US EPA RECORDS CENTER REGION 5
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RCRA FACILITY INVESTIGATION REPORT

Prepared for:

REFINED METALS CORPORATION
Beech Grove, Indiana

Prepared by:

ADVANCED GEOSERVICES CORP.
Chadds Ford, Pennsylvania

RECEIVED
MAR 30 2000
Enforcement & Compliance Assurance Branch
Waste, Pesticides & Toxics Division
U.S. EPA – REGION 5

Project No. 98-478-03
March 29, 2000

EXIDE CORPORATION

March 29, 2000

United States Environmental
Protection Agency – Region V
RCRA Enforcement Branch
77 W. Jackson Street, HRE-8J
Chicago, IL 60604-3590
Attn: Mr. Jonathan Adenuga

RECEIVED
MAR 30 2000
Enforcement & Compliance Assurance Branch
Waste, Pesticides & Toxics Division
U.S. EPA – REGION 5

Re: RCRA Facility Investigation Report
Refined Metals Corporation
Beech Grove, Indiana

Dear Mr. Adenuga:

Pursuant to Section VI of the Consent Decree entered August 31, 1998, attached is the RCRA Facility Investigation Report for the subject facility. I certify under penalty of perjury that the information contained in or accompanying this RCRA Facility Investigation Report is, to the best of my knowledge after thorough investigation, 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.

Sincerely,

EXIDE CORPORATION

Matthew A. Love
Director, Environmental Affairs

Attachment

cc: Rebecca Joniskan - IDEM (w. attach.)

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TABLE OF CONTENTS

PAGE NO.

1.0 Introduction 1

1.1 General 1
1.2 Purpose 1
1.3 Organization 2

2.0 Facility Background 4

2.1 Facility Location 4
2.2 Ownership History 5
2.3 Operational History 5

2.3.1 Smelting 5
2.3.2 Refining 6
2.3.3 Wastewater Treatment 7
2.3.4 Storage Tanks 7

2.4 Regulatory History 8

2.4.1 RCRA 8
2.4.2 CERCLA 11
2.4.3 State and Local Permits 11

2.5 Nature and Extent of Contamination 13

2.5.1 Behavior of Lead 13
2.5.2 Discussion of Source Areas 13

3.0 Site Setting 16

3.1 Physical Setting 16
3.2 Regional Geology 16
3.3 Regional Hydrogeology 17
3.4 Site Specific Geology 18
3.5 Site Specific Hydrogeology 19

4.0 Methods and Procedures 20

4.1 Introduction 20
4.2 Well Installation Activities 20

TABLE OF CONTENTS
(Continued)

PAGE NO.

4.2.1 Introduction 20
4.2.2 Drilling Methods 20
4.2.3 Well Construction 21
4.2.4 Well Development 22

4.3 Groundwater Sampling 22

4.3.1 Well Evacuation 22
4.3.2 Sample Collection 23

4.4 Soil Sampling 24

4.4.1 On-Site Soil Sampling 24
4.4.2 Off-Site Soil Sampling 25
4.4.3 Diesel Spill Soil Sampling 26
4.4.4 Sub-Floor Soil Sampling 26
4.4.5 Floor Dust Sampling 27

4.5 Additional Soil Sampling 27
4.6 Sediment Sampling 28
4.7 Supplemental Survey 28

5.0 Results 29

5.1 Introduction 29
5.2 Hydrogeologic Investigation 29

5.2.1 Introduction 29
5.2.2 Well Location 29
5.2.3 Groundwater Quality 30

5.2.3.1 First Sampling Event 30
5.2.3.2 Second Sampling Event 31

5.3 Soil Investigation 31

5.3.1 Eight RCRA Metals Sampling 31
5.3.2 Diesel Spill 32

5.4 Interior Sub-Floor Soil 32
5.5 Sediment 33

TABLE OF CONTENTS
(Continued)

PAGE NO.

5.6 Floor Dust 33

6.0 Site Characterization Summary 34

6.1 Groundwater 34
6.2 Soil 35

6.2.1 On-Site Soil 35
6.2.2 Off-Site Soil 36
6.2.3 Interior Sub-Floor Soil 36

6.3 Sediment 37

7.0 Conclusions 38

8.0 Recommendations 40

8.1 Introduction 40
8.2 Groundwater 40
8.3 Soil 41
8.4 Sediment 41

LIST OF TABLES

TABLE

2-1 Materials Used On-Site
5-1 Refined Metals Site Project Analyte List

LIST OF FIGURES

FIGURE

2-1 Site location Map
2-2 Site Plan
4-1 Site Well Locations
4-2 RFI Sample Locations
4-3 Closure Plan Sample Locations
5-1 Potentiometric Surface Map for Shallow Groundwater September 21, 1999
5-2 Potentiometric Surface Map for Shallow Groundwater December 13, 1999
5-3 Soil Sample Lead and Arsenic Concentrations (0-3 inches bgs)

LIST OF FIGURES
(Continued)

FIGURE

5-4 Soil Sample Lead and Arsenic Concentrations (3-10 inches bgs)
5-5 Soil Sample Lead and Arsenic Concentrations (24-30 inches bgs)
5-6 Sub-Floor Soil Samples Lead and Arsenic Concentrations (0-6 inches bgs)
5-7 Sub-Floor Soil Samples Lead and Arsenic Concentrations (12-24 inches bgs)
5-8 Sub-Floor Soil Samples Lead and Arsenic Concentrations (24-30 inches bgs)
5-9 Sediment Sample Lead and Arsenic Concentrations (0-6 inches bgs)
5-10 Sediment Sample Lead and Arsenic Concentrations (6-12 inches bgs)

LIST OF APPENDICES

APPENDIX

A Boring Logs
B Data Validation Report for Closure Samples
C Data Validation Report First Groundwater Sampling Event
D Data Validation Report Second Groundwater Sampling Event
E Data Validation Report For RFI Soil, Dust and Sediment Samples

1.0 INTRODUCTION

1.1 GENERAL

The Refined Metals Corporation (RMC) facility was the location of secondary lead smelting operations from 1968 through 1995. RMC was involved in the reclamation of lead from used automotive and industrial batteries and other lead bearing materials. The site ceased smelting operations on December 31, 1995.

During its operational life, the facility handled materials that were classified as hazardous materials or hazardous wastes under the Resource Conservation and Recovery Act (RCRA). At this time, the site is idle except for the wastewater treatment system which remains in operation. The wastewater treatment system remains in place to collect and treat stormwater runoff from the lined lagoon and other site areas.

1.2 PURPOSE

On July 14, 1998 RMC entered into a Consent Decree with the United States Environmental Protection Agency (USEPA) and the Indiana Department of Environmental Management (IDEM). Under this Consent Decree, a RCRA Facility Investigation (RFI) is to be performed to evaluate and determine the full nature and extent of releases and to collect information necessary to support human health and ecological risk assessments so that a Corrective Measures Study may be implemented. Pursuant to Section VI, Paragraph 42 of the Consent Decree (Compliance Requirements for Corrective Action), Advanced GeoServices Corp. (AGC) has performed the RFI in accordance with the approved RFI work plan on behalf of RMC. The preparation and implementation of the RFI work plan was enacted in accordance with Exhibit B of the Consent Decree and the EPA's RCRA Facility Investigation Guidance Document (EPA 530/SW-89-031). The information contained in this report cites the findings of the RFI regarding the presence, magnitude, extent and mobility of hazardous waste and hazardous constituents on and beneath the

former site area and adjacent off-site areas that may have originated from the RCRA permitted hazardous waste or solid waste management units at the site.

1.3 ORGANIZATION

This document contains a description of the field activities associated with the implementation of the RFI work plan, the results of the laboratory analysis of the samples collected for the RFI, and the recommendations for future investigation activities at the RMC facility. This document is organized as follows:

- Section 1.0 - General introduction provided above;
- Section 2.0 - Facility Background, including ownership and operational history as well as a discussion of the nature of contamination;
- Section 3.0 - Site Setting, provides a physical description of the site including geologic and hydrogeologic characteristics;
- Section 4.0 - Methods and Procedures, details the scope of work as the RFI Work Plan was implemented;
- Section 5.0 - Results, presents the analytical results of the samples collected during the RFI field activities;
- Section 6.0 - Site Characterization Summary, summarizes the characteristics of site groundwater, soil and sediment with respect to the constituents addressed by the RFI;
- Section 7.0 - Presents the Conclusions that may be drawn from the findings of the RFI; and

- Section 8.0 - Presents AGC's Recommendations for further investigational activities at the RMC facility.

2.0 FACILITY BACKGROUND

2.1 FACILITY LOCATION

The RMC facility is located at 3700 South Arlington Avenue in Marion County, Beech Grove, Indiana, approximately four miles south-southeast of downtown Indianapolis (Figure 2-1). The site occupies approximately 24 acres, of which approximately 10 acres represented the active manufacturing area (including paved areas and buildings). The remaining 14 acres includes grassed and wooded site areas. The configuration of the site is triangular, bounded by Arlington Avenue (oriented in a north to south direction representing the hypotenuse), Big Four Road (along the base), and the common property line with a natural gas company forming the third side. The northwest end of the triangle is truncated by a railroad right-of-way (Figure 2-2).

The site is relatively flat with less than 10 feet of total relief. Natural site drainage is toward the north and east. The former manufacturing area is characterized by nearly 80,000 square feet (sf) of structures consisting of the battery breaker, a wastewater treatment plant, a filter press, material storage areas, a blast furnace, a dust furnace, a metals refining area, warehouse and offices. In addition, there are four baghouses, a vehicle maintenance structure, and five stormwater pump houses. The site plan is illustrated in Figure 2-2.

The ground surface surrounding the buildings is currently paved (primarily with concrete). Older facility photographs indicate that areas northwest and northeast of the main facility structure were unpaved except for a concrete driveway, which encircled the facility. The paved surface areas are sloped to drain toward catch basins situated around the site. The catch basins in-turn flow to the stormwater pump houses that convey collected stormwater either directly to the wastewater treatment plant for immediate processing (small storm events) or to a 750,000 gallon stormwater and fire control lagoon where it is stored until it can be processed (large storm events). The lagoon was originally lined with concrete. During 1988, the lagoon was cleaned out and the concrete was covered with a geomembrane liner.

2.2 OWNERSHIP HISTORY

The site was reportedly undeveloped woodlands until 1968. In 1968, the property was developed as a secondary lead smelter by National Lead. National Lead operated the facility from 1968 through 1980, when it was sold to Exide Corporation. In 1985, the site was purchased from Exide Corporation by RMC. RMC continued to operate the facility until the cessation of operations on December 31, 1995. From April 14, 1995 through December 31, 1995, operations were reduced to enriching and casting lead ingots from off-specification lead products. Since 1996, no production has taken place at the facility except for operation of the wastewater treatment facility, which is still used to treat stormwater runoff from the former manufacturing areas.

2.3 OPERATIONAL HISTORY

2.3.1 Smelting

The facility was constructed as a secondary lead smelter to recycle lead-acid batteries and other lead-bearing wastes. Auto batteries constituted approximately 90 percent of the materials recycled, and the remainder was waste material from battery manufacturers and other lead scrap.

Prior to 1984, battery crushing was performed off-site at other commercial facilities. In 1984, the battery breaker was constructed on-site. During post-1984 operations, the batteries were temporarily stored in trailers or on pallets in a paved storage yard. The batteries were then fed into the battery crusher where the tops of the batteries were sawed off and the sulfuric acid was collected in a sump and transferred into a stainless steel tank that drained to the wastewater treatment system. The battery casings and their contents were tumbled and crushed. Lead plates and other lead parts were separated and transported to waste piles to be later fed into the furnace. The battery casings were shredded and separated into plastic and ebonite in a flotation tank. The plastic was blown into a trailer for sale to an off-site recycler. Ebonite casings were placed in a separate waste pile and then fed into the blast furnace as a supplemental fuel.

Prior to 1984, storage piles were located outdoors with minimal spill and runoff control. The majority of stormwater runoff from the piles and other work areas flowed and/or was pumped to the stormwater lagoon where it was allowed to evaporate. However, when the lagoon was full, it overflowed to a drainage ditch that flowed off-site toward the east. A small portion of the drainage from the active manufacturing area flowed uncontrolled toward the wooded area to the north, and then along an intermittent stream to the north. During 1984, the material storage building was constructed and the waste piles were moved inside. Reportedly, material was occasionally stored outside after 1984 when the material storage building was full.

One blast furnace and one dust furnace were used at the facility. During operation, the blast furnace used coke and oxygen-enriched air for heating. Liquid oxygen was stored in a 10,000-gallon tank located north of the blast furnace building. Scrap iron was added to the blast furnace to remove sulfur. During the smelting process, molten lead would form at the bottom of the furnace, and the slag would float to the top. The slag was poured into ingots and solidified before being sent off-site for disposal. The dust furnace used natural gas and oxygen-enriched air to melt baghouse dust, which was then fed into the blast furnace.

2.3.2 Refining

Molten lead from the blast furnace was tapped from the bottom of the furnace to kettles in the adjacent refining and casting area. In the kettles, the molten lead was tested to determine its quality. Antimony and tin were either added or removed to create the required lead type and quality. A list of principle materials used on-site is provided on Table 2-1. Removal of antimony and tin was performed by adding sodium hydroxide or through other methods of oxidation. If the lead contained excess copper it was removed through the addition of red phosphorus. The excess antimony, tin, copper and other impurities formed as a dross on top of the molten lead and was removed through skimming. The dross was returned to the blast furnace. The refined lead was typically cast into 60-pound bars that were cooled, extracted and stacked for shipment off-site.

The refining kettles were situated with their tops approximately at floor level in the refining and casting building. The bottom of the kettles extended below grade into a sub-floor area. The kettles were heated by natural gas burners located in the sub-floor area.

2.3.3 Wastewater Treatment

With the installation of the battery crusher in 1984, waste sulfuric acid, and acidic and lead-bearing wastewater was actively collected for treatment through a batch neutralization process. During 1988 the site was also re-graded and stormwater drainage modified to allow the collection and treatment of all stormwater runoff from the active manufacturing areas. Wastewater effluent is discharged to the Municipal Sanitary Sewer system which conveys the wastewater for treatment at the City of Indianapolis POTW. A detailed description of the operation of the wastewater treatment system was included in the RFI Workplan.

2.3.4 Storage Tanks

Reportedly, underground storage tanks (USTs) were never used at the site. Three above ground storage tanks (ASTs) - two 10,000-gallon ASTs and one 20,000-gallon AST - were used to store diesel fuel for company trucks. The tanks were reportedly cleaned out in 1985 and have since been out of service. The three tanks are enclosed by a spill containment wall. The tanks were reportedly constructed in 1968 and the containment was present before 1980, although the date that the containment was added could not be determined. The three ASTs are located at the northeast end of the former manufacturing area as shown on Figure 2-2. A 500-gallon AST and a 750-gallon AST are presently used for diesel fuel and gasoline, respectively, to fuel on-site vehicles. The 750-gallon gasoline tank is enclosed within a spill containment wall and pad located near the office building. The 500-gallon diesel tank has no secondary containment. Propane, which is used to power forklifts, is stored in a 2,000-gallon tank. The diesel tank and the propane tank are located side by side near the wastewater treatment building.

A leak in a valve of one of the now out-of-service diesel tanks occurred around 1983, resulting in a spill of unknown volume outside of the containment wall. A portion of the spill flowed along the drainage ditch located north of the refining area. The contaminated soil was excavated and the tanks were emptied.

Although documentation of the spill and subsequent response action is not available, the soil clean-up was reportedly conducted under state supervision.

2.4 REGULATORY HISTORY

2.4.1 RCRA

As stated above, following the promulgation of RCRA, the facility submitted a Part A RCRA permit application. On November 19, 1980 the facility was granted Interim Status as a hazardous waste treatment, storage and disposal facility. The RCRA Subtitle C units included indoor and outdoor waste piles (used to store batteries and lead-bearing wastes), and the 750,000-gallon concrete lined lagoon. A Part B application was submitted during the mid-1980s, although full RCRA permitted status was never granted. The EPA maintains that interim status was lost on November 8, 1985 as a result of RMC's alleged failure to comply with Section 3005(e)(2) of RCRA, 42 U.S.C. 6925(e)(2); RMC did not agree with this allegation.

RMC submitted a revised Part A application on October 26, 1988 requesting an increase in the storage volume for spent batteries from 200 cubic yards (cy) to 400 cy. The request was granted on September 20, 1989. A subsequent revised Part A application was submitted to IDEM on December 7, 1990 for increasing the storage volume of spent batteries from 400 cy to 500 cy. IDEM denied the increase. RMC filed for a stay and was granted interim status to store 400 cy, however, IDEM approved the revised Part A application on June 3, 1991 with the provision that it did not grant interim status under RCRA. The Part B application was not resubmitted. In 1994, the facility withdrew its Part A and Part B permit applications.

The following enforcement actions were identified for the facility:

- Notice of Violation April 13, 1982;
- Notice of Violation July 30, 1982;
- Complaint Order (N-283) December 13, 1985;
- Notice of Violation (V-442) February 16, 1987; and
- Letter of Warning March 26, 1987.

The IDEM issued a draft Agreed Order addressing deficiencies in 1989. Deficiencies identified included:

- Spills had occurred in the baghouse area (the nature of the spillage was not identified).

- Scrap had been stored in waste piles without run-on, runoff, or wind dispersal control, and wastewater from dust control had been allowed to overflow from the drainage system to a ditch that flowed off-site.

- Waste slag had not been analyzed to determine if it was hazardous.

- The inspection and documentation program for security devices, spills, and equipment was deficient.

- The emergency response, contingency plan, and training programs were deficient.

RMC responded to the draft Order in October 1989, and requested modifications to indicate that many of the deficiencies identified had been implemented. IDEM issued a revised Agreed Order to RMC on September 4, 1990. The revised Order contained several of the items to which RMC protested in the original draft Order. RMC did not sign the Order, but completed the following actions to comply with the draft Order:

- The furnace slag was analyzed and determined to be non-hazardous. Subsequent analysis for metals using the toxicity characteristic leaching procedure (TCLP) for leachability determined that the material contained hazardous concentrations of lead.

- The parking areas and building floors were covered with a 6-inch thick concrete pad. Stormwater runoff, from potentially contaminated areas, was contained and was pumped to the wastewater treatment system via three 10,000-gallon sumps that were constructed in 1988. In 1989, the concrete-lined stormwater pond was pumped out and the sediment was removed and processed in the blast furnace. After cleaning the concrete surface, the pond was coated with a sealant and covered with a heavy vinyl plastic geomembrane liner.

RMC believed that all of the deficiencies identified in the draft Order were corrected. However, IDEM did not comment on the documents related to the improvements. Negotiations with IDEM concerning the Order were suspended when the EPA filed a complaint in Federal Court against the RMC facility on November 21, 1990. The complaint requested the court to order RMC to cease its operations as a hazardous waste treatment, storage, and disposal facility, to submit a closure plan, prepare and implement a plan to investigate the nature and extent of hazardous waste constituents released from the facility and the effects on groundwater, to prepare a plan for remediation of contamination in and around the facility, and to pay a fine for each violation. The complaint indicates that the EPA had issued a "Determination of Release of Hazardous Waste into the Environment from a RCRA Interim Status Facility" on or about May 5, 1989. Negotiations ensued between RMC and the EPA concerning the deficiencies. A draft Consent Decree was also being negotiated between RMC and the USEPA which was ultimately lodged on July 14, 1998 (Civil Action #IP902077C). This RFI Work Plan is being submitted under the requirements of that Consent Decree.

2.4.2 CERCLA

A site inspection was performed under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) in 1980. In 1985, a preliminary assessment was performed under CERCLA. No further action was planned under CERCLA at that time.

2.4.3 State and Local Permits

Wastewater Discharge Permit

A City of Indianapolis Permit to Discharge Wastewater to the Municipal Sewer System (Permit #334103) was issued on May 1, 1993. On January 6, 1994, RMC was informed that they were no longer required to sample for pH, arsenic, lead, zinc, and antimony, and a monthly self-monitoring report was no longer required under their permit to discharge wastewater.

Air Permits

The Beech Grove facility originally had ten certificates of operation Nos. 08025 through 08034 for its seven refinery kettles and three baghouses (M-1 through M-3). The permits were issued by the Air Pollution Control Section of the City of Indianapolis Department of Public Works.

RMC received approval for a fugitive dust control program from the City on July 15, 1991. Installation Permit (#910036-01) was issued by the City of Indianapolis on September 11, 1991 for a total enclosure building to house the blast and dust furnace which were vented to a new baghouse, M-4. The seven refinery kettles were also re-directed to vent through baghouse M-4. The allowable emissions of lead for M-4 were 0.30 pounds per hour (lb/hr).

An Installation Permit (950036-01) was issued on May 22, 1995 to install a natural gas-fired after burner and scrubber to baghouse M-1. The allowable emissions established in the installation permit were as follows:

Total suspended particles - 0.003 gr/dscf, or 2.8 ton/yr

Lead - 0.91 lb/hr, or 3.99 ton/yr

Sulfate - 64.8 lb/hr, 283.82 ton/yr, or 10.8 lb sulfate/ton of material discharged.

The Indianapolis Air Pollution Control Section granted an Operating Permit on August 26, 1994 for fuel combustion - gas, oil, blast furnace, secondary lead smelter, dust furnace, blast furnace, metallurgical baghouse (M-1), blast furnace sanitary baghouse (M-2), sanitary baghouse (M-4), and refinery sanitary baghouse (M-3).

The City of Indianapolis granted an Operating Permit, facility number 0036 on January 12, 1995 for the following:

0036-01	M-1	Allowable: Total suspended particulate - 0.003 gr/dscf, 2.8 ton/yr Lead - 0.91 lb/hr, 3.99 ton/yr Sulfate 64.8 lb/hr
0036-02	M-2	Allowable: Total suspended particulate - 0.0005 gr/dscf, <1 ton/yr Lead - 0.015 lb/hr, 0.66 ton/yr
0036-03	M-3	Allowable: Total suspended particulate - 0.03 gr/dscf Lead - 0.015 lb/hr, 0.66 ton/yr
0036-04	M-4	Allowable: Total suspended particulate - 0.03 gr/dscf Lead - 0.3 lb/hr, 1.31 ton/yr

On January 10, 1995, RMC entered into an Agreed Order with IDEM to address Clean Air Act violations.

A revised Construction Permit (950036-01) for M-1 afterburner and scrubber was granted on May 23, 1995.

2.5 NATURE AND EXTENT OF CONTAMINATION

2.5.1 Behavior Of Lead

A number of the materials formerly used at the facility have toxic characteristics, however; the principal material of concern is lead. Lead is a common metal and can be found at an average concentration in excess of 30 ppm in natural soils and 1-10 ug/l in surface water. Most lead salts are fairly insoluble in water, however the solubility depends on the pH, with solubility increasing in more acidic conditions. Movement of lead in soils depends on its adsorption, chelation with organic matter, and the precipitation of the less soluble salts. In general, lead reacts with soil anions or clays to form insoluble complexes, inhibiting its mobility. Lead can be ingested or absorbed by inhalation. Poisoning from acute exposure to lead is uncommon. The primary toxic effects from chronic exposure are on the blood and the nervous system.

2.5.2 Discussion Of Source Areas

Facility inspection reports identified poor housekeeping, storage of materials on unpaved surfaces, spillage in a baghouse, and runoff/runon control for the outdoor waste piles as situations which could aid migration from the paved site area.

Based on the documented operating history and an understanding of the character of lead mobility and transport, the most significant potential sources of contamination at the facility during its operating history were erosion and transport of lead-bearing solids from outdoor waste piles and other areas by stormwater runoff (prior to re-engineering of site drainage to contain all runoff from the manufacturing area); fugitive dust emissions from traffic and production areas, unpaved outdoor waste pile areas (north and west of the material storage building) and stack emissions. Based on original facility grading, transport and deposition of lead-bearing sediment from the facility could have occurred in areas northeast and east of the Battery Breaker building prior to containment of site stormwater runoff. The lined stormwater lagoon and the channels that received lagoon overflow represent potential source areas. In addition, those areas that were either unpaved or not covered by

a building within the active manufacturing areas could represent an area where lead contaminated sediment or materials could have accumulated and were subsequently covered with pavement or a structure. The fugitive dust and stack emissions could have resulted in the deposition of lead on the ground surface within and beyond the manufacturing area.

During the preparation of the RFI Work Plan, AGC performed a review of RMC files to identify previous sampling activities. The file review indicated that previous sampling of environmental media at the facility was limited to an investigation of soils and building interiors performed by Entact, Inc. during April 1996 and quarterly groundwater sampling performed by RMC since June 1991. The groundwater samples were not collected using the low flow sampling techniques, and potential discrepancies exist between the total and dissolved analytical results (some dissolved concentrations are higher than the total concentrations). Therefore the data provided by these samples proved to be insufficient in performing an evaluation of the RMC facility. Information and results for the soil samples collected by USEPA, as referenced in the Consent Decree, could not be located.

Floor dust sample results for the warehouse and refining building, collected by Entact, indicated the highest concentration of lead was 129,707 parts per million (ppm). Lead in floor dust samples ranged from 51,702 to 129,707 ppm. Soil samples collected at varying depths beneath the floor slab in the warehouse, refining, and furnace room building had results ranging from non-detect to 2,950 ppm. Floor dust sample results collected from the furnace room, the battery breaker building, and the material storage building indicated lead concentrations ranging from 10,073 to 115,736 ppm. Soil samples collected from varying depths beneath the slab in the material storage building and battery breaker building had lead concentrations ranging from non-detect to 75,373 mg/kg.

Surface soil samples collected from outside of the buildings indicated lead concentrations from 43 mg/kg to 70,406 mg/kg. Subsurface samples of varying depths ranged from non-detect to 22,793 mg/kg. The highest lead concentrations were located within the former active manufacturing areas of the site.

In addition to the Entact samples, soil samples were reportedly collected and analyzed by the EPA. The samples reportedly failed EP Toxicity tests for lead and cadmium. The date of the sampling and the locations where the soil samples were collected from could not be determined.

3.0 SITE SETTING

3.1 PHYSICAL SETTING

The site is located in the White River Drainage Basin. The site is situated on a minor local topographic high with a surface elevation of approximately 845 feet mean sea level (msl). The surface elevation slopes gently to the southeast toward Sloan Ditch, and the northwestern perimeter of the site slopes to the northwest toward the intermittent headwaters of Beech Creek. Surface water at the site is collected in the stormwater management basin and, as discussed in Section 2.3.3, is treated and discharged to the municipal sewer system.

Prior to construction of the present-day stormwater collection and control system, surface water from the northern portion of the facility flowed to the intermittent stream that flows northwest to the headwaters of Beech Creek. Surface water from other areas on the site historically flowed to the same location as the present-day (geomembrane lined) stormwater basin, which was reportedly concrete lined. Water collected in this impoundment either evaporated, or when full, overflowed the banks to a drainage ditch that flowed off-site to the east (Figure 2-2) and then to the south, eventually discharging to Sloan Ditch. Sloan Ditch flows 0.6 mile west-southwest to Churchman Creek, which flows to the west 0.9 mile and discharges to Beech Creek. Beech Creek flows 1.2 miles to the southwest to Lick Creek, which then flows 7 miles to the White River.

3.2 REGIONAL GEOLOGY

The surficial geology of Marion County is glacial till (Tipton Till Plain) consisting of yellowish-gray, bluish-gray, or gray sand or silt with some clay and pebbles and scattered cobbles and boulders. The drift cover in Marion County is believed to be composed of three drift sheets resulting from the Kansan, Illinoian, and Wisconsin glaciations. Thicknesses range from less than 15 feet to greater than 400 feet of till. The site is underlain by approximately 200 feet of unconsolidated material.

Bedrock is encountered at an elevation of approximately 640 feet mean sea level (on the order of 200 feet bgs), and consists of middle Devonian-aged dolomitic limestones. The limestones consist primarily of the Geneva Dolomite and the Jefferson Limestone. The Geneva Dolomite is a light gray to tan and buff to chocolate brown dolomite that contains white crystalline calcite masses. The Jeffersonville Limestone is a pure limestone in the upper portion of the formation, and is laminated with organic material in the lower portion. The organic laminae are more argillaceous than the coralline zone (Harrison, 1963). Meyer, 1975 indicates that shale is present beneath the glacial till and overlying the limestones. Additional detail on the shale unit is not provided by Meyer. The regional dip is to the southwest so that progressively younger formations are encountered below the till plain to the southwest.

3.3 REGIONAL HYDROGEOLOGY

In Marion County, groundwater is encountered in un-named sand and gravel beds overlying the bedrock, the Jefferson Limestone and Geneva Dolomite, and the Niagaran Limestones (Harrison, 1963). The sand and gravel glacial outwash that coincides with the courses of the White River and Fall Creek is the aquifer of greatest economic importance in Marion County. The location of this aquifer generally coincides with the glacial melt water and outwash deposits along the major streams. Fall Creek enters White River upstream of the site. The White River sand and gravel aquifer is located approximately 5.3 miles west of the site. The sand and gravel aquifer is unconfined and flows toward and discharges to the surface water bodies. The hydraulic conductivity was determined for sand, sand and gravel, and gravel by Meyer, 1975 and are as follows:

Sand	40 ft/day
Sand and Gravel	240 ft/day
Gravel	415 ft/day

The hydraulic conductivity of the silt and clay was determined to be too low for reporting purposes by Meyer. Specific capacity and lithologic information used in Meyer's hydraulic conductivity calculations of the sand and gravel glacial outwash deposits were obtained from drillers' records.

It is noted by Meyer that three thin, areally discontinuous, sheet-like deposits of sand and gravel in the till-plain area are separated by beds of silt and clay that cause the groundwater in these deposits to be semi-confined. Meyer also notes that large areas of silt and clay often separate one area of an aquifer from another. The elevation of the uppermost semi-confined aquifer beneath the site was estimated to be approximately 720 ft msl (approximately 120 feet bgs) and is overlain by deposits of varying thickness of silt and clay. Groundwater flow in the uppermost regional semi-confined aquifer is to the northwest. The middle regional semi-confined aquifer is not mapped beneath the site because an aquitard (clay unit) is mapped in the area. The elevation of the lower regional semi-confined aquifer beneath the site is approximately 660 ft msl (180 ft bgs) and flow is to the southeast.

The average daily industrial and municipal groundwater pumpage for Marion County is 28.95 million gallons per day (mgpd). Less than 20 percent of the industrial/municipal pumpage is from the bedrock. Also, less than 20 percent of the total pumpage is obtained outside the unconfined glacial-outwash aquifer which occurs only along the White River and Fall Creek and is located at least 5.3 miles west of the site. The major centers of groundwater pumpage occurred within approximately one mile of a major stream. The estimated total domestic groundwater pumpage is 9.0 to 11.0 mgpd (Meyer 1975).

3.4 SITE SPECIFIC GEOLOGY

Based on results of the RFI activities, the surficial geology at the site is consistent with the regional geology described in Section 3.2. Four deep borings were advanced on-site to depths ranging from 110 feet to 130 feet bgs during the RFI to characterize subsurface conditions. From these borings it was determined that a substantial thickness of unconsolidated silt, clay and fine sands exist beneath the site. The boring logs for these deep are included in Appendix A. The thickness of the till plain beneath the site is at least 130 feet as bedrock was not encountered in any of the deep borings.

Various portions of the site have been altered due to plant operation activities. Several topographic high mounds in the wooded area northeast of the manufacturing area and adjacent to the intermittent stream are believed to be fill material from construction activities on-site. Similarly, paved areas and areas below the structures on-site have been filled with gravel of thicknesses ranging from six to 12 inches.

3.5 SITE SPECIFIC HYDROGEOLOGY

Shallow groundwater encountered at the Site is believed to represent a local perched zone of saturation in sand layers within the glacial till. Boring logs indicate that this sand layer varies in thickness and elevation throughout the site. The potentiometric surface for the groundwater on-site is approximately 10 feet bgs, and flow in the shallow on-site wells appears to be to the southeast. Boring logs for the deep borings on-site indicate that a substantial thickness of silt and clay is deposited below the shallow zone of saturation and overlies the regional uppermost semi-confined water bearing zone. In two on-site borings advanced, the regional uppermost semi-confined aquifer was not encountered, and the borings were terminated at a depth of 130 feet bgs, as specified in the Work Plan. Due to these substantial layers of silt and clay combined with the areal discontinuity of the regional uppermost semi-confined aquifer it is believed that there is no direct hydraulic connection between the on-site groundwater and the regional uppermost semi-confined aquifer. Sampling results from the two deep wells completed on-site for the RFI further support this. These results are discussed in Section 5.2.3.

4.0 METHODS AND PROCEDURES

4.1 INTRODUCTION

This section discusses the methods and procedures used to implement the scope of work for the RFI on the entire site. Sampling activities and drilling supervision were conducted by AGC and laboratory analysis was performed by TriMatrix Laboratories Inc. (TriMatrix) of Grand Rapids, MI.

4.2 WELL INSTALLATION ACTIVITIES

4.2.1 Introduction

As specified by the Work Plan, deep borings were advanced at various on-site locations to determine the subsurface geology and depth to regional groundwater. On-site monitoring wells were constructed within two of the deep borings to determine the effect, if any, that the RMC facility has had on the regional water bearing zone. Additionally, one shallow on-site monitoring well was installed in conjunction with the RCRA Closure Plan. The locations of the on-site monitoring wells are illustrated in Figure 4-1.

4.2.2 Drilling Methods

All drilling activities for the RMC facility RFI were conducted by Boart Longyear Environmental Division of Greensberg, Indiana. Borings were advanced using hollow stem auger (HSA) techniques and continuous split spoon samples were collected in accordance with ASTM D 1586. A 14-inch outer diameter (OD) borehole was advanced using augers and an 8-inch ID casing was set into the clay unit that underlies the perched, saturated zone on-site. Casing was used so that any potential contamination existing in the perched zone would not migrate to greater depths. The casing was tremie-grouted in place with a 95% cement/5% bentonite mixture.

Well logs from the existing on-site monitoring wells were referenced to determine the depth of the perched groundwater zone. The well logs along with the logs for borings completed as part of the RFI and Closure plans are included in Appendix A.

After allowing the casing to set overnight, an 8-inch ID borehole was advance through the casing using the rotosonic drilling technique. The rotosonic rig advances the bit by means of a combination of high frequency vibration of the drill rods and variable speed rotation. The rotosonic method allows for a continuous sample to be collected in a plastic sleeve within the core barrel during each run. The strata of the formation being drilled is preserved within the core barrel, and allows undisturbed samples to be collected. Continuous sampling for lithology was performed along the entire depth of the borehole. The samples recovered from the advancement of the deep borings were logged by an AGC geologist. Copies of the logs are provided in Appendix A. The borings were advanced until the regional semi-confined water bearing zone was encountered or until 130 ft. bgs was reached, per the RFI Work Plan.

The boring for the shallow well, MW-6S, installed as part of the Closure Plan activities was advanced using hollow stem auger techniques and continuous split spoon sampling.

4.2.3 Well Construction

All monitoring wells constructed as part of the RFI and Closure Plan field activities consist of a 4-inch ID, flush-threaded, Schedule 40 PVC riser with a 10-foot length of factory-slotted 0.010-inch PVC well screen. A sand pack was placed to 2 feet above the top of the monitoring well screen with No. 5 sand. A minimum 2-foot thick bentonite seal was placed on top of the sand pack. The remaining annulus of each borehole was tremie-grouted to the surface using a 95% Portland Cement/5% Bentonite grout.

All monitoring wells installed as part of the RFI and Closure Plan activities were completed with a 6-inch square steel protective casing with a locking cap. The protective casing extends from an approximate depth of 3 feet bgs to approximately 2 feet above ground. A neat cement seal was

placed around the protective casing to a depth of three feet bgs. A 2 x 2 foot square well pad was installed so that the surface slopes away from the well.

Borings that were not completed as wells were abandoned by grouting the borehole to the surface using a 95% Portland Cement/5% Bentonite grout.

4.2.4 Well Development

Monitoring wells were developed using the surge-block and pump method. Monitoring wells were first surged using a plunger-type surge block assembly. This provides the necessary turbulence in and near the well screen to remove fine-grained material and to properly develop the well. The wells were then purged and developed using a submersible pump (except MW-6S which was developed using a decontaminated bailer because of low water production). When the development water in each well was relatively sediment free, exhibited a satisfactory clarity and yield, and pH and specific conductance readings had stabilized as measured in the field, development was ceased.

4.3 GROUNDWATER SAMPLING

4.3.1 Well Evacuation

Groundwater samples were collected from site monitoring wells MW-1, MW-2S, MW-2D, MW-3, MW-4, MW-5, and MW-6D, using the low-flow sampling technique to more accurately determine the potential for site-related constituents to have entered groundwater. An initial inspection of the condition of each well was made and recorded in the field book. The depth to water in each monitoring well was determined from the construction logs and the purge volume calculated. This provided the sampling team with an estimate of when stabilization of purging parameters would occur. Monitoring wells were purged and sampled from the suspected least contaminated well to the most contaminated well to minimize the potential for cross-contamination.

The wells were purged using a stainless steel low-flow bladder pump placed at the midpoint of the screen in each well. The wells were purged at a flow rate ranging from 100 to 300 milliliters per minute mls/min, depending on the yield of the well. A flow-through cell was used to measure pH, temperature, conductivity, redox potential, and dissolved oxygen prior to contact with oxygen at 3 to 5 minute intervals during purging. Turbidity was also measured at the same time interval. The wells were purged until the field parameters stabilize to within 10% over three readings and pH readings differ by less than 0.1 unit.

Shallow well MW-6S, was not sampled using low-flow techniques due to insufficient volume of water within the well (i.e., sufficient water was not available to fill the pump lines and move to the surface), consequently a disposable Teflon bailer was used to purge the well.

Purge water was contained in 55-gallon drums until analytical results of groundwater samples were evaluated. Drums were labeled with the location and date of generation (i.e., purge water, MW-1, 5/25/96) and remained on-site until disposal. Based on results of the sampling, the collected water was managed with site stormwater runoff.

4.3.2 Sample Collection

Once the field parameters had stabilized, the flow rate was reduced to 100 mls/min. to collect volatile organic compounds (VOC) samples and 100 to 300 mls/min. for the remaining parameters. Samples were collected directly from the pump discharge line into laboratory-supplied bottles containing the necessary preservatives.

Insufficient water volume was available to sample MW-6S with the low-flow pump, as an alternative, a Teflon bailer was used to collect the sample. The dedicated, disposable bailer was lowered slowly into the screened interval of the well and a sample was collected with minimal agitation to the water.

Groundwater samples were collected in laboratory-supplied bottles containing the necessary preservatives. Samples were packed on ice and shipped to TriMatrix Laboratories Inc. for analysis of eight RCRA metals, and antimony (SW-846 6010), 1,1,1-trichloroethane, tetrachloroethene, benzene, toluene, and ethylbenzene (EPA 8260). For samples collected from MW-6S were analyzed for both total and dissolved metals were analyzed. For the remaining wells only total RCRA metals and antimony were analyzed. Samples for dissolved metals analyses were field filtered through a dedicated disposable Nalgene 0.45 μm membrane filter immediately after collection and prior to preservation. The sample was decanted into the dedicated, Nalgene disposable filtration unit and filtered under vacuum pressure created by a hand-held pump. The sample was then immediately transferred to a laboratory supplied bottleware.

4.4 SOIL SAMPLING

4.4.1 On-Site Soil Sampling

Soil samples were collected between August 10, 1999 and September 1, 1999 at a total of 58 locations designated as RSB-1 through RSB-58 (Figure 4-2). These samples were collected at intervals of 0-3 inches and 3-10 inches bgs, with ten locations additionally being sampled from 24-30 inches bgs. Soil samples were collected using decontaminated hand augers where asphalt or concrete were not present. For sample locations where either concrete or asphalt existed, a Geoprobe was used to penetrate the pavement and collect the samples. Soil was removed from the auger bucket, or the Geoprobe disposable acetate sleeve using a disposable scoop. The sample was then homogenized in a stainless steel bowl and placed into a laboratory-supplied jar. The samples were placed on ice and submitted to TriMatrix to be analyzed for eight RCRA metals (SW-846 6010).

Prior to collection of each soil sample on-site or off-site, all downhole and homogenizing equipment was decontaminated using the following procedures:

- Wash equipment thoroughly with a non-phosphate detergent (Alconox) and water using a brush to remove any particulate matter or surface film;

- Rinse equipment with distilled water;
- Rinse with methanol (when analyzed for VOCs);
- Rinse equipment with distilled water;
- Rinse with diluted 10 % nitric acid;
- Triple rinse with distilled water;
- Air dry equipment; and
- Wrap equipment in a clean plastic sleeve or in aluminum foil if not used immediately.

4.4.2 Off-Site Soil Sampling

Permission was granted to perform soil sampling at four sample locations designated as RSB-65 through RSB-68, on the Wavetech property located south of the site and at four locations RSB-63, RSB-64, RSB-69 and RSB-70 on the Citizens Gas Company property located northwest of the site (Figure 4-2). These samples were collected at intervals of 0-3 inches and 3-10 inches bgs using a decontaminated hand auger. Additionally, two locations on the Citizen's Gas Company property were sampled at the 24-30 inch interval.

Soil samples were collected using decontaminated hand augers and homogenized in a stainless steel mixing bowl. They were subsequently placed into a laboratory-supplied sample jar and placed on ice for shipment. The samples were submitted to TriMatrix to be analyzed for eight RCRA metals (SW-846 6010). Prior to sample collection, all downhole and homogenizing equipment was decontaminated using the procedures described in Section 4.4.1. The sampling on the Wavetech

property was performed on August 21, 1999. The sampling on the Citizens Gas Company Property was performed on September 20, 1999.

4.4.3 Diesel Spill Soil Sampling

Three locations designated as RDSB-1 through RDSB-3, located along the drainage channel north of the refining area were sampled on September 1, 1999 (Figure 4-2). Soil was collected from depth intervals of 0-3 inches and 3-10 inches at each location using decontaminated hand augers. Soil was removed from the auger buckets using an Encore sample container. Each Encore sample container was filled by depressing the sample collector directly into the soil. Each Encore sampler was completely filled to eliminate air spaces within the sample container and then clamped shut to ensure an air tight seal, and placed in a sealed bag. This minimizes the potential for loss of volatiles due to aeration during collection of soil samples. The samples were placed directly on ice for shipment to TriMatrix for benzene, toluene, ethylbenzene, cumene, naphthalene, fluorine, and phenanthrene analysis (EPA 8260B and 8270C). Prior to sampling at each location, all downhole equipment was decontaminated using the procedures described in Section 4.4.1.

4.4.4 Sub-Floor Soil Sampling

As part of the RFI sampling activities, soil samples were collected from below the floor slab at a total of 12 locations in the interior of the material storage building, the furnace room, refining building, and warehouse on August 20 through August 23, 1999. These locations were designated as RSB-74 through RSB-85 and are shown in Figure 4-2. Soil samples were collected at depth intervals of 0-6 inches, 12-24 inches, and 24-30 inches below the floor slab at each sample location. The concrete floor at each location was penetrated and soil was collected using a Geoprobe. The soil for each specified interval was removed from the disposable, acetate sleeve of the Geoprobe with a decontaminated stainless steel spoon or disposable scoop and was thoroughly homogenized in a stainless steel mixing bowl. Each sample was then placed directly into a laboratory-supplied jar and was placed on ice. The samples were submitted to TriMatrix Laboratories to be analyzed for eight RCRA metals (SW-846 6010).

An additional, three locations within the Battery Breaker Building (RSB-71 through RSB-73) were sampled on August 21, 1999 at depth intervals of 0-6 inches, 12-24 inches and 24-30 inches below the floor slab (Figure 4-2). Due to restricted access in the building which made it infeasible to gain access to the sample locations with a Geoprobe rig, an electric coring machine was used to penetrate the floor slab and a decontaminated hand auger was used to collect the soil. A concrete subsurface was encountered at approximately 18 inches below the floor slab. Due to auger refusal and the inability of the coring machine to penetrate the concrete at this depth, a soil sample was collected from only the 0-6 inch interval at sample location RSG-71. The soil for each specified interval was thoroughly homogenized in a stainless steel mixing bowl. Each sample was then placed directly into a laboratory supplied jar and was placed on ice. The samples were submitted to TriMatrix Laboratories to be analyzed for eight RCRA metals (SW-846 6010).

4.4.5 Floor Dust Sampling

Floor dust samples were collected from the interior of the Material Storage Building on August 12, 1999 (Figure 4-2). Each dust sample was collected as a grab sample using a dedicated, disposable scoop and was placed directly into laboratory-supplied jars. The locations were designated as CFD-1 through CFD-3. The samples were then placed on ice and were submitted to TriMatrix Laboratories to be analyzed for total lead and cadmium (SW-846 6010).

4.5 ADDITIONAL SOIL SAMPLING

In addition to the locations sampled during the implementation of the RFI, soil samples were collected at 50 on-site locations between August 17, 1999 and August 25, 1999 in conjunction with the Closure Plan, pursuant to Section VI Item 37 of the Consent Decree. These locations are illustrated in Figure 4-3.

Soil was collected at depth intervals of 0-3 inches, 6-9 inches, 12-15 inches, 24-28 inches, 36-39 inches, 48-51 inches, and 60-63 inches bgs, at each of these locations. Soil was collected using a Geoprobe and a discrete portion of the sample, for each interval, was removed from the disposable

acetate sleeve and placed directly into a laboratory supplied jar. Each sample was placed on ice and submitted to TriMatrix Laboratories. The soil from the first two feet was analyzed for eight RCRA metals, pH, and antimony (SW-846 6010 and 7470). Samples from below two feet were archived. The results of these samples can be found in Appendix B.

4.6 SEDIMENT SAMPLING

Sediment samples were collected from five locations along the intermittent stream located along the northern portion of the site on August 22, 1999 and from five locations along the former drainage channel leading from the stormwater lagoon. These samples were designated as RSED-1 through RSED-10 and are presented on Figure 4–2. Sediment was collected at depth intervals of 0-6 inches and 6-12 inches bgs at each of the locations using decontaminated hand augers. The sediment from each interval was thoroughly homogenized in a stainless steel mixing bowl and was placed directly into a laboratory supplied jar. Each sample was then placed on ice for shipment and was submitted to TriMatrix to be analyzed for eight RCRA metals (SW-846 6010).

On August 25, 1999 sediment samples were collected at two locations, RSED-11and RSED-12 within the stormwater lagoon (Figure 4-2). These samples were collected as a composite of the vertical profile of sediment at each of the sampling locations. The sediment was collected using a disposable scoop and was thoroughly homogenized in a stainless steel mixing bowl. The sediment was then placed directly into a laboratory supplied jar and placed on ice. The samples were submitted to TriMatrix Laboratories to be analyzed for eight RCRA metals (SW-846 6010).

4.7 SUPPLEMENTAL SURVEY

The Schneider Corporation, an Indiana licensed surveyor, located all soil and sediment sampling locations (between August 25, 1999 and September 24, 1999) for the purpose of accurately representing the horizontal datum of the sampling locations in the state-plane coordinate system. In addition, both the existing and the newly installed monitoring wells were surveyed for vertical and horizontal datum in the state-plane coordinate system.

5.0 RESULTS

5.1 INTRODUCTION

Preliminary Remediation Goals (PRGs) established by the USEPA Region 9 were used to characterize on-site groundwater, soil and sediment, off-site soil, and material storage building dust. Similarly, Ecological Data Quality levels, established by the USEPA Region 5 were used to establish the impact of potential soil and sediment contamination on ecological receptors. These critical parameters for the RFI investigation are listed in Table 5-1.

5.2 HYDROGEOLOGIC INVESTIGATION

5.2.1 Introduction

Four deep borings were advanced at various locations at the site to collect information regarding the subsurface geology and depth to the regional groundwater table. Monitoring wells were installed in two of these borings to determine the effect, if any, that the RMC facility has had upon the regional water bearing zone. Additionally, one shallow on-site well was installed in conjunction with the Closure activities.

5.2.2 Well Location

One of the deep monitoring wells (MW-2D) constructed during the RFI is situated adjacent to MW-2, (an existing shallow groundwater well). The second deep monitoring well was installed near MW-6S, a new well constructed as part of the Closure Investigation. These wells are shown on Figure 4-1. Water levels were measured in the existing shallow wells prior to drilling and a potentiometric surface map was constructed in the field to determine the downgradient side of the lined lagoon, and consequently the placement of the MW-6 cluster.

Two additional deep borings were advanced on-site adjacent to shallow wells MW-1 and MW-3 (Figure 4-1). The regional water bearing zone was not encountered and the borings were terminated at 130 ft. below ground surface per the Work Plan. Consistent with regional hydrogeological publications the results of the deep boring program indicate that the uppermost semi-confined aquifer is discontinuous beneath the site. The four deep borings each encountered a substantial low permeability silty/clay clayey/silt zone (Appendix A). When the uppermost semi-confined aquifer was encountered on the northern and eastern portions of the site. It is believed that the site is located at the contact between the uppermost sem-confined aquifer and a confining unit.

5.2.3 Groundwater Quality

5.2.3.1 First Sampling Event

The analytical results and Validation Report for samples, collected from the on-site wells for the first groundwater sampling event are summarized in Appendix C. A potentiometric surface map is shown as Figure 5-1. Arsenic and lead are the two site constituents of concern (COCs) that were detected at levels above the PRGs listed in Table 5-1. Arsenic was found in concentrations ranging from 1.8 ug/l in MW-4 to 21 ug/l in MW-1. These monitoring wells were purged and sampled with the low-flow sampling techniques. Total arsenic was detected at a concentration of 8.8 ug/l and a dissolved concentration of 1.7 ug/l in MW-6S. Due to equipment blank contamination, the detection limit for lead was elevated which resulted in a non-detect for lead in each of the wells sampled. Further discussion about these results is provided in section 6.1.

As agreed upon with the USEPA, groundwater samples were analyzed for 1,1,1-trichloroethane, tetrachloroethene, benzene, toluene, and ethylbenzene from the six shallow wells during the first sampling event. Laboratory analysis of these samples found no detectable concentrations of these compounds in any of the on-site wells.

5.2.3.2 Second Sampling Event

The analytical results and Validation Report for samples, collected from the on-site wells for the second groundwater sampling event are summarized in Appendix D. A potentiometric surface map is shown as Figure 5-2. Arsenic and lead are the two site COCs that were detected at levels above the PRGs listed in Table 5-1. Arsenic was found at concentrations ranging from 1.6 ug/l in MW-4 to 25 ug/l in MW-1 these wells were purged and sampled with low-flow sampling techniques. Total arsenic was detected at a concentration of 3.1 ug/l and at a dissolved concentration of 1.6 ug/l in MW-6S.

Lead (total lead) was detected at a concentration of 18 ug/l in MW-2S and at a concentration of 4.9 ug/l in MW-6S. Dissolved lead was not detected in MW-6S. Total lead was also detected at levels below the PRG in wells MW-2D and MW-6D. As agreed with USEPA, VOC samples were not collected in the second sampling event since they were not detected during the first sampling event.

5.3 SOIL INVESTIGATION

5.3.1 Eight RCRA Metals Sampling

The validated analytical results of the on-site and off-site soil samples collected and analyzed for eight RCRA metals are included in Appendix E. Lead and arsenic are the two COCs which exceed the PRGs. All samples with an "A" suffix indicate they were collected within the 0-3 inches bgs depth interval; concentrations of lead ranged from 11mg/kg at RSB-19 to 83,500 mg/kg at RSB-25, and concentrations of arsenic ranged from 3.9 mg/kg at RSB-46 to 867 mg/kg at RSB-25 at this depth. Figure 5-3 presents lead and arsenic results within this depth interval.

All samples with a "B" suffix indicate they were collected within the 3-10 inches bgs interval; concentrations of lead ranged from 13 mg/kg at RSB-19 to 27,400 mg/kg at RSB-31, and concentrations of arsenic ranged from 1.4 mg/kg at RSB-49 to 359 mg/kg at RSB-55 at this depth. Figure 5-4 presents lead and arsenic results within this depth interval.

All samples with a "C" suffix indicate they were collected within the 24-30 inches bgs depth interval; concentrations of depth ranged from 11 mg/kg at RSB-70 to 13,100 mg/kg at RSB-55, and concentrations of arsenic ranged from undetected at RSB-49 to 60 mg/kg at RSB-55 at this depth. Figure 5-5 presents lead and arsenic results within this depth interval.

5.3.2 Diesel Spill

The validated analytical results of the on-site diesel spill soil samples collected and analyzed for benzene, toluene, ethylbenzene, cumene, naphthalene, fluorine, and phenanthrene are included in Appendix E. None of these compounds were detected in these samples. Figure 4-2 illustrates the sample locations.

5.4 INTERIOR SUB-FLOOR SOIL

The validated analytical results of the interior sub-floor soil samples collected and analyzed for eight RCRA metals are included in Appendix E. Lead and arsenic are the two COCs which exceeded the PRG. All samples with an "A" suffix indicate they were collected within the 0-6 inches below the floor slab; concentrations of lead ranged from 9.1 mg/kg at RSB-85 to 66,800 mg/kg at RSB-71, and concentrations of arsenic ranged from 7.0 mg/kg at RSB-77 to 215 mg/kg at RSB-71 at this depth. Figure 5-6 presents lead and arsenic results within this depth interval.

All samples with a "B" suffix indicate they were collected within the 12-24 inches bgs interval; concentrations of lead ranged from 8.2 mg/kg at RSB-85 to 2,920 mg/kg at RSB-77, and concentrations of arsenic ranged from 6.7 mg/kg at RSB-85 to 24 mg/kg at RSB-82 at this depth. Figure 5-7 presents lead and arsenic results within this depth interval.

All samples with a "C" suffix indicate they were collected within the 24-30 inches bgs depth interval; concentrations of lead ranged from 8.7 mg/kg at RSB-85 to 2,960 mg/kg at RSB-78, and concentrations of arsenic ranged from 4.9 mg/kg at RSB-74 to 16 mg/kg at RSB-83 at this depth. Figure 5-8 presents lead and arsenic results within this depth interval.

5.5 SEDIMENT

The validated analytical results for the sediment samples collected within the lined lagoon, the drainage ditch adjacent to the lined lagoon and the intermittent stream northeast of the site are presented in Appendix E. Lead and arsenic are the two COCs for the site which exceeded the PRG. All samples with an "A" suffix indicate they were collected within the 0-6 inches bgs depth interval; concentrations of lead ranged from19,300 mg/kg at RSED-1 to 324,000 mg/kg at RSED-9, and concentrations of arsenic ranged from 96 mg/kg at RSED-10 to 2,300 mg/kg at RSED-4 at this depth. Figure 5-9 presents lead and arsenic results within this depth interval.

All samples with a "B" suffix indicate they were collected within the 6-12 inches bgs depth interval, concentrations of lead ranged from 4,080 mg/kg at RSED-2 to 182,000 mg/kg at RSED-5, and concentrations of arsenic ranged from 50 mg/kg at RSED-9 to 3,880 mg/kg at RSED-5 at this depth. Figure 5-10 presents lead and arsenic results within this depth interval.

5.6 FLOOR DUST

The validated analytical results of the floor dust samples collected from the interior of the Material Storage Building and analyzed for lead and cadmium are included in Appendix E. Lead is the COC which exceeded the PRG. Lead concentrations in the floor dust ranged from 342,000 mg/kg to 707,000 mg/kg (Figure 5-6).

6.0 SITE CHARACTERIZATION SUMMARY

6.1 GROUNDWATER

Groundwater is encountered on-site at approximately ten feet bgs. Figures 5-1 and 5-2 display the potentiometric surface for the shallow on-site wells based upon data collected during the first and second groundwater sampling events. Groundwater flow in the shallow on-site wells appears to be to the southeast. Boring logs for the deep borings on-site indicate that a substantial thickness of silt and clay is deposited below the shallow zone of saturation and overlies the regional uppermost semi-confined water bearing zone. In two on-site borings advanced, the regional uppermost semi-confined aquifer was not encountered, and the borings were terminated at a depth of 130 feet bgs, as specified in the Work Plan. As noted by Meyer (1975), the three semi-confined aquifers are not areally continuous throughout the county and sections of them are often divided by large areas of the silt and clay. Consequently, it is noted, that in some portions of the County, all of the aquifers may not be encountered.

The hydraulic conductivity in these regional silt and clay deposits is low which makes these deposits semi-pervious. Consequently, the shallow groundwater on the site is a perched zone that extends areally across the site, and the underlying thick layers of clays and silts serve to restrict infiltration to the regional semi-confined water bearing zone, where it is present.

Groundwater was collected from both the shallow and deep wells on-site during two quarterly sampling events. Total lead was detected at concentrations just above the PRG (4 μg/l) in two shallow on-site wells (lead data from the first round was qualitatively questioned due to blank contamination). The two wells where lead was detected above the PRGs are MW-2S (18 μg/l) which is located near the northwestern portion of the manufacturing area, and MW-6S (4.9 μg/l) which is located east of the stormwater lagoon. Lead was only detected at a total concentration in MW-6S and was not detected at a dissolved concentration. Consequently, the dissolved lead concentrations most likely represent groundwater conditions, since bailing of the well serves to

agitate lead-bearing sediment from the well bottom. Lead was not detected in the deep on-site wells at levels above the PRG.

Arsenic was detected at concentrations from 1.7 μg/l to 24 μg/l during the first round of sampling and at concentrations from 1.6 μg/l to 31 μg/l during the second round of groundwater sampling. The PRG for arsenic in groundwater is 0.045 μg/l.

6.2 SOIL

6.2.1 On-Site Soil

As part of the RFI sampling activities, soil was collected from 58 on-site locations at depths varying from 0 to 30 inches bgs. Lead concentrations in site surficial soils (0-3 inches bgs) above the PRG (1,000 mg/kg) are generally concentrated in areas within or adjacent to the manufacturing area with several other discrete locations around the site (Figure 5-3).

Lead concentrations above the PRG in the 3-10 inch bgs. depth interval are limited to areas immediately adjacent to the northern and western edges of the manufacturing area at a maximum concentration of 31,200 mg/kg at RSB-55 (Figure 5-4).

Lead concentrations above the PRGs in the 24-30 inch bgs depth interval are limited to areas immediately adjacent to the northern and western edges of the manufacturing area at a maximum concentration of 13,100 mg/kg at RSB-55 (Figure 5-5).

Arsenic was detected in each of the on-site soil samples collected at concentrations above the PRG (3 mg/kg). Barium, cadmium, chromium, mercury, selenium and silver were not detected above their capacity PRGs.

6.2.2 Off-Site Soil

Soil samples were collected from four locations on the Wavetech property located to the south of the site at 0-3 inch bgs and 3-10 inch bgs. depth intervals. Concentrations of lead above the PRG were not detected in any of these samples.

Soil samples were also collected from four locations on the Citizen's Gas property located to the west of the site at 0-3 inch bgs and 3-10 inch bgs. depth intervals. Additionally, two of these locations were also sampled at a depth of 24-30 inches bgs. Lead was detected above the PRG in all four of the surficial (0-3 inches bgs) soil samples at a maximum concentration of 6,420 mg/kg at RSB-70 (Figure 5-3).

Lead was detected above the PRG in the 3-10 inch bgs depth interval at one sample location (RSB-70) at a concentration of 13,100 mg/kg (Figure 5-4). Lead concentrations did not exceed the PRG in the 24-30 inch bgs depth interval on the Citizen's Gas property.

Arsenic was detected in each of the soil samples collected off-site at concentrations above the PRG. Barium, cadmium, chromium, mercury, selenium, and silver were not detected above their corresponding PRGs.

6.2.3 Interior Sub-floor Soil

Soil was collected from 15 locations beneath the manufacturing building floors at varying depths. Lead concentrations above the PRG were detected at several locations in the materials storage building and the battery breaker building in the 0-6 inch depth interval. The maximum lead concentration was 66,800 mg/kg at RSB-71 (Figure 5-6).

Lead above the PRG was limited to the materials storage building in the 12-24 inch depth interval at a maximum concentration of 2,920 mg/kg at RSB-77 (Figure 5-7). Lead concentrations above the PRG were detected only at RSB-78 at a concentration of 2,960 mg/kg in the 24-30 inch depth interval.

Arsenic was detected in each of the soil samples collected beneath the building floor surfaces at concentrations above the PRG. Barium, cadmium, chromium, mercury, selenium and silver were not detected above their corresponding PRG.

6.3 SEDIMENT

All sediment samples collected from the lined lagoon, the drainage ditch adjacent to the lined lagoon, and the intermittent stream northeast of the site indicate concentrations of lead above the PRG for lead in soil (no PRG exists for lead in sediment). Figure 5-9 illustrate the lead concentrations for sediment collected at the 0-6 inch bgs depth interval. Figure 5-10 illustrate the lead concentrations for sediment collected at the 6-12 inch bgs depth interval.

Arsenic was detected in each of the sediment samples collected on-site at concentrations above the PRG.

7.0 CONCLUSIONS

The following conclusions can be drawn from the findings of the RFI:

Groundwater

- Lead and arsenic are the only COCs for the site that are in excess of the USEPA Region 9 PRGs established as concentration limits for the site.

- Lead detected above the PRG is limited to MW-2S (18 μg/l) immediately adjacent to the manufacturing area where elevated soil lead concentrations exist, and MW-6S (4.9 μg/l) near the lagoon which was sampled using a bailer and only exceed for total lead.

- Elevated lead concentrations in MW-2S may be influenced by suspended solids and an analysis for dissolved lead may be more indicative of true groundwater conditions.

- The uppermost regional aquifer has not been influenced by site COCs.

- Groundwater flow in the shallow zone of saturation on-site appears to be to the southeast.

Soil

- Elevated lead in soil exists on-site to the north, west, and south of the manufacturing areas, in addition to the manufacturing portion of the site.

