L (ppb) | 50 | 83 | 89 | 70-130 | 7 |
| 2-Nitroaniline | ug/L (ppb) | 50 | 87 | 99 | 70-130 | 13 |
| Acenaphthylene | ug/L (ppb) | 50 | 87 | 96 | 70-130 | 10 |
| 3-Nitroaniline | ug/L (ppb) | 50 | 64 vo | 75 | 70-130 | 16 |
| Acenaphthene | ug/L (ppb) | 50 | 82 | 91 | 70-130 | 10 |
| Dibenzofuran | ug/L (ppb) | 50 | 84 | 94 | 70-130 | 11 |
| 2,4-Dinitrotoluene | ug/L (ppb) | 50 | 84 | 93 | 70-130 | 10 |
| 4-Nitrophenol | ug/L (ppb) | 75 | 38 vo | 41 vo | 70-130 | 8 |
| Fluorene | ug/L (ppb) | 50 | 81 | 89 | 70-130 | 9 |
| 4-Nitroaniline | ug/L (ppb) | 50 | 79 | 85 | 70-130 | 7 |
| Pentachlorophenol | ug/L (ppb) | 75 | 77 | 85 | 70-130 | 10 |
| Phenanthrene | ug/L (ppb) | 50 | 81 | 88 | 70-130 | 8 |
| Anthracene | ug/L (ppb) | 50 | 80 | 87 | 70-130 | 8 |
| Fluoranthene | ug/L (ppb) | 50 | 84 | 94 | 70-130 | 11 |
| Pyrene | ug/L (ppb) | 50 | 86 | 96 | 70-130 | 11 |
| Benz(a)anthracene | ug/L (ppb) | 50 | 78 | 87 | 70-130 | 11 |
| Chrysene | ug/L (ppb) | 50 | 86 | 94 | 70-130 | 9 |
| Benzo(a)pyrene | ug/L (ppb) | 50 | 67 vo | 74 | 70-130 | 10 |
| Benzo(b)fluoranthene | ug/L (ppb) | 50 | 81 | 89 | 70-130 | 9 |
| Benzo(k)fluoranthene | ug/L (ppb) | 50 | 86 | 94 | 70-130 | 9 |
| Indeno(1,2,3-cd)pyrene | ug/L (ppb) | 50 | 80 | 88 | 70-130 | 10 |
| Dibenz(a,h)anthracene | ug/L (ppb) | 50 | 80 | 87 | 70-130 | 8 |
| Benzo(g,h,i)perylene | ug/L (ppb) | 50 | 79 | 87 | 70-130 | 10 |

Date of Report: 10/14/09
Date Received: 10/13/09
Project: EP-S7-06-02 Site 0908, F&BI 910112

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR POLYCHLORINATED BIPHENYLS AS AROCLOR 1016/1260 BY METHOD 608

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | % Recovery LCS | % Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Aroclor 1016 | ug/L (ppb) | 2.5 | 110 | 106 | 52-135 | 4 |
| Aroclor 1260 | ug/L (ppb) | 2.5 | 109 | 103 | 60-128 | 6 |

## 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 - The analyte indicated was found in the method blank. The result should be considered an estimate.

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 - The sample was extracted outside of holding time. Results should be considered estimates.

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 - The value reported exceeded the calibration range established for the analyte. The reported concentration should be considered an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The pattern of peaks present is not indicative of diesel.

y - The pattern of peaks present is not indicative of motor oil.

Page 1 of 1 91012

ME 10/13/09 VI/AIG/C05

**CHAIN OF CUSTODY RECORD**

No: 0907-10/12/09-0023

START, Portland, OR
EPA Contract Number: EP-S7-06-02

Site #: 0908
Contact Name: Jim Petersen
Contact Phone: 503-547-3964

Lab: Friedman and Bruya
Lab Phone: 206 285 8282

| Lab # | Sample # | Location | Analyses | Matrix | Collected | Sample Time | Numb Cont | Container | Preservative | MS/MSD | Sampler |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 A | 0910-0138 | TT10101209 | Semivolatiles 625 | Water | 10/12/2009 | 13:30 | 1 | 1 L poly | 4 C | | Jim Petersen - START |
| B-E | 0910-0138 | TT10101209 | VOCs 624 | Water | 10/12/2009 | 13:30 | 4 | 40 ml VOA | HCl/4 C | | Jim Petersen - START |
| F | 0910-0138 | TT10101209 | PCBs 608 | Water | 10/12/2009 | 13:30 | 1 | 1 L amber | 4 C | | Jim Petersen - START |
| G | 0910-0138 | TT10101209 | Total Oil and Grease (Polar and Nonpolar) 1664 | Water | 10/12/2009 | 13:30 | 1 | 1 L amber | | | Jim Petersen - START |
| H | 0910-0138 | TT10101209 | As, Cd, Cr, Cu, Pb, Hg, Ni, Ag, Zn 200.8 | Water | 10/12/2009 | 13:30 | 1 | 500mL Poly | HNO3 | | Jim Petersen - START |
| I | 0910-0138 | TT10101209 | Mercury 245.1 or 1631 | Water | 10/12/2009 | 13:30 | 1 | 500mL Poly | HNO3 | | Jim Petersen - START |
| J | 0910-0138 | TT10101209 | Cyanide 335.3 | Water | 10/12/2009 | 13:30 | 1 | 250mL poly | 4 C | | Jim Petersen - START |
| L | 0910-0138 | TT10101209 | TSS 160.2 | Water | 10/12/2009 | 13:30 | 1 | 500mL Poly | 4 C | | Jim Petersen - START |
| ~~—~~ | ~~0910-0138~~ | ~~TT10101209~~ | ~~pH 150.1~~ | ~~Water~~ | ~~10/12/2009~~ | ~~13:30~~ | ~~1~~ | ~~500mL Poly~~ | ~~4 C~~ | | ~~Jim Petersen - START~~ |
| M | 0910-0138 | TT10101209 | TTO (624, 625, 608) | Water | 10/12/2009 | 13:30 | 1 | | | | Jim Petersen - START |
| 02 AB | 0910-0139 | TB24WT | VOCs 8260 | Water | 10/12/2009 | 13:50 | 2 | 40mL VOA | HCl/4 C | | Jim Petersen - START |

Special Instructions: 24-hour turnaround for sample TT10101209

**SAMPLES TRANSFERRED FROM CHAIN OF CUSTODY #**

| Items/Reason | Relinquished by | Date | Received by | Date | Time | Items/Reason | Relinquished By | Date | Received by | Date | Time |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 10/12/09 | (FEDEX) | 10/12/09 | 16:00 | | | | | 10/13 | 9:15 |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

Samples received at 1 °C

**Am Test Inc.**
13600 NE 126TH PL
Suite C
Kirkland, WA 98034
(425) 885-1664
www.amtestlab.com

AMTEST LABORATORIES

*Professional Analytical Services*

# ANALYSIS REPORT

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Attention: Michael Erdahl
Project #: 910112
PO Number: A-138
All results reported on an as received basis.

Date Received: 10/13/09
Date Reported: 10/15/09

---

**AMTEST Identification Number** **09-A016801**
**Client Identification** **0910-0138 TT 10101209**
**Sampling Date** **10/12/09, 13:30**

## Conventionals

| PARAMETER | RESULT | UNITS | Q | D.L. | METHOD | ANALYST | DATE |
|---|---|---|---|---|---|---|---|
| Total Cyanide | < 0.005 | mg/l | | 0.005 | EPA 335.4 | TS | 10/14/09 |
| Oil and Grease (HEM) | 1.5 | mg/l | | 1.0 | EPA 1664 HEM | CG | 10/13/09 |

Kathy Fugiel
President

# Specialty Analytical

11711 SE Capps Road
Clackamas, OR 97015
(503) 607-1331
Fax (503) 607-1336


October 15, 2009

Jason Coury
Environmental Quality Management, Inc.
6825 216th Street SW
Suite J
Lynnwood, WA 98036

TEL: (425) 673-2900
FAX: (425) 673-7511

RE: NWP&C

Dear Jason Coury: Order No.: 0910081

Specialty Analytical received 1 sample on 10/12/2009 for the analyses presented in the following report.

There were no problems with the analysis and all data for associated QC met EPA or laboratory specifications except where noted in the Case Narrative, or as qualified with flags. Results apply only to the samples analyzed. Without approval of the laboratory, the reproduction of this report is only permitted in its entirety.

If you have any questions regarding these tests, please feel free to call.

Sincerely,

Cindy Hillyard
Project Manager

Technical Review

**Specialty Analytical** **Date:** *15-Oct-09*

**CLIENT:** Environmental Quality Management, Inc.
**Project:** NWP&C
**Lab Order:** 0910081

# CASE NARRATIVE

Due to modified rules for testing procedures approved for analysis and sampling under the Clean Water Act in March of 2007, the holding time for pH analysis has been reduced to 15 minutes. The pH data has been qualified with an HT flag to reflect the analysis outside of holding time.

## Specialty Analytical

**Date:** *15-Oct-09*

| | | | |
|---|---|---|---|
| **CLIENT:** | Environmental Quality Management, Inc. | **Client Sample ID:** | TT10101209 |
| **Lab Order:** | 0910081 | **Collection Date:** | 10/12/2009 1:30:00 PM |
| **Project:** | NWP&C | | |
| **Lab ID:** | 0910081-01 | **Matrix:** | AQUEOUS |

| Analyses | Result | Limit | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **PH** | | **SM 4500-H+ B** | | | | Analyst: **das** |
| pH | 6.7 | | HT | | 1 | 10/12/2009 |

Specialty Analytical

**Date:** *15-Oct-09*

**CLIENT:** Environmental Quality Management, Inc.
**Work Order:** 0910081
**Project:** NWP&C

# ANALYTICAL QC SUMMARY REPORT

**TestCode: PH_CWA**

| Sample ID: **0910081-01ADUP** | SampType: **DUP** | TestCode: **PH_CWA** | Units: | Prep Date: | Run ID: **PH ACCUMET_091012A** |
|---|---|---|---|---|---|
| Client ID: **TT10101209** | Batch ID: **R57867** | TestNo: **SM 4500-H+** | | Analysis Date: **10/12/2009** | SeqNo: **632844** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| pH | 6.71 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |

**Qualifiers:**

ND - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

# KEY TO FLAGS

| | |
|---|---|
| A | This sample contains a Gasoline Range Organic not identified as a specific hydrocarbon product. The result was quantified against gasoline calibration standards. |
| A1 | This sample contains a Diesel Range Organic not identified as a specific hydrocarbon product. The result was quantified against diesel calibration standards. |
| A2 | This sample contains a Lube Oil Range Organic not identified as a specific hydrocarbon product. The result was quantified against a lube oil calibration standard. |
| A3 | The result was determined to be Non-Detect based on hydrocarbon pattern recognition. The product was carry-over from another hydrocarbon type. |
| B | The blank exhibited a positive result greater than the reporting limit for this compound. |
| CN | See Case Narrative. |
| D | Result is based from a dilution. |
| E | Result exceeds the calibration range for this compound. The result should be considered as estimate. |
| F | The positive result for this hydrocarbon is due to single component contamination. The product does not match any hydrocarbon in the fuels library. |
| H | Sample was analyzed outside recommended hold time. |
| HT | At clients request, sample was analyzed outside recommended hold time. |
| J | The result for this analyte is between the MDL and the PQL and should be considered as estimated concentration. |
| K | Diesel result is biased high due to amount of Oil contained in the sample. |
| L | Diesel result is biased high due to amount of Gasoline contained in the sample. |
| M | Oil result is biased high due to amount of Diesel contained in the sample. |
| N | Gasoline result is biased high due to amount of Diesel contained in the sample. |
| MC | Sample concentration is greater than 4x the spiked value, the spiked value is considered insignificant. |
| MI | Result is outside control limits due to matrix interference. |
| MSA | Value determined by Method of Standard Addition. |
| O | Laboratory Control Standard (LCS) exceeded laboratory control limits, but meets CCV criteria. Data meets EPA requirements. |
| P | Detection levels of Methylene Chloride may be laboratory contamination, due to previous analysis or background levels. |
| Q | Detection levels elevated due to sample matrix. |
| R | RPD control limits were exceeded. |
| RF | Duplicate failed due to result being at or near the method-reporting limit. |
| RP | Matrix spike values exceed established QC limits, post digestion spike is in control. |
| S | Recovery is outside control limits. |
| SC | Closing CCV or LCS exceeded high recovery control limits, but associated samples are non-detect. Data meets EPA requirements. |
| * | The result for this parameter was greater that the maximum contaminant level of the TCLP regulatory limit. |

# SAMPLE CHAIN OF CUSTODY

0910081

Page # _____ of _____

Send Report To
Company Jason Coury - EQM, Inc
Address
City, State, ZIP
Phone # Fax #

SAMPLERS (signature)
PROJECT NAME/NO. Northwest Pipe & Casing
PO #
REMARKS

TURNAROUND TIME
☐ Standard (2 Weeks)
☒ RUSH ~~24~~ 48-HR
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 | pH (150.1) | | | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | ANALYSES REQUESTED | | | | | | | | | | | | |
| TT10101209 | | 10/12/09 | 13:30 | Water | 1 | | | | | | | X | | | | | | Location: 0910-0138 |
| | | | | | | | | | | | | | | | | | | |
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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: | | Jim Petersen | E&E | 10/12/09 | 14:00 |
| Received by: | Pam Marcyes | Pam Marcyes | EQM | 10/12/09 | 1400 |
| Relinquished by: | | | | | |
| Received by: | Danielle Perno | Danielle Perno | Specialty | 10-12-09 | 1415 |

WATER ENVIRONMENT SERVICES
*Beyond* clean water.

Water Quality Protection
Surface Water Management
Wastewater Collection & Treatment
Michael S. Kuenzi, P.E.
Director

# DISCHARGE CERTIFICATION REPORT

Industrial Users permitted to discharge wastewater regulated under Federal and local standards must submit a periodic " Discharge Certification Report" to comply with the conditions of their permit.

Report Due: 11-6-09

To: Source Control
Water Environment Services
15941 S. Agnes Rd., Bldg. B
Oregon City, OR 97045

Facility Name: *U.S. EPA – Northwest Pipe & Casing Site*

Address: *9585 SE Mather Road*
*Clackamas, OR 97015*

Reporting Period (From) 10-25-09 (To) 10-31-09

**Certification Statement: I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.**

Signature _____ Date 11-5-09

Title Project Manager

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

October 27, 2009

Jason Coury, Project Manager
EQM, Inc.
6825 216th St. SW St. J
Lynnwood, WA 98036

Dear Mr. Coury:

Included are the results from the testing of material submitted on October 23, 2009 from the EP-S7-06-02 Site 0908, F&BI 910222 project. There are 19 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 should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Jim Petersen, Bryce Robbert, Mark Ader, Kathy Parker, earoth@paramatrix.com
EQM1027R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on October 23, 2009 by Friedman & Bruya, Inc. from the EQM, Inc. EP-S7-06-02 Site 0908, F&BI 910222 project. Samples were logged in under the laboratory ID's listed below.

| Laboratory ID | EQM, Inc. |
|---|---|
| 910222-01 | 0910-0192 TT06102209 |
| 910222-02 | 0910-0193 TB34WT |

The analysis of water samples by Method 624 Modified followed the practices described by EPA Method 8260C.

The analysis of water samples by Method 625 Modified followed the practices described by EPA Method 8270D.

The analysis of water samples by Method 608 Modified followed the practices described by EPA Method 8082A.

Sample 0910-0192 TT06102209 was sent to Aquatic Research for oil and grease and total cyanide analyses. The report is enclosed.

The 8260C bromoform laboratory control sample and laboratory control sample duplicate exceeded the acceptance critieria. Bromoform was not detected in the samples, therefore the data is acceptable.

Several 8270D surrogates exceeded the acceptance critieria. No target analytes were detected in the sample, therefore the data is acceptable.

All other quality control requirements were acceptable.

## Analysis For Total Metals By EPA Method 200.8

| | | | |
|---|---|---|---|
| Client ID: | 0910-0192 TT06102209 | Client: | EQM, Inc. |
| Date Received: | 10/23/09 | Project: | EP-S7-06-02 Site 0908, F&BI 910222 |
| Date Extracted: | 10/23/09 | Lab ID: | 910222-01 |
| Date Analyzed: | 10/23/09 | Data File: | 910222-01.046 |
| Matrix: | Water | Instrument: | ICPMS1 |
| Units: | ug/L (ppb) | Operator: | btb |

| Internal Standard: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Germanium | 109 | 60 | 125 |
| Indium | 99 | 60 | 125 |
| Holmium | 107 | 60 | 125 |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Chromium | 2.15 |
| Nickel | 7.50 |
| Copper | 3.88 |
| Zinc | 28.1 |
| Arsenic | <1 |
| Silver | <1 |
| Cadmium | <1 |
| Lead | <1 |

## Analysis For Total Metals By EPA Method 200.8

| | | | |
|---|---|---|---|
| Client ID: | Method Blank | Client: | EQM, Inc. |
| Date Received: | Not Applicable | Project: | EP-S7-06-02 Site 0908, F&BI 910222 |
| Date Extracted: | 10/23/09 | Lab ID: | I9-445 mb |
| Date Analyzed: | 10/23/09 | Data File: | I9-445 mb.009 |
| Matrix: | Water | Instrument: | ICPMS1 |
| Units: | ug/L (ppb) | Operator: | btb |

| Internal Standard: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| Germanium | 89 | 60 | 125 |
| Indium | 91 | 60 | 125 |
| Holmium | 91 | 60 | 125 |

| Analyte: | Concentration ug/L (ppb) |
|---|---|
| Chromium | <1 |
| Nickel | <1 |
| Copper | <1 |
| Zinc | <1 |
| Arsenic | <1 |
| Silver | <1 |
| Cadmium | <1 |
| Lead | <1 |

Date of Report: 10/27/09
Date Received: 10/23/09
Project: EP-S7-06-02 Site 0908, F&BI 910222
Date Extracted: 10/23/09
Date Analyzed: 10/26/09

**RESULTS FROM THE ANALYSIS OF THE WATER SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E**

Results Reported as ug/L (ppb)

| Sample ID<br>Laboratory ID | Total Mercury |
|---|---|
| 0910-0192 TT06102209<br>910222-01 | <0.2 |
| Method Blank | <0.2 |

## Analysis For Volatile Compounds By Method 624

| | | | |
|---|---|---|---|
| Client Sample ID: | 0910-0192 TT06102209 | Client: | EQM, Inc. |
| Date Received: | 10/23/09 | Project: | EP-S7-06-02 Site 0908, F&BI 910222 |
| Date Extracted: | 10/23/09 | Lab ID: | 910222-01 |
| Date Analyzed: | 10/23/09 | Data File: | 102308.D |
| Matrix: | Water | Instrument: | GCMS5 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 99 | 65 | 127 |
| Toluene-d8 | 103 | 69 | 127 |
| 4-Bromofluorobenzene | 101 | 77 | 156 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <1 |
| Chloromethane | <1 | Tetrachloroethene | <1 |
| Vinyl chloride | <0.2 | Dibromochloromethane | <1 |
| Bromomethane | <1 | 1,2-Dibromoethane (EDB) | <1 |
| Chloroethane | <1 | Chlorobenzene | <1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <1 |
| Acetone | <10 | 1,1,1,2-Tetrachloroethane | <1 |
| 1,1-Dichloroethene | <1 | m,p-Xylene | <2 |
| Methylene chloride | <5 | o-Xylene | <1 |
| Methyl t-butyl ether (MTBE) | <1 | Styrene | <1 |
| trans-1,2-Dichloroethene | <1 | Isopropylbenzene | <1 |
| 1,1-Dichloroethane | <1 | Bromoform | <1 |
| 2,2-Dichloropropane | <1 | n-Propylbenzene | <1 |
| cis-1,2-Dichloroethene | <1 | Bromobenzene | <1 |
| Chloroform | <1 | 1,3,5-Trimethylbenzene | <1 |
| 2-Butanone (MEK) | <10 | 1,1,2,2-Tetrachloroethane | <1 |
| 1,2-Dichloroethane (EDC) | <1 | 1,2,3-Trichloropropane | <1 |
| 1,1,1-Trichloroethane | <1 | 2-Chlorotoluene | <1 |
| 1,1-Dichloropropene | <1 | 4-Chlorotoluene | <1 |
| Carbon tetrachloride | <1 | tert-Butylbenzene | <1 |
| Benzene | <1 | 1,2,4-Trimethylbenzene | <1 |
| Trichloroethene | <1 | sec-Butylbenzene | <1 |
| 1,2-Dichloropropane | <1 | p-Isopropyltoluene | <1 |
| Bromodichloromethane | <1 | 1,3-Dichlorobenzene | <1 |
| Dibromomethane | <1 | 1,4-Dichlorobenzene | <1 |
| 4-Methyl-2-pentanone | <10 | 1,2-Dichlorobenzene | <1 |
| cis-1,3-Dichloropropene | <1 | 1,2-Dibromo-3-chloropropane | <1 |
| Toluene | <1 | 1,2,4-Trichlorobenzene | <1 |
| trans-1,3-Dichloropropene | <1 | Hexachlorobutadiene | <1 |
| 1,1,2-Trichloroethane | <1 | Naphthalene | <1 |
| 2-Hexanone | <10 | 1,2,3-Trichlorobenzene | <1 |

## Analysis For Volatile Compounds By EPA Method 8260C

| | | | |
|---|---|---|---|
| Client Sample ID: | 0910-0193 TB34WT | Client: | EQM, Inc. |
| Date Received: | 10/23/09 | Project: | EP-S7-06-02 Site 0908, F&BI 910222 |
| Date Extracted: | 10/23/09 | Lab ID: | 910222-02 |
| Date Analyzed: | 10/23/09 | Data File: | 102307.D |
| Matrix: | Water | Instrument: | GCMS5 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 98 | 65 | 127 |
| Toluene-d8 | 103 | 69 | 127 |
| 4-Bromofluorobenzene | 102 | 77 | 156 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <1 |
| Chloromethane | <1 | Tetrachloroethene | <1 |
| Vinyl chloride | <0.2 | Dibromochloromethane | <1 |
| Bromomethane | <1 | 1,2-Dibromoethane (EDB) | <1 |
| Chloroethane | <1 | Chlorobenzene | <1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <1 |
| Acetone | <10 | 1,1,1,2-Tetrachloroethane | <1 |
| 1,1-Dichloroethene | <1 | m,p-Xylene | <2 |
| Methylene chloride | <5 | o-Xylene | <1 |
| Methyl t-butyl ether (MTBE) | <1 | Styrene | <1 |
| trans-1,2-Dichloroethene | <1 | Isopropylbenzene | <1 |
| 1,1-Dichloroethane | <1 | Bromoform | <1 |
| 2,2-Dichloropropane | <1 | n-Propylbenzene | <1 |
| cis-1,2-Dichloroethene | <1 | Bromobenzene | <1 |
| Chloroform | <1 | 1,3,5-Trimethylbenzene | <1 |
| 2-Butanone (MEK) | <10 | 1,1,2,2-Tetrachloroethane | <1 |
| 1,2-Dichloroethane (EDC) | <1 | 1,2,3-Trichloropropane | <1 |
| 1,1,1-Trichloroethane | <1 | 2-Chlorotoluene | <1 |
| 1,1-Dichloropropene | <1 | 4-Chlorotoluene | <1 |
| Carbon tetrachloride | <1 | tert-Butylbenzene | <1 |
| Benzene | <1 | 1,2,4-Trimethylbenzene | <1 |
| Trichloroethene | <1 | sec-Butylbenzene | <1 |
| 1,2-Dichloropropane | <1 | p-Isopropyltoluene | <1 |
| Bromodichloromethane | <1 | 1,3-Dichlorobenzene | <1 |
| Dibromomethane | <1 | 1,4-Dichlorobenzene | <1 |
| 4-Methyl-2-pentanone | <10 | 1,2-Dichlorobenzene | <1 |
| cis-1,3-Dichloropropene | <1 | 1,2-Dibromo-3-chloropropane | <1 |
| Toluene | <1 | 1,2,4-Trichlorobenzene | <1 |
| trans-1,3-Dichloropropene | <1 | Hexachlorobutadiene | <1 |
| 1,1,2-Trichloroethane | <1 | Naphthalene | <1 |
| 2-Hexanone | <10 | 1,2,3-Trichlorobenzene | <1 |

## Analysis For Volatile Compounds By EPA Method 8260C and 624

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | EQM, Inc. |
| Date Received: | NA | Project: | EP-S7-06-02 Site 0908, F&BI 910222 |
| Date Extracted: | 10/23/09 | Lab ID: | 091545 mb |
| Date Analyzed: | 10/23/09 | Data File: | 102306.D |
| Matrix: | Water | Instrument: | GCMS5 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 98 | 65 | 127 |
| Toluene-d8 | 102 | 69 | 127 |
| 4-Bromofluorobenzene | 102 | 77 | 156 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Dichlorodifluoromethane | <1 | 1,3-Dichloropropane | <1 |
| Chloromethane | <1 | Tetrachloroethene | <1 |
| Vinyl chloride | <0.2 | Dibromochloromethane | <1 |
| Bromomethane | <1 | 1,2-Dibromoethane (EDB) | <1 |
| Chloroethane | <1 | Chlorobenzene | <1 |
| Trichlorofluoromethane | <1 | Ethylbenzene | <1 |
| Acetone | <10 | 1,1,1,2-Tetrachloroethane | <1 |
| 1,1-Dichloroethene | <1 | m,p-Xylene | <2 |
| Methylene chloride | <5 | o-Xylene | <1 |
| Methyl t-butyl ether (MTBE) | <1 | Styrene | <1 |
| trans-1,2-Dichloroethene | <1 | Isopropylbenzene | <1 |
| 1,1-Dichloroethane | <1 | Bromoform | <1 |
| 2,2-Dichloropropane | <1 | n-Propylbenzene | <1 |
| cis-1,2-Dichloroethene | <1 | Bromobenzene | <1 |
| Chloroform | <1 | 1,3,5-Trimethylbenzene | <1 |
| 2-Butanone (MEK) | <10 | 1,1,2,2-Tetrachloroethane | <1 |
| 1,2-Dichloroethane (EDC) | <1 | 1,2,3-Trichloropropane | <1 |
| 1,1,1-Trichloroethane | <1 | 2-Chlorotoluene | <1 |
| 1,1-Dichloropropene | <1 | 4-Chlorotoluene | <1 |
| Carbon tetrachloride | <1 | tert-Butylbenzene | <1 |
| Benzene | <1 | 1,2,4-Trimethylbenzene | <1 |
| Trichloroethene | <1 | sec-Butylbenzene | <1 |
| 1,2-Dichloropropane | <1 | p-Isopropyltoluene | <1 |
| Bromodichloromethane | <1 | 1,3-Dichlorobenzene | <1 |
| Dibromomethane | <1 | 1,4-Dichlorobenzene | <1 |
| 4-Methyl-2-pentanone | <10 | 1,2-Dichlorobenzene | <1 |
| cis-1,3-Dichloropropene | <1 | 1,2-Dibromo-3-chloropropane | <1 |
| Toluene | <1 | 1,2,4-Trichlorobenzene | <1 |
| trans-1,3-Dichloropropene | <1 | Hexachlorobutadiene | <1 |
| 1,1,2-Trichloroethane | <1 | Naphthalene | <1 |
| 2-Hexanone | <10 | 1,2,3-Trichlorobenzene | <1 |

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 10/27/09
Date Received: 10/23/09
Project: EP-S7-06-02 Site 0908, F&BI 910222
Date Analyzed: 10/23/09

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL SUSPENDED SOLIDS BY METHOD 2540D**

Results Reported as mg/L (ppm)

| Sample ID<br>Laboratory ID | Total Suspended Solids |
|---|---|
| 0910-0192 TT06102209<br>910222-01 | 21 |
| Method Blank | <10 |

## Analysis For Semivolatile Compounds By Method 625

| | | | |
|---|---|---|---|
| Client Sample ID: | 0910-0192 TT06102209 | Client: | EQM, Inc. |
| Date Received: | 10/23/09 | Project: | EP-S7-06-02 Site 0908, F&BI 910222 |
| Date Extracted: | 10/23/09 | Lab ID: | 910222-01 rr |
| Date Analyzed: | 10/26/09 | Data File: | 102609.D |
| Matrix: | Water | Instrument: | GCMS3 |
| Units: | ug/L (ppb) | Operator: | YA |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 84 vo | 27 | 76 |
| Phenol-d6 | 53 | 13 | 58 |
| Nitrobenzene-d5 | 106 | 55 | 115 |
| 2-Fluorobiphenyl | 117 vo | 51 | 113 |
| 2,4,6-Tribromophenol | 105 | 28 | 107 |
| Terphenyl-d14 | 115 | 45 | 119 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Phenol | <10 | 3-Nitroaniline | <3 |
| Bis(2-chloroethyl) ether | <1 | Acenaphthene | <1 |
| 2-Chlorophenol | <10 | 2,4-Dinitrophenol | <30 |
| 1,3-Dichlorobenzene | <1 | Dibenzofuran | <1 |
| 1,4-Dichlorobenzene | <1 | 2,4-Dinitrotoluene | <1 |
| 1,2-Dichlorobenzene | <1 | 4-Nitrophenol | <10 |
| Benzyl alcohol | <1 | Diethyl phthalate | <1 |
| Bis(2-chloroisopropyl) ether | <1 | Fluorene | <1 |
| 2-Methylphenol | <10 | 4-Chlorophenyl phenyl ether | <1 |
| Hexachloroethane | <1 | N-Nitrosodiphenylamine | <1 |
| N-Nitroso-di-n-propylamine | <1 | 4-Nitroaniline | <10 |
| 4-Methylphenol | <10 | 4,6-Dinitro-2-methylphenol | <30 |
| Nitrobenzene | <1 | 4-Bromophenyl phenyl ether | <1 |
| Isophorone | <1 | Hexachlorobenzene | <1 |
| 2-Nitrophenol | <10 | Pentachlorophenol | <10 |
| 2,4-Dimethylphenol | <10 | Phenanthrene | <1 |
| Benzoic acid | <100 | Anthracene | <1 |
| Bis(2-chloroethoxy)methane | <1 | Carbazole | <1 |
| 2,4-Dichlorophenol | <10 | Di-n-butyl phthalate | <1 |
| 1,2,4-Trichlorobenzene | <1 | Fluoranthene | <1 |
| Naphthalene | <1 | Pyrene | <1 |
| Hexachlorobutadiene | <1 | Benzyl butyl phthalate | <1 |
| 4-Chloroaniline | <3 | Benz(a)anthracene | <1 |
| 4-Chloro-3-methylphenol | <10 | Chrysene | <1 |
| 2-Methylnaphthalene | <1 | Bis(2-ethylhexyl) phthalate | <10 |
| Hexachlorocyclopentadiene | <3 | Di-n-octyl phthalate | <1 |
| 2,4,6-Trichlorophenol | <10 | Benzo(a)pyrene | <1 |
| 2,4,5-Trichlorophenol | <10 | Benzo(b)fluoranthene | <1 |
| 2-Chloronaphthalene | <1 | Benzo(k)fluoranthene | <1 |
| 2-Nitroaniline | <1 | Indeno(1,2,3-cd)pyrene | <1 |
| Dimethyl phthalate | <1 | Dibenz(a,h)anthracene | <1 |
| Acenaphthylene | <1 | Benzo(g,h,i)perylene | <1 |
| 2,6-Dinitrotoluene | <1 | | |

## Analysis For Semivolatile Compounds By Method 625

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | EQM, Inc. |
| Date Received: | NA | Project: | EP-S7-06-02 Site 0908, F&BI 910222 |
| Date Extracted: | 10/23/09 | Lab ID: | 091595mb |
| Date Analyzed: | 10/26/09 | Data File: | 102607.D |
| Matrix: | Water | Instrument: | GCMS3 |
| Units: | ug/L (ppb) | Operator: | YA |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 2-Fluorophenol | 65 | 27 | 76 |
| Phenol-d6 | 37 | 13 | 58 |
| Nitrobenzene-d5 | 83 | 55 | 115 |
| 2-Fluorobiphenyl | 90 | 51 | 113 |
| 2,4,6-Tribromophenol | 73 | 28 | 107 |
| Terphenyl-d14 | 93 | 45 | 119 |

| Compounds: | Concentration ug/L (ppb) | Compounds: | Concentration ug/L (ppb) |
|---|---|---|---|
| Phenol | <10 | 3-Nitroaniline | <3 |
| Bis(2-chloroethyl) ether | <1 | Acenaphthene | <1 |
| 2-Chlorophenol | <10 | 2,4-Dinitrophenol | <30 |
| 1,3-Dichlorobenzene | <1 | Dibenzofuran | <1 |
| 1,4-Dichlorobenzene | <1 | 2,4-Dinitrotoluene | <1 |
| 1,2-Dichlorobenzene | <1 | 4-Nitrophenol | <10 |
| Benzyl alcohol | <1 | Diethyl phthalate | <1 |
| Bis(2-chloroisopropyl) ether | <1 | Fluorene | <1 |
| 2-Methylphenol | <10 | 4-Chlorophenyl phenyl ether | <1 |
| Hexachloroethane | <1 | N-Nitrosodiphenylamine | <1 |
| N-Nitroso-di-n-propylamine | <1 | 4-Nitroaniline | <10 |
| 4-Methylphenol | <10 | 4,6-Dinitro-2-methylphenol | <30 |
| Nitrobenzene | <1 | 4-Bromophenyl phenyl ether | <1 |
| Isophorone | <1 | Hexachlorobenzene | <1 |
| 2-Nitrophenol | <10 | Pentachlorophenol | <10 |
| 2,4-Dimethylphenol | <10 | Phenanthrene | <1 |
| Benzoic acid | <100 | Anthracene | <1 |
| Bis(2-chloroethoxy)methane | <1 | Carbazole | <1 |
| 2,4-Dichlorophenol | <10 | Di-n-butyl phthalate | <1 |
| 1,2,4-Trichlorobenzene | <1 | Fluoranthene | <1 |
| Naphthalene | <1 | Pyrene | <1 |
| Hexachlorobutadiene | <1 | Benzyl butyl phthalate | <1 |
| 4-Chloroaniline | <3 | Benz(a)anthracene | <1 |
| 4-Chloro-3-methylphenol | <10 | Chrysene | <1 |
| 2-Methylnaphthalene | <1 | Bis(2-ethylhexyl) phthalate | <10 |
| Hexachlorocyclopentadiene | <3 | Di-n-octyl phthalate | <1 |
| 2,4,6-Trichlorophenol | <10 | Benzo(a)pyrene | <1 |
| 2,4,5-Trichlorophenol | <10 | Benzo(b)fluoranthene | <1 |
| 2-Chloronaphthalene | <1 | Benzo(k)fluoranthene | <1 |
| 2-Nitroaniline | <1 | Indeno(1,2,3-cd)pyrene | <1 |
| Dimethyl phthalate | <1 | Dibenz(a,h)anthracene | <1 |
| Acenaphthylene | <1 | Benzo(g,h,i)perylene | <1 |
| 2,6-Dinitrotoluene | <1 | | |

Date of Report: 10/27/09
Date Received: 10/23/09
Project: EP-S7-06-02 Site 0908, F&BI 910222
Date Extracted: 10/23/09
Date Analyzed: 10/23/09

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR PCBs AS AROCLORS USING METHOD 608**

Resultsported as ug/L (ppb)

| Sample ID<br>Laboratory ID | Aroclor 1221 | 1232 | 1016 | 1242 | 1248 | 1254 | 1260 | Surrogate (%c.)<br>(Limit 61-132) |
|---|---|---|---|---|---|---|---|---|
| 0910-0192 TT06102209<br>910222-01 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 82 |
| Method Blank | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 74 |

Date of Report: 10/27/09
Date Received: 10/23/09
Project: EP-S7-06-02 Site 0908, F&BI 910222

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL METALS USING EPA METHOD 200.8

Laboratory Code: 910202-01 (Duplicate)

| Analyte | Reporting Units | Sample Result | Duplicate Result | Relative Percent Difference | Acceptance Criteria |
|---|---|---|---|---|---|
| Chromium | ug/L (ppb) | 2.74 | 2.86 | 4 | 0-20 |
| Nickel | ug/L (ppb) | 3.31 | 3.44 | 4 | 0-20 |
| Copper | ug/L (ppb) | 1,090 | 1,100 | 0 | 0-20 |
| Zinc | ug/L (ppb) | 586 | 614 | 5 | 0-20 |
| Arsenic | ug/L (ppb) | 2.21 | 2.22 | 0 | 0-20 |
| Silver | ug/L (ppb) | <1 | <1 | nm | 0-20 |
| Cadmium | ug/L (ppb) | <1 | <1 | nm | 0-20 |
| Lead | ug/L (ppb) | 25.3 | 26.2 | 3 | 0-20 |

Laboratory Code: 910202-01 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result | Percent Recovery MS | Acceptance Criteria |
|---|---|---|---|---|---|
| Chromium | ug/L (ppb) | 20 | 2.74 | 94 | 50-150 |
| Nickel | ug/L (ppb) | 20 | 3.31 | 97 | 50-150 |
| Copper | ug/L (ppb) | 20 | 1,090 | <1 | 50-150 |
| Zinc | ug/L (ppb) | 50 | 586 | 69 b | 50-150 |
| Arsenic | ug/L (ppb) | 10 | 2.21 | 87 b | 50-150 |
| Silver | ug/L (ppb) | 5 | <1 | 94 | 50-150 |
| Cadmium | ug/L (ppb) | 5 | <1 | 93 | 50-150 |
| Lead | ug/L (ppb) | 10 | 25.3 | 83 b | 50-150 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Chromium | ug/L (ppb) | 20 | 99 | 70-130 |
| Nickel | ug/L (ppb) | 20 | 104 | 70-130 |
| Copper | ug/L (ppb) | 20 | 102 | 70-130 |
| Zinc | ug/L (ppb) | 50 | 114 | 70-130 |
| Arsenic | ug/L (ppb) | 10 | 92 | 70-130 |
| Silver | ug/L (ppb) | 5 | 98 | 70-130 |
| Cadmium | ug/L (ppb) | 5 | 98 | 70-130 |
| Lead | ug/L (ppb) | 10 | 100 | 70-130 |

Date of Report: 10/27/09
Date Received: 10/23/09
Project: EP-S7-06-02 Site 0908, F&BI 910222

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Laboratory Code: 910214-01 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result | Percent Recovery MS | Percent Recovery MS | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Mercury | ug/L (ppb) | 0.5 | <0.2 | 99 | 108 | 50-150 | 9 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Mercury | ug/L (ppb) | 0.5 | 102 | 70-130 |

Date of Report: 10/27/09
Date Received: 10/23/09
Project: EP-S7-06-02 Site 0908, F&BI 910222

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260C AND 624

Laboratory Code: 910222-01 (Duplicate)

| Analyte | Reporting Units | Sample Result | Duplicate Result | Relative Percent Difference (Limit 20) |
|---|---|---|---|---|
| Dichlorodifluoromethane | ug/L (ppb) | <1 | <1 | nm |
| Chloromethane | ug/L (ppb) | <1 | <1 | nm |
| Vinyl chloride | ug/L (ppb) | <0.2 | <0.2 | nm |
| Bromomethane | ug/L (ppb) | <1 | <1 | nm |
| Chloroethane | ug/L (ppb) | <1 | <1 | nm |
| Trichlorofluoromethane | ug/L (ppb) | <1 | <1 | nm |
| Acetone | ug/L (ppb) | <10 | <10 | nm |
| 1,1-Dichloroethene | ug/L (ppb) | <1 | <1 | nm |
| Methylene chloride | ug/L (ppb) | <5 | <5 | nm |
| Methyl t-butyl ether (MTBE) | ug/L (ppb) | <1 | <1 | nm |
| trans-1,2-Dichloroethene | ug/L (ppb) | <1 | <1 | nm |
| 1,1-Dichloroethane | ug/L (ppb) | <1 | <1 | nm |
| 2,2-Dichloropropane | ug/L (ppb) | <1 | <1 | nm |
| cis-1,2-Dichloroethene | ug/L (ppb) | <1 | <1 | nm |
| Chloroform | ug/L (ppb) | <1 | <1 | nm |
| 2-Butanone (MEK) | ug/L (ppb) | <10 | <10 | nm |
| 1,2-Dichloroethane (EDC) | ug/L (ppb) | <1 | <1 | nm |
| 1,1,1-Trichloroethane | ug/L (ppb) | <1 | <1 | nm |
| 1,1-Dichloropropene | ug/L (ppb) | <1 | <1 | nm |
| Carbon tetrachloride | ug/L (ppb) | <1 | <1 | nm |
| Benzene | ug/L (ppb) | <1 | <1 | nm |
| Trichloroethene | ug/L (ppb) | <1 | <1 | nm |
| 1,2-Dichloropropane | ug/L (ppb) | <1 | <1 | nm |
| Bromodichloromethane | ug/L (ppb) | <1 | <1 | nm |
| Dibromomethane | ug/L (ppb) | <1 | <1 | nm |
| 4-Methyl-2-pentanone | ug/L (ppb) | <10 | <10 | nm |
| cis-1,3-Dichloropropene | ug/L (ppb) | <1 | <1 | nm |
| Toluene | ug/L (ppb) | <1 | <1 | nm |
| trans-1,3-Dichloropropene | ug/L (ppb) | <1 | <1 | nm |
| 1,1,2-Trichloroethane | ug/L (ppb) | <1 | <1 | nm |
| 2-Hexanone | ug/L (ppb) | <10 | <10 | nm |
| 1,3-Dichloropropane | ug/L (ppb) | <1 | <1 | nm |
| Tetrachloroethene | ug/L (ppb) | <1 | <1 | nm |
| Dibromochloromethane | ug/L (ppb) | <1 | <1 | nm |
| 1,2-Dibromoethane (EDB) | ug/L (ppb) | <1 | <1 | nm |
| Chlorobenzene | ug/L (ppb) | <1 | <1 | nm |
| Ethylbenzene | ug/L (ppb) | <1 | <1 | nm |
| 1,1,1,2-Tetrachloroethane | ug/L (ppb) | <1 | <1 | nm |
| m,p-Xylene | ug/L (ppb) | <2 | <2 | nm |
| o-Xylene | ug/L (ppb) | <1 | <1 | nm |
| Styrene | ug/L (ppb) | <1 | <1 | nm |
| Isopropylbenzene | ug/L (ppb) | <1 | <1 | nm |
| Bromoform | ug/L (ppb) | <1 | <1 | nm |
| n-Propylbenzene | ug/L (ppb) | <1 | <1 | nm |
| Bromobenzene | ug/L (ppb) | <1 | <1 | nm |
| 1,3,5-Trimethylbenzene | ug/L (ppb) | <1 | <1 | nm |
| 1,1,2,2-Tetrachloroethane | ug/L (ppb) | <1 | <1 | nm |
| 1,2,3-Trichloropropane | ug/L (ppb) | <1 | <1 | nm |
| 2-Chlorotoluene | ug/L (ppb) | <1 | <1 | nm |
| 4-Chlorotoluene | ug/L (ppb) | <1 | <1 | nm |
| tert-Butylbenzene | ug/L (ppb) | <1 | <1 | nm |
| 1,2,4-Trimethylbenzene | ug/L (ppb) | <1 | <1 | nm |
| sec-Butylbenzene | ug/L (ppb) | <1 | <1 | nm |
| p-Isopropyltoluene | ug/L (ppb) | <1 | <1 | nm |
| 1,3-Dichlorobenzene | ug/L (ppb) | <1 | <1 | nm |
| 1,4-Dichlorobenzene | ug/L (ppb) | <1 | <1 | nm |
| 1,2-Dichlorobenzene | ug/L (ppb) | <1 | <1 | nm |
| 1,2-Dibromo-3-chloropropane | ug/L (ppb) | <1 | <1 | nm |
| 1,2,4-Trichlorobenzene | ug/L (ppb) | <1 | <1 | nm |
| Hexachlorobutadiene | ug/L (ppb) | <1 | <1 | nm |
| Naphthalene | ug/L (ppb) | <1 | <1 | nm |
| 1,2,3-Trichlorobenzene | ug/L (ppb) | <1 | <1 | nm |

Date of Report: 10/27/09
Date Received: 10/23/09
Project: EP-S7-06-02 Site 0908, F&BI 910222

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260C AND 624

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ug/L (ppb) | 50 | 97 | 98 | 27-138 | 1 |
| Chloromethane | ug/L (ppb) | 50 | 91 | 93 | 49-125 | 2 |
| Vinyl chloride | ug/L (ppb) | 50 | 107 | 112 | 53-131 | 5 |
| Bromomethane | ug/L (ppb) | 50 | 98 | 99 | 62-125 | 1 |
| Chloroethane | ug/L (ppb) | 50 | 105 | 108 | 52-127 | 3 |
| Trichlorofluoromethane | ug/L (ppb) | 50 | 113 | 116 | 75-128 | 3 |
| Acetone | ug/L (ppb) | 50 | 158 | 166 | 32-177 | 5 |
| 1,1-Dichloroethene | ug/L (ppb) | 50 | 104 | 107 | 68-131 | 3 |
| Methylene chloride | ug/L (ppb) | 50 | 89 | 90 | 56-136 | 1 |
| Methyl t-butyl ether (MTBE) | ug/L (ppb) | 50 | 97 | 102 | 66-140 | 5 |
| trans-1,2-Dichloroethene | ug/L (ppb) | 50 | 101 | 105 | 71-128 | 4 |
| 1,1-Dichloroethane | ug/L (ppb) | 50 | 99 | 104 | 74-118 | 5 |
| 2,2-Dichloropropane | ug/L (ppb) | 50 | 112 | 116 | 73-130 | 4 |
| cis-1,2-Dichloroethene | ug/L (ppb) | 50 | 100 | 104 | 74-126 | 4 |
| Chloroform | ug/L (ppb) | 50 | 101 | 105 | 76-118 | 4 |
| 2-Butanone (MEK) | ug/L (ppb) | 50 | 116 | 123 | 57-138 | 6 |
| 1,2-Dichloroethane (EDC) | ug/L (ppb) | 50 | 103 | 106 | 77-118 | 3 |
| 1,1,1-Trichloroethane | ug/L (ppb) | 50 | 105 | 108 | 77-123 | 3 |
| 1,1-Dichloropropene | ug/L (ppb) | 50 | 106 | 109 | 75-122 | 3 |
| Carbon tetrachloride | ug/L (ppb) | 50 | 116 | 119 | 76-126 | 3 |
| Benzene | ug/L (ppb) | 50 | 99 | 102 | 77-121 | 3 |
| Trichloroethene | ug/L (ppb) | 50 | 102 | 104 | 74-119 | 2 |
| 1,2-Dichloropropane | ug/L (ppb) | 50 | 104 | 106 | 77-121 | 2 |
| Bromodichloromethane | ug/L (ppb) | 50 | 116 | 121 | 77-129 | 4 |
| Dibromomethane | ug/L (ppb) | 50 | 107 | 111 | 79-121 | 4 |
| 4-Methyl-2-pentanone | ug/L (ppb) | 50 | 107 | 111 | 65-135 | 4 |
| cis-1,3-Dichloropropene | ug/L (ppb) | 50 | 115 | 119 | 79-129 | 3 |
| Toluene | ug/L (ppb) | 50 | 97 | 99 | 86-118 | 2 |
| trans-1,3-Dichloropropene | ug/L (ppb) | 50 | 116 | 116 | 90-128 | 0 |
| 1,1,2-Trichloroethane | ug/L (ppb) | 50 | 101 | 104 | 89-114 | 3 |
| 2-Hexanone | ug/L (ppb) | 50 | 117 | 122 | 74-136 | 4 |
| 1,3-Dichloropropane | ug/L (ppb) | 50 | 101 | 104 | 89-113 | 3 |
| Tetrachloroethene | ug/L (ppb) | 50 | 101 | 103 | 86-121 | 2 |
| Dibromochloromethane | ug/L (ppb) | 50 | 117 | 119 | 89-128 | 2 |
| 1,2-Dibromoethane (EDB) | ug/L (ppb) | 50 | 105 | 108 | 90-118 | 3 |
| Chlorobenzene | ug/L (ppb) | 50 | 99 | 102 | 86-118 | 3 |
| Ethylbenzene | ug/L (ppb) | 50 | 99 | 101 | 87-119 | 2 |
| 1,1,1,2-Tetrachloroethane | ug/L (ppb) | 50 | 109 | 113 | 86-124 | 4 |
| m,p-Xylene | ug/L (ppb) | 100 | 96 | 99 | 88-121 | 3 |
| o-Xylene | ug/L (ppb) | 50 | 99 | 101 | 88-120 | 2 |
| Styrene | ug/L (ppb) | 50 | 100 | 102 | 85-119 | 2 |
| Isopropylbenzene | ug/L (ppb) | 50 | 98 | 100 | 83-120 | 2 |
| Bromoform | ug/L (ppb) | 50 | 122 vo | 126 vo | 77-119 | 3 |
| n-Propylbenzene | ug/L (ppb) | 50 | 100 | 103 | 85-121 | 3 |
| Bromobenzene | ug/L (ppb) | 50 | 100 | 102 | 88-117 | 2 |
| 1,3,5-Trimethylbenzene | ug/L (ppb) | 50 | 99 | 101 | 88-119 | 2 |
| 1,1,2,2-Tetrachloroethane | ug/L (ppb) | 50 | 100 | 103 | 88-119 | 3 |
| 1,2,3-Trichloropropane | ug/L (ppb) | 50 | 100 | 102 | 85-120 | 2 |
| 2-Chlorotoluene | ug/L (ppb) | 50 | 98 | 100 | 86-119 | 2 |
| 4-Chlorotoluene | ug/L (ppb) | 50 | 100 | 103 | 86-120 | 3 |
| tert-Butylbenzene | ug/L (ppb) | 50 | 100 | 103 | 77-121 | 3 |
| 1,2,4-Trimethylbenzene | ug/L (ppb) | 50 | 99 | 101 | 85-119 | 2 |
| sec-Butylbenzene | ug/L (ppb) | 50 | 98 | 100 | 85-119 | 2 |
| p-Isopropyltoluene | ug/L (ppb) | 50 | 99 | 102 | 87-119 | 3 |
| 1,3-Dichlorobenzene | ug/L (ppb) | 50 | 97 | 100 | 85-118 | 3 |
| 1,4-Dichlorobenzene | ug/L (ppb) | 50 | 99 | 100 | 85-119 | 1 |
| 1,2-Dichlorobenzene | ug/L (ppb) | 50 | 97 | 99 | 81-117 | 2 |
| 1,2-Dibromo-3-chloropropane | ug/L (ppb) | 50 | 113 | 116 | 62-136 | 3 |
| 1,2,4-Trichlorobenzene | ug/L (ppb) | 50 | 98 | 102 | 75-129 | 4 |
| Hexachlorobutadiene | ug/L (ppb) | 50 | 98 | 103 | 74-132 | 5 |
| Naphthalene | ug/L (ppb) | 50 | 101 | 105 | 66-135 | 4 |
| 1,2,3-Trichlorobenzene | ug/L (ppb) | 50 | 97 | 101 | 70-133 | 4 |

Date of Report: 10/27/09
Date Received: 10/23/09
Project: EP-S7-06-02 Site 0908, F&BI 910222

## QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL SUSPENDED SOLIDS BY METHOD 2540D

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| TSS | mg/L | 50 | 108 | 110 | 67-128 | 2 |

Date of Report: 10/27/09
Date Received: 10/23/09
Project: EP-S7-06-02 Site 0908, F&BI 910222

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR SEMIVOLATILES BY METHOD 625

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Phenol | ug/L (ppb) | 75 | 40 | 45 | 18-54 | 12 |
| 2-Chlorophenol | ug/L (ppb) | 75 | 77 | 90 | 43-101 | 16 |
| 1,4-Dichlorobenzene | ug/L (ppb) | 50 | 72 | 87 | 45-103 | 19 |
| Benzyl alcohol | ug/L (ppb) | 50 | 65 | 74 | 35-111 | 13 |
| N-Nitroso-di-n-propylamine | ug/L (ppb) | 50 | 73 | 85 | 45-114 | 15 |
| 1,2,4-Trichlorobenzene | ug/L (ppb) | 50 | 75 | 90 | 45-110 | 18 |
| Naphthalene | ug/L (ppb) | 50 | 76 | 91 | 42-115 | 18 |
| 4-Chloroaniline | ug/L (ppb) | 50 | 42 | 51 | 10-143 | 19 |
| 4-Chloro-3-methylphenol | ug/L (ppb) | 75 | 79 | 92 | 46-107 | 15 |
| 2-Methylnaphthalene | ug/L (ppb) | 50 | 76 | 90 | 41-133 | 17 |
| 2-Nitroaniline | ug/L (ppb) | 50 | 80 | 93 | 50-124 | 15 |
| Acenaphthylene | ug/L (ppb) | 50 | 85 | 99 | 49-121 | 15 |
| 3-Nitroaniline | ug/L (ppb) | 50 | 39 | 47 | 10-243 | 19 |
| Acenaphthene | ug/L (ppb) | 50 | 80 | 91 | 41-114 | 13 |
| Dibenzofuran | ug/L (ppb) | 50 | 81 | 94 | 44-132 | 15 |
| 2,4-Dinitrotoluene | ug/L (ppb) | 50 | 79 | 93 | 46-119 | 16 |
| 4-Nitrophenol | ug/L (ppb) | 75 | 47 | 54 | 15-66 | 14 |
| Fluorene | ug/L (ppb) | 50 | 82 | 94 | 47-128 | 14 |
| 4-Nitroaniline | ug/L (ppb) | 50 | 70 | 85 | 29-170 | 19 |
| Pentachlorophenol | ug/L (ppb) | 75 | 69 | 82 | 39-126 | 17 |
| Phenanthrene | ug/L (ppb) | 50 | 79 | 92 | 48-124 | 15 |
| Anthracene | ug/L (ppb) | 50 | 77 | 90 | 49-123 | 16 |
| Fluoranthene | ug/L (ppb) | 50 | 81 | 94 | 49-121 | 15 |
| Pyrene | ug/L (ppb) | 50 | 83 | 98 | 35-115 | 17 |
| Benz(a)anthracene | ug/L (ppb) | 50 | 76 | 88 | 47-121 | 15 |
| Chrysene | ug/L (ppb) | 50 | 76 | 89 | 39-126 | 16 |
| Benzo(a)pyrene | ug/L (ppb) | 50 | 68 | 79 | 39-121 | 15 |
| Benzo(b)fluoranthene | ug/L (ppb) | 50 | 80 | 96 | 39-119 | 18 |
| Benzo(k)fluoranthene | ug/L (ppb) | 50 | 82 | 93 | 43-153 | 13 |
| Indeno(1,2,3-cd)pyrene | ug/L (ppb) | 50 | 86 | 101 | 37-137 | 16 |
| Dibenz(a,h)anthracene | ug/L (ppb) | 50 | 79 | 93 | 41-134 | 16 |
| Benzo(g,h,i)perylene | ug/L (ppb) | 50 | 79 | 93 | 41-141 | 16 |

Date of Report: 10/27/09
Date Received: 10/23/09
Project: EP-S7-06-02 Site 0908, F&BI 910222

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR POLYCHLORINATED BIPHENYLS AS AROCLOR 1016/1260 BY METHOD 608

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | % Recovery LCS | % Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Aroclor 1016 | ug/L (ppb) | 2.5 | 85 | 98 | 52-135 | 14 |
| Aroclor 1260 | ug/L (ppb) | 2.5 | 84 | 96 | 60-128 | 13 |

## 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 - The analyte indicated was found in the method blank. The result should be considered an estimate.

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 - The sample was extracted outside of holding time. Results should be considered estimates.

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 - The value reported exceeded the calibration range established for the analyte. The reported concentration should be considered an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The pattern of peaks present is not indicative of diesel.

y - The pattern of peaks present is not indicative of motor oil.

**Am Test Inc.**
13600 NE 126TH PL
Suite C
Kirkland, WA 98034
(425) 885-1664
www.amtestlab.com

AMTEST LABORATORIES

*Professional Analytical Services*

## ANALYSIS REPORT

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Attention: Michael Erdahl
Project #: 910222
PO Number: A-138
All results reported on an as received basis.

Date Received: 10/23/09
Date Reported: 10/26/09

---

**AMTEST Identification Number** **09-A017325**
**Client Identification** **0910-0192 TT06102209**
**Sampling Date** **10/22/09, 10:45**

### Conventionals

| PARAMETER | RESULT | UNITS | Q | DL | METHOD | ANA'S | DATE |
|---|---|---|---|---|---|---|---|
| Total Cyanide | < 0.005 | mg/l | | 0.005 | EPA 335.4 | TS | 10/23/09 |
| Total Oil and Grease | < 1 | mg/l | | 1.0 | EPA 1664 | MO | 10/23/09 |

Kathy Fugiel
President

Page 1 of 1 910222

ME 10/23/09

VI/AI2/ DO4

**CHAIN OF CUSTODY RECORD**

**No: 0907-10/22/09-0030**

START, Portland, OR
EPA Contract Number: EP-S7-06-02

Site #: 0908
Contact Name: Jim Petersen
Contact Phone: 503-547-3964

Lab: Friedman and Bruyla
Lab Phone: 206 285 8282

| Lab # | Sample # | Location | Analyses | Matrix | Collected | Sample Time | Numb Cont | Container | Preservative | MS/MSD | Sampler |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 A | 0910-0192 | TT06102209 | Semivolatiles 625 | Water | 10/22/2009 | 10:45 | 1 | 1 L amber | 4 C | | Jim Petersen - START |
| B-E | 0910-0192 | TT06102209 | VOCs 624 | Water | 10/22/2009 | 10:45 | 4 | 40 ml VOA | HCl/4 C | | Jim Petersen - START |
| F | 0910-0192 | TT06102209 | PCBs 608 | Water | 10/22/2009 | 10:45 | 1 | 1 L amber | 4 C | | Jim Petersen - START |
| G | 0910-0192 | TT06102209 | Total Oil and Grease (Polar and Nonpolar) 1664 | Water | 10/22/2009 | 10:45 | 1 | 1 L amber | 4 C | | Jim Petersen - START |
| H | 0910-0192 | TT06102209 | As, Cd, Cr, Cu, Pb, Hg, Ni, Ag, Zn 200.8 | Water | 10/22/2009 | 10:45 | 1 | 500mL Poly | HNO3 | | Jim Petersen - START |
| | 0910-0192 | TT06102209 | Mercury 245.1 or 1631 | Water | 10/22/2009 | 10:45 | 1 | 500mL Poly | HNO3 | | Jim Petersen - START |
| I | 0910-0192 | TT06102209 | Cyanide 335.3 | Water | 10/22/2009 | 10:45 | 1 | 1 L poly | 4 C | | Jim Petersen - START |
| J | 0910-0192 | TT06102209 | TSS 160.2 | Water | 10/22/2009 | 10:45 | 1 | 500mL Poly | 4 C | | Jim Petersen - START |
| | 0910-0192 | TT06102209 | TTO (624, 625, 608) | Water | 10/22/2009 | 10:45 | 1 | | 4 C | | Jim Petersen - START |
| 02 AB | 0910-0193 | TB34WT | VOCs 8260 | Water | 10/22/2009 | 10:50 | (HP) 2 | 40mL VOA | HCl/4 C | | Jim Petersen - START |
| | | | | | | | | | | | |

Special Instructions: Sample no. 09100192 (TT06102209) - 24-hour T.A.T.

**SAMPLES TRANSFERRED FROM CHAIN OF CUSTODY #**

| Items/Reason | Relinquished by | Date | Received by | Date | Time | Items/Reason | Relinquished By | Date | Received by | Date | Time |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | [signature] | 10/22/09 | (FedEx) | 10/22/09 | 14:00 | | | | | | |
| | | | [signature] | 10/23/09 | 8:40 | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

Samples received at 2 °C

# Specialty Analytical

11711 SE Capps Road
Clackamas, OR 97015
(503) 607-1331
Fax (503) 607-1336


October 23, 2009

Jason Coury
Environmental Quality Management, Inc.
6825 216th Street SW
Suite J
Lynnwood, WA 98036

TEL: (425) 673-2900
FAX: (425) 673-7511

RE: NWP&C

Dear Jason Coury:

Order No.: 0910147

Specialty Analytical received 1 sample on 10/22/2009 for the analyses presented in the following report.

There were no problems with the analysis and all data for associated QC met EPA or laboratory specifications except where noted in the Case Narrative, or as qualified with flags. Results apply only to the samples analyzed. Without approval of the laboratory, the reproduction of this report is only permitted in its entirety.

If you have any questions regarding these tests, please feel free to call.

Sincerely,

Cindy Hillyard
Project Manager

Technical Review

**Specialty Analytical** **Date:** *23-Oct-09*

**CLIENT:** Environmental Quality Management, Inc.
**Project:** NWP&C
**Lab Order:** 0910147

## CASE NARRATIVE

Due to modified rules for testing procedures approved for analysis and sampling under the Clean Water Act in March of 2007, the holding time for pH analysis has been reduced to 15 minutes. The pH data has been qualified with an HT flag to reflect the analysis outside of holding time.

## Specialty Analytical

**Date:** *23-Oct-09*

| | | | |
|---|---|---|---|
| **CLIENT:** | Environmental Quality Management, Inc. | **Client Sample ID:** | TT06102209 |
| **Lab Order:** | 0910147 | **Collection Date:** | 10/22/2009 10:45:00 AM |
| **Project:** | NWP&C | | |
| **Lab ID:** | 0910147-01 | **Matrix:** | AQUEOUS |

| Analyses | Result | Limit | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **PH** | | **SM 4500-H+ B** | | | | Analyst: **en** |
| pH | 6.8 | | HT | | 1 | 10/22/2009 |

Specialty Analytical

**Date:** *23-Oct-09*

**CLIENT:** Environmental Quality Management, Inc.
**Work Order:** 0910147
**Project:** NWP&C

# ANALYTICAL QC SUMMARY REPORT

**TestCode: PH_CWA**

| Sample ID: **0910147-01ADUP** | SampType: **DUP** | TestCode: **PH_CWA** | Units: | Prep Date: | Run ID: **PH ACCUMET_091022A** |
|---|---|---|---|---|---|
| Client ID: **TT06102209** | Batch ID: **R58012** | TestNo: **SM 4500-H+** | | Analysis Date: **10/22/2009** | SeqNo: **634590** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| pH | 6.77 | 0 | 0 | 0 | 0 | 0 | 0 | 6.77 | 0 | 20 | HT |

**Qualifiers:**

ND - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

# KEY TO FLAGS

| | |
|---|---|
| A | This sample contains a Gasoline Range Organic not identified as a specific hydrocarbon product. The result was quantified against gasoline calibration standards. |
| A1 | This sample contains a Diesel Range Organic not identified as a specific hydrocarbon product. The result was quantified against diesel calibration standards. |
| A2 | This sample contains a Lube Oil Range Organic not identified as a specific hydrocarbon product. The result was quantified against a lube oil calibration standard. |
| A3 | The result was determined to be Non-Detect based on hydrocarbon pattern recognition. The product was carry-over from another hydrocarbon type. |
| B | The blank exhibited a positive result greater than the reporting limit for this compound. |
| CN | See Case Narrative. |
| D | Result is based from a dilution. |
| E | Result exceeds the calibration range for this compound. The result should be considered as estimate. |
| F | The positive result for this hydrocarbon is due to single component contamination. The product does not match any hydrocarbon in the fuels library. |
| H | Sample was analyzed outside recommended hold time. |
| HT | At clients request, sample was analyzed outside recommended hold time. |
| J | The result for this analyte is between the MDL and the PQL and should be considered as estimated concentration. |
| K | Diesel result is biased high due to amount of Oil contained in the sample. |
| L | Diesel result is biased high due to amount of Gasoline contained in the sample. |
| M | Oil result is biased high due to amount of Diesel contained in the sample. |
| N | Gasoline result is biased high due to amount of Diesel contained in the sample. |
| MC | Sample concentration is greater than 4x the spiked value, the spiked value is considered insignificant. |
| MI | Result is outside control limits due to matrix interference. |
| MSA | Value determined by Method of Standard Addition. |
| O | Laboratory Control Standard (LCS) exceeded laboratory control limits, but meets CCV criteria. Data meets EPA requirements. |
| P | Detection levels of Methylene Chloride may be laboratory contamination, due to previous analysis or background levels. |
| Q | Detection levels elevated due to sample matrix. |
| R | RPD control limits were exceeded. |
| RF | Duplicate failed due to result being at or near the method-reporting limit. |
| RP | Matrix spike values exceed established QC limits, post digestion spike is in control. |
| S | Recovery is outside control limits. |
| SC | Closing CCV or LCS exceeded high recovery control limits, but associated samples are non-detect. Data meets EPA requirements. |
| * | The result for this parameter was greater that the maximum contaminant level of the TCLP regulatory limit. |

0910147

# SAMPLE CHAIN OF CUSTODY

Send Report To
Company Jason Courey - EQM
Address
City, State, ZIP
Phone # Fax #

SAMPLERS (signature)
PROJECT NAME/NO. Northwest Pipe & Casing
PO #
REMARKS #

Page # 1 of 1

TURNAROUND TIME
☐ Standard (2 Weeks)
☒ RUSH 48 - HR
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 by 8260 | SVOCs by 8270 | HFS | 2H (150.1) | | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TT06102209 | | 10/22/09 | 10:45 | Water | 1 | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
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*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: | | Jim Peterson | E&E Inc | 10/22/09 | |
| Received by: | | Dean Strom | Spec. Analytical | 10/22/09 | 11:50AM |
| Relinquished by: | | | | | |
| Received by: | | | | | |

# APPENDIX H

## Site-Specific Sampling Plans

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**
**REGION 10 Emergency Response Unit**
**1200 Sixth Avenue, Suite 900**
**Seattle, Washington 98101-3140**

# Site Specific Sampling Plan

Project Name: North West Pipe and Casing (Deliniation of Aerial Extent) Site ID: 10G8

Author: Jim Petersen/Steve Hall Company: E & E Date Completed: August 11, 2009

This Site Specific Sampling Plan (SSSP) is prepared and used in conjunction with the Quality Management Plan (QMP) for the Emergency Response Unit for collecting samples during this Removal Program project. The information contained herein is based on the information available at the time of preparation. As better information becomes available, this SSSP will be adjusted.

When inadequate time is available for preparing the SSSP in advance of the sampling event, a Field Sampling Form is prepared on-site immediately prior to sampling. The completed Field Sampling Form is attached to this full length version of the SSSP that is written after the sampling event.

This version of the SSSP addresses test pits and soil excavation at the site. Additional SSSPs will be prepared to address water samples from dewatering activities and soil stockpiles for off-site waste disposal.

## 1. Approvals

| Name, Title | Telephone, Email, Address | Signature | Date |
|---|---|---|---|
| Kathy Parker<br>**On-Scene Coordinator** | 206-553-0062, parker.kathy@epa.gov<br>USEPA , M/S: ECL-116, 1200 Sixth Ave Suite 900, Seattle, WA 98101 | MK Parker | 8/11/09 |
| Michael Boykin<br>**ERU Quality Assurance Coordinator** | 206-553-0062, boykin.michael@epa.gov<br>USEPA , M/S: ECL-116, 1200 Sixth Ave Suite 900, Seattle, WA 98101 | Michael Boykin | 11 Aug 09 |

## 2. Additional Personnel and Affiliations involved in the project:

| Name | Address | Telephone | E-mail |
|---|---|---|---|
| **START Project Manager** | | | |
| Jim Petersen | 333 SW Fifth Avenue, Suite 600<br>Portland, OR 97204 | 503-248-5600 | tadair@ene.com |
| **START Quality Assurance Officer** | | | |
| Mark Woodke | 720 Third Avenue, Suite 1700<br>Seattle, WA 98104 | 206-624-9537 | mwoodke@ene.com |
| **Analytical Laboratory Director or Contact** | | | |
| TestAmerica Laboratories, Inc. Howard Holmes / Christina Woodcock | 9405 SW Nimbus Avenue<br>Beaverton, OR 97008 | 503-906-9200 | howard.holmes@testamericainc.com, christina.woodcock@testamericainc.com |

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10 Emergency Response Unit
1200 Sixth Avenue, Suite 900
Seattle, Washington 98101-3140

# Site Specific Sampling Plan

Project Name: North West Pipe and Casing (Deliniation of Aerial Extent) Site ID: 10G8

Author: Jim Petersen/Steve Hall Company: E & E Date Completed: August 11, 2009

This Site Specific Sampling Plan (SSSP) is prepared and used in conjunction with the Quality Management Plan (QMP) for the Emergency Response Unit for collecting samples during this Removal Program project. The information contained herein is based on the information available at the time of preparation. As better information becomes available, this SSSP will be adjusted.

When inadequate time is available for preparing the SSSP in advance of the sampling event, a Field Sampling Form is prepared on-site immediately prior to sampling. The completed Field Sampling Form is attached to this full length version of the SSSP that is written after the sampling event.

This version of the SSSP addresses test pits and soil excavation at the site. Additional SSSPs will be prepared to address water samples from dewatering activities and soil stockpiles for off-site waste disposal.

## 1. Approvals

| Name, Title | Telephone, Email, Address | Signature | Date |
|---|---|---|---|
| Kathy Parker<br>**On-Scene Coordinator** | 206-553-0062, parker.kathy@epa.gov<br>USEPA , M/S: ECL-116, 1200 Sixth Ave Suite 900, Seattle, WA 98101 | | |
| Michael Boykin<br>**ERU Quality Assurance Coordinator** | 206-553-0062, boykin.michael@epa.gov<br>USEPA , M/S: ECL-116, 1200 Sixth Ave Suite 900, Seattle, WA 98101 | | |

## 2. Additional Personnel and Affiliations involved in the project:

| Name | Address | Telephone | E-mail |
|---|---|---|---|
| **START Project Manager** | | | |
| Jim Petersen | 333 SW Fifth Avenue, Suite 600<br>Portland, OR 97204 | 503-248-5600 | tadair@ene.com |
| **START Quality Assurance Officer** | | | |
| Mark Woodke | 720 Third Avenue, Suite 1700<br>Seattle, WA 98104 | 206-624-9537 | mwoodke@ene.com |
| **Analytical Laboratory Director or Contact** | | | |
| TestAmerica Laboratories, Inc. Howard Holmes / Christina Woodcock | 9405 SW Nimbus Avenue<br>Beaverton, OR 97008 | 503-906-9200 | howard.holmes@testamericainc.com, christina.woodcock@testamericainc.com |

## 3. Physical Description and Contact Information:

| | | |
|---|---|---|
| **Site Name** | Northwest Pipe and Casing | |
| **Site Location** | The site is located at 9585 SE Mather Road, Clackamas, Oregon. The site is bounded to the north by SE Lawnfield Road and to the south by SE Mather Road, and lies approximately ½ mile east of Interstate Highway 205. | |
| **Property Size** | Approximately 53 acres. | |
| **Site Contact** | Mark Ader, EPA Remedial Project Manager | 206-553-1849 |
| **Nearest Residents** | Approximately ½ mile | **Direction:** west |
| **Primary Land Uses Surrounding the Site** | Light industrial and commercial. The site is located in an industrial park. | |

## 4. The proposed schedule of project work follows:

| Activity | Estimated Start Date | Estimated Completion Date | Comments |
|---|---|---|---|
| **SSSP Review/Approval** | August 10, 2009 | August 11, 2009 | |
| **Mobilize to / Demobilize from Site** | August 11, 2009 | August 14, 2009 | Test pit phase only |
| **Sample Collection** | August 12, 2009 | August 14, 2009 | |
| **Laboratory Sample Receipt** | August 13, 2009 | August 17, 2009 | |
| **Laboratory Analysis** | August 14, 2009 | August 19, 2009 | |
| **Data Validation** | August 24, 2009 | August 28, 2009 | |

## 5. Historical and Background Information

*Describe briefly what you know about the site that is relevant to sampling and analysis for this investigation.*

The Northwest Pipe and Casing (NWP&C) site was the former location of a pipe manufacturing and storage facility that operated from 1956 to 1985. Facility activities during this time caused the release of volatile organic compounds (VOCs), polynuclear aromatic hydrocarbons (PAHs), and polychlorinated biphenyls (PCBs) to soil and groundwater at the site. The site was placed on EPA's National Priorities List (NPL) in 1992. In 1996 EPA began a Remedial Investigation / Feasibility Study, and a Record of Decision (ROD) was issued in 2000. Cleanup activities performed at the site include soil capping, wetland restoration, and air stripping to remove VOCs from groundwater.

To further redevelop the site, there is a planned expansion of a railroad spur through the contaminated zone. Currently, the area with the planned rail spur expansion contains subsurface coal tar and is capped by the protective cover. At the request of EPA's remedial program, EPA's removal program will perform a removal action to remove subsurface coal tar contamination in the vicinity of the planned rail spur.

The purpose of this sampling event is to determine the aerial extent of contamination beyond which the shoring will be installed. Test pits will be used to pinpoint the edge of contamination and will extent downward as far as twenty feet, if necessary.

## 6. Conceptual Site Model

*Example: Contaminant: Mercury*
*Transport Mechanism: vapor moving on air currents*
*Receptors: people living in the house*

Contaminants: VOCs, PAHs, PCBs, and total petroleum hydrocarbons (TPH; diesel range). According to Parametrix, the EPA redial program Response Action Contract (RAC) contractor, indicator compounds for contamination at the site are the PAHs naphthalene and benzo(a)pyrene and the VOC tetrachloroethylene (percholorethylene [PCE]).

Transport Mechanisms: Contaminants in subsurface soil can leach to groundwater which migrates off site.

Receptors: On-site surface water flows to the Willamette River, where fishing occurs and which contains wetlands and endangered species. There are several private and municipal groundwater drinking wells within four miles of the site.

## 7. Decision Statement

*Examples: 1) Determine whether surface contamination exceeds the established action level;*
*2) Determine appropriate disposal options for contaminated materials.*

The decisions to be made from this investigation are to:

Determine the horizontal and vertical extents of contamination where action levels are exceeded to delineate the extent of material to be removed during soil excavation.

## 8. Action Level

*State the analyte, concentration, and units for each selected action level. Describe the rationale for choosing each action level and its source (i.e. MTCA, PRG, ATSDR, etc.) Example: The action level for total mercury in soil is 6.7 mg/kg (from Regional Screening Level residential).*

Site action levels from the ROD wil lbe used for:
Benzo(a)pyrene, 250 µg/kg
Tetrachloroethene (PCE), 7 µg/kg

The Regional Screening Level will be used for:
Naphthalene, 20 mg/kg

NWTPH-Dx results will be compared to the following Oregon Risk-Based Concentrations:
Diesel Range (diesel / heating oil), 3,900 mg/kg
Heavy Oil Range (mineral insulating oil), 9,800 mg/kg

Samples of groundwater in a few test pits will also be collected for disposal characterization. Analytical results will be compared to applicable disposal regulations.

## 9. Site Diagram and Sampling Areas

*A Sampling Area is an area within in which a specific action will be performed.*
*Examples : 1) Each drum on the site is a Sampling Area;*
*2) Each section of sidewalk in front of the residence is a Sampling Area;*
*3) Each sampling grid section is a Sampling Area.*

Diagram of the site is attached as Figure 2.

Each individual test pit is a Sampling Area and will be determined by the OSC in the field to detemine the area to be surrounded by shoring.

## 10. The Decision Rules

*These can be written as logical If…, Then.. statements. Describe how the decisions will be made and how to address results falling within the error range of the action level. Examples: 1) In the Old Furnace Sampling Area, the soil in the area around the furnace structure will be excavated until sample analysis with XRF shows no mercury concentrations in surface soil above the lower limit of the error associated with the action level, 18.4 mg/kg. 2) If the concentrations of contaminants in a SA are less than the lower limit of the error associated with the action level, then the area may be characterized as not posing an unacceptable risk to human health or the environment and may be dismissed from additional RP activities. The area may be referred to other Federal, State or Local government agencies.*

The following statement(s) describe the decision rules to apply to this investigation:

If any of the indicator compounds or NWTPH-Dx are detected in test pit samples above site action levels, the area represented by that test pit will be included in the planned excavation during removal activities.

## 11. Information Needed for the Decision Rule

*What information needs to be collected to make the decisions – this includes non-sampling info as well: action levels, climate history, direction of water flow, etc. Examples: Current and future on-site and off-site land use; wind direction, humidity and ambient temperature; contaminant concentrations in surface soil.*

The following inputs to the decision are necessary to interpret the analytical results:

Contaminant concentrations and locations in the soil.

Depths and horizontal locations of test pits so that the extent of contamination can be mapped.

## 12. Sampling and Analysis

*For each SA, describe:*

1. *sampling pattern (random, targeted, scheme for composite)*
2. *number of samples, how many to be collected from where, and why*
3. *sample type (grab, composite)*
4. *matrix (air, water, soil)*
5. *analytes and analytical methods*
6. *name and locations of off-site laboratories, if applicable.*

Soil test pits will be targeted in the area of the planned rail spur expansion to delineate the horizontal and vertical extent of contamination.

As many as 20 test pits will be excavated. One grab sample of visibly clean soil will be collected from each test pit at a maximum depth of twenty feet. Additionally, as many as four grab samples may be collected from groundwater in some of the test pits for waste water disposal characterization.

Soil samples will be analyzed for PCE by SW-846 method 8260B; naphthalene and benzo(a)pyrene by SW-846 method 8270D; and TPH by NWTPH-Dx.

Water samples will be analyzed for PCE by SW-846 method 8260B; naphthalene and benzo(a)pyrene by SW-846 method 8270D; TPH by NWTPH-Dx; and total suspended solids (TSS) by EPA method 160.2.

Soil and groundwater samples will be analyzed at TestAmerica Laboratories, Inc., in Beaverton, Oregon.

## 13. Applicability of Data (place an X in front of the data categories needed, explain with comments)

*Do the decisions to be made from the data require that the analytical data be:*
*1) definitive data, 2) screening data (with definitive confirmation) or 3) screening data (without definitive confirmation)?*

__***X***__***A) Definitive data*** *is analytical data of sufficient quality for final decision-making. To produce definitive data on-site or off-site, the field or lab analysis will have passed full Quality Control (QC) requirements (continuing calibration checks, Method Detection Limit (MDL) study, field duplicate samples, field blank, matrix spikes, lab duplicate samples, and other method-specific QC such as surrogates) AND the analyst will have passed a Precision and Recovery (PAR) study AND the instrument will have a valid Performance Evaluation sample on file. This category of data is suitable for:* ***1) enforcement purposes, 2) determination of extent of contamination, 3) disposal, 4) RP verification or 5) cleanup confirmation.***
Comments:

__ __***B) Screening data with definitive confirmation*** *is analytical data that may be used* ***to support preliminary or intermediate decision-making*** *until confirmed by definitive data. However, even after confirmation, this data is often not as precise as definitive data. To produce this category of data, the analyst will have passed a PAR study to determine analytical error AND 10% of the samples are split and analyzed by a method that produced definitive data with a minimum of three samples above the action level and three samples below it.*
Comments:

__ __***C) Screening data*** *is analytical data which has not been confirmed by definitive data. The QC requirements are limited to an MDL study and continuing calibration checks. This data can be used for making decisions:* ***1) in emergencies, 2) for health and safety screening, 3) to supplement other analytical data, 4) to determine where to collect samples, 5) for***

***waste profiling, and 6) for preliminary identification of pollutants**. This data is not of sufficient quality for final decision-making.*

Comments: Screening of air for ammonia concentration.

## 14. Special Sampling or Analysis Directions

*Describe any special directions for the planned sampling and analysis such as additional quality controls or sample preparation issues. Examples: 1) XRF and Lumex for sediment will be calibrated before each day of use and checked with a second source standard. 2) A field blank will be analyzed with each calibration to confirm the concentration of non-detection. 3) A Method Detection Limit determination will be performed prior to the start of analysis so that the lower quantitation limit can be determined. 4) If particle size is too large for accurate analyses, the samples will be ground prior to analysis. If the sample contains too much moisture for accurate analyses, the sample will be decanted and air dried prior to analysis.*

For test pits that are deeper than four feet or that are otherwise unstable, soil samples will be collected from undisturbed soil from the excavator bucket (i.e., away from the side of the excavator bucket).

Groundwater samples will be collected from the bottom of test pits with groundwater well sampling equipment (i.e., bailers or peristaltic pump).

## 15. Method Requirements

*[Describe the restrictions to be considered in choosing an analytical method due to the need to meet specific regulations, policies, ARARs, and other analytical needs. Examples: 1) Methods must meet USEPA Drinking Water Program requirements. 2) Methods must achieve lower quantitation limits of less than 1/10 the action levels.3) Methods must be performed exactly as written without modification by the analytical laboratory.]*

The laboratory must follow its approved SOP or request approval from the EPA for any necessary modifications.

## 16. Sample Collection Information

*[Describe any activities that will be performed related to sample collection]*

The applicable sample collection Standard Operating Procedures (SOPs) or methods will be followed and include:

Field Activity Logbook SOP
Sample Packaging and Shipping SOP
Sampling Equipment Decontamination SOP
Soil Sampling SOP
Groundwater Well SOP
Groundwater Sampling Devices SOP

## 17. Optimization of Sampling Plan (Maximizing Data Quality While Minimizing Time and Cost)

*[Describe what choices were made to reduce cost of sampling while meeting the needed level of data quality. Example: The XRF will be used in situ whenever possible to achieve accurate results. Reproducibility and accuracy of in situ XRF analyses will be checked by collecting, air drying, analyzing and comparing five in situ samples at the start of sampling. Where interferences are suspected, steps will be taken to eliminate the interferences by mechanisms such as drying, grinding or sieving the samples or analyzing them using the Lumex with soil attachment.]*

Because site contaminants are associated with coal tar contamination, soil from test pits will be observed for visual signs of contamination to help delineate the extent of contamination (i.e., samples will generally only be collected from soil that appears not to be obviously contaminated).

The format for sample number identification is summarized in Table 1. Sample collection and analysis information is summarized in Table 2.

Use a Sample Plan Alteration Form (SPAF) to describe project discrepancies (if any) that occur between planned project activities listed in the final SSSP and actual project work. Append completed SPAF to original SSSP.

Use a Field Sampling Form (FSF) to capture the sampling and analysis scheme for emergency responses and insert the FSF pages into the appropriate areas of the final SSSP.

**Table 1**
**SAMPLE CODING**

**Project Name _____Northwest Pipe and Casing _____ Site ID:____10G8_**

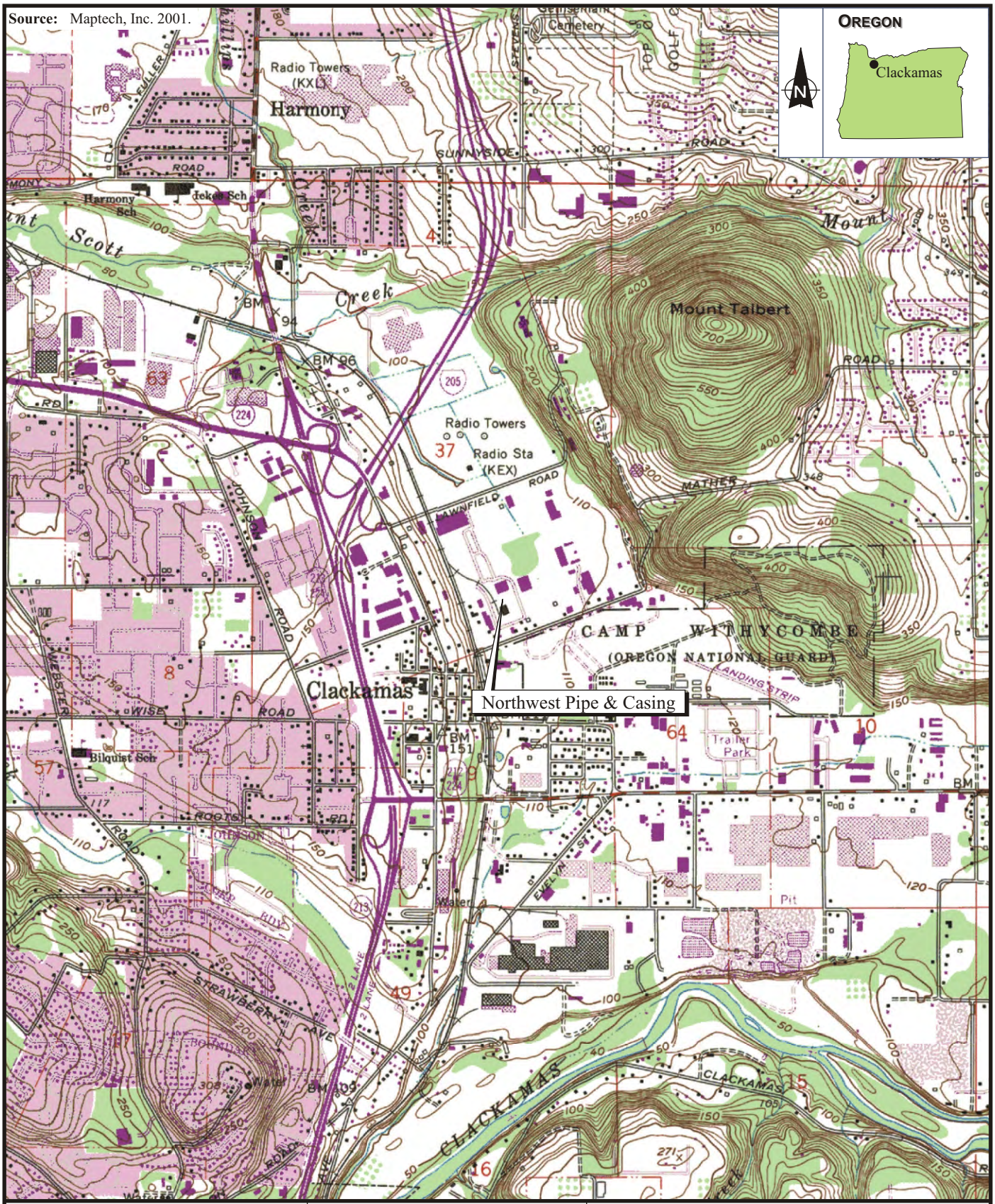
| ***SAMPLE NUMBER*** [(1)] | | |
|---|---|---|
| **Digits** | **Description** | **Code (Example)** |
| 1,2,3,4 | Year and Month Code | 0908 (YYMM) |
| 5,6,7,8 | Consecutive Sample Number (grouped by SA as appropriate) | 0401 – First sample of SA |

| ***SAMPLE NAME / LOCATION ID*** [(2)] ***(Optional)*** | | |
|---|---|---|
| 1,2 | Sampling Area | TP – Test Pit<br>RB – Rinsate Blank |
| 3,4 | Consecutive Sample Number | 01 – First sample of DA. |
| 5,6 | Matrix Code | SO - Soil<br>WT – Water |
| 7,8 | Depth (Optional) | 01 |

Notes:
(1) The Sample Number is a unique, 8-digit number assigned to each sample.
(2) The Sample Name or Location ID is an optional identifier that can be used to further describe each sample or sample location.

**Table 3. Sampling and Analysis** *(circle or fill in)*

| Data Quality | Sampling Area | Matrix | Sampling Pattern | Sample Type | Data Quality | Number Of Field Samples | Analyte or Parameter | Method Number | Action Level | Method Quant. Limit | Sample Container | Preserv. | Hold Time | Field QC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab Analysis | Test Pits | Soil | Targeted | Grab | Definitive | 20 | Napthalene and Benzo(a)pyrene | SW-8468270D | 20 mg/kg 250 µg/kg | 20 / 30 µg/kg | 1 x 8-oz jar | < 6° C for all PAHs: no preservative | 14 days | 1 field duplicate 1 MS/MSD |
| | | | | | | | PCE | SW-8468260B | 7 µg/kg | 25 µg/kg | 2 x EnCores and 1 40-ml vial with methanol | < 6° C; methanol in one vial | 48 hours | 1 field duplicate 1 MS/MSD<br><br>1 trip blank (per cooler) |
| | | | | | | | diesel range organics | NWTPH-Dx | 70,000 mg/kg | 25-50 mg/kg | 1 x 8-oz jar | < 6° C: no preservative | 14 days | 1 field duplicate 1 MS/MSD |
| | | Ground water | Targeted | Grab | Definitive | 4 | Napthalene and Benzo(a)pyrene | SW-8468270D | Total Toxic Organics 2.13 mg/L | 2 / 0.2 µg/L | 2 x 1-L Amber | < 6° C: no preservative | 7 days | 1 field duplicate 1 MS/MSD |
| | | | | | | | PCE | SW-8468260B | | 1 µg/L | 3 x 40-ml vials | < 6° C: HCl to pH < 2 | 14 days | 1 field duplicate 1 MS/MSD<br><br>1 trip blank (per cooler) |
| | | | | | | | Diesel Range Organics | NWTPH-Dx | none | 0.125 – 0.25 mg/L | 2 x 1-L amber | < 6° C: HCl to pH < 2 | 14 days | 1 field duplicate 1 MS/MSD |
| | | | | | | | TSS | EPA 160,2 | none | 4 mg/L | 1 x 500-ml HDPE | < 6° C: no preservative | 24 hours | 1 field duplicate |

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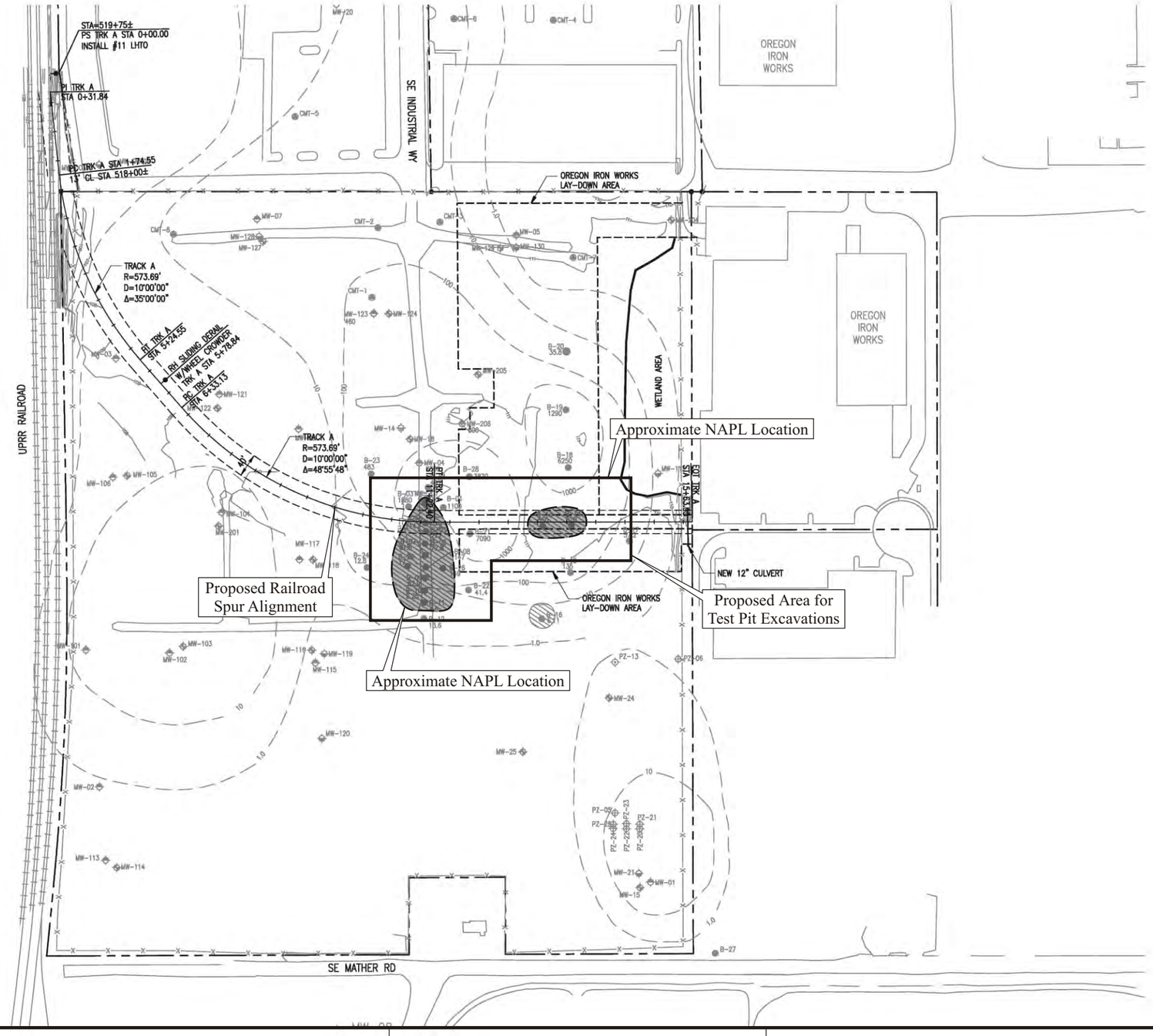
|---|---|---|---|---|
| **ecology and environment, inc.**<br>International Specialists in the Environment<br>Seattle, Washington | NORTHWEST PIPE & CASING<br>Clackamas, Oregon | Figure 1<br>SITE LOCATION MAP | | |
| | 0 1000 2000<br>Approximate Scale in Feet | Date:<br>8-11-09 | Drawn by:<br>AES | 10:START-3\09070014\fig 1 |




## GENERAL NOTES

1. PLUME 1 DELINEATION FROM FIGURE 5-1 "PLUME 1 SOURCE AREA" PROVIDED BY PARAMETRIX, APRIL 13, 2009.

## KEYED NOTES

(1) NOT USED.

## LEGEND

FOOTPRINT OF OBSERVED NAPL IN SHALLOW WATER BEARING ZONE

**ecology and environment, inc.**
International Specialists in the Environment
Seattle, Washington

**Source:** Harris Group Inc., 2009.

NORTHWEST PIPE & CASING
Clackamas, Oregon

Figure 2
SITE PLAN

| Date: | Drawn by: | |
|---|---|---|
| 8/11/09 | AES | 10:START-3\09070014\fig 2 |

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**
**REGION 10 Emergency Response Unit**
**1200 Sixth Avenue, Suite 900**
**Seattle, Washington 98101-3140**

# Site Specific Sampling Plan

Project Name: North West Pipe and Casing (Soil Excavation and Removal) Site ID: 10G8

Author: Jim Petersen/Steve Hall Company: E & E Date Completed: September 18, 2009

This Site Specific Sampling Plan (SSSP) is prepared and used in conjunction with the Quality Management Plan (QMP) for the Emergency Response Unit for collecting samples during this Removal Program project. The information contained herein is based on the information available at the time of preparation. As better information becomes available, this SSSP will be adjusted.

When inadequate time is available for preparing the SSSP in advance of the sampling event, a Field Sampling Form is prepared on-site immediately prior to sampling. The completed Field Sampling Form is attached to this full length version of the SSSP that is written after the sampling event.

This version of the SSSP addresses the plan for confirmation soil sampling from the sides and bottom of the two excavation pits at the site.

## 1. Approvals

| Name, Title | Telephone, Email, Address | Signature | Date |
|---|---|---|---|
| Mark Ader<br>**On-Scene Coordinator** | 206-553-1849, ader.mark@epa.gov<br>USEPA , M/S: ECL-115, 1200 Sixth Ave Suite 900, Seattle, WA 98101 | Mark Ader | 9/18/09 |
| Kathy Parker<br>**ERU Quality Assurance Coordinator** | 206-553-0062, parker.kathy@epa.gov<br>USEPA , M/S: ECL-116, 1200 Sixth Ave Suite 900, Seattle, WA 98101 | KM Parker | 9/18/09 |

## 2. Additional Personnel and Affiliations involved in the project:

| Name | Address | Telephone | E-mail |
|---|---|---|---|
| **START Project Manager** | | | |
| Jim Petersen | 333 SW Fifth Avenue, Suite 600<br>Portland, OR 97204 | 503-248-5600 | jpetersen@ene.com |
| **START Quality Assurance Officer** | | | |
| Mark Woodke | 720 Third Avenue, Suite 1700<br>Seattle, WA 98104 | 206-624-9537 | mwoodke@ene.com |

| Analytical Laboratory Director or Contact | | | |
|---|---|---|---|
| CLP or USEPA R10 Lab | | | |

## 3. Physical Description and Contact Information:

| | | |
|---|---|---|
| **Site Name** | Northwest Pipe and Casing | |
| **Site Location** | The site is located at 9585 SE Mather Road, Clackamas, Oregon. The site is bounded to the north by SE Lawnfield Road and to the south by SE Mather Road, and lies approximately ½ mile east of Interstate Highway 205. | |
| **Property Size** | Approximately 53 acres. | |
| **Site Contact** | Mark Ader, EPA Remedial Project Manager | 206-553-1849 |
| **Nearest Residents** | Approximately ½ mile | **Direction:** west |
| **Primary Land Uses Surrounding the Site** | Light industrial and commercial. The site is located adjacent to an industrial park. | |

## 4. The proposed schedule of project work follows:

| Activity | Estimated Start Date | Estimated Completion Date | Comments |
|---|---|---|---|
| **SSSP Review/Approval** | August 31, 2009 | September 18, 2009 | |
| **Mobilize to / Demobilize from Site** | September 1, 2009 | October 30, 2009 | |
| **Sample Collection** | September 21, 2009 | October 29, 2009 | |
| **Laboratory Sample Receipt** | September 22, 2009 | October 28, 2009 | |
| **Laboratory Analysis** | September 22, 2009 | October 30, 2009 | |
| **Data Validation** | September 11, 2009 | October 31, 2009 | |

## 5. Historical and Background Information

*Describe briefly what you know about the site that is relevant to sampling and analysis for this investigation.*

The Northwest Pipe and Casing (NWP&C) site was the former location of a pipe manufacturing and storage facility that operated from 1956 to 1985. Facility activities during this time caused the release of volatile organic compounds (VOCs), polynuclear aromatic hydrocarbons (PAHs), and polychlorinated biphenyls (PCBs) to soil and groundwater at the site. The site was placed on EPA's National Priorities List (NPL) in 1992. In 1996 EPA began a Remedial Investigation / Feasibility Study, and a Record of Decision (ROD) was issued in 2000. Cleanup activities performed at the site included soil capping, wetland restoration, and air stripping to remove VOCs from groundwater.

To further redevelop the site, there is a planned expansion of a railroad spur through the contaminated zone. Currently, the area with the planned rail spur expansion contains subsurface coal tar. At the request of EPA's remedial program, EPA's removal program will perform a removal action to remove subsurface coal tar contamination in the vicinity of the planned rail spur.

## 6. Conceptual Site Model

*Example: Contaminant: Mercury*
*Transport Mechanism: vapor moving on air currents*
*Receptors: people living in the house*

Contaminants: VOCs, PAHs, and PCBs.
According to Parametrix, the EPA remedial program Response Action Contract (RAC) contractor, indicator compounds for contamination at the site are PAHs: naphthalene and benzo(a)pyrene and the VOC: tetrachloroethylene (percholorethylene [PCE]).

Transport Mechanisms: Contaminants in subsurface soil are leaching into groundwater and migrating off site.

Receptors: On-site surface water flows to the Dean and Johnson creeks, where fishing occurs and which contains wetlands and may contain endangered species. There are several private and municipal groundwater drinking wells within four miles of the site.

## 7. Decision Statement

*Examples: 1) Determine whether surface contamination exceeds the established action level;*
*2) Determine appropriate disposal options for contaminated materials.*

The decisions to be made from this investigation are to:

Evaluate the contaminant levels remaining in the subsurface after the extents of the excavation have been reached.

## 8. Action Levels

*State the analyte, concentration, and units for each selected action level. Describe the rationale for choosing each action level and its source (i.e. MTCA, PRG, ATSDR, etc.) Example: The action level for total mercury in soil is 6.7 mg/kg (from Regional Screening Level residential).*

Site action levels for confirmation soil samples are based on the cleanup levels from the ROD:

Benzo(a)anthracene - 2,500 micrograms per kilogram (µg/kg)
Benzo(b)fluoranthene - 2,500 µg/kg
Benzo(k)fluoranthene - 2,500 µg/kg
Benzo(a)pyrene - 250 µg/kg
Chrysene - 250,000 µg/kg
Dibenz(a,h)anthracene - 250 µg/kg
Indeno(1,2,3-cd)pyrene - 2,500 µg/kg

PCBs, Total - 1 milligrams per kilogram (mg/kg)
Tetrachloroethene (PCE) - 7 µg/kg
Trichloroethene - 13 µg/kg
Vinyl Chloride - 0.1 µg/kg

## 9. Site Diagram and Sampling Areas

*A Sampling Area is an area within in which a specific action will be performed.*
*Examples : 1) Each drum on the site is a Sampling Area;*
*2) Each section of sidewalk in front of the residence is a Sampling Area;*
*3) Each sampling grid section is a Sampling Area.*

Diagram of the site layout is attached as Figure 1. Sampling areas (locations of the two excavation pits) are labeled on the figure.

## 10. The Decision Rules

*These can be written as logical If…, Then.. statements. Describe how the decisions will be made and how to address results falling within the error range of the action level. Examples: 1) In the Old Furnace Sampling Area, the soil in the area around the furnace structure will be excavated until sample analysis with XRF shows no mercury concentrations in surface soil above the lower limit of the error associated with the action level, 18.4 mg/kg. 2) If the concentrations of contaminants in a SA are less than the lower limit of the error associated with the action level, then the area may be characterized as not posing an unacceptable risk to human health or the environment and may be dismissed from additional RP activities. The area may be referred to other Federal, State or Local government agencies.*

The following statement(s) describe the decision rules to apply to this investigation:

If results above above the action level are found, then the remedial program will consider further action to address the remaining soil contamination.

## 11. Information Needed for the Decision Rule

*What information needs to be collected to make the decisions – this includes non-sampling info as well: action levels, climate history, direction of water flow, etc. Examples: Current and future on-site and off-site land use; wind direction, humidity and ambient temperature; contaminant concentrations in surface soil.*

The following inputs to the decision are necessary to revise the sampling plan when necessary:

More confirmation samples may be collected if contamination is observed on the sides and bottoms of the pits.