- Elevated lead in soil is detected on an adjacent property to the west of the site, which may represent off-site migration of airborne contaminants.

- Elevated arsenic in soils on-site and off-site may be indicative of regionally high arsenic values and will be addressed by a site specific risk assessment.

Sediment

- Elevated lead in sediment in the drainage ditch adjacent to the lined lagoon, and the intermittent stream northeast of the site indicate that off-site transport has occurred.

8.0 RECOMMENDATIONS

8.1 INTRODUCTION

The approved RFI Work Plan included sampling and evaluations to characterize the nature and extent of contamination in groundwater, soil and sediment at the Refined Metals site. The RFI activities have provided information to allow a partial characterization of contaminants for the various media on-site; however, additional characterization is required to complete the characterization.

AGC recommends that a Phase II RFI be performed to collect additional information necessary to complete the characterization of both on-site and off-site areas and perform a detailed human health and ecological risk assessment. Consistent with the approach followed for the initial RFI, AGC anticipates that a brief Phase II RFI Work Plan which adopts by reference procedures and protocol specified in the original RFI Work Plan would be prepared following approval of this report. The anticipated Phase II activities are described in the following sections.

8.2 GROUNDWATER

RFI activities have identified a shallow water table aquifer beneath the RMC facility. Lead and arsenic concentrations above the PRG were detected in the shallow groundwater beneath the site. AGC recommends two additional groundwater sampling events three months apart to further characterize groundwater quality in the shallow aquifer. Analysis of groundwater from the uppermost regional semi-confined aquifer indicates that site COCs have not migrated downward to this zone; therefore, AGC recommends that the proposed sampling be limited to the shallow wells.

To further evaluate the groundwater quality and address the disparity between total and dissolved lead results raised in Section 6.1, groundwater collected during the additional sampling events as part of the Phase II RFI should be analyzed for the following parameters: total and dissolved lead, total

arsenic, dissolved oxygen, eH, pH, specific conductance and temperature. The additional sampling events will be completed following USEPA approval.

8.3 SOIL

RFI activities have identified that elevated surficial lead levels are concentrated in areas immediately adjacent to the manufacturing areas and on the adjacent property to the west. Elevated lead levels at depth, are concentrated to the portion of the site immediately north of the manufacturing area, and to the west, including the adjacent property. Based on these findings, AGC recommends no additional on-site soil sampling.

8.4 SEDIMENT

RFI activities have identified elevated lead in sediment in the drainage ditch adjacent to the lined lagoon, and the intermittent stream northeast of the site which suggests off-site migration via surface water run-off. AGC recommends that site reconnaissance be performed during preparation of the Phase II RFI Work Plan to determine areas of potential offsite impact. The conclusions derived from this reconnaissance will be discussed with EPA to determine the location of additional sediment sampling which will then be included in the Phase II Work Plan.

TABLES

Table 2-1
Materials Used On-Site
Refined Metals Facility
Beech Grove, Indiana

Material	Use
Lead batteries and scrap	Raw material for refining
Coke	Furnace fuel
Oxygen	Furnace oxidant
Natural gas	Furnace fuel
Antimony	Alloys added to lead
Tin	Alloys added to lead
Sodium hydroxide	Removal of antimony and tin in refining kettles
Red phosphorus	Removal of copper from refining kettles
Scrap iron	Furnace additive to remove sulfur
Mangensium hydroxide	Wastewater neutralization and flocculent
Polymers and chelating agents	Wastewater treatment
Muriatic (hydrochloric) acid	Cleaning wastewater filter press
Lime and sodium bicarbonate	Neutralizing spills

TABLE 5-1
REFINED METALS SITE PROJECT ANALYTE LIST

Constituent	Matrix	Human Health[1] Data Quality Level[1]	Ecological Data Quality Level [3]	Reporting Limit
Antimony	aqueous[1]	15 ug/l	Not Applicable	10 ug/l
Antimony	soil[2]	7.5e[2] mg/kg	0.142 mg/kg	4.0 mg/kg
Antimony	sediment	Not Applicable	Not Applicable	4.0 mg/kg
Arsenic (cancer endpoint)	aqueous	0.045 ug/l*	Non Applicable	1 ug/l
Arsenic (cancer endpoint)	soil	3 mg/kg	5.7 mg/kg	4.0 mg/kg
Arsenic	sediment	Not applicable	5.9 mg/kg	4.0 mg/kg
Barium	aqueous	2,600 µg/l	Not Applicable	10 µg/l
Barium	soil	1e[5] mg/kg	Not Applicable	0.4 mg/kg
Barium	sediment	Not Applicable	Not Available	0.4 mg/kg
Cadmium	aqueous	18 ug/l	Not Applicable	0.2 ug/l
Cadmium	soil	9.3e[2] mg/kg	0.181 mg/kg	0.5 mg/kg
Cadmium	sediment	Not Applicable	0.596 mg/kg	0.5 mg/kg
Cadmium	dust	Not Applicable	Not Applicable	0.5 mg/kg
Chromium	aqueous	Not Applicable	Not Applicable	
Chromium	soil	4.5e[2] mg/kg	0.4 mg/kg	
Chromium	sediment	Not Applicable	26 mg/kg	
Lead	aqueous	4 ug/l	Non Applicable	1 ug/l
Lead	soil	1e[3] mg/kg	0.450 mg/kg	0.7 mg/kg
Lead	sediment	Not Applicable	31 mg/kg	0.7 mg/kg
Lead	dust	Not Applicable	Not Applicable	0.7 mg/kg
Selenium	aqueous	180 µg/l	Not Applicable	2.0 µg/l
Selenium	soil	9.4e[3] mg/kg	0.28 mg/kg	4.0 mg/kg
Selenium	sediment	Not Applicable	Not Available	4.0 mg/kg
Silver	aqueous	180 µg/l	Not Applicable	0.2 µg/l
Silver	soil	9.4e[3] mg/kg	4.04 mg/kg	0.2 mg/kg
Silver	sediment	Not Applicable	0.5 mg/kg	0.2 mg/kg
Mercury	aqueous	11 µ/l	Not Applicable	0.2 µg/l
Mercury	soil	5.6e[2] mg/kg	0.0079 mg/kg	0.1 mg/kg

TABLE 5-1
REFINED METALS SITE PROJECT ANALYTE LIST
(Continued)

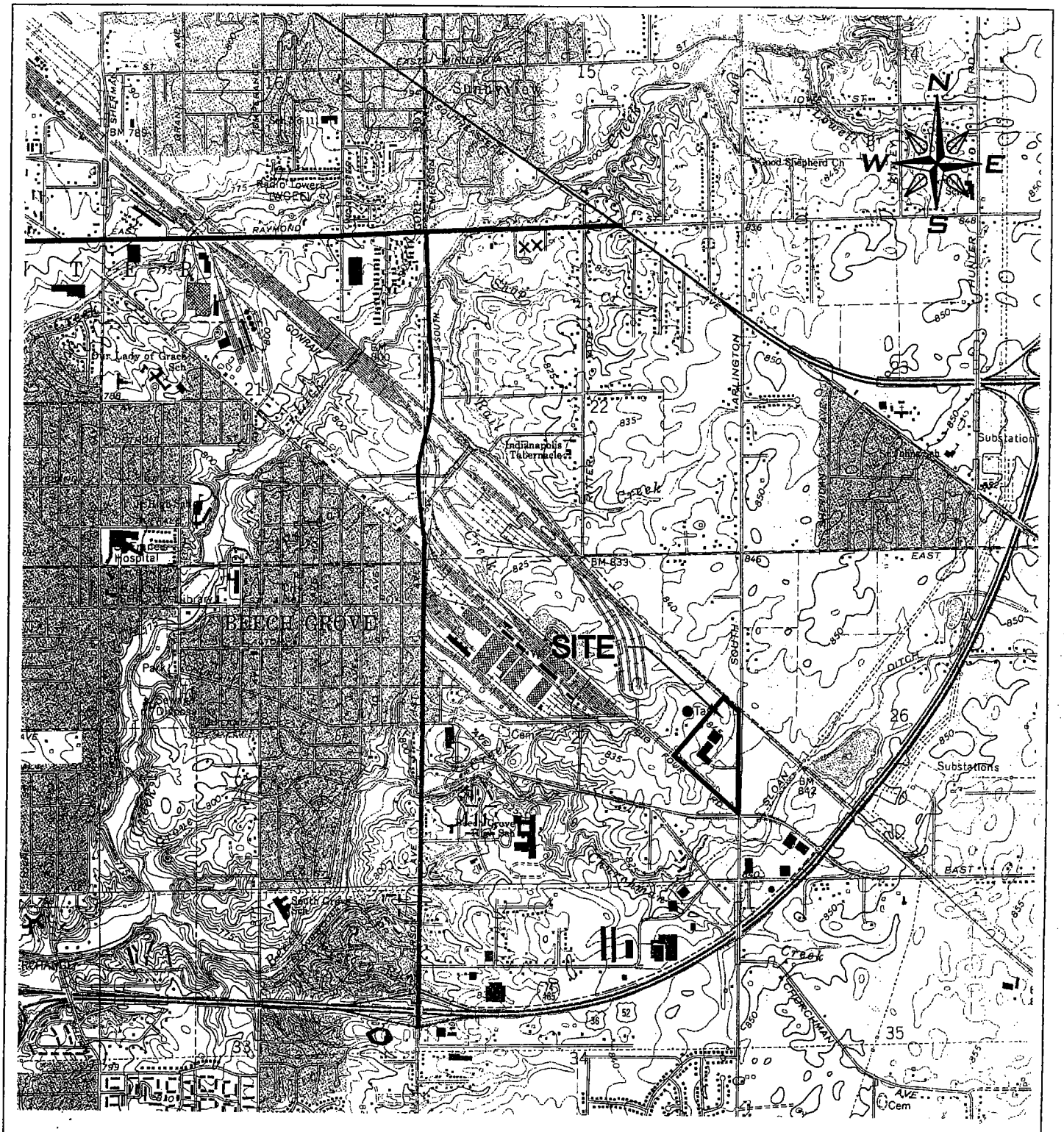
Constituent	Matrix	Human Health[1] Data Quality Level[1]	Ecological Data Quality Level[3]	Reporting Limit
Mercury	sediment	Not Applicable	0.174 mg/kg	0.1 mg/kg
Benzene	aqueous	0.39 µg/l	Not Applicable	
Benzene	soil	$1.4e^{0}$	.255 mg/kg	0.05 mg/kg
Cumene	soil	$5.2e^{0}$	Not Available	0.05 mg/kg
Ethylbenzene	aqueous	1,300 µg/l	Not Applicable	1 µg/l
Ethylbenzene	soil	230 mg/kg	Not Applicable	0.05 mg/kg
Toluene	aqueous	720 µg/l	253 µg/l	1 µg/l
Toluene	soil	$5.2e^{2}$ mg/kg	5.45 µg/kg	0.05 mg/kg
Tetrachloroethene	aqueous	1.1 µg/l	Not Applicable	1 µg/l
1,1,1-Trochloroethane	aqueous	790 µg/l	Not Applicable	1 µg/l
Napthalene	soil	$1.9e^{2}$ mg/kg	0.99 mg/kg	330 µg/kg
Fluorene	soil	$2.2e^{4}$ mg/kg	122 mg/kg	330 µg/kg
Phenanthrene	soil	Not Applicable	45,700 µg/kg	330 µg/kg

* - For these parameters, analytical sensitivity is inadequate to meet target decision levels. Therefore, for risk assessment purposes, non-detect data shall be considered as equal to one-half the reporting limit.

1. Region IX Preliminary Remediation Goals (PRGs), 1998.
2. Soil values are represented by industrial soil PRGs.
3. Region V Ecological Data Quality Levels.

Note: The maximum concentration for each medium and constituent will be compared to the target decision levels to determine the need for human health and ecological risk assessments.

FIGURES



REF. U.S.G.S. 7 1/2 MINUTE
BEECH GROVE, IND
QUADRANGLE MAP

REFINED METALS CORPORATION
RCRA FACILITY INVESTIGATION

BEECH GROVE, INDIANA

Date: 10/12/98	SITE LOCATION MAP
Scale: N.T.S.	
Drawn By: P.S.G.	
Checked By: S.W.K.	Advanced GeoServices Corp. Chadds Ford Business Campus, Rts. 202 & 1 Brandywine One, Suite 202 Chadds Ford, Pennsylvania 19317
Project Mgr: P.G.S.	
Dwg No. 98478-01	Project No. 98-478-03
Issued: 2 9 2000	FIGURE: 2-1

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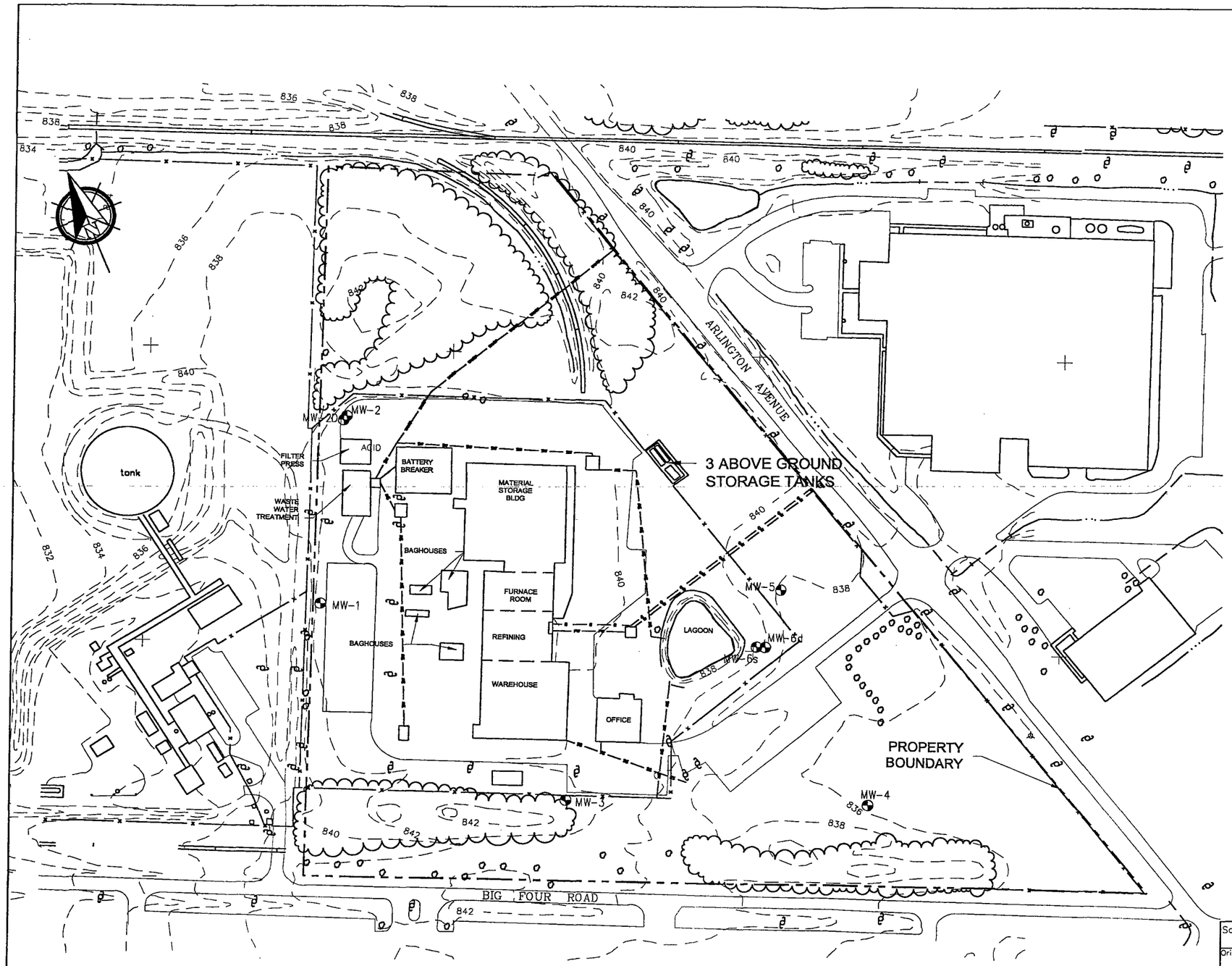


LEGEND

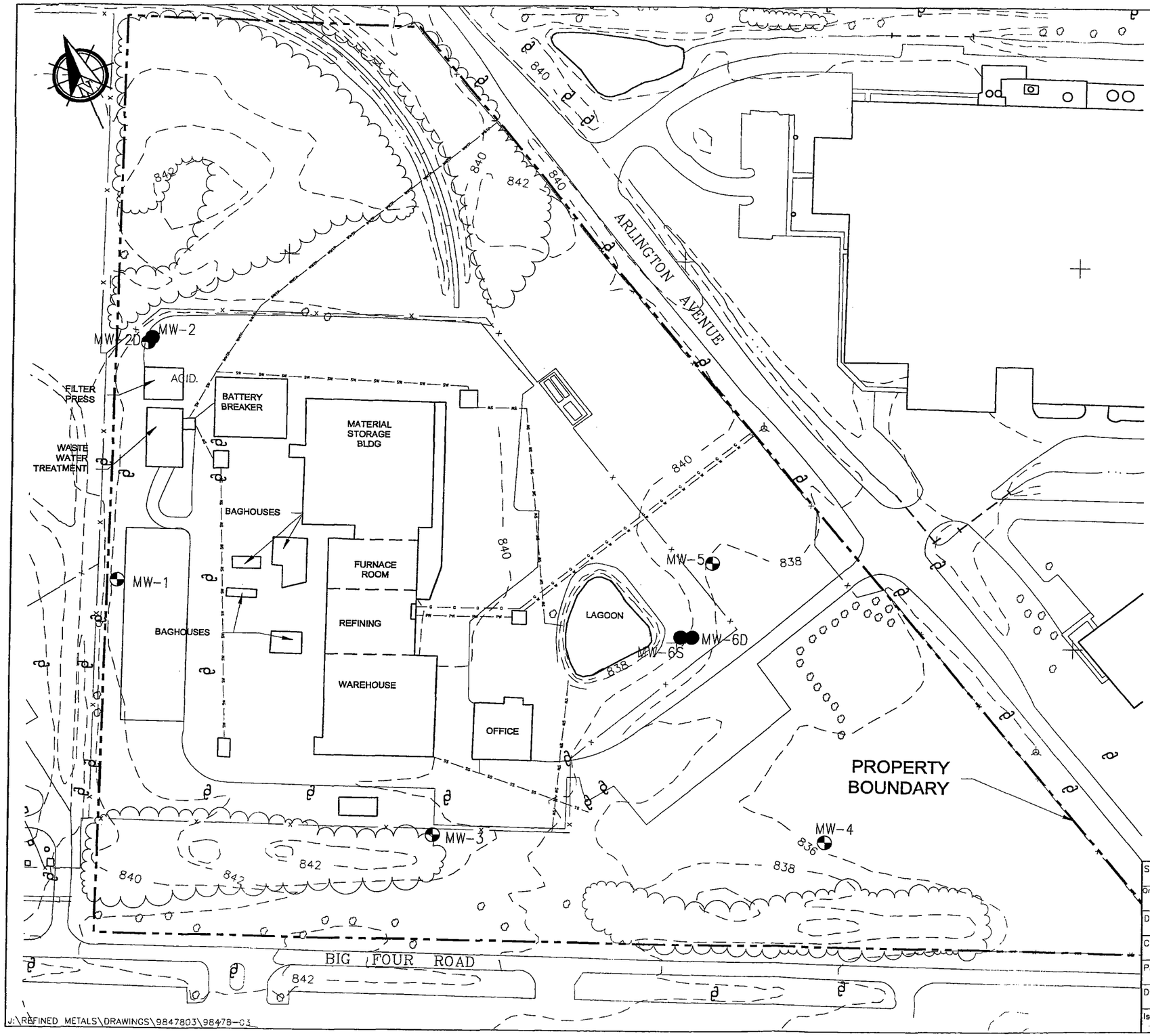
MONITORING WELL–SURVEYED BY THE SCHNEIDER CORP., INDIANAPOLIS, IN

REFINED METALS CORPORATION
RCRA FACILITY INVESTIGATION

BEECH GROVE, IN

Scale: 1"=180'	SITE PLAN
Originated By: B.L.	
Drawn By: V.E.N.	
Checked By:	Advanced GeoServices Corp. Chadds Ford Business Campus, Rts. 202 & 1 Brandywine One, Suite 202 Chadds Ford, Pennsylvania 19317
Project Mgr: P.G.S.	
Dwg No. 98478–02	Project No. 98–478–03
Issued: MAR 29 2000	FIGURE: 2–2

J:\REFINED METALS\DRAWINGS\9847803\98478-02



LEGEND

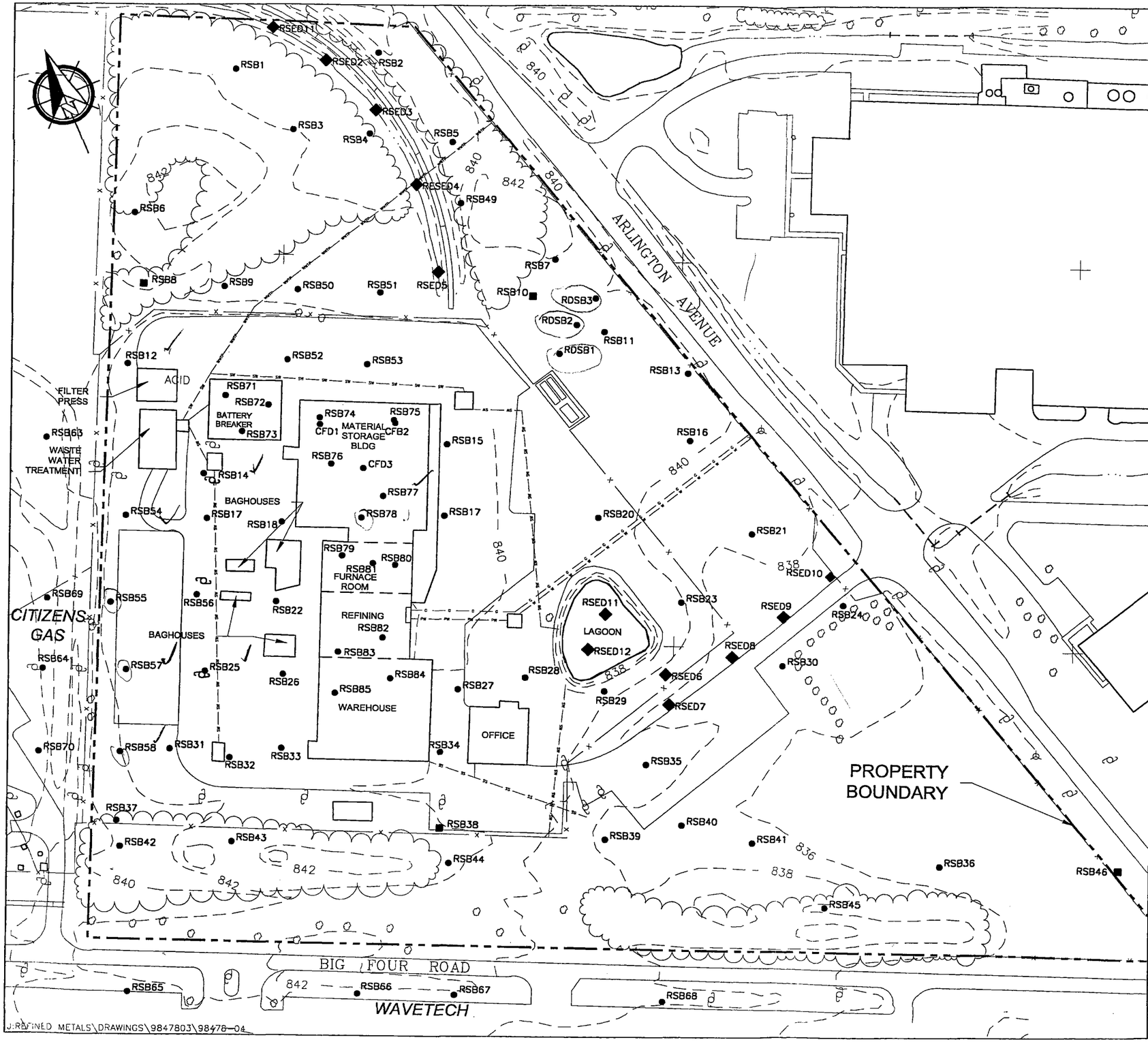
- EXISTING MONITORING WELL-SURVEYED BY THE SCHNEIDER CORP., INDIANAPOLIS, IN
- MONITORING WELL-INSTALLED AS PART OF RFI ACTIVITIES-SURVEYED BY THE SCHNEIDER CORP., INDIANAPOLIS, IN

REFINED METALS CORPORATION
RCRA FACILITY INVESTIGATION

BEECH GROVE, IN

Scale: 1"=130'	SITE WELL LOCATIONS
Originated By: B.L.	
Drawn By: V.E.N.	Advanced GeoServices Corp.
Checked By:	Chadds Ford Business Campus, Rts. 202 & 1 Brandywine One, Suite 202 Chadds Ford, Pennsylvania 19317
Project Mgr: P.G.S.	
Dwg No. 98478-03	Project No. 98-478-03
Issued:	FIGURE: 4-1

J:\REFINED METALS\DRAWINGS\9847803\98478-03



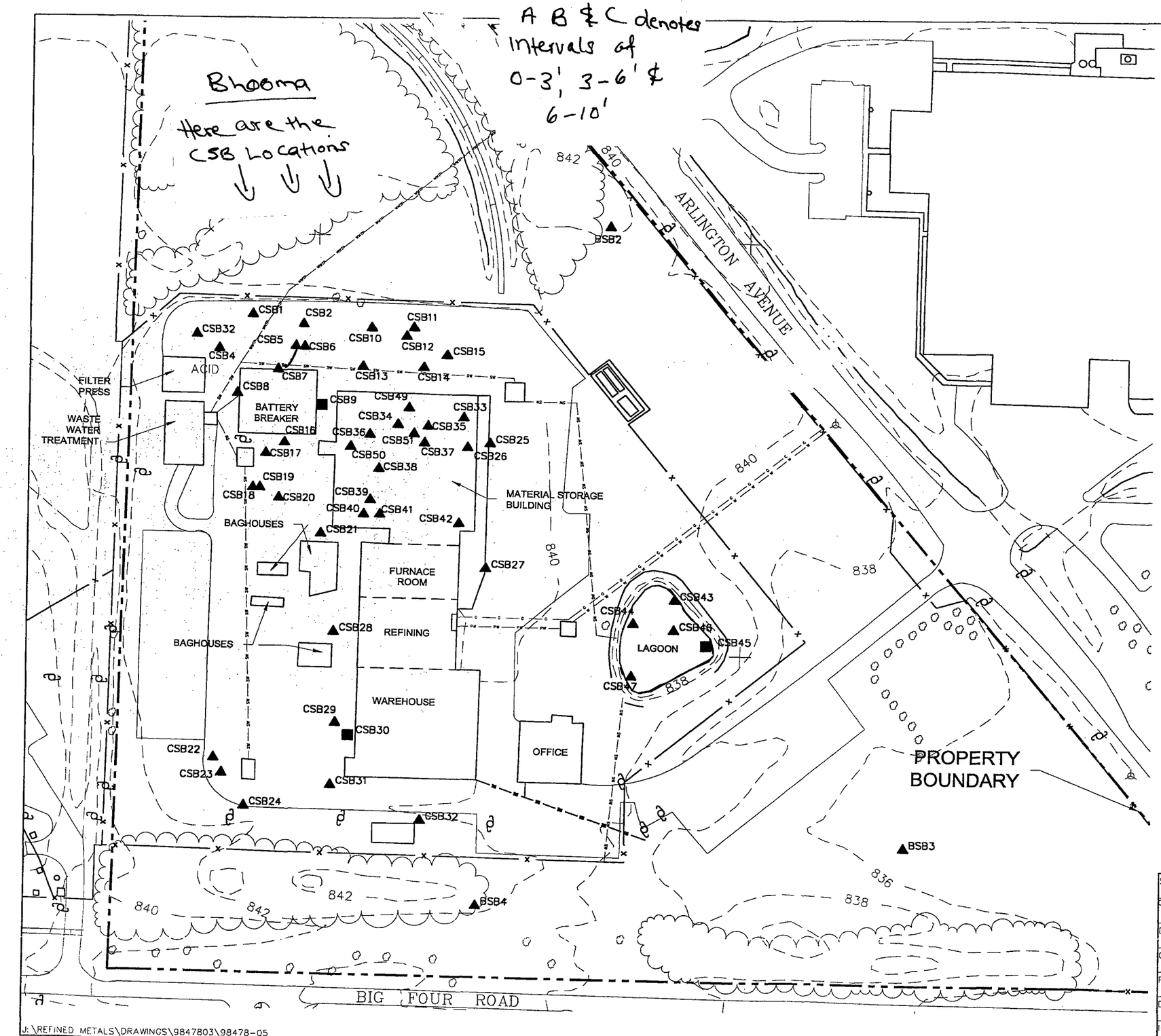
LEGEND

- ● CSB25 — SOIL SAMPLE LOCATION/DESIGNATION SURVEYED BY THE SCHNIEDER CORP., INDIANAPOLIS, IN
- ■ APPROXIMATE SOIL SAMPLE LOCATION—NOT SURVEYED
- ◆ SEDIMENT SAMPLE LOCATION—SURVEYED BY THE SCHNEIDER CORP., INDIANAPOLIS, IN

REFINED METALS CORPORATION
RCRA FACILITY INVESTIGATION

BEECH GROVE, IN

Scale: 1"=130'	RFI SAMPLE LOCATIONS
Originated By: B.M.L.	
Drawn By: V.E.N.	
Checked By:	Advanced GeoServices Corp. Chadds Ford Business Campus, Rts. 202 & 1 Brandywine One, Suite 202 Chadds Ford, Pennsylvania 19317
Project Mgr: P.G.S.	
Dwg. No. 98478-04	
Issued: 2 9 2008	Project No. 98-478-03 — FIGURE: 4-2



LEGEND

▲ CSB25 — SAMPLE LOCATION/DESIGNATION SURVEYED BY THE SCHNIEDER CORP., INDIANAPOLIS, IN

■ — APPROXIMATE SAMPLE LOCATION–NOT SURVEYED

REFINED METALS CORPORATION RCRA FACILITY INVESTIGATION

BEECH GROVE, IN

Scale: 1"=120'	CLOSURE PLAN SAMPLE LOCATIONS
Originated By: B.M.L.	
Drawn By: V.E.N.	
Checked By:	
Project Mgr: P.G.S.	Advanced GeoServices Corp. Chadds Ford Business Campus, Rts. 202 & 1 Brandywine One, Suite 202 Chadds Ford, Pennsylvania 19317
Dwg No. 98478-05	
Issued: 2 9 2000	Project No. 98-478-03 — FIGURE: 4-3

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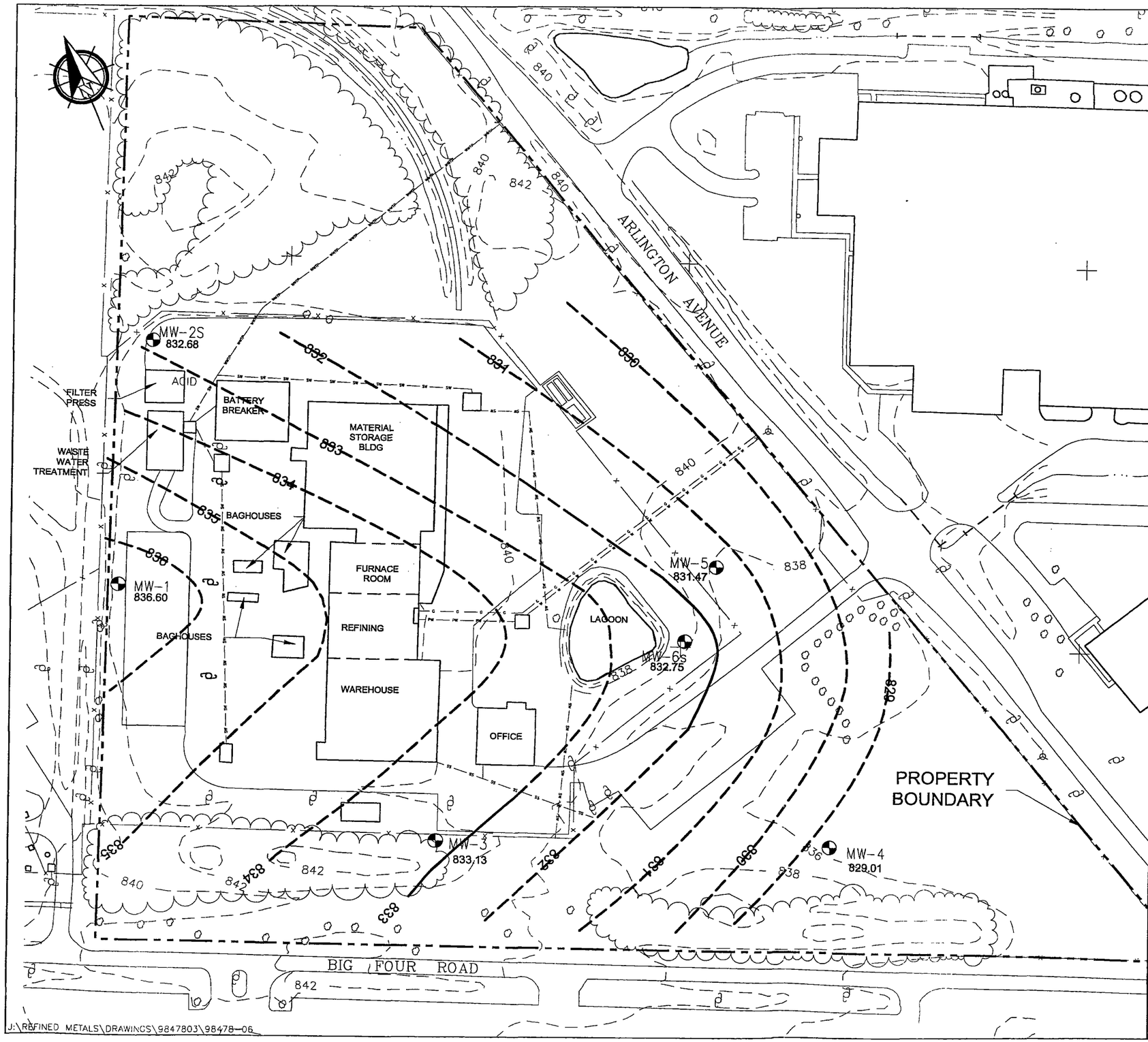


LEGEND

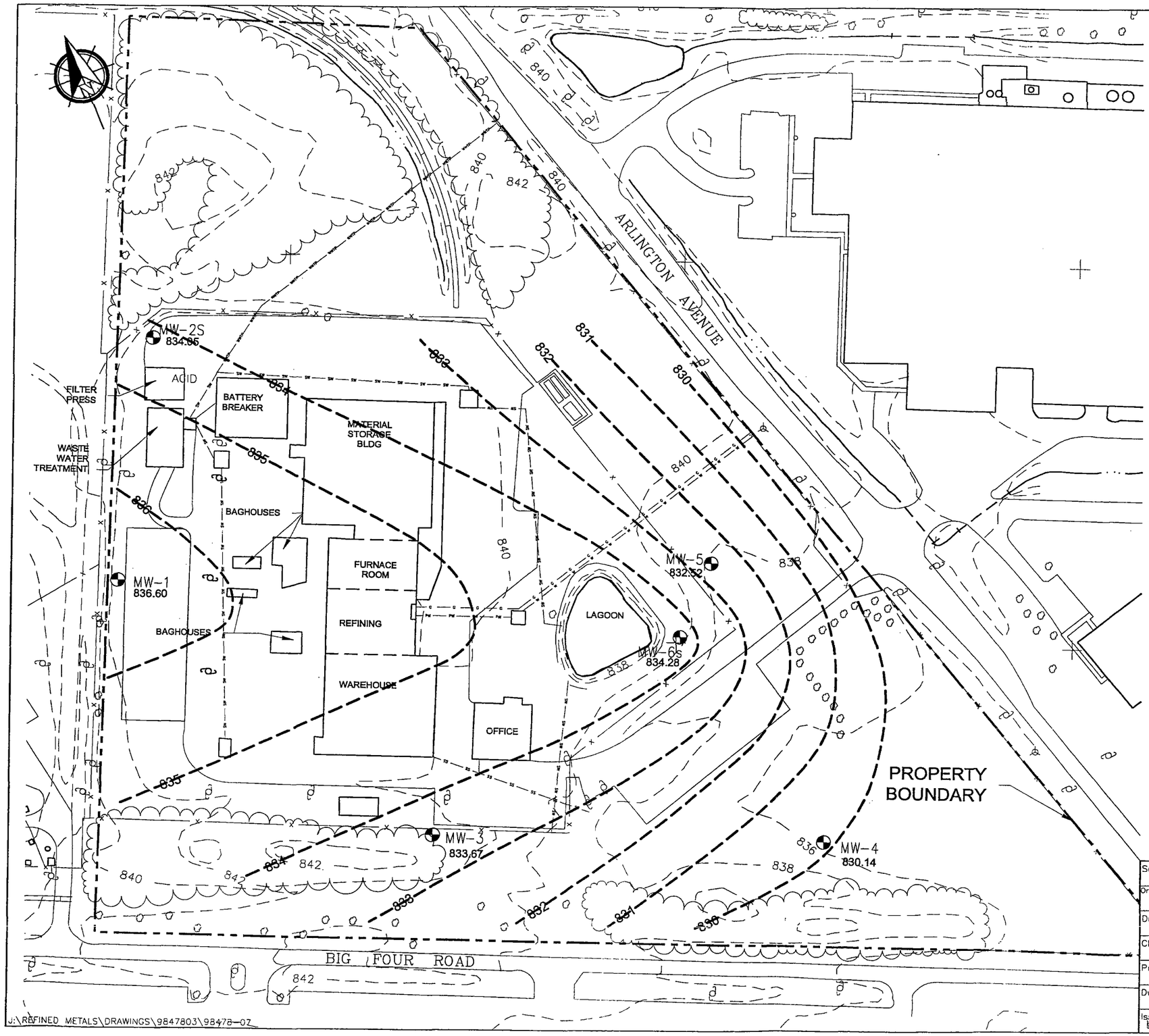
SHALLOW MONITORING WELL–SURVEYED BY THE SCHNEIDER CORP., INDIANAPOLIS, IN

REFINED METALS CORPORATION
RCRA FACILITY INVESTIGATION

BEECH GROVE, IN

Scale: 1"=130'	POTENTIOMETRIC SURFACE MAP FOR SHALLOW GROUNDWATER 9/21/99
Originated By: B.M.L.	
Drawn By: V.E.N.	
Checked By:	Advanced GeoServices Corp. Chadds Ford Business Campus, Rts. 202 & 1 Brandywine One, Suite 202 Chadds Ford, Pennsylvania 19317
Project Mgr: P.G.S.	
Dwg No. 98478-06	
Issued: MAR 23 2000	Project No. 98-478-03 — FIGURE: 5-1

J:\REFINED METALS\DRAWINGS\9847803\98478-06



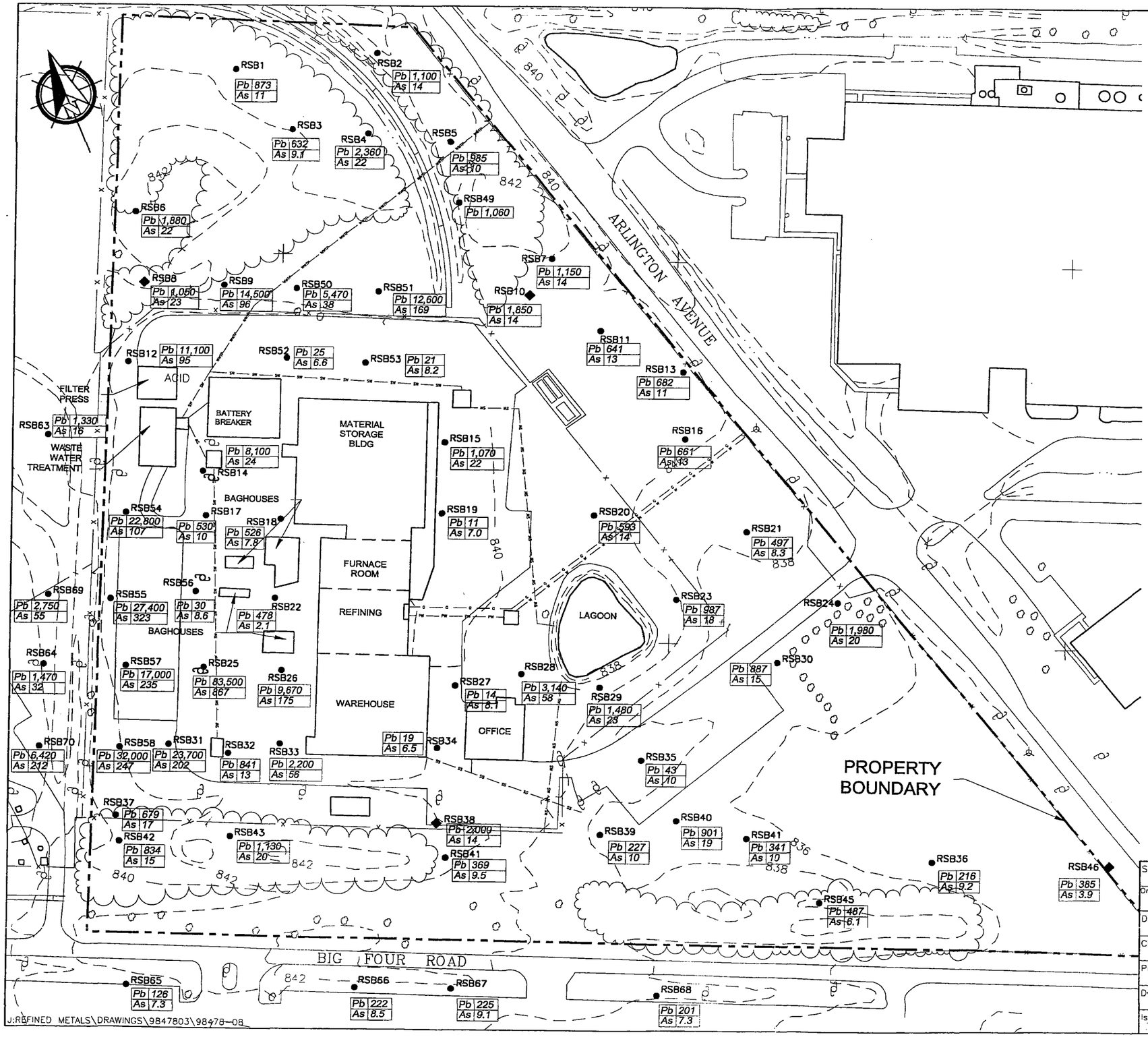
LEGEND

SHALLOW MONITORING WELL-SURVEYED BY THE SCHNEIDER CORP., INDIANAPOLIS, IN

REFINED METALS CORPORATION RCRA FACILITY INVESTIGATION

BEECH GROVE, IN

Scale: 1"=130'	POTENTIOMETRIC SURFACE MAP FOR SHALLOW GROUNDWATER 12/13/99
Originated By: B.M.L.	
Drawn By: V.E.N.	
Checked By:	Advanced GeoServices Corp. Chadds Ford Business Campus, Rts. 202 & 1 Brandywine One, Suite 202 Chadds Ford, Pennsylvania 19317
Project Mgr: P.G.S.	
Dwg No. 98478-07	Project No. 98-478-03
Issued: MAR 25 2009	FIGURE: 5-2



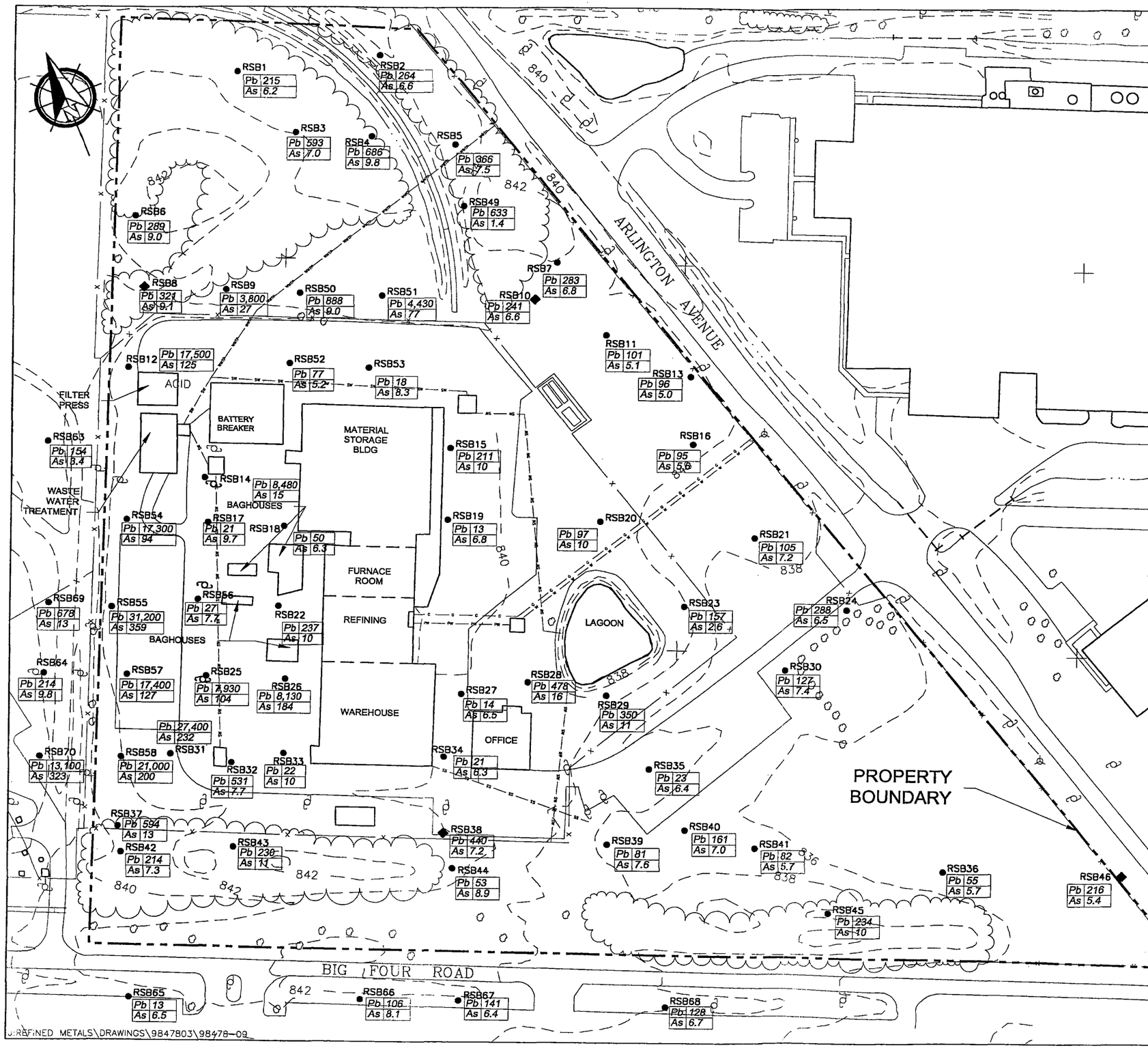
LEGEND

● CSB25	SAMPLE LOCATION/DESIGNATION SURVEYED BY THE SCHNIEDER CORP., INDIANAPOLIS, IN
◆	APPROXIMATE SAMPLE LOCATION–NOT SURVEYED
Pb-887	ANALYTICAL RESULT–LEAD (MG/KG)
As-23	ANALYTICAL RESULT–ARSENIC (MG/KG)

REFINED METALS CORPORATION RCRA FACILITY INVESTIGATION

BEECH GROVE, IN

Scale: 1"=130'	SOIL SAMPLE LEAD AND ARSENIC CONCENTRATIONS MG/KG 0–3" BGS
Originated By: B.M.L.	
Drawn By: V.E.N.	
Checked By:	
Project Mgr: P.G.S.	Advanced GeoServices Corp. Chadds Ford Business Campus, Rts. 202 & 1 Brandywine One, Suite 202 Chadds Ford, Pennsylvania 19317
Dwg No. 98478-08	
Issued: 2 5 2000	Project No. 98-478-03 — FIGURE: 5-3



LEGEND

•CSB25	SAMPLE LOCATION/DESIGNATION SURVEYED BY THE SCHNIEDER CORP., INDIANAPOLIS, IN
◆	APPROXIMATE SAMPLE LOCATION–NOT SURVEYED
Pb-887	ANALYTICAL RESULT–LEAD (MG/KG)
As-23	ANALYTICAL RESULT–ARSENIC (MG/KG)

REFINED METALS CORPORATION RCRA FACILITY INVESTIGATION

BEECH GROVE, IN

Scale: 1"=130'	SOIL SAMPLE LEAD AND ARSENIC CONCENTRATIONS MG/KG 3–10" BGS
Originated By: S.M.L.	
Drawn By: V.E.N.	
Checked By:	Advanced GeoServices Corp. Chadds Ford Business Campus, Rts. 202 & 1 Brandywine One, Suite 202 Chadds Ford, Pennsylvania 19317
Project Mgr: P.G.S.	
Dwg No. 98478–09	
Issued: 2 3 2000	Project No. 98–478–03 — FIGURE: 5–4

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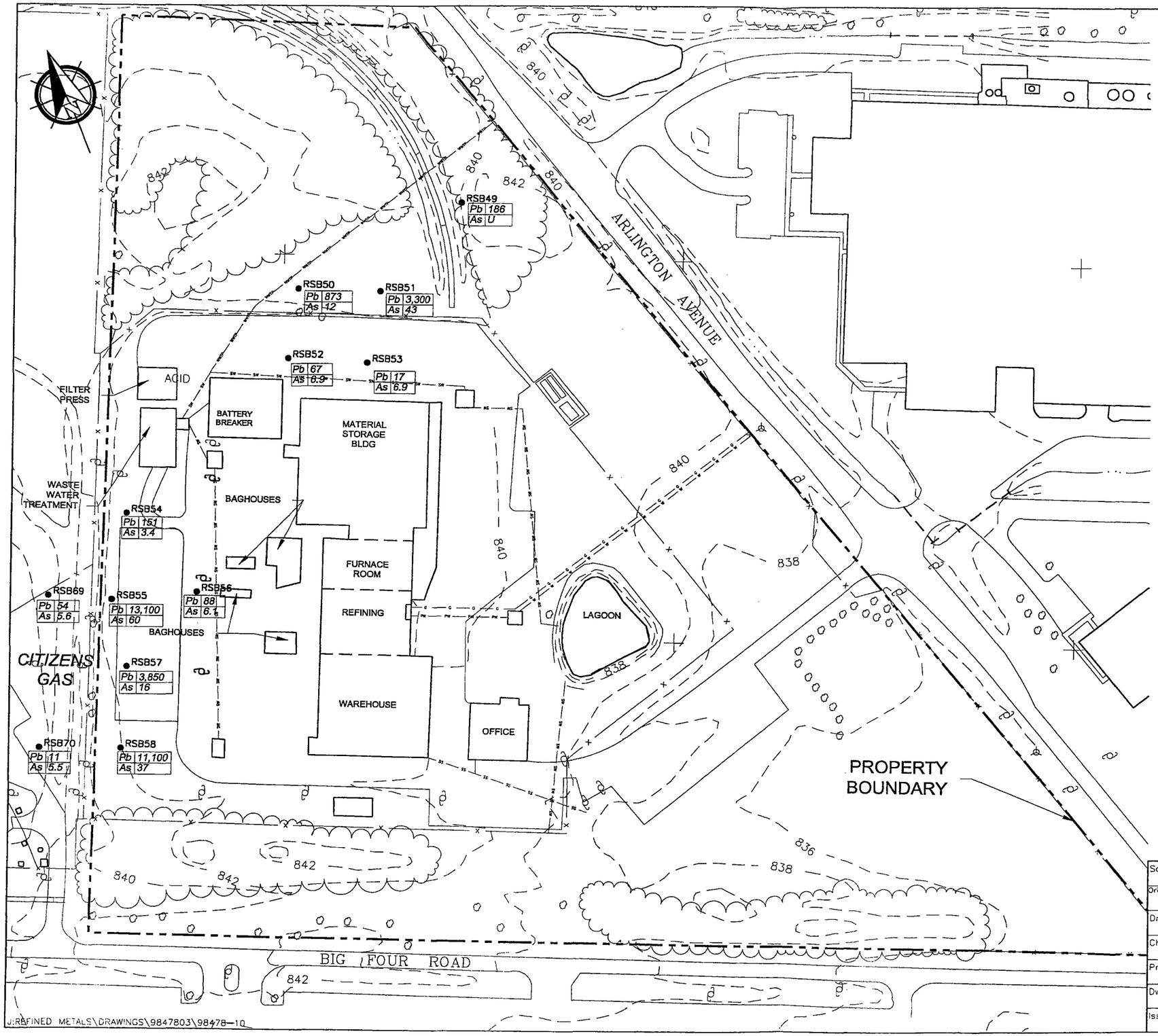


LEGEND

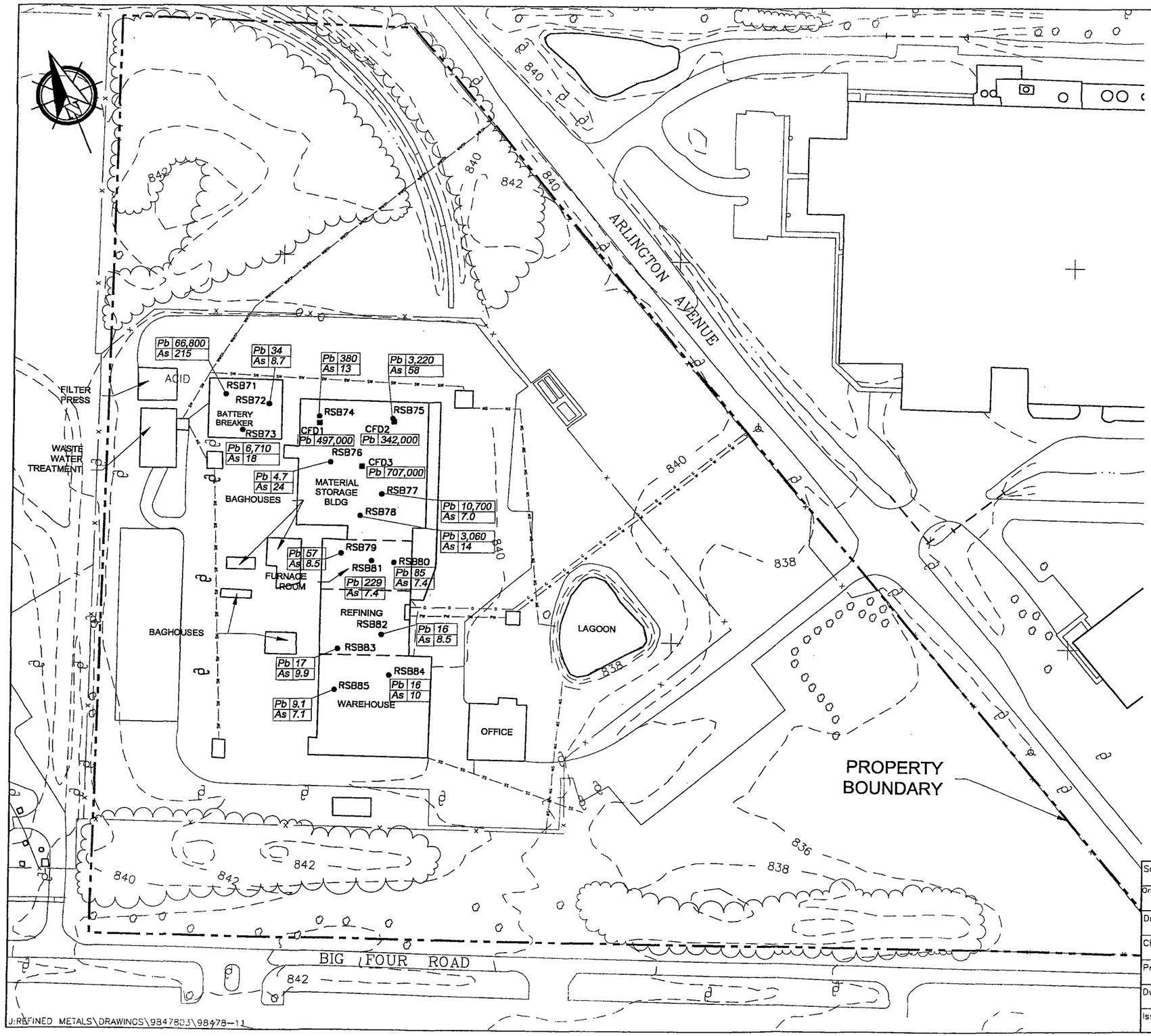
•CSB25	SAMPLE LOCATION/DESIGNATION SURVEYED BY THE SCHNIEDER CORP., INDIANAPOLIS, IN
◆	APPROXIMATE SAMPLE LOCATION–NOT SURVEYED
Pb-887	ANALYTICAL RESULT–LEAD (MG/KG)
As-23	ANALYTICAL RESULT–ARSENIC (MG/KG)
U	ANALYTICAL RESULT UNDETECTED AT LABORATORY DETECTION LIMIT

REFINED METALS CORPORATION RCRA FACILITY INVESTIGATION

BEECH GROVE, IN

Scale: 1"=130'	SOIL SAMPLE LEAD AND ARSENIC CONCENTRATIONS MG/KG 24–30" BGS
Originated By: B.M.L.	
Drawn By: V.E.N.	
Checked By:	Advanced GeoServices Corp. Chadds Ford Business Campus, Rts. 202 & 1 Brandywine One, Suite 202 Chadds Ford, Pennsylvania 19317
Project Mgr: P.G.S.	
Dwg No. 98478–10	
Issued: 2 9 2000	Project No. 98–478–03 — FIGURE: 5–5

J:\REFINED METALS\DRAWINGS\9847803\98478–10



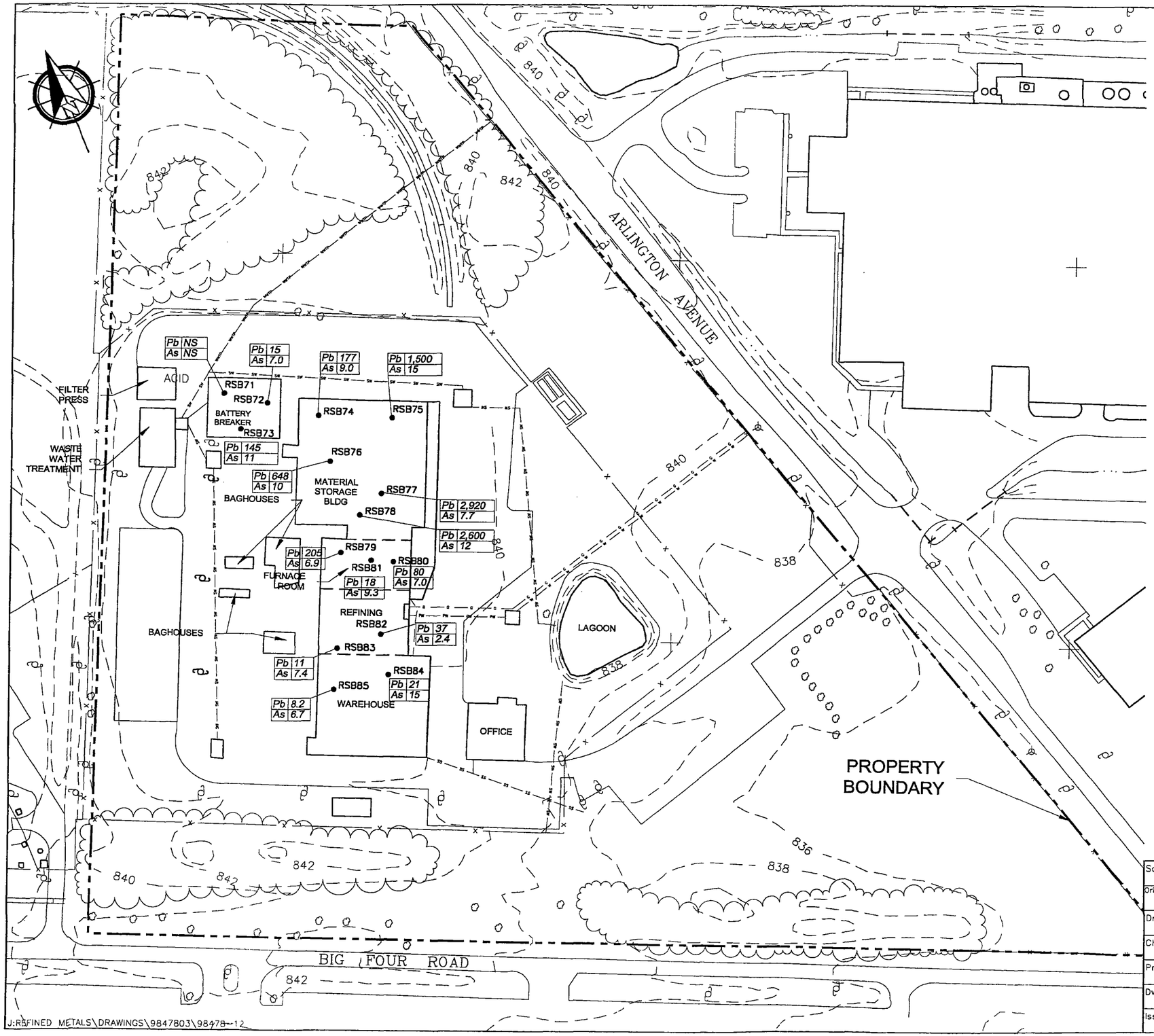
LEGEND

●RSB85	SAMPLE LOCATION/DESIGNATION SURVEYED BY THE SCHNIEDER CORP., INDIANAPOLIS, IN
■CFD1	MATERIALS STORAGE BUILDING FLOOR DUST SAMPLE LOCATION
Pb-887	ANALYTICAL RESULT–LEAD (MG/KG)
As-23	ANALYTICAL RESULT–ARSENIC (MG/KG)