## 12. Sampling and Analysis

*For each SA, describe:*

1. *sampling pattern (random, targeted, scheme for composite)*
2. *number of samples, how many to be collected from where, and why*
3. *sample type (grab, composite)*
4. *matrix (air, water, soil)*
5. *analytes and analytical methods*
6. *name and locations of off-site laboratories, if applicable.*

Soil samples will be analyzed by CLP assigned laboratories.

Confirmation Samples:

- Confirmation samples will be taken from the bottom and sides of the two excavation pits. Grab soil samples will be taken from the excavator buckets at certain locations. See attached figure for the layout of excavation pits #1 and sample locations.

Soil samples will be analyzed for VOC compounds by SW-846 method 8260B; SVOC compounds by SW-846 method 8270D; and PCB's by Method 8082.

## 13. Applicability of Data (place an X in front of the data categories needed, explain with comments)

*Do the decisions to be made from the data require that the analytical data be:*
*1) definitive data, 2) screening data (with definitive confirmation) or 3) screening data (without definitive confirmation)?*

__X__ ***A) Definitive data*** *is analytical data of sufficient quality for final decision-making. To produce definitive data on-site or off-site, the field or lab analysis will have passed full Quality Control (QC) requirements (continuing calibration checks, Method Detection Limit (MDL) study, field duplicate samples, field blank, matrix spikes, lab duplicate samples, and other method-specific QC such as surrogates) AND the analyst will have passed a Precision and Recovery (PAR) study AND the instrument will have a valid Performance Evaluation sample on file. This category of data is suitable for:* ***1) enforcement purposes, 2) determination of extent of contamination, 3) disposal, 4) RP verification or 5) cleanup confirmation.***
Comments:

__ __ ***B) Screening data with definitive confirmation*** *is analytical data that may be used* ***to support preliminary or intermediate decision-making*** *until confirmed by definitive data. However, even after confirmation, this data is often not as precise as definitive data. To produce this category of data, the analyst will have passed a PAR study to determine analytical error AND 10% of the samples are split and analyzed by a method that produced definitive data with a minimum of three samples above the action level and three samples below it.*
Comments:

__ __ ***C) Screening data*** *is analytical data which has not been confirmed by definitive data. The QC requirements are limited to an MDL study and continuing calibration checks. This data can be used for making decisions:* ***1) in emergencies, 2) for health and safety screening, 3) to supplement other analytical data, 4) to determine where to collect samples, 5) for waste profiling, and 6) for preliminary identification of pollutants****. This data is not of sufficient quality for final decision-making.*
Comments: Screening of air for ammonia concentration.

## 14. Special Sampling or Analysis Directions

*Describe any special directions for the planned sampling and analysis such as additional quality controls or sample preparation issues. Examples: 1) XRF and Lumex for sediment will be calibrated before each day of use and checked with a second source standard. 2) A field blank will be analyzed with each calibration to confirm the concentration of non-detection. 3) A Method Detection Limit determination will be performed prior to the start of analysis so that the lower quantitation limit can be determined. 4) If particle size is too large for accurate analyses, the samples will be ground prior to analysis. If the sample contains too much moisture for accurate analyses, the sample will be decanted and air dried prior to analysis.*

Soil samples will be collected from undisturbed soil from the excavator bucket (i.e., away from the side of the excavator bucket) or directly from the sidewall with a collection cup or bucket.

Samples can be frozen by the lab until enough are collected for one analysis batch as long as holding times are met.

## 15. Method Requirements

*[Describe the restrictions to be considered in choosing an analytical method due to the need to meet specific regulations, policies, ARARs, and other analytical needs. Examples: 1) Methods must meet USEPA Drinking Water Program requirements. 2) Methods must achieve lower quantitation limits of less than 1/10 the action levels.3) Methods must be performed exactly as written without modification by the analytical laboratory.]*

The laboratory must follow its approved SOP or request approval from the EPA for any necessary modifications.

## 16. Sample Collection Information

*[Describe any activities that will be performed related to sample collection]*

The applicable sample collection Standard Operating Procedures (SOPs) or methods will be followed and include:
Field Activity Logbook SOP
Sample Packaging and Shipping SOP
Sampling Equipment Decontamination SOP
Soil Sampling SOP
Groundwater Well SOP
Groundwater Sampling Devices SOP

## 17. Optimization of Sampling Plan (Maximizing Data Quality While Minimizing Time and Cost)

*[Describe what choices were made to reduce cost of sampling while meeting the needed level of data quality. Example: The XRF will be used in situ whenever possible to achieve accurate results. Reproducibility and accuracy of in situ XRF analyses will be checked by collecting, air drying, analyzing and comparing five in situ samples at the start of sampling. Where interferences are suspected, steps will be taken to eliminate the interferences by mechanisms such as drying, grinding or sieving the samples or analyzing them using the Lumex with soil attachment.]*

Site contaminants are associated with coal tar contamination, therefore soil samples will be inspected for visual signs of contamination to help delineate the extent of contamination.

The format for sample number identification is summarized in Table 1. Sample collection and analysis information is summarized in Table 2.

Use a Sample Plan Alteration Form (SPAF) to describe project discrepancies (if any) that occur between planned project activities listed in the final SSSP and actual project work. Append completed SPAF to original SSSP.

Use a Field Sampling Form (FSF) to capture the sampling and analysis scheme for emergency responses and insert the FSF pages into the appropriate areas of the final SSSP.

**Table 1**
**SAMPLE CODING**

**Project Name _____Northwest Pipe and Casing _____ Site ID:____10G8_**

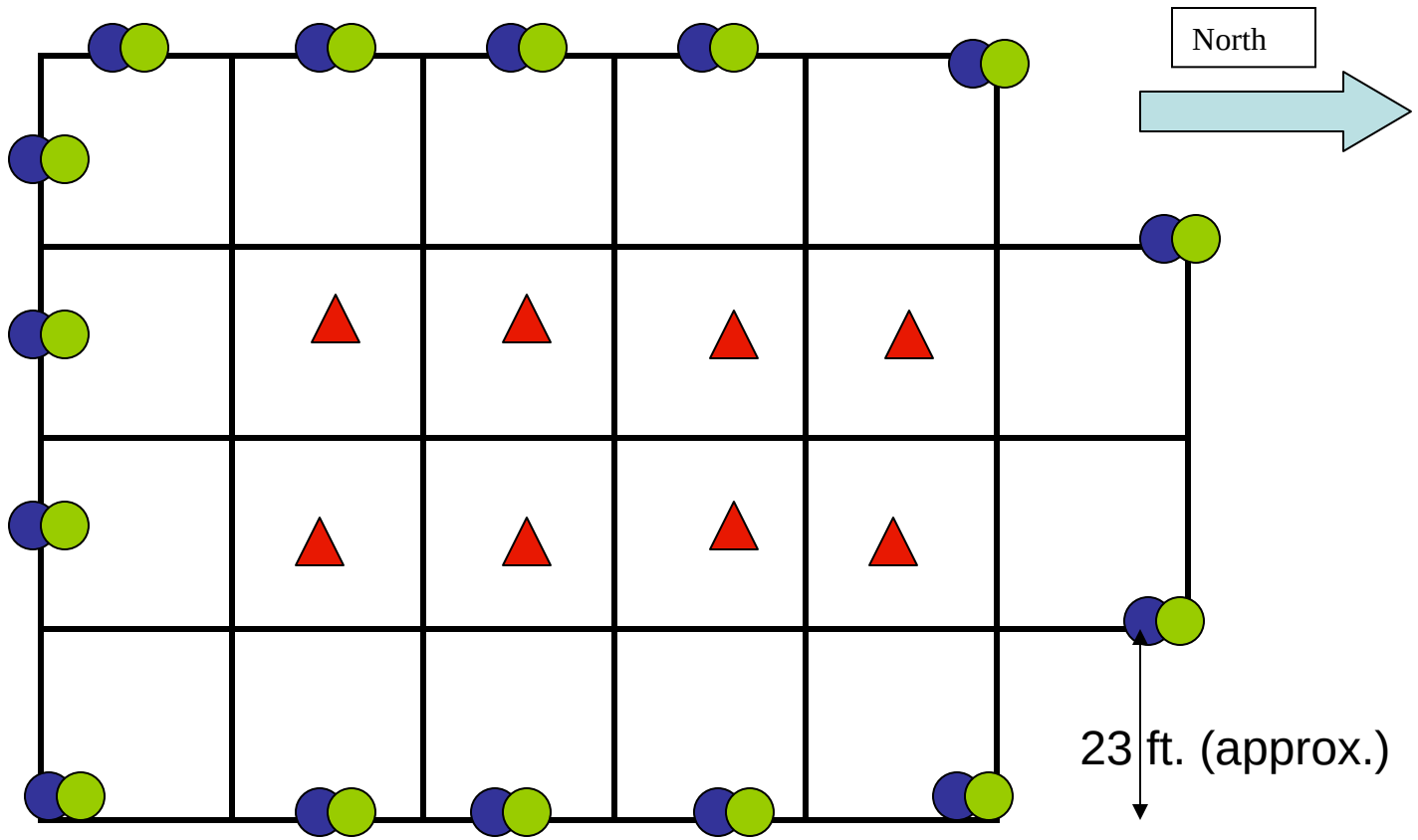
| ***SAMPLE NUMBER*** [(1)] | | |
|---|---|---|
| **Digits** | **Description** | **Code (Example)** |
| 1,2,3,4 | Year and Month Code | (YYMM) |
| 5,6,7,8 | Consecutive Sample Number (grouped by SA as appropriate) | First sample |

| ***SAMPLE NAME / LOCATION ID*** [(2)] ***(Optional)*** | | |
|---|---|---|
| 1,2 | Sampling Area | E- Excavation Area |
| 3,4 | Consecutive Sample Number | 01 – First sample |

Notes:
(1) The Sample Number is a unique, 8-digit number assigned to each sample.
(2) The Sample Name or Location ID is an optional identifier that can be used to further describe each sample or sample location.

## Table 2. Sampling and Analysis

| Data Quality | Sampling Area | Matrix | Sampling Pattern | Sample Type | Data Quality | Number Of Field Samples | Analyte or Parameter | Method Number | Action Level | Method Quant. Limit | Sample Container | Preserv. | Hold Time | QA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Definitive | Excavations | Soil | Targeted | Grab | Definitive | 80 | SVOCs | SW-846 8270D | 20 mg/kg 250 µg/kg | 1/10 action level | 1 x 8 oz jar | < 6° C for all PAHs: no preservative | 14 days | MS/MSD Trip blank |
| | | | | | | | VOCs | SW-846 8260B | 7 µg/kg | 1/10 action level | 1 x 4 oz jar | < 6° C | 7 days | MS/MSD Trip blank |
| | | | | | | | PCB | SW-846 8082 | 1.0 mg/kg | 1/10 action level | 1 x 4 oz jar | < 6° C | 28 days | MS/MSD Trip blank |




Floor sample location – bottom center of bay

Sidewall sample location – 10’ to 12’ BGS

Sidewall sample location – Bottom, ~ 25’ BGS

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**
**REGION 10 Emergency Response Unit**
**1200 Sixth Avenue, Suite 900**
**Seattle, Washington 98101-3140**

# Site Specific Sampling Plan

Project Name: North West Pipe and Casing (Water Treatment) Site ID: 10G8

Author: Jim Petersen/Steve Hall Company: E & E Date Completed: September 19, 2009

This Site Specific Sampling Plan (SSSP) is prepared and used in conjunction with the Quality Management Plan (QMP) for the Emergency Response Unit for collecting samples during this Removal Program project. The information contained herein is based on the information available at the time of preparation. As better information becomes available, this SSSP will be adjusted.

When inadequate time is available for preparing the SSSP in advance of the sampling event, a Field Sampling Form is prepared on-site immediately prior to sampling. The completed Field Sampling Form is attached to this full length version of the SSSP that is written after the sampling event.

This version of the SSSP addresses the plan for collecting water samples including groundwater removed from the excavations, water derived from excavated soil dewatering, water treated in the temporary on-site waste water treatment system, and water treatment system maintenance samples (e.g. samples collected between granular activated carbon vessels)..

## 1. Approvals

| Name, Title | Telephone, Email, Address | Signature | Date |
|---|---|---|---|
| Mark Ader<br>**On-Scene Coordinator** | 206-553-1849, ader.mark@epa.gov<br>USEPA , M/S: ECL-115, 1200 Sixth Ave Suite 900, Seattle, WA 98101 | Mark Ader | 9/21/09 |
| Kathy Parker<br>**ERU Quality Assurance Coordinator** | 206-553-0062, parker.kathy@epa.gov<br>USEPA , M/S: ECL-116, 1200 Sixth Ave Suite 900, Seattle, WA 98101 | MKParker | 9/19/09 |

## 2. Additional Personnel and Affiliations involved in the project:

| Name | Address | Telephone | E-mail |
|---|---|---|---|
| **START Project Manager** | | | |
| Jim Petersen | 333 SW Fifth Avenue, Suite 600<br>Portland, OR 97204 | 503-248-5600 | jpetersen@ene.com |
| **USEPA Emergency Response Unit Alternate Quality Assurance Coordinator** | | | |
| Kathy Parker | USEPA M/S: ECL-116 Suite 900<br>1200 Sixth Avenue, Seattle, WA 98101 | 206-553-0062 | parker.kathy@epa.gov |
| **START Quality Assurance Officer** | | | |
| Mark Woodke | 720 Third Avenue, Suite 1700<br>Seattle, WA 98104 | 206-624-9537 | mwoodke@ene.com |

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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Project Name: North West Pipe and Casing (Water Treatment) Site ID: 10G8

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This version of the SSSP addresses the plan for collecting water samples including groundwater removed from the excavations, water derived from excavated soil dewatering, water treated in the temporary on-site waste water treatment system, and water treatment system maintenance samples (e.g. samples collected between granular activated carbon vessels)..

## 1. Approvals

| Name, Title | Telephone, Email, Address | Signature | Date |
|---|---|---|---|
| Mark Ader<br>**On-Scene Coordinator** | 206-553-1849, ader.mark@epa.gov<br>USEPA , M/S: ECL-115, 1200 Sixth Ave Suite 900, Seattle, WA 98101 | | |
| Kathy Parker<br>**ERU Quality Assurance Coordinator** | 206-553-0062, parker.kathy@epa.gov<br>USEPA , M/S: ECL-116, 1200 Sixth Ave Suite 900, Seattle, WA 98101 | | |

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| Jim Petersen | 333 SW Fifth Avenue, Suite 600<br>Portland, OR 97204 | 503-248-5600 | jpetersen@ene.com |
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| Kathy Parker | USEPA M/S: ECL-116 Suite 900<br>1200 Sixth Avenue, Seattle, WA 98101 | 206-553-0062 | parker.kathy@epa.gov |
| **START Quality Assurance Officer** | | | |
| Mark Woodke | 720 Third Avenue, Suite 1700<br>Seattle, WA 98104 | 206-624-9537 | mwoodke@ene.com |

| Analytical Laboratory Director or Contact | | | |
|---|---|---|---|
| Friedman & Bruya, Inc. | 3012 16th Avenue West, Seattle, WA 98119-2029 | 206-285-8282 | Mike Erdalhl: merdahl@friedmanandbruya.com |
| Specialty Analytical, Inc. | 11711 SE Capps Road, Suit B<br>Clackamas, OR 97015 | 503-612-9007 | Dean Strom<br>dean@specialtyanalytical.com |

## 3. Physical Description and Contact Information:

| | | |
|---|---|---|
| **Site Name** | Northwest Pipe and Casing | |
| **Site Location** | The site is located at 9585 SE Mather Road, Clackamas, Oregon. The site is bounded to the north by SE Lawnfield Road and to the south by SE Mather Road, and lies approximately ½ mile east of Interstate Highway 205. | |
| **Property Size** | Approximately 53 acres. | |
| **Site Contact** | Mark Ader, EPA Remedial Project Manager | 206-553-1849 |
| **Nearest Residents** | Approximately ½ mile | **Direction:** west |
| **Primary Land Uses Surrounding the Site** | Light industrial and commercial. The site is located in an industrial park. | |

## 4. The proposed schedule of project work follows:

| Activity | Estimated Start Date | Estimated Completion Date | Comments |
|---|---|---|---|
| **SSSP Review/Approval** | September 19, 2009 | September 21, 2009 | |
| **Mobilize to / Demobilize from Site** | September 1, 2009 | October 30, 2009 | |
| **Sample Collection** | September 18, 2009 | October 29, 2009 | |
| **Laboratory Sample Receipt** | September 19, 2009 | October 30, 2009 | |
| **Laboratory Analysis** | September 19, 2009 | November 2, 2009 | |
| **Data Validation** | September 21, 2009 | November 14, 2009 | |

## 5. Historical and Background Information

*Describe briefly what you know about the site that is relevant to sampling and analysis for this investigation.*

The Northwest Pipe and Casing (NWP&C) site was the former location of a pipe manufacturing and storage facility that operated from 1956 to 1985. Facility activities during this time caused the release of volatile organic compounds (VOCs), polynuclear aromatic hydrocarbons (PAHs), and polychlorinated biphenyls (PCBs) to soil and groundwater at the site. The site was placed on EPA's National Priorities List (NPL) in 1992. In 1996 EPA began a Remedial Investigation / Feasibility Study, and a Record of Decision (ROD) was issued in 2000. Cleanup activities performed at the site included soil capping, wetland restoration, and air stripping to remove VOCs from groundwater.

To further redevelop the site, there is a planned expansion of a railroad spur through the contaminated zone. Currently, the area with the planned rail spur expansion contains subsurface coal tar. At the request of EPA's remedial program, EPA's removal program will perform a removal action to remove subsurface coal tar contamination in the vicinity of the planned rail spur.

## 6. Conceptual Site Model

*Example: Contaminant: Mercury*
*Transport Mechanism: vapor moving on air currents*
*Receptors: people living in the house*

Contaminants: VOCs, PAHs, and PCBs.
According to Parametrix, the EPA remedial program Response Action Contract (RAC) contractor, indicator compounds for contamination at the site are PAHs: naphthalene and benzo(a)pyrene and the VOC: tetrachloroethylene (percholorethylene [PCE]).

Transport Mechanisms: Contaminants in subsurface soil are leaching into groundwater and migrating off site.

Receptors: On-site surface water flows to the Dean and Johnson creeks, where fishing occurs and which contains wetlands and may contain endangered species. There are several private and municipal groundwater drinking wells within four miles of the site.

## 7. Decision Statement

*Examples: 1) Determine whether surface contamination exceeds the established action level;*
*2) Determine appropriate disposal options for contaminated materials.*

The decisions to be made from this investigation are to:

1) Collect analytical samples from the outlet water treatment system holding tank(s) to evaluate whether the treated water meets the sanitary sewer discharge limitations established in the site-specific discharge permit issued by Clackamas County Water Environmental Services (WES).
2) Collect analytical samples from the water treatment system process stream at a location between the upstream and downstream granular activated carbon (GAC) vessels to evaluate whether the GAC is adequately removing contaminants or if GAC replacement is necessary.
3) Collect analytical samples from the inlet water treatment system holding tank(s) to evaluate the contaminant levels of groundwater removed from the site excavations and from water derived from the excavated soil dewatering operations.

## 8. Action Levels

*State the analyte, concentration, and units for each selected action level. Describe the rationale for choosing each action level and its source (i.e. MTCA, PRG, ATSDR, etc.) Example: The action level for total mercury in soil is 6.7 mg/kg (from Regional Screening Level residential).*

Site action levels for water samples are based on the local sanitary sewer discharge limitations established in the site-specific discharge permit issued by Clackamas County Water Environmental Services (WES):

Total Oil & Grease - 100 mg/L, if this limit is exceeded, then analyze separate fractions:
- Non Polar Oil & Grease 100 mg/L
- Polar Oil & Grease 300 mg/L

pH - 5.5 to 11.5 s.u.
Arsenic - 0.16 mg/L
Cadmium - 0.24 mg/L
Chromium - 2.77 mg/L
Copper - 3.84 mg/L
Lead - 0.81mg/L
Mercury - 0.0035 mg/L
Nickel - 2.45 mg/L
Silver - 0.56 mg/L
Zinc - 2.61 mg/L
Cyanide - 1.20 mg/L
Total Suspended Solids - no specified limit
Total Toxic Organics - 2.13 mg/L

## 9. Site Diagram and Sampling Areas

*A Sampling Area is an area within in which a specific action will be performed.*
*Examples : 1) Each drum on the site is a Sampling Area;*
*2) Each section of sidewalk in front of the residence is a Sampling Area;*
*3) Each sampling grid section is a Sampling Area.*

Diagram of the site layout is attached as Figure 1. Sampling areas (locations of the two excavation pits) are labeled on the figure.

## 10. The Decision Rules

*These can be written as logical If…, Then.. statements. Describe how the decisions will be made and how to address results falling within the error range of the action level. Examples: 1) In the Old Furnace Sampling Area, the soil in the area around the furnace structure will be excavated until sample analysis with XRF shows no mercury concentrations in surface soil above the lower limit of the error associated with the action level, 18.4 mg/kg. 2) If the concentrations of contaminants in a SA are less than the lower limit of the error associated with the action level, then the area may be characterized as not posing an unacceptable risk to human health or the environment and may be dismissed from additional RP activities. The area may be referred to other Federal, State or Local government agencies.*

The following statement(s) describe the decision rules to apply to this investigation:

Water will not be discharged to the sanitary sewer unless all conditions of the discharge permit are met or the POTW agrees to waive a limit.

If elevated metals concentrations are detected in water treatment system Treated Tanks, modification to the treatment system will be evaluated (such as the addition of Ion Exchange).

If elevated levels of organic compounds are detected in the sample collected between water treatment system GAC vessels (intermediate filter sample), indicating less than 99 percent removal efficiency, then the carbon in the upstream GAC vessel will be replaced.

If the contaminant concentrations in the water treatment system Treated Tanks are less than the action levels established by the Oregon Department of Environmental Quality for on-site surface application, then the OSC may evaluate whether to place the water on-site for surface infiltration rather than disposal to the sanitary sewer.

## 11. Information Needed for the Decision Rule

*What information needs to be collected to make the decisions – this includes non-sampling info as well: action levels, climate history, direction of water flow, etc. Examples: Current and future on-site and off-site land use; wind direction, humidity and ambient temperature; contaminant concentrations in surface soil.*

The following inputs to the decision are necessary to revise the sampling plan when necessary:
Action levels for surface application.

## 12. Sampling and Analysis

*For each SA, describe:*

1. *sampling pattern (random, targeted, scheme for composite)*
2. *number of samples, how many to be collected from where, and why*
3. *sample type (grab, composite)*
4. *matrix (air, water, soil)*
5. *analytes and analytical methods*
6. *name and locations of off-site laboratories, if applicable.*

Water samples will be analyzed at Friedman & Bruya, Inc. in Seattle, Washington, with the exception of pH samples which will be analyzed by Specialty Analytical, Inc. in Clackamas, Oregon.

Confirmation grab samples will be taken from the top access hatch at the Untreated Tank (UT), the Intermediate Filter (IF) location between the two Granular Activated Carbon vessels, and the top access hatch at the Treated Tank (TT) with a dedicated HDPE bailer or dedicated glass drum thief.

Before any Treated Tank water is discharged, water samples from each tank will be analyzed utilizing methods approved for NPDES or modified methods agreed upon by the POTW for selected metals (As, Cd, Cr, Cu, Pb, Hg, Ni, Ag, Zn by 200.8); pH (105.1); Cyanide (335.3); Total Oil and Grease (1664); Polar and Non-Polar Oil and Grease by 1664 if Total Oil and Grease limit is exceeded; Total Suspended Solids (160.2); and for VOCs (624), SVOCs (625), PCBs (608), which will also be reported as Total Toxic Organics (608, 624, 625). These are required analyses for the post-treatment water samples (Treated Tank location) to meet POTW permit discharge requirements. Samples will be a grab from one tank and, at the direction of the OSC, may represent several Treated Tanks depending on how the tanks were filled.

Intermediate Filter grab water samples will be collected weekly or as needed and analysed for only PCE, TCE and vinyl chloride by 8260 to determine break through. One initial Intermediate Filter sample will be submitted for POTW metals analysis.

Untreated Tank grab water samples will be collected when Intermediate Filter samples are collected and analysed for only PCE, TCE and vinyl chloride by 8260. The results will be used in the break-through calculations. One initial Untreated Tank sample will be submitted for POTW metals analysis.

## 13. Applicability of Data (place an X in front of the data categories needed, explain with comments)

*Do the decisions to be made from the data require that the analytical data be:*
*1) definitive data, 2) screening data (with definitive confirmation) or 3) screening data (without definitive confirmation)?*

*__**X**__**A) Definitive data** is analytical data of sufficient quality for final decision-making. To produce definitive data on-site or off-site, the field or lab analysis will have passed full Quality Control (QC) requirements (continuing calibration checks, Method Detection Limit (MDL) study, field duplicate samples, field blank, matrix spikes, lab duplicate samples, and other method-specific QC such as surrogates) AND the analyst will have passed a Precision and Recovery (PAR) study AND the instrument will have a valid Performance Evaluation sample on file. This category of data is suitable for: **1) enforcement purposes, 2) determination of extent of contamination, 3) disposal, 4) RP verification or 5) cleanup confirmation.***
Comments:

__ __***B) Screening data with definitive confirmation*** *is analytical data that may be used* ***to support preliminary or intermediate decision-making*** *until confirmed by definitive data. However, even after confirmation, this data is often not as precise as definitive data. To produce this category of data, the analyst will have passed a PAR study to determine analytical error AND 10% of the samples are split and analyzed by a method that produced definitive data with a minimum of three samples above the action level and three samples below it.*
Comments:

__ __***C) Screening data*** *is analytical data which has not been confirmed by definitive data. The QC requirements are limited to an MDL study and continuing calibration checks. This data can be used for making decisions:* ***1) in emergencies, 2) for health and safety screening, 3) to supplement other analytical data, 4) to determine where to collect samples, 5) for waste profiling, and 6) for preliminary identification of pollutants****. This data is not of sufficient quality for final decision-making.*
Comments:

## 14. Special Sampling or Analysis Directions

*Describe any special directions for the planned sampling and analysis such as additional quality controls or sample preparation issues. Examples: 1) XRF and Lumex for sediment will be calibrated before each day of use and checked with a second source standard. 2) A field blank will be analyzed with each calibration to confirm the concentration of non-detection. 3) A Method Detection Limit determination will be performed prior to the start of analysis so that the lower quantitation limit can be determined. 4) If particle size is too large for accurate analyses, the samples will be ground prior to analysis. If the sample contains too much moisture for accurate analyses, the sample will be decanted and air dried prior to analysis.*

Water samples will be collected from the holding tanks using bailers or drum thieves. The sampling point between the GAC vessels is a tap from which samples may be collected directly into sample containers. The pH sample has a 24 hour holding time which the sample shipping and laboratory turn-around time must accommodate. A separate, local laboratory will be used to meet pH sample analysis holding time.

## 15. Method Requirements

*[Describe the restrictions to be considered in choosing an analytical method due to the need to meet specific regulations, policies, ARARs, and other analytical needs. Examples: 1) Methods must meet USEPA Drinking Water Program requirements. 2) Methods must achieve lower quantitation limits of less than 1/10 the action levels.3) Methods must be performed exactly as written without modification by the analytical laboratory.]*

The POTW requires the Treated Tank water samples be analyzed by methods approved for NPDES, 40 CFR136.3 Tables 1B and 1C. They have agreed to allow a few modifications to methods on the list including analyzing the organics by 8260 and 8270 and reporting them as modified 624, 625 and 608 and analyzing the metals (not mercury) by 200.8 rather than by 2007.

## 16. Sample Collection Information

*[Describe any activities that will be performed related to sample collection]*

The applicable sample collection Standard Operating Procedures (SOPs) or methods will be followed and include:
Field Activity Logbook SOP
Sample Packaging and Shipping SOP
Sampling Equipment Decontamination SOP
Soil Sampling SOP
Groundwater Well SOP
Groundwater Sampling Devices SOP

## 17. Optimization of Sampling Plan (Maximizing Data Quality While Minimizing Time and Cost)

*[Describe what choices were made to reduce cost of sampling while meeting the needed level of data quality. Example: The XRF will be used in situ whenever possible to achieve accurate results. Reproducibility and accuracy of in situ XRF analyses will be checked by collecting, air drying, analyzing and comparing five in situ samples at the start of sampling. Where interferences are suspected, steps will be taken to eliminate the interferences by mechanisms such as drying, grinding or sieving the samples or analyzing them using the Lumex with soil attachment.]*

Since site contaminants are associated with coal tar contamination, water samples will be observed for visual signs of contamination (sheen, free product, high turbidity) to help evaluate presence of contaminates.

Analyte lists have been kept to just the minimum needed to meet regulatory requirements and for maintenance of the water treatment system. To minimize the number of samples, an individual grab sample will be collected that represents several individual Treated Tanks whenever possible.

The format for sample number identification is summarized in Table 1. Sample collection and analysis information is summarized in Table 2.

Use a Sample Plan Alteration Form (SPAF) to describe project discrepancies (if any) that occur between planned project activities listed in the final SSSP and actual project work. Append completed SPAF to original SSSP.

Use a Field Sampling Form (FSF) to capture the sampling and analysis scheme for emergency responses and insert the FSF pages into the appropriate areas of the final SSSP.

**Table 1**
**SAMPLE CODING**

**Project Name _____Northwest Pipe and Casing _(Water Treatment) Site ID:____10G8_**

| ***SAMPLE NUMBER*** [1] | | |
|---|---|---|
| **Digits** | **Description** | **Code (Example)** |
| 1,2,3,4 | Year and Month Code | 0909 or 0910 (YYMM) |
| 5,6,7,8 | Consecutive Sample Number (grouped by SA as appropriate) | 0101 – First sample in September |

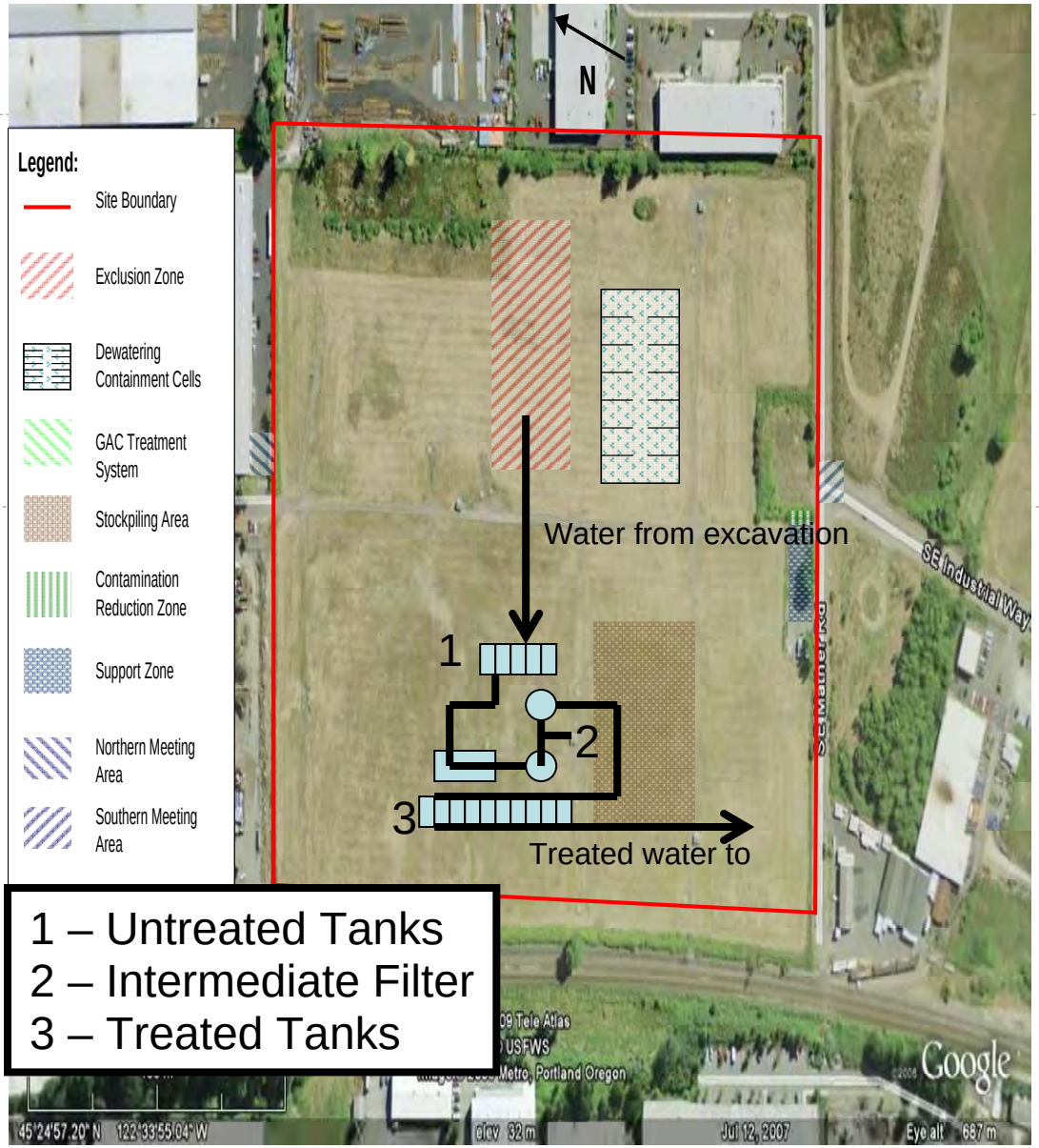
| ***SAMPLE NAME / LOCATION ID*** [2] ***(Optional)*** | | |
|---|---|---|
| 1,2 | Sampling Area | IF – Intermediate Filter<br>TT – Treated Tank<br>UT – Untreated Tank |
| 3,4 | Consecutive Sample Number | 01 – First sample of the day |
| 5,6 | Month | 09 or 10 |
| 7,8 | Day of Month | 01 |
| 9,10 | Year | 09 |

Notes:
(1) The Sample Number is a unique, 8-digit number assigned to each sample.
(2) The Sample Name or Location ID is an optional identifier that can be used to further describe each sample or sample location.

## Table 2. Sampling and Analysis for Northwest Pipe and Casing (Water Treatment)

| Location | Analyte or Parameter | Method Number | Action Level | Method Quant. Limit | Sample Container | Preserv. | Hold Time |
|---|---|---|---|---|---|---|---|
| UT, IF, TT | SVOCs | EPA 625 | None | 5 μg/L | 1 x 1 L amber | < 6° C: no preservative | 7 days to extraction/ 40 days to analysis |
| | VOCs | EPA 624 | None | 5 μg/L | 3 x 40 mL VOA vials | < 6° C: HCl to pH < 2 | 14 days |
| | PCBs | EPA 608 | None | 5 μg/L | 1 x 1 L amber | < 6° C: no preservative | 7 days to extraction/ 40 days to analysis |
| TT | Total Toxic Organics | EPA 624, 625, 608 | 2.13 | (reported as sum of Total Toxic Organics analytes over 0.01 mg/L analysed by EPA method 625, 624 and 608) | | | |
| | Total Oil & Grease;<br><br>If action level exceeded: Non-polar Oil & Grease; Polar Oil & Grease | EPA 1664 | 100 mg/L<br><br>100 mg/L<br>300 mg/L | 5 mg/L | 1 x 1 L amber | < 6° C: HCl to pH < 2 | 28 days |
| | Arsenic<br>Cadmium<br>Chromium<br>Copper<br>Lead<br>Nickel<br>Silver<br>Zinc | EPA 200.8 | As 0.16 mg/L<br>Cd 0.24 mg/L<br>Cr 2.77 mg/L<br>Cu 3.84 mg/L<br>Pb 0.81mg/L<br>Ni 2.45mg/L<br>Ag 0.56 mg/L<br>Zn 2.61 mg/L | 0.01 mg/L | 1 x 500 mL HDPE | < 6° C: Nitric Acid to pH < 2 | 6 months |
| | Mercury | EPA 245.1<br><br>Or<br><br>EPA 1631 | 3.5 ug/L | 0.5 ug/L | 1 x 500 mL HDPE<br>or<br>1 x 500 mL glass | < 6° C: Nitric Acid to pH < 2<br>Or<br>HCl pH <2 | 28 days<br><br>Or<br><br>90 days |
| | Cyanide | EPA 335.3 | 1.20 mg/L | 0.005 mg/L | 1 x 1 Liter HDPE | NaOH pH > 12 | 14 days |
| | pH | EPA 150.1 | 5.5 - 11.5 s.u. | 0 - 14 s.u. | 1 x 250 mL Poly | < 6° C | 24 hours |
| | TSS | EPA 160.2 | none | 4 mg/L | 1 x 500 mL HDPE | < 6° C: no preservative | 7 days |

**Figure 1 Diagram of the Site Layout with Water Treatment System**



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**
**REGION 10 Emergency Response Unit**
**1200 Sixth Avenue, Suite 900**
**Seattle, Washington 98101-3140**

# Site Specific Sampling Plan

Project Name: North West Pipe and Casing (~~Water Treatment~~ SOIL DISPOSAL) Site ID: 10G8

Author: Jim Petersen/Steve Hall Company: E & E Date Completed: November 6, 2009

This Site Specific Sampling Plan (SSSP) is prepared and used in conjunction with the Quality Management Plan (QMP) for the Emergency Response Unit for collecting samples during this Removal Program project. The information contained herein is based on the information available at the time of preparation. As better information becomes available, this SSSP will be adjusted.

When inadequate time is available for preparing the SSSP in advance of the sampling event, a Field Sampling Form is prepared on-site immediately prior to sampling. The completed Field Sampling Form is attached to this full length version of the SSSP that is written after the sampling event.

This version of the SSSP addresses the plan for collecting water samples including groundwater removed from the excavations, water derived from excavated soil dewatering, water treated in the temporary on-site waste water treatment system, and water treatment system maintenance samples (e.g. samples collected between granular activated carbon vessels)..

## 1. Approvals

| Name, Title | Telephone, Email, Address | Signature | Date |
|---|---|---|---|
| Mark Ader<br>**On-Scene Coordinator** | 206-553-1849, ader.mark@epa.gov<br>USEPA , M/S: ECL-115, 1200 Sixth Ave Suite 900, Seattle, WA 98101 | Mark Ader | 12.17.09 |
| Kathy Parker<br>**ERU Quality Assurance Coordinator** | 206-553-0062, parker.kathy@epa.gov<br>USEPA , M/S: ECL-116, 1200 Sixth Ave Suite 900, Seattle, WA 98101 | Kathy Parker | 12/16/09 |

## 2. Additional Personnel and Affiliations involved in the project:

| Name | Address | Telephone | E-mail |
|---|---|---|---|
| **START Project Manager** | | | |
| Jim Petersen | 333 SW Fifth Avenue, Suite 600<br>Portland, OR 97204 | 503-248-5600 | jpetersen@ene.com |
| **USEPA Emergency Response Unit Alternate Quality Assurance Coordinator** | | | |
| Kathy Parker | USEPA M/S: ECL-116 Suite 900<br>1200 Sixth Avenue, Seattle, WA 98101 | 206-553-0062 | parker.kathy@epa.gov |
| **START Quality Assurance Officer** | | | |
| Mark Woodke | 720 Third Avenue, Suite 1700<br>Seattle, WA 98104 | 206-624-9537 | mwoodke@ene.com |

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10 Emergency Response Unit
1200 Sixth Avenue, Suite 900
Seattle, Washington 98101-3140

# Site Specific Sampling Plan

Project Name: North West Pipe and Casing (Soil Disposal) Site ID: 10G8

Author: Jim Petersen/Steve Hall Company: E & E Date Completed: November 6, 2009

This Site Specific Sampling Plan (SSSP) is prepared and used in conjunction with the Quality Management Plan (QMP) for the Emergency Response Unit for collecting samples during this Removal Program project. The information contained herein is based on the information available at the time of preparation. As better information becomes available, this SSSP will be adjusted.

When inadequate time is available for preparing the SSSP in advance of the sampling event, a Field Sampling Form is prepared on-site immediately prior to sampling. The completed Field Sampling Form is attached to this full length version of the SSSP that is written after the sampling event.

This version of the SSSP addresses the plan for collecting water samples including groundwater removed from the excavations, water derived from excavated soil dewatering, water treated in the temporary on-site waste water treatment system, and water treatment system maintenance samples (e.g. samples collected between granular activated carbon vessels)..

## 1. Approvals

| Name, Title | Telephone, Email, Address | Signature | Date |
|---|---|---|---|
| Mark Ader<br>**On-Scene Coordinator** | 206-553-1849, ader.mark@epa.gov<br>USEPA , M/S: ECL-115, 1200 Sixth Ave Suite 900, Seattle, WA 98101 | | |
| Kathy Parker<br>**ERU Quality Assurance Coordinator** | 206-553-0062, parker.kathy@epa.gov<br>USEPA , M/S: ECL-116, 1200 Sixth Ave Suite 900, Seattle, WA 98101 | | |

## 2. Additional Personnel and Affiliations involved in the project:

| Name | Address | Telephone | E-mail |
|---|---|---|---|
| **START Project Manager** | | | |
| Jim Petersen | 333 SW Fifth Avenue, Suite 600<br>Portland, OR 97204 | 503-248-5600 | jpetersen@ene.com |
| **USEPA Emergency Response Unit Alternate Quality Assurance Coordinator** | | | |
| Kathy Parker | USEPA M/S: ECL-116 Suite 900<br>1200 Sixth Avenue, Seattle, WA 98101 | 206-553-0062 | parker.kathy@epa.gov |
| **START Quality Assurance Officer** | | | |
| Mark Woodke | 720 Third Avenue, Suite 1700<br>Seattle, WA 98104 | 206-624-9537 | mwoodke@ene.com |

| Analytical Laboratory Director or Contact | | | |
|---|---|---|---|
| Friedman & Bruya, Inc. | 3012 16th Avenue West, Seattle, WA 98119-2029 | 206-285-8282 | Mike Erdahl: merdahl@friedmanandbruya.com |
| Specialty Analytical, Inc. | 11711 SE Capps Road, Suit B<br>Clackamas, OR 97015 | 503-612-9007 | Dean Strom<br>dean@specialtyanalytical.com |

## 3. Physical Description and Contact Information:

| | | |
|---|---|---|
| **Site Name** | Northwest Pipe and Casing | |
| **Site Location** | The site is located at 9585 SE Mather Road, Clackamas, Oregon. The site is bounded to the north by SE Lawnfield Road and to the south by SE Mather Road, and lies approximately ½ mile east of Interstate Highway 205. | |
| **Property Size** | Approximately 53 acres. | |
| **Site Contact** | Mark Ader, EPA Remedial Project Manager | 206-553-1849 |
| **Nearest Residents** | Approximately ½ mile | **Direction:** west |
| **Primary Land Uses Surrounding the Site** | Light industrial and commercial. The site is located in an industrial park. | |

## 4. The proposed schedule of project work follows:

| Activity | Estimated Start Date | Estimated Completion Date | Comments |
|---|---|---|---|
| **SSSP Review/Approval** | November 10, 2009 | November 12, 2009 | |
| **Mobilize to / Demobilize from Site** | September 1, 2009 | October 30, 2009 | |
| **Sample Collection** | September 8, 2009 | October 28, 2009 | |
| **Laboratory Sample Receipt** | September 9, 2009 | October 29, 2009 | |
| **Laboratory Analysis** | September 9, 2009 | November 6, 2009 | |
| **Data Validation** | November 16, 2009 | November 27, 2009 | |

## 5. Historical and Background Information

*Describe briefly what you know about the site that is relevant to sampling and analysis for this investigation.*

The Northwest Pipe and Casing (NWP&C) site was the former location of a pipe manufacturing and storage facility that operated from 1956 to 1985. Facility activities during this time caused the release of volatile organic compounds (VOCs), polynuclear aromatic hydrocarbons (PAHs), and polychlorinated biphenyls (PCBs) to soil and groundwater at the site. The site was placed on EPA's National Priorities List (NPL) in 1992. In 1996 EPA began a Remedial Investigation / Feasibility Study, and a Record of Decision (ROD) was issued in 2000. Cleanup activities performed at the site included soil capping, wetland restoration, and air stripping to remove VOCs from groundwater.

To further redevelop the site, there is a planned expansion of a railroad spur through the contaminated zone. Currently, the area with the planned rail spur expansion contains subsurface coal tar. At the request of EPA's remedial program, EPA's removal program will perform a removal action to remove subsurface coal tar contamination in the vicinity of the planned rail spur.

## 6. Conceptual Site Model

*Example: Contaminant: Mercury*
*Transport Mechanism: vapor moving on air currents*
*Receptors: people living in the house*

Contaminants: VOCs, PAHs, and PCBs.
According to Parametrix, the EPA remedial program Response Action Contract (RAC) contractor, indicator compounds for contamination at the site are PAHs: naphthalene and benzo(a)pyrene and the VOC: tetrachloroethylene (percholorethylene [PCE]).

Transport Mechanisms: Contaminants in subsurface soil are leaching into groundwater and migrating off site.

Receptors: On-site surface water flows to the Dean and Johnson creeks, where fishing occurs and which contains wetlands and may contain endangered species. There are several private and municipal groundwater drinking wells within four miles of the site.

## 7. Decision Statement

*Examples: 1) Determine whether surface contamination exceeds the established action level;*
*2) Determine appropriate disposal options for contaminated materials.*

The decisions to be made from this investigation are to:

1) Collect analytical samples from soil stockpiled in the lined, bermed containment cells in order to characterize the soil for waste disposal.
2) Collect analytical samples from soil *beneath* the lined, bermed containment cells prior to stockpiling waste soil in order to assess whether the existing soil contains elevated contaminant levels.
3) Collect analytical samples from soil *beneath* the lined, bermed containment cells after all of the stockpiled waste soil has been removed in order to assess whether the underlying soils have been cross-contaminated from the stockpiled waste soils.

## 8. Action Levels

*State the analyte, concentration, and units for each selected action level. Describe the rationale for choosing each action level and its source (i.e. MTCA, PRG, ATSDR, etc.) Example: The action level for total mercury in soil is 6.7 mg/kg (from Regional Screening Level residential).*

Site action levels for stockpiled soils in the containment cells are based on the landfill disposal requirements as established in the Federal Code of Federal Regulations (CFR). Specific requirements may be found in 40 CFR 261.24.

Table 1--Maximum Concentration of Contaminants for the Toxicity Characteristic

| EPA HW No. \1\ | Contaminant | CAS No. \2\ | Regulatory Level (mg/L) |
|---|---|---|---|
| D004 | Arsenic | 7440-38-2 | 5.0 |
| D005 | Barium | 7440-39-3 | 100.0 |
| D018 | Benzene | 71-43-2 | 0.5 |
| D006 | Cadmium | 7440-43-9 | 1.0 |
| D019 | Carbon tetrachloride | 56-23-5 | 0.5 |
| D020 | Chlordane | 57-74-9 | 0.03 |
| D021 | Chlorobenzene | 108-90-7 | 100.0 |
| D022 | Chloroform | 67-66-3 | 6.0 |
| D007 | Chromium | 7440-47-3 | 5.0 |
| D023 | o-Cresol | 95-48-7 \4\ | 200.0 |
| D024 | m-Cresol | 108-39-4 \4\ | 200.0 |
| D025 | p-Cresol | 106-44-5 \4\ | 200.0 |
| D026 | Cresol | \4\ | 200.0 |
| D016 | 2,4-D | 94-75-7 | 10.0 |
| D027 | 1,4-Dichlorobenzene | 106-46-7 | 7.5 |
| D028 | 1,2-Dichloroethane | 107-06-2 | 0.5 |
| D029 | 1,1-Dichloroethylene | 75-35-4 | 0.7 |
| D030 | 2,4-Dinitrotoluene | 121-14-2 \3\ | 0.13 |
| D012 | Endrin | 72-20-8 | 0.02 |
| D031 | Heptachlor (and its epoxide). | 76-44-8 | 0.008 |
| D032 | Hexachlorobenzene | 118-74-1 \3\ | 0.13 |
| D033 | Hexachlorobutadiene | 87-68-3 | 0.5 |
| D034 | Hexachloroethane | 67-72-1 | 3.0 |
| D008 | Lead | 7439-92-1 | 5.0 |
| D013 | Lindane | 58-89-9 | 0.4 |
| D009 | Mercury | 7439-97-6 | 0.2 |
| D014 | Methoxychlor | 72-43-5 | 10.0 |
| D035 | Methyl ethyl ketone | 78-93-3 | 200.0 |
| D036 | Nitrobenzene | 98-95-3 | 2.0 |
| D037 | Pentrachlorophenol | 87-86-5 | 100.0 |
| D038 | Pyridine | 110-86-1 \3\ | 5.0 |
| D010 | Selenium | 7782-49-2 | 1.0 |
| D011 | Silver | 7440-22-4 | 5.0 |
| D039 | Tetrachloroethyl ene | 127-18-4 | 0.7 |
| D015 | Toxaphene | 8001-35-2 | 0.5 |
| D040 | Trichloroethyl ene | 79-01-6 | 0.5 |
| D041 | 2,4,5-Trichlorophenol | 95-95-4 | 400.0 |
| D042 | 2,4,6-Trichlorophenol | 88-06-2 | 2.0 |
| D017 | 2,4,5-TP (Silvex) | 93-72-1 | 1.0 |
| D043 | Vinyl chloride | 75-01-4 | 0.2 |

\1\ Hazardous waste number.
\2\ Chemical abstracts service number.
\3\ Quantitation limit is greater than the calculated regulatory level. The quantitation limit therefore becomes the regulatory level.
\4\ If o-, m-, and p-Cresol concentrations cannot be differentiated, the total cresol (D026) concentration is used. The regulatory level of total cresol is 200 mg/l.

The receiving landfill(s) may have additional requirements, and should be consulted prior to preparing the waste profile document(s).

Northwest Pipe & Casing site-specific action levels for soils remaining on site are based on the cleanup levels from the Record of Decision:
Benzo(a)anthracene 2,500 micrograms per kilogram (µg/kg)
Benzo(b)fluoranthene 2,500 µg/kg
Benzo(k)fluoranthene 2,500 µg/kg
Benzo(a)pyrene 250 µg/kg
Chrysene 250,000 µg/kg
Dibenz(a,h)anthracene 250 µg/kg
Indeno(1,2,3-cd)pyrene 2,500 µg/kg
Total PCBs 1 milligrams per kilogram (mg/kg)
Tetrachloroethene (PCE) 7 µg/kg
Trichloroethene 13 µg/kg
Vinyl Chloride 0.1 µg/kg

## 9. Site Diagram and Sampling Areas

*A Sampling Area is an area within in which a specific action will be performed.*
*Examples : 1) Each drum on the site is a Sampling Area;*
*2) Each section of sidewalk in front of the residence is a Sampling Area;*
*3) Each sampling grid section is a Sampling Area.*

A diagram of the waste soil stockpile containment cells is attached as Figure 1. An example of a composite sample sub-location set is labeled on the figure.

## 10. The Decision Rules

*These can be written as logical If…, Then.. statements. Describe how the decisions will be made and how to address results falling within the error range of the action level. Examples: 1) In the Old Furnace Sampling Area, the soil in the area around the furnace structure will be excavated until sample analysis with XRF shows no mercury concentrations in surface soil above the lower limit of the error associated with the action level, 18.4 mg/kg. 2) If the concentrations of contaminants in a SA are less than the lower limit of the error associated with the action level, then the area may be characterized as not posing an unacceptable risk to human health or the environment and may be dismissed from additional RP activities. The area may be referred to other Federal, State or Local government agencies.*

The following statement(s) describe the decision rules to apply to this investigation:

Soil will not be removed from the Northwest Pipe & Casing site until results of a representative sample of the soil have been received evaluated.

Containment cell soil stockpiles that meet acceptance criteria may be disposed at an approved, licensed Subtitle D landfill facility with approval by the OSC. Containment cell soil stockpiles exceeding the acceptance criteria will be disposed at an approved, licensed Subtitle C landfill facility with OSC approval; however, pretreatment of the soils may be required depending on sample results and on the Subtitle D landfill acceptance criteria.

If the contaminant concentrations in the containment cell sample are less than the Northwest Pipe & Casing action levels for surface soils established by the Record of Decision, then the OSC may evaluate whether to utilize the soil on site as fill material.

## 11. Information Needed for the Decision Rule

*What information needs to be collected to make the decisions – this includes non-sampling info as well: action levels, climate history, direction of water flow, etc. Examples: Current and future on-site and off-site land use; wind direction, humidity and ambient temperature; contaminant concentrations in surface soil.*

The following inputs to the decision are necessary to revise the sampling plan when necessary:
After enough containment cells have been sampled that a general understanding of the subsurface contaminant levels is developed, the sampling frequency may be reduced with the approval of the OSC and the landfill facility.

## 12. Sampling and Analysis

*For each SA, describe:*

1. *sampling pattern (random, targeted, scheme for composite)*
2. *number of samples, how many to be collected from where, and why*
3. *sample type (grab, composite)*
4. *matrix (air, water, soil)*
5. *analytes and analytical methods*
6. *name and locations of off-site laboratories, if applicable.*

Soil samples will be analyzed at Friedman & Bruya, Inc. in Seattle, Washington.

Each containment cell sample will consist of a composite sample from a single containment cell. Each sample will be a composite sample from a minimum of six sub-locations within containment cell stockpile. The six (or more) sub-locations be at random locations in the containment cell stockpile. The depth of each sub-location will be a minimum of six inches below the surface. Soil from the sub-locations will be placed in a clean, disposable bowl and blended, then the composited soil placed into labeled sample containers.

Prior to disposing of any soil stockpile off site, a sample of the material will be analyzed for selected metals (As, Ba, Cd, Cr, Pb, Hg, Ag, Se by 200.8 and 1631E); Diesel and Motor Oil Range Total Petroleum Hydrocarbons (NWTPH-Dx); Volatile Organic Compounds (8260C); Semivolatile Organic Compounds (8270C); polynuclear aromatic hydrocarbons (8082A). Analytical results will be compared to landfill disposal limitations as stipulated in 40 CFR 261.24, and to the specific requirements of the receiving landfill(s). At the direction of the OSC and with the approval of the receiving landfill, a containment cell composite sample may represent two or more containment cell soil stockpiles generated from adjoining areas of the excavation.

## 13. Applicability of Data (place an X in front of the data categories needed, explain with comments)

*Do the decisions to be made from the data require that the analytical data be:*
*1) definitive data, 2) screening data (with definitive confirmation) or 3) screening data (without definitive confirmation)?*

__X__ ***A) Definitive data*** *is analytical data of sufficient quality for final decision-making. To produce definitive data on-site or off-site, the field or lab analysis will have passed full Quality Control (QC) requirements (continuing calibration checks, Method Detection Limit (MDL) study, field duplicate samples, field blank, matrix spikes, lab duplicate samples, and other method-specific QC such as surrogates) AND the analyst will have passed a Precision and Recovery (PAR) study AND the instrument will have a valid Performance Evaluation sample on file. This category of data is suitable for:* ***1) enforcement purposes, 2) determination of extent of contamination, 3) disposal, 4) RP verification or 5) cleanup confirmation.***
Comments:

__ __ ***B) Screening data with definitive confirmation*** *is analytical data that may be used* ***to support preliminary or intermediate decision-making*** *until confirmed by definitive data. However, even after confirmation, this data is often not as precise as definitive data. To produce this category of data, the analyst will have passed a PAR study to determine analytical error AND 10% of the samples are split and analyzed by a method that produced definitive data with a minimum of three samples above the action level and three samples below it.*
Comments:

__ __ ***C) Screening data*** *is analytical data which has not been confirmed by definitive data. The QC requirements are limited to an MDL study and continuing calibration checks. This data can be used for making decisions:* ***1) in emergencies, 2) for health and safety screening, 3) to supplement other analytical data, 4) to determine where to collect samples, 5) for waste profiling, and 6) for preliminary identification of pollutants****. This data is not of sufficient quality for final decision-making.*
Comments:

## 14. Special Sampling or Analysis Directions

*Describe any special directions for the planned sampling and analysis such as additional quality controls or sample preparation issues. Examples: 1) XRF and Lumex for sediment will be calibrated before each day of use and checked with a second source standard. 2) A field blank will be analyzed with each calibration to confirm the concentration of non-detection. 3) A Method Detection Limit determination will be performed prior to the start of analysis so that the lower quantitation limit can be determined. 4) If particle size is too large for accurate analyses, the samples will be ground prior to analysis. If the sample contains too much moisture for accurate analyses, the sample will be decanted and air dried prior to analysis.*

Each containment cell soil sample will be collected as a composite sample. Soil will be collected from a minimum of six sub-locations within the targeted containment cell. Composite cell sample sub-locations will be random locations distributed throughout the targeted containment cell. At each sub-location surface soil will be scraped away so allow soil collection from a minimum of 6-inches below the surface. Soil from each sub-location will be collected in a clean, disposable bowl. Once all of the sub-location points have been collected in the bowl, the soil will be blended mixed to create a homogenous mixture. The mixed soil will placed into appropriate sample containers.

## 15. Method Requirements

*[Describe the restrictions to be considered in choosing an analytical method due to the need to meet specific regulations, policies, ARARs, and other analytical needs. Examples: 1) Methods must meet USEPA Drinking Water Program requirements. 2) Methods must achieve lower quantitation limits of less than 1/10 the action levels.3) Methods must be performed exactly as written without modification by the analytical laboratory.]*

Methods must be acceptable to the landfill accepting the waste for disposal. Containment cell soil samples will be analyzed for Volatile Organic Compounds (VOCs) by method 8260, Semivolatile Organic Compounds (SVOCs) by method 8270, Polychlorinated biphenyls (PCBs) by method 8082, Total Petroleum Hydrocarbons – Diesel-Range (TPH-DRO) by method NWTPH-Dx, and RCRA Metals by method 200.8 (mercury by method 1631E).

## 16. Sample Collection Information

*[Describe any activities that will be performed related to sample collection]*

The applicable sample collection Standard Operating Procedures (SOPs) or methods will be followed and include:
Field Activity Logbook SOP
Sample Packaging and Shipping SOP
Sampling Equipment Decontamination SOP
Soil Sampling SOP
Groundwater Well SOP
Groundwater Sampling Devices SOP

## 17. Optimization of Sampling Plan (Maximizing Data Quality While Minimizing Time and Cost)

*[Describe what choices were made to reduce cost of sampling while meeting the needed level of data quality. Example: The XRF will be used in situ whenever possible to achieve accurate results. Reproducibility and accuracy of in situ XRF analyses will be checked by collecting, air drying, analyzing and comparing five in situ samples at the start of sampling. Where interferences are suspected, steps will be taken to eliminate the interferences by mechanisms such as drying, grinding or sieving the samples or analyzing them using the Lumex with soil attachment.]*

Initially, a composite sample will be collected from each containment cell soil stockpile to characterize the soil for disposal. After a sufficient number of the stockpiles have been sampled, the sampling frequency may be reduced with the approval of the landfill facility(s) accepting the waste. The sampling frequency will be reduced to one containment cell composite sample to represent a set of two or more containments cells consisting of soils excavated from adjacent areas within the source excavation. No soils may be removed from the site until laboratory results representative of that containment cell (or set of cells) has been received and review by the OSC or OSC's designated representative has determined that the soil meets landfill acceptance requirements.

The format for sample number identification is summarized in Table 1. Sample collection and analysis information is summarized in Table 2.

Use a Sample Plan Alteration Form (SPAF) to describe project discrepancies (if any) that occur between planned project activities listed in the final SSSP and actual project work. Append completed SPAF to original SSSP.

Use a Field Sampling Form (FSF) to capture the sampling and analysis scheme for emergency responses and insert the FSF pages into the appropriate areas of the final SSSP.

**Table 1**
**SAMPLE CODING**

**Project Name _____Northwest Pipe and Casing _(Water Treatment) Site ID:____10G8_**

| ***SAMPLE NUMBER*** [(1)] | | |
|---|---|---|
| **Digits** | **Description** | **Code (Example)** |
| 1,2,3,4 | Year and Month Code | 0909 or 0910 (YYMM) |
| 5,6,7,8 | Consecutive Sample Number (grouped by SA as appropriate) | 0101 – First sample in September |

| ***SAMPLE NAME / LOCATION ID*** [(2)] ***(Optional)*** | | |
|---|---|---|
| 1,2 | Sampling Area | CC – Containment Cell |
| 3,4 | Containment Cell Number | 01 – Containment Cell I.D. Number (01 through 04) |
| 5,6 | Month | 09 or 10 |
| 7,8 | Day of Month | 01 |
| 9,10 | Year | 09 |

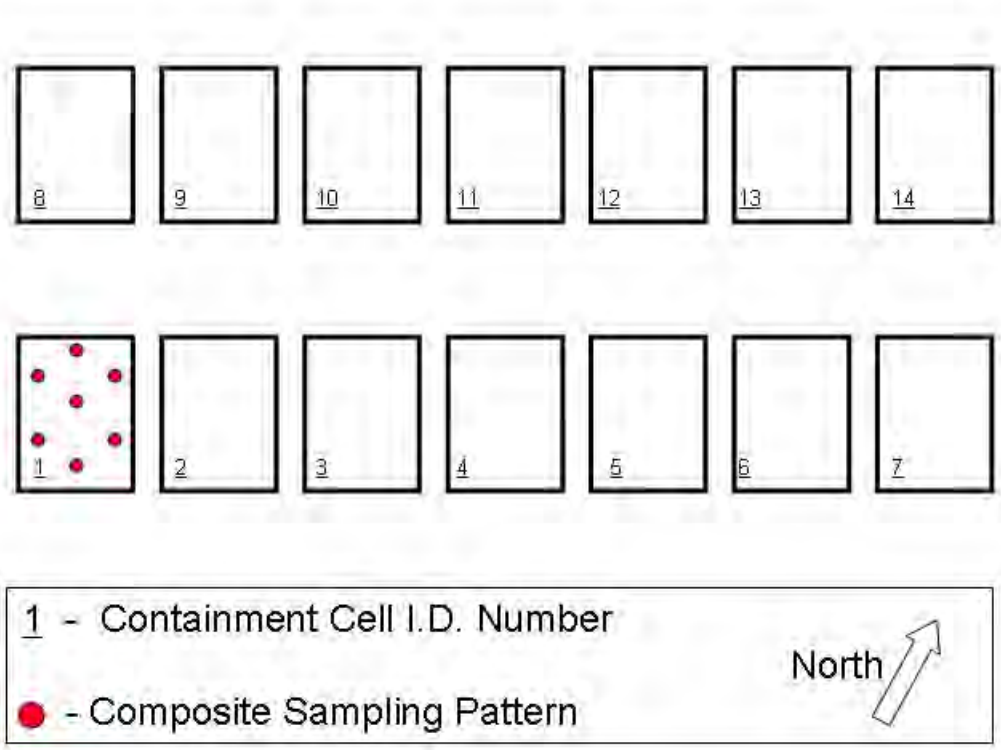
Notes:
(1) The Sample Number is a unique, 8-digit number assigned to each sample.
(2) The Sample Name or Location ID is an optional identifier that can be used to further describe each sample or sample location.

## Table 2. Sampling and Analysis for Northwest Pipe and Casing (Water Treatment)

| Location | Analyte or Parameter | Method Number | Action Level | Method Quant. Limit | Sample Container | Preserv. | Hold Time |
|---|---|---|---|---|---|---|---|
| CC | VOCs | 8260C | (refer to 40 CFR 261.24) | 0.5 mg/kg | 1 x 4 Ounce Glass Jar * | Wet ice; < 6° C | 7 days |
| | SVOCs | 8270D | (refer to 40 CFR 261.24) | 0.3 mg/kg | 1 x 4 Ounce Glass Jar * | Wet ice; < 6° C | 14 days |
| | PCBs | 8082A | (refer to 40 CFR 261.24) | 0.1 mg/kg | 1 x 4 Ounce Glass Jar * | Wet ice; < 6° C | 30 days |
| | Arsenic<br>Barium<br>Cadmium<br>Chromium<br>Lead<br>Selenium<br>Silver | EPA 200.8 | (refer to 40 CFR 261.24) | 1 mg/kg | 1 x 4 Ounce Glass Jar * | Wet ice; < 6° C | 30days |
| | Mercury | EPA 1631E | (refer to 40 CFR 261.24) | 0.2 mg/kg | 1 x 4 Ounce Glass Jar * | Wet ice; < 6° C | 30 days |
| | TPH-DRO | NWTPH-Dx | (refer to 40 CFR 261.24) | 50 mg/kg (diesel); 250 mg/kg (motor oil) | 1 x 4 Ounce Glass Jar * | Wet ice; < 6° C | 14 days |

* Per Freidman & Bruya Laboratory a total of two 4-ounce glass jars is sufficient sample volume for all of the above analyses.

**Figure 1. Waste Soil Stockpile Layout with Composite Sample Sublocation Grid.**



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue, Suite 900
Seattle, Washington 98101-3140

OFFICE OF ENVIRONMENTAL CLEANUP
EMERGENCY RESPONSE UNIT

# Site Specific Sampling Plan Alteration Form

Project Name: Northwest Pipe and Casing (Soil Disposal) Site ID: 10G8

Author: Ryan Whitchurch Company: START (E&E) Date Completed: June 8, 2010

Changes from Final SSSP (include rationale, decision area, matrices, parameters, equipment, personnel, etc.:

The previous SSSP, dated November 9, 2009, is being modified to add confirmation surface soil samples. The reason for adding confirmation surface soil samples is to determine whether cross contamination from the last remaining soil stockpile to in-situ surface soil has occurred. The stockpiled soil is currently being transferred to dump trucks for transportation and off-site disposal. The stockpiled soil was determined to be non-RCRA, non-TSCA and is being disposed in a Subtitle D municipal landfill. However, the stockpiled soil does have contaminant concentrations that are elevated above site action removal levels with respect to background.

Once the soil stockpile has been completely transported off-site and underlying plastic liners have been removed, surface soil sampling is planned to occur. Three samples, consisting of 6 composite samples each, are planned to be collected within the soil stockpile footprint. The approximate shape of the footprint and the relative locations of the samples are shown in Figure 1 of this SPAF. Yellow shaded boxes indicate the approximate coverage for each of the three samples. Red circles indicate the approximate planned locations of each composite sample location within each sample coverage area.

Sampling methodology will follow the original SSSP, and the analytical methods will be the same as those in Table 2 of the original SSSP. One additional QA sample will be collected: one of the samples will be duplicated. No rinse QA sample will be collected because only dedicated sampling equipment will be used. No MS/MSD will be collected because previous MS/MSD results from the site are applicable.

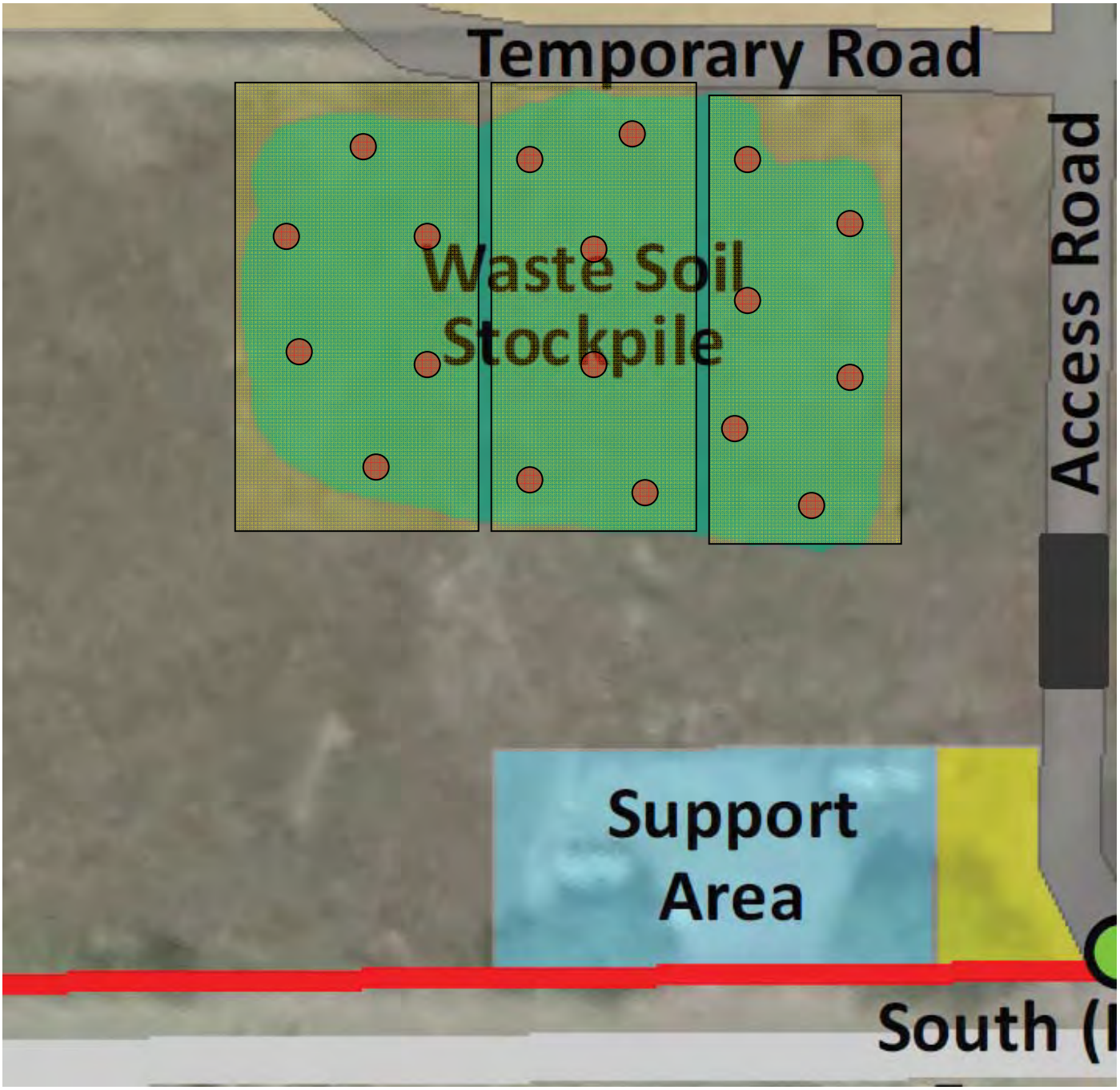



Figure 1 – Sample areas and composite sample locations within the NWP&C waste soil stockpile footprint.

| Approvals of SSSP Alteration Form | | |
|---|---|---|
| **Name** | **Title** | **Signature** |
| Richard Franklin | On-Scene Coordinator (OSC) | Richard Franklin<br>Digitally signed by Richard Franklin<br>DN: cn=Richard Franklin, o=EPA Region 10, Oregon Operations Office, ou=ERU, email=franklin.richard@epa.gov, c=US<br>Date: 2010.06.21 16:49:06 -07'00' |
| Kathy Parker | Emergency Response Unit (ERU) Quality Assurance Coordinator (QAC) or alternate | Kathy Parker<br>Digitally signed by Kathy Parker<br>DN: cn=Kathy Parker, o=On Scene Coordinator, ou=USEPA Region 10 ERU, email=parker.kathy@epa.gov, c=US<br>Date: 2010.06.21 16:19:27 -07'00' |

# APPENDIX I

## Quality Assurance Reports

**ecology and environment, inc.**
International Specialists in the Environment
720 Third Avenue, Suite 1700, Seattle, WA 98104
Tel: (206) 624-9537, Fax: (206) 621-9832

**MEMORANDUM**

DATE: October 14, 2009

TO: Jim Petersen, START-3 Project Manager, E & E, Portland, OR

FROM: Mark Woodke, START-3 Chemist, E & E, Seattle, Washington MW

SUBJ: **Organic Data Quality Assurance Review, Northwest Pipe and Casing Site, Clackamas, Oregon**

REF: TDD: 09-07-0014 PAN: 002233.0472.01RA

The data quality assurance review of 1 soil sample collected from the Northwest Pipe and Casing site located in Clackamas, Oregon, has been completed. Analysis for Semivolatile Organic Compounds (EPA Method 8270) was performed by TestAmerica, Inc., Tacoma, Washington.

The sample was numbered: 09080417

**Data Qualifications:**

**1. Sample Holding Times: Acceptable.**

The sample was maintained and received within the temperature limits of < 6°C. The sample was collected on August 14, 2009, was extracted by August 18, 2009, and was analyzed by August 20, 2009, therefore meeting holding time criteria of less than 14 days between collection and extraction and less than 40 days between extraction and analysis.

**2. Tuning: Acceptable.**

Tuning was performed at the beginning of each 12-hour analysis sequence. All results were within QC limits.

**3. Initial Calibration: Acceptable.**

All average Relative Response Factors (RRFs) were greater than the QC limit of 0.050. All Relative Standard Deviations (RSDs) were less than the QC limit of 30%.

**4. Continuing Calibration: Satisfactory.**

All RRFs were greater than the QC limit of 0.050. All % differences were less than the QC limit of 25 % except and benzyl alcohol, hexachlorocyclopentadiene, 4-nitrophenol, and pentachlorophenol with low recoveries on 8-20-09; associated positive results and sample quantitation limits were qualified as estimated quantities (J or UJ).

**5. Blanks: Satisfactory.**

A method blank was analyzed for each 20 sample batch per matrix. There were no detections in any method blank except bis(2-ethylhexyl)phthalate (68.6 µg/kg); associated sample results less than 5

times the blank contamination (10 times for common laboratory contaminants) were qualified as not detected (U).

**6. System Monitoring Compounds (SMCs): Satisfactory.**

All SMC recoveries were within QC limits except one acid SMC with a 0 % recovery in sample 09080417; no action was taken based on this outlier as the other SMCs were within QC limits.

**7. Blank Spike (BS) Analysis: Acceptable.**

All spike analyses were performed per SDG or per matrix per concentration level, whichever was more frequent. All recoveries were within the QC limits.

**8. Internal Standards: Acceptable.**

All internal standards (IS) were within $\pm$ 30 seconds of the continuing calibration IS retention times. All area counts were within 50 % to 200 % of the continuing calibration area counts.

**9. Precision and Bias Determination: Not Performed.**

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

**10. Performance Evaluation Sample Analysis: Not Provided.**

Performance evaluation samples were not provided to the laboratory.

**11. Overall Assessment of Data for Use**

The overall usefulness of the data is based on the criteria outlined in the site-specific sampling plan, the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical method, and, when applicable, the Office of Emergency and Remedial Response Publication "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

J - The associated numerical value is an estimated quantity because the reported concentrations were less than the sample quantitation limits or because quality control criteria limits were not met.

R - The sample results are rejected (analyte may or may not be present) due to gross deficiencies in quality control criteria. Any reported value is unusable. Resampling and/or reanalysis is necessary for verification.

U - The material was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.

UJ - The material was analyzed for, but not detected. The reported detection limit is estimated because quality control criteria were not met.

Client: Ecology and Environment, Inc. Job Number: 580-14968-1

**Client Sample ID:** 0908-0417

Lab Sample ID: 580-14968-1 Date Sampled: 08/14/2009 1230
Client Matrix: Solid % Moisture: 22.1 Date Received: 08/15/2009 1230

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 580-48682 | | Instrument ID: | TAC023 |
| Preparation: | 3550B | Prep Batch: 580-48593 | | Lab File ID: | HP14731.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 10.1348 g |
| Date Analyzed: | 08/20/2009 0013 | | | Final Weight/Volume: | 10 mL |
| Date Prepared: | 08/18/2009 1419 | | | Injection Volume: | 1.0 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Phenol | | ND | | 9.4 | 130 |
| Bis(2-chloroethyl)ether | | ND | | 13 | 130 |
| 2-Chlorophenol | | ND | | 9.4 | 130 |
| 1,3-Dichlorobenzene | | ND | | 9.1 | 63 |
| 1,4-Dichlorobenzene | | ND | | 4.1 | 63 |
| Benzyl alcohol | | ND | | 12 | 130 |
| 1,2-Dichlorobenzene | | ND | | 8.1 | 63 |
| 2-Methylphenol | | ND | | 9.0 | 130 |
| 3 & 4 Methylphenol | | 18 | J | 7.1 | 250 |
| N-Nitrosodi-n-propylamine | | ND | | 12 | 130 |
| Hexachloroethane | | ND | | 14 | 130 |
| Nitrobenzene | | ND | | 37 | 130 |
| Isophorone | | ND | | 5.2 | 130 |
| 2-Nitrophenol | | ND | | 5.4 | 130 |
| 2,4-Dimethylphenol | | 42 | J | 2.7 | 130 |
| Benzoic acid | | ND | | 820 | 3200 |
| Bis(2-chloroethoxy)methane | | ND | | 3.8 | 130 |
| 2,4-Dichlorophenol | | ND | | 3.8 | 130 |
| 1,2,4-Trichlorobenzene | | ND | | 15 | 63 |
| 4-Chloroaniline | | ND | | 14 | 130 |
| Hexachlorobutadiene | | ND | | 12 | 63 |
| 4-Chloro-3-methylphenol | | ND | | 9.0 | 130 |
| Hexachlorocyclopentadiene | | ND | | 3.3 | 130 |
| 2,4,6-Trichlorophenol | | ND | | 5.1 | 190 |
| 2,4,5-Trichlorophenol | | ND | | 5.4 | 130 |
| 2-Chloronaphthalene | | ND | | 2.3 | 25 |
| 2-Nitroaniline | | ND | | 5.3 | 130 |
| Dimethyl phthalate | | ND | | 5.3 | 130 |
| Acenaphthylene | | ND | | 2.0 | 25 |
| 2,6-Dinitrotoluene | | ND | | 5.2 | 130 |
| 3-Nitroaniline | | ND | | 7.3 | 130 |
| 2,4-Dinitrophenol | | ND | | 18 | 1300 |
| 4-Nitrophenol | | ND | | 220 | 1300 |
| 2,4-Dinitrotoluene | | ND | | 3.2 | 130 |
| Diethyl phthalate | | ND | | 19 | 130 |
| 4-Chlorophenyl phenyl ether | | ND | | 7.2 | 130 |
| 4-Nitroaniline | | ND | | 18 | 130 |
| 4,6-Dinitro-2-methylphenol | | ND | | 23 | 1300 |
| N-Nitrosodiphenylamine | | ND | | 2.8 | 63 |
| 4-Bromophenyl phenyl ether | | ND | | 4.2 | 130 |
| Hexachlorobenzene | | ND | | 4.8 | 63 |
| Pentachlorophenol | | ND | | 15 | 130 |
| Di-n-butyl phthalate | | ND | | 33 | 250 |
| Butyl benzyl phthalate | | ND | | 39 | 130 |
| 3,3'-Dichlorobenzidine | | ND | | 10 | 250 |
| Bis(2-ethylhexyl) phthalate | | 220 | U | 53 | 1900 |

Client: Ecology and Environment, Inc. Job Number: 580-14968-1

**Client Sample ID:** **0908-0417**

Lab Sample ID: 580-14968-1 Date Sampled: 08/14/2009 1230
Client Matrix: Solid % Moisture: 22.1 Date Received: 08/15/2009 1230

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 580-48682 | | Instrument ID: | TAC023 |
| Preparation: | 3550B | Prep Batch: 580-48593 | | Lab File ID: | HP14731.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 10.1348 g |
| Date Analyzed: | 08/20/2009 0013 | | | Final Weight/Volume: | 10 mL |
| Date Prepared: | 08/18/2009 1419 | | | Injection Volume: | 1.0 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Di-n-octyl phthalate | | ND | | 1.6 U | 250 |
| Benzo[a]pyrene | | 4100 | | 2.7 | 38 |
| Indeno[1,2,3-cd]pyrene | | 620 | | 5.3 | 51 |
| Dibenz(a,h)anthracene | | 210 | | 2.8 | 51 |
| Benzo[g,h,i]perylene | | 500 | | 1.9 | 32 |
| Benzo[k]fluoranthene | | 2600 | | 1.6 | 32 |
| 2,2'-oxybis[1-chloropropane] | | ND | | 8.5 U | 190 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 2-Fluorophenol | 104 | | 36 - 145 |
| Phenol-d5 | 82 | | 38 - 149 |
| Nitrobenzene-d5 | 77 | | 38 - 141 |
| 2-Fluorobiphenyl | 59 | | 42 - 140 |
| 2,4,6-Tribromophenol | 0 | X MW | 28 - 143 |
| Terphenyl-d14 | 87 | | 42 - 151 |

MW
10/14/09

Client: Ecology and Environment, Inc. Job Number: 580-14968-1

**Client Sample ID:** **0908-0417**

Lab Sample ID: 580-14968-1 Date Sampled: 08/14/2009 1230
Client Matrix: Solid % Moisture: 22.1 Date Received: 08/15/2009 1230

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 580-48682 | | Instrument ID: | TAC023 |
| Preparation: | 3550B | Prep Batch: 580-48593 | | Lab File ID: | HP14730.D |
| Dilution: | 10 | | | Initial Weight/Volume: | 10.1348 g |
| Date Analyzed: | 08/19/2009 2353 | | | Final Weight/Volume: | 10 mL |
| Date Prepared: | 08/18/2009 1419 | | | Injection Volume: | 1.0 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Benzo[b]fluoranthene | | 6200 | | 52 | 250 |

MW
10/14/09

Client: Ecology and Environment, Inc. Job Number: 580-14968-1

**Client Sample ID:** **0908-0417**

Lab Sample ID: 580-14968-1 Date Sampled: 08/14/2009 1230
Client Matrix: Solid % Moisture: 22.1 Date Received: 08/15/2009 1230

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 580-48733 | | Instrument ID: | TAC023 |
| Preparation: | 3550B | Prep Batch: 580-48593 | | Lab File ID: | HP14743.D |
| Dilution: | 500 | | | Initial Weight/Volume: | 10.1348 g |
| Date Analyzed: | 08/20/2009 1232 | | | Final Weight/Volume: | 10 mL |
| Date Prepared: | 08/18/2009 1419 | | | Injection Volume: | 1.0 uL |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Naphthalene | | 81000 | | 1400 | 13000 |
| 2-Methylnaphthalene | | 47000 | | 1500 | 13000 |
| Acenaphthene | | 310000 | | 1000 | 13000 |
| Dibenzofuran | | 190000 | | 950 | 63000 |
| Fluorene | | 390000 | | 760 | 13000 |
| Phenanthrene | | 1400000 | | 1300 | 13000 |
| Anthracene | | 350000 | | 890 | 13000 |
| Fluoranthene | | 320000 | | 760 | 13000 |
| Pyrene | | 190000 | | 890 | 13000 |
| Benzo[a]anthracene | | 23000 | | 1100 | 16000 |
| Chrysene | | 25000 | | 890 | 16000 |
| Carbazole | | 150000 | | 2700 | 95000 |
| 1-Methylnaphthalene | | 28000 | | 1100 | 19000 |

10-14-09

**ecology and environment, inc.**
International Specialists in the Environment
720 Third Avenue, Suite 1700, Seattle, WA 98104
Tel: (206) 624-9537, Fax: (206) 621-9832

**MEMORANDUM**

DATE: October 14, 2009

TO: Jim Petersen, START-3 Project Manager, E & E, Portland, OR

FROM: Mark Woodke, START-3 Chemist, E & E, Seattle, Washington MW

SUBJ: **Organic Data Quality Assurance Review, Northwest Pipe and Casing Site, Clackamas, Oregon**

REF: TDD: 09-07-0014 PAN: 002233.0472.01RA

The data quality assurance review of 1 soil sample collected from the Northwest Pipe and Casing site located in Clackamas, Oregon, has been completed. Analysis for Extended Diesel Range Total Petroleum Hydrocarbons (ODEQ Method NWTPH-Dx) was performed by TestAmerica, Inc., Tacoma, Washington.

The sample was numbered: 09080417

**Data Qualifications:**

1. **Sample Holding Times: Acceptable.**

The sample was maintained and received within the temperature limits of < 6°C. The sample was collected on August 14, 2009, extracted by August 17, 2009, and analyzed by August 20, 2009, therefore meeting QC criteria of less than 14 days between collection and extraction and less than 40 days between extraction and analysis.

2. **Initial Calibration: Acceptable.**

Calculations were verified as correct. All relative percent differences (RPDs) were less than or equal to the laboratory control limits.

3. **Continuing Calibration: Acceptable.**

Calculations were verified as correct. All percent differences (%Ds) were ≤ the laboratory control limits of 15%.

4. **Error Determination: Not Performed.**

Samples necessary for bias and precision determination were not provided to the laboratory. All samples were flagged RND (Recovery Not Determined) and PND (Precision Not Determined), although the flags are not found on the Form I's.

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**5. Blanks: Satisfactory.**

A method blank was analyzed for each extraction batch for each matrix and analysis system. Diesel- and motor oil-range TPHs were not detected in any blank except diesel at 9.43 mg/kg; associated sample results less than 5 times the method blank concentration were qualified as not detected (U).

**6. System Monitoring Compounds (SMC): Acceptable.**

All recoveries of the SMCs were greater than 10% and within QC criteria.

**7. Performance Evaluation Samples: Not Provided.**

Performance evaluation samples were not provided to the laboratory.

**8. Blank Spikes: Acceptable.**

Blank spike results were within QC limits.

**9. Quantitation and Quantitation Limits: Acceptable.**

Sample concentrations were correctly calculated.

**10. Laboratory Contact: Not Required.**

No laboratory contact was required.

**11. Overall Assessment of Data for Use**

The overall usefulness of the data is based on the criteria outlined in the Site-Specific Sampling Plan, the OSWER Directive "Quality Assurance/Quality Control Guidance for Removal Activities, Data Validation Procedures" (EPA/540/G-90/004) and the analytical method. Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

J - The associated numerical value is an estimated quantity because the reported concentrations were less than the sample quantitation limits or because quality control criteria limits were not met.

R - The sample results are rejected (analyte may or may not be present) due to gross deficiencies in quality control criteria. Any reported value is unusable. Resampling and/or reanalysis is necessary for verification.

U - The material was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.

UJ - The material was analyzed for, but not detected. The reported detection limit is estimated because quality control criteria were not met.

Client: Ecology and Environment, Inc.

Job Number: 580-14968-1

**Client Sample ID:** **0908-0417**

Lab Sample ID: 580-14968-1
Client Matrix: Solid

% Moisture: 22.1

Date Sampled: 08/14/2009 1230
Date Received: 08/15/2009 1230

**NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | NWTPH-Dx | Analysis Batch: 580-48736 | | Instrument ID: | TAC015 |
| Preparation: | 3550B | Prep Batch: 580-48490 | | Lab File ID: | 5401623.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 10.2009 g |
| Date Analyzed: | 08/20/2009 1528 | | | Final Weight/Volume: | 10 mL |
| Date Prepared: | 08/17/2009 1306 | | | Injection Volume: | 1 uL |

| Analyte | DryWt Corrected: Y | Result (mg/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| #2 Diesel (C10-C24) | | 5700 | B | 7.2 | 31 |
| Motor Oil (>C24-C36) | | 3900 | | 11 | 63 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| o-Terphenyl | 104 | | 50 - 150 |

MW 10/14/09

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**MEMORANDUM**

DATE: October 14, 2009

TO: Jim Petersen, START-3 Project Manager, E & E, Portland, OR

FROM: Mark Woodke, START-3 Chemist, E & E, Seattle, Washington MW

SUBJ: **Organic Data Quality Assurance Review, Northwest Pipe and Casing Site, Clackamas, Oregon**

REF: TDD: 09-07-0014 PAN: 002233.0472.01RA

The data quality assurance review of 1 soil sample collected from the Northwest Pipe and Casing site located in Clackamas, Oregon, has been completed. Analysis for Volatile Organic Compounds (EPA Method 8260) was performed by TestAmerica, Inc., Tacoma, Washington.

The sample was numbered: 09080417

**Data Qualifications:**

**1. Sample Holding Times: Acceptable.**

The sample was maintained and received within the temperature limits of < 6°C. The sample was collected on August 14, 2009, and was analyzed by August 18, 2009, therefore meeting QC criteria of less than 14 days between collection and analysis for soil samples.

**2. Tuning: Acceptable.**

Tuning was performed at the beginning of each 12-hour analysis sequence. All results were within QC limits.

**3. Initial Calibration: Satisfactory.**

All average Relative Response Factors (RRFs) were greater than the QC limit of 0.050 except chloroethane in the August 9, 2009 medium level calibration; associated positive results were qualified as estimated quantities (J) and sample quantitation limits were rejected (R). All Relative Standard Deviations (RSDs) were less than the QC limits of 30%.

**4. Continuing Calibration: Satisfactory.**

All RRFs were greater than the QC limit of 0.050 except chloroethane in the medium level calibration; no additional action was taken. All % differences were less than the QC limit of 25% except dichlorodifluoromethane, chloromethane, trichlorofluoromethane, carbon tetrachloride, tetrachloroethene, 1,1,2,2-tetrachloroethane, t-butyl benzene, 1,2-dibromo-3-chloropropane, and hexachlorobutadiene (all with increasing response factors) in the low concentration calibration. Associated positive results were qualified as estimated quantities (J).

**5. Blanks: Satisfactory.**

A method blank was analyzed for each 20 sample batch per matrix. There were no detections in any method blank except benzene (0.0831 ug/kg), toluene (0.126 ug/kg), tetrachloroethene (0.374 ug/kg), o-xylene (0.0491 ug/kg), 1,2,3-trichlorobenzene (0.247 ug/kg), and naphthalene (0.516 ug/kg). Associated sample results less than 5 times the blank contamination (10 times for common laboratory contaminants) were qualified as not detected (U).

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**6. System Monitoring Compounds (SMCs): Satisfactory.**

All SMC recoveries were within QC limits except 4-bromofluorobenzene with a high recovery in the low concentration analysis of sample 09080417; associated positive results were qualified as estimated quantities (J).

**7. Blank Spike (BS)/BS Duplicate (BSD) Analysis: Satisfactory.**

BS and BSD analyses were performed per SDG or per matrix per concentration level, whichever was more frequent. All recoveries were within QC limits except the medium concentration BS/BSD high recoveries for chlorobromomethane and 1,2-dichloropropane and the low concentration high BS/BSD recoveries for dichlorodifluoromethane, chloromethane, vinyl chloride, and 1,2-dibromo-3-chloropropane benzene with a low recovery. Positive results associated with the high recovery outliers were qualified as estimated quantities (J).

**8. Internal Standards: Satisfactory.**

All internal standards were within $\pm$ 30 seconds of the continuing calibration internal standard retention times. All area counts were within 50 % to 200 % of the continuing calibration area counts except low concentration low recoveries for chlorobenzene and 1,4-dichlorobenzene. Positive sample results and sample quantitation limits associated with low area count outliers were qualified as estimated quantities (J or UJ).

**9. Precision and Bias Determination: Not Performed.**

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

**10. Performance Evaluation Sample Analysis: Not Provided.**

Performance evaluation samples were not provided to the laboratory.

**11. Overall Assessment of Data for Use**

The overall usefulness of the data is based on the criteria outlined in the site-specific sampling plan, the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical method, and, when applicable, the Office of Emergency and Remedial Response Publication "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

J - The associated numerical value is an estimated quantity because the reported concentrations were less than the sample quantitation limits or because quality control criteria limits were not met.

R - The sample results are rejected (analyte may or may not be present) due to gross deficiencies in quality control criteria. Any reported value is unusable. Resampling and/or reanalysis is necessary for verification.

U - The material was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.

UJ - The material was analyzed for, but not detected. The reported detection limit is estimated because quality control criteria were not met.

Client: Ecology and Environment, Inc.

Job Number: 580-14968-1

**Client Sample ID:** 0908-0417

Lab Sample ID: 580-14968-1
Client Matrix: Solid

% Moisture: 22.1

Date Sampled: 08/14/2009 1230
Date Received: 08/15/2009 1230

**8260B Volatile Organic Compounds (GC/MS)**

Method: 8260B
Preparation: 5035
Dilution: 20
Date Analyzed: 08/18/2009 0003
Date Prepared: 08/17/2009 1606

Analysis Batch: 580-48488
Prep Batch: 580-48478

Instrument ID: TAC043
Lab File ID: VB00116825.D
Initial Weight/Volume: 9.095 g
Final Weight/Volume: 480 mL

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dichlorodifluoromethane | | ND | | 270 | 1400 |
| Chloromethane | | ND | | 2000 | 14000 |
| Vinyl chloride | | ND | | 58 | 270 |
| Bromomethane | | ND | | 850 | 4700 |
| ~~Chloroethane~~ | | ~~ND~~ | | ~~780~~ | ~~14000~~ R |
| Trichlorofluoromethane | | ND | | 170 | 1400 |
| 1,1-Dichloroethene | | ND | | 170 | 680 |
| Methylene Chloride | | ND | | 130 | 1400 |
| trans-1,2-Dichloroethene | | ND | | 120 | 1400 |
| 1,1-Dichloroethane | | ND | | 130 | 1400 |
| 2,2-Dichloropropane | | ND | | 130 | 1400 |
| cis-1,2-Dichloroethene | | 420 | J | 81 | 1400 |
| Chlorobromomethane | | ND | | 410 | 1400 |
| Chloroform | | ND | | 71 | 1400 |
| 1,1,1-Trichloroethane | | ND | | 170 | 1400 |
| Carbon tetrachloride | | ND | | 130 | 680 |
| 1,1-Dichloropropene | | ND | | 61 | 1400 |
| Benzene | | ND | | 85 | 540 |
| 1,2-Dichloroethane | | ND | | 74 | 1400 |
| Trichloroethene | | ND | | 120 | 540 |
| 1,2-Dichloropropane | | ND | | 130 | 410 |
| Dibromomethane | | ND | | 140 | 1400 |
| Dichlorobromomethane | | ND | | 100 | 1400 |
| cis-1,3-Dichloropropene | | ND | | 81 | 540 |
| Toluene | | 770 | J | 81 | 1400 |
| trans-1,3-Dichloropropene | | ND | | 140 | 540 |
| 1,1,2-Trichloroethane | | ND | | 61 | 410 |
| Tetrachloroethene | | 260 | J | 71 | 680 |
| 1,3-Dichloropropane | | ND | | 170 | 1400 |
| Chlorodibromomethane | | ND | | 270 | 1400 |
| Ethylene Dibromide | | ND | | 110 | 1400 |
| Chlorobenzene | | ND | | 78 | 1400 |
| Ethylbenzene | | 260 | J | 130 | 1400 |
| 1,1,1,2-Tetrachloroethane | | ND | | 160 | 1400 |
| 1,1,2,2-Tetrachloroethane | | ND | | 110 | 340 |
| m-Xylene & p-Xylene | | 1000 | J | 260 | 1400 |
| o-Xylene | | ND | | 78 | 1400 |
| Styrene | | ND | | 130 | 1400 |
| Bromoform | | ND | | 370 | 1400 |
| Isopropylbenzene | | ND | | 61 | 1400 |
| Bromobenzene | | ND | | 91 | 1400 |
| N-Propylbenzene | | ND | | 95 | 1400 |
| 1,2,3-Trichloropropane | | ND | | 390 | 1400 |
| 2-Chlorotoluene | | ND | | 180 | 1400 |
| 1,3,5-Trimethylbenzene | | ND | | 140 | 1400 |
| 4-Chlorotoluene | | ND | | 440 | 1400 |



MW 10/14/09

Client: Ecology and Environment, Inc. Job Number: 580-14968-1

**Client Sample ID:** **0908-0417**

Lab Sample ID: 580-14968-1 Date Sampled: 08/14/2009 1230
Client Matrix: Solid % Moisture: 22.1 Date Received: 08/15/2009 1230

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 580-48488 | | Instrument ID: | TAC043 |
| Preparation: | 5035 | Prep Batch: 580-48478 | | Lab File ID: | VB00116825.D |
| Dilution: | 20 | | | Initial Weight/Volume: | 9.095 g |
| Date Analyzed: | 08/18/2009 0003 | | | Final Weight/Volume: | 480 mL |
| Date Prepared: | 08/17/2009 1606 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| tert-Butylbenzene | | ND | | 110 | 1400 |
| 1,2,4-Trimethylbenzene | | 470 | J | 71 | 1400 |
| sec-Butylbenzene | | ND | | 170 | 1400 |
| 1,3-Dichlorobenzene | | ND | | 170 | 1400 |
| 4-Isopropyltoluene | | ND | | 95 | 1400 |
| 1,4-Dichlorobenzene | | ND | | 170 | 1400 |
| n-Butylbenzene | | ND | | 250 | 1400 |
| 1,2-Dichlorobenzene | | ND | | 88 | 1400 |
| 1,2-Dibromo-3-Chloropropane | | ND | | 2200 | 6800 |
| 1,2,4-Trichlorobenzene | | ND | | 170 | 1400 |
| 1,2,3-Trichlorobenzene | | ND | | 170 | 1400 |
| Hexachlorobutadiene | | ND | | 190 | 1400 |
| Naphthalene | | 120000 | | 200 | 1400 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Fluorobenzene (Surr) | 97 | | 75 - 125 |
| Toluene-d8 (Surr) | 100 | | 85 - 115 |
| Ethylbenzene-d10 | 105 | | 75 - 125 |
| 4-Bromofluorobenzene (Surr) | 98 | | 85 - 120 |

MW 10/4/09

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**
**REGION 10**
1200 Sixth Avenue
Seattle, Washington 98101

March 17, 2010

Reply to:
Attn of: OEA095

**MEMORANDUM**

Subject: Data Validation Report for the Volatile Organic (VOCs), Semi-Volatile Organics (SVOCs), PCB Aroclors, Total Extended Diesel Range Organics (DRO-ex), Total Analyte List (TAL) Metals and Mercury Analyses of Water and Sediment/Soil Samples Collected from Northwest Pipe and Casing

From: Ginna Grepo-Grove, RQAM
USEPA, OEA

To: Kathy Parker, OSC, USEPA, ECL
USEPA, ECL

CC: Mark Ader, RPM
Eric Roth, RPM, Parametrix, Inc.

The quality assurance (QA) review of the analytical data generated from the analysis of 14 solid/soil samples collected from the above referenced site has been completed. These samples were analyzed for VOCs, SVOCs, PCBs, DRO-ex, TAL metals, and mercury by Freidman and Bruya, Inc. located in Seattle WA.

All sample analyses were evaluated following the EPA's Stage 4 Manual Data Verification/Validation Process (S4VM). The validations were evaluated using the Quality Control Specifications outlined in the Quality Assurance Project Plan for NW Pipe and Casing Removal Activities, the technical specifications of the Statement of Work for Organics Analysis SOM02.1, the Contract Laboratory Program's National Functional Guidelines for Organic and Inorganic Data Review, and the Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use (EPA-540-R08-005). Some of the data quality elements were qualified using the reviewer's professional judgment.

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## I. DATA QUALIFICATIONS

The following samples were evaluated in this report:

| | | | |
|---|---|---|---|
| CC01090809 | CC02090809 | CC03090809 | CC04090809 |
| CC05090809 | CC06090809 | CC07090809 | CC08090809 |
| CC09090809 | CC10090809 | CC11090809 | CC12090809 |
| CC13090809 | CC14090809 | | |

The conclusions presented herein are based on the information provided for the review.

**Summary of Validation Qualifiers Applied:**

Some of the data points were qualified due to following reasons:

- Target compounds were detected at concentrations that were over the calibration range of the instrument and no dilution runs were analyzed. Affected results were qualified estimated with a low bias
- Results that were less than the reporting limits were qualified estimated.
- Other compounds were qualified due to out of control calibrations and laboratory control sample recoveries

Most of the sample and QC results were acceptable. The data, as qualified, are usable for all purposes.

**Reasons for Validation Qualifiers**

The reasons for applying a validation qualifier to a sample result is also listed in the validated electronic data deliverables (EDDs), under the column header "Reasons". Below is a list of reasons why a data point could be qualified during data validation.

| **Reasons for Validation Qualifiers:** | |
|---|---|
| <CRQL | The value reported is <Contract Required Quantitation Limits (CRQLs) |
| %D | The percent difference (%D) of the concentrations calculated off the primary and secondary columns are >25% but <60% and were qualified estimated. |
| MULT | Multiple runs were conducted for the analyte. Use the other value reported for the same analyte. The value which is not to be used is qualified 'R'. |
| USE R1 | Use the value(s) reported off the initial analytical run |
| USE R2 | Use the value(s) reported off the second analytical run |
| USE R3 | Use the value(s) reported off the third analytical run |
| USE DIL | The value reported is over the calibration range. Use the value reported off the dilution run. |

| | |
|---|---|
| SURR/DMCs | The surrogate/deuterated monitoring compound (DMC) recoveries did not meet the specified control limits. Results are qualified estimated. |
| RRF | The response factor for the analyte did not meet the minimum acceptance criteria (0.005). |
| MS/MSD | The spiked recoveries and/or RPDs did not meet the specified control limits. Results are qualified estimated. |
| MB | Analyte was qualified as non-detect due to contamination in the associated blank. The value reported is <5x or <10x (if common lab contaminant) the value in the blank. |
| ND | The analyte was not detected in the sample, and is reported at the CRQL with the 'U' Qualifier. |
| COELN | Initial identification erroneous. Peak due to co-elution with other detected target analytes. |
| CAL | Calibration criteria not met |
| CCV | Continuing calibration criteria not met |
| GPC | GPC Clean-up criteria not met. |
| CLN-UP | Silica gel, alumina or sulfur clean-up criteria not met |
| LCS | LCS/LCSD criteria not met |
| HT | Holding time criteria not met |
| STORE | Sample Storage and preservation specified not met |
| TEMP | Cooler recommended temperature exceeded at the verified time of sample receipt at the lab (VTSR) |
| M/Z | Mass/ion resolution ratio not met |
| DPE | Diphenyl ether interferences. False positive. Elevate reporting limits at level of detection |

## Data Qualifiers

The following is a list of validation qualifiers applied to the sample result(s) when needed to indicate associated out-of-control QA/QC results.

| **Data Qualifiers** | | |
|---|---|---|
| | U | The analyte was not detected at or above the reported result. |
| | J | The analyte was positively identified. The associated numerical result is an estimate. |
| | UJ | The analyte was not detected at or above the reported estimated result. The associated numerical value is an estimate of the quantitation limit of the analyte in this sample. |
| | R | The data are unusable for all purposes. |
| | N | There is evidence the analyte is present in this sample. |
| | JN | There is evidence that the analyte is present. The associated numerical result is an estimate. |

## II. DATA REVIEW CHECKLIST

The analytical data were evaluated following the recommended baseline checks used in the four stages of laboratory analytical data verification and validation for Superfund use listed as follows (EPA-540-R08-005, 2009):

| Stage 1 – Data Validation | | | | | |
|---|---|---|---|---|---|
| | VERIFIED | | QUAL | | |
| | YES | NO | YES | NO | |
| 1 | x | | | x | Documentation identifies the laboratory receiving and conducting analyses, and includes documentation for all samples submitted by the project or requester for analyses. |
| 2 | x | | | x | Requested analytical methods were performed and the analysis dates are present. |
| 3 | x | | | x | Requested target analyte results are reported along with the original laboratory data qualifiers and data qualifier definitions for each reported result |
| 4 | x | | | x | Requested target analyte result units are reported |
| 5 | x | | | x | Requested reporting limits for all samples are present and results at and below the requested (required) reporting limits are clearly identified (including sample detection limits if required). |
| 6 | x | | | x | Sampling dates (including times if needed), date and time of laboratory receipt of samples, and sample conditions upon receipt at the laboratory (including preservation, pH and temperature) are documented. |
| 7 | x | | | x | Sample results are evaluated by comparing sample conditions upon receipt at the laboratory (e.g., preservation checks) and sample characteristics (e.g., percent moisture) to the requirements and guidelines present in national or regional data validation documents, analytical method(s) or contract. |
| **Stage 2A – Data Validation** | | | | | |
| | VERIFIED | | QUAL | | QC Procedure or Check |
| | YES | NO | YES | NO | |
| 8 | x | | | x | Requested methods (handling, preparation, cleanup, and analytical) are performed. |
| 9 | x | | | x | Method dates (including dates, times and duration of analysis for radiation counting measurements and other methods, if needed) for handling (e.g., Toxicity Characteristic Leaching Procedure), preparation, cleanup and analysis are present, as appropriate. |
| 10 | x | | | x | Requested spike analytes or compounds (e.g., surrogate, DMCs, LCS spikes, post digestion spikes) have been added, as appropriate. |
| 11 | x | | | x | Sample holding times (from sampling date to preparation and preparation to analysis) are evaluated. |
| 12 | x | | | x | Frequency of QC samples is checked for appropriateness (e.g., one LCS per twenty samples in a preparation batch). |
| 13 | x | | | x | Sample results are evaluated by comparing holding times and sample-related QC data to the requirements and guidelines present in national or regional data validation documents, analytical method(s) or contract |
| | | | | | **Stage 2A – Data Validation QC Data** |
| 14 | x | | | x | method blanks |
| 15 | x | | | x | surrogate recoveries/deuterated monitoring compounds (DMC) recoveries |
| 16 | x | | x | | laboratory control sample (LCS)/Laboratory control sample duplicate (LCSD) recoveries |
| 17 | x | | | | matrix spike and matrix spike duplicate recoveries |
| 18 | x | | | x | serial dilutions |
| 19 | x | | | x | post digestion spikes |

| | | | | | |
|---|---|---|---|---|---|
| **20** | x | | | | standard reference materials |
| **21** | x | | | | equipment blanks |
| **22** | x | | | | trip blanks |

## Stage 2B – Data Validation

Stage 2B validation builds on the validation conducted in Stage 2A. Stage 2B validation of the laboratory analytical data package consists of the Stage 2A validation plus the verification and validation checks for the compliance of instrument-related QC.

| | VERIFIED | | QUAL | | Calibration Procedure or Check |
|---|---|---|---|---|---|
| | YES | NO | YES | NO | |
| **23** | x | | x | | Initial calibration data (e.g., ICAL standards, ICV standards, ICBs) are provided for all requested analytes and linked to field samples reported. For each initial calibration, the calibration type used is present along with the initial calibration equation used including any weighting factor(s) applied and the associated correlation coefficients, as appropriate. Recalculations of the standard concentrations using the initial calibration curve are present, along with their associated percent recoveries, as appropriate (e.g., if required by the project, method, or contract). For the ICV standard, the associated percent recovery (or percent difference, as appropriate) is present. |
| **24** | x | | | x | Appropriate number and concentration of initial calibration standards are present. |
| **25** | x | | | x | Continuing calibration data (e.g. CCV standards and CCBs) are provided for all requested analytes and linked to field samples reported, as appropriate. For the CCV standard(s), the associated percent recoveries (or percent differences, as appropriate) are present. |
| **26** | x | | | x | Reported samples are bracketed by CCV standards and CCBs standards as appropriate. |
| **27** | x | | | x | Method specific instrument performance checks are present as appropriate (e.g., tunes for mass spectrometry methods, DDT/Endrin breakdown checks for pesticides and aroclors, instrument blanks and interference checks for ICP methods). |
| **28** | x | | | x | Frequency of instrument QC samples is checked for appropriateness (e.g., gas chromatography-mass spectroscopy [GC-MS] tunes have been run every 12 hours). |

## Stage 3 – Data Validation

Stage 3 validation builds on the validation conducted in Stage 2B. Stage 3 validation of the laboratory analytical data package consists of the Stage 2B validation plus the recalculation of instrument and sample results from the laboratory instrument responses, and comparison of recalculated results to laboratory reported results.

| | VERIFIED | | QUAL | | QC Procedure or Check |
|---|---|---|---|---|---|
| | YES | NO | YES | NO | |
| **29** | x | | | x | Instrument response data (e.g., GC peak areas, ICP corrected intensities) are reported for requested analytes, surrogates, internal standards, and DMCs for all requested field samples, matrix spikes, matrix spike duplicates, LCS, and method blanks as well as calibration data and instrument QC checks (e.g., tunes, DDT/Endrin breakdowns, inter-element correction factors, and Florisil cartridge checks). |
| **30** | x | | | x | Reported target analyte instrument responses are associated with appropriate internal standard analyte(s) for each (or selected) analyte(s) (for methods using internal standard for calibration). |
| **31** | x | | | x | Fit and appropriateness of the initial calibration curve used or required (e.g., mean calibration factor, regression analysis [linear or non-linear, with or without weighting factors, with or without forcing]) is checked with recalculation of the initial calibration curve for each (or selected) analyte(s) from the instrument response. |

| | | | | | |
|---|---|---|---|---|---|
| **32** | x | | | x | Comparison of instrument response to the minimum response requirements for each (or selected) analyte(s). |
| **33** | x | | | x | Recalculation of each (or selected) opening and closing CCV (and CCB) response from the peak data reported for each (or selected) analyte(s) from the instrument response, as appropriate. |
| **34** | x | | | x | Compliance check of recalculated opening and/or closing CCV (and CCB) response to recalculated initial calibration response for each (or selected) analyte(s). |
| **35** | x | | | x | Recalculation of percent ratios for each (or selected) tune from the instrument response, as appropriate. |
| **36** | x | | | x | Compliance check of recalculated percent ratio for each (or selected) tune from the instrument response. |
| **37** | | | | | Recalculation of each (or selected) instrument performance check (e.g., DDT/Endrin breakdown for pesticide analysis, instrument blanks, interference checks) from the instrument response. |
| **38** | x | | | x | Recalculation and compliance check of retention time windows (for chromatographic methods) for each (or selected) analyte(s) from the laboratory reported retention times. |
| **39** | x | | | x | Recalculation of reported results for each reported (or selected) target analyte(s) from the instrument response. |
| **40** | x | | | x | Recalculation of each (or selected) reported spike recovery (surrogate recoveries, DMC recoveries, LCS recoveries, duplicate analyses, matrix spike and matrix spike duplicate recoveries, serial dilutions, post digestion spikes, standard reference materials etc.) from the instrument response. |
| **41** | x | | | x | Each (or selected) sample result(s) and spike recovery(ies) are evaluated by comparing the recalculated numbers to the laboratory reported numbers according to the requirements and guidelines present in national or regional data validation documents, analytical method(s) or contract |

**Note**: Selection of analytes, spikes, and performance evaluation checks for the Stage 3 validation checks for a laboratory analytical data package being verified and validated generally will depend on many factors including (but not limited to) the type of verification and validation being performed (manual or electronic), requirements and guidelines present in national or regional data validation documents, analytical method(s) or contract, the number of laboratories reporting the data, the number and type of analytical methods reported, the number of analytes reported in each method, and the number of detected analytes.

**Stage 4 validation builds on the validation conducted in Stage 3. Stage 4 validation of the laboratory analytical data package consists of the Stage 3 validation plus the evaluation of instrument outputs.**

| | **VERIFIED** | | **QUAL** | | **QC Procedure or Check** |
|---|---|---|---|---|---|
| | **YES** | **NO** | **YES** | **NO** | |
| **42** | x | | | x | All required instrument outputs (e.g., chromatograms, mass spectra, atomic emission spectra, instrument background corrections, and interference corrections) for evaluating sample and instrument performance are present. |
| **43** | x | | | x | Sample results are evaluated by checking each (or selected) instrument output (e.g., chromatograms, mass spectra, atomic emission spectra data, instrument background corrections, interference corrections) for correct identification and quantitation of analytes (e.g., peak integrations, use of appropriate internal standards for quantitation, elution order of analytes, and interferences). |
| **44** | x | | | x | Each (or selected) instrument's output(s) is evaluated for confirmation of non-detected or tentatively identified analytes. |

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**
**REGION 10**
1200 Sixth Avenue
Seattle, Washington 98101

March 2, 2010

Reply to:
Attn of: OEA095

**MEMORANDUM**

Subject: Data Validation Report for the Volatile Organic (VOCs), Semi-volatile Organic Compound (SVOCs), Polynuclear Aromatic Hydrocarbons (PAHs) and Polychlorinated Biphenyl (PCB) Analyses of Water Samples Collected from Northwest Pipe and Casing Case Number: 36091
SDGs: JBR68, JBR66, JBR51, JBR27 and JBR30

From: Ginna Grepo-Grove, RQAM
USEPA, OEA

To: Mark Ader, RPM
USEPA, ECL

CC: Kathy Parker, OSC, USEPA, ECL
Eric Roth, RPM, Parametrix, Inc.

The quality assurance (QA) review of the analytical data generated from the analysis of 41 soil and 7 water samples collected from the above referenced site has been completed. These samples were analyzed for VOCs, SVOCs, PAHs and PCBs by A4 Scientific, Inc located in The Woodlands, TX.

All sample analyses were evaluated following the EPA's Stage 4 Electronic/Manual Data Validation Process (S4VEM). The validations were evaluated using the Quality Control Specifications outlined in the Quality Assurance Project Plan for NW Pipe and Casing Removal Activities, the technical specifications of the Statement of Work for Organics Analysis SOM02.1, the Contract Laboratory Program's National Functional Guidelines for Organic and Inorganic Data Review, and the Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use (EPA-540-R08-005). Some of the data quality elements were qualified using the reviewer's professional judgment.

## I. DATA QUALIFICATIONS

A summary of samples evaluated in this validation report and the pertinent dates for sample collection, sample receipt at the laboratory, extraction and analyses is listed in Table 1 at the end

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of this report.

The conclusions presented herein are based on the information provided for the review.

**Summary of Validation Qualifiers Applied:**

After the manual and electronic data review, the following data points were qualified:

JBR68

- Methylene chloride was detected in the VOC method blank and some of the methylene chloride sample results were qualified non-detects due to contamination in the blank.
- A few SVOC target compounds were qualified estimated due to calibration and/or surrogate recoveries.

JBR66

- Methylene chloride was detected in the VOC method blank and some of the methylene chloride sample results were qualified non-detects due to contamination in the blank.
- A few VOC and SVOC target compounds were qualified estimated due to calibration and/or surrogate recoveries.

JBR27

- Some VOC and SVOC analyses required multiple analysis due to target compound concentrations >linear calibration range. For these results, the dilution runs were recommended for use. Sample results exceeding instrument calibration range without dilution runs were qualified estimated. VOC and SVOC target compounds were qualified estimated due to calibration and/or surrogate recoveries.

JBR51

- Some VOC and SVOC analyses required multiple analysis due to target compound concentrations >linear calibration range. For these results, the dilution runs were recommended for use. Sample results exceeding instrument calibration range without dilution runs were qualified estimated. VOC and SVOC target compounds were qualified estimated due to calibration and/or surrogate recoveries.

JBR30

- Some VOC and SVOC analyses required multiple analysis due to target compound concentrations >linear calibration range. For these results, the dilution runs were recommended for use. Sample results exceeding instrument calibration range without dilution runs were qualified estimated. VOC and SVOC target compounds were qualified estimated due to calibration and/or surrogate recoveries.

The data, as qualified, are usable for all purposes.

**Reasons for Validation Qualifiers**

The reasons for applying a validation qualifier to a sample result is also listed in the validated electronic data deliverables (EDDs), under the column header "Reasons". Below is a list of reasons why a data point could be qualified during data validation.

| **Reasons for Validation Qualifiers:** | |
|---|---|
| <CRQL | The value reported is <Contract Required Quantitation Limits (CRQLs) |
| %D | The percent difference (%D) of the concentrations calculated off the primary and secondary columns are >25% but <60% and were qualified estimated. |
| MULT | Multiple runs were conducted for the analyte. Use the other value reported for the same analyte. The value which is not to be used is qualified 'R'. |
| USE R1 | Use the value(s) reported off the initial analytical run |
| USE R2 | Use the value(s) reported off the second analytical run |
| USE R3 | Use the value(s) reported off the third analytical run |
| USE DIL | The value reported is over the calibration range. Use the value reported off the dilution run. |
| SURR/DMCs | The surrogate/deuterated monitoring compound (DMC) recoveries did not meet the specified control limits. Results are qualified estimated. |
| RRF | The response factor for the analyte did not meet the minimum acceptance criteria (0.005). |
| MS/MSD | The spiked recoveries and/or RPDs did not meet the specified control limits. Results are qualified estimated. |
| MB | Analyte was qualified as non-detect due to contamination in the associated blank. The value reported is <5x or <10x (if common lab contaminant) the value in the blank. |
| ND | The analyte was not detected in the sample, and is reported at the CRQL with the 'U' Qualifier. |
| COELN | Initial identification erroneous. Peak due to co-elution with other detected target analytes. |
| CAL | Calibration criteria not met |
| CCV | Continuing calibration criteria not met |
| GPC | GPC Clean-up criteria not met. |
| CLN-UP | Silica gel, alumina or sulfur clean-up criteria not met |

| | |
|---|---|
| LCS | LCS/LCSD criteria not met |
| HT | Holding time criteria not met |
| STORE | Sample Storage and preservation specified not met |
| TEMP | Cooler recommended temperature exceeded at the verified time of sample receipt at the lab (VTSR) |
| M/Z | Mass/ion resolution ratio not met |
| DPE | Diphenyl ether interferences. False positive. Elevate reporting limits at level of detection |

## Data Qualifiers

The following is a list of validation qualifiers applied to the sample result(s) when needed to indicate associated out-of-control QA/QC results.

| **Data Qualifiers** | | |
|---|---|---|
| | U | The analyte was not detected at or above the reported result. |
| | J | The analyte was positively identified. The associated numerical result is an estimate. |
| | UJ | The analyte was not detected at or above the reported estimated result. The associated numerical value is an estimate of the quantitation limit of the analyte in this sample. |
| | R | The data are unusable for all purposes. |
| | N | There is evidence the analyte is present in this sample. |
| | JN | There is evidence that the analyte is present. The associated numerical result is an estimate. |

## II. DATA REVIEW

The analytical data were evaluated following the recommended baseline checks used in the four stages of laboratory analytical data verification and validation for Superfund use listed as follows (EPA-540-R08-005, 2009):

| Stage 1 – Data Validation | | | | |
|---|---|---|---|---|
| | YES | NO | N/A | QC Procedure or Check |
| **1** | x | | | Documentation identifies the laboratory receiving and conducting analyses, and includes documentation for all samples submitted by the project or requester for analyses. |
| **2** | x | | | Requested analytical methods were performed and the analysis dates are present. |
| **3** | x | | | Requested target analyte results are reported along with the original laboratory data qualifiers and data qualifier definitions for each reported result |
| **4** | x | | | Requested target analyte result units are reported |
| **5** | x | | | Requested reporting limits for all samples are present and results at and below the requested (required) reporting limits are clearly identified (including sample detection limits if required). |
| **6** | x | | | Sampling dates (including times if needed), date and time of laboratory receipt of samples, and sample conditions upon receipt at the laboratory (including preservation, pH and temperature) are documented. |
| **7** | x | | | Sample results are evaluated by comparing sample conditions upon receipt at the laboratory (e.g., preservation checks) and sample characteristics (e.g., percent moisture) to the requirements and guidelines present in national or regional data validation documents, analytical method(s) or contract. |

| Stage 2A – Data Validation | | | | |
|---|---|---|---|---|
| | YES | NO | N/A | QC Procedure or Check |
| **8** | x | | | Requested methods (handling, preparation, cleanup, and analytical) are performed. |
| **9** | x | | | Method dates (including dates, times and duration of analysis for radiation counting measurements and other methods, if needed) for handling (e.g., Toxicity Characteristic Leaching Procedure), preparation, cleanup and analysis are present, as appropriate. |
| **10** | x | | | Requested spike analytes or compounds (e.g., surrogate, DMCs, LCS spikes, post digestion spikes) have been added, as appropriate. |
| **11** | x | | | Sample holding times (from sampling date to preparation and preparation to analysis) are evaluated. |
| **12** | x | | | Frequency of QC samples is checked for appropriateness (e.g., one LCS per twenty samples in a preparation batch). |

| | | | | |
|---|---|---|---|---|
| **13** | x | | | Sample results are evaluated by comparing holding times and sample-related QC data to the requirements and guidelines present in national or regional data validation documents, analytical method(s) or contract |

| | | | | |
|---|---|---|---|---|
| | | | | **Stage 2A – Data Validation QC Data** |
| **14** | | x | | method blanks - |
| **15** | | x | | surrogate recoveries/deuterated monitoring compounds (DMC) recoveries |
| **16** | x | | | laboratory control sample (LCS) recoveries |
| **17** | x | | | matrix spike and matrix spike duplicate recoveries |
| **18** | | | x | serial dilutions |
| **19** | | | x | post digestion spikes |
| **20** | | | x | standard reference materials |
| **21** | | | x | equipment blanks |
| **22** | x | | | trip blanks |

**Stage 2B – Data Validation**

Stage 2B validation builds on the validation conducted in Stage 2A. Stage 2B validation of the laboratory analytical data package consists of the Stage 2A validation plus the verification and validation checks for the compliance of instrument-related QC.

| | YES | NO | N/A | QC Procedure or Check |
|---|---|---|---|---|
| **23** | x | | | Initial calibration data (e.g., ICAL standards, ICV standards, ICBs) are provided for all requested analytes and linked to field samples reported. For each initial calibration, the calibration type used is present along with the initial calibration equation used including any weighting factor(s) applied and the associated correlation coefficients, as appropriate. Recalculations of the standard concentrations using the initial calibration curve are present, along with their associated percent recoveries, as appropriate (e.g., if required by the project, method, or contract). For the ICV standard, the associated percent recovery (or percent difference, as appropriate) is present. |
| **24** | x | | | Appropriate number and concentration of initial calibration standards are present. |
| **25** | | x | | Continuing calibration data (e.g. CCV standards and CCBs) are provided for all requested analytes and linked to field samples reported, as appropriate. For the CCV standard(s), the associated percent recoveries (or percent differences, as appropriate) are present. |
| **26** | x | | | Reported samples are bracketed by CCV standards and CCBs standards as appropriate. |
| **27** | x | | | Method specific instrument performance checks are present as appropriate (e.g., tunes for mass spectrometry methods, DDT/Endrin breakdown checks for pesticides and aroclors, instrument blanks and interference checks for ICP methods). |
| **28** | x | | | Frequency of instrument QC samples is checked for appropriateness (e.g., gas chromatography-mass spectroscopy [GC-MS] tunes have been run every 12 hours). |

## Stage 3 – Data Validation

Stage 3 validation builds on the validation conducted in Stage 2B. Stage 3 validation of the laboratory analytical data package consists of the Stage 2B validation plus the recalculation of instrument and sample results from the laboratory instrument responses, and comparison of recalculated results to laboratory reported results.

| | YES | NO | N/A | QC Procedure or Check |
|---|---|---|---|---|
| **29** | x | | | Instrument response data (e.g., GC peak areas, ICP corrected intensities) are reported for requested analytes, surrogates, internal standards, and DMCs for all requested field samples, matrix spikes, matrix spike duplicates, LCS, and method blanks as well as calibration data and instrument QC checks (e.g., tunes, DDT/Endrin breakdowns, inter-element correction factors, and Florisil cartridge checks). |
| **30** | x | | | Reported target analyte instrument responses are associated with appropriate internal standard analyte(s) for each (or selected) analyte(s) (for methods using internal standard for calibration). |
| **31** | x | | | Fit and appropriateness of the initial calibration curve used or required (e.g., mean calibration factor, regression analysis [linear or non-linear, with or without weighting factors, with or without forcing]) is checked with recalculation of the initial calibration curve for each (or selected) analyte(s) from the instrument response. |
| **32** | x | | | Comparison of instrument response to the minimum response requirements for each (or selected) analyte(s). |
| **33** | x | | | Recalculation of each (or selected) opening and closing CCV (and CCB) response from the peak data reported for each (or selected) analyte(s) from the instrument response, as appropriate. |
| **34** | x | | | Compliance check of recalculated opening and/or closing CCV (and CCB) response to recalculated initial calibration response for each (or selected) analyte(s). |
| **35** | x | | | Recalculation of percent ratios for each (or selected) tune from the instrument response, as appropriate. |
| **36** | x | | | Compliance check of recalculated percent ratio for each (or selected) tune from the instrument response. |
| **37** | x | | | Recalculation of each (or selected) instrument performance check (e.g., DDT/Endrin breakdown for pesticide analysis, instrument blanks, interference checks) from the instrument response. |
| **38** | x | | | Recalculation and compliance check of retention time windows (for chromatographic methods) for each (or selected) analyte(s) from the laboratory reported retention times. |
| **39** | x | | | Recalculation of reported results for each reported (or selected) target analyte(s) from the instrument response. |
| **40** | x | | | Recalculation of each (or selected) reported spike recovery (surrogate recoveries, DMC recoveries, LCS recoveries, duplicate analyses, matrix spike and matrix spike duplicate recoveries, serial dilutions, post digestion spikes, standard reference materials etc.) from the instrument response. |
| **41** | x | | | Each (or selected) sample result(s) and spike recovery(ies) are evaluated by comparing the recalculated numbers to the laboratory reported numbers according to the requirements and guidelines present in national or regional data validation documents, analytical method(s) or contract |

**Note**: Selection of analytes, spikes, and performance evaluation checks for the Stage 3 validation checks for a laboratory analytical data package being verified and validated generally will depend on many factors including (but not limited to) the type of verification and validation being performed (manual or electronic), requirements and guidelines present in national or regional data validation documents, analytical method(s) or contract, the number of laboratories reporting the data, the number and type of analytical methods reported, the number of analytes reported in each method, and the number of detected analytes.

## Stage 4 – Data Validation

Stage 4 validation builds on the validation conducted in Stage 3. Stage 4 validation of the laboratory analytical data package consists of the Stage 3 validation plus the evaluation of instrument outputs.

| | YES | NO | N/A | QC Procedure or Check |
|---|---|---|---|---|
| **42** | x | | | All required instrument outputs (e.g., chromatograms, mass spectra, atomic emission spectra, instrument background corrections, and interference corrections) for evaluating sample and instrument performance are present. |
| **43** | x | | | Sample results are evaluated by checking each (or selected) instrument output (e.g., chromatograms, mass spectra, atomic emission spectra data, instrument background corrections, interference corrections) for correct identification and quantitation of analytes (e.g., peak integrations, use of appropriate internal standards for quantitation, elution order of analytes, and interferences). |
| **44** | x | | | Each (or selected) instrument's output(s) is evaluated for confirmation of non-detected or tentatively identified analytes. |

**Note:** Selection of instrument outputs for the Stage 4 validation checks for a laboratory analytical data package being verified and validated generally will depend on many factors including, but not limited to, the type of verification and validation being performed (electronic or manual), requirements and guidelines present in national or regional data validation documents, analytical method(s) or contract, the number of laboratories reporting the data, the number and type of analytical methods reported, the number of analytes reported in each method, and the number of detected analytes.

Attachments:

Table 1 – Summary of Samples Analyzed (Sample Index)
Summary of Electronic Data Review
Validated Electronic Data Deliverables

National Functional Guidelines Report # 6



**Lab** A4 (A4 Scientific) **SDG** JBR66 **Case** 39061 **Contract** EPW05036 **Region** 10 **DDTID** 80959 **SOW** SOM01.2

## *Analytical Sample Listing*

BNA

| VOCs | | | | | | Extraction | | Analysis | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Number** | **Sample Type** | **Matrix** | **Level** | **Sampling Date** | **Date Received** | **Type** | **Date** | **Date/Time** | **GC Column** | **Intstrument** |
| JBR68 | Field_Sample | Water | Low | 10152009 10:30:00 | 10202009 10:24:00 | | | 10212009 16:04:00 | DB-624 | C-5973 |
| JBR73 | Field_Sample | Water | Low | 10162009 13:15:00 | 10202009 10:24:00 | | | 10212009 16:33:00 | DB-624 | C-5973 |
| JBR73DL | Field_Sample | Water | Low | 10162009 13:15:00 | 10202009 10:24:00 | | | 10222009 00:16:00 | DB-624 | C-5973 |
| JBR73MS | Matrix_Spike | Water | Low | 10162009 13:15:00 | 10202009 10:24:00 | | | 10212009 21:23:00 | DB-624 | C-5973 |
| JBR73MSD | Matrix_Spike_Duplicate | Water | Low | 10162009 13:15:00 | 10202009 10:24:00 | | | 10212009 22:20:00 | DB-624 | C-5973 |
| JBR78 | Field_Sample | Water | Low | 10192009 10:45:00 | 10202009 10:24:00 | | | 10212009 17:02:00 | DB-624 | C-5973 |
| JBR83 | Field_Sample | Water | Low | 10192009 16:30:00 | 10212009 09:53:00 | | | 10212009 18:00:00 | DB-624 | C-5973 |
| JBR84 | Field_Sample | Water | Low | 10202009 10:15:00 | 10212009 09:53:00 | | | 10212009 17:31:00 | DB-624 | C-5973 |
| JBR84DL | Field_Sample | Water | Low | 10202009 10:15:00 | 10212009 09:53:00 | | | 10222009 00:45:00 | DB-624 | C-5973 |
| JBR94 | Field_Sample | Water | Low | 10222009 15:00:00 | 10242009 11:00:00 | | | 10262009 22:34:00 | DB-624 | C-5973 |

| SVOCs | | | | | | Extraction | | Analysis | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Number** | **Sample Type** | **Matrix** | **Level** | **Sampling Date** | **Date Received** | **Type** | **Date** | **Date/Time** | **GC Column** | **Intstrument** |
| JBR73 | Field_Sample | Water | Low | 10162009 13:15:00 | 10202009 10:24:00 | Liq_Liq | 10202009 13:30:00 | 10222009 18:42:00 | HP-5MS | D-5973 |
| JBR84 | Field_Sample | Water | Low | 10202009 10:15:00 | 10212009 09:53:00 | Liq_Liq | 10212009 12:00:00 | 10232009 11:28:00 | HP-5MS | D-5973 |
| JBR84DL | Field_Sample | Water | Low | 10202009 10:15:00 | 10212009 09:53:00 | Liq_Liq | 10212009 12:00:00 | 10232009 01:20:00 | HP-5MS | D-5973 |

| PAHs | | | | | | Extraction | | Analysis | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Number** | **Sample Type** | **Matrix** | **Level** | **Sampling Date** | **Date Received** | **Type** | **Date** | **Date/Time** | **GC Column** | **Intstrument** |
| JBR73 | Field_Sample | Water | | 10162009 13:15:00 | 10202009 10:24:00 | Sep_Funnel | 10212009 12:00:00 | 10212009 21:44:52 | DB-XLB | F-6890A |
| JBR73 | Field_Sample | Water | | 10162009 13:15:00 | 10202009 10:24:00 | Sep_Funnel | 10212009 12:00:00 | 10212009 22:15:00 | DB-35MS | F-6890B |
| JBR84 | Field_Sample | Water | | 10202009 10:15:00 | 10212009 09:53:00 | Sep_Funnel | 10212009 12:00:00 | 10212009 23:48:00 | DB-XLB | F-6890A |
| JBR84 | Field_Sample | Water | | 10202009 10:15:00 | 10212009 09:53:00 | Sep_Funnel | 10212009 12:00:00 | 10222009 00:19:00 | DB-35MS | F-6890B |

National Functional Guidelines Report # 6



**Lab** A4 (A4 Scientific) **SDG** JBR66 **Case** 39061 **Contract** EPW05036 **Region** 10 **DDTID** 80959 **SOW** SOM01.2

## *Analytical Sample Listing*

BNA

| | | | | | | Extraction | | Analysis | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Number** | **Sample Type** | **Matrix** | **Level** | **Sampling Date** | **Date Received** | **Type** | **Date** | **Date/Time** | **GC Column** | **Intstrument** |
| JBR66 | Field_Sample | Soil | Low | 10152009 15:25:00 | 10202009 10:24:00 | | | 10202009 12:30:00 | DB-624 | C-5973 |
| JBR66MS | Matrix_Spike | Soil | Low | 10152009 15:25:00 | 10202009 10:24:00 | | | 10202009 17:23:00 | DB-624 | C-5973 |
| JBR66MSD | Matrix_Spike_Duplicate | Soil | Low | 10152009 15:25:00 | 10202009 10:24:00 | | | 10202009 17:52:00 | DB-624 | C-5973 |
| JBR67 | Field_Sample | Soil | Low | 10192009 15:40:00 | 10202009 10:24:00 | | | 10202009 13:02:00 | DB-624 | C-5973 |
| JBR69 | Field_Sample | Soil | Low | 10162009 10:00:00 | 10202009 10:24:00 | | | 10202009 13:31:00 | DB-624 | C-5973 |
| JBR70 | Field_Sample | Soil | Low | 10162009 10:15:00 | 10202009 10:24:00 | | | 10202009 14:01:00 | DB-624 | C-5973 |
| JBR71 | Field_Sample | Soil | Low | 10162009 12:50:00 | 10202009 10:24:00 | | | 10202009 14:30:00 | DB-624 | C-5973 |
| JBR72 | Field_Sample | Soil | Low | 10162009 13:00:00 | 10202009 10:24:00 | | | 10202009 14:59:00 | DB-624 | C-5973 |
| JBR74 | Field_Sample | Soil | Low | 10162009 14:30:00 | 10202009 10:24:00 | | | 10202009 15:28:00 | DB-624 | C-5973 |
| JBR75 | Field_Sample | Soil | Low | 10162009 14:40:00 | 10202009 10:24:00 | | | 10202009 16:55:00 | DB-624 | C-5973 |
| JBR76 | Field_Sample | Soil | Low | 10192009 09:20:00 | 10202009 10:24:00 | | | 10202009 16:26:00 | DB-624 | C-5973 |
| JBR77 | Field_Sample | Soil | Low | 10192009 09:35:00 | 10202009 10:24:00 | | | 10202009 16:53:00 | DB-624 | H-5975 |
| JBR77ME | Field_Sample | Soil | Medium | 10192009 09:35:00 | 10202009 10:24:00 | Purge_and_Trap | 10212009 00:00:00 | 10212009 19:56:00 | DB-624 | C-5973 |
| JBR77MEMS | Matrix_Spike | Soil | Medium | 10192009 09:35:00 | 10202009 10:24:00 | Purge_and_Trap | 10212009 00:00:00 | 10212009 23:18:00 | DB-624 | C-5973 |
| JBR77MEMSD | Matrix_Spike_Duplicate | Soil | Medium | 10192009 09:35:00 | 10202009 10:24:00 | Purge_and_Trap | 10212009 00:00:00 | 10212009 23:47:00 | DB-624 | C-5973 |
| JBR79 | Field_Sample | Soil | Low | 10192009 11:25:00 | 10202009 10:24:00 | | | 10202009 16:25:00 | DB-624 | H-5975 |
| JBR80 | Field_Sample | Soil | Low | 10192009 11:30:00 | 10202009 10:24:00 | | | 10202009 14:13:00 | DB-624 | H-5975 |
| JBR80ME | Field_Sample | Soil | Medium | 10192009 11:30:00 | 10202009 10:24:00 | Purge_and_Trap | 10212009 00:00:00 | 10212009 20:25:00 | DB-624 | C-5973 |
| JBR81 | Field_Sample | Soil | Low | 10192009 15:35:00 | 10212009 09:53:00 | | | 10212009 19:48:00 | DB-624 | H-5975 |
| JBR81ME | Field_Sample | Soil | Medium | 10192009 15:35:00 | 10212009 09:53:00 | Purge_and_Trap | 10212009 10:00:00 | 10212009 20:54:00 | DB-624 | C-5973 |
| JBR82 | Field_Sample | Soil | Low | 10192009 15:45:00 | 10212009 09:53:00 | | | 10212009 19:18:00 | DB-624 | H-5975 |
| JBR88 | Field_Sample | Soil | Low | 10222009 14:00:00 | 10242009 11:00:00 | | | 10242009 17:01:00 | DB-624 | H-5975 |
| JBR89 | Field_Sample | Soil | Low | 10222009 14:10:00 | 10242009 11:00:00 | | | 10242009 17:27:00 | DB-624 | H-5975 |
| JBR91 | Field_Sample | Soil | Low | 10222009 14:20:00 | 10242009 11:00:00 | | | 10242009 17:53:00 | DB-624 | H-5975 |

**Lab** A4 (A4 Scientific) **SDG** JBR66 **Case** 39061 **Contract** EPW05036 **Region** 10 **DDTID** 80959 **SOW** SOM01.2

## *Analytical Sample Listing*

BNA

| | | | | | | Extraction | | Analysis | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Number** | **Sample Type** | **Matrix** | **Level** | **Sampling Date** | **Date Received** | **Type** | **Date** | **Date/Time** | **GC Column** | **Intstrument** |
| JBR92 | Field_Sample | Soil | Low | 10222009 14:30:00 | 10242009 11:00:00 | | | 10242009 18:20:00 | DB-624 | H-5975 |
| JBR93 | Field_Sample | Soil | Low | 10222009 14:40:00 | 10242009 11:00:00 | | | 10242009 18:46:00 | DB-624 | H-5975 |

| | | | | | | Extraction | | Analysis | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Number** | **Sample Type** | **Matrix** | **Level** | **Sampling Date** | **Date Received** | **Type** | **Date** | **Date/Time** | **GC Column** | **Intstrument** |
| JBR66 | Field_Sample | Soil | Low | 10152009 15:25:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10222009 11:02:00 | HP-5MS | D-5973 |
| JBR67 | Field_Sample | Soil | Low | 10192009 15:40:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10222009 11:32:00 | HP-5MS | D-5973 |
| JBR67MS | Matrix_Spike | Soil | Low | 10192009 15:40:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10222009 12:03:00 | HP-5MS | D-5973 |
| JBR67MSD | Matrix_Spike_Duplicate | Soil | Low | 10192009 15:40:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10222009 12:33:00 | HP-5MS | D-5973 |
| JBR69 | Field_Sample | Soil | Low | 10162009 10:00:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10222009 19:44:00 | HP-5MS | D-5973 |
| JBR70 | Field_Sample | Soil | Low | 10162009 10:15:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10222009 20:15:00 | HP-5MS | D-5973 |
| JBR71 | Field_Sample | Soil | Low | 10162009 12:50:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10222009 15:07:00 | HP-5MS | D-5973 |
| JBR72 | Field_Sample | Soil | Low | 10162009 13:00:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10222009 20:45:00 | HP-5MS | D-5973 |
| JBR74 | Field_Sample | Soil | Low | 10162009 14:30:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10222009 13:35:00 | HP-5MS | D-5973 |
| JBR75 | Field_Sample | Soil | Low | 10162009 14:40:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10222009 15:37:00 | HP-5MS | D-5973 |
| JBR76 | Field_Sample | Soil | Low | 10192009 09:20:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10222009 21:15:00 | HP-5MS | D-5973 |
| JBR77 | Field_Sample | Soil | Low | 10192009 09:35:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10222009 16:39:00 | HP-5MS | D-5973 |
| JBR79 | Field_Sample | Soil | Low | 10192009 11:25:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10222009 17:10:00 | HP-5MS | D-5973 |
| JBR79DL | Field_Sample | Soil | Low | 10192009 11:25:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10222009 19:14:00 | HP-5MS | D-5973 |
| JBR80 | Field_Sample | Soil | Low | 10192009 11:30:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10222009 17:41:00 | HP-5MS | D-5973 |
| JBR81 | Field_Sample | Soil | Low | 10192009 15:35:00 | 10212009 09:53:00 | Sonication | 10212009 11:50:00 | 10222009 23:18:00 | HP-5MS | D-5973 |
| JBR82 | Field_Sample | Soil | Low | 10192009 15:45:00 | 10212009 09:53:00 | Sonication | 10212009 11:50:00 | 10222009 23:48:00 | HP-5MS | D-5973 |
| JBR88 | Field_Sample | Soil | Low | 10222009 14:00:00 | 10242009 11:00:00 | Sonication | 10242009 11:30:00 | 10262009 13:14:00 | HP-5MS | D-5973 |
| JBR89 | Field_Sample | Soil | Low | 10222009 14:10:00 | 10242009 11:00:00 | Sonication | 10242009 11:30:00 | 10262009 14:16:00 | HP-5MS | D-5973 |
| JBR91 | Field_Sample | Soil | Low | 10222009 14:20:00 | 10242009 11:00:00 | Sonication | 10242009 11:30:00 | 10262009 12:43:00 | HP-5MS | D-5973 |
| JBR92 | Field_Sample | Soil | Low | 10222009 14:30:00 | 10242009 11:00:00 | Sonication | 10242009 11:30:00 | 10262009 13:45:00 | HP-5MS | D-5973 |
| JBR93 | Field_Sample | Soil | Low | 10222009 14:40:00 | 10242009 11:00:00 | Sonication | 10242009 11:30:00 | 10262009 12:13:00 | HP-5MS | D-5973 |

National Functional Guidelines Report # 3



**Lab** A4 (A4 Scientific) **SDG** JBR66 **Case** 39061 **Contract** EPW05036 **Region** 10 **DDTID** 80959 **SOW** SOM01.2

## *Analytical Sample Listing*

PCBS

| | | | | | | Extraction | | Analysis | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Number** | **Sample Type** | **Matrix** | **Level** | **Sampling Date** | **Date Received** | **Type** | **Date** | **Date/Time** | **GC Column** | **Intstrument** |
| JBR66 | Field_Sample | Soil | | 10152009 15:25:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10212009 10:46:00 | DB-XLB | F-6890A |
| JBR66 | Field_Sample | Soil | | 10152009 15:25:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10212009 11:17:00 | DB-35MS | F-6890B |
| JBR67 | Field_Sample | Soil | | 10192009 15:40:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10212009 11:17:00 | DB-XLB | F-6890A |
| JBR67 | Field_Sample | Soil | | 10192009 15:40:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10212009 11:48:00 | DB-35MS | F-6890B |
| JBR67MS | Matrix_Spike | Soil | | 10192009 15:40:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10212009 19:40:44 | DB-XLB | F-6890A |
| JBR67MS | Matrix_Spike | Soil | | 10192009 15:40:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10212009 20:11:39 | DB-35MS | F-6890B |
| JBR67MSD | Matrix_Spike_Duplicate | Soil | | 10192009 15:40:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10212009 20:42:48 | DB-35MS | F-6890B |
| JBR67MSD | Matrix_Spike_Duplicate | Soil | | 10192009 15:40:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10212009 20:11:39 | DB-XLB | F-6890A |
| JBR69 | Field_Sample | Soil | | 10162009 10:00:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10212009 12:50:00 | DB-35MS | F-6890B |
| JBR69 | Field_Sample | Soil | | 10162009 10:00:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10212009 12:19:00 | DB-XLB | F-6890A |
| JBR70 | Field_Sample | Soil | | 10162009 10:15:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10212009 12:50:00 | DB-XLB | F-6890A |
| JBR70 | Field_Sample | Soil | | 10162009 10:15:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10212009 13:21:37 | DB-35MS | F-6890B |
| JBR71 | Field_Sample | Soil | | 10162009 12:50:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10212009 13:21:37 | DB-XLB | F-6890A |
| JBR71 | Field_Sample | Soil | | 10162009 12:50:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10212009 13:52:34 | DB-35MS | F-6890B |
| JBR72 | Field_Sample | Soil | | 10162009 13:00:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10212009 14:23:42 | DB-35MS | F-6890B |
| JBR72 | Field_Sample | Soil | | 10162009 13:00:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10212009 13:52:34 | DB-XLB | F-6890A |
| JBR74 | Field_Sample | Soil | | 10162009 14:30:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10212009 14:23:42 | DB-XLB | F-6890A |
| JBR74 | Field_Sample | Soil | | 10162009 14:30:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10212009 14:54:39 | DB-35MS | F-6890B |
| JBR75 | Field_Sample | Soil | | 10162009 14:40:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10212009 14:54:39 | DB-XLB | F-6890A |
| JBR75 | Field_Sample | Soil | | 10162009 14:40:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10212009 15:25:48 | DB-35MS | F-6890B |
| JBR76 | Field_Sample | Soil | | 10192009 09:20:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10212009 15:56:43 | DB-35MS | F-6890B |
| JBR76 | Field_Sample | Soil | | 10192009 09:20:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10212009 15:25:48 | DB-XLB | F-6890A |
| JBR77 | Field_Sample | Soil | | 10192009 09:35:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10212009 15:56:43 | DB-XLB | F-6890A |
| JBR77 | Field_Sample | Soil | | 10192009 09:35:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10212009 16:27:49 | DB-35MS | F-6890B |
| JBR79 | Field_Sample | Soil | | 10192009 11:25:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10212009 12:19:00 | DB-35MS | F-6890B |
| JBR79 | Field_Sample | Soil | | 10192009 11:25:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10212009 11:48:00 | DB-XLB | F-6890A |
| JBR80 | Field_Sample | Soil | | 10192009 11:30:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10212009 16:27:49 | DB-XLB | F-6890A |

National Functional Guidelines Report # 3



**Lab** A4 (A4 Scientific) **SDG** JBR66 **Case** 39061 **Contract** EPW05036 **Region** 10 **DDTID** 80959 **SOW** SOM01.2

## *Analytical Sample Listing*

PCBS

| | | | | | | Extraction | | Analysis | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Number** | **Sample Type** | **Matrix** | **Level** | **Sampling Date** | **Date Received** | **Type** | **Date** | **Date/Time** | **GC Column** | **Intstrument** |
| JBR80 | Field_Sample | Soil | | 10192009 11:30:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10212009 16:58:42 | DB-35MS | F-6890B |
| JBR81 | Field_Sample | Soil | | 10192009 15:35:00 | 10212009 09:53:00 | Sonication | 10212009 11:50:00 | 10222009 01:53:01 | DB-XLB | F-6890A |
| JBR81 | Field_Sample | Soil | | 10192009 15:35:00 | 10212009 09:53:00 | Sonication | 10212009 11:50:00 | 10222009 02:23:53 | DB-35MS | F-6890B |
| JBR82 | Field_Sample | Soil | | 10192009 15:45:00 | 10212009 09:53:00 | Sonication | 10212009 11:50:00 | 10222009 02:23:53 | DB-XLB | F-6890A |
| JBR82 | Field_Sample | Soil | | 10192009 15:45:00 | 10212009 09:53:00 | Sonication | 10212009 11:50:00 | 10222009 02:55:03 | DB-35MS | F-6890B |
| JBR88 | Field_Sample | Soil | | 10222009 14:00:00 | 10242009 11:00:00 | Sonication | 10242009 19:13:00 | 10262009 00:13:00 | DB-XLB | F-6890A |
| JBR88 | Field_Sample | Soil | | 10222009 14:00:00 | 10242009 11:00:00 | Sonication | 10242009 19:13:00 | 10262009 00:44:00 | DB-35MS | F-6890B |
| JBR89 | Field_Sample | Soil | | 10222009 14:10:00 | 10242009 11:00:00 | Sonication | 10242009 19:13:00 | 10262009 00:44:00 | DB-XLB | F-6890A |
| JBR89 | Field_Sample | Soil | | 10222009 14:10:00 | 10242009 11:00:00 | Sonication | 10242009 19:13:00 | 10262009 01:16:00 | DB-35MS | F-6890B |
| JBR91 | Field_Sample | Soil | | 10222009 14:20:00 | 10242009 11:00:00 | Sonication | 10242009 19:13:00 | 10262009 01:16:00 | DB-XLB | F-6890A |
| JBR91 | Field_Sample | Soil | | 10222009 14:20:00 | 10242009 11:00:00 | Sonication | 10242009 19:13:00 | 10262009 01:46:56 | DB-35MS | F-6890B |
| JBR92 | Field_Sample | Soil | | 10222009 14:30:00 | 10242009 11:00:00 | Sonication | 10242009 19:13:00 | 10262009 01:46:55 | DB-XLB | F-6890A |
| JBR92 | Field_Sample | Soil | | 10222009 14:30:00 | 10242009 11:00:00 | Sonication | 10242009 19:13:00 | 10262009 02:18:04 | DB-35MS | F-6890B |
| JBR93 | Field_Sample | Soil | | 10222009 14:40:00 | 10242009 11:00:00 | Sonication | 10242009 19:13:00 | 10262009 09:37:38 | DB-XLB | F-6890A |
| JBR93 | Field_Sample | Soil | | 10222009 14:40:00 | 10242009 11:00:00 | Sonication | 10242009 19:13:00 | 10262009 10:08:00 | DB-35MS | F-6890B |

National Functional Guidelines Report # 6



**Lab** A4 (A4 Scientific) **SDG** JBR51 **Case** 39061 **Contract** EPW05036 **Region** 10 **DDTID** 80123 **SOW** SOM01.2

## *Analytical Sample Listing*

VOA_Low_Med

| | | | | | | Extraction | | Analysis | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Number** | **Sample Type** | **Matrix** | **Level** | **Sampling Date** | **Date Received** | **Type** | **Date** | **Date/Time** | **GC Column** | **Intstrument** |
| JBR51 | Field_Sample | Soil | Low | 10092009 16:10:00 | 10132009 10:20:00 | | | 10142009 10:36:00 | DB-624 | C-5973 |
| JBR51MS | Matrix_Spike | Soil | Low | 10092009 16:10:00 | 10132009 10:20:00 | | | 10142009 15:15:00 | DB-624 | C-5973 |
| JBR51MSD | Matrix_Spike_Duplicate | Soil | Low | 10092009 16:10:00 | 10132009 10:20:00 | | | 10142009 15:44:00 | DB-624 | C-5973 |
| JBR52 | Field_Sample | Soil | Low | 10102009 13:45:00 | 10132009 10:20:00 | | | 10142009 11:05:00 | DB-624 | C-5973 |
| JBR52ME | Field_Sample | Soil | Medium | 10102009 13:45:00 | 10132009 10:20:00 | Purge_and_Trap | 10152009 00:00:00 | 10152009 17:42:00 | DB-624 | C-5973 |
| JBR52MEMS | Matrix_Spike | Soil | Medium | 10102009 13:45:00 | 10132009 10:20:00 | Purge_and_Trap | 10152009 00:00:00 | 10152009 20:10:00 | DB-624 | C-5973 |
| JBR52MEMSD | Matrix_Spike_Duplicate | Soil | Medium | 10102009 13:45:00 | 10132009 10:20:00 | Purge_and_Trap | 10152009 00:00:00 | 10152009 20:39:00 | DB-624 | C-5973 |
| JBR53 | Field_Sample | Soil | Low | 10102009 17:00:00 | 10132009 10:20:00 | | | 10142009 12:03:00 | DB-624 | C-5973 |
| JBR53ME | Field_Sample | Soil | Medium | 10102009 17:00:00 | 10132009 10:20:00 | Purge_and_Trap | 10152009 00:00:00 | 10152009 16:44:00 | DB-624 | C-5973 |
| JBR53MEDL | Field_Sample | Soil | Medium | 10102009 17:00:00 | 10132009 10:20:00 | Purge_and_Trap | 10152009 00:00:00 | 10152009 19:41:00 | DB-624 | C-5973 |
| JBR55 | Field_Sample | Soil | Low | 10122009 12:00:00 | 10132009 10:20:00 | | | 10142009 13:53:00 | DB-624 | C-5973 |
| JBR55ME | Field_Sample | Soil | Medium | 10122009 12:00:00 | 10132009 10:20:00 | Purge_and_Trap | 10152009 00:00:00 | 10152009 15:46:00 | DB-624 | C-5973 |
| JBR55MEDL | Field_Sample | Soil | Medium | 10122009 12:00:00 | 10132009 10:20:00 | Purge_and_Trap | 10152009 00:00:00 | 10152009 19:12:00 | DB-624 | C-5973 |
| JBR56 | Field_Sample | Soil | Low | 10142009 10:00:00 | 10162009 09:54:00 | | | 10162009 13:34:00 | DB-624 | H-5975 |
| JBR57 | Field_Sample | Soil | Low | 10142009 10:10:00 | 10162009 09:54:00 | | | 10162009 14:01:00 | DB-624 | H-5975 |
| JBR57ME | Field_Sample | Soil | Medium | 10142009 10:10:00 | 10162009 09:54:00 | Purge_and_Trap | 10192009 00:00:00 | 10192009 18:09:00 | DB-624 | C-5973 |
| JBR59 | Field_Sample | Soil | Low | 10142009 12:45:00 | 10162009 09:54:00 | | | 10162009 15:31:00 | DB-624 | H-5975 |
| JBR60 | Field_Sample | Soil | Low | 10142009 12:55:00 | 10162009 09:54:00 | | | 10162009 16:01:00 | DB-624 | H-5975 |
| JBR61 | Field_Sample | Soil | Low | 10142009 13:05:00 | 10162009 09:54:00 | | | 10162009 16:29:00 | DB-624 | H-5975 |
| JBR62 | Field_Sample | Soil | Low | 10152009 09:40:00 | 10162009 09:54:00 | | | 10162009 16:56:00 | DB-624 | H-5975 |
| JBR63 | Field_Sample | Soil | Low | 10152009 09:50:00 | 10162009 09:54:00 | | | 10162009 17:22:00 | DB-624 | H-5975 |
| JBR64 | Field_Sample | Soil | Low | 10152009 10:00:00 | 10162009 09:54:00 | | | 10162009 17:48:00 | DB-624 | H-5975 |
| JBR64ME | Field_Sample | Soil | Medium | 10152009 10:00:00 | 10162009 09:54:00 | Purge_and_Trap | 10192009 00:00:00 | 10192009 18:38:00 | DB-624 | C-5973 |
| JBR65 | Field_Sample | Soil | Low | 10152009 10:10:00 | 10162009 09:54:00 | | | 10172009 13:55:00 | DB-624 | C-5973 |

**Lab** A4 (A4 Scientific) **SDG** JBR51 **Case** 39061 **Contract** EPW05036 **Region** 10 **DDTID** 80123 **SOW** SOM01.2

## *Analytical Sample Listing*

BNA

| | | | | | | Extraction | | Analysis | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Number** | **Sample Type** | **Matrix** | **Level** | **Sampling Date** | **Date Received** | **Type** | **Date** | **Date/Time** | **GC Column** | **Intstrument** |
| JBR51 | Field_Sample | Soil | Low | 10092009 16:10:00 | 10132009 10:20:00 | Sonication | 10132009 13:00:00 | 10142009 15:30:00 | HP-5MS | D-5973 |
| JBR51MS | Matrix_Spike | Soil | Low | 10092009 16:10:00 | 10132009 10:20:00 | Sonication | 10132009 13:00:00 | 10142009 18:21:00 | HP-5MS | D-5973 |
| JBR51MSD | Matrix_Spike_Duplicate | Soil | Low | 10092009 16:10:00 | 10132009 10:20:00 | Sonication | 10132009 13:00:00 | 10142009 18:55:00 | HP-5MS | D-5973 |
| JBR52 | Field_Sample | Soil | Low | 10102009 13:45:00 | 10132009 10:20:00 | Sonication | 10132009 13:00:00 | 10142009 21:23:00 | HP-5MS | D-5973 |
| JBR53 | Field_Sample | Soil | Low | 10102009 17:00:00 | 10132009 10:20:00 | Sonication | 10132009 13:00:00 | 10142009 14:56:00 | HP-5MS | D-5973 |
| JBR55 | Field_Sample | Soil | Medium | 10122009 12:00:00 | 10132009 10:20:00 | Sonication | 10132009 13:00:00 | 10142009 16:04:00 | HP-5MS | D-5973 |
| JBR55DL | Field_Sample | Soil | Medium | 10122009 12:00:00 | 10132009 10:20:00 | Sonication | 10132009 13:00:00 | 10142009 17:48:00 | HP-5MS | D-5973 |
| JBR55MS | Matrix_Spike | Soil | Medium | 10122009 12:00:00 | 10132009 10:20:00 | Sonication | 10132009 13:00:00 | 10142009 16:39:00 | HP-5MS | D-5973 |
| JBR55MSD | Matrix_Spike_Duplicate | Soil | Medium | 10122009 12:00:00 | 10132009 10:20:00 | Sonication | 10132009 13:00:00 | 10142009 17:13:00 | HP-5MS | D-5973 |
| JBR56 | Field_Sample | Soil | Low | 10142009 10:00:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10172009 21:06:00 | HP-5MS | D-5973 |
| JBR57 | Field_Sample | Soil | Low | 10142009 10:10:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10172009 15:34:00 | HP-5MS | D-5973 |
| JBR57DL | Field_Sample | Soil | Low | 10142009 10:10:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10172009 18:21:00 | HP-5MS | D-5973 |
| JBR59 | Field_Sample | Soil | Low | 10142009 12:45:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10172009 16:07:00 | HP-5MS | D-5973 |
| JBR59DL | Field_Sample | Soil | Low | 10142009 12:45:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10172009 18:54:00 | HP-5MS | D-5973 |
| JBR60 | Field_Sample | Soil | Low | 10142009 12:55:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10172009 21:39:00 | HP-5MS | D-5973 |
| JBR61 | Field_Sample | Soil | Low | 10142009 13:05:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10172009 17:48:00 | HP-5MS | D-5973 |
| JBR62 | Field_Sample | Soil | Low | 10152009 09:40:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10172009 19:26:00 | HP-5MS | D-5973 |
| JBR63 | Field_Sample | Soil | Low | 10152009 09:50:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10172009 19:59:00 | HP-5MS | D-5973 |
| JBR64 | Field_Sample | Soil | Low | 10152009 10:00:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10172009 16:40:00 | HP-5MS | D-5973 |
| JBR65 | Field_Sample | Soil | Low | 10152009 10:10:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10172009 20:32:00 | HP-5MS | D-5973 |

**Lab** A4 (A4 Scientific) **SDG** JBR27 **Case** 39061 **Contract** EPW05036 **Region** 10 **DDTID** 79401 **SOW** SOM01.2

## *Analytical Sample Listing*

LOW MEDIUM VOAS

| | | | | | | Extraction | | Analysis | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Number** | **Sample Type** | **Matrix** | **Level** | **Sampling Date** | **Date Received** | **Type** | **Date** | **Date/Time** | **GC Column** | **Intstrument** |
| JBR51 | Field_Sample | Soil | | 10092009 16:10:00 | 10132009 10:20:00 | Sonication | 10132009 12:00:00 | 10142009 18:35:28 | DB-XLB | F-6890A |
| JBR51 | Field_Sample | Soil | | 10092009 16:10:00 | 10132009 10:20:00 | Sonication | 10132009 12:00:00 | 10142009 19:06:39 | DB-35MS | F-6890B |
| JBR51MS | Matrix_Spike | Soil | | 10092009 16:10:00 | 10132009 10:20:00 | Sonication | 10132009 12:00:00 | 10142009 19:06:39 | DB-XLB | F-6890A |
| JBR51MS | Matrix_Spike | Soil | | 10092009 16:10:00 | 10132009 10:20:00 | Sonication | 10132009 12:00:00 | 10142009 19:37:34 | DB-35MS | F-6890B |
| JBR51MSD | Matrix_Spike_Duplicate | Soil | | 10092009 16:10:00 | 10132009 10:20:00 | Sonication | 10132009 12:00:00 | 10142009 19:37:34 | DB-XLB | F-6890A |
| JBR51MSD | Matrix_Spike_Duplicate | Soil | | 10092009 16:10:00 | 10132009 10:20:00 | Sonication | 10132009 12:00:00 | 10142009 20:08:45 | DB-35MS | F-6890B |
| JBR52 | Field_Sample | Soil | | 10102009 13:45:00 | 10132009 10:20:00 | Sonication | 10132009 12:00:00 | 10142009 20:08:45 | DB-XLB | F-6890A |
| JBR52 | Field_Sample | Soil | | 10102009 13:45:00 | 10132009 10:20:00 | Sonication | 10132009 12:00:00 | 10142009 20:39:42 | DB-35MS | F-6890B |
| JBR53 | Field_Sample | Soil | | 10102009 17:00:00 | 10132009 10:20:00 | Sonication | 10132009 12:00:00 | 10142009 20:39:42 | DB-XLB | F-6890A |
| JBR53 | Field_Sample | Soil | | 10102009 17:00:00 | 10132009 10:20:00 | Sonication | 10132009 12:00:00 | 10142009 21:10:49 | DB-35MS | F-6890B |
| JBR55 | Field_Sample | Soil | | 10122009 12:00:00 | 10132009 10:20:00 | Sonication | 10132009 12:00:00 | 10142009 21:10:49 | DB-XLB | F-6890A |
| JBR55 | Field_Sample | Soil | | 10122009 12:00:00 | 10132009 10:20:00 | Sonication | 10132009 12:00:00 | 10142009 21:41:43 | DB-35MS | F-6890B |
| JBR55DL | Field_Sample | Soil | | 10122009 12:00:00 | 10132009 10:20:00 | Sonication | 10132009 12:00:00 | 10142009 21:41:43 | DB-XLB | F-6890A |
| JBR55DL | Field_Sample | Soil | | 10122009 12:00:00 | 10132009 10:20:00 | Sonication | 10132009 12:00:00 | 10142009 22:12:00 | DB-35MS | F-6890B |
| JBR56 | Field_Sample | Soil | | 10142009 10:00:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10162009 18:53:40 | DB-XLB | F-6890A |
| JBR56 | Field_Sample | Soil | | 10142009 10:00:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10162009 19:24:35 | DB-35MS | F-6890B |
| JBR57 | Field_Sample | Soil | | 10142009 10:10:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10162009 19:24:35 | DB-XLB | F-6890A |
| JBR57 | Field_Sample | Soil | | 10142009 10:10:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10162009 19:55:43 | DB-35MS | F-6890B |
| JBR59 | Field_Sample | Soil | | 10142009 12:45:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10162009 20:26:36 | DB-XLB | F-6890A |
| JBR59 | Field_Sample | Soil | | 10142009 12:45:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10162009 20:57:42 | DB-35MS | F-6890B |
| JBR60 | Field_Sample | Soil | | 10142009 12:55:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10162009 21:28:36 | DB-XLB | F-6890A |
| JBR60 | Field_Sample | Soil | | 10142009 12:55:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10162009 21:59:41 | DB-35MS | F-6890B |
| JBR61 | Field_Sample | Soil | | 10142009 13:05:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10162009 21:59:41 | DB-XLB | F-6890A |
| JBR61 | Field_Sample | Soil | | 10142009 13:05:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10162009 22:30:00 | DB-35MS | F-6890B |
| JBR61DL | Field_Sample | Soil | | 10142009 13:05:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10162009 22:30:00 | DB-XLB | F-6890A |
| JBR61DL | Field_Sample | Soil | | 10142009 13:05:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10162009 23:01:00 | DB-35MS | F-6890B |
| JBR62 | Field_Sample | Soil | | 10152009 09:40:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10162009 23:01:00 | DB-XLB | F-6890A |

**Lab** A4 (A4 Scientific) **SDG** JBR27 **Case** 39061 **Contract** EPW05036 **Region** 10 **DDTID** 79401 **SOW** SOM01.2

## *Analytical Sample Listing*

LOW MEDIUM VOAS

| | | | | | | Extraction | | Analysis | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Number** | **Sample Type** | **Matrix** | **Level** | **Sampling Date** | **Date Received** | **Type** | **Date** | **Date/Time** | **GC Column** | **Intstrument** |
| JBR62 | Field_Sample | Soil | | 10152009 09:40:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10162009 23:32:00 | DB-35MS | F-6890B |
| JBR63 | Field_Sample | Soil | | 10152009 09:50:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10162009 23:32:00 | DB-XLB | F-6890A |
| JBR63 | Field_Sample | Soil | | 10152009 09:50:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10172009 00:03:00 | DB-35MS | F-6890B |
| JBR64 | Field_Sample | Soil | | 10152009 10:00:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10172009 00:03:00 | DB-XLB | F-6890A |
| JBR64 | Field_Sample | Soil | | 10152009 10:00:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10172009 00:34:00 | DB-35MS | F-6890B |
| JBR65 | Field_Sample | Soil | | 10152009 10:10:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10172009 00:34:00 | DB-XLB | F-6890A |
| JBR65 | Field_Sample | Soil | | 10152009 10:10:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10172009 01:05:33 | DB-35MS | F-6890B |

**Lab** A4 (A4 Scientific) **SDG** JBR27 **Case** 39061 **Contract** EPW05036 **Region** 10 **DDTID** 79401 **SOW** SOM01.2

## *Analytical Sample Listing*

LOW MEDIUM VOAS

| | | | | | | Extraction | | Analysis | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Number** | **Sample Type** | **Matrix** | **Level** | **Sampling Date** | **Date Received** | **Type** | **Date** | **Date/Time** | **GC Column** | **Intstrument** |
| JBR27 | Field_Sample | Soil | Low | 09232009 16:55:00 | 09252009 09:58:00 | | | 09272009 15:20:00 | DB-624 | F-5973 |
| JBR27MS | Matrix_Spike | Soil | Low | 09232009 16:55:00 | 09252009 09:58:00 | | | 09272009 18:10:00 | DB-624 | F-5973 |
| JBR27MSD | Matrix_Spike_Duplicate | Soil | Low | 09232009 16:55:00 | 09252009 09:58:00 | | | 09272009 18:36:00 | DB-624 | F-5973 |
| JBR28 | Field_Sample | Soil | Low | 09252009 07:45:00 | 09262009 09:35:00 | | | 09272009 15:50:00 | DB-624 | F-5973 |
| JBR29 | Field_Sample | Soil | Low | 09252009 07:48:00 | 09262009 09:35:00 | | | 09272009 16:20:00 | DB-624 | F-5973 |
| JBR29ME | Field_Sample | Soil | Medium | 09252009 07:48:00 | 09262009 09:35:00 | Purge_and_Trap | 09272009 00:00:00 | 09272009 16:55:00 | DB-624 | H-5975 |
| JBR29MEMS | Matrix_Spike | Soil | Medium | 09252009 07:48:00 | 09262009 09:35:00 | Purge_and_Trap | 09272009 00:00:00 | 09272009 17:25:00 | DB-624 | H-5975 |
| JBR29MEMSD | Matrix_Spike_Duplicate | Soil | Medium | 09252009 07:48:00 | 09262009 09:35:00 | Purge_and_Trap | 09272009 00:00:00 | 09272009 17:51:00 | DB-624 | H-5975 |
| JBRA7 | Field_Sample | Water | Low | 09232009 16:25:00 | 09252009 09:58:00 | | | 09252009 18:23:00 | DB-624 | C-5973 |

**Lab** A4 (A4 Scientific) **SDG** JBR30 **Case** 39061 **Contract** EPW05036 **Region** 10 **DDTID** 79749 **SOW** SOM01.2

## *Analytical Sample Listing*

LOW MEDIUM VOAS

| | | | | | | Extraction | | Analysis | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Number** | **Sample Type** | **Matrix** | **Level** | **Sampling Date** | **Date Received** | **Type** | **Date** | **Date/Time** | **GC Column** | **Intstrument** |
| JBR27 | Field_Sample | Soil | Medium | 09232009 16:55:00 | 09252009 09:58:00 | Sonication | 09252009 11:45:00 | 09262009 15:34:00 | HP-5MS | G-5973 |
| JBR27DL | Field_Sample | Soil | Medium | 09232009 16:55:00 | 09252009 09:58:00 | Sonication | 09252009 11:45:00 | 09262009 16:06:00 | HP-5MS | G-5973 |
| JBR27MS | Matrix_Spike | Soil | Medium | 09232009 16:55:00 | 09252009 09:58:00 | Sonication | 09252009 11:45:00 | 09262009 16:39:00 | HP-5MS | G-5973 |
| JBR27MSD | Matrix_Spike_Duplicate | Soil | Medium | 09232009 16:55:00 | 09252009 09:58:00 | Sonication | 09252009 11:45:00 | 09262009 17:11:00 | HP-5MS | G-5973 |
| JBR28 | Field_Sample | Soil | Low | 09252009 07:45:00 | 09262009 09:35:00 | Sonication | 09262009 10:45:00 | 09262009 20:25:00 | HP-5MS | G-5973 |
| JBR28DL | Field_Sample | Soil | Low | 09252009 07:45:00 | 09262009 09:35:00 | Sonication | 09262009 10:45:00 | 09262009 18:48:00 | HP-5MS | G-5973 |
| JBR28MS | Matrix_Spike | Soil | Low | 09252009 07:45:00 | 09262009 09:35:00 | Sonication | 09262009 10:45:00 | 10012009 17:40:00 | HP-5MS | D-5973 |
| JBR28MSD | Matrix_Spike_Duplicate | Soil | Low | 09252009 07:45:00 | 09262009 09:35:00 | Sonication | 09262009 10:45:00 | 10012009 18:11:00 | HP-5MS | D-5973 |
| JBR29 | Field_Sample | Soil | Medium | 09252009 07:48:00 | 09262009 09:35:00 | Sonication | 09262009 10:45:00 | 09262009 19:20:00 | HP-5MS | G-5973 |
| JBR29DL | Field_Sample | Soil | Medium | 09252009 07:48:00 | 09262009 09:35:00 | Sonication | 09262009 10:45:00 | 09262009 20:57:00 | HP-5MS | G-5973 |

| PCBS | | | | | | Extraction | | Analysis | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Number** | **Sample Type** | **Matrix** | **Level** | **Sampling Date** | **Date Received** | **Type** | **Date** | **Date/Time** | **GC Column** | **Intstrument** |
| JBR27 | Field_Sample | Soil | | 09232009 16:55:00 | 09252009 09:58:00 | Sonication | 09252009 11:45:00 | 09262009 10:19:00 | DB-XLB | F-6890A |
| JBR27 | Field_Sample | Soil | | 09232009 16:55:00 | 09252009 09:58:00 | Sonication | 09252009 11:45:00 | 09262009 10:50:00 | DB-35MS | F-6890B |
| JBR27DL | Field_Sample | Soil | | 09232009 16:55:00 | 09252009 09:58:00 | Sonication | 09252009 11:45:00 | 09262009 10:50:00 | DB-XLB | F-6890A |
| JBR27DL | Field_Sample | Soil | | 09232009 16:55:00 | 09252009 09:58:00 | Sonication | 09252009 11:45:00 | 09262009 11:21:00 | DB-35MS | F-6890B |
| JBR27MS | Matrix_Spike | Soil | | 09232009 16:55:00 | 09252009 09:58:00 | Sonication | 09252009 11:45:00 | 09262009 11:21:00 | DB-XLB | F-6890A |
| JBR27MS | Matrix_Spike | Soil | | 09232009 16:55:00 | 09252009 09:58:00 | Sonication | 09252009 11:45:00 | 09262009 11:52:00 | DB-35MS | F-6890B |
| JBR27MSD | Matrix_Spike_Duplicate | Soil | | 09232009 16:55:00 | 09252009 09:58:00 | Sonication | 09252009 11:45:00 | 09262009 11:52:00 | DB-XLB | F-6890A |
| JBR27MSD | Matrix_Spike_Duplicate | Soil | | 09232009 16:55:00 | 09252009 09:58:00 | Sonication | 09252009 11:45:00 | 09262009 12:23:00 | DB-35MS | F-6890B |
| JBR28 | Field_Sample | Soil | | 09252009 07:45:00 | 09262009 09:35:00 | Sonication | 09262009 10:45:00 | 09262009 15:04:24 | DB-XLB | F-6890A |
| JBR28 | Field_Sample | Soil | | 09252009 07:45:00 | 09262009 09:35:00 | Sonication | 09262009 10:45:00 | 09262009 15:35:21 | DB-35MS | F-6890B |
| JBR28DL | Field_Sample | Soil | | 09252009 07:45:00 | 09262009 09:35:00 | Sonication | 09262009 10:45:00 | 09262009 16:41:46 | DB-XLB | F-6890A |
| JBR28DL | Field_Sample | Soil | | 09252009 07:45:00 | 09262009 09:35:00 | Sonication | 09262009 10:45:00 | 09262009 17:12:55 | DB-35MS | F-6890B |
| JBR29 | Field_Sample | Soil | | 09252009 07:48:00 | 09262009 09:35:00 | Sonication | 09262009 10:45:00 | 09262009 15:35:21 | DB-XLB | F-6890A |
| JBR29 | Field_Sample | Soil | | 09252009 07:48:00 | 09262009 09:35:00 | Sonication | 09262009 10:45:00 | 09262009 16:06:29 | DB-35MS | F-6890B |

**Lab** A4 (A4 Scientific) **SDG** JBR30 **Case** 39061 **Contract** EPW05036 **Region** 10 **DDTID** 79749 **SOW** SOM01.2

## *Analytical Sample Listing*

LOW MEDIUM VOAS

| | | | | | | Extraction | | Analysis | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Number** | **Sample Type** | **Matrix** | **Level** | **Sampling Date** | **Date Received** | **Type** | **Date** | **Date/Time** | **GC Column** | **Intstrument** |
| JBR30 | Field_Sample | Soil | Low | 09282009 11:15:00 | 10012009 09:51:00 | | | 10012009 11:55:00 | DB-624 | F-5973 |
| JBR32 | Field_Sample | Soil | Low | 09292009 13:00:00 | 10012009 09:51:00 | | | 10012009 12:26:00 | DB-624 | F-5973 |
| JBR32MS | Matrix_Spike | Soil | Low | 09292009 13:00:00 | 10012009 09:51:00 | | | 10012009 12:56:00 | DB-624 | F-5973 |
| JBR32MSD | Matrix_Spike_Duplicate | Soil | Low | 09292009 13:00:00 | 10012009 09:51:00 | | | 10012009 13:22:00 | DB-624 | F-5973 |
| JBR33 | Field_Sample | Soil | Low | 09302009 15:25:00 | 10022009 10:11:00 | | | 10032009 16:56:00 | DB-624 | F-5973 |
| JBR34 | Field_Sample | Soil | Low | 09302009 15:35:00 | 10022009 10:11:00 | | | 10032009 16:29:00 | DB-624 | F-5973 |
| JBR36 | Field_Sample | Soil | Low | 10012009 10:30:00 | 10022009 10:11:00 | | | 10032009 17:49:00 | DB-624 | F-5973 |
| JBR36ME | Field_Sample | Soil | Medium | 10012009 10:30:00 | 10022009 10:11:00 | Purge_and_Trap | 10052009 00:00:00 | 10052009 16:59:00 | DB-624 | H-5975 |
| JBR36MEMS | Matrix_Spike | Soil | Medium | 10012009 10:30:00 | 10022009 10:11:00 | Purge_and_Trap | 10072009 00:00:00 | 10082009 01:01:00 | DB-624 | F-5973 |
| JBR36MEMSD | Matrix_Spike_Duplicate | Soil | Medium | 10012009 10:30:00 | 10022009 10:11:00 | Purge_and_Trap | 10072009 00:00:00 | 10082009 01:28:00 | DB-624 | F-5973 |
| JBR37 | Field_Sample | Soil | Low | 10012009 15:00:00 | 10022009 10:11:00 | | | 10032009 17:23:00 | DB-624 | F-5973 |

**Lab** A4 (A4 Scientific) **SDG** JBR30 **Case** 39061 **Contract** EPW05036 **Region** 10 **DDTID** 79749 **SOW** SOM01.2

## *Analytical Sample Listing*

BNA

| | | | | | | Extraction | | Analysis | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Number** | **Sample Type** | **Matrix** | **Level** | **Sampling Date** | **Date Received** | **Type** | **Date** | **Date/Time** | **GC Column** | **Intstrument** |
| JBR30 | Field_Sample | Soil | Low | 09282009 11:15:00 | 10012009 09:51:00 | Sonication | 10012009 11:00:00 | 10022009 17:28:00 | HP-5MS | D-5973 |
| JBR32 | Field_Sample | Soil | Low | 09292009 13:00:00 | 10012009 09:51:00 | Sonication | 10012009 11:00:00 | 10022009 18:01:00 | HP-5MS | D-5973 |
| JBR32DL | Field_Sample | Soil | Low | 09292009 13:00:00 | 10012009 09:51:00 | Sonication | 10012009 11:00:00 | 10022009 19:43:00 | HP-5MS | D-5973 |
| JBR32MS | Matrix_Spike | Soil | Low | 09292009 13:00:00 | 10012009 09:51:00 | Sonication | 10012009 11:00:00 | 10022009 18:35:00 | HP-5MS | D-5973 |
| JBR32MSD | Matrix_Spike_Duplicate | Soil | Low | 09292009 13:00:00 | 10012009 09:51:00 | Sonication | 10012009 11:00:00 | 10022009 19:09:00 | HP-5MS | D-5973 |
| JBR33 | Field_Sample | Soil | Medium | 09302009 15:25:00 | 10022009 10:11:00 | Sonication | 10022009 14:00:00 | 10032009 19:10:00 | HP-5MS | D-5973 |
| JBR33MS | Matrix_Spike | Soil | Medium | 09302009 15:25:00 | 10022009 10:11:00 | Sonication | 10022009 14:00:00 | 10032009 19:43:00 | HP-5MS | D-5973 |
| JBR33MSD | Matrix_Spike_Duplicate | Soil | Medium | 09302009 15:25:00 | 10022009 10:11:00 | Sonication | 10022009 14:00:00 | 10042009 14:08:00 | HP-5MS | D-5973 |
| JBR34 | Field_Sample | Soil | Low | 09302009 15:35:00 | 10022009 10:11:00 | Sonication | 10022009 14:10:00 | 10042009 14:41:00 | HP-5MS | D-5973 |
| JBR34DL | Field_Sample | Soil | Low | 09302009 15:35:00 | 10022009 10:11:00 | Sonication | 10022009 14:10:00 | 10032009 17:30:00 | HP-5MS | D-5973 |
| JBR36 | Field_Sample | Soil | Medium | 10012009 10:30:00 | 10022009 10:11:00 | Sonication | 10022009 14:00:00 | 10032009 18:03:00 | HP-5MS | D-5973 |
| JBR36DL | Field_Sample | Soil | Medium | 10012009 10:30:00 | 10022009 10:11:00 | Sonication | 10022009 14:00:00 | 10082009 12:27:00 | HP-5MS | D-5973 |
| JBR37 | Field_Sample | Soil | Low | 10012009 15:00:00 | 10022009 10:11:00 | Sonication | 10022009 14:10:00 | 10032009 18:36:00 | HP-5MS | D-5973 |
| JBR37DL | Field_Sample | Soil | Low | 10012009 15:00:00 | 10022009 10:11:00 | Sonication | 10022009 14:10:00 | 10032009 16:22:00 | HP-5MS | D-5973 |

**Lab** A4 (A4 Scientific) **SDG** JBR68 **Case** 39061 **Contract** EPW05036 **Region** 10 **DDTID** 80959 **SOW** SOM01.2

## *DATA REVIEW RESULTS*

| | | | | | | Extraction | | Analysis | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Number** | **Sample Type** | **Matrix** | **Level** | **Sampling Date** | **Date Received** | **Type** | **Date** | **Date/Time** | **GC Column** | **Intstrument** |
| JBR30 | Field_Sample | Soil | | 09282009 11:15:00 | 10012009 09:51:00 | Sonication | 10012009 11:00:00 | 10022009 11:39:00 | DB-XLB | F-6890A |
| JBR30 | Field_Sample | Soil | | 09282009 11:15:00 | 10012009 09:51:00 | Sonication | 10012009 11:00:00 | 10022009 12:10:00 | DB-35MS | F-6890B |
| JBR32 | Field_Sample | Soil | | 09292009 13:00:00 | 10012009 09:51:00 | Sonication | 10012009 11:00:00 | 10022009 12:10:00 | DB-XLB | F-6890A |
| JBR32 | Field_Sample | Soil | | 09292009 13:00:00 | 10012009 09:51:00 | Sonication | 10012009 11:00:00 | 10022009 12:41:00 | DB-35MS | F-6890B |
| JBR32MS | Matrix_Spike | Soil | | 09292009 13:00:00 | 10012009 09:51:00 | Sonication | 10012009 11:00:00 | 10022009 12:41:00 | DB-XLB | F-6890A |
| JBR32MS | Matrix_Spike | Soil | | 09292009 13:00:00 | 10012009 09:51:00 | Sonication | 10012009 11:00:00 | 10022009 13:12:41 | DB-35MS | F-6890B |
| JBR32MSD | Matrix_Spike_Duplicate | Soil | | 09292009 13:00:00 | 10012009 09:51:00 | Sonication | 10012009 11:00:00 | 10022009 13:12:41 | DB-XLB | F-6890A |
| JBR32MSD | Matrix_Spike_Duplicate | Soil | | 09292009 13:00:00 | 10012009 09:51:00 | Sonication | 10012009 11:00:00 | 10022009 13:43:39 | DB-35MS | F-6890B |
| JBR33 | Field_Sample | Soil | | 09302009 15:25:00 | 10022009 10:11:00 | Sonication | 10022009 14:10:00 | 10032009 17:25:38 | DB-35MS | F-6890B |
| JBR33 | Field_Sample | Soil | | 09302009 15:25:00 | 10022009 10:11:00 | Sonication | 10022009 14:10:00 | 10032009 16:54:48 | DB-XLB | F-6890A |
| JBR34 | Field_Sample | Soil | | 09302009 15:35:00 | 10022009 10:11:00 | Sonication | 10022009 14:10:00 | 10032009 17:56:46 | DB-35MS | F-6890B |
| JBR34 | Field_Sample | Soil | | 09302009 15:35:00 | 10022009 10:11:00 | Sonication | 10022009 14:10:00 | 10032009 17:25:38 | DB-XLB | F-6890A |
| JBR36 | Field_Sample | Soil | | 10012009 10:30:00 | 10022009 10:11:00 | Sonication | 10022009 14:10:00 | 10032009 18:27:38 | DB-35MS | F-6890B |
| JBR36 | Field_Sample | Soil | | 10012009 10:30:00 | 10022009 10:11:00 | Sonication | 10022009 14:10:00 | 10032009 17:56:46 | DB-XLB | F-6890A |
| JBR36DL | Field_Sample | Soil | | 10012009 10:30:00 | 10022009 10:11:00 | Sonication | 10022009 14:10:00 | 10042009 09:16:58 | DB-35MS | F-6890B |
| JBR36DL | Field_Sample | Soil | | 10012009 10:30:00 | 10022009 10:11:00 | Sonication | 10022009 14:10:00 | 10042009 08:46:07 | DB-XLB | F-6890A |
| JBR37 | Field_Sample | Soil | | 10012009 15:00:00 | 10022009 10:11:00 | Sonication | 10022009 14:10:00 | 10032009 18:27:38 | DB-XLB | F-6890A |
| JBR37 | Field_Sample | Soil | | 10012009 15:00:00 | 10022009 10:11:00 | Sonication | 10022009 14:10:00 | 10032009 18:58:43 | DB-35MS | F-6890B |

**Lab** A4 (A4 Scientific) **SDG** JBR68 **Case** 39061 **Contract** EPW05036 **Region** 10 **DDTID** 80959 **SOW** SOM01.2

***DATA REVIEW RESULTS***

| **Blanks** | **VOA_LOW_MED** |
|---|---|
| VLB11 | The following volatile samples have common contaminant analyte concentrations reported less than 2x the CRQL. The associated method blank common contaminant concentration is less than 2x the concentration criteria Detected compounds are qualified U. Nondetected compounds are not qualified. Reported sample concentrationshave been elevated to the CRQL. |
| | **Methylene chloride** JBR68, JBR73, JBR78, JBR83, JBR84 |

| **Continuing Calibration Verification** | **BNA** |
|---|---|
| BC10 | The following semivolatile samples are associated with an opening or closing CCV percent difference (%D) outside criteria. Detected compounds are qualified J. Nondetected compounds are qualified UJ. |
| | JBR73, JBR84, JBR84DL, SBLK7R, SBLK7T |
| | **2,4-Dinitrotoluene** SSTD0204O, SSTD0204P, SSTD0204R |
| | JBR73, JBR84, JBR84DL, SBLK7R, SBLK7T |
| | **Indeno (1,2,3-cd) pyrene** SSTD0204O, SSTD0204R |
| | JBR73, JBR84, SBLK7R |
| | **Benzo (b) fluoranthene** SSTD0204R |
| | JBR84 |
| | **Dibenzo (a,h) anthracene** SSTD0204O |
| | JBR73, SBLK7R |

| **DMC/Surrogate** | **BNA** |
|---|---|
| BDSS14 | The following semivolatile samples have deuterated monitoring compound recovery above the upper limit of the criteria window. Detected compounds are qualified J. Nondetected compounds are not qualified. |
| | **Phenol-d5** JBR84 |
| | Benzaldehyde, Phenol |
| | **4,6-Dinitro-2-methylphenol-d2** JBR84 |
| | 4,6-Dinitro-2-methylphenol |
| | **4-Nitrophenol-d4** JBR84 |
| | 2,4-Dinitrophenol, 2-Nitroaniline, 3-Nitroaniline, 4-Nitroaniline, 4-Nitrophenol |

## *DATA REVIEW RESULTS*

| **DMC/Surrogate** | **VOA_LOW_MED** |
|---|---|
| VDSS3 | The following volatile samples have DMC/SMC recoveries above the upper limit of the criteria window. Detected compounds are qualified J. Nondetected compounds are not qualified. |
| | **1,1-Dichloroethene-d2** JBR73MS, JBR73MSD |
| | 1,1-Dichloroethene, cis-1,2-Dichloroethene, trans-1,2-Dichloroethene |

| **Detection Limit** | **AROCLOR** |
|---|---|
| ADL1 | The following aroclor samples have analyte concentrations below the quantitation limit (CRQL). Detected compounds are qualified J. Nondetected compounds are not qualified. |
| | **Aroclor-1260** ALCSLP, ALCSLQ |
| | **Aroclor-1016** ALCSLP, ALCSLQ |
| **Detection Limit** | **BNA** |
| BDL1 | The following semivolatile samples have analyte concentrations below the quantitaion limit (CRQL). Detected compounds are qualified J. Nondetected compounds are not qualified. |
| | JBR73, JBR84, JBR84DL |
| | **Phenol** JBR73 |
| | **Bis (2-Ethylhexyl) phthalate** JBR84 |
| | **Anthracene** JBR84DL |
| | **Benzo (b) fluoranthene** JBR84 |
| | **Benzo (k) fluoranthene** JBR84 |
| | **Acenaphthene** JBR73 |
| | **Phenanthrene** JBR73 |
| | **9H-Carbazole** JBR84DL |
| | **Naphthalene** JBR73 |
| | **1,1'-Biphenyl** JBR84DL |
| **Detection Limit** | **VOA_LOW_MED** |
| VDL1 | The following volatile samples have analyte concentrations below the quantitation limit (CRQL). Detected compounds are qualified J. Nondetected compounds are not qualified. |
| | JBR73, JBR73MS, JBR73MSD, JBR78, JBR84, JBR84DL, VBLK38 |
| | **Ethylbenzene** JBR84DL |

| | |
|---|---|
| | **Toluene** JBR84DL |
| | **trans-1,2-Dichloroethene** JBR84 |
| | **m,p-Xylene** JBR84DL |
| | **Vinyl Chloride** JBR73, JBR73MS, JBR73MSD |
| | **Methylene chloride** JBR78, VBLK38 |
| | **o-Xylene** JBR84DL |

| **Initial Calibration** | **BNA** |
|---|---|
| BC5 | The following semivolatile samples are associated with an initial calibration percent relative standard deviation (%RSD) outside criteria. Detected compounds are qualified J. Nondetected compounds are not qualified. Use professional judgement to qualify non-detected compounds. |
| | JBR73, JBR84, JBR84DL, SBLK7R, SBLK7T |
| | **2,4-Dinitrotoluene** SSTD0054C |
| | JBR73, JBR84, JBR84DL, SBLK7R, SBLK7T |
| | **Indeno (1,2,3-cd) pyrene** SSTD0054C |
| | JBR73, JBR84, JBR84DL, SBLK7R, SBLK7T |
| | **Dibenzo (a,h) anthracene** SSTD0054C |
| | JBR73, JBR84, JBR84DL, SBLK7R, SBLK7T |
| | **Pentachlorophenol** SSTD0054C |
| | JBR73, JBR84, JBR84DL, SBLK7R, SBLK7T |

| **Blanks** | **VOA_LOW_MED** |
|---|---|
| VLB11 | The following volatile samples have common contaminant analyte concentrations reported less than 2x the CRQL. The associated method blank common contaminant concentration is less than 2x the concentration criteria Detected compounds are qualified U. Nondetected compounds are not qualified. Reported sample concentrationshave been elevated to the CRQL. |
| | **Methylene chloride** JBR80, JBR81, JBR82, JBR88, JBR89, JBR91, JBR92, JBR93 |

| **Blanks** | **VOA_LOW_MED** |
|---|---|
| VLB46 | The following volatile samples have common contaminant analyte concentrations reported less than 2x the CRQL. The associated storage blank common contaminant concentration is less than 2x the concentration criteria Detected compounds are qualified U. Nondetected compounds are not qualified. Reported sample concentrations have been elevated to the CRQL. |

**Lab** A4 (A4 Scientific) **SDG** JBR68 **Case** 39061 **Contract** EPW05036 **Region** 10 **DDTID** 80959 **SOW** SOM01.2

***DATA REVIEW RESULTS***

| | |
|---|---|
| | **Methylene chloride** JBR67, JBR70, JBR72, JBR74, JBR76, JBR77ME, JBR77MEMS, JBR77MEMSD, JBR80, JBR80ME, JBR81, JBR81ME, JBR82, JBR88, JBR89, JBR91, JBR92, JBR93 |
| **Blanks** | **VOA_LOW_MED** |
| VLB55 | The following volatile samples have common contaminant analyte concentrations reported greater than or equal to 2x the CRQL. The associated storage blank common contaminant concentration is less than 2x the concentration criteria. Detected and nondetected compounds are not qualified. |
| | **Methylene chloride** JBR66, JBR66MS, JBR66MSD, JBR75, JBR77, JBR79 |

**Lab** A4 (A4 Scientific) **SDG** JBR66 **Case** 39061 **Contract** EPW05036 **Region** 10 **DDTID** 80959 **SOW** SOM01.2

***Data Review Results***

Continuing Calibration Verification

| **Continuing Calibration Verification** | **BNA** |
|---|---|
| BC10 | The following semivolatile samples are associated with an opening or closing CCV percent difference (%D) outside criteria. Detected compounds are qualified J. Nondetected compounds are qualified UJ. |
| | JBR66, JBR67, JBR67MS, JBR67MSD, JBR69, JBR70, JBR71, JBR72, JBR74, JBR75, JBR76, JBR77, JBR79, JBR79DL, JBR80, JBR81, JBR82, JBR88, JBR89, JBR91, JBR92, JBR93, SBLK5Y, SBLK5Z, SBLK6B |
| | **2,4-Dinitrotoluene** SSTD0204O, SSTD0204P |
| | JBR69, JBR70, JBR72, JBR76, JBR79DL, JBR81, JBR82, SBLK5Z |
| | **Indeno (1,2,3-cd) pyrene** SSTD0204O, SSTD0204U |
| | JBR69, JBR70, JBR72, JBR76, JBR79DL, JBR88, JBR89, JBR91, JBR92, JBR93, SBLK6B |
| | **Benzo (b) fluoranthene** SSTD0204U |
| | JBR88, JBR89, JBR91, JBR92, JBR93, SBLK6B |
| | **Dibenzo (a,h) anthracene** SSTD0204O |
| | JBR69, JBR70, JBR72, JBR76, JBR79DL |
| | **Pentachlorophenol** SSTD0204N |
| | JBR66, JBR67, JBR67MS, JBR67MSD, JBR71, JBR74, JBR75, JBR77, JBR79, JBR80, SBLK5Y |
| **Continuing Calibration Verification** | **VOA_LOW_MED** |
| VC8 | The following volatile samples are associated with an opening or closing CCV percent difference (%D) outside criteria. Detected compounds are qualified J. Nondetected compounds are qualified UJ. |
| | JBR81, JBR82, VBLKDC |
| | **m,p-Xylene** VSTD025DC |
| | JBR81, JBR82, VBLKDC |

**Lab** A4 (A4 Scientific) **SDG** JBR66 **Case** 39061 **Contract** EPW05036 **Region** 10 **DDTID** 80959 **SOW** SOM01.2

***Data Review Results***

DMC/Surrogate

| DMC/Surrogate | BNA |
|---|---|
| BDSS15 | The following semivolatile samples have deuterated monitoring compound recovery below the lower limit of the criteria window. Detected compounds are qualified J. Nondetected compounds are qualified UJ. |
| | JBR67, JBR67MS, JBR67MSD, JBR69, JBR70, JBR71, JBR72, JBR74, JBR75, JBR76, JBR77, JBR79, JBR80, JBR81, JBR82, JBR88, JBR89, JBR91, JBR92, JBR93 |
| | **Pyrene-d10** JBR71 |
| | Benzo(a)anthracene, Chrysene, Fluoranthene, Pyrene |
| | **4-Chloroaniline-d4** JBR67, JBR67MS, JBR67MSD, JBR69, JBR70, JBR72, JBR76, JBR79, JBR80, JBR82, JBR88, JBR89, JBR91, JBR92, JBR93 |
| | 3,3'-Dichlorobenzidine, 4-Chloroaniline, Hexachlorocyclopentadiene |
| | **Benzo (a) pyrene-d12** JBR67, JBR67MS, JBR67MSD, JBR69, JBR70, JBR71, JBR74, JBR75, JBR76, JBR77, JBR79, JBR80, JBR81, JBR82 |
| | Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(g,h,i)perylene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Indeno(1,2,3-cd)pyrene |
| **DMC/Surrogate** | **VOA_LOW_MED** |
| VDSS3 | The following volatile samples have DMC/SMC recoveries above the upper limit of the criteria window. Detected compounds are qualified J. Nondetected compounds are not qualified. |
| | **1,4-Dioxane-d8** JBR82 |
| | 1,4-Dioxane |
| **DMC/Surrogate** | **VOA_LOW_MED** |
| VDSS4 | The following volatile samples have one or more DMC/SMC recovery values is less than the primary lower limit but greater than or equal to the expanded lower limit of the criteria window. Detected compounds are qualified J. Nondetected compounds are qualified UJ. |
| | JBR72, JBR76, JBR77MEMS, JBR77MEMSD |
| | **1,2-Dichloroethane-d4** JBR72 |
| | 1,1,1-Trichloroethane, 1,1,2-Trichloro-1,2,2-trifluoroethane, 1,2-Dibromoethane, 1,2-Dichloroethane, Carbon tetrachloride, Methyl acetate, Methyl tert-butyl ether, Methylene chloride, Trichlorofluoromethane |
| | **Chloroethane-d5** JBR77MEMS, JBR77MEMSD |
| | Bromomethane, Carbon disulfide, Chloroethane, Chloromethane, Dichlorodifluoromethane |
| | **Vinyl chloride-d3** JBR72, JBR76 |
| | Vinyl chloride |

**Lab** A4 (A4 Scientific) **SDG** JBR66 **Case** 39061 **Contract** EPW05036 **Region** 10 **DDTID** 80959 **SOW** SOM01.2

## *Data Review Results*

Detection Limit

| Detection Limit | AROCLOR |
|---|---|
| ADL1 | The following aroclor samples have analyte concentrations below the quantitation limit (CRQL). Detected compounds are qualified J. Nondetected compounds are not qualified. |
| | JBR67, JBR67MS, JBR67MSD, JBR77, JBR80, JBR91, JBR92 |
| | **Aroclor-1260** ALCSMF, ALCSMK |
| | **Aroclor-1254** JBR67, JBR67MS, JBR67MSD, JBR77, JBR80, JBR91, JBR92 |
| | **Aroclor-1016** ALCSMF |
| **Detection Limit** | **AROCLOR** |
| ADL3 | The relative percent difference between analyte results for the following aroclor samples is greater than 25%. Detected and nondetected compounds are not qualified. |
| | **Aroclor-1254** JBR67MSD, JBR80, JBR88, JBR91, JBR92 |
| **Detection Limit** | **BNA** |
| BDL1 | The following semivolatile samples have analyte concentrations below the quantitaion limit (CRQL). Detected compounds are qualified J. Nondetected compounds are not qualified. |
| | JBR67, JBR69, JBR70, JBR71, JBR72, JBR74, JBR75, JBR76, JBR77, JBR79, JBR79DL, JBR80, JBR81, JBR82, JBR88, JBR89, JBR92, JBR93 |
| | **Phenol** JBR69, JBR70, JBR71, JBR72, JBR74, JBR75, JBR76, JBR77, JBR79, JBR80, JBR81, JBR82 |
| | **Anthracene** JBR70, JBR75, JBR79DL |
| | **Pyrene** JBR67, JBR80, JBR88, JBR89, JBR92, JBR93 |
| | **Dibenzofuran** JBR70, JBR75, JBR79DL |
| | **Fluoranthene** JBR67, JBR80, JBR88, JBR89, JBR92 |
| | **Chrysene** JBR70, JBR75 |
| | **Benzo (a) anthracene** JBR70, JBR75 |
| | **Acenaphthene** JBR80 |
| | **Phenanthrene** JBR74, JBR88 |
| | **Fluorene** JBR70, JBR79DL, JBR80 |
| | **9H-Carbazole** JBR79 |
| | **2-Methylnaphthalene** JBR79 |
| | **1,1'-Biphenyl** JBR79 |
| | **Acetophenone** JBR74, JBR75, JBR76, JBR77, JBR79, JBR80 |

**Lab** A4 (A4 Scientific) **SDG** JBR66 **Case** 39061 **Contract** EPW05036 **Region** 10 **DDTID** 80959 **SOW** SOM01.2

## *Data Review Results*

Detection Limit

| Detection Limit | VOA_LOW_MED |
|---|---|
| VDL1 | The following volatile samples have analyte concentrations below the quantitation limit (CRQL). Detected compounds are qualified J. Nondetected compounds are not qualified. |
| | JBR66, JBR66MS, JBR66MSD, JBR67, JBR69, JBR70, JBR71, JBR72, JBR74, JBR75, JBR76, JBR77, JBR77ME, JBR80, JBR80ME, JBR81, JBR81ME, JBR82, JBR88, JBR89, JBR91, JBR92, JBR93, VBLKCZ, VBLKDC, VBLKDI, VHBLK01 |
| | **Ethylbenzene** JBR76 |
| | **Toluene** JBR77 |
| | **Tetrachloroethene** JBR66, JBR66MS, JBR66MSD, JBR70, JBR72 |
| | **cis-1,2-Dichloroethene** JBR66, JBR66MS, JBR66MSD, JBR67, JBR70, JBR71, JBR72, JBR82 |
| | **Acetone** JBR81, JBR82 |
| | **Methylene chloride** JBR67, JBR70, JBR72, JBR74, JBR77ME, JBR80, JBR80ME, JBR81, JBR81ME, JBR88, JBR89, JBR91, JBR92, JBR93, VBLKCZ, VBLKDC, VBLKDI, VHBLK01 |
| | **1,1,2-Trichloroethane** JBR80 |
| | **Trichloroethene** JBR66, JBR67, JBR69, JBR75, JBR76, JBR82 |
| | **o-Xylene** JBR76 |

**Lab** A4 (A4 Scientific) **SDG** JBR27 **Case** 39061 **Contract** EPW05036 **Region** 10 **DDTID** 79401 **SOW** SOM01.2

## *Analytical Sample Listing*

BNA

| **Initial Calibration** | **BNA** |
|---|---|
| BC5 | The following semivolatile samples are associated with an initial calibration percent relative standard deviation (%RSD) outside criteria. Detected compounds are qualified J. Nondetected compounds are not qualified. Use professional judgement to qualify non-detected compounds. |
| | JBR66, JBR67, JBR67MS, JBR67MSD, JBR69, JBR70, JBR71, JBR72, JBR74, JBR75, JBR76, JBR77, JBR79, JBR79DL, JBR80, JBR81, JBR82, JBR88, JBR89, JBR91, JBR92, JBR93, SBLK5Y, SBLK5Z, SBLK6B |
| | **2,4-Dinitrotoluene** SSTD0054C |
| | JBR66, JBR67, JBR67MS, JBR67MSD, JBR69, JBR70, JBR71, JBR72, JBR74, JBR75, JBR76, JBR77, JBR79, JBR79DL, JBR80, JBR81, JBR82, JBR88, JBR89, JBR91, JBR92, JBR93, SBLK5Y, SBLK5Z, SBLK6B |
| | **Indeno (1,2,3-cd) pyrene** SSTD0054C |
| | JBR66, JBR67, JBR67MS, JBR67MSD, JBR69, JBR70, JBR71, JBR72, JBR74, JBR75, JBR76, JBR77, JBR79, JBR79DL, JBR80, JBR81, JBR82, JBR88, JBR89, JBR91, JBR92, JBR93, SBLK5Y, SBLK5Z, SBLK6B |
| | **Dibenzo (a,h) anthracene** SSTD0054C |
| | JBR66, JBR67, JBR67MS, JBR67MSD, JBR69, JBR70, JBR71, JBR72, JBR74, JBR75, JBR76, JBR77, JBR79, JBR79DL, JBR80, JBR81, JBR82, JBR88, JBR89, JBR91, JBR92, JBR93, SBLK5Y, SBLK5Z, SBLK6B |
| | **Pentachlorophenol** SSTD0054C |
| | JBR66, JBR67, JBR67MS, JBR67MSD, JBR69, JBR70, JBR71, JBR72, JBR74, JBR75, JBR76, JBR77, JBR79, JBR79DL, JBR80, JBR81, JBR82, JBR88, JBR89, JBR91, JBR92, JBR93, SBLK5Y, SBLK5Z, SBLK6B |
| **Initial Calibration** | **VOA_LOW_MED** |
| VC6 | The following volatile samples are associated with an initial calibration percent relative standard deviation (%RSD) outside criteria. Detected compounds are qualified J. Nondetected compounds are not qualified. Use professional judgement to qualify non-detected compounds. |
| | JBR77, JBR79, JBR80, JBR81, JBR82, VBLKCZ, VBLKDC |
| | **Bromomethane** VSTD2.5CU |
| | |

**Lab** A4 (A4 Scientific) **SDG** JBR51 **Case** 39061 **Contract** EPW05036 **Region** 10 **DDTID** 80123 **SOW** SOM01.2

***Data Review Results***

Detection Limit

| **DMC/Surrogate** | **VOA_LOW_MED** |
|---|---|
| VDSS3 | The following volatile samples have DMC/SMC recoveries above the upper limit of the criteria window. Detected compounds are qualified J. Nondetected compounds are not qualified. |
| | **Vinyl chloride-d3** JBR29ME |
| | Vinyl chloride |

| **DMC/Surrogate** | **VOA_LOW_MED** |
|---|---|
| VDSS4 | The following volatile samples have one or more DMC/SMC recovery values is less than the primary lower limit but greater than or equal to the expanded lower limit of the criteria window. Detected compounds are qualified J. Nondetected compounds are qualified UJ. |
| | **1,2-Dichloroethane-d4** JBR27MS |
| | 1,1,1-Trichloroethane, 1,1,2-Trichloro-1,2,2-trifluoroethane, 1,2-Dibromoethane, 1,2-Dichloroethane, Carbon tetrachloride, Methyl acetate, Methyl tert-butyl ether, Methylene chloride, Trichlorofluoromethane |

| **Detection Limit** | **AROCLOR** |
|---|---|

| **Detection Limit** | **BNA** |
|---|---|
| BDL1 | The following semivolatile samples have analyte concentrations below the quantitaion limit (CRQL). Detected compounds are qualified J. Nondetected compounds are not qualified. |
| | JBR27, JBR27DL, JBR27MS, JBR27MSD, JBR28, JBR28DL, JBR28MS, JBR28MSD, JBR29, JBR29DL |
| | **Bis (2-Ethylhexyl) phthalate** JBR28MS, JBR28MSD |
| | **Anthracene** JBR27DL, JBR28DL, JBR29DL |
| | **Benzo (g,h,i) perylene** JBR28, JBR28MS, JBR28MSD |
| | **Indeno (1,2,3-cd) pyrene** JBR28, JBR28MS, JBR28MSD |
| | **Benzo (b) fluoranthene** JBR27, JBR27MS, JBR27MSD, JBR29 |
| | **Benzo (k) fluoranthene** JBR27, JBR27MSD, JBR29 |
| | **Chrysene** JBR27DL, JBR28DL, JBR29DL |
| | **Benzo (a) pyrene** JBR27, JBR27MS, JBR27MSD, JBR29 |
| | **Benzo (a) anthracene** JBR27DL, JBR28DL, JBR29DL |
| | **9H-Carbazole** JBR27, JBR27DL, JBR27MS, JBR27MSD, JBR28DL, JBR29, JBR29DL |
| | **Naphthalene** JBR27DL, JBR28DL, JBR29DL |

| | |
|---|---|
| | **2-Methylnaphthalene** JBR27DL, JBR28DL, JBR29DL |
| | **1,1'-Biphenyl** JBR27DL, JBR28DL, JBR29DL |
| **Detection Limit** | **VOA_LOW_MED** |
| VDL1 | The following volatile samples have analyte concentrations below the quantitation limit (CRQL). Detected compounds are qualified J. Nondetected compounds are not qualified. |
| | JBR28, JBR29ME, JBR29MEMS, JBR29MEMSD, VHBLK01 |
| | **Ethylbenzene** JBR29ME, JBR29MEMS, JBR29MEMSD |
| | **Styrene** VHBLK01 |
| | **Toluene** JBR28 |
| | **cis-1,2-Dichloroethene** JBR29ME, JBR29MEMS, JBR29MEMSD |
| | **m,p-Xylene** JBR29ME, JBR29MEMS, JBR29MEMSD |
| | **Trichloroethene** JBR29ME |
| | **o-Xylene** JBR28, JBR29ME, JBR29MEMS, JBR29MEMSD |