REFINED METALS CORPORATION RCRA FACILITY INVESTIGATION

BEECH GROVE, IN

Scale: 1"=130'	SUB–FLOOR SOIL SAMPLES LEAD AND ARSENIC CONCENTRATIONS MG/KG 0–6" BGS
Originated By: B.M.L.	
Drawn By: V.E.N.	
Checked By:	Advanced GeoServices Corp. Chadds Ford Business Campus, Rts. 202 & 1 Brandywine One, Suite 202 Chadds Ford, Pennsylvania 19317
Project Mgr: P.G.S.	
Dwg No. 98478–11	
Issued: [illegible] 2000	Project No. 98–478–03 — FIGURE: 5–6



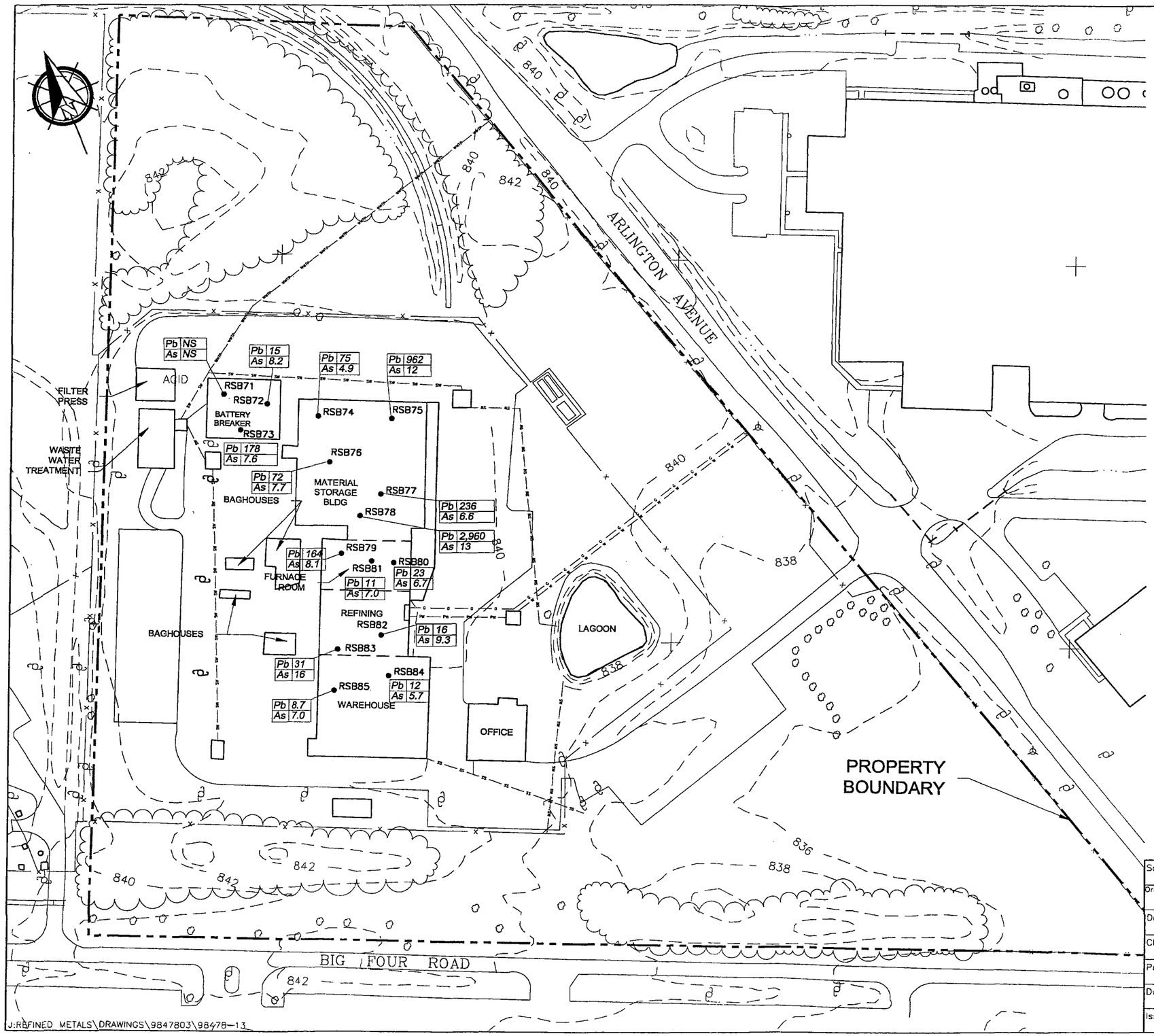
LEGEND

RSB85	SAMPLE LOCATION/DESIGNATION SURVEYED BY THE SCHNIEDER CORP., INDIANAPOLIS, IN
Pb-1,500	ANALYTICAL RESULT–LEAD (MG/KG)
As-7.0	ANALYTICAL RESULT–ARSENIC (MG/KG)
NS	NO SAMPLE COLLECTED

REFINED METALS CORPORATION RCRA FACILITY INVESTIGATION

BEECH GROVE, IN

Scale: 1"=130'	SUB–FLOOR SOIL SAMPLES LEAD AND ARSENIC CONCENTRATIONS MG/KG 12–24" BGS
Originated By: B.M.L.	
Drawn By: V.E.N.	
Checked By:	Advanced GeoServices Corp. Chadds Ford Business Campus, Rts. 202 & 1 Brandywine One, Suite 202 Chadds Ford, Pennsylvania 19317
Project Mgr: P.G.S.	
Dwg No. 98478–12	
Issued: 2 9 2000	Project No. 98–478–03 — FIGURE: 5–7



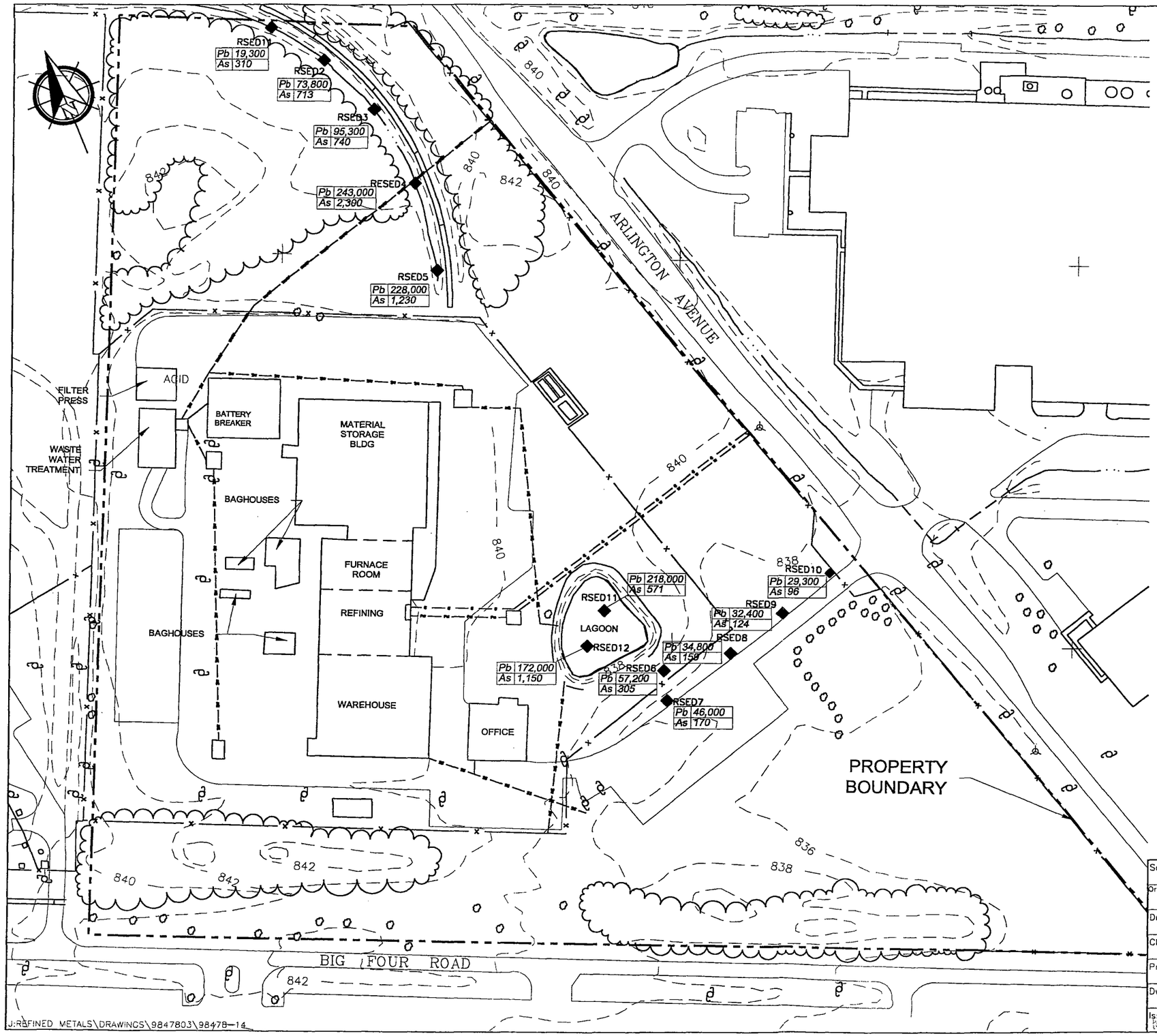
LEGEND

● RSB85	SAMPLE LOCATION/DESIGNATION SURVEYED BY THE SCHNIEDER CORP., INDIANAPOLIS, IN
Pb-1,500	ANALYTICAL RESULT–LEAD (MG/KG)
As-7.0	ANALYTICAL RESULT–ARSENIC (MG/KG)
NS	NO SAMPLE COLLECTED

REFINED METALS CORPORATION RCRA FACILITY INVESTIGATION

BEECH GROVE, IN

Scale: 1"=130'	SUB–FLOOR SOIL SAMPLES LEAD AND ARSENIC CONCENTRATIONS MG/KG 24–30" BGS
Originated By: B.M.L.	
Drawn By: V.E.N.	
Checked By:	Advanced GeoServices Corp. Chadds Ford Business Campus, Rts. 202 & 1 Brandywine One, Suite 202 Chadds Ford, Pennsylvania 19317
Project Mgr: P.G.S.	
Dwg No. 98478–13	
Issued: 2 3 2000	Project No. 98–478–03 — FIGURE: 5–8



LEGEND

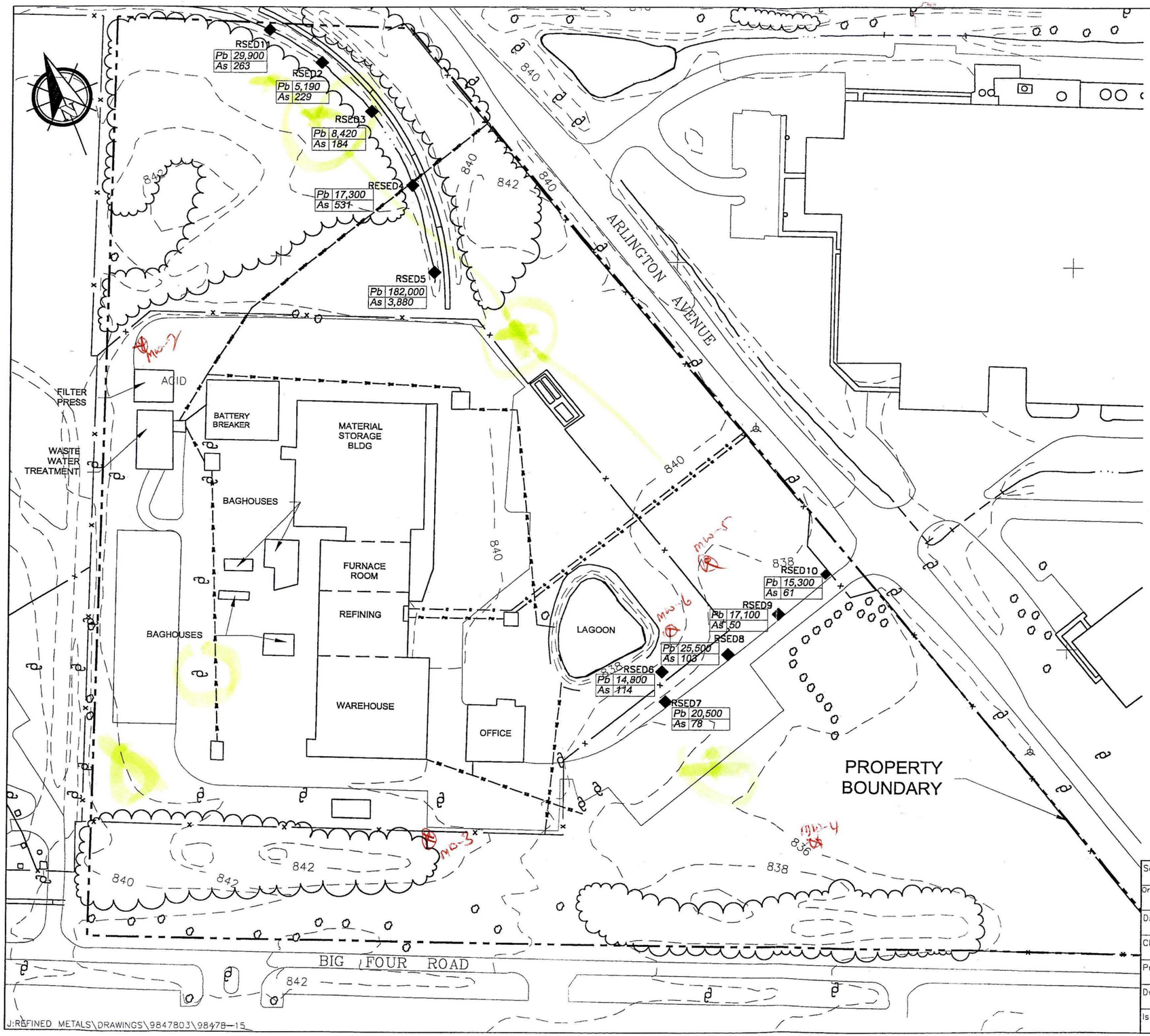
◆ RSED6	SAMPLE LOCATION/DESIGNATION SURVEYED BY THE SCHNIEDER CORP., INDIANAPOLIS, IN
Pb-1,500	ANALYTICAL RESULT–LEAD (MG/KG)
As-96	ANALYTICAL RESULT–ARSENIC (MG/KG)

REFINED METALS CORPORATION RCRA FACILITY INVESTIGATION

BEECH GROVE, IN

Scale: 1"=130'	SEDIMENT SAMPLE LEAD AND ARSENIC CONCENTRATIONS MG/KG 0–6" BGS
Originated By: B.M.L.	
Drawn By: V.E.N.	
Checked By:	Advanced GeoServices Corp. Chadds Ford Business Campus, Rts. 202 & 1 Brandywine One, Suite 202 Chadds Ford, Pennsylvania 19317
Project Mgr: P.G.S.	
Dwg No. 98478–14	
Issued: MAR 2 9 2000	Project No. 98-478-03 — FIGURE: 5–9

J:\REFINED METALS\DRAWINGS\9847803\98478–14



LEGEND

◆ RSED6	SAMPLE LOCATION/DESIGNATION SURVEYED BY THE SCHNIEDER CORP., INDIANAPOLIS, IN
Pb-1,500	ANALYTICAL RESULT–LEAD (MG/KG)
As-96	ANALYTICAL RESULT–ARSENIC (MG/KG)

REFINED METALS CORPORATION RCRA FACILITY INVESTIGATION

BEECH GROVE, IN

Scale: 1"=130'	SEDIMENT SAMPLE LEAD AND ARSENIC CONCENTRATIONS MG/KG 6–12" BGS
Originated By: B.M.L.	
Drawn By: V.E.N.	
Checked By:	Advanced GeoServices Corp. Chadds Ford Business Campus, Rts. 202 & 1 Brandywine One, Suite 202 Chadds Ford, Pennsylvania 19317
Project Mgr: P.G.S.	
Dwg No. 98478–15	Project No. 98–478–03
Issued: MAR 29 2000	FIGURE: 5–10

J:\REFINED METALS\DRAWINGS\9847803\98478–15

APPENDIX A

Boring Logs

BORING LOG

PROJECT NUMBER: 98-478-03	PROJECT NAME: RMC-Beech Grove	
BORING / WELL NUMBER: MW-10	LOCATION: Beech Grove, Indiana	
DIAMETER: No well installed	WATER DEPTH: none encountered	DATE/TIME:
GEOLOGIST: Eric Stanke	COMPLETION DEPTH: 129.5'	DATE STARTED: 8/23/99
DRILLING METHOD: HSA and Roto-Sonic	SAMPLING METHOD: HSA/ss & Roto-Sonic	DATE COMPLETED: 8/31/99
DRILLING SUBCONTRACTOR: Boart Longyear	DEVELOPMENT METHOD: Not Applicable	YIELD: Not Applicable

DESCRIPTION	WELL CONSTRUCTION	DEPTH (FT.)	PENETRATION BLOWS PER 6 IN.	RECOVERY (FT.)	INSTRUMENT READING	SAMPLE NUMBER	REMARKS
0.0-3.0' CLAY, brown with construction debris -dry (fill)(Loose) (3.0')			Data not collected.	Data not collected	Not applicable.	No applicable.	On 8/23/99 use Roto-Sonic rig to determine what depth to overdri to with 10' Augers and set 8" surface casing. Set 8" surface casing to 29.5' and grout. Casing in on 8/25/99.
3.0'-9.0' CLAY, brown -moist (Loose) (9.0')		5					
9.0'-15.0' Clayey SILT, brown to dark brown -moist (Loose) (15.0')		10					
15.0'-20.0' Fine sandy CLAY, Light brown and gray with a trace of gravel -moist (Loose) (20.0')		15					
20.0'-23.0' SILT, dark and orange brown with a trace of subrounded to subangular gravel -moist (Loose) (23.0')		20					
23.0'-26.0' Fine sandy SILT, Light to dark gray with a trace of subangular to subrounded gravel -dry (medium dense) (26.0')		25					
26.0'-28.0' Fine SAND, gray with a trace of silt and subangular to subrounded gravel-dry (medium to very dense) (28.0')							
28.0'-32.0' SILT, dark gray with a trace of subangular to subrounded gravel -dry (medium to very dense) (32.0')		30					Surface Casing Set to 29.5'. Begin 8" Roto-Sonic drilling and 6" continuous sampling from 29.5' to 77.0' on 8/30/99.

BORING LOG

MW-1D

DESCRIPTION	WELL CONSTRUCTION	DEPTH (FT.)	PENETRATION BLOWS PER 6 IN.	RECOVERY (FT.)	INSTRUMENT READING	SAMPLE NUMBER	REMARKS
32.0'-37.0' silty CLAY dark gray with some subangular to subrounded gravel-dry (medium dense) (37.0')		35					
37.0'-40.0' Fine SAND, gray with a trace of silt and gravel - dry (medium dense) (40.0')		40					
40.0'- 48.0' SILT, dark gray with a trace of gravel - dry (very dense) (48.0')		45					
48.0'- 60.0' CLAY, dark gray and dark brown with a trace of coarse sand-moist (medium to very dense) (60.0')		50 55					
60.0'-62.0' fine SAND, gray with a trace of silt -moist (Loose) (62.0')		60					
62.0'-66.0' SILT, dark gray with <1" Fine sand lenses - moist (very dense) (66.0')		65					
66.0'-68.0' Fine SAND, dark gray with a trace of silt and gravel -moist (Loose) (68.0')							
68.0'-70.0' SILT, dark gray with some subrounded to subangular gravel-dry (medium to very dense) (70.0')		70					

BORING LOG

MW-10

DESCRIPTION	WELL CONSTRUCTION	DEPTH (FT.)	PENETRATION BLOWS PER 6 IN.	RECOVERY (FT.)	INSTRUMENT READING	SAMPLE NUMBER	REMARKS
70.0'-77.0' SILT, dark gray with a trace of subrounded to subangular gravel - moist (medium to very dense (77.0')		75					
77.0'-93.0' SILT, dark gray with a trace of gravel and intermittent clay and fine sand lenses - moist (medium to very dense) (93.0')		80, 85, 90					Continuous Roto-Sonic sampling and drilling from 77.0' to 129.5' on 8/31/99.
93.0'-98.0' silty CLAY, dark gray with a trace of subrounded to subangular gravel - dry (very dense) (98.0')		95					
98.0'-102.0' CLAY, glauconitic with brown sandy clay lenses - moist (Loose) (102.0')		100					
102.0'-110.0' CLAY, Light brown with a trace of silt and gravel - dry (medium to very dense)		105					

BORING LOG

MW-1D

DESCRIPTION	WELL CONSTRUCTION	DEPTH (FT.)	PENETRATION BLOWS PER 6 IN.	RECOVERY (FT.)	INSTRUMENT READING	SAMPLE NUMBER	REMARKS
(110.0')		110					
110.0 120.0' SILT, gray to dark gray with a trace of gravel -dry (very dense)		115					
(120.0')		120					
120.0'-123.0' CLAY, dark gray with a trace of fine sand and gravel -dry (medium dense)							
(123.0')							
123.0'-129.5' Fine to coarse sandy CLAY, dark gray with a trace of gravel -moist (medium dense)		125					
(129.5')							
Boring terminated at 129.5'.		130					Per work plan cease Roto-sonic sampling and drilling at 130.0' on 8/31/99 at 1540 hrs. Recovered sample to 129.5' Boring is dry. Boring sealed/filled to surface with a 95% cement/ 5% bentonite grout on 8/31/99.

8" borehole with 95/5% grout

BORING LOG

PROJECT NUMBER: 98-478-03	PROJECT NAME: RMC-Beech Grove	
BORING / WELL NUMBER: MW-26	LOCATION: Beech Grove Indiana	
DIAMETER: 4"	WATER DEPTH: 1st Water @ 21.75'	DATE/TIME: 8/12 @ 0920
GEOLOGIST: Eric Stanke	COMPLETION DEPTH: Well 80.0' Boring 110.0'	DATE STARTED: 8/12/99
DRILLING METHOD: HSA and Roto-Sonic	SAMPLING METHOD: HSA/SS & Roto-Sonic	DATE COMPLETED: 8/21/99
DRILLING SUBCONTRACTOR: Boart Longyear	DEVELOPMENT METHOD: Surge block/pump	YIELD: ~3 gpm

DESCRIPTION	WELL CONSTRUCTION	DEPTH (FT.)	PENETRATION BLOWS PER 6 IN.	RECOVERY (FT.)	INSTRUMENT READING	SAMPLE NUMBER	REMARKS
0.0-1.5' Asphalt (#6") stone and rubble (1.5')			Data not collected.	Data not collected.	Not applicable.	Not applicable.	On 8/12/99 use 6 1/4" HSA and split spoon sampling to determine what depth to overdrill to with 10" augers and set 8" surface casing. Set 8" surface to 31.0' on 8/12/99. Grout casing in on 8/12/99.
1.5'-4.0' CLAY, gray with a trace of organics and gravel - moist (Loose) (4.0')							
4.0'-7.0' CLAY, black, gray and brown with some silt - moist (Loose to medium dense) (7.0')		5					
7.0'-7.25' GRAVEL, limestone with some silt (Loose) (7.25')							
7.25'-12.0' CLAY, Light brown and gray mottled with a trace of silt - moist (medium dense) (12.0')		10					
12.0'-15.5' CLAY, Light brown with some silt and a trace of fine sand and subangular to subrounded gravel - moist (medium dense) (15.5')		15					
15.5'-16.0' LIMESTONE Cobble (16.0')							
16.0'-21.75' SILT, tan with some fine sand and a trace of coarse sand - moist (Loose) (21.75')		20					
21.75'-22.0' Fine SAND, brown - wet (Loose) (22.0')							
22.0'-25.0' Grades from material at 21.75' to very fine SAND with silt - moist (Loose) (25.0')		25					
25.0'-26.25' SILT, dark brown with a trace of clay and subangular to subrounded gravel - moist (medium dense) (26.25')							
26.25'-27.0' fine SAND, Light brown with some silt and a trace of gravel - wet (Loose) (27.0')							
27.0'-31.0' SILT, dark brown with a trace of clay and gravel - dry (very dense (31.0')		30					Surface casing set to 31.0'. Begin 8" Roto-Sonic drilling and 6" Roto-Sonic continuous
31.0'-49.0' SILT, dark brown and dark gray with a trace of subangular to subrounded gravel -							

BORING LOG

MW-2A

DESCRIPTION	WELL CONSTRUCTION	DEPTH (FT.)	PENETRATION BLOWS PER 6 IN.	RECOVERY (FT.)	INSTRUMENT READING	SAMPLE NUMBER	REMARKS
dry (medium to very dense) (49.0')		35, 40, 45					Sampling from 31.0' to 110.0' on 8/21/99.
49.0'-50.0' Fine sandy CLAY, dark gray and black with a trace of gravel-moist (medium dense) (less)		50					
50.0'-56.0' CLAY, dark gray with a trace of fine sand-moist (medium dense) (56.0')		55					
56.0'-58.5' CLAY, glauconitic with a trace of gray fine sand and silt-moist (medium dense) (58.0')							
58.0'-60.0' SILT, gray and tan mottled with some clay and a trace of fine sand and gravel-moist (medium to very dense) (60.0')		60					
60.0'-68.0' Fine sandy SILT with a trace of gravel-moist (Loose to medium dense) (68.0')		65					
68.0'-80.0' Coarse SAND, black and gray with gravel and intermittent very fine sand lenses -wet (very Loose)		70					

BORING LOG

MW-20

DESCRIPTION	WELL CONSTRUCTION	DEPTH (FT.)	PENETRATION BLOWS PER 6 IN.	RECOVERY (FT.)	INSTRUMENT READING	SAMPLE NUMBER	REMARKS
		75					
(80.0') 80.0'-84.0' silty medium SAND, gray with a trace of gravel - moist (loose)		80					
(84.0') 84.0'-90.5' very fine SAND, gray - moist (loose)		85					
(90.5') 90.5'-96.0' SILT, dark gray with a trace of gravel - dry (medium to very dense)		90					
(96.0') 96.0'-99.0' silty CLAY, brown and gray mottled - dry (medium dense)		95					
(99.0') 99.0'-110.0' SILT, dark gray with a trace of gravel - dry (very dense)		100					
		105					

BORING LOG

MW-20

DESCRIPTION	WELL CONSTRUCTION	DEPTH (FT.)	PENETRATION BLOWS PER 6 IN.	RECOVERY (FT.)	INSTRUMENT READING	SAMPLE NUMBER	REMARKS
(110.0')		110					
Boring terminated at 110.0'.							Per conversation with Project Geologist cease Roto-Sonic sampling and drilling at 110.0' on 8/21/99. Build back boring to 80.0' and begin well construction at 80.0'.
							8" borehole with 95/5% grout and 4" diameter PVC casing
							8" borehole with bentonite and 4" diameter PVC casing
							8" borehole with #5 sand and 4" diameter PVC casing
							8" borehole with #5 sand and 0.010" slot 4" diameter PVC Screen
							8" borehole with bentonite
							8" borehole with #5 sand

BORING LOG

PROJECT NUMBER: 98-478-03	PROJECT NAME: RMC - Beech Grove	
BORING / WELL NUMBER: MW-30	LOCATION: Beech Grove Indiana	
DIAMETER: No well installed.	WATER DEPTH: 1st water @ 13.75'	DATE/TIME: 8/11 @ 1000
GEOLOGIST: Eric Stanke	COMPLETION DEPTH: 130'	DATE STARTED: 8/11/99
DRILLING METHOD: HSA and Roto-Sonic	SAMPLING METHOD: HSA/SS & Roto-Sonic	DATE COMPLETED: 8/20/99
DRILLING SUBCONTRACTOR: Boart Longyear	DEVELOPMENT METHOD: Not Applicable	YIELD: Not Applicable

DESCRIPTION	WELL CONSTRUCTION	DEPTH (FT.)	PENETRATION BLOWS PER 6 IN.	RECOVERY (FT.)	INSTRUMENT READING	SAMPLE NUMBER	REMARKS
0.0-1.0' SILT, tan with trace organics-dry (1.0')			Data not collected.	Data not collected.	Not applicable.	Not applicable.	On 8/11/99 use 6¼ HSA and split spoon sampling to determine what depth to overdrill to with 10" augers and set 8" surface casing. Set 8" surface casing to 32' on 8/11/99 Grout casing in on 8/12/99.
1.0'-2.0' SILT, gray and brown mottled with trace rock fragments-dry (2.0')							
2.0'-6.0' SILT, brown and tan mottled with trace of subrounded to rounded gravel-dry (6.0')		5					
6.0'-8.5' Fine sandy CLAY, Light brown and Tan with a trace of subrounded gravel -dry (8.5')							
8.5'-10.25' silty Fine SAND, with trace of subrounded to rounded gravel -moist (10.25')							
10.25'-13.0' CLAY, brown with trace of fine to coarse sand-moist (13.0')		10					
13.0'-13.75' SILT, gray-dry (13.75')							
13.75'-14.0' SAND, gray medium to coarse with trace clay-wet (14.0')		15					
14.0'-19.5' CLAY, gray with some subangular to rounded gravel-moist and medium dense (19.5')							
19.5'-20.0' silty fine SAND, with trace of subrounded to rounded gravel-moist (20.0')		20					
20.0'-21.5' subangular to rounded gravelly SILT, gray and wet (21.5')							
21.5'-24.5' SILT, gray with some subrounded to rounded gravel-moist (24.5')							
24.5'-25.0' fine to coarse SAND-dry (25.0')		25					
25.0'-26.0' SILT, gray-dry (26.0')							
26.0'-26.5' clayey Fine SAND, gray and wet (26.5')							
26.5'-28.5' clayey SILT, gray with trace of rounded to subrounded gravel-dry (medium dense) (28.5')							
28.5'-29.0' CLAY, brown with trace of fine sand (medium to very dense)-moist (29.0')		30					
29.0'-32.0' CLAY, gray with trace gravel and silt -dry (very dense) (32.0')							Surface casing set to 32'. Drain 8" roto-sonic
32.0'-35.0' clayey SILT, gray with trace of							

BORING LOG

MW-30

DESCRIPTION	WELL CONSTRUCTION	DEPTH (FT.)	PENETRATION BLOWS PER 6 IN.	RECOVERY (FT.)	INSTRUMENT READING	SAMPLE NUMBER	REMARKS
Subrounded gravel - dry (very dense) (35.0')		35					drilling and 6" Roto-Sonic Continuous Sampling From 32.0' to 55.0' on 8/18/99.
35.0'-37.0' SILT, gray with trace clay and Subangular to subrounded gravel to 1" in diameter - moist (Loose) (37.0')							
37.0'-42.0' SILT, gray with some subrounded to rounded gravel - dry (medium to very dense) (42.0')		40					
42.0'-45.0' SILT, gray - dry (very dense) (45.0')							
45.0'-48.0' medium SAND, gray and black - wet grades to medium to coarse SAND, gray and black with some gravel - wet (very Loose) (48.0')		45					
48.0'-52.0' SILT, gray to black - dry (very dense) (52.0')		50					
52.0'-54.5' glauconitic CLAY, mixed with Fine sand and gravel - dry (medium to very dense) (54.5')							
54.5'-59.0' CLAY, Light brown with some Fine Sand and a trace of gravel - moist (Loose to medium dense) (59.0')		55					Continuous Roto-Sonic Sampling and drilling from 55.0' to 117.0' on 8/19/99
59.0'-60.0' SILT, gray interbedded with Light brown Sand (medium dense) (60.0')		60					
60.0'-64.0' SAND, Light brown with a trace of silt and gravel - dry (medium dense) (64.0')							
64.0'-66.0' SILT, dark gray to gray with a trace clay and gravel - dry (medium dense) (66.0')		65					
66.0'-69.0' CLAY and fine SAND, Light brown and gray - dry (medium dense) (69.0')							
69.0'-70.0' coarse SAND, gray and black with some gravel and a trace of silt (Loose) (70.0')		70					

BORING LOG

MW-30

DESCRIPTION	WELL CONSTRUCTION	DEPTH (FT.)	PENETRATION BLOWS PER 6 IN.	RECOVERY (FT.)	INSTRUMENT READING	SAMPLE NUMBER	REMARKS
70.0'-79.0' SILT, gray with a trace of gravel - dry (medium to very dense (79.0')		75					
79.0'-80.0' SILT, gray with some gravel - wet (Loose) (80.0')		80					
80.0'-81.0' gravelly SILT, gray to dark gray - wet (Loose) (81.0')							
81.0'-85.0' SILT interbedded with SAND, both gray. Silt has some clay - dry (medium dense). Sand is medium to coarse with a trace of gravel (medium dense) (85.0')		85					
85.0'-90.0' SILT, gray with a trace of sub-angular to subrounded gravel - dry (medium dense. (90.0')		90					
90.0'-90.5' Fine to coarse SAND, gray - wet (Loose) (90.5')							
90.5'-98.0' silty CLAY, gray with a trace of subangular to subrounded gravel - dry (medium to very dense) (98.0')		95					
98.0'-105.0' CLAY, Light brown and Light gray mottled with a trace of silt and gravel - dry (medium to very dense) (105.0')		100					
105.0'-114.5' Clayey SILT, Light brown with a trace of gravel - dry (medium dense)		105					

BORING LOG

MW-30

DESCRIPTION	WELL CONSTRUCTION	DEPTH (FT.)	PENETRATION BLOWS PER 6 IN.	RECOVERY (FT.)	INSTRUMENT READING	SAMPLE NUMBER	REMARKS
		110					
(114.5')							
114.5'-127.0' Fine sandy SILT, grey-dry (very dense) (tree branch at 115.0')		115					
		120					Continuous Roto-Sonic sampling and drilling from 117.0' to 130.0' on 8/20/99.
		125					
(127.0')							
127.0'-130.0' very fine SAND, grey-moist (medium to very dense)							
(130.0')		130					
Boring terminated at 130.0' per work plan.							Per work plan cease Roto-Sonic sampling and drilling at 130.0' on 8/20/99 at 0910hrs. Boring is dry. Boring sealed/Filled to surface with a 95% cement/5% bentonite grout on 8/20/99.
							8" borehole with 95/5% grout

BORING LOG

PROJECT NUMBER: 98-478-03	PROJECT NAME: RMC - Beech Grove	
BORING / WELL NUMBER: MW-6D	LOCATION: Beech Grove Indiana	
DIAMETER: 4"	WATER DEPTH: 26.0'	DATE/TIME: 8/17/99 @ 1100
GEOLOGIST: Eric Stanke	COMPLETION DEPTH: 123.0'	DATE STARTED: 8/12/99
DRILLING METHOD: HSA and Roto-Sonic	SAMPLING METHOD: HSA/SS & Roto-Sonic	DATE COMPLETED: 8/18/99
DRILLING SUBCONTRACTOR: Boart Longyear	DEVELOPMENT METHOD: Surge block & pump	YIELD: ~2 gpm

DESCRIPTION	WELL CONSTRUCTION	DEPTH (FT.)	PENETRATION BLOWS PER 6 IN.	RECOVERY (FT.)	INSTRUMENT READING	SAMPLE NUMBER	REMARKS
0.0'-10.0' See MW-6s Log. (10.0')		5, 10					On 8/12/99 use data from MW-6s to auger without sampling to 10.0'. HSA/SS from 10.0' to 19.0'. On 8/14/99 over drill hole with 10" augers and set 8" casing to 19.0'.
10.0'-14.0' CLAY, dark brown and tan mottled with some subrounded gravel and a trace of fine sand - moist (Loose) (14.0')							
14.0'-16.0' silty CLAY, dark brown and brown mottled with some subrounded gravel - moist (medium dense) (16.0')		15					
16.0'-19.0' SILT, dark gray with a trace of subrounded gravel - moist (medium dense) (19.0')							Surface casing set to 19.0'. Begin 8" Roto-Sonic drilling and 6" Roto-Sonic continuous sampling from 19.0' to 105.0' on 8/17/99.
19.0'-24.0' Fine SAND, gray with a trace of silt and angular gravel and intermittent < 1/2" thick clay lenses - moist (Loose) (24.0')		20					
24.0'-26.0' silty CLAY, brown and gray mottled with a trace of fine sand and subangular to subrounded gravel - moist (medium dense) (26.0')		25					
26.0'-28.0' Fine to coarse SAND, brown with a trace of silt & some gravel - moist (medium dense) (28.0')							
28.0'-28.5' silty CLAY, gray with a trace of fine sand and subrounded gravel - dry (medium dense) (28.5')							
28.5'-29.0' Fine to Coarse SAND - moist (loose) (29.0')		30					
29.0'-30.0' silty CLAY, gray with a trace of fine sand - dry (medium dense) (30.0')							
30.0'-44.0' CLAY, gray with some subangular to subrounded gravel - dry (medium to very dense)							

BORING LOG

mw-67

DESCRIPTION	WELL CONSTRUCTION	DEPTH (FT.)	PENETRATION BLOWS PER 6 IN.	RECOVERY (FT.)	INSTRUMENT READING	SAMPLE NUMBER	REMARKS
		35					
		40					
(44.0')							
44.0'-46.0' clayey GRAVEL, gray subangular to rounded -wet (loose) (46.0')		45					
46.0'-47.0' CLAY, gray with some subangular to subrounded gravel -dry (medium to very dense) (47.0')							
47.0'-50.0' fine SAND to Gravel, poorly sorted gray -wet (very loose) (50.0')		50					
50.0'-58.0' CLAY, glauconitic with a trace of rounded gravel-dry (very dense)							
		55					
(58.0')							
58.0'-60.0' fine SAND, brown with some silt and a trace of gravel grades to fine SAND, brown with a trace of silt and gravel-wet (Loose) (60.0')		60					
60.0'-62.0' fine sandy SILT, Light brown with a trace of subangular to subrounded gravel -dry (medium dense) (62.0')							
62.0'-72.0' SILT, Light brown with a trace of clay, subrounded gravel and fine sand -dry (medium dense)		65					
		70					

BORING LOG

MW-60

DESCRIPTION	WELL CONSTRUCTION	DEPTH (FT.)	PENETRATION BLOWS PER 6 IN.	RECOVERY (FT.)	INSTRUMENT READING	SAMPLE NUMBER	REMARKS
(72.0')							
72.0'-82.0' Fine SAND, Light brown to dark gray with a trace of silt and gravel-moist (Loose)		75 80					
(82.0')							
82.0'-85.0' SILT, dark gray with some fine sand and gravel-moist (Loose)							
(85.0')		85					
85.0'-90.5' Fine SAND, dark brown to dark gray - moist (Loose)							
(90.5')		90					
90.5'-96.0' Fine to course SAND, dark gray with some gravel and a trace of silt -moist (Loose)							
(96.0')		95					
96.0'-99.0' fine SAND, gray to dark gray with a trace of silt and gravel-moist (Loose)							
(99.0')							
99.0'-108.0' CLAY, gray with some gravel and a trace of silt-dry (medium to very dense)		100 105					Continuous Roto-Sonic Sampling and drilling from 105.0' to 123.0' on 8/18/94

BORING LOG

mw-60

DESCRIPTION	WELL CONSTRUCTION	DEPTH (FT.)	PENETRATION BLOWS PER 6 IN.	RECOVERY (FT.)	INSTRUMENT READING	SAMPLE NUMBER	REMARKS
(108.0') 108.0'-123.0' silty CLAY, dark gray to gray with a trace of gravel <3" diameter -dry (medium to very dense)		110 115 120					
(123.0') Boring terminated at 123.0'.		125 130					Per conversation with Project Geologist Lease Roto-Sonic sampling and drilling at 123.0' on 8/18/99. Build boring to 96.0' and begin well construction at 95.0'. 8" borehole with 95/5% grout and 4" diameter PVC casing. 8" borehole with bentonite and 4" diameter PVC casing. 8" borehole with #5 sand and 4" diameter PVC casing. 8" borehole with #5 sand and 0.010" slot 4" diameter PVC Screen. 8" borehole with #5 Sand.

BORING LOG

PROJECT NUMBER: 98-478-03	PROJECT NAME: RMC- Beech Grove	
BORING / WELL NUMBER: MW-6s	LOCATION: Beech Grove Indiana	
DIAMETER: 2"	WATER DEPTH: 16.0'	DATE/TIME: 8/12/99 @ 1400
GEOLOGIST: Eric Stanke	COMPLETION DEPTH: 17.0'	DATE STARTED: 8/12/99
DRILLING METHOD: HSA	SAMPLING METHOD: Split Spoon	DATE COMPLETED: 8/12/99
DRILLING SUBCONTRACTOR: Boart Longyear	DEVELOPMENT METHOD: Surge block/pump	YIELD: ~ 0.5 gpm

DESCRIPTION	WELL CONSTRUCTION	DEPTH (FT.)	PENETRATION BLOWS PER 6 IN.	RECOVERY (FT.)	INSTRUMENT READING	SAMPLE NUMBER	REMARKS
0.0-1.0' SILT, tan with a trace of organics and subangular to angular gravel-dry (1.0')			Data not collected.	Data not collected.	Not applicable.	Not applicable.	On 8/12/99 use 6" HSA and split spoons to determine where to set well. Well installed on 8/12/99
1.0'-5.0' SILT, tan with a trace of subangular to angular gravel-dry (5.0')							
5.0'-9.0' SILT, black with a trace of organics-moist (medium dense) (9.0')		5					
9.0'-10.5' CLAY, Light brown with a trace of silt and angular gravel-moist (medium dense) (10.5')		10					
10.5'-12.0' CLAY, brown with a trace of angular to subrounded gravel-wet (loose) (12.0')							
12.0'-16.0' CLAY, brown and dark brown mottled with a trace of fine sand, silt and angular gravel-moist (medium dense) (16.0')		15					
16.0'-16.5' SILT, Light brown with angular to rounded gravel-wet (loose) (16.5')							6" borehole with bentonite and 2" PVC casing
16.5'-21.0' CLAY, dark gray with a trace of fine sand and gravel-moist (medium dense) (21.0')		20					6" borehole with #5 sand and 2" diameter PVC casing
21.0'-24.5' fine sandy SILT, gray-moist (loose) (24.5')							6" borehole with #5 sand and 0.010" slot 2" diameter PVC casing
24.5'-31.0' medium SAND, gray with a trace of silt-moist (loose)		25					6" borehole with #5 Sand
		30					6" borehole with bentonite
Boring terminated at 31.0'. Well screened from 7.0' to 17.0' bgs.							

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SUBSURFACE LOG

N. Marion, Indiana
JECT NAME: Refined Metals Corporation
FACE ELEVATION: N/A
LLER: Craig Avery/David Mullins
JECT TYPE: Monitoring Well Installation
E NUMBER: 1 TOTAL DEPTH: 30.0'

PROJECT NUMBER: 90226
LOCATION: Hole #1
DATE STARTED: 10/11/90 COMPLETED: 10/11/90
LOGGED BY: Don Armour
DEPTH TO WATER: IMMEDIATE: 6.0'
DEPTH TO WATER: DAYS AFTER COMPL: ---

LITHOLOGY SYM.	LITHOLOGY DEPTH	DESCRIPTION	OVERBURDEN	SAMP.NO.	DEPTH	REC.FT.	BLOWS	TYPE	REMARKS
	5.0	Fill: intermixed clay, sandy clay, and construction debris (Excavated with backhoe)							
	21.0	Silty clay, brown, moist, medium stiff; with some sand and gravel		1	10.0-11.5	1.5	3/3/5	SPT	
				2	15.0-16.5	1.0	5/7/14	SPT	
				3	20.0-21.5	1.0	8/16/29	SPT	
	30.0	Sand, brown, fine to medium grained, medium dense		4	28.5-30.0	0.0	50+	SPT	
		Bottom of Hole - 30.0'							

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SUBSURFACE LOG

JUNTY:	Marion, Indiana	PROJECT NUMBER:	90226
ROJECT NAME:	Refined Metals Corporation	LOCATION:	Hole #2
URFACE ELEVATION:	N/A	DATE STARTED:	10/10/90 COMPLETED: 10/11/90
RILLER:	Craig Avery/David Mullins	LOGGED BY:	Don Armour
ROJECT TYPE:	Monitoring Well Installation	DEPTH TO WATER:	IMMEDIATE: 9.7' (0730 hrs.; 10/11/90)
OLE NUMBER:	2 TOTAL DEPTH: 30.0'	DEPTH TO WATER:	DAYS AFTER COMPL: 6.9' (1515 hrs.; 10/11/90)

LITHOLOGY ELEV.	LITHOLOGY DEPTH	DESCRIPTION	OVERBURDEN	SAMP.NO.	DEPTH	REC.FT.	BLOWS	TYPE	REMARKS
	0.0	Silty clay, brown, moist, medium stiff; with some sand and gravel							
				1	5.0-6.5	1.5	4/3/5	SPT	
				2	10.0-11.5	1.5	4/6/8	SPT	
				3	15.0-16.5	1.0	5/10/18	SPT	
	20.0			4	20.0-21.5	0.0	3/5/15	SPT	
		Clayey sand and silt, brown, wet, medium dense							
				5	25.0-26.5	1.0	8/12/20	SPT	
	28.0								
	30.0	Clay, gray, moist, stiff; with occasional gravel		6	28.5-30.0	1.5	10/22/31	SPT	
		Bottom of Hole - 30.0'							

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SUBSURFACE LOG

NT.	Marion, Indiana	PROJECT NUMBER:	90226
JECT NAME:	Refined Metals Corporation	LOCATION:	Hole #3
RFACE ELEVATION:	N/A	DATE STARTED:	10/17/90 COMPLETED: 10/17/90
LLER:	Craig Avery/David Mullins	LOGGED BY:	Don Armour
JECT TYPE:	Monitoring Well Installation	DEPTH TO WATER:	IMMEDIATE: ---
LE NUMBER:	3 TOTAL DEPTH: 21.5'	DEPTH TO WATER:	DAYS AFTER COMPL: ---

LITHOLOGY ELEV.	LITHOLOGY DEPTH	DESCRIPTION	OVERBURDEN	SAMP.NO.	DEPTH	REC.FT.	BLOWS	TYPE	REMARKS
		Silty clay, brown, moist, medium stiff; with some sand and gravel		1	5.0-6.5	1.5	7/13/15	SPT	
	13.0			2	10.0-11.5	1.0	4/8/14	SPT	
		Clayey sand and silt, brown, wet, medium dense		3	15.0-16.5	1.0	8/21/52	SPT	
	20.0			4	20.0-21.5	1.5	12/20/50	SPT	
	21.5	Clay, gray, moist, stiff; with occasional gravel							
		Bottom of Hole - 21.5'							

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SUBSURFACE LOG

ON:	Marion, Indiana	PROJECT NUMBER:	90226
OJECT NAME:	Refined Metals Corporation	LOCATION:	Hole #4
RFACE ELEVATION:	N/A	DATE STARTED:	10/15/90 COMPLETED: 10/15/90
ILLER:	Craig Avery/David Mullins	LOGGED BY:	Don Armour
OJECT TYPE:	Monitoring Well Installation	DEPTH TO WATER:	IMMEDIATE: ——
LE NUMBER:	4 TOTAL DEPTH: 26.0'	DEPTH TO WATER:	DAYS AFTER COMPL: ——

LITHOLOGY ELEV.	LITHOLOGY DEPTH	DESCRIPTION	OVERBURDEN	SAMP.NO.	DEPTH	REC.FT.	BLOWS	TYPE	REMARKS
		Silty clay, brown, moist, medium stiff; with some sand and gravel		1	5.0-6.5	1.5	2/1/2	SPT	
				2	10.0-11.5	1.0	5/9/11	SPT	
	15.0			3	15.0-16.5	1.0	12/17/13	SPT	
		Clayey sand and silt, brown, wet, medium dense		4	20.0-21.5	1.0	16/38/43	SPT	
	22.0								
		Clay, gray, moist, very stiff with occasional gravel		5	24.5-26.0	1.5	9/22/20	SPT	
	26.0								
		Bottom of Hole - 26.0'							

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SUBSURFACE LOG

IN	Marion, Indiana	PROJECT NUMBER:	90226
JOB NAME:	Refined Metals Corporation	LOCATION:	Hole #5
SURFACE ELEVATION:	N/A	DATE STARTED:	10/12/90 COMPLETED: 10/12/90
DRILLER:	Craig Avery/David Mullins	LOGGED BY:	Don Armour
PROJECT TYPE:	Monitoring Well Installation	DEPTH TO WATER: IMMEDIATE:	10' (0900 hrs.; 10/12/90)
HOLE NUMBER:	5 TOTAL DEPTH: 25.0'	DEPTH TO WATER: DAYS AFTER COMPL:	---

LITHOLOGY ELEV.	LITHOLOGY DEPTH	DESCRIPTION	OVERBURDEN	SAMP.NO.	DEPTH	REC.FT.	BLOWS	TYPE	REMARKS
	1.0	Topsoil							
	15.0	Silty clay, brown, moist, medium stiff; with some sand and gravel		1	5.0-6.5	1.5	2/3/3	SPT	
				2	10.0-11.5	1.0	5/8/17	SPT	
				3	15.0-16.5	1.0	14/20/14	SPT	
	25.0	Clayey sand and silt, brown, wet, medium dense Gravel 16.0-17.0							
		Bottom of Hole - 25.0'							

APPENDIX B

Data Validation Report for Closure Samples

DATA VALIDATION REPORT

OF

CLOSURE INVESTIGATION SOIL SAMPLES

COLLECTED BETWEEN AUGUST 10 AND SEPTEMBER 1, 1999

FOR

INORGANIC PARAMETERS

REFINED METALS CORPORATION
BEECH GROVE, INDIANA

Laboratory Case Number
35132-4, 5, 6, 8, 9, 13, 15, 16, 20, 21, and 35132-27

PREPARED FOR:

REFINED METALS CORPORATION
BEECH GROVE, INDIANA

PREPARED BY:

ADVANCED GEOSERVICES CORP.
CHADDS FORD, PENNSYLVANIA

DECEMBER 20, 1999

PROJECT NUMBER 98-478-03

TABLE OF CONTENTS

		Page Number
1.0	Introduction	1
2.0	Inorganic Data Validation	2
2.1	Metals Data	2
2.1.1	General	2
2.1.2	Qualifications	2
2.2	Wet Chemistry Data	8
2.2.1	General	8
2.2.2	Qualifications	8
3.0	Conclusion	9

TABLES

Metals Data Summary Table
Wet Chemistry Data Summary Table

ATTACHMENTS

Metals Data Support Documentation
Wet Chemistry Data Support Documentation

1.0 INTRODUCTION

Soil and sediment samples were collected at the Refined Metals Corporation (RMC) Site in Beech Grove, Indiana, between August 10 and September 1, 1999 for chemical analyses as part of the RMC Closure Investigation. The samples were analyzed for Resource Conservation Recovery Act (RCRA) metals, antimony, and pH. Several field duplicates and equipment blanks were also collected and analyzed. Analyses were performed by TriMatrix Laboratories of Grand Rapids, Michigan. The sample results are reported under TriMatrix Case Numbers 35132-4, 5, 6, 8, 9, 13, 15, 16, 20, 21, and 35132-27.

The samples were analyzed for the following parameters by the corresponding methodologies:

Analytical Parameter	Methodology
RCRA Metals and Antimony	SW-846 Method 6020/7471
pH	EPA Method 9045C

The data deliverables consisted of a Report of Analysis listing each sample and result, chain-of-custody records, copies of relevant notebook pages and instrument raw data, calibration information, laboratory blank analysis results, and quality control forms that show precision and accuracy data derived from the quality control samples.

Field duplicate samples can be identified by the "D" after the sample number. The duplicate samples correspond with the sample letter preceding the "D." For example, the sample CSB-4B has a corresponding field duplicate sample of CSB-4BD.

2.0 INORGANIC DATA VALIDATION

All data generated by TriMatrix were reviewed by an Advanced GeoServices Corp. data validation specialist. Validation was performed for holding time compliance, laboratory method blank and field blank contamination, initial and continuing calibration accuracy, matrix spike/matrix spike duplicate (MS/MSD) recovery and precision, field duplicate precision, and detection limit applicability. Inorganic data were validated according to the "USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Inorganic Data Review" (February 1994) and "Region V Standard Operating Procedures for Validation of CLP Inorganic Data" (September 1993).

Validation was performed to verify compliance with the required analytical protocols and to determine the qualitative and quantitative reliability of the data. For criteria differences between the functional guidelines and the specific method, the specific method criteria prevailed. Qualifier codes were applied as required. The U qualifier code was applied to all sample results qualitatively questioned due to blank contamination. The U denotes the analyte was not detected at or above the associated instrument detection limit. The J qualifier code was applied to all sample results which are considered quantitative estimates due to exceeding quality control criteria. The UJ qualifier code was applied to all results which were undetected but are estimated due to exceeding quality control criteria. Samples may have exceeded several quality control criteria, however, only one qualifier is applied to a result.

2.1 Metals Data

2.1.1 General

168 soil samples, 5 sediment samples, 17 field duplicate samples, and 43 equipment blanks were collected and analyzed for arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver, and antimony by SW-846 method 6020, 7470, and 7471. All holding times were within the EPA method requirements. Initial and continuing calibrations were accurate. Laboratory control sample recoveries were within acceptance criteria.

2.1.2 Qualifications

According to Region V criteria, when applying qualification based on blank contamination, results which are greater than the instrument detection limit (IDL) but less than five times the Contract Required Detection Limit ©
RDL) are qualified using the following criteria: results less than five times the blank concentration are qualified with the U qualifier code and results greater than five times the blank concentration are qualified with the J qualifier code.

Due to the presence of antimony in associated method blanks, the following sample antimony results are qualitatively questioned. The U qualifier code is applied to reflect an elevated detection limit.

CSB-3E (235314)	CSB-7D (235315)	CSB-7E (235316)
CSB-10D (235317)	CSB-15A (229763)	CSB-15B (229764)
CSB-15C (229765)	CSB-15CD (229766)	CSB-14A (229768)
CSB-14C (229770)	CSB-8C (229774)	CSB-16A (229776)
CSB-16B (229777)	CSB-16C (229778)	CSB-17A (229780)
CSB-17B (229781)	CSB-17C (229782)	CSB-17CD (229783)
CSB-20A(229785)		

Due to the presence of chromium in an associated method blank, the following sample chromium results are qualitatively questioned. The U qualifier code is applied to reflect an elevated detection limit.

CSB-31C (230316)	CSB-24A (230319)	CSB-24B (230320)
CSB-24C (230321)	CSB-23A (230322)	CSB-23B (230323)
CSB-23C (230324)	CSB-23CD (230325)	CSB-22B (230328)
CSB-22C (230329)		

Due to the presence of lead in associated method blanks and equipment blanks, the following sample lead results are qualitatively questioned. The U qualifier code is applied to reflect an elevated detection limit.

CSB-4C (229461)	CSB-5B (229472)	CSB-5C (229473)
CSB-6B (229476)	CSB-6C (229477)	CSB-9C (229484)
CSB-9CD (229485)	CSB-13B (229488)	CSB-13C (229489)
CSB-38B (229945)	CSB-38C (229946)	CSB-38CD (229947)
CSB-49B (229954)	CSB-49C (229955)	CSB-45C (230565)
CSB-47B (230567)	CSB-47C (230568)	CSB-15A (229763)
CSB-14B (229769)	CSB-14C (229770)	CSB-20B (229786)
CSB-14A (229768)	CSB-26B (230260)	CSB-39C (229984)
CSB-39CD (229985)	CSB-40B (229988)	CSB-40C (229989)
CSB-41B (229991)	CSB-41C (229992)	CSB-42A (229978)
CSB-42B (229979)	CSB-42C (229980)	

Due to the presence of mercury in the equipment blank EQ-8 (229453), the following sample mercury results are qualitatively questioned. The U qualifier code is applied to reflect an elevated detection limit.

CSB-3A (229454)	CSB-3B (229455)	CSB-3C (229456)
CSB-3D (235313)		

Due to duplicate injection precision outside the acceptance limit of 20% relative standard deviation (RSD), the selenium results for the following samples are estimated (J):

CSB-9B (229483)	CSB-11C (229498)	CSB-13A (229487)
CSB-13B (229488)	CSB-13C (229489)	CSB-9C (229484)
CSB-34A (229956)	CSB-49A (229953)	CSB-51A (229949)
CSB-47A (230506)	CSB-43A (230577)	BSB-2B (230761)
CSB-25A (230246)	CSB-25B (230247)	CSB-27B (230251)
CSB-19B (230264)	CSB-19C (230265)	CSB-50C (230256)
CSB-26A (230259)		

Due to mercury MS/MSD percent recoveries (%Rs) outside the upper acceptance criteria (75-125), the detected results are estimated (J) for the following samples: BSB-2A (230760), CSED-4A (230587), and CSB-8A (229772).

Due to lead and silver MS/MSD %R exceeding acceptance limits, the following sample lead and silver results and detection limits are estimated (J, UJ):

CSB-3A (229454)	CSB-3B (229455)	CSB-3C (229456)
CSB-4A (229458)	CSB-4B (229459)	CSB-4BD (229460)
CSB-1A (229463)	CSB-1B (229464)	CSB-1C (229465)
CSB-7A (229466)	CSB-7B (229467)	CSB-6A (229475)
CSB-5A (229471)	CSB-7C (229468)	CSB-7CD (229469)

Due to MS/MSD %Rs outside control limits, the following samples silver detection limits were estimated (UJ):

CSB-4C (229461)	CSB-5B (229472)	CSB-5C (229473)
CSB-6B (229476)	CSB-6C (229477)	

Due to arsenic, barium , lead, and selenium MS/MSD relative percent differences (RPDs) outside acceptance criteria, sample CSB-38A (229944) arsenic, barium, lead, and selenium results and detection limits are estimated (J).

Due to lead MS/MSD accuracy and precision outside acceptance criteria, the following sample lead results are estimated (J):

CSB-18C (230269)	CSB-35B (229970)	CSB-35C (229972)
CSB-35CD (229971)	CSB-37A (229974)	CSB-37B (229975)
CSB-37C (229976)	CSB-39A (229982)	CSB-39B (229983)
CSB-40A (229987)	CSB-41A (229990)	

Due to arsenic and selenium MS/MSD accuracy and precision outside acceptance criteria, the following sample arsenic and selenium results and detection limits are estimated (J, UJ):

CSB-31C (230316)	CSB-24A (230319)	CSB-24B (230320)
CSB-24C (230321)	CSB-23A (230322)	CSB-23C (230324)
CSB-23CD (230325)	CSB-22A (230327)	CSB-22B (230328)
CSB-22C (230329)	CSB-23B (230323)	

Due to barium, lead, and silver MS/MSD %Rs outside the lower acceptance criteria, the following sample barium, lead, and silver results and detection limits are estimated (J, UJ):

CSB-21A (230293)	CSB-21B (230294)	CSB-21C (230295)
CSB-28A (230297)	CSB-28B (230298)	CSB-28C (230299)
CSB-28CD (230300)	CSB-29A (230302)	CSB-29B (230303)
CSB-29C (230304)	CSB-30A (230305)	CSB-30B (230306)
CSB-30C (230307)	CSB-30CD (230308)	CSB-32A (230310)
CSB-32C (230312)	CSB-32B (230311)	CSB-31A (230314)
CSB-31B (230315)		

Field duplicate samples were evaluated based on duplicate precision. A control limit of $\pm$ 40% was used for original and duplicate sample values greater than or equal to 5 times the CRDL. A control limit of $\pm$ 2 times the CRDL was used if either the sample or duplicate result was less than the CRDL.

Due to poor field duplicate precision, the following sample arsenic results are qualified as estimated (J):

CSB-39A (229982)	CSB-39B (229983)	CSB-39C (229984)
CSB-39CD (229985)	CSB-40A (229987)	CSB-40B (229988)
CSB-40C (229989)	CSB-41A (229990)	CSB-41B (229991)
CSB-41C (229992)		

Due to poor field duplicate precision, the following sample antimony, arsenic, cadmium and chromium results are qualified as estimated (J):

CSB-1A (229463)	CSB-1B (229464)	CSB-1C (229465)
CSB-3A (229454)	CSB-3B (229455)	CSB-3C (229456)
CSB-3D (235313)	CSB-3E (235314)	CSB-4A (229458)
CSB-4B (229459)	CSB-4BD (229460)	CSB-4C (229461)

Due to poor field duplicate precision, the following sample antimony, arsenic and lead results are qualified as estimated (J):

CSB-10A (229491)	CSB-10B (229492)	CSB-10C (229493)
CSB-10CD (229494)	CSB-11A (229496)	CSB-11B (229497)
CSB-11C (229498)	CSB-12A (229499)	CSB-12B (229500)
CSB-12C (229501)	CSB-10D (235317)	

Due to poor field duplicate precision, the following sample barium, chromium, and lead results are qualified as estimated (J):

CSB-25A (230246)	CSB-25B (230247)	CSB-25C (230248)
CSB-27A (230250)	CSB-27B (230251)	CSB-27C (230252)
CSB-50A (230254)	CSB-50B (230255)	CSB-50C (230256)
CSB-50CD (230257)		

2.2 Wet Chemistry Data

2.2.1 General

101 samples were analyzed for pH by SW-846 method 9045C. Initial and continuing calibrations were accurate. The laboratory control sample was accurate. Laboratory duplicates and field duplicate results were within control criteria. Blank results were accurate.