**Lab** A4 (A4 Scientific) **SDG** JBR51 **Case** 39061 **Contract** EPW05036 **Region** 10 **DDTID** 80123 **SOW** SOM01.2

***Data Review Results***

Detection Limit

| **Continuing Calibration Verification** | **BNA** |
|---|---|
| BC10 | The following semivolatile samples are associated with an opening or closing CCV percent difference (%D) outside criteria. Detected compounds are qualified J. Nondetected compounds are qualified UJ. |
| | JBR52, JBR56, JBR57, JBR57DL, JBR59, JBR59DL, JBR60, JBR61, JBR62, JBR63, JBR64, JBR65, SBLK5W, SBLK5X |
| | **2,4-Dinitrotoluene** SSTD0204D |
| | JBR52, SBLK5W |
| | **Indeno (1,2,3-cd) pyrene** SSTD0204H |
| | JBR56, JBR57, JBR57DL, JBR59, JBR59DL, JBR60, JBR61, JBR62, JBR63, JBR64, JBR65, SBLK5X |
| | **2,6-Dinitrotoluene** SSTD0204D |
| | JBR52, SBLK5W |
| **DMC/Surrogate** | **BNA** |
| BDSS15 | The following semivolatile samples have deuterated monitoring compound recovery below the lower limit of the criteria window. Detected compounds are qualified J. Nondetected compounds are qualified UJ. |
| | **4-Chloroaniline-d4** JBR51, JBR51MS, JBR51MSD, JBR53, JBR56, JBR60, JBR62, JBR63, JBR64, JBR65 |
| | 3,3'-Dichlorobenzidine, 4-Chloroaniline, Hexachlorocyclopentadiene |
| | **Benzo (a) pyrene-d12** JBR51, JBR51MS, JBR53, JBR62, JBR65 |
| | Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(g,h,i)perylene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Indeno(1,2,3-cd)pyrene |
| **DMC/Surrogate** | **VOA_LOW_MED** |
| VDSS4 | The following volatile samples have one or more DMC/SMC recovery values is less than the primary lower limit but greater than or equal to the expanded lower limit of the criteria window. Detected compounds are qualified J. Nondetected compounds are qualified UJ. |
| | JBR51, JBR51MS, JBR51MSD, JBR52, JBR52ME, JBR52MEMSD, JBR53 |
| | **1,2-Dichloroethane-d4** JBR51, JBR51MS, JBR51MSD, JBR52, JBR53 |
| | 1,1,1-Trichloroethane, 1,1,2-Trichloro-1,2,2-trifluoroethane, 1,2-Dibromoethane, 1,2-Dichloroethane, Carbon tetrachloride, Methyl acetate, Methyl tert-butyl ether, Methylene chloride, Trichlorofluoromethane |
| | **Chloroethane-d5** JBR52ME, JBR52MEMSD |
| | Bromomethane, Carbon disulfide, Chloroethane, Chloromethane, Dichlorodifluoromethane |
| | **trans-1,3-Dichloropropene-d4** JBR51, JBR51MSD |
| | 1,1,2-Trichloroethane, cis-1,3-Dichloropropene, trans-1,3-Dichloropropene |

| | |
|---|---|
| | **1,2-Dichloropropane-d6** JBR51, JBR51MSD |
| | 1,2-Dichloropropane, Bromodichloromethane, Cyclohexane, Methylcyclohexane |

| **Detection Limit** | **AROCLOR** |
|---|---|
| ADL1 | The following aroclor samples have analyte concentrations below the quantitation limit (CRQL). Detected compounds are qualified J. Nondetected compounds are not qualified. |
| | **Aroclor-1260** ALCSLT |
| | **Aroclor-1016** ALCSLT, ALCSLU |
| **Detection Limit** | **BNA** |
| BDL1 | The following semivolatile samples have analyte concentrations below the quantitaion limit (CRQL). Detected compounds are qualified J. Nondetected compounds are not qualified. |
| | JBR51, JBR52, JBR53, JBR55, JBR55DL, JBR55MS, JBR55MSD, JBR57, JBR57DL, JBR59, JBR59DL, JBR60, JBR61, JBR64 |
| | **4-Nitrophenol** JBR55 |
| | **Anthracene** JBR55DL, JBR57DL, JBR59DL, JBR60, JBR61, JBR64 |
| | **Pyrene** JBR51 |
| | **Dibenzofuran** JBR52 |
| | **Indeno (1,2,3-cd) pyrene** JBR59 |
| | **Benzo (b) fluoranthene** JBR55, JBR55MS, JBR55MSD, JBR57 |
| | **Fluoranthene** JBR51 |
| | **Benzo (k) fluoranthene** JBR55, JBR55MS, JBR55MSD |
| | **Chrysene** JBR55DL, JBR57DL, JBR59DL, JBR60, JBR64 |
| | **Benzo (a) anthracene** JBR55DL, JBR57DL, JBR59DL, JBR60, JBR64 |
| | **Acenaphthene** JBR51, JBR52, JBR61 |
| | **Phenanthrene** JBR51, JBR53 |
| | **Fluorene** JBR52 |
| | **9H-Carbazole** JBR55, JBR55DL, JBR55MS, JBR55MSD, JBR57DL, JBR59DL, JBR60, JBR61, JBR64 |
| | **Naphthalene** JBR55DL, JBR57DL, JBR60, JBR64 |
| | **2-Methylnaphthalene** JBR55DL, JBR57DL, JBR60, JBR64 |
| | **1,1'-Biphenyl** JBR55DL, JBR57DL, JBR59DL, JBR60, JBR64 |
| **Detection Limit** | **VOA_LOW_MED** |

**Lab** A4 (A4 Scientific) **SDG** JBR51 **Case** 39061 **Contract** EPW05036 **Region** 10 **DDTID** 80123 **SOW** SOM01.2

## *Data Review Results*

Detection Limit

| | |
|---|---|
| VDL1 | The following volatile samples have analyte concentrations below the quantitation limit (CRQL). Detected compounds are qualified J. Nondetected compounds are not qualified. |
| | JBR51, JBR51MS, JBR51MSD, JBR52, JBR52ME, JBR52MEMS, JBR52MEMSD, JBR53ME, JBR53MEDL, JBR55, JBR55ME, JBR55MEDL, JBR57, JBR59, JBR60, JBR61, JBR62, JBR63, JBR64, JBR64ME, JBR65 |
| | **Ethylbenzene** JBR53ME, JBR55MEDL |
| | **Toluene** JBR52, JBR53MEDL, JBR57, JBR59, JBR64 |
| | **1,2,4-Trichlorobenzene** JBR55MEDL |
| | **Tetrachloroethene** JBR64ME |
| | **cis-1,2-Dichloroethene** JBR51, JBR51MS, JBR52ME, JBR52MEMS, JBR52MEMSD, JBR55ME, JBR65 |
| | **trans-1,2-Dichloroethene** JBR64 |
| | **m,p-Xylene** JBR53MEDL, JBR55MEDL, JBR64 |
| | **Acetone** JBR55MEDL, JBR57, JBR59, JBR60, JBR61, JBR62 |
| | **Vinyl Chloride** JBR57, JBR59, JBR62, JBR63 |
| | **Methylene chloride** JBR51MS, JBR51MSD, JBR59, JBR62, JBR63 |
| | **Trichloroethene** JBR51, JBR52ME, JBR60, JBR62, JBR64ME |
| | **1,2,3-Trichlorobenzene** JBR55MEDL |
| | **o-Xylene** JBR53ME, JBR64 |
| | **Isopropylbenzene** JBR55 |

**Lab** A4 (A4 Scientific) **SDG** JBR30 **Case** 39061 **Contract** EPW05036 **Region** 10 **DDTID** 79749 **SOW** SOM01.2

***Data Review Results***

DMC/Surrogate

| **Initial Calibration** | **BNA** |
|---|---|
| BC5 | The following semivolatile samples are associated with an initial calibration percent relative standard deviation (%RSD) outside criteria. Detected compounds are qualified J. Nondetected compounds are not qualified. Use professional judgement to qualify non-detected compounds. |
| | JBR51, JBR51MS, JBR51MSD, JBR52, JBR53, JBR55, JBR55DL, JBR55MS, JBR55MSD, JBR56, JBR57, JBR57DL, JBR59, JBR59DL, JBR60, JBR61, JBR62, JBR63, JBR64, JBR65, SBLK5V, SBLK5W, SBLK5X |
| | **2,4-Dinitrotoluene** SSTD0054C |
| | JBR51, JBR51MS, JBR51MSD, JBR52, JBR53, JBR55, JBR55DL, JBR55MS, JBR55MSD, JBR56, JBR57, JBR57DL, JBR59, JBR59DL, JBR60, JBR61, JBR62, JBR63, JBR64, JBR65, SBLK5V, SBLK5W, SBLK5X |
| | **Indeno (1,2,3-cd) pyrene** SSTD0054C |
| | JBR51, JBR51MS, JBR51MSD, JBR52, JBR53, JBR55, JBR55DL, JBR55MS, JBR55MSD, JBR56, JBR57, JBR57DL, JBR59, JBR59DL, JBR60, JBR61, JBR62, JBR63, JBR64, JBR65, SBLK5V, SBLK5W, SBLK5X |
| | **Dibenzo (a,h) anthracene** SSTD0054C |
| | JBR51, JBR51MS, JBR51MSD, JBR52, JBR53, JBR55, JBR55DL, JBR55MS, JBR55MSD, JBR56, JBR57, JBR57DL, JBR59, JBR59DL, JBR60, JBR61, JBR62, JBR63, JBR64, JBR65, SBLK5V, SBLK5W, SBLK5X |
| | **Pentachlorophenol** SSTD0054C |
| | JBR51, JBR51MS, JBR51MSD, JBR52, JBR53, JBR55, JBR55DL, JBR55MS, JBR55MSD, JBR56, JBR57, JBR57DL, JBR59, JBR59DL, JBR60, JBR61, JBR62, JBR63, JBR64, JBR65, SBLK5V, SBLK5W, SBLK5X |
| **Initial Calibration** | **VOA_LOW_MED** |
| VC6 | The following volatile samples are associated with an initial calibration percent relative standard deviation (%RSD) outside criteria. Detected compounds are qualified J. Nondetected compounds are not qualified. Use professional judgement to qualify non-detected compounds. |
| | JBR56, JBR57, JBR59, JBR60, JBR61, JBR62, JBR63, JBR64, VBLKCW |
| | **Bromomethane** VSTD2.5CU |
| | |

**Lab** A4 (A4 Scientific) **SDG** JBR30 **Case** 39061 **Contract** EPW05036 **Region** 10 **DDTID** 79749 **SOW** SOM01.2

***Data Review Results***

DMC/Surrogate

| **DMC/Surrogate** | **AROCLOR** |
|---|---|
| ADSS5 | The following aroclor samples have surrogate percent recoveries less than the primary minimum criteria but greater than or equal to the expanded minimum criteria. Detected compounds are qualified J. Nondetected compounds are qualified UJ. |
| | **Tetrachloro-m-xylene** JBR30 |
| | Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254, Aroclor-1260, Aroclor-1262, Aroclor-1268 |
| **DMC/Surrogate** | **BNA** |
| BDSS15 | The following semivolatile samples have deuterated monitoring compound recovery below the lower limit of the criteria window. Detected compounds are qualified J. Nondetected compounds are qualified UJ. |
| | **Benzo (a) pyrene-d12** JBR30 |
| | Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(g,h,i)perylene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Indeno(1,2,3-cd)pyrene |
| **DMC/Surrogate** | **VOA_LOW_MED** |
| VDSS4 | The following volatile samples have one or more DMC/SMC recovery values is less than the primary lower limit but greater than or equal to the expanded lower limit of the criteria window. Detected compounds are qualified J. Nondetected compounds are qualified UJ. |
| | JBR30, JBR32, JBR32MS, JBR32MSD, JBR34, JBR36, JBR36ME, JBR37 |
| | **1,2-Dichloroethane-d4** JBR30, JBR32, JBR32MS, JBR32MSD, JBR34, JBR36, JBR37 |
| | 1,1,1-Trichloroethane, 1,1,2-Trichloro-1,2,2-trifluoroethane, 1,2-Dibromoethane, 1,2-Dichloroethane, Carbon tetrachloride, Methyl acetate, Methyl tert-butyl ether, Methylene chloride, Trichlorofluoromethane |
| | **Vinyl chloride-d3** JBR36ME |
| | Vinyl chloride |

| Detection Limit | AROCLOR |
|---|---|
| ADL3 | The relative percent difference between analyte results for the following aroclor samples is greater than 25%. Detected and nondetected compounds are not qualified. |
| | JBR32MS, JBR33, JBR34, JBR36, JBR37 |
| | **Aroclor-1260** JBR32MS |
| | **Aroclor-1254** JBR33, JBR34, JBR36, JBR37 |
| | **Aroclor-1016** JBR32MS |
| **Detection Limit** | **BNA** |
| BDL1 | The following semivolatile samples have analyte concentrations below the quantitaion limit (CRQL). Detected compounds are qualified J. Nondetected compounds are not qualified. |
| | JBR32, JBR32DL, JBR32MS, JBR32MSD, JBR33, JBR33MS, JBR33MSD, JBR34, JBR34DL, JBR36, JBR36DL, JBR37, JBR37DL |
| | **Di-n-octylphthalate** JBR34 |
| | **Anthracene** JBR32DL, JBR33MSD, JBR34DL, JBR36DL, JBR37DL |
| | **Benzo (g,h,i) perylene** JBR34 |
| | **Indeno (1,2,3-cd) pyrene** JBR34, JBR37 |
| | **Benzo (b) fluoranthene** JBR32, JBR32MS, JBR32MSD, JBR36 |
| | **Benzo (k) fluoranthene** JBR32, JBR32MS, JBR32MSD |
| | **Chrysene** JBR32DL, JBR33, JBR33MS, JBR33MSD, JBR34DL, JBR36DL, JBR37DL |
| | **Benzo (a) pyrene** JBR32, JBR32MS, JBR32MSD, JBR36 |
| | **Benzo (a) anthracene** JBR32DL, JBR33, JBR33MS, JBR33MSD, JBR34DL, JBR36DL, JBR37DL |
| | **9H-Carbazole** JBR32DL, JBR33, JBR33MS, JBR33MSD, JBR37DL |
| | **Naphthalene** JBR32DL, JBR34DL |
| | **2-Methylnaphthalene** JBR32DL, JBR34DL, JBR36DL, JBR37DL |
| | **1,1'-Biphenyl** JBR32DL, JBR33, JBR33MS, JBR33MSD, JBR34DL, JBR36DL, JBR37DL |
| **Detection Limit** | **VOA_LOW_MED** |
| VDL1 | The following volatile samples have analyte concentrations below the quantitation limit (CRQL). Detected compounds are qualified J. Nondetected compounds are not qualified. |
| | JBR33, JBR34, JBR36, JBR36ME, JBR36MEMS, JBR36MEMSD, JBR37, VBLK8Q, VBLK8Z |
| | **Styrene** VBLK8Q |

**Lab** A4 (A4 Scientific) **SDG** JBR30 **Case** 39061 **Contract** EPW05036 **Region** 10 **DDTID** 80863 **SOW** SOM01.2

***Analytical Sample Listing***

BNA

| | |
|---|---|
| | **Toluene** JBR33, JBR34, JBR36ME, JBR37 |
| | **cis-1,2-Dichloroethene** JBR36MEMS, JBR36MEMSD |
| | **trans-1,2-Dichloroethene** JBR36 |
| | **Benzene** JBR33 |

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**
**REGION 10**
1200 Sixth Avenue
Seattle, Washington 98101

March 17, 2010

Reply to:
Attn of: OEA095

**MEMORANDUM**

Subject: Data Validation Report for the Volatile Organic (VOCs), Semi-Volatile Organics (SVOCs), PCB Aroclors, Total Extended Diesel Range Organics (DRO-ex), Total Analyte List (TAL) Metals and Mercury Analyses of Water and Sediment/Soil Samples Collected from Northwest Pipe and Casing

From: Ginna Grepo-Grove, RQAM
USEPA, OEA

To: Kathy Parker, OSC, USEPA, ECL
USEPA, ECL

CC: Mark Ader, RPM
Eric Roth, RPM, Parametrix, Inc.

The quality assurance (QA) review of the analytical data generated from the analysis of 66 solid and 30 water samples collected from the above referenced site has been completed. These samples were analyzed for VOCs, SVOCs, PCBs, DRO-ex, TAL metals, and mercury by Freidman and Bruya, Inc. located in Seattle WA.

All sample analyses were evaluated following the EPA's Stage 2A Manual Data Verification/Validation Process (S2VM). The validations were evaluated using the Quality Control Specifications outlined in the Quality Assurance Project Plan for NW Pipe and Casing Removal Activities, the technical specifications of the Statement of Work for Organics Analysis SOM02.1, the Contract Laboratory Program's National Functional Guidelines for Organic and Inorganic Data Review, and the Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use (EPA-540-R08-005). Some of the data quality elements were qualified using the reviewer's professional judgment.

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## I. DATA QUALIFICATIONS

The following sample delivery groups were evaluated in this report:

| | | |
|---|---|---|
| FB910019 | FB909135 | FB909154 |
| FB909161 | FB909175 | FB909185 |
| FB909201 | FB909204 | FB909211 |
| FB909227 | FB909243 | FB909252 |
| FB909278 | FB910001 | FB910036 |
| FB910038 | FB910051 | FB910182 |
| FB910109 | FB910112 | FB910139 |
| FB910156 | FB910169 | FB910181 |
| FB910193 | FB910222 | FB910243 |
| FB910252 | FB910265 | |

The conclusions presented herein are based on the information provided for the review.

**Summary of Validation Qualifiers Applied:**

Some of the data points were qualified due to following reasons:

- Target compounds were detected at concentrations that were over the calibration range of the instrument and no dilution runs were analyzed. Affected results were qualified estimated with a low bias
- Results that were less than the reporting limits were qualified estimated.
- Other compounds were qualified due to out of control calibrations and laboratory control sample recoveries

Most of the sample and QC results were acceptable. The data, as qualified, are usable for all purposes.

**Reasons for Validation Qualifiers**

The reasons for applying a validation qualifier to a sample result is also listed in the validated electronic data deliverables (EDDs), under the column header "Reasons". Below is a list of reasons why a data point could be qualified during data validation.

| **Reasons for Validation Qualifiers:** | |
|---|---|
| <CRQL | The value reported is <Contract Required Quantitation Limits (CRQLs) |
| %D | The percent difference (%D) of the concentrations calculated off the primary and secondary columns are >25% but <60% and were qualified estimated. |
| MULT | Multiple runs were conducted for the analyte. Use the other value reported for the same analyte. The value which is not to be used is qualified 'R'. |
| USE R1 | Use the value(s) reported off the initial analytical run |
| USE R2 | Use the value(s) reported off the second analytical run |

| | |
|---|---|
| USE R3 | Use the value(s) reported off the third analytical run |
| USE DIL | The value reported is over the calibration range. Use the value reported off the dilution run. |
| SURR/DMCs | The surrogate/deuterated monitoring compound (DMC) recoveries did not meet the specified control limits. Results are qualified estimated. |
| RRF | The response factor for the analyte did not meet the minimum acceptance criteria (0.005). |
| MS/MSD | The spiked recoveries and/or RPDs did not meet the specified control limits. Results are qualified estimated. |
| MB | Analyte was qualified as non-detect due to contamination in the associated blank. The value reported is <5x or <10x (if common lab contaminant) the value in the blank. |
| ND | The analyte was not detected in the sample, and is reported at the CRQL with the 'U' Qualifier. |
| COELN | Initial identification erroneous. Peak due to co-elution with other detected target analytes. |
| CAL | Calibration criteria not met |
| CCV | Continuing calibration criteria not met |
| GPC | GPC Clean-up criteria not met. |
| CLN-UP | Silica gel, alumina or sulfur clean-up criteria not met |
| LCS | LCS/LCSD criteria not met |
| HT | Holding time criteria not met |
| STORE | Sample Storage and preservation specified not met |
| TEMP | Cooler recommended temperature exceeded at the verified time of sample receipt at the lab (VTSR) |
| M/Z | Mass/ion resolution ratio not met |
| DPE | Diphenyl ether interferences. False positive. Elevate reporting limits at level of detection |

## Data Qualifiers

The following is a list of validation qualifiers applied to the sample result(s) when needed to indicate associated out-of-control QA/QC results.

| **Data Qualifiers** | | |
|---|---|---|
| | U | The analyte was not detected at or above the reported result. |
| | J | The analyte was positively identified. The associated numerical result is an estimate. |
| | UJ | The analyte was not detected at or above the reported estimated result. The associated numerical value is an estimate of the quantitation limit of the analyte in this sample. |
| | R | The data are unusable for all purposes. |
| | N | There is evidence the analyte is present in this sample. |

| | | |
|---|---|---|
| | JN | There is evidence that the analyte is present. The associated numerical result is an estimate. |

## II. DATA REVIEW CHECKLIST

The analytical data were evaluated following the recommended baseline checks used in the four stages of laboratory analytical data verification and validation for Superfund use listed as follows (EPA-540-R08-005, 2009):

| **Stage 1 – Data Validation** | | | | | |
|---|---|---|---|---|---|
| | **VERIFIED** | | **QUAL** | | |
| | **YES** | **NO** | **YES** | **NA** | |
| **1** | x | | | | Documentation identifies the laboratory receiving and conducting analyses, and includes documentation for all samples submitted by the project or requester for analyses. |
| **2** | x | | | | Requested analytical methods were performed and the analysis dates are present. |
| **3** | x | | | | Requested target analyte results are reported along with the original laboratory data qualifiers and data qualifier definitions for each reported result |
| **4** | x | | | | Requested target analyte result units are reported |
| **5** | x | | | | Requested reporting limits for all samples are present and results at and below the requested (required) reporting limits are clearly identified (including sample detection limits if required). |
| **6** | x | | | | Sampling dates (including times if needed), date and time of laboratory receipt of samples, and sample conditions upon receipt at the laboratory (including preservation, pH and temperature) are documented. |
| **7** | x | | | | Sample results are evaluated by comparing sample conditions upon receipt at the laboratory (e.g., preservation checks) and sample characteristics (e.g., percent moisture) to the requirements and guidelines present in national or regional data validation documents, analytical method(s) or contract. |
| **Stage 2A – Data Validation** | | | | | |
| | **VERIFIED** | | **QUAL** | | **QC Procedure or Check** |
| | **YES** | **NO** | **YES** | **NA** | |
| **8** | x | | | | Requested methods (handling, preparation, cleanup, and analytical) are performed. |
| **9** | x | | | | Method dates (including dates, times and duration of analysis for radiation counting measurements and other methods, if needed) for handling (e.g., Toxicity Characteristic Leaching Procedure), preparation, cleanup and analysis are present, as appropriate. |
| **10** | x | | | | Requested spike analytes or compounds (e.g., surrogate, DMCs, LCS spikes, post digestion spikes) have been added, as appropriate. |
| **11** | x | | | | Sample holding times (from sampling date to preparation and preparation to analysis) are evaluated. |
| **12** | x | | | | Frequency of QC samples is checked for appropriateness (e.g., one LCS per twenty samples in a preparation batch). |
| **13** | x | | | | Sample results are evaluated by comparing holding times and sample-related QC data to the requirements and guidelines present in national or regional data validation documents, analytical method(s) or contract |
| | | | | | **Stage 2A – Data Validation QC Data** |
| **14** | x | | | | method blanks |
| **15** | x | | | | surrogate recoveries/deuterated monitoring compounds (DMC) recoveries |
| **16** | x | | x | | laboratory control sample (LCS) recoveries |
| **17** | x | | | | matrix spike and matrix spike duplicate recoveries |

| | | | | | |
|---|---|---|---|---|---|
| **18** | x | | | | serial dilutions |
| **19** | x | | | | post digestion spikes |
| **20** | x | | | | standard reference materials |
| **21** | x | | | | equipment blanks |
| **22** | x | | | | trip blanks |

## Stage 2B – Data Validation

Stage 2B validation builds on the validation conducted in Stage 2A. Stage 2B validation of the laboratory analytical data package consists of the Stage 2A validation plus the verification and validation checks for the compliance of instrument-related QC.

| | **VERIFIED** | | **QUAL** | | **Calibration Procedure or Check** |
|---|---|---|---|---|---|
| | **YES** | **NO** | **YES** | **NO** | |
| **23** | x | | | | Initial calibration data (e.g., ICAL standards, ICV standards, ICBs) are provided for all requested analytes and linked to field samples reported. For each initial calibration, the calibration type used is present along with the initial calibration equation used including any weighting factor(s) applied and the associated correlation coefficients, as appropriate. Recalculations of the standard concentrations using the initial calibration curve are present, along with their associated percent recoveries, as appropriate (e.g., if required by the project, method, or contract). For the ICV standard, the associated percent recovery (or percent difference, as appropriate) is present. |
| **24** | x | | x | | Appropriate number and concentration of initial calibration standards are present. |
| **25** | x | | x | | Continuing calibration data (e.g. CCV standards and CCBs) are provided for all requested analytes and linked to field samples reported, as appropriate. For the CCV standard(s), the associated percent recoveries (or percent differences, as appropriate) are present. |
| **26** | x | | | | Reported samples are bracketed by CCV standards and CCBs standards as appropriate. |
| **27** | x | | | | Method specific instrument performance checks are present as appropriate (e.g., tunes for mass spectrometry methods, DDT/Endrin breakdown checks for pesticides and aroclors, instrument blanks and interference checks for ICP methods). |
| **28** | x | | | | Frequency of instrument QC samples is checked for appropriateness (e.g., gas chromatography-mass spectroscopy [GC-MS] tunes have been run every 12 hours). |

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**
**REGION 10**
1200 Sixth Avenue
Seattle, Washington 98101

March 3, 2010

Reply to:
Attn of: OEA095

**MEMORANDUM**

Subject: Data Validation Report for the Volatile Organic (VOCs), Dissolved Metals, Total Organic Carbon and General Inorganic Analyses of Water Samples Collected from Northwest Pipe and Casing

From: Ginna Grepo-Grove, RQAM
USEPA, OEA

To: Mark Ader, RPM
USEPA, ECL

CC: Kathy Parker, OSC, USEPA, ECL
Eric Roth, RPM, Parametrix, Inc.

The quality assurance (QA) review of the analytical data generated from the analysis of 7 water samples collected from the above referenced site has been completed. These samples were analyzed for a short list of VOCs (benzene, 1, 2-dichloroethane, 1, 1-dichlorethane, cis-1, 2-dichloroethene, trichloroethene, ethyl benzene, m,p-xylene, naphthalene, o-xylene, tetrachloroethene, toluene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, and vinyl chloride), dissolved metals (iron), anions (chloride and sulfates) and TOC by the USEPA Manchester Environmental Laboratory (MEL) located in Port Orchard WA.

All sample analyses were evaluated following the EPA's Stage 4 Manual Data Verification/Validation Process (S4VM). The validations were evaluated using the Quality Control Specifications outlined in the Quality Assurance Project Plan for NW Pipe and Casing Removal Activities, the technical specifications of the Statement of Work for Organics Analysis SOM02.1, the Contract Laboratory Program's National Functional Guidelines for Organic and Inorganic Data Review, and the Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use (EPA-540-R08-005). Some of the data quality elements were

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qualified using the reviewer's professional judgment.

# I. DATA QUALIFICATIONS

A summary of samples evaluated in this validation report and the pertinent dates for sample collection, sample receipt at the laboratory, extraction and analyses is listed in Table 1 at the end of this report.

The conclusions presented herein are based on the information provided for the review.

**Summary of Validation Qualifiers Applied:**

After the manual and electronic data review, the following data points were qualified:

- Sample results that were less than the reporting limits were qualified estimated.
- The relative percent differences between the sample and the field duplicate were all acceptable and ranged from 2.5% - 7.6 % for VOCs, 0.5% for chloride ions, 0.1% for sulfates, 3% for iron and 12% for TOC..
- All of the QC results were acceptable. None of the data were qualified based on WC results.

The data, as qualified, are usable for all purposes.

**Reasons for Validation Qualifiers**

The reasons for applying a validation qualifier to a sample result is also listed in the validated electronic data deliverables (EDDs), under the column header "Reasons". Below is a list of reasons why a data point could be qualified during data validation.

| Reasons for Validation Qualifiers: | |
|---|---|
| <CRQL | The value reported is <Contract Required Quantitation Limits (CRQLs) |
| %D | The percent difference (%D) of the concentrations calculated off the primary and secondary columns are >25% but <60% and were qualified estimated. |
| MULT | Multiple runs were conducted for the analyte. Use the other value reported for the same analyte. The value which is not to be used is qualified 'R'. |
| USE R1 | Use the value(s) reported off the initial analytical run |
| USE R2 | Use the value(s) reported off the second analytical run |
| USE R3 | Use the value(s) reported off the third analytical run |

| | |
|---|---|
| USE DIL | The value reported is over the calibration range. Use the value reported off the dilution run. |
| SURR/DMCs | The surrogate/deuterated monitoring compound (DMC) recoveries did not meet the specified control limits. Results are qualified estimated. |
| RRF | The response factor for the analyte did not meet the minimum acceptance criteria (0.005). |
| MS/MSD | The spiked recoveries and/or RPDs did not meet the specified control limits. Results are qualified estimated. |
| MB | Analyte was qualified as non-detect due to contamination in the associated blank. The value reported is <5x or <10x (if common lab contaminant) the value in the blank. |
| ND | The analyte was not detected in the sample, and is reported at the CRQL with the 'U' Qualifier. |
| COELN | Initial identification erroneous. Peak due to co-elution with other detected target analytes. |
| CAL | Calibration criteria not met |
| CCV | Continuing calibration criteria not met |
| GPC | GPC Clean-up criteria not met. |
| CLN-UP | Silica gel, alumina or sulfur clean-up criteria not met |
| LCS | LCS/LCSD criteria not met |
| HT | Holding time criteria not met |
| STORE | Sample Storage and preservation specified not met |
| TEMP | Cooler recommended temperature exceeded at the verified time of sample receipt at the lab (VTSR) |
| M/Z | Mass/ion resolution ratio not met |
| DPE | Diphenyl ether interferences. False positive. Elevate reporting limits at level of detection |

## Data Qualifiers

The following is a list of validation qualifiers applied to the sample result(s) when needed to indicate associated out-of-control QA/QC results.

| **Data Qualifiers** | | |
|---|---|---|
| | U | The analyte was not detected at or above the reported result. |
| | J | The analyte was positively identified. The associated numerical result is an estimate. |
| | UJ | The analyte was not detected at or above the reported estimated result. The associated numerical value is an estimate of the quantitation limit of the analyte in this sample. |

| | | |
|---|---|---|
| | R | The data are unusable for all purposes. |
| | N | There is evidence the analyte is present in this sample. |
| | JN | There is evidence that the analyte is present. The associated numerical result is an estimate. |

## II. DATA REVIEW

The analytical data were evaluated following the recommended baseline checks used in the four stages of laboratory analytical data verification and validation for Superfund use listed as follows (EPA-540-R08-005, 2009):

| Stage 1 – Data Validation | | | | | |
|---|---|---|---|---|---|
| | VERIFIED | | QUAL | | |
| | YES | NO | YES | NA | |
| 1 | x | | | | Documentation identifies the laboratory receiving and conducting analyses, and includes documentation for all samples submitted by the project or requester for analyses. |
| 2 | x | | | | Requested analytical methods were performed and the analysis dates are present. |
| 3 | x | | | | Requested target analyte results are reported along with the original laboratory data qualifiers and data qualifier definitions for each reported result |
| 4 | x | | | | Requested target analyte result units are reported |
| 5 | x | | | | Requested reporting limits for all samples are present and results at and below the requested (required) reporting limits are clearly identified (including sample detection limits if required). |
| 6 | x | | | | Sampling dates (including times if needed), date and time of laboratory receipt of samples, and sample conditions upon receipt at the laboratory (including preservation, pH and temperature) are documented. |
| 7 | x | | | | Sample results are evaluated by comparing sample conditions upon receipt at the laboratory (e.g., preservation checks) and sample characteristics (e.g., percent moisture) to the requirements and guidelines present in national or regional data validation documents, analytical method(s) or contract. |
| **Stage 2A – Data Validation** | | | | | |
| | VERIFIED | | QUAL | | QC Procedure or Check |
| | YES | NO | YES | NA | |
| 8 | x | | | | Requested methods (handling, preparation, cleanup, and analytical) are performed. |
| 9 | x | | | | Method dates (including dates, times and duration of analysis for radiation counting measurements and other methods, if needed) for handling (e.g., Toxicity Characteristic Leaching Procedure), preparation, cleanup and analysis are present, as appropriate. |
| 10 | x | | | | Requested spike analytes or compounds (e.g., surrogate, DMCs, LCS spikes, post digestion spikes) have been added, as appropriate. |
| 11 | x | | | | Sample holding times (from sampling date to preparation and preparation to analysis) are evaluated. |
| 12 | x | | | | Frequency of QC samples is checked for appropriateness (e.g., one LCS per twenty samples in a preparation batch). |
| 13 | x | | | | Sample results are evaluated by comparing holding times and sample-related QC data to the requirements and guidelines present in national or regional data validation documents, analytical method(s) or contract |

| | | | | | **Stage 2A – Data Validation QC Data** |
|---|---|---|---|---|---|
| **14** | x | | | | method blanks - |
| **15** | x | | | | surrogate recoveries/deuterated monitoring compounds (DMC) recoveries |
| **16** | x | | | | laboratory control sample (LCS) recoveries |
| **17** | x | | | | matrix spike and matrix spike duplicate recoveries |
| **18** | x | | | | serial dilutions |
| **19** | x | | | | post digestion spikes |
| **20** | x | | | | standard reference materials |
| **21** | x | | | | equipment blanks |
| **22** | x | | | | trip blanks |

## Stage 2B – Data Validation

Stage 2B validation builds on the validation conducted in Stage 2A. Stage 2B validation of the laboratory analytical data package consists of the Stage 2A validation plus the verification and validation checks for the compliance of instrument-related QC.

| | **VERIFIED** | | **QUAL** | | **Calibration Procedure or Check** |
|---|---|---|---|---|---|
| | **YES** | **NO** | **YES** | **NO** | |
| **23** | x | | | | Initial calibration data (e.g., ICAL standards, ICV standards, ICBs) are provided for all requested analytes and linked to field samples reported. For each initial calibration, the calibration type used is present along with the initial calibration equation used including any weighting factor(s) applied and the associated correlation coefficients, as appropriate. Recalculations of the standard concentrations using the initial calibration curve are present, along with their associated percent recoveries, as appropriate (e.g., if required by the project, method, or contract). For the ICV standard, the associated percent recovery (or percent difference, as appropriate) is present. |
| **24** | x | | | | Appropriate number and concentration of initial calibration standards are present. |
| **25** | x | | | | Continuing calibration data (e.g. CCV standards and CCBs) are provided for all requested analytes and linked to field samples reported, as appropriate. For the CCV standard(s), the associated percent recoveries (or percent differences, as appropriate) are present. |
| **26** | x | | | | Reported samples are bracketed by CCV standards and CCBs standards as appropriate. |
| **27** | x | | | | Method specific instrument performance checks are present as appropriate (e.g., tunes for mass spectrometry methods, DDT/Endrin breakdown checks for pesticides and aroclors, instrument blanks and interference checks for ICP methods). |
| **28** | x | | | | Frequency of instrument QC samples is checked for appropriateness (e.g., gas chromatography-mass spectroscopy [GC-MS] tunes have been run every 12 hours). |

## Stage 3 – Data Validation

Stage 3 validation builds on the validation conducted in Stage 2B. Stage 3 validation of the laboratory analytical data package consists of the Stage 2B validation plus the recalculation of instrument and sample results from the laboratory instrument responses, and comparison of recalculated results to laboratory reported results.

| | VERIFIED | | QUAL | | QC Procedure or Check |
|---|---|---|---|---|---|
| | YES | NO | YES | NO | |
| **29** | x | | | | Instrument response data (e.g., GC peak areas, ICP corrected intensities) are reported for requested analytes, surrogates, internal standards, and DMCs for all requested field samples, matrix spikes, matrix spike duplicates, LCS, and method blanks as well as calibration data and instrument QC checks (e.g., tunes, DDT/Endrin breakdowns, inter-element correction factors, and Florisil cartridge checks). |
| **30** | x | | | | Reported target analyte instrument responses are associated with appropriate internal standard analyte(s) for each (or selected) analyte(s) (for methods using internal standard for calibration). |
| **31** | x | | | | Fit and appropriateness of the initial calibration curve used or required (e.g., mean calibration factor, regression analysis [linear or non-linear, with or without weighting factors, with or without forcing]) is checked with recalculation of the initial calibration curve for each (or selected) analyte(s) from the instrument response. |
| **32** | x | | | | Comparison of instrument response to the minimum response requirements for each (or selected) analyte(s). |
| **33** | x | | | | Recalculation of each (or selected) opening and closing CCV (and CCB) response from the peak data reported for each (or selected) analyte(s) from the instrument response, as appropriate. |
| **34** | x | | | | Compliance check of recalculated opening and/or closing CCV (and CCB) response to recalculated initial calibration response for each (or selected) analyte(s). |
| **35** | x | | | | Recalculation of percent ratios for each (or selected) tune from the instrument response, as appropriate. |
| **36** | x | | | | Compliance check of recalculated percent ratio for each (or selected) tune from the instrument response. |
| **37** | x | | | | Recalculation of each (or selected) instrument performance check (e.g., DDT/Endrin breakdown for pesticide analysis, instrument blanks, interference checks) from the instrument response. |
| **38** | x | | | | Recalculation and compliance check of retention time windows (for chromatographic methods) for each (or selected) analyte(s) from the laboratory reported retention times. |
| **39** | x | | | | Recalculation of reported results for each reported (or selected) target analyte(s) from the instrument response. |
| **40** | x | | | | Recalculation of each (or selected) reported spike recovery (surrogate recoveries, DMC recoveries, LCS recoveries, duplicate analyses, matrix spike and matrix spike duplicate recoveries, serial dilutions, post digestion spikes, standard reference materials etc.) from the instrument response. |
| **41** | x | | | | Each (or selected) sample result(s) and spike recovery(ies) are evaluated by comparing the recalculated numbers to the laboratory reported numbers according to the requirements and guidelines present in national or regional data validation documents, analytical method(s) or contract |

**Note**: Selection of analytes, spikes, and performance evaluation checks for the Stage 3 validation checks for a laboratory analytical data package being verified and validated generally will depend on many factors including (but not limited to) the type of verification and validation being performed (manual or electronic), requirements and guidelines present in national or regional data validation documents, analytical method(s) or contract, the number of laboratories reporting the data, the number and type of analytical methods reported, the number of analytes reported in each method, and the number of detected analytes.

## Stage 4 – Data Validation

Stage 4 validation builds on the validation conducted in Stage 3. Stage 4 validation of the laboratory analytical data package consists of the Stage 3 validation plus the evaluation of instrument outputs.

| | VERIFIED | | QUAL | | QC Procedure or Check |
|---|---|---|---|---|---|
| | YES | NO | YES | NO | |
| **42** | x | | | | All required instrument outputs (e.g., chromatograms, mass spectra, atomic emission spectra, instrument background corrections, and interference corrections) for evaluating sample and instrument performance are present. |
| **43** | x | | | | Sample results are evaluated by checking each (or selected) instrument output (e.g., chromatograms, mass spectra, atomic emission spectra data, instrument background corrections, interference corrections) for correct identification and quantitation of analytes (e.g., peak integrations, use of appropriate internal standards for quantitation, elution order of analytes, and interferences). |
| **44** | x | | | | Each (or selected) instrument's output(s) is evaluated for confirmation of non-detected or tentatively identified analytes. |

**Note:** Selection of instrument outputs for the Stage 4 validation checks for a laboratory analytical data package being verified and validated generally will depend on many factors including, but not limited to, the type of verification and validation being performed (electronic or manual), requirements and guidelines present in national or regional data validation documents, analytical method(s) or contract, the number of laboratories reporting the data, the number and type of analytical methods reported, the number of analytes reported in each method, and the number of detected analytes.

Attachments:

Validated Electronic Data Deliverables

| EPA No | Station | Collection Date | Analysis Date | CAS Number | Target Compounds | Concentration | Units | LabQual | ValQuaL | Reasons | Val Label |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9494000 | FD-120209 | 12/2/09 | 12/9/09 | 71432 | Benzene | 1 | ug/L | U | U | ND | S4VM |
| 9494000 | FD-120209 | 12/2/09 | 12/9/09 | 107062 | 1,2-Dichloroethane | 1 | ug/L | U | U | ND | S4VM |
| 9494000 | FD-120209 | 12/2/09 | 12/9/09 | 75343 | 1,1-Dichloroethane | 1 | ug/L | U | U | ND | S4VM |
| 9494000 | FD-120209 | 12/2/09 | 12/9/09 | 156592 | cis-1,2-Dichloroethene | 220 | ug/L | | | | S4VM |
| 9494000 | FD-120209 | 12/2/09 | 12/9/09 | 75354 | 1,1-Dichloroethene | 1 | ug/L | U | U | ND | S4VM |
| 9494000 | FD-120209 | 12/2/09 | 12/9/09 | 79016 | Ethene, trichloro- | 3.8 | ug/L | | | | S4VM |
| 9494000 | FD-120209 | 12/2/09 | 12/9/09 | 100414 | Ethylbenzene | 1 | ug/L | U | U | ND | S4VM |
| 9494000 | FD-120209 | 12/2/09 | 12/9/09 | *1330207 | MP-Xylene | 2 | ug/L | U | U | ND | S4VM |
| 9494000 | FD-120209 | 12/2/09 | 12/9/09 | 91203 | Naphthalene | 1 | ug/L | U | U | ND | S4VM |
| 9494000 | FD-120209 | 12/2/09 | 12/9/09 | 95476 | o-Xylene | 1 | ug/L | U | U | ND | S4VM |
| 9494000 | FD-120209 | 12/2/09 | 12/9/09 | 127184 | Tetrachloroethene | 1 | ug/L | U | U | ND | S4VM |
| 9494000 | FD-120209 | 12/2/09 | 12/9/09 | 108883 | Toluene | 1 | ug/L | U | U | ND | S4VM |
| 9494000 | FD-120209 | 12/2/09 | 12/9/09 | 71556 | 1,1,1-Trichloroethane | 1 | ug/L | U | U | ND | S4VM |
| 9494000 | FD-120209 | 12/2/09 | 12/9/09 | 79005 | 1,1,2-Trichloroethane | 1 | ug/L | U | U | ND | S4VM |
| 9494000 | FD-120209 | 12/2/09 | 12/9/09 | 75014 | Vinyl Chloride | 4.1 | ug/L | | | | S4VM |
| 9494000 | FD-120209 | 12/2/09 | 12/8/09 | 90012 | Chloride | 5.9 | mg/L | | | | S4VM |
| 9494000 | FD-120209 | 12/2/09 | 12/8/09 | 90054 | Sulfate | 8.91 | mg/L | | | | S4VM |
| 9494000 | FD-120209 | 12/2/09 | 12/14/09 | 7439896 | Iron | 23200 | mg/L | | | | S4VM |
| 9494000 | FD-120209 | 12/2/09 | 12/29/09 | 90064 | TOC | 4.98 | mg/L | | | | S4VM |
| 9494001 | MW-04 | 12/2/09 | 12/9/09 | 71432 | Benzene | 1 | ug/L | U | U | ND | S4VM |
| 9494001 | MW-04 | 12/2/09 | 12/9/09 | 107062 | 1,2-Dichloroethane | 1 | ug/L | U | U | ND | S4VM |
| 9494001 | MW-04 | 12/2/09 | 12/9/09 | 75343 | 1,1-Dichloroethane | 1 | ug/L | U | U | ND | S4VM |
| 9494001 | MW-04 | 12/2/09 | 12/9/09 | 156592 | cis-1,2-Dichloroethene | 230 | ug/L | | | | S4VM |
| 9494001 | MW-04 | 12/2/09 | 12/9/09 | 75354 | 1,1-Dichloroethene | 1 | ug/L | U | U | ND | S4VM |
| 9494001 | MW-04 | 12/2/09 | 12/9/09 | 79016 | Ethene, trichloro- | 4.1 | ug/L | | | | S4VM |
| 9494001 | MW-04 | 12/2/09 | 12/9/09 | 100414 | Ethylbenzene | 1 | ug/L | U | U | ND | S4VM |
| 9494001 | MW-04 | 12/2/09 | 12/9/09 | *1330207 | MP-Xylene | 2 | ug/L | U | U | ND | S4VM |
| 9494001 | MW-04 | 12/2/09 | 12/9/09 | 91203 | Naphthalene | 1 | ug/L | U | U | ND | S4VM |
| 9494001 | MW-04 | 12/2/09 | 12/9/09 | 95476 | o-Xylene | 1 | ug/L | U | U | ND | S4VM |

| EPA No | Station | Collection Date | Analysis Date | CAS Number | Target Compounds | Concentration | Units | LabQual | ValQuaL | Reasons | Val Label |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9494001 | MW-04 | 12/2/09 | 12/9/09 | 127184 | Tetrachloroethene | 1 | ug/L | U | U | ND | S4VM |
| 9494001 | MW-04 | 12/2/09 | 12/9/09 | 108883 | Toluene | 1 | ug/L | U | U | ND | S4VM |
| 9494001 | MW-04 | 12/2/09 | 12/9/09 | 71556 | 1,1,1-Trichloroethane | 1 | ug/L | U | U | ND | S4VM |
| 9494001 | MW-04 | 12/2/09 | 12/9/09 | 79005 | 1,1,2-Trichloroethane | 1 | ug/L | U | U | ND | S4VM |
| 9494001 | MW-04 | 12/2/09 | 12/9/09 | 75014 | Vinyl Chloride | 4.2 | ug/L | | | | S4VM |
| 9494001 | MW-04 | 12/2/09 | 12/8/09 | 90012 | Chloride | 5.97 | mg/L | | | | S4VM |
| 9494001 | MW-04 | 12/2/09 | 12/8/09 | 90054 | Sulfate | 8.9 | mg/L | | | | S4VM |
| 9494001 | MW-04 | 12/2/09 | 12/14/09 | 7439896 | Iron | 23500 | mg/L | | | | S4VM |
| 9494001 | MW-04 | 12/2/09 | 12/29/09 | 90064 | TOC | 4.42 | mg/L | | | | S4VM |
| 9494002 | MW-18 | 12/2/09 | 12/9/09 | 71432 | Benzene | 1 | ug/L | U | U | ND | S4VM |
| 9494002 | MW-18 | 12/2/09 | 12/9/09 | 107062 | 1,2-Dichloroethane | 1 | ug/L | U | U | ND | S4VM |
| 9494002 | MW-18 | 12/2/09 | 12/9/09 | 75343 | 1,1-Dichloroethane | 1 | ug/L | U | U | ND | S4VM |
| 9494002 | MW-18 | 12/2/09 | 12/9/09 | 156592 | cis-1,2-Dichloroethene | 58 | ug/L | | | | S4VM |
| 9494002 | MW-18 | 12/2/09 | 12/9/09 | 75354 | 1,1-Dichloroethene | 1 | ug/L | U | U | ND | S4VM |
| 9494002 | MW-18 | 12/2/09 | 12/9/09 | 79016 | Ethene, trichloro- | 2.5 | ug/L | | | | S4VM |
| 9494002 | MW-18 | 12/2/09 | 12/9/09 | 100414 | Ethylbenzene | 1 | ug/L | U | U | ND | S4VM |
| 9494002 | MW-18 | 12/2/09 | 12/9/09 | *1330207 | MP-Xylene | 2 | ug/L | U | U | ND | S4VM |
| 9494002 | MW-18 | 12/2/09 | 12/9/09 | 91203 | Naphthalene | 1 | ug/L | U | U | ND | S4VM |
| 9494002 | MW-18 | 12/2/09 | 12/9/09 | 95476 | o-Xylene | 1 | ug/L | U | U | ND | S4VM |
| 9494002 | MW-18 | 12/2/09 | 12/9/09 | 127184 | Tetrachloroethene | 1 | ug/L | U | U | ND | S4VM |
| 9494002 | MW-18 | 12/2/09 | 12/9/09 | 108883 | Toluene | 1 | ug/L | U | U | ND | S4VM |
| 9494002 | MW-18 | 12/2/09 | 12/9/09 | 71556 | 1,1,1-Trichloroethane | 1 | ug/L | U | U | ND | S4VM |
| 9494002 | MW-18 | 12/2/09 | 12/9/09 | 79005 | 1,1,2-Trichloroethane | 1 | ug/L | U | U | ND | S4VM |
| 9494002 | MW-18 | 12/2/09 | 12/9/09 | 75014 | Vinyl Chloride | 11 | ug/L | | | | S4VM |
| 9494002 | MW-18 | 12/2/09 | 12/8/09 | 90012 | Chloride | 3.32 | mg/L | | | | S4VM |
| 9494002 | MW-18 | 12/2/09 | 12/8/09 | 90054 | Sulfate | 12.4 | mg/L | | | | S4VM |
| 9494002 | MW-18 | 12/2/09 | 12/14/09 | 7439896 | Iron | 8600 | mg/L | | | | S4VM |
| 9494002 | MW-18 | 12/2/09 | 12/29/09 | 90064 | TOC | 3.17 | mg/L | | | | S4VM |
| 9494003 | MW-205 | 12/2/09 | 12/9/09 | 71432 | Benzene | 1 | ug/L | U | U | ND | S4VM |
| 9494003 | MW-205 | 12/2/09 | 12/9/09 | 107062 | 1,2-Dichloroethane | 1 | ug/L | U | U | ND | S4VM |

| EPA No | Station | Collection Date | Analysis Date | CAS Number | Target Compounds | Concentration | Units | LabQual | ValQuaL | Reasons | Val Label |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9494003 | MW-205 | 12/2/09 | 12/9/09 | 75343 | 1,1-Dichloroethane | 1 | ug/L | U | U | ND | S4VM |
| 9494003 | MW-205 | 12/2/09 | 12/9/09 | 156592 | cis-1,2-Dichloroethene | 62 | ug/L | | | | S4VM |
| 9494003 | MW-205 | 12/2/09 | 12/9/09 | 75354 | 1,1-Dichloroethene | 1 | ug/L | U | U | ND | S4VM |
| 9494003 | MW-205 | 12/2/09 | 12/9/09 | 79016 | Ethene, trichloro- | 140 | ug/L | | | | S4VM |
| 9494003 | MW-205 | 12/2/09 | 12/9/09 | 100414 | Ethylbenzene | 1 | ug/L | U | U | ND | S4VM |
| 9494003 | MW-205 | 12/2/09 | 12/9/09 | *1330207 | MP-Xylene | 2 | ug/L | U | U | ND | S4VM |
| 9494003 | MW-205 | 12/2/09 | 12/9/09 | 91203 | Naphthalene | 1 | ug/L | U | U | ND | S4VM |
| 9494003 | MW-205 | 12/2/09 | 12/9/09 | 95476 | o-Xylene | 1 | ug/L | U | U | ND | S4VM |
| 9494003 | MW-205 | 12/2/09 | 12/9/09 | 127184 | Tetrachloroethene | 390 | ug/L | J | J | ND | S4VM |
| 9494003 | MW-205 | 12/2/09 | 12/9/09 | 108883 | Toluene | 1 | ug/L | U | U | ND | S4VM |
| 9494003 | MW-205 | 12/2/09 | 12/9/09 | 71556 | 1,1,1-Trichloroethane | 1 | ug/L | U | U | ND | S4VM |
| 9494003 | MW-205 | 12/2/09 | 12/9/09 | 79005 | 1,1,2-Trichloroethane | 1 | ug/L | U | U | ND | S4VM |
| 9494003 | MW-205 | 12/2/09 | 12/9/09 | 75014 | Vinyl Chloride | 1 | ug/L | U | U | ND | S4VM |
| 9494003 | MW-205 | 12/2/09 | 12/8/09 | 90012 | Chloride | 8.08 | mg/L | | | | S4VM |
| 9494003 | MW-205 | 12/2/09 | 12/8/09 | 90054 | Sulfate | 10.6 | mg/L | | | | S4VM |
| 9494003 | MW-205 | 12/2/09 | 12/14/09 | 7439896 | Iron | 60 | mg/L | | | | S4VM |
| 9494003 | MW-205 | 12/2/09 | 12/29/09 | 90064 | TOC | 1.24 | mg/L | | | | S4VM |
| 9494004 | MW-206 | 12/2/09 | 12/9/09 | 71432 | Benzene | 1 | ug/L | U | U | ND | S4VM |
| 9494004 | MW-206 | 12/2/09 | 12/9/09 | 107062 | 1,2-Dichloroethane | 1 | ug/L | U | U | ND | S4VM |
| 9494004 | MW-206 | 12/2/09 | 12/9/09 | 75343 | 1,1-Dichloroethane | 1 | ug/L | U | U | ND | S4VM |
| 9494004 | MW-206 | 12/2/09 | 12/9/09 | 156592 | cis-1,2-Dichloroethene | 98 | ug/L | | | | S4VM |
| 9494004 | MW-206 | 12/2/09 | 12/9/09 | 75354 | 1,1-Dichloroethene | 1 | ug/L | U | U | ND | S4VM |
| 9494004 | MW-206 | 12/2/09 | 12/9/09 | 79016 | Ethene, trichloro- | 56 | ug/L | | | | S4VM |
| 9494004 | MW-206 | 12/2/09 | 12/9/09 | 100414 | Ethylbenzene | 1 | ug/L | U | U | ND | S4VM |
| 9494004 | MW-206 | 12/2/09 | 12/9/09 | *1330207 | MP-Xylene | 2 | ug/L | U | U | ND | S4VM |
| 9494004 | MW-206 | 12/2/09 | 12/9/09 | 91203 | Naphthalene | 1 | ug/L | U | U | ND | S4VM |
| 9494004 | MW-206 | 12/2/09 | 12/9/09 | 95476 | o-Xylene | 1 | ug/L | U | U | ND | S4VM |
| 9494004 | MW-206 | 12/2/09 | 12/9/09 | 127184 | Tetrachloroethene | 200 | ug/L | J | J | ND | S4VM |
| 9494004 | MW-206 | 12/2/09 | 12/9/09 | 108883 | Toluene | 1 | ug/L | U | U | ND | S4VM |
| 9494004 | MW-206 | 12/2/09 | 12/9/09 | 71556 | 1,1,1-Trichloroethane | 1 | ug/L | U | U | ND | S4VM |

| EPA No | Station | Collection Date | Analysis Date | CAS Number | Target Compounds | Concentration | Units | LabQual | ValQuaL | Reasons | Val Label |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9494004 | MW-206 | 12/2/09 | 12/9/09 | 79005 | 1,1,2-Trichloroethane | 1 | ug/L | U | U | ND | S4VM |
| 9494004 | MW-206 | 12/2/09 | 12/9/09 | 75014 | Vinyl Chloride | 1 | ug/L | U | U | ND | S4VM |
| 9494004 | MW-206 | 12/2/09 | 12/8/09 | 90012 | Chloride | 5.02 | mg/L | | | | S4VM |
| 9494004 | MW-206 | 12/2/09 | 12/8/09 | 90054 | Sulfate | 14.2 | mg/L | | | | S4VM |
| 9494004 | MW-206 | 12/2/09 | 12/14/09 | 7439896 | Iron | 330 | mg/L | | | | S4VM |
| 9494004 | MW-206 | 12/2/09 | 12/29/09 | 90064 | TOC | 1.67 | mg/L | | | | S4VM |
| 9494005 | MW-207 | 12/2/09 | 12/9/09 | 71432 | Benzene | 1 | ug/L | U | U | ND | S4VM |
| 9494005 | MW-207 | 12/2/09 | 12/9/09 | 107062 | 1,2-Dichloroethane | 1 | ug/L | U | U | ND | S4VM |
| 9494005 | MW-207 | 12/2/09 | 12/9/09 | 75343 | 1,1-Dichloroethane | 1 | ug/L | U | U | ND | S4VM |
| 9494005 | MW-207 | 12/2/09 | 12/9/09 | 156592 | cis-1,2-Dichloroethene | 8700 | ug/L | | | | S4VM |
| 9494005 | MW-207 | 12/2/09 | 12/9/09 | 75354 | 1,1-Dichloroethene | 21 | ug/L | | | | S4VM |
| 9494005 | MW-207 | 12/2/09 | 12/9/09 | 79016 | Ethene, trichloro- | 110 | ug/L | | | | S4VM |
| 9494005 | MW-207 | 12/2/09 | 12/9/09 | 100414 | Ethylbenzene | 27 | ug/L | | | | S4VM |
| 9494005 | MW-207 | 12/2/09 | 12/9/09 | *1330207 | MP-Xylene | 46 | ug/L | | | | S4VM |
| 9494005 | MW-207 | 12/2/09 | 12/9/09 | 91203 | Naphthalene | 520 | ug/L | | | | S4VM |
| 9494005 | MW-207 | 12/2/09 | 12/9/09 | 95476 | o-Xylene | 19 | ug/L | | | | S4VM |
| 9494005 | MW-207 | 12/2/09 | 12/9/09 | 127184 | Tetrachloroethene | 6.3 | ug/L | | | | S4VM |
| 9494005 | MW-207 | 12/2/09 | 12/9/09 | 108883 | Toluene | 74 | ug/L | | | | S4VM |
| 9494005 | MW-207 | 12/2/09 | 12/9/09 | 71556 | 1,1,1-Trichloroethane | 1 | ug/L | U | U | ND | S4VM |
| 9494005 | MW-207 | 12/2/09 | 12/9/09 | 79005 | 1,1,2-Trichloroethane | 1 | ug/L | U | U | ND | S4VM |
| 9494005 | MW-207 | 12/2/09 | 12/9/09 | 75014 | Vinyl Chloride | 59 | ug/L | | | | S4VM |
| 9494005 | MW-207 | 12/2/09 | 12/8/09 | 90012 | Chloride | 50.1 | mg/L | | | | S4VM |
| 9494005 | MW-207 | 12/2/09 | 12/8/09 | 90054 | Sulfate | 25.6 | mg/L | | | | S4VM |
| 9494005 | MW-207 | 12/2/09 | 12/14/09 | 7439896 | Iron | 198000 | mg/L | | | | S4VM |
| 9494005 | MW-207 | 12/2/09 | 12/29/09 | 90064 | TOC | 1840 | mg/L | | | | S4VM |
| 9494006 | MW-208 | 12/2/09 | 12/14/09 | 71432 | Benzene | 1 | ug/L | U | U | ND | S4VM |
| 9494006 | MW-208 | 12/2/09 | 12/14/09 | 107062 | 1,2-Dichloroethane | 1 | ug/L | U | U | ND | S4VM |
| 9494006 | MW-208 | 12/2/09 | 12/14/09 | 75343 | 1,1-Dichloroethane | 1 | ug/L | U | U | ND | S4VM |
| 9494006 | MW-208 | 12/2/09 | 12/14/09 | 156592 | cis-1,2-Dichloroethene | 6.8 | ug/L | | | | S4VM |
| 9494006 | MW-208 | 12/2/09 | 12/14/09 | 75354 | 1,1-Dichloroethene | 1 | ug/L | U | U | ND | S4VM |

| EPA No | Station | Collection Date | Analysis Date | CAS Number | Target Compounds | Concentration | Units | LabQual | ValQuaL | Reasons | Val Label |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9494006 | MW-208 | 12/2/09 | 12/14/09 | 79016 | Ethene, trichloro- | 2.8 | ug/L | | | | S4VM |
| 9494006 | MW-208 | 12/2/09 | 12/14/09 | 100414 | Ethylbenzene | 1 | ug/L | U | U | ND | S4VM |
| 9494006 | MW-208 | 12/2/09 | 12/14/09 | *1330207 | MP-Xylene | 2 | ug/L | U | U | ND | S4VM |
| 9494006 | MW-208 | 12/2/09 | 12/14/09 | 91203 | Naphthalene | 7.2 | ug/L | | | | S4VM |
| 9494006 | MW-208 | 12/2/09 | 12/14/09 | 95476 | o-Xylene | 1 | ug/L | U | U | ND | S4VM |
| 9494006 | MW-208 | 12/2/09 | 12/14/09 | 127184 | Tetrachloroethene | 7.1 | ug/L | | | | S4VM |
| 9494006 | MW-208 | 12/2/09 | 12/14/09 | 108883 | Toluene | 6.1 | ug/L | | | | S4VM |
| 9494006 | MW-208 | 12/2/09 | 12/14/09 | 71556 | 1,1,1-Trichloroethane | 1 | ug/L | U | U | ND | S4VM |
| 9494006 | MW-208 | 12/2/09 | 12/14/09 | 79005 | 1,1,2-Trichloroethane | 1 | ug/L | U | U | ND | S4VM |
| 9494006 | MW-208 | 12/2/09 | 12/14/09 | 75014 | Vinyl Chloride | 1 | ug/L | U | U | ND | S4VM |
| 9494006 | MW-208 | 12/2/09 | 12/8/09 | 90012 | Chloride | 4.67 | mg/L | | | | S4VM |
| 9494006 | MW-208 | 12/2/09 | 12/8/09 | 90054 | Sulfate | 11.3 | mg/L | | | | S4VM |
| 9494006 | MW-208 | 12/2/09 | 12/14/09 | 7439896 | Iron | 277 | mg/L | | | | S4VM |
| 9494006 | MW-208 | 12/2/09 | 12/29/09 | 90064 | TOC | 7.19 | mg/L | | | | S4VM |
| 9494007 | MW-209 | 12/2/09 | 12/14/09 | 71432 | Benzene | 1 | ug/L | U | U | ND | S4VM |
| 9494007 | MW-209 | 12/2/09 | 12/14/09 | 107062 | 1,2-Dichloroethane | 1 | ug/L | U | U | ND | S4VM |
| 9494007 | MW-209 | 12/2/09 | 12/14/09 | 75343 | 1,1-Dichloroethane | 1 | ug/L | U | U | ND | S4VM |
| 9494007 | MW-209 | 12/2/09 | 12/14/09 | 156592 | cis-1,2-Dichloroethene | 6.2 | ug/L | | | | S4VM |
| 9494007 | MW-209 | 12/2/09 | 12/14/09 | 75354 | 1,1-Dichloroethene | 1 | ug/L | U | U | ND | S4VM |
| 9494007 | MW-209 | 12/2/09 | 12/14/09 | 79016 | Ethene, trichloro- | 69 | ug/L | | | | S4VM |
| 9494007 | MW-209 | 12/2/09 | 12/14/09 | 100414 | Ethylbenzene | 1 | ug/L | U | U | ND | S4VM |
| 9494007 | MW-209 | 12/2/09 | 12/14/09 | *1330207 | MP-Xylene | 2 | ug/L | U | U | ND | S4VM |
| 9494007 | MW-209 | 12/2/09 | 12/14/09 | 91203 | Naphthalene | 1 | ug/L | U | U | ND | S4VM |
| 9494007 | MW-209 | 12/2/09 | 12/14/09 | 95476 | o-Xylene | 1 | ug/L | U | U | ND | S4VM |
| 9494007 | MW-209 | 12/2/09 | 12/14/09 | 127184 | Tetrachloroethene | 44 | ug/L | J | J | <CRQL | S4VM |
| 9494007 | MW-209 | 12/2/09 | 12/14/09 | 108883 | Toluene | 1 | ug/L | U | U | ND | S4VM |
| 9494007 | MW-209 | 12/2/09 | 12/14/09 | 71556 | 1,1,1-Trichloroethane | 1 | ug/L | U | U | ND | S4VM |
| 9494007 | MW-209 | 12/2/09 | 12/14/09 | 79005 | 1,1,2-Trichloroethane | 1 | ug/L | U | U | ND | S4VM |
| 9494007 | MW-209 | 12/2/09 | 12/14/09 | 75014 | Vinyl Chloride | 1 | ug/L | U | U | ND | S4VM |
| 9494007 | MW-209 | 12/2/09 | 12/8/09 | 90012 | Chloride | 3.13 | mg/L | | | | S4VM |

| EPA No | Station | Collection Date | Analysis Date | CAS Number | Target Compounds | Concentration | Units | LabQual | ValQuaL | Reasons | Val Label |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9494007 | MW-209 | 12/2/09 | 12/8/09 | 90054 | Sulfate | 3.11 | mg/L | | | | S4VM |
| 9494007 | MW-209 | 12/2/09 | 12/14/09 | 7439896 | Iron | 20 | mg/L | U | U | ND | S4VM |
| 9494007 | MW-209 | 12/2/09 | 12/29/09 | 90064 | TOC | 1 | mg/L | U | U | ND | S4VM |
| 9494008 | TRIP BLANK | | 12/9/09 | 71432 | Benzene | 1 | ug/L | U | U | ND | S4VM |
| 9494008 | TRIP BLANK | | 12/9/09 | 107062 | 1,2-Dichloroethane | 1 | ug/L | U | U | ND | S4VM |
| 9494008 | TRIP BLANK | | 12/9/09 | 75343 | 1,1-Dichloroethane | 1 | ug/L | U | U | ND | S4VM |
| 9494008 | TRIP BLANK | | 12/9/09 | 156592 | cis-1,2-Dichloroethene | 1 | ug/L | U | U | ND | S4VM |
| 9494008 | TRIP BLANK | | 12/9/09 | 75354 | 1,1-Dichloroethene | 1 | ug/L | U | U | ND | S4VM |
| 9494008 | TRIP BLANK | | 12/9/09 | 79016 | Ethene, trichloro- | 1 | ug/L | U | U | ND | S4VM |
| 9494008 | TRIP BLANK | | 12/9/09 | 100414 | Ethylbenzene | 1 | ug/L | U | U | ND | S4VM |
| 9494008 | TRIP BLANK | | 12/9/09 | *1330207 | MP-Xylene | 2 | ug/L | U | U | ND | S4VM |
| 9494008 | TRIP BLANK | | 12/9/09 | 91203 | Naphthalene | 1 | ug/L | U | U | ND | S4VM |
| 9494008 | TRIP BLANK | | 12/9/09 | 95476 | o-Xylene | 1 | ug/L | U | U | ND | S4VM |
| 9494008 | TRIP BLANK | | 12/9/09 | 127184 | Tetrachloroethene | 1 | ug/L | U | U | ND | S4VM |
| 9494008 | TRIP BLANK | | 12/9/09 | 108883 | Toluene | 1 | ug/L | U | U | ND | S4VM |
| 9494008 | TRIP BLANK | | 12/9/09 | 71556 | 1,1,1-Trichloroethane | 1 | ug/L | U | U | ND | S4VM |
| 9494008 | TRIP BLANK | | 12/9/09 | 79005 | 1,1,2-Trichloroethane | 1 | ug/L | U | U | ND | S4VM |
| 9494008 | TRIP BLANK | | 12/9/09 | 75014 | Vinyl Chloride | 1 | ug/L | U | U | ND | S4VM |

**ecology and environment, inc.**
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**MEMORANDUM**

DATE: December 30, 2010

TO: Ryan Whitchurch, START-3 Project Manager, E & E, Portland, Oregon

FROM: Mark Woodke, START-3 Chemist, E & E, Seattle, Washington MW

SUBJ: **Data Summary Check, Northwest Pipe and Casing Site, Troutdale, Oregon**

REF: TDD: 09-07-0014 PAN: 002233.0472.01RA

The data summary check of 1 water (trip blank) and 4 soil samples collected from the Northwest Pipe and Casing site located in Troutdale, Oregon, has been completed. Organic analyses (EPA CLP SOW SOM01.2) were performed by Mitkem Laboratories, Inc., Shealy Environmental, Warwick, Rhode Island.

The samples were numbered:

JCGR3 JCGR4 JCGR5 JCGR6 JCHR7

No discrepancies were noted. Sample results originally qualified as "J" by the laboratory were changed to "JQ" by the secondary reviewer to indicate that the results were estimated below the contract required detection limit. Bias qualifiers were added by the secondary reviewer based on information in the data validation memorandum.

recycled paper

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**
**REGION 10**
1200 Sixth Avenue, Suite 900
Seattle, WA 98101-3140

November 15, 2010

Reply to: Jennifer Crawford
Attn of: OEA-095

**MEMORANDUM**

Subject: Data Validation Report for the Organic Analyses of Soil Samples Collected from the Northwest Pipe and Casing Project Case 40263, SDG JCGR3

From: Jennifer Crawford, Chemist
USEPA R10, OEA, Environmental Services Unit

To: Richard Franklin, On-Scene Coordinator (Removal Action PM)
USEPA R10, Office of Environmental Clean-up

CC: Mark Ader, Project Manager - NWPC
Ginna Grepo-Grove, USEPA R10 RQAM

The quality assurance (QA) review of the analytical data generated from the analysis of four (4) soil samples and one trip blank sample collected from the above referenced site has been completed. These samples were analyzed for Volatile Organic Compounds (VOC), Semi-Volatile Compounds (SVOC) and PCB Aroclors by Mitkem Laboratories located in Warwick, Rhode Island.

All sample analyses were evaluated following EPA's Stage 4 Data Validation Electronic/Manual Process (S4VEM). The validations were conducted and appropriate qualifiers were applied according to the Quality Control Specifications outlined in the Quality Assurance Project Plan (SSSP) for the NW Pipe and Casing Containment Cells project, the technical specifications of the EPA Contract Laboratory Program's (CLP) Statement of Work (SOW) for Multi-Media, Multi-Concentration Organic Analyses (SOM01.2), the Contract Laboratory Program's National Functional Guidelines for Organic Data Review, and the Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use (EPA-540-R08-005). Some of the data quality elements were qualified using the reviewer's professional judgment.

A summary of samples evaluated in this validation report and the pertinent dates for sample collection, sample receipt at the laboratory, extraction and analyses is listed in Attachment 1 – Sample Index.

The conclusions presented herein are based on the information provided for the review.

## I. DATA QUALIFICATIONS

**Summary of Validation Qualifiers Applied**
After the manual and electronic data review, the following data points were qualified:

| AFFECTED SAMPLE(s) | ANALYSIS / ANALYTE | QUAL. D/ND* | EXPLANATION |
|---|---|---|---|
| ALL | VOC - 1,4-Dioxane | R/R | The response factor (RRF) for 1,4-Dioxane was <0.01. 1,4-Dioxane in all VOC samples was consequently qualified unusable, "R". |

| | | | |
|---|---|---|---|
| JCGR3<br>JCGR4 | VOC –<br>Associated compounds to DMC DCA | J/UJ | The recovery of the Deuterated Monitoring Compound (DMC) 1,2-Dichloroethane-$d_4$ (DCA) associated with the target compounds at left was below the applicable acceptance criteria (but greater than 10%). |
| JCGR5 | VOC –<br>Associated compounds to DMCs BUT and TDP | J/UJ | The recovery of the Deuterated Monitoring Compounds (DMC) 2-Butanone-$d_5$ (BUT) and trans-1,3-Dichloropropene-$d_4$ (TDP) associated with the target compounds at left was below the applicable acceptance criteria (but greater than 10%). |
| JCGR4 | VOC –<br>Associated compounds to DMC TOL | J/UJ | The recovery of the Deuterated Monitoring Compound (DMC) Toluene-$d_8$ (TOL) associated with the target compounds at left was below the applicable acceptance criteria (but greater than 10%). |
| JCGR5<br>JCGR6 | VOC –<br>Associated compounds to DMC BEN | J/None | The recovery of the Deuterated Monitoring Compound (DMC) Benzene-$d_6$ (BEN) associated with the target compounds at left was above the applicable acceptance criteria. |
| All | SVOC<br>4-Nitrophenol<br>2,4,6-Trichlorophenol<br>2-Nitrophenol<br>2,4,5-Trichlorophenol | J/UJ | The Closing CCV standard for SVOC analysis was below the percent difference criteria for the compounds listed at left. |
| All | SVOC<br>2,4-Dinitrophenol<br>4,6-Dinitro-2-methylphenol<br>2,3,4,6-Tetrachlorophenol<br>Pentachlorophenol | J/R | The Closing CCV standard for SVOC analysis had a failing RRF for the compounds listed at left (<0.01). |
| All | SVOC<br>2,4-Dimethylphenol | J/UJ | The initial calibration (ICAL) for the compound listed had a %RSD outside the acceptance criteria due to linearity issues. |
| All | SVOC<br>2,4-Dinitrophenol | CRQL raised | The initial calibration (ICAL) for the compound listed had a %RSD outside the acceptance criteria and it was determined the curve had linearity problems at the CRQL. The CRQL was raised to the second calibration standard. |
| JCGR5,<br>JCGR6 | PCB Aroclor / 1254 | J/None | The percent difference (%D) of the 1254 concentrations calculated off the primary and secondary columns are >25% but <60% and were qualified estimated. |

* D/ND = Qualifier for Detected / Non-Detect samples

**Data Qualifiers**

The following is a list of validation qualifiers applied to the sample result(s) when needed to indicate associated out-of-control QA/QC results.

| Data Qualifiers | | |
|---|---|---|
| | U | The analyte was not detected at or above the reported result. |
| | J | The analyte was positively identified. The associated numerical result is an estimate. |
| | UJ | The analyte was not detected at or above the reported estimated result. The associated numerical value is an estimate of the quantitation limit of the analyte in this sample. |
| | R | The data are unusable for all purposes. |
| | N | There is evidence the analyte is present in this sample. |
| | JN | There is evidence that the analyte is present. The associated numerical result is an estimate. |

**Reasons for Validation Qualifiers**

The reasons for applying a validation qualifier to a sample result is also listed in the validated electronic data deliverables (EDDs), under the column header "Reasons". Below is a list of reasons why a data point could be qualified during data validation.

| Reasons for Validation Qualifiers: | |
|---|---|
| <CRQL | The value reported is <Contract Required Quantitation Limits (CRQLs) |
| %D | The percent difference (%D) of the concentrations calculated off the primary and secondary columns are >25% but <60% and were qualified estimated. |
| MULT | Multiple runs were conducted for the analyte. Use the other value reported for the same analyte. The value which is not to be used is qualified 'R'. |
| USE R1 | Use the value(s) reported off the initial analytical run |
| USE DIL | The value reported is over the calibration range. Use the value reported off the dilution run. |
| SURR/DMCs/ IS | The surrogate/deuterated monitoring compound (DMC)/internal standard recoveries did not meet the specified control limits. Results are qualified estimated. |
| RRF | The response factor for the analyte did not meet the minimum acceptance criteria (0.005). |
| MS/MSD | The spiked recoveries and/or RPDs did not meet the specified control limits. Results are qualified estimated. |
| MB | Analyte was qualified as non-detect due to contamination in the associated blank. The value reported is <5x or <10x (if common lab contaminant) the value in the blank. |
| ND | The analyte was not detected in the sample, and is reported at the CRQL with the 'U' Qualifier. |
| COELN | Initial identification erroneous. Peak due to co-elution with other detected target analytes. |
| ICAL | Initial Calibration criteria not met |
| CCV | Continuing calibration criteria not met |
| GPC | GPC Clean-up criteria not met. |
| CLN-UP | Silica gel, alumina or sulfur clean-up criteria not met |
| LCS | LCS/LCSD criteria not met |
| HT | Holding time criteria not met |
| STORE | Sample Storage and preservation specified not met |
| TEMP | Cooler recommended temperature exceeded at the verified time of sample receipt at the lab (VTSR) |
| M/Z | Mass/ion resolution ratio not met |
| DPE | Diphenyl ether interferences. False positive. Elevate reporting limits at level of detection |
| MISMATCH | Mismatch of spectra, interference present. Report at detected level with a "U" qualifier. |
| 2 RUNS | Multiple runs were conducted for the analyte. Use the other value reported for the same analyte. The value which is not to be used is qualified 'R'. |

## II. DATA REVIEW

The analytical data were evaluated following the recommended baseline checks used in the four stages of laboratory analytical data verification and validation for Superfund use listed as follows (EPA-540-R08-005, 2009):

| Stage 1 – Data Validation | | | | |
|---|---|---|---|---|
| | Verified | | N/A | QC Procedure or Check |
| | YES | NO | | |
| 1 | X | | | Documentation identifies the laboratory receiving and conducting analyses, and includes documentation for all samples submitted by the project or requester for analyses. |
| 2 | X | | | Requested analytical methods were performed and the analysis dates are present. |
| 3 | X | | | Requested target analyte results are reported along with the original laboratory data qualifiers and data qualifier definitions for each reported result |
| 4 | X | | | Requested target analyte result units are reported |
| 5 | X | | | Requested reporting limits for all samples are present and results at and below the requested (required) reporting limits are clearly identified (including sample detection limits if required). |
| 6 | X | | | Sampling dates (including times if needed), date and time of laboratory receipt of samples, and sample conditions upon receipt at the laboratory (including preservation, pH and temperature) are documented. |
| 7 | X | | | Sample results are evaluated by comparing sample conditions upon receipt at the laboratory (e.g., preservation checks) and sample characteristics (e.g., percent moisture) to the requirements and guidelines present in national or regional data validation documents, analytical method(s) or contract. |

| Stage 2A – Data Validation | | | | |
|---|---|---|---|---|
| | Verified | | N/A | QC Procedure or Check |
| | YES | NO | | |
| 8 | X | | | Requested methods (handling, preparation, cleanup, and analytical) are performed. |
| 9 | X | | | Method dates (including dates, times and duration of analysis for radiation counting measurements and other methods, if needed) for handling (e.g., Toxicity Characteristic Leaching Procedure), preparation, cleanup and analysis are present, as appropriate. |
| 10 | X | | | Requested spike analytes or compounds (e.g., surrogate, DMCs, LCS spikes, post digestion spikes) have been added, as appropriate. |
| 11 | X | | | Sample holding times (from sampling date to preparation and preparation to analysis) are evaluated. |
| 12 | X | | | Frequency of QC samples is checked for appropriateness (e.g., one LCS per twenty samples in a preparation batch). |
| 13 | X | | | Sample results are evaluated by comparing holding times and sample-related QC data to the requirements and guidelines present in national or regional data validation documents, analytical method(s) or contract |
| | | | | **Stage 2A – Data Validation QC Data** |
| 14 | X | | | method blanks |
| 15 | X | | | surrogate recoveries/deuterated monitoring compounds (DMC) recoveries |
| 16 | X | | | laboratory control sample (LCS) recoveries |
| 17 | X | | | matrix spike and matrix spike duplicate recoveries |
| 18 | | | X | serial dilutions |
| 19 | | | X | post digestion spikes |
| 20 | | | X | standard reference materials |
| 21 | X | | | equipment blanks |

| | | | | |
|---|---|---|---|---|
| 22 | X | | | trip blanks |

## Stage 2B – Data Validation

Stage 2B validation builds on the validation conducted in Stage 2A. Stage 2B validation of the laboratory analytical data package consists of the Stage 2A validation plus the verification and validation checks for the compliance of instrument-related QC.

| | Verified | | N/A | QC Procedure or Check |
|---|---|---|---|---|
| | YES | NO | | |
| 23 | X | | | Initial calibration data (e.g., ICAL standards, ICV standards, ICBs) are provided for all requested analytes and linked to field samples reported. For each initial calibration, the calibration type used is present along with the initial calibration equation used including any weighting factor(s) applied and the associated correlation coefficients, as appropriate. Recalculations of the standard concentrations using the initial calibration curve are present, along with their associated percent recoveries, as appropriate (e.g., if required by the project, method, or contract). For the ICV standard, the associated percent recovery (or percent difference, as appropriate) is present. |
| 24 | X | | | Appropriate number and concentration of initial calibration standards are present. |
| 25 | X | | | Continuing calibration data (e.g. CCV standards and CCBs) are provided for all requested analytes and linked to field samples reported, as appropriate. For the CCV standard(s), the associated percent recoveries (or percent differences, as appropriate) are present. |
| 26 | X | | | Reported samples are bracketed by CCV standards and CCBs standards as appropriate. |
| 27 | X | | | Method specific instrument performance checks are present as appropriate (e.g., tunes for mass spectrometry methods, DDT/Endrin breakdown checks for pesticides and aroclors, instrument blanks and interference checks for ICP methods). |
| 28 | X | | | Frequency of instrument QC samples is checked for appropriateness (e.g., gas chromatography-mass spectroscopy [GC-MS] tunes have been run every 12 hours). |

## Stage 3 – Data Validation

Stage 3 validation builds on the validation conducted in Stage 2B. Stage 3 validation of the laboratory analytical data package consists of the Stage 2B validation plus the recalculation of instrument and sample results from the laboratory instrument responses, and comparison of recalculated results to laboratory reported results.

| | Verified | | N/A | QC Procedure or Check |
|---|---|---|---|---|
| | YES | NO | | |
| 29 | X | | | Instrument response data (e.g., GC peak areas, ICP corrected intensities) are reported for requested analytes, surrogates, internal standards, and DMCs for all requested field samples, matrix spikes, matrix spike duplicates, LCS, and method blanks as well as calibration data and instrument QC checks (e.g., tunes, DDT/Endrin breakdowns, inter-element correction factors, and Florisil cartridge checks). |
| 30 | X | | | Reported target analyte instrument responses are associated with appropriate internal standard analyte(s) for each (or selected) analyte(s) (for methods using internal standard for calibration). |
| 31 | X | | | Fit and appropriateness of the initial calibration curve used or required (e.g., mean calibration factor, regression analysis [linear or non-linear, with or without weighting factors, with or without forcing]) is checked with recalculation of the initial calibration curve for each (or selected) analyte(s) from the instrument response. |
| 32 | X | | | Comparison of instrument response to the minimum response requirements for each (or selected) analyte(s). |
| 33 | X | | | Recalculation of each (or selected) opening and closing CCV (and CCB) response from the peak data reported for each (or selected) analyte(s) from the instrument response, as appropriate. |
| 34 | X | | | Compliance check of recalculated opening and/or closing CCV (and CCB) response to recalculated initial calibration response for each (or selected) analyte(s). |

| | | | | |
|---|---|---|---|---|
| 35 | X | | | Recalculation of percent ratios for each (or selected) tune from the instrument response, as appropriate. |
| 36 | X | | | Compliance check of recalculated percent ratio for each (or selected) tune from the instrument response. |
| 37 | X | | | Recalculation of each (or selected) instrument performance check (e.g., DDT/Endrin breakdown for pesticide analysis, instrument blanks, interference checks) from the instrument response. |
| 38 | X | | | Recalculation and compliance check of retention time windows (for chromatographic methods) for each (or selected) analyte(s) from the laboratory reported retention times. |
| 39 | X | | | Recalculation of reported results for each reported (or selected) target analyte(s) from the instrument response. |
| 40 | X | | | Recalculation of each (or selected) reported spike recovery (surrogate recoveries, DMC recoveries, LCS recoveries, duplicate analyses, matrix spike and matrix spike duplicate recoveries, serial dilutions, post digestion spikes, standard reference materials etc.) from the instrument response. |
| 41 | X | | | Each (or selected) sample result(s) and spike recovery(ies) are evaluated by comparing the recalculated numbers to the laboratory reported numbers according to the requirements and guidelines present in national or regional data validation documents, analytical method(s) or contract |
| **Note:** Selection of analytes, spikes, and performance evaluation checks for the Stage 3 validation checks for a laboratory analytical data package being verified and validated generally will depend on many factors including (but not limited to) the type of verification and validation being performed (manual or electronic), requirements and guidelines present in national or regional data validation documents, analytical method(s) or contract, the number of laboratories reporting the data, the number and type of analytical methods reported, the number of analytes reported in each method, and the number of detected analytes. | | | | |

**Stage 4 – Data Validation**

Stage 4 validation builds on the validation conducted in Stage 3. Stage 4 validation of the laboratory analytical data package consists of the Stage 3 validation plus the evaluation of instrument outputs.

| | Verified | | N/A | QC Procedure or Check |
|---|---|---|---|---|
| | YES | NO | | |
| 42 | X | | | All required instrument outputs (e.g., chromatograms, mass spectra, atomic emission spectra, instrument background corrections, and interference corrections) for evaluating sample and instrument performance are present. |
| 43 | X | | | Sample results are evaluated by checking each (or selected) instrument output (e.g., chromatograms, mass spectra, atomic emission spectra data, instrument background corrections, interference corrections) for correct identification and quantitation of analytes (e.g., peak integrations, use of appropriate internal standards for quantitation, elution order of analytes, and interferences). |
| 44 | X | | | Each (or selected) instrument's output(s) is evaluated for confirmation of non-detected or tentatively identified analytes. |
| **Note:** Selection of instrument outputs for the Stage 4 validation checks for a laboratory analytical data package being verified and validated generally will depend on many factors including, but not limited to, the type of verification and validation being performed (electronic or manual), requirements and guidelines present in national or regional data validation documents, analytical method(s) or contract, the number of laboratories reporting the data, the number and type of analytical methods reported, the number of analytes reported in each method, and the number of detected analytes. | | | | |

Attachments:

1. Summary of Samples Analyzed (Sample Index)
2. Validated Electronic Data Deliverables

1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JCGR3

Lab Name: MITKEM LABORATORIES Contract: EP-W-05-030

Lab Code: MITKEM Case No.: 40263 Mod. Ref No.: SDG No.: JCGR3

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: J1276-01B

Sample wt/vol: 6.50 (g/mL) G Lab File ID: V5M0168.D

Level: (TRACE/LOW/MED) LOW Date Received: 06/19/2010

% Moisture: not dec. 15 Date Analyzed: 06/26/2010

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 10.0 (mL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) µG/KG | Q | |
|---|---|---|---|---|
| 75-71-8 | Dichlorodifluoromethane | 4.5 | U | |
| 74-87-3 | Chloromethane | 4.5 | U | |
| 75-01-4 | Vinyl chloride | 4.5 | U | |
| 74-83-9 | Bromomethane | 4.5 | U | |
| 75-00-3 | Chloroethane | 4.5 | U | |
| 75-69-4 | Trichlorofluoromethane | 4.5 | UJL | DMC |
| 75-35-4 | 1,1-Dichloroethene | 4.5 | UJL | DMC |
| 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 4.5 | UJL | DMC |
| 67-64-1 | Acetone | 9.0 | U | |
| 75-15-0 | Carbon disulfide | 4.5 | U | |
| 79-20-9 | Methyl acetate | 4.5 | UJL | DMC |
| 75-09-2 | Methylene chloride | 4.5 | UJL | DMC |
| 156-60-5 | trans-1,2-Dichloroethene | 4.5 | U | |
| 1634-04-4 | Methyl tert-butyl ether | 4.5 | UJL | DMC |
| 75-34-3 | 1,1-Dichloroethane | 4.5 | U | |
| 156-59-2 | cis-1,2-Dichloroethene | 4.5 | U | |
| 78-93-3 | 2-Butanone | 9.0 | U | |
| 74-97-5 | Bromochloromethane | 4.5 | U | |
| 67-66-3 | Chloroform | 4.5 | U | |
| 71-55-6 | 1,1,1-Trichloroethane | 4.5 | UJL | DMC |
| 110-82-7 | Cyclohexane | 4.5 | U | |
| 56-23-5 | Carbon tetrachloride | 4.5 | UJL | DMC |
| 71-43-2 | Benzene | 4.5 | U | |
| 107-06-2 | 1,2-Dichloroethane | 4.5 | UJL | DMC |
| 123-91-1 | 1,4-Dioxane | 90 | UR | RRF |

10/28/10

Report 1,4-Dioxane for Low-Medium VOA analysis only

SOM01.2 (6/2007)

1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JCGR3

Lab Name: MITKEM LABORATORIES Contract: EP-W-05-030

Lab Code: MITKEM Case No.: 40263 Mod. Ref No.: SDG No.: JCGR3

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: J1276-01B

Sample wt/vol: 6.50 (g/mL) G Lab File ID: V5M0168.D

Level: (TRACE/LOW/MED) LOW Date Received: 06/19/2010

% Moisture: not dec. 15 Date Analyzed: 06/26/2010

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 10.0 (mL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) µG/KG | Q |
|---|---|---|---|
| 79-01-6 | Trichloroethene | 4.5 | U |
| 108-87-2 | Methylcyclohexane | 4.5 | U |
| 78-87-5 | 1,2-Dichloropropane | 4.5 | U |
| 75-27-4 | Bromodichloromethane | 4.5 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 4.5 | U |
| 108-10-1 | 4-Methyl-2-pentanone | 9.0 | U |
| 108-88-3 | Toluene | 4.5 | U |
| 10061-02-6 | trans-1,3-Dichloropropene | 4.5 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 4.5 | U |
| 127-18-4 | Tetrachloroethene | 4.5 | U |
| 591-78-6 | 2-Hexanone | 9.0 | U |
| 124-48-1 | Dibromochloromethane | 4.5 | U |
| 106-93-4 | 1,2-Dibromoethane | 4.5 | UJ DMC |
| 108-90-7 | Chlorobenzene | 4.5 | U |
| 100-41-4 | Ethylbenzene | 4.5 | U |
| 179601-23-1 | m,p-Xylene | 4.5 | U |
| 95-47-6 | o-Xylene | 4.5 | U |
| 100-42-5 | Styrene | 4.5 | U |
| 75-25-2 | Bromoform | 4.5 | U |
| 98-82-8 | Isopropylbenzene | 4.5 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 4.5 | U |
| 541-73-1 | 1,3-Dichlorobenzene | 4.5 | U |
| 106-46-7 | 1,4-Dichlorobenzene | 4.5 | U |
| 95-50-1 | 1,2-Dichlorobenzene | 4.5 | U |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 4.5 | U |
| 120-82-1 | 1,2,4-Trichlorobenzene | 4.5 | U |
| 87-61-6 | 1,2,3-Trichlorobenzene | 4.5 | U |

10/28/10

1J - FORM I VOA-TIC

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

JCGR3

Lab Name: MITKEM LABORATORIES Contract: EP-W-05-030

Lab Code: MITKEM Case No.: 40263 Mod. Ref No.: SDG No.: JCGR3

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: J1276-01B

Sample wt/vol: 6.50 (g/mL) G Lab File ID: V5M0168.D

Level: (TRACE or LOW/MED) LOW Date Received: 06/19/2010

% Moisture: not dec. 15 Date Analyzed: 06/26/2010

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) µG/KG Purge Volume: 10.0 (mL)

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| E966796[1] | Total Alkanes | N/A | | |

[1] EPA-designated Registry Number.

DL 10/28/10

1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JCGR4

Lab Name: MITKEM LABORATORIES Contract: EP-W-05-030

Lab Code: MITKEM Case No.: 40263 Mod. Ref No.: SDG No.: JCGR3

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: J1276-02B

Sample wt/vol: 5.00 (g/mL) G Lab File ID: V5M0169.D

Level: (TRACE/LOW/MED) LOW Date Received: 06/19/2010

% Moisture: not dec. 22 Date Analyzed: 06/26/2010

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 10.0 (mL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) µG/KG | Q | |
|---|---|---|---|---|
| 75-71-8 | Dichlorodifluoromethane | 6.4 | U | |
| 74-87-3 | Chloromethane | 6.4 | U | |
| 75-01-4 | Vinyl chloride | 6.4 | U | |
| 74-83-9 | Bromomethane | 6.4 | U | |
| 75-00-3 | Chloroethane | 6.4 | U | |
| 75-69-4 | Trichlorofluoromethane | 6.4 | UJ L | DMC |
| 75-35-4 | 1,1-Dichloroethene | 6.4 | UJ L | DMC |
| 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 6.4 | UJ L | DMC |
| 67-64-1 | Acetone | 13 | U | |
| 75-15-0 | Carbon disulfide | 6.4 | U | |
| 79-20-9 | Methyl acetate | 6.4 | UJL | DMC |
| 75-09-2 | Methylene chloride | 6.4 | UJL | DMC |
| 156-60-5 | trans-1,2-Dichloroethene | 6.4 | U | |
| 1634-04-4 | Methyl tert-butyl ether | 6.4 | UJ L | DMC |
| 75-34-3 | 1,1-Dichloroethane | 6.4 | U | |
| 156-59-2 | cis-1,2-Dichloroethene | 6.4 | U | |
| 78-93-3 | 2-Butanone | 13 | U | |
| 74-97-5 | Bromochloromethane | 6.4 | U | |
| 67-66-3 | Chloroform | 6.4 | U | |
| 71-55-6 | 1,1,1-Trichloroethane | 6.4 | UJL | DMC |
| 110-82-7 | Cyclohexane | 6.4 | U | |
| 56-23-5 | Carbon tetrachloride | 6.4 | UJ L | DMC |
| 71-43-2 | Benzene | 6.4 | U | |
| 107-06-2 | 1,2-Dichloroethane | 6.4 | UJ L | DMC |
| 123-91-1 | 1,4-Dioxane | 130 | U-K | RRP |

10/29/10

Report 1,4-Dioxane for Low-Medium VOA analysis only

SOM01.2 (6/2007)

0034

1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JCGR4

Lab Name: MITKEM LABORATORIES Contract: EP-W-05-030

Lab Code: MITKEM Case No.: 40263 Mod. Ref No.: SDG No.: JCGR3

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: J1276-02B

Sample wt/vol: 5.00 (g/mL) G Lab File ID: V5M0169.D

Level: (TRACE/LOW/MED) LOW Date Received: 06/19/2010

% Moisture: not dec. 22 Date Analyzed: 06/26/2010

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 10.0 (mL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) µG/KG | Q | |
|---|---|---|---|---|
| 79-01-6 | Trichloroethene | 6.4 | UJL | DMC |
| 108-87-2 | Methylcyclohexane | 6.4 | U | |
| 78-87-5 | 1,2-Dichloropropane | 6.4 | U | |
| 75-27-4 | Bromodichloromethane | 6.4 | U | |
| 10061-01-5 | cis-1,3-Dichloropropene | 6.4 | U | |
| 108-10-1 | 4-Methyl-2-pentanone | 13 | U | |
| 108-88-3 | Toluene | 6.4 | UJL | DMC |
| 10061-02-6 | trans-1,3-Dichloropropene | 6.4 | U | |
| 79-00-5 | 1,1,2-Trichloroethane | 6.4 | U | |
| 127-18-4 | Tetrachloroethene | 6.4 | UJL | DMC |
| 591-78-6 | 2-Hexanone | 13 | U | |
| 124-48-1 | Dibromochloromethane | 6.4 | U | |
| 106-93-4 | 1,2-Dibromoethane | 6.4 | UJL | DMC |
| 108-90-7 | Chlorobenzene | 6.4 | U | |
| 100-41-4 | Ethylbenzene | 6.4 | UJL | DMC |
| 179601-23-1 | m,p-Xylene | 6.4 | UJL | DMC |
| 95-47-6 | o-Xylene | 6.4 | UJL | DMC |
| 100-42-5 | Styrene | 6.4 | UJL | DMC |
| 75-25-2 | Bromoform | 6.4 | U | |
| 98-82-8 | Isopropylbenzene | 6.4 | UJL | DMC |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 6.4 | U | |
| 541-73-1 | 1,3-Dichlorobenzene | 6.4 | U | |
| 106-46-7 | 1,4-Dichlorobenzene | 6.4 | U | |
| 95-50-1 | 1,2-Dichlorobenzene | 6.4 | U | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 6.4 | U | |
| 120-82-1 | 1,2,4-Trichlorobenzene | 6.4 | U | |
| 87-61-6 | 1,2,3-Trichlorobenzene | 6.4 | U | |

10/28/10

1J - FORM I VOA-TIC

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

JCGR4

Lab Name: MITKEM LABORATORIES Contract: EP-W-05-030

Lab Code: MITKEM Case No.: 40263 Mod. Ref No.: SDG No.: JCGR3

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: J1276-02B

Sample wt/vol: 5.00 (g/mL) G Lab File ID: V5M0169.D

Level: (TRACE or LOW/MED) LOW Date Received: 06/19/2010

% Moisture: not dec. 22 Date Analyzed: 06/26/2010

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) µG/KG Purge Volume: 10.0 (mL)

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| E96679E[1] | Total Alkanes | N/A | | |

[1]EPA-designated Registry Number.

1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.: JCGR5

Lab Name: MITKEM LABORATORIES | Contract: EP-W-05-030

Lab Code: MITKEM | Case No.: 40263 | Mod. Ref No.: | SDG No.: JCGR3

Matrix: (SOIL/SED/WATER) SOIL | Lab Sample ID: J1276-03B

Sample wt/vol: 5.40 (g/mL) G | Lab File ID: V5M0165.D

Level: (TRACE/LOW/MED) LOW | Date Received: 06/19/2010

% Moisture: not dec. 14 | Date Analyzed: 06/26/2010

GC Column: DB-624 | ID: 0.25 (mm) | Dilution Factor: 1.0

Soil Extract Volume: (uL) | Soil Aliquot Volume: (uL)

Purge Volume: 10.0 (mL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) µG/KG | Q | |
|---|---|---|---|---|
| 75-71-8 | Dichlorodifluoromethane | 5.4 | U | |
| 74-87-3 | Chloromethane | 5.4 | U | |
| 75-01-4 | Vinyl chloride | 5.4 | U | |
| 74-83-9 | Bromomethane | 5.4 | U | |
| 75-00-3 | Chloroethane | 5.4 | U | |
| 75-69-4 | Trichlorofluoromethane | 5.4 | U | |
| 75-35-4 | 1,1-Dichloroethene | 5.4 | U | |
| 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 5.4 | U | |
| 67-64-1 | Acetone | 11 | UJL | DMC |
| 75-15-0 | Carbon disulfide | 5.4 | U | |
| 79-20-9 | Methyl acetate | 5.4 | U | |
| 75-09-2 | Methylene chloride | 5.4 | U | |
| 156-60-5 | trans-1,2-Dichloroethene | 5.4 | U | |
| 1634-04-4 | Methyl tert-butyl ether | 5.4 | U | |
| 75-34-3 | 1,1-Dichloroethane | 5.4 | U | |
| 156-59-2 | cis-1,2-Dichloroethene | 5.4 | U | |
| 78-93-3 | 2-Butanone | 11 | UJL | DMC |
| 74-97-5 | Bromochloromethane | 5.4 | U | |
| 67-66-3 | Chloroform | 5.4 | U | |
| 71-55-6 | 1,1,1-Trichloroethane | 5.4 | U | |
| 110-82-7 | Cyclohexane | 5.4 | U | |
| 56-23-5 | Carbon tetrachloride | 5.4 | U | |
| 71-43-2 | Benzene | 5.4 | U | |
| 107-06-2 | 1,2-Dichloroethane | 5.4 | U | |
| 123-91-1 | 1,4-Dioxane | 110 | ~~U~~ R | |

JZ 10/28/10

Report 1,4-Dioxane for Low-Medium VOA analysis only

SOM01.2 (6/2007)

1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JCGR5

Lab Name: MITKEM LABORATORIES Contract: EP-W-05-030

Lab Code: MITKEM Case No.: 40263 Mod. Ref No.: SDG No.: JCGR3

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: J1276-03B

Sample wt/vol: 5.40 (g/mL) G Lab File ID: V5M0165.D

Level: (TRACE/LOW/MED) LOW Date Received: 06/19/2010

% Moisture: not dec. 14 Date Analyzed: 06/26/2010

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 10.0 (mL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) µG/KG | Q | |
|---|---|---|---|---|
| 79-01-6 | Trichloroethene | 5.4 | U | |
| 108-87-2 | Methylcyclohexane | 5.4 | U | |
| 78-87-5 | 1,2-Dichloropropane | 5.4 | U | |
| 75-27-4 | Bromodichloromethane | 5.4 | U | |
| 10061-01-5 | cis-1,3-Dichloropropene | 5.4 | UJ | DMC |
| 108-10-1 | 4-Methyl-2-pentanone | 11 | U | |
| 108-88-3 | Toluene | 5.4 | U | |
| 10061-02-6 | trans-1,3-Dichloropropene | 5.4 | UJ | DMC |
| 79-00-5 | 1,1,2-Trichloroethane | 5.4 | UJ | DMC |
| 127-18-4 | Tetrachloroethene | 5.4 | U | |
| 591-78-6 | 2-Hexanone | 11 | U | |
| 124-48-1 | Dibromochloromethane | 5.4 | U | |
| 106-93-4 | 1,2-Dibromoethane | 5.4 | U | |
| 108-90-7 | Chlorobenzene | 5.4 | U | |
| 100-41-4 | Ethylbenzene | 5.4 | U | |
| 179601-23-1 | m,p-Xylene | 5.4 | U | |
| 95-47-6 | o-Xylene | 5.4 | U | |
| 100-42-5 | Styrene | 5.4 | U | |
| 75-25-2 | Bromoform | 5.4 | U | |
| 98-82-8 | Isopropylbenzene | 5.4 | U | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 5.4 | U | |
| 541-73-1 | 1,3-Dichlorobenzene | 5.4 | U | |
| 106-46-7 | 1,4-Dichlorobenzene | 5.4 | U | |
| 95-50-1 | 1,2-Dichlorobenzene | 5.4 | U | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 5.4 | U | |
| 120-82-1 | 1,2,4-Trichlorobenzene | 5.4 | U | |
| 87-61-6 | 1,2,3-Trichlorobenzene | 5.4 | U | |

DZ 10/28/10

1J - FORM I VOA-TIC

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

JCGR5

Lab Name: MITKEM LABORATORIES Contract: EP-W-05-030

Lab Code: MITKEM Case No.: 40263 Mod. Ref No.: SDG No.: JCGR3

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: J1276-03B

Sample wt/vol: 5.40 (g/mL) G Lab File ID: V5M0165.D

Level: (TRACE or LOW/MED) LOW Date Received: 06/19/2010

% Moisture: not dec. 14 Date Analyzed: 06/26/2010

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) µG/KG Purge Volume: 10.0 (mL)

| | CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|---|
| 01 | | Unknown-01 | 5.173 | 7.5 | J |
| 02 | 556-67-2 | Cyclotetrasiloxane, octameth | 11.144 | 10 | NJ |
| | E96679[1] | Total Alkanes | N/A | | |

[1] EPA-designated Registry Number.