2.2.2 Qualifications

All pH results are estimated (J) due to exceeding the holding time criteria of 24 hours. pH analysis should be performed immediately upon sample collection for the most accurate results. The pH analyses of these samples were performed two or three days after sample collection.

3.0 CONCLUSION

This data validation has identified method and equipment blank contamination, duplicate injection precision, MS/MSD precision and accuracy, and field duplicate precision as reasons for qualifying the metals data. Exceeding holding time criteria was identified as the reason for estimating all pH results. All other data are acceptable as reported by the laboratory. All data requiring qualification have been addressed in this review and are appropriately qualified on the data summary tables. To confidently use any of the analytical results, the data user should understand the qualifications and limitations stated in this report.

QUALIFIER CODES

U - Denotes the analyte is not present at or above the associated detection limit.

J - Denotes an estimated value.

UJ - Denotes an undetected result that is estimated due to exceeding quality control criteria.

BEECH GROVE CLOSURE INVESTIGATION
INORGANIC DATA SUMMARY TABLE
AUGUST 1999
SOIL AND SEDIMENT SAMPLES

Project Name	Beech Grove	Laboratory	TriMatrix Laboratories
Project Number	98-478-03	Case No.	35132-4-6, 8, 9, 13, 15, 16, 20, 21, 27
Sample Date(s)	8/10-8/26, 9/1/99	Method	SW-846 6010B, 7470 & 7471

Sample Location	BSB-1A			BSB-1B			BSB-1C			BSB-2A			BSB-2B			BSB-3A			BSB-3B		
Lab ID	230762			230763			230764			230760			230761			230765			230766		
Matrix	Soil			Soil			Soil			Soil			Soil			Soil			Soil		
Units	mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
Sample Date	8/26/99			8/26/99			8/26/99			8/26/99			8/26/99			8/26/99			8/26/99		
Comments																					
Parameter	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Antimony	4.3		1.0	1.8		1.0	5.8		1.0	26		1.0	2.5		1.0	4.0		1.0		U	1.0
Arsenic	5.5		1.0	5.9		1.0	10		1.0	13		1.0	5.1		1.0	7.0		1.0	5.4		1.0
Barium	66		1.0	87		1.0	85		1.0	53		1.0	57		1.0	98		1.0	95		1.0
Cadmium	0.77		0.50		U	0.50	1.4		0.50	3.5		0.50		U	0.50	1.3		0.50		U	0.50
Chromium	15		1.0	20		1.0	12		1.0	9.6		1.0	11		1.0	16		1.0	18		1.0
Lead	158		0.60	63		0.60	262		0.60	1200		0.60	74		0.60	257		0.60	20		0.60
Mercury		U	0.10		U	0.10		U	0.10	0.11	J	0.10		U	0.10		U	0.10		U	0.10
Selenium	0.98		0.50	0.92		0.50	2.6		0.50	0.97		0.50	0.53	J	0.50	1.3		0.50	1.0		0.50
Silver		U	0.20		U	0.20	1.5		0.20		U	0.20		U	0.20		U	0.20		U	0.20

Sample Location	BSB-4A			BSB-4B			CSB-1A			CSB-1B			CSB-1C			CSB-2A			CSB-2B			CSB-2C		
Lab ID	230767			230768			229463			229464			229465			229479			229480			229481		
Matrix	Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil		
Units	mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
Sample Date	8/26/99			8/26/99			8/17/99			8/17/99			8/17/99			8/17/99			8/17/99			8/17/99		
Comments																								
Parameter	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Antimony	44		1.0	34		1.0	1110	J	1.0	5390	J	1.0	19	J	1.0	1320		1.0	523		1.0	1860		1.0
Arsenic	16		1.0	12		1.0	406	J	1.0	599	J	1.0	8.0	J	1.0	266		1.0	159		1.0	469		1.0
Barium	279		1.0	276		1.0	148		1.0	251		1.0	56		1.0	210		1.0	136		1.0	264		1.0
Cadmium	3.3		0.50	2.2		0.50	94	J	0.50	148	J	0.50	3.3	J	0.50	99		0.50	70		0.50	98		0.50
Chromium	34		1.0	25		1.0	6.9	J	1.0	8.0	J	1.0	9.0	J	1.0	9.3		1.0	11		1.0	12		1.0
Lead	1060		0.60	690		0.60	139000	J	0.60	268000	J	0.60	511	J	0.60	175000		0.60	58400		0.60	180000		0.60
Mercury		U	0.10		U	0.10	0.52		0.10	2.0		0.10		U	0.10	0.53		0.10	0.19		0.10	0.64		0.10
Selenium	0.76		0.50		U	0.50	42		0.50	72		0.50	0.63		0.50	10		0.50	2.7		0.50	27		0.50
Silver	0.34		0.20	0.31		0.20	1.9	J	0.20	3.2	J	0.20		UJ	0.20	0.90		0.20	0.29		0.20	1.7		0.20

DL - Detection Limit prior to any dilutions.
Q - Qualifier.
U - The analyte was not detected at or above the associated value or reflects an adjusted detection limit due to blank contamination.
J - Denotes an estimated result.
FD - Field duplicate.

QA Scientist Megan Cloud Date 12/22/99

BEECH GROVE CLOSURE INVESTIGATION
INORGANIC DATA SUMMARY TABLE
AUGUST 1999
SOIL AND SEDIMENT SAMPLES

Project Name	Beech Grove	Laboratory	TriMatrix Laboratories
Project Number	98-478-03	Case No.	35132-4-6, 8, 9, 13, 15, 16, 20, 21, 27
Sample Date(s)	8/10-8/26, 9/1/99	Method	SW-846 6010B, 7470 & 7471

Sample Location	CSB-3A			CSB-3B			CSB-3C			CSB-3D			CSB-3E			CSB-4A			CSB-4B			CSB-4BD			CSB-4C			CSB-5A		
Lab ID	229454			229455			229456			235313			235314			229458			229459			229460			229461			229471		
Matrix	Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil		
Units	mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
Sample Date	8/17/99			8/17/99			8/17/99			8/17/99			8/17/99			8/17/99			8/17/99			8/17/99			8/17/99			8/17/99		
Comments																						FD of CSB-4B								
Parameter	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Antimony	1880	J	1.0	2360	J	1.0	1510	J	1.0	1270	J	1.0	9.7	U	1.0	2400	J	1.0	1000	J	1.0	34	J	1.0	3.2	J	1.0	6.4		1.0
Arsenic	284	J	1.0	565	J	1.0	217	J	1.0	193	J	1.0	12	J	1.0	690	J	1.0	164	J	1.0	25	J	1.0	6.8	J	1.0	7.2		1.0
Barium	123		1.0	160		1.0	174		1.0	158		1.0	146		1.0	266		1.0	123		1.0	158		1.0	76		1.0	66		1.0
Cadmium	124	J	0.50	167	J	0.50	68	J	0.50	57	J	0.50		UJ	0.50	138	J	0.50	102	J	0.50	29	J	0.50		UJ	0.50		U	0.50
Chromium	9.8	J	1.0	8.4	J	1.0	12	J	1.0	17	J	1.0	27	J	1.0	14	J	1.0	13	J	1.0	30	J	1.0	14	J	1.0	13		1.0
Lead	121000	J	0.60	150000	J	0.60	78100	J	0.60	93900	J	0.60	232	J	0.60	192000	J	0.60	460000	J	0.60	2450	J	0.60	65	U	0.60	125	J	0.60
Mercury	0.56	U	0.1	3.7	U	0.10	0.33	U	0.10	0.48	U	0.1		U	0.10	0.70		0.10	0.23		0.10		U	0.10		U	0.10		U	0.10
Selenium	22		0.50	38		0.50	24		0.50	20		0.50	1.8		0.50	36		0.50	1.9		0.50	1.2		0.50	0.61		0.50		U	0.50
Silver	0.98	J	0.20	0.50	J	0.20	0.66	J	0.20	1.4		0.20		U	0.20	2.5	J	0.20	0.50	J	0.20		UJ	0.20		UJ	0.20		UJ	0.20

Sample Location	CSB-5B			CSB-5C			CSB-6A			CSB-6B			CSB-6C			CSB-7A			CSB-7B			CSB-7C			CSB-7CD			CSB-7D		
Lab ID	229472			229473			229475			229476			229477			229466			229467			229468			229469			235315		
Matrix	Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil		
Units	mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
Sample Date	8/17/99			8/17/99			8/17/99			8/17/99			8/17/99			8/17/99			8/17/99			8/17/99			8/17/99			8/17/99		
Comments																									FD of CSB-7C					
Parameter	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Antimony	3.0		1.0	1.2		1.0	13		1.0	2.0		1.0	3.9		1.0	826		1.0	2070		1.0	904		1.0	1140		1.0	6.5	U	1.0
Arsenic	7.1		1.0	5.1		1.0	8.9		1.0	9.6		1.0	11		1.0	81		1.0	788		1.0	343		1.0	430		1.0	6.9		1.0
Barium	79		1.0	74		1.0	67		1.0	85		1.0	76		1.0	39		1.0	207		1.0	134		1.0	113		1.0	44		1.0
Cadmium		U	0.50		U	0.50	0.51		0.50		U	0.50		U	0.50	20		0.50	163		0.50	158		0.50	163		0.50	0.61		0.50
Chromium	14		1.0	15		1.0	11		1.0	18		1.0	22		1.0	14		1.0	18		1.0	16		1.0	12		1.0	8.7		1.0
Lead	67	U	0.60	42	U	0.60	165	J	0.60	50	U	0.60	69	U	0.60	255000	J	0.60	154000	J	0.60	77200	J	0.60	144000	J	0.60	114		0.60
Mercury		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10	2.9		0.10	0.87		0.10	0.73		0.10	0.61		0.10		U	0.10
Selenium	0.53		0.50		U	0.50	1.6		0.50	0.52		0.50	0.62		0.50	20		0.50	9.4		0.50	12		0.50	9.9		0.50		U	0.50
Silver		UJ	0.20		UJ	0.20		UJ	0.20		UJ	0.20		UJ	0.20	11	J	0.20	1.7	J	0.20	1.5	J	0.20	1.9	J	0.20		U	0.20

DL - Detection Limit prior to any dilutions.
Q - Qualifier.
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J - Denotes an estimated result.
FD - Field duplicate.

QA Scientist Megan Cloud Date 12/22/99

BEECH GROVE CLOSURE INVESTIGATION
INORGANIC DATA SUMMARY TABLE
AUGUST 1999
SOIL AND SEDIMENT SAMPLES

Project Name	Beech Grove	Laboratory	TriMatrix Laboratories
Project Number	98-478-03	Case No.	35132-4-6, 8, 9, 13, 15, 16, 20, 21, 27
Sample Date(s)	8/10-8/26, 9/1/99	Method	SW-846 6010B, 7470 & 7471

Sample Location	CSB-7E			CSB-8A			CSB-8B			CSB-8C			CSB-9A			CSB-9B			CSB-9C			CSB-9CD			CSB-10A			CSB-10B		
Lab ID	235316			229772			229773			229774			229482			229483			229484			229485			229491			229492		
Matrix	Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil		
Units	mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
Sample Date	8/17/99			8/19/99			8/19/99			8/19/99			8/17/99			8/17/99			8/17/99			8/17/99			8/17/99			8/17/99		
Comments																						FD of CSB-9C								
Parameter	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Antimony	5.0	U	1.0	486		1.0	38		1.0	13	U	1.0	6.9		1.0	2.2		1.0	1.2		1.0	4.3		1.0	1280	J	1.0	3040	J	1.0
Arsenic	6.2		1.0	66		1.0	10		1.0	10		1.0	12		1.0	11		1.0	7.7		1.0	7.4		1.0	709	J	1.0	916	J	1.0
Barium	45		1.0	101		1.0	62		1.0	39		1.0	84		1.0	206		1.0	76		1.0	69		1.0	197		1.0	308		1.0
Cadmium		U	0.50	12		0.50	2.5		0.50	1.2		0.50		U	0.50	8.5		0.50		U	0.50		U	0.50	225		0.50	1080		0.50
Chromium	8.4		1.0	5.6		1.0	13		1.0	9.5		1.0	20		1.0	26		1.0	13		1.0	12		1.0	14		1.0	9.6		1.0
Lead	19	U	0.60	83800		0.60	989		0.60	279		0.60	289		0.60	132		0.60	53	U	0.60	50	U	0.60	132000	J	0.60	23600	J	0.60
Mercury		U	0.10	0.51	J	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10	1.3		0.10	1.4		0.10
Selenium	0.63		0.50	7.4		0.50	0.80		0.50	0.65		0.50	0.91		0.50	1.2	J	0.50	0.71	J	0.50	0.73		0.50	62		0.5	111		0.5
Silver		U	0.20	1.1		0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20	1		0.2	1.8		0.2

Sample Location	CSB-10C			CSB-10CD			CSB-10D			CSB-11A			CSB-11B			CSB-11C			CSB-12A			CSB-12B			CSB-12C			CSB-13A		
Lab ID	229493			229494			235317			229496			229497			229498			229499			229500			229501			229487		
Matrix	Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil		
Units	mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
Sample Date	8/17/99			8/17/99			8/17/99			8/17/99			8/17/99			8/17/99			8/17/99			8/17/99			8/17/99			8/17/99		
Comments				FD of CSB-10C																										
Parameter	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Antimony	43	J	1.0	4.9	J	1.0	16	U	1.0	1300	J	1.0	2420	J	1.0	28	J	1.0	9600	J	1.0	7610	J	1.0	15	J	1.0	94		1.0
Arsenic	17	J	1.0	8.7	J	1.0	6.9	J	1.0	237	J	1.0	585	J	1.0	14	J	1.0	1050	J	1.0	2270	J	1.0	14	J	1.0	38		1.0
Barium	138		1.0	96		1.0	99		1.0	194		1.0	146		1.0	173		1.0	30		1.0	435		1.0	202		1.0	212		1.0
Cadmium	151		0.50	156		0.50		U	0.50	86		0.50	151		0.50	3.4		0.50	313		0.50	421		0.50	0.94		0.50	19		0.50
Chromium	20		1.0	15		1.0	19		1.0	13		1.0	15		1.0	19		1.0	5.6		1.0	7.7		1.0	21		1.0	25		1.0
Lead	1500	J	0.60	362	J	0.60	548	J	0.60	104000	J	0.60	351000	J	0.60	522	J	0.60	467000	J	0.60	372000	J	0.60	353	J	0.60	323		0.60
Mercury			0.10		U	0.10		U	0.10	0.57		0.10	0.75		0.10		U	0.10	2.9		0.10	3.8		0.10		U	0.10		U	0.10
Selenium	1.6		0.5	0.98		0.5	1.4		0.50	16		0.5	367		0.5	1.9	J	0.50	94		0.50	5.6		0.50	1.9		0.50	0.85	J	0.50
Silver		U	0.2		U	0.2		U	0.20	1		0.2	5		0.2		U	0.20	3.0		0.20	4.0		0.20		U	0.20		U	0.20

DL - Detection Limit prior to any dilutions.
Q - Qualifier.
U - The analyte was not detected at or above the associated value or reflects an adjusted detection limit due to blank contamination.
J - Denotes an estimated result.
FD - Field duplicate.

QA Scientist Megan Cloud Date 12/22/99

BEECH GROVE CLOSURE INVESTIGATION
INORGANIC DATA SUMMARY TABLE
AUGUST 1999
SOIL AND SEDIMENT SAMPLES

Project Name	Beech Grove	Laboratory	TriMatrix Laboratories
Project Number	98-478-03	Case No.	35132-4-6, 8, 9, 13, 15, 16, 20, 21, 27
Sample Date(s)	8/10-8/26, 9/1/99	Method	SW-846 6010B, 7470 & 7471

Sample Location	CSB-13B			CSB-13C			CSB-14A			CSB-14B			CSB-14C			CSB-15A			CSB-15B			CSB-15C			CSB-15CD			CSB-16A		
Lab ID	229488			229489			229768			229769			229770			229763			229764			229765			229766			229776		
Matrix	Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil		
Units	mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
Sample Date	8/17/99			8/17/99			8/19/99			8/19/99			8/19/99			8/19/99			8/19/99			8/19/99			8/19/99			8/19/99		
Comments																									FD of CSB-15C					
Parameter	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Antimony	7.8		1.0	2.2		1.0	1.4	U	1.0		U	1.0	1.0	U	1.0	1.5	U	1.0	2.9	U	1.0	2.3	U	1.0	3.3	U	1.0	2.4	U	1.0
Arsenic	11		1.0	10		1.0	2.2		1.0	5.7		1.0	6.4		1.0	7.0		1.0	7.8		1.0	5.3		1.0	6.1		1.0	6.0		1.0
Barium	122		1.0	120		1.0	85		1.0	53		1.0	69		1.0	48		1.0	50		1.0	47		1.0	51		1.0	166		1.0
Cadmium	26		0.50	199		0.50		U	0.50		U	0.50		U	0.50	0.64		0.50	1.3		0.50		U	0.50		U	0.50		U	0.50
Chromium	22		1.0	19		1.0	12		1.0	9.6		1.0	11		1.0	9.9		1.0	12		1.0	9.6		1.0	12		1.0	16		1.0
Lead	30	U	0.60	49	U	0.60	28	U	0.6	9.8	U	0.6	18	U	0.6	9.6	U	0.60	89		0.60	28		0.60	30		0.60	209	J	0.60
Mercury		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10
Selenium	0.74	J	0.50	0.83	J	0.50		U	0.50		U	0.50		U	0.50	0.78		0.50		U	0.50		U	0.50		U	0.50	0.92		0.50
Silver		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20

Sample Location	CSB-16B			CSB-16C			CSB-17A			CSB-17B			CSB-17C			CSB-17CD			CSB-18A			CSB-18B			CSB-18C			CSB19-A		
Lab ID	229777			229778			229780			229781			229782			229783			230267			230268			230269			230263		
Matrix	Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil		
Units	mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
Sample Date	8/19/99			8/19/99			8/19/99			8/19/99			8/19/99			8/19/99			8/23/99			8/23/99			8/23/99			8/23/99		
Comments																FD of CSB-17C														
Parameter	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Antimony	1.8	U	1.0	3.2	U	1.0	1.3	U	1.0	1.1	U	1.0	1.2	U	1.0	1.2	U	1.0	1.2		1.0			1.0	1.0		1.0	6.0		1.0
Arsenic	7.2		1.0	7.5		1.0	7.3		1.0	7.1		1.0	6.9		1.0	7.0		1.0	7.8		1.0	6.0		1.0	8.3		1.0	9.0		1.0
Barium	69		1.0	58		1.0	62		1.0	77		1.0	53		1.0	55		1.0	67		1.0	63		1.0	58		1.0	65		1.0
Cadmium		U	0.50	0.53		0.50		U	0.50		U	0.50	0.52		0.50		U	0.50	1.1		0.50	0.63		0.50	0.71		0.50	1.7		0.50
Chromium	11		1.0	11		1.0	11		1.0	14		1.0	11		1.0	10		1.0	12		1.0	12		1.0	12		1.0	13		1.0
Lead	195	J	0.60	234	J	0.60	87	J	0.60	20	J	0.60	101	J	0.60	273	J	0.60	70	J	0.60	26	J	0.60	38	J	0.60	187	J	0.60
Mercury		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10	0.32		0.10		U	0.10		U	0.10		U	0.10
Selenium		U	0.50		U	0.50	0.63		0.50		U	0.50	0.59		0.50	0.65		0.50	0.64		0.50		U	0.50		U	0.50	1.3		0.50
Silver		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20

DL - Detection Limit prior to any dilutions.
Q - Qualifier.
U - The analyte was not detected at or above the associated value or reflects an adjusted detection limit due to blank contamination.
J - Denotes an estimated result.
FD - Field duplicate.

QA Scientist Megan Cloud Date 12/22/99

BEECH GROVE CLOSURE INVESTIGATION
INORGANIC DATA SUMMARY TABLE
AUGUST 1999
SOIL AND SEDIMENT SAMPLES

Project Name	*Beech Grove*	Laboratory	TriMatrix Laboratories
Project Number	98-478-03	Case No.	35132-4-6, 8, 9, 13, 15, 16, 20, 21, 27
Sample Date(s)	8/10-8/26, 9/1/99	Method	SW-846 6010B, 7470 & 7471

Sample Location	CSB-19B			CSB-19C			CSB-19CD			CSB-20A			CSB-20B			CSB-20C			CSB-21A			CSB-21B			CSB-21C			CSB-22A		
Lab ID	230264			230265			230266			229785			229786			229787			230293			230294			230295			230327		
Matrix	Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil		
Units	mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
Sample Date	8/23/99			8/23/99			8/23/99			8/19/99			8/19/99			8/19/99			8/23/99			8/23/99			8/23/99			8/24/99		
Comments							FD of CSB-19C																							
Parameter	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Antimony	6.6		1.0	1.4		1.0	2.2		1.0	1.8	U	1.0		U	1		U	1.0		U	1.0	1.3		1.0		U	1.0		U	1.0
Arsenic	6.8		1.0	6.7		1.0	6.8		1.0	9.6		1.0	6.9		1.0	2.4		1.0	7.8	J	1.0	9.3	J	1.0	6.8	J	1.0	6.3	J	1.0
Barium	61		1.0	47		1.0	53		1.0	73		1.0	64		1.0	41		1.0	204	J	1.0	152	J	1.0	56	J	1.0	56		1.0
Cadmium	0.79		0.50	1.3		0.50	0.66		0.50	1.4		0.50		U	0.50		U	0.50	0.68		0.50	1.3		0.50	1.2		0.50		U	0.50
Chromium	15		1.0	11		1.0	12		1.0	11		1.0	11		1.0	6.6		1.0	18	J	1.0	16	J	1.0	9.2	J	1.0	50		1.0
Lead	79	J	0.60	129	J	0.60	68	J	0.60	30	J	0.60	19	U	0.60	23	J	0.60	31	J	0.60	329	J	0.60	32	J	0.60	8.0	J	0.60
Mercury		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10
Selenium	1.6	J	0.50	1.4	J	0.50	0.75		0.50	1.0		0.50		U	0.50		U	0.50		UJ	0.50	0.66	J	0.50		UJ	0.50	0.58	J	0.50
Silver		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		UJ	0.20		UJ	0.20		UJ	0.20		U	0.20

Sample Location	CSB-22B			CSB-22C			CSB-23A			CSB-23B			CSB-23C			CSB-23CD			CSB-24A			CSB-24B			CSB-24C			CSB-25A		
Lab ID	230328			230329			230322			230323			230324			230325			230319			230320			230321			230246		
Matrix	Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil		
Units	mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
Sample Date	8/24/99			8/24/99			8/24/99			8/24/99			8/24/99			8/24/99			8/24/99			8/24/99			8/24/99			8/23/99		
Comments																FD of CSB-23C														
Parameter	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Antimony	4.0		1.0	3.8		1.0	1.3		1.0		U	1.0	1.0		1.0		U	1.0		U	1.0	5.5		1.0		U	1.0	9.1		1.0
Arsenic	6.7	J	1.0	6.6	J	1.0	7.5	J	1.0	7.0	J	1.0	6.2	J	1.0	6.1	J	1.0	4.8	J	1.0	9.3	J	1.0	4.4	J	1.0	13		1.0
Barium	59		1.0	62		1.0	89		1.0	248		1.0	42		1.0	44		1.0	83		1.0	101		1.0	116		1.0	43	J	1.0
Cadmium		U	0.50		U	0.50		U	0.50	0.66		0.50		U	0.50		U	0.50		U	0.50		U	0.50		U	0.50	3.9		0.50
Chromium	10	U	1.0	9.3	U	1.0	12	U	1.0	9.1	U	1.0	8.0	U	1.0	8.3	U	1.0	12	U	1.0	22	U	1.0	17	U	1.0	13	J	1.0
Lead	7.7	J	0.60	9.8	J	0.60	10	J	0.60	11	J	0.60	32	J	0.60	8.0	J	0.60	28	J	0.60	20	J	0.60	12	J	0.60	411	J	0.60
Mercury		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10
Selenium	0.57	J	0.50	0.72	J	0.50	0.78	J	0.50	0.75	J	0.50		UJ	0.50	0.62	J	0.50	0.55	J	0.50	1.1	J	0.50	0.92	J	0.50	2.3	J	0.50
Silver		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20

DL - Detection Limit prior to any dilutions.
Q - Qualifier.
U - The analyte was not detected at or above the associated value or reflects an adjusted detection limit due to blank contamination.
J - Denotes an estimated result.
FD - Field duplicate.

QA Scientist Megan Cloud Date 12/22/99

BEECH GROVE CLOSURE INVESTIGATION
INORGANIC DATA SUMMARY TABLE
AUGUST 1999
SOIL AND SEDIMENT SAMPLES

Project Name	Beech Grove	Laboratory	TriMatrix Laboratories
Project Number	98-478-03	Case No.	35132-4-6, 8, 9, 13, 15, 16, 20, 21, 27
Sample Date(s)	8/10-8/26, 9/1/99	Method	SW-846 6010B, 7470 & 7471

Sample Location	CSB-25B			CSB-25C			CSB-26A			CSB-26B			CSB-26C			CSB-27A			CSB-27B			CSB-27C			CSB-28A			CSB-28B		
Lab ID	230247			230248			230259			230260			230261			230250			230251			230252			230297			230298		
Matrix	Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil		
Units	mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
Sample Date	8/23/99			8/23/99			8/23/99			8/23/99			8/23/99			8/23/99			8/23/99			8/23/99			8/23/99			8/23/99		
Comments																														
Parameter	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Antimony	57		1.0	3.4		1.0	4.6		1.0	6.1		1.0	4.1		1.0	3.3		1.0		U	1.0		U	1.0		U	1.0		U	1.0
Arsenic	75		1.0	8.8		1.0	7.7		1.0	6.5		1.0	8.6		1.0	6.3		1.0	8.5		1.0	6.4		1.0	4.4	J	1.0	10	J	1.0
Barium	40	J	1.0	46	J	1.0	47		1.0	46		1.0	48		1.0	46	J	1.0	22	J	1.0	20	J	1.0	65	J	1.0	164	J	1.0
Cadmium	26		0.50	0.89		0.50	1.6		0.50	0.76		0.50	6.7		0.50		U	0.50		U	0.50		U	0.50		U	0.50		U	0.50
Chromium	8.5	J	1.0	8.7	J	1.0	12		1.0	9.7		1.0	11		1.0	9.4	J	1.0	5.8	J	1.0	5.7	J	1.0	10	J	1.0	29	J	1.0
Lead	2420	J	0.60	108	J	0.60	191	J	0.60	73	U	0.6	583	J	0.60	22	J	0.60	13	J	0.60	14	J	0.60	14	J	0.60	19	J	0.60
Mercury		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10
Selenium	1.6	J	0.50	0.71		0.50	4.5	J	0.50	0.98		0.50	3.8		0.50	0.75		0.50	0.68	J	0.50	0.70		0.50		UJ	0.50	1.2	J	0.50
Silver		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		UJ	0.20		UJ	0.20

Sample Location	CSB-28C			CSB-28CD			CSB-29A			CSB-29B			CSB-29C			CSB-30A			CSB-30B			CSB-30C			CSB-30CD			CSB-31A		
Lab ID	230299			230300			230302			230303			230304			230305			230306			230307			230308			230314		
Matrix	Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil		
Units	mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
Sample Date	8/23/99			8/23/99			8/23/99			8/23/99			8/23/99			8/23/99			8/23/99			8/23/99			8/23/99			8/23/99		
Comments				FD of CSB-28C																					FD of CSB-30C					
Parameter	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Antimony	1.7		1.0		U	1.0	1.6		1.0	2.3		1.0	1.5		1.0	1.1	J	1.0		UJ	1.0	1.0	J	1.0	741	J	1.0	11		1.0
Arsenic	23	J	1.0	8.7	J	1.0	9.2	J	1.0	25	J	1.0	11	J	1.0	9.5		1.0	6.7		1.0	11		1.0	8.6		1.0	14		1.0
Barium	534	J	1.0	190	J	1.0	59	J	1.0	192	J	1.0	100	J	1.0	96	J	1.0	58	J	1.0	97	J	1.0	62	J	1.0	75	J	1.0
Cadmium	0.83		0.50		U	0.50		U	0.50	0.72		0.50	0.73		0.50	0.56		0.50		U	0.50		U	0.50		U	0.50		U	0.50
Chromium	61	J	1.0	18	J	1.0	17	J	1.0	44	J	1.0	21	J	1.0	16		1.0	10		1.0	21		1.0	14		1.0	18		1.0
Lead	29	J	0.60	10	J	0.60	32	J	0.60	44	J	0.60	36	J	0.60	16	J	0.60	13	J	0.60	15	J	0.60	24	J	0.60	431	J	0.60
Mercury		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10
Selenium	3.4	J	0.50	1.4	J	0.50	0.92	J	0.50	3.3	J	0.50	1.3	J	0.50	1.5		0.50	0.53		0.50	1.0		0.50	1.1		0.50	0.92		0.50
Silver		UJ	0.20		UJ	0.20		UJ	0.20		UJ	0.20		UJ	0.20		UJ	0.20		UJ	0.20		UJ	0.20		UJ	0.20		UJ	0.20

DL - Detection Limit prior to any dilutions.
Q - Qualifier.
U - The analyte was not detected at or above the associated value or reflects an adjusted detection limit due to blank contamination.
J - Denotes an estimated result.
FD - Field duplicate.

QA Scientist Megan Cloud Date 12/22/99

BEECH GROVE CLOSURE INVESTIGATION
INORGANIC DATA SUMMARY TABLE
AUGUST 1999
SOIL AND SEDIMENT SAMPLES

Project Name	Beech Grove	Laboratory	TriMatrix Laboratories
Project Number	98-478-03	Case No.	35132-4-6, 8, 9, 13, 15, 16, 20, 21, 27
Sample Date(s)	8/10-8/26, 9/1/99	Method	SW-846 6010B, 7470 & 7471

Sample Location	CSB-31B			CSB-31C			CSB-32A			CSB-32B			CSB-32C			CSB-33A			CSB-33B			CSB-33C			CSB-34A			CSB-34B		
Lab ID	230315			230316			230310			230311			230312			229965			229966			229967			229956			229957		
Matrix	Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil		
Units	mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
Sample Date	8/23/99			8/23/99			8/23/99			8/23/99			8/23/99			8/20/99			8/20/99			8/20/99			8/20/99			8/20/99		
Comments																														
Parameter	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Antimony	15		1.0		U	1.0		U	1.0	4.6		1.0	2.1		1.0	6.8		1.0	4.5		1.0	2.7		1.0	821		1.0	36		1.0
Arsenic	22		1.0	6.7	J	1.0	388		1.0	7.4		1.0	7.0		1.0	13		1.0	12		1.0	13		1.0	189		1.0	9.1		1.0
Barium	103	J	1.0	54		1.0	120	J	1.0	44	J	1.0	41	J	1.0	80		1.0	139		1.0	124		1.0	338		1.0	49		1.0
Cadmium	1.5		0.50		U	0.50	86		0.50	0.60		0.50		U	0.50	2.2		0.50	2.3		0.50	4.4		0.50	84		0.50	2.0		0.50
Chromium	14		1.0	9.5	U	1.0	14		1.0	8.8		1.0	9.1		1.0	25		1.0	17		1.0	21		1.0		U	1.0	9.6		1.0
Lead	2280	J	0.60	10		0.60	42800	J	0.60	403	J	0.60	694	J	0.60	196		0.60	868		0.60	245		0.60	94500		0.60	2360		0.60
Mercury		U	0.10		U	0.10	0.28		0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10	0.25		0.10		U	0.10
Selenium	0.96		0.50	0.75	J	0.50	15		0.50	0.89		0.50	0.60		0.50	1.6		0.50	0.84		0.50	0.74		0.50	3.6	J	0.50	0.66		0.50
Silver		UJ	0.20		U	0.20	0.86	J	0.20		UJ	0.20		UJ	0.20		U	0.20		U	0.20		U	0.20	2.2		0.20		U	0.20

Sample Location	CSB-34C			CSB-34CD			CSB-35A			CSB-35B			CSB-35C			CSB-35CD			CSB-35D			CSB-36A			CSB-36B			CSB-36C		
Lab ID	229958			229959			229969			229970			229972			229971			235318			229961			229962			229963		
Matrix	Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil		
Units	mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
Sample Date	8/20/99			8/20/99			8/20/99			8/20/99			8/20/99			8/20/99			8/20/99			8/20/99			8/20/99			8/20/99		
Comments				FD of CSB-34C												FD of CSB-35C														
Parameter	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Antimony	1.6		1.0	1.6		1.0	42		1.0	8.7		1.0	16		1.0	15		1.0	67		1.0	2.2		1.0	2.0		1.0	1.6		1.0
Arsenic	7.0		1.0	6.5		1.0	8.4		1.0	9.5		1.0	7.0		1.0	7.9		1.0	12		1.0	170		1.0	15		1.0	12		1.0
Barium	40		1.0	44		1.0	65		1.0	47		1.0	41		1.0	45		1.0	62		1.0	94		1.0	128		1.0	141		1.0
Cadmium		U	0.50		U	0.50	3.6		0.50	0.79		0.50	1.2		0.50	1.4		0.50	3.6		0.50	3.1		0.50		U	0.50		U	0.50
Chromium	9.0		1.0	9.6		1.0	12		1.0	9.5		1.0	7.2		1.0	7.7		1.0	10		1.0	20		1.0	21		1.0	21		1.0
Lead	68		0.60	86		0.60	3090		0.60	518	J	0.60	1400	J	0.60	1120	J	0.60	10800		0.60	103		0.60	76		0.60	67		0.60
Mercury		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10
Selenium		U	0.50	0.60		0.50	1.2		0.50	0.73		0.50	0.77		0.50	0.68		0.50	1.1		0.50	7.5		0.50	1.2		0.50	1.2		0.50
Silver		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20

DL - Detection Limit prior to any dilutions.
Q - Qualifier.
U - The analyte was not detected at or above the associated value or reflects an adjusted detection limit due to blank contamination.
J - Denotes an estimated result.
FD - Field duplicate.

QA Scientist Megan Cloud Date 12/22/99

BEECH GROVE CLOSURE INVESTIGATION
INORGANIC DATA SUMMARY TABLE
AUGUST 1999
SOIL AND SEDIMENT SAMPLES

Project Name	Beech Grove	Laboratory	TriMatrix Laboratories
Project Number	98-478-03	Case No.	35132-4-6, 8, 9, 13, 15, 16, 20, 21, 27
Sample Date(s)	8/10-8/26, 9/1/99	Method	SW-846 6010B, 7470 & 7471

Sample Location	CSB-37A			CSB-37B			CSB-37C			CSB-38A			CSB-38B			CSB-38C			CSB-38CD			CSB-39A			CSB-39B			CSB-39C		
Lab ID	229974			229975			229976			229944			229945			229946			229947			229982			229983			229984		
Matrix	Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil		
Units	mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
Sample Date	8/20/99			8/20/99			8/20/99			8/20/99			8/20/99			8/20/99			8/20/99			8/20/99			8/20/99			8/20/99		
Comments																			FD of CSB-38C											
Parameter	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Antimony	3.8		1.0	23		1.0	2.6		1.0		U	1.0		U	1.0		U	1.0		U	1.0	8550		1.0	7.3		1.0	1.4		1.0
Arsenic	30		1.0	7.9		1.0	6.8		1.0	4.9	J	1.0	4.4		1.0	7.8		1.0	8.4		1.0	863	J	1.0	8.0	J	1.0	5.8	J	1.0
Barium	65		1.0	43		1.0	47		1.0	75	J	1.0	149		1.0	169		1.0	164		1.0	132		1.0	54		1.0	44		1.0
Cadmium	126		0.50	3.9		0.50	1.9		0.50		U	0.50		U	0.50		U	0.50		U	0.50	39		0.50		U	0.50		U	0.50
Chromium	12		1.0	8.2		1.0	7.1		1.0	178		1.0	117		1.0	75		1.0	64		1.0	1.5		1.0	10		1.0	9.9		1.0
Lead	325	J	0.60	314	J	0.60	242	J	0.60	22	J	0.60	15	U	0.60	19	U	0.60	17	U	0.60	46800	J	0.60	69	J	0.60	15	U	0.6
Mercury		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10	0.14		0.10		U	0.10		U	0.10
Selenium	1.6		0.50		U	0.50		U	0.50	0.76	J	0.50	1.4		0.50	0.53		0.50	0.70		0.50	21		0.50	0.84		0.50		U	0.50
Silver		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20	0.46		0.20		U	0.20		U	0.20

Sample Location	CSB-39CD			CSB-40A			CSB-40B			CSB-40C			CSB-41A			CSB-41B			CSB41-C			CSB-42A			CSB-42B			CSB-42C		
Lab ID	229985			229987			229988			229989			229990			229991			229992			229978			229979			229980		
Matrix	Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil		
Units	mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
Sample Date	8/20/99			8/20/99			8/20/99			8/20/99			8/20/99			8/20/99			8/20/99			8/20/99			8/20/99			8/20/99		
Comments	FD of CSB-39C																													
Parameter	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Antimony	1.4		1.0	313		1.0	1.3		1.0	1.2		1.0	2.0		1.0		U	1.0		U	1.0		U	1.0		U	1.0		U	1.0
Arsenic	9.0	J	1.0	39	J	1.0	6.4	J	1.0	11	J	1.0	4.8	J	1.0	7.6	J	1.0	6.3	J	1.0	23		1.0	73		1.0	7.8		1.0
Barium	43		1.0	62		1.0	132		1.0	96		1.0	51		1.0	105		1.0	57		1.0	25		1.0	42		1.0	51		1.0
Cadmium		U	0.50	24		0.50	11		0.50		U	0.50	0.87		0.50		U	0.50		U	0.50	7.0		0.50	1.7		0.50	0.41		0.50
Chromium	8.4		1.0	4.9		1.0	11		1.0	15		1.0	27		1.0	12		1.0	9.2		1.0	4.2		1.0	7.6		1.0	7.7		1.0
Lead	15	U	0.6	6660	J	0.60	20	U	0.6	14	U	0.6	45	J	0.60	8.9	U	0.6	8.8	U	0.6	11	U	0.6	11	U	0.6	15	U	0.6
Mercury		U	0.10	0.11		0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10
Selenium	0.54		0.50		U	0.50		U	0.50	0.67		0.50	0.91		0.50		U	0.50	0.57		0.50		U	0.50	0.93		0.50		U	0.50
Silver		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20

DL - Detection Limit prior to any dilutions.
Q - Qualifier.
U - The analyte was not detected at or above the associated value or reflects an adjusted detection limit due to blank contamination.
J - Denotes an estimated result.
FD - Field duplicate.

QA Scientist Megan Cloud Date 12/22/99

BEECH GROVE CLOSURE INVESTIGATION
INORGANIC DATA SUMMARY TABLE
AUGUST 1999
SOIL AND SEDIMENT SAMPLES

Project Name	Beech Grove	Laboratory	TriMatrix Laboratories
Project Number	98-478-03	Case No.	35132-4-6, 8, 9, 13, 15, 16, 20, 21, 27
Sample Date(s)	8/10-8/26, 9/1/99	Method	SW-846 6010B, 7470 & 7471

Sample Location	CSB-43A			CSB-43B			CSB-43C			CSB-44A			CSB-44B			CSB-44C			CSB-44CD			CSB-45A			CSB-45B			CSB-45C		
Lab ID	230577			230578			230579			230572			230573			230574			230575			230563			230564			230565		
Matrix	Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil		
Units	mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
Sample Date	8/25/99			8/25/99			8/25/99			8/25/99			8/25/99			8/25/99			8/25/99			8/25/99			8/25/99			8/25/99		
Comments																			FD of CSB-44C											
Parameter	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Antimony		U	1.0	7.4		1.0		U	1.0		U	1.0	1.5		1.0		U	1.0		U	1.0	1.5		1.0	1.1		1.0		U	1.0
Arsenic	10		1.0	9.3		1.0	6.6		1.0	7.8		1.0	7.2		1.0	7.6		1.0	6.2		1.0	7.9		1.0	10		1.0	7.2		1.0
Barium	77		1.0	45		1.0	48		1.0	56		1.0	50		1.0	50		1.0	45		1.0	74		1.0	71		1.0	49		1.0
Cadmium		U	0.50	1.1		0.50		U	0.50		U	0.50	0.69		0.50		U	0.50		U	0.50		U	0.50	0.62		0.50		U	0.50
Chromium	17		1.0	11		1.0	13		1.0	14		1.0	13		1.0	13		1.0	8.7		1.0	15		1.0	15		1.0	11		1.0
Lead	14	J	0.60	106	J	0.60	24	J	0.60	32	J	0.60	12	J	0.60	20	J	0.60	11	J	0.60	27		0.60	12		0.60	9.9	U	0.60
Mercury		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10
Selenium	0.77	J	0.50	0.81		0.50	0.79		0.50	1.6		0.50	0.76		0.50	0.85		0.50	1.4		0.50	1.8		0.50	1.6		0.50	1.8		0.50
Silver		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20

Sample Location	CSB-46A			CSB-46B			CSB-46C			CSB-47A			CSB-47B			CSB-47C			CSB-47CD			CSB-49A			CSB-49B			CSB-49C		
Lab ID	230580			230581			230582			230566			230567			230568			230569			229953			229954			229955		
Matrix	Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil		
Units	mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
Sample Date	8/25/99			8/25/99			8/25/99			8/25/99			8/25/99			8/25/99			8/25/99			8/20/99			8/20/99			8/20/99		
Comments																			FD of CSB-47C											
Parameter	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Antimony		U	1.0		U	1.0		U	1.0	4.1		1.0		U	1.0		U	1.0		U	1.0	4.0		1.0		U	1.0	1.5		1.0
Arsenic	8.9		1.0	6.9		1.0	9.1		1.0	25		1.0	6.8		1.0	5.9		1.0	6.4		1.0	8.1		1.0	6.4		1.0	6.8		1.0
Barium	65		1.0	41		1.0	47		1.0	53		1.0	47		1.0	41		1.0	43		1.0	56		1.0	56		1.0	43		1.0
Cadmium	0.53		0.50		U	0.50	0.81		0.50		U	0.50		U	0.50		U	0.50		U	0.50	0.56		0.50		U	0.50		U	0.50
Chromium	10		1.0	8.1		1.0	11		1.0	13		1.0	10		1.0	7.7		1.0	8.3		1.0	8.4		1.0	10		1.0	8.6		1.0
Lead	12	J	0.60	12	J	0.60	9.7	J	0.60	58		0.60	11	U	0.60	10	U	0.60	14		0.60	147		0.60	18	U	0.6	17	U	0.6
Mercury		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10
Selenium	1.3		0.50	0.74		0.50	0.66		0.50	2.1	J	0.50	1.6		0.50	1.6		0.50	0.59		0.50	1.1	J	0.50		U	0.50		U	0.50
Silver		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20

DL - Detection Limit prior to any dilutions.
Q - Qualifier.
U - The analyte was not detected at or above the associated value or reflects an adjusted detection limit due to blank contamination.
J - Denotes an estimated result.
FD - Field duplicate.

QA Scientist Megan Cloud Date 12/22/99

BEECH GROVE CLOSURE INVESTIGATION
INORGANIC DATA SUMMARY TABLE
AUGUST 1999
SOIL AND SEDIMENT SAMPLES

Project Name	Beech Grove	Laboratory	TriMatrix Laboratories
Project Number	98-478-03	Case No.	35132-4-6, 8, 9, 13, 15, 16, 20, 21, 27
Sample Date(s)	8/10-8/26, 9/1/99	Method	SW-846 6010B, 7470 & 7471

Sample Location	CSB-50A			CSB-50B			CSB-50C			CSB-50CD			CSB-51A			CSB-51B			CSB-51C			CSB-51D			CSB-51E			CSED-1A		
Lab ID	230254			230255			230256			230257			229949			229950			229951			235319			235320			230585		
Matrix	Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Sediment		
Units	mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
Sample Date	8/23/99			8/23/99			8/23/99			8/23/99			8/20/99			8/20/99			8/20/99			8/20/99			8/20/99			8/25/99		
Comments										FD of CSB-50C																				
Parameter	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Antimony	17		1.0	1.9		1.0	3.8		1.0	2.0		1.0	873		1.0	86		1.0	79		1.0	282		1.0	47		1.0	837		1.0
Arsenic	15		1.0	13		1.0	10		1.0	11		1.0	265		1.0	187		1.0	17		1.0	36		1.0	26		1.0	653		1.0
Barium	180	J	1.0	100	J	1.0	168	J	1.0	133	J	1.0	228		1.0	81		1.0	69		1.0	123		1.0	69		1.0	45		1.0
Cadmium	1.0		0.50		U	0.50	0.56		0.50		U	0.50	28		0.50	6.0		0.50	4.4		0.50	8.1		0.50	3.4		0.50	250		0.50
Chromium	15	J	1.0	19	J	1.0	32	J	1.0	21	J	1.0	2.8		1.0	12		1.0	10		1.0	11		1.0	8.5		1.0	18		1.0
Lead	480	J	0.60	131	J	0.60	229	J	0.60	111	J	0.60	47300		0.60	10300		0.60	5680		0.60	18700		0.60	12000		0.60	43900		0.60
Mercury		U	0.10		U	0.10		U	0.10		U	0.10	0.14		0.10		U	0.10		U	0.10		U	0.10		U	0.10	1.9		0.10
Selenium	3.8		0.50	1.3		0.50	2.0	J	0.50	1.1		0.50	3.0	J	0.50	3.9		0.50	1.7		0.50	2.6		0.50	0.98		0.50	44		0.50
Silver		U	0.20		U	0.20		U	0.20		U	0.20	0.99		0.20	0.21		0.20	0.90		0.20	0.24		0.20		U	0.20	0.84		0.20

Sample Location	CSED-2A			CSED-3A			CSED-4A			CSED-4B			EQ-4			EQ-8			EQ-9			EQ-10			EQ-11			EQ-13		
Lab ID	230589			230586			230587			230588			229242			229453			229457			229462			229470			229478		
Matrix	Sediment			Sediment			Sediment			Sediment			Aqueous			Aqueous			Aqueous			Aqueous			Aqueous			Aqueous		
Units	mg/kg			mg/kg			mg/kg			mg/kg			ug/L			ug/L			ug/L			ug/L			ug/L			ug/L		
Sample Date	8/25/99			8/25/99			8/25/99			8/25/99			8/12/99			8/17/99			8/17/99			8/17/99			8/17/99			8/17/99		
Comments													Equipment Blank			Equipment Blank			Equipment Blank			Equipment Blank			Equipment Blank			Equipment Blank		
Parameter	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Antimony	2170		1.0	1910		1.0	199		1.0	204		1.0	NA				U	10		U	10		U	10		U	10		U	10
Arsenic	229		1.0	368		1.0	189		1.0	182		1.0	NA				U	1.0		U	1.0		U	1.0		U	1.0		U	1.0
Barium	118		1.0	100		1.0	62		1.0	58		1.0	NA				U	10		U	10		U	10		U	10		U	10
Cadmium	351		0.50	268		0.50	22		0.50	30		0.50		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2
Chromium	29		1.0	32		1.0	17		1.0	19		1.0	NA			6.9		1.0	1.0		1.0		U	1.0		U	1.0		U	1.0
Lead	138000		0.60	161000		0.60	7390		0.60	11000		0.60	28		1	7.5		1.0		U	1.0		U	1.0	2.3		1.0		U	1.0
Mercury	2.5		0.10	6.6		0.10	0.24	J	0.10	0.61		0.10	NA				U	0.2		U	0.2		U	0.2		U	0.2		U	0.2
Selenium	34		0.50	40		0.50	3.6		0.50	3.5		0.50	NA				U	2.0		U	2.0		U	2.0		U	2.0		U	2.0
Silver	2.3		0.20	1.7		0.20		U	0.20	0.24		0.20	NA				U	0.2		U	0.2		U	0.2		U	0.2		U	0.2

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J - Denotes an estimated result.
FD - Field duplicate.

QA Scientist Megan Cloud Date 12/22/99

BEECH GROVE CLOSURE INVESTIGATION
INORGANIC DATA SUMMARY TABLE
AUGUST 1999
SOIL AND SEDIMENT SAMPLES

Project Name	Beech Grove	Laboratory	TriMatrix Laboratories
Project Number	98-478-03	Case No.	35132-4-6, 8, 9, 13, 15, 16, 20, 21, 27
Sample Date(s)	8/10-8/26, 9/1/99	Method	SW-846 6010B, 7470 & 7471

Sample Location	EQ-14			EQ-15			EQ-16			EQ-18			EQ-19			EQ-20			EQ-21			EQ-22			EQ-24			EQ-25		
Lab ID	229486			229490			229495			229767			229771			229775			229779			229784			229943			229948		
Matrix	Aqueous			Aqueous			Aqueous			Aqueous			Aqueous			Aqueous			Aqueous			Aqueous			Aqueous			Aqueous		
Units	ug/L			ug/L			ug/L			ug/L			ug/L			ug/L			ug/L			ug/L			ug/L			ug/L		
Sample Date	8/17/99			8/17/99			8/17/99			8/19/99			8/19/99			8/19/99			8/19/99			8/19/99			8/20/99			8/20/99		
Comments	Equipment Blank			Equipment Blank			Equipment Blank			Equipment Blank			Equipment Blank			Equipment Blank			Equipment Blank			Equipment Blank			Equipment Blank			Equipment Blank		
Parameter	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Antimony		U	10		U	10		U	10		U	10		U	10		U	10		U	10		U	10		U	10		U	10
Arsenic		U	1.0		U	1.0		U	1.0		U	1.0		U	1.0		U	1.0		U	1.0		U	1.0		U	1.0		U	1.0
Barium		U	10		U	10		U	10		U	10		U	10		U	10		U	10		U	10		U	10		U	10
Cadmium		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2
Chromium		U	1.0		U	1.0		U	1.0		U	1.0		U	1.0		U	1.0		U	1.0		U	1.0		U	1.0		U	1.0
Lead	1.2		1.0	1.1		1.0	4.9		1.0	260		1.0	41		1.0	9.0		1.0	10		1.0	1.6		1.0	1.4		1.0	25		1.0
Mercury		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2
Selenium		U	2.0		U	2.0		U	2.0		U	2.0		U	2.0		U	2.0		U	2.0		U	2.0		U	2.0		U	2.0
Silver		U	0.20		U	0.20		U	0.20		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2

Sample Location	EQ-26			EQ-27			EQ-28			EQ-30			EQ-31			EQ-32			EQ-33			EQ-34			EQ-35			EQ-43		
Lab ID	229952			229960			229964			229968			229973			229977			229981			229986			229993			230249		
Matrix	Aqueous			Aqueous			Aqueous			Aqueous			Aqueous			Aqueous			Aqueous			Aqueous			Aqueous			Aqueous		
Units	ug/L			ug/L			ug/L			ug/L			ug/L			ug/L			ug/L			ug/L			ug/L			ug/L		
Sample Date	8/20/99			8/20/99			8/20/99			8/20/99			8/20/99			8/20/99			8/20/99			8/20/99			8/20/99			8/23/99		
Comments	Equipment Blank			Equipment Blank			Equipment Blank			Equipment Blank			Equipment Blank			Equipment Blank			Equipment Blank			Equipment Blank			Equipment Blank			Equipment Blank		
Parameter	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Antimony		U	10		U	10		U	10		U	10		U	10		U	10		U	10		U	10		U	10		U	10
Arsenic		U	1.0		U	1.0		U	1.0		U	1.0		U	1.0		U	1.0		U	1.0		U	1.0		U	1.0		U	1.0
Barium		U	10		U	10		U	10		U	10		U	10		U	10		U	10		U	10		U	10		U	10
Cadmium		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2
Chromium		U	1.0		U	1.0		U	1.0		U	1.0		U	1.0		U	1.0		U	1.0		U	1.0		U	1.0		U	1.0
Lead	40		1.0	63		1.0	30		1.0	118		1.0	106		1.0	92		1.0	37		1.0	24		1.0	91		1.0	14		1.0
Mercury		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2
Selenium		U	2.0		U	2.0		U	2.0		U	2.0		U	2.0		U	2.0		U	2.0		U	2.0		U	2.0		U	2.0
Silver		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2

DL - Detection Limit prior to any dilutions.
Q - Qualifier.
U - The analyte was not detected at or above the associated value or reflects an adjusted detection limit due to blank contamination.
J - Denotes an estimated result.
FD - Field duplicate.

QA Scientist Megan Cloud Date 12/22/99

BEECH GROVE CLOSURE INVESTIGATION
INORGANIC DATA SUMMARY TABLE
AUGUST 1999
SOIL AND SEDIMENT SAMPLES

Project Name	Beech Grove	Laboratory	TriMatrix Laboratories
Project Number	98-478-03	Case No.	35132-4-6, 8, 9, 13, 15, 16, 20, 21, 27
Sample Date(s)	8/10-8/26, 9/1/99	Method	SW-846 6010B, 7470 & 7471

Sample Location	EQ-44			EQ-45			EQ-48			EQ-49			EQ-50			EQ-51			EQ-52			EQ-53			EQ-54			EQ-55		
Lab ID	230253			230258			230262			230292			230296			230301			230309			230313			230318			230326		
Matrix	Aqueous			Aqueous			Aqueous			Aqueous			Aqueous			Aqueous			Aqueous			Aqueous			Aqueous			Aqueous		
Units	ug/L			ug/L			ug/L			ug/L			ug/L			ug/L			ug/L			ug/L			ug/L			ug/L		
Sample Date	8/23/99			8/23/99			8/23/99			8/23/99			8/23/99			8/23/99			8/23/99			8/23/99			8/24/99			8/24/99		
Comments	Equipment Blank			Equipment Blank			Equipment Blank			Equipment Blank			Equipment Blank			Equipment Blank			Equipment Blank			Equipment Blank			Equipment Blank			Equipment Blank		
Parameter	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Antimony		U	10		U	10		U	10		U	10		U	10		U	10		U	10		U	10		U	10		U	10
Arsenic		U	1.0		U	1.0		U	1.0		U	1.0		U	1.0		U	1.0		U	1.0		U	1.0		U	1.0		U	1.0
Barium		U	10		U	10		U	10		U	10		U	10		U	10		U	10		U	10		U	10		U	10
Cadmium		U	0.2	0.4		0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2
Chromium		U	1.0		U	1.0		U	1.0		U	1.0		U	1.0		U	1.0		U	1.0		U	1.0		U	1.0		U	1.0
Lead	141		1.0	250		1.0		U	1.0	3.7		1.0	1.6		1.0	3.6		1.0	4.9		1.0	2.1		1.0	1.4		1.0		U	1.0
Mercury		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2
Selenium		U	2.0		U	2.0		U	2.0		U	2.0		U	2.0		U	2.0		U	2.0		U	2.0		U	2.0		U	2.0
Silver		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2

Sample Location	EQ-60			EQ-61			EQ-62			EQ-63			EQ-64			EQ-65			EQ-69		
Lab ID	230571			230576			230562			230570			230583			230584			230769		
Matrix	Aqueous			Aqueous			Aqueous			Aqueous			Aqueous			Aqueous			Aqueous		
Units	ug/L			ug/L			ug/L			ug/L			ug/L			ug/L			ug/L		
Sample Date	8/25/99			8/25/99			8/25/99			8/25/99			8/25/99			8/25/99			8/26/99		
Comments	Equipment Blank			Equipment Blank			Equipment Blank			Equipment Blank			Equipment Blank			Equipment Blank			Equipment Blank		
Parameter	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Antimony		U	10		U	10		U	10		U	10		U	10		U	10		U	10
Arsenic		U	1.0		U	1.0		U	1.0		U	1.0		U	1.0		U	1.0		U	1.0
Barium		U	10		U	10		U	10		U	10		U	10		U	10		U	10
Cadmium		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2
Chromium		U	1.0		U	1.0		U	1.0		U	1.0		U	1.0		U	1.0		U	1.0
Lead		U	1.0		U	1.0		U	1.0		U	1.0		U	1.0		U	1.0	6.9		1.0
Mercury		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2
Selenium		U	2.0		U	2.0		U	2.0		U	2.0		U	2.0		U	2.0		U	2.0
Silver		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2

DL - Detection Limit prior to any dilutions.
Q - Qualifier.
U - The analyte was not detected at or above the associated value or reflects an adjusted detection limit due to blank contamination.
J - Denotes an estimated result.
FD - Field duplicate.

QA Scientist Megan Cloud Date 12/22/99

BEECH GROVE, IN
PH DATA SUMMARY TABLE
AUGUST 1999

Project Name	Beech Grove	Laboratory	TriMatrix Laboratories
Project Number	98-478-03	Case No.	35132-4-6, 8, 9, 13, 15, 16, 20, 21, 23, 27
Sample Date(s)	8/9-8/20/99	Method	EPA Method 9045C

LAB ID	LOCATION	RESULT	Q
229463	CSB-1A	7.92	J
229464	CSB-1B	7.64	J
229465	CSB-1C	7.13	J
229479	CSB-2A	7.34	J
229480	CSB-2B	7.36	J
229481	CSB-2C	7.79	J
229454	CSB-3A	7.90	J
229455	CSB-3B	8.96	J
229456	CSB-3C	11.27	J
235313	CSB-3D	9.99	J
235314	CSB-3E	7.29	J
229458	CSB-4A	8.09	J
229459	CSB-4B	7.65	J
229460	CSB-4BD	7.93	J
229461	CSB-4C	8.02	J
229471	CSB-5A	8.00	J
229472	CSB-5B	7.89	J
229473	CSB-5C	6.86	J
229475	CSB-6A	7.86	J
229476	CSB-6B	7.43	J
229477	CSB-6C	5.72	J
229466	CSB-7A	7.81	J
229467	CSB-7B	7.69	J
229468	CSB-7C	8.21	J
229469	CSB-7CD	8.41	J
235315	CSB-7D	8.08	J
235316	CSB-7E	8.18	J
229772	CSB-8A	8.26	J
229773	CSB-8B	8.43	J
229774	CSB-8C	8.98	J
229482	CSB-9A	4.62	J
229483	CSB-9B	4.23	J
229484	CSB-9C	7.34	J
229485	CSB-9CD	7.44	J
229491	CSB-10A	6.79	J
229492	CSB-10B	6.64	J
229493	CSB-10C	7.32	J
229494	CSB-10CD	7.37	J
235317	CSB-10D	5.87	J
229496	CSB-11A	7.62	J

LAB ID	LOCATION	RESULT	Q
229497	CSB-11B	7.55	J
229498	CSB-11C	7.39	J
229499	CSB-12A	7.25	J
229500	CSB-12B	7.29	J
229501	CSB-12C	6.70	J
229487	CSB-13A	7.50	J
229488	CSB-13B	7.22	J
229489	CSB-13C	7.19	J
229768	CSB-14A	8.35	J
229769	CSB-14B	8.75	J
229770	CSB-14C	8.82	J
229763	CSB-15A	8.30	J
229764	CSB-15B	10.33	J
229765	CSB-15C	9.19	J
229766	CSB-15CD	7.52	J
229776	CSB-16A	6.95	J
229777	CSB-16B	7.92	J
229778	CSB-16C	10.21	J
229780	CSB-17A	8.46	J
229781	CSB-17B	8.12	J
229782	CSB-17C	9.27	J
229783	CSB-17CD	9.04	J
230267	CSB-18A	9.64	J
230268	CSB-18B	8.90	J
230269	CSB-18C	8.45	J
230263	CSB-19A	10.07	J
230264	CSB-19B	9.26	J
230265	CSB-19C	9.00	J
230266	CSB-19CD	9.19	J
229785	CSB-20A	8.55	J
229786	CSB-20B	8.70	J
229787	CSB-20C	8.56	J
230293	CSB-21A	8.71	J
230294	CSB-21B	8.63	J
230295	CSB-21C	8.53	J
230327	CSB-22A	8.42	J
230328	CSB-22B	8.45	J
230329	CSB-22C	8.45	J
230322	CSB-23A	7.55	J
230323	CSB-23B	7.94	J

All results are reported in Standard Units with a detection limit of 1.00.
Q - Qualifier.
J - Estimated result.