1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JCGR6

Lab Name: MITKEM LABORATORIES Contract: EP-W-05-030

Lab Code: MITKEM Case No.: 40263 Mod. Ref No.: SDG No.: JCGR3

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: J1276-04B

Sample wt/vol: 5.40 (g/mL) G Lab File ID: V5M0166.D

Level: (TRACE/LOW/MED) LOW Date Received: 06/19/2010

% Moisture: not dec. 25 Date Analyzed: 06/26/2010

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 10.0 (mL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) µG/KG | Q |
|---|---|---|---|
| 75-71-8 | Dichlorodifluoromethane | 6.2 | U |
| 74-87-3 | Chloromethane | 6.2 | U |
| 75-01-4 | Vinyl chloride | 6.2 | U |
| 74-83-9 | Bromomethane | 6.2 | U |
| 75-00-3 | Chloroethane | 6.2 | U |
| 75-69-4 | Trichlorofluoromethane | 6.2 | U |
| 75-35-4 | 1,1-Dichloroethene | 6.2 | U |
| 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 6.2 | U |
| 67-64-1 | Acetone | 12 | U |
| 75-15-0 | Carbon disulfide | 6.2 | U |
| 79-20-9 | Methyl acetate | 6.2 | U |
| 75-09-2 | Methylene chloride | 6.2 | U |
| 156-60-5 | trans-1,2-Dichloroethene | 6.2 | U |
| 1634-04-4 | Methyl tert-butyl ether | 6.2 | U |
| 75-34-3 | 1,1-Dichloroethane | 6.2 | U |
| 156-59-2 | cis-1,2-Dichloroethene | 6.2 | U |
| 78-93-3 | 2-Butanone | 12 | U |
| 74-97-5 | Bromochloromethane | 6.2 | U |
| 67-66-3 | Chloroform | 6.2 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 6.2 | U |
| 110-82-7 | Cyclohexane | 6.2 | U |
| 56-23-5 | Carbon tetrachloride | 6.2 | U |
| 71-43-2 | Benzene | 6.2 | U |
| 107-06-2 | 1,2-Dichloroethane | 6.2 | U |
| 123-91-1 | 1,4-Dioxane | 120 | ~~U~~ R |

11/2/10

Report 1,4-Dioxane for Low-Medium VOA analysis only

SOM01.2 (6/2007)

1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JCGR6

Lab Name: MITKEM LABORATORIES Contract: EP-W-05-030

Lab Code: MITKEM Case No.: 40263 Mod. Ref No.: SDG No.: JCGR3

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: J1276-04B

Sample wt/vol: 5.40 (g/mL) G Lab File ID: V5M0166.D

Level: (TRACE/LOW/MED) LOW Date Received: 06/19/2010

% Moisture: not dec. 25 Date Analyzed: 06/26/2010

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 10.0 (mL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) ug/KG | Q |
|---|---|---|---|
| 79-01-6 | Trichloroethene | 6.2 | U |
| 108-87-2 | Methylcyclohexane | 6.2 | U |
| 78-87-5 | 1,2-Dichloropropane | 6.2 | U |
| 75-27-4 | Bromodichloromethane | 6.2 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 6.2 | U |
| 108-10-1 | 4-Methyl-2-pentanone | 12 | U |
| 108-88-3 | Toluene | 6.2 | U |
| 10061-02-6 | trans-1,3-Dichloropropene | 6.2 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 6.2 | U |
| 127-18-4 | Tetrachloroethene | 6.2 | U |
| 591-78-6 | 2-Hexanone | 12 | U |
| 124-48-1 | Dibromochloromethane | 6.2 | U |
| 106-93-4 | 1,2-Dibromoethane | 6.2 | U |
| 108-90-7 | Chlorobenzene | 6.2 | U |
| 100-41-4 | Ethylbenzene | 6.2 | U |
| 179601-23-1 | m,p-Xylene | 6.2 | U |
| 95-47-6 | o-Xylene | 6.2 | U |
| 100-42-5 | Styrene | 6.2 | U |
| 75-25-2 | Bromoform | 6.2 | U |
| 98-82-8 | Isopropylbenzene | 6.2 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 6.2 | U |
| 541-73-1 | 1,3-Dichlorobenzene | 6.2 | U |
| 106-46-7 | 1,4-Dichlorobenzene | 6.2 | U |
| 95-50-1 | 1,2-Dichlorobenzene | 6.2 | U |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 6.2 | U |
| 120-82-1 | 1,2,4-Trichlorobenzene | 6.2 | U |
| 87-61-6 | 1,2,3-Trichlorobenzene | 6.2 | U |

11/2/10

1J - FORM I VOA-TIC

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

JCGR6

Lab Name: MITKEM LABORATORIES Contract: EP-W-05-030

Lab Code: MITKEM Case No.: 40263 Mod. Ref No.: SDG No.: JCGR3

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: J1276-04B

Sample wt/vol: 5.40 (g/mL) G Lab File ID: V5M0166.D

Level: (TRACE or LOW/MED) LOW Date Received: 06/19/2010

% Moisture: not dec. 25 Date Analyzed: 06/26/2010

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) µG/KG Purge Volume: 10.0 (mL)

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| E966796[1] | Total Alkanes | N/A | | |

[1] EPA-designated Registry Number.

1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JCGR7

Lab Name: MITKEM LABORATORIES Contract: EP-W-05-030

Lab Code: MITKEM Case No.: 40263 Mod. Ref No.: SDG No.: JCGR3

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: J1276-05A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V5M0102.D

Level: (TRACE/LOW/MED) LOW Date Received: 06/19/2010

% Moisture: not dec. Date Analyzed: 06/20/2010

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) µG/L | Q |
|---|---|---|---|
| 75-71-8 | Dichlorodifluoromethane | 5.0 | U |
| 74-87-3 | Chloromethane | 5.0 | U |
| 75-01-4 | Vinyl chloride | 5.0 | U |
| 74-83-9 | Bromomethane | 5.0 | U |
| 75-00-3 | Chloroethane | 5.0 | U |
| 75-69-4 | Trichlorofluoromethane | 5.0 | U |
| 75-35-4 | 1,1-Dichloroethene | 5.0 | U |
| 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | 5.0 | U |
| 67-64-1 | Acetone | 10 | U |
| 75-15-0 | Carbon disulfide | 5.0 | U |
| 79-20-9 | Methyl acetate | 5.0 | U |
| 75-09-2 | Methylene chloride | 5.0 | U |
| 156-60-5 | trans-1,2-Dichloroethene | 5.0 | U |
| 1634-04-4 | Methyl tert-butyl ether | 5.0 | U |
| 75-34-3 | 1,1-Dichloroethane | 5.0 | U |
| 156-59-2 | cis-1,2-Dichloroethene | 5.0 | U |
| 78-93-3 | 2-Butanone | 10 | U |
| 74-97-5 | Bromochloromethane | 5.0 | U |
| 67-66-3 | Chloroform | 5.0 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 5.0 | U |
| 110-82-7 | Cyclohexane | 5.0 | U |
| 56-23-5 | Carbon tetrachloride | 5.0 | U |
| 71-43-2 | Benzene | 5.0 | U |
| 107-06-2 | 1,2-Dichloroethane | 5.0 | U |
| 123-91-1 | 1,4-Dioxane | 100 | ~~U~~ R |

11/2/10

Report 1,4-Dioxane for Low-Medium VOA analysis only

SOM01.2 (6/2007)

2057

1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JCGR7

Lab Name: MITKEM LABORATORIES Contract: EP-W-05-030

Lab Code: MITKEM Case No.: 40263 Mod. Ref No.: SDG No.: JCGR3

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: J1276-05A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V5M0102.D

Level: (TRACE/LOW/MED) LOW Date Received: 06/19/2010

% Moisture: not dec. Date Analyzed: 06/20/2010

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) µG/L | Q |
|---|---|---|---|
| 79-01-6 | Trichloroethene | 5.0 | U |
| 108-87-2 | Methylcyclohexane | 5.0 | U |
| 78-87-5 | 1,2-Dichloropropane | 5.0 | U |
| 75-27-4 | Bromodichloromethane | 5.0 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 5.0 | U |
| 108-10-1 | 4-Methyl-2-pentanone | 10 | U |
| 108-88-3 | Toluene | 5.0 | U |
| 10061-02-6 | trans-1,3-Dichloropropene | 5.0 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 5.0 | U |
| 127-18-4 | Tetrachloroethene | 5.0 | U |
| 591-78-6 | 2-Hexanone | 10 | U |
| 124-48-1 | Dibromochloromethane | 5.0 | U |
| 106-93-4 | 1,2-Dibromoethane | 5.0 | U |
| 108-90-7 | Chlorobenzene | 5.0 | U |
| 100-41-4 | Ethylbenzene | 5.0 | U |
| 179601-23-1 | m,p-Xylene | 2.3 | J Q |
| 95-47-6 | o-Xylene | 5.0 | U |
| 100-42-5 | Styrene | 5.0 | U |
| 75-25-2 | Bromoform | 5.0 | U |
| 98-82-8 | Isopropylbenzene | 5.0 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 5.0 | U |
| 541-73-1 | 1,3-Dichlorobenzene | 5.0 | U |
| 106-46-7 | 1,4-Dichlorobenzene | 5.0 | U |
| 95-50-1 | 1,2-Dichlorobenzene | 5.0 | U |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 5.0 | U |
| 120-82-1 | 1,2,4-Trichlorobenzene | 5.0 | U |
| 87-61-6 | 1,2,3-Trichlorobenzene | 5.0 | U |

11/2/10

1J - FORM I VOA-TIC

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

JCGR7

Lab Name: MITKEM LABORATORIES Contract: EP-W-05-030

Lab Code: MITKEM Case No.: 40263 Mod. Ref No.: SDG No.: JCGR3

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: J1276-05A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V5M0102.D

Level: (TRACE or LOW/MED) LOW Date Received: 06/19/2010

% Moisture: not dec. Date Analyzed: 06/20/2010

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) µG/L Purge Volume: 5.0 (mL)

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| E966796[1] | Total Alkanes | N/A | | |

[1]EPA-designated Registry Number.

1D - FORM I SV-1

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JCGR3

Lab Name: MITKEM LABORATORIES Contract: EP-W-05-030

Lab Code: MITKEM Case No.: 40263 Mod. Ref No.: SDG No.: JCGR3

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: J1276-01A

Sample wt/vol: 30.3 (g/mL) G Lab File ID: S4E1027.D

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: 15 ✓ Decanted: (Y/N) N Date Received: 06/19/2010

Concentrated Extract Volume: 500 (uL) Date Extracted: 06/23/2010

Injection Volume: 2.0 (uL) GPC Factor: 2.00 Date Analyzed: 07/01/2010

GPC Cleanup: (Y/N) Y pH: 6.4 Dilution Factor: 1.0

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) µG/KG | Q | |
|---|---|---|---|---|
| 100-52-7 | Benzaldehyde | 200 | U | |
| 108-95-2 | Phenol | 200 | U | |
| 111-44-4 | Bis(2-chloroethyl)ether | 200 | U | |
| 95-57-8 | 2-Chlorophenol | 200 | U | |
| 95-48-7 | 2-Methylphenol | 200 | U | |
| 108-60-1 | 2,2'-Oxybis(1-chloropropane) | 200 | U | |
| 98-86-2 | Acetophenone | 200 | U | |
| 106-44-5 | 4-Methylphenol | 200 | U | |
| 621-64-7 | N-Nitroso-di-n-propylamine | 200 | U | |
| 67-72-1 | Hexachloroethane | 200 | U | |
| 98-95-3 | Nitrobenzene | 200 | U | |
| 78-59-1 | Isophorone | 200 | U | |
| 88-75-5 | 2-Nitrophenol | 200 | ~~U~~ UJ | CCV RSD |
| 105-67-9 | 2,4-Dimethylphenol | 200 | UJK | ICAL |
| 111-91-1 | Bis(2-chloroethoxy)methane | 200 | U | |
| 120-83-2 | 2,4-Dichlorophenol | 200 | U | |
| 91-20-3 | Naphthalene | 200 | U | |
| 106-47-8 | 4-Chloroaniline | 200 | U | |
| 87-68-3 | Hexachlorobutadiene | 200 | U | |
| 105-60-2 | Caprolactam | 200 | U | |
| 59-50-7 | 4-Chloro-3-methylphenol | 200 | U | |
| 91-57-6 | 2-Methylnaphthalene | 200 | U | |
| 77-47-4 | Hexachlorocyclopentadiene | 200 | U | |
| 88-06-2 | 2,4,6-Trichlorophenol | 200 | ~~U~~ UJ | CCV RSD |
| 95-95-4 | 2,4,5-Trichlorophenol | 200 | ~~U~~ UJ | CCV RSD |
| 92-52-4 | 1,1'-Biphenyl | 200 | U | |
| 91-58-7 | 2-Chloronaphthalene | 200 | U | |
| 88-74-4 | 2-Nitroaniline | 380 | U | |
| 131-11-3 | Dimethylphthalate | 200 | U | |
| 606-20-2 | 2,6-Dinitrotoluene | 200 | U | |
| 208-96-8 | Acenaphthylene | 200 | U | |
| 99-09-2 | 3-Nitroaniline | 380 | U | |
| 83-32-9 | Acenaphthene | 54 | J Q | LCRQL |

07/15/10

1E - FORM I SV-2

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JCGR3

Lab Name: MITKEM LABORATORIES Contract: EP-W-05-030

Lab Code: MITKEM Case No.: 40263 Mod. Ref No.: SDG No.: JCGR3

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: J1276-01A

Sample wt/vol: 30.3 (g/mL) G Lab File ID: S4E1027.D

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: 15 Decanted: (Y/N) N Date Received: 06/19/2010

Concentrated Extract Volume: 500 (uL) Date Extracted: 06/23/2010

Injection Volume: 2.0 (uL) GPC Factor: 2.00 Date Analyzed: 07/01/2010

GPC Cleanup: (Y/N) Y pH: 6.4 Dilution Factor: 1.0

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) µG/KG | Q | |
|---|---|---|---|---|
| 51-28-5 | 2,4-Dinitrophenol | ~~380~~ 760 | ~~U~~ R | ✓ ICAL, CCV RRF |
| 100-02-7 | 4-Nitrophenol | 380 | ~~U~~ UJL | CCV RSD |
| 132-64-9 | Dibenzofuran | 200 | U | |
| 121-14-2 | 2,4-Dinitrotoluene | 200 | U | |
| 84-66-2 | Diethylphthalate | 200 | U | |
| 86-73-7 | Fluorene | 200 | U | |
| 7005-72-3 | 4-Chlorophenyl-phenylether | 200 | U | |
| 100-01-6 | 4-Nitroaniline | 380 | U | |
| 534-52-1 | 4,6-Dinitro-2-methylphenol | 380 | ~~U~~ R | CCV RRF |
| 86-30-6 | N-Nitrosodiphenylamine 1 | 200 | U | |
| 95-94-3 | 1,2,4,5-Tetrachlorobenzene | 200 | U | |
| 101-55-3 | 4-Bromophenyl-phenylether | 200 | U | |
| 118-74-1 | Hexachlorobenzene | 200 | U | |
| 1912-24-9 | Atrazine | 200 | U | |
| 87-86-5 | Pentachlorophenol | 380 | ~~U~~ R | CCV RRF |
| 85-01-8 | Phenanthrene | 55 | J Q | |
| 120-12-7 | Anthracene | 200 | U | |
| 86-74-8 | Carbazole | 200 | U | |
| 84-74-2 | Di-n-butylphthalate | 200 | U | |
| 206-44-0 | Fluoranthene | 110 | J Q | |
| 129-00-0 | Pyrene | 120 | J Q | |
| 85-68-7 | Butylbenzylphthalate | 200 | U | |
| 91-94-1 | 3,3'-Dichlorobenzidine | 200 | U | |
| 56-55-3 | Benzo(a)anthracene | 200 | U | |
| 218-01-9 | Chrysene | 200 | U | |
| 117-81-7 | Bis(2-ethylhexyl)phthalate | 200 | U | |
| 117-84-0 | Di-n-octylphthalate | 200 | U | |
| 205-99-2 | Benzo(b)fluoranthene | 200 | U | |
| 207-08-9 | Benzo(k)fluoranthene | 200 | U | |
| 50-32-8 | Benzo(a)pyrene | 200 | U | |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | 200 | U | |
| 53-70-3 | Dibenzo(a,h)anthracene | 200 | U | |
| 191-24-2 | Benzo(g,h,i)perylene | 200 | U | |
| 58-90-2 | 2,3,4,6-Tetrachlorophenol | 200 | ~~U~~ R | CCV RRF |

(1) Cannot be separated from Diphenylamine

11/5/10

1K - FORM I SV-TIC

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

JCGR3

Lab Name: MITKEM LABORATORIES Contract: EP-W-05-030

Lab Code: MITKEM Case No.: 40263 Mod. Ref No.: SDG No.: JCGR3

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: J1276-01A

Sample wt/vol: 30.3 (g/mL) G Lab File ID: S4E1027.D

Level: (TRACE or LOW/MED) LOW Extraction: (Type) SONC

% Moisture: 15 Decanted: (Y/N) N Date Received: 06/19/2010

Concentrated Extract Volume: 500 (uL) Date Extracted: 06/23/2010

Injection Volume: 2.0 (uL) GPC Factor: 2.00 Date Analyzed: 07/01/2010

GPC Cleanup: (Y/N) Y pH: 6.4 Dilution Factor: 1.0

CONCENTRATION UNITS: (ug/L or ug/Kg) µG/KG

| | CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|---|
| 01 | | Unknown-01 | 2.448 | 100 | J N |
| 02 | | Unknown-02 | 2.644 | 130 | J |
| 03 | | Unknown-03 | 3.276 | 95 | J |
| 04 | | Unknown-04 | 12.187 | 250 | J |
| 05 | | Unknown-05 | 12.291 | 120 | J |
| 06 | | Unknown-06 | 12.549 | 140 | J |
| 07 | | Unknown-07 | 12.829 | 93 | J |
| 08 | | Unknown-08 | 13.077 | 190 | J |
| 09 | | Unknown-09 | 13.170 | 400 | J |
| 10 | | Unknown-10 | 13.222 | 240 | J |
| 11 | 20475-86-9 | Urs-12-en-24-oic acid, 3-oxo | 13.429 | 690 | NJ |
| 12 | | Unknown-11 | 13.636 | 150 | J N |
| 13 | | Unknown-12 | 13.771 | 930 | J |
| 14 | | Unknown-13 | 13.947 | 270 | J |
| 15 | | Unknown-14 | 14.030 | 390 | J |
| | E96679E[2] | Total Alkanes | N/A | 78 | J |

[2]EPA-designated Registry Number.

11/4/10

1D - FORM I SV-1

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JCGR4

Lab Name: MITKEM LABORATORIES Contract: EP-W-05-030

Lab Code: MITKEM Case No.: 40263 Mod. Ref No.: SDG No.: JCGR3

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: J1276-02A

Sample wt/vol: 30.3 (g/mL) G Lab File ID: S4E1028.D

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: 22 Decanted: (Y/N) N Date Received: 06/19/2010

Concentrated Extract Volume: 500 (uL) Date Extracted: 06/23/2010

Injection Volume: 2.0 (uL) GPC Factor: 2.00 Date Analyzed: 07/01/2010

GPC Cleanup: (Y/N) Y pH: 7.2 Dilution Factor: 1.0

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) µG/KG | Q |
|---|---|---|---|
| 100-52-7 | Benzaldehyde | 220 | U |
| 108-95-2 | Phenol | 220 | U |
| 111-44-4 | Bis(2-chloroethyl)ether | 220 | U |
| 95-57-8 | 2-Chlorophenol | 220 | U |
| 95-48-7 | 2-Methylphenol | 220 | U |
| 108-60-1 | 2,2´-Oxybis(1-chloropropane) | 220 | U |
| 98-86-2 | Acetophenone | 220 | U |
| 106-44-5 | 4-Methylphenol | 220 | U |
| 621-64-7 | N-Nitroso-di-n-propylamine | 220 | U |
| 67-72-1 | Hexachloroethane | 220 | U |
| 98-95-3 | Nitrobenzene | 220 | U |
| 78-59-1 | Isophorone | 220 | U |
| 88-75-5 | 2-Nitrophenol | 220 | ~~U~~ UJL CCV RSD |
| 105-67-9 | 2,4-Dimethylphenol | 220 | UJK ICAL |
| 111-91-1 | Bis(2-chloroethoxy)methane | 220 | U |
| 120-83-2 | 2,4-Dichlorophenol | 220 | U |
| 91-20-3 | Naphthalene | 220 | U |
| 106-47-8 | 4-Chloroaniline | 220 | U |
| 87-68-3 | Hexachlorobutadiene | 220 | U |
| 105-60-2 | Caprolactam | 220 | U |
| 59-50-7 | 4-Chloro-3-methylphenol | 220 | U |
| 91-57-6 | 2-Methylnaphthalene | 220 | U |
| 77-47-4 | Hexachlorocyclopentadiene | 220 | U |
| 88-06-2 | 2,4,6-Trichlorophenol | 220 | ~~U~~ UJL CCV RSD |
| 95-95-4 | 2,4,5-Trichlorophenol | 220 | ~~U~~ UJL CCV RSD |
| 92-52-4 | 1,1´-Biphenyl | 220 | U |
| 91-58-7 | 2-Chloronaphthalene | 220 | U |
| 88-74-4 | 2-Nitroaniline | 420 | U |
| 131-11-3 | Dimethylphthalate | 220 | U |
| 606-20-2 | 2,6-Dinitrotoluene | 220 | U |
| 208-96-8 | Acenaphthylene | 220 | U |
| 99-09-2 | 3-Nitroaniline | 420 | U |
| 83-32-9 | Acenaphthene | 300 | |

11/5/10

1E - FORM I SV-2

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JCGR4

Lab Name: MITKEM LABORATORIES Contract: EP-W-05-030

Lab Code: MITKEM Case No.: 40263 Mod. Ref No.: SDG No.: JCGR3

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: J1276-02A

Sample wt/vol: 30.3 (g/mL) G Lab File ID: S4E1028.D

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: 22 Decanted: (Y/N) N Date Received: 06/19/2010

Concentrated Extract Volume: 500 (uL) Date Extracted: 06/23/2010

Injection Volume: 2.0 (uL) GPC Factor: 2.00 Date Analyzed: 07/01/2010

GPC Cleanup: (Y/N) Y pH: 7.2 Dilution Factor: 1.0

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) ug/KG | Q | |
|---|---|---|---|---|
| 51-28-5 | 2,4-Dinitrophenol | ~~420~~ 840 | ~~U~~ R | CCV RRF |
| 100-02-7 | 4-Nitrophenol | 420 | ~~U~~ UJ | CCV RSD |
| 132-64-9 | Dibenzofuran | 100 | JQ | |
| 121-14-2 | 2,4-Dinitrotoluene | 220 | U | |
| 84-66-2 | Diethylphthalate | 220 | U | |
| 86-73-7 | Fluorene | 130 | JQ | |
| 7005-72-3 | 4-Chlorophenyl-phenylether | 220 | U | |
| 100-01-6 | 4-Nitroaniline | 420 | U | |
| 534-52-1 | 4,6-Dinitro-2-methylphenol | 420 | ~~U~~ R | CCV/RRF |
| 86-30-6 | N-Nitrosodiphenylamine [1] | 220 | U | |
| 95-94-3 | 1,2,4,5-Tetrachlorobenzene | 220 | U | |
| 101-55-3 | 4-Bromophenyl-phenylether | 220 | U | |
| 118-74-1 | Hexachlorobenzene | 220 | U | |
| 1912-24-9 | Atrazine | 220 | U | |
| 87-86-5 | Pentachlorophenol | 420 | ~~U~~ R | CCV RRF |
| 85-01-8 | Phenanthrene | 790 | | |
| 120-12-7 | Anthracene | 170 | JQ | |
| 86-74-8 | Carbazole | 220 | U | |
| 84-74-2 | Di-n-butylphthalate | 220 | U | |
| 206-44-0 | Fluoranthene | 1700 | | |
| 129-00-0 | Pyrene | 1400 | | |
| 85-68-7 | Butylbenzylphthalate | 220 | U | |
| 91-94-1 | 3,3'-Dichlorobenzidine | 220 | U | |
| 56-55-3 | Benzo(a)anthracene | 410 | | |
| 218-01-9 | Chrysene | 470 | | |
| 117-81-7 | Bis(2-ethylhexyl)phthalate | 220 | U | |
| 117-84-0 | Di-n-octylphthalate | 220 | U | |
| 205-99-2 | Benzo(b)fluoranthene | 400 | | |
| 207-08-9 | Benzo(k)fluoranthene | 180 | JQ | |
| 50-32-8 | Benzo(a)pyrene | 310 | | |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | 140 | JQ | |
| 53-70-3 | Dibenzo(a,h)anthracene | 69 | JQ | |
| 191-24-2 | Benzo(g,h,i)perylene | 150 | JQ | |
| 58-90-2 | 2,3,4,6-Tetrachlorophenol | 220 | ~~U~~ R | CCV RRF |

(1) Cannot be separated from Diphenylamine

11/5/10

1K - FORM I SV-TIC

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

JCGR4

Lab Name: MITKEM LABORATORIES Contract: EP-W-05-030

Lab Code: MITKEM Case No.: 40263 Mod. Ref No.: SDG No.: JCGR3

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: J1276-02A

Sample wt/vol: 30.3 (g/mL) G Lab File ID: S4E1028.D

Level: (TRACE or LOW/MED) LOW Extraction: (Type) SONC

% Moisture: 22 Decanted: (Y/N) N Date Received: 06/19/2010

Concentrated Extract Volume: 500 (uL) Date Extracted: 06/23/2010

Injection Volume: 2.0 (uL) GPC Factor: 2.00 Date Analyzed: 07/01/2010

GPC Cleanup: (Y/N) Y pH: 7.2 Dilution Factor: 1.0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

| | CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|---|
| 01 | | Unknown-01 | 2.851 | 150 | J N |
| 02 | 7320-53-8 | Dibenzofuran, 4-methyl- | 6.598 | 91 | NJ |
| 03 | | Unknown-02 | 7.757 | 130 | J N |
| 04 | 610-48-0 | Anthracene, 1-methyl- | 7.788 | 180 | NJ |
| 05 | | Unknown-03 | 7.861 | 630 | J N |
| 06 | 35465-71-5 | 2-Phenylnaphthalene | 8.047 | 270 | NJ |
| 07 | 3674-66-6 | Phenanthrene, 2,5-dimethyl- | 8.223 | 110 | NJ |
| 08 | | Unknown-04 | 8.296 | 190 | J N |
| 09 | 5737-13-3 | Cyclopenta(def)phenanthrenon | 8.368 | 120 | NJ |
| 10 | 2381-21-7 | Pyrene, 1-methyl- | 8.989 | 130 | NJ |
| 11 | | Unknown-05 | 10.945 | 130 | J N |
| 12 | | Unknown-06 | 11.525 | 120 | J |
| 13 | | Unknown-07 | 11.794 | 91 | J |
| 14 | 213-46-7 | 1,2:7,8-Dibenzophenanthrene | 12.291 | 210 | NJ |
| 15 | | Unknown-08 | 12.539 | 370 | J N |
| 16 | | Unknown-09 | 12.643 | 140 | J |
| 17 | | Unknown-10 | 12.839 | 410 | J |
| 18 | | Unknown-11 | 13.077 | 760 | J |
| 19 | | Unknown-12 | 13.160 | 340 | J |
| 20 | | Unknown-13 | 13.222 | 270 | J |
| 21 | | Unknown-14 | 13.315 | 170 | J |
| 22 | | Unknown-15 | 13.388 | 380 | J |
| 23 | | Unknown-16 | 13.533 | 180 | J |
| 24 | | Unknown-17 | 13.595 | 120 | J |
| 25 | | Unknown-18 | 13.771 | 900 | J |
| 26 | | Unknown-19 | 13.947 | 220 | J |
| 27 | | Unknown-20 | 14.030 | 470 | J |
| | E96679[2] | Total Alkanes | N/A | | |

[2]EPA-designated Registry Number.

1D - FORM I SV-1

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JCGR5

Lab Name: MITKEM LABORATORIES Contract: EP-W-05-030

Lab Code: MITKEM Case No.: 40263 Mod. Ref No.: SDG No.: JCGR3

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: J1276-03A

Sample wt/vol: 30.2 (g/mL) G Lab File ID: S4E1031.D

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: 14 Decanted: (Y/N) N Date Received: 06/19/2010

Concentrated Extract Volume: 500 (uL) Date Extracted: 06/23/2010

Injection Volume: 2.0 (uL) GPC Factor: 2.00 Date Analyzed: 07/01/2010

GPC Cleanup: (Y/N) Y pH: 6.8 Dilution Factor: 1.0

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 100-52-7 | Benzaldehyde | 200 | U |
| 108-95-2 | Phenol | 200 | U |
| 111-44-4 | Bis(2-chloroethyl)ether | 200 | U |
| 95-57-8 | 2-Chlorophenol | 200 | U |
| 95-48-7 | 2-Methylphenol | 200 | U |
| 108-60-1 | 2,2'-Oxybis(1-~~chloro~~propane) | 200 | U |
| 98-86-2 | Acetophenone | 200 | U |
| 106-44-5 | 4-Methylphenol | 200 | U |
| 621-64-7 | N-Nitroso-di-n-propylamine | 200 | U |
| 67-72-1 | Hexachloroethane | 200 | U |
| 98-95-3 | Nitrobenzene | 200 | U |
| 78-59-1 | Isophorone | 200 | U |
| 88-75-5 | 2-Nitrophenol | 200 | ~~U~~ UJL CCV RSD |
| 105-67-9 | 2,4-Dimethylphenol | 200 | UJK ICAL |
| 111-91-1 | Bis(2-chloroethoxy)methane | 200 | U |
| 120-83-2 | 2,4-Dichlorophenol | 200 | U |
| 91-20-3 | Naphthalene | 200 | U |
| 106-47-8 | 4-Chloroaniline | 200 | U |
| 87-68-3 | Hexachlorobutadiene | 200 | U |
| 105-60-2 | Caprolactam | 200 | U |
| 59-50-7 | 4-Chloro-3-methylphenol | 200 | U |
| 91-57-6 | 2-Methylnaphthalene | 200 | U |
| 77-47-4 | Hexachlorocyclopentadiene | 200 | U |
| 88-06-2 | 2,4,6-Trichlorophenol | 200 | ~~U~~ UJL CCV RSD |
| 95-95-4 | 2,4,5-Trichlorophenol | 200 | ~~U~~ UJL CCV RSD |
| 92-52-4 | 1,1'-Biphenyl | 200 | U |
| 91-58-7 | 2-Chloronaphthalene | 200 | U |
| 88-74-4 | 2-Nitroaniline | 380 | U |
| 131-11-3 | Dimethylphthalate | 200 | U |
| 606-20-2 | 2,6-Dinitrotoluene | 200 | U |
| 208-96-8 | Acenaphthylene | 200 | U |
| 99-09-2 | 3-Nitroaniline | 380 | U |
| 83-32-9 | Acenaphthene | 87 | J Q |

11/5/10

1E - FORM I SV-2

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JCGR5

Lab Name: MITKEM LABORATORIES Contract: EP-W-05-030

Lab Code: MITKEM Case No.: 40263 Mod. Ref No.: SDG No.: JCGR3

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: J1276-03A

Sample wt/vol: 30.2 (g/mL) G Lab File ID: S4E1031.D

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: 14 Decanted: (Y/N) N Date Received: 06/19/2010

Concentrated Extract Volume: 500 (uL) Date Extracted: 06/23/2010

Injection Volume: 2.0 (uL) GPC Factor: 2.00 Date Analyzed: 07/01/2010

GPC Cleanup: (Y/N) Y pH: 6.8 Dilution Factor: 1.0

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) µG/KG | Q | |
|---|---|---|---|---|
| 51-28-5 | 2,4-Dinitrophenol | ~~380~~ 760 | ~~U~~ R | ICAL, CCV RRF |
| 100-02-7 | 4-Nitrophenol | 380 | ~~U~~ UJL | CCV RSD |
| 132-64-9 | Dibenzofuran | 200 | U | |
| 121-14-2 | 2,4-Dinitrotoluene | 200 | U | |
| 84-66-2 | Diethylphthalate | 200 | U | |
| 86-73-7 | Fluorene | 49 | J Q | |
| 7005-72-3 | 4-Chlorophenyl-phenylether | 200 | U | |
| 100-01-6 | 4-Nitroaniline | 380 | U | |
| 534-52-1 | 4,6-Dinitro-2-methylphenol | 380 | ~~U~~ R | CCV RRF |
| 86-30-6 | N-Nitrosodiphenylamine (1) | 200 | U | |
| 95-94-3 | 1,2,4,5-Tetrachlorobenzene | 200 | U | |
| 101-55-3 | 4-Bromophenyl-phenylether | 200 | U | |
| 118-74-1 | Hexachlorobenzene | 200 | U | |
| 1912-24-9 | Atrazine | 200 | U | |
| 87-86-5 | Pentachlorophenol | 380 | ~~U~~ R | CCV RRF |
| 85-01-8 | Phenanthrene | 240 | | |
| 120-12-7 | Anthracene | 56 | J Q | |
| 86-74-8 | Carbazole | 200 | U | |
| 84-74-2 | Di-n-butylphthalate | 200 | U | |
| 206-44-0 | Fluoranthene | 450 | | |
| 129-00-0 | Pyrene | 340 | | |
| 85-68-7 | Butylbenzylphthalate | 200 | U | |
| 91-94-1 | 3,3'-Dichlorobenzidine | 200 | U | |
| 56-55-3 | Benzo(a)anthracene | 55 | J Q | |
| 218-01-9 | Chrysene | 61 | J Q | |
| 117-81-7 | Bis(2-ethylhexyl)phthalate | 200 | U | |
| 117-84-0 | Di-n-octylphthalate | 200 | U | |
| 205-99-2 | Benzo(b)fluoranthene | 200 | U | |
| 207-08-9 | Benzo(k)fluoranthene | 200 | U | |
| 50-32-8 | Benzo(a)pyrene | 200 | U | |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | 200 | U | |
| 53-70-3 | Dibenzo(a,h)anthracene | 200 | U | |
| 191-24-2 | Benzo(g,h,i)perylene | 200 | U | |
| 58-90-2 | 2,3,4,6-Tetrachlorophenol | 200 | ~~U~~ R | CCV RRF |

(1) Cannot be separated from Diphenylamine

11/5/10

1K - FORM I SV-TIC

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.: JCGR5

Lab Name: MITKEM LABORATORIES | Contract: EP-W-05-030

Lab Code: MITKEM | Case No.: 40263 | Mod. Ref No.: | SDG No.: JCGR3

Matrix: (SOIL/SED/WATER) SOIL | Lab Sample ID: J1276-03A

Sample wt/vol: 30.2 (g/mL) G | Lab File ID: S4E1031.D

Level: (TRACE or LOW/MED) LOW | Extraction: (Type) SONC

% Moisture: 14 | Decanted: (Y/N) N | Date Received: 06/19/2010

Concentrated Extract Volume: 500 (uL) | Date Extracted: 06/23/2010

Injection Volume: 2.0 (uL) | GPC Factor: 2.00 | Date Analyzed: 07/01/2010

GPC Cleanup: (Y/N) Y | pH: 6.8 | Dilution Factor: 1.0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

| | CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|---|
| 01 | | Unknown-01 | 2.448 | 98 | JN |
| 02 | | Unknown-02 | 2.644 | 130 | J |
| 03 | | Unknown-03 | 2.851 | 150 | J |
| 04 | | Unknown-04 | 3.276 | 83 | J |
| 05 | | Unknown-05 | 3.565 | 78 | J |
| 06 | | Unknown-06 | 4.776 | 110 | J |
| 07 | | Unknown-07 | 7.861 | 160 | J |
| 08 | | Unknown-08 | 8.368 | 150 | J |
| 09 | | Unknown-09 | 9.776 | 150 | J |
| 10 | 1000131-19-4 | 13-Methylhentriacontane | 11.525 | 95 | NJ |
| 11 | | Unknown-10 | 12.177 | 460 | JN |
| 12 | | Unknown-11 | 12.280 | 280 | J |
| 13 | 83-46-5 | .beta.-Sitosterol | 12.539 | 480 | NJ |
| 14 | | Unknown-12 | 12.643 | 130 | JN |
| 15 | | Unknown-13 | 12.725 | 160 | J |
| 16 | | Unknown-14 | 12.829 | 560 | J |
| 17 | | Unknown-15 | 13.046 | 560 | J |
| 18 | | Unknown-16 | 13.077 | 640 | J |
| 19 | | Unknown-17 | 13.170 | 570 | J |
| 20 | | Unknown-18 | 13.222 | 460 | J |
| 21 | | Unknown-19 | 13.326 | 160 | J |
| 22 | | Unknown-20 | 13.429 | 1200 | J |
| 23 | | Unknown-21 | 13.543 | 130 | J |
| 24 | | Unknown-22 | 13.584 | 90 | J |
| 25 | | Unknown-23 | 13.771 | 1000 | J |
| 26 | | Unknown-24 | 13.947 | 410 | J |
| 27 | | Unknown-25 | 14.029 | 560 | J |
| | E96679[2] | Total Alkanes | N/A | 140 | JN |

[2]EPA-designated Registry Number.

SOM01.2 (6/2007)

1D - FORM I SV-1

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JCGR6

Lab Name: MITKEM LABORATORIES Contract: EP-W-05-030

Lab Code: MITKEM Case No.: 40263 Mod. Ref No.: SDG No.: JCGR3

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: J1276-04A

Sample wt/vol: 30.3 (g/mL) G Lab File ID: S4E1032.D

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: 25 Decanted: (Y/N) N Date Received: 06/19/2010

Concentrated Extract Volume: 500 (uL) Date Extracted: 06/23/2010

Injection Volume: 2.0 (uL) GPC Factor: 2.00 Date Analyzed: 07/01/2010

GPC Cleanup: (Y/N) Y pH: 7.3 Dilution Factor: 1.0

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) µG/KG | Q |
|---|---|---|---|
| 100-52-7 | Benzaldehyde | 220 | U |
| 108-95-2 | Phenol | 220 | U |
| 111-44-4 | Bis(2-chloroethyl)ether | 220 | U |
| 95-57-8 | 2-Chlorophenol | 220 | U |
| 95-48-7 | 2-Methylphenol | 220 | U |
| 108-60-1 | 2,2'-Oxybis(1-chloropropane) | 220 | U |
| 98-86-2 | Acetophenone | 220 | U |
| 106-44-5 | 4-Methylphenol | 220 | U |
| 621-64-7 | N-Nitroso-di-n-propylamine | 220 | U |
| 67-72-1 | Hexachloroethane | 220 | U |
| 98-95-3 | Nitrobenzene | 220 | U |
| 78-59-1 | Isophorone | 220 | U |
| 88-75-5 | 2-Nitrophenol | 220 | ~~U~~ UJL CCV RSD |
| 105-67-9 | 2,4-Dimethylphenol | 220 | UJK ICAL |
| 111-91-1 | Bis(2-chloroethoxy)methane | 220 | U |
| 120-83-2 | 2,4-Dichlorophenol | 220 | U |
| 91-20-3 | Naphthalene | 220 | U |
| 106-47-8 | 4-Chloroaniline | 220 | U |
| 87-68-3 | Hexachlorobutadiene | 220 | U |
| 105-60-2 | Caprolactam | 220 | U |
| 59-50-7 | 4-Chloro-3-methylphenol | 220 | U |
| 91-57-6 | 2-Methylnaphthalene | 220 | U |
| 77-47-4 | Hexachlorocyclopentadiene | 220 | U |
| 88-06-2 | 2,4,6-Trichlorophenol | 220 | ~~U~~ UJL CCV RSD |
| 95-95-4 | 2,4,5-Trichlorophenol | 220 | ~~U~~ UJL CCV RSD |
| 92-52-4 | 1,1'-Biphenyl | 220 | U |
| 91-58-7 | 2-Chloronaphthalene | 220 | U |
| 88-74-4 | 2-Nitroaniline | 440 | U |
| 131-11-3 | Dimethylphthalate | 220 | U |
| 606-20-2 | 2,6-Dinitrotoluene | 220 | U |
| 208-96-8 | Acenaphthylene | 220 | U |
| 99-09-2 | 3-Nitroaniline | 440 | U |
| 83-32-9 | Acenaphthene | 360 | |

11/5/11

1E - FORM I SV-2

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JCGR6

Lab Name: MITKEM LABORATORIES Contract: EP-W-05-030

Lab Code: MITKEM Case No.: 40263 Mod. Ref No.: SDG No.: JCGR3

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: J1276-04A

Sample wt/vol: 30.3 (g/mL) G Lab File ID: S4E1032.D

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: 25 Decanted: (Y/N) N Date Received: 06/19/2010

Concentrated Extract Volume: 500 (uL) Date Extracted: 06/23/2010

Injection Volume: 2.0 (uL) GPC Factor: 2.00 Date Analyzed: 07/01/2010

GPC Cleanup: (Y/N) Y pH: 7.3 Dilution Factor: 1.0

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) ug/KG | Q | |
|---|---|---|---|---|
| 51-28-5 | 2,4-Dinitrophenol | ~~440~~ 880 | ~~U~~ R | ICAL, CCV RRF |
| 100-02-7 | 4-Nitrophenol | 440 | ~~U~~ UJL | CCV RSD |
| 132-64-9 | Dibenzofuran | 120 | J Q | |
| 121-14-2 | 2,4-Dinitrotoluene | 220 | U | |
| 84-66-2 | Diethylphthalate | 220 | U | |
| 86-73-7 | Fluorene | 130 | J Q | |
| 7005-72-3 | 4-Chlorophenyl-phenylether | 220 | U | |
| 100-01-6 | 4-Nitroaniline | 440 | U | |
| 534-52-1 | 4,6-Dinitro-2-methylphenol | 440 | ~~U~~ R | CCV RRF |
| 86-30-6 | N-Nitrosodiphenylamine (1) | 220 | U | |
| 95-94-3 | 1,2,4,5-Tetrachlorobenzene | 220 | U | |
| 101-55-3 | 4-Bromophenyl-phenylether | 220 | U | |
| 118-74-1 | Hexachlorobenzene | 220 | U | |
| 1912-24-9 | Atrazine | 220 | U | |
| 87-86-5 | Pentachlorophenol | 440 | ~~U~~ R | CCV RRF |
| 85-01-8 | Phenanthrene | 480 | | |
| 120-12-7 | Anthracene | 79 | J Q | |
| 86-74-8 | Carbazole | 220 | U | |
| 84-74-2 | Di-n-butylphthalate | 220 | U | |
| 206-44-0 | Fluoranthene | 640 | | |
| 129-00-0 | Pyrene | 470 | | |
| 85-68-7 | Butylbenzylphthalate | 220 | U | |
| 91-94-1 | 3,3'-Dichlorobenzidine | 220 | U | |
| 56-55-3 | Benzo(a)anthracene | 93 | J Q | |
| 218-01-9 | Chrysene | 95 | J Q | |
| 117-81-7 | Bis(2-ethylhexyl)phthalate | 220 | U | |
| 117-84-0 | Di-n-octylphthalate | 220 | U | |
| 205-99-2 | Benzo(b)fluoranthene | 59 | J Q | |
| 207-08-9 | Benzo(k)fluoranthene | 63 | J Q | |
| 50-32-8 | Benzo(a)pyrene | 52 | J Q | |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | 220 | U | |
| 53-70-3 | Dibenzo(a,h)anthracene | 220 | U | |
| 191-24-2 | Benzo(g,h,i)perylene | 220 | U | |
| 58-90-2 | 2,3,4,6-Tetrachlorophenol | 220 | ~~U~~ R | CCV RRF |

(1) Cannot be separated from Diphenylamine

11/5/10

1K - FORM I SV-TIC

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

JCGR6

Lab Name: MITKEM LABORATORIES Contract: EP-W-05-030

Lab Code: MITKEM Case No.: 40263 Mod. Ref No.: SDG No.: JCGR3

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: J1276-04A

Sample wt/vol: 30.3 (g/mL) G Lab File ID: S4E1032.D

Level: (TRACE or LOW/MED) LOW Extraction: (Type) SONC

% Moisture: 25 Decanted: (Y/N) N Date Received: 06/19/2010

Concentrated Extract Volume: 500 (uL) Date Extracted: 06/23/2010

Injection Volume: 2.0 (uL) GPC Factor: 2.00 Date Analyzed: 07/01/2010

GPC Cleanup: (Y/N) Y pH: 7.3 Dilution Factor: 1.0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

| | CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|---|
| 01 | | Unknown-01 | 2.448 | 260 | J |
| 02 | | Unknown-02 | 2.644 | 210 | J |
| 03 | | Unknown-03 | 4.797 | 330 | J |
| 04 | | Unknown-04 | 7.861 | 970 | J |
| 05 | | Unknown-05 | 7.954 | 110 | J |
| 06 | 35465-71-5 | 2-Phenylnaphthalene | 8.047 | 170 | NJ |
| 07 | | Unknown-06 | 8.295 | 130 | J |
| 08 | | Unknown-07 | 10.780 | 190 | J |
| 09 | | Unknown-08 | 10.862 | 120 | J |
| 10 | | Unknown-09 | 10.945 | 270 | J |
| 11 | | Unknown-10 | 11.183 | 330 | J |
| 12 | | Unknown-11 | 11.328 | 95 | J |
| 13 | | Unknown-12 | 11.390 | 430 | J |
| 14 | | Unknown-13 | 11.432 | 300 | J |
| 15 | | Unknown-14 | 11.473 | 400 | J |
| 16 | | Unknown-15 | 11.514 | 460 | J |
| 17 | | Unknown-16 | 11.597 | 130 | J |
| 18 | | Unknown-17 | 11.670 | 830 | J |
| 19 | | Unknown-18 | 11.742 | 110 | J |
| 20 | | Unknown-19 | 11.959 | 120 | J |
| 21 | | Unknown-20 | 12.363 | 89 | J |
| 22 | | Unknown-21 | 12.436 | 130 | J |
| 23 | | Unknown-22 | 12.643 | 340 | J |
| 24 | | Unknown-23 | 12.870 | 430 | J |
| 25 | | Unknown-24 | 13.170 | 570 | J |
| 26 | | Unknown-25 | 13.222 | 200 | J |
| 27 | | Unknown-26 | 13.315 | 240 | J |
| 28 | | Unknown-27 | 13.429 | 330 | J |
| 29 | | Unknown-28 | 13.947 | 290 | J |
| | E96679[2] | Total Alkanes | N/A | | |

[2]EPA-designated Registry Number.

11/5/10

1H - FORM I ARO

AROCLOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JCGR3

Lab Name: MITKEM LABORATORIES Contract: EP-W-05-030

Lab Code: MITKEM Case No.: 40263 Mod. Ref No.: SDG No.: JCGR3

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: J1276-01A

Sample wt/vol: 30.0 (g/mL) G Lab File ID: E2J5695F.D/E2J5695R.D

% Moisture: 15 Decanted: (Y/N) N Date Received: 06/19/2010

Extraction: (Type) SONC Date Extracted: 06/22/2010

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 07/03/2010

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 6.4 Sulfur Cleanup: (Y/N) Y

Acid Cleanup: (Y/N) Y

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) µG/KG | Q |
|---|---|---|---|
| 12674-11-2 | Aroclor-1016 | 39 | U |
| 11104-28-2 | Aroclor-1221 | 39 | U |
| 11141-16-5 | Aroclor-1232 | 39 | U |
| 53469-21-9 | Aroclor-1242 | 39 | U |
| 12672-29-6 | Aroclor-1248 | 39 | U |
| 11097-69-1 | Aroclor-1254 | 73 | Jor |
| 11096-82-5 | Aroclor-1260 | 39 | U |
| 37324-23-5 | Aroclor-1262 | 39 | U |
| 11100-14-4 | Aroclor-1268 | 39 | U |

X 11/5/10

11/5/10

1H - FORM I ARO

AROCLOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JCGR4

Lab Name: MITKEM LABORATORIES Contract: EP-W-05-030

Lab Code: MITKEM Case No.: 40263 Mod. Ref No.: SDG No.: JCGR3

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: J1276-02A

Sample wt/vol: 30.0 (g/mL) G Lab File ID: E2J5696F.D/E2J5696R.D

% Moisture: 22 Decanted: (Y/N) N Date Received: 06/19/2010

Extraction: (Type) SONC Date Extracted: 06/22/2010

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 07/04/2010

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.2 Sulfur Cleanup: (Y/N) Y

Acid Cleanup: (Y/N) Y

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) µG/KG | Q |
|---|---|---|---|
| 12674-11-2 | Aroclor-1016 | 42 | U |
| 11104-28-2 | Aroclor-1221 | 42 | U |
| 11141-16-5 | Aroclor-1232 | 42 | U |
| 53469-21-9 | Aroclor-1242 | 42 | U |
| 12672-29-6 | Aroclor-1248 | 42 | U |
| 11097-69-1 | Aroclor-1254 | 120 | |
| 11096-82-5 | Aroclor-1260 | 42 | U |
| 37324-23-5 | Aroclor-1262 | 42 | U |
| 11100-14-4 | Aroclor-1268 | 42 | U |

11/5/10

1H - FORM I ARO

AROCLOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JCGR5

Lab Name: MITKEM LABORATORIES Contract: EP-W-05-030

Lab Code: MITKEM Case No.: 40263 Mod. Ref No.: SDG No.: JCGR3

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: J1276-03A

Sample wt/vol: 30.2 (g/mL) G Lab File ID: E2J5699F.D/E2J5699R.D

% Moisture: 14 Decanted: (Y/N) N Date Received: 06/19/2010

Extraction: (Type) SONC Date Extracted: 06/22/2010

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 07/04/2010

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 6.8 Sulfur Cleanup: (Y/N) Y

Acid Cleanup: (Y/N) Y

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) µG/KG | Q |
|---|---|---|---|
| 12674-11-2 | Aroclor-1016 | 38 | U |
| 11104-28-2 | Aroclor-1221 | 38 | U |
| 11141-16-5 | Aroclor-1232 | 38 | U |
| 53469-21-9 | Aroclor-1242 | 38 | U |
| 12672-29-6 | Aroclor-1248 | 38 | U |
| 11097-69-1 | Aroclor-1254 | 76 | ~~P~~ JK %D |
| 11096-82-5 | Aroclor-1260 | 38 | U |
| 37324-23-5 | Aroclor-1262 | 38 | U |
| 11100-14-4 | Aroclor-1268 | 38 | U |

11/5/10

1H - FORM I ARO

AROCLOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JCGR6

Lab Name: MITKEM LABORATORIES Contract: EP-W-05-030

Lab Code: MITKEM Case No.: 40263 Mod. Ref No.: SDG No.: JCGR3

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: J1276-04A

Sample wt/vol: 30.2 (g/mL) G Lab File ID: E2J5700F.D/E2J5700R.D

% Moisture: 25 Decanted: (Y/N) N Date Received: 06/19/2010

Extraction: (Type) SONC Date Extracted: 06/22/2010

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 07/04/2010

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.3 Sulfur Cleanup: (Y/N) Y

Acid Cleanup: (Y/N) Y

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) µG/KG | Q |
|---|---|---|---|
| 12674-11-2 | Aroclor-1016 | 44 | U |
| 11104-28-2 | Aroclor-1221 | 44 | U |
| 11141-16-5 | Aroclor-1232 | 44 | U |
| 53469-21-9 | Aroclor-1242 | 44 | U |
| 12672-29-6 | Aroclor-1248 | 44 | U |
| 11097-69-1 | Aroclor-1254 | 42 | ~~J~~ K %D |
| 11096-82-5 | Aroclor-1260 | 44 | U |
| 37324-23-5 | Aroclor-1262 | 44 | U |
| 11100-14-4 | Aroclor-1268 | 44 | U |

14/5/10

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**
**REGION 10**
1200 Sixth Avenue, Suite 900
Seattle, WA 98101-3140

July 14, 2010

Reply To
Attn. Of: **OEA-095**

**MEMORANDUM**

SUBJECT: Data Validation for Northwest Pipe & Casing, Case# 40263, SDG: MJCGR3, Inorganic Analysis

FROM: Donald Matheny, Chemist
Environmental Services Unit, OEA

TO: Richard Franklin, On-Scene Coordinator
Office of Environmental Cleanup (OOO)

CC: Renee Nordeen, Ecology & Environment, Inc.

The data validation of inorganic analyses for the above sample set is complete. Four soils were analyzed for total elements by Silver Valley Labs, Kellogg, ID. The sample numbers for this delivery group are:

MJCGR3 MJCGR4 MJCGR5 MJCGR6

**DATA QUALIFICATIONS**

The following comments refer to the lab's performance in meeting the specifications outlined in the "CLP Statement of Work (CLP-SOW) for Inorganic Analysis, rev. ILM05.4", the "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review" and the judgment of the reviewer. The comments presented herein are based on the information provided for the review.

**TIMELINESS** - Acceptable

Holding times from the date of collection to the date of digestion and analyses were met for all elements (180 days, Hg 28 days). Samples were collected on 6/17/10. ICP-AES analysis was performed on 7/8/10. Mercury analysis was performed on 7/8/10.

**INSTRUMENT CALIBRATION/VERIFICTION** - Acceptable

For ICP-AES, instrument calibration was performed in accordance with method requirements. Recoveries for instrument verification standards (91-107%) met the frequency (10%) and recovery (90-110%) criteria.

For mercury, a blank and six standards were digested for instrument calibration. The correlation coefficient (0.999) met the linearity criterion ($\geq$ 0.995). Percent recoveries for verification standards (99-103%) met the frequency (10%) and recovery (80-120%) criteria.

Quantitation verification standards met both the frequency and recovery criteria for all elements.

**INTERFERENCE CHECK SAMPLE (ICS)** - Acceptable

An ICS was analyzed at the required frequency and recoveries met the criteria (80-120% or $\pm$ 2xCRQL) for all elements.

**LABORATORY CONTROL SAMPLES (LCS)** - Acceptable

A solid LCS was digested and analyzed. Recoveries were within the control limits for soils.

**BLANKS** - Acceptable

Preparation and instrument control blanks were prepared and analyzed in accordance with method requirements. Blanks were not detected within a concentration factor (5X) of sample values.

**MATRIX SPIKE ANALYSIS**

A matrix spike was analyzed for sample MJCGR4. Percent recoveries (79-123%) met the criterion (75-125%) for all elements with the exception of antimony (45%). Data were qualified (J or UJ) for this element and may be biased low.

**DUPLICATE SAMPLE ANALYSIS** - Acceptable

A duplicate sample was analyzed for sample MJCGR4. Relative percent differences ($\leq$ 22%) met the control limits ($\pm$ 35% or $\pm$ 2xCRQL) for soils.

**SERIAL DILUTION** - Acceptable

A serial dilution was analyzed for sample MJCGR4. Percent differences ($\leq$ 9%) met the acceptance criteria ($\leq$ 10%) for the serial dilution analysis.

**ASSESSMENT SUMMARY**

The following is a summary of qualified data:

Antimony data were qualified (J or UJ) due to a low spike recovery. Values for antimony may be biased low.

**DATA QUALIFIERS**

U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

J - The associated value is an estimated quantity.

R - The data are unusable. The analyte may or may not be present in the sample.

UJ - The analyte was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.

# USEPA-CLP

## 1A-IN

## INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJCGR3

Lab Name: SVL Analytical, Inc. Contract: EP-W-08-068

Lab Code: SVL Case No.: 40263 NRAS No.: SDG NO.: MJCGR3

Matrix (soil/water): SOIL Lab Sample ID: MJCGR3

Level (low/med): LOW Date Received: 06/22/2010

% Solids: 85.4

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 15400 | | | P |
| 7440-36-0 | Antimony | 7.0 | ~~U~~ | ~~N~~ UJ | P |
| 7440-38-2 | Arsenic | 2.0 | | | P |
| 7440-39-3 | Barium | 98.0 | | | P |
| 7440-41-7 | Beryllium | 0.46 | J | | P |
| 7440-43-9 | Cadmium | 1.4 | | | P |
| 7440-70-2 | Calcium | 4570 | | | P |
| 7440-47-3 | Chromium | 16.9 | | | P |
| 7440-48-4 | Cobalt | 16.8 | | | P |
| 7440-50-8 | Copper | 35.8 | | * | P |
| 7439-89-6 | Iron | 31300 | | | P |
| 7439-92-1 | Lead | 4.5 | | | P |
| 7439-95-4 | Magnesium | 4240 | | | P |
| 7439-96-5 | Manganese | 606 | | | P |
| 7439-97-6 | Mercury | 0.12 | U | | CV |
| 7440-02-0 | Nickel | 12.9 | | | P |
| 7440-09-7 | Potassium | 694 | | | P |
| 7782-49-2 | Selenium | 4.1 | U | | P |
| 7440-22-4 | Silver | 2.2 | | | P |
| 7440-23-5 | Sodium | 275 | J | | P |
| 7440-28-0 | Thallium | 2.0 | J | | P |
| 7440-62-2 | Vanadium | 73.2 | | | P |
| 7440-66-6 | Zinc | 52.1 | | | P |

DM 7-14-10

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts: Y

Comments: ARTIFACTS: PLANT MATTER

# USEPA-CLP

## 1A-IN

## INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJCGR4

Lab Name: SVL Analytical, Inc. Contract: EP-W-08-068

Lab Code: SVL Case No.: 40263 NRAS No.: SDG NO.: MJCGR3

Matrix (soil/water): SOIL Lab Sample ID: MJCGR4

Level (low/med): LOW Date Received: 06/22/2010

% Solids: 75.9

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 19700 | | | P |
| 7440-36-0 | Antimony | 7.9 | ~~J~~ | ~~N~~ UJ | P |
| 7440-38-2 | Arsenic | 2.7 | | | P |
| 7440-39-3 | Barium | 137 | | | P |
| 7440-41-7 | Beryllium | 0.57 | J | | P |
| 7440-43-9 | Cadmium | 1.5 | | | P |
| 7440-70-2 | Calcium | 5810 | | | P |
| 7440-47-3 | Chromium | 19.2 | | | P |
| 7440-48-4 | Cobalt | 17.2 | | | P |
| 7440-50-8 | Copper | 38.9 | | ~~*~~ | P |
| 7439-89-6 | Iron | 36300 | | | P |
| 7439-92-1 | Lead | 6.2 | | | P |
| 7439-95-4 | Magnesium | 5160 | | | P |
| 7439-96-5 | Manganese | 676 | | | P |
| 7439-97-6 | Mercury | 0.13 | U | | CV |
| 7440-02-0 | Nickel | 12.8 | | | P |
| 7440-09-7 | Potassium | 942 | | | P |
| 7782-49-2 | Selenium | 4.6 | U | | P |
| 7440-22-4 | Silver | 2.6 | | | P |
| 7440-23-5 | Sodium | 268 | J | | P |
| 7440-28-0 | Thallium | 1.7 | J | | P |
| 7440-62-2 | Vanadium | 77.7 | | | P |
| 7440-66-6 | Zinc | 60.1 | | | P |

DM 7-14-10

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts: Y

Comments: ARTIFACTS: PLANT MATTER

# USEPA-CLP

## 1A-IN

## INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJCGR5

Lab Name: SVL Analytical, Inc. Contract: EP-W-08-068

Lab Code: SVL Case No.: 40263 NRAS No.: SDG NO.: MJCGR3

Matrix (soil/water): SOIL Lab Sample ID: MJCGR5

Level (low/med): LOW Date Received: 06/22/2010

% Solids: 86.2

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 16400 | | | P |
| 7440-36-0 | Antimony | 0.17 | ~~J~~ | ~~N~~ J | P |
| 7440-38-2 | Arsenic | 3.3 | | | P |
| 7440-39-3 | Barium | 161 | | | P |
| 7440-41-7 | Beryllium | 0.64 | | | P |
| 7440-43-9 | Cadmium | 1.4 | | | P |
| 7440-70-2 | Calcium | 4110 | | | P |
| 7440-47-3 | Chromium | 22.5 | | | P |
| 7440-48-4 | Cobalt | 14.9 | | | P |
| 7440-50-8 | Copper | 30.4 | | ~~J~~ | P |
| 7439-89-6 | Iron | 30900 | | | P |
| 7439-92-1 | Lead | 7.5 | | | P |
| 7439-95-4 | Magnesium | 5020 | | | P |
| 7439-96-5 | Manganese | 564 | | | P |
| 7439-97-6 | Mercury | 0.12 | U | | CV |
| 7440-02-0 | Nickel | 19.0 | | | P |
| 7440-09-7 | Potassium | 1220 | | | P |
| 7782-49-2 | Selenium | 4.1 | U | | P |
| 7440-22-4 | Silver | 2.1 | | | P |
| 7440-23-5 | Sodium | 165 | J | | P |
| 7440-28-0 | Thallium | 1.6 | J | | P |
| 7440-62-2 | Vanadium | 80.8 | | | P |
| 7440-66-6 | Zinc | 60.4 | | | P |

DM 7-14-10

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts: Y

Comments: ARTIFACTS: PLANT MATTER

# USEPA-CLP

## 1A-IN

## INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJCGR6

Lab Name: SVL Analytical, Inc. Contract: EP-W-08-068

Lab Code: SVL Case No.: 40263 NRAS No.: SDG NO.: MJCGR3

Matrix (soil/water): SOIL Lab Sample ID: MJCGR6

Level (low/med): LOW Date Received: 06/22/2010

% Solids: 79.8

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 18800 | | | P |
| 7440-36-0 | Antimony | 7.5 | ~~U~~ | ~~N~~ UJ | P |
| 7440-38-2 | Arsenic | 2.7 | | | P |
| 7440-39-3 | Barium | 121 | | | P |
| 7440-41-7 | Beryllium | 0.58 | J | | P |
| 7440-43-9 | Cadmium | 1.5 | | | P |
| 7440-70-2 | Calcium | 5070 | | | P |
| 7440-47-3 | Chromium | 16.6 | | | P |
| 7440-48-4 | Cobalt | 16.6 | | | P |
| 7440-50-8 | Copper | 38.0 | | ✓ | P |
| 7439-89-6 | Iron | 32800 | | | P |
| 7439-92-1 | Lead | 6.0 | | | P |
| 7439-95-4 | Magnesium | 4470 | | | P |
| 7439-96-5 | Manganese | 662 | | | P |
| 7439-97-6 | Mercury | 0.12 | U | | CV |
| 7440-02-0 | Nickel | 12.8 | | | P |
| 7440-09-7 | Potassium | 899 | | | P |
| 7782-49-2 | Selenium | 4.4 | U | | P |
| 7440-22-4 | Silver | 2.4 | | | P |
| 7440-23-5 | Sodium | 237 | J | | P |
| 7440-28-0 | Thallium | 1.4 | J | | P |
| 7440-62-2 | Vanadium | 69.6 | | | P |
| 7440-66-6 | Zinc | 56.6 | | | P |

DM 7-14-10

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts: Y

Comments: ARTIFACTS: PLANT MATTER

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**
**REGION 10**
1200 Sixth Avenue
Seattle, Washington 98101

March 2, 2010

Reply to: Jennifer Crawford
Attn of: OEA-095

**MEMORANDUM**

Subject: Data Validation Report for the Volatile Organic Compounds (VOC) Analyses of Organic Analyses of Soil/Sediment Samples Collected from the Northwest Pipe and Casing/Hall Process Company Project Case 39061, SDG JBR31

From: Jennifer Crawford, Chemist
USEPA R10, OEA, Environmental Services Unit

To: Mark Ader, Remedial Project Manager
USEPA R10, Office of Environmental Clean-up

CC: Kathy Parker, On-Scene Coordinator, USEPA R10, Office of Environmental Clean-up
Ginna Grepo-Grove, USEPA R10 RQAM

The quality assurance (QA) review of the analytical data generated from the analysis of two (2) water samples collected from the above referenced site has been completed. These samples were analyzed for Volatile Organic Compounds (VOC) byA4 Scientific located in The Woodlands, Texas.

All sample analyses were evaluated following EPA's Stage 4 Data Validation Electronic/Manual Process (S4VEM). The validations were conducted and appropriate qualifiers were applied according to the Quality Control Specifications outlined in the Quality Assurance Project Plan for Northwest Pipe and Casing, the technical specifications of the EPA Contract Laboratory Program's (CLP) Statement of Work (SOW) for Multi-Media, Multi-Concentration Organic Analyses (SOM01.2), the Contract Laboratory Program's National Functional Guidelines for Organic and Inorganic Data Review, and the Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use (EPA-540-R08-005). Some of the data quality elements were qualified using the reviewer's professional judgment.

A summary of samples evaluated in this validation report and the pertinent dates for sample collection, sample receipt at the laboratory, extraction and analyses is listed in Attachment 1 – Sample Index at the end of this report.

The conclusions presented herein are based on the information provided for the review.

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## I. DATA QUALIFICATIONS

### Summary of Validation Qualifiers Applied:

After the manual and electronic data review, the following data points were qualified:

- Vinyl Chloride is qualified "UJ" in sample JBR35, due to low recovery (55%) of the compound in the Continuing Calibration Verification (CCV) standard during analysis.
- Acetone is qualified "J" in sample JBR31, due to low recovery (65%) of the compound in the Continuing Calibration Verification (CCV) standard during analysis. There is a potential low bias in this estimated sample result.
- The response factor (RRF) for 1,4-Dioxane was <0.01. 1,4-Dioxane in all samples was consequently qualified unusable, "R".

### Data Qualifiers

The following is a list of validation qualifiers applied to the sample result(s) when needed to indicate associated out-of-control QA/QC results.

| Data Qualifiers | | |
|---|---|---|
| | U | The analyte was not detected at or above the reported result. |
| | J | The analyte was positively identified. The associated numerical result is an estimate. |
| | UJ | The analyte was not detected at or above the reported estimated result. The associated numerical value is an estimate of the quantitation limit of the analyte in this sample. |
| | R | The data are unusable for all purposes. |
| | N | There is evidence the analyte is present in this sample. |
| | JN | There is evidence that the analyte is present. The associated numerical result is an estimate. |

For site assessment and investigations, the following bias qualifiers are applied to the data in addition to the above data qualifiers when necessary to allow for data analysis and interpretation using Pre-Score software calculations for National Priority Listing Hazard Rankling Scoring (NPL-HRS).

| Bias Qualifiers | | |
|---|---|---|
| | L | Low bias. |
| | H | High bias. |
| | Q | The result is estimated because the concentration is below the Contract Required Quantitation Limits (CRQLs). |
| | K | Unknown Bias |

### Reasons for Validation Qualifiers

The reasons for applying a validation qualifier to a sample result is also listed in the validated electronic data deliverables (EDDs), under the column header "Reasons". Below is a list of reasons why a data point could be qualified during data validation.

| **Reasons for Validation Qualifiers:** | |
|---|---|
| <CRQL | The value reported is <Contract Required Quantitation Limits (CRQLs) |
| %D | The percent difference (%D) of the concentrations calculated off the primary and secondary columns are >25% but <60% and were qualified estimated. |
| MULT | Multiple runs were conducted for the analyte. Use the other value reported for the same analyte. The value which is not to be used is qualified 'R'. |
| USE R1 | Use the value(s) reported off the initial analytical run |
| USE DIL | The value reported is over the calibration range. Use the value reported off the dilution run. |
| SURR/DMCs | The surrogate/deuterated monitoring compound (DMC) recoveries did not meet the specified control limits. Results are qualified estimated. |
| RRF | The response factor for the analyte did not meet the minimum acceptance criteria (0.005). |
| MS/MSD | The spiked recoveries and/or RPDs did not meet the specified control limits. Results are qualified estimated. |
| MB | Analyte was qualified as non-detect due to contamination in the associated blank. The value reported is <5x or <10x (if common lab contaminant) the value in the blank. |
| ND | The analyte was not detected in the sample, and is reported at the CRQL with the 'U' Qualifier. |
| COELN | Initial identification erroneous. Peak due to co-elution with other detected target analytes. |
| ICAL | Initial Calibration criteria not met |
| CCV | Continuing calibration criteria not met |
| GPC | GPC Clean-up criteria not met. |
| CLN-UP | Silica gel, alumina or sulfur clean-up criteria not met |
| LCS | LCS/LCSD criteria not met |
| HT | Holding time criteria not met |
| STORE | Sample Storage and preservation specified not met |
| TEMP | Cooler recommended temperature exceeded at the verified time of sample receipt at the lab (VTSR) |
| M/Z | Mass/ion resolution ratio not met |
| DPE | Diphenyl ether interferences. False positive. Elevate reporting limits at level of detection |

## II. DATA REVIEW

The analytical data were evaluated following the recommended baseline checks used in the four stages of laboratory analytical data verification and validation for Superfund use listed as follows (EPA-540-R08-005, 2009):

| Stage 1 – Data Validation | | | | |
|---|---|---|---|---|
| | Verified | | N/A | QC Procedure or Check |
| | YES | NO | | |
| **1** | X | | | Documentation identifies the laboratory receiving and conducting analyses, and includes documentation for all samples submitted by the project or requester for analyses. |
| **2** | X | | | Requested analytical methods were performed and the analysis dates are present. |
| **3** | X | | | Requested target analyte results are reported along with the original laboratory data qualifiers and data qualifier definitions for each reported result |
| **4** | X | | | Requested target analyte result units are reported |
| **5** | X | | | Requested reporting limits for all samples are present and results at and below the requested (required) reporting limits are clearly identified (including sample detection limits if required). |
| **6** | X | | | Sampling dates (including times if needed), date and time of laboratory receipt of samples, and sample conditions upon receipt at the laboratory (including preservation, pH and temperature) are documented. |
| **7** | X | | | Sample results are evaluated by comparing sample conditions upon receipt at the laboratory (e.g., preservation checks) and sample characteristics (e.g., percent moisture) to the requirements and guidelines present in national or regional data validation documents, analytical method(s) or contract. |

| Stage 2A – Data Validation | | | | |
|---|---|---|---|---|
| | Verified | | N/A | QC Procedure or Check |
| | YES | NO | | |
| **8** | X | | | Requested methods (handling, preparation, cleanup, and analytical) are performed. |
| **9** | X | | | Method dates (including dates, times and duration of analysis for radiation counting measurements and other methods, if needed) for handling (e.g., Toxicity Characteristic Leaching Procedure), preparation, cleanup and analysis are present, as appropriate. |
| **10** | X | | | Requested spike analytes or compounds (e.g., surrogate, DMCs, LCS spikes, post digestion spikes) have been added, as appropriate. |
| **11** | X | | | Sample holding times (from sampling date to preparation and preparation to analysis) are evaluated. |
| **12** | X | | | Frequency of QC samples is checked for appropriateness (e.g., one LCS per twenty samples in a preparation batch). |
| **13** | X | | | Sample results are evaluated by comparing holding times and sample-related QC data to the requirements and guidelines present in national or regional data validation documents, analytical method(s) or contract |
| | | | | **Stage 2A – Data Validation QC Data** |
| **14** | X | | | method blanks |
| **15** | X | | | surrogate recoveries/deuterated monitoring compounds (DMC) recoveries |
| **16** | X | | | laboratory control sample (LCS) recoveries |
| **17** | X | | | matrix spike and matrix spike duplicate recoveries |
| **18** | X | | | serial dilutions |
| **19** | X | | | post digestion spikes |
| **20** | X | | | standard reference materials |
| **21** | X | | | equipment blanks |

| | | | | |
|---|---|---|---|---|
| **22** | X | | | trip blanks |

## Stage 2B – Data Validation

Stage 2B validation builds on the validation conducted in Stage 2A. Stage 2B validation of the laboratory analytical data package consists of the Stage 2A validation plus the verification and validation checks for the compliance of instrument-related QC.

| | Verified | | N/A | QC Procedure or Check |
|---|---|---|---|---|
| | YES | NO | | |
| **23** | X | | | Initial calibration data (e.g., ICAL standards, ICV standards, ICBs) are provided for all requested analytes and linked to field samples reported. For each initial calibration, the calibration type used is present along with the initial calibration equation used including any weighting factor(s) applied and the associated correlation coefficients, as appropriate. Recalculations of the standard concentrations using the initial calibration curve are present, along with their associated percent recoveries, as appropriate (e.g., if required by the project, method, or contract). For the ICV standard, the associated percent recovery (or percent difference, as appropriate) is present. |
| **24** | X | | | Appropriate number and concentration of initial calibration standards are present. |
| **25** | X | | | Continuing calibration data (e.g. CCV standards and CCBs) are provided for all requested analytes and linked to field samples reported, as appropriate. For the CCV standard(s), the associated percent recoveries (or percent differences, as appropriate) are present. |
| **26** | X | | | Reported samples are bracketed by CCV standards and CCBs standards as appropriate. |
| **27** | X | | | Method specific instrument performance checks are present as appropriate (e.g., tunes for mass spectrometry methods, DDT/Endrin breakdown checks for pesticides and aroclors, instrument blanks and interference checks for ICP methods). |
| **28** | X | | | Frequency of instrument QC samples is checked for appropriateness (e.g., gas chromatography-mass spectroscopy [GC-MS] tunes have been run every 12 hours). |

## Stage 3 – Data Validation

Stage 3 validation builds on the validation conducted in Stage 2B. Stage 3 validation of the laboratory analytical data package consists of the Stage 2B validation plus the recalculation of instrument and sample results from the laboratory instrument responses, and comparison of recalculated results to laboratory reported results.

| | Verified | | N/A | QC Procedure or Check |
|---|---|---|---|---|
| | YES | NO | | |
| **29** | X | | | Instrument response data (e.g., GC peak areas, ICP corrected intensities) are reported for requested analytes, surrogates, internal standards, and DMCs for all requested field samples, matrix spikes, matrix spike duplicates, LCS, and method blanks as well as calibration data and instrument QC checks (e.g., tunes, DDT/Endrin breakdowns, inter-element correction factors, and Florisil cartridge checks). |
| **30** | X | | | Reported target analyte instrument responses are associated with appropriate internal standard analyte(s) for each (or selected) analyte(s) (for methods using internal standard for calibration). |
| **31** | X | | | Fit and appropriateness of the initial calibration curve used or required (e.g., mean calibration factor, regression analysis [linear or non-linear, with or without weighting factors, with or without forcing]) is checked with recalculation of the initial calibration curve for each (or selected) analyte(s) from the instrument response. |
| **32** | X | | | Comparison of instrument response to the minimum response requirements for each (or selected) analyte(s). |
| **33** | X | | | Recalculation of each (or selected) opening and closing CCV (and CCB) response from the peak data reported for each (or selected) analyte(s) from the instrument response, as appropriate. |
| **34** | X | | | Compliance check of recalculated opening and/or closing CCV (and CCB) response to recalculated initial calibration response for each (or selected) analyte(s). |

| | | | | |
|---|---|---|---|---|
| **35** | X | | | Recalculation of percent ratios for each (or selected) tune from the instrument response, as appropriate. |
| **36** | X | | | Compliance check of recalculated percent ratio for each (or selected) tune from the instrument response. |
| **37** | X | | | Recalculation of each (or selected) instrument performance check (e.g., DDT/Endrin breakdown for pesticide analysis, instrument blanks, interference checks) from the instrument response. |
| **38** | X | | | Recalculation and compliance check of retention time windows (for chromatographic methods) for each (or selected) analyte(s) from the laboratory reported retention times. |
| **39** | X | | | Recalculation of reported results for each reported (or selected) target analyte(s) from the instrument response. |
| **40** | X | | | Recalculation of each (or selected) reported spike recovery (surrogate recoveries, DMC recoveries, LCS recoveries, duplicate analyses, matrix spike and matrix spike duplicate recoveries, serial dilutions, post digestion spikes, standard reference materials etc.) from the instrument response. |
| **41** | X | | | Each (or selected) sample result(s) and spike recovery(ies) are evaluated by comparing the recalculated numbers to the laboratory reported numbers according to the requirements and guidelines present in national or regional data validation documents, analytical method(s) or contract |

**Note**: Selection of analytes, spikes, and performance evaluation checks for the Stage 3 validation checks for a laboratory analytical data package being verified and validated generally will depend on many factors including (but not limited to) the type of verification and validation being performed (manual or electronic), requirements and guidelines present in national or regional data validation documents, analytical method(s) or contract, the number of laboratories reporting the data, the number and type of analytical methods reported, the number of analytes reported in each method, and the number of detected analytes.

## Stage 4 – Data Validation

Stage 4 validation builds on the validation conducted in Stage 3. Stage 4 validation of the laboratory analytical data package consists of the Stage 3 validation plus the evaluation of instrument outputs.

| | Verified | | N/A | QC Procedure or Check |
|---|---|---|---|---|
| | **YES** | **NO** | | |
| **42** | X | | | All required instrument outputs (e.g., chromatograms, mass spectra, atomic emission spectra, instrument background corrections, and interference corrections) for evaluating sample and instrument performance are present. |
| **43** | X | | | Sample results are evaluated by checking each (or selected) instrument output (e.g., chromatograms, mass spectra, atomic emission spectra data, instrument background corrections, interference corrections) for correct identification and quantitation of analytes (e.g., peak integrations, use of appropriate internal standards for quantitation, elution order of analytes, and interferences). |
| **44** | X | | | Each (or selected) instrument's output(s) is evaluated for confirmation of non-detected or tentatively identified analytes. |

**Note:** Selection of instrument outputs for the Stage 4 validation checks for a laboratory analytical data package being verified and validated generally will depend on many factors including, but not limited to, the type of verification and validation being performed (electronic or manual), requirements and guidelines present in national or regional data validation documents, analytical method(s) or contract, the number of laboratories reporting the data, the number and type of analytical methods reported, the number of analytes reported in each method, and the number of detected analytes.

Attachments:

1. Summary of Samples Analyzed (Sample Index)
2. Summary of Electronic Data Review

3. Validated Electronic Data Deliverables

National Functional Guidelines Report # 6



**Lab** A4 (A4 Scientific) **SDG** JBR66 **Case** 39061 **Contract** EPW05036 **Region** 10 **DDTID** 80959 **SOW** SOM01.2

## *Analytical Sample Listing*

BNA

| VOCs | | | | | | Extraction | | Analysis | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Number** | **Sample Type** | **Matrix** | **Level** | **Sampling Date** | **Date Received** | **Type** | **Date** | **Date/Time** | **GC Column** | **Intstrument** |
| JBR68 | Field_Sample | Water | Low | 10152009 10:30:00 | 10202009 10:24:00 | | | 10212009 16:04:00 | DB-624 | C-5973 |
| JBR73 | Field_Sample | Water | Low | 10162009 13:15:00 | 10202009 10:24:00 | | | 10212009 16:33:00 | DB-624 | C-5973 |
| JBR73DL | Field_Sample | Water | Low | 10162009 13:15:00 | 10202009 10:24:00 | | | 10222009 00:16:00 | DB-624 | C-5973 |
| JBR73MS | Matrix_Spike | Water | Low | 10162009 13:15:00 | 10202009 10:24:00 | | | 10212009 21:23:00 | DB-624 | C-5973 |
| JBR73MSD | Matrix_Spike_Duplicate | Water | Low | 10162009 13:15:00 | 10202009 10:24:00 | | | 10212009 22:20:00 | DB-624 | C-5973 |
| JBR78 | Field_Sample | Water | Low | 10192009 10:45:00 | 10202009 10:24:00 | | | 10212009 17:02:00 | DB-624 | C-5973 |
| JBR83 | Field_Sample | Water | Low | 10192009 16:30:00 | 10212009 09:53:00 | | | 10212009 18:00:00 | DB-624 | C-5973 |
| JBR84 | Field_Sample | Water | Low | 10202009 10:15:00 | 10212009 09:53:00 | | | 10212009 17:31:00 | DB-624 | C-5973 |
| JBR84DL | Field_Sample | Water | Low | 10202009 10:15:00 | 10212009 09:53:00 | | | 10222009 00:45:00 | DB-624 | C-5973 |
| JBR94 | Field_Sample | Water | Low | 10222009 15:00:00 | 10242009 11:00:00 | | | 10262009 22:34:00 | DB-624 | C-5973 |

| SVOCs | | | | | | Extraction | | Analysis | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Number** | **Sample Type** | **Matrix** | **Level** | **Sampling Date** | **Date Received** | **Type** | **Date** | **Date/Time** | **GC Column** | **Intstrument** |
| JBR73 | Field_Sample | Water | Low | 10162009 13:15:00 | 10202009 10:24:00 | Liq_Liq | 10202009 13:30:00 | 10222009 18:42:00 | HP-5MS | D-5973 |
| JBR84 | Field_Sample | Water | Low | 10202009 10:15:00 | 10212009 09:53:00 | Liq_Liq | 10212009 12:00:00 | 10232009 11:28:00 | HP-5MS | D-5973 |
| JBR84DL | Field_Sample | Water | Low | 10202009 10:15:00 | 10212009 09:53:00 | Liq_Liq | 10212009 12:00:00 | 10232009 01:20:00 | HP-5MS | D-5973 |

| PAHs | | | | | | Extraction | | Analysis | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Number** | **Sample Type** | **Matrix** | **Level** | **Sampling Date** | **Date Received** | **Type** | **Date** | **Date/Time** | **GC Column** | **Intstrument** |
| JBR73 | Field_Sample | Water | | 10162009 13:15:00 | 10202009 10:24:00 | Sep_Funnel | 10212009 12:00:00 | 10212009 21:44:52 | DB-XLB | F-6890A |
| JBR73 | Field_Sample | Water | | 10162009 13:15:00 | 10202009 10:24:00 | Sep_Funnel | 10212009 12:00:00 | 10212009 22:15:00 | DB-35MS | F-6890B |
| JBR84 | Field_Sample | Water | | 10202009 10:15:00 | 10212009 09:53:00 | Sep_Funnel | 10212009 12:00:00 | 10212009 23:48:00 | DB-XLB | F-6890A |
| JBR84 | Field_Sample | Water | | 10202009 10:15:00 | 10212009 09:53:00 | Sep_Funnel | 10212009 12:00:00 | 10222009 00:19:00 | DB-35MS | F-6890B |

National Functional Guidelines Report # 6



**Lab** A4 (A4 Scientific) **SDG** JBR66 **Case** 39061 **Contract** EPW05036 **Region** 10 **DDTID** 80959 **SOW** SOM01.2

## *Analytical Sample Listing*

BNA

| | | | | | | Extraction | | Analysis | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Number** | **Sample Type** | **Matrix** | **Level** | **Sampling Date** | **Date Received** | **Type** | **Date** | **Date/Time** | **GC Column** | **Intstrument** |
| JBR66 | Field_Sample | Soil | Low | 10152009 15:25:00 | 10202009 10:24:00 | | | 10202009 12:30:00 | DB-624 | C-5973 |
| JBR66MS | Matrix_Spike | Soil | Low | 10152009 15:25:00 | 10202009 10:24:00 | | | 10202009 17:23:00 | DB-624 | C-5973 |
| JBR66MSD | Matrix_Spike_Duplicate | Soil | Low | 10152009 15:25:00 | 10202009 10:24:00 | | | 10202009 17:52:00 | DB-624 | C-5973 |
| JBR67 | Field_Sample | Soil | Low | 10192009 15:40:00 | 10202009 10:24:00 | | | 10202009 13:02:00 | DB-624 | C-5973 |
| JBR69 | Field_Sample | Soil | Low | 10162009 10:00:00 | 10202009 10:24:00 | | | 10202009 13:31:00 | DB-624 | C-5973 |
| JBR70 | Field_Sample | Soil | Low | 10162009 10:15:00 | 10202009 10:24:00 | | | 10202009 14:01:00 | DB-624 | C-5973 |
| JBR71 | Field_Sample | Soil | Low | 10162009 12:50:00 | 10202009 10:24:00 | | | 10202009 14:30:00 | DB-624 | C-5973 |
| JBR72 | Field_Sample | Soil | Low | 10162009 13:00:00 | 10202009 10:24:00 | | | 10202009 14:59:00 | DB-624 | C-5973 |
| JBR74 | Field_Sample | Soil | Low | 10162009 14:30:00 | 10202009 10:24:00 | | | 10202009 15:28:00 | DB-624 | C-5973 |
| JBR75 | Field_Sample | Soil | Low | 10162009 14:40:00 | 10202009 10:24:00 | | | 10202009 16:55:00 | DB-624 | C-5973 |
| JBR76 | Field_Sample | Soil | Low | 10192009 09:20:00 | 10202009 10:24:00 | | | 10202009 16:26:00 | DB-624 | C-5973 |
| JBR77 | Field_Sample | Soil | Low | 10192009 09:35:00 | 10202009 10:24:00 | | | 10202009 16:53:00 | DB-624 | H-5975 |
| JBR77ME | Field_Sample | Soil | Medium | 10192009 09:35:00 | 10202009 10:24:00 | Purge_and_Trap | 10212009 00:00:00 | 10212009 19:56:00 | DB-624 | C-5973 |
| JBR77MEMS | Matrix_Spike | Soil | Medium | 10192009 09:35:00 | 10202009 10:24:00 | Purge_and_Trap | 10212009 00:00:00 | 10212009 23:18:00 | DB-624 | C-5973 |
| JBR77MEMSD | Matrix_Spike_Duplicate | Soil | Medium | 10192009 09:35:00 | 10202009 10:24:00 | Purge_and_Trap | 10212009 00:00:00 | 10212009 23:47:00 | DB-624 | C-5973 |
| JBR79 | Field_Sample | Soil | Low | 10192009 11:25:00 | 10202009 10:24:00 | | | 10202009 16:25:00 | DB-624 | H-5975 |
| JBR80 | Field_Sample | Soil | Low | 10192009 11:30:00 | 10202009 10:24:00 | | | 10202009 14:13:00 | DB-624 | H-5975 |
| JBR80ME | Field_Sample | Soil | Medium | 10192009 11:30:00 | 10202009 10:24:00 | Purge_and_Trap | 10212009 00:00:00 | 10212009 20:25:00 | DB-624 | C-5973 |
| JBR81 | Field_Sample | Soil | Low | 10192009 15:35:00 | 10212009 09:53:00 | | | 10212009 19:48:00 | DB-624 | H-5975 |
| JBR81ME | Field_Sample | Soil | Medium | 10192009 15:35:00 | 10212009 09:53:00 | Purge_and_Trap | 10212009 10:00:00 | 10212009 20:54:00 | DB-624 | C-5973 |
| JBR82 | Field_Sample | Soil | Low | 10192009 15:45:00 | 10212009 09:53:00 | | | 10212009 19:18:00 | DB-624 | H-5975 |
| JBR88 | Field_Sample | Soil | Low | 10222009 14:00:00 | 10242009 11:00:00 | | | 10242009 17:01:00 | DB-624 | H-5975 |
| JBR89 | Field_Sample | Soil | Low | 10222009 14:10:00 | 10242009 11:00:00 | | | 10242009 17:27:00 | DB-624 | H-5975 |
| JBR91 | Field_Sample | Soil | Low | 10222009 14:20:00 | 10242009 11:00:00 | | | 10242009 17:53:00 | DB-624 | H-5975 |

National Functional Guidelines Report # 6



**Lab** A4 (A4 Scientific) **SDG** JBR66 **Case** 39061 **Contract** EPW05036 **Region** 10 **DDTID** 80959 **SOW** SOM01.2

## *Analytical Sample Listing*

BNA

| | | | | | | Extraction | | Analysis | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Number** | **Sample Type** | **Matrix** | **Level** | **Sampling Date** | **Date Received** | **Type** | **Date** | **Date/Time** | **GC Column** | **Intstrument** |
| JBR92 | Field_Sample | Soil | Low | 10222009 14:30:00 | 10242009 11:00:00 | | | 10242009 18:20:00 | DB-624 | H-5975 |
| JBR93 | Field_Sample | Soil | Low | 10222009 14:40:00 | 10242009 11:00:00 | | | 10242009 18:46:00 | DB-624 | H-5975 |

| | | | | | | Extraction | | Analysis | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Number** | **Sample Type** | **Matrix** | **Level** | **Sampling Date** | **Date Received** | **Type** | **Date** | **Date/Time** | **GC Column** | **Intstrument** |
| JBR66 | Field_Sample | Soil | Low | 10152009 15:25:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10222009 11:02:00 | HP-5MS | D-5973 |
| JBR67 | Field_Sample | Soil | Low | 10192009 15:40:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10222009 11:32:00 | HP-5MS | D-5973 |
| JBR67MS | Matrix_Spike | Soil | Low | 10192009 15:40:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10222009 12:03:00 | HP-5MS | D-5973 |
| JBR67MSD | Matrix_Spike_Duplicate | Soil | Low | 10192009 15:40:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10222009 12:33:00 | HP-5MS | D-5973 |
| JBR69 | Field_Sample | Soil | Low | 10162009 10:00:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10222009 19:44:00 | HP-5MS | D-5973 |
| JBR70 | Field_Sample | Soil | Low | 10162009 10:15:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10222009 20:15:00 | HP-5MS | D-5973 |
| JBR71 | Field_Sample | Soil | Low | 10162009 12:50:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10222009 15:07:00 | HP-5MS | D-5973 |
| JBR72 | Field_Sample | Soil | Low | 10162009 13:00:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10222009 20:45:00 | HP-5MS | D-5973 |
| JBR74 | Field_Sample | Soil | Low | 10162009 14:30:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10222009 13:35:00 | HP-5MS | D-5973 |
| JBR75 | Field_Sample | Soil | Low | 10162009 14:40:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10222009 15:37:00 | HP-5MS | D-5973 |
| JBR76 | Field_Sample | Soil | Low | 10192009 09:20:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10222009 21:15:00 | HP-5MS | D-5973 |
| JBR77 | Field_Sample | Soil | Low | 10192009 09:35:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10222009 16:39:00 | HP-5MS | D-5973 |
| JBR79 | Field_Sample | Soil | Low | 10192009 11:25:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10222009 17:10:00 | HP-5MS | D-5973 |
| JBR79DL | Field_Sample | Soil | Low | 10192009 11:25:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10222009 19:14:00 | HP-5MS | D-5973 |
| JBR80 | Field_Sample | Soil | Low | 10192009 11:30:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10222009 17:41:00 | HP-5MS | D-5973 |
| JBR81 | Field_Sample | Soil | Low | 10192009 15:35:00 | 10212009 09:53:00 | Sonication | 10212009 11:50:00 | 10222009 23:18:00 | HP-5MS | D-5973 |
| JBR82 | Field_Sample | Soil | Low | 10192009 15:45:00 | 10212009 09:53:00 | Sonication | 10212009 11:50:00 | 10222009 23:48:00 | HP-5MS | D-5973 |
| JBR88 | Field_Sample | Soil | Low | 10222009 14:00:00 | 10242009 11:00:00 | Sonication | 10242009 11:30:00 | 10262009 13:14:00 | HP-5MS | D-5973 |
| JBR89 | Field_Sample | Soil | Low | 10222009 14:10:00 | 10242009 11:00:00 | Sonication | 10242009 11:30:00 | 10262009 14:16:00 | HP-5MS | D-5973 |
| JBR91 | Field_Sample | Soil | Low | 10222009 14:20:00 | 10242009 11:00:00 | Sonication | 10242009 11:30:00 | 10262009 12:43:00 | HP-5MS | D-5973 |
| JBR92 | Field_Sample | Soil | Low | 10222009 14:30:00 | 10242009 11:00:00 | Sonication | 10242009 11:30:00 | 10262009 13:45:00 | HP-5MS | D-5973 |
| JBR93 | Field_Sample | Soil | Low | 10222009 14:40:00 | 10242009 11:00:00 | Sonication | 10242009 11:30:00 | 10262009 12:13:00 | HP-5MS | D-5973 |

National Functional Guidelines Report # 3



**Lab** A4 (A4 Scientific) **SDG** JBR66 **Case** 39061 **Contract** EPW05036 **Region** 10 **DDTID** 80959 **SOW** SOM01.2

## *Analytical Sample Listing*

PCBS

| | | | | | | Extraction | | Analysis | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Number** | **Sample Type** | **Matrix** | **Level** | **Sampling Date** | **Date Received** | **Type** | **Date** | **Date/Time** | **GC Column** | **Intstrument** |
| JBR66 | Field_Sample | Soil | | 10152009 15:25:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10212009 10:46:00 | DB-XLB | F-6890A |
| JBR66 | Field_Sample | Soil | | 10152009 15:25:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10212009 11:17:00 | DB-35MS | F-6890B |
| JBR67 | Field_Sample | Soil | | 10192009 15:40:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10212009 11:17:00 | DB-XLB | F-6890A |
| JBR67 | Field_Sample | Soil | | 10192009 15:40:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10212009 11:48:00 | DB-35MS | F-6890B |
| JBR67MS | Matrix_Spike | Soil | | 10192009 15:40:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10212009 19:40:44 | DB-XLB | F-6890A |
| JBR67MS | Matrix_Spike | Soil | | 10192009 15:40:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10212009 20:11:39 | DB-35MS | F-6890B |
| JBR67MSD | Matrix_Spike_Duplicate | Soil | | 10192009 15:40:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10212009 20:42:48 | DB-35MS | F-6890B |
| JBR67MSD | Matrix_Spike_Duplicate | Soil | | 10192009 15:40:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10212009 20:11:39 | DB-XLB | F-6890A |
| JBR69 | Field_Sample | Soil | | 10162009 10:00:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10212009 12:50:00 | DB-35MS | F-6890B |
| JBR69 | Field_Sample | Soil | | 10162009 10:00:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10212009 12:19:00 | DB-XLB | F-6890A |
| JBR70 | Field_Sample | Soil | | 10162009 10:15:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10212009 12:50:00 | DB-XLB | F-6890A |
| JBR70 | Field_Sample | Soil | | 10162009 10:15:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10212009 13:21:37 | DB-35MS | F-6890B |
| JBR71 | Field_Sample | Soil | | 10162009 12:50:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10212009 13:21:37 | DB-XLB | F-6890A |
| JBR71 | Field_Sample | Soil | | 10162009 12:50:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10212009 13:52:34 | DB-35MS | F-6890B |
| JBR72 | Field_Sample | Soil | | 10162009 13:00:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10212009 14:23:42 | DB-35MS | F-6890B |
| JBR72 | Field_Sample | Soil | | 10162009 13:00:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10212009 13:52:34 | DB-XLB | F-6890A |
| JBR74 | Field_Sample | Soil | | 10162009 14:30:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10212009 14:23:42 | DB-XLB | F-6890A |
| JBR74 | Field_Sample | Soil | | 10162009 14:30:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10212009 14:54:39 | DB-35MS | F-6890B |
| JBR75 | Field_Sample | Soil | | 10162009 14:40:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10212009 14:54:39 | DB-XLB | F-6890A |
| JBR75 | Field_Sample | Soil | | 10162009 14:40:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10212009 15:25:48 | DB-35MS | F-6890B |
| JBR76 | Field_Sample | Soil | | 10192009 09:20:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10212009 15:56:43 | DB-35MS | F-6890B |
| JBR76 | Field_Sample | Soil | | 10192009 09:20:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10212009 15:25:48 | DB-XLB | F-6890A |
| JBR77 | Field_Sample | Soil | | 10192009 09:35:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10212009 15:56:43 | DB-XLB | F-6890A |
| JBR77 | Field_Sample | Soil | | 10192009 09:35:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10212009 16:27:49 | DB-35MS | F-6890B |
| JBR79 | Field_Sample | Soil | | 10192009 11:25:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10212009 12:19:00 | DB-35MS | F-6890B |
| JBR79 | Field_Sample | Soil | | 10192009 11:25:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10212009 11:48:00 | DB-XLB | F-6890A |
| JBR80 | Field_Sample | Soil | | 10192009 11:30:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10212009 16:27:49 | DB-XLB | F-6890A |

National Functional Guidelines Report # 3



**Lab** A4 (A4 Scientific) **SDG** JBR66 **Case** 39061 **Contract** EPW05036 **Region** 10 **DDTID** 80959 **SOW** SOM01.2

## *Analytical Sample Listing*

PCBS

| | | | | | | Extraction | | Analysis | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Number** | **Sample Type** | **Matrix** | **Level** | **Sampling Date** | **Date Received** | **Type** | **Date** | **Date/Time** | **GC Column** | **Intstrument** |
| JBR80 | Field_Sample | Soil | | 10192009 11:30:00 | 10202009 10:24:00 | Sonication | 10202009 12:00:00 | 10212009 16:58:42 | DB-35MS | F-6890B |
| JBR81 | Field_Sample | Soil | | 10192009 15:35:00 | 10212009 09:53:00 | Sonication | 10212009 11:50:00 | 10222009 01:53:01 | DB-XLB | F-6890A |
| JBR81 | Field_Sample | Soil | | 10192009 15:35:00 | 10212009 09:53:00 | Sonication | 10212009 11:50:00 | 10222009 02:23:53 | DB-35MS | F-6890B |
| JBR82 | Field_Sample | Soil | | 10192009 15:45:00 | 10212009 09:53:00 | Sonication | 10212009 11:50:00 | 10222009 02:23:53 | DB-XLB | F-6890A |
| JBR82 | Field_Sample | Soil | | 10192009 15:45:00 | 10212009 09:53:00 | Sonication | 10212009 11:50:00 | 10222009 02:55:03 | DB-35MS | F-6890B |
| JBR88 | Field_Sample | Soil | | 10222009 14:00:00 | 10242009 11:00:00 | Sonication | 10242009 19:13:00 | 10262009 00:13:00 | DB-XLB | F-6890A |
| JBR88 | Field_Sample | Soil | | 10222009 14:00:00 | 10242009 11:00:00 | Sonication | 10242009 19:13:00 | 10262009 00:44:00 | DB-35MS | F-6890B |
| JBR89 | Field_Sample | Soil | | 10222009 14:10:00 | 10242009 11:00:00 | Sonication | 10242009 19:13:00 | 10262009 00:44:00 | DB-XLB | F-6890A |
| JBR89 | Field_Sample | Soil | | 10222009 14:10:00 | 10242009 11:00:00 | Sonication | 10242009 19:13:00 | 10262009 01:16:00 | DB-35MS | F-6890B |
| JBR91 | Field_Sample | Soil | | 10222009 14:20:00 | 10242009 11:00:00 | Sonication | 10242009 19:13:00 | 10262009 01:16:00 | DB-XLB | F-6890A |
| JBR91 | Field_Sample | Soil | | 10222009 14:20:00 | 10242009 11:00:00 | Sonication | 10242009 19:13:00 | 10262009 01:46:56 | DB-35MS | F-6890B |
| JBR92 | Field_Sample | Soil | | 10222009 14:30:00 | 10242009 11:00:00 | Sonication | 10242009 19:13:00 | 10262009 01:46:55 | DB-XLB | F-6890A |
| JBR92 | Field_Sample | Soil | | 10222009 14:30:00 | 10242009 11:00:00 | Sonication | 10242009 19:13:00 | 10262009 02:18:04 | DB-35MS | F-6890B |
| JBR93 | Field_Sample | Soil | | 10222009 14:40:00 | 10242009 11:00:00 | Sonication | 10242009 19:13:00 | 10262009 09:37:38 | DB-XLB | F-6890A |
| JBR93 | Field_Sample | Soil | | 10222009 14:40:00 | 10242009 11:00:00 | Sonication | 10242009 19:13:00 | 10262009 10:08:00 | DB-35MS | F-6890B |

National Functional Guidelines Report # 6



**Lab** A4 (A4 Scientific) **SDG** JBR51 **Case** 39061 **Contract** EPW05036 **Region** 10 **DDTID** 80123 **SOW** SOM01.2

## *Analytical Sample Listing*

VOA_Low_Med

| | | | | | | Extraction | | Analysis | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Number** | **Sample Type** | **Matrix** | **Level** | **Sampling Date** | **Date Received** | **Type** | **Date** | **Date/Time** | **GC Column** | **Intstrument** |
| JBR51 | Field_Sample | Soil | Low | 10092009 16:10:00 | 10132009 10:20:00 | | | 10142009 10:36:00 | DB-624 | C-5973 |
| JBR51MS | Matrix_Spike | Soil | Low | 10092009 16:10:00 | 10132009 10:20:00 | | | 10142009 15:15:00 | DB-624 | C-5973 |
| JBR51MSD | Matrix_Spike_Duplicate | Soil | Low | 10092009 16:10:00 | 10132009 10:20:00 | | | 10142009 15:44:00 | DB-624 | C-5973 |
| JBR52 | Field_Sample | Soil | Low | 10102009 13:45:00 | 10132009 10:20:00 | | | 10142009 11:05:00 | DB-624 | C-5973 |
| JBR52ME | Field_Sample | Soil | Medium | 10102009 13:45:00 | 10132009 10:20:00 | Purge_and_Trap | 10152009 00:00:00 | 10152009 17:42:00 | DB-624 | C-5973 |
| JBR52MEMS | Matrix_Spike | Soil | Medium | 10102009 13:45:00 | 10132009 10:20:00 | Purge_and_Trap | 10152009 00:00:00 | 10152009 20:10:00 | DB-624 | C-5973 |
| JBR52MEMSD | Matrix_Spike_Duplicate | Soil | Medium | 10102009 13:45:00 | 10132009 10:20:00 | Purge_and_Trap | 10152009 00:00:00 | 10152009 20:39:00 | DB-624 | C-5973 |
| JBR53 | Field_Sample | Soil | Low | 10102009 17:00:00 | 10132009 10:20:00 | | | 10142009 12:03:00 | DB-624 | C-5973 |
| JBR53ME | Field_Sample | Soil | Medium | 10102009 17:00:00 | 10132009 10:20:00 | Purge_and_Trap | 10152009 00:00:00 | 10152009 16:44:00 | DB-624 | C-5973 |
| JBR53MEDL | Field_Sample | Soil | Medium | 10102009 17:00:00 | 10132009 10:20:00 | Purge_and_Trap | 10152009 00:00:00 | 10152009 19:41:00 | DB-624 | C-5973 |
| JBR55 | Field_Sample | Soil | Low | 10122009 12:00:00 | 10132009 10:20:00 | | | 10142009 13:53:00 | DB-624 | C-5973 |
| JBR55ME | Field_Sample | Soil | Medium | 10122009 12:00:00 | 10132009 10:20:00 | Purge_and_Trap | 10152009 00:00:00 | 10152009 15:46:00 | DB-624 | C-5973 |
| JBR55MEDL | Field_Sample | Soil | Medium | 10122009 12:00:00 | 10132009 10:20:00 | Purge_and_Trap | 10152009 00:00:00 | 10152009 19:12:00 | DB-624 | C-5973 |
| JBR56 | Field_Sample | Soil | Low | 10142009 10:00:00 | 10162009 09:54:00 | | | 10162009 13:34:00 | DB-624 | H-5975 |
| JBR57 | Field_Sample | Soil | Low | 10142009 10:10:00 | 10162009 09:54:00 | | | 10162009 14:01:00 | DB-624 | H-5975 |
| JBR57ME | Field_Sample | Soil | Medium | 10142009 10:10:00 | 10162009 09:54:00 | Purge_and_Trap | 10192009 00:00:00 | 10192009 18:09:00 | DB-624 | C-5973 |
| JBR59 | Field_Sample | Soil | Low | 10142009 12:45:00 | 10162009 09:54:00 | | | 10162009 15:31:00 | DB-624 | H-5975 |
| JBR60 | Field_Sample | Soil | Low | 10142009 12:55:00 | 10162009 09:54:00 | | | 10162009 16:01:00 | DB-624 | H-5975 |
| JBR61 | Field_Sample | Soil | Low | 10142009 13:05:00 | 10162009 09:54:00 | | | 10162009 16:29:00 | DB-624 | H-5975 |
| JBR62 | Field_Sample | Soil | Low | 10152009 09:40:00 | 10162009 09:54:00 | | | 10162009 16:56:00 | DB-624 | H-5975 |
| JBR63 | Field_Sample | Soil | Low | 10152009 09:50:00 | 10162009 09:54:00 | | | 10162009 17:22:00 | DB-624 | H-5975 |
| JBR64 | Field_Sample | Soil | Low | 10152009 10:00:00 | 10162009 09:54:00 | | | 10162009 17:48:00 | DB-624 | H-5975 |
| JBR64ME | Field_Sample | Soil | Medium | 10152009 10:00:00 | 10162009 09:54:00 | Purge_and_Trap | 10192009 00:00:00 | 10192009 18:38:00 | DB-624 | C-5973 |
| JBR65 | Field_Sample | Soil | Low | 10152009 10:10:00 | 10162009 09:54:00 | | | 10172009 13:55:00 | DB-624 | C-5973 |

National Functional Guidelines Report # 6



**Lab** A4 (A4 Scientific) **SDG** JBR51 **Case** 39061 **Contract** EPW05036 **Region** 10 **DDTID** 80123 **SOW** SOM01.2

## *Analytical Sample Listing*

BNA

| | | | | | | Extraction | | Analysis | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Number** | **Sample Type** | **Matrix** | **Level** | **Sampling Date** | **Date Received** | **Type** | **Date** | **Date/Time** | **GC Column** | **Intstrument** |
| JBR51 | Field_Sample | Soil | Low | 10092009 16:10:00 | 10132009 10:20:00 | Sonication | 10132009 13:00:00 | 10142009 15:30:00 | HP-5MS | D-5973 |
| JBR51MS | Matrix_Spike | Soil | Low | 10092009 16:10:00 | 10132009 10:20:00 | Sonication | 10132009 13:00:00 | 10142009 18:21:00 | HP-5MS | D-5973 |
| JBR51MSD | Matrix_Spike_Duplicate | Soil | Low | 10092009 16:10:00 | 10132009 10:20:00 | Sonication | 10132009 13:00:00 | 10142009 18:55:00 | HP-5MS | D-5973 |
| JBR52 | Field_Sample | Soil | Low | 10102009 13:45:00 | 10132009 10:20:00 | Sonication | 10132009 13:00:00 | 10142009 21:23:00 | HP-5MS | D-5973 |
| JBR53 | Field_Sample | Soil | Low | 10102009 17:00:00 | 10132009 10:20:00 | Sonication | 10132009 13:00:00 | 10142009 14:56:00 | HP-5MS | D-5973 |
| JBR55 | Field_Sample | Soil | Medium | 10122009 12:00:00 | 10132009 10:20:00 | Sonication | 10132009 13:00:00 | 10142009 16:04:00 | HP-5MS | D-5973 |
| JBR55DL | Field_Sample | Soil | Medium | 10122009 12:00:00 | 10132009 10:20:00 | Sonication | 10132009 13:00:00 | 10142009 17:48:00 | HP-5MS | D-5973 |
| JBR55MS | Matrix_Spike | Soil | Medium | 10122009 12:00:00 | 10132009 10:20:00 | Sonication | 10132009 13:00:00 | 10142009 16:39:00 | HP-5MS | D-5973 |
| JBR55MSD | Matrix_Spike_Duplicate | Soil | Medium | 10122009 12:00:00 | 10132009 10:20:00 | Sonication | 10132009 13:00:00 | 10142009 17:13:00 | HP-5MS | D-5973 |
| JBR56 | Field_Sample | Soil | Low | 10142009 10:00:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10172009 21:06:00 | HP-5MS | D-5973 |
| JBR57 | Field_Sample | Soil | Low | 10142009 10:10:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10172009 15:34:00 | HP-5MS | D-5973 |
| JBR57DL | Field_Sample | Soil | Low | 10142009 10:10:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10172009 18:21:00 | HP-5MS | D-5973 |
| JBR59 | Field_Sample | Soil | Low | 10142009 12:45:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10172009 16:07:00 | HP-5MS | D-5973 |
| JBR59DL | Field_Sample | Soil | Low | 10142009 12:45:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10172009 18:54:00 | HP-5MS | D-5973 |
| JBR60 | Field_Sample | Soil | Low | 10142009 12:55:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10172009 21:39:00 | HP-5MS | D-5973 |
| JBR61 | Field_Sample | Soil | Low | 10142009 13:05:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10172009 17:48:00 | HP-5MS | D-5973 |
| JBR62 | Field_Sample | Soil | Low | 10152009 09:40:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10172009 19:26:00 | HP-5MS | D-5973 |
| JBR63 | Field_Sample | Soil | Low | 10152009 09:50:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10172009 19:59:00 | HP-5MS | D-5973 |
| JBR64 | Field_Sample | Soil | Low | 10152009 10:00:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10172009 16:40:00 | HP-5MS | D-5973 |
| JBR65 | Field_Sample | Soil | Low | 10152009 10:10:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10172009 20:32:00 | HP-5MS | D-5973 |

**Lab** A4 (A4 Scientific) **SDG** JBR27 **Case** 39061 **Contract** EPW05036 **Region** 10 **DDTID** 79401 **SOW** SOM01.2

## *Analytical Sample Listing*

LOW MEDIUM VOAS

| | | | | | | Extraction | | Analysis | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Number** | **Sample Type** | **Matrix** | **Level** | **Sampling Date** | **Date Received** | **Type** | **Date** | **Date/Time** | **GC Column** | **Intstrument** |
| JBR51 | Field_Sample | Soil | | 10092009 16:10:00 | 10132009 10:20:00 | Sonication | 10132009 12:00:00 | 10142009 18:35:28 | DB-XLB | F-6890A |
| JBR51 | Field_Sample | Soil | | 10092009 16:10:00 | 10132009 10:20:00 | Sonication | 10132009 12:00:00 | 10142009 19:06:39 | DB-35MS | F-6890B |
| JBR51MS | Matrix_Spike | Soil | | 10092009 16:10:00 | 10132009 10:20:00 | Sonication | 10132009 12:00:00 | 10142009 19:06:39 | DB-XLB | F-6890A |
| JBR51MS | Matrix_Spike | Soil | | 10092009 16:10:00 | 10132009 10:20:00 | Sonication | 10132009 12:00:00 | 10142009 19:37:34 | DB-35MS | F-6890B |
| JBR51MSD | Matrix_Spike_Duplicate | Soil | | 10092009 16:10:00 | 10132009 10:20:00 | Sonication | 10132009 12:00:00 | 10142009 19:37:34 | DB-XLB | F-6890A |
| JBR51MSD | Matrix_Spike_Duplicate | Soil | | 10092009 16:10:00 | 10132009 10:20:00 | Sonication | 10132009 12:00:00 | 10142009 20:08:45 | DB-35MS | F-6890B |
| JBR52 | Field_Sample | Soil | | 10102009 13:45:00 | 10132009 10:20:00 | Sonication | 10132009 12:00:00 | 10142009 20:08:45 | DB-XLB | F-6890A |
| JBR52 | Field_Sample | Soil | | 10102009 13:45:00 | 10132009 10:20:00 | Sonication | 10132009 12:00:00 | 10142009 20:39:42 | DB-35MS | F-6890B |
| JBR53 | Field_Sample | Soil | | 10102009 17:00:00 | 10132009 10:20:00 | Sonication | 10132009 12:00:00 | 10142009 20:39:42 | DB-XLB | F-6890A |
| JBR53 | Field_Sample | Soil | | 10102009 17:00:00 | 10132009 10:20:00 | Sonication | 10132009 12:00:00 | 10142009 21:10:49 | DB-35MS | F-6890B |
| JBR55 | Field_Sample | Soil | | 10122009 12:00:00 | 10132009 10:20:00 | Sonication | 10132009 12:00:00 | 10142009 21:10:49 | DB-XLB | F-6890A |
| JBR55 | Field_Sample | Soil | | 10122009 12:00:00 | 10132009 10:20:00 | Sonication | 10132009 12:00:00 | 10142009 21:41:43 | DB-35MS | F-6890B |
| JBR55DL | Field_Sample | Soil | | 10122009 12:00:00 | 10132009 10:20:00 | Sonication | 10132009 12:00:00 | 10142009 21:41:43 | DB-XLB | F-6890A |
| JBR55DL | Field_Sample | Soil | | 10122009 12:00:00 | 10132009 10:20:00 | Sonication | 10132009 12:00:00 | 10142009 22:12:00 | DB-35MS | F-6890B |
| JBR56 | Field_Sample | Soil | | 10142009 10:00:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10162009 18:53:40 | DB-XLB | F-6890A |
| JBR56 | Field_Sample | Soil | | 10142009 10:00:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10162009 19:24:35 | DB-35MS | F-6890B |
| JBR57 | Field_Sample | Soil | | 10142009 10:10:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10162009 19:24:35 | DB-XLB | F-6890A |
| JBR57 | Field_Sample | Soil | | 10142009 10:10:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10162009 19:55:43 | DB-35MS | F-6890B |
| JBR59 | Field_Sample | Soil | | 10142009 12:45:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10162009 20:26:36 | DB-XLB | F-6890A |
| JBR59 | Field_Sample | Soil | | 10142009 12:45:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10162009 20:57:42 | DB-35MS | F-6890B |
| JBR60 | Field_Sample | Soil | | 10142009 12:55:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10162009 21:28:36 | DB-XLB | F-6890A |
| JBR60 | Field_Sample | Soil | | 10142009 12:55:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10162009 21:59:41 | DB-35MS | F-6890B |
| JBR61 | Field_Sample | Soil | | 10142009 13:05:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10162009 21:59:41 | DB-XLB | F-6890A |
| JBR61 | Field_Sample | Soil | | 10142009 13:05:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10162009 22:30:00 | DB-35MS | F-6890B |
| JBR61DL | Field_Sample | Soil | | 10142009 13:05:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10162009 22:30:00 | DB-XLB | F-6890A |
| JBR61DL | Field_Sample | Soil | | 10142009 13:05:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10162009 23:01:00 | DB-35MS | F-6890B |
| JBR62 | Field_Sample | Soil | | 10152009 09:40:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10162009 23:01:00 | DB-XLB | F-6890A |

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**Lab** A4 (A4 Scientific) **SDG** JBR27 **Case** 39061 **Contract** EPW05036 **Region** 10 **DDTID** 79401 **SOW** SOM01.2

## *Analytical Sample Listing*

LOW MEDIUM VOAS

| | | | | | | Extraction | | Analysis | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Number** | **Sample Type** | **Matrix** | **Level** | **Sampling Date** | **Date Received** | **Type** | **Date** | **Date/Time** | **GC Column** | **Intstrument** |
| JBR62 | Field_Sample | Soil | | 10152009 09:40:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10162009 23:32:00 | DB-35MS | F-6890B |
| JBR63 | Field_Sample | Soil | | 10152009 09:50:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10162009 23:32:00 | DB-XLB | F-6890A |
| JBR63 | Field_Sample | Soil | | 10152009 09:50:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10172009 00:03:00 | DB-35MS | F-6890B |
| JBR64 | Field_Sample | Soil | | 10152009 10:00:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10172009 00:03:00 | DB-XLB | F-6890A |
| JBR64 | Field_Sample | Soil | | 10152009 10:00:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10172009 00:34:00 | DB-35MS | F-6890B |
| JBR65 | Field_Sample | Soil | | 10152009 10:10:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10172009 00:34:00 | DB-XLB | F-6890A |
| JBR65 | Field_Sample | Soil | | 10152009 10:10:00 | 10162009 09:54:00 | Sonication | 10162009 11:45:00 | 10172009 01:05:33 | DB-35MS | F-6890B |

**Lab** A4 (A4 Scientific) **SDG** JBR27 **Case** 39061 **Contract** EPW05036 **Region** 10 **DDTID** 79401 **SOW** SOM01.2

## *Analytical Sample Listing*

LOW MEDIUM VOAS

| | | | | | | Extraction | | Analysis | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Number** | **Sample Type** | **Matrix** | **Level** | **Sampling Date** | **Date Received** | **Type** | **Date** | **Date/Time** | **GC Column** | **Intstrument** |
| JBR27 | Field_Sample | Soil | Low | 09232009 16:55:00 | 09252009 09:58:00 | | | 09272009 15:20:00 | DB-624 | F-5973 |
| JBR27MS | Matrix_Spike | Soil | Low | 09232009 16:55:00 | 09252009 09:58:00 | | | 09272009 18:10:00 | DB-624 | F-5973 |
| JBR27MSD | Matrix_Spike_Duplicate | Soil | Low | 09232009 16:55:00 | 09252009 09:58:00 | | | 09272009 18:36:00 | DB-624 | F-5973 |
| JBR28 | Field_Sample | Soil | Low | 09252009 07:45:00 | 09262009 09:35:00 | | | 09272009 15:50:00 | DB-624 | F-5973 |
| JBR29 | Field_Sample | Soil | Low | 09252009 07:48:00 | 09262009 09:35:00 | | | 09272009 16:20:00 | DB-624 | F-5973 |
| JBR29ME | Field_Sample | Soil | Medium | 09252009 07:48:00 | 09262009 09:35:00 | Purge_and_Trap | 09272009 00:00:00 | 09272009 16:55:00 | DB-624 | H-5975 |
| JBR29MEMS | Matrix_Spike | Soil | Medium | 09252009 07:48:00 | 09262009 09:35:00 | Purge_and_Trap | 09272009 00:00:00 | 09272009 17:25:00 | DB-624 | H-5975 |
| JBR29MEMSD | Matrix_Spike_Duplicate | Soil | Medium | 09252009 07:48:00 | 09262009 09:35:00 | Purge_and_Trap | 09272009 00:00:00 | 09272009 17:51:00 | DB-624 | H-5975 |
| JBRA7 | Field_Sample | Water | Low | 09232009 16:25:00 | 09252009 09:58:00 | | | 09252009 18:23:00 | DB-624 | C-5973 |

**Lab** A4 (A4 Scientific) **SDG** JBR30 **Case** 39061 **Contract** EPW05036 **Region** 10 **DDTID** 79749 **SOW** SOM01.2

## *Analytical Sample Listing*

LOW MEDIUM VOAS

| | | | | | | Extraction | | Analysis | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Number** | **Sample Type** | **Matrix** | **Level** | **Sampling Date** | **Date Received** | **Type** | **Date** | **Date/Time** | **GC Column** | **Intstrument** |
| JBR27 | Field_Sample | Soil | Medium | 09232009 16:55:00 | 09252009 09:58:00 | Sonication | 09252009 11:45:00 | 09262009 15:34:00 | HP-5MS | G-5973 |
| JBR27DL | Field_Sample | Soil | Medium | 09232009 16:55:00 | 09252009 09:58:00 | Sonication | 09252009 11:45:00 | 09262009 16:06:00 | HP-5MS | G-5973 |
| JBR27MS | Matrix_Spike | Soil | Medium | 09232009 16:55:00 | 09252009 09:58:00 | Sonication | 09252009 11:45:00 | 09262009 16:39:00 | HP-5MS | G-5973 |
| JBR27MSD | Matrix_Spike_Duplicate | Soil | Medium | 09232009 16:55:00 | 09252009 09:58:00 | Sonication | 09252009 11:45:00 | 09262009 17:11:00 | HP-5MS | G-5973 |
| JBR28 | Field_Sample | Soil | Low | 09252009 07:45:00 | 09262009 09:35:00 | Sonication | 09262009 10:45:00 | 09262009 20:25:00 | HP-5MS | G-5973 |
| JBR28DL | Field_Sample | Soil | Low | 09252009 07:45:00 | 09262009 09:35:00 | Sonication | 09262009 10:45:00 | 09262009 18:48:00 | HP-5MS | G-5973 |
| JBR28MS | Matrix_Spike | Soil | Low | 09252009 07:45:00 | 09262009 09:35:00 | Sonication | 09262009 10:45:00 | 10012009 17:40:00 | HP-5MS | D-5973 |
| JBR28MSD | Matrix_Spike_Duplicate | Soil | Low | 09252009 07:45:00 | 09262009 09:35:00 | Sonication | 09262009 10:45:00 | 10012009 18:11:00 | HP-5MS | D-5973 |
| JBR29 | Field_Sample | Soil | Medium | 09252009 07:48:00 | 09262009 09:35:00 | Sonication | 09262009 10:45:00 | 09262009 19:20:00 | HP-5MS | G-5973 |
| JBR29DL | Field_Sample | Soil | Medium | 09252009 07:48:00 | 09262009 09:35:00 | Sonication | 09262009 10:45:00 | 09262009 20:57:00 | HP-5MS | G-5973 |

| PCBS | | | | | | Extraction | | Analysis | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Number** | **Sample Type** | **Matrix** | **Level** | **Sampling Date** | **Date Received** | **Type** | **Date** | **Date/Time** | **GC Column** | **Intstrument** |
| JBR27 | Field_Sample | Soil | | 09232009 16:55:00 | 09252009 09:58:00 | Sonication | 09252009 11:45:00 | 09262009 10:19:00 | DB-XLB | F-6890A |
| JBR27 | Field_Sample | Soil | | 09232009 16:55:00 | 09252009 09:58:00 | Sonication | 09252009 11:45:00 | 09262009 10:50:00 | DB-35MS | F-6890B |
| JBR27DL | Field_Sample | Soil | | 09232009 16:55:00 | 09252009 09:58:00 | Sonication | 09252009 11:45:00 | 09262009 10:50:00 | DB-XLB | F-6890A |
| JBR27DL | Field_Sample | Soil | | 09232009 16:55:00 | 09252009 09:58:00 | Sonication | 09252009 11:45:00 | 09262009 11:21:00 | DB-35MS | F-6890B |
| JBR27MS | Matrix_Spike | Soil | | 09232009 16:55:00 | 09252009 09:58:00 | Sonication | 09252009 11:45:00 | 09262009 11:21:00 | DB-XLB | F-6890A |
| JBR27MS | Matrix_Spike | Soil | | 09232009 16:55:00 | 09252009 09:58:00 | Sonication | 09252009 11:45:00 | 09262009 11:52:00 | DB-35MS | F-6890B |
| JBR27MSD | Matrix_Spike_Duplicate | Soil | | 09232009 16:55:00 | 09252009 09:58:00 | Sonication | 09252009 11:45:00 | 09262009 11:52:00 | DB-XLB | F-6890A |
| JBR27MSD | Matrix_Spike_Duplicate | Soil | | 09232009 16:55:00 | 09252009 09:58:00 | Sonication | 09252009 11:45:00 | 09262009 12:23:00 | DB-35MS | F-6890B |
| JBR28 | Field_Sample | Soil | | 09252009 07:45:00 | 09262009 09:35:00 | Sonication | 09262009 10:45:00 | 09262009 15:04:24 | DB-XLB | F-6890A |
| JBR28 | Field_Sample | Soil | | 09252009 07:45:00 | 09262009 09:35:00 | Sonication | 09262009 10:45:00 | 09262009 15:35:21 | DB-35MS | F-6890B |
| JBR28DL | Field_Sample | Soil | | 09252009 07:45:00 | 09262009 09:35:00 | Sonication | 09262009 10:45:00 | 09262009 16:41:46 | DB-XLB | F-6890A |
| JBR28DL | Field_Sample | Soil | | 09252009 07:45:00 | 09262009 09:35:00 | Sonication | 09262009 10:45:00 | 09262009 17:12:55 | DB-35MS | F-6890B |
| JBR29 | Field_Sample | Soil | | 09252009 07:48:00 | 09262009 09:35:00 | Sonication | 09262009 10:45:00 | 09262009 15:35:21 | DB-XLB | F-6890A |
| JBR29 | Field_Sample | Soil | | 09252009 07:48:00 | 09262009 09:35:00 | Sonication | 09262009 10:45:00 | 09262009 16:06:29 | DB-35MS | F-6890B |

National Functional Guidelines Report # 6



**Lab** A4 (A4 Scientific) **SDG** JBR30 **Case** 39061 **Contract** EPW05036 **Region** 10 **DDTID** 79749 **SOW** SOM01.2

## *Analytical Sample Listing*

LOW MEDIUM VOAS

| | | | | | | Extraction | | Analysis | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Number** | **Sample Type** | **Matrix** | **Level** | **Sampling Date** | **Date Received** | **Type** | **Date** | **Date/Time** | **GC Column** | **Intstrument** |
| JBR30 | Field_Sample | Soil | Low | 09282009 11:15:00 | 10012009 09:51:00 | | | 10012009 11:55:00 | DB-624 | F-5973 |
| JBR32 | Field_Sample | Soil | Low | 09292009 13:00:00 | 10012009 09:51:00 | | | 10012009 12:26:00 | DB-624 | F-5973 |
| JBR32MS | Matrix_Spike | Soil | Low | 09292009 13:00:00 | 10012009 09:51:00 | | | 10012009 12:56:00 | DB-624 | F-5973 |
| JBR32MSD | Matrix_Spike_Duplicate | Soil | Low | 09292009 13:00:00 | 10012009 09:51:00 | | | 10012009 13:22:00 | DB-624 | F-5973 |
| JBR33 | Field_Sample | Soil | Low | 09302009 15:25:00 | 10022009 10:11:00 | | | 10032009 16:56:00 | DB-624 | F-5973 |
| JBR34 | Field_Sample | Soil | Low | 09302009 15:35:00 | 10022009 10:11:00 | | | 10032009 16:29:00 | DB-624 | F-5973 |
| JBR36 | Field_Sample | Soil | Low | 10012009 10:30:00 | 10022009 10:11:00 | | | 10032009 17:49:00 | DB-624 | F-5973 |
| JBR36ME | Field_Sample | Soil | Medium | 10012009 10:30:00 | 10022009 10:11:00 | Purge_and_Trap | 10052009 00:00:00 | 10052009 16:59:00 | DB-624 | H-5975 |
| JBR36MEMS | Matrix_Spike | Soil | Medium | 10012009 10:30:00 | 10022009 10:11:00 | Purge_and_Trap | 10072009 00:00:00 | 10082009 01:01:00 | DB-624 | F-5973 |
| JBR36MEMSD | Matrix_Spike_Duplicate | Soil | Medium | 10012009 10:30:00 | 10022009 10:11:00 | Purge_and_Trap | 10072009 00:00:00 | 10082009 01:28:00 | DB-624 | F-5973 |
| JBR37 | Field_Sample | Soil | Low | 10012009 15:00:00 | 10022009 10:11:00 | | | 10032009 17:23:00 | DB-624 | F-5973 |

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**Lab** A4 (A4 Scientific) **SDG** JBR30 **Case** 39061 **Contract** EPW05036 **Region** 10 **DDTID** 79749 **SOW** SOM01.2

## *Analytical Sample Listing*

BNA

| | | | | | | Extraction | | Analysis | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Number** | **Sample Type** | **Matrix** | **Level** | **Sampling Date** | **Date Received** | **Type** | **Date** | **Date/Time** | **GC Column** | **Intstrument** |
| JBR30 | Field_Sample | Soil | Low | 09282009 11:15:00 | 10012009 09:51:00 | Sonication | 10012009 11:00:00 | 10022009 17:28:00 | HP-5MS | D-5973 |
| JBR32 | Field_Sample | Soil | Low | 09292009 13:00:00 | 10012009 09:51:00 | Sonication | 10012009 11:00:00 | 10022009 18:01:00 | HP-5MS | D-5973 |
| JBR32DL | Field_Sample | Soil | Low | 09292009 13:00:00 | 10012009 09:51:00 | Sonication | 10012009 11:00:00 | 10022009 19:43:00 | HP-5MS | D-5973 |
| JBR32MS | Matrix_Spike | Soil | Low | 09292009 13:00:00 | 10012009 09:51:00 | Sonication | 10012009 11:00:00 | 10022009 18:35:00 | HP-5MS | D-5973 |
| JBR32MSD | Matrix_Spike_Duplicate | Soil | Low | 09292009 13:00:00 | 10012009 09:51:00 | Sonication | 10012009 11:00:00 | 10022009 19:09:00 | HP-5MS | D-5973 |
| JBR33 | Field_Sample | Soil | Medium | 09302009 15:25:00 | 10022009 10:11:00 | Sonication | 10022009 14:00:00 | 10032009 19:10:00 | HP-5MS | D-5973 |
| JBR33MS | Matrix_Spike | Soil | Medium | 09302009 15:25:00 | 10022009 10:11:00 | Sonication | 10022009 14:00:00 | 10032009 19:43:00 | HP-5MS | D-5973 |
| JBR33MSD | Matrix_Spike_Duplicate | Soil | Medium | 09302009 15:25:00 | 10022009 10:11:00 | Sonication | 10022009 14:00:00 | 10042009 14:08:00 | HP-5MS | D-5973 |
| JBR34 | Field_Sample | Soil | Low | 09302009 15:35:00 | 10022009 10:11:00 | Sonication | 10022009 14:10:00 | 10042009 14:41:00 | HP-5MS | D-5973 |
| JBR34DL | Field_Sample | Soil | Low | 09302009 15:35:00 | 10022009 10:11:00 | Sonication | 10022009 14:10:00 | 10032009 17:30:00 | HP-5MS | D-5973 |
| JBR36 | Field_Sample | Soil | Medium | 10012009 10:30:00 | 10022009 10:11:00 | Sonication | 10022009 14:00:00 | 10032009 18:03:00 | HP-5MS | D-5973 |
| JBR36DL | Field_Sample | Soil | Medium | 10012009 10:30:00 | 10022009 10:11:00 | Sonication | 10022009 14:00:00 | 10082009 12:27:00 | HP-5MS | D-5973 |
| JBR37 | Field_Sample | Soil | Low | 10012009 15:00:00 | 10022009 10:11:00 | Sonication | 10022009 14:10:00 | 10032009 18:36:00 | HP-5MS | D-5973 |
| JBR37DL | Field_Sample | Soil | Low | 10012009 15:00:00 | 10022009 10:11:00 | Sonication | 10022009 14:10:00 | 10032009 16:22:00 | HP-5MS | D-5973 |

**Lab** A4 (A4 Scientific) **SDG** JBR68 **Case** 39061 **Contract** EPW05036 **Region** 10 **DDTID** 80959 **SOW** SOM01.2

## *DATA REVIEW RESULTS*

| | | | | | | Extraction | | Analysis | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Number** | **Sample Type** | **Matrix** | **Level** | **Sampling Date** | **Date Received** | **Type** | **Date** | **Date/Time** | **GC Column** | **Intstrument** |
| JBR30 | Field_Sample | Soil | | 09282009 11:15:00 | 10012009 09:51:00 | Sonication | 10012009 11:00:00 | 10022009 11:39:00 | DB-XLB | F-6890A |
| JBR30 | Field_Sample | Soil | | 09282009 11:15:00 | 10012009 09:51:00 | Sonication | 10012009 11:00:00 | 10022009 12:10:00 | DB-35MS | F-6890B |
| JBR32 | Field_Sample | Soil | | 09292009 13:00:00 | 10012009 09:51:00 | Sonication | 10012009 11:00:00 | 10022009 12:10:00 | DB-XLB | F-6890A |
| JBR32 | Field_Sample | Soil | | 09292009 13:00:00 | 10012009 09:51:00 | Sonication | 10012009 11:00:00 | 10022009 12:41:00 | DB-35MS | F-6890B |
| JBR32MS | Matrix_Spike | Soil | | 09292009 13:00:00 | 10012009 09:51:00 | Sonication | 10012009 11:00:00 | 10022009 12:41:00 | DB-XLB | F-6890A |
| JBR32MS | Matrix_Spike | Soil | | 09292009 13:00:00 | 10012009 09:51:00 | Sonication | 10012009 11:00:00 | 10022009 13:12:41 | DB-35MS | F-6890B |
| JBR32MSD | Matrix_Spike_Duplicate | Soil | | 09292009 13:00:00 | 10012009 09:51:00 | Sonication | 10012009 11:00:00 | 10022009 13:12:41 | DB-XLB | F-6890A |
| JBR32MSD | Matrix_Spike_Duplicate | Soil | | 09292009 13:00:00 | 10012009 09:51:00 | Sonication | 10012009 11:00:00 | 10022009 13:43:39 | DB-35MS | F-6890B |
| JBR33 | Field_Sample | Soil | | 09302009 15:25:00 | 10022009 10:11:00 | Sonication | 10022009 14:10:00 | 10032009 17:25:38 | DB-35MS | F-6890B |
| JBR33 | Field_Sample | Soil | | 09302009 15:25:00 | 10022009 10:11:00 | Sonication | 10022009 14:10:00 | 10032009 16:54:48 | DB-XLB | F-6890A |
| JBR34 | Field_Sample | Soil | | 09302009 15:35:00 | 10022009 10:11:00 | Sonication | 10022009 14:10:00 | 10032009 17:56:46 | DB-35MS | F-6890B |
| JBR34 | Field_Sample | Soil | | 09302009 15:35:00 | 10022009 10:11:00 | Sonication | 10022009 14:10:00 | 10032009 17:25:38 | DB-XLB | F-6890A |
| JBR36 | Field_Sample | Soil | | 10012009 10:30:00 | 10022009 10:11:00 | Sonication | 10022009 14:10:00 | 10032009 18:27:38 | DB-35MS | F-6890B |
| JBR36 | Field_Sample | Soil | | 10012009 10:30:00 | 10022009 10:11:00 | Sonication | 10022009 14:10:00 | 10032009 17:56:46 | DB-XLB | F-6890A |
| JBR36DL | Field_Sample | Soil | | 10012009 10:30:00 | 10022009 10:11:00 | Sonication | 10022009 14:10:00 | 10042009 09:16:58 | DB-35MS | F-6890B |
| JBR36DL | Field_Sample | Soil | | 10012009 10:30:00 | 10022009 10:11:00 | Sonication | 10022009 14:10:00 | 10042009 08:46:07 | DB-XLB | F-6890A |
| JBR37 | Field_Sample | Soil | | 10012009 15:00:00 | 10022009 10:11:00 | Sonication | 10022009 14:10:00 | 10032009 18:27:38 | DB-XLB | F-6890A |
| JBR37 | Field_Sample | Soil | | 10012009 15:00:00 | 10022009 10:11:00 | Sonication | 10022009 14:10:00 | 10032009 18:58:43 | DB-35MS | F-6890B |

## *DATA REVIEW RESULTS*

| **Blanks** | **VOA_LOW_MED** |
|---|---|
| VLB11 | The following volatile samples have common contaminant analyte concentrations reported less than 2x the CRQL. The associated method blank common contaminant concentration is less than 2x the concentration criteria Detected compounds are qualified U. Nondetected compounds are not qualified. Reported sample concentrationshave been elevated to the CRQL. |
| | **Methylene chloride** JBR68, JBR73, JBR78, JBR83, JBR84 |

| **Continuing Calibration Verification** | **BNA** |
|---|---|
| BC10 | The following semivolatile samples are associated with an opening or closing CCV percent difference (%D) outside criteria. Detected compounds are qualified J. Nondetected compounds are qualified UJ. |
| | JBR73, JBR84, JBR84DL, SBLK7R, SBLK7T |
| | **2,4-Dinitrotoluene** SSTD0204O, SSTD0204P, SSTD0204R |
| | JBR73, JBR84, JBR84DL, SBLK7R, SBLK7T |
| | **Indeno (1,2,3-cd) pyrene** SSTD0204O, SSTD0204R |
| | JBR73, JBR84, SBLK7R |
| | **Benzo (b) fluoranthene** SSTD0204R |
| | JBR84 |
| | **Dibenzo (a,h) anthracene** SSTD0204O |
| | JBR73, SBLK7R |

| **DMC/Surrogate** | **BNA** |
|---|---|
| BDSS14 | The following semivolatile samples have deuterated monitoring compound recovery above the upper limit of the criteria window. Detected compounds are qualified J. Nondetected compounds are not qualified. |
| | **Phenol-d5** JBR84 |
| | Benzaldehyde, Phenol |
| | **4,6-Dinitro-2-methylphenol-d2** JBR84 |
| | 4,6-Dinitro-2-methylphenol |
| | **4-Nitrophenol-d4** JBR84 |
| | 2,4-Dinitrophenol, 2-Nitroaniline, 3-Nitroaniline, 4-Nitroaniline, 4-Nitrophenol |

| **DMC/Surrogate** | **VOA_LOW_MED** |
|---|---|
| VDSS3 | The following volatile samples have DMC/SMC recoveries above the upper limit of the criteria window. Detected compounds are qualified J. Nondetected compounds are not qualified. |
| | **1,1-Dichloroethene-d2** JBR73MS, JBR73MSD |
| | 1,1-Dichloroethene, cis-1,2-Dichloroethene, trans-1,2-Dichloroethene |

| **Detection Limit** | **AROCLOR** |
|---|---|
| ADL1 | The following aroclor samples have analyte concentrations below the quantitation limit (CRQL). Detected compounds are qualified J. Nondetected compounds are not qualified. |
| | **Aroclor-1260** ALCSLP, ALCSLQ |
| | **Aroclor-1016** ALCSLP, ALCSLQ |
| **Detection Limit** | **BNA** |
| BDL1 | The following semivolatile samples have analyte concentrations below the quantitaion limit (CRQL). Detected compounds are qualified J. Nondetected compounds are not qualified. |
| | JBR73, JBR84, JBR84DL |
| | **Phenol** JBR73 |
| | **Bis (2-Ethylhexyl) phthalate** JBR84 |
| | **Anthracene** JBR84DL |
| | **Benzo (b) fluoranthene** JBR84 |
| | **Benzo (k) fluoranthene** JBR84 |
| | **Acenaphthene** JBR73 |
| | **Phenanthrene** JBR73 |
| | **9H-Carbazole** JBR84DL |
| | **Naphthalene** JBR73 |
| | **1,1'-Biphenyl** JBR84DL |
| **Detection Limit** | **VOA_LOW_MED** |
| VDL1 | The following volatile samples have analyte concentrations below the quantitation limit (CRQL). Detected compounds are qualified J. Nondetected compounds are not qualified. |
| | JBR73, JBR73MS, JBR73MSD, JBR78, JBR84, JBR84DL, VBLK38 |
| | **Ethylbenzene** JBR84DL |

## *DATA REVIEW RESULTS*

| | |
|---|---|
| | **Toluene** JBR84DL |
| | **trans-1,2-Dichloroethene** JBR84 |
| | **m,p-Xylene** JBR84DL |
| | **Vinyl Chloride** JBR73, JBR73MS, JBR73MSD |
| | **Methylene chloride** JBR78, VBLK38 |
| | **o-Xylene** JBR84DL |

| **Initial Calibration** | **BNA** |
|---|---|
| BC5 | The following semivolatile samples are associated with an initial calibration percent relative standard deviation (%RSD) outside criteria. Detected compounds are qualified J. Nondetected compounds are not qualified. Use professional judgement to qualify non-detected compounds. |
| | JBR73, JBR84, JBR84DL, SBLK7R, SBLK7T |
| | **2,4-Dinitrotoluene** SSTD0054C |
| | JBR73, JBR84, JBR84DL, SBLK7R, SBLK7T |
| | **Indeno (1,2,3-cd) pyrene** SSTD0054C |
| | JBR73, JBR84, JBR84DL, SBLK7R, SBLK7T |
| | **Dibenzo (a,h) anthracene** SSTD0054C |
| | JBR73, JBR84, JBR84DL, SBLK7R, SBLK7T |
| | **Pentachlorophenol** SSTD0054C |
| | JBR73, JBR84, JBR84DL, SBLK7R, SBLK7T |

| **Blanks** | **VOA_LOW_MED** |
|---|---|
| VLB11 | The following volatile samples have common contaminant analyte concentrations reported less than 2x the CRQL. The associated method blank common contaminant concentration is less than 2x the concentration criteria Detected compounds are qualified U. Nondetected compounds are not qualified. Reported sample concentrationshave been elevated to the CRQL. |
| | **Methylene chloride** JBR80, JBR81, JBR82, JBR88, JBR89, JBR91, JBR92, JBR93 |

| **Blanks** | **VOA_LOW_MED** |
|---|---|
| VLB46 | The following volatile samples have common contaminant analyte concentrations reported less than 2x the CRQL. The associated storage blank common contaminant concentration is less than 2x the concentration criteria Detected compounds are qualified U. Nondetected compounds are not qualified. Reported sample concentrations have been elevated to the CRQL. |

**Lab** A4 (A4 Scientific) **SDG** JBR68 **Case** 39061 **Contract** EPW05036 **Region** 10 **DDTID** 80959 **SOW** SOM01.2

***DATA REVIEW RESULTS***

| | |
|---|---|
| | **Methylene chloride** JBR67, JBR70, JBR72, JBR74, JBR76, JBR77ME, JBR77MEMS, JBR77MEMSD, JBR80, JBR80ME, JBR81, JBR81ME, JBR82, JBR88, JBR89, JBR91, JBR92, JBR93 |
| **Blanks** | **VOA_LOW_MED** |
| VLB55 | The following volatile samples have common contaminant analyte concentrations reported greater than or equal to 2x the CRQL. The associated storage blank common contaminant concentration is less than 2x the concentration criteria. Detected and nondetected compounds are not qualified. |
| | **Methylene chloride** JBR66, JBR66MS, JBR66MSD, JBR75, JBR77, JBR79 |

**Lab** A4 (A4 Scientific) **SDG** JBR66 **Case** 39061 **Contract** EPW05036 **Region** 10 **DDTID** 80959 **SOW** SOM01.2

***Data Review Results***

Continuing Calibration Verification

| **Continuing Calibration Verification** | **BNA** |
|---|---|
| BC10 | The following semivolatile samples are associated with an opening or closing CCV percent difference (%D) outside criteria. Detected compounds are qualified J. Nondetected compounds are qualified UJ. |
| | JBR66, JBR67, JBR67MS, JBR67MSD, JBR69, JBR70, JBR71, JBR72, JBR74, JBR75, JBR76, JBR77, JBR79, JBR79DL, JBR80, JBR81, JBR82, JBR88, JBR89, JBR91, JBR92, JBR93, SBLK5Y, SBLK5Z, SBLK6B |
| | **2,4-Dinitrotoluene** SSTD0204O, SSTD0204P |
| | JBR69, JBR70, JBR72, JBR76, JBR79DL, JBR81, JBR82, SBLK5Z |
| | **Indeno (1,2,3-cd) pyrene** SSTD0204O, SSTD0204U |
| | JBR69, JBR70, JBR72, JBR76, JBR79DL, JBR88, JBR89, JBR91, JBR92, JBR93, SBLK6B |
| | **Benzo (b) fluoranthene** SSTD0204U |
| | JBR88, JBR89, JBR91, JBR92, JBR93, SBLK6B |
| | **Dibenzo (a,h) anthracene** SSTD0204O |
| | JBR69, JBR70, JBR72, JBR76, JBR79DL |
| | **Pentachlorophenol** SSTD0204N |
| | JBR66, JBR67, JBR67MS, JBR67MSD, JBR71, JBR74, JBR75, JBR77, JBR79, JBR80, SBLK5Y |
| **Continuing Calibration Verification** | **VOA_LOW_MED** |
| VC8 | The following volatile samples are associated with an opening or closing CCV percent difference (%D) outside criteria. Detected compounds are qualified J. Nondetected compounds are qualified UJ. |
| | JBR81, JBR82, VBLKDC |
| | **m,p-Xylene** VSTD025DC |
| | JBR81, JBR82, VBLKDC |

**Lab** A4 (A4 Scientific) **SDG** JBR66 **Case** 39061 **Contract** EPW05036 **Region** 10 **DDTID** 80959 **SOW** SOM01.2

***Data Review Results***

DMC/Surrogate

| DMC/Surrogate | BNA |
|---|---|
| BDSS15 | The following semivolatile samples have deuterated monitoring compound recovery below the lower limit of the criteria window. Detected compounds are qualified J. Nondetected compounds are qualified UJ. |
| | JBR67, JBR67MS, JBR67MSD, JBR69, JBR70, JBR71, JBR72, JBR74, JBR75, JBR76, JBR77, JBR79, JBR80, JBR81, JBR82, JBR88, JBR89, JBR91, JBR92, JBR93 |
| | **Pyrene-d10** JBR71 |
| | Benzo(a)anthracene, Chrysene, Fluoranthene, Pyrene |
| | **4-Chloroaniline-d4** JBR67, JBR67MS, JBR67MSD, JBR69, JBR70, JBR72, JBR76, JBR79, JBR80, JBR82, JBR88, JBR89, JBR91, JBR92, JBR93 |
| | 3,3'-Dichlorobenzidine, 4-Chloroaniline, Hexachlorocyclopentadiene |
| | **Benzo (a) pyrene-d12** JBR67, JBR67MS, JBR67MSD, JBR69, JBR70, JBR71, JBR74, JBR75, JBR76, JBR77, JBR79, JBR80, JBR81, JBR82 |
| | Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(g,h,i)perylene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Indeno(1,2,3-cd)pyrene |
| **DMC/Surrogate** | **VOA_LOW_MED** |
| VDSS3 | The following volatile samples have DMC/SMC recoveries above the upper limit of the criteria window. Detected compounds are qualified J. Nondetected compounds are not qualified. |
| | **1,4-Dioxane-d8** JBR82 |
| | 1,4-Dioxane |
| **DMC/Surrogate** | **VOA_LOW_MED** |
| VDSS4 | The following volatile samples have one or more DMC/SMC recovery values is less than the primary lower limit but greater than or equal to the expanded lower limit of the criteria window. Detected compounds are qualified J. Nondetected compounds are qualified UJ. |
| | JBR72, JBR76, JBR77MEMS, JBR77MEMSD |
| | **1,2-Dichloroethane-d4** JBR72 |
| | 1,1,1-Trichloroethane, 1,1,2-Trichloro-1,2,2-trifluoroethane, 1,2-Dibromoethane, 1,2-Dichloroethane, Carbon tetrachloride, Methyl acetate, Methyl tert-butyl ether, Methylene chloride, Trichlorofluoromethane |
| | **Chloroethane-d5** JBR77MEMS, JBR77MEMSD |
| | Bromomethane, Carbon disulfide, Chloroethane, Chloromethane, Dichlorodifluoromethane |
| | **Vinyl chloride-d3** JBR72, JBR76 |
| | Vinyl chloride |

**Lab** A4 (A4 Scientific) **SDG** JBR66 **Case** 39061 **Contract** EPW05036 **Region** 10 **DDTID** 80959 **SOW** SOM01.2

## *Data Review Results*

Detection Limit

| Detection Limit | AROCLOR |
|---|---|
| ADL1 | The following aroclor samples have analyte concentrations below the quantitation limit (CRQL). Detected compounds are qualified J. Nondetected compounds are not qualified. |
| | JBR67, JBR67MS, JBR67MSD, JBR77, JBR80, JBR91, JBR92 |
| | **Aroclor-1260** ALCSMF, ALCSMK |
| | **Aroclor-1254** JBR67, JBR67MS, JBR67MSD, JBR77, JBR80, JBR91, JBR92 |
| | **Aroclor-1016** ALCSMF |
| **Detection Limit** | **AROCLOR** |
| ADL3 | The relative percent difference between analyte results for the following aroclor samples is greater than 25%. Detected and nondetected compounds are not qualified. |
| | **Aroclor-1254** JBR67MSD, JBR80, JBR88, JBR91, JBR92 |
| **Detection Limit** | **BNA** |
| BDL1 | The following semivolatile samples have analyte concentrations below the quantitaion limit (CRQL). Detected compounds are qualified J. Nondetected compounds are not qualified. |
| | JBR67, JBR69, JBR70, JBR71, JBR72, JBR74, JBR75, JBR76, JBR77, JBR79, JBR79DL, JBR80, JBR81, JBR82, JBR88, JBR89, JBR92, JBR93 |
| | **Phenol** JBR69, JBR70, JBR71, JBR72, JBR74, JBR75, JBR76, JBR77, JBR79, JBR80, JBR81, JBR82 |
| | **Anthracene** JBR70, JBR75, JBR79DL |
| | **Pyrene** JBR67, JBR80, JBR88, JBR89, JBR92, JBR93 |
| | **Dibenzofuran** JBR70, JBR75, JBR79DL |
| | **Fluoranthene** JBR67, JBR80, JBR88, JBR89, JBR92 |
| | **Chrysene** JBR70, JBR75 |
| | **Benzo (a) anthracene** JBR70, JBR75 |
| | **Acenaphthene** JBR80 |
| | **Phenanthrene** JBR74, JBR88 |
| | **Fluorene** JBR70, JBR79DL, JBR80 |
| | **9H-Carbazole** JBR79 |
| | **2-Methylnaphthalene** JBR79 |
| | **1,1'-Biphenyl** JBR79 |
| | **Acetophenone** JBR74, JBR75, JBR76, JBR77, JBR79, JBR80 |

**Lab** A4 (A4 Scientific) **SDG** JBR66 **Case** 39061 **Contract** EPW05036 **Region** 10 **DDTID** 80959 **SOW** SOM01.2

## *Data Review Results*

Detection Limit

| Detection Limit | VOA_LOW_MED |
|---|---|
| VDL1 | The following volatile samples have analyte concentrations below the quantitation limit (CRQL). Detected compounds are qualified J. Nondetected compounds are not qualified. |
| | JBR66, JBR66MS, JBR66MSD, JBR67, JBR69, JBR70, JBR71, JBR72, JBR74, JBR75, JBR76, JBR77, JBR77ME, JBR80, JBR80ME, JBR81, JBR81ME, JBR82, JBR88, JBR89, JBR91, JBR92, JBR93, VBLKCZ, VBLKDC, VBLKDI, VHBLK01 |
| | **Ethylbenzene** JBR76 |
| | **Toluene** JBR77 |
| | **Tetrachloroethene** JBR66, JBR66MS, JBR66MSD, JBR70, JBR72 |
| | **cis-1,2-Dichloroethene** JBR66, JBR66MS, JBR66MSD, JBR67, JBR70, JBR71, JBR72, JBR82 |
| | **Acetone** JBR81, JBR82 |
| | **Methylene chloride** JBR67, JBR70, JBR72, JBR74, JBR77ME, JBR80, JBR80ME, JBR81, JBR81ME, JBR88, JBR89, JBR91, JBR92, JBR93, VBLKCZ, VBLKDC, VBLKDI, VHBLK01 |
| | **1,1,2-Trichloroethane** JBR80 |
| | **Trichloroethene** JBR66, JBR67, JBR69, JBR75, JBR76, JBR82 |
| | **o-Xylene** JBR76 |

**Lab** A4 (A4 Scientific) **SDG** JBR27 **Case** 39061 **Contract** EPW05036 **Region** 10 **DDTID** 79401 **SOW** SOM01.2

## *Analytical Sample Listing*

BNA

| **Initial Calibration** | **BNA** |
|---|---|
| BC5 | The following semivolatile samples are associated with an initial calibration percent relative standard deviation (%RSD) outside criteria. Detected compounds are qualified J. Nondetected compounds are not qualified. Use professional judgement to qualify non-detected compounds. |
| | JBR66, JBR67, JBR67MS, JBR67MSD, JBR69, JBR70, JBR71, JBR72, JBR74, JBR75, JBR76, JBR77, JBR79, JBR79DL, JBR80, JBR81, JBR82, JBR88, JBR89, JBR91, JBR92, JBR93, SBLK5Y, SBLK5Z, SBLK6B |
| | **2,4-Dinitrotoluene** SSTD0054C |
| | JBR66, JBR67, JBR67MS, JBR67MSD, JBR69, JBR70, JBR71, JBR72, JBR74, JBR75, JBR76, JBR77, JBR79, JBR79DL, JBR80, JBR81, JBR82, JBR88, JBR89, JBR91, JBR92, JBR93, SBLK5Y, SBLK5Z, SBLK6B |
| | **Indeno (1,2,3-cd) pyrene** SSTD0054C |
| | JBR66, JBR67, JBR67MS, JBR67MSD, JBR69, JBR70, JBR71, JBR72, JBR74, JBR75, JBR76, JBR77, JBR79, JBR79DL, JBR80, JBR81, JBR82, JBR88, JBR89, JBR91, JBR92, JBR93, SBLK5Y, SBLK5Z, SBLK6B |
| | **Dibenzo (a,h) anthracene** SSTD0054C |
| | JBR66, JBR67, JBR67MS, JBR67MSD, JBR69, JBR70, JBR71, JBR72, JBR74, JBR75, JBR76, JBR77, JBR79, JBR79DL, JBR80, JBR81, JBR82, JBR88, JBR89, JBR91, JBR92, JBR93, SBLK5Y, SBLK5Z, SBLK6B |
| | **Pentachlorophenol** SSTD0054C |
| | JBR66, JBR67, JBR67MS, JBR67MSD, JBR69, JBR70, JBR71, JBR72, JBR74, JBR75, JBR76, JBR77, JBR79, JBR79DL, JBR80, JBR81, JBR82, JBR88, JBR89, JBR91, JBR92, JBR93, SBLK5Y, SBLK5Z, SBLK6B |
| **Initial Calibration** | **VOA_LOW_MED** |
| VC6 | The following volatile samples are associated with an initial calibration percent relative standard deviation (%RSD) outside criteria. Detected compounds are qualified J. Nondetected compounds are not qualified. Use professional judgement to qualify non-detected compounds. |
| | JBR77, JBR79, JBR80, JBR81, JBR82, VBLKCZ, VBLKDC |
| | **Bromomethane** VSTD2.5CU |
| | |

**Lab** A4 (A4 Scientific) **SDG** JBR51 **Case** 39061 **Contract** EPW05036 **Region** 10 **DDTID** 80123 **SOW** SOM01.2

***Data Review Results***

Detection Limit

| **DMC/Surrogate** | **VOA_LOW_MED** |
|---|---|
| VDSS3 | The following volatile samples have DMC/SMC recoveries above the upper limit of the criteria window. Detected compounds are qualified J. Nondetected compounds are not qualified. |
| | **Vinyl chloride-d3** JBR29ME |
| | Vinyl chloride |
| **DMC/Surrogate** | **VOA_LOW_MED** |
| VDSS4 | The following volatile samples have one or more DMC/SMC recovery values is less than the primary lower limit but greater than or equal to the expanded lower limit of the criteria window. Detected compounds are qualified J. Nondetected compounds are qualified UJ. |
| | **1,2-Dichloroethane-d4** JBR27MS |
| | 1,1,1-Trichloroethane, 1,1,2-Trichloro-1,2,2-trifluoroethane, 1,2-Dibromoethane, 1,2-Dichloroethane, Carbon tetrachloride, Methyl acetate, Methyl tert-butyl ether, Methylene chloride, Trichlorofluoromethane |

| **Detection Limit** | **AROCLOR** |
|---|---|
| **Detection Limit** | **BNA** |
| BDL1 | The following semivolatile samples have analyte concentrations below the quantitaion limit (CRQL). Detected compounds are qualified J. Nondetected compounds are not qualified. |
| | JBR27, JBR27DL, JBR27MS, JBR27MSD, JBR28, JBR28DL, JBR28MS, JBR28MSD, JBR29, JBR29DL |
| | **Bis (2-Ethylhexyl) phthalate** JBR28MS, JBR28MSD |
| | **Anthracene** JBR27DL, JBR28DL, JBR29DL |
| | **Benzo (g,h,i) perylene** JBR28, JBR28MS, JBR28MSD |
| | **Indeno (1,2,3-cd) pyrene** JBR28, JBR28MS, JBR28MSD |
| | **Benzo (b) fluoranthene** JBR27, JBR27MS, JBR27MSD, JBR29 |
| | **Benzo (k) fluoranthene** JBR27, JBR27MSD, JBR29 |
| | **Chrysene** JBR27DL, JBR28DL, JBR29DL |
| | **Benzo (a) pyrene** JBR27, JBR27MS, JBR27MSD, JBR29 |
| | **Benzo (a) anthracene** JBR27DL, JBR28DL, JBR29DL |
| | **9H-Carbazole** JBR27, JBR27DL, JBR27MS, JBR27MSD, JBR28DL, JBR29, JBR29DL |
| | **Naphthalene** JBR27DL, JBR28DL, JBR29DL |

| | |
|---|---|
| | **2-Methylnaphthalene** JBR27DL, JBR28DL, JBR29DL |
| | **1,1'-Biphenyl** JBR27DL, JBR28DL, JBR29DL |
| **Detection Limit** | **VOA_LOW_MED** |
| VDL1 | The following volatile samples have analyte concentrations below the quantitation limit (CRQL). Detected compounds are qualified J. Nondetected compounds are not qualified. |
| | JBR28, JBR29ME, JBR29MEMS, JBR29MEMSD, VHBLK01 |
| | **Ethylbenzene** JBR29ME, JBR29MEMS, JBR29MEMSD |
| | **Styrene** VHBLK01 |
| | **Toluene** JBR28 |
| | **cis-1,2-Dichloroethene** JBR29ME, JBR29MEMS, JBR29MEMSD |
| | **m,p-Xylene** JBR29ME, JBR29MEMS, JBR29MEMSD |
| | **Trichloroethene** JBR29ME |
| | **o-Xylene** JBR28, JBR29ME, JBR29MEMS, JBR29MEMSD |

**Lab** A4 (A4 Scientific) **SDG** JBR51 **Case** 39061 **Contract** EPW05036 **Region** 10 **DDTID** 80123 **SOW** SOM01.2

## *Data Review Results*

Detection Limit

| **Continuing Calibration Verification** | **BNA** |
|---|---|
| BC10 | The following semivolatile samples are associated with an opening or closing CCV percent difference (%D) outside criteria. Detected compounds are qualified J. Nondetected compounds are qualified UJ. |
| | JBR52, JBR56, JBR57, JBR57DL, JBR59, JBR59DL, JBR60, JBR61, JBR62, JBR63, JBR64, JBR65, SBLK5W, SBLK5X |
| | **2,4-Dinitrotoluene** SSTD0204D |
| | JBR52, SBLK5W |
| | **Indeno (1,2,3-cd) pyrene** SSTD0204H |
| | JBR56, JBR57, JBR57DL, JBR59, JBR59DL, JBR60, JBR61, JBR62, JBR63, JBR64, JBR65, SBLK5X |
| | **2,6-Dinitrotoluene** SSTD0204D |
| | JBR52, SBLK5W |
| **DMC/Surrogate** | **BNA** |
| BDSS15 | The following semivolatile samples have deuterated monitoring compound recovery below the lower limit of the criteria window. Detected compounds are qualified J. Nondetected compounds are qualified UJ. |
| | **4-Chloroaniline-d4** JBR51, JBR51MS, JBR51MSD, JBR53, JBR56, JBR60, JBR62, JBR63, JBR64, JBR65 |
| | 3,3'-Dichlorobenzidine, 4-Chloroaniline, Hexachlorocyclopentadiene |
| | **Benzo (a) pyrene-d12** JBR51, JBR51MS, JBR53, JBR62, JBR65 |
| | Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(g,h,i)perylene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Indeno(1,2,3-cd)pyrene |
| **DMC/Surrogate** | **VOA_LOW_MED** |
| VDSS4 | The following volatile samples have one or more DMC/SMC recovery values is less than the primary lower limit but greater than or equal to the expanded lower limit of the criteria window. Detected compounds are qualified J. Nondetected compounds are qualified UJ. |
| | JBR51, JBR51MS, JBR51MSD, JBR52, JBR52ME, JBR52MEMSD, JBR53 |
| | **1,2-Dichloroethane-d4** JBR51, JBR51MS, JBR51MSD, JBR52, JBR53 |
| | 1,1,1-Trichloroethane, 1,1,2-Trichloro-1,2,2-trifluoroethane, 1,2-Dibromoethane, 1,2-Dichloroethane, Carbon tetrachloride, Methyl acetate, Methyl tert-butyl ether, Methylene chloride, Trichlorofluoromethane |
| | **Chloroethane-d5** JBR52ME, JBR52MEMSD |
| | Bromomethane, Carbon disulfide, Chloroethane, Chloromethane, Dichlorodifluoromethane |
| | **trans-1,3-Dichloropropene-d4** JBR51, JBR51MSD |
| | 1,1,2-Trichloroethane, cis-1,3-Dichloropropene, trans-1,3-Dichloropropene |

| | |
|---|---|
| | **1,2-Dichloropropane-d6** JBR51, JBR51MSD |
| | 1,2-Dichloropropane, Bromodichloromethane, Cyclohexane, Methylcyclohexane |

| **Detection Limit** | **AROCLOR** |
|---|---|
| ADL1 | The following aroclor samples have analyte concentrations below the quantitation limit (CRQL). Detected compounds are qualified J. Nondetected compounds are not qualified. |
| | **Aroclor-1260** ALCSLT |
| | **Aroclor-1016** ALCSLT, ALCSLU |
| **Detection Limit** | **BNA** |
| BDL1 | The following semivolatile samples have analyte concentrations below the quantitaion limit (CRQL). Detected compounds are qualified J. Nondetected compounds are not qualified. |
| | JBR51, JBR52, JBR53, JBR55, JBR55DL, JBR55MS, JBR55MSD, JBR57, JBR57DL, JBR59, JBR59DL, JBR60, JBR61, JBR64 |
| | **4-Nitrophenol** JBR55 |
| | **Anthracene** JBR55DL, JBR57DL, JBR59DL, JBR60, JBR61, JBR64 |
| | **Pyrene** JBR51 |
| | **Dibenzofuran** JBR52 |
| | **Indeno (1,2,3-cd) pyrene** JBR59 |
| | **Benzo (b) fluoranthene** JBR55, JBR55MS, JBR55MSD, JBR57 |
| | **Fluoranthene** JBR51 |
| | **Benzo (k) fluoranthene** JBR55, JBR55MS, JBR55MSD |
| | **Chrysene** JBR55DL, JBR57DL, JBR59DL, JBR60, JBR64 |
| | **Benzo (a) anthracene** JBR55DL, JBR57DL, JBR59DL, JBR60, JBR64 |
| | **Acenaphthene** JBR51, JBR52, JBR61 |
| | **Phenanthrene** JBR51, JBR53 |
| | **Fluorene** JBR52 |
| | **9H-Carbazole** JBR55, JBR55DL, JBR55MS, JBR55MSD, JBR57DL, JBR59DL, JBR60, JBR61, JBR64 |
| | **Naphthalene** JBR55DL, JBR57DL, JBR60, JBR64 |
| | **2-Methylnaphthalene** JBR55DL, JBR57DL, JBR60, JBR64 |
| | **1,1'-Biphenyl** JBR55DL, JBR57DL, JBR59DL, JBR60, JBR64 |
| **Detection Limit** | **VOA_LOW_MED** |

**Lab** A4 (A4 Scientific) **SDG** JBR51 **Case** 39061 **Contract** EPW05036 **Region** 10 **DDTID** 80123 **SOW** SOM01.2

## *Data Review Results*

Detection Limit

| | |
|---|---|
| VDL1 | The following volatile samples have analyte concentrations below the quantitation limit (CRQL). Detected compounds are qualified J. Nondetected compounds are not qualified. |
| | JBR51, JBR51MS, JBR51MSD, JBR52, JBR52ME, JBR52MEMS, JBR52MEMSD, JBR53ME, JBR53MEDL, JBR55, JBR55ME, JBR55MEDL, JBR57, JBR59, JBR60, JBR61, JBR62, JBR63, JBR64, JBR64ME, JBR65 |
| | **Ethylbenzene** JBR53ME, JBR55MEDL |
| | **Toluene** JBR52, JBR53MEDL, JBR57, JBR59, JBR64 |
| | **1,2,4-Trichlorobenzene** JBR55MEDL |
| | **Tetrachloroethene** JBR64ME |
| | **cis-1,2-Dichloroethene** JBR51, JBR51MS, JBR52ME, JBR52MEMS, JBR52MEMSD, JBR55ME, JBR65 |
| | **trans-1,2-Dichloroethene** JBR64 |
| | **m,p-Xylene** JBR53MEDL, JBR55MEDL, JBR64 |
| | **Acetone** JBR55MEDL, JBR57, JBR59, JBR60, JBR61, JBR62 |
| | **Vinyl Chloride** JBR57, JBR59, JBR62, JBR63 |
| | **Methylene chloride** JBR51MS, JBR51MSD, JBR59, JBR62, JBR63 |
| | **Trichloroethene** JBR51, JBR52ME, JBR60, JBR62, JBR64ME |
| | **1,2,3-Trichlorobenzene** JBR55MEDL |
| | **o-Xylene** JBR53ME, JBR64 |
| | **Isopropylbenzene** JBR55 |

**Lab** A4 (A4 Scientific) **SDG** JBR30 **Case** 39061 **Contract** EPW05036 **Region** 10 **DDTID** 79749 **SOW** SOM01.2

***Data Review Results***

DMC/Surrogate

| **Initial Calibration** | **BNA** |
|---|---|
| BC5 | The following semivolatile samples are associated with an initial calibration percent relative standard deviation (%RSD) outside criteria. Detected compounds are qualified J. Nondetected compounds are not qualified. Use professional judgement to qualify non-detected compounds. |
| | JBR51, JBR51MS, JBR51MSD, JBR52, JBR53, JBR55, JBR55DL, JBR55MS, JBR55MSD, JBR56, JBR57, JBR57DL, JBR59, JBR59DL, JBR60, JBR61, JBR62, JBR63, JBR64, JBR65, SBLK5V, SBLK5W, SBLK5X |
| | **2,4-Dinitrotoluene** SSTD0054C |
| | JBR51, JBR51MS, JBR51MSD, JBR52, JBR53, JBR55, JBR55DL, JBR55MS, JBR55MSD, JBR56, JBR57, JBR57DL, JBR59, JBR59DL, JBR60, JBR61, JBR62, JBR63, JBR64, JBR65, SBLK5V, SBLK5W, SBLK5X |
| | **Indeno (1,2,3-cd) pyrene** SSTD0054C |
| | JBR51, JBR51MS, JBR51MSD, JBR52, JBR53, JBR55, JBR55DL, JBR55MS, JBR55MSD, JBR56, JBR57, JBR57DL, JBR59, JBR59DL, JBR60, JBR61, JBR62, JBR63, JBR64, JBR65, SBLK5V, SBLK5W, SBLK5X |
| | **Dibenzo (a,h) anthracene** SSTD0054C |
| | JBR51, JBR51MS, JBR51MSD, JBR52, JBR53, JBR55, JBR55DL, JBR55MS, JBR55MSD, JBR56, JBR57, JBR57DL, JBR59, JBR59DL, JBR60, JBR61, JBR62, JBR63, JBR64, JBR65, SBLK5V, SBLK5W, SBLK5X |
| | **Pentachlorophenol** SSTD0054C |
| | JBR51, JBR51MS, JBR51MSD, JBR52, JBR53, JBR55, JBR55DL, JBR55MS, JBR55MSD, JBR56, JBR57, JBR57DL, JBR59, JBR59DL, JBR60, JBR61, JBR62, JBR63, JBR64, JBR65, SBLK5V, SBLK5W, SBLK5X |
| **Initial Calibration** | **VOA_LOW_MED** |
| VC6 | The following volatile samples are associated with an initial calibration percent relative standard deviation (%RSD) outside criteria. Detected compounds are qualified J. Nondetected compounds are not qualified. Use professional judgement to qualify non-detected compounds. |
| | JBR56, JBR57, JBR59, JBR60, JBR61, JBR62, JBR63, JBR64, VBLKCW |
| | **Bromomethane** VSTD2.5CU |
| | |

**Lab** A4 (A4 Scientific) **SDG** JBR30 **Case** 39061 **Contract** EPW05036 **Region** 10 **DDTID** 79749 **SOW** SOM01.2

***Data Review Results***

DMC/Surrogate

| **DMC/Surrogate** | **AROCLOR** |
|---|---|
| ADSS5 | The following aroclor samples have surrogate percent recoveries less than the primary minimum criteria but greater than or equal to the expanded minimum criteria. Detected compounds are qualified J. Nondetected compounds are qualified UJ. |
| | **Tetrachloro-m-xylene** JBR30 |
| | Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254, Aroclor-1260, Aroclor-1262, Aroclor-1268 |
| **DMC/Surrogate** | **BNA** |
| BDSS15 | The following semivolatile samples have deuterated monitoring compound recovery below the lower limit of the criteria window. Detected compounds are qualified J. Nondetected compounds are qualified UJ. |
| | **Benzo (a) pyrene-d12** JBR30 |
| | Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(g,h,i)perylene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Indeno(1,2,3-cd)pyrene |
| **DMC/Surrogate** | **VOA_LOW_MED** |
| VDSS4 | The following volatile samples have one or more DMC/SMC recovery values is less than the primary lower limit but greater than or equal to the expanded lower limit of the criteria window. Detected compounds are qualified J. Nondetected compounds are qualified UJ. |
| | JBR30, JBR32, JBR32MS, JBR32MSD, JBR34, JBR36, JBR36ME, JBR37 |
| | **1,2-Dichloroethane-d4** JBR30, JBR32, JBR32MS, JBR32MSD, JBR34, JBR36, JBR37 |
| | 1,1,1-Trichloroethane, 1,1,2-Trichloro-1,2,2-trifluoroethane, 1,2-Dibromoethane, 1,2-Dichloroethane, Carbon tetrachloride, Methyl acetate, Methyl tert-butyl ether, Methylene chloride, Trichlorofluoromethane |
| | **Vinyl chloride-d3** JBR36ME |
| | Vinyl chloride |

| Detection Limit | AROCLOR |
|---|---|
| ADL3 | The relative percent difference between analyte results for the following aroclor samples is greater than 25%. Detected and nondetected compounds are not qualified. |
| | JBR32MS, JBR33, JBR34, JBR36, JBR37 |
| | **Aroclor-1260** JBR32MS |
| | **Aroclor-1254** JBR33, JBR34, JBR36, JBR37 |
| | **Aroclor-1016** JBR32MS |
| **Detection Limit** | **BNA** |
| BDL1 | The following semivolatile samples have analyte concentrations below the quantitaion limit (CRQL). Detected compounds are qualified J. Nondetected compounds are not qualified. |
| | JBR32, JBR32DL, JBR32MS, JBR32MSD, JBR33, JBR33MS, JBR33MSD, JBR34, JBR34DL, JBR36, JBR36DL, JBR37, JBR37DL |
| | **Di-n-octylphthalate** JBR34 |
| | **Anthracene** JBR32DL, JBR33MSD, JBR34DL, JBR36DL, JBR37DL |
| | **Benzo (g,h,i) perylene** JBR34 |
| | **Indeno (1,2,3-cd) pyrene** JBR34, JBR37 |
| | **Benzo (b) fluoranthene** JBR32, JBR32MS, JBR32MSD, JBR36 |
| | **Benzo (k) fluoranthene** JBR32, JBR32MS, JBR32MSD |
| | **Chrysene** JBR32DL, JBR33, JBR33MS, JBR33MSD, JBR34DL, JBR36DL, JBR37DL |
| | **Benzo (a) pyrene** JBR32, JBR32MS, JBR32MSD, JBR36 |
| | **Benzo (a) anthracene** JBR32DL, JBR33, JBR33MS, JBR33MSD, JBR34DL, JBR36DL, JBR37DL |
| | **9H-Carbazole** JBR32DL, JBR33, JBR33MS, JBR33MSD, JBR37DL |
| | **Naphthalene** JBR32DL, JBR34DL |
| | **2-Methylnaphthalene** JBR32DL, JBR34DL, JBR36DL, JBR37DL |
| | **1,1'-Biphenyl** JBR32DL, JBR33, JBR33MS, JBR33MSD, JBR34DL, JBR36DL, JBR37DL |
| **Detection Limit** | **VOA_LOW_MED** |
| VDL1 | The following volatile samples have analyte concentrations below the quantitation limit (CRQL). Detected compounds are qualified J. Nondetected compounds are not qualified. |
| | JBR33, JBR34, JBR36, JBR36ME, JBR36MEMS, JBR36MEMSD, JBR37, VBLK8Q, VBLK8Z |
| | **Styrene** VBLK8Q |

**Lab** A4 (A4 Scientific) **SDG** JBR30 **Case** 39061 **Contract** EPW05036 **Region** 10 **DDTID** 80863 **SOW** SOM01.2

***Analytical Sample Listing***

BNA

| | |
|---|---|
| | **Toluene** JBR33, JBR34, JBR36ME, JBR37 |
| | **cis-1,2-Dichloroethene** JBR36MEMS, JBR36MEMSD |
| | **trans-1,2-Dichloroethene** JBR36 |
| | **Benzene** JBR33 |

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**
**REGION 10**
1200 Sixth Avenue
Seattle, Washington 98101

March 4, 2010

Reply to: Jennifer Crawford
Attn of: OEA-095

**MEMORANDUM**

Subject: Data Validation Report for the Volatile Organic Compounds (VOC) Analyses of Organic Analyses of Soil/Sediment Samples Collected from the Northwest Pipe and Casing/Hall Process Company Project Case 39061, SDG JBR39

From: Jennifer Crawford, Chemist
USEPA R10, OEA, Environmental Services Unit

To: Mark Ader, Remedial Project Manager
USEPA R10, Office of Environmental Clean-up

CC: Kathy Parker, On-Scene Coordinator, USEPA R10, Office of Environmental Clean-up
Ginna Grepo-Grove, USEPA R10 RQAM
Maja Tritt, USEPA R10 CLP PO

The quality assurance (QA) review of the analytical data generated from the analysis of three (3) water samples collected from the above referenced site has been completed. These samples were analyzed for Volatile Organic Compounds (VOC) byA4 Scientific located in The Woodlands, Texas.

All sample analyses were evaluated following EPA's Stage 4 Data Validation Electronic/Manual Process (S4VEM). The validations were conducted and appropriate qualifiers were applied according to the Quality Control Specifications outlined in the Quality Assurance Project Plan for Northwest Pipe and Casing, the technical specifications of the EPA Contract Laboratory Program's (CLP) Statement of Work (SOW) for Multi-Media, Multi-Concentration Organic Analyses (SOM01.2), the Contract Laboratory Program's National Functional Guidelines for Organic Data Review, and the Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use (EPA-540-R08-005). Some of the data quality elements were qualified using the reviewer's professional judgment.

A summary of samples evaluated in this validation report and the pertinent dates for sample collection, sample receipt at the laboratory, extraction and analyses is listed in Attachment 1 – Sample Index at the end of this report.

The conclusions presented herein are based on the information provided for the review.

## I. DATA QUALIFICATIONS

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**Summary of Validation Qualifiers Applied:**

After the manual and electronic data review, the following data points were qualified:

- Acetone and 2-Butanone in sample JBR44 were qualified "UJ" due to low recovery of the associated Deuterated Monitoring Compound (DMC) 2-Butanone-d5.
- A number of undetected analytes in samples JBR39 and JBR44 were qualified "UJ" due to low recovery of the Continuing Calibration Verification (CCV) standard during analysis. The affected analytes are identified on the validated Excel result spreadsheet by the Reason Code "CCV."
- The response factor (RRF) for 1,4-Dioxane was <0.01. 1,4-Dioxane in all samples was consequently qualified unusable, "R".

**Data Qualifiers**

The following is a list of validation qualifiers applied to the sample result(s) when needed to indicate associated out-of-control QA/QC results.

| Data Qualifiers | | |
|---|---|---|
| | U | The analyte was not detected at or above the reported result. |
| | J | The analyte was positively identified. The associated numerical result is an estimate. |
| | UJ | The analyte was not detected at or above the reported estimated result. The associated numerical value is an estimate of the quantitation limit of the analyte in this sample. |
| | R | The data are unusable for all purposes. |
| | N | There is evidence the analyte is present in this sample. |
| | JN | There is evidence that the analyte is present. The associated numerical result is an estimate. |

For site assessment and investigations, the following bias qualifiers are applied to the data in addition to the above data qualifiers when necessary to allow for data analysis and interpretation using Pre-Score software calculations for National Priority Listing Hazard Rankling Scoring (NPL-HRS).

| Bias Qualifiers | | |
|---|---|---|
| | L | Low bias. |
| | H | High bias. |
| | Q | The result is estimated because the concentration is below the Contract Required Quantitation Limits (CRQLs). |
| | K | Unknown Bias |

**Reasons for Validation Qualifiers**

The reasons for applying a validation qualifier to a sample result is also listed in the validated electronic data deliverables (EDDs), under the column header "Reasons". Below is a list of reasons why a data point could be qualified during data validation.

| Reasons for Validation Qualifiers: | |
|---|---|
| <CRQL | The value reported is <Contract Required Quantitation Limits (CRQLs) |
| %D | The percent difference (%D) of the concentrations calculated off the primary and secondary columns are >25% but <60% and were qualified estimated. |
| MULT | Multiple runs were conducted for the analyte. Use the other value reported for the same analyte. The value which is not to be used is qualified 'R'. |
| USE R1 | Use the value(s) reported off the initial analytical run |
| USE DIL | The value reported is over the calibration range. Use the value reported off the dilution run. |
| SURR/DMCs | The surrogate/deuterated monitoring compound (DMC) recoveries did not meet the specified control limits. Results are qualified estimated. |
| RRF | The response factor for the analyte did not meet the minimum acceptance criteria (0.005). |
| MS/MSD | The spiked recoveries and/or RPDs did not meet the specified control limits. Results are qualified estimated. |
| MB | Analyte was qualified as non-detect due to contamination in the associated blank. The value reported is <5x or <10x (if common lab contaminant) the value in the blank. |
| ND | The analyte was not detected in the sample, and is reported at the CRQL with the 'U' Qualifier. |
| COELN | Initial identification erroneous. Peak due to co-elution with other detected target analytes. |
| ICAL | Initial Calibration criteria not met |
| CCV | Continuing calibration criteria not met |
| GPC | GPC Clean-up criteria not met. |
| CLN-UP | Silica gel, alumina or sulfur clean-up criteria not met |
| LCS | LCS/LCSD criteria not met |
| HT | Holding time criteria not met |
| STORE | Sample Storage and preservation specified not met |
| TEMP | Cooler recommended temperature exceeded at the verified time of sample receipt at the lab (VTSR) |
| M/Z | Mass/ion resolution ratio not met |
| DPE | Diphenyl ether interferences. False positive. Elevate reporting limits at level of detection |

## II. DATA REVIEW

The analytical data were evaluated following the recommended baseline checks used in the four stages of laboratory analytical data verification and validation for Superfund use listed as follows (EPA-540-R08-005, 2009):

| Stage 1 – Data Validation | | | | |
|---|---|---|---|---|
| | Verified | | N/A | QC Procedure or Check |
| | YES | NO | | |
| **1** | X | | | Documentation identifies the laboratory receiving and conducting analyses, and includes documentation for all samples submitted by the project or requester for analyses. |
| **2** | X | | | Requested analytical methods were performed and the analysis dates are present. |
| **3** | X | | | Requested target analyte results are reported along with the original laboratory data qualifiers and data qualifier definitions for each reported result |
| **4** | X | | | Requested target analyte result units are reported |
| **5** | X | | | Requested reporting limits for all samples are present and results at and below the requested (required) reporting limits are clearly identified (including sample detection limits if required). |
| **6** | X | | | Sampling dates (including times if needed), date and time of laboratory receipt of samples, and sample conditions upon receipt at the laboratory (including preservation, pH and temperature) are documented. |
| **7** | X | | | Sample results are evaluated by comparing sample conditions upon receipt at the laboratory (e.g., preservation checks) and sample characteristics (e.g., percent moisture) to the requirements and guidelines present in national or regional data validation documents, analytical method(s) or contract. |

| Stage 2A – Data Validation | | | | |
|---|---|---|---|---|
| | Verified | | N/A | QC Procedure or Check |
| | YES | NO | | |
| **8** | X | | | Requested methods (handling, preparation, cleanup, and analytical) are performed. |
| **9** | X | | | Method dates (including dates, times and duration of analysis for radiation counting measurements and other methods, if needed) for handling (e.g., Toxicity Characteristic Leaching Procedure), preparation, cleanup and analysis are present, as appropriate. |
| **10** | X | | | Requested spike analytes or compounds (e.g., surrogate, DMCs, LCS spikes, post digestion spikes) have been added, as appropriate. |
| **11** | X | | | Sample holding times (from sampling date to preparation and preparation to analysis) are evaluated. |
| **12** | X | | | Frequency of QC samples is checked for appropriateness (e.g., one LCS per twenty samples in a preparation batch). |
| **13** | X | | | Sample results are evaluated by comparing holding times and sample-related QC data to the requirements and guidelines present in national or regional data validation documents, analytical method(s) or contract |
| | | | | **Stage 2A – Data Validation QC Data** |
| **14** | X | | | method blanks |
| **15** | X | | | surrogate recoveries/deuterated monitoring compounds (DMC) recoveries |
| **16** | X | | | laboratory control sample (LCS) recoveries |
| **17** | X | | | matrix spike and matrix spike duplicate recoveries |
| **18** | X | | | serial dilutions |
| **19** | X | | | post digestion spikes |
| **20** | X | | | standard reference materials |

| | | | | |
|---|---|---|---|---|
| **21** | X | | | equipment blanks |
| **22** | X | | | trip blanks |

## Stage 2B – Data Validation

Stage 2B validation builds on the validation conducted in Stage 2A. Stage 2B validation of the laboratory analytical data package consists of the Stage 2A validation plus the verification and validation checks for the compliance of instrument-related QC.

| | Verified | | N/A | QC Procedure or Check |
|---|---|---|---|---|
| | YES | NO | | |
| **23** | X | | | Initial calibration data (e.g., ICAL standards, ICV standards, ICBs) are provided for all requested analytes and linked to field samples reported. For each initial calibration, the calibration type used is present along with the initial calibration equation used including any weighting factor(s) applied and the associated correlation coefficients, as appropriate. Recalculations of the standard concentrations using the initial calibration curve are present, along with their associated percent recoveries, as appropriate (e.g., if required by the project, method, or contract). For the ICV standard, the associated percent recovery (or percent difference, as appropriate) is present. |
| **24** | X | | | Appropriate number and concentration of initial calibration standards are present. |
| **25** | X | | | Continuing calibration data (e.g. CCV standards and CCBs) are provided for all requested analytes and linked to field samples reported, as appropriate. For the CCV standard(s), the associated percent recoveries (or percent differences, as appropriate) are present. |
| **26** | X | | | Reported samples are bracketed by CCV standards and CCBs standards as appropriate. |
| **27** | X | | | Method specific instrument performance checks are present as appropriate (e.g., tunes for mass spectrometry methods, DDT/Endrin breakdown checks for pesticides and aroclors, instrument blanks and interference checks for ICP methods). |
| **28** | X | | | Frequency of instrument QC samples is checked for appropriateness (e.g., gas chromatography-mass spectroscopy [GC-MS] tunes have been run every 12 hours). |

## Stage 3 – Data Validation

Stage 3 validation builds on the validation conducted in Stage 2B. Stage 3 validation of the laboratory analytical data package consists of the Stage 2B validation plus the recalculation of instrument and sample results from the laboratory instrument responses, and comparison of recalculated results to laboratory reported results.

| | Verified | | N/A | QC Procedure or Check |
|---|---|---|---|---|
| | YES | NO | | |
| **29** | X | | | Instrument response data (e.g., GC peak areas, ICP corrected intensities) are reported for requested analytes, surrogates, internal standards, and DMCs for all requested field samples, matrix spikes, matrix spike duplicates, LCS, and method blanks as well as calibration data and instrument QC checks (e.g., tunes, DDT/Endrin breakdowns, inter-element correction factors, and Florisil cartridge checks). |
| **30** | X | | | Reported target analyte instrument responses are associated with appropriate internal standard analyte(s) for each (or selected) analyte(s) (for methods using internal standard for calibration). |
| **31** | X | | | Fit and appropriateness of the initial calibration curve used or required (e.g., mean calibration factor, regression analysis [linear or non-linear, with or without weighting factors, with or without forcing]) is checked with recalculation of the initial calibration curve for each (or selected) analyte(s) from the instrument response. |
| **32** | X | | | Comparison of instrument response to the minimum response requirements for each (or selected) analyte(s). |
| **33** | X | | | Recalculation of each (or selected) opening and closing CCV (and CCB) response from the peak data reported for each (or selected) analyte(s) from the instrument response, as appropriate. |

| | | | | |
|---|---|---|---|---|
| **34** | X | | | Compliance check of recalculated opening and/or closing CCV (and CCB) response to recalculated initial calibration response for each (or selected) analyte(s). |
| **35** | X | | | Recalculation of percent ratios for each (or selected) tune from the instrument response, as appropriate. |
| **36** | X | | | Compliance check of recalculated percent ratio for each (or selected) tune from the instrument response. |
| **37** | X | | | Recalculation of each (or selected) instrument performance check (e.g., DDT/Endrin breakdown for pesticide analysis, instrument blanks, interference checks) from the instrument response. |
| **38** | X | | | Recalculation and compliance check of retention time windows (for chromatographic methods) for each (or selected) analyte(s) from the laboratory reported retention times. |
| **39** | X | | | Recalculation of reported results for each reported (or selected) target analyte(s) from the instrument response. |
| **40** | X | | | Recalculation of each (or selected) reported spike recovery (surrogate recoveries, DMC recoveries, LCS recoveries, duplicate analyses, matrix spike and matrix spike duplicate recoveries, serial dilutions, post digestion spikes, standard reference materials etc.) from the instrument response. |
| **41** | X | | | Each (or selected) sample result(s) and spike recovery(ies) are evaluated by comparing the recalculated numbers to the laboratory reported numbers according to the requirements and guidelines present in national or regional data validation documents, analytical method(s) or contract |
| **Note**: Selection of analytes, spikes, and performance evaluation checks for the Stage 3 validation checks for a laboratory analytical data package being verified and validated generally will depend on many factors including (but not limited to) the type of verification and validation being performed (manual or electronic), requirements and guidelines present in national or regional data validation documents, analytical method(s) or contract, the number of laboratories reporting the data, the number and type of analytical methods reported, the number of analytes reported in each method, and the number of detected analytes. | | | | |

## Stage 4 – Data Validation

Stage 4 validation builds on the validation conducted in Stage 3. Stage 4 validation of the laboratory analytical data package consists of the Stage 3 validation plus the evaluation of instrument outputs.

| | Verified | | N/A | QC Procedure or Check |
|---|---|---|---|---|
| | **YES** | **NO** | | |
| **42** | X | | | All required instrument outputs (e.g., chromatograms, mass spectra, atomic emission spectra, instrument background corrections, and interference corrections) for evaluating sample and instrument performance are present. |
| **43** | X | | | Sample results are evaluated by checking each (or selected) instrument output (e.g., chromatograms, mass spectra, atomic emission spectra data, instrument background corrections, interference corrections) for correct identification and quantitation of analytes (e.g., peak integrations, use of appropriate internal standards for quantitation, elution order of analytes, and interferences). |
| **44** | X | | | Each (or selected) instrument's output(s) is evaluated for confirmation of non-detected or tentatively identified analytes. |
| **Note:** Selection of instrument outputs for the Stage 4 validation checks for a laboratory analytical data package being verified and validated generally will depend on many factors including, but not limited to, the type of verification and validation being performed (electronic or manual), requirements and guidelines present in national or regional data validation documents, analytical method(s) or contract, the number of laboratories reporting the data, the number and type of analytical methods reported, the number of analytes reported in each method, and the number of detected analytes. | | | | |

Attachments:

1. Summary of Samples Analyzed (Sample Index) – also included below for reference
2. Summary of Electronic Data Review
3. Validated Electronic Data Deliverables

## Attachment 1: Sample Index

| | | | | | | Extraction | | Analysis | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Number** | **Sample Type** | **Matrix** | **Level** | **Sampling Date** | **Date Received** | **Type** | **Date** | **Date/Time** | **GC Column** | **Intstrument** |
| JBR39 | Field_Sample | Water | Low | 10022009 10:45:00 | 10062009 11:13:00 | | | 10062009 20:47:00 | DB-624 | F-5973 |
| JBR44 | Field_Sample | Water | Low | 10062009 11:15:00 | 10072009 10:08:00 | | | 10082009 00:34:00 | DB-624 | F-5973 |
| JBR48 | Field_Sample | Water | Low | 10092009 13:30:00 | 10102009 11:09:00 | | | 10112009 10:33:00 | DB-624 | C-5973 |

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**
**REGION 10**
1200 Sixth Avenue
Seattle, Washington 98101

January 21, 2010

Reply to: OEA-095
Attn of: Jennifer Crawford

MEMORANDUM

Subject: Data Validation Report for the Organic Analyses of Soil/Sediment Samples Collected from the Northwest Pipe and Casing/Hall Process Company Project Case 39061, SDG JBR47

From: Jennifer Crawford, Chemist
Office of Environmental Assessment, USEPA R10

To: Mark Ader, Remedial Project Manager
Office of Environmental Clean-up, USEPA R10

CC: Kathy Parker, On-Scene Coordinator, Office of Env.Clean-up, USEPA R10
Ginna Grepo-Grove, USEPA R10 RQAM

The quality assurance (QA) review of the analytical data generated from the analysis of three soil samples collected from the above referenced site has been completed. These samples were analyzed for VOCs, SVOCs, and PCB-Aroclors in accordance with the Contract Laboratory Program's (CLP) Statement of Work (SOW) for Multi-Media, Multi-Concentration Organic Analyses (SOM01.2). The analyses were performed by A4 Scientific Inc., located in The Woodlands, TX. All sample analyses went through a Stage 4 Validation Using Electronic and Manual (SV4EM) techniques as specified in the USEPA's *"Guidance for Labeling Externally Validated Laboratory Analytical data for Superfund Use"*, EPA 540-R-08-05, January, 2009. Some of the data quality elements were qualified using the reviewer's professional judgment.

The following samples were evaluated in this validation report:

JBR47 JBR49 JBR50

**DATA QUALIFICATIONS**

The following comments refer to the laboratory performance in meeting the Quality Control Specifications outlined in the technical specifications of the Contract Laboratory Program's (CLP) Statement of Work (SOW) for Multi-Media, Multi-Concentration Organic Analyses (SOM01.2), USEPA National Guidelines for Organic Data Review and the USEPA's *"Guidance for Labeling Externally Validated Laboratory Analytical data for Superfund Use"*, EPA 540-R-08-05, January, 2009. Some of the data quality elements were qualified using the reviewer's professional judgment.

The conclusions presented herein are based on the information provided for the review.

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**Samples' Condition upon Receipt**

The soil samples were collected from 10/08/2009 to 10/09/2009. The Validated Time of Sample Receipt (VTSR) at the lab was 10/10/2009. The samples arrived intact with a cooler temperature of 5ºC.

**Holding Time** - Acceptable

The soil samples were analyzed within the holding times specified in SOM01.2 for each analyte. VOC Samples were stored frozen prior to analysis. None of the data were qualified on the basis of holding times.

Below are the pertinent sample collection, and analysis dates.

| EPA No. | Lab ID | Matrix | Date Sampled | VTSR | Date Analyzed – VOC | Date Analyzed – SVOC | Date Analyzed – PCB ARO |
|---|---|---|---|---|---|---|---|
| JBR47 | 0011001-01 | Soil | 10/08/2009 | 10/10/2009 | 10/11/2009 | 10/12/2009 | 10/12/2009 |
| JBR49 | 0011001-02 | Soil | 10/09/2009 | 10/10/2009 | 10/11/2009 | 10/12/2009 | 10/12/2009 |
| JBR50 | 0011001-03 | Soil | 10/09/2009 | 10/10/2009 | 10/11/2009 and (med) 10/12/2009 | 10/12/2009 | 10/12/2009 |

***VTSR –** Verified Time of Sample Receipt at the lab.

**Target Compounds and Reporting Limits** - Acceptable

The samples were analyzed according to the Contract Laboratory Program (CLP) SOM01.2 organic methods for Volatile Organic Compounds (VOC), Semi-Volatile Organic Compounds including PAHs (SVOC), and PCB Aroclors. The CLP CRQLs were used for all analytes (adjusted for sample moisture content). Target compounds detected at concentrations below the CRQLs were qualified estimated. Samples with target compounds detected at concentrations greater than linear calibration range of the instrument were re-analyzed at dilutions or at medium levels. For samples with multiple runs, the best analytical runs were recommended by this review for use.

**Instrument Performance** - Acceptable

For VOC instrument tuning, bromofluorobenzene (BFB) checks were analyzed every 12 hour analytical sequence. For SVOC, a DFTPP check was analyzed at a frequency specified by the SOW. Instrument performance for PCB-Aroclor was checked by monitoring the retention time shifts and areas of the surrogates. The frequency of analysis and technical acceptance criteria for all of the system performance checks for all instruments used for the analyses were met. The instruments used remained stable throughout the course of the analytical sequences. None of the data were qualified on this basis.

**Initial Calibrations**

The frequency of analysis, percent relative standard deviations (%RSDs), percent recoveries, the correlation coefficient [r >0.995], the ion abundance, S/N ratios, retention times and chromatographic

resolution criteria were met for all target compounds and surrogates, with the following exception:

- VOC: The response factor (RRF) for 1,4-Dioxane which was <0.001. 1, 4-Dioxane in all samples was qualified unusable, "R".

- SVOC: The %RSD for Pentachlorophenol (PCP) was outside the criteria. Recalculation of the %RSD indicated that PCP was not linear at the top point of the curve. Since PCP was not detected in any of the samples, none of the data were qualified on this basis.

**Continuing Calibration Verification Standards (CCV)** - Acceptable

The frequency of analysis, the percent recoveries, retention times, chromatographic resolution, ion abundance and S/N ratio criteria were met by all CCVs. None of the data were qualified on this basis.

**Deuterated Monitoring Compounds (DMCs) and Surrogate Recoveries**

Deuterated surrogates were added to all samples and QC samples prior to sample extraction to monitor the efficiency and performance of sample extraction and analysis. All of the surrogate and DMC recoveries were acceptable for the VOC, SVOC, and PCB-Aroclor analyses with the following exceptions:

- VOC Analyses - The following DMC recoveries were below the lower limit of the criteria window in the samples listed:

| DMC | Sample (s) | Recoveries (%) | Control Limits (%) | Qualifiers Detects/ Non-detects | Affected Analytes (Associated Compounds) |
|---|---|---|---|---|---|
| 1,2-Dichloroethane-d4 | JBR47<br>JBR49 | 76<br>74 | 79-124 | J/UJ | Trichlorofluoromethane; 1,1,2-Trichloro-1,2,2-trifluoroethane; Methyl acetate; Methylene chloride; Methyl-tert-butyl ether; 1,1,1-Trichloroethane; Carbon tetrachloride; 1,2-Dibromoethane; 1,2-Dichloroethane |
| trans-1,3-dichloropropene-d4 | JBR47 | 71 | 72-130 | None | Meets expanded limit criteria of lower limit (-1LL = 71%R). No associated compounds qualified. |

**Sample Extract Clean-Up** – Acceptable

The recovery of the GPC calibration compounds met the acceptance criteria. None of the samples were qualified on the basis of Sample Extract Clean-Up performance.

**Laboratory Control/Duplicate (LCS/LCSD) Samples**- Acceptable

An LCS and LCSD were analyzed for the PCB Aroclors analysis. The frequency of analysis and recovery criteria were met by all LCS extracted and analyzed with the samples. None of the reported results were qualified on this basis.

**Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis** - Acceptable

The VOC MS/MSD analyses at the low and medium levels were acceptable, with percent recoveries and relative percent differences (RPDs) that were within the SOW recommended control limits.

The SVOC MS/MSD spike recoveries and/or RPD for both the medium and low analyses were outside the acceptance criteria for some or all spikes on the compounds Pyrene, Acenapthene, and Pentachlorophenol. This was due to interferences in the native sample. The DMC and IS recoveries were all acceptable; therefore, no SVOC samples were qualified due to MS/MSD performance.

The PCB Aroclor MS/MSD Recoveries of AR1016 and AR1260 were outside the acceptance criteria, due to aroclor concentration native to the sample interfering with the spike. Since the LCS and LCSD analyses were acceptable, the Aroclor samples were not qualified due to MS/MSD analyses.

**Compound Quantitation and Detection Limits** - Acceptable

All of the samples were analyzed at the contract required reporting limits (CRQLs). Some samples were run at dilution, in order to get all the detected compounds within the instrument's linear calibration range. Sample JBR50 was analyzed at both low and medium VOC levels, due to high concentrations in the sample of several compounds.

All of the compounds detected in the GC and GC/MS analyses were within the retention time windows, met the USEPA spectral matching criteria, and were judged to be acceptable.

**Method Blanks**

The frequency of analysis of laboratory blanks was met. None of the SVOC or PCB Aroclor data were qualified on the basis of blank contamination.

Several compounds were detected in two VOC method blanks at concentration levels that were <CRQLs. None of the data were qualified on this basis.

| Blank | Analysis / Date | Detected Compound (Conc) | CRQL | Assoc. Samples in Analysis or batch | Qualifiers for Assoc.Samples Detects/Non-detects |
|---|---|---|---|---|---|
| VBLK14 | Med Soil VOC 10/12/09 | Methylene Chloride (110J) | 250ug/kg | JBR50ME | None - Methylene chloride reported off the low VOC run. |
| VBLK12 | Low Soil VOC 10/11/09 | 1,2,4-Trichlorobenzene $(1.5J)_1$<br>1,2,3-Trichlorobenzene $(2.3J)_2$ | 5.0ug/kg<br>5.0ug/kg | JBR47, JBR49, JBR50 | None - results in samples were non-detects. |

**Analytical Sequence** - Acceptable

All of the standards, blanks, samples and QC samples were analyzed in accordance with the SOW specified analytical sequence. All of the analytical sequences were also bracketed by the continuing

calibration check standards. None of the data were qualified on this basis.

**Internal Standards (IS) Areas and Retention Time** - Acceptable

The acceptance criteria for trace VOC and SVOC internal standards (IS) are $\pm$ 30 seconds for retention time (RT) shifts and -50% to + 200% of the IS area as compared to the IS RT and area of the daily continuing calibration standard. None of the data were qualified on this basis.

**Tentatively Identified Compounds**

Peaks that were detected in the samples at areas >10% of the internal standards and were not part of the target compound lists for VOCs or SVOCs were identified as tentatively identified compounds (TICs). TICs that were both found in the sample and in the associated method blank(s) were crossed-out by the reviewer and not reported. Peaks that were identified as common laboratory contaminants, solvent preservatives, column bleed or aldol condensation products were also crossed-out by the reviewer and qualified as unusable, "R". The rest of the peaks IDs including the hydrocarbon lists were qualified "JN", tentatively identified at the estimated concentration.

**Laboratory Contact**

The laboratory was not contacted for this review.

**Overall Assessment**

A Stage 4 Validation Electronic and Manual (SV4EM) techniques was conducted on all analyses. All of the samples were analyzed in accordance with technical specifications outlined in the CLP SOW SOM01.2. Attached are the data deliverables spreadsheet with the applied validation qualifiers and reason for the qualifiers. For samples with multiple analytical runs, the best results were recommended for use by this reviewer and the extra results were flagged "R". The data, as qualified, are acceptable and can be used for all purposes.

| **Data Qualifiers** | |
|---|---|
| U | The analyte was not detected at or above the reported result. |
| J | The analyte was positively identified. The associated numerical result is an estimate. |
| UJ | The analyte was not detected at or above the reported estimated result. The associated numerical value is an estimate of the quantitation limit of the analyte in this sample. |
| R | The data are unusable for all purposes. |
| N | There is evidence the analyte is present in this sample. |
| JN | There is evidence that the analyte is present. The associated numerical result is an estimate. |

| Reasons for Validation Qualifiers: | |
|---|---|
| <CRQL | The value reported is <Contract Required Quantitation Limits (CRQLs) |
| %D | The percent difference (%D) of the concentrations calculated off the primary and secondary columns are >25% but <60% and were qualified estimated. |
| 2 Runs | Multiple runs were conducted for the analyte. Use the other value reported for the same analyte. The value which is not to be used is qualified 'R'. |
| USE DIL | The value reported is over the calibration range. Use the value reported off the dilution run. |
| SURR/DMCs | The surrogate recoveries did not meet the specified control limits. Results are qualified estimated. |
| RRF | The response factor for the analyte did not meet the minimum acceptance criteria (0.005). |
| MS/MSD | The spiked recoveries and/or RPDs did not meet the specified control limits. Results are qualified estimated. |
| MB | Analyte was qualified as non-detect due to contamination in the associated blank. The value reported is <5x or <10x (if common lab contaminant) the value in the blank. |
| ND | The analyte was not detected in the sample, and is reported at the CRQL with the 'U' Qualifier. |
| COELN | Initial identification erroneous. Peak due to co-elution with other detected target analytes. |
| CCV | Continuing calibration criteria not met |
| GPC | GPC Clean-up criteria not met. |
| CLN-UP | Silica gel, alumina or sulfur clean-up criteria not met |
| LCS | LCS/LCSD criteria not met |
| HT | Holding time criteria not met |
| STORE | Sample Storage and preservation specified not met |

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**
**REGION 10**
1200 Sixth Avenue
Seattle, Washington 98101

January 21, 2010

Reply to: OEA-095
Attn of: Jennifer Crawford

MEMORANDUM

Subject: Data Validation Report for the Organic Analyses of Soil/Sediment Samples Collected from the Northwest Pipe and Casing/Hall Process Company Project Case 39061, SDG JBR47

From: Jennifer Crawford, Chemist
Office of Environmental Assessment, USEPA R10

To: Mark Ader, Remedial Project Manager
Office of Environmental Clean-up, USEPA R10

CC: Kathy Parker, On-Scene Coordinator, Office of Env.Clean-up, USEPA R10
Ginna Grepo-Grove, USEPA R10 RQAM

The quality assurance (QA) review of the analytical data generated from the analysis of three soil samples collected from the above referenced site has been completed. These samples were analyzed for VOCs, SVOCs, and PCB-Aroclors in accordance with the Contract Laboratory Program's (CLP) Statement of Work (SOW) for Multi-Media, Multi-Concentration Organic Analyses (SOM01.2). The analyses were performed by A4 Scientific Inc., located in The Woodlands, TX. All sample analyses went through a Stage 4 Validation Using Electronic and Manual (SV4EM) techniques as specified in the USEPA's *"Guidance for Labeling Externally Validated Laboratory Analytical data for Superfund Use"*, EPA 540-R-08-05, January, 2009. Some of the data quality elements were qualified using the reviewer's professional judgment.

The following samples were evaluated in this validation report:

JBR47 JBR49 JBR50

**DATA QUALIFICATIONS**

The following comments refer to the laboratory performance in meeting the Quality Control Specifications outlined in the technical specifications of the Contract Laboratory Program's (CLP) Statement of Work (SOW) for Multi-Media, Multi-Concentration Organic Analyses (SOM01.2), USEPA National Guidelines for Organic Data Review and the USEPA's *"Guidance for Labeling Externally Validated Laboratory Analytical data for Superfund Use"*, EPA 540-R-08-05, January, 2009. Some of the data quality elements were qualified using the reviewer's professional judgment.

The conclusions presented herein are based on the information provided for the review.

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**Samples' Condition upon Receipt**

The soil samples were collected from 10/08/2009 to 10/09/2009. The Validated Time of Sample Receipt (VTSR) at the lab was 10/10/2009. The samples arrived intact with a cooler temperature of 5ºC.

**Holding Time** - Acceptable

The soil samples were analyzed within the holding times specified in SOM01.2 for each analyte. VOC Samples were stored frozen prior to analysis. None of the data were qualified on the basis of holding times.

Below are the pertinent sample collection, and analysis dates.

| EPA No. | Lab ID | Matrix | Date Sampled | VTSR | Date Analyzed – VOC | Date Analyzed – SVOC | Date Analyzed – PCB ARO |
|---|---|---|---|---|---|---|---|
| JBR47 | 0011001-01 | Soil | 10/08/2009 | 10/10/2009 | 10/11/2009 | 10/12/2009 | 10/12/2009 |
| JBR49 | 0011001-02 | Soil | 10/09/2009 | 10/10/2009 | 10/11/2009 | 10/12/2009 | 10/12/2009 |
| JBR50 | 0011001-03 | Soil | 10/09/2009 | 10/10/2009 | 10/11/2009 and (med) 10/12/2009 | 10/12/2009 | 10/12/2009 |

***VTSR –** Verified Time of Sample Receipt at the lab.

**Target Compounds and Reporting Limits** - Acceptable

The samples were analyzed according to the Contract Laboratory Program (CLP) SOM01.2 organic methods for Volatile Organic Compounds (VOC), Semi-Volatile Organic Compounds including PAHs (SVOC), and PCB Aroclors. The CLP CRQLs were used for all analytes (adjusted for sample moisture content). Target compounds detected at concentrations below the CRQLs were qualified estimated. Samples with target compounds detected at concentrations greater than linear calibration range of the instrument were re-analyzed at dilutions or at medium levels. For samples with multiple runs, the best analytical runs were recommended by this review for use.