QA Scientist M. Cloud Date 11/17/99

BEECH GROVE, IN
PH DATA SUMMARY TABLE
AUGUST 1999

Project Name	Beech Grove	Laboratory	TriMatrix Laboratories
Project Number	98-478-03	Case No.	35132-4-6, 8, 9, 13, 15, 16, 20, 21, 23, 27
Sample Date(s)	8/9-8/20/99	Method	EPA Method 9045C

LAB ID	LOCATION	RESULT	Q
230324	CSB-23C	8.31	J
230325	CSB-23CD	8.28	J
230319	CSB-24A	7.04	J
230320	CSB-24B	7.03	J
230321	CSB-24C	7.40	J
230246	CSB-25A	9.06	J
230247	CSB-25B	8.26	J
230248	CSB-25C	9.10	J
230259	CSB-26A	9.72	J
230260	CSB-26B	9.61	J
230261	CSB-26C	9.96	J
230250	CSB-27A	8.05	J
230251	CSB-27B	8.34	J
230252	CSB-27C	8.53	J
230297	CSB-28A	7.43	J
230298	CSB-28B	6.05	J
230299	CSB-28C	6.85	J
230300	CSB-28CD	6.80	J
230302	CSB-29A	6.06	J
230303	CSB-29B	6.58	J
230304	CSB-29C	7.43	J
230305	CSB-30A	8.03	J
230306	CSB-30B	9.48	J
230307	CSB-30C	8.34	J
230308	CSB-30CD	9.06	J
230314	CSB-31A	6.02	J
230315	CSB-31B	7.39	J
230316	CSB-31C	8.06	J
230310	CSB-32A	8.08	J
230311	CSB-32B	8.15	J
230312	CSB-32C	8.11	J
229965	CSB-33A	6.73	J
229966	CSB-33B	7.15	J
229967	CSB-33C	7.73	J
229956	CSB-34A	9.19	J
229957	CSB-34B	8.12	J
229958	CSB-34C	8.55	J
229959	CSB-34CD	8.76	J
229969	CSB-35A	8.80	J
229970	CSB-35B	8.73	J

LAB ID	LOCATION	RESULT	Q
229972	CSB-35C	8.80	J
229971	CSB-35CD	8.68	J
235318	CSB-35D	8.44	J
229961	CSB-36A	7.31	J
229962	CSB-36B	5.03	J
229963	CSB-36C	5.40	J
229974	CSB-37A	9.63	J
229975	CSB-37B	9.19	J
229976	CSB-37C	9.28	J
229944	CSB-38A	8.06	J
229945	CSB-38B	6.07	J
229946	CSB-38C	7.09	J
229947	CSB-38CD	7.70	J
229982	CSB-39A	8.65	J
229983	CSB-39B	8.67	J
229984	CSB-39C	8.52	J
229985	CSB-39CD	8.63	J
229987	CSB-40A	9.96	J
229988	CSB-40B	8.77	J
229989	CSB-40C	8.88	J
229990	CSB-41A	9.21	J
229991	CSB-41B	8.24	J
229992	CSB-41C	8.69	J
229978	CSB-42A	9.13	J
229979	CSB-42B	8.63	J
229980	CSB-42C	8.66	J
230577	CSB-43A	9.03	J
230578	CSB-43B	8.78	J
230579	CSB-43C	9.14	J
230572	CSB-44A	9.46	J
230573	CSB-44B	8.86	J
230574	CSB-44C	8.60	J
230575	CSB-44CD	8.60	J
230563	CSB-45A	10.62	J
230564	CSB-45B	8.64	J
230565	CSB-45C	8.70	J
230580	CSB-46A	9.50	J
230581	CSB-46B	9.24	J
230582	CSB-46C	8.47	J
230566	CSB-47A	11.28	J

All results are reported in Standard Units with a detection limit of 1.00.
Q - Qualifier.
J - Estimated result.

QA Scientist M. Cloud Date 11/17/99

BEECH GROVE, IN
PH DATA SUMMARY TABLE
AUGUST 1999

Project Name	Beech Grove	Laboratory	TriMatrix Laboratories
Project Number	98-478-03	Case No.	35132-4-6, 8, 9, 13, 15, 16, 20, 21, 23, 27
Sample Date(s)	8/9-8/20/99	Method	EPA Method 9045C

LAB ID	LOCATION	RESULT	Q
230567	CSB-47B	8.95	J
230568	CSB-47C	8.51	J
230569	CSB-47CD	8.69	J
229953	CSB-49A	8.73	J
229954	CSB-49B	8.72	J
229955	CSB-49C	8.26	J
230254	CSB-50A	7.93	J
230255	CSB-50B	5.54	J
230256	CSB-50C	5.35	J
230257	CSB-50CD	5.48	J
229949	CSB-51A	8.30	J
229950	CSB-51B	8.43	J
229951	CSB-51C	8.36	J
235319	CSB-51D	8.18	J
235320	CSB-51E	8.25	J
230585	CSED-1A	7.00	J
230589	CSED-2A	6.94	J
230586	CSED-3A	7.49	J
230587	CSED-4A	7.25	J
230588	CSED-4B	7.28	J
230762	BSB-1A	7.75	J
230763	BSB-1B	7.76	J
230764	BSB-1C	7.81	J
230760	BSB-2A	5.43	J
230761	BSB-2B	5.42	J
230765	BSB-3A	6.28	J
230766	BSB-3B	6.72	J
230767	BSB-4A	7.94	J
230768	BSB-4B	8.01	J

All results are reported in Standard Units with a detection limit of 1.00.
Q - Qualifier.
J - Estimated result.

QA Scientist M. Cloud Date 11/17/99

METALS DATA
SUPPORT DOCUMENTATION
35132-4, 5, 6, 8, 9, 13, 15, 16, 20, 21, and 27

TriMatrix Laboratories, Inc.

QUALITY CONTROL REPORT
BLANKS
USEPA CLP FORM 3

SDG No.	35132 -4	Parameter	Lead, Total
Instrument ID	114	Ref. Cit.	USEPA-6020
		Matrix	SOIL
		Units	mg/kg dry

Batch	Blank QC Type	Sequence No.	Amount Found
47078	Method Preparation	1	41.5

no samples reported for lead w/ this method blk

lead 22.4 mg/kg –

Associated samples:
229454, 55, 56, 58, 59
60, 61, 63, 64, 65, 66,
67, 68, 69, 71, 73, 76,
77, 72

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QUALITY CONTROL REPORT
BLANKS
USEPA CLP FORM 3

SDG No.	35132 -5	Parameter	Lead, Total
Instrument ID	114	Ref. Cit.	USEPA-6020
		Matrix	SOIL
		Units	mg/kg dry

Batch	Blank QC Type	Sequence No.	Amount Found
47109	Method Preparation	1	20.2

Associated samples:
229482-85
229487-89
~~229491~~
229493+94

method blk

19.3 mg/kg

Associated samples: 229479-81, 229491-92, 229496-501
DJM 11/17/99

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QUALITY CONTROL REPORT
BLANKS
USEPA CLP FORM 3

SDG No.	35132 -6	Parameter	Lead, Total
Instrument ID	114	Ref. Cit.	USEPA-6020
		Matrix	SOIL
		Units	mg/kg dry

Batch	Blank QC Type	Sequence No.	Amount Found
47091	Method Preparation	1	3.9

Associated Samples: 229763, 64, 65, 66
229768-70, 72, 73, 74, 76, 77, 78, 80
81, 82, 83, 85, 86 + 87
DJM 11/17/99

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QUALITY CONTROL REPORT
BLANKS
USEPA CLP FORM 3

SDG No.	35132 -6	Parameter	Antimony, Total
Instrument ID	114	Ref. Cit.	USEPA-6020
		Matrix	SOIL
		Units	mg/kg dry

Batch	Blank QC Type	Sequence No.	Amount Found
47125	Method Preparation	1	6.80

Associated Samples:
229763-66
229768-70
229772-74
229776-78
229780-83
229785-87
DM 11/3/99

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QUALITY CONTROL REPORT
BLANKS
USEPA CLP FORM 3

SDG No.	35132 -9	Parameter	Lead, Total
Instrument ID	114	Ref. Cit.	USEPA-6020
		Matrix	SOIL
		Units	mg/kg dry

Batch	Blank QC Type	Sequence No.	Amount Found
47155	Method Preparation	1	3.0

Associated data:
229945, ~~229949, 53, 54, 55, 56~~

Lead 5.97 Associated data
229946, 47, 49, 50, 51, 53, 54, 55, 56, 57, 58, 59
60, 61, 62, 63, 65, 66, 67, 69

DLM

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TriMatrix
Laboratories, Inc.

QUALITY CONTROL REPORT
BLANKS
USEPA CLP FORM 3

SDG No.	35132 -10	Parameter	Lead, Total
Instrument ID	114	Ref. Cit.	USEPA-6020
		Matrix	SOIL
		Units	mg/kg dry

Batch	Blank QC Type	Sequence No.	Amount Found
47158	Method Preparation	1	7.44
47159	Method Preparation	1	0.70

7.44 – Associated samples –
230200, 202, 205, 206, 207, 209, 210, 204
211, 212, 213, 215, 216, 217, 218, 219
220, 221, 222,

0.70 – Associated samples:
229969, 230179, 230180, 181, 182, 184, 185, 186, 187, 188, 189,
190, 191, 193, 194, 195, 196, 197, 198, 199

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TriMatrix Laboratories, Inc.

QUALITY CONTROL REPORT
BLANKS
USEPA CLP FORM 3

SDG No.	35132 -12	Parameter	Lead, Total
Instrument ID	114	Ref. Cit.	USEPA-6020
		Matrix	SOIL
		Units	mg/kg dry

Batch	Blank QC Type	Sequence No.	Amount Found
47160	Method Preparation	1	<0.60
47168	Method Preparation	1	0.61

Associated samples:
230245, 230246, 47, 48, 51, 52, 50
54, 55, 56, 57, 59, 60, 61, 63, 64
65, 66, 67, 68

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DJM

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QUALITY CONTROL REPORT
BLANKS
USEPA CLP FORM 3

SDG No.	35132 -13	Parameter	Lead, Total
Instrument ID	114	Ref. Cit.	USEPA-6020
		Matrix	SOIL
		Units	mg/kg dry

Batch	Blank QC Type	Sequence No.	Amount Found
47168	Method Preparation	1	0.61
47623	Method Preparation	1	<0.60

Associated data:
230 245, 246, 247, 248,
~~250~~, 251, 252, 254, 255
256, 257, 259, 260, 263
264, 265

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QUALITY CONTROL REPORT
BLANKS
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SDG No.	35132 -14	Parameter	Lead, Total
Instrument ID	114	Ref. Cit.	USEPA-6020
		Matrix	SOIL
		Units	mg/kg dry

Batch	Blank QC Type	Sequence No.	Amount Found
47623	Method Preparation	1	<0.60
47812	Method Preparation	1	1.98

Associated data:
230291, 293, 295, 297, 298, 299, 300, 302, 303, 304, 305, 306, 307, 308

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BLANKS
USEPA CLP FORM 3

SDG No.	35132 -16	Parameter	Chromium, Total
Instrument ID	114	Ref. Cit.	USEPA-6020
		Matrix	SOIL
		Units	mg/kg dry

Batch	Blank QC Type	Sequence No.	Amount Found
47813	Method Preparation	1	6.83

Associated data:
230316, 319, 320, 321,
322, 323, 324, 325, 327
328 + 329, 30, 31, 32, 34-38
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SDG No.	35132 -16	Parameter	Lead, Total
Instrument ID	114	Ref. Cit.	USEPA-6020
		Matrix	SOIL
		Units	mg/kg dry

Batch	Blank QC Type	Sequence No.	Amount Found
47813	Method Preparation	1	1.07

Associated data: 230316, 319, 320, 321, 322, 323, 324, 325, 327, 328

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USEPA CLP FORM 3

SDG No.	35132 -20	Parameter	Lead, Total
Instrument ID	114	Ref. Cit.	USEPA-6020
		Matrix	SOIL
		Units	mg/kg dry

Batch	Blank QC Type	Sequence No.	Amount Found
47624	Method Preparation	1	2.36
47626	Method Preparation	1	1.24

Pb 1.24 - Associated samples: 230572, 573, 574
575, 577, 579, 580, 581, + 582
non above 5x Blk
Pb 2.36 - Associated samples: 230564, 565, 566,
567, 568, 569

DIM

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QUALITY CONTROL REPORT
BLANKS
USEPA CLP FORM 3

SDG No.	35132 -27	Parameter	Lead, Total
Instrument ID	114	Ref. Cit.	USEPA-6020
		Matrix	SOIL
		Units	mg/kg dry

Batch	Blank QC Type	Sequence No.	Amount Found
48972	Method Preparation	1	0.616

Associated samples:
235313-20
DIM

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QUALITY CONTROL REPORT
BLANKS
USEPA CLP FORM 3

SDG No.	35132 -27	Parameter	Antimony, Total
Instrument ID	114	Ref. Cit.	USEPA-6020
		Matrix	SOIL
		Units	mg/kg dry

Batch	Blank QC Type	Sequence No.	Amount Found
48910	Method Preparation	1	4.2

Associated samples:
235313 - 235320
DIM

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QUALITY CONTROL REPORT
SPIKE SAMPLE RECOVERY
USEPA CLP FORM 5A

SDG No. 35132 -4

Sample ID. CSB1CMS/MSD

Matrix SOIL
Lab Sample No. 229465
Units mg/kg dry

Analyte	Control Limit %R	Spiked Sample Result	Sample Result		Spike Added	%R	M
Antimony, Total	70 - 130	107.5	19		100	89	MS
Antimony, Total	70 - 130	103.7	19		100	85	MS
Arsenic, Total	73 - 121	125.2	8.0		125	94	MS
Arsenic, Total	73 - 121	111.9	8.0		125	83	MS
Barium, Total	69 - 131	175.6	56		125	96	MS
Barium, Total	69 - 131	194.4	56		125	111	MS
Cadmium, Total	83 - 114	26.4	3.3		25.0	92	MS
Cadmium, Total	83 - 114	27.2	3.3		25.0	96	MS
Chromium, Total	69 - 130	125.7	9.0		125	93	MS
Chromium, Total	69 - 130	134.2	9.0		125	100	MS
Lead, Total	74 - 132	604.6	511		125	75	MS
Lead, Total	74 - 132	772.7	511		125	209	MS
Mercury, Total	73 - 136	0.448	<0.10	U	0.417	107	CV
Mercury, Total	73 - 136	0.474	<0.10	U	0.417	114	CV
Selenium, Total	62 - 126	94.0	0.63		125	75	MS
Selenium, Total	62 - 126	112.7	0.63		125	90	MS
Silver, Total	78 - 115	17.4	<0.20	U	25.0	70	MS
Silver, Total	78 - 115	22.3	<0.20	U	25.0	89	MS

Associated Samples

Pb, Ag - 229454-56
229458-61
229463-69
229471-73
229475-77

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QUALITY CONTROL REPORT
MATRIX SPIKE DUPLICATE
USEPA CLP FORM 6

SDG No. 35132 -4

Sample ID. CSB1CMS/MSD

Matrix SOIL
Lab Sample No. 229465
Units mg/kg dry

Analyte	Control Limit	Sample Result	Duplicate Spike Result	RPD	M
Antimony, Total	0 - 20	107.5	103.7	4	MS
Arsenic, Total	0 - 20	125.2	111.9	11	MS
Barium, Total	0 - 20	175.6	194.4	10	MS
Cadmium, Total	0 - 20	27.2	26.4	3	MS
Chromium, Total	0 - 20	134.2	125.7	7	MS
Lead, Total	0 - 20	604.6	772.7	24	MS
Mercury, Total	0 - 20	0.448	0.474	6	CV
Selenium, Total	0 - 20	112.7	94.0	18	MS
Silver, Total	0 - 20	22.3	17.4	25	MS

Associated data:
229454, 55, 56, 58, 59, 60, 61
63, 64, 65, 66, 67, 68, 69, 71
72, 73, 75, 76, 77

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QUALITY CONTROL REPORT
SPIKE SAMPLE RECOVERY
USEPA CLP FORM 5A

SDG No. 35132 -6

Sample ID. CSB14CMS/MSD

Matrix SOIL
Lab Sample No. 229770
Units mg/kg dry

Analyte	Control Limit %R	Spiked Sample Result	Sample Result		Spike Added	%R	M
Antimony, Total	70 - 130	93.0	1.0		100	92	MS
Antimony, Total	70 - 130	96.4	1.0		100	95	MS
Arsenic, Total	73 - 121	124.4	6.4		125	94	MS
Arsenic, Total	73 - 121	118.4	6.4		125	90	MS
Barium, Total	69 - 131	182.1	69		125	90	MS
Barium, Total	69 - 131	182.9	69		125	91	MS
Cadmium, Total	83 - 114	23.7	<0.50	U	25.0	95	MS
Cadmium, Total	83 - 114	23.3	<0.50	U	25.0	93	MS
Chromium, Total	69 - 130	114.7	11		125	83	MS
Chromium, Total	69 - 130	117.4	11		125	85	MS
Lead, Total	74 - 132	128.5	18		125	88	MS
Lead, Total	74 - 132	124.7	18		125	85	MS
Mercury, Total	73 - 136	0.453	<0.10	U	0.417	109	CV
Mercury, Total	73 - 136	0.541	<0.10	U	0.417	130	CV
Selenium, Total	62 - 126	105.8	<0.50	U	125	85	MS
Selenium, Total	62 - 126	114.8	<0.50	U	125	92	MS
Silver, Total	78 - 115	21.2	<0.20	U	25.0	85	MS
Silver, Total	78 - 115	21.5	<0.20	U	25.0	86	MS

Associated data:
Estimate detects only
229772
DJM

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QUALITY CONTROL REPORT
SPIKE SAMPLE RECOVERY
USEPA CLP FORM 5A

SDG No. 35132 -7

Sample ID. RSB74BMS/MSD

Matrix SOIL
Lab Sample No. 229935
Units mg/kg dry

Analyte	Control Limit %R	Spiked Sample Result	Sample Result		Spike Added	%R	M
Arsenic, Total	73 - 121	124.9	9.0		125	93	MS
Arsenic, Total	73 - 121	100.4	9.0		125	73	MS
Barium, Total	69 - 131	237.8	133		125	84	MS
Barium, Total	69 - 131	222.0	133		125	71	MS
Cadmium, Total	83 - 114	25.9	<0.50	U	25.0	104	MS
Cadmium, Total	83 - 114	25.4	<0.50	U	25.0	102	MS
Chromium, Total	69 - 130	142.4	19		125	99	MS
Chromium, Total	69 - 130	131.1	19		125	90	MS
Lead, Total	74 - 132	262.6	177		125	68	MS
Lead, Total	74 - 132	333.7	177		125	125	MS
Mercury, Total	73 - 136	0.478	<0.10	U	0.417	115	CV
Mercury, Total	73 - 136	0.458	<0.10	U	0.417	110	CV
Selenium, Total	62 - 126	75.0	0.77		125	59	MS
Selenium, Total	62 - 126	116.6	0.77		125	93	MS
Silver, Total	78 - 115	23.0	<0.20	U	25.0	92	MS
Silver, Total	78 - 115	22.9	<0.20	U	25.0	92	MS

Associated Samples:
229921, 22, 23, 24, 25, 26, 27, 28, 30
31, 32, 33, 34, 35, 36, 38, 39, 40, 41, 44

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QUALITY CONTROL REPORT
MATRIX SPIKE DUPLICATE
USEPA CLP FORM 6

SDG No.	35132 -7	Matrix	SOIL
		Lab Sample No.	229935
Sample ID.	RSB74BMS/MSD	Units	mg/kg dry

Analyte	Control Limit	Sample Result	Duplicate Spike Result	RPD	M
Arsenic, Total	0 - 20	124.9	100.4	22	MS
Barium, Total	0 - 20	237.8	222.0	7	MS
Cadmium, Total	0 - 20	25.9	25.4	2	MS
Chromium, Total	0 - 20	142.4	131.1	8	MS
Lead, Total	0 - 20	262.6	333.7	24	MS
Mercury, Total	0 - 20	0.478	0.458	4	CV
Selenium, Total	0 - 20	116.6	75.0	43	MS
Silver, Total	0 - 20	22.9	23.0	0	MS

Associated Samples:
229921-28, 229930-36
229938-41, 229944
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QUALITY CONTROL REPORT
SPIKE SAMPLE RECOVERY
USEPA CLP FORM 5A

SDG No. 35132 -9

Sample ID. CSB37CMS/MSD

Matrix SOIL
Lab Sample No. 229976
Units mg/kg dry

Analyte	Control Limit %R	Spiked Sample Result	Sample Result		Spike Added	%R	M
Antimony, Total	70 - 130	96.4	2.6		100	94	MS
Antimony, Total	70 - 130	101.5	2.6		100	99	MS
Arsenic, Total	73 - 121	124.5	6.8		125	94	MS
Arsenic, Total	73 - 121	129.1	6.8		125	98	MS
Barium, Total	69 - 131	164.2	47		125	94	MS
Barium, Total	69 - 131	165.9	47		125	95	MS
Cadmium, Total	83 - 114	27.0	1.9		25.0	100	MS
Cadmium, Total	83 - 114	25.9	1.9		25.0	96	MS
Chromium, Total	69 - 130	119.4	7.1		125	90	MS
Chromium, Total	69 - 130	120.0	7.1		125	90	MS
Lead, Total	74 - 132	379.2	242		125	110	MS
Lead, Total	74 - 132	300	242		125	46	MS
Mercury, Total	73 - 136	0.425	<0.10	U	0.417	102	CV
Mercury, Total	73 - 136	0.428	<0.10	U	0.417	103	CV
Selenium, Total	62 - 126	101.0	<0.50	U	125	81	MS
Selenium, Total	62 - 126	100.9	<0.50	U	125	81	MS
Silver, Total	78 - 115	23.6	<0.20	U	25.0	94	MS
Silver, Total	78 - 115	22.7	<0.20	U	25.0	91	MS

Associated samples:
229970, 71, 72, 74, 75, 76
78, 79, 80, 82, 83, 84, 85,
87, 88, 89, 90, 91, 92
DM

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QUALITY CONTROL REPORT
MATRIX SPIKE DUPLICATE
USEPA CLP FORM 6

SDG No. 35132 -9

Sample ID. CSB37CMS/MSD

Matrix SOIL
Lab Sample No. 229976
Units mg/kg dry

Analyte	Control Limit	Sample Result	Duplicate Spike Result	RPD	M
Antimony, Total	0 - 20	96.4	101.5	5	MS
Arsenic, Total	0 - 20	124.5	129.1	4	MS
Barium, Total	0 - 20	164.2	165.9	1	MS
Cadmium, Total	0 - 20	25.9	27.0	4	MS
Chromium, Total	0 - 20	119.4	120.0	1	MS
Lead, Total	0 - 20	379.2	300	23	MS
Mercury, Total	0 - 20	0.425	0.428	1	CV
Selenium, Total	0 - 20	100.9	101.0	0	MS
Silver, Total	0 - 20	22.7	23.6	4	MS

Associated samples:
229970-72, 229974-76
229978-80, 229982-85,
229987 - 92
DM

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QUALITY CONTROL REPORT
SPIKE SAMPLE RECOVERY
USEPA CLP FORM 5A

SDG No. 35132 -14

Sample ID. RSB79BMS/MSD

Matrix SOIL
Lab Sample No. 230277
Units mg/kg dry

Analyte	Control Limit %R	Spiked Sample Result	Sample Result		Spike Added	%R	M
Arsenic, Total	73 - 121	123.5	6.9		125	93	MS
Arsenic, Total	73 - 121	128.9	6.9		125	98	MS
Barium, Total	69 - 131	170.7	62		125	87	MS
Barium, Total	69 - 131	179.9	62		125	94	MS
Cadmium, Total	83 - 114	28.5	6.4		25	88	MS
Cadmium, Total	83 - 114	29.5	6.4		25	92	MS
Chromium, Total	69 - 130	123.2	11		125	90	MS
Chromium, Total	69 - 130	130.6	11		125	96	MS
Lead, Total	74 - 132	253.9	205		125	39	MS
Lead, Total	74 - 132	299.5	205		125	76	MS
Mercury, Total	73 - 136	0.481	<0.10	U	0.417	115	CV
Mercury, Total	73 - 136	0.473	<0.10	U	0.417	113	CV
Selenium, Total	62 - 126	114.9	0.54		125	91	MS
Selenium, Total	62 - 126	110.0	0.54		125	88	MS
Silver, Total	78 - 115	21.6	<0.20	U	25	86	MS
Silver, Total	78 - 115	21.9	<0.20	U	25	88	MS

Associated samples:
230269-74, 230276-81
230283-90

DM

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QUALITY CONTROL REPORT
SPIKE SAMPLE RECOVERY
USEPA CLP FORM 5A

SDG No. 35132 -15

Sample ID. CSBCSB29CMS/MSD

Matrix SOIL
Lab Sample No. 230304
Units mg/kg dry

Analyte	Control Limit %R	Spiked Sample Result	Sample Result		Spike Added	%R	M
Antimony, Total	68 - 126	97.3	1.5		100	96	MS
Antimony, Total	68 - 126	101.4	1.5		100	100	MS
Arsenic, Total	73 - 121	109.8	11		125	79	MS
Arsenic, Total	73 - 121	108.2	11		125	78	MS
Barium, Total	69 - 131	185.4	100		125	68	MS
Barium, Total	69 - 131	183.9	100		125	67	MS
Cadmium, Total	83 - 114	21.3	0.73		25	82	MS
Cadmium, Total	83 - 114	20.6	0.73		25	79	MS
Chromium, Total	69 - 130	114.9	21		125	75	MS
Chromium, Total	69 - 130	118.8	21		125	78	MS
Lead, Total	74 - 132	125.6	36		125	72	MS
Lead, Total	74 - 132	125.0	36		125	71	MS
Mercury, Total	73 - 136	0.493	<0.10	U	0.417	118	CV
Mercury, Total	73 - 136	0.495	<0.10	U	0.417	119	CV
Selenium, Total	62 - 126	117.3	1.3		125	93	MS
Selenium, Total	62 - 126	106.8	1.3		125	84	MS
Silver, Total	78 - 115	19.0	<0.20	U	25	76	MS
Silver, Total	78 - 115	18.6	<0.20	U	25	74	MS

Used 75-125% R as criteria stated in QAPP.
Associated data:
230291, 230293-95, 230297-300, 230302-308, 230310-312, 230314-15
DLM

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QUALITY CONTROL REPORT
SPIKE SAMPLE RECOVERY
USEPA CLP FORM 5A

SDG No. 35132 -16

Sample ID. CSB24CMS/MSD

Matrix SOIL
Lab Sample No. 230321
Units mg/kg dry

Analyte	Control Limit %R	Spiked Sample Result	Sample Result		Spike Added	%R	M
Antimony, Total	68 - 126	92.1	<1.0	U	100	92	MS
Antimony, Total	68 - 126	93.2	<1.0	U	100	93	MS
Arsenic, Total	73 - 121	98.1	4.4		125	75	MS
Arsenic, Total	73 - 121	123.3	4.4		125	95	MS
Barium, Total	69 - 131	216.2	116		125	80	MS
Barium, Total	69 - 131	233.6	116		125	94	MS
Cadmium, Total	83 - 114	23.4	<0.50	U	25	94	MS
Cadmium, Total	83 - 114	23.5	<0.50	U	25	94	MS
Chromium, Total	69 - 130	124.7	17		125	86	MS
Chromium, Total	69 - 130	134.7	17		125	94	MS
Lead, Total	74 - 132	123.9	12		125	90	MS
Lead, Total	74 - 132	124.0	12		125	90	MS
Mercury, Total	73 - 136	0.513	<0.10	U	0.417	123	CV
Mercury, Total	73 - 136	0.516	<0.10	U	0.417	124	CV
Selenium, Total	62 - 126	91.9	0.92		125	73	MS
Selenium, Total	62 - 126	117.0	0.92		125	93	MS
Silver, Total	78 - 115	22.5	<0.20	U	25	90	MS
Silver, Total	78 - 115	22.5	<0.20	U	25	90	MS

Associated samples:
230316, 230319, 320, 321, 23
322, 324, 325, 327, 328
329, 330, 331, 332, 334
335, 336, 337 ~~+338~~
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QUALITY CONTROL REPORT
MATRIX SPIKE DUPLICATE
USEPA CLP FORM 6

SDG No. 35132 -16

Sample ID. CSB24CMS/MSD

Matrix SOIL
Lab Sample No. 230321
Units mg/kg dry

Analyte	Control Limit	(MS) Sample Result	(MSD) Duplicate Spike Result	RPD	M
Antimony, Total	0 - 20	92.1	93.2	1	MS
Arsenic, Total	0 - 20	98.1	123.3	23	MS
Barium, Total	0 - 20	216.2	233.6	8	MS
Cadmium, Total	0 - 20	23.4	23.5	0	MS
Chromium, Total	0 - 20	124.7	134.7	8	MS
Lead, Total	0 - 20	123.9	124.0	0	MS
Mercury, Total	0 - 20	0.513	0.516	1	CV
Selenium, Total	0 - 20	91.9	117.0	24	MS
Silver, Total	0 - 20	22.5	22.5	0	MS

Associated samples:
230316, 230319, 320, 321
322, 324, 325, 327, 328,
329, 330, 331, 332, 334,
335, 336, 337 + 338
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QUALITY CONTROL REPORT
SPIKE SAMPLE RECOVERY
USEPA CLP FORM 5A

SDG No. 35132 -17

Sample ID. RSB26BMS/MSD

Matrix SOIL
Lab Sample No. 230338
Units mg/kg dry

Analyte	Control Limit %R	Spiked Sample Result	Sample Result	Spike Added	%R	M
Arsenic, Total	73 - 121	290.7	184	125	85	MS
Arsenic, Total	73 - 121	485.8	184	125	241	MS
Barium, Total	69 - 131	228.5	114	125	92	MS
Barium, Total	69 - 131	219.1	114	125	84	MS
Cadmium, Total	83 - 114	33.1	10	25	92	MS
Cadmium, Total	83 - 114	37.8	10	25	111	MS
Chromium, Total	69 - 130	128.5	21	125	86	MS
Chromium, Total	69 - 130	124.5	21	125	83	MS
Mercury, Total	73 - 136	0.892	0.36	0.417	128	CV
Mercury, Total	73 - 136	0.874	0.36	0.417	123	CV
Selenium, Total	62 - 126	102.6	4.6	125	78	MS
Selenium, Total	62 - 126	116.7	4.6	125	90	MS
Silver, Total	78 - 115	22.2	0.23	25	88	MS
Silver, Total	78 - 115	22.0	0.23	25	87	MS

Hg - Estimated detected results
230334, 337, 338, 340
339
DIM

As - Estimated detected results
Associated samples:
230316, 230319-25,
230327-32, 230334-38
DIM

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Individual sample results relate only to the sample tested.

TriMatrix Laboratories, Inc.

QUALITY CONTROL REPORT
MATRIX SPIKE DUPLICATE
USEPA CLP FORM 6

SDG No.	35132 -17	Matrix	SOIL
		Lab Sample No.	230338
Sample ID.	RSB26BMS/MSD	Units	mg/kg dry

Analyte	Control Limit	(MS) Sample Result	(MSD) Duplicate Spike Result	RPD	M
Arsenic, Total	0 - 20	290.7	485.8	50	MS
Barium, Total	0 - 20	228.5	219.1	4	MS
Cadmium, Total	0 - 20	33.1	37.8	13	MS
Chromium, Total	0 - 20	128.5	124.5	3	MS
Mercury, Total	0 - 20	0.892	0.874	2	CV
Selenium, Total	0 - 20	102.6	116.7	13	MS
Silver, Total	0 - 20	22.0	22.2	1	MS

Associated data:
230316, 230319-25,
230327-32, 230334-38
D/M

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TriMatrix Laboratories, Inc.

QUALITY CONTROL REPORT
SPIKE SAMPLE RECOVERY
USEPA CLP FORM 5A

SDG No. 35132 -23

Sample ID. RSB3AMS/MSD

Matrix SOIL
Lab Sample No. 230765
Units mg/kg dry

Analyte	Control Limit %R	Spiked Sample Result	Sample Result		Spike Added	%R	M
Antimony, Total	68 - 126	95.7	4.0		100	92	MS
Antimony, Total	68 - 126	97.6	4.0		100	94	MS
Arsenic, Total	73 - 121	117.9	7.0		125	89	MS
Arsenic, Total	73 - 121	116.3	7.0		125	87	MS
Barium, Total	69 - 131	217.4	98		125	96	MS
Barium, Total	69 - 131	211.4	98		125	91	MS
Cadmium, Total	83 - 114	24.3	1.3		25.0	92	MS
Cadmium, Total	83 - 114	24.2	1.3		25.0	92	MS
Chromium, Total	69 - 130	132.9	16		125	94	MS
Chromium, Total	69 - 130	126.9	16		125	89	MS
Lead, Total	74 - 132	355.3	257		125	79	MS
Lead, Total	74 - 132	384.6	257		125	102	MS
Mercury, Total	73 - 136	0.549	<0.10	U	0.417	132	CV
Mercury, Total	73 - 136	0.557	<0.10	U	0.417	134	CV
Selenium, Total	62 - 126	123.1	1.3		100	122	MS
Selenium, Total	62 - 126	119.7	1.3		100	118	MS
Silver, Total	78 - 115	20.2	<0.20	U	25.0	81	MS
Silver, Total	78 - 115	20.7	<0.20	U	25.0	83	MS

Associated data
Estimate detects:
230760-68, 230587

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Individual sample results relate only to the sample tested.
5560 Corporate Exchange Court SE • Grand Rapids, MI 49512 • (616) 975-4500 • Fax (616) 942-7463

FIELD DUPLICATE SUMMARY FORM

Site Name:	RMC Beech Grove, IN	Laboratory:	TriMatrix
Project Number:	98-478-03	Case/Order No.:	35132-1 to 3532-27
Sampling Date(s):	8/10-8/26/99, 9/1/99		

Sample description or location	CSB-4B	CSB-4BD		
Sample number	229459	229460		
Matrix	Soil	Soil		
Units	mg/kg	mg.kg		
Parameters			RPD	Q
TOTAL				
Antimony	1000	34	186.85	J
Arsenic	164	25	147.09	J
Barium	123	158	24.91	
Cadmium	102	29	111.45	J
Chromium	13	30	79.07	J
Lead	460000	2450	197.88	J
Mercury	0.23	ND	NA	
Selenium	1.9	1.2	NA	
Silver	0.5	ND	NA	

Sample description or location	CSB-7C	CSB-7CD		
Sample number	229468	229469		
Matrix	Soil	Soil		
Units	mg/kg	mg.kg		
Parameters			RPD	Q
TOTAL				
Antimony	904	1140	23.09	
Arsenic	343	430	22.51	
Barium	134	113	17.00	
Cadmium	158	163	3.12	
Chromium	16	12	28.57	
Lead	77200	144000	60.40	J
Mercury	0.73	0.61	17.91	
Selenium	12	9.9	19.18	
Silver	1.5	1.9	23.53	

Sample description or location	CSB-9C	CSB-9CD		
Sample number	229484	229485		
Matrix	Soil	Soil		
Units	mg/kg	mg.kg		
Parameters			RPD	Q
TOTAL				
Antimony	1.2	4.3	NA	
Arsenic	7.7	7.4	3.97	
Barium	76	69	9.66	
Cadmium	ND	ND	NA	
Chromium	13	12	8.00	
Lead	53	50	5.83	
Mercury	ND	ND	NA	
Selenium	0.71	0.73	2.78	
Silver	ND	ND	NA	

Duplicate criteria: Soil <40% if >5X LOQ; ±2 LOQ if <5X LOQ.
J - Denotes %RPD outside criteria.
NA - Cannot be calculated or results <5X LOQ.
ND - Not detected.

QA Scientist Dianne McGuire Date 12/22/99

Sample description or location	CSB-10C	CSB-10CD		
Sample number	229493	229494		
Matrix	Soil	Soil		
Units	mg/kg	mg.kg		
Parameters			RPD	Q
TOTAL				
Antimony	43	4.9	159.08	J
Arsenic	17	8.7	64.59	J
Barium	138	96	35.90	
Cadmium	151	156	NA	
Chromium	20	15	28.57	
Lead	1500	362	122.23	J
Mercury	ND	ND	NA	
Selenium	1.6	0.98	NA	
Silver	ND	ND	NA	

Sample description or location	CSB-15C	CSB-15CD		
Sample number	229765	229766		
Matrix	Soil	Soil		
Units	mg/kg	mg.kg		
Parameters			RPD	Q
TOTAL				
Antimony	2.3	3.3	35.71	
Arsenic	5.3	6.1	14.04	
Barium	47	51	8.16	
Cadmium	ND	ND	NA	
Chromium	9.6	12	22.22	
Lead	28	30	6.90	
Mercury	ND	ND	NA	
Selenium	ND	ND	NA	
Silver	ND	ND	NA	

Sample description or location	CSB-17C	CSB-17CD		
Sample number	229782	229783		
Matrix	Soil	Soil		
Units	mg/kg	mg.kg		
Parameters			RPD	Q
TOTAL				
Antimony	1.2	1.2	0.00	
Arsenic	6.9	7	1.44	
Barium	53	55	3.70	
Cadmium	0.52	ND	NA	
Chromium	11	10	9.52	
Lead	101	273	91.98	J
Mercury	ND	ND	NA	
Selenium	0.59	0.65	9.68	
Silver	ND	ND	NA	

Duplicate criteria: Soil <40% if >5X LOQ; ±2 LOQ if <5X LOQ.
J - Denotes %RPD outside criteria.
NA - Cannot be calculated or results <5X LOQ.
ND - Not detected.

QA Scientist D. McCune Date 12/22/99

Sample description or location	CSB-19C	CSB-19CD		
Sample number	230265	230266		
Matrix	Soil	Soil		
Units	mg/kg	mg.kg		
Parameters			RPD	Q
TOTAL				
Antimony	1.4	2.2	NA	
Arsenic	6.7	6.8	1.48	
Barium	47	53	12.00	
Cadmium	1.3	0.66	NA	
Chromium	11	12	8.70	
Lead	129	68	61.93	J
Mercury	ND	ND	NA	
Selenium	1.40	0.75	NA	
Silver	ND	ND	NA	

Sample description or location	CSB-23C	CSB-23CD		
Sample number	230324	230325		
Matrix	Soil	Soil		
Units	mg/kg	mg.kg		
Parameters			RPD	Q
TOTAL				
Antimony	1	ND	NA	
Arsenic	6.2	6.1	1.63	
Barium	42	44	4.65	
Cadmium	ND	ND	NA	
Chromium	8	8.3	3.68	
Lead	32	8	120.00	J
Mercury	ND	ND	NA	
Selenium	ND	0.62	NA	
Silver	ND	ND	NA	

Sample description or location	CSB-28C	CSB-28CD		
Sample number	230299	230300		
Matrix	Soil	Soil		
Units	mg/kg	mg.kg		
Parameters			RPD	Q
TOTAL				
Antimony	1.7	ND	NA	
Arsenic	23	8.7	90.22	J
Barium	534	190	95.03	J
Cadmium	0.83	ND	NA	
Chromium	61	18	108.86	J
Lead	29	10	97.44	J
Mercury	ND	ND	NA	
Selenium	3.40	1.4	83.33	J
Silver	ND	ND	NA	

Duplicate criteria: Soil <40% if >5X LOQ; ±2 LOQ if <5X LOQ.
J - Denotes %RPD outside criteria.
NA - Cannot be calculated or results <5X LOQ.
ND - Not detected.

QA Scientist DMCline Date 12/22/99

Sample description or location	CSB-30C	CSB-30CD		
Sample number	230307	230308		
Matrix	Soil	Soil		
Units	mg/kg	mg.kg		
Parameters			RPD	Q
TOTAL				
Antimony	1	741	199.46	J
Arsenic	11	8.6	24.49	
Barium	97	62	44.03	
Cadmium	ND	ND	NA	
Chromium	21	14	40.00	
Lead	15	24	46.15	J
Mercury	ND	ND	NA	
Selenium	1.00	1.1	9.52	
Silver	ND	ND	NA	

Sample description or location	CSB-34C	CSB-34CD		
Sample number	229958	229959		
Matrix	Soil	Soil		
Units	mg/kg	mg.kg		
Parameters			RPD	Q
TOTAL				
Antimony	1.6	1.6	0.00	
Arsenic	7	6.5	7.41	
Barium	40	44	9.52	
Cadmium	ND	ND	NA	
Chromium	9	9.6	6.45	
Lead	68	86	23.38	
Mercury	ND	ND	NA	
Selenium	ND	0.6	NA	
Silver	ND	ND	NA	

Sample description or location	CSB-35C	CSB-35CD		
Sample number	229972	229971		
Matrix	Soil	Soil		
Units	mg/kg	mg.kg		
Parameters			RPD	Q
TOTAL				
Antimony	16	15	6.45	
Arsenic	7	7.9	12.08	
Barium	41	45	9.30	
Cadmium	1.2	1.4	NA	
Chromium	7.2	7.7	6.71	
Lead	1400	1120	22.22	
Mercury	ND	ND	NA	
Selenium	0.77	0.68	12.41	
Silver	ND	ND	NA	

Duplicate criteria: Soil <40% if >5X LOQ; ±2 LOQ if <5X LOQ.
J - Denotes %RPD outside criteria.
NA - Cannot be calculated or results <5X LOQ.
ND - Not detected.

QA Scientist [signature] Date 12/22/99

Sample description or location	CSB-39C	CSB-39CD		
Sample number	229984	229985		
Matrix	Soil	Soil		
Units	mg/kg	mg.kg		
Parameters			RPD	Q
TOTAL				
Antimony	1.4	1.4	0.00	
Arsenic	5.8	9	43.24	J
Barium	44	43	2.30	
Cadmium	ND	ND	NA	
Chromium	9.9	8.4	16.39	
Lead	15	15	0.00	
Mercury	ND	ND	NA	
Selenium	ND	0.54	NA	
Silver	ND	ND	NA	

Sample description or location	CSB-44C	CSB-44CD		
Sample number	229984	229985		
Matrix	Soil	Soil		
Units	mg/kg	mg.kg		
Parameters			RPD	Q
TOTAL				
Antimony	ND	ND	NA	
Arsenic	7.6	6.2	20.29	
Barium	50	45	10.53	
Cadmium	ND	ND	NA	
Chromium	13	8.7	39.63	
Lead	20	11	58.06	J
Mercury	ND	ND	NA	
Selenium	0.85	1.4	NA	
Silver	ND	ND	NA	

Sample description or location	CSB-47C	CSB-47CD		
Sample number	230568	230569		
Matrix	Soil	Soil		
Units	mg/kg	mg.kg		
Parameters			RPD	Q
TOTAL				
Antimony	ND	ND	NA	
Arsenic	5.9	6.4	8.13	
Barium	41	43	4.76	
Cadmium	ND	ND	NA	
Chromium	7.7	8.3	7.50	
Lead	10	14	33.33	
Mercury	ND	ND	NA	
Selenium	1.60	0.59	NA	
Silver	ND	ND	NA	

Duplicate criteria: Soil <40% if >5X LOQ; ±2 LOQ if <5X LOQ.
J - Denotes %RPD outside criteria.
NA - Cannot be calculated or results <5X LOQ.
ND - Not detected.

QA Scientist [signature] Date 12/22/99

FIELD DUPLICATE SUMMARY FORM

Sample description or location	CSB-50C	CSB-50CD		
Sample number	230256	230257		
Matrix	Soil	Soil		
Units	mg/kg	mg.kg		
Parameters			RPD	Q
TOTAL				
Antimony	3.8	2	NA	
Arsenic	10	11	9.52	
Barium	168	33	134.33	J
Cadmium	0.56	ND	NA	
Chromium	32	21	41.51	J
Lead	229	111	69.41	J
Mercury	ND	ND	NA	
Selenium	2.00	1.1	NA	
Silver	ND	ND	NA	

Duplicate criteria: Soil <40% if >5X LOQ; ±2 LOQ if <5X LOQ.
J - Denotes %RPD outside criteria.
NA - Cannot be calculated or results <5X LOQ.
ND - Not detected.

QA Scientist D McCu Date 12/22/99

WET CHEMISTRY DATA
SUPPORT DOCUMENTATION
35132-4, 5, 6, 8, 9, 13, 15, 16, 20, 21, and 27

WET CHEMISTRY DATA VALIDATION SUMMARY

Site Name: Beech Grove
Project Number: 98-478-03
Sampling Date(s): 8/25

Laboratory: TriMatrix
Case /Order No.: 35132 - 20, 21, 23
CSB43A - CSB47CD, RSB1A - RSE
CSED1A - CSED4B

Parameter List: pH
Method: 9045C

The following table indicates the data validation criteria examined, any problems identified, and the QA action applied.

Data Validation Criteria:	accept	FYI	qualify	Comments
Holding Times			✓	Samples were analyzed 2 days after collection - estimated results
Calibration Curve		✓		NA
Initial Calibration	✓			
Continuing Calibration	✓			
Laboratory Control Sample Results	✓			
Blank Analysis Results	✓			
Duplicate Analysis Results	✓			CSB44C + CSB44CD, CSB47C + CSB47CD
Field Duplicate Analysis Results	✓			
Matrix Spike Analysis Results		✓		NA
Quantitation/Detection Limits	✓			
Overall Assessment of Data	✓			
Other:				

General Comments:

Accept - No qualification required.
FYI - For your information only, no qualification necessary.
Qualify - Qualify as rejected, estimated or biased

NA - Not Applicable
NR - Not Reviewed

QA Scientist Megan N. Cloud
Date 11/9/99

WET CHEMISTRY DATA VALIDATION SUMMARY

Site Name: Beech Grove
Project Number: 98-478-03
Sampling Date(s): 8/17, 8/19/99

Laboratory: TriMatrix
Case /Order No.: 35132 - 4,5,6
CSB1A - CSB17CD, CSB20A,

Parameter List: pH
Method: 9045C (SW-846)

The following table indicates the data validation criteria examined, any problems identified, and the QA action applied.

Data Validation Criteria:	accept	FYI	qualify	Comments
Holding Times			✓	samples analyzed 2 days after collection - estimated all pH's
Calibration Curve		✓		NA
Initial Calibration	✓			
Continuing Calibration	✓			
Laboratory Control Sample Results	✓			
Blank Analysis Results	✓			
Duplicate Analysis Results	✓			
Field Duplicate Analysis Results	✓			CSB4B + CSB4BD, CSB9C + CSB9CD, 15C + 15C, CSB7C + CSB7CD, CSB10C + CSB10CD, 17C + 17C
Matrix Spike Analysis Results		✓		NA
Quantitation/Detection Limits	✓			
Overall Assessment of Data	✓			
Other:				

General Comments:

Accept - No qualification required.
FYI - For your information only, no qualification necessary.
Qualify - Qualify as rejected, estimated or biased

NA - Not Applicable
NR - Not Reviewed

QA Scientist Megan U. Cloud
Date 11/9/99

WET CHEMISTRY DATA VALIDATION SUMMARY

Site Name: Beech Grove
Project Number: 98-478-03
Sampling Date(s): 8/20

Laboratory: TriMatrix
Case /Order No.: 35132-8,9
CSB33A - CSB42C, CSB49A,B,C
CSB51A, B, C

Parameter List: pH
Method: 9045C

The following table indicates the data validation criteria examined, any problems identified, and the QA action applied.

Data Validation Criteria:	accept	FYI	qualify	Comments
Holding Times			✓	Samples analyzed 3 days after collection - Estimated all pH's
Calibration Curve		✓		NA
Initial Calibration	✓			
Continuing Calibration	✓			
Laboratory Control Sample Results	✓			
Blank Analysis Results	✓			
Duplicate Analysis Results	✓			
Field Duplicate Analysis Results	✓			CSB34C + CSB34CD, CSB38C + CSB38CD, CSB35C + CSB35CD, CSB39C + CSB39CD, CSB50C + CSB50CD
Matrix Spike Analysis Results		✓		NA
Quantitation/Detection Limits	✓			
Overall Assessment of Data	✓			
Other:				

General Comments:

Accept - No qualification required.
FYI - For your information only, no qualification necessary.
Qualify - Qualify as rejected, estimated or biased

NA - Not Applicable
NR - Not Reviewed

QA Scientist Megan N. Cloud
Date 11/9/99

WET CHEMISTRY DATA VALIDATION SUMMARY

Site Name: Beech Grove
Project Number: 98-478-03
Sampling Date(s):

Laboratory: Tri Matrix
Case /Order No.: 35132-13, 15, 16
CSB18A – CSB19CD,
CSB21A – CSB32C

Parameter List: pH
Method: 9045C

The following table indicates the data validation criteria examined, any problems identified, and the QA action applied.

Data Validation Criteria:	accept	FYI	qualify	Comments
Holding Times			✓	Samples analyzed 3 days after collection, estimated all results
Calibration Curve		✓		NA
Initial Calibration	✓			
Continuing Calibration	✓			
Laboratory Control Sample Results	✓			
Blank Analysis Results	✓			
Duplicate Analysis Results	✓			
Field Duplicate Analysis Results				
Matrix Spike Analysis Results		✓		NA
Quantitation/Detection Limits	✓			
Overall Assessment of Data	✓			
Other:				

General Comments:

Accept - No qualification required.
FYI - For your information only, no qualification necessary.
Qualify - Qualify as rejected, estimated or biased

NA - Not Applicable
NR - Not Reviewed

QA Scientist Megan N. Cloud
Date 11/9/99

DATA VALIDATION REPORT

OF

CLOSURE INVESTIGATION SOIL SAMPLES

COLLECTED AUGUST 20, 1999

FOR

INORGANIC PARAMETERS

REFINED METALS CORPORATION
BEECH GROVE, INDIANA

Laboratory Case Number
35132-28

PREPARED FOR:

REFINED METALS CORPORATION
BEECH GROVE, INDIANA

PREPARED BY:

ADVANCED GEOSERVICES CORP.
CHADDS FORD, PENNSYLVANIA

FEBRUARY 16, 2000

PROJECT NUMBER 98-478-03

TABLE OF CONTENTS

		Page Number
1.0	Introduction	1
2.0	Inorganic Data Validation	2
	2.1 General	2
	2.2 Qualifications	2
3.0	Conclusion	3

TABLE

Metals Data Summary Table

ATTACHMENT

Metals Data Support Documentation

1.0 INTRODUCTION

Soil samples were collected at the Refined Metals Corporation (RMC) Site in Beech Grove, Indiana, between August 10 and September 1, 1999 for chemical analyses as part of the RMC Closure Investigation. Four samples were retrieved from archive in December and analyzed for Resource Conservation Recovery Act (RCRA) metals and antimony using SW-846 method 6020 and 7471. Analyses were performed by TriMatrix Laboratories of Grand Rapids, Michigan. The sample results are reported under TriMatrix Case Numbers 35132-28.

The data deliverables consisted of a Report of Analysis listing each sample and result, chain-of-custody records, copies of relevant notebook pages and instrument raw data, calibration information, laboratory blank analysis results, and quality control forms that show precision and accuracy data derived from the quality control samples.

2.0 INORGANIC DATA VALIDATION

All data generated by TriMatrix were reviewed by an Advanced GeoServices Corp. data validation specialist. Validation was performed for holding time compliance, laboratory method blank and field blank contamination, initial and continuing calibration accuracy, matrix spike/matrix spike duplicate (MS/MSD) recovery and precision, field duplicate precision, and detection limit applicability. Inorganic data were validated according to the "USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Inorganic Data Review" (February 1994) and "Region V Standard Operating Procedures for Validation of CLP Inorganic Data" (September 1993).

Validation was performed to verify compliance with the required analytical protocols and to determine the qualitative and quantitative reliability of the data. For criteria differences between the functional guidelines and the specific method, the specific method criteria prevailed. Qualifier codes were applied as required. The U qualifier code was applied to all sample results qualitatively questioned due to blank contamination. The U denotes the analyte was not detected at or above the associated instrument detection limit. The J qualifier code was applied to all sample results which are considered quantitative estimates due to exceeding quality control criteria. The UJ qualifier code was applied to all results which were undetected but are estimated due to exceeding quality control criteria. The R qualifier code was applied to all sample results which are considered unusable. Samples may have exceeded several quality control criteria, however, only one qualifier is applied to a result.

2.1 General

Four soil samples were collected, archived then retrieved from archive and analyzed for arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver, and antimony by SW-846 method 6020 and 7471. Initial and continuing calibrations were accurate. The laboratory blanks were evaluated for blank contamination. No laboratory blank contamination was present. Laboratory control sample recoveries were within acceptance criteria.

2.2 Qualifications

All mercury results and detection limits are rejected (R). The samples were retrieved from archive and analyzed 3 months after the mercury hold time of 28 days had expired.

Due to silver matrix spike and matrix spike duplicate recoveries outside the acceptance criteria, all silver results and detection limits are estimated (J, UJ). It should also be noted that the contract required detection limit standard recovery was also outside the acceptance criteria.

3.0 CONCLUSION

This data validation has identified exceeding mercury hold time criteria and silver MS/MSD accuracy as reasons for qualifying the metals data. All other data are acceptable as reported by the laboratory. All data requiring qualification have been addressed in this review and are appropriately qualified on the data summary tables. To confidently use any of the analytical results, the data user should understand the qualifications and limitations stated in this report.

QUALIFIER CODES

R - Denotes an unusable result. The analyte may or may not be present.

U - Denotes the analyte is not present at or above the associated detection limit.

J - Denotes an estimated value.

UJ - Denotes an undetected result that is estimated due to exceeding quality control criteria.

BEECH GROVE CLOSURE INVESTIGATION
INORGANIC DATA SUMMARY TABLE
SOIL SAMPLES COLLECTED
AUGUST 1999

Project Name	Beech Grove	Laboratory	TriMatrix Laboratories
Project Number	98-478-03	Case No.	35132-28
Sample Date(s)	8/20/1999	Method	SW-846 6010B & 7471

Sample Location	CSB-35E			CSB-35F			CSB-51F			CSB-51G		
Lab ID	237903			237902			237904			237905		
Matrix	aqueous			aqueous			aqueous			aqueous		
Units	mg/kg			mg/kg			mg/kg			mg/kg		
Sample Date	8/20/1999			8/20/1999			8/20/1999			8/20/1999		
Comments												
Parameter	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Antimony	99		1	55		1	182		1	81		1
Arsenic	15		1	12		1	18		1	15		1
Barium	49		1	48		1	55		1	50		1
Cadmium	5.6		0.5	3.2		0.5	6.5		0.5	3.6		0.5
Chromium	9.3		1	10		1	9		1	10		1
Lead	4910		0.6	3010		0.6	8020		0.6	3800		0.6
Mercury		R	0.1		R	0.1		R	0.1		R	0.1
Selenium	1.1		0.5	1.4		0.5	1.4		0.5	1.1		0.5
Silver		UJ	0.2		UJ	0.2	0.28	J	0.2		UJ	0.2

DL - Detection Limit prior to any dilutions.
Q - Qualifier.
R - Denotes an unusable result. The analyte may or may not be present.
U - The analyte was not detected at or above the associated value.
UJ - Denotes an estimated detection limit.
J - Denotes an estimated result.

 QA Scientist [signature] Date 2/16/00

METALS DATA
SUPPORT DOCUMENTATION
35132-28

INORGANIC DATA VALIDATION SUMMARY

Site Name: Beech Grove
Project Number: 98-478-03
Sampling Date(s): 8/20/99

Laboratory: Tri Matrix
Case /Order No.: 35132-28

Compound List: [ ] TAL [ ] Priority Pollutant [ ] Appendix IX [✓] Other RCRA

Method: [ ] CLP SOW ILMO4. [ ] 40 CFR 136 [✓] SW-846 Method [ ] Other _____

The following table indicates the data validation criteria examined, any problems identified, and the QA action applied.

Data Validation Criteria:	accept	FYI	qualify	Comments
Holding Times			✓	Hg - digestion took place 3 months out side HT. Results close to DL.
Initial Calibrations	✓			
Continuing Calibrations	✓			
CRDL Standards			✓	Ag CRDL 150% R
Blank Analysis Results	✓			
ICP Interference Check Sample Recoveries	✓			
Duplicate Results	✓			
Field Duplicate Results		✓		NA
Spike Analysis Recoveries			✓	Ag spk Rs 51 + 57% R
Serial Dilution Results		✓		NA
Laboratory Control Sample Results		✓		Ag low (~50% R) reran w/in criteria
~~Furnace~~ Flame AA QC Analysis		✓		Hg
Quantitation/Detection Limits		✓		Hg results reported < DL, did not use since rejected results
Overall Assessment of Data	✓			
Other:				

General Comments: _____

Accept - No qualification required.
FYI - For your information only, no qualification necessary.
Qualify - Qualify as rejected, estimated or biased
NA - Not applicable.
NR - Not reviewed.

QA Scientist Denise McGuire
Date 2/14/00

TriMatrix Laboratories, Inc.

QUALITY CONTROL REPORT
CRDL STANDARD
USEPA CLP FORM 2B

SDG No. 35132 -28 Matrix WATER
Units ug/L

Analyte	Anlytical Batch	True Value	Amount Found	% Recovery
Antimony, Total	150445	1.0	1.08	108
Arsenic, Total	150445	1.0	1.10	110
Barium, Total	150445	1.0	1.08	108
Cadmium, Total	150445	0.20	0.28	140
Chromium, Total	150445	1.0	1.04	104
Selenium, Total	150445	1.0	0.95	95
Silver, Total	150445	0.20	0.30	150
Lead, Total	150488	1.0	1.07	107
Mercury, Total	150500	0.20	0.21	105
Antimony, Total	150628	1.0	1.11	111

Cd - spk less than DL.
∴ no qualification
based on this

Ag - estimate results.

DLM 2/14/00

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TriMatrix Laboratories, Inc.

QUALITY CONTROL REPORT
SPIKE SAMPLE RECOVERY
USEPA CLP FORM 5A

SDG No. 35132 -28

Sample ID. CSB51F

Matrix SOIL
Lab Sample No. 237904
Units mg/kg dry

Analyte	Control Limit %R	Spiked Sample Result	Sample Result	Spike Added	%R	M
Arsenic, Total	73 - 121	147.4	18	125	104	MS
Arsenic, Total	73 - 121	143.8	18	125	101	MS
Barium, Total	69 - 131	176.4	55	125	97	MS
Barium, Total	69 - 131	180.2	55	125	100	MS
Cadmium, Total	83 - 114	31.1	6.5	25.0	98	MS
Cadmium, Total	83 - 114	30.7	6.5	25.0	97	MS
Chromium, Total	69 - 130	129.2	9.0	125	96	MS
Chromium, Total	69 - 130	134.2	9.0	125	100	MS
Selenium, Total	62 - 126	120.3	1.4	125	95	MS
Selenium, Total	62 - 126	124.4	1.4	125	98	MS
Silver, Total	78 - 115	13.1	0.28	25.0	51	MS
Silver, Total	78 - 115	14.6	0.28	25.0	57	MS

Estimate all samples.
DM 2/14/00

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TriMatrix Laboratories, Inc.

ANALYSIS-PRETREATMENT DATE SUMMARY PAGE

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Submittal Number 35132- 28
Date Sampled: 08/20/99
Date Received: 11/30/99

Subm: 8/20/99 Archive Samples
Sample: CSB35F

Sample No: 237902

	Analysis		Pretreatment	
	Run Date	Hold Date	Run Date	Hold Date
Antimony, Total	12/08/99	05/28/00	11/30/99	02/16/00
Arsenic, Total	12/08/99	05/28/00	11/30/99	02/16/00
Barium, Total	12/08/99	05/28/00	11/30/99	02/16/00
Cadmium, Total	12/08/99	05/28/00	11/30/99	02/16/00
Chromium, Total	12/08/99	05/28/00	11/30/99	02/16/00
Lead, Total	12/09/99	05/28/00	11/30/99	02/16/00
Mercury, Total	12/02/99	12/14/99	12/01/99	09/17/99
Digestion Mtd. 245.1/7470 Mercury-Cold Vapor Method	12/01/99	09/17/99		
Acid Digestion of Soils USEPA Method 3050B	11/30/99	02/16/00		
Selenium, Total	12/08/99	05/28/00	11/30/99	02/16/00
Silver, Total	12/08/99	05/28/00	11/30/99	02/16/00

Reject results
DJM 2/14/00

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TriMatrix Laboratories, Inc.

ANALYSIS-PRETREATMENT DATE SUMMARY PAGE

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Submittal Number 35132- 28
Date Sampled: 08/20/99
Date Received: 11/30/99

Subm: 8/20/99 Archive Samples
Sample: CSB35E

Sample No: 237903

	Analysis		Pretreatment	
	Run Date	Hold Date	Run Date	Hold Date
Antimony, Total	12/14/99	05/28/00	11/30/99	02/16/00
Arsenic, Total	12/08/99	05/28/00	11/30/99	02/16/00
Barium, Total	12/08/99	05/28/00	11/30/99	02/16/00
Cadmium, Total	12/08/99	05/28/00	11/30/99	02/16/00
Chromium, Total	12/08/99	05/28/00	11/30/99	02/16/00
Lead, Total	12/09/99	05/28/00	11/30/99	02/16/00
Mercury, Total	12/02/99	12/14/99	12/01/99	09/17/99
Digestion Mtd. 245.1/7470 Mercury-Cold Vapor Method	12/01/99	09/17/99		
Acid Digestion of Soils USEPA Method 3050B	11/30/99	02/16/00		
Selenium, Total	12/08/99	05/28/00	11/30/99	02/16/00
Silver, Total	12/08/99	05/28/00	11/30/99	02/16/00

Reject results
2/14/00
DJM

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TriMatrix Laboratories, Inc.

ANALYSIS-PRETREATMENT DATE SUMMARY PAGE

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Submittal Number 35132- 28
Date Sampled: 08/20/99
Date Received: 11/30/99

Subm: 8/20/99 Archive Samples
Sample: CSB51F

Sample No: 237904

	Analysis		Pretreatment	
	Run Date	Hold Date	Run Date	Hold Date
Antimony, Total	12/14/99	05/28/00	11/30/99	02/16/00
Arsenic, Total	12/08/99	05/28/00	11/30/99	02/16/00
Barium, Total	12/08/99	05/28/00	11/30/99	02/16/00
Cadmium, Total	12/08/99	05/28/00	11/30/99	02/16/00
Chromium, Total	12/08/99	05/28/00	11/30/99	02/16/00
Lead, Total	12/09/99	05/28/00	11/30/99	02/16/00
Mercury, Total	12/02/99	12/14/99	12/01/99	09/17/99
Digestion Mtd. 245.1/7470 Mercury-Cold Vapor Method	12/01/99	09/17/99		
Acid Digestion of Soils USEPA Method 3050B	11/30/99	02/16/00		
Selenium, Total	12/08/99	05/28/00	11/30/99	02/16/00
Silver, Total	12/08/99	05/28/00	11/30/99	02/16/00

Reject Hg results DLM 2/14/00

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TriMatrix Laboratories, Inc.

ANALYSIS-PRETREATMENT DATE SUMMARY PAGE

Advanced GeoServices Corporation
Proj: RMC - Beech Grove, IN

Submittal Number 35132- 28
Date Sampled: 08/20/99
Date Received: 11/30/99

Subm: 8/20/99 Archive Samples
Sample: CSB51G

Sample No: 237905

	Analysis		Pretreatment	
	Run Date	Hold Date	Run Date	Hold Date
Antimony, Total	12/14/99	05/28/00	11/30/99	02/16/00
Arsenic, Total	12/08/99	05/28/00	11/30/99	02/16/00
Barium, Total	12/08/99	05/28/00	11/30/99	02/16/00
Cadmium, Total	12/08/99	05/28/00	11/30/99	02/16/00
Chromium, Total	12/08/99	05/28/00	11/30/99	02/16/00
Lead, Total	12/09/99	05/28/00	11/30/99	02/16/00
Mercury, Total	12/02/99	12/14/99	12/01/99	09/17/99
Digestion Mtd. 245.1/7470 Mercury-Cold Vapor Method	12/01/99	09/17/99		
Acid Digestion of Soils USEPA Method 3050B	11/30/99	02/16/00		
Selenium, Total	12/08/99	05/28/00	11/30/99	02/16/00
Silver, Total	12/08/99	05/28/00	11/30/99	02/16/00

reject Hg results 2/14/00

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APPENDIX C

Data Validation Report for First Groundwater Sampling Event

DATA VALIDATION REPORT

OF

GROUNDWATER SAMPLES

COLLECTED SEPTEMBER 21, 22, AND 23, 1999

FOR

ORGANIC AND INORGANIC PARAMETERS

REFINED METALS CORPORATION
BEECH GROVE, INDIANA

Laboratory Case Number
35132-26

PREPARED FOR:

REFINED METALS CORPORATION
BEECH GROVE, INDIANA

PREPARED BY:

ADVANCED GEOSERVICES CORP.
CHADDS FORD, PENNSYLVANIA

DECEMBER 16, 1999

PROJECT NUMBER 98-478-03

TABLE OF CONTENTS

		Page Number
1.0	Introduction	1
2.0	Data Validation	
2.1	Volatile Organic Data	2
2.1.1	General	2
2.1.2	Qualifications	2
2.1.3	Comments	2
2.2	Metals Data	3
2.2.1	General	3
2.2.2	Qualifications	3
2.2.3	Comments	4
3.0	Conclusion	5

TABLES

Volatiles Data Summary Table
Metals Data Summary Table

ATTACHMENTS

Volatiles Data Support Documentation
Metals Data Support Documentation

1.0 INTRODUCTION

Eight groundwater samples, a field duplicate sample, field blank and equipment blank were collected at the Refined Metals Site in Beech Grove, Indiana, September 21, 22, and 23, 1999 for chemical analyses. The six shallow well samples, field duplicate sample, field blank and equipment blank were analyzed for select volatile compounds and Resource and Conservation Recovery Act (RCRA) metals plus antimony. Additionally, one well sample and a field duplicate sample were field filtered and analyzed for dissolved RCRA metals and antimony. The two deep wells were collected and analyzed for RCRA metals and antimony only. Analyses of these samples were performed by TriMatrix Laboratories of Grand Rapids, Michigan. The sample results are reported under TriMatrix Case Number 35132-26.

The samples were analyzed for the following parameters by the corresponding methodologies:

Analytical Parameter	Methodology
Volatile Organic Compounds (Benzene, Ethylbenzene, 1,1,1-trichloroethane Toluene, and Tetrachloroethene)	SW-846 Method 8260B
RCRA Metals and antimony	SW-846 Method 6020

The data deliverables consisted of a Report of Analysis listing each sample and result, chain-of-custody records, copies of relevant notebook pages and instrument raw data, calibration information, laboratory blank analysis results, and quality control forms that show precision and accuracy data derived from the quality control samples.

2.0 DATA VALIDATION

2.1 Volatile Organic Data

All data generated by TriMatrix were reviewed by an Advanced GeoServices Corp. data validation specialist. Validation was performed for holding time compliance, laboratory method blank and field blank contamination, initial and continuing calibration accuracy, matrix spike/matrix spike duplicate (MS/MSD) recovery and precision, field duplicate precision, and detection limit applicability. Organic data was validated according to the "USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review" (February 1994) and "Region V Standard Operating Procedure for Validation of CLP Organic Data" (August 1993).

Validation was performed to verify compliance with the required analytical protocols and to determine the qualitative and quantitative reliability of the data. For criteria differences between the functional guidelines and the specific method, the specific method criteria prevailed. Qualifier codes were applied as required. The U qualifier code was applied to all sample results qualitatively questioned due to blank contamination. The U reflects either an adjusted detection limit due to blank contamination or the analyte was not detected at or above the associated instrument detection limit. The J qualifier code was applied to all sample results which are considered quantitative estimates due to exceeding quality control criteria. The UJ qualifier code was applied to all results which were undetected but are estimated due to exceeding quality control criteria.

2.1.1 General

Groundwater samples collected from five locations were analyzed for benzene, toluene, ethylbenzene, tetrachloroethene, and 1,1,1-trichloroethane by SW-846 method 8260B. An associated field duplicate, field blank, equipment blank, and three trip blanks were analyzed for the same parameters as the samples. All holding times were within EPA method requirements. Samples were received at the laboratory at 5°C. Initial calibrations were accurate. All blanks were free of contamination. Surrogate recoveries and internal standard areas were within control limits. Laboratory control sample recoveries were within acceptance criteria. Matrix spike and matrix spike duplicate recoveries were accurate. Field duplicate precision was accurate.

2.1.2 Qualifications

No qualifiers are applied. The data are acceptable as reported.

2.1.3 Comments

The ethylbenzene continuing calibration percent difference (%D) was greater than the acceptance criteria (<20%) for samples MW-3 MS and MW-3 MSD. Since these are QC samples, no qualifiers were applied to these data.

2.2 Metals Data

All data generated by TriMatrix were reviewed by an Advanced GeoServices Corp. data validation specialist. Validation was performed for holding time compliance, laboratory method blank and field blank contamination, initial and continuing calibration accuracy, MS/MSD recovery and precision, field duplicate precision, and detection limit applicability. Inorganic data was validated according to the "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review" (February 1994) and "Region V Standard Operating Procedures for Validation of CLP Inorganic Data" (September 1993).

Validation was performed to verify compliance with the required analytical protocols and to determine the qualitative and quantitative reliability of the data. For criteria differences between the functional guidelines and the specific method, the specific method criteria prevailed. Qualifier codes were applied as required. The U qualifier code was applied to all sample results qualitatively questioned due to blank contamination. The U also denotes the analyte was not detected at or above the associated instrument detection limit. The J qualifier code was applied to all sample results which are considered quantitative estimates due to exceeding quality control criteria. The UJ qualifier code was applied to all results which were undetected but are estimated due to exceeding quality control criteria. The R qualifier code was applied to all sample results which are considered unusable.

2.2.1 General

Eight groundwater samples were collected and analyzed for total arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver, and antimony by SW-846 method 6020. A field duplicate sample, field blank and an equipment blank were also sampled and analyzed for the same parameters. Additionally, one well was sampled in duplicate, field filtered and analyzed for dissolved arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver, and antimony. All holding times were within the EPA method requirements. Initial and continuing calibrations were accurate. Laboratory control sample recoveries were within acceptance criteria.

2.2.2 Qualifications

According to Region V criteria, when applying qualification based on blank contamination, results which are greater than the instrument detection limit (IDL) but less than five times the Contract Required Detection Limit (CRDL) are qualified using the following criteria: results less than five times the blank concentration are qualified with the U qualifier code and results greater than five times the blank concentration are qualified with the J qualifier code. The following samples have been qualified due to blank contamination:

> Due to the presence of arsenic in an associated method blank at a similar concentration, the total arsenic result for sample MW-16S (233022) is qualitatively questioned and qualified with the U qualifier code to reflect an elevated detection limit, while the total arsenic result for sample MW-6S (233021) is estimated (J).

Due to the presence of chromium and lead in the associated equipment blank, all results for chromium and lead qualitatively questioned and qualified with the U qualifier code to reflect elevated detection limits.

Due to duplicate injection precision outside the acceptance criteria of 20 relative percent difference (RPD), the total and dissolved selenium results for sample MW-6S (233021) are estimated (J).

Due to extremely low silver MS/MSD recoveries (less than 30%), the following sample silver detection limits are qualified as unusable (R): MW-1 (232806), MW-2D (232801), MW-2S (232802), MW-3 (232878), MW-4 (232879), MW-5 (232880) and MW-6D (232803).

Due to total silver MS/MSD recoveries between 30 and 74%, samples MW-6S (233021) and MW-16S (233022) silver detection limits are estimated (UJ). Additionally, the silver MS/MSD duplicate precision was also outside the acceptance criteria.

2.2.3 Comments

The original sample (MW-6S) and the field duplicate sample (MW-16S) total lead results exceeded the field duplicate criteria. However, both lead results have been qualified due to equipment blank contamination and further qualification is not applicable.

The total and dissolved results for samples MW-6S (233021) and MW-16S (233022) were compared. All dissolved results were less than the associated total results.

3.0 CONCLUSION

This data validation has identified arsenic method blank contamination, lead and chromium equipment blank contamination, duplicate injection precision for selenium in two samples, and silver MS/MSD accuracy and precision as reasons for qualifying the metals data. All other data are acceptable as reported by the laboratory. All data requiring qualification have been addressed in this review and are appropriately qualified on the data summary tables. To confidently use any of the analytical results, the data user should understand the qualifications and limitations stated in this report.

QUALIFIER CODES

R - Denotes an unusable result. The analyte may or may not be present.

U - Denotes the compound/analyte is not present at or above the associated instrument detection limit.

J - Denotes an estimated value.

UJ - Denotes an undetected result that is estimated due to exceeding quality control criteria.

REFINED METAL CORPORATION
BEECH GROVE, INDIANA
SEPTEMBER 1999
GROUNDWATER SAMPLES

Project Name	Beech Grove	Laboratory	TriMatrix Laboratories
Project Number	98-478-03	Case No.	35132-26
Sample Date(s)	9/21,22, & 23/99	Method	EPA Methods 8260B

Sample Location	MW-1			MW-2S			MW-3			MW-4			MW-5			MW-6S		
Lab ID	232806			232802			232878			232879			232880			233021		
Matrix	Aqueous			Aqueous			Aqueous			Aqueous			Aqueous			Aqueous		
Units	mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
Sample Date	9/21/99			9/21/99			9/22/99			9/22/99			9/22/99			9/23/99		
Comments																		
Parameter	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
1,1,1-Trichloroethane		U	1		U	1		U	1		U	1		U	1		U	1
Benzene		U	1		U	1		U	1		U	1		U	1		U	1
Ethylbenzene		U	1		U	1		U	1		U	1		U	1		U	1
Tetrachloroethene		U	1		U	1		U	1		U	1		U	1		U	1
Toluene		U	1		U	1		U	1		U	1		U	1		U	1

Sample Location	MW-16S			MW-6D-FB			MW-6D-EQ			MW-1-TB			MW-5-TB			Trip Blank		
Lab ID	233022			232805			232804			232807			232881			233023		
Matrix	Aqueous			Aqueous			Aqueous			Aqueous			Aqueous			Aqueous		
Units	mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
Sample Date	9/21/99			9/21/99			9/21/99			9/21/99			9/22/99			9/23/99		
Comments	FD of MW-6S			Field Blank			Equip. Blank			Trip Blank			Trip Blank			Trip Blank		
Parameter	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
1,1,1-Trichloroethane		U	1		U	1		U	1		U	1		U	1		U	1
Benzene		U	1		U	1		U	1		U	1		U	1		U	1
Ethylbenzene		U	1		U	1		U	1		U	1		U	1		U	1
Tetrachloroethene		U	1		U	1		U	1		U	1		U	1		U	1
Toluene		U	1		U	1		U	1		U	1		U	1		U	1

DL -Detection limit.
Q - Qualifier.
U - The compound was not detected at or above the associated quantitation limit.

QA Scientist Megan N. Cloud Date 12/16/99

REFINED METALS CORPORATION
BEECH GROVE, INDIANA
SEPTEMBER 1999
GROUNDWATER SAMPLES

Project Name	Beech Grove	Laboratory	TriMatrix Laboratories
Project Number	98-478-03	Case No.	35132-26
Sample Date(s)	9/21-23/99	Method	SW-846 6010B & 7470

ARSENIC

Sample Location	MW-1			MW-2D			MW-2S			MW-3			MW-4			MW-5		
Lab ID	232806			232801			232802			232878			232879			232880		
Matrix	aqueous			aqueous			aqueous			aqueous			aqueous			aqueous		
Units	ug/l			ug/l			ug/l			ug/l			ug/l			ug/l		
Sample Date	9/21/1999			9/21/1999			9/21/1999			9/22/1999			9/22/1999			9/22/1999		
Comments																		
Parameter	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Antimony		U	10		U	10		U	10		U	10		U	10		U	10
Arsenic	21		1	6.3		1	9.8		1	11		1	1.8		1	8.4		1
Barium	96		10	334		10	40		10	135		10	211		10	149		10
Cadmium		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2
Chromium	1.8	U	1	5.2	U	1		U	1	1.1	U	1	3.1	U	1	1.5	U	1
Lead	1.8	U	1	10	U	1	11	U	1		U	1	1.7	U	1		U	1
Mercury		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2
Selenium	9		2		U	2	7.7		2	5.2		2		U	2		U	2
Silver		R	0.2		R	0.2		R	0.2		R	0.2		R	0.2		R	0.2

Sample Location	MW-6S			MW-6S			MW-6D			MW-16S*			MW-16S*			MW-6D-FB			MW-6D-EQ		
Lab ID	233021			233021			232803			233022			233022			232805			232804		
Matrix	aqueous			aqueous			aqueous			aqueous			aqueous			aqueous			aqueous		
Units	ug/l			ug/l			ug/l			ug/l			ug/l			ug/l			ug/l		
Sample Date	9/21/1999			9/23/1999			9/21/1999			9/21/1999			9/23/1999			9/21/1999			9/21/1999		
Comments				Dissolved									Dissolved			Field Blank			Equipment Blank		
Parameter	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Antimony		U	10		U	10		U	10		U	10		U	10		U	10		U	10
Arsenic	8.8	J	1	1.7		1	24		1	7.4	U	1	1.7		1		U	1		U	1
Barium	218		10	39		10	293		10	179		10	39		10		U	10		U	10
Cadmium	0.2		0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2
Chromium	26	U	1	8.7	U	1	2	U	1	22	U	1	8	U	1		U	1	6.6		1
Lead	21	U	1		U	1	2.2	U	1	14	U	1		U	1		U	1	11		1
Mercury		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2
Selenium	4.9	J	2	2.9	J	2	2.1		2	5		2	2.6		2		U	2		U	2
Silver		UJ	0.2		U	0.2		R	0.2		UJ	0.2		U	0.2		U	0.2		U	0.2

DL - Detection limit prior to any dilutions.
Q - Qualifier.
R - Denotes a rejected detection limit or result.
U - The analyte was not detected at or above the detection limit.
Result + U - The result is qualitatively questioned due to the analyte in an associated blank at a similar concentration.
The detection limit has been elevated and is reflected by the associated value.
UJ- Denotes an estimated detection limit.
J - Denotes an estimated result.
* Total and dissolved MW-16S samples are field duplicates of total and dissolved MW-6S.

QA Scientist D. M. Date 12/16/99

VOLATILE DATA
SUPPORT DOCUMENTATION
35132-26

VOLATILE DATA VALIDATION SUMMARY

Site Name: Beech Grove
Project Number: 99-478-03
Sampling Date(s): 9/21-23/99

Laboratory: TriMatrix
Case/Order No.: 35132-26

Compound List: ☐ TCL ☐ Priority Pollutant ☐ Appendix IX ☒ Other Toluene, Benzene, Ethylbenzene, PCE, 1,1,1-TCA

Method: ☐ CLP SOW 3/90 ☐ 40 CFR 136 ☒ SW-846 Method 8260B ☐ Other _____

The following table indicates the data validation criteria examined, any problems identified, and the QA action applied.

Data Validation Criteria:	Accept	FYI	Qualify	Comments
Holding Times	✓			received @ 5°C in cooler
GC/MS Tuning	✓			used National guidelines criteria not method criteria
Initial Calibrations	✓			
Continuing Calibrations		✓		Ethylbenzene %D 720 for MW-3 MS/MSD Samples
Blank Analysis Results	✓			
System Monitoring/Surrogate Results	✓			
MS/MSD Results	✓			site-specific (MW-3 MS/MSD)
Field Duplicate Results	✓			MW-6S and MW-16S
Internal Standard Areas/RT	✓			
Target Compound Identification	✓			
TIC Identification		✓		NA
Quantitation/Detection Limits	✓			
System Performance	✓			
Overall Assessment of Data	✓			
Other: LCS	✓			

General Comments: _____

Accept - No qualification required.
FYI - For your information only, no qualification necessary.
Qualify - Qualify as rejected, estimated or biased.
NR - Not Reviewed
NA - Not Applicable

QA Scientist Megan N. Cloud
Date 11/24/99

Evaluate Continuing Calibration Report Form 7

Data File : I:\VOMS\132\40P1001.D
Acq On : 1 OCT 1999 8:43
Sample :
Misc :
MS Integration Params: rteint.p

Vial: 0
Operator:
Inst :
Multiplr: 1.00

Associated Samples
MW-3-92299 MS
MW-3-92299 MSI

Method : C:\SAT132\QUANT\8260B-11.M (RTE Integrator)
Title : Saturn 132
Last Update : Thu Oct 07 09:52:05 1999
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	IS: Flourobenzene	1.000	1.000	0.0	102	-0.02
2	T	Dichlorodifluoromethane	0.266	0.138	48.1#	48#	0.00
3	TP	Chloromethane	0.237	0.212	10.5	89	-0.02
4	TC	Vinyl Chloride	0.172	0.153	11.0	83	0.00
5	T	Bromomethane	0.239	0.191	20.1	86	-0.02
6	T	Chloroethane	0.037	0.038	-2.7	98	0.00
7	T	Trichlorofluoromethane	0.473	0.565	-19.5	106	-0.02
8	T	Ethyl Ether	0.164	0.187	-14.0	109	-0.02
9	T	Acrolein	0.017	0.000	100.0#	1#	0.00
10	TCM	1,1-Dichloroethene	0.211	0.229	-8.5	106	-0.02
11	T	Trichlorotrifluoroethane	0.320	0.355	-10.9	103	0.00
12	T	Iodomethane	0.658	0.706	-7.3	108	0.00
[illegible]	T	Carbon Disulfide	0.398	0.402	-1.0	97	-0.02
14	T	Acetone	0.146	0.227	-55.5#	150	0.00
15	T	Isopropanol	0.012	0.012	0.0	101	-0.01
16	T	Methylene Chloride	0.675	0.719	-6.5	105	-0.02
17	T	Acrylonitrile	0.183	0.001	99.5#	0#	0.03
18	T	trans-1,2-Dichloroethene	0.253	0.293	-15.8	116	0.00
19	T	Methyl(tert)Butyl Ether	0.558	0.613	-9.9	111	-0.02
20	TP	1,1-Dichloroethane	0.282	0.285	-1.1	100	-0.02
21	T	Vinyl Acetate	0.694	0.782	-12.7	110	-0.01
22	T	2,2-Dichloropropane	0.308	0.276	10.4	92	0.00
23	T	cis-1,2-Dichloroethene	0.296	0.304	-2.7	103	-0.02
24	T	Methyl Ethyl Ketone	0.161	0.190	-18.0	123	0.00
25	T	Bromochloromethane	0.510	0.519	-1.8	99	-0.02
26	TC	Chloroform	0.492	0.480	2.4	101	-0.01
27	T	1,1,1-Trichloroethane	0.561	0.574	-2.3	98	-0.01
28	S	SUR: Dibromofluoromethane	0.357	0.312	12.6	95	0.00
29	T	Carbon Tetrachloride	0.507	0.452	10.8	86	0.00
30	T	1,1-Dichloropropene	0.289	0.320	-10.7	109	-0.01
31	TM	Benzene	0.881	0.919	-4.3	105	-0.02
32	T	1,2-Dichloroethane	0.427	0.443	-3.7	104	-0.02
33	T	Heptane	0.346	0.406	-17.3	113	0.00
34	S	SUR: 1,2-Dichloroethane-d4	0.356	0.327	8.1	93	-0.01
35	TM	Trichloroethene	0.301	0.318	-5.6	106	0.00
36	TC	1,2-Dichloropropane	0.167	0.180	-7.8	105	0.00
37	T	Dibromomethane	0.288	0.295	-2.4	100	-0.01
[illegible]	T	Bromodichloromethane	0.415	0.405	2.4	97	-0.02
[illegible]	T	2-Chloroethyl Vinyl Ether	0.114	0.117	-2.6	103	1.05#
40	T	cis-1,3-Dichloropropene	0.389	0.418	-7.5	107	-0.01
41	T	4-Methyl-2-Pentanone	0.261	0.249	4.6	100	0.01

(#) = Out of Range

MNC 11/24/99

METALS DATA
SUPPORT DOCUMENTATION
35132-26

TriMatrix Laboratories, Inc.

QUALITY CONTROL REPORT
BLANKS
USEPA CLP FORM 3

SDG No.	35132 -26	Parameter	Arsenic, Total
Instrument ID	114	Ref. Cit.	EPA-200.8/6020
		Matrix	WATER
		Units	ug/L

Batch	Blank QC Type	Sequence No.	Amount Found
48449	Method Preparation	1	<1.0
48451	Method Preparation	1	1.73

Associated samples:
233021 + 233022
DM
12/16/99

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Evaluate Continuing Calibration Report

Data File : I:\VOMS\132\40P1001.D Vial: 0
Acq On : 1 OCT 1999 8:43 Operator:
Sample : Inst :
Misc : Multiplr: 1.00
MS Integration Params: rteint.p

Method : C:\SAT132\QUANT\8260B-11.M (RTE Integrator)
Title : Saturn 132
Last Update : Thu Oct 07 09:52:05 1999
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
42	S	SUR: d8-Toluene	1.249	1.159	7.2	101	-0.01
43	I	IS: d5-Chlorobenzene	1.000	1.000	0.0	94	-0.01
44	TCM	Toluene	3.604	4.225	-17.2	107	0.00
45	T	trans-1,3-Dichloropropene	0.852	1.000	-17.4	108	0.00
46	T	1,1,2-Trichloroethane	0.453	0.473	-4.4	95	-0.03
47	T	Tetrachloroethene	0.540	0.622	-15.2	103	-0.02
48	T	1,3-Dichloropropane	0.591	0.715	-21.0	120	-0.01
49	T	2-Hexanone	0.449	0.561	-24.9	108	0.00
50	T	Dibromochloromethane	1.058	1.101	-4.1	96	-0.01
51	T	1,2-Dibromoethane	0.929	1.027	-10.5	104	-0.01
52	TPM	Chlorobenzene	1.999	2.514	-25.8	110	-0.02
53	T	1,1,1,2-Tetrachloroethane	0.782	0.937	-19.8	107	0.00
54	TC	Ethyl Benzene	3.692	4.456	-20.7#	114	0.00
55	T	m/p-Xylene	3.308	4.129	-24.8	112	-0.01
56	T	o-Xylene	3.494	4.110	-17.6	109	-0.01
57	T	Styrene	2.075	2.409	-16.1	107	0.00
58	TP	Bromoform	0.685	0.681	0.6	96	0.00
59	T	Isopropylbenzene	3.145	3.915	-24.5	114	-0.01
60	S	Sur: 4-Bromofluorobenzene	1.236	1.249	-1.1	97	-0.02
61	I	IS: d4-1,4-Dichlorobenzene	1.000	1.000	0.0	83	-0.01
62	T	1,4-trans-2-dichlorobutene	0.422	0.437	-3.6	93	0.00
63	T	Bromobenzene	1.210	1.508	-24.6	114	-0.02
64	TP	1,1,2,2-Tetrachloroethane	0.756	0.791	-4.6	91	-0.02
65	T	1,2,3-Trichloropropane	1.036	1.133	-9.4	97	0.00
66	T	n-Propylbenzene	3.803	4.801	-26.2	111	-0.01
67	T	2-Chlorotoluene	0.672	0.842	-25.3	112	-0.01
68	T	1,3,5-Trimethylbenzene	2.973	3.718	-25.1	110	-0.02
69	T	4-Chlorotoluene	3.299	4.056	-22.9	109	-0.02
70	T	tert-Butylbenzene	2.062	2.618	-27.0	106	-0.02
71	T	1,2,4-Trimethylbenzene	2.951	3.641	-23.4	107	-0.02
72	T	sec-Butylbenzene	2.860	3.622	-26.6	114	-0.03
73	T	1,3-Dichlorbenzene	1.530	1.814	-18.6	104	0.00
74	T	4-Isopropyltoluene	2.409	3.074	-27.6	119	0.00
75	T	1,4-Dichlorobenzene	1.662	1.891	-13.8	101	-0.02
76	T	1,2-Dichlorobenzene	1.384	1.577	-13.9	94	-0.02
77	T	n-Butylbenzene	2.605	3.123	-19.9	101	-0.02
78	T	1,2-Dibromo-3-chloropropane	0.240	0.164	31.7#	61	0.00
79	T	1,2,4-Trichlorobenzene	0.961	0.594	38.2#	55	-0.01
80	T	Hexachlorobutadiene	0.485	0.484	0.2	87	-0.03
81	T	Naphthalene	2.679	1.324	50.6#	43#	-0.01

(#) = Out of Range

LMC 11/24/99

INORGANIC DATA VALIDATION SUMMARY

Site Name: RMC - Beech Grove, In.
Project Number: 98-478-03
Sampling Date(s): 9/21,22,23/99

Laboratory: TriMatrix
Case /Order No.: 35132-26

Compound List: [ ] TAL [ ] Priority Pollutant [ ] Appendix IX [X] Other RCRA + Sb

Method: [ ] CLP SOW ILMO4. [ ] 40 CFR 136 [✓] SW-846 Method [ ] Other _____

The following table indicates the data validation criteria examined, any problems identified, and the QA action applied.

Data Validation Criteria:	accept	FYI	qualify	Comments
Holding Times	✓			
Initial Calibrations	✓			
Continuing Calibrations	✓			
CRDL Standards		✓		Not reviewed
Blank Analysis Results			✓	Equip blk cont. Cr - 6.6 Pb - 11 ; MBlk - As 1.73
ICP Interference Check Sample Recoveries	✓			
Duplicate Results			✓	Ag MW-16S total MS/MSD 56 RPD
Field Duplicate Results		✓		Lead MW-6S + MW-16S total Pb 40 RPD already
Spike Analysis Recoveries			✓	Ag for all total blk qualified MW-1, MW-3 R, MW-16S J
Serial Dilution Results		✓		not reviewed
Laboratory Control Sample Results	✓			
Furnace AA QC Analysis		✓		NA
Quantitation/Detection Limits	✓			
Overall Assessment of Data	✓			
Other:			✓	Total vs dissolved - ✓ Duplicate injection precision - J 233021 total + dissolved Se

General Comments: Used Region V qualifications on blks with analytes ≥ IDL but <5xCRDL ; U values ≥5x blk + J values >5x blk.

Accept - No qualification required.
FYI - For your information only, no qualification necessary.
Qualify - Qualify as rejected, estimated or biased
NA - Not applicable.
NR - Not reviewed.

QA Scientist Denise McGuire
Date 12/15/99

TriMatrix Laboratories, Inc.

QUALITY CONTROL REPORT
SPIKE SAMPLE RECOVERY
USEPA CLP FORM 5A

SDG No. 35132 -26

Sample ID. MW-1-092199

Matrix WATER
Lab Sample No. 232806
Units ug/L

Analyte	Control Limit %R	Spiked Sample Result	Sample Result		Spike Added	%R	M
Antimony, Total	70 - 138	1062	<10	U	1111	96	MS
Antimony, Total	70 - 138	1055	<10	U	1111	95	MS
Arsenic, Total	78 - 127	1035	21		1111	91	MS
Arsenic, Total	78 - 127	1065	21		1111	94	MS
Barium, Total	75 - 126	203.4	96		111	97	MS
Barium, Total	75 - 126	206.7	96		111	100	MS
Cadmium, Total	86 - 117	121.9	<0.2	U	111	110	MS
Cadmium, Total	86 - 117	116.8	<0.2	U	111	105	MS
Chromium, Total	71 - 123	115.5	1.8		111	102	MS
Chromium, Total	71 - 123	111.9	1.8		111	99	MS
Lead, Total	83 - 121	116.5	1.8		111	103	MS
Lead, Total	83 - 121	122.1	1.8		111	108	MS
Selenium, Total	73 - 129	1086	9.0		1111	97	MS
Selenium, Total	73 - 129	1074	9.0		1111	96	MS
Silver, Total	69 - 128	22.6	<0.2	U	111	20	MS
Silver, Total	69 - 128	22.7	<0.2	U	111	20	MS

Associated Samples:
MW-1, MW-2D,
232806, 232801
MW-2S, MW-6D
232802, 232803
DJM 12/17/99

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TriMatrix Laboratories, Inc.

QUALITY CONTROL REPORT
SPIKE SAMPLE RECOVERY
USEPA CLP FORM 5A

SDG No. 35132 -26

Sample ID. MW-3-92299MS/MSD

Matrix WATER
Lab Sample No. 232878
Units ug/L

Analyte	Control Limit %R	Spiked Sample Result	Sample Result		Spike Added	%R	M
Antimony, Total	70 - 138	1046	<10	U	1111	94	MS
Antimony, Total	70 - 138	1053	<10	U	1111	95	MS
Arsenic, Total	78 - 127	1081	11		1111	96	MS
Arsenic, Total	78 - 127	1064	11		1111	95	MS
Barium, Total	75 - 126	237.9	135		111	93	MS
Barium, Total	75 - 126	247.9	135		111	102	MS
Cadmium, Total	86 - 117	104.4	<0.2	U	111	94	MS
Cadmium, Total	86 - 117	105.2	<0.2	U	111	95	MS
Chromium, Total	71 - 123	111.8	1.1		111	100	MS
Chromium, Total	71 - 123	110.2	1.1		111	98	MS
Lead, Total	83 - 121	111.1	<1.0	U	111	100	MS
Lead, Total	83 - 121	112.8	<1.0	U	111	102	MS
Mercury, Total	73 - 135	3.00	<0.2	U	2.50	120	CV
Mercury, Total	73 - 135	2.55	<0.2	U	2.50	102	CV
Selenium, Total	73 - 129	1090	5.2		1111	98	MS
Selenium, Total	73 - 129	1055	5.2		1111	94	MS
Silver, Total	69 - 128	24.7	<0.2	U	111	22	MS
Silver, Total	69 - 128	25.6	<0.2	U	111	23	MS

Associated Samples
232878, 232879 +
232880
DJM 12/17/99

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TriMatrix Laboratories, Inc.

QUALITY CONTROL REPORT
SPIKE SAMPLE RECOVERY
USEPA CLP FORM 5A

SDG No. 35132 -26

Sample ID. MW-16S-092399

Matrix WATER
Lab Sample No. 233022
Units ug/L

Analyte	Control Limit %R	Spiked Sample Result	Sample Result		Spike Added	%R	M
Antimony, Dissolved	70 - 138	976.0	<10	U	1000	98	MS
Antimony, Dissolved	70 - 138	956.7	<10	U	1000	96	MS
Antimony, Total	70 - 138	1007	<10	U	1111	91	MS
Antimony, Total	70 - 138	1126	<10	U	1111	101	MS
Arsenic, Dissolved	78 - 127	2755	1.7		2500	110	MS
Arsenic, Dissolved	78 - 127	2858	1.7		2500	114	MS
Arsenic, Total	78 - 127	1045	7.4		1111	93	MS
Arsenic, Total	78 - 127	1068	7.4		1111	95	MS
Barium, Dissolved	75 - 126	145.9	39		100	107	MS
Barium, Dissolved	75 - 126	142.5	39		100	104	MS
Barium, Total	75 - 126	283.1	179		111	94	MS
Barium, Total	75 - 126	296.9	179		111	106	MS
Cadmium, Dissolved	86 - 117	104.3	<0.2	U	100	104	MS
Cadmium, Dissolved	86 - 117	103.3	<0.2	U	100	103	MS
Cadmium, Total	86 - 117	110.8	<0.2	U	111	100	MS
Cadmium, Total	86 - 117	103.5	<0.2	U	111	93	MS
Chromium, Dissolved	71 - 123	103.1	8.0		100	95	MS
Chromium, Dissolved	71 - 123	105.9	8.0		100	98	MS
Chromium, Total	71 - 123	134.3	22		111	101	MS
Chromium, Total	71 - 123	141.7	22		111	108	MS
Lead, Dissolved	83 - 121	104.9	<1.0	U	100	105	MS
Lead, Dissolved	83 - 121	106.8	<1.0	U	100	107	MS
Lead, Total	83 - 121	135.2	14		111	109	MS
Lead, Total	83 - 121	131.8	14		111	106	MS
Selenium, Dissolved	73 - 129	1133	2.6		1000	113	MS
Selenium, Dissolved	73 - 129	1165	2.6		1000	116	MS
Selenium, Total	73 - 129	1166	5.0		1111	105	MS
Selenium, Total	73 - 129	1066	5.0		1111	95	MS
Silver, Dissolved	69 - 128	224.0	<0.2	U	250	90	MS
Silver, Dissolved	69 - 128	240.4	<0.2	U	250	96	MS
Silver, Total	69 - 128	61.0	<0.2	U	111	55	MS
Silver, Total	69 - 128	34.4	<0.2	U	111	31	MS

Associated samples:
233021 + 233022
RM
12/17/95

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TriMatrix Laboratories, Inc.

QUALITY CONTROL REPORT
MATRIX SPIKE DUPLICATE
USEPA CLP FORM 6

SDG No. 35132 -26

Sample ID. MW-16S-092399

Matrix WATER
Lab Sample No. 233022
Units ug/L

Analyte	Control Limit	Sample Result	Duplicate Spike Result	RPD	M
Antimony, Dissolved	0 - 20	976.0	956.7	2	MS
Antimony, Total	0 - 20	1007	1126	11	MS
Arsenic, Dissolved	0 - 20	2755	2858	4	MS
Arsenic, Total	0 - 20	1045	1068	2	MS
Barium, Dissolved	0 - 20	142.5	145.9	2	MS
Barium, Total	0 - 20	283.1	296.9	5	MS
Cadmium, Dissolved	0 - 20	103.3	104.3	1	MS
Cadmium, Total	0 - 20	103.5	110.8	7	MS
Chromium, Dissolved	0 - 20	105.9	103.1	3	MS
Chromium, Total	0 - 20	134.3	141.7	5	MS
Lead, Dissolved	0 - 20	106.8	104.9	2	MS
Lead, Total	0 - 20	131.8	135.2	3	MS
Selenium, Dissolved	0 - 20	1165	1133	3	MS
Selenium, Total	0 - 20	1066	1166	9	MS
Silver, Dissolved	0 - 20	224.0	240.4	7	MS
Silver, Total	0 - 20	34.4	61.0	56	MS

Associated samples:
233021 + 233022
total Silver
DJM 12/17/99

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Individual sample results relate only to the sample tested.

APPENDIX D

Data Validation Report for Second Groundwater Sampling Event

DATA VALIDATION REPORT

OF

GROUNDWATER SAMPLES

COLLECTED DECEMBER 14, AND 15, 1999

FOR

INORGANIC PARAMETERS

REFINED METALS CORPORATION
BEECH GROVE, INDIANA

Laboratory Case Number
35132-29

PREPARED FOR:

REFINED METALS CORPORATION
BEECH GROVE, INDIANA

PREPARED BY:

ADVANCED GEOSERVICES CORP.
CHADDS FORD, PENNSYLVANIA

FEBRUARY 16, 2000

PROJECT NUMBER 98-478-03

TABLE OF CONTENTS

		Page Number
1.0	Introduction	1
2.0	Metals Data Validation	2
	2.1 General	2
	2.2 Qualifications	2
	2.3 Comments	3
3.0	Conclusion	4

TABLE

Metals Data Summary Table

ATTACHMENT

Metals Data Support Documentation

1.0 INTRODUCTION

Eight groundwater samples, a field duplicate sample, field blank and two equipment blanks were collected at the Refined Metals Site in Beech Grove, Indiana, December 14, and 15, 1999 for chemical analyses. The samples, field duplicate sample, field blank and equipment blanks were analyzed for Resource and Conservation Recovery Act (RCRA) metals plus antimony. Additionally, one well sample was field filtered and analyzed for dissolved RCRA metals and antimony. Analyses of these samples were performed by TriMatrix Laboratories of Grand Rapids, Michigan. The sample results are reported under TriMatrix Case Number 35132-29.

The samples were analyzed for the following parameters by the corresponding methodologies:

Analytical Parameter	Methodology
RCRA Metals and antimony	SW-846 Method 6020/7470

The data deliverables consisted of a Report of Analysis listing each sample and result, chain-of-custody records, copies of relevant notebook pages and instrument raw data, calibration information, laboratory blank analysis results, and quality control forms that show precision and accuracy data derived from the quality control samples.

2.0 METAL DATA VALIDATION

All data generated by TriMatrix were reviewed by an Advanced GeoServices Corp. data validation specialist. Validation was performed for holding time compliance, laboratory method blank and field blank contamination, initial and continuing calibration accuracy, MS/MSD recovery and precision, field duplicate precision, and detection limit applicability. Inorganic data were validated according to the "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review" (February 1994) and "Region V Standard Operating Procedures for Validation of CLP Inorganic Data" (September 1993).

Validation was performed to verify compliance with the required analytical protocols and to determine the qualitative and quantitative reliability of the data. For criteria differences between the functional guidelines and the specific method, the specific method criteria prevailed. Qualifier codes were applied as required. The U qualifier code was applied to all sample results qualitatively questioned due to blank contamination. The U also denotes the analyte was not detected at or above the associated instrument detection limit. The J qualifier code was applied to all sample results which are considered quantitative estimates due to exceeding quality control criteria. The UJ qualifier code was applied to all results which were undetected but are estimated due to exceeding quality control criteria.

2.1 General

Eight groundwater samples were collected and analyzed for total arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver, and antimony by SW-846 method 6020 and 7470. A field duplicate sample, field blank and an equipment blank were also sampled and analyzed for the same parameters. Additionally, monitoring well MW-6S was field filtered and analyzed for dissolved arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver, and antimony. All holding times were within the EPA method requirements. Initial and continuing calibrations were accurate. Laboratory control sample recoveries were within acceptance criteria.

2.2 Qualifications

According to Region V criteria, when applying qualification based on blank contamination, results which are greater than the instrument detection limit (IDL) but less than five times the Contract Required Detection Limit (CRDL) are qualified using the following criteria: results less than five times the blank concentration are qualified with the U qualifier code and results greater than five times the blank concentration are qualified with the J qualifier code. The following samples have been qualified due to blank contamination:

> Due to the presence of mercury in an associated equipment blank at a similar concentration, the dissolved mercury result for sample MW-6S (239454) is qualitatively questioned and qualified with the U qualifier code to reflect an elevated detection limit. It should be noted

that mercury was not detected in the unfiltered sample, further indicating the probability of blank contamination in the filtered sample.

Due to a low lead CRDL standard recovery (75 percent), lead sample results and detection limits are estimated (J, UJ) for all samples except MW-2S (239450) and field duplicate MW-12S (239451).

Due to a total silver MS recovery between 30% and 74%, all sample silver detection limits are estimated (UJ). Additionally, the silver MS/MSD duplicate precision was outside the acceptance criteria.

2.3 Comments

The total and dissolved results for samples MW-6S (239453/239454) were compared. All dissolved results, except for mercury, were less than the associated total results. The dissolved mercury result has been qualitatively questioned due to equipment blank contamination and is U qualified.

3.0 CONCLUSION

This data validation has identified mercury equipment blank contamination, lead CRDL standard accuracy and silver MS/MSD accuracy and precision as reasons for qualifying the metals data. All other data are acceptable as reported by the laboratory. All data requiring qualification have been addressed in this review and are appropriately qualified on the data summary tables. To confidently use any of the analytical results, the data user should understand the qualifications and limitations stated in this report.

QUALIFIER CODES

U - Denotes the analyte is not present at or above the associated instrument detection limit.

J - Denotes an estimated value.

UJ - Denotes an estimated detection limit.

REFINED METALS CORPORATION
BEECH GROVE, INDIANA
DECEMBER 1999
GROUNDWATER SAMPLES

Project Name	Beech Grove	Laboratory	TriMatrix Laboratories
Project Number	98-478-03	Case No.	35132-29
Sample Date(s)	12/14/99-12/15/99	Method	SW-846 6020 & 7470

Sample Location	MW-1			MW-2D			MW-2S			MW-12S			MW-3			MW-4			MW-5		
Lab ID	239445			239449			239450			239451			239442			239444			239443		
Matrix	Aqueous			Aqueous			Aqueous			Aqueous			Aqueous			Aqueous			Aqueous		
Units	ug/l			ug/l			ug/l			ug/l			ug/l			ug/l			ug/l		
Sample Date	12/14/1999			12/15/1999			12/15/1999			12/15/1999			12/14/1999			12/14/1999			12/14/1999		
Comments										FD of MW-2S											
Parameter	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Antimony		U	10		U	10		U	10		U	10		U	10		U	10		U	10
Arsenic	25		1	15		1	15		1	13		1	7.8		1	1.6		1	10		1
Barium	86		10	311		10	45		10	44		10	127		10	204		10	162		10
Cadmium		U	0.2		U	0.2	0.2		0.2		U	0.2		U	0.2		U	0.2		U	0.2
Chromium		U	1		U	1	1.6		1	1.3		1		U	1		U	1	1.9		1
Lead		UJ	1	3.1	J	1	18		1	18		1		UJ	1		UJ	1		UJ	1
Mercury		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2
Selenium	7.3		2		U	2	6		2	6.8		2	5.3		2		U	2	2.9		2
Silver		UJ	0.2		UJ	0.2		UJ	0.2		UJ	0.2		UJ	0.2		UJ	0.2		UJ	0.2

ARSENIC

Sample Location	MW-6S			MW-6S			MW-6D			FB			EQ			EQB		
Lab ID	239453			239454			239448			239447			239446			239452		
Matrix	Aqueous			Aqueous			Aqueous			Aqueous			Aqueous			Aqueous		
Units	ug/l			ug/l			ug/l			ug/l			ug/l			ug/l		
Sample Date	12/15/1999			12/15/1999			12/15/1999			12/15/1999			12/15/1999			12/15/1999		
Comments				Dissolved						Field Blank			Equipment Blank			Equipment Blank		
Parameter	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Antimony		U	10		U	10		U	10		U	10		U	10		U	10
Arsenic	3.1		1	1.6		1	31		1		U	1		U	1		U	1
Barium	82		10	36		10	301		10		U	10		U	10		U	10
Cadmium		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2
Chromium	7.5		1		U	1		U	1		U	1		U	1		U	1
Lead	4.9	J	1		UJ	1	1.2	J	1		UJ	1		UJ	1		UJ	1
Mercury		U	0.2	0.2	U	0.2		U	0.2		U	0.2		U	0.2	0.2		0.2
Selenium	2.1		2		U	2		U	2		U	2		U	2		U	2
Silver		UJ	0.2		UJ	0.2		UJ	0.2		UJ	0.2		UJ	0.2		UJ	0.2

Chromium

Chromium potentially is a problem in MW-6S even though it was estimated in MW-6S in Sept. monitoring. In Dec it was actually detected @ 7.5 ppb.

DL - Detection limit prior to any dilutions.
Q - Qualifier.
U - The analyte was not detected at or above the detection limit.
Result + U - The result is qualitatively questioned due to the analyte in an associated blank at a similar concentration.
The detection limit has been elevated and is reflected by the associated value.
UJ- Denotes an estimated detection limit.
J - Denotes an estimated result.

QA Scientist Denise McGuire Date 2/16/00

METALS DATA
SUPPORT DOCUMENTATION
35132-29

INORGANIC DATA VALIDATION SUMMARY

Site Name: Beech Grove RMC
Project Number: 98-478-03
Sampling Date(s): Dec 14+15 99

Laboratory: TriMatrix
Case /Order No.: 35132-29

Compound List: [ ] TAL [ ] Priority Pollutant [ ] Appendix IX [X] Other RCRA + Sb

Method: [ ] CLP SOW ILMO4. [ ] 40 CFR 136 [X] SW-846 Method [ ] Other _____

The following table indicates the data validation criteria examined, any problems identified, and the QA action applied.

Data Validation Criteria:	accept	FYI	qualify	Comments
Holding Times	✓			
Initial Calibrations	✓			
Continuing Calibrations	✓			
CRDL Standards			✓	Pb low; Mercury ↑
Blank Analysis Results			✓	Mercury equip. blk contamination
ICP Interference Check Sample Recoveries		✓		
Duplicate Results			✓	Ag MS/MSD precision 27 RPD
Field Duplicate Results	✓			
Spike Analysis Recoveries			✓	Ag low 67% R
Serial Dilution Results		✓		NA
Laboratory Control Sample Results	✓			
~~Furnace~~ Flame AA QC Analysis (Hg)	✓			
Quantitation/Detection Limits	✓			
Overall Assessment of Data	✓			
Other:				

General Comments:

Accept - No qualification required.
FYI - For your information only, no qualification necessary.
Qualify - Qualify as rejected, estimated or biased
NA - Not applicable.
NR - Not reviewed.

QA Scientist Diane Mu
Date 2/16/00

QUALITY CONTROL REPORT
CRDL STANDARD
USEPA CLP FORM 2B

SDG No. 35132 -29 Matrix WATER
Units ug/L

Analyte	Anlytical Batch	True Value	Amount Found	% Recovery
Antimony, Total	150944	1.0	1.08	108
Arsenic, Total	150944	1.0	1.09	109
Barium, Total	150944	1.0	1.02	102
Cadmium, Total	150944	0.2	0.21	105
Chromium, Total	150944	1.0	1.14	114
Lead, Total	150944	1.0	0.75	75
Selenium, Total	150944	1.0	0.96	96
Silver, Total	150944	0.2	0.21	105
Chromium, Total	151176	1.0	1.09	109
Mercury, Total	151298	0.20	0.43	215
Barium, Total	151451	1.0	1.05	105

Associated data:
All
DJM 2/16/00

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TriMatrix Laboratories, Inc.

QUALITY CONTROL REPORT
SPIKE SAMPLE RECOVERY
USEPA CLP FORM 5A

SDG No. 35132 -29

Sample ID. MW1-121499MS/MSD

Matrix WATER
Lab Sample No. 239445
Units ug/L

Analyte	Control Limit %R	Spiked Sample Result	Sample Result		Spike Added	%R	M
Antimony, Total	70 - 138	1174	<10	U	1111	106	MS
Antimony, Total	70 - 138	1137	<10	U	1111	102	MS
Arsenic, Total	78 - 127	1059	25		1111	93	MS
Arsenic, Total	78 - 127	1064	25		1111	94	MS
Barium, Total	75 - 126	200.9	86		111.1	103	MS
Barium, Total	75 - 126	196.2	86		111.1	99	MS
Cadmium, Total	86 - 117	108.4	<0.2	U	111.1	98	MS
Cadmium, Total	86 - 117	106.5	<0.2	U	111.1	96	MS
Chromium, Total	71 - 123	121.7	<1.0	U	111.1	110	MS
Chromium, Total	71 - 123	127.0	<1.0	U	111.1	114	MS
Lead, Total	83 - 121	112.9	<1.0	U	111.1	102	MS
Lead, Total	83 - 121	120.0	<1.0	U	111.1	108	MS
Mercury, Total	73 - 135	3.11	<0.2	U	2.5	124	CV
Mercury, Total	73 - 135	2.97	<0.2	U	2.5	119	CV
Selenium, Total	73 - 129	1036	7.3		1111	93	MS
Selenium, Total	73 - 129	1029	7.3		1111	92	MS
Silver, Total	69 - 128	76.7	<0.2	U	111.1	69	MS
Silver, Total	69 - 128	100.9	<0.2	U	111.1	91	MS

Associated data: all
Dm 2/16/00

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TriMatrix Laboratories, Inc.

QUALITY CONTROL REPORT
MATRIX SPIKE DUPLICATE
USEPA CLP FORM 6

SDG No. 35132 -29

Sample ID. MW1-121499MS/MSD

Matrix WATER
Lab Sample No. 239445
Units ug/L

Analyte	Control Limit	Sample Result	Duplicate Spike Result	RPD	M
Antimony, Total	0 - 20	1174	1137	3	MS
Arsenic, Total	0 - 20	1059	1064	0	MS
Barium, Total	0 - 20	200.9	196.2	2	MS
Cadmium, Total	0 - 20	108.4	106.5	2	MS
Chromium, Total	0 - 20	121.7	127.0	4	MS
Lead, Total	0 - 20	120.0	112.9	6	MS
Mercury, Total	0 - 20	3.11	2.97	5	CV
Selenium, Total	0 - 20	1029	1036	1	MS
Silver, Total	0 - 20	100.9	76.7	27	MS

Associated data:
All
DM 2/16/05

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APPENDIX E

Data Validation Report for RFI Soil, Dust and Sediment Samples

DATA VALIDATION REPORT

OF

REMEDIAL FIELD INVESTIGATION SOIL, SEDIMENT, AND DUST SAMPLES
COLLECTED AUGUST 10 THROUGH SEPTEMBER 1, 1999, AND SEPTEMBER 20, 1999

FOR

ORGANIC AND INORGANIC PARAMETERS

REFINED METALS CORPORATION
BEECH GROVE, INDIANA

Laboratory Case Number
35132-1, 2, 3, 7, 10, 11, 12, 14, 17, 18, 19, 22, 23, 24, and 25

PREPARED FOR:

REFINED METALS CORPORATION
BEECH GROVE, INDIANA

PREPARED BY:

ADVANCED GEOSERVICES CORP.
CHADDS FORD, PENNSYLVANIA

DECEMBER 21, 1999

PROJECT NUMBER 98-478-03

TABLE OF CONTENTS

		Page Number
1.0	Introduction	1
2.0	Organic Data Validation	2
2.1	Volatile Organic Data	2
2.1.1	General	2
2.1.2	Qualifications	2
2.1.3	Comments	3
2.2	Semivolatile Organic Data	3
2.2.1	General	3
2.2.2	Qualifications	3
3.0	Inorganic Data Validation	4
3.1	General	4
3.2	Qualifications	4
4.0	Conclusion	10

TABLES

Volatiles and Semivolatiles Data Summary Table
Metals Data Summary Table

ATTACHMENTS

Volatiles Data Support Documentation
Semivolatiles Data Support Documentation
Metals Data Support Documentation

1.0 INTRODUCTION

Soil, sediment, and dust samples were collected at the Refined Metals Corporation (RMC) Site in Beech Grove, Indiana, between August 10 and September 1, 1999 for chemical analyses as part of the RMC Remedial Field Investigation (RFI). Additional soil samples were collected on September 20, 1999. The samples were analyzed for volatile and semivolatile organic compounds and Resource Conservation Recovery Act (RCRA) metals. Several field duplicates and equipment blanks were also collected and analyzed. Analyses of these samples were performed by TriMatrix Laboratories of Grand Rapids, Michigan. The sample results are reported under TriMatrix Case Numbers 35132-1, 2, 3, 7, 10, 11, 12, 14, 17, 18, 19, 22, 23, 24, and 25.

The samples were analyzed for the following parameters by the corresponding methodologies:

Analytical Parameter	Methodology
Volatile Organic Compounds	SW-846 Method 8260B
Semivolatile Organic Compounds	SW-846 Method 8270C
RCRA Metals	SW-846 Method 6020/7471

The data deliverables consisted of a Report of Analysis listing each sample and result, chain-of-custody records, copies of relevant notebook pages and instrument raw data, calibration information, laboratory blank analysis results, and quality control forms that show precision and accuracy data derived from the quality control samples.

Field duplicate samples can be identified by the "D" after the sample number. The duplicate samples correspond with the sample letter preceding the "D." For example, the sample RSB-29B has a corresponding field duplicate sample of RSB-29D.

2.0 ORGANIC DATA VALIDATION

All data generated by TriMatrix were reviewed by an Advanced GeoServices Corp. data validation specialist. Validation was performed for holding time compliance, GC/MS tuning criteria, laboratory method blank and field blank contamination, initial and continuing calibration accuracy, surrogate recoveries, internal standard area control limits, matrix spike/matrix spike duplicate (MS/MSD) recovery and precision, field duplicate precision, and detection limit applicability. Organic data were validated according to the "USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review" (February 1994) and "Region V Standard Operating Procedure for Validation of CLP Organic Data" (August 1993).

Validation was performed to verify compliance with the required analytical protocols and to determine the qualitative and quantitative reliability of the data. For criteria differences between the functional guidelines and the specific method, the specific method criteria prevailed. Qualifier codes were applied as required. The U qualifier code was applied to all sample results qualitatively questioned due to blank contamination. The U reflects either an adjusted detection limit due to blank contamination or the analyte was not detected at or above the associated detection limit. The J qualifier code was applied to all sample results which are considered quantitative estimates due to exceeding quality control criteria. The UJ qualifier code was applied to all results which were undetected but are estimated due to exceeding quality control criteria. Samples may have exceeded several quality control criteria, however, only one qualifier is applied to a result.

2.1.1 Volatile Organic Data

2.1.2 General

Soil samples collected from seven locations were analyzed for benzene, toluene, ethylbenzene, napthalene, and isopropylbenzene by SW-846 method 8260B. An associated equipment blank was analyzed for the same parameters as the samples. All holding times were within the EPA method requirements. Samples were received at the laboratory at 3°C. Initial calibrations were accurate. Internal standard areas were within control limits. Laboratory control sample recoveries were within acceptance criteria. MS/MSD recoveries were accurate.

2.1.3 Qualifications

Due to a- continuing calibration percent difference (%D) of greater than 20 for napthalene, sample EQB-1 (231638) detection limit is estimated (UJ).

Due to surrogate percent recoveries (%Rs) less than the lower acceptance limit but greater than 10%, the detection limits for sample RD-11A (231363) are estimated (UJ) for all compounds.

2.1.4 Comments

Napthalene was present in method blank BLK0913A at 11 ug/l. However, because there were no positive results for napthalene in the samples, no qualifiers were applied.

2.2 Semivolatile Organic Data

2.2.1 General

Soil samples collected from seven locations were analyzed for fluorene and phenanthrene by SW-846 method 8270C. An associated equipment blank was analyzed for the same parameters as the samples. All holding times were within the EPA method requirements. Samples were received at the laboratory at 3°C. Initial and continuing calibrations were accurate. The method blank and equipment blank were free of contamination. Internal standard areas were within control limits. Laboratory control sample recoveries were within acceptance criteria. MS/MSD recoveries were accurate.

2.2.2 Qualifications

No qualifications are applied to the semivolatile organic data. All results are acceptable as reported.

3.0 INORGANIC DATA VALIDATION

All data generated by TriMatrix were reviewed by an Advanced GeoServices Corp. data validation specialist. Validation was performed for holding time compliance, laboratory method blank and field blank contamination, initial and continuing calibration accuracy, MS/MSD recovery and precision, field duplicate precision, and detection limit applicability. Inorganic data were validated according to the "USEPA CLP National Functional Guidelines for Inorganic Data Review" (February 1994) and "Region V Standard Operating Procedures for Validation of CLP Inorganic Data" (September 1993).

Validation was performed to verify compliance with the required analytical protocols and to determine the qualitative and quantitative reliability of the data. For criteria differences between the functional guidelines and the specific method, the specific method criteria prevailed. Qualifier codes were applied as required. The U qualifier code was applied to all sample results qualitatively questioned due to blank contamination. The U also denotes the analyte was not detected at or above the associated instrument detection limit. The J qualifier code was applied to all sample results which are considered quantitative estimates due to exceeding quality control criteria. The UJ qualifier code was applied to all results which were undetected but are estimated due to exceeding quality control criteria. Some samples exceeded more than one quality control criteria for a particular parameter. In these instances, only one qualifier code was applied and the sample was only noted once in the qualifier section.

3.1. General

Four floor dust samples (CFD), 22 sediment samples (RSED), 188 soil samples (RSB), 25 field duplicate samples, and 25 equipment blanks (EQ) were collected and analyzed for arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver, and antimony by SW-846 method 6020, 7470 and 7471. All holding times were within the EPA method requirements. Initial and continuing calibrations were accurate.

3.2 Qualifications

According to Region V criteria, when applying qualification based on blank contamination, results which are greater than the instrument detection limit (IDL) but less than five times the Contract Required Detection Limit (CRDL) are qualified using the following criteria: results less than five times the blank concentration are qualified with the U qualifier code and results greater than five times the blank concentration are qualified with the J qualifier code.

Due to the presence of arsenic in an associated method blank, the following sample arsenic results are qualitatively questioned and designated with the U qualifier code to reflect an elevated detection limit:

RSB-11B (229440)	RSB-13B (229437)	RSB-16B (229434)

Due to the presence of chromium in associated method blanks, the following chromium sample results are qualitatively questioned. The U qualifier code is applied to reflect an elevated detection limit.

RSB-14A (230352)	RSB-14B (230353)	RSB-17B (230351)
RSB-18A (230348)	RSB-18B (230349)	RSB-22D (230347)
RSB-25A (230339)	RSB-25B (230340)	RSB-26A (230337)
RSB-26B (230338)	RSB-32A (230331)	RSB-32B (230332)
RSB-33A (230334)	RSB-33B (230335)	RSB-52A (230355)
RSB-52B (230356)	RSB-52C (230357)	RSB-53C (230360)
RSB-56A (230342)	RSB-56C (230344)	RSB-84C (230330)

Due to the presence of selenium in associated method blanks, the following selenium sample results are qualitatively questioned. The U qualifier code is applied to reflect an elevated detection limit.

RSB-23A (229219)	RSB-23B (229220)	RSB-45A (229221)
RSB-45B (229222)	RSB-45D (229223)	RSB-46B (229225)
RSB-21B (229432)	RSB-16A (229433)	RSB-16B (229434)
RSB-13A (229436)	RSB-13B (229437)	RSB-11A (229439)
RSB-11B (229440)	RSB-10A (229441)	RSB-10B (229442)
RSB-7A (229443)	RSB-7B (229444)	RSB-7D (229445)
RSB-AA (229446)	RSB-AB (229447)	RSB-BA (229448)
RSB-BB (229449)	RSB-5A (229450)	RSB-5B (229451)
RSB-58C (229231)	RSB-38A (229235)	RSB-38B (229236)
RSB-16D (229435)		

Due to the presence of lead in associated method blanks and/or equipment blanks, the following lead sample results are qualitatively questioned. The U qualifier code is applied to reflect an elevated detection limit.

RSB-72A (230209)	RSB-72B (230210)	RSB-72C (230211)

RSB-76A (229930)	RSB-80B (230272)	RSB-80C (230273)
RSB-81B (230245)	RSB-81C (230270)	RSB-83A (230279)
RSB-83B (230280)		

Several samples exceeded the criteria for duplicate injection precision (less than or equal to 20% relative standard deviation (RSD)) for selenium. The following sample results are estimated (J):

RSB-37B (230194)	RSB-44B (230197)	RSB-43A (230198)
RSB-42B (230202)	RSB-72C (230211)	RSB-73B (230205)
RSB-51A (230233)	RSED-4A (230383)	RSB-52A (230355)
RSB-53C (230360)	RSB-57C (230364)	RSB-65A (230186)
RSB-77C (230181)	RSB-68B (230191)	

Due to duplicate injection precision of greater than 20% RSD, the silver result is estimated (J) for sample RSED-5A (230385).

Due to mercury MS/MSD percent recoveries outside the upper acceptance criteria (75-125), detected mercury results are estimated (J) for the following samples:

RSB-14A (230352)	RSB-14B (230353)	RSB-57A (230362)
RSB-57B (230363)	RSB-55A (230366)	RSB-55B (230367)
RSB-55C (230368)	RSB-55D (230369)	RSB-54A (230370)
RSB-54B (230371)	RSB-33A (230334)	RSB-26A (230337)
RSB-26B (230338)	RSB-25A (230339)	RSB-25B (230340)
RSED-3B (230382)		

Due to barium and selenium MS/MSD percent recoveries outside the lower acceptance criteria, the following sample results and detection limits are estimated (J, UJ):

RSB-70A (232808)	RSB-70B (232809)	RSB-70C (232810)
RSB-64A (232811)	RSB-64B (232812)	RSB-69A (232813)
RSB-69B (232814)	RSB-69C (232815)	RSB-63A (232817)
RSB-63B (232818)	RSB-63D (232819)	

Due to cadmium and lead MS/MSD %Rs outside the acceptance limits, the following sample cadmium and lead results are estimated (J):

RSED-7A (230596)	RSED-7B (230597)	RSED-6A (230598)
RSED-11A (230552)	RSED-12A (230553)	

Due to lead MS/MSD %Rs outside the lower acceptance limits, the following sample lead results are estimated (J):

RSB-79A (230276)	RSB-79B (230277)	RSB-79C (230278)
RSB-85A (230283)	RSB-85B (230284)	RSB-85C (230285)
RSB-85D (230286)	RSB-82A (230287)	RSB-82B (230288)
RSB-82C (230289)	RSB-84A (230290)	RSB-80A (230271)
RSB-83C (230281)	RSB-80D (230274)	

Due to arsenic and selenium MS/MSD poor accuracy and precision, the following samples are estimated (J, UJ):

RSB-84C (230330)	RSB-32A (230331)	RSB-32B (230332)
RSB-33A (230334)	RSB-33B (230335)	RSB-33D (230336)
RSB-26A (230337)	RSB-26B (230338)	

Due to barium, lead, and silver MS/MSD %Rs outside acceptance criteria, sample RSB-84B (230291) results are estimated (J, UJ).