**Instrument Performance** - Acceptable

For VOC instrument tuning, bromofluorobenzene (BFB) checks were analyzed every 12 hour analytical sequence. For SVOC, a DFTPP check was analyzed at a frequency specified by the SOW. Instrument performance for PCB-Aroclor was checked by monitoring the retention time shifts and areas of the surrogates. The frequency of analysis and technical acceptance criteria for all of the system performance checks for all instruments used for the analyses were met. The instruments used remained stable throughout the course of the analytical sequences. None of the data were qualified on this basis.

**Initial Calibrations**

The frequency of analysis, percent relative standard deviations (%RSDs), percent recoveries, the correlation coefficient [r >0.995], the ion abundance, S/N ratios, retention times and chromatographic

resolution criteria were met for all target compounds and surrogates, with the following exception:

- VOC: The response factor (RRF) for 1,4-Dioxane which was <0.001. 1, 4-Dioxane in all samples was qualified unusable, "R".

- SVOC: The %RSD for Pentachlorophenol (PCP) was outside the criteria. Recalculation of the %RSD indicated that PCP was not linear at the top point of the curve. Since PCP was not detected in any of the samples, none of the data were qualified on this basis.

**Continuing Calibration Verification Standards (CCV)** - Acceptable

The frequency of analysis, the percent recoveries, retention times, chromatographic resolution, ion abundance and S/N ratio criteria were met by all CCVs. None of the data were qualified on this basis.

**Deuterated Monitoring Compounds (DMCs) and Surrogate Recoveries**

Deuterated surrogates were added to all samples and QC samples prior to sample extraction to monitor the efficiency and performance of sample extraction and analysis. All of the surrogate and DMC recoveries were acceptable for the VOC, SVOC, and PCB-Aroclor analyses with the following exceptions:

- VOC Analyses - The following DMC recoveries were below the lower limit of the criteria window in the samples listed:

| DMC | Sample (s) | Recoveries (%) | Control Limits (%) | Qualifiers Detects/ Non-detects | Affected Analytes (Associated Compounds) |
|---|---|---|---|---|---|
| 1,2-Dichloroethane-d4 | JBR47<br>JBR49 | 76<br>74 | 79-124 | J/UJ | Trichlorofluoromethane; 1,1,2-Trichloro-1,2,2-trifluoroethane; Methyl acetate; Methylene chloride; Methyl-tert-butyl ether; 1,1,1-Trichloroethane; Carbon tetrachloride; 1,2-Dibromoethane; 1,2-Dichloroethane |
| trans-1,3-dichloropropene-d4 | JBR47 | 71 | 72-130 | None | Meets expanded limit criteria of lower limit (-1LL = 71%R). No associated compounds qualified. |

**Sample Extract Clean-Up** – Acceptable

The recovery of the GPC calibration compounds met the acceptance criteria. None of the samples were qualified on the basis of Sample Extract Clean-Up performance.

**Laboratory Control/Duplicate (LCS/LCSD) Samples**- Acceptable

An LCS and LCSD were analyzed for the PCB Aroclors analysis. The frequency of analysis and recovery criteria were met by all LCS extracted and analyzed with the samples. None of the reported results were qualified on this basis.

**Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis** - Acceptable

The VOC MS/MSD analyses at the low and medium levels were acceptable, with percent recoveries and relative percent differences (RPDs) that were within the SOW recommended control limits.

The SVOC MS/MSD spike recoveries and/or RPD for both the medium and low analyses were outside the acceptance criteria for some or all spikes on the compounds Pyrene, Acenapthene, and Pentachlorophenol. This was due to interferences in the native sample. The DMC and IS recoveries were all acceptable; therefore, no SVOC samples were qualified due to MS/MSD performance.

The PCB Aroclor MS/MSD Recoveries of AR1016 and AR1260 were outside the acceptance criteria, due to aroclor concentration native to the sample interfering with the spike. Since the LCS and LCSD analyses were acceptable, the Aroclor samples were not qualified due to MS/MSD analyses.

**Compound Quantitation and Detection Limits** - Acceptable

All of the samples were analyzed at the contract required reporting limits (CRQLs). Some samples were run at dilution, in order to get all the detected compounds within the instrument's linear calibration range. Sample JBR50 was analyzed at both low and medium VOC levels, due to high concentrations in the sample of several compounds.

All of the compounds detected in the GC and GC/MS analyses were within the retention time windows, met the USEPA spectral matching criteria, and were judged to be acceptable.

**Method Blanks**

The frequency of analysis of laboratory blanks was met. None of the SVOC or PCB Aroclor data were qualified on the basis of blank contamination.

Several compounds were detected in two VOC method blanks at concentration levels that were <CRQLs. None of the data were qualified on this basis.

| Blank | Analysis / Date | Detected Compound (Conc) | CRQL | Assoc. Samples in Analysis or batch | Qualifiers for Assoc.Samples Detects/Non-detects |
|---|---|---|---|---|---|
| VBLK14 | Med Soil VOC 10/12/09 | Methylene Chloride (110J) | 250ug/kg | JBR50ME | None - Methylene chloride reported off the low VOC run. |
| VBLK12 | Low Soil VOC 10/11/09 | 1,2,4-Trichlorobenzene $(1.5J)_1$<br>1,2,3-Trichlorobenzene $(2.3J)_2$ | 5.0ug/kg<br>5.0ug/kg | JBR47, JBR49, JBR50 | None - results in samples were non-detects. |

**Analytical Sequence** - Acceptable

All of the standards, blanks, samples and QC samples were analyzed in accordance with the SOW specified analytical sequence. All of the analytical sequences were also bracketed by the continuing

calibration check standards. None of the data were qualified on this basis.

**Internal Standards (IS) Areas and Retention Time** - Acceptable

The acceptance criteria for trace VOC and SVOC internal standards (IS) are $\pm$ 30 seconds for retention time (RT) shifts and -50% to + 200% of the IS area as compared to the IS RT and area of the daily continuing calibration standard. None of the data were qualified on this basis.

**Tentatively Identified Compounds**

Peaks that were detected in the samples at areas >10% of the internal standards and were not part of the target compound lists for VOCs or SVOCs were identified as tentatively identified compounds (TICs). TICs that were both found in the sample and in the associated method blank(s) were crossed-out by the reviewer and not reported. Peaks that were identified as common laboratory contaminants, solvent preservatives, column bleed or aldol condensation products were also crossed-out by the reviewer and qualified as unusable, "R". The rest of the peaks IDs including the hydrocarbon lists were qualified "JN", tentatively identified at the estimated concentration.

**Laboratory Contact**

The laboratory was not contacted for this review.

**Overall Assessment**

A Stage 4 Validation Electronic and Manual (SV4EM) techniques was conducted on all analyses. All of the samples were analyzed in accordance with technical specifications outlined in the CLP SOW SOM01.2. Attached are the data deliverables spreadsheet with the applied validation qualifiers and reason for the qualifiers. For samples with multiple analytical runs, the best results were recommended for use by this reviewer and the extra results were flagged "R". The data, as qualified, are acceptable and can be used for all purposes.

| **Data Qualifiers** | |
|---|---|
| U | The analyte was not detected at or above the reported result. |
| J | The analyte was positively identified. The associated numerical result is an estimate. |
| UJ | The analyte was not detected at or above the reported estimated result. The associated numerical value is an estimate of the quantitation limit of the analyte in this sample. |
| R | The data are unusable for all purposes. |
| N | There is evidence the analyte is present in this sample. |
| JN | There is evidence that the analyte is present. The associated numerical result is an estimate. |

| Reasons for Validation Qualifiers: | |
|---|---|
| <CRQL | The value reported is <Contract Required Quantitation Limits (CRQLs) |
| %D | The percent difference (%D) of the concentrations calculated off the primary and secondary columns are >25% but <60% and were qualified estimated. |
| 2 Runs | Multiple runs were conducted for the analyte. Use the other value reported for the same analyte. The value which is not to be used is qualified 'R'. |
| USE DIL | The value reported is over the calibration range. Use the value reported off the dilution run. |
| SURR/DMCs | The surrogate recoveries did not meet the specified control limits. Results are qualified estimated. |
| RRF | The response factor for the analyte did not meet the minimum acceptance criteria (0.005). |
| MS/MSD | The spiked recoveries and/or RPDs did not meet the specified control limits. Results are qualified estimated. |
| MB | Analyte was qualified as non-detect due to contamination in the associated blank. The value reported is <5x or <10x (if common lab contaminant) the value in the blank. |
| ND | The analyte was not detected in the sample, and is reported at the CRQL with the 'U' Qualifier. |
| COELN | Initial identification erroneous. Peak due to co-elution with other detected target analytes. |
| CCV | Continuing calibration criteria not met |
| GPC | GPC Clean-up criteria not met. |
| CLN-UP | Silica gel, alumina or sulfur clean-up criteria not met |
| LCS | LCS/LCSD criteria not met |
| HT | Holding time criteria not met |
| STORE | Sample Storage and preservation specified not met |

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**
**REGION 10**
1200 Sixth Avenue
Seattle, Washington 98101

December 30, 2009

Reply to: OEA-095
Attn of: Jennifer Crawford

MEMORANDUM

Subject: Data Validation Report for the Volatile Organic Compounds (VOCs) Analyses of Water Samples Collected from the Northwest Pipe and Casing/Hall Process Company Project Case 39061, SDG JBR54

From: Jennifer Crawford, Chemist
Office of Environmental Assessment, USEPA R10

To: Mark Ader, Remedial Project Manager
Office of Environmental Clean-up, USEPA R10

CC: Kathy Parker, On-Scene Coordinator, Office of Env.Clean-up, USEPA R10
Ginna Grepo-Grove, USEPA R10 RQAM

The quality assurance (QA) review of the analytical data generated from the analysis of two (2) water samples collected from the above referenced site has been completed. These samples were analyzed for VOCs in accordance with the Contract Laboratory Program's (CLP) Statement of Work (SOW) for Multi-Media, Multi-Concentration Organic Analyses (SOM01.2). The analyses were performed by A4 Scientific of Woodlands, TX. All sample analyses were validated following the Stage 4 Validation Using Electronic and Manual (SV4EM) techniques as specified in the USEPA's *"Guidance for Labeling Externally Validated Laboratory Analytical data for Superfund Use,"* EPA 540-R-08-05, January, 2009.

The following samples were evaluated in this validation report:

JBR54 JBR58

**DATA QUALIFICATIONS**

The following comments refer to the laboratory performance in meeting the Quality Control Specifications outlined in the technical specifications of the Contract Laboratory Program's (CLP) Statement of Work (SOW) for Multi-Media, Multi-Concentration Organic Analyses (SOM01.2), USEPA National Guidelines for Organic Data Review and the USEPA's *"Guidance for Labeling Externally Validated Laboratory Analytical data for Superfund Use"*, EPA 540-R-08-05, January, 2009. Some of the data quality elements were qualified using the reviewer's professional judgment.

The conclusions presented herein are based on the information provided for the review.

**Holding Time** - Acceptable

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Both of the water samples were analyzed within 7 days of sample collection date. None of the data were qualified on the basis of holding times.

Below are the pertinent sample collection, and analysis dates.

| EPA No. | Lab ID | Matrix | Date Sampled | VTSR | Date Analyzed |
|---|---|---|---|---|---|
| JBR54 | 0011011-01 | Water | 10/12/09 | 10/13/09 | 10/13/09 |
| JBR58 | 0011029-01 | Water | 10/14/09 | 10/16/09 | 10/19/09 |

***VTSR –** Verified Time of Sample Receipt at the lab.

**Instrument Performance** - Acceptable

The frequency of system performance checks were met for instruments used for all analyses. The BFB checks met all the ion abundance criteria and samples were analyzed within acceptable 12-hour QC periods. None of the VOC data were qualified on this basis.

**Initial Calibrations**

The frequency of analysis, percent relative standard deviations (%RSDs), percent recoveries, the correlation coefficient (r) of >0.995, the ion abundance, S/N ratios, retention times and chromatographic resolution criteria were met for all target compounds and surrogates with the exception of the RRF for 1,4-dioxane which was <0.01. 1,4-Dioxane in all samples was qualified unusable, "R".

**Continuing Calibrations Verification Standards (CCV) -** Acceptable

The frequency of analysis, the percent recoveries, retention times, chromatographic resolution, ion abundance and S/N ratio criteria were met by all CCVs. None of the reported results were qualified on this basis.

**Deuterated Monitoring Compounds (DMCs) Recoveries**

Twelve deuterated monitoring compounds (DMCs) were added to all samples and QC samples prior to sample extraction to monitor sample extraction and analysis efficiency and laboratory performance. All of the surrogate and DMC recoveries were acceptable with the following exceptions:

| Sample No. | DMCs | Recoveries (%) | Control Limits (%) | Qualifiers Detects/ Non-detects | Affected Analytes |
|---|---|---|---|---|---|
| JBR58 | 1,1,2,2-tetrachloroethane-d2 | 71 | 73-125 | J/UJ | 1,1,2,2-tetrachloroethane, 1,2-dibromo-3-chloropropane (DBCP) |

**Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis –** N/A

No MS/MSD samples were analyzed with this batch, as the water samples were QC blank samples for the project.

**Compound Quantitation and Detection Limits** - Acceptable

All of the samples were analyzed at the contract required reporting limits (CRQLs). All VOCs detected were within the retention time windows, met the USEPA spectral matching criteria, and were judged to be acceptable.

**Method Blanks** - Acceptable

The frequency of analysis of laboratory blanks was met. No contaminants were detected in any of the method blanks or in the storage blank. None of the data were qualified on this basis.

**Analytical Sequence** - Acceptable

All of the standards, blanks, samples and QC samples were analyzed in accordance with the SOW specified analytical sequence. All of the analytical sequences were also bracketed by the continuing calibration check standards. None of the data were qualified on this basis.

**Internal Standards (IS) Areas and Retention Time -** Acceptable

The acceptance criteria for VOC internal standards (IS) are $\pm$ 30 seconds for retention time (RT) shifts and -50% to +100% of the IS area as compared to the IS RT and area of the daily continuing calibration standard. All samples met the established criteria, and none of the data were qualified on this basis.

**Tentatively Identified Compounds** - Acceptable

Peaks that were detected in the samples at areas >10% of the internal standards and were not part of the target compound lists for VOCs were identified as tentatively identified compounds (TICs). TICs that were both found in the sample and in the associated method blank(s) were crossed-out by the reviewer and not reported. Peaks that were identified as common laboratory contaminants, solvent preservatives, column bleed or aldol condensation products were also crossed-out by the reviewer and not reported. No other TICs were identified.

**Laboratory Contact**

The laboratory was not contacted for this review.

**Overall Assessment**

A Stage 4 Validation Electronic and Manual (SV4EM) techniques was conducted on all analyses. Attached are the data deliverables spreadsheet with the applied validation qualifiers and reason for the qualifiers. The data, as qualified, are acceptable and can be used for all purposes.

| **Data Qualifiers** | | |
|---|---|---|
| | U | The analyte was not detected at or above the reported result. |

| | | |
|---|---|---|
| | J | The analyte was positively identified. The associated numerical result is an estimate. |
| | UJ | The analyte was not detected at or above the reported estimated result. The associated numerical value is an estimate of the quantitation limit of the analyte in this sample. |
| | R | The data are unusable for all purposes. |
| | N | There is evidence the analyte is present in this sample. |
| | JN | There is evidence that the analyte is present. The associated numerical result is an estimate. |

| **Reasons for Validation Qualifiers:** | |
|---|---|
| <DL | The value reported is <Contract Required Quantitation Limits (CRQLs) |
| %D | The percent difference (%D) of the concentrations calculated off the primary and secondary columns are >30% but <100% and were qualified estimated. |
| 2 Runs | Multiple runs were conducted for the analyte. Use the other value reported for the same analyte. The value which is not to be used is qualified 'R'. |
| USE DIL | The value reported is over the calibration range. Use the value reported off the dilution run. |
| SURR/DMCs | The surrogate recoveries did not meet the specified control limits. Results are qualified estimated. |
| RRF | The response factor for the analyte did not meet the minimum acceptance criteria (0.005). |
| MS/MSD | The spiked recoveries and/or RPDs did not meet the specified control limits. Results are qualified estimated. |
| MB | Analyte was qualified as non-detect due to contamination in the associated blank. The value reported is <5x or <10x (if common lab contaminant) the value in the blank. |
| ND | The analyte was not detected in the sample, and is reported at the CRQL with the 'U' Qualifier. |

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**
**REGION 10**
1200 Sixth Avenue
Seattle, Washington 98101

February 18, 2010

Reply to:
Attn of: OEA095

**MEMORANDUM**

Subject: Data Validation Report for the Volatile Organic (VOCs), Semi-volatile Organic Compound (SVOCs) and Polynuclear Aromatic Hydrocarbons (PAHs) Analyses of Water Samples Collected from Northwest Pipe and Casing
Case Number: 36091 SDG: JBR68

From: Ginna Grepo-Grove, RQAM
USEPA, OEA

To: Mark Ader, RPM
USEPA, ECL

CC: Kathy Parker, OSC, USEPA, ECL
Eric Roth, RPM, Parametrix, Inc.

The quality assurance (QA) review of the analytical data generated from the analysis of 7 water samples collected from the above referenced site has been completed. These samples were analyzed for VOCs, SVOCs, and PAHs by A4 Scientific, Inc located in The Woodlands, TX.

All sample analyses were evaluated following the EPA's Stage 4 Electronic/Manual Data Validation Process (S4VEM). The validations were evaluated using the Quality Control Specifications outlined in the Quality Assurance Project Plan for NW Pipe and Casing Removal Activities, the technical specifications of the Statement of Work for Organics Analysis SOM02.1, the Contract Laboratory Program's National Functional Guidelines for Organic and Inorganic Data Review, and the Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use (EPA-540-R08-005). Some of the data quality elements were qualified using the reviewer's professional judgment.

## I. DATA QUALIFICATIONS

A summary of samples evaluated in this validation report and the pertinent dates for sample collection, sample receipt at the laboratory, extraction and analyses is listed in Table 1 at the end of this report.

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The conclusions presented herein are based on the information provided for the review.

**Summary of Validation Qualifiers Applied:**

After the manual and electronic data review, the following data points were qualified:

- Methylene chloride was detected in the VOC method blank and some of the methylene chloride sample results were qualified non-detects due to contamination in the blank.
- A few SVOC target compounds were qualified estimated due to calibration and/or surrogate recoveries.

The data, as qualified, are usable for all purposes.

**Reasons for Validation Qualifiers**

The reasons for applying a validation qualifier to a sample result is also listed in the validated electronic data deliverables (EDDs), under the column header "Reasons". Below is a list of reasons why a data point could be qualified during data validation.

| **Reasons for Validation Qualifiers:** | |
|---|---|
| <CRQL | The value reported is <Contract Required Quantitation Limits (CRQLs) |
| %D | The percent difference (%D) of the concentrations calculated off the primary and secondary columns are >25% but <60% and were qualified estimated. |
| MULT | Multiple runs were conducted for the analyte. Use the other value reported for the same analyte. The value which is not to be used is qualified 'R'. |
| USE R1 | Use the value(s) reported off the initial analytical run |
| USE DIL | The value reported is over the calibration range. Use the value reported off the dilution run. |
| SURR/DMCs | The surrogate/deuterated monitoring compound (DMC) recoveries did not meet the specified control limits. Results are qualified estimated. |
| RRF | The response factor for the analyte did not meet the minimum acceptance criteria (0.005). |
| MS/MSD | The spiked recoveries and/or RPDs did not meet the specified control limits. Results are qualified estimated. |
| MB | Analyte was qualified as non-detect due to contamination in the associated blank. The value reported is <5x or <10x (if common lab contaminant) the value in the blank. |
| ND | The analyte was not detected in the sample, and is reported at the CRQL with the 'U' Qualifier. |

| | |
|---|---|
| COELN | Initial identification erroneous. Peak due to co-elution with other detected target analytes. |
| ICAL | Initial Calibration criteria not met |
| CCV | Continuing calibration criteria not met |
| GPC | GPC Clean-up criteria not met. |
| CLN-UP | Silica gel, alumina or sulfur clean-up criteria not met |
| LCS | LCS/LCSD criteria not met |
| HT | Holding time criteria not met |
| STORE | Sample Storage and preservation specified not met |
| TEMP | Cooler recommended temperature exceeded at the verified time of sample receipt at the lab (VTSR) |
| M/Z | Mass/ion resolution ratio not met |
| DPE | Diphenyl ether interferences. False positive. Elevate reporting limits at level of detection |

## Data Qualifiers

The following is a list of validation qualifiers applied to the sample result(s) when needed to indicate associated out-of-control QA/QC results.

| **Data Qualifiers** | | |
|---|---|---|
| | U | The analyte was not detected at or above the reported result. |
| | J | The analyte was positively identified. The associated numerical result is an estimate. |
| | UJ | The analyte was not detected at or above the reported estimated result. The associated numerical value is an estimate of the quantitation limit of the analyte in this sample. |
| | R | The data are unusable for all purposes. |
| | N | There is evidence the analyte is present in this sample. |
| | JN | There is evidence that the analyte is present. The associated numerical result is an estimate. |

For site assessment and investigations, the following validation and bias qualifiers are applied to the data when necessary to allow for data analysis and interpretation using Pre-Score software calculations for National Priority Listing Hazard Rankling Scoring (NPL-HRS).

| **Data Qualifiers** | | |
|---|---|---|
| | U | The analyte was not detected at or above the reported result. |
| | J | The analyte was positively identified. The associated numerical result is an estimate. |
| | UJ | The analyte was not detected at or above the reported estimated result. The associated numerical value is an estimate of the quantitation limit of the analyte in this sample. |
| | R | The data are unusable for all purposes. |
| | N | There is evidence the analyte is present in this sample. |
| | JN | There is evidence that the analyte is present. The associated numerical result is an estimate. |
| **Bias Qualifiers** | L | Low bias. |
| | H | High bias. |
| | Q | The result is estimated because the concentration is below the Contract Required Quantitation Limits (CRQLs). |
| | K | Unknown Bias |

## II. DATA REVIEW

The analytical data were evaluated following the recommended baseline checks used in the four stages of laboratory analytical data verification and validation for Superfund use listed as follows (EPA-540-R08-005, 2009):

| Stage 1 – Data Validation | | | | |
|---|---|---|---|---|
| | YES | NO | N/A | QC Procedure or Check |
| **1** | x | | | Documentation identifies the laboratory receiving and conducting analyses, and includes documentation for all samples submitted by the project or requester for analyses. |
| **2** | x | | | Requested analytical methods were performed and the analysis dates are present. |
| **3** | x | | | Requested target analyte results are reported along with the original laboratory data qualifiers and data qualifier definitions for each reported result |
| **4** | x | | | Requested target analyte result units are reported |
| **5** | x | | | Requested reporting limits for all samples are present and results at and below the requested (required) reporting limits are clearly identified (including sample detection limits if required). |
| **6** | x | | | Sampling dates (including times if needed), date and time of laboratory receipt of samples, and sample conditions upon receipt at the laboratory (including preservation, pH and temperature) are documented. |
| **7** | x | | | Sample results are evaluated by comparing sample conditions upon receipt at the laboratory (e.g., preservation checks) and sample characteristics (e.g., percent moisture) to the requirements and guidelines present in national or regional data validation documents, analytical method(s) or contract. |

| Stage 2A – Data Validation | | | | |
|---|---|---|---|---|
| | YES | NO | N/A | QC Procedure or Check |
| **8** | x | | | Requested methods (handling, preparation, cleanup, and analytical) are performed. |
| **9** | x | | | Method dates (including dates, times and duration of analysis for radiation counting measurements and other methods, if needed) for handling (e.g., Toxicity Characteristic Leaching Procedure), preparation, cleanup and analysis are present, as appropriate. |
| **10** | x | | | Requested spike analytes or compounds (e.g., surrogate, DMCs, LCS spikes, post digestion spikes) have been added, as appropriate. |
| **11** | x | | | Sample holding times (from sampling date to preparation and preparation to analysis) are evaluated. |
| **12** | x | | | Frequency of QC samples is checked for appropriateness (e.g., one LCS per twenty samples in a preparation batch). |
| **13** | x | | | Sample results are evaluated by comparing holding times and sample-related QC data to the requirements and guidelines present in national or regional data validation documents, analytical method(s) or contract |

| | | | | **Stage 2A – Data Validation QC Data** |
|---|---|---|---|---|
| **14** | | x | | method blanks - |
| **15** | | x | | surrogate recoveries/deuterated monitoring compounds (DMC) recoveries |
| **16** | x | | | laboratory control sample (LCS) recoveries |
| **17** | x | | | matrix spike and matrix spike duplicate recoveries |
| **18** | | | x | serial dilutions |
| **19** | | | x | post digestion spikes |
| **20** | | | x | standard reference materials |
| **21** | | | x | equipment blanks |
| **22** | x | | | trip blanks |

## Stage 2B – Data Validation

Stage 2B validation builds on the validation conducted in Stage 2A. Stage 2B validation of the laboratory analytical data package consists of the Stage 2A validation plus the verification and validation checks for the compliance of instrument-related QC.

| | **YES** | **NO** | **N/A** | **QC Procedure or Check** |
|---|---|---|---|---|
| **23** | x | | | Initial calibration data (e.g., ICAL standards, ICV standards, ICBs) are provided for all requested analytes and linked to field samples reported. For each initial calibration, the calibration type used is present along with the initial calibration equation used including any weighting factor(s) applied and the associated correlation coefficients, as appropriate. Recalculations of the standard concentrations using the initial calibration curve are present, along with their associated percent recoveries, as appropriate (e.g., if required by the project, method, or contract). For the ICV standard, the associated percent recovery (or percent difference, as appropriate) is present. |
| **24** | x | | | Appropriate number and concentration of initial calibration standards are present. |
| **25** | | x | | Continuing calibration data (e.g. CCV standards and CCBs) are provided for all requested analytes and linked to field samples reported, as appropriate. For the CCV standard(s), the associated percent recoveries (or percent differences, as appropriate) are present. |
| **26** | x | | | Reported samples are bracketed by CCV standards and CCBs standards as appropriate. |
| **27** | x | | | Method specific instrument performance checks are present as appropriate (e.g., tunes for mass spectrometry methods, DDT/Endrin breakdown checks for pesticides and aroclors, instrument blanks and interference checks for ICP methods). |
| **28** | x | | | Frequency of instrument QC samples is checked for appropriateness (e.g., gas chromatography-mass spectroscopy [GC-MS] tunes have been run every 12 hours). |

## Stage 3 – Data Validation

Stage 3 validation builds on the validation conducted in Stage 2B. Stage 3 validation of the laboratory analytical data package consists of the Stage 2B validation plus the recalculation of instrument and sample results from the laboratory instrument responses, and comparison of recalculated results to laboratory reported results.

| | YES | NO | N/A | QC Procedure or Check |
|---|---|---|---|---|
| **29** | x | | | Instrument response data (e.g., GC peak areas, ICP corrected intensities) are reported for requested analytes, surrogates, internal standards, and DMCs for all requested field samples, matrix spikes, matrix spike duplicates, LCS, and method blanks as well as calibration data and instrument QC checks (e.g., tunes, DDT/Endrin breakdowns, inter-element correction factors, and Florisil cartridge checks). |
| **30** | x | | | Reported target analyte instrument responses are associated with appropriate internal standard analyte(s) for each (or selected) analyte(s) (for methods using internal standard for calibration). |
| **31** | x | | | Fit and appropriateness of the initial calibration curve used or required (e.g., mean calibration factor, regression analysis [linear or non-linear, with or without weighting factors, with or without forcing]) is checked with recalculation of the initial calibration curve for each (or selected) analyte(s) from the instrument response. |
| **32** | x | | | Comparison of instrument response to the minimum response requirements for each (or selected) analyte(s). |
| **33** | x | | | Recalculation of each (or selected) opening and closing CCV (and CCB) response from the peak data reported for each (or selected) analyte(s) from the instrument response, as appropriate. |
| **34** | x | | | Compliance check of recalculated opening and/or closing CCV (and CCB) response to recalculated initial calibration response for each (or selected) analyte(s). |
| **35** | x | | | Recalculation of percent ratios for each (or selected) tune from the instrument response, as appropriate. |
| **36** | x | | | Compliance check of recalculated percent ratio for each (or selected) tune from the instrument response. |
| **37** | x | | | Recalculation of each (or selected) instrument performance check (e.g., DDT/Endrin breakdown for pesticide analysis, instrument blanks, interference checks) from the instrument response. |
| **38** | x | | | Recalculation and compliance check of retention time windows (for chromatographic methods) for each (or selected) analyte(s) from the laboratory reported retention times. |
| **39** | x | | | Recalculation of reported results for each reported (or selected) target analyte(s) from the instrument response. |
| **40** | x | | | Recalculation of each (or selected) reported spike recovery (surrogate recoveries, DMC recoveries, LCS recoveries, duplicate analyses, matrix spike and matrix spike duplicate recoveries, serial dilutions, post digestion spikes, standard reference materials etc.) from the instrument response. |
| **41** | x | | | Each (or selected) sample result(s) and spike recovery(ies) are evaluated by comparing the recalculated numbers to the laboratory reported numbers according to the requirements and guidelines present in national or regional data validation documents, analytical method(s) or contract |

**Note**: Selection of analytes, spikes, and performance evaluation checks for the Stage 3 validation checks for a laboratory analytical data package being verified and validated generally will depend on many factors including (but not limited to) the type of verification and validation being performed (manual or electronic), requirements and guidelines present in national or regional data validation documents, analytical method(s) or contract, the number of laboratories reporting the data, the number and type of analytical methods reported, the number of analytes reported in each method, and the number of detected analytes.

## Stage 4 – Data Validation

Stage 4 validation builds on the validation conducted in Stage 3. Stage 4 validation of the laboratory analytical data package consists of the Stage 3 validation plus the evaluation of instrument outputs.

| | YES | NO | N/A | QC Procedure or Check |
|---|---|---|---|---|
| **42** | x | | | All required instrument outputs (e.g., chromatograms, mass spectra, atomic emission spectra, instrument background corrections, and interference corrections) for evaluating sample and instrument performance are present. |
| **43** | x | | | Sample results are evaluated by checking each (or selected) instrument output (e.g., chromatograms, mass spectra, atomic emission spectra data, instrument background corrections, interference corrections) for correct identification and quantitation of analytes (e.g., peak integrations, use of appropriate internal standards for quantitation, elution order of analytes, and interferences). |
| **44** | x | | | Each (or selected) instrument's output(s) is evaluated for confirmation of non-detected or tentatively identified analytes. |

**Note:** Selection of instrument outputs for the Stage 4 validation checks for a laboratory analytical data package being verified and validated generally will depend on many factors including, but not limited to, the type of verification and validation being performed (electronic or manual), requirements and guidelines present in national or regional data validation documents, analytical method(s) or contract, the number of laboratories reporting the data, the number and type of analytical methods reported, the number of analytes reported in each method, and the number of detected analytes.

Attachments:

Table 1 – Summary of Samples Analyzed (Sample Index)
Summary of Electronic Data Review
Validated Electronic Data Deliverables

**Lab** A4 (A4 Scientific) **SDG** JBR68 **Case** 39061 **Contract** EPW05036 **Region** 10 **DDTID** 80863 **SOW** SOM01.2

## *Data Review Results*

Matrix Spikes

| VOCs | | | | | | Extraction | | Analysis | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Number** | **Sample Type** | **Matrix** | **Level** | **Sampling Date** | **Date Received** | **Type** | **Date** | **Date/Time** | **GC Column** | **Intstrument** |
| JBR68 | Field_Sample | Water | Low | 10152009 10:30:00 | 10202009 10:24:00 | | | 10212009 16:04:00 | DB-624 | C-5973 |
| JBR73 | Field_Sample | Water | Low | 10162009 13:15:00 | 10202009 10:24:00 | | | 10212009 16:33:00 | DB-624 | C-5973 |
| JBR73DL | Field_Sample | Water | Low | 10162009 13:15:00 | 10202009 10:24:00 | | | 10222009 00:16:00 | DB-624 | C-5973 |
| JBR73MS | Matrix_Spike | Water | Low | 10162009 13:15:00 | 10202009 10:24:00 | | | 10212009 21:23:00 | DB-624 | C-5973 |
| JBR73MSD | Matrix_Spike_Duplicate | Water | Low | 10162009 13:15:00 | 10202009 10:24:00 | | | 10212009 22:20:00 | DB-624 | C-5973 |
| JBR78 | Field_Sample | Water | Low | 10192009 10:45:00 | 10202009 10:24:00 | | | 10212009 17:02:00 | DB-624 | C-5973 |
| JBR83 | Field_Sample | Water | Low | 10192009 16:30:00 | 10212009 09:53:00 | | | 10212009 18:00:00 | DB-624 | C-5973 |
| JBR84 | Field_Sample | Water | Low | 10202009 10:15:00 | 10212009 09:53:00 | | | 10212009 17:31:00 | DB-624 | C-5973 |
| JBR84DL | Field_Sample | Water | Low | 10202009 10:15:00 | 10212009 09:53:00 | | | 10222009 00:45:00 | DB-624 | C-5973 |
| JBR94 | Field_Sample | Water | Low | 10222009 15:00:00 | 10242009 11:00:00 | | | 10262009 22:34:00 | DB-624 | C-5973 |

| SVOCs | | | | | | Extraction | | Analysis | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Number** | **Sample Type** | **Matrix** | **Level** | **Sampling Date** | **Date Received** | **Type** | **Date** | **Date/Time** | **GC Column** | **Intstrument** |
| JBR73 | Field_Sample | Water | Low | 10162009 13:15:00 | 10202009 10:24:00 | Liq_Liq | 10202009 13:30:00 | 10222009 18:42:00 | HP-5MS | D-5973 |
| JBR84 | Field_Sample | Water | Low | 10202009 10:15:00 | 10212009 09:53:00 | Liq_Liq | 10212009 12:00:00 | 10232009 11:28:00 | HP-5MS | D-5973 |
| JBR84DL | Field_Sample | Water | Low | 10202009 10:15:00 | 10212009 09:53:00 | Liq_Liq | 10212009 12:00:00 | 10232009 01:20:00 | HP-5MS | D-5973 |

| PAHs | | | | | | Extraction | | Analysis | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Number** | **Sample Type** | **Matrix** | **Level** | **Sampling Date** | **Date Received** | **Type** | **Date** | **Date/Time** | **GC Column** | **Intstrument** |
| JBR73 | Field_Sample | Water | | 10162009 13:15:00 | 10202009 10:24:00 | Sep_Funnel | 10212009 12:00:00 | 10212009 21:44:52 | DB-XLB | F-6890A |
| JBR73 | Field_Sample | Water | | 10162009 13:15:00 | 10202009 10:24:00 | Sep_Funnel | 10212009 12:00:00 | 10212009 22:15:00 | DB-35MS | F-6890B |
| JBR84 | Field_Sample | Water | | 10202009 10:15:00 | 10212009 09:53:00 | Sep_Funnel | 10212009 12:00:00 | 10212009 23:48:00 | DB-XLB | F-6890A |
| JBR84 | Field_Sample | Water | | 10202009 10:15:00 | 10212009 09:53:00 | Sep_Funnel | 10212009 12:00:00 | 10222009 00:19:00 | DB-35MS | F-6890B |

**Lab** A4 (A4 Scientific) **SDG** JBR68 **Case** 39061 **Contract** EPW05036 **Region** 10 **DDTID** 80863 **SOW** SOM01.2

***Data Review Results***

Matrix Spikes

| **Blanks** | **VOA_LOW_MED** |
|---|---|
| VLB11 | The following volatile samples have common contaminant analyte concentrations reported less than 2x the CRQL. The associated method blank common contaminant concentration is less than 2x the concentration criteria Detected compounds are qualified U. Nondetected compounds are not qualified. Reported sample concentrationshave been elevated to the CRQL. |
| | **Methylene chloride** JBR68, JBR73, JBR78, JBR83, JBR84 |

| **Continuing Calibration Verification** | **BNA** |
|---|---|
| BC10 | The following semivolatile samples are associated with an opening or closing CCV percent difference (%D) outside criteria. Detected compounds are qualified J. Nondetected compounds are qualified UJ. |
| | JBR73, JBR84, JBR84DL, SBLK7R, SBLK7T |
| | **2,4-Dinitrotoluene** SSTD0204O, SSTD0204P, SSTD0204R |
| | JBR73, JBR84, JBR84DL, SBLK7R, SBLK7T |
| | **Indeno (1,2,3-cd) pyrene** SSTD0204O, SSTD0204R |
| | JBR73, JBR84, SBLK7R |
| | **Benzo (b) fluoranthene** SSTD0204R |
| | JBR84 |
| | **Dibenzo (a,h) anthracene** SSTD0204O |
| | JBR73, SBLK7R |

| **DMC/Surrogate** | **BNA** |
|---|---|
| BDSS14 | The following semivolatile samples have deuterated monitoring compound recovery above the upper limit of the criteria window. Detected compounds are qualified J. Nondetected compounds are not qualified. |
| | **Phenol-d5** JBR84 |
| | Benzaldehyde, Phenol |
| | **4,6-Dinitro-2-methylphenol-d2** JBR84 |
| | 4,6-Dinitro-2-methylphenol |
| | **4-Nitrophenol-d4** JBR84 |
| | 2,4-Dinitrophenol, 2-Nitroaniline, 3-Nitroaniline, 4-Nitroaniline, 4-Nitrophenol |

**Lab** A4 (A4 Scientific) **SDG** JBR68 **Case** 39061 **Contract** EPW05036 **Region** 10 **DDTID** 80863 **SOW** SOM01.2

***Data Review Results***

Matrix Spikes

| DMC/Surrogate | VOA_LOW_MED |
|---|---|
| VDSS3 | The following volatile samples have DMC/SMC recoveries above the upper limit of the criteria window. Detected compounds are qualified J. Nondetected compounds are not qualified. |
| | **1,1-Dichloroethene-d2** JBR73MS, JBR73MSD |
| | 1,1-Dichloroethene, cis-1,2-Dichloroethene, trans-1,2-Dichloroethene |

| Detection Limit | AROCLOR |
|---|---|
| ADL1 | The following aroclor samples have analyte concentrations below the quantitation limit (CRQL). Detected compounds are qualified J. Nondetected compounds are not qualified. |
| | **Aroclor-1260** ALCSLP, ALCSLQ |
| | **Aroclor-1016** ALCSLP, ALCSLQ |
| **Detection Limit** | **BNA** |
| BDL1 | The following semivolatile samples have analyte concentrations below the quantitaion limit (CRQL). Detected compounds are qualified J. Nondetected compounds are not qualified. |
| | JBR73, JBR84, JBR84DL |
| | **Phenol** JBR73 |
| | **Bis (2-Ethylhexyl) phthalate** JBR84 |
| | **Anthracene** JBR84DL |
| | **Benzo (b) fluoranthene** JBR84 |
| | **Benzo (k) fluoranthene** JBR84 |
| | **Acenaphthene** JBR73 |
| | **Phenanthrene** JBR73 |
| | **9H-Carbazole** JBR84DL |
| | **Naphthalene** JBR73 |
| | **1,1'-Biphenyl** JBR84DL |
| **Detection Limit** | **VOA_LOW_MED** |
| VDL1 | The following volatile samples have analyte concentrations below the quantitation limit (CRQL). Detected compounds are qualified J. Nondetected compounds are not qualified. |
| | JBR73, JBR73MS, JBR73MSD, JBR78, JBR84, JBR84DL, VBLK38 |
| | **Ethylbenzene** JBR84DL |

**Lab** A4 (A4 Scientific) **SDG** JBR68 **Case** 39061 **Contract** EPW05036 **Region** 10 **DDTID** 80863 **SOW** SOM01.2

***Data Review Results***

Matrix Spikes

| | |
|---|---|
| | **Toluene** JBR84DL |
| | **trans-1,2-Dichloroethene** JBR84 |
| | **m,p-Xylene** JBR84DL |
| | **Vinyl Chloride** JBR73, JBR73MS, JBR73MSD |
| | **Methylene chloride** JBR78, VBLK38 |
| | **o-Xylene** JBR84DL |

| **Initial Calibration** | **BNA** |
|---|---|
| BC5 | The following semivolatile samples are associated with an initial calibration percent relative standard deviation (%RSD) outside criteria. Detected compounds are qualified J. Nondetected compounds are not qualified. Use professional judgement to qualify non-detected compounds. |
| | JBR73, JBR84, JBR84DL, SBLK7R, SBLK7T |
| | **2,4-Dinitrotoluene** SSTD0054C |
| | JBR73, JBR84, JBR84DL, SBLK7R, SBLK7T |
| | **Indeno (1,2,3-cd) pyrene** SSTD0054C |
| | JBR73, JBR84, JBR84DL, SBLK7R, SBLK7T |
| | **Dibenzo (a,h) anthracene** SSTD0054C |
| | JBR73, JBR84, JBR84DL, SBLK7R, SBLK7T |
| | **Pentachlorophenol** SSTD0054C |
| | JBR73, JBR84, JBR84DL, SBLK7R, SBLK7T |

| **Matrix Spikes** | **VOA_LOW_MED** |
|---|---|
| VMS3 | The following volatile matrix spike/matrix spike duplicate samples have percent recovery greater than the upper acceptance criteria. Detected compounds are qualified J. Nondetected compounds are not qualified. |
| | **Trichloroethene** JBR73MS, JBR73MSD |

| TIC | BNA |
|---|---|
| BTIC1 | A library search indicates a match at or above 85% for a TIC compound in the semivolatile sample Detected compounds are qualified NJ. Nondetected compounds are not qualified. |
| | JBR73, JBR84, JBR84DL |
| | **000079-31-2** JBR84 |
| | **000103-82-2** JBR84 |
| | **000203-64-5** JBR84 |
| | **000501-52-0** JBR84 |
| | **000542-28-9** JBR84 |
| | **107-92-6** JBR84DL |
| | **64-19-7** JBR73, JBR84, JBR84DL |
| | **71-36-3** JBR84 |
| | **75-09-2** JBR84DL |
| | **79-09-4** JBR84, JBR84DL |
| **TIC** | **BNA** |
| BTIC2 | A library search indicates a match below 85% for a TIC compound in the semivolatile sample Detected compounds are qualified J. Nondetected compounds are not qualified. |
| | JBR84, JBR84DL |
| | **000095-63-6** JBR84 |
| | **000109-52-4** JBR84, JBR84DL |
| | **000111-14-8** JBR84 |
| | **000116-53-0** JBR84 |
| | **000503-74-2** JBR84 |
| | **000646-07-1** JBR84 |
| | **003218-36-8** JBR84 |
| **TIC** | **VOA_LOW_MED** |
| VTIC1 | A library search indicates a match at or above 85% for a TIC compound in the volatile sample Detected compounds are qualified NJ. Nondetected compounds are not qualified. |
| | JBR73, JBR73DL, JBR83, JBR84, JBR84DL |

**Lab** A4 (A4 Scientific) **SDG** JBR68 **Case** 39061 **Contract** EPW05036 **Region** 10 **DDTID** 80863 **SOW** SOM01.2

***Analytical Sample Listing***

BNA

| | |
|---|---|
| | **000090-12-0** JBR83 |
| | **000108-67-8** JBR84, JBR84DL |
| | **000496-11-7** JBR84 |
| | **000526-73-8** JBR84 |
| | **000611-14-3** JBR84 |
| | **000766-47-2** JBR84 |
| | **66-25-1** JBR73, JBR73DL |
| **TIC** | **VOA_LOW_MED** |
| VTIC2 | A library search indicates a match below 85% for a TIC compound in the volatile sample Detected compounds are qualified J. Nondetected compounds are not qualified. |
| | JBR73, JBR73DL |
| | **000078-84-2** JBR73DL |
| | **002100-17-6** JBR73DL |
| | **006261-22-9** JBR73 |
| | **020461-31-8** JBR73 |

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**
**REGION 10**
**1200 Sixth Avenue, Suite 900**
**Seattle, Washington 98101**

November 18, 2009

Reply To
Attn. Of: **OEA-095**

**MEMORANDUM**

SUBJECT: Data Validation for NW Pipe & Casing Removal Action, Case# 39061, SDG: MJBR85, Inorganic Analysis

FROM: Donald Matheny, Chemist DM
Environmental Services Unit, OEA

TO: Mark Ader, Regional Project Manager
Office of Environmental Cleanup (ECL-115)

CC: Mark Woodke, Ecology & Environment, Inc.

The data validation of inorganic analyses for the above sample set is complete. Two (2) water samples were analyzed for total elements by CompuChem Labs, Cary, NC. The sample numbers for this delivery group are:

MJBR85 MJBR86

**DATA QUALIFICATIONS**

The following comments refer to the lab's performance in meeting the specifications outlined in the "CLP Statement of Work (CLP-SOW) for Inorganic Analysis, rev. ILM05.4", the "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review" and the judgment of the reviewer. The comments presented herein are based on the information provided for the review.

**TIMELINESS** - Acceptable

The holding time from the date of collection to the date of digestion and analyses were met for all elements (180 days, Hg 28 days). Samples were collected on 10/16/09 and 10/20/09. ICP-AES analysis was conducted on 11/5/09. Mercury analysis was conducted on 10/23/09.

**INSTRUMENT CALIBRATION/VERIFICTION** - Acceptable

Instrument calibration for the ICP-AES was performed within the method requirements. Recoveries for verification standards (97-103%) met the frequency (10%) and recovery (90-110%) criteria.

For mercury, a blank and five standards were digested for instrument calibration. The correlation coefficient ($\geq$ 0.999) met the linearity criterion ($\geq$ 0.995). Percent recoveries for verification standards (101-111%) met the frequency (10%) and recovery (80-120%) criteria.

Quantitation verification standards met both the frequency and recovery criteria for all elements.

**ICP INTERFERENCE CHECK SAMPLE (ICS)** - Acceptable

An ICS was analyzed at the required frequency and recoveries met the criteria (80-120% or $\pm$ 2xCRQL) for all elements.

**LABORATORY CONTROL SAMPLES (LCS)** - Acceptable

An aqueous LCS was digested and analyzed. Recoveries (99-104%) were within the acceptance limits (80-120%) for aqueous samples.

**BLANKS**

Laboratory blanks were prepared and analyzed in accordance with method requirements. Blanks were not detected within a concentration factor (5X) that could impact sample results with the exception of cadmium and silver. Data for these elements were qualified (U).

**MATRIX SPIKE ANALYSIS**

A matrix spike was analyzed for sample MJBR85. Percent recoveries (77-119%) met the matrix spike acceptance criterion (75-125%) with the exception of arsenic (135%), copper (186%) and lead (178%). Data for these elements were qualified (J). Copper and lead data may be biased high whereas bias for arsenic data could not be determined.

**DUPLICATE SAMPLE ANALYSIS**

A duplicate sample was analyzed for sample MJBR85. Relative percent differences ($\leq$ 20%) met the duplicate control limits ($\pm$ 20% or $\pm$ CRQL) with the exception arsenic (25%). Arsenic data were qualified (J) with no indication of bias.

**ICP SERIAL DILUTION**

A five-fold serial dilution was analyzed for sample MJBR85. Percent differences ($\leq$ 10%) met the acceptance criteria ($\leq$ 10%) for all applicable elements with the exception of nickel (13%). Data for nickel were qualified (J) and may be biased low.

**ASSESSMENT SUMMARY**

The following is a summary of qualified data:

Cadmium and silver data were qualified (U) due to the detection of these elements in the laboratory blanks.

Arsenic data were qualified (J) due to a high spike recovery and high variability in the duplicate result. Bias for arsenic data could not be determined.

Copper and lead data were qualified (J) due to high spike recoveries. Values for these elements may be biased high.

Nickel data were qualified (J) due to a high percent difference in the serial dilution result. Nickel data may be biased low.

**DATA QUALIFIERS**

U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

J - The associated value is an estimated quantity.

R - The data are unusable. The analyte may or may not be present in the sample.

UJ - The analyte was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.

# US EPA - CLP

## 1A-IN

## INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJBR86

Lab Name: COMPUCHEM Contract: EPW08067

Lab Code: LIBRTY Case No.: 39061 NRAS No.: SDG NO.: MJBR85

Matrix (soil/water): WATER Lab Sample ID: 0910164-02

Level (low/med): LOW Date Received: 10/21/2009

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7440-38-2 | Arsenic | 4.8 | J | N* J | P |
| 7440-43-9 | Cadmium | 5.0 | U | | P |
| 7440-47-3 | Chromium | 9.3 | J | | P |
| 7440-50-8 | Copper | 20.8 | J | N J | P |
| 7439-92-1 | Lead | 2.9 | J | N J | P |
| 7439-97-6 | Mercury | 0.20 | U | | CV |
| 7440-02-0 | Nickel | 29.1 | J | E J | P |
| 7440-22-4 | Silver | 10.0 | U | | P |
| 7440-66-6 | Zinc | 39.7 | J | | P |

DM 11-18-09

Color Before: BROWN Clarity Before: CLEAR Texture:

Color After: BROWN Clarity After: CLEAR Artifacts:

Comments:

# US EPA - CLP

## 1A-IN

## INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJBR85

Lab Name: COMPUCHEM Contract: EPW08067

Lab Code: LIBRTY Case No.: 39061 NRAS No.: SDG NO.: MJBR85

Matrix (soil/water): WATER Lab Sample ID: 0910164-01

Level (low/med): LOW Date Received: 10/21/2009

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7440-38-2 | Arsenic | 76.2 | | N* J | P |
| 7440-43-9 | Cadmium | 1.2 | B | U | P |
| 7440-47-3 | Chromium | 255 | | | P |
| 7440-50-8 | Copper | 824 | | N J | P |
| 7439-92-1 | Lead | 67.5 | | N J | P |
| 7439-97-6 | Mercury | 0.34 | | | CV |
| 7440-02-0 | Nickel | 279 | | E J | P |
| 7440-22-4 | Silver | 0.73 | B | U | P |
| 7440-66-6 | Zinc | 942 | | | P |

DM 11-18-09

Color Before: BROWN Clarity Before: CLOUDY Texture:

Color After: BROWN Clarity After: CLOUDY Artifacts:

Comments:

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**
**REGION 10**
1200 Sixth Avenue, Suite 900
Seattle, Washington 98101

November 17, 2009

Reply To
Attn. Of: **OEA-095**

**MEMORANDUM**

SUBJECT: Data Validation for NW Pipe & Casing Removal Action, Case# 39061, SDG: MJBR88, Inorganic Analysis

FROM: Donald Matheny, Chemist
Environmental Services Unit, OEA

TO: Mark Ader, Regional Project Manager
Office of Environmental Cleanup (ECL-115)

CC: Mark Woodke, Ecology & Environment, Inc.

The data validation of inorganic analyses for the above sample set is complete. Five (5) soil samples were analyzed for total elements by CompuChem Labs, Cary, NC. The sample numbers for this delivery group are:

MJBR88 MJBR89 MJBR91 MJBR92 MJBR93

**DATA QUALIFICATIONS**

The following comments refer to the lab's performance in meeting the specifications outlined in the "CLP Statement of Work (CLP-SOW) for Inorganic Analysis, rev. ILM05.4", the "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review" and the judgment of the reviewer. The comments presented herein are based on the information provided for the review.

**TIMELINESS** - Acceptable

The holding time from the date of collection to the date of digestion and analyses were met for all elements (180 days, Hg 28 days). Samples were collected on 10/22/09. ICP-AES analysis was conducted on 11/5/09. Mercury analysis was conducted on 10/26/09.

**INSTRUMENT CALIBRATION/VERIFICTION** - Acceptable

Instrument calibration for the ICP-AES was performed within the method requirements. Recoveries for verification standards (97-103%) met the frequency (10%) and recovery (90-110%) criteria.

For mercury, a blank and five standards were digested for instrument calibration. The correlation coefficient ($\geq$ 0.999) met the linearity criterion ($\geq$ 0.995). Percent recoveries for verification standards (98-104%) met the frequency (10%) and recovery (80-120%) criteria.

Quantitation verification standards met both the frequency and recovery criteria for all elements.

**ICP INTERFERENCE CHECK SAMPLE (ICS)** - Acceptable

An ICS was analyzed at the required frequency and recoveries met the criteria (80-120% or $\pm$ 2xCRQL) for all elements.

**LABORATORY CONTROL SAMPLES (LCS)** - Acceptable

A solid LCS was digested and analyzed. Recoveries were within the acceptance limits for solids.

**BLANKS** - Acceptable

Laboratory blanks were prepared and analyzed in accordance with method requirements. Blanks were not detected within a concentration factor (5X) that could impact sample results.

**MATRIX SPIKE ANALYSIS** - Acceptable

A matrix spike was analyzed for sample MJBR88. Percent recoveries (81-110%) met the acceptance criterion (75-125%) for the matrix spike analysis.

**DUPLICATE SAMPLE ANALYSIS** - Acceptable

A duplicate sample was analyzed for sample MJBR88. Relative percent differences ($\leq$ 14%) met the control limits ($\pm$ 35% or $\pm$ 2xCRQL) for duplicate sample analysis in soil/sediments.

**ICP SERIAL DILUTION**

A five-fold serial dilution was analyzed for sample MJBR88. Percent differences ($\leq$ 5%) met the acceptance criteria ($\leq$ 10%) for all applicable elements with the exception of chromium (12%). Data for chromium were qualified (J) and may be biased low.

**ASSESSMENT SUMMARY**

The following is a summary of qualified data:

Chromium data were qualified (J) due to a high percent difference in the serial dilution result. Chromium data may be biased low.

**DATA QUALIFIERS**

U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

J - The associated value is an estimated quantity.

R - The data are unusable. The analyte may or may not be present in the sample.

UJ - The analyte was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.

# US EPA - CLP

## 1A-IN

## INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJBR88

Lab Name: COMPUCHEM Contract: EPW08067

Lab Code: LIBRTY Case No.: 39061 NRAS No.: SDG NO.: MJBR88

Matrix (soil/water): SOIL Lab Sample ID: 0910194-01

Level (low/med): LOW Date Received: 10/24/2009

% Solids: 73.3

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7440-38-2 | Arsenic | 1.8 | | | P |
| 7440-43-9 | Cadmium | 0.68 | U | | P |
| 7440-47-3 | Chromium | 12.7 | | E JV | P |
| 7440-50-8 | Copper | 37.2 | | | P |
| 7439-92-1 | Lead | 5.6 | | | P |
| 7439-97-6 | Mercury | 0.14 | U | | CV |
| 7440-02-0 | Nickel | 17.0 | | | P |
| 7440-22-4 | Silver | 1.4 | U | | P |
| 7440-66-6 | Zinc | 47.3 | | | P |

DM 11-17-09

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

# US EPA - CLP

## 1A-IN

## INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJBR89

Lab Name: COMPUCHEM Contract: EPW08067

Lab Code: LIBRTY Case No.: 39061 NRAS No.: SDG NO.: MJBR88

Matrix (soil/water): SOIL Lab Sample ID: 0910194-02

Level (low/med): LOW Date Received: 10/24/2009

% Solids: 86.1

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7440-38-2 | Arsenic | 1.4 | | | P |
| 7440-43-9 | Cadmium | 0.56 | U | | P |
| 7440-47-3 | Chromium | 11.3 | | ~~E~~ JV | P |
| 7440-50-8 | Copper | 34.3 | | | P |
| 7439-92-1 | Lead | 5.4 | | | P |
| 7439-97-6 | Mercury | 0.12 | U | | CV |
| 7440-02-0 | Nickel | 16.0 | | | P |
| 7440-22-4 | Silver | 1.1 | U | | P |
| 7440-66-6 | Zinc | 53.2 | | | P |

DH 11-17-09

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

# US EPA - CLP

## 1A-IN

## INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJBR91

Lab Name: COMPUCHEM Contract: EPW08067

Lab Code: LIBRTY Case No.: 39061 NRAS No.: SDG NO.: MJBR88

Matrix (soil/water): SOIL Lab Sample ID: 0910194-03

Level (low/med): LOW Date Received: 10/24/2009

% Solids: 89.1

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7440-38-2 | Arsenic | 0.52 | J | | P |
| 7440-43-9 | Cadmium | 0.53 | U | | P |
| 7440-47-3 | Chromium | 4.4 | | ~~E~~ J | P |
| 7440-50-8 | Copper | 13.7 | | | P |
| 7439-92-1 | Lead | 2.5 | | | P |
| 7439-97-6 | Mercury | 0.11 | U | | CV |
| 7440-02-0 | Nickel | 6.3 | | | P |
| 7440-22-4 | Silver | 1.1 | U | | P |
| 7440-66-6 | Zinc | 23.9 | | | P |

DH 11-17-09

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

US EPA - CLP

1A-IN

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJBR92

Lab Name: COMPUCHEM Contract: EPW08067

Lab Code: LIBRTY Case No.: 39061 NRAS No.: SDG NO.: MJBR88

Matrix (soil/water): SOIL Lab Sample ID: 0910194-04

Level (low/med): LOW Date Received: 10/24/2009

% Solids: 94.9

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7440-38-2 | Arsenic | 1.5 | | | P |
| 7440-43-9 | Cadmium | 0.52 | U | | P |
| 7440-47-3 | Chromium | 15.4 | | E J | P |
| 7440-50-8 | Copper | 39.0 | | | P |
| 7439-92-1 | Lead | 5.1 | | | P |
| 7439-97-6 | Mercury | 0.10 | U | | CV |
| 7440-02-0 | Nickel | 20.6 | | | P |
| 7440-22-4 | Silver | 1.0 | U | | P |
| 7440-66-6 | Zinc | 45.7 | | | P |

DH 11-17-09

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

# US EPA - CLP

## 1A-IN

## INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJBR93

Lab Name: COMPUCHEM Contract: EPW08067

Lab Code: LIBRTY Case No.: 39061 NRAS No.: SDG NO.: MJBR88

Matrix (soil/water): SOIL Lab Sample ID: 0910194-05

Level (low/med): LOW Date Received: 10/24/2009

% Solids: 85.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7440-38-2 | Arsenic | 3.2 | | | P |
| 7440-43-9 | Cadmium | 0.57 | U | | P |
| 7440-47-3 | Chromium | 18.1 | | ~~E~~ J | P |
| 7440-50-8 | Copper | 32.5 | | | P |
| 7439-92-1 | Lead | 7.7 | | | P |
| 7439-97-6 | Mercury | 0.12 | U | | CV |
| 7440-02-0 | Nickel | 19.5 | | | P |
| 7440-22-4 | Silver | 1.1 | U | | P |
| 7440-66-6 | Zinc | 51.8 | | | P |

RM 11-17-09

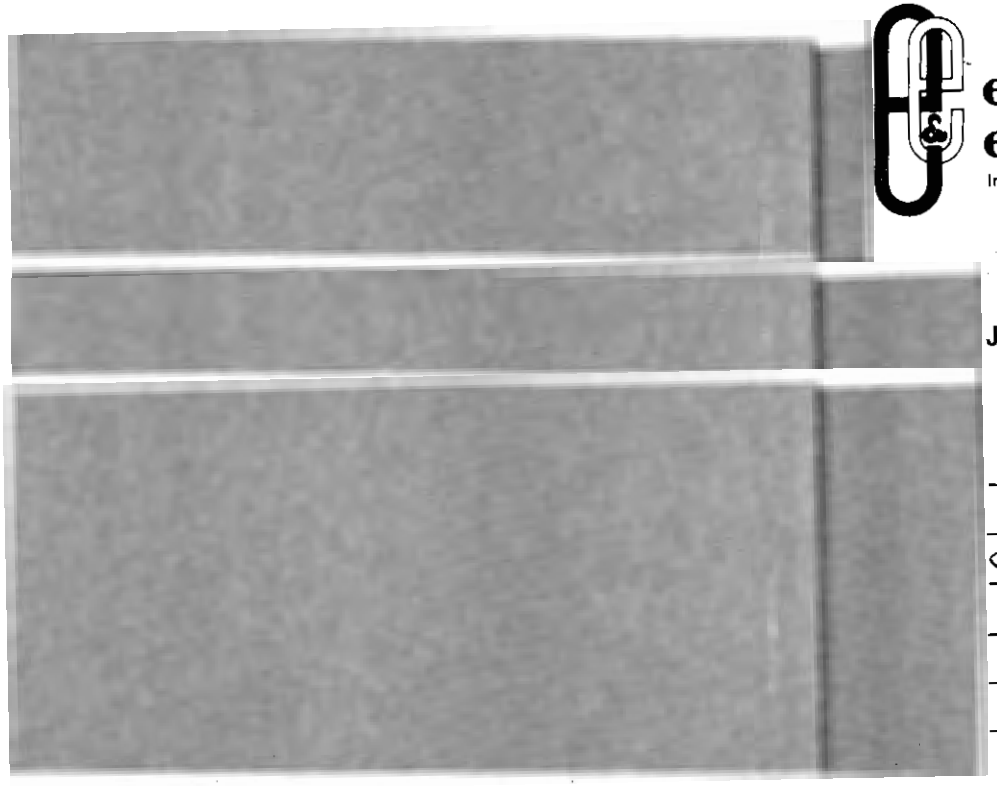
Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

# APPENDIX J

## START Field Logs



ecology and environment, inc.
International Specialists in the Environment

Job Number _____

NWT &C

JUNE 18, 2009

Recycled Paper / 568019

E & E Job Number _____

Telephone Code Number _____

Site Name _____

_____

City/State _____

TDD _____

PAN _____

SSID _____

Start/Finish Date _____/_____

Book _____ of _____

E & E Emergency Response Center: (716) 684-8940
E & E Corporate Center: (716) 684-8060
MEDTOX Hotline: (501) 370-8263
E & E Safety Director (Home): (716) 655-1260

Eric Roth - Parametrix
Mark Ader - EPA
Debbie Bailey - DEQ
Kathy Parker - EPA
Jim - E&E
Jason Coury - ERLS
Tom McManamy - ERLS
(+2 EQM)

"Soil Freeze" ® (Sodium Product)
drilling or geopunch well inst
~3 week freeze time
CDM did a soil removal + trenching (PM - ask Eric Roth)
URS (same) Dave Weatherby - Ted Wall

Clackamas County
will lease to Oregon
→ Barbara Cartmill -
503-780-2958 Gary Cook
is Consultant (Clack. Cnty)

Ken Idle - Proj. Mngr for Clack Co.
(DEQ's primary contact)
Stage to South (Truck wash,
stock piles)

Parametrix / DEQ
wants to start the
F.S. in Sept.

In Situ w/
Heavy (Napth, SemiVol)
and TCE

SSSP
(SP) Ammendments to
add to excav. to promote
biol. deg./polish

NWP&C
(?) 9530 Mather St

Survey needs? (Exam's)
SSH/SP

No removal assessment
just removal

GIS needs
Lab/Analysis needs / also sampling

PCB's & Pollutant 8080 Metals 8081 (or 82) = 6020, 8000/8015, = 8270, = 8260c VOL
Extra Characterization (?)
→ during the removal,
→ or during Soil Freeze Install

- Road Specs
- Water Recharge* - Jim (Tim A.)
- Soil Amendments

Supp. Field Invest.
~~RO~~ on EPA FTP site

*Eric Roth: Para will provide
hydro, transmissivity, etc
data (they have lots)

Eric will send by email
Figures, overlays

Eric/Mark advocates
PCB amino assay
Use Mini-RAE to field screen

Field QC? (will that
satisfy landfill req.?)

Sampling

Stock piles
- (4 items listed by Eric)

Confirmation

Field Screen / Analysis
- PID
- PCB assay (need a chemist?)
- other

Water - (What are re-injection feed stock req.)

Cost Est. by ~ Tues or Wed.

Conference Call

What is Mark Ader's cost cap?



Assessment of the "Between Area" between the 2 blobs
EQM will excavate test pits START to GPS & Sample (and log holes?)

City of Clackamas - Noise Ordinances (?)

Start ~ 3rd Week of August
5 weeks for excavation

Finish by Sept. 30

Ron
McManamy

Jason Coury
(425) 673-2900

Excavation A
B

6020 → ICP Metals
8080/8081 - PCB (8082)
*8270 - NAPH
*8260 → PERC TCE

~~*25~~

8081 - Minimum
$48 hr

* Naphthalene picked up by both 8270 & 8260



≈ $100 special

CAS Rush markup

24 + 48 = 100%

1 week = 50%

3 to 4 day ≈ 75%

Pick up in Morning

CAS
TAT?

Low Level PCB - 8082

DET. levels
10 ug/kg
.01 mg/kg

CAS Normal 8082
0.1 mg/kg

~~NCA~~
Test America

PCBs
8081
608
8080/8082
8082
~~8081A~~

RCRA

No further entries as of 11/25/2014

Ryan Whitehurst

*"Outdoor writing products...*
*...for outdoor writing people."*

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NWP&C
8/12/09 – 9/4/09
002233.0472.01RA
Jim Petersen

4 5/8" x 7" - 48 Numbered Pages

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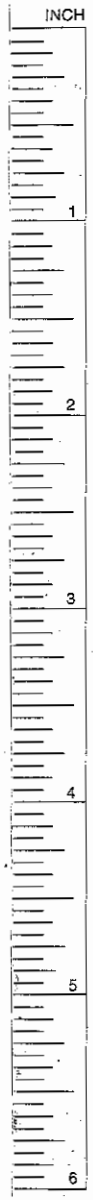


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TP-1



08/12/09 WED.

NWP&C

0620 warehouse

0825 On site

0930 Meeting - Kathy Parker EPA
Ken Hall - Clark Co. Dev.
Ian Townsend (Developer) Harris Group
Doug Tull - Oregon Iron Works
Adam - Parametrix
ERES: Dason Cooney, Gabe, Gary
Jim P - T&E
Brian - DOE

Weather 68° Rain (tapered off by 10:30)

1015 locator on site (Locates D.U.)

8/12/09

TP-1
N 45° 24.973'
W 122° 33.875'

sample TP-1 @ 15' bgs
0908-0401
11:28 am 8/12/09

Roughly centerline of RR alignment, between the two approx. loc. of coal tar bodies
Started 10:45
1045 completed 11:30
water at ~ 7-8' bgs
No odor or visual contam. observed. Sample TP-1 at 11:20 am 15' bgs
backfilled at 11:30 / 12:00 (12:00 lunch)

TP-2
45° 24.964' N
122° 33.890' W
Started at 1300
Sample at 14.5' 13:15
Very wet at 10' - 11' (flowing)
Backfilled 13:30

TP-2 0908-0402 13:15 8/12/09 14.5'

Slight odor



TP-3
N 45° 24.961'
W 122° 33.900'
Started at 13:40
~8' E of roadway
Dark soil ~ 4'-6' (seems to be consistant w/ layer of 'Thermal-Desorbtion' treated soil - very dark, no odor noticed
Wet at ~ 10' (but not flowing like at TP-2)
Odor (coal-tar/naph?) at ~8' to 10' and deeper. Sheen test at 14' (~~soil~~ 4-oz soil in a jar w/ 3-oz distilled water) revealed very small globules of dark NAPL, and odor. Sample Collected at 14.5' bgs. 14:05
Completed test pit (14.5') at ~~13:~~ 14:10. Backfilled.
Sample "TP-3"
0908-0403 @ 14:05 8/12/09
14.5' bgs

8/12/09

TP-4 started 14:25
N 45° 24.968'
W 122° 33.894'
~15' S of MW-207 Strong "Solvent/paint" odor at ~ 13-15' bgs - No Stained soil noted 0'-to 15'.
Sample at 15'
TP-4 0908-0404 14:45 8/12/09
(Multi-RAE lead ~2.0 ppm in bucket)
Backfilled No VOC Multi-RAE reading in jarred sample
1500 - finished
No black/naphthalene soil noted

---

15:10 started on
TP-5 (located ~ 20' west of boring B-3 location; within the RR alignment)
N 45° 24.976'
W 122° 33.856'
Sampled at ~10' bgs in grayish
10' Soil 0908-0405 @ 15:30 8/12/09
17' 0908-0406 @ 16:00 8/12/09
No black/naphthalene odor soil was noted in test pit. Backfilled 16:15



08/12/09

DataRAM

Run 4:09:18

8/12/09 ~~Run 4:6~~

L-TWA = 2.1 µg/m³

Left Site at 17:00.
Dropped samples off at lab at 17:45

8/13/2009 NW P&T

0640 on site
Weather - Clear, 65°F
Agenda for today is to continue test pitting around the coal tar / naphthalene areas to delineate

Next Sample # will be [0908-0407]
Stacted Data RAM at 07:13 am

Schedule
9/1/09 - Mobe (10 am) (after Labor day)
site set up

JP - Sept 2 to set up
E&E
Soil freeze / De-water / Cells week of Sept 8 - 12 (JP stay by occasionally)

Excavation start
9/14 - 9/19 overburden exc.
plus maybe start ~
[JP/E&E on site ~ 9/17 - 9-19]
Safety Meeting 07:10 am





Continue Exc until ~Oct 24

E&E full time
9/17 - 10/24
6 days/week

Final Depths - Conf Samples
Base

GPS shots of boundaries

E&E RAMS daily when on site
(otherwise weekly)
(check on air card)

130-2 pick up

08/13/09

TP-6 started at 07:30
~~(below~~ (between B-9 & B-10, ~12'
East of site access road)
Very strong creosote odor ~~at~~
starting 6' to 7' bgs
N 45° 24.949'
W 122.891'
Sampled TP-6 at 18' (Soil)
Heavy Naph/Creosote odor, esp
from water (~10' to bottom/18')
Backfilled @ 0820
Sample: 0908-0407 08:00
from TP-6 @ 18'

B

8/13/09



~~At~~ TP-7 ~~East~~ West of site access
road ~10', W. of B-11(?) ≈ Same
N-S as B-11(?)
N 45° 24.942'
W 122° 33.897'
Dark soil at 3½' - 5' (Thermal-
treated?) No odor
Water entering excavation at
10' bgs - Silvery sheen on
water
Collected water Sample
2 Unpres 1L Amber
2 Pres 1L Amber
3 VOA 40ml Pres
1 1L Amber
1 Poly Unpres. ½-L
0908-0411 @ 0855 am

Soil Sample at 13' TP7
~~040~~ 0908-0408 09:00 x3
DUPE 0908-0409 09:10

13' Total Depth
MS/MSD at 09080408
+ Dupe (09080409)

8/13/09

0940 TP-8
N 45° 24.950'
W 122° 33.902'
Sheen, creosote odor at 10' bgs. ~~wet~~ (slightly wet but no water entering exc.)
Sampled at 10' bgs
0908-0410 0945

Backfilled at 1000



TP-9 @ 1005
(just ~~east~~ west of TP-8)
N 45° 24.949'
W 122° 33.903'
~~Soil~~ Sample 0908-0412
@ 1020 @ 11' bgs (Total Depth)

(Sheen, odor. Not as Strong as TP-6)

TP-10
odor, Sheen
Sample at

N 45° 24.958' } (actual location is
W 122° 33.902' } 4' to the north of this)
odor sheen at water (10')
No odor or sheen noted (~12'?)
from (est) 12' to bottom - 15'
Sample
0908-0413 11:00 8/13/09

08/13/09

8/13/09

TP-11 11:35

N 45° 24.962'

W 122° 33.907'

No noticable odor was observed 0-15' bgs - wet at ~10', but very little water running into excavation.

Sample at 0908-0414

8/13/09 11:40 15' bgs

Backfilled

Lunch break - 1200 - 1245



8/13/09

TP-12 started 12:45 pm

N ~~12~~ 45° 24.949'

W 122° 33.876'

Slight odor at ~10-12' (where water occurs).

Sample at 15' @ 13:10

0908-0415

Little or no odor at 15'

TP-13 Started at 13:35 to 17' No odor or sheen noted. Very little water

Gps

N 45° 24.978'

W 122° 33.846'

Sample ~~14:55~~ 13:55

0908-0416 @ 16' bgs

TD = 17' bgs

~~No~~

TA. Courier picked up Samples 0908-0407 to -0416 at 14:30

8/13/09

TP-14 (Between & South of B-13 and B-14)
Found bundle of 3 pipes at 3', but they were ended / no caps
Black Coal Tar at 3'-4' bgs
N 45° 24.973'
W 122° 33.845'

Coal Tar Location
N45° 24.974'
W122° 33.844'

14:50 ~~Move~~ Shifted to the South (but same test pit)
N 45° 24.971'
W 122° 33.843'
Very oily / soil from ~ 10 to 11' down to 16' bgs - could see brown NAPL. NO SAMPLE - backfilled



8/13/09

TP-15 (due South of TP-14)
N 45° 24.967'
W 122° 33.842'
Water / free product at 10' bgs
Continued South w/ pit
Sample at 15' bgs ~~Cleared at~~ at ~~12~~ 11'-12' to ~~15~~ 15'-16' ~~Sam~~
Sandy gravel, no apparent odor or staining

TP-16 N 45° 24.980'
W 122° 33.834'
"Coal Tar" or oily clay observed at ~4' bgs (past bottom - ≈7' bgs)
Backfilled - No sample (Visual - oily soil w/ oil/naph. odor 4-7' bgs) - Moved to New pit to the SE

→

8/13/09

TP-17 started at 16:50

N 45° 24.980'
W 122° 33.837'

Black/"coal tar" material at ~4' bottom (stopped ~5' to 5.5' bgs)
Moved 15' to the East (same test pit)
Dark stain at western ~~edge~~ end of test pit, diminished toward eastern end of test pit
GPS reading at the approx. boundary

N 45° 24.979'
W 122° 33.831'

Backfilled at 1700

Turned off DataRam at 17:20 Run Time = 10:06:51
~~Conc~~ TWA = 8.7 µg/m3



8/13/09

Off site at 17:35
Went to EPA Warehouse (bowls & nitrile gloves)
Left warehouse at 18:45

8/14/09

0645 on site. Got ice for samples
Weather - cloudy, ~60°F, calm.

0715 Started TP-18 (~20' S of B-18)
N 45° 24.991'
W 122° 33.847'
~24" top soil; ~3' to 5'
Grayish soil from 5' to 6' down
to w/ slight oily odor
~6' to 9' same
10' wet gravely very oily
w/ strong oil/creosote odor,
down to 18' bgs.
No samples, Backfilled. Moved
to the NE for next test pit



8/14/09

TP19
N 45° 24.997'
W 122° 33.843'
Down to ~~16'~~ 18' bgs
(Sample at 15' visual only
Not jarred/submitted)
No Odor noted; No stained
soil noted

TP-20 (~30' NNE of B-14)
7'-9' oil soil w/ wood
debris. Black oil in pit 7-9' (Bottom
of exc.)
Backfilled.

~~TP~~ N 45° 24.989'
W 122° 33.840'

8/14/09

TP-21
N 45° 24.993'
W 122° 33.837'
Concrete, woody debris w/ soil ~~down to~~ from ~4' to 6', but did not appear or small oily. 6' to bottom (15') No Odor or apparent Staining - Backfilled at 09:15

TP-22
N 45° 24.993'
W 122° 33.855'
~~Con~~ ~~Wood debris~~ Slight odor 5' to 9' bgs ~10' to 13' wet, ~~[illegible]~~ oily; creosote odor

Backfilled, moved to the N.



8/14/09

TP-23
~~N° 45° 24.996'~~
~~W° 122° 33.855'~~
N 45° 24.974'
W 122° 33.830'
4 to 5' bgs to 8' to 10' bgs: dark (oily) gray clayey soil, slight to moderate odor (mothball/naphthalene odor) Slight sheen/odor at 10' (wet) where water occures. No water running into excavation.

TP-24
N 45° 24.973'
W 122° 33.849'
Dark grey "oily clay" ~~[illegible]~~ at ~3.5' to 5' bgs only in NE end of the test pit slight odor/sheen at ~~gw~~ groundwater at ~9'.

~10-15' bgs No odor noted.
Backfilled at 11:00

8/14/09

TP25

N 45° 24.953'
W 122° 33.882'

Odor, Stain 5-6' down to 11' (groundwater). Product on GW at 11' bgs

Backfilled at 11:40



8/14/09

TP-26
N - 45° 24.960'
W - 122° 33.888'
9' - 14', petro/creosote odor, dark gray stain
Backfilled at 12:05

TP-27

N 45° 24.949'
W 122° 33.889'
very strong odor from 5' to 11' (bottom)
Dark stain (soil)
*Took SAMPLE for Lab Analysis:

0908-0417 @ 1230 8/14/09
(A) 2 9-oz soil jars
(B) 1 encore (C) 1 Methanol w/ 10-g soil
*Jason wanted sample for waste disposal reference at "Worst Case" location.

Left site 13:15

Warehouse
19:45 - ~~15~~ 1430
Lab 15:30 - 1600

9/1/09 Tues

3 Soil disposal streams for soil (+ on-site re-use)

200 yd initial stockpiles

Lab Friedman Bovay - Seattle (carrier) 2-day min

(Rush - Specialty if nec.)

Fed-Ex shipments ~~for~~ (shipping done by EQM) Phoenix an

B-20 Bio-diesel

This Week - set up office Equipment, Fuel, Commun.

Linear Shoring - Disposal

Cont. only (?)

NWTPHDX 8270 full 8260 8 metals + Hg cyanide water PCBS TSS Flash



9-2

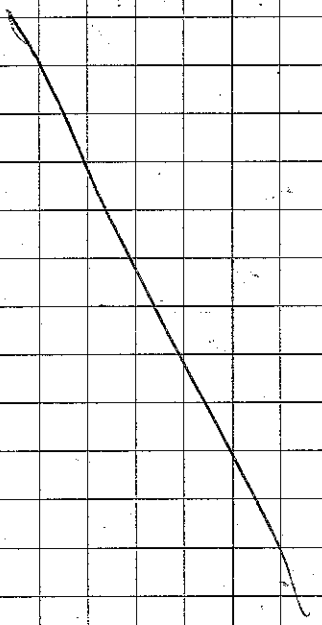
EQM improved roads

Built de-water cells

9-3 JP - Equip

Spotted borings w/ Kathy/Mark (A.M.) → Water Treatment reps

9-4



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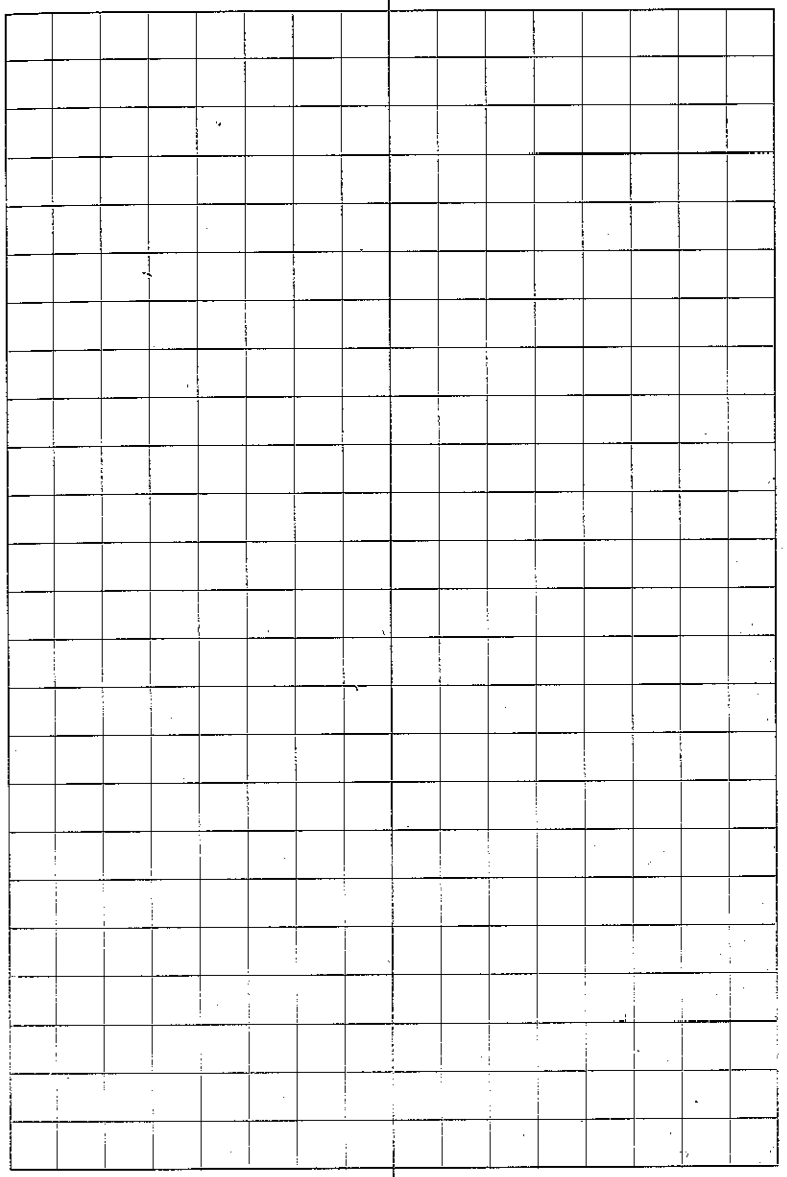

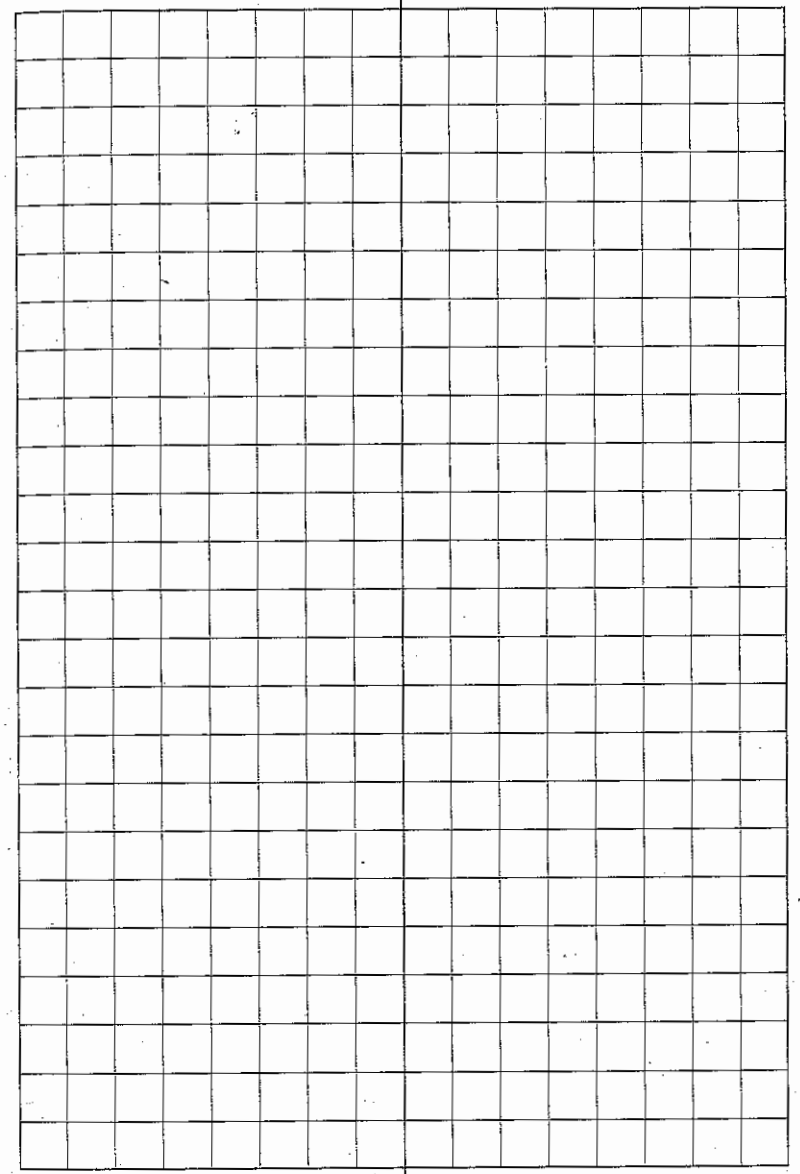

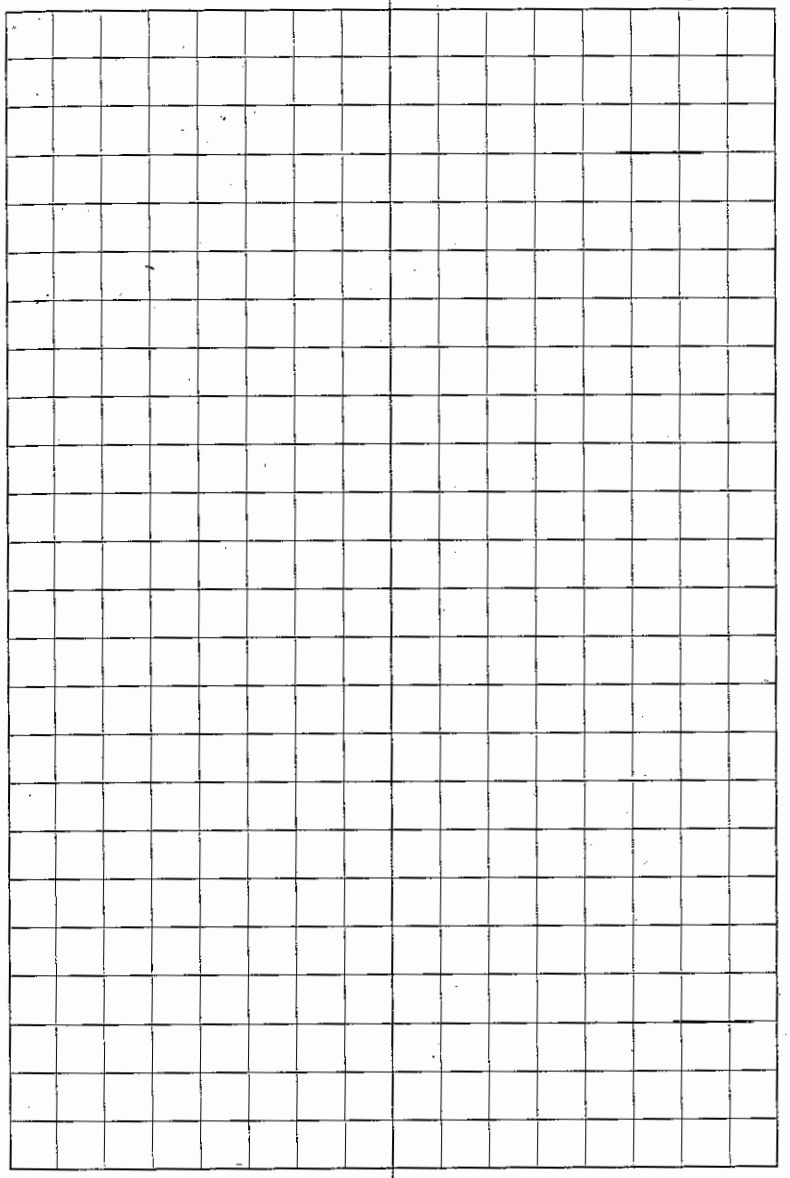

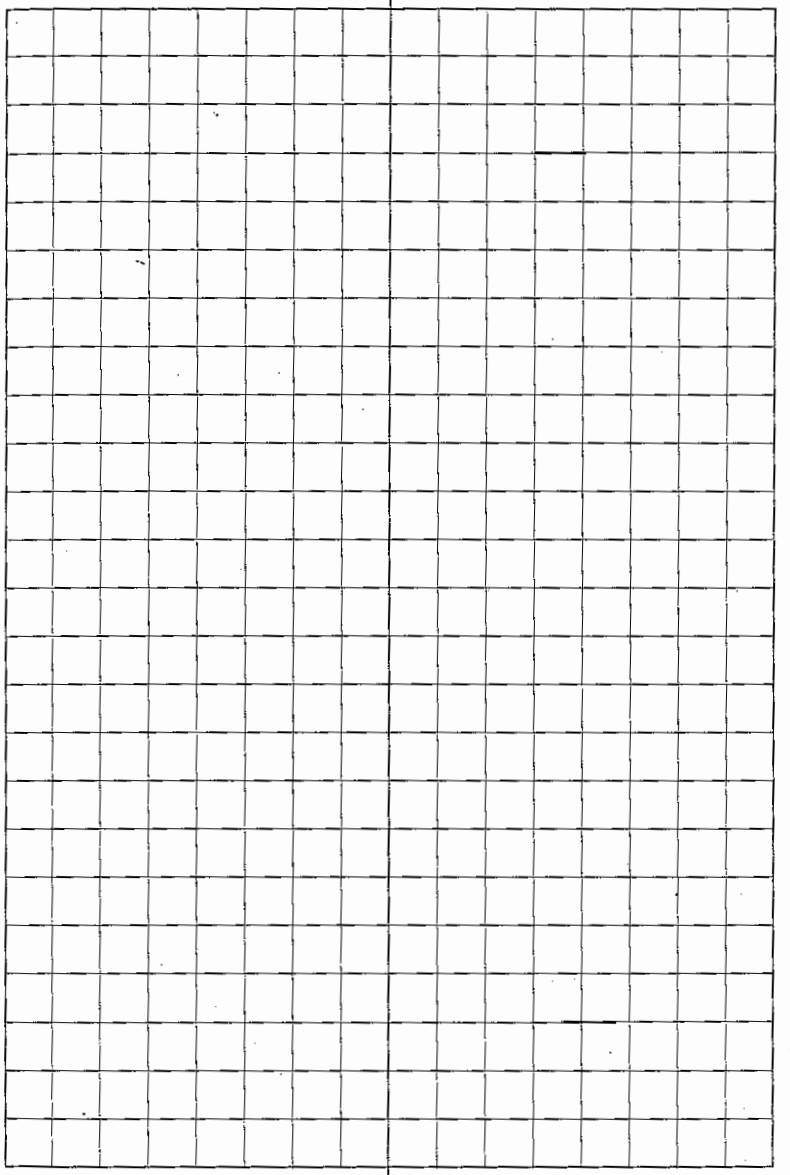

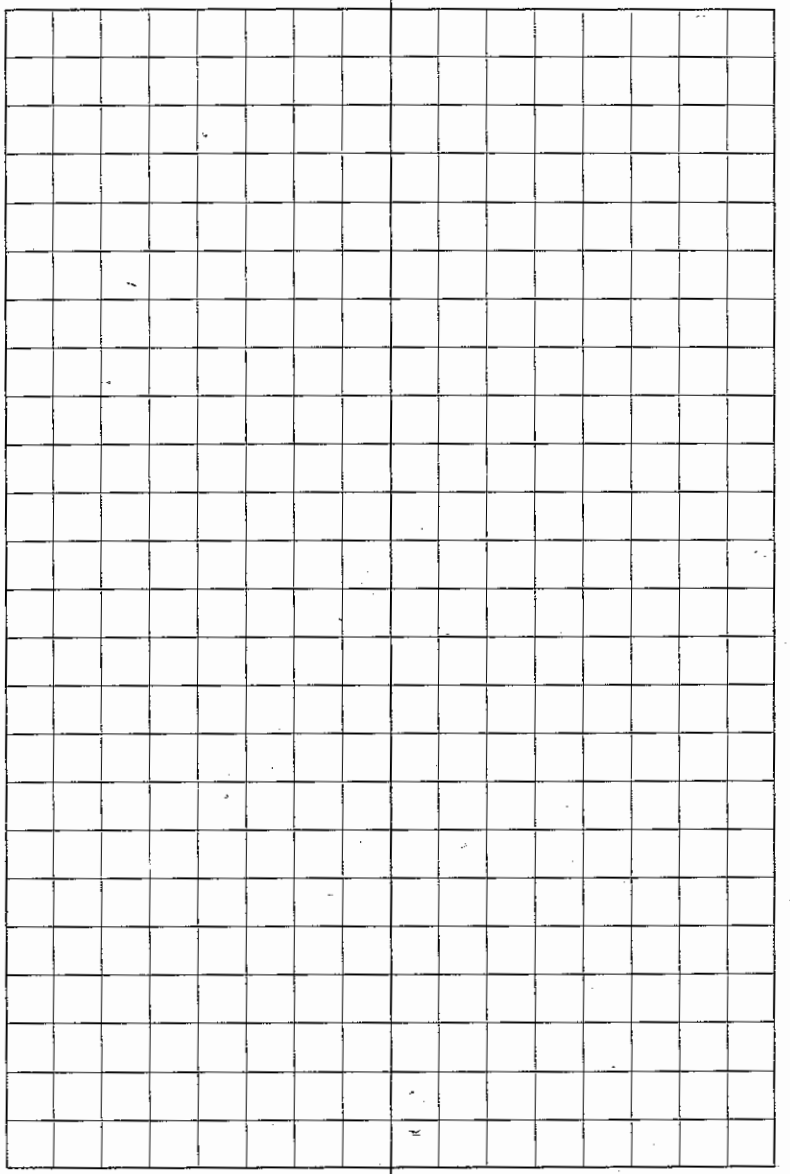

# Photo Log

| | | | |
|---|---|---|---|
| 9/4/09 | 10:26 | South | EQM removing top 2' overburden from Pit #1 |
| 9/4/09 | 10:28 | SW | EQM placing clean cap overburden in stockpile |
| 9/4/09 | 10:32 | SW | Soil stockpile de-watering cells |
| 9/4/09 | 1032 | S | (Same) |



Ed

Water Env. Svc - Clack.

Monitors

(503) 557-2834

Noi

| | | | | |
|---|---|---|---|---|
| 48 | 8/10/09 | | | |
| | 8/11/09 | " | " | " |
| | 8/12/09 | 05:45 | - 18:30 | 12.75 |
| | 8/13/09 | 05:45 | - 1900 | 13.75 |
| | 8/14/09 | 0600 | - 1600 | 10 |


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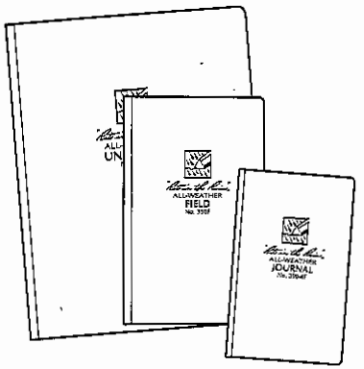
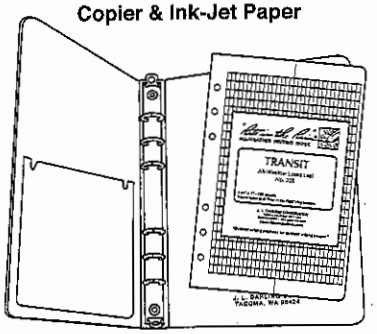
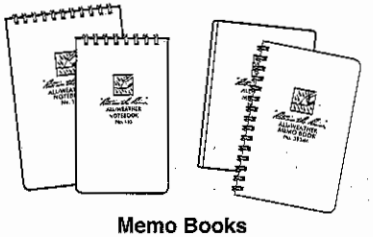

Bound Books



Loose Leaf / Ring Binder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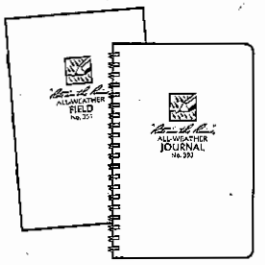
All-Weather Pens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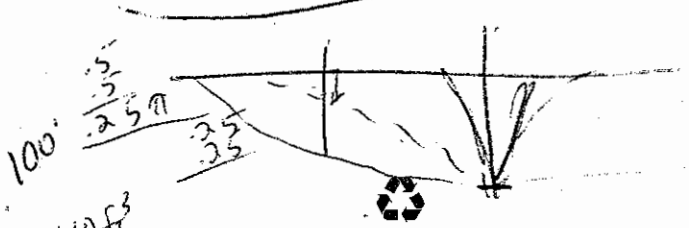


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# FIELD

All-Weather Notebook
**No. 351**

| |
|---|
| NWP&C |
| 9/8/2009 – 9/18/09 |
| Jim Petersen E&E |
| 002233.0472.01RA |

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Mon 9/8/09

0703 on site - Joined the H&S meeting.
ERLS on site w/ 9 people
Jason Coury - ERLS PM
Pam - Project Support
Crew of 7

Kathy Parker - EPA OSC

Jim P. - E&E/START

Discussed Site H&S + Agenda
Today - Continue to excavate Pit #1 to remove 2' clean cap and ~2' (to 4') "overburden" - Thermal desorption

> Shoring contractor on site (Probably will not begin to assemble 1st shoring box until tomorrow)
> Lab rep (PM) on site (time?)

0920 Rachel Lu on site

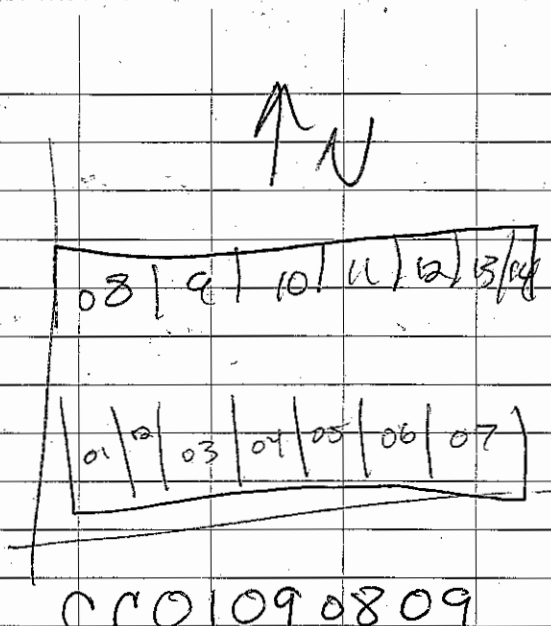




10:45 - Set data rams
Data Ram4 A60826
Started rem at 10:58 am at Bio-diesel ~~tank~~ support area ~~Ram~~ Picked up ~17:30

11:01 am Started Rem at MW-112 data Ram # A59876
~17:30 picked up

11:05 Started Data Ram at MW-209 ~~A60825~~ A60825
picked up ~17:30




CCO109080 9

CC

CC ## MMDDYY



9/9/09 Cloudy, 60°F.

0700
Water Treatment System will go in.

More Shoring coming. 1pm beginning to put together

Lining de-watering cells

Rock coming to line de-water cells. Also widing roads

Permit for POTW - working on. Also - trying to get approval for on-site application (UIC)

Starting to excavate ~~water~~ the ~~the~~ first shoring area

Today

line dewatering cells

Water treatment install

| dust | |
|---|---|
| 3 mg/m³ | off-site |
| 10 mg/m³ | on site |



Data Ram:
A 59876 @ 08:07
set at MW - ~~30~~ 211

Bullet list of tasks daily

Water Infiltration Test 2000-gal
Start at 14:59:20 sec
14:59:00

at 5 min - wet area 18 yds
x 13 yds ~ 2 to 3" deep in
the middle

54
40
2160 ft²

2000 gal
2160 ft²

@ 11 minutes
after we stopped
applying water
had soaked in
except ~10' ø
circle ~ ½" deep

Area RAES

Cells built
Agenda
Thurs. - Starting excavation
1) dig 2' to 6'
2) Set shoring
3) then to ≈10' (1st water)
~~4) 3~~
500-T of 1" minus rock

finishing lining/rocking of containment system

J.P. Land app sample
1) Composit sample of Land-app areas

2) Email to Kathy - the stuff about contacting the owner about sewer hook-up.

Send Kathy + Jason Regenisis info ('bid')



Fire Extinguisher - Connex - put in office trailer

SSSP

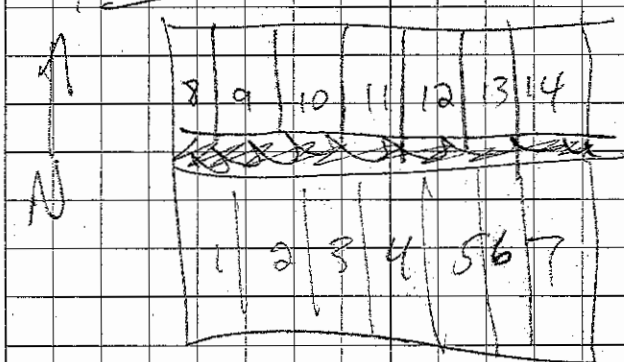
CC Containment Cell (taken when closed - 200yd)

TT Treated Tank

UT Untreated Tank

IF intermediate Filter (between 1 & 2 GAC)

By Saturday




CC01090909
↳ = containment cell #

9/10/09

JP on site at 11:00
(10-10:30 at warehouse)
- Black H.S. tour
- Calls/discussions w/ Siemens (Alex Pearce)
Ram-for Rent (Don Ehly)

- Excavation at first shoring location. EQM removed ~ 4 additional feet in first excavation cell. Bruce, rep. from DP Nicoli, is on site consulting w/ EQM on shoring system



4/10/09
17:15 EQM is installing shoring in first cell of Pit #1. Carbon vessels are in place and ~~Carb~~ GAC is being added. Crews will work to 6:30 pm tonight.
Sunny, ~85°F

18:30 - pulled Data Ram #159876 from MW-211 location

left site @ 19:00

9/11/2009

0700 Site Safety/Agenda Meeting

Expect to pump water tomorrow
- set pumps today.
Water test ASAP (tomorrow?)
to test out treatment system
Today - import/stockpile
2½" minus backfill mat'l
Clean-up + road widening
Containment cells are done
≈10 truckloads per cell to fill

EQM set up Sewer Inlet road
crossing at Sewer by IWP.
Ed Gilmore, WES brought DRAFT
POTW permit by @



| | | R.X. | JP | |
|---|---|---|---|---|
| Sun | 9-6 | Ø | Ø | (6:30-7) 7-6 |
| Mon | 9-7 | 2 | Ø | (Labor day) |
| Tues | 9-8 | 12 | 10.5 | |
| Wed | 9-9 | 10 | 7.75 | (9:45 10:15, 10:15 1:00) 11-6:30, 6:30-7:30 |
| Thur | 9-10 | 11 | 12.0 | (7-6:30) 6:30-7, 6:30- |
| Fri | 9-11 | 10 | 10.5 | (7-6:30) 6:30- |
| Sat | 9-12 | | | |

8 SPO
2 SPO

Vehicle $394.77/week

Per Diem

| | | |
|---|---|---|
| Maren Fulton | AT | 06074 |
| Rachel Xu | AS | 05806 |
| M. Woodke | CH | 02255 |
| J Mihalek | SE | 04102 |
| J Carrejean | CH | 05302 |

Sat 9/12/09 Sunny 90° at 4/m

Todays agenda

- Test Water treatment system
- Excavate Pit 1 to groundwater
- Expect to fill Containment Cell #1
- Possibly fill Cont. Cell #2.
- Panels - hey heavy - crew to be careful when using tag lines.
- Crew to listen to Spotter (Caleb) when around excavation.
- Rain for - rest is here, will show EQM how to operate system.