Due to arsenic, barium, lead, and selenium MS/MSD duplicate precision outside the lower acceptance criteria, the following sample results and detection limits are estimated (J, UJ):

RSB-15A (229921)	RSB-15B (229922)	RSB-19A (229923)
RSB-19B (229924)	RSB-27A (229925)	RSB-27B (229926)
RSB-34A (229927)	RSB-34B (229928)	RSB-76A (229930)
RSB-76B (229931)	RSB-76C (229932)	RSB-76D (229933)
RSB-74A (229934)	RSB-74B (229935)	RSB-74C (229936)
RSB-75A (229938)	RSB-75B (229939)	RSB-75D (229940)
RSB-75C (229941)		

The silver results for the following samples are estimated due to a Laboratory Control Sample (LCS) %R outside the acceptance limits (80 to 120%R). The LCS %R is 79.

RSB-25A (230339)	RSB-25B (230340)	RSB-56A (230342)
RSB-56B (230343)	RSB-56C (230344)	RSB-22A (230345)
RSB-22B (230346)	RSB-22D (230347)	RSB-18A (230348)
RSB-18B (230349)	RSB-17A (230350)	RSB-17B (230351)
RSB-14A (230352)	RSB-14B (230353)	RSB-52A (230355)
RSB-52B (230356)	RSB-52C (230357)	RSB-53A (230358)
RSB-53B (230359)	RSB-53C (230360)	

Field duplicate samples were evaluated based on duplicate precision. A control limit of $\pm$ 40% was used for original and duplicate sample values greater than or equal to 5 times the CRDL. A control limit of $\pm$ 2 times the CRDL was used if either the sample or duplicate result was less than the CRDL.

The following sample lead results are estimated (J) due to poor field duplicate precison:

CFD-3 (229240)	CFD-13 (229241)	CFD-1 (229238)
CFD-2 (229239)	RSB-77A (230179)	RSB-77B (230180)
RSB-77C (230181)	RSB-77D (230182)	RSB-66A (230184)
RSB-65A (230186)	RSB-65B (230187)	RSB-66B (230185)
RSB-67A (230188)	RSB-67B (230189)	RSB-68A (230190)
RSB-68B (230191)		

The following sample arsenic results are estimated (J) due to poor field duplicate precison:

RSB-45B (229222)	RSB-45D (229223)	RSB-45A (229221)
RSB-23A (229219)	RSB-23B (229220)	RSB-46A (229224)
RSB-46B (229225)	RSB-31A (229226)	RSB-31B (229227)
RSB-63B (232818)	RSB-63D (232819)	RSB-36A (232817)
RSB-70A (232808)	RSB-70B (232809)	RSB-70C (232810)
RSB-64A (232811)	RSB-64B (232812)	RSB-69A (232813)
RSB-69B (232814)	RSB-69C (232815)	

The following sample chromium results are estimated (J) due to poor field duplicate precison:

RSB-33D (230336)	RSB-22A (230345)	RSB-22B (230346)
RSB-56B (230343)	RSB-17A (230350)	RSB-49A (230236)
RSB-49B (230337)	RSB-49C (230238)	RSB-49D (230239)
RSB-74A (229934)	RSB-74B (229935)	RSB-78A (230241)
RSB-78B (230242)	RSB-78C (230243)	RSB-81A (230244)
RSB-81B (230245)	RSB-81C (230270)	RSB-76C (229932)
RSB-76D (229933)	RSB-76A (229930)	RSB-74C (229936)
RSB-76B (229931)		

The following sample selenium results are estimated (J) due to poor field duplicate precison:

RSB-49A (230236)	RSB-49B (230337)	RSB-49C (230238)
RSB-49D (230239)	RSB-78A (230241)	RSB-78B (230242)
RSB-78C (230243)	RSB-81A (230244)	RSB-81B (230245)
RSB-81C (230270)		

Due to arsenic, barium, and chromium poor field duplicate precision, the following sample results are qualified as estimated (J):

RSB-80A (230271)	RSB-80B (230272)	RSB-80C (230273)
RSB-80D (230274)	RSB-79A (230276)	RSB-79B (230277)
RSB-79C (230278)	RSB-83A (230279)	RSB-83B (230280)
RSB-83C (230281)		

4.0 CONCLUSION

This data validation has identified a continuing calibration %D and a surrogate recovery accuracy as reasons for qualifying the volatile organic data. Additionally, this data validation has identified method and equipment blank contamination, duplicate injection precision, MS/MSD precision and accuracy, LCS accuracy, and field duplicate precision as reasons for qualifying the inorganic data. All other data are acceptable as reported by the laboratory. All data requiring qualification have been addressed in this review and are appropriately qualified on the data summary tables. To confidently use any of the analytical results, the data user should understand the qualifications and limitations stated in this report.

QUALIFIER CODES

U - Denotes the compound analyte is not present at or above the associated value.

J - Denotes an estimated value.

UJ - Denotes an undetected result that is estimated due to exceeding quality control criteria.

BEECH GROVE, IN
ORGANIC DATA SUMMARY TABLE
AUGUST 1999

Project Name	Beech Grove	Laboratory	TriMatrix Laboratories
Project Number	98-478-03	Case No.	35132-24
Sample Date(s)	9/1/1999	Method	EPA Methods 8260B, 8270C

Sample Location	RD-10A			RD-10B			RD-11A			RD-11B		
Lab ID	231361			231362			231363			231365		
Matrix	Soil			Soil			Soil			Soil		
Units	mg/kg			mg/kg			mg/kg			mg/kg		
Sample Date	9/1/1999			9/1/1999			9/1/1999			9/1/1999		
Comments												
Parameter	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Benzene		U	0.054		U	0.055		UJ	0.054		U	0.053
Ethylbenzene		U	0.054		U	0.055		UJ	0.054		U	0.053
Fluorene		U	0.33		U	0.33		UJ	0.33		U	0.33
Isopropylbenzene		U	0.054		U	0.055		UJ	0.054		U	0.053
Napthalene		U	0.27		U	0.27		UJ	0.27		U	0.26
Phenanthrene		U	0.33		U	0.33		UJ	0.33		U	0.33
Toluene		U	0.054		U	0.055		UJ	0.054		U	0.053

Sample Location	RD-12A			RD-12B			RD-13A			EQB-1		
Lab ID	231366			231367			231364			231368		
Matrix	Soil			Soil			Soil			Aqueous		
Units	mg/kg			mg/kg			mg/kg			ug/L		
Sample Date	9/1/1999			9/1/1999			9/1/1999			9/1/1999		
Comments												
Parameter	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Benzene		U	0.053		U	0.053		U	0.053		U	1.0
Ethylbenzene		U	0.053		U	0.053		U	0.053		U	1.0
Fluorene		U	0.33		U	0.33		U	0.33		U	5.0
Isopropylbenzene		U	0.053		U	0.053		U	0.053		U	1.0
Napthalene		U	0.26		U	0.26		U	0.26		UJ	5.0
Phenanthrene		U	0.33		U	0.33		U	0.33		U	5.0
Toluene		U	0.053		U	0.053		U	0.053		U	1.0

DL -Detection limit.
Q - Qualifier.
U - The compound was not detected at or above the associated quantitation limit.
UJ - Denotes an estimated quantitation limit.

QA Scientist Megan N. Ritchie Date 10/20/99

BEECH GROVE RFI
INORGANIC DATA SUMMARY TABLE
AUGUST 1999

Project Name	Beech Grove	Laboratory	TriMatrix Laboratories
Project Number	98-478-03	Case No.	35132-1, 2, 3, 7, 10-12, 14, 17-19, 22, 23, 25
Sample Date(s)	8/10-8/26, 9/1, 9/20/1999	Method	SW-846 6010B, 7470 & 7471

Sample Location	CFD-1			CFD-2			CFD-3			CFD-13			RSB-1A			RSB-1B			RSB-2A			RSB-2B			RSB-2D			RSB-3A		
Lab ID	229238			229239			229240			229241			230212			230213			230215			230216			230217			230218		
Matrix	Dust			Dust			Dust			Dust			Soil			Soil			Soil			Soil			Soil			Soil		
Units	mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
Sample Date	8/12/99			8/12/99			8/12/99			8/12/99			8/22/99			8/22/99			8/22/99			8/22/99			8/22/99			8/22/99		
Comments										FD of CFD-3															FD of RSB-2B					
Parameter	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Arsenic	NA			NA			NA			NA			11		1.0	6.2		1.0	14		1.0	6.6		1.0	7.4		1.0	9.1		1.0
Barium	NA			NA			NA			NA			73		1.0	91		1.0	75		1.0	79		1.0	72		1.0	142		1.0
Cadmium	436		0.5	357		0.5	547		0.5	474		0.5	28		0.50	0.88		0.50	4.5		0.50	0.99		0.50	1.1		0.5	2.8		0.50
Chromium	NA			NA			NA			NA			15		1.0	17		1.0	15		1.0	16		1.0	14		1.0	19		1.0
Lead	497000	J	0.6	342000	J	0.6	707000	J	0.6	377000	J	0.6	873		0.60	215		0.60	1100		0.60	202		0.60	264		0.6	632		0.60
Mercury	NA			NA			NA			NA			0.12		0.10		U	0.10	0.11		0.10		U	0.10		U	0.1		U	0.10
Selenium	NA			NA			NA			NA			1.3		0.50	1.3		0.50	1.2		0.50	1.1		0.50	0.74		0.5	1.8		0.50
Silver	NA			NA			NA			NA				U	0.20		U	0.20		U	0.20		U	0.20		U	0.2		U	0.20

Sample Location	RSB-3B			RSB-4A			RSB-4B			RSB-5A			RSB-5B			RSB-6A			RSB-6B			RSB-7A			RSB-7B			RSB-7D		
Lab ID	230219			230220			230221			229450			229451			230222			230223			229443			229444			229445		
Matrix	Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil		
Units	mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			ug/L			ug/L		
Sample Date	8/22/99			8/22/99			8/22/99			8/16/99			8/16/99			8/22/09			8/22/09			8/16/99			8/16/99			8/16/99		
Comments																												FD of RSB-7B		
Parameter	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Arsenic	7.0		1.0	22		1.0	9.8		1.0	10		1.0	7.5		1.0	22		1.0	9.0		1.0	14		1.0	6.8		1.0	6.8		1.0
Barium	97		1.0	83		1.0	86		1.0	72		1.0	77		1.0	47		1.0	48		1.0	58		1.0	61		1.0	57		1.0
Cadmium	2.0		0.50	17		0.50	4.4		0.50	3.2		0.50	1.1		0.50	7.3		0.50	1.4		0.50	3.3		0.50	0.80		0.5	0.95		0.50
Chromium	16		1.0	16		1.0	14		1.0	13		1.0	13		1.0	11		1.0	10		1.0	12		1.0	12		1.0	11		1.0
Lead	593		0.60	2360		0.60	686		0.60	985		0.60	366		0.60	1880		0.60	289		0.60	1150		0.60	232		0.6	283		0.60
Mercury		U	0.10	0.12		0.10		U	0.10		U	0.10		U	0.10	0.12		0.10		U	0.10		U	0.10		U	0.1		U	0.10
Selenium	1.6		0.50	1.9		0.50	1.3		0.50	0.92	U	0.50	0.80	U	0.50	1.4		0.50	1.4		0.50	1.1	U	0.50	1.2	U	0.5	1.2	U	0.50
Silver		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.2		U	0.20

DL - Detection Limit prior to any dilutions.
Q - Qualifier.
U - The analyte was not detected at or above the associated value or reflects an adjusted detection limit due to blank contamination.
J - Denotes an estimated result.
FD - Field duplicate.
CFD - Floor dust samples.

QA Scientist David McCune Date 12/21/99

BEECH GROVE RFI
INORGANIC DATA SUMMARY TABLE
AUGUST 1999

Project Name	Beech Grove	Laboratory	TriMatrix Laboratories
Project Number	98-478-03	Case No.	35132-1, 2, 3, 7, 10-12, 14, 17-19, 22, 23, 25
Sample Date(s)	8/10-8/26, 9/1, 9/20/1999	Method	SW-846 6010B, 7470 & 7471

Sample Location	RSB-8A			RSB-8B			RSB-9A			RSB-9B			RSB-9D			RSB-10A			RSB-10B			RSB-11A			RSB-11B			RSB-12A		
Lab ID	230224			230225			230227			230228			230229			229441			229442			229439			229440			229232		
Matrix	Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil		
Units	mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
Sample Date	8/22/99			8/22/99			8/22/99			8/22/99			8/22/99			8/16/99			8/16/99			8/16/99			8/16/99			8/11/99		
Comments													FD of RSB-9B																	
Parameter	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Arsenic	23		1.0	9.1		1.0	96		1.0	27		1.0	28		1.0	14		1.0	6.6		1.0	13		1.0	5.1	U	1.0	95		1.0
Barium	32		1.0	34		1.0	73		1.0	72		1.0	78		1.0	59		1.0	61		1.0	81		1.0	53		1.0	122		1.0
Cadmium	6.8		0.50	1.4		0.50	39		0.50	9.7		0.50	11		0.50	3.9		0.50	0.56		0.50	12		0.50		U	0.5	6.3		0.50
Chromium	7.5		1.0	8.4		1.0	15		1.0	11		1.0	12		1.0	10		1.0	13		1.0	11		1.0	10		1.0	17		1.0
Lead	1050		0.60	321		0.60	14500		0.60	3800		0.60	3080		0.60	1850		0.60	241		0.60	641		0.60	101		0.6	11100		0.60
Mercury		U	0.10		U	0.10	0.31		0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.1	0.11		0.10
Selenium	1.3		0.50	0.87		0.50	8.7		0.50	1.9		0.50	2.2		0.50	1.8	U	0.50	0.79	U	0.50	0.80	U	0.50	0.51	U	0.5	5.6		0.50
Silver		U	0.20		U	0.20	0.28		0.20		U	0.20	0.25		0.20	0.24		0.20		U	0.20		U	0.20		U	0.2		U	0.20

Sample Location	RSB-12B			RSB-12D			RSB-13A			RSB-13B			RSB-14A			RSB-14B			RSB-15A			RSB-15B			RSB-16A			RSB-16B		
Lab ID	229233			229234			229436			229437			230352			230353			229921			229922			229433			229434		
Matrix	Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil		
Units	mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
Sample Date	8/11/99			8/11/99			8/16/99			8/16/99			8/24/99			8/24/99			8/19/99			8/19/99			8/16/99			8/16/99		
Comments				FD of RSB-12B																										
Parameter	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Arsenic	125		1.0	128		1.0	11		1.0	5.0	U	1.0	24		1.0	15		1.0	22	J	1.0	10	J	1.0	13		1.0	5.6	U	1.0
Barium	122		1.0	110		1.0	54		1.0	61		1.0	120		1.0	76		1.0	50	J	1.0	53	J	1.0	51		1.0	47		1.0
Cadmium	8.4		0.50	9.0		0.50	2.7		0.50	0.52		0.50	15		0.50	3.6		0.50	23		0.50	1.9		0.50	2.8		0.5	0.57		0.50
Chromium	16		1.0	14		1.0	8.8		1.0	8.8		1.0	15	U	1.0	11	U	1.0	10		1.0	10		1.0	10		1.0	10		1.0
Lead	17500		0.60	15200		0.60	682		0.60	96		0.60	8100		0.60	8480		0.60	1070	J	0.60	211	J	0.60	661		0.6	95		0.60
Mercury		U	0.10		U	0.10		U	0.10		U	0.10	0.11	J	0.10	0.13	J	0.10		U	0.10		U	0.10		U	0.1		U	0.10
Selenium	8.0		0.50	6.2		0.50	0.75	U	0.50	0.65	U	0.50	1.9		0.50	1.5		0.50	1.1	J	0.50	80	J	0.50	0.71	U	0.5	0.59	U	0.50
Silver	0.22		0.20	0.23		0.20		U	0.20		U	0.20		UJ	0.20		UJ	0.20		U	0.20		U	0.20	0.84		0.2		U	0.20

DL - Detection Limit prior to any dilutions.
Q - Qualifier.
U - The analyte was not detected at or above the associated value or reflects an adjusted detection limit due to blank contamination.
J - Denotes an estimated result.
FD - Field duplicate.

QA Scientist Dana Mace Date 12/21/99

BEECH GROVE RFI
INORGANIC DATA SUMMARY TABLE
AUGUST 1999

Project Name	Beech Grove	Laboratory	TriMatrix Laboratories
Project Number	98-478-03	Case No.	35132-1, 2, 3, 7, 10-12, 14, 17-19, 22, 23, 25
Sample Date(s)	8/10-8/26, 9/1, 9/20/1999	Method	SW-846 6010B, 7470 & 7471

Sample Location	RSB-16D			RSB-17A			RSB-17B			RSB-18A			RSB-18B			RSB-19A			RSB-19B			RSB-20A			RSB-20B			RSB-21A		
Lab ID	229435			230350			230351			230348			230349			229923			229924			228728			228729			229431		
Matrix	Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil		
Units	mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			ug/L			ug/L			mg/kg			mg/kg			mg/kg		
Sample Date	8/16/99			8/24/99			8/24/99			8/24/99			8/24/99			8/19/99			8/19/99			8/10/99			8/10/99			8/16/99		
Comments	FD of RSB-16B																													
Parameter	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Arsenic	6.5		1.0	10		1.0	9.7		1.0	7.8		1.0	6.3		1.0	7.0	J	1.0	6.8	J	1.0	14		1.0	10		1.0	8.3		1.0
Barium	50		1.0	215		1.0	133		1.0	47		1.0	39		1.0	43	J	1.0	49	J	1.0	83		1.0	85		1.0	64		1.0
Cadmium	0.63		0.50	188		0.50	12		0.50	1.7		0.50		U	0.50	0.64		0.50	0.69		0.50	5.0		0.50	1.2		0.5	2.7		0.50
Chromium	13		1.0	23	J	1.0	16	U	1.0	8.1	U	1.0	8.2	U	1.0	8.7		1.0	8.1		1.0	15		1.0	16		1.0	8.5		1.0
Lead	96		0.60	530		0.60	21		0.60	526		0.60	50		0.60	11	J	0.60	13	J	0.60	593		0.60	97		0.6	497		0.60
Mercury		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10	0.13		0.10		U	0.1		U	0.10
Selenium	0.52	U	0.50	2.5		0.50	0.98		0.50	0.71		0.50	0.60		0.50	1.3	J	0.50	1.2	J	0.50	1.2		0.50	1.0		0.5		U	0.50
Silver		U	0.20		UJ	0.20		UJ	0.20		UJ	0.20		UJ	0.20		U	0.20		U	0.20		U	0.20		U	0.2		U	0.20

Sample Location	RSB-21B			RSB-22A			RSB-22B			RSB-22D			RSB-23A			RSB-23B			RSB-24A			RSB-24B			RSB-25A			RSB-25B		
Lab ID	229432			230345			230346			230347			229219			229220			228743			228744			230339			230340		
Matrix	Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil		
Units	mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
Sample Date	8/16/99			8/24/99			8/24/99			8/24/99			8/11/99			8/11/99			8/10/99			8/10/99			8/24/99			8/24/99		
Comments										FD of RSB-22B																				
Parameter	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Arsenic	7.2		1.0	21		1.0	10		1.0	12		1.0	18	J	1.0	2.6	J	1.0	20		1.0	6.5		1.0	867		1.0	104		1.0
Barium	52		1.0	187		1.0	88		1.0	90		1.0	78		1.0	70		1.0	55		1.0	63		1.0	217		1.0	145		1.0
Cadmium	0.55		0.50	6.9		0.50	2.7		0.50	2.9		0.50	3.5		0.50	0.79		0.50	8.7		0.50	1.2		0.50	103		0.5	28		0.50
Chromium	13		1.0	25	J	1.0	25	J	1.0	15	U	1.0	19		1.0	12		1.0	9.8		1.0	11		1.0	12	U	1.0	21	U	1.0
Lead	105		0.60	478		0.60	237		0.60	247		0.60	987		0.60	157		0.60	1980		0.60	288		0.60	83500		0.6	7930		0.60
Mercury		U	0.10		U	0.10		U	0.10		U	0.10	0.12		0.10		U	0.10		U	0.10		U	0.10	3.0	J	0.1	0.49	J	0.10
Selenium	0.74	U	0.50	1.3		0.50	0.55		0.50	0.94		0.50	1.1	U	0.50	0.92	U	0.50	0.93		0.50	0.78		0.50	50	J	0.5	6.0	J	0.50
Silver		U	0.20		UJ	0.20		UJ	0.20		UJ	0.20		U	0.20		U	0.20		U	0.20		U	0.20	1.5	J	0.2		UJ	0.20

DL - Detection Limit prior to any dilutions.
Q - Qualifier.
U - The analyte was not detected at or above the associated value or reflects an adjusted detection limit due to blank contamination.
J - Denotes an estimated result.
FD - Field duplicate.

QA Scientist [signature] Date 12/21/99

BEECH GROVE RFI
INORGANIC DATA SUMMARY TABLE
AUGUST 1999

Project Name	Beech Grove	Laboratory	TriMatrix Laboratories
Project Number	98-478-03	Case No.	35132-1, 2, 3, 7, 10-12, 14, 17-19, 22, 23, 25
Sample Date(s)	8/10-8/26, 9/1, 9/20/1999	Method	SW-846 6010B, 7470 & 7471

Sample Location	RSB-26A			RSB-26B			RSB-27A			RSB-27B			RSB-28A			RSB-28B			RSB-29A			RSB-29B			RSB-29D			RSB-30A		
Lab ID	230337			230338			229925			229926			228723			228724			228725			228726			228727			228741		
Matrix	Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil		
Units	mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
Sample Date	8/24/99			8/24/99			8/19/99			8/19/99			8/10/99			8/10/99			8/10/99			8/10/99			8/10/99			8/10/99		
Comments																									FD of RSB-29B					
Parameter	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Arsenic	175	J	1.0	184	J	1.0	8.1	J	1.0	6.5	J	1.0	56		1.0	16		1.0	23		1.0	11		1.0	12		1.0	15		1.0
Barium	97		1.0	114		1.0	39	J	1.0	39	J	1.0	62		1.0	85		1.0	67		1.0	97		1.0	99		1.0	125		1.0
Cadmium	17		0.50	10		0.50		U	0.50		U	0.50	14		0.50	3.4		0.50	8.5		0.50	2.5		0.50	1.9		0.5	3.3		0.50
Chromium	15	U	1.0	21	U	1.0	8.4		1.0	8.6		1.0	14		1.0	15		1.0	13		1.0	17		1.0	21		1.0	16		1.0
Lead	9670		0.60	8130		0.60	14	J	0.60	14	J	0.60	3140		0.60	478		0.60	1480		0.60	350		0.60	278		0.6	887		0.60
Mercury	0.36	J	0.10	0.36	J	0.10		U	0.10		U	0.10	0.33		0.10		U	0.10	0.26		0.10		U	0.10		U	0.1		U	0.10
Selenium	6.4	J	0.50	4.6	J	0.50	1.3	J	0.50	1.3	J	0.50	2.0		0.50	1.1		0.50	0.94		0.50	0.86		0.50	0.82		0.5	1.3		0.50
Silver		U	0.20	0.23		0.20		U	0.20		U	0.20	0.24		0.20		U	0.20		U	0.20		U	0.20		U	0.2		U	0.20

Sample Location	RSB-30B			RSB-31A			RSB-31B			RSB-32A			RSB-32B			RSB-33A			RSB-33B			RSB-33D			RSB-34A			RSB-34B		
Lab ID	228742			229226			229227			230331			230332			230334			230335			230336			229927			229928		
Matrix	Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil		
Units	mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
Sample Date	8/10/99			8/11/99			8/11/99			8/24/99			8/24/99			8/24/99			8/24/99			8/24/99			8/19/99			8/19/99		
Comments																						FD of RSB-33B								
Parameter	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Arsenic	7.4		1.0	202	J	1.0	232	J	1.0	13	J	1.0	7.7	J	1.0	56	J	1.0	10	J	1.0	12	J	1.0	6.5	J	1.0	6.3	J	1.0
Barium	110		1.0	84		1.0	88		1.0	107		1.0	83		1.0	108		1.0	163		1.0	146		1.0	34	J	1.0	28	J	1.0
Cadmium	0.64		0.50	38		0.50	50		0.50	5.0		0.50	1.8		0.50	3.8		0.50	0.54		0.50		U	0.50		U	0.5		U	0.50
Chromium	17		1.0	15		1.0	12		1.0	18	U	1.0	13	U	1.0	20	U	1.0	18	U	1.0	99	J	1.0	6.9		1.0	6.7		1.0
Lead	127		0.60	23700		0.60	27400		0.60	841		0.60	531		0.60	2200		0.60	22		0.60	21		0.60	19	J	0.6	19	J	0.60
Mercury		U	0.10	0.48		0.10	0.63		0.10		U	0.10		U	0.10	0.15	J	0.10		U	0.10		U	0.10		U	0.1		U	0.10
Selenium	1.5		0.50	8.7		0.50	9.6		0.50	1.2	J	0.50	0.75	J	0.50	1.9	J	0.50	1.8	J	0.50	2.4	J	0.50		UJ	0.5	1.3	J	0.50
Silver		U	0.20	0.34		0.20	0.26		0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.2		U	0.20

DL - Detection Limit prior to any dilutions.
Q - Qualifier.
U - The analyte was not detected at or above the associated value or reflects an adjusted detection limit due to blank contamination.
J - Denotes an estimated result.
FD - Field duplicate.

QA Scientist Dana McGee Date 12/21/99

BEECH GROVE RFI
INORGANIC DATA SUMMARY TABLE
AUGUST 1999

Project Name	Beech Grove	Laboratory	TriMatrix Laboratories
Project Number	98-478-03	Case No.	35132-1, 2, 3, 7, 10-12, 14, 17-19, 22, 23, 25
Sample Date(s)	8/10-8/26, 9/1, 9/20/1999	Method	SW-846 6010B, 7470 & 7471

Sample Location	RSB-35A			RSB-35B			RSB-36A			RSB-36B			RSB-36D			RSB-37A			RSB-37B			RSB-37D			RSB-38A			RSB-38B		
Lab ID	230373			230374			228737			228738			228739			230193			230194			230195			229235			229236		
Matrix	Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil		
Units	mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
Sample Date	8/24/99			8/24/99			8/10/99			8/10/99			8/10/99			8/21/99			8/21/99			8/21/99			8/13/99			8/13/99		
Comments													FD of RSB-36B									FD of RSB-37B								
Parameter	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Arsenic	10		1.0	6.4		1.0	9.2		1.0	5.7		1.0	6.0		1.0	17		1.0	13		1.0	12		1.0	14		1.0	7.2		1.0
Barium	106		1.0	67		1.0	93		1.0	96		1.0	94		1.0	85		1.0	87		1.0	64		1.0	70		1.0	66		1.0
Cadmium		U	0.50		U	0.50	1.9		0.50	0.67		0.50	0.55		0.50	6.5		0.50	4.2		0.50	3.4		0.50	4.3		0.5	1.3		0.50
Chromium	18		1.0	15		1.0	14		1.0	18		1.0	15		1.0	13		1.0	10		1.0	13		1.0	9.2		1.0	9.8		1.0
Lead	43		0.60	23		0.60	216		0.60	55		0.60	39		0.60	679		0.60	594		0.60	570		0.60	2000		0.6	440		0.60
Mercury		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10	0.13		0.1		U	0.10
Selenium	0.89		0.50	0.58		0.50	1.1		0.50	1.1		0.50	0.97		0.50	1.2		0.50	1.7	J	0.50	1.1		0.50	0.99	U	0.5	0.65	U	0.50
Silver		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.2		U	0.20

Sample Location	RSB-39A			RSB-39B			RSB-40A			RSB-40B			RSB-41A			RSB-41B			RSB-42A			RSB-42B			RSB-43A			RSB-43B		
Lab ID	228730			228731			228733			228734			228735			228736			230200			230202			230198			230199		
Matrix	Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil		
Units	mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
Sample Date	8/10/99			8/10/99			8/10/99			8/10/99			8/10/99			8/10/99			8/21/99			8/21/99			8/21/99			8/21/99		
Comments																														
Parameter	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Arsenic	10		1.0	7.6		1.0	19		1.0	7.0		1.0	10		1.0	5.7		1.0	15		1.0	7.3		1.0	20		1.0	11		1.0
Barium	119		1.0	73		1.0	67		1.0	69		1.0	64		1.0	68		1.0	58		1.0	54		1.0	92		1.0	72		1.0
Cadmium	1.1		0.50	0.63		0.50	4.1		0.50	0.99		0.50	1.5		0.50		U	0.50	3.2		0.50	0.91		0.50	5.3		0.5	0.90		0.50
Chromium	19		1.0	14		1.0	12		1.0	10		1.0	13		1.0	14		1.0	9.4		1.0	11		1.0	15		1.0	16		1.0
Lead	227		0.60	81		0.60	901		0.60	161		0.60	341		0.60	82		0.60	834		0.60	214		0.60	1130		0.6	230		0.60
Mercury		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10	0.13		0.1		U	0.10
Selenium	0.77		0.50	1.5		0.50	1.1		0.50	0.69		0.50	1.4		0.50	0.84		0.50	0.68		0.50	1.0	J	0.50	1.3	J	0.5	0.81		0.50
Silver		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.2		U	0.20

DL - Detection Limit prior to any dilutions.
Q - Qualifier.
U - The analyte was not detected at or above the associated value or reflects an adjusted detection limit due to blank contamination.
J - Denotes an estimated result.
FD - Field duplicate.

QA Scientist [signature] Date 12/21/99

TriMatrix Laboratories, Inc.

QUALITY CONTROL REPORT
SPIKE SAMPLE RECOVERY
USEPA CLP FORM 5A

SDG No. 35132 -25

Sample ID. RSB-64BMS/MSD

Matrix SOIL
Lab Sample No. 232812
Units mg/kg dry

Analyte	Control Limit %R	Spiked Sample Result	Sample Result		Spike Added	%R	M
Arsenic, Total	73 - 121	125.5	9.8		125	93	MS
Arsenic, Total	73 - 121	121.4	9.8		125	89	MS
Barium, Total	69 - 131	77.3	68		12.5	74	MS
Barium, Total	69 - 131	73.0	68		12.5	40	MS
Cadmium, Total	83 - 114	18.8	6.8		12.5	96	MS
Cadmium, Total	83 - 114	17.6	6.8		12.5	86	MS
Chromium, Total	69 - 130	20.4	11		12.5	75	MS
Chromium, Total	69 - 130	20.8	11		12.5	78	MS
Selenium, Total	62 - 126	79.7	0.74		125	63	MS
Selenium, Total	62 - 126	74.0	0.74		125	59	MS
Silver, Total	78 - 115	10.3	<0.20	U	12.5	82	MS
Silver, Total	78 - 115	11.0	<0.20	U	12.5	88	MS

Associated samples:
232808-815, 817-819
DM

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Individual sample results relate only to the sample tested.
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TriMatrix Laboratories, Inc.

QUALITY CONTROL REPORT
LABORATORY FORTIFIED BLANK
USEPA CLP FORM 7

SDG No. 35132 -17 Units mg/kg dry

Analyte	Batch	True Value	Amount Found	Control Limit	%R
Arsenic, Total	47813	125	112.2	82 - 117	90
Arsenic, Total	47814	125	112.6	82 - 117	90
Barium, Total	47813	125	116.4	86 - 116	93
Barium, Total	47814	125	123.4	86 - 116	99
Cadmium, Total	47813	25	23.2	80 - 117	93
Cadmium, Total	47814	25	21.3	80 - 117	85
Chromium, Total	47813	125	107.0	83 - 122	86
Chromium, Total	47814	125	108.6	83 - 122	87
Lead, Total	47813	125	114.3	83 - 127	91
Lead, Total	47814	125	110.8	83 - 127	89
Mercury, Total	47363	0.417	0.488	84 - 124	117
Selenium, Total	47813	125	118.8	76 - 118	95
Selenium, Total	47814	125	119.9	76 - 118	96
Silver, Total	47813	25	23.3	74 - 118	93
Silver, Total	47814	25	19.8	74 - 118	79

Associated samples 230339, 40, 42, 43, 44, 45, 46
47, 48, 49, 50, 51, 52, 53, 55, 56
57, 58, 59, 60

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Individual sample results relate only to the sample tested.
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FIELD DUPLICATE SUMMARY FORM

Site Name:	RMC Beech Grove, IN	Laboratory:	TriMatrix
Project Number:	98-478-03	Case/Order No.:	35132-1-25
Sampling Date(s):	8/10-8/26/99, 9/1/99		

Sample description or location	CFD-3	CFD-13		
Sample number	229240	229241		
Matrix	Soil	Soil		
Units	mg/kg	mg.kg		
Parameters			RPD	Q
TOTAL				
Cadmium	547	474	14.30	
Lead	707000	377000	60.89	J

Sample description or location	RSB-2B	RSB-2D		
Sample number	230216	230217		
Matrix	Soil	Soil		
Units	mg/kg	mg.kg		
Parameters			RPD	Q
TOTAL				
Arsenic	6.6	7.4	11.43	
Barium	79	72	9.27	
Cadmium	0.99	1.1	10.53	
Chromium	16	14	13.33	
Lead	202	264	26.61	
Mercury	ND	ND	NA	
Selenium	1.10	0.74	39.13	
Silver	ND	ND	NA	

Sample description or location	RSB-7B	RSB-7D		
Sample number	229444	229445		
Matrix	Soil	Soil		
Units	mg/kg	mg.kg		
Parameters			RPD	Q
TOTAL				
Arsenic	6.8	6.8	0.00	
Barium	61	57	6.78	
Cadmium	0.8	0.95	17.14	
Chromium	12	11	8.70	
Lead	232	283	19.81	
Mercury	ND	ND	NA	
Selenium	1.20	1.2	0.00	
Silver	ND	ND	NA	

Duplicate criteria: Soil <40% if >5X LOQ; ±2 LOQ if <5X LOQ.
J - Denotes %RPD outside criteria.
NA - Cannot be calculated or results <5X LOQ.
ND - Not detected.

FIELD DUPLICATE SUMMARY FORM

Sample description or location	RSB-9B	RSB-9D		
Sample number	230228	230229		
Matrix	Soil	Soil		
Units	mg/kg	mg.kg		
Parameters			RPD	Q
TOTAL				
Arsenic	27	28	3.64	
Barium	72	78	8.00	
Cadmium	9.7	11	12.56	
Chromium	11	12	8.70	
Lead	3800	3080	20.93	
Mercury	ND	ND	NA	
Selenium	1.90	2.2	14.63	
Silver	ND	0.25	NA	

Sample description or location	RSB-12B	RSB-12D		
Sample number	229233	229234		
Matrix	Soil	Soil		
Units	mg/kg	mg.kg		
Parameters			RPD	Q
TOTAL				
Arsenic	125	128	2.37	
Barium	122	110	10.34	
Cadmium	8.4	9	6.90	
Chromium	16	14	13.33	
Lead	17500	15200	14.07	
Mercury	ND	ND	NA	
Selenium	8.00	6.2	25.35	
Silver	0.22	0.23	4.44	

Sample description or location	RSB-16B	RSB-16D		
Sample number	229434	229435		
Matrix	Soil	Soil		
Units	mg/kg	mg.kg		
Parameters			RPD	Q
TOTAL				
Arsenic	5.6	6.5	14.88	
Barium	47	50	6.19	
Cadmium	0.57	0.63	10.00	
Chromium	10	13	26.09	
Lead	95	96	1.05	
Mercury	ND	ND	NA	
Selenium	0.59	0.52	12.61	
Silver	ND	ND	NA	

Duplicate criteria: Soil <40% if >5X LOQ; ±2 LOQ if <5X LOQ.
J - Denotes %RPD outside criteria.
NA - Cannot be calculated or results <5X LOQ.
ND - Not detected.

FIELD DUPLICATE SUMMARY FORM

Sample description or location	RSB-22B	RSB-22D		
Sample number	230346	230347		
Matrix	Soil	Soil		
Units	mg/kg	mg.kg		
Parameters			RPD	Q
TOTAL				
Arsenic	10	12	18.18	
Barium	88	90	2.25	
Cadmium	2.7	2.9	7.14	
Chromium	25	15	50.00	J
Lead	237	247	4.13	
Mercury	ND	ND	NA	
Selenium	0.55	0.94	NA	
Silver	ND	ND	NA	

Sample description or location	RSB-29B	RSB-29D		
Sample number	228726	228727		
Matrix	Soil	Soil		
Units	mg/kg	mg.kg		
Parameters			RPD	Q
TOTAL				
Arsenic	11	12	8.70	
Barium	97	99	2.04	
Cadmium	2.5	1.9	27.27	
Chromium	17	21	21.05	
Lead	350	278	22.93	
Mercury	ND	ND	NA	
Selenium	0.86	0.82	4.76	
Silver	ND	ND	NA	

Sample description or location	RSB-33B	RSB-33D		
Sample number	230335	230336		
Matrix	Soil	Soil		
Units	mg/kg	mg.kg		
Parameters			RPD	Q
TOTAL				
Arsenic	10	12	18.18	
Barium	163	146	11.00	
Cadmium	0.54	ND	NA	
Chromium	18	99	138.46	J
Lead	22	21	4.65	
Mercury	ND	ND	NA	
Selenium	1.80	2.4	28.57	
Silver	ND	ND	NA	

Duplicate criteria: Soil <40% if >5X LOQ; ±2 LOQ if <5X LOQ.
J - Denotes %RPD outside criteria.
NA - Cannot be calculated or results <5X LOQ.
ND - Not detected.

FIELD DUPLICATE SUMMARY FORM

Sample description or location	RSB-36B	RSB-36D		
Sample number	228738	228739		
Matrix	Soil	Soil		
Units	mg/kg	mg.kg		
Parameters			RPD	Q
TOTAL				
Arsenic	5.7	6	5.13	
Barium	96	94	2.11	
Cadmium	0.67	0.55	NA	
Chromium	18	15	18.18	
Lead	55	39	34.04	
Mercury	ND	ND	NA	
Selenium	1.10	0.97	12.56	
Silver	ND	ND	NA	

Sample description or location	RSB-37B	RSB-37D		
Sample number	230194	230195		
Matrix	Soil	Soil		
Units	mg/kg	mg.kg		
Parameters			RPD	Q
TOTAL				
Arsenic	13	12	8.00	
Barium	87	64	30.46	
Cadmium	4.2	3.4	NA	
Chromium	10	13	26.09	
Lead	594	570	4.12	
Mercury	ND	ND	NA	
Selenium	1.70	1.1	NA	
Silver	ND	ND	NA	

Sample description or location	RSB-45B	RSB-45D		
Sample number	229222	229223		
Matrix	Soil	Soil		
Units	mg/kg	mg.kg		
Parameters			RPD	Q
TOTAL				
Arsenic	10	4.1	83.69	J
Barium	43	38	12.35	
Cadmium	1.1	0.91	NA	
Chromium	11	7.6	36.56	
Lead	234	172	30.54	
Mercury	ND	ND	NA	
Selenium	0.72	0.56	25.00	
Silver	ND	ND	NA	

Duplicate criteria: Soil <40% if >5X LOQ; ±2 LOQ if <5X LOQ.
J - Denotes %RPD outside criteria.
NA - Cannot be calculated or results <5X LOQ.
ND - Not detected.

FIELD DUPLICATE SUMMARY FORM

Sample description or location	RSB-49C	RSB-49D		
Sample number	230238	230239		
Matrix	Soil	Soil		
Units	mg/kg	mg.kg		
Parameters			RPD	Q
TOTAL				
Arsenic	ND	6.3	NA	
Barium	85	79	7.32	
Cadmium	0.64	0.6	6.45	
Chromium	5.6	11	65.06	J
Lead	186	182	2.17	
Mercury	ND	ND	NA	
Selenium	0.53	1.8	109.01	J
Silver	ND	ND	NA	

Sample description or location	RSB-53B	RSB-53D		
Sample number	230359	230361		
Matrix	Soil	Soil		
Units	mg/kg	mg.kg		
Parameters			RPD	Q
TOTAL				
Arsenic	8.3	9.2	10.29	
Barium	176	137	24.92	
Cadmium	0.58	0.45	25.24	
Chromium	23	27	16.00	
Lead	18	19	5.41	
Mercury	ND	ND	NA	
Selenium	0.93	0.89	4.40	
Silver	ND	ND	NA	

Sample description or location	RSB-55B	RSB-55D		
Sample number	230367	230369		
Matrix	Soil	Soil		
Units	mg/kg	mg.kg		
Parameters			RPD	Q
TOTAL				
Arsenic	359	349	2.82	
Barium	121	92	27.23	
Cadmium	52	52	0.00	
Chromium	12	12	0.00	
Lead	27000	31200	14.43	
Mercury	0.94	0.88	6.59	
Selenium	13.00	14	7.41	
Silver	0.39	0.45	14.29	

Duplicate criteria: Soil <40% if >5X LOQ; ±2 LOQ if <5X LOQ.
J - Denotes %RPD outside criteria.
NA - Cannot be calculated or results <5X LOQ.
ND - Not detected.

FIELD DUPLICATE SUMMARY FORM

Sample description or location	RSB-63B	RSB-63D		
Sample number	232818	232819		
Matrix	Soil	Soil		
Units	mg/kg	mg.kg		
Parameters			RPD	Q
TOTAL				
Arsenic	3.4	5.4	NA	
Barium	35	39	10.81	
Cadmium	1.1	1.3	16.67	
Chromium	6.5	9.1	33.33	
Lead	131	154	16.14	
Mercury	ND	ND	NA	
Selenium	ND	0.63	NA	
Silver	ND	ND	NA	

Sample description or location	RSB-73C	RSB-73D		
Sample number	230206	230207		
Matrix	Soil	Soil		
Units	mg/kg	mg.kg		
Parameters			RPD	Q
TOTAL				
Arsenic	7.6	8.1	6.37	
Barium	86	85	1.17	
Cadmium	0.85	1.2	34.15	
Chromium	11	14	24.00	
Lead	178	179	0.56	
Mercury	ND	ND	NA	
Selenium	1.50	1.5	0.00	
Silver	ND	ND	NA	

Sample description or location	RSB-75B	RSB-75D		
Sample number	229939	229940		
Matrix	Soil	Soil		
Units	mg/kg	mg.kg		
Parameters			RPD	Q
TOTAL				
Arsenic	15	18	18.18	
Barium	61	65	6.35	
Cadmium	2	1.7	16.22	
Chromium	8.7	12	31.88	
Lead	1500	1450	3.39	
Mercury	ND	ND	NA	
Selenium	1.20	1.6	28.57	
Silver	ND	ND	NA	

Duplicate criteria: Soil <40% if >5X LOQ; ±2 LOQ if <5X LOQ.
J - Denotes %RPD outside criteria.
NA - Cannot be calculated or results <5X LOQ.
ND - Not detected.

FIELD DUPLICATE SUMMARY FORM

Sample description or location	RSB-76C	RSB-76D		
Sample number	229932	229933		
Matrix	Soil	Soil		
Units	mg/kg	mg.kg		
Parameters			RPD	Q
TOTAL				
Arsenic	7.7	6	24.82	
Barium	114	89	24.63	
Cadmium	ND	ND	NA	
Chromium	18	9.9	58.06	J
Lead	72	78	8.00	
Mercury	ND	ND	NA	
Selenium	0.73	1.4	NA	
Silver	ND	ND	NA	

Sample description or location	RSB-77B	RSB-77D		
Sample number	230180	230182		
Matrix	Soil	Soil		
Units	mg/kg	mg.kg		
Parameters			RPD	Q
TOTAL				
Arsenic	7.7	8.3	7.50	
Barium	45	44	2.25	
Cadmium	1.6	2.6	NA	
Chromium	10	10	0.00	
Lead	2920	1090	91.27	J
Mercury	ND	ND	NA	
Selenium	0.75	1.6	NA	
Silver	ND	ND	NA	

Sample description or location	RSB-80B	RSB-80D		
Sample number	230273	230274		
Matrix	Soil	Soil		
Units	mg/kg	mg.kg		
Parameters			RPD	Q
TOTAL				
Arsenic	7	17	83.33	J
Barium	62	164	90.27	J
Cadmium	ND	0.93	NA	
Chromium	10	27	91.89	J
Lead	23	80	110.68	J
Mercury	ND	ND	NA	
Selenium	0.52	1.4	NA	
Silver	ND	ND	NA	

Duplicate criteria: Soil <40% if >5X LOQ; ±2 LOQ if <5X LOQ.
J - Denotes %RPD outside criteria.
NA - Cannot be calculated or results <5X LOQ.
ND - Not detected.

FIELD DUPLICATE SUMMARY FORM

Sample description or location	RSB-85B	RSB-85D		
Sample number	230284	230286		
Matrix	Soil	Soil		
Units	mg/kg	mg.kg		
Parameters			RPD	Q
TOTAL				
Arsenic	6.7	6.6	1.50	
Barium	44	46	4.44	
Cadmium	ND	ND	NA	
Chromium	9.9	9.5	4.12	
Lead	8.2	8.6	4.76	
Mercury	ND	ND	NA	
Selenium	0.59	0.56	5.22	
Silver	ND	ND	NA	

Sample description or location	RSED-2B	RSED-2C		
Sample number	230379	230380		
Matrix	Soil	Soil		
Units	mg/kg	mg.kg		
Parameters			RPD	Q
TOTAL				
Arsenic	229	266	14.95	
Barium	90	85	5.71	
Cadmium	81	80	1.24	
Chromium	27	27	0.00	
Lead	4080	5190	23.95	
Mercury	0.74	0.81	9.03	
Selenium	1.90	2.3	19.05	
Silver	ND	ND	NA	

Sample description or location	RSED-6B	RSED-6C		
Sample number	230599	230600		
Matrix	Soil	Soil		
Units	mg/kg	mg.kg		
Parameters			RPD	Q
TOTAL				
Arsenic	114	91	22.44	
Barium	75	65	14.29	
Cadmium	89	92	3.31	
Chromium	22	19	14.63	
Lead	14800	18600	22.75	
Mercury	0.48	0.41	15.73	
Selenium	6.00	4.1	37.62	
Silver	0.24	ND	NA	

Duplicate criteria: Soil <40% if >5X LOQ; ±2 LOQ if <5X LOQ.
J - Denotes %RPD outside criteria.
NA - Cannot be calculated or results <5X LOQ.
ND - Not detected.

FIELD DUPLICATE SUMMARY FORM

Sample description or location	RSED-9B	RSED-9C		
Sample number	230558	230559		
Matrix	Soil	Soil		
Units	mg/kg	mg.kg		
Parameters			RPD	Q
TOTAL				
Arsenic	50	57	13.08	
Barium	115	119	3.42	
Cadmium	23	25	8.33	
Chromium	19	24	23.26	
Lead	14800	17100	14.42	
Mercury	0.17	0.15	12.50	
Selenium	2.40	3.2	28.57	
Silver	ND	0.27	NA	

Duplicate criteria: Soil <40% if >5X LOQ; ±2 LOQ if <5X LOQ.
J - Denotes %RPD outside criteria.
NA - Cannot be calculated or results <5X LOQ.
ND - Not detected.

BEECH GROVE RFI
INORGANIC DATA SUMMARY TABLE
AUGUST 1999

Project Name	Beech Grove	Laboratory	TriMatrix Laboratories
Project Number	98-478-03	Case No.	35132-1, 2, 3, 7, 10-12, 14, 17-19, 22, 23, 25
Sample Date(s)	8/10-8/26, 9/1, 9/20/1999	Method	SW-846 6010B, 7470 & 7471

Sample Location	RSB-44A			RSB-44B			RSB-45A			RSB-45B			RSB-45D			RSB-46A			RSB-46B			RSB-49A			RSB-49B			RSB-49C		
Lab ID	230196			230197			229221			229222			229223			229224			229225			230236			230237			230238		
Matrix	Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil		
Units	mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
Sample Date	8/21/99			8/21/99			8/11/99			8/11/99			8/11/99			8/11/99			8/11/99			8/22/99			8/22/99			8/22/99		
Comments													FD of RSB-45B																	
Parameter	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Arsenic	9.5		1.0	8.9		1.0	6.1	J	1.0	10	J	1.0	4.1	J	1.0	3.9	J	1.0	5.4	J	1.0	20		1.0	1.4		1.0		U	1.0
Barium	57		1.0	75		1.0	33		1.0	43		1.0	38		1.0	42		1.0	50		1.0	131		1.0	154		1.0	85		1.0
Cadmium	1.1		0.50		U	0.50	1.9		0.50	1.1		0.50	0.91		0.50	1.1		0.50	0.75		0.50	3.9		0.50	2.4		0.5	0.64		0.50
Chromium	14		1.0	20		1.0	7.4		1.0	11		1.0	7.6		1.0	5.7		1.0	10		1.0	17	J	1.0	17	J	1.0	5.6	J	1.0
Lead	369		0.60	53		0.60	487		0.60	234		0.60	172		0.60	385		0.60	216		0.60	1060		0.60	663		0.6	186		0.60
Mercury		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.1		U	0.10
Selenium	0.88		0.50	0.85	J	0.50	0.64	U	0.50	0.72	U	0.50	0.56	U	0.50		U	0.50	0.89	U	0.50	1.0	J	0.50	0.75	J	0.5	0.53	J	0.50
Silver		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.2		U	0.20

Sample Location	RSB-49D			RSB-50A			RSB-50B			RSB-50C			RSB-51A			RSB-51B			RSB-51C			RSB-52A			RSB-52B			RSB-52C		
Lab ID	230239			230230			230231			230232			230233			230234			230235			230355			230356			230357		
Matrix	Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil		
Units	mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
Sample Date	8/22/99			8/22/99			8/22/99			8/22/99			8/22/99			8/22/99			8/22/99			8/24/99			8/24/99			8/24/99		
Comments	FD of RSB-49C																													
Parameter	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Arsenic	6.3		1.0	38		1.0	9.0		1.0	12		1.0	169		1.0	77		1.0	43		1.0	6.6		1.0	5.9		1.0	6.9		1.0
Barium	79		1.0	48		1.0	51		1.0	95		1.0	83		1.0	89		1.0	161		1.0	57		1.0	79		1.0	80		1.0
Cadmium	0.60		0.50	14		0.50	3.5		0.50	2.3		0.50	45		0.50	36		0.50	11		0.50		U	0.50	0.51		0.5		U	0.50
Chromium	11	J	1.0	6.7		1.0	7.0		1.0	16		1.0	15		1.0	13		1.0	17		1.0	14	U	1.0	14	U	1.0	15	U	1.0
Lead	182		0.60	5470		0.60	888		0.60	873		0.60	12600		0.60	4430		0.60	3300		0.60	25		0.60	77		0.6	67		0.60
Mercury		U	0.10	0.21		0.10		U	0.10		U	0.10	0.17		0.10	0.12		0.10		U	0.10		U	0.10		U	0.1		U	0.10
Selenium	1.8	J	0.50	1.4		0.50	0.86		0.50	1.1		0.50	7.2	J	0.50	3.1		0.50	1.8		0.50	0.63	J	0.50	0.84		0.5	0.84		0.50
Silver		U	0.20		U	0.20		U	0.20		U	0.20	0.23		0.20	0.23		0.20		U	0.20		UJ	0.20		UJ	0.2		UJ	0.20

DL - Detection Limit prior to any dilutions.
Q - Qualifier.
U - The analyte was not detected at or above the associated value or reflects an adjusted detection limit due to blank contamination.
J - Denotes an estimated result.
FD - Field duplicate.

QA Scientist Dana McCu Date 12/21/99

BEECH GROVE RFI
INORGANIC DATA SUMMARY TABLE
AUGUST 1999

Project Name	Beech Grove	Laboratory	TriMatrix Laboratories
Project Number	98-478-03	Case No.	35132-1, 2, 3, 7, 10-12, 14, 17-19, 22, 23, 25
Sample Date(s)	8/10-8/26, 9/1, 9/20/1999	Method	SW-846 6010B, 7470 & 7471

Sample Location	RSB53A			RSB-53B			RSB-53D			RSB-53C			RSB-54A			RSB-54B			RSB-54C			RSB-55A			RSB-55B			RSB-55D		
Lab ID	230358			230359			230361			230360			230370			230371			230372			230366			230367			230369		
Matrix	Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil		
Units	mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
Sample Date	8/24/99			8/24/99			8/24/99			8/24/99			8/24/99			8/24/99			8/24/99			8/24/99			8/24/99			8/24/99		
Comments							FD of RSB-53B																					FD of RSB-55B		
Parameter	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Arsenic	8.2		1.0	8.3		1.0	9.2		1.0	6.9		1.0	107		1.0	94		1.0	3.4		1.0	323		1.0	359		1.0	349		1.0
Barium	134		1.0	176		1.0	137		1.0	53		1.0	101		1.0	90		1.0	65		1.0	97		1.0	121		1.0	92		1.0
Cadmium		U	0.50	0.58		0.50	0.45		0.50		U	0.50	29		0.50	22		0.50	0.51		0.50	38		0.50	52		0.5	52		0.50
Chromium	24		1.0	23		1.0	27		1.0	10	U	1.0	12		1.0	12		1.0	9.5		1.0	14		1.0	12		1.0	12		1.0
Lead	21		0.6	18		0.6	19		0.6	17		0.6	22800		0.60	17300		0.60	151		0.60	27400		0.60	27000		0.6	31200		0.60
Mercury		U	0.10		U	0.10		U	0.10		U	0.10	0.24	J	0.10	0.20	J	0.10		U	0.10	0.82	J	0.10	0.94	J	0.1	0.88	J	0.10
Selenium	1.2		0.50	0.93		0.50	0.89		0.50	0.55	J	0.50	5.3		0.50	5.5		0.50		U	0.50	12		0.50	13		0.5	14		0.50
Silver		UJ	0.20		UJ	0.20		U	0.20		UJ	0.20	0.31		0.20	0.32		0.20		U	0.20	0.37		0.20	0.39		0.2	0.45		0.20

Sample Location	RSB-55C			RSB-56A			RSB-56B			RSB-56C			RSB-57A			RSB-57B			RSB-57C			RSB-58A			RSB-58B			RSB-58C		
Lab ID	230368			230342			230343			230344			230362			230363			230364			229229			229230			229231		
Matrix	Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil		
Units	mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
Sample Date	8/24/99			8/24/99			8/24/99			8/24/99			8/24/99			8/24/99			8/24/99			8/11/99			8/11/99			8/11/99		
Comments																														
Parameter	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Arsenic	60		1.0	8.6		1.0	7.7		1.0	6.1		1.0	235		1.0	127		1.0	16		1.0	247		1.0	200		1.0	37		1.0
Barium	79		1.0	129		1.0	106		1.0	147		1.0	69		1.0	74		1.0	58		1.0	92		1.0	96		1.0	65		1.0
Cadmium	30		0.50	0.53		0.50	14		0.50	0.87		0.50	25		0.50	23		0.50	3.3		0.50	40		0.50	39		0.5	16		0.50
Chromium	11		1.0	19	U	1.0	39	J	1.0	18	U	1.0	12		1.0	10		1.0	8.8		1.0	10		1.0	16		1.0	8.0		1.0
Lead	13100		0.60	30		0.60	27		0.60	88		0.60	17000		0.60	17400		0.60	3850		0.60	32000		0.60	21000		0.6	11100		0.60
Mercury	0.34	J	0.10		U	0.10		U	0.10		U	0.10	0.65	J	0.10	0.33	J	0.10		U	0.10	0.94		0.10	0.45		0.1	0.19		0.10
Selenium	5.4		0.50	1.4		0.50	0.98		0.50	0.83		0.50	9.7		0.50	4.2		0.50	1.4	J	0.50	8.3	J	0.50	7.8		0.5	2.7	U	0.50
Silver	0.22		0.20		UJ	0.20		UJ	0.20		UJ	0.20	0.27		0.20	0.41		0.20		U	0.20	0.38		0.20	0.32		0.2		U	0.20

DL - Detection Limit prior to any dilutions.
Q - Qualifier.
U - The analyte was not detected at or above the associated value or reflects an adjusted detection limit due to blank contamination.
J - Denotes an estimated result.
FD - Field duplicate.

QA Scientist [signature] Date 12/21/99

BEECH GROVE RFI
INORGANIC DATA SUMMARY TABLE
AUGUST 1999

Project Name	Beech Grove	Laboratory	TriMatrix Laboratories
Project Number	98-478-03	Case No.	35132-1, 2, 3, 7, 10-12, 14, 17-19, 22, 23, 25
Sample Date(s)	8/10-8/26, 9/1, 9/20/1999	Method	SW-846 6010B, 7470 & 7471

Sample Location	RSB-63A			RSB-63B			RSB-63D			RSB-64A			RSB-64B			RSB-65A			RSB-65B			RSB-66A			RSB-66B			RSB-67A		
Lab ID	232817			232818			232819			232811			232812			230186			230187			230184			230185			230188		
Matrix	soil			soil			soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil		
Units	mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
Sample Date	9/20/99			9/20/99			9/20/99			9/20/99			9/20/99			8/21/99			8/21/99			8/21/99			8/21/99			8/21/99		
Comments							FD of RSB-63B																							
Parameter	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Arsenic	16	J	1.0	3.4	J	1.0	5.4	J	1.0	32	J	1.0	9.8	J	1.0	7.3		1.0	6.6		1.0	8.5		1.0	8.1		1.0	9.1		1.0
Barium	67	J	1.0	35	J	1.0	39	J	1.0	63	J	1.0	68	J	1.0	60		1.0	48		1.0	73		1.0	78		1.0	67		1.0
Cadmium	8.3		0.50	1.1		0.50	1.3		0.50	7.5		0.50	6.8		0.50	0.54		0.50		U	0.50	0.75		0.50	0.72		0.5	0.94		0.50
Chromium	13		1.0	6.5		1.0	9.1		1.0	13		1.0	11		1.0	10		1.0	9.2		1.0	16		1.0	12		1.0	13		1.0
Lead	1330		0.60	131		0.60	154		0.60	1470		0.60	214		0.60	126	J	0.60	13	J	0.60	222	J	0.60	106	J	0.6	225	J	0.60
Mercury		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.1		U	0.10
Selenium	1.2	J	0.50		UJ	0.50	0.63	J	0.50	0.99	J	0.50	0.74	J	0.50	1.3	J	0.50	0.83		0.50	0.98		0.50	0.73		0.5	1.2		0.50
Silver		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.2		U	0.20

Sample Location	RSB-67B			RSB-68A			RSB-68B			RSB-69A			RSB-69B			RSB-69C			RSB-70A			RSB-70B			RSB-70C			RSB-71A		
Lab ID	230189			230190			230191			232813			232814			232815			232808			232809			232810			230208		
Matrix	Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil		
Units	mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
Sample Date	8/21/99			8/21/99			8/21/99			9/20/99			9/20/99			9/20/99			9/20/99			9/20/99			9/20/99			8/21/99		
Comments																														
Parameter	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Arsenic	6.4		1.0	7.3		1.0	6.7		1.0	55	J	1.0	13	J	1.0	5.6	J	1.0	212	J	1.0	323	J	1.0	5.5	J	1.0	215		1.0
Barium	57		1.0	63		1.0	59		1.0	51	J	1.0	62	J	1.0	204	J	1.0	23	J	1.0	48	J	1.0	37	J	1.0	264		1.0
Cadmium	0.77		0.50	0.75		0.50	0.63		0.50	13		0.50	8.6		0.50	0.87		0.50	24		0.50	40		0.50	0.36		0.5	15		0.50
Chromium	8.5		1.0	11		1.0	11		1.0	11		1.0	7.9		1.0	13		1.0	6.0		1.0	11		1.0	9.0		1.0	16		1.0
Lead	141	J	0.60	201	J	0.60	128	J	0.60	2750		0.60	678		0.60	54		0.60	6420		0.60	13100		0.60	11		0.6	66800		0.60
Mercury		U	0.10		U	0.10		U	0.10	0.14		0.10	0.12		0.10		U	0.10	0.42		0.10	0.66		0.10		U	0.1	0.12		0.10
Selenium	0.72		0.50	0.79		0.50	1.2	J	0.50	1.6	J	0.50	0.84	J	0.50	0.68	J	0.50	0.98	J	0.50	1.9	J	0.50	0.68	J	0.5	8.3		0.50
Silver		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.2	1.4		0.20

DL - Detection Limit prior to any dilutions.
Q - Qualifier.
U - The analyte was not detected at or above the associated value or reflects an adjusted detection limit due to blank contamination.
J - Denotes an estimated result.
FD - Field duplicate.

QA Scientist Diane Mu Date 12/21/99

BEECH GROVE RFI
INORGANIC DATA SUMMARY TABLE
AUGUST 1999

Project Name	Beech Grove	Laboratory	TriMatrix Laboratories
Project Number	98-478-03	Case No.	35132-1, 2, 3, 7, 10-12, 14, 17-19, 22, 23, 25
Sample Date(s)	8/10-8/26, 9/1, 9/20/1999	Method	SW-846 6010B, 7470 & 7471

Sample Location	RSB-72A			RSB-72B			RSB-72C			RSB-73A			RSB-73B			RSB-73C			RSB-73D			RSB-74A			RSB-74B			RSB-74C		
Lab ID	230209			230210			230211			230204			230205			230206			230207			229934			229235			229236		
Matrix	Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil		
Units	mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
Sample Date	8/21/99			8/21/99			8/21/99			8/21/99			8/21/99			8/21/99			8/21/99			8/20/99			8/20/99			8/20/99		
Comments																			FD of RSB-73C											
Parameter	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Arsenic	8.7		1.0	7.0		1.0	8.2		1.0	18		1.0	11		1.0	7.6		1.0	8.1		1.0	13	J	1.0	9.0	J	1.0	4.9	J	1.0
Barium	57		1.0	44		1.0	37		1.0	109		1.0	181	J	1.0	86		1.0	85		1.0	134	J	1.0	133	J	1.0	124	J	1.0
Cadmium		U	0.50		U	0.50		U	0.50	33		0.50	1.1		0.50	0.85		0.50	1.2		0.50	0.70		0.50		U	0.5	0.55		0.50
Chromium	10		1.0	8.0		1.0	9.0		1.0	29		1.0	26		1.0	11		1.0	14		1.0	16	J	1.0	19	J	1.0	14	J	1.0
Lead	34	U	0.60	15	U	0.60	15	U	0.60	6710		0.60	145	J	0.60	178		0.60	179		0.60	380	J	0.60	177	J	0.6	75	J	0.60
Mercury		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.1		U	0.10
Selenium		U	0.50	0.51		0.50	1.3	J	0.50	2.5		0.50	1.5	J	0.50	1.5		0.50	1.5		0.50	1.1	J	0.50	0.77	J	0.5	0.55	J	0.50
Silver		U	0.20		U	0.20		U	0.20	2.6		0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.2		U	0.20

Sample Location	RSB-75A			RSB-75B			RSB-75D			RSB-75C			RSB-76A			RSB-76B			RSB-76C			RSB-76D			RSB-77A			RSB-77B		
Lab ID	229938			229939			229940			229941			229930			229931			229932			229933			230179			230180		
Matrix	Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil		
Units	mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
Sample Date	8/20/99			8/20/99			8/20/99			8/20/99			8/20/99			8/20/99			8/20/99			8/20/99			8/20/99			8/20/99		
Comments							FD of RSB-75B															FD of RSB-76C								
Parameter	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Arsenic	58	J	1.0	15	J	1.0	18	J	1.0	12	J	1.0	24	J	1.0	10	J	1.0	7.7	J	1.0	6.0	J	1.0	7.0		1.0	7.7		1.0
Barium	203	J	1.0	61	J	1.0	65	J	1.0	54	J	1.0	115	J	1.0	193	J	1.0	114	J	1.0	89	J	1.0	46		1.0	45		1.0
Cadmium	7.3		0.50	2.0		0.50	1.7		0.50	1.9		0.50	6.2		0.50	1.8		0.50		U	0.50		U	0.50	0.80		0.5	1.6		0.50
Chromium	19		1.0	8.7		1.0	12		1.0	11		1.0	22	J	1.0	16	J	1.0	18	J	1.0	9.9	J	1.0	9.8		1.0	10		1.0
Lead	3220	J	0.60	1500	J	0.60	1450	J	0.60	962	J	0.60	4.7	U	0.6	648	J	0.60	72	J	0.60	78	J	0.60	10700	J	0.6	2920	J	0.60
Mercury		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.1		U	0.10
Selenium	5.2	J	0.50	1.2	J	0.50	1.6	J	0.50	0.99	J	0.50	2.0	J	0.50	0.93	J	0.50	0.73	J	0.50	1.4	J	0.50	1.5		0.5	0.75		0.50
Silver		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.2		U	0.20

DL - Detection Limit prior to any dilutions.
Q - Qualifier.
U - The analyte was not detected at or above the associated value or reflects an adjusted detection limit due to blank contamination.
J - Denotes an estimated result.
FD - Field duplicate.

QA Scientist Denise Marie Date 12/21/99

BEECH GROVE RFI
INORGANIC DATA SUMMARY TABLE
AUGUST 1999

Project Name	Beech Grove	Laboratory	TriMatrix Laboratories
Project Number	98-478-03	Case No.	35132-1, 2, 3, 7, 10-12, 14, 17-19, 22, 23, 25
Sample Date(s)	8/10-8/26, 9/1, 9/20/1999	Method	SW-846 6010B, 7470 & 7471

Sample Location	RSB-77D			RSB-77C			RSB-78A			RSB-78B			RSB-78C			RSB-79A			RSB-79B			RSB-79C			RSB-80A			RSB-80B		
Lab ID	230182			230181			230241			230242			230243			230276			230277			230278			230271			230272		
Matrix	Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil		
Units	mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
Sample Date	8/20/99			8/20/99			8/23/99			8/23/99			8/23/99			8/23/99			8/23/99			8/23/99			8/23/99			8/23/99		
Comments	FD of RSB-77B																													
Parameter	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Arsenic	8.3		1.0	6.6		1.0	14		1.0	12		1.0	13		1.0	8.5	J	1.0	6.9	J	1.0	8.1	J	1.0	7.4	J	1.0	7.0	J	1.0
Barium	44		1.0	44		1.0	132		1.0	64		1.0	62		1.0	167	J	1.0	62	J	1.0	89	J	1.0	215	J	1.0	62	J	1.0
Cadmium	2.6		0.50	0.53		0.50	12		0.50	8.6		0.50	9.3		0.50	1.6		0.50	6.4		0.50	3.8		0.50		U	0.5		U	0.50
Chromium	10		1.0	9.5		1.0	14	J	1.0	8.7	J	1.0	10	J	1.0	22	J	1.0	11	J	1.0	14	J	1.0	14	J	1.0	10	J	1.0
Lead	1090	J	0.60	232	J	0.60	3060		0.60	2600		0.60	2960		0.60	57	J	0.60	205	J	0.60	164	J	0.60	85	J	0.6	23	U	0.6
Mercury		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.1		U	0.10
Selenium	1.6		0.50	1.3	J	0.50	1.8	J	0.50	1.1	J	0.50	2.1	J	0.50	1.1		0.50	0.54		0.50	0.91		0.50	1.1		0.5	0.52		0.50
Silver		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.2		U	0.20

Sample Location	RSB-80D			RSB-80C			RSB-81A			RSB-81B			RSB-81C			RSB-82A			RSB-82B			RSB-82C			RSB-83A			RSB-83B		
Lab ID	230274			230273			230244			230245			230270			230287			230288			230289			230279			230280		
Matrix	Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil		
Units	mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
Sample Date	8/23/99			8/23/99			8/23/99			8/23/99			8/23/99			8/23/99			8/23/99			8/23/99			8/23/99			8/23/99		
Comments	FD of RSB-80B																													
Parameter	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Arsenic	17	J	1.0	6.7	J	1.0	9.4		1.0	9.3		1.0	7.0		1.0	8.5		1.0	24		1.0	9.3		1.0	9.9	J	1.0	7.4	J	1.0
Barium	164	J	1.0	55	J	1.0	112		1.0	157		1.0	91		1.0	93		1.0	300		1.0	92		1.0	115	J	1.0	47	J	1.0
Cadmium	0.93		0.50		U	0.50	0.62		0.50	0.54		0.50		U	0.50		U	0.50	0.90		0.50		U	0.50		U	0.5		U	0.50
Chromium	27	J	1.0	9.4	J	1.0	18	J	1.0	19	J	1.0	11	J	1.0	27		1.0	53		1.0	16		1.0	19	J	1.0	10	J	1.0
Lead	80	J	0.60	23	U	0.6	229	J	0.60	18	U	0.6	11	U	0.6	16	J	0.60	37	J	0.60	16	J	0.60	17	U	0.6	11	U	0.6
Mercury		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.1		U	0.10
Selenium	1.4		0.50	0.55		0.50	1.6	J	0.50	0.64	J	0.50	0.62	J	0.50	0.65		0.50	2.2		0.50	0.67		0.50	1.0		0.5		U	0.50
Silver		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.2		U	0.20

DL - Detection Limit prior to any dilutions.
Q - Qualifier.
U - The analyte was not detected at or above the associated value or reflects an adjusted detection limit due to blank contamination.
J - Denotes an estimated result.
FD - Field duplicate.

QA Scientist Denise M[illegible] Date 10/21/99

BEECH GROVE RFI
INORGANIC DATA SUMMARY TABLE
AUGUST 1999

Project Name	Beech Grove	Laboratory	TriMatrix Laboratories
Project Number	98-478-03	Case No.	35132-1, 2, 3, 7, 10-12, 14, 17-19, 22, 23, 25
Sample Date(s)	8/10-8/26, 9/1, 9/20/1999	Method	SW-846 6010B, 7470 & 7471

Sample Location	RSB-83C			RSB-84A			RSB-84B			RSB-84C			RSB-85A			RSB-85B			RSB-85D			RSB-85C			RSB-AA			RSB-AB		
Lab ID	230281			230290			230291			230330			230283			230284			230286			230285			229446			229447		
Matrix	Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil		
Units	mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
Sample Date	8/23/99			8/23/99			8/23/99			8/23/99			8/23/99			8/23/99			8/23/99			8/23/99			8/16/99			8/16/99		
Comments																			FD of RSB-85B											
Parameter	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Arsenic	16	J	1.0	10		1.0	15		1.0	5.7	J	1.0	7.1		1.0	6.7		1.0	6.6		1.0	7.0		1.0	10		1.0	7.1		1.0
Barium	81	J	1.0	181		1.0	110	J	1.0	48		1.0	55		1.0	44		1.0	46		1.0	40		1.0	77		1.0	75		1.0
Cadmium	2.0		0.50		U	0.50	0.96		0.50		U	0.50		U	0.50		U	0.50		U	0.50		U	0.50	2.5		0.5	1.2		0.50
Chromium	23	J	1.0	23		1.0	26		1.0	9.0	U	1.0	8.7		1.0	9.9		1.0	9.5		1.0	10		1.0	13		1.0	11		1.0
Lead	31	J	0.60	16	J	0.60	21	J	0.60	12		0.60	9.1	J	0.60	8.2	J	0.60	8.6	J	0.60	8.7	J	0.60	966		0.6	269		0.60
Mercury		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.10		U	0.1		U	0.10
Selenium	1.2		0.50	0.91		0.50	1.3		0.50	0.60	J	0.50		U	0.50	0.59		0.50	0.56		0.50	0.62		0.50	0.96	U	0.5	0.66	U	0.50
Silver		U	0.20		U	0.20		UJ	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.20		U	0.2		U	0.20

Sample Location	RSB-BA			RSB-BB			RSED-1A			RSED-1B			RSED-2A			RSED-2B			RSED-2C			RSED-3A			RSED-3B			RSED-4A		
Lab ID	229448			229449			230376			230377			230378			230379			230380			230381			230382			230383		
Matrix	Soil			Soil			Sediment			Sediment			Sediment			Sediment			Sediment			Sediment			Sediment			Sediment		
Units	mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
Sample Date	8/16/99			8/16/99			8/22/99			8/22/99			8/22/99			8/22/99			8/22/99			8/22/99			8/22/99			8/22/99		
Comments																			FD of RSED-2B											
Parameter	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Arsenic	19		1.0	8.4		1.0	310		1.0	263		1.0	713		1.0	229		1.0	266		1.0	740		1.0	184		1.0	2300		1.0
Barium	54		1.0	66		1.0	118		1.0	140		1.0	147		1.0	90		1.0	85		1.0	205		1.0	101		1.0	372		1.0
Cadmium	5.5		0.50	1.3		0.50	55		0.50	41		0.50	93		0.50	81		0.50	80		0.50	54		0.50	37		0.5	109		0.50
Chromium	12		1.0	11		1.0	19		1.0	14		1.0	17		1.0	27		1.0	27		1.0	15		1.0	20		1.0	8.3		1.0
Lead	2430		0.60	490		0.60	19300		0.60	29900		0.60	73800		0.60	4080		0.60	5190		0.60	95300		0.60	8420		0.6	24300		0.60
Mercury	0.12		0.10		U	0.10	3.2		0.10	4.8		0.10	6.8		0.10	0.74		0.10	0.81		0.10	12		0.10	1.0	J	0.1	10		0.10
Selenium	1.1	U	0.50	0.69	U	0.50	7.3		0.50	10		0.50	10		0.50	1.9		0.50	2.3		0.50	15		0.50	2.5		0.5	46	J	0.50
Silver		U	0.20		U	0.20	0.65		0.20	0.86		0.20	1.0		0.20		U	0.20		U	0.20	1.6		0.20	0.24		0.2	3.6		0.20

DL - Detection Limit prior to any dilutions.
Q - Qualifier.
U - The analyte was not detected at or above the associated value or reflects an adjusted detection limit due to blank contamination.
J - Denotes an estimated result.
FD - Field duplicate.

QA Scientist Denise Mc[illegible] Date 12/20/99

BEECH GROVE RFI
INORGANIC DATA SUMMARY TABLE
AUGUST 1999

Project Name	Beech Grove	Laboratory	TriMatrix Laboratories
Project Number	98-478-03	Case No.	35132-1, 2, 3, 7, 10-12, 14, 17-19, 22, 23, 25
Sample Date(s)	8/10-8/26, 9/1, 9/20/1999	Method	SW-846 6010B, 7470 & 7471

Sample Location	RSED-4B			RSED-5A			RSED-5B			RSED-6A			RSED-6B			RSED-6C			RSED-7A			RSED-7B			RSED-8A			RSED-8B		
Lab ID	230384			230385			230386			230598			230599			230600			230596			230597			230560			230561		
Matrix	Sediment			Sediment			Sediment			Sediment			Sediment			Sediment			Sediment			Sediment			Sediment			Sediment		
Units	mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
Sample Date	8/22/99			8/22/99			8/22/99			8/25/99			8/25/99			8/25/99			8/25/99			8/25/99			8/25/99			8/25/99		
Comments																FD of RSED-6B														
Parameter	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Arsenic	531		1.0	1230		1.0	3880		1.0	305		1.0	114		1.0	91		1.0	170		1.0	78		1.0	159		1.0	103		1.0
Barium	104		1.0	271		1.0	239		1.0	91		1.0	75		1.0	65		1.0	95		1.0	111		1.0	87		1.0	97		1.0
Cadmium	55		0.50	149		0.50	661		0.50	167	J	0.50	89		0.50	92		0.50	65	J	0.50	34	J	0.50	65		0.5	45		0.50
Chromium	29		1.0	12		1.0	8.6		1.0	27		1.0	22		1.0	19		1.0	18		1.0	19		1.0	21		1.0	25		1.0
Lead	17300		0.60	228000		0.60	182000		0.60	57200	J	0.60	14800		0.60	18600		0.60	46000	J	0.60	20500	J	0.60	34800		0.6	25900		0.60
Mercury	4.2		0.10	5.7		0.10	5.6		0.10	1.2		0.10	0.48		0.10	0.41		0.10	0.60		0.10	0.39		0.10	0.48		0.1	0.37		0.10
Selenium	3.3		0.50	19		0.50	12		0.50	26		0.50	6.0		0.50	4.1		0.50	10		0.50	4.3		0.50	5.9		0.5	3.8		0.50
Silver	0.33		0.20	1.7	J	0.20	1.4		0.20	0.84		0.20	0.24		0.20		U	0.20	0.62		0.20	0.26		0.20	0.45		0.2	0.35		0.20

Sample Location	RSED-9A			RSED-9B			RSED-9C			RSED-10A			RSED-10B			RSED-11A			RSED-12A			EQ-1			EQ-2			EQ-3		
Lab ID	230557			230558			230559			230554			230555			230552			230553			228732			228740			229228		
Matrix	Sediment			Sediment			Sediment			Sediment			Sediment			Sediment			Sediment			Aqueous			Aqueous			Aqueous		
Units	mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			ug/L			ug/L			ug/L		
Sample Date	8/25/99			8/25/99			8/25/99			8/25/99			8/25/99			8/25/99			8/25/99			8/10/99			8/10/99			8/11/99		
Comments							FD of RSED-9B															Equipment Blank			Equipment Blank			Equipment Blank		
Parameter	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Arsenic	124		1.0	50		1.0	57		1.0	96		1.0	61		1.0	571		1.0	1150		1.0		U	1.0		U	1.0		U	1.0
Barium	82		1.0	115		1.0	119		1.0	73		1.0	94		1.0	81		1.0	134		1.0		U	10		U	10		U	10
Cadmium	64		0.50	23		0.50	25		0.50	50		0.50	34		0.50	309	J	0.50	486	J	0.50		U	0.2		U	0.2		U	0.2
Chromium	27		1.0	19		1.0	24		1.0	18		1.0	18		1.0	41		1.0	25		1.0		U	1.0		U	1.0		U	1.0
Lead	32400		0.60	14800		0.60	17100		0.60	29300		0.60	15300		0.60	218000	J	0.60	172000	J	0.60	6.5		1.0		U	1.0	3.8		1.0
Mercury	0.41		0.10	0.17		0.10	0.15		0.10	0.28		0.10	0.17		0.10	6.4		0.10	3.3		0.10		U	0.2		U	0.2		U	0.2
Selenium	6.1		0.50	2.4		0.50	3.2		0.50	4.8		0.50	2.5		0.50	126		0.50	52		0.50		U	2.0		U	2.0		U	2.0
Silver	0.40		0.20			0.20	0.27		0.20	0.32		0.20		U	0.20	2.2		0.20	2.1		0.20		U	0.2		U	0.2		U	0.2

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J - Denotes an estimated result.
FD - Field duplicate.

QA Scientist Dan McGuire Date 12/21/99

BEECH GROVE RFI
INORGANIC DATA SUMMARY TABLE
AUGUST 1999

Project Name	Beech Grove	Laboratory	TriMatrix Laboratories
Project Number	98-478-03	Case No.	35132-1, 2, 3, 7, 10-12, 14, 17-19, 22, 23, 25
Sample Date(s)	8/10-8/26, 9/1, 9/20/1999	Method	SW-846 6010B, 7470 & 7471

Sample Location	EQ-4			EQ-5			EQ-6			EQ-7			EQ-23			EQ-29			EQ-36			EQ-37			EQ-38			EQ-39		
Lab ID	229242			229237			229438			229452			229929			229937			230183			230192			230203			230214		
Matrix	Aqueous			Aqueous			Aqueous			Aqueous			Aqueous			Aqueous			Aqueous			Aqueous			Aqueous			Aqueous		
Units	ug/L			ug/L			ug/L			ug/L			ug/L			ug/L			ug/L			ug/L			ug/L			ug/L		
Sample Date	8/12/99			8/13/99			8/16/99			8/16/99			8/19/99			8/20/99			8/21/99			8/21/99			8/21/99			8/22/99		
Comments	Equipment Blank			Equipment Blank			Equipment Blank			Equipment Blank			Equipment Blank			Equipment Blank			Equipment Blank			Equipment Blank			Equipment Blank			Equipment Blank		
Parameter	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Arsenic	NA				U	1.0		U	1.0		U	1.0		U	1.0		U	1.0		U	1.0		U	1.0		U	1.0		U	1.0
Barium	NA				U	10		U	10		U	10		U	10		U	10		U	10		U	10		U	10		U	10
Cadmium		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2
Chromium	NA				U	1.0		U	1.0	1.1		1.0		U	1.0		U	1.0	1.1		1.0		U	1.0	1.2		1.0		U	1.0
Lead	28		1	3.4		1.0	3.4		1.0	3.9		1.0	13		1.0	47		1.0	6.5		1.0	2.2		1.0	4.0		1.0	9.0		1.0
Mercury	NA				U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2
Selenium	NA				U	2.0		U	2.0		U	2.0		U	2.0		U	2.0		U	2.0		U	2.0		U	2.0		U	2.0
Silver	NA				U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2

Sample Location	EQ-40			EQ-41			EQ-42			EQ-46			EQ-47			EQ-56			EQ-57			EQ-58			EQ-59		
Lab ID	230226			230240			230377			230275			230282			230333			230341			230354			230365		
Matrix	Aqueous			Aqueous			Aqueous			Aqueous			Aqueous			Aqueous			Aqueous			Aqueous			Aqueous		
Units	ug/L			ug/L			ug/L			ug/L			ug/L			ug/L			ug/L			ug/L			ug/L		
Sample Date	8/22/99			8/22/99			8/22/99			8/23/99			8/23/99			8/24/99			8/24/99			8/24/99			8/24/99		
Comments	Equipment Blank			Equipment Blank			Equipment Blank			Equipment Blank			Equipment Blank			Equipment Blank			Equipment Blank			Equipment Blank			Equipment Blank		
Parameter	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL	Result	Q	DL
Arsenic		U	1.0		U	1.0		U	1.0		U	1.0		U	1.0		U	1.0		U	1.0		U	1.0		U	1.0
Barium		U	10		U	10		U	10		U	10		U	10		U	10		U	10		U	10		U	10
Cadmium		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2
Chromium		U	1.0		U	1.0		U	1.0		U	1.0		U	1.0		U	1.0		U	1.0		U	1.0		U	1.0
Lead	2.9		1.0	2.9		1.0	57		1.0	50		1.0	28		1.0	5.0		1.0	5.0		1.0	7.9		1.0	17		1.0
Mercury		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2
Selenium		U	2.0		U	2.0		U	2.0		U	2.0		U	2.0		U	2.0		U	2.0		U	2.0		U	2.0
Silver		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2		U	0.2

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Q - Qualifier.
U - The analyte was not detected at or above the associated value or reflects an adjusted detection limit due to blank contamination.
J - Denotes an estimated result.
FD - Field duplicate.

QA Scientist Dana McCann Date 12/21/99

BEECH GROVE RFI
INORGANIC DATA SUMMARY TABLE
AUGUST 1999

Project Name	Beech Grove
Project Number	98-478-03
Sample Date(s)	8/10-8/26, 9/1, 9/20/1999

Laboratory	TriMatrix Laboratories
Case No.	35132-1, 2, 3, 7, 10-12, 14, 17-19, 22, 23, 25
Method	SW-846 6010B, 7470 & 7471

Sample Location	EQ-66			EQ-67			EQ-70		
Lab ID	230566			230601			232816		
Matrix	Aqueous			Aqueous			Soil		
Units	ug/L			ug/L			mg/kg		
Sample Date	8/25/99			8/25/99			9/20/99		
Comments	Equipment Blank			Equipment Blank			Equipment Blank		
Parameter	Result	Q	DL	Result	Q	DL	Result	Q	DL
Arsenic		U	1.0		U	1.0		U	1.0
Barium		U	10		U	10		U	10
Cadmium	0.2		0.2		U	0.2		U	0.2
Chromium	1.5		1.0		U	1.0		U	1.0
Lead	184		1.0	54		1.0	2.3		1.0
Mercury		U	0.2		U	0.2		U	0.2
Selenium		U	2.0		U	2.0		U	2.0
Silver		U	0.2		U	0.2		U	0.2

DL - Detection Limit prior to any dilutions.
Q - Qualifier.
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J - Denotes an estimated result.
FD - Field duplicate.

QA Scientist Dean Hamm Date 12/21/99

VOLATILES DATA
SUPPORT DOCUMENTATION
35132-24

VOLATILE DATA VALIDATION SUMMARY

Site Name: RMC - Beech Grove
Project Number: 98-478-03
Sampling Date(s): 9/1/99

Laboratory: TriMatrix
Case/Order No.: 35132-4

Compound List: ☐ TCL ☐ Priority Pollutant ☐ Appendix IX ☑ Other BTE, Cumene, Napthalene

Method: ☐ CLP SOW 3/90 ☐ 40 CFR 136 ☑ SW-846 Method 8260B ☐ Other _____

The following table indicates the data validation criteria examined, any problems identified, and the QA action applied.

Data Validation Criteria:	Accept	FYI	Qualify	Comments
Holding Times	✓			received @ 3°C
GC/MS Tuning	✓			criteria reported for USEPA National guidelines, but also meets 8260B tuning criteria
Initial Calibrations	✓			
Continuing Calibrations			✓	Napthalene %D >20 for EQB-1
Blank Analysis Results		✓		did not report Napthalene and * isopropylbenzene for method blanks
System Monitoring/Surrogate Results	✓		✓	231363 - surr 1 is <control limit and greater 10% - UJ results
MS/MSD Results	✓			
Field Duplicate Results	✓	✓		NA
Internal Standard Areas/RT	✓			
Target Compound Identification	✓			
TIC Identification		✓		NA
Quantitation/Detection Limits	✓			
System Performance	✓			
Overall Assessment of Data	✓			
Other: LCS	✓			

rec'd new forms 11/9/9 MAIC

General Comments: * Napthalene present in method blank BLK0913A @ 11ug/L no hits in sample so no qualifier applies.

Accept - No qualification required.
FYI - For your information only, no qualification necessary.
Qualify - Qualify as rejected, estimated or biased.
NR - Not Reviewed
NA - Not Applicable

QA Scientist M. Ritchie
Date 10/20/99

Evaluate Continuing Calibration Report FORM 7

Data File : C:\HPCHEM\1\DATA\40P0913B.D
Acq On : 13 SEP 1999 17:38
Sample :
Misc :
MS Integration Params: rteint.p

Vial: 0
Operator:
Inst :
Multiplr: 1.00

Associated Samples: EQB-1 Napthalene %D 720

Method : C:\SAT132\QUANT\8260B-11.M (RTE Integrator)
Title : Saturn 132
Last Update : Mon Aug 23 08:53:45 1999
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	IS: Flourobenzene	1.000	1.000	0.0	82	0.00
2	T	Dichlorodifluoromethane	0.266	0.151	43.2#	42#	-0.03
3	TP	Chloromethane	0.237	0.206	13.1	70	0.03
4	TC	Vinyl Chloride	0.172	0.157	8.7	69	0.00
5	T	Bromomethane	0.239	0.217	9.2	78	0.00
6	T	Chloroethane	0.037	0.035	5.4	72	-0.02
7	T	Trichlorofluoromethane	0.473	0.491	-3.8	74	-0.01
8	T	Ethyl Ether	0.164	0.176	-7.3	83	0.00
9	T	Acrolein	0.017	0.000	100.0#	1#	0.05
10	TCM	1,1-Dichloroethene	0.211	0.209	0.9	78	0.00
11	T	Trichlorotrifluoroethane	0.320	0.299	6.6	70	0.03
12	T	Iodomethane	0.658	0.562	14.6	69	0.00
[illegible]	T	Carbon Disulfide	0.398	0.354	11.1	69	-0.01
[illegible]	T	Acetone	0.146	0.181	-24.0	97	0.00
15	T	Isopropanol	0.012	0.009	25.0	65	-0.01
16	T	Methylene Chloride	0.675	0.637	5.6	75	0.00
17	T	Acrylonitrile	0.183	0.000	100.0#	0#	-0.05
18	T	trans-1,2-Dichloroethene	0.253	0.238	5.9	76	0.00
19	T	Methyl(tert)Butyl Ether	0.558	0.545	2.3	79	-0.01
20	TP	1,1-Dichloroethane	0.282	0.258	8.5	73	0.00
21	T	Vinyl Acetate	0.694	0.716	-3.2	81	0.00
22	T	2,2-Dichloropropane	0.308	0.234	24.0	62	0.00
23	T	cis-1,2-Dichloroethene	0.296	0.287	3.0	78	0.00
24	T	Methyl Ethyl Ketone	0.161	0.216	-34.2#	112	0.00
25	T	Bromochloromethane	0.510	0.494	3.1	76	0.00
26	TC	Chloroform	0.492	0.455	7.5	77	0.01
27	T	1,1,1-Trichloroethane	0.561	0.553	1.4	76	0.00
28	S	SUR: Dibromofluoromethane	0.357	0.315	11.8	77	-0.01
29	T	Carbon Tetrachloride	0.507	0.417	17.8	64	0.00
30	T	1,1-Dichloropropene	0.289	0.281	2.8	77	0.00
31	TM	Benzene	0.881	0.851	3.4	78	0.00
32	T	1,2-Dichloroethane	0.427	0.396	7.3	75	0.00
33	T	Heptane	0.346	0.366	-5.8	82	0.00
34	S	SUR: 1,2-Dichloroethane-d4	0.356	0.313	12.1	72	-0.01
35	TM	Trichloroethene	0.301	0.281	6.6	75	0.00
36	TC	1,2-Dichloropropane	0.167	0.158	5.4	75	0.00
37	T	Dibromomethane	0.288	0.258	10.4	71	0.00
38	T	Bromodichloromethane	0.415	0.362	12.8	70	0.00
[illegible]	T	2-Chloroethyl Vinyl Ether	0.114	0.115	-0.9	82	0.00
40	T	cis-1,3-Dichloropropene	0.389	0.341	12.3	70	0.00
41	T	4-Methyl-2-Pentanone	0.261	0.296	-13.4	96	0.00

(#) = Out of Range

MNR 10/20/99

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\1\DATA\40P0913B.D Vial: 0
Acq On : 13 SEP 1999 17:38 Operator:
Sample : Inst :
Misc : Multiplr: 1.00
MS Integration Params: rteint.p

Method : C:\SAT132\QUANT\8260B-11.M (RTE Integrator)
Title : Saturn 132
Last Update : Mon Aug 23 08:53:45 1999
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
42	S	SUR: d8-Toluene	1.249	1.120	10.3	78	0.00
43	I	IS: d5-Chlorobenzene	1.000	1.000	0.0	74	0.00
44	TCM	Toluene	3.604	3.857	-7.0	77	0.02
45	T	trans-1,3-Dichloropropene	0.852	0.867	-1.8	73	0.00
46	T	1,1,2-Trichloroethane	0.453	0.433	4.4	68	0.00
47	T	Tetrachloroethene	0.540	0.535	0.9	70	0.00
48	T	1,3-Dichloropropane	0.591	0.592	-0.2	78	0.00
49	T	2-Hexanone	0.449	0.538	-19.8	81	0.00
50	T	Dibromochloromethane	1.058	0.993	6.1	68	0.00
51	T	1,2-Dibromoethane	0.929	0.914	1.6	72	-0.01
52	TPM	Chlorobenzene	1.999	2.169	-8.5	75	0.00
53	T	1,1,1,2-Tetrachloroethane	0.782	0.785	-0.4	70	0.00
[illegible]	TC	Ethyl Benzene	3.692	3.821	-3.5	77	0.00
[illegible]	T	m/p-Xylene	3.308	3.493	-5.6	75	0.00
56	T	o-Xylene	3.494	3.435	1.7	71	0.00
57	T	Styrene	2.075	2.130	-2.7	74	0.00
58	TP	Bromoform	0.685	0.578	15.6	64	-0.01
59	T	Isopropylbenzene	3.145	3.044	3.2	69	0.00
60	S	Sur: 4-Bromofluorobenzene	1.236	1.234	0.2	75	0.00
61	I	IS: d4-1,4-Dichlorobenzene	1.000	1.000	0.0	63	0.00
62	T	1,4-trans-2-dichlorobutene	0.422	0.393	6.9	64	0.00
63	T	Bromobenzene	1.210	1.332	-10.1	77	0.00
64	TP	1,1,2,2-Tetrachloroethane	0.756	0.684	9.5	60	0.00
65	T	1,2,3-Trichloropropane	1.036	1.027	0.9	67	-0.02
66	T	n-Propylbenzene	3.803	4.127	-8.5	73	0.00
67	T	2-Chlorotoluene	0.672	0.740	-10.1	75	0.01
68	T	1,3,5-Trimethylbenzene	2.973	3.141	-5.7	71	0.00
69	T	4-Chlorotoluene	3.299	3.490	-5.8	71	0.00
70	T	tert-Butylbenzene	2.062	2.407	-16.7	75	0.01
71	T	1,2,4-Trimethylbenzene	2.951	3.606	-22.2	81	0.00
72	T	sec-Butylbenzene	2.860	3.302	-15.5	79	0.00
73	T	1,3-Dichlorbenzene	1.530	1.549	-1.2	68	0.00
74	T	4-Isopropyltoluene	2.409	2.787	-15.7	83	0.00
75	T	1,4-Dichlorobenzene	1.662	1.622	2.4	66	0.00
76	T	1,2-Dichlorobenzene	1.384	1.353	2.2	61	0.00
77	T	n-Butylbenzene	2.605	2.662	-2.2	66	0.00
78	T	1,2-Dibromo-3-chloropropane	0.240	0.128	46.7#	36#	0.00
[illegible]	T	1,2,4-Trichlorobenzene	0.961	0.401	58.3#	28#	0.00
80	T	Hexachlorobutadiene	0.485	0.305	37.1#	42#	0.00
81	T	Naphthalene	2.679	0.842	68.6#	21#	0.00

(#) = Out of Range

MNR 10/20/99

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\1\DATA\40P0913B.D
Acq On : 13 SEP 1999 17:38
Sample :
Misc :
MS Integration Params: rteint.p

Vial: 0
Operator:
Inst :
Multiplr: 1.00

Method : C:\SAT132\QUANT\8260B-11.M (RTE Integrator)
Title : Saturn 132
Last Update : Mon Aug 23 08:53:45 1999
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 30% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
82 T	1,2,3-Trichlorobenzene	0.902	0.238	73.6#	17#	0.00

MWR 10/20/99

(#) = Out of Range SPCC's out = 0 CCC's out = 0

35132- 24

QUALITY CONTROL REPORT
SURROGATE RECOVERIES
USEPA CLP FORM 2

Method: Volatiles Purge & Trap-GC/MS USEPA-8260B SOIL

Surrogate Compound List

SUR-1: Dibromofluoromethane
SUR-2: d8-Toluene
SUR-3: 4-Bromofluorobenzene

% R = Percent Recovery

Compounds:		SUR-1	SUR-2	SUR-3
Control Limits:		74-131	78-122	79-125
Sample # / ID	Batch	% R	% R	% R
MPB-114	47646	104	100	109
LFB-114	47646	101	98	105
231362SPK	47646	99	97	106
231362SPK	47646	101	97	105
231361	47646	99	100	108
231362	47646	100	98	109
231363	47646	65	99	109
231364	47646	98	99	109
231365	47646	88	99	109
231366	47646	99	100	109
231367	47646	100	99	109

Associated sample:

RD-11A

detection limit "U"

HMR
10/20/99

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35132- 24

QUALITY CONTROL REPORT
METHOD PREPARATION BLANK

Method: Volatiles Purge & Trap-GC/MS
Analyst: Jeff Glaser
Test Date: 09/13/99
Analytical Batch No: 146886
QC Batch No: 46950-213
Units: ug/L

Parameter	Blank Concentration	Quantitation Limit
Benzene	<1.0	1.0
Ethylbenzene	<1.0	1.0
Toluene	<1.0	1.0
Isopropylbenzene	<1.0	1.0
Naphthalene	11	5.0

Associated samples:

EQB-1

no qualifiers applied
no hits in sample.

MNR
11/9/99

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Quantitation Report

Data File : c:\hpchem\1\data\BLK0913A.D
Acq On : 13 SEP 1999 18:22
Sample :
Misc :
MS Integration Params: rteint.p
Quant Time: Sep 13 19:00 1999

Vial: 0
Operator:
Inst :
Multiplr: 1.00
Quant Results File: 8260b-11.RES

Quant Method : c:\sat132\quant\8260b-11.m (RTE Integrator)
Title : Saturn 132
Last Update : Mon Aug 23 08:53:45 1999
Response via : Initial Calibration
DataAcq Meth :
IS QA File : C:\HPCHEM\1\DATA\40P08131.D (13 AUG 1999 11:40)

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min) Rcv(Ar)
1) IS: Flourobenzene	16.29	96	1209876	40.00 ug/L	0.00 74.73%
43) IS: d5-Chlorobenzene	23.19	82	535413	40.00 ug/L	-0.02 79.25%
61) IS: d4-1,4-Dichlorobenzene	29.01	152	482426	40.00 ug/L	0.00 64.93%
System Monitoring Compounds					
28) SUR: Dibromofluoromethane	14.86	113	399310	37.03 ug/L	0.00
Spiked Amount 40.000			Recovery =	92.58%	
34) SUR: 1,2-Dichloroethane-d4	15.56	65	416918	38.70 ug/L	0.00
Spiked Amount 40.000			Recovery =	96.75%	
42) SUR: d8-Toluene	19.82	98	1430184	37.87 ug/L	0.02
Spiked Amount 40.000			Recovery =	94.68%	
60) Sur: 4-Bromofluorobenzene	26.14	95	603901	36.50 ug/L	0.00
Spiked Amount 40.000			Recovery =	91.25%	

Target Compounds					Qvalue
14) Acetone	9.59	43	5575	1.26 ug/L #	90
15) Isopropanol	10.41	45	2442	6.89 ug/L #	95
24) Methyl Ethyl Ketone	13.91	43	17445	3.59 ug/L #	93
33) Heptane	16.31	41	38840	3.71 ug/L #	1
41) 4-Methyl-2-Pentanone	19.83	43	12452	1.43 ug/L #	78
66) n-Propylbenzene	26.81	91	28145	0.61 ug/L #	97
68) 1,3,5-Trimethylbenzene	27.25	105	22307	0.62 ug/L #	82
70) tert-Butylbenzene	28.09	119	22723	0.91 ug/L	98
71) 1,2,4-Trimethylbenzene	28.20	105	22289	0.63 ug/L	100
72) sec-Butylbenzene	28.61	105	51755	1.50 ug/L #	93
73) 1,3-Dichlorbenzene	28.86	146	11475	0.62 ug/L	94
74) 4-Isopropyltoluene	28.94	119	41047	1.41 ug/L #	90
75) 1,4-Dichlorobenzene	29.07	146	11808	0.59 ug/L	92
76) 1,2-Dichlorobenzene	29.88	146	12263	0.73 ug/L	91
77) n-Butylbenzene	29.85	91	64954	2.07 ug/L #	96
78) 1,2-Dibromo-3-chloropropan	31.45	75	13157	4.55 ug/L	95
79) 1,2,4-Trichlorobenzene	33.22	180	85713	7.40 ug/L	96
80) Hexachlorobutadiene	33.62	225	38459	6.57 ug/L	94
81) Naphthalene	33.79	128	348056	10.77 ug/L	99
82) 1,2,3-Trichlorobenzene	34.37	180	115087	10.58 ug/L	97

(#) = qualifier out of range (m) = manual integration

10/20/99

SEMIVOLATILES DATA
SUPPORT DOCUMENTATION
35132-24

SEMIVOLATILE DATA VALIDATION SUMMARY

Site Name: RMC Beech Grove, IN
Project Number: 98-478-03
Sampling Date(s): 9/1/99

Laboratory: TriMatrix
Case/Order No.: 35132-24

Compound List: ☐ TCL ☐ Priority Pollutant ☐ Appendix IX ☑ Other Fluorene, Phenanthrene

Method: ☐ CLP SOW 3/90 ☐ 40 CFR 136 ☑ SW-846 Method 8270 ☐ Other _____

The following table indicates the data validation criteria examined, any problems identified, and the QA action app

Data Validation Criteria:	accept	FYI	qualify	Comments
Holding Times	✓			received @ 3°C
GC/MS Tuning		✓		tune criteria - National guidelines does not pass 8270C criteria
Initial Calibrations	✓			
Continuing Calibrations	✓			
Blank Analysis Results	✓			
System Monitoring/Surrogate Results	✓			
MS/MSD Results	✓			
Field Duplicate Results		✓		NA
Internal Standard Areas/RT	✓			
Target Compound Identification	✓			
TIC Identification		✓		NA
Quantitation/Detection Limits	✓			
System Performance	✓			
Overall Assessment of Data	✓			
Other: LCS	✓			

General Comments: _____

Accept - No qualification required.
FYI - For your information only, no qualification necessary.
Qualify - Qualify as rejected, estimated or biased.

NA - Not analyzed.
NR - Not reviewed.

QA Scientist M. Ritchie
Date 10/20/99

METALS DATA
SUPPORT DOCUMENTATION
35132-1, 2, 3, 7, 10, 11, 12, 14, 17, 18, 19, 22, 23, and 25

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QUALITY CONTROL REPORT
BLANKS
USEPA CLP FORM 3

SDG No.	35132 -2	Parameter	Selenium, Total
Instrument ID	114	Ref. Cit.	USEPA-6020
		Matrix	SOIL
		Units	mg/kg dry

Batch	Blank QC Type	Sequence No.	Amount Found
47060	Method Preparation	1	0.73

229219, 229221-27, 20
229229-236
DIM

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QUALITY CONTROL REPORT
BLANKS
USEPA CLP FORM 3

SDG No.	35132 -2	Parameter	Lead, Total
Instrument ID	114	Ref. Cit.	USEPA-6020
		Matrix	SOIL
		Units	mg/kg dry

Batch	Blank QC Type	Sequence No.	Amount Found
47050	Method Preparation	1	13.5
47060	Method Preparation	1	13.3

– 229219-25, 26-34
229235-36, 38
(all above 5x MB)

13.5 - 229167, 68, 69, 70, 71 - not AGC samples

DLM

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QUALITY CONTROL REPORT
BLANKS
USEPA CLP FORM 3

SDG No.	35132 -3	Parameter	Lead, Total
Instrument ID	114	Ref. Cit.	USEPA-6020
		Matrix	SOIL
		Units	mg/kg dry

Batch	Blank QC Type	Sequence No.	Amount Found
47105	Method Preparation	1	3.2

Associated samples:
229431-37
229439-457
DJM 11/17/99

all >5x BLK

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TriMatrix Laboratories, Inc.

QUALITY CONTROL REPORT
BLANKS
USEPA CLP FORM 3

SDG No.	35132 -3	Parameter	Selenium, Total
Instrument ID	114	Ref. Cit.	USEPA-6020
		Matrix	SOIL
		Units	mg/kg dry

Batch	Blank QC Type	Sequence No.	Amount Found
47105	Method Preparation	1	1.0

Associated samples:
229431, 229434, 229435, 32, 33, 36
229437, 229439-43, 44, 49
229445-48, 229450-51
DM 11/17/99

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QUALITY CONTROL REPORT
BLANKS
USEPA CLP FORM 3

SDG No.	35132 -3	Parameter	Arsenic, Total
Instrument ID	114	Ref. Cit.	USEPA-6020
		Matrix	SOIL
		Units	mg/kg dry

Batch	Blank QC Type	Sequence No.	Amount Found
47105	Method Preparation	1	1.2

Associated samples:
229431-37
229439-451
DJM 11/17/99

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TriMatrix Laboratories, Inc.

QUALITY CONTROL REPORT
BLANKS
USEPA CLP FORM 3

SDG No.	35132 -7	Parameter	Lead, Total
Instrument ID	114	Ref. Cit.	USEPA-6020
		Matrix	SOIL
		Units	mg/kg dry

Batch	Blank QC Type	Sequence No.	Amount Found
47157	Method Preparation	1	1.24

Associated data:
229922, 229923, 229924, 21
229925, 26, 27, 28, 31, 32, 33, 34, 30
35, 36, 39, 40, 41, 44, 38

DIM

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TriMatrix Laboratories, Inc.

QUALITY CONTROL REPORT
BLANKS
USEPA CLP FORM 3

SDG No.	35132 -10	Parameter	Lead, Total
Instrument ID	114	Ref. Cit.	USEPA-6020
		Matrix	SOIL
		Units	mg/kg dry

Batch	Blank QC Type	Sequence No.	Amount Found
47158	Method Preparation	1	7.44
47159	Method Preparation	1	0.70

7.44 – Associated samples –
230200, 202, 205, 206, 207, 209, 210, 204
211, 212, 213, 215, 216, 217, 218, 219
220, 221, 222,

0.70 – Associated samples:
229969, 230179, 230180, 181, 182, 184, 185, 186, 187, 188, 189,
190, 191, 193, 194, 195, 196, 197, 198, 199

DJM

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QUALITY CONTROL REPORT
BLANKS
USEPA CLP FORM 3

SDG No.	35132 -12	Parameter	Lead, Total
Instrument ID	114	Ref. Cit.	USEPA-6020
		Matrix	SOIL
		Units	mg/kg dry

Batch	Blank QC Type	Sequence No.	Amount Found
47160	Method Preparation	1	<0.60
47168	Method Preparation	1	0.61

Associated samples:
230245, 230246, 47, 48, 51, 52, 50
54, 55, 56, 57, 59, 60, 61, 63, 64
65, 66, 67, 68

all over 5x MB
DM

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QUALITY CONTROL REPORT
BLANKS
USEPA CLP FORM 3

SDG No.	35132 -13	Parameter	Lead, Total
Instrument ID	114	Ref. Cit.	USEPA-6020
		Matrix	SOIL
		Units	mg/kg dry

Batch	Blank QC Type	Sequence No.	Amount Found
47168	Method Preparation	1	0.61
47623	Method Preparation	1	<0.60

Associated data:
230 245, 246, 247, 248,
~~250~~, 251, 252, 254, 255
256, 257, 259, 260, 263
264, 265

Dim

all > 5X MB

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QUALITY CONTROL REPORT
BLANKS
USEPA CLP FORM 3

SDG No.	35132 -14	Parameter	Lead, Total
Instrument ID	114	Ref. Cit.	USEPA-6020
		Matrix	SOIL
		Units	mg/kg dry

Batch	Blank QC Type	Sequence No.	Amount Found
47623	Method Preparation	1	<0.60
47812	Method Preparation	1	1.98

Associated data:
230291, 293, 295, 297, 298, 299, 300, 302, 303, 304, 305, 306, 307, 308

DIM

all > 5x MB

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QUALITY CONTROL REPORT
BLANKS
USEPA CLP FORM 3

SDG No.	35132 -16	Parameter	Chromium, Total
Instrument ID	114	Ref. Cit.	USEPA-6020
		Matrix	SOIL
		Units	mg/kg dry

Batch	Blank QC Type	Sequence No.	Amount Found
47813	Method Preparation	1	6.83

Associated data:
230316, 319, 320, 321,
322, 323, 324, 325, 327
328 + 329, 30, 31, 32, 34-38
DIM

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TriMatrix Laboratories, Inc.

QUALITY CONTROL REPORT
BLANKS
USEPA CLP FORM 3

SDG No.	35132 -18	Parameter	Chromium, Total
Instrument ID	114	Ref. Cit.	USEPA-6020
		Matrix	SOIL
		Units	mg/kg dry

Batch	Blank QC Type	Sequence No.	Amount Found
47811	Method Preparation	1	<1.0
47814	Method Preparation	1	4.40

Associated data: 230339, 40, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 56, 57, 58, 59, 60

Dim

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QUALITY CONTROL REPORT
BLANKS
USEPA CLP FORM 3

SDG No.	35132 -18	Parameter	Lead, Total
Instrument ID	114	Ref. Cit.	USEPA-6020
		Matrix	SOIL
		Units	mg/kg dry

Batch	Blank QC Type	Sequence No.	Amount Found
47811	Method Preparation	1	1.18
47814	Method Preparation	1	<0.60

Associated data:
230371,
230372
230373,374

all > 5x MB
Dim

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TriMatrix Laboratories, Inc.

QUALITY CONTROL REPORT
BLANKS
USEPA CLP FORM 3

SDG No.	35132 -25	Parameter	Lead, Total
Instrument ID	114	Ref. Cit.	USEPA-6020
		Matrix	SOIL
		Units	mg/kg dry

Batch	Blank QC Type	Sequence No.	Amount Found
47852	Method Preparation	1	0.61

Associated samples:

232808-815, 817-19
Dim
All > 5x MB

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TriMatrix Laboratories, Inc.

QUALITY CONTROL REPORT
SPIKE SAMPLE RECOVERY
USEPA CLP FORM 5A

SDG No. 35132 -7

Sample ID. RSB74BMS/MSD

Matrix SOIL
Lab Sample No. 229935
Units mg/kg dry

Analyte	Control Limit %R	Spiked Sample Result	Sample Result		Spike Added	%R	M
Arsenic, Total	73 - 121	124.9	9.0		125	93	MS
Arsenic, Total	73 - 121	100.4	9.0		125	73	MS
Barium, Total	69 - 131	237.8	133		125	84	MS
Barium, Total	69 - 131	222.0	133		125	71	MS
Cadmium, Total	83 - 114	25.9	<0.50	U	25.0	104	MS
Cadmium, Total	83 - 114	25.4	<0.50	U	25.0	102	MS
Chromium, Total	69 - 130	142.4	19		125	99	MS
Chromium, Total	69 - 130	131.1	19		125	90	MS
Lead, Total	74 - 132	262.6	177		125	68	MS
Lead, Total	74 - 132	333.7	177		125	125	MS
Mercury, Total	73 - 136	0.478	<0.10	U	0.417	115	CV
Mercury, Total	73 - 136	0.458	<0.10	U	0.417	110	CV
Selenium, Total	62 - 126	75.0	0.77		125	59	MS
Selenium, Total	62 - 126	116.6	0.77		125	93	MS
Silver, Total	78 - 115	23.0	<0.20	U	25.0	92	MS
Silver, Total	78 - 115	22.9	<0.20	U	25.0	92	MS

Associated Samples:
229921, 22, 23, 24, 25, 26, 27, 28, 30
31, 32, 33, 34, 35, 36, 38, 39, 40, 41, 44

DJM

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TriMatrix Laboratories, Inc.

QUALITY CONTROL REPORT
MATRIX SPIKE DUPLICATE
USEPA CLP FORM 6

SDG No. 35132 -7

Sample ID. RSB74BMS/MSD

Matrix SOIL
Lab Sample No. 229935
Units mg/kg dry

Analyte	Control Limit	Sample Result	Duplicate Spike Result	RPD	M
Arsenic, Total	0 - 20	124.9	100.4	22	MS
Barium, Total	0 - 20	237.8	222.0	7	MS
Cadmium, Total	0 - 20	25.9	25.4	2	MS
Chromium, Total	0 - 20	142.4	131.1	8	MS
Lead, Total	0 - 20	262.6	333.7	24	MS
Mercury, Total	0 - 20	0.478	0.458	4	CV
Selenium, Total	0 - 20	116.6	75.0	43	MS
Silver, Total	0 - 20	22.9	23.0	0	MS

Associated samples:
229921-28, 229930-36
229938-41, 229944
DM

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QUALITY CONTROL REPORT
SPIKE SAMPLE RECOVERY
USEPA CLP FORM 5A

SDG No. 35132 -14

Sample ID. RSB79BMS/MSD

Matrix SOIL
Lab Sample No. 230277
Units mg/kg dry

Analyte	Control Limit %R	Spiked Sample Result	Sample Result		Spike Added	%R	M
Arsenic, Total	73 - 121	123.5	6.9		125	93	MS
Arsenic, Total	73 - 121	128.9	6.9		125	98	MS
Barium, Total	69 - 131	170.7	62		125	87	MS
Barium, Total	69 - 131	179.9	62		125	94	MS
Cadmium, Total	83 - 114	28.5	6.4		25	88	MS
Cadmium, Total	83 - 114	29.5	6.4		25	92	MS
Chromium, Total	69 - 130	123.2	11		125	90	MS
Chromium, Total	69 - 130	130.6	11		125	96	MS
Lead, Total	74 - 132	253.9	205		125	39	MS
Lead, Total	74 - 132	299.5	205		125	76	MS
Mercury, Total	73 - 136	0.481	<0.10	U	0.417	115	CV
Mercury, Total	73 - 136	0.473	<0.10	U	0.417	113	CV
Selenium, Total	62 - 126	114.9	0.54		125	91	MS
Selenium, Total	62 - 126	110.0	0.54		125	88	MS
Silver, Total	78 - 115	21.6	<0.20	U	25	86	MS
Silver, Total	78 - 115	21.9	<0.20	U	25	88	MS

Associated samples:
230269-74, 230276-81
230283-90

DM

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QUALITY CONTROL REPORT
SPIKE SAMPLE RECOVERY
USEPA CLP FORM 5A

SDG No. 35132 -15 | Matrix SOIL
Lab Sample No. 230304
Sample ID. CSBCSB29CMS/MSD | Units mg/kg dry

Analyte	Control Limit %R	Spiked Sample Result	Sample Result		Spike Added	%R	M
Antimony, Total	68 - 126	97.3	1.5		100	96	MS
Antimony, Total	68 - 126	101.4	1.5		100	100	MS
Arsenic, Total	73 - 121	109.8	11		125	79	MS
Arsenic, Total	73 - 121	108.2	11		125	78	MS
Barium, Total	69 - 131	185.4	100		125	68	MS
Barium, Total	69 - 131	183.9	100		125	67	MS
Cadmium, Total	83 - 114	21.3	0.73		25	82	MS
Cadmium, Total	83 - 114	20.6	0.73		25	79	MS
Chromium, Total	69 - 130	114.9	21		125	75	MS
Chromium, Total	69 - 130	118.8	21		125	78	MS
Lead, Total	74 - 132	125.6	36		125	72	MS
Lead, Total	74 - 132	125.0	36		125	71	MS
Mercury, Total	73 - 136	0.493	<0.10	U	0.417	118	CV
Mercury, Total	73 - 136	0.495	<0.10	U	0.417	119	CV
Selenium, Total	62 - 126	117.3	1.3		125	93	MS
Selenium, Total	62 - 126	106.8	1.3		125	84	MS
Silver, Total	78 - 115	19.0	<0.20	U	25	76	MS
Silver, Total	78 - 115	18.6	<0.20	U	25	74	MS

Used 75-125% R as criteria stated in QAPP.
Associated data:
230291, 230293-95,
230297-300, 230302-308
230310-312, 230314-15
DM

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TriMatrix Laboratories, Inc.

QUALITY CONTROL REPORT
SPIKE SAMPLE RECOVERY
USEPA CLP FORM 5A

SDG No. 35132 -16

Sample ID. CSB24CMS/MSD

Matrix SOIL
Lab Sample No. 230321
Units mg/kg dry

Analyte	Control Limit %R	Spiked Sample Result	Sample Result		Spike Added	%R	M
Antimony, Total	68 - 126	92.1	<1.0	U	100	92	MS
Antimony, Total	68 - 126	93.2	<1.0	U	100	93	MS
Arsenic, Total	73 - 121	98.1	4.4		125	75	MS
Arsenic, Total	73 - 121	123.3	4.4		125	95	MS
Barium, Total	69 - 131	216.2	116		125	80	MS
Barium, Total	69 - 131	233.6	116		125	94	MS
Cadmium, Total	83 - 114	23.4	<0.50	U	25	94	MS
Cadmium, Total	83 - 114	23.5	<0.50	U	25	94	MS
Chromium, Total	69 - 130	124.7	17		125	86	MS
Chromium, Total	69 - 130	134.7	17		125	94	MS
Lead, Total	74 - 132	123.9	12		125	90	MS
Lead, Total	74 - 132	124.0	12		125	90	MS
Mercury, Total	73 - 136	0.513	<0.10	U	0.417	123	CV
Mercury, Total	73 - 136	0.516	<0.10	U	0.417	124	CV
Selenium, Total	62 - 126	91.9	0.92		125	73	MS
Selenium, Total	62 - 126	117.0	0.92		125	93	MS
Silver, Total	78 - 115	22.5	<0.20	U	25	90	MS
Silver, Total	78 - 115	22.5	<0.20	U	25	90	MS

Associated samples:
230316, 230319, 320, 321
322, 324, 325, 327, 328
329, 330, 331, 332, 334
335, 336, 337 ~~+338~~
DM

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QUALITY CONTROL REPORT
MATRIX SPIKE DUPLICATE
USEPA CLP FORM 6

SDG No. 35132 -16

Sample ID. CSB24CMS/MSD

Matrix SOIL
Lab Sample No. 230321
Units mg/kg dry

Analyte	Control Limit	(MS) Sample Result	(MSD) Duplicate Spike Result	RPD	M
Antimony, Total	0 - 20	92.1	93.2	1	MS
Arsenic, Total	0 - 20	98.1	123.3	23	MS
Barium, Total	0 - 20	216.2	233.6	8	MS
Cadmium, Total	0 - 20	23.4	23.5	0	MS
Chromium, Total	0 - 20	124.7	134.7	8	MS
Lead, Total	0 - 20	123.9	124.0	0	MS
Mercury, Total	0 - 20	0.513	0.516	1	CV
Selenium, Total	0 - 20	91.9	117.0	24	MS
Silver, Total	0 - 20	22.5	22.5	0	MS

Associated samples:
230316, 230319, 320, 321
322, 324, 325, 327, 328,
329, 330, 331, 332, 334,
335, 336, 337 + 338
DM

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QUALITY CONTROL REPORT
SPIKE SAMPLE RECOVERY
USEPA CLP FORM 5A

SDG No. 35132 -17

Sample ID. RSB26BMS/MSD

Matrix SOIL
Lab Sample No. 230338
Units mg/kg dry

Analyte	Control Limit %R	Spiked Sample Result	Sample Result	Spike Added	%R	M
Arsenic, Total	73 - 121	290.7	184	125	85	MS
Arsenic, Total	73 - 121	485.8	184	125	241	MS
Barium, Total	69 - 131	228.5	114	125	92	MS
Barium, Total	69 - 131	219.1	114	125	84	MS
Cadmium, Total	83 - 114	33.1	10	25	92	MS
Cadmium, Total	83 - 114	37.8	10	25	111	MS
Chromium, Total	69 - 130	128.5	21	125	86	MS
Chromium, Total	69 - 130	124.5	21	125	83	MS
Mercury, Total	73 - 136	0.892	0.36	0.417	128	CV
Mercury, Total	73 - 136	0.874	0.36	0.417	123	CV
Selenium, Total	62 - 126	102.6	4.6	125	78	MS
Selenium, Total	62 - 126	116.7	4.6	125	90	MS
Silver, Total	78 - 115	22.2	0.23	25	88	MS
Silver, Total	78 - 115	22.0	0.23	25	87	MS

Hg - Estimated detected results
230334, 337, 338, 340
339
DIM

As - Estimated detected results
Associated samples:
230316, 230319-25,
230327-32, 230334-38
DIM

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QUALITY CONTROL REPORT
MATRIX SPIKE DUPLICATE
USEPA CLP FORM 6

SDG No. 35132 -17

Sample ID. RSB26BMS/MSD

Matrix SOIL
Lab Sample No. 230338
Units mg/kg dry

Analyte	Control Limit	(MS) Sample Result	(MSD) Duplicate Spike Result	RPD	M
Arsenic, Total	0 - 20	290.7	485.8	50	MS
Barium, Total	0 - 20	228.5	219.1	4	MS
Cadmium, Total	0 - 20	33.1	37.8	13	MS
Chromium, Total	0 - 20	128.5	124.5	3	MS
Mercury, Total	0 - 20	0.892	0.874	2	CV
Selenium, Total	0 - 20	102.6	116.7	13	MS
Silver, Total	0 - 20	22.0	22.2	1	MS

Associated data:
230316, 230319-25,
230327-32, 230334-38
D/M

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QUALITY CONTROL REPORT
SPIKE SAMPLE RECOVERY
USEPA CLP FORM 5A

SDG No. 35132 -18

Sample ID. RSB52BMS/MSD

Matrix SOIL
Lab Sample No. 230356
Units mg/kg dry

Analyte	Control Limit %R	Spiked Sample Result	Sample Result		Spike Added	%R	M
Arsenic, Total	73 - 121	124.0	5.9		125	94	MS
Arsenic, Total	73 - 121	118.1	5.9		125	90	MS
Barium, Total	69 - 131	204.4	79		125	100	MS
Barium, Total	69 - 131	197.4	79		125	95	MS
Cadmium, Total	83 - 114	23.6	0.51		25	92	MS
Cadmium, Total	83 - 114	23.3	0.51		25	91	MS
Chromium, Total	69 - 130	132.1	14		125	94	MS
Chromium, Total	69 - 130	133.9	14		125	96	MS
Lead, Total	74 - 132	208.8	77		125	105	MS
Lead, Total	74 - 132	195.8	77		125	95	MS
Mercury, Total	73 - 136	0.534	<0.10	U	0.417	128	CV
Mercury, Total	73 - 136	0.533	<0.10	U	0.417	128	CV
Selenium, Total	62 - 126	112.0	0.84		125	89	MS
Selenium, Total	62 - 126	107.8	0.84		125	86	MS
Silver, Total	78 - 115	20.7	<0.20	U	25	83	MS
Silver, Total	78 - 115	20.8	<0.20	U	25	83	MS

Hg - Associated data
Estimated detects
230352, 53, 362, 363
366, 367, 368, 369,
370, 371

Mercury MS 0.557 MSD 0.549
230765 %R 134 132
original 0.11 spk added 0.417
> Associated data Estimate detects
230760 + 230587

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QUALITY CONTROL REPORT
SPIKE SAMPLE RECOVERY
USEPA CLP FORM 5A

SDG No. 35132 -19

Sample ID. RSED3B

Matrix SOIL
Lab Sample No. 230382
Units mg/kg dry

Analyte	Control Limit %R	Spiked Sample Result	Sample Result	Spike Added	%R	M
Mercury, Total	73 - 136	1.530	1.0	0.417	127	CV
Mercury, Total	73 - 136	1.770	1.0	0.417	185	CV

Associated sample:
230382
DIM

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QUALITY CONTROL REPORT
SPIKE SAMPLE RECOVERY
USEPA CLP FORM 5A

SDG No. 35132 -22

Sample ID. RSED7AMS/MSD

Matrix SOIL
Lab Sample No. 230596
Units mg/kg dry

Analyte	Control Limit %R	Spiked Sample Result	Sample Result	Spike Added	%R	M
Arsenic, Total	73 - 121	296.1	170	125	101	MS
Arsenic, Total	73 - 121	302.5	170	125	106	MS
Barium, Total	69 - 131	206.5	95	125	89	MS
Barium, Total	69 - 131	225.4	95	125	104	MS
Cadmium, Total	83 - 114	103.5	65	25.0	154	MS
Cadmium, Total	83 - 114	87.5	65	25.0	90	MS
Chromium, Total	69 - 130	137.0	18	125	95	MS
Chromium, Total	69 - 130	144.1	18	125	101	MS
Lead, Total	74 - 132	70818	46000	31250	79	MS
Lead, Total	74 - 132	68224	46000	31250	71	MS
Mercury, Total	73 - 136	1.04	0.60	0.417	106	CV
Mercury, Total	73 - 136	0.913	0.60	0.417	75	CV
Selenium, Total	62 - 126	125.0	10	125	92	MS
Selenium, Total	62 - 126	124.7	10	125	92	MS
Silver, Total	78 - 115	24.5	0.62	25.0	96	MS
Silver, Total	78 - 115	24.5	0.62	25.0	96	MS

Associated Samples;
230596, 230597,
230598, 230552,
230553

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