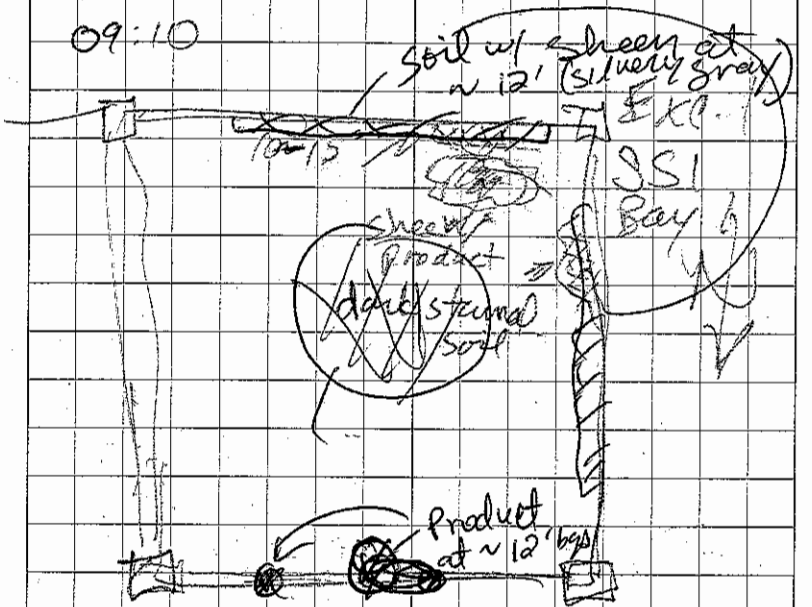
0700 Set DataRam A59876 in support area: Date/time read 24-Jan-2000 / 00:00. Reset to current date but the unit would not keep date. Started run at 07:23 at front of EQM/EPA office trailer in support area. Note that date/time at start is



Sat 9/12

Jan 24, 2000, 00:00 hours.

09:10




16:00 Sheen/product (guess ~5% of water surface) on water ponded at ~13' & 14' bgs level of excavation bottom. Excavation is ~13' to 15' bgs (un even).

Soil Samples

1 Sample: 2" –
1 CC #1.

Lab Mark-Up → Lab What I have in RCMS is ≈ 330% is this correct? Kathy is thinking lower % – May be 3%?

Add Comments on personnel Check for

| |
|---|
| 2000 |
| 4000 |

~~For~~ Ten

Starting



9/12

1400 Rain-for-Rent Tech (Joe) gave operating demonstration of water treatment system to ERRS crew.

Down Stream Flow meter, initial Reading is 726920 x 100, or 72,692,000 gallons.

15:00 Samples:

1500 Sample at B 3" – backfill pile 7-pt composite J Petersen
15:00 9/12/09 BF01091209

sample at
1" minus backfill: 7pt Composite
BF02091209 15:10 9/12/09

Rachel Xu dewatering containment cell #1 CC01091209 15:02 9/12/09

15:02

9/12/09

1600 Loader made numerous passes along the main N-S road in front of excavation Pit #1 area smoothing road surface creating alot of dust dispated by ~~S~~ side boarding Wind is light, to South and Southeast.

16:10 - Equipment is parking

Battery Dead 16:10 - MW D-211 pulled DERD Data Ram# 60826

1612 MW 209 D

Stopped run @ 1612
Data Ram # A60825

1616 Support Area at front of Ram Trailer Data Ram # A59876
Run had stopped ~~after~~ immediately
- No Data Collected



9/12/09

17:00

→ Download Data Rams
→ Complete notes on weekly/daily START Tasks
→ Prepare Excel Spreadsheet of Data Ram Data
→ Update Spreadsheet for tracking ~~Lab~~ to Samples/Labs.

TRIMBLE GPS Points

9/4/09 ~~Area~~ EXC #2 boundary points:

(A) 45° 24' 58.590" N
~~122° 33' 51.134" W~~
122° 33' 51.055" W

(B) 45° 24' 59.327" N
122° 33' 50.926" W

(C) 45° 24' 58.321" N
122° 33' 50.469" W

09/14/2008 Monday

0700 Safety Meeting

0821 Set up data Ram A60826 at Support area ~~B~~ East end of EQM/BPA Trailer

08:25 Set up Data Ram A60825 at MW-211 (east of exc. areas between OR hon works and site activities)



9/14/09 Mon.

→ Steady Flow ~~even~~ as even as possible as over the 24-hr period

Email saying draft is okay.

~~[illegible]~~

→ Methods as per CFR Part 136

Signature for permit application

14:50 Shoring is at ~~18'~~ 16' bgs excavation goes another 1-2' so excavation in Exc. #, Shore Sys #1, Bay 01 is ≈ 17 to 18' bgs

9/14/09 16:00 meeting

4 pm

Small excavator ~~is~~ going to be brought on site to operate in the pit, to exc. under shoring system corner posts.

Pea Gravel coming tomorrow — will need to sample

Landfill levels: Book

Naphthalene for subtitle D? will they have a limit



9/14/09

10X rule for RCRA

If .7 mg/L, then 10 X TCLP

If 10 X than subtitle D, then has to go for incineration

Decision point

| Analyte "X" Level | Subtitle D | Subtitle C | Subtitle C w/ treatment |
|---|---|---|---|

Jim to Make decision table

9/14/09

17:15 picked up data RAM A60825
at MW-211. Run time 8 hr 45 min
Conc L-TWA = 5.3 µs/m³

left site 18:15

Stopped at EPA PDX warehouse
to drop off two Data RAMs
w/ battery problems; exchanged
for two good Data Rams.
Also picked up MultiRAE
calibration gas~~ses~~.
Left warehouse at 19:00

0.5
~~30~~ min travel
11.25 hr site
0.75 hr ~~min~~ warehouse
0.5 Travel
13 hrs.



9/15/09 Tues.

| Mult. RAE Cal | Read | Actual (Cal gas) |
|---|---|---|
| $H_2S$ | 37 | 25 |
| CO | 55 | 50 |
| LEL | 58 | 50% |
| $O_2$ | 20.9 | 20.9 |
| VOC | 3.1 | — |

| | Read | Actual |
|---|---|---|
| VOC | 106 | 100 |

Fresh air zero

| | Read |
|---|---|
| $H_2S$ | 0 |
| CO | 0 |
| LEL | 0 |
| $O_2$ | 0 |
| VOC | 0 |

9/15/09
0700 Meeting
Exc: construction fencing to be kept up around excavation.
2 ladders to be put into excavation - secured, or held by other person.
When pounding shoring piles and plates only necessary personnel in the area.
~Six more loads to place in cell #2 to fill
Entering excavation safely - do not go on gap ~~[illegible]~~ of open-side plate



Meeting w/ Kathy

Work w/ Pat Turina on Landfill "Action Conc. level"

~~Removal Assessment TDD Send copy $ left~~

Data RAM
by 10 am Sat

Figures - Data RAM
Exc. areas

START Work Log
by 10 am Sat

Photos - give to Kathy periodically

SSSP's

change:

(1) One Soil sample plan

One Water sample plan

(2)

DATA Ram + PID

Action level 10 ppm site

3 ppm off-site

Action Levels
PID/
LEL 10%
CO
$O_2$

(3) OR combine



Cutting back on number of containment cell samples?

Ideas?

— eg.

NE corner of Exc I (very ROUGHLY)

45° 24' 58.067" N
122° 33' 53.167" W

NW corner (ROUGHLY)

45° 24' 57.864" N
122° 33' 54.199" W

30

9/14/09 ~~2~~ 11:42

E1/S1/B1

NW 45° 24' 57.001" N
122° 33' 53.934" W

SW 45° 24' 56.~~804~~ "N
122° 33' 53.~~837~~ "W

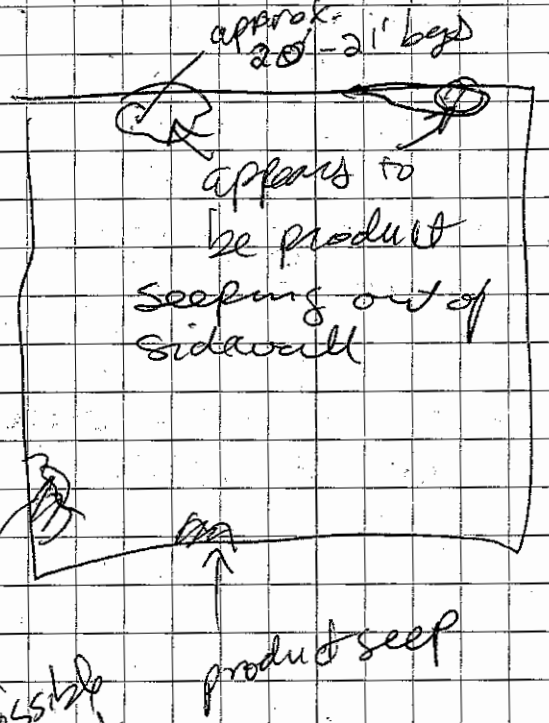
SE (Point 5' S of SE corner)
45° 24' 56.809" N
122° 33' 53.535" W

NE (Point 5' N of NE corner)
45° 24' 57.102" N
122° 33' 53.681" W

9/15/09

31

~~E1/S1/B1~~ S1




E1/S1/B1

Zander - Shoring Lund
Rachel - Kathys figs
- Corner points of Ex 1
S1 B1

Call Eric White
- Sample Results?
- Volatiles / hold time
- 624/625/608
VOC's semivol PCB

> Rpt in PDF
> Tier 4 data pack
2½% for excel data tables

Oregon is not a 5035 state
2°-4° 14 total
volatiles



New MultiRAE 9/15
4-gas cal
CO 48 VOC 0.3 $H_2S$ 27
LEL 51 $O_2$ 209
Isu.
LEL 100

Gave 2nd MultiRAE to Pat Turina to assign to Mini-Ex operator (told Pat that he must make sure that person who gets is informed that he is responsible for it.

9/15/09

Collected Sample # 09090122 from EXC. 1, SS#1, Bay 1 at South side wall 10ft east of the Southwest Corner at 25' bgs time: 15:50

Collected 09090123 at 16:10 from western sidewall +2' N of SW corner of E1/S1/B1 at 25' bgs.

Data Ram#
Picked up A60822 from MW-211 location at 9/15/09 17:50

303 Mini-excavator on site today Rubber Track came off - unclear whether it will help yet!

Left site 1810



9/16/09 Wed.

0700 Safety/Ops Meeting
- Shoring rep on site
- Start Bay # 2 (E1/S1)
- Ram for Rent will be on site due to problems lifting water from 25' bgs to top
- Safety fence will be here today for excavation top-side safety rails.

~2500 to 3000 gal in first tank so far

Data Rams set out at MW-209, MW-211, Support Area

1255 Light Rain
Pulled Data Ram DE4000s
A60822 at MW-211 - stopped at 12:53
A60823 at MW-209 - stopped at 1257
A60825 at Support Area " " 1303

Left Site 18:00

9/17/09 Cloudy ~60° wet from mist/rain

0700 Site Meeting - Recycling dumpster on site. Caleb is in charge of shoring. Discussed the potential for blow-out in excavation.

0728 Set out Data Ram DR4000 s

0728 A60822 set up at MW-209
0730 A60823 set at MW-211

Today's agenda:
Excavation in E1/S1/B2, and continue to Bay 3. Shoring for Bay 3 will be set up this morning. Additional shoring materials will be brought on site
Set Data Ram DR4000 A60823 at MW-211 at 0745



9/17/2009

14:00 Bay 3 is excavated to ~15' bgs on North side of Bay 3 dark stained soil at ~14-15' bgs.

1625 left site to pick up ice.
1640 Left site.
1640 - 17:25 Travel

9/18/2009 Fri

0645 On Site - Call from Bryce - in meeting yesterday Kathy had indicated she wants START to reduce to one person, Pat Turina of Phoenix to assume some of duties (DataRAMs, MultiRAMs, ~~Stan~~ confirmation and soil pile samplings, other)

0700 Meeting:

at 0800 - will run water treatment system

Add'l shoring will come (including some damaged parts?)

They will finish Bay #4, then move on to Shoring System #2 on Saturday. There will be a 40' ladder brought in today.

Water Samples

UT01-091809 08:20 9/18/09 taken from tank #2



Sample Log Sheet

DR 4000 Log

Daily Activity

ERRS water

Water Sample

~~Dirty~~ Dirty TSS

OG

TTO

RCMS

Confirm Lab Methods (Water)

Scribe

DR4000

RCMS

Left Site 17:10 to take pit samples to Specialty Lab in Clackamas

5

$\frac{1}{12}$ 43,560 $ft^2$

$$\begin{array}{r} 3805\ ft^3 \\ 12\overline{)43560} \\ \underline{36} \\ 45 \end{array}$$

$$\begin{array}{r} 3805 \\ 7 \\ \hline 26,635 \end{array}$$

| | | | |
|---|---|---|---|
| 9/16 | 14:23 | NNW | Removing Mini Ex from E1/S1/B2 |
| 9/16 | 1425 | SE | Soil stockpiles in Containment Cell 2 |



| | | | |
|---|---|---|---|
| 9/12 | 9:00 | W | START Collecting GPS data |
| 9/12 | 9:01 | SW | Excavation P1, SS1, B1 |
| 9/12 | 14:03 | W | Vendor demonstrating (Pre-carbon filter) water treatment system |
| 9/12 | 1407 | S | same (Bag filter) |
| 9/12 | 1408 | N | Same (Pre-Carbon TSS meas.) |
| 9/14 | 07:11 | NE/down | ~~Exc~~ E1/SS1/B1 after setting through weekend. |
| 9/14 | 1500 | N/down | E1/S1/B1 excavation at approximately 18' bgs |
| 9/14 | 1502 | NE/down | (same) |
| 9/14 | 1503 | NE | Loading out soil from E1/S1/B1 excavation |
| 9/15 | 0955 | W | E1/S1/B1 " |
| 9/15 | 0956 | N | " " w/ Mini-excavator |
| 9/15 | 1209 | S/down | E1/S1/B1 ~20' bgs |
| 9/15 | 1455 | ENE | NE Corner of E1/S1/B1 |
| 9/16 | 0741 | NW | Installing ESI field panel → E1/S1/B2 |
| 9/16 | 0742 | NW | ↓ |
| 9/16 | 0742 | NW | ↓ |
| 9/16 | 1247 | E | E1/S1/B2 at ~15' bgs |
| 9/16 | 1418 | E | E1/S1/B2 " " ~18-19' |
| 9/16 | 1420 | ENE | Removing mini ex from E1/S1/B2 |

3

Photo

| | | | |
|---|---|---|---|
| 9/8/09 | 09:00 | West | Setting first three Rain-for-Rent tanks |
| 9/8 | 09:03 | SSW | Off-loading shoring sections |
| 9/8 | 0906 | SSW | Dewatering cells |
| 9/8 | 0908 | SW | Truck tire wash installed at southern (Mather Rd) entrance |
| 9/8 | 09:09 | W | B-20 Bio-diesel fueling area and boot wash in Support Zone |
| 9/9 | 14:47 | E | Water infiltration Test |
| 9/9 | 14:49 | NE | " " " |
| 9/9 | 15:12 | SSW | EQM Lining dewatering cells |
| 9/9 | 15:13 | NNE | " " " |
| 9/10 | ~~15~~ 1350 | ESE | Shoring installation at first excavation cell. |
| 9/10 | 1354 | S | Polymer flocculant tank |
| 9/10 | 1400 | S | ~~Water~~ Installation of water treatment system components |
| 9/11 | 1420 | NW | Excavation and Shoring |
| 9/12 | 8:52 | N | Excavation at Bay 1, Shoring System |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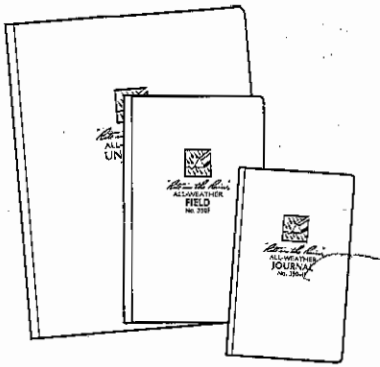
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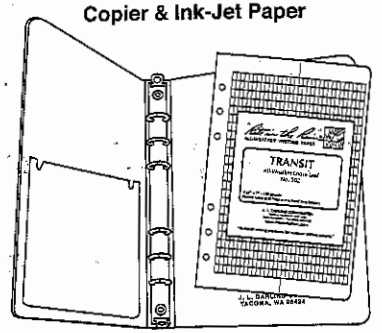
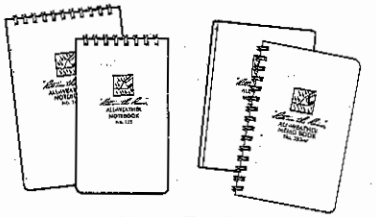


Loose Leaf / Ring Binder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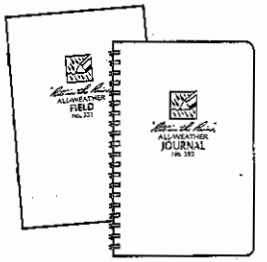
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9/14 13
9/15 11.5
9/16 11.5
9/17 10.5
9/18 11
9/19

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Katy 0466-01TT 10-5
Jim 0472-01RA

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7 60823 MW211
C60822 MW209 Fri Fri

Bryce 10 JP 8
9/21 12 ~~10.5~~
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24 11.5 #6
25 18
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Jim Petersen

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100 gpm over ~10 days

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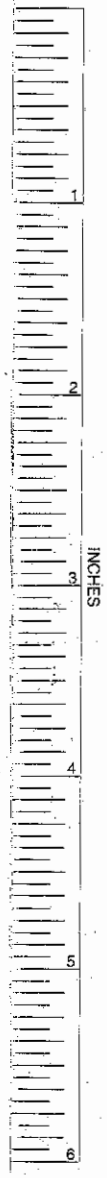


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Project _____

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_____

Clear Vinyl Protective Slipcovers (Item No. 30) are available for this style of notebook. Helps protect your notebook from wear & tear. Contact your dealer or the J. L. Darling Corporation.

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9/19/2009 Saturday Rain 60°F
0650 on site Data Rains not
0700 Site Meeting Set due to rain.
Finish bay 4 on SS1, Start
SS2. If wet conditions get too
sloppy to work will call off.
Multi RAE - workers w/ Multi
RAEs should try to keep them
dry (~~de~~ raindrops okay - dousing
not okay). Kathy's comment?
> Excavation Samples - continue
w/ same 8-digit #'s
> F&B: Ask them to put
location in header (Jason in
header)
Change - Labs to list location
ID to header
Add CLP lab column.

> Need to give Kathy the two
Excavation Conf. Sample
locations & figures





*Parker Meeting:
> Sample Tracking spreadsheet
> Sample Data Bases Scribe +
~~Forms 2 Lite~~ (hold off on forms)
> Packaging Samples
> Sampling w/ ERRS support
- Water - ERRS/Pat Turina
- Soil - Pat

Sample Tracking Spreadsheet

Daily → Forgo this - Kathy will
~~[illegible]~~ do daily log

10:30 - Met w/ Kathy Parker*
Kathy is concerned about START
being able to keep up, complete
all deliverables, and stay within
the TDD. I told Kathy that
the workload requirements and
sampling require a minimum
of two people, and that we
cannot ~~complete~~ finish the
project at the current rate - we
will exceed the $100,000 TDD before

9/19/09

the scheduled project completion in Late-Oct.
Kathy said that there will be no addition money available - the ~~#~~ $100K TDD is it and START needs to find a way to stay under that amount, and that START needs to figure out what tasks we can do and still stay under budget.
I said that the current budget allows for only limited hrs per day given budget and duration of project

Scale: 1 square=_____



9/21/2009

0630 On site - Worked on time sheet ~~and~~ STARTED Data

0700 Meeting
Kathy will not be on site. Adeconsite
Tanks through #8 will be filled for a batch
Ex #1, SS #1, bay #1 - continue excavating, and start building shoring for bay #2
Various rock products coming
I demonstrated PID alarm w/ Cal. gas.
0715-0745 bumptested 2 MultiRAES (both w/i 5% on Isobut / $O_2$-LEL-$H_2S$-CO), gave to operators at excavation
0729 Set Data RAM A60825 at Support area

0732 Set Data RAM A60822 at MW209
0739 Set Data RAM A60823 at MW211

Scale: 1 square=_____

Scale: 1 square=_____



FRIDAY

9/25/09

Temp Blank only

CLP - excavations
1 ~~40~~ 4-oz - VOC
~~2~~1 8-oz - SVOCs
1 8-oz - PCBs
Forms 2 lite file is in root

COC:
1 lab copy
Our files: 1 lab copy + 1 region copy

MS/MSD (4) 8oz + (2) 4-oz
every 20

"BNA" = Semi-Volatils
write BNA on chain
Case# 39061
CLP# _____
-BNA
-PEST PCB TR#
- VOA
west
W or F
E01S01B01W
or E01S01B01F

Scale: 1 square=_____

 9/25/09

8260 Soil

(1) 0909-0151 CC11092209
-0152 Ex1 SS02 Bay01

-0153 CC12092309
(2) -0154 CC13092309
-0157 CC14092309

Mike - F&B lab only one the two above sample sets will get done today due to issues w/ VOC analyses - which should get priority. Per discussion w/ Jason, Pat; Run the one w/ the three cont. cell samples

Containment Cell #4 is currently being filled

Scale: 1 square=_____

622.69
1214
1836

Need EPA Codes

CONTENTS

| PAGE | REFERENCE | DATE |
|---|---|---|
| | Del. to Cathy | |
| | > Work Log | |
| | > Sample Log | |
| | ~~EPA~~ | |
| | 57 hr week | |
| | Support SCRIBE → Melissa (or other) | |
| | 800-999-6990 8-5 EST | |
| | After Hrs | |
| | Scribe | |
| | - File | |
| | - Scribe.net | |
| | - Set up | |
| | - Switch tabs to System at bottom, button that says Release project ownership" (Click it) | |
| | File back up project take to other computer Restore from Backup | |

9/25/09 FRIDAY

Kathy's last COC week 9/23 samples

Treated water - once during Project.
COC's to Kathy
Need 9/23 and later CLP
" 9/24 " " F&B

Sample first of every 4 cells
Containment Cell

Scale: 1 square=_____



9/25/09 FRI

Dan Heister - Mid-Day Monday
Beginning Monday - sample FIRST of EVERY FOUR containment cells (instead of every one) -
1030 SAMPLE Meeting Conference in

Containment Cells #3 & 4 are full (but 1 & 2 are sampled, so #2 sample covers #2, 3, 4, & 5, so next containment cell to sample is #6)

Saturday
Import Fill + Backfill START on

Data RAM A60822 at SW corner of exc. #1
stopped at 17:22

Data RAM A60825 at MW 210 E. of Exc.
Stopped at 17:26

Data Ram A60825 at Support Area
stopped 17:32

Scale: 1 square=_____

9/25/09 PRL

Collected Sand Sample
Import 15:15 0909-0165
BFO 4090509

Collected/downloaded BR4000s Multirates

Scribed Sample -0165

left site 18:45

Scale: 1 square=_____



9/28/09 Mon. Cool ~60° Partly Cloudy SW wind ~10 mph

on site at 10:00 (Stopped for coffee on route to site). Met w/ Dan Heister who is temp OSC - Kathy Parker is off site due to restrictions on EPA travel budget. Dan asked me to take photos today of all parts of the NWR operation.
11:15 collected sample from ES3B1 at 13' bgs. Sample was collected here rather than the target depth of 10-12' because excavation was already at that depth. The material at 13' was tan sand w/ rock, no apparent odor or staining. The over-burden at side presumably from ~10' did have dark gray stain + odor but was not sampled since it was unclear exactly where the material originated from.
Worked on sample record, Scribe, Forms II Lite. Checked data loans and took 4 photos of site. Copied photo files

Scale: 1 square=_____

9/28/09 (8)

onto CD for Dan Heister &
Sampled Cont. Cell #6
Shipped Sample CC#6
CC06092809
off Site at 1800



9/29/09

0915 Warehouse - picked up 6 coolers, packing tape, 4 oz/8 oz jars Pat ~~Ron~~ St. J and I checked trailer at Customs - but no Custody Seals - Pat will check w/ Joe Follow to get some shipped. On site at 10:20 Met w/ OSC Richard Franklin. ~~Cal~~ Called Specialty Lab re: results for 9/24 pH sample - should have been delivered 9/28. It will be sent shortly.
Sampling meeting w/ Richard, Jason, Pat T. and me at 12:10.
Scribe, forms 2 lite

SVOC (A)
VOC (3VOA)
PCB (A)
Metals Poly

from "Worst Case" water from bottom of pit

P Collected ~~E1B3~~ E1S3B1 at 25'

Scale: 1 square=_____

Scale: 1 square=_____

9/30/09 Cloudy, off & on Rain ~60°F light breeze

Got Ice, Power Strips, sample labels

1110 Rain -
Supper area - 1113 Stopped run at 11:13 Data ROM A
MW 211 1118 Stopped run A60822
MW 209 1120 Stopped Run A60823

Conf Call w/ Kathy, Jason and I.

1240 had Gabe get bucket of water from floor of "Worst Water"
1315 Collected Sample
0909-0171 . 3 VOA (HCl), 2 1-Liter Amber, 1-500ml Poly ($HNO_3$)
TB12WT (0909-0172) - Trip Blank

15:25 E01S03B02 floor 25' center
1535 E01S03B03 floor 25' center
(Trip blank)

Scale: 1 square=_____



15

Scale: 1 square=_____

10/1/2009 Partly Cloudy ~60°F, Light Breeze

10:00 On Site. Met w/ Pat, Jason, Mark Ader, Richard Franklin.
Excavation at E01S03B04 is already past 10-12' sample interval. I took a sample at E1S01B04 at 14' bgs ~2' ~~in from~~ West of eastern wall (eastern wall/shoring panel is the eastern-most extent of the excavation)
Sample time = 10:30 (Grab Sample).

1050 Collected soil sample from containment cell #11
CC11100109 10/1/09 10:50
7-pt. Composite.

Scribe/Forms II Lite
1500 Sampled E01S03B04 W 25'
(double vol.)
Packed samples

Picked up DR4000s A60822 @ MW211 17:04
A60822 @ MW209 @ 17:08
A60825 Support Area at 17:12

Scale: 1 square=_____



10/2/09

on site 0930
Worked on R CMS
Picked up Data Rams (Rain)
Moved Support Area Data Ram under lunch tent in Support area near front gate at ~12:30
& Jason Coury had sampled E1S4B1W10' at 700 this a.m.
13:35 Collected Water samples
~~U.T~~
13:35 TT from tank #10 (TT10100209)
1400 I.F. ~~from tank #3~~ (IF100209)
1410 Untreated Tank from Tank #3 (UT03100209)

TT Corresponded w/ tanks #10, 11, 12, 13 (all four of these tanks are linked by hoses and were filled together

Scale: 1 square=_____

Scale: 1 square=_____



10/3/09 Sat.
on site at 0945

Colleded Soil samples:
Cont Cell #1 when full
CC01100309 10:25 10/3/09
TB16 WT (corresponding trip blank)

Colleded Conf. sample from
EXC. 1, Shoring Sys 4, Bay 1 from
western wall at 25' bgs

Entered into Excel Sample
Log and Scribe. Got Ice
Packed for Shipment

145 1528 SE Bybee Blvd
PDX 97202

9738 SE Washington
PDX

Scale: 1 square=_____

10/3/09

Left site at 13:10
1345 dropped off samples at FedEx

9-215
215-255 equip
7 hrs

Scale: 1 square=_____



10/5/09

0945 ice (9.5 hr)
1010 on site. Chaked in w/ OSC Franklin. Checked on excavation - E154B2 is excavated to 25' but alot of water - needs to be pumped off prior to sample E154B3 is at ~ 15' bgs. According to SAM workers both bays will probably be ready to sample after lunch
Collected water sample TT1010-S09 (pH to Specialty) w/ Trip Blank
Packed for shipment
Scribed
Updated sample log
Put exc. samples into FedEx & Packed for shipment

Collected Data Recon and downloaded data from today & 10/3.

off site at 18:15

Scale: 1 square=_____

10/6/2009 Tues.

0945 - On site

1030 - Collected sample E1SS4B412e 1030 10/6/09 from Exc #1, SS# 4, Bay 4 eastern side-wall at 12' bgs. (End panel of shoring system was below the 10' targeted sample location). Taken from center of wall.

ERLs cleaned out bottom of Bays 2 & 3

1040 collected sample no. E1SS4B2-25 10:45 10/6/09 from bottom (25') center of Exc #1, SS #4, Bay 2.

1055 collected E1SS4B3-25 10:55 10/6 from bottom center (25') of Exc #1, SS #4, Bay 3.

Bay 4 was collected from excavator bucket. Bays 2 & 3 ERLs worker in hole filled at new, clean plastic bag.







Trip Blank TB19WT 11:15

Shredding ~~Data~~ Sample Logs, Scribe + FDL

1330 Collected Sample from Exc #1, Shore S#s 4, bay 4 at 25' bgs - eastern side wall. E1SS4B4-25e 13:30 10/6/09 0910-0120 JBR45 Prevalent "paint" odor.

Entered to Sample Log, Scribe, FDL. Packed for shipment to A4 lab. Fed Ex track #7979 9594 9149 Packed for shipment

1620 Collected Sample from Exc #1 Shore S#s 5, bay 1, 10' bgs in NW corner (Excavator bucket). ~~Very slight odor~~ Little or no odor, staining. Add to Scribe FDL sample log, and included w/ the

10/6/09 Tues

Shipment with other two coolers.

Picked up Data Rams

Off Site at 1740 (9.5 hr)

| 10/9/09 | this Week |
|---|---|
| M | 8.5 |
| T | 9.5 |
| W | 6.5 |
| Th | 9 |
| F | |
| S | |

Scale: 1 square=_____



10/7/09 Wed

~~On site~~ @

0620-0655 Warehouse - dropped off equip. request.

Was at EPA SPCC outreach until 12:15

12:15 - 1245 EPA Warehouse for equip & Supplies. Got replacement MultiRAE (swapped out the multirae w/ bad $O_2$ sensor).

1300 On site. Met w/ Kathy and Mark Ader.

1345 Collected sample from Containment Cell #8 (CC08100709 13:45 10/7/09)

Synced & updated sample log.

Picked up ice packed samples

updated Excel Data Ram Spreadsheet.

Picked up Data Rams & downloaded data.

Put text files into Excel - time consuming

Off Site at 18:15

Scale: 1 square=_____

10/8/2009 Thurs.

1000

Need 2-pt Composite from Exc. #1 Stockpile

~~Reuse/HC~~ PCBs Metals VOCs SVOCs (No TPH-Dro)

By Oct 22

Layout of all AEC (includes all areas we are utilizing including Stockpiles, Wastewater, Support Zone, excavations, etc)

Notes from test pits - info on overburden

1255 Went to Sample ~~Exc~~ excavation ~~Exc#1~~ SS#5 Bag#1 at 25' (NW corner) ~~EISSSB1-25nw~~ 13:10 10/9/09



GPS Points

~~Excavation~~ #1 - SS ~~#1-5~~ 1-4

~~NW corner N45°33.679' W122°32.444'~~

SW corner N 45°24.952' W 122°33.899'

SE " N45°24.952' W 122°33.882'

NE " N45°24.964' W 122°33.888'

NW " N45°24.958' W122°33.910'

Water Treatment

~~Equalization~~ tanks (5)

SE corner N 45°24.922' W122°33.962'

NE N45°24.930' W 122°33.962'

NW N45°24.932' W 122°33.970'

SW N45°24.928' W 33.965'

Clean ~~Equalization~~ tanks (10)

NE N 45°24.933' W 122°33.982'

NW N 45°24.931' W 122°33.995'

SW N45°24.911' W 122°33986'

SE N 45°24.914' W 122°33.973'

GAC N45°24.925' W 122°33.967'

(Pad ≈ 30'×15', GAC ≈ 20'28')

Scale: 1 square=_____

Scale: 1 square=_____

10/8

Excavation #1 Stockpiles

(west) (2-4'?)

NE N45°24.910' W122°33.967'

NW N45°24.906' W 122°33.984'

SW N45°24.891' W 122°33.971'

SE N45°24.892' W 122°33.955'

east (0-2'?)

NW N45°24.912' W 122.33.967'

SW N45°24.893' W122°33.955'

SE N45°24.894' W 122°33.945'

NE N45°24.917' W 122°33.958'

Import

Pea gravel

North N45°24.895' W122°33.931'

south N45°24.890' W 122°33.921'

3" minus

North N45°24.911' W 122° 33.918'

South N 45°24.898' W 122° 33.910'

Sand

North 45°24.919 W122° 33.900'

South 450 24.904' W 122°33.892'

Scale: 1 square=____



10/8

Contaminated Soil (Subtitled) Stagung

NW N45°24.872' W122°33.930'

SW N45°24.861' W 122°33.917'

SE N45°24.874' W122 33.895'

NE N45°24.884' W 122° 33.900'

Pea Gravel #2

N45°24.925' W122°33.900' ~30' ϕ

Waste water pipe crossing under road

N45° 24.939' W122° 33.903'

Scale: 1 square=____

10/8/09

14:45 Collected soil sample from Excavation #1 "overburden" Stockpile (soils removed from ~2-4' bgs) stockpiled on the western side of the site
E10B100809 14:45 10/8/09
7-point composite

1500 Site meeting Coal tar and pipes found in Excavation #2 ~4' bgs
N 45° 24.976 W122° 33.845'
3 parallel pipes ~ 12" ϕ.

Picked up data Loans ~ 1730
Downloaded Data

off site at 18:30
9.5

Scale: 1 square=_____



10/9/09 0950 on site

> Oily liquid
> Coal Tar
> Other product? Solvent?

Kathy ask for samples of materials from the shallow excavation #2 area where pipes were found on 10/8/09 including coal tar, sludge that came out of pipes, and any other "product" or ~~material~~ -type material, if any.
EQM reported Exc #1 was ready to sample
Exc #1, Shore Sys #5, bay 3 was at 25' deep - so opportunity to get the 10' deep sample is gone
Collected Exc #1 samples
10: E1SS5B2-25 (center)
10: E1SS5B3-25ne (northeast corner)

Looked at Exc. Area #2 where EQM is removing sentinel soils and coal tar/debris. All of the coal tar was gone, along with sludge? pipes. So got samples

Scale: 1 square=_____

10/9/09

from Containment Cell #13 where the material was stockpiled:

*Coal Tar E2CT100909 11:00

*Sludge E2SL100909 11:05

*Dark grey soil E2GS100909 11:15

*All of these three materials originated from the excavation #2 area near Test Pit #14 location, ~ 3-6' bgs where three horizontal pipes were discovered, however the material had been excavated and moved to Containment cell #13 prior to sampling, so the three samples of the material were collected out of Containment Cell #13.

Scale: 1 square=_____



1230 left to get ice at FM

Updated & Sample log; entered into Scribe + F2L.

Packed up samples for shipment to F&B lab and A-4 labs.

Entered hours into RCMS ~17:30

Picked up data Rams

off site 18:15

Scale: 1 square=_____

10/12/2009 Monday

Picked up ice On site at 09:40.

Water Samples - Clean tanks #10 - 13 (only TT samples, no IE or UT)

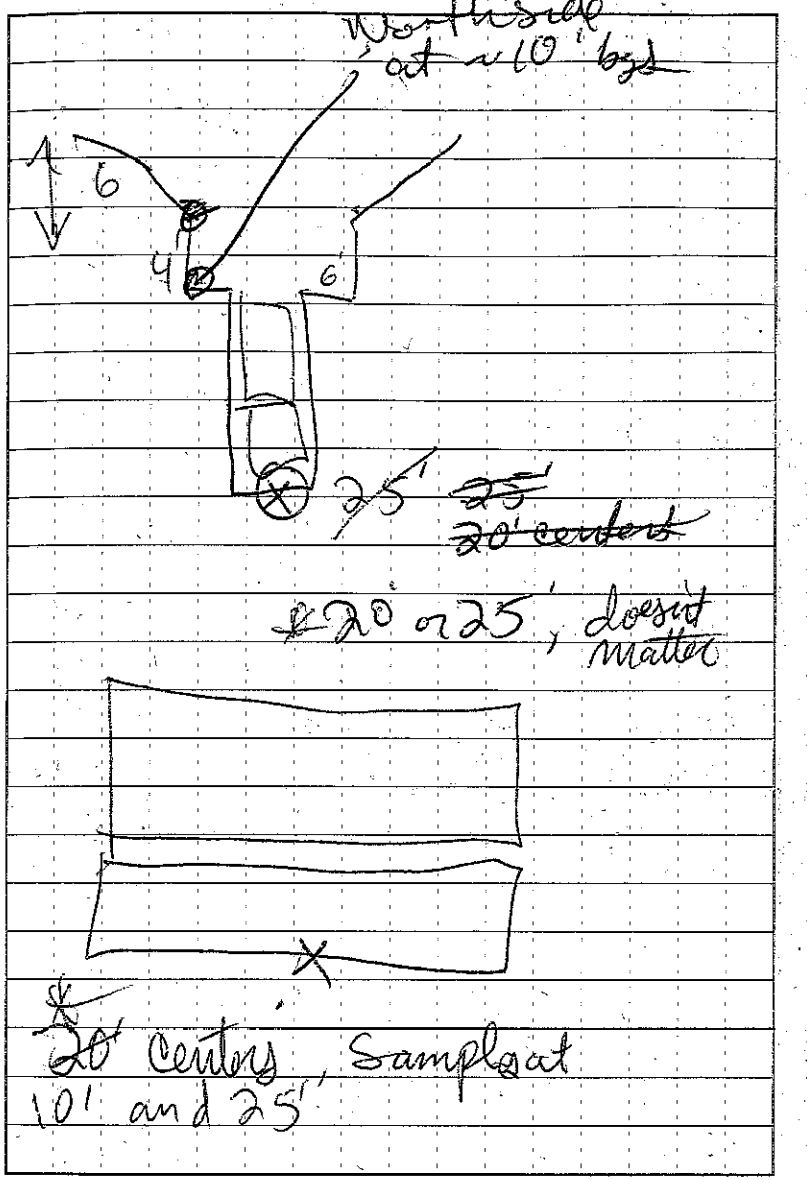
Collected Sample from Ex. 1, Shore Sys 6, Bay 2 @25' (NE)
E1SS6B2-25 ne 12:00

Pat had collected two on Sat 10/10:
E1SS6B1-25nw
E1SS6B2-10 ne

Entered in log + Scribe
Water Sample TT
Shipped

Scale: 1 square=_____






Scale: 1 square=_____

10/12/09 Mon

Per Kathy I should not come to site Tues. 10/13; Next site visit 10/14 Wed.

Picked up Data Rams at MW-209 & MW 211. No Data Ram at Support Area today since it would not start for Pat this morning.

Could not download todays or Saturdays data (software issue??)

off site at 1830

10/13/09 - Not on site

10/14/09 Sampled Cont. Cell floors #3-7 and #10-14.
Sampled E2 east end (2 samples: 10' & 25' & also 25' west of east end 10' and 25' bgs.)

9-4
T1.5 8.5

Scale: 1 square=_____



10/15/09

0920 - Ice 0930 on site
Sampled E2 (50' 10 & 25 bgs and 75' 10 & 25 bgs)
Sampled Treated tank #6 (Rep. 6-9), IF and U.T. #3.

Sampled Large Waste Soil Stockpile at NW corner (WSSP-101509)

Entered into Log, Scribe & F2L
Packed and shipped

1520 Sampled Exc #2 at 100' mark (100' West of Eastern end).
E2-100-10-101509 15:25
E2-100-25-101509 15:40
left site 1620 (8.5)

10/16/09 10.5 hrs
Too busy for notes. See Sample Log for samples collected.

Scale: 1 square=_____

7

10/19/09
0850 Picked up Ice in Clackamas
0900 On site. Collected E2 samples at 200'.
Collected Treated tank samples from tank #10 (tanks #10, 11, 12, 13)

17:15 off site (10)

10/20/09
0910 - F.M. for Ice, labels.
0945 Site.

~~12~~ 11 - 12:30 - Warehouse
off Site 17:20

730-6
9.5

Scale: 1 square=_____



10/21/09

0915 Warehouse
1000 Site - No sampling today. Worked on GPS data Collection. TerraSync File R102110A
- Shoring laydown area
- Excavation #1
- E1SS6B1 se
  " sw
  " ne

- Flags (Flags are offset ~19' from centerline of Excavation #2 trench)
  F9 thru F4 (flags are offset from sampling locations by 25'; e.g. Sample at trench position 125' west is Flag 4).
- Excavation 2 Overburden
- " 2 Cap Soil SP
- ~~Water treatment~~ Dewatering System pipe 1
- " " " 2
- excavation 1 cap soil SP
- " " overburden soil SP

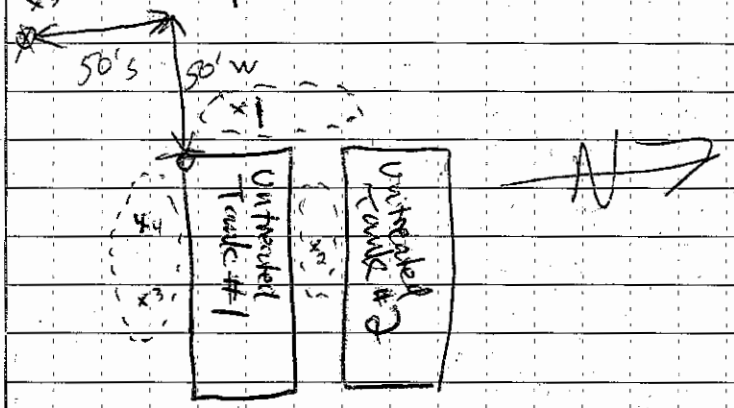
Scale: 1 square=_____

10/22/09

1015 W.E.S. on site for dup-Treated Tank Sample

1045 - Sampled treated tank #6 (Ref. 6, 7, 8, 9)
TTO6102209 10:45
Entered into Sample Log, Scribe.
Packaged for shipment

Untreated tank #1 Spill Area
Samples (VOC, SVOC, PCB, Metals)



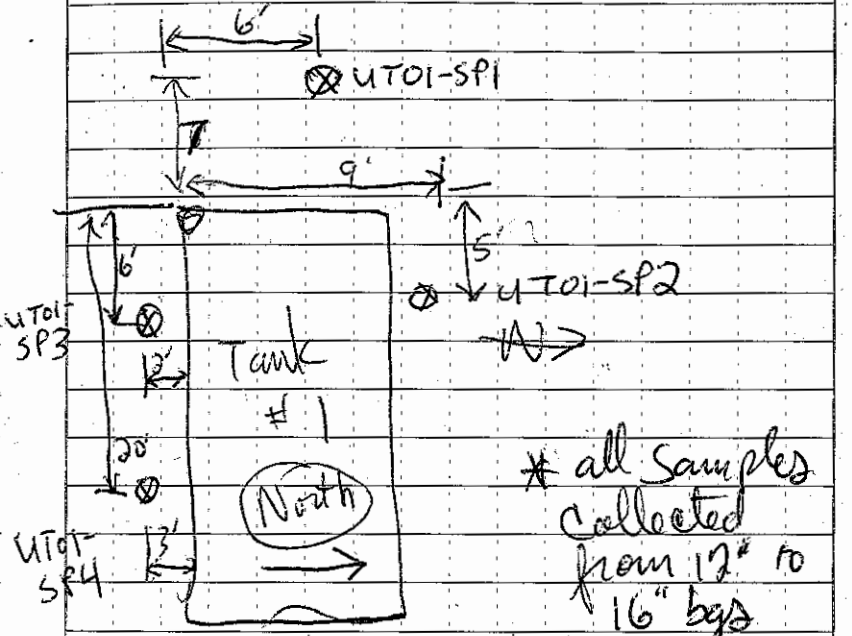

Scale: 1 square=_____





1400 UTO1-SP1-102209 6'N, 7'W
1410 UTO1-SP2-102209 9'N, 5'E
1420 UTO1-SP3-102209 2'S, 6'E
1430 UTO1-SP4-102209 3'S, 20'E
1440 UTBG-102209 50'S, 50'W
All measurements from SW corner of Tank

*




* all Samples collected from 12" to 16" bgs

10/23 10-430 Weeks shipped samples, warehouse 8.5

Scale: 1 square=_____

10/26/09 Mon

Samples needed

GAC (lead vessel only) VOC SVOC PCB Metals DRO

Untreated Tank #1 Sediment

" " Water - ? (pH) VOC SVOC PCB Metals DRO (TSS)

~~Treated Tanks (#10 #3)~~ Do not Sample

SSSP ~~for~~ Alteration form for the Containment cells *

Analyses

Action levels - 40 CFR 261.24

(Find Kathy's Email w/ diagrams)

~~Done~~

* if use alt. form - alt of Water samples

Meeting w/ Kathy, Jason - figures

Tomorrow Sample GAC (1) Middle (2) Top

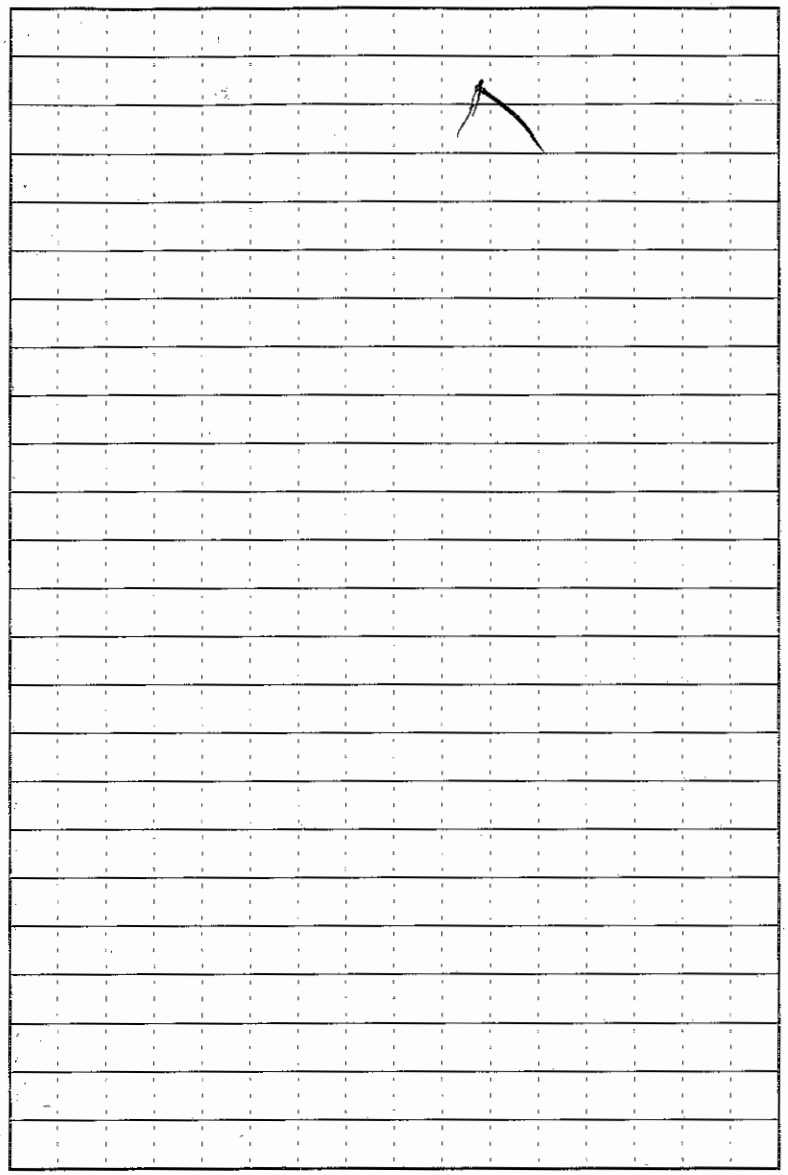
Under Cont. Cell #8

off Site 17:15

Scale: 1 square=_____



Scale: 1 square=_____



Scale: 1 square=_____



Scale: 1 square=_____

Photos

| date | time | dir | des |
|---|---|---|---|
| 9/19 | 0942 | W | E1, SS1 (Bays 4-4) |
| 9/19 | 0943 | N | Sampling E1S1B4 |
| 9/28 | 1105 | NW | Subtitled soil stockpile |
| 9/28 | 1105 | NE | Containment Cells |
| 9/28 | 1108 | NE | ~~Ex~~ E1S3B1 |
| 9/28 | 1121 | NW | Water treatment System |

M 10/12 ~~8~~ 9 0
T 10/13 0
W 10/14 9.5
Th 10/15 8.5
F 10/16 9-~~8~~ 10.5
S 10/17 0

Scale: 1 square=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for outdoor writing people."

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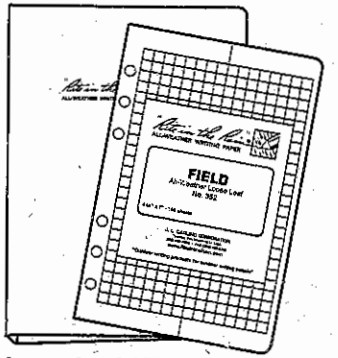


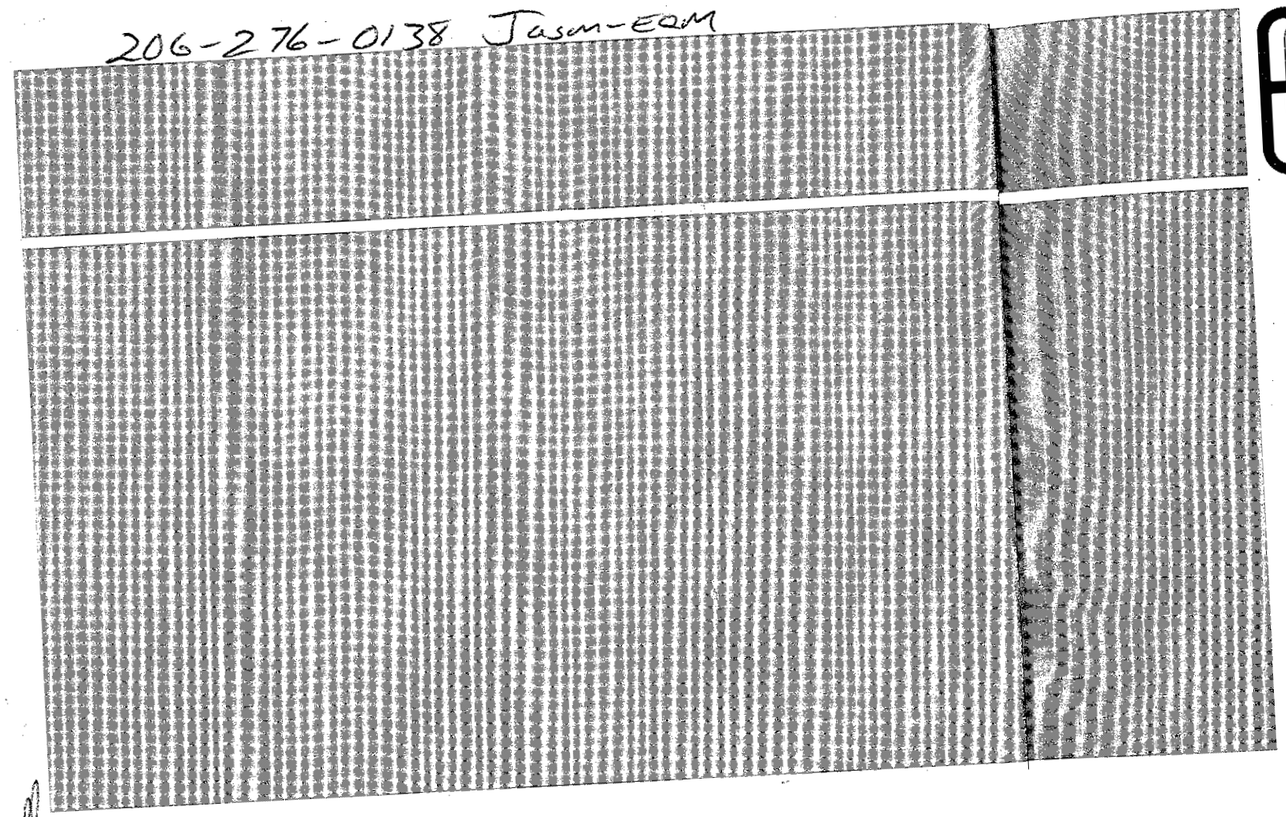

Loose Leaf / Field Binders

Copier Paper / All-Weather Pens

Memo Books

www.RiteintheRain.com

206-276-0138 Jason-EQM

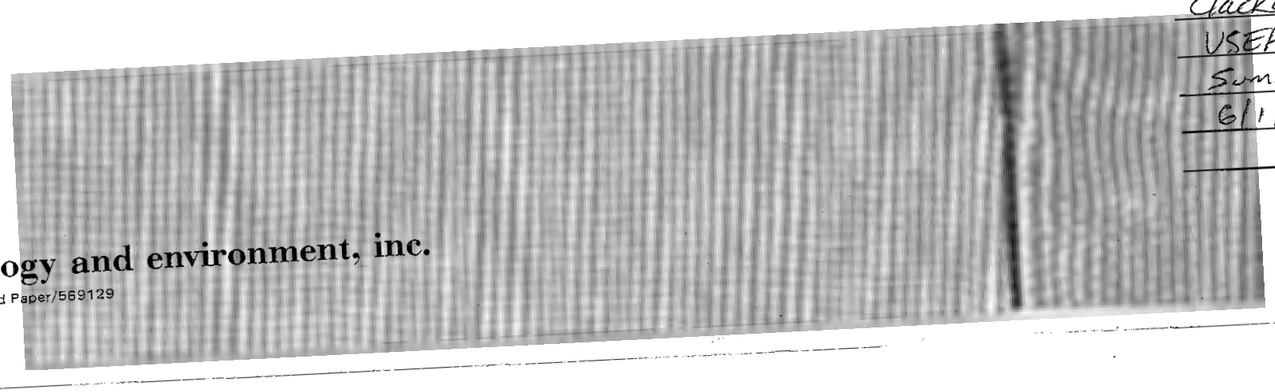


ecology and environment, inc.

International Specialists in the Environment

Job Number 002233.0472

Northwest Pipe & Casing
Clackamas, OR
USEPA Region 10 Removal
Summer 2010
6/1/10 - 6/17/10



Logbook Contributors:

Ryan Whitchurch

Tim Adair

Eric Nuckims

E & E Job Number _____

Telephone Code Number _____

Summer 2010

Site Name Northwest Pipe & Casing
USEPA Region 10

City/State Clackamas, OR

TDD _____

PAN 002233.0472

SSID _____

Start / Finish Date 6/1/10 / 6/17/2010

Book ____ of ____

E & E Emergency Response Center: (716) 684-8940
E & E Corporate Center: (716) 684-8060
MEDTOX Hotline: (501) 370-8263
E & E Safety Director (Home): (716) 655-1260

6/1/10 NWP&C

0830 START EN arrives at EPA Seattle Warehouse to pick up supplies + equipment.
0900 START EN departs for EPA Portland Warehouse
1150 START EN arrives at Portland Warehouse in POV. Additional supplies + Portland's Emergency Response Truck (PERT) + small Trailer.
1400 START EN departs Portland for NWP&C site in Clackamas, Oregon.
1430 START EN arrives at 9585 SE Mather Rd NWP&C site. While attempting to turn the PERT + trailer around on the dead end street, START EN observed that the trailer jack knifed + did superficial damage to both the PERT + trailer.
1450 START EN contacts EPA Warehouse contractor Joe Fowlow + alerts him of the situation with the PERT + trailer.
1505 OSC Franklin contacts START EN + ~~her~~ OSC Franklin informs START that he will not arrive onsite until afternoon tomorrow. START EN informs ~~ster~~ OSC that there is light damage to the PERT + trailer.
1515 START contacts ERRS Jason Covey the Project manager for NWP&C
1530 START + ERRS meet at the Courtyard Marriot Hotel + then mobilize to site to leave equipment + the trailer for site activities.
1600 START + ERRS arrive at the site + leave equipment + trailer.
1630 START + ERRS depart the site.
1655 START PM D. Shrivastava contacts START + discuss trailer situation.



6/2/10 NWP&C

0640 START EN arrives onsite. ERRS JC onsite as well as 3 Equipment Operators/Laborers. Site activities will begin today with preparation for loading activities tomorrow.
0700 End Loader delivered to the Site
0715 ERRS accounts person arrives on site. Weather today Rain + temps in the low 60's.
0815 Water truck is being delivered
0830 START EN checking equipment to make sure it is in working order.
0930 Excavator arrives onsite
1000 ERRS (3) removing ~~fr~~ orange filter fence from around dirt pile
1030 START EN cannot get the Area Rae to communicate the ~~the~~ computer for data logging purposes.
1145 START + ERRS break for lunch
1220 START + ERRS return from lunch
1250 START EN gets Area Rae's to communicate with the PERT computer + data log information from the sensors
1300 ERRS fixing the water truck valve. Valve has a crack in the body of it causing water to leak out.
1345 START EN asks ERRS JC if the PERT can be wired to power on site. JC will contact an electrician to have a 50A connection
1420 START EN ~~places~~ selects two locations for air monitoring equipment. 1st Location will be east of the stockpile, the 2nd location will be just west of the access road that is..

6/2/10 NWP&C

cont - just west of the stockpile. A 3rd location will be south of the stockpile at the command post area.
1500 OSC RF arrives at the site.
ERRS operators depart site.
1530 ERRS JC gives OSC RF manifests to sign for tomorrow mornings first run of trucks.
1600 START securing equipment on trailer.
1630 OSC RF gives ERRS JC signed manifests. START begins securing
1650 OSC RF departs the site
1715 START EN & ERRS JC depart site.
Nuchons 10 hours



6/3/10 NWP&C

0540 START EN arrives onsite ERRS JC Gary onsite.
0550 ERRS Doug & Mark arrive onsite with an EQM Equipment Trailer.
0600 Safety Meeting - Watch out for truck drivers, hard hats in the yard around heavy equipment.
ERRS prepping pile for truck loading operations.
START EN setting up data Ram Particulate monitors according to QSO. A60826, A60825, & A60823. Setting Area Rae Gas Monitors as well.
633 START EN - DR A60826 & AR A59870 started. First Truck & pup arrives
644 START EN - DR A60825 & AR A59871 started. ERRS loading pup of first Truck, already loaded truck. Rae Started
655 DR A60823 & A59983 started.
656 1st truck departs site.
705 START EN switching AR-A59870 with AR-A59981 due to VOC drift.
ERRS loading second Truck.
718 3rd truck arrives onsite 2nd truck departs site,
720 4th truck arrives onsite.
750 5th truck being loaded & the 6th arrives onsite.
800 7th truck arrives onsite
START EN checks the monitors - readings are satisfactory. DR A60823 at command post - a calm hood was attached causing temporarily elevated readings.

6/3/10 NWP+C

830 ~~8th Truck arrives onsite.~~ an
8, 9, + 10th truck are onsite.
845 10th truck departs site.
11, 12, + 13th truck onsite.
0900 14th 15th + 16th truck onsite.
0920 17th ~~+ 18th~~ truck onsite + 17th being loaded.
0930 ~~17th 18th~~ truck offsite
0950 START EN checks monitors readings are ~~with~~ an well under any actionable levels or none detected.
1000 START EN working on Umbrella Safety Plan, ERRS informs START of 18 trucks seat of
1045 ERRS breaking for lunch.
1055 START EN checks monitors - situation normal.
1130 The electrician arrives onsite to connect an electrical outlet for the PERT.
1200 START EN completes fresh air calibration of Area Rae's while no loading of materials/soil ~~[illegible]~~ an is done.
1215 First Truck arrives onsite for the afternoon run.
1230 1st Truck departs site for afternoon (AN) The morning run only had 17 trucks as there were 17 manifests.
1255 2nd + 3rd AN trucks arrive onsite.
~~2~~ an 1315 3rd truck departs site + 4th truck arrives.
1320 5th AN truck arrives onsite.



6/3/10 NWP+C

1330 5th truck being loaded by ERRS
1345 6th truck arrives onsite.
1350 7th truck arrives onsite.
1355 8th truck onsite.
1403 9th truck arrives onsite
1410 10th truck arrives onsite. OSC RF arrives onsite.
1420 11th truck arrives onsite.
1430 12th truck onsite.
1450 13th truck departs site.
1515 14th truck off site
1530 15th truck arrives onsite.
Weather - Mostly Cloudy ~~low~~ an Temps in low 50's
1537 16th truck arrives onsite.
START EN checked the monitors - no elevated readings observed.
1545 OSC RF departs the site.
1600 17th truck in afternoon departs site.
5 ERRS personnel onsite + 1 Dietrich trucking supervisor. 17 truck drivers were also onsite.
1636 START EN stops AR A59981 + DR A60826 from location east of the stockpile.
1645 ERRS has covered the stockpile with plastic to keep rain of the pile.
START EN stops AR-A59983 + DR A60823 from Command Post Area.
1653 START EN stops DR A60825 + ~~AR A60825~~ an AR59871 NW of stockpile.
1715 START EN has secured equipment + put on charge for the night. Demobes with ERRS.

6/4/10 NWP&C

0645 START EN arrives onsite with ERRS Pass. 1st truck leaving site second one being loaded.

0655 3rd, 4th, 5th truck arrive onsite START EN setting out AR A59871 NW + ~~AR59~~ AR A59981 East

0710 6th ~~+ 7th~~ truck onsite Started AR A59983 + DR A60823 + Command Post

0730 START EN Starts DR A60825 at NW of stockpile

0735 START EN Starts DR A60826 at E of stockpile

0750 OSC RF arrives onsite.

0820 ERRS cleaning up edge of pile on the eastern side.

0900 ERRS informs START that 35 total trucks were loaded yesterday.

0930 START checks monitors. No elevated readings.

1000 Ryan Whitchurch contacts START EN to inform he is in Clackamas + will be arriving to the site soon.

1015 START RW arrives onsite.

1020 7th truck arrives onsite.

1035 8th + 9th truck onsite.

1105 START EN + RW conducting site walk. Check Monitors East of site. No elevated readings trucks 13-17 onsite.

1115 START EN + RW Check NW + Command AR's + DR's - No elevated readings observed.

[signature]



6/4/10 NWP&C

1200 ERRS ~~ge~~ an has fuel truck onsite to fuel up heavy equipment.

1240 Truck onsite for soil pile removal.

ERRS Excavator loaded with fuel.

1250 START EN hands over log book to START RW [signature]

1305 START Ryan Whitchurch (RW) makes rounds:

* Area Rae Unit 7 (A59981) - LEL reading high at 2% Needs to be checked on next fresh air cal. Battery at 8.4 volts.
* Data Ram 4 (A60826) - Bat at 41%, mem at 95%. Pump at 2.07 LPM. RH @ 47%.
  Inst. Conc = 2.6 µg/m³
  TWA Conc = 4.6 µg/m³
* Trucks = 23rd load leaving (paperwork just completed by EQM DM (Doug). 24th truck for today is currently being loaded.
* Area Rae Unit 2 (A59871) - VOC slightly elevated at 0.9 to 1.1 ppm. Bat 8.1 volts.
* Data Ram 4 (A60825) -
  Inst. Conc = 1.4 µg/L
  TWA Conc = 2.5 µg/L
  Bat at = 61%
  Mem left = 100%
  Flow rate = 1.99 LPM
  RH = 44%
* Area Rae Unit 9 (A59983) - Bat at 8.1 volts. CO slightly elevated at 1 ppm.
* Data Ram 4 (A60823) - Bat 82%, Mem 100%, RH 78%.
  Inst. Conc = 3.2 µg/m³
  TWA Conc = 3.8 µg/m³
  Flow rate = 1.99 LPM.

[signature] 6/4/10

6/4/10 NWP&C

1515 RW (START) – Make rounds on meters. Work is currently stopped – waiting for trucks to load.

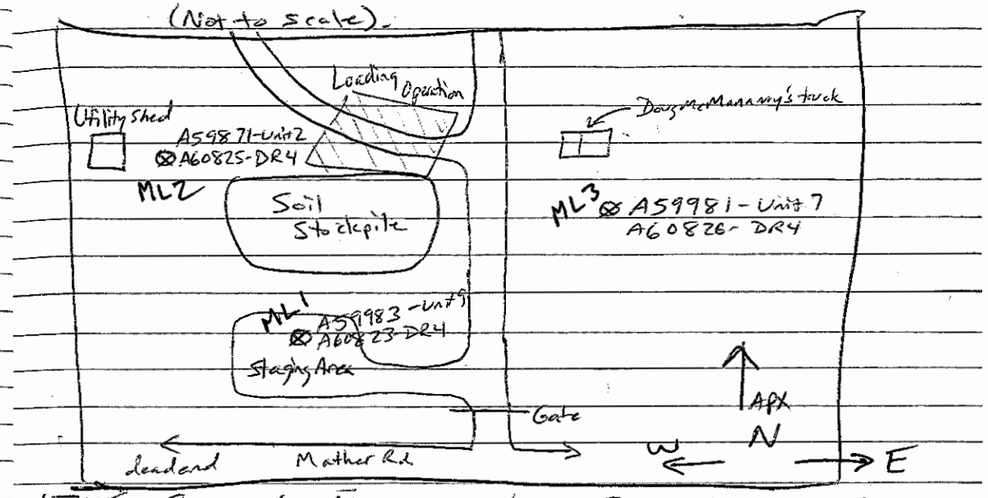
- AreaRae Unit 7 (A59981) – LEL continues to trend higher – at 5% now. Used MultiRae A59663 to confirm LEL is really ND (Ø). Bat at 8.2 V.
- DataRam 4 (A60826) – Bat @ 24%, mem @ 94%, RH 35%, Flow rate 2.05 LPM.
  Inst Conc = 4.9 mg/m³
  TWA Conc = 4.2 mg/m³
- Loads = 25 off site. #26 is now filling.
- AreaRae Unit 2 (A59871) – VOC slightly elevated at 0.4 ppm. VOC on MultiRae A59663 indicates 0.0 ppm. Bat @ 8.1 volts.
- DataRam 4 (A60825) – Bat @ 43%, mem at 100%, RH 33%, Flow Rate 2.00 LPM.
  Inst. Conc = 1.2 mg/m³
  TWA Conc = 2.1 mg/m³
- AreaRae Unit 9 (A59983) – CO slightly elevated at 2 ppm. CO on MultiRae A59663 is Ø. Bat is 8.0 volts.
- DataRam 4 (A60823) – Bat @ 75%, mem @ 100%, RH 61%, Flow rate 2.07 LPM.
  Inst Conc = 3.8 mg/m³
  TWA Conc = 3.4 mg/m³
- Note: MultiRae A59663 was calibrated on 5/30/10 at EPA Portland warehouse and fresh air zero'd on site at apx 1515.

6/4/10



6/4/10 NWP&C

Site Sketch: (after 1515 rounds)
(Not to scale).




1745 Cease loading ops. Last 2 trucks will not arrive in time. Total now at 30 truckloads (needs to be confirmed with EQM).

- AreaRae Unit 7 (A59981) – LEL still elevated at 4%. Bat at 8.2 volts, Unit shut down.
- DataRam 4 (A60826) – Bat at 22%, mem at 94%, flow rate 1.97 LPM, RH 39%.
  Inst Conc = 3.5 mg/m³
  TWA Conc = 4.2 mg/m³. Unit turned off.
- AreaRae Unit 9 (A59983) – CO elev at 1 ppm. Bat at 8.0 V. Shut down unit.
- DataRam 4 (A60823) Bat at 67%. 2.07 LPM, RH 55%, Mem 100%.
  Inst Conc: 3.2 mg/m³
  TWA Conc: 3.3 mg/m³
- AreaRae Unit 2 (A59871) – VOC slight elev at 0.4 ppm. Bat at 8.0 volts, Unit shut down.

continued next page

6/4/10

6/4/10 NWPFC

1745 Wrap up continued
- DataRam4 (A60825) - Bat at 30%, RH 37%, Flow rate 2.06 LPM, Mem 100%
  Inst Conc: 2.1 ug/M3
  TWA Conc: 2.0 ug/M3
  Unit turned off.

Apx 1800 Off site to warehouse to overnight PERT. Will need to be ~~escorted~~ ferried back to site to pick up POV.



6-7-10 NWPFC

0740 RW pick up PERT at warehouse.

0810 RW on site. Set up area Rae's and DR-4000's and comms. Tim Adair (START) on site - will take over START role.

0910 RW and TA do instrument rounds:
DataRam4 (A60825 - E side of pile) - Bat at 87%, mem at 99%, 1.92 LPM, RH 49%,
Inst Conc = 2.1 ug/M3, TWA Conc = 2.8 ug/M3
AreaRae (A59981) Unit 7 - no anomolies, Bat at 8.5V.
TRUCKS = 11 loads today so far

0915 T. Adair recording data - taking devices for today
DataRAM A60826 Conc = 5.4 ug/m3 TWA = 4.6 ug/m3
Memory = 93% Batt = 69% RH = 47%
A59871 (Unit 2) - nothing unusual.
$H_2S$ = 0 LEL = 0 VOCs = 0 $O_2$ = 21.9% CO = 0
7.9V power battery

0920 A60823 (Background Unit)
Battery = 100% memory = 99% Flow Rate 1.95 RH = 54%
Conc = 11.0 ug/m3 TWA = 2.9 ug/m3

Unit 9 A59983 (unit was calibrated today by Rae)
CO = 1 LEL = 0 VOCs = 0 $H_2S$ = 0 $O_2$ = 21.9%

1127 Unit 7 (A59981) Batt = 8.4V
CO = 0 VOC = 0 $H_2S$ = 0 LEL = 2 $O_2$ = 20.9
DataRAM A60825 Conc = 7.1 ug/m3 TWA = 3.6 ug/m3
memory = 99% Batt = 60% Flow = 2.0 L/m RH = 36%

1134 Unit 2 (A59871) - All readings normal Batt = 7.8V
DataRAM A60826 - conc = 2.0 TWA = 4.1 ug/m3 Batt = 61% Mem = 93%
Flow = 2.04 L/m RH = 36%

T Adair

6-7-10 NW Pipe + Casing

1138

Unit 9 (A59983) Batt = 8.3V

CO=1 VOC=0 $H_2S$=0 LEL=0 $O_2$=20.9%

Data RAM A60823 Batt = 91% ~~Conc = 2~~ TA Memory = 99%

conc = 1.0 TWA = 4.7 ug/m3 Flow 2.02 L/m RH = 54%

18 Loads total so far

1400 HRS - Site Inspector is done with her walk around.

~~Karen Trachsel~~ TA She has documented many concerns. Will issue email report.

Trachsel * Ruts, drainage, fence issues

1430 - walked site w/ EPA + ERRS to look at ponded water on east/North east side of site.

1455 - Unit 7 (A59981) - Batt = 8.2V

LEL = 5, CO = Ø VOC = Ø $H_2S$ = Ø, $O_2$ = 20.9%

Data RAM A60825 = Mem = 98% Batt = 41% RH = 21%

conc = 0.1 ug/m3 TWA = 3.6 ug/m3 Flow = 2.0 L/m

1500 Unit 2 (A59871) = Batt = 7.8V

All Normal Readings

Data RAM A60826 Memory = 92% Batt = 24% 2.0 L/m RH = 21%

conc = 2.3 ug/m3 TWA = 3.0 ug/m3

1505 Unit 9 (A59983) Batt = 8.1V

CO = 1 LEL = 0 $O_2$ = 20.9% $VOC_s$ = 0 $H_2S$ = 0

Data RAM A60823 Conc = 1.1 TWA = 3.3 ug/m3

memory = 98% Batt = 81% RH = 40% Flow = 1.99 L/m

1530 - Ken ITEL, Clackamas County Development Agency visit w/ R. Franklin about cap + servicing.

1630 Unit 7 (A59981) - Batt = 8.2V

CO = 0 $VOC_s$ = 0 $H_2S$ = 0 LEL = 6 $O_2$ = 20.9%

Data RAM A60825 - Memory 97% Batt = 37% RH = 18 Flow 2.02 L/m

Conc = 0.1 TWA 3.5 ug/m3



6-7-10 NW Pipe + Casing

1646 - Unit 2 (A59871) - all readings normal Batt = 7.8V

data RAM A60826 0.9 to 1.7 conc TWA 3.0 ug/m3

memory = 91% Batt = 10% Flow 2.03 L/m RH = 20%

1652 Unit 9 (A59983) CO = 3 - All others Normal Batt = 8.0V

data RAM A60823 Conc = 0.1 to 0.2 TWA = 3.8 ug/m3

memory = 97% Batt = 76% Flow 2.04 L/m RH = 36%

1700 - Work stopped ERRS covers stockpile + site clean up.

Adrian collecting data RAMs for charging.

1730 - Lock up + leave site

PERT staying @ site.

36 loads collected today

6-8-2010 NW Pipe & Casing
clear day forcast ~ 75°F, light NW wind
0638 – T Adair arrived onsite – crew is pulling plastic sheeting to expose soil pile & preping to load trucks. Same crew as previous day
short tailgate H&S meeting
0650 – Preping Data RAM & Area RAE for field posts.
0730 – Field instruments working & recording data
0745 – Richard (EPA) on site.
0800 Area Rae A59981 – Readings normal Batt = 8.6 V
data RAM A60826 conc = 9.7 TWA = 13.9 ug/m3
memory = 91% Batt = 58% Flow = 2.05 L/m RH = 52%
TAG #14 June 8, 2010 for logged data
0806 Area RAE A59871 – Readings normal Batt = 8.4 V
data RAM A60825 conc = 7.9 TWA = 14.4 ug/m3
memory = 97% Batt = 39% Flow = 2.05 L/m RH = 54%
Tag #01
0815 – Moved A59871 to S of pile due to wind direction from NW. Slight creosote typ odor coming from pile – odor of wet soil too.
0820 Not showing elevated readings.
0825 Double checking New station with Multi RAE plus meter # A59969 – No elevated readings
0855 – All Readings Normal.
0958 – Area RAE A59981 – all readings normal Batt = 8.5 V
data RAM A60826 Conc = 7.7 TWA = 10.6 ug/m3 memory = 90% Batt = 24%
Flow = 2.05 L/m RH = 42%
1003 Unit 2 (A59871) – All readings Normal Batt = 8.3 V
multi RAE plus # A59969 – hand held = all readings Normal
data RAM A60825 Conc = 7.4 TWA = 10.2 memory = 96% Batt = 53%
Flow = 1.94 L/m RH = 37%
Unit 9 (A59983) CO = 2 – All other readings Normal Batt = 7.9 V
data RAM A60823 Conc = 5.0 TWA = 4.9 ug/m3 memory = 96%
Batt = 89% RH = 51%



6-8-2010 NWP & Casing
1005 – Eric from Paramatrix is here } To check cap.
Mark Ader – EPA remedial on site }
1100 – Walking w/ Mark, Eric, Jason, Richard to review cap. & water issues.
1140 – EPA remedial discussed with EPA/ERRS changes they would like to see in a new area of cap that will occur next week.
1153 Unit 7 (A59981) – All readings normal Batt = 8.4 V
data RAM A60826 conc = 7.9 TWA = 10.9 ug/m3 memory = 91% Batt = 10%
Flow Rate = 2.05 L/m RH = 32%
1156 Unit 2 A59871 – All readings normal Battery = 8.3 V
multi RAE A59969 – All readings normal
data RAM A60825 conc = 6.5 TWA = 9.2 ug/m3 memory = 96%
Battery = 49% Flow = 1.96 L/m RH = 28%
1300 – Alarm is showing on Main PC – checking air stations
1304 Unit 2 A59871 – All readings Normal Battery = 8.2 V
data RAM A60825 memory = 95% Battery = 37% Flow = 1.99 L/m RH = 22%
conc = 9.2 TWA = 8.6 ug/m3
1307 Unit 9 CO = 2 All other readings Normal Battery = 7.8 V
data RAM A60823 conc = 3.4 TWA = 4.4 ug/m3 mem = 95% Batt = 76% RH = 46%
Flow = 1.98 L/m
1311 Unit 7 (A59981) – LEL = 3 to 4 (cause of Alarm)
All other reading normal. The LEL drift is causing the Alarm
Batt = 8.3 V
data RAM A60826 – Memory 89% – Battery = 0% Flow 1.94
RH = 23% Conc = 6.3 TWA 10.5
Note: changing this unit out. Higher than average TWA is due to heavy truck traffic 25' west of this air monitor location.
Changed east station to A60822 (using A60826 antenna/particulate)
1323 memory = 97% Batt = 100% Flow = 1.98 L/m RH = 47%
TAG #9 start @ 1323.
Note: Wind is blowing less – ~5-10 mph from North.

6-8-2010 Northwest Pipe & Casing.

1536 - Unit 2 (A59871) Readings normal / Batt = 8.1 V
Data RAM A60825 conc. 2.7 TWA 7.2 ug/m3
memory = 95% Batt = 38% Flow 1.95 l/m RH = 20%
1539 - Unit 9 - CO = 3 $O_2$ = 21.2 - other readings normal
Batt = 7.8V
Data RAM A60823 memory = 95% Batt = 67% Flow = 2.05 l/m
RH = 40% Conc = 1.3 TWA = 3.6 ug/m3
1538 - Unit 7 (A59981) LEL = 5 - other readings normal
Batt = 8.3V (note CO + LEL are fluctuating)
Data RAM A60822 Conc = 8.0 TWA = 12.4 ug/m3
memory = 97% Battery = 76% Flow = 2.05 l/m RH = 32%
TAC Ø9
Note: ERRS applying water to road for dust control.
1704: Unit 2 - All readings normal Batt = 8.0 V
A60825 - Conc = 2.5 TWA = 6.5 ug/m3 memory = 94% Batt = 24%
Flow = 2.05 l/m RH = 29%
1707 Unit 9 CO = 2 $O_2$ = 21.1% - all others normal, Batt = 7.8V
A60823 conc = 1.9 TWA = 3.3 ug/m3 memory = 94% Batt = 55%
Flow = 1.91 l/m RH = 40%
1710 Unit 7 LEL = 2 - All others normal Batt = 8.2 V
A60822 conc = 5.3 TWA = 11.3 memory = 96% Batt = 67%
Flow = 2.05 l/m RH = 40%
ERRS is covering Stockpile. End Day
Adair recovers instruments & plugs them in for charge
1725 - Finish up & clean up: locking up PEAT.
Note: ERRS to begin removing ponded water per EPA direction
1730 - Leaving site.

31 loads today.



6-9-2010 Northwest Pipe & Casing

0640 - Adair arrived on-site
weather: Cloudy & rain occasional ~ 60°F - light variable wind
0645: Tailgate H&S brief
- set up monitoring stations
0700 OSC Heister on-site - deploy monitors - data Rams @ AREA RAEs
0715 - Instruments working recording data.
0837 - Unit 7 (A59981) - All readings normal Batt = 8.1 V
dataRAM A60822 conc = 3.0 TWA = 3.8 ug/m3 / memory = 96% Batt = 65%
Flow rate = 2.05 l/m RH = 50%
Note: Wind direction from SW → NE 10-15 mph - moving station downwind. (Unit 2) TAGØ2 dataset
0847: Unit 2 (A59871) - All Readings normal Batt = 8.4 V
data Ram A60825 conc = 3.1 TWA = 2.8 ug/m3
memory = 94% Batt = 64% Flow 1.99 l/m RH = 46%
0852 Unit 9 (A59983) CO = 1 VOC = 0.1 $H_2S$ = 0 $O_2$ = 20.9 LEL = 0
Batt = 8.4 V
data Ram A60826 conc = 2.0 TWA = 3.0 ug/m3 mem = 81% Batt = 43%
Flow = 1.92 l/m RH = 56% TAG #15
0955 O. Heister leaves site for apt.
1042 - Rain starting - turning heavy
1100 - Rain ending - wind changed ~~from~~ blowing W → E now.
1118 Unit 7 - All Readings normal Batt = 8.0 V
A60822 3.7 conc TWA = 4.5 ug/m3 memory = 96% Batt = 46%
Flow = 1.99 l/m RH = 92%
1123 Unit 2 - All readings normal Batt = 8.3 V
A60825 conc = 1.7 TWA = 1.9 ug/m3 memory = 95% Batt = 46%
Flow = 2.04 l/m RH = 41%
1127 Unit 9 CO = 1 to 2 - All others normal Batt = 8.3 V
A60826 conc = 0.7 TWA = 2.1 memory = 88% Batt = 17%
Flow = 1.94 l/m RH = 68%
1210 OSC Heister back on-site

6-9-2010 NW P&C Casing

1300 – Trying to get Unit 9 (A59983) battery info as requested by Seattle.

1317 – Unit 2 – Readings Normal Batt = 8.2V
A60825 Conc = 0.1 TWA = 1.5 Memory 92% Batt = 30%
Flow = 2.04 L/m RH = 46%

1321 Unit 7 – Readings Normal Batt = 8.0V
A60822 Memory = 95% Batt = 41% Flow = 2.06 L/m RH = 45%
Conc = 2.1 TWA = 3.6 ug/m3

1326 Unit 9 All readings Normal Batt = 8.2V
A60826 Conc = 1.3 TWA = 1.7 ug/m3 Memory = 88% Batt = 12%
Flow = 1.91 L/m RH = 55%

Note: @ 1348 we rebooted the computer system and resulted in turning off the logging on the pc in the PERT. Due to internet connectivity issues.

1448: Re-started RAE logging in the PERT

1326 Unit 7 – All readings Normal Batt = 7.9V
A60822 Conc = 3.9 TWA = 3.1 ug/m3 Memory = 95% Batt = 45%
Flow = 1.94 L/m RH = 37%

1530: Unit 2: All readings Normal Batt = 8.1V
A60825: Memory = 92% Battery = 31% Flow = 1.97 L/m
RH = 41% Conc = 2.0 TWA = 1.5 ug/m3

1534: Unit 9 = All Normal Batt = 8.1V
A60826 Memory = 87% Batt = 0 Flow = 1.91 RH = 47%
Conc = 1.1 TWA = 1.3 mg/m3.

Note: Changing out data RAM @ control post.

1343: A60824 Data RAm on – Background @ Control Post
Memory = 100% Battery = 100%
Flow = 1.97 L/m RH = 46% TAG #00



6-9-2010 NW P&C

1700 – A60824 data RAm Conc = 0.1 TWA = 0.1 ug/m3
Flow = 1.93 L/m Memory = 100% Batt = 53% RH = 47%

1716 A60825 data RAm Conc. 0.2 TWA = 1.4 ug/m3
Memory = 95% Batt = 34% Flow = 2.06 L/m RH = 49%

1724 A60822 data RAm Conc = 0.3 TWA = 2.9
Memory = 95% Batt = 20% Flow = 2.02 L/m RH = 41%

1725 – Charging all instruments. ~~Continuous~~ Intermittent (non steady) rain all day.
Clean up & lock up.
Note: a truck is stuck in gate w/ bad engine.

1740 – Leaving site
36 loads today

6-10-2010 Northwest Pipe & Casing

0645 - Adam on-site - open PERT, prep instruments

0700 - Tailgate H+S brief.

light Rain today ~55°F - wind from SW→NE

Reset Monitoring stations downwind + Crosswind

0730 - Reboot satellite dish - bad connection could be due to water build up.

A60826 - TAG 16 RH=63% Batt=63% mem=8%

0920 - Unit 2 = All Readings Normal Conc=2.1 TWA=3.0 Batt=80%

A60822 - TAG 11 mem=95% Batt=90% RH=65%

0925 unit 7 - All Readings normal Batt=82%

0930 Unit 9 - All Readings Normal

Rain continuing.

1110 - Less rain - still intermittent

unit 9 All readings Normal - Batt=8.3 V

A60823 - memory=93% Batt=88% Flow 2.07 l/m

TAG2 RH=56% Conc=2.4 TWA=3.1 ug/m3

1113 - Unit 7 - All readings normal Batt=8.4V

TAG#16 A60826 memory=86% Battery=55% Flow=1.94 l/m

RH=53% Conc=0 TWA=1.3 ug/m3

1117 - Unit 2 - Readings normal Batt=8.2V

TAG#11 A60822 memory=92% Batt=84% Flow: 2.06 l/m

RH=54% Conc=21.4 TWA=29.3 ug/m3

Note: AreaRAE logging function was down for ~1Hr due to PC issues on the PERT.

1343: Unit 7 - All readings normal Batt=8.3V

A60826: Memory=85% Batt=41% Flow=1.95 l/m RH=40%

Conc=0.0 TWA=0.8 ug/m3

1347: Unit 2 - All Readings Normal Batt=8.1V

A60822 Memory=99% Batt=74% Flow=1.95 l/m RH=41%

Conc=3.7 TWA=17.5 ug/m3

1352: Unit 9 = All readings normal Batt=8.2V

A60823 = Conc=0.1 TWA=2.3 ug/m3 Memory=98%

Batt=78% Flow=1.92 l/m RH=51%



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1536 Unit 7 - All readings Normal, VOC; peak @ 0.3 ppm

Battery = 8.3V - Unit not communicating w/host

A60826 - conc=0.0 TWA=0.6 ug/m3 memory=85% Batt=77%

flow=2.05 l/m RH=43%

Host connection is down.

1541 - Unit 2 - All readings Normal - No peaks Batt=8.1V

A60822 = Memory=94% Batt=62% Flow=1.94 l/m

RH=45% Conc=2.2 TWA=14.1 ug/m3

Host connection is down.

1545 - Unit 9 - All readings Normal - No peaks Batt=8.0V

A60823 Batt=69% memory=92% flow=1.95 l/m

RH=56% Conc=0.1 TWA=1.9 ug/m3

Host connection is down.

Note: steady rain sprinkle all day.

1700 - last truck loaded, left the site

ERRS preping remaining stockpile for loading

1720 Unit 2 - No peaks - unit turned off. - All normal

1721 Unit 7 - VOC peak @ 0.3 ppm - All others normal

1722 Unit 9 - No peaks all reading Normal

All units placed on chargers

1730 Lock up PERT

1740 Demob

35 loads today

Note: same personal on-site yesterday START + ERRS

6-11-2010 Northwest Pipe & Casing

0645 Adair on-site, open PERT, prep instruments
Tailgate H+S brief

0700 Trucks loading
weather - overcast, wind from W → E ≈ 60°F

0725 R. Whitchurch on-site

0750 Adair off-site.

0830 Silt fencing is being installed north of Soil stockpile area by Fox Erosion Control & Landscaping Inc. (crew of 6 with skid steer and trench cutter and stake bed truck).

0845 Note - ProRae remote suite not functioning today. Problem is USB to ComPort (serial) adapter - the registry for this device has been corrupted in Windows software. Unsuccessful so far in reinstalling driver, Will switch to backup laptop after making rounds:

AREARAE UNIT 2 - A59871

0852 - CO (ø), VOC (0.0), $H_2S$ (ø), LEL (ø), $O_2$ (20.9), all normal.
TWA - CO (ø), VOC (0.0), $H_2S$ (ø)
Peak - CO (ø), VOC (0.0), $H_2S$ (ø), LEL (ø), $O_2$ (20.9).
BAT - 8.3 V
MIN - all ø, but $O_2$ (20.5).
STEL - CO (ø), VOC (0.0), $H_2S$ (ø)
Note - this unit is now to north of stockpile due to prevailing winds from the SW.
Also, turned on datalogging in unit.

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AREARAE UNIT 7 (A59981).

0859 - CO (ø), VOC (0.0), $H_2S$ (ø), LEL (ø), $O_2$ (20.9), strong odor in air (west of pile, wind from roughly SW to WSW, est.).
PEAK - CO (~~ø~~ 1), VOC (1.9), $H_2S$ (ø), LEL (ø), $O_2$ (20.9).
MIN - CO (ø), VOC (0.0), $H_2S$ (ø), LEL (ø), $O_2$ (20.5).
STEL - CO (ø), VOC (0.0), $H_2S$ (ø)
TWA - CO (ø), VOC (0.0), $H_2S$ (ø).
BAT - 8.5 V
NOTE - This unit still E of stockpile.
No datalogger available

DATARAM 4 (A60826) - E of pile w/ A59981

0905 - Inst Conc 0.0 ug/m³, TWA 1.3 ug/m³, logger on, Mem left 84%, Bat left 53%, RH 60%, Flow 2.00 LPM.

DATARAM 4 (A60822) - N of Pile w/ A59871

0908 - Inst Conc 8.5 ug/m³, TWA 12.6 ug/m³, logger on, Mem 93%, Bat 89%, RH 58%, 2.03 LPM.

AREARAE UNT 9 (A59983)
Located at CP.

0914 - CO (ø), VOC (0.0), $H_2S$ (ø), LEL (ø), $O_2$ (20.4).
Bat = 8.4 V
No STEL, PEAK, MIN, or TWA. No data logger.

DATARAM 4 - A60823 at CP

0916 - Conc (INST) = 6.2 ug/m³, TWA = 5.6 ug/m³, Mem = 9%, Bat = 100%, Flow = 1.94 LPM, RH 61%. Logger on.

6/11/10

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0920 - 5 loads so far today per FAM convey.

1408 - Attempted to resolve computer issues with Adam Bilodeau, no success so far. Hampered now by lack of internet connection.

Make rounds:

Area Rae Unit 7 (A59981) - E of stockpile

1410 - CO(Ø), VOC(0.0), $H_2S$(Ø), LEL(Ø), $O_2$(20.9).

Peak - CO(1), VOC(1.9), $H_2S$(Ø), LEL(Ø), $O_2$(20.9).

MIN - CO(Ø), VOC(0.0), $H_2S$(0), LEL(Ø), $O_2$(20.5)

STEL - CO(Ø), VOC(0.0), $H_2S$(Ø)

TWA - CO(Ø), VOC(0.0), $H_2S$(Ø).

Bat - 8.3V. Odor gone.

DATARAM 4 (A60826) w/ A59981

INST Conc = 0.0 mg/$M^3$, TWA Conc = 0.4 mg/$M^3$

Bat = 5%, Mem = 82%, RH 32%, 2.04 LPM.

Will swap units w/ fresh one.

AREARAE Unit 2 (A59871) - NNE of stockpile

1422 - CO(Ø), VOC(0.0), $H_2S$(Ø), LEL(Ø), $O_2$(20.9).

Logging active.

Peak - CO(Ø), VOC(0.0), $H_2S$(Ø), LEL(Ø), $O_2$(20.9).

MIN - CO(Ø), VOC(0.0), $H_2S$(Ø), LEL(Ø), $O_2$(20.5).

STEL - CO(Ø), VOC(0.0), $H_2S$(Ø).

TWA - CO(Ø), VOC(0.0), $H_2S$(Ø).

Bat - 8.1V.

DataRam 4 (A60822) - w/ A59871

1427 - INST Conc = 4.9 mg/$M^3$, TWA Conc = 8.9 mg/$M^3$

Mem 92%, Bat 68%, RH 34%, 2.03 LPM.

Logging active.

6/11/10



6/11/2010 NWPC

1430 Check with Doug McManamy - 18th load is being filled now for today.

1435 DataRAM 4 A60825 will replace unit A60826 to the east of the stockpile.

1440 Wind has shifted during the day and is now predominantly from the north. Area Rae Unit 2 (A59871) and dataRam A60822 have been moved back to the original location next to the well.

1515 Satellite and computer USB→serial issues corrected. PRO-RAE Remote software back up and running.

Catch up on rounds for instrument at CP:

AREARAE Unit 9 (A59983)

1530: CO(Ø), VOC(0.0), $H_2S$(Ø), LEL(Ø), $O^2$(21.1)

$O^2$ is reading high but within safe range.

No peak, min, TWA, STEL on this meter.

Bat = 8.2V.

DataRam 4 (A60823)

1535 INST Conc = 15.1 ug/$M^3$, TWA Conc = 7.2 ug/$M^3$.

Mem left = 89%, Bat 78%, RH 39%, 2.07 LPM.

Logging active.

NOTE - pull out MultiRae A59663 to check $O^2$ on A59983. Needs to warm up.

1734 Pro Rae remote turned off. Work done for the day. Tim and Ryan shuttled a vehicle back to warehouse. Ready to demob for the weekend.

6/11/2010

6/11/10 NSWPAC

1738 End Round: AREARAE Unit 7
(A59981) - east of pile. No DL.
1739 - CO(0), VOC(0.0), H2S(0), LEL(0), O2(20.9). Bat = 8.2 V.
Peak - CO(1), VOC(1.9), H2S(0), LEL(0), O2(20.9)
MIN - CO(0), VOC(0.0), H2S(0), LEL(0), O2(20.5)
STEL - CO(0), VOC(0.0), H2S(0).
TWA - CO(0), VOC(0.0), H2S(0).
DATARAM4 (A60825) - w/A59981
1742 - inst conc = 3.9 ug/M3, TWA conc = 4.3 ug/m3
Mem 90%, Bat 62%, 2.01 LPM, RH 42%.
AreaRae Unit 9 (A59983) - CP
1744 - CO(0), VOC(0.0), H2S(0), LEL(0), O2(21.3).
BAT 8.4V. No DL.
No peak, MIN, STEL, or TWA on this meter.
DATARAM4 (A60823) w/A59983
1745 Inst Conc = 5.2 ug/M3, TWA Conc = 6.8 ug/m3, DL Active.
Mem = 88%, Bat = 69%, RH = 38%, 2.05 LPM.
AREARAE UNIT 2 (A59871) - NW of stockpile at well
1748 = CO(0), VOC(0.0), H2S(0), LEL(0), O2(20.9).
Peak = CO(0), VOC(0.0), H2S(0), LEL(0), O2(20.9)
MIN = CO(0), VOC(0.0), H2S(0), LEL(0), O2(20.5)
STEL = CO(0), VOC(0.0), H2S(0).
TWA = CO(0), VOC(0.0), H2S(0).
Bat = 8.0 V. DL Active.
DATARAM4 (A60822) - w/A59871
1752 = Inst Conc = 3.2 ug/M3, TWA Conc = 7.3 ug/M3
DL Active, 92% mem, 46% Bat, 1.97 LPM, 30% RH.
1900 BERT back at warehouse.

6/11/10



6-14-2010 NW Pipe & Casing Monday

0630 - Arrive @ warehouse to pick up PERT
0700 - Leave Trimble GPS & PDA's for Seattle training
0715 - Mob to site
0725 - Arrive @ site, set up PERT & Air monitoring stations.
- Tailgate H&S brief - same as last week
Weather - overcast ~62°F - wind very lite W → E 5mph
0800 - R. Franklin (OSC) on-site
Note: 24 loads removed on Friday June 11.
Note: Ponded water on NE side of site is drained.
1130 A60825 (located east of stockpile) conc = 15.0 ug/m3
TWA = 21.4 ug/m3 memory = 89% Batt = 33% RH = 47%
Unit 2 (A59871) Readings normal - No peaks Batt = 8.3V
1137 A60824 conc 17.1 ug/m TWA = 17.8 ug/m3 - located west of stockpile
memory = 100% Batt = 73% RH = 50%
Unit 7 (A59981) - All Normal, no peaks - Batt = 8.4V
1142 - At EA/EPA Response Truck station - A60826 conc = 0.1 TWA = 0.1 ug/m3
memory = 81% Batt = 32% RH = 46%
Unit 9 (A59983) Readings normal - No peaks Batt = 8.3 V
1401 Unit 7 (A59981) All readings normal - CO peak TM = 1 ppm Batt 8.3V
A60824 conc 20.7 ug/M3 TWA = 17.5 ug/m3 memory 100% Batt = 68%
RH = 43% Flow = 1.96 l/m
1404 Terminated Run for A60824 - was not logging
1407 - Set A60824 to log on 10 second intervals (TAG #00)
1414 (A60825) conc = 21.2 ug/m3 TWA = 20.3 ug/m3 Memory = 89%
Batt = 19% Flow = 1.96 l/m RH = 41% (TAG #04)
Unit 2 - All normal Batt = 8.0V
1423 Unit 9 - All Normal - Batt = 8.0V
A60826 - Conc. 0.1 TWA = 0.0 ug/m3 Memory = 80% Batt = 0%
Flow Rate 1.96 l/m RH = 43% TAG #18
1425 - changing out Data RAMs @ trailer.
A60823 is now data RAM @ trailer (Background)

6/14/2010 NWP & Casing Monday

1604 - A60825 conc = 13.3 TWA = 19.6 ug/m3
memory = 88% Batt = 15% Flow = 2.02 l/m RH = 31% TAG #04
Unit 2 All normal - No peaks $O_2$ = 20.5% Batt = 8.0V
1609 - A60824 conc = 15.3 TWA = 13.9 ug/m3 memory = 99% Batt = 67%
Flow = 2.02 l/m RH = 33%
Unit 7 - LEL = 2 - others normal Batt = 8.2V
1613 A60822 conc = 1.4 TWA = 2.5 ug/m3 memory = 99%
Batt = 73% Flow = 1.91 l/m RH = 34% TAG #13
Unit 9 - All normal - Batt = 8.0V
1638 - last truck leaving for the day. About 1 truckload left. Crews clean excavator bucket & tracks of mud.
1700 - Finishing w/ last load
1725 - Pictures of site - no more stockpile
- collect instruments
- change instruments
- Lock up PERT
- Leave site

34 truckloads today

8,147.57 TONS Hauled

Haul Job complete. For tomorrow:

ERRS to work on cap 80 x 125 ft² area northeast side of site adjacent to Oregon Iron works.



6/15/2010 NWP & C Tuesday

0800 - Adair arrive on-site - Same personnel as yesterday
weather - cloudy, light rain (on-off today) ~60°F
light variable wind
ERRS is placing a line membrane on NE corner of site
START is praping for collecting soil confirmation samples.

change 120 x 68' is the area ERRS will apply a 12 mil liner & slope @ 1.5° for surface drainage.
1030 ERRS is in the process of digging the area for the cap to install the new liner & culvert.

1230 - ERRS continues to work & lay membrane
- Adair leave for lunch off-site
1300 - Adair back on site - Rain starting
Note: PERT computer & satellite having connectivity issues
Cant acquire network address
1500 - Intermittent rain continuing. Adair working on lining up sampling supplies for confirmation samples
1600 - ERRS has stopped digging in the cap area.
Grade = 1 to 1.5% slope to south for drainage
ERRS is praping for work tomorrow plan to:
— lay 6" of sand for bedding
Note: ERRS is following a design plan for the CAP made by Parametrix
- lay 12 mil liner
- Backfill over top of liner w/ clay cap.
1700 - End day - lock up PERT
1730 - Leave site

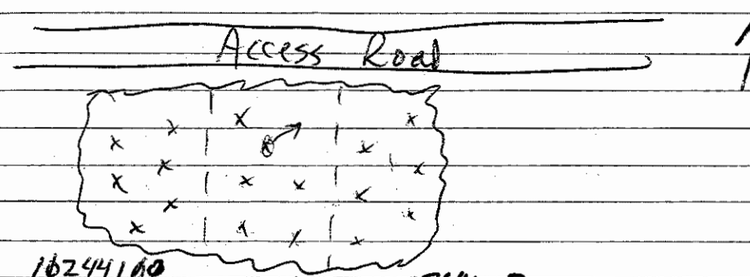
6/16/2010 NWP & Casing Wednesday

0730 - Adair arrived on-site
Weather - Rain ~ 60° F light wind. Rain is forcast for the rest of week making problems for ERRS.
0800 - still have connectivity issues with Internet + PERT.
0930 - Adair prepping for soil sampling today getting assistance from Seattle w/ Scribe issues
1110 - Made 4 trip blanks - using 40ml bottles from ESS pre-cleaned + certified lab supply stamped 011207 on box in PERT - Used 7-8 drops HCL for each VOA. LabChem Inc Lot # 8092-01 Deionized water ASTM Type II from PERT.
1200 Adair preparing for conformation soil sample Chain of custody + labels using Scribe obtained help from R. Jordeen in setting up CLP parameters
1400 ERRS laying sand bed lines + grading.
1500 Connectivity returned - internet + printer working again. was off-line and could not print COCs or labels
1515 - Too late to sample today due to coolers being shipped to Rhode Island.
Adam to continue getting to collect samples labelling bottles, bagging ice, etc.
Computer is back on-line able to print labels + COCs.
1600 ERRS cleaning up + prepping for laying clay cap tomorrow.
1645 Adair off site.



6-17-2010 NWP & C Thursday

0745 - Adair on-site, brief tailgate H&S topics
weather: Misting rain, light wind ~ 62°F cool day again.
plan is to collect confirmation soil samples this morning. ice + pack samples + deliver to Fed Ex @ PDX airport
0815 - Bagging ice - wait for break in rain to collect samples per SSSP dated Nov. 4, 2009 + SAP dated 6-8-2010.
0930 - Sampling composite locations -
note: ERRS is filling in ruts on landfill CAP fixing & repairing major divots caused by trucks.
1035 collecting last composite sample on most west cell
1057 collected west cell




1230 - Adair leaves site w/ samples. drive to warehouse to pack samples for ship Fed-Ex

1530 - Dropped samples @ Fed-Ex

End of Season's Fieldwork