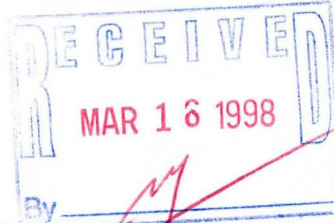


Wisconsin Gas Company
626 East Wisconsin Avenue
Milwaukee, WI 53202



July 3, 1996

Ms. Margaret Graefe
Wisconsin Department of Natural Resources
4041 North Richards Street
Milwaukee, Wisconsin 53212

Dear Ms. Graefe:

Please find attached two copies of the report:

Shallow Soil Predesign Investigation Report (SSPI)
Third Ward MGP Site
Milwaukee, Wisconsin
(RETEC 3-0887-603)

The SSPI report was generated by RETEC in conclusion to investigation work at the Third Ward MGP site during April, 1995 in conjunction with building demolition at the City of Milwaukee property. Submittal of the report was delayed in order to include another round of groundwater sampling data. The major purpose of the SSPI was to evaluate shallow soils and specific impacted soil management options for both the Peter-Johnson property and the City property. In addition, another round of groundwater sampling was conducted at the site to confirm the site hydrogeology.

Evaluation of soils during the demolition activities was performed in support of subsurface demolition work and to minimize exposure of potentially contaminated soils. Representatives of Wisconsin Gas were present in the field during subsurface demolition to monitor the work and make recommendations limiting the extent of excavation.

Soil data from the SSPI was used to develop more accurate remediation proposals through several competing consultants. These proposals were received in February, 1996 and have undergone review at Wisconsin Gas. Selection of proposals for the site will be made during July - August of 1996.

Please also review the attached Quarterly Report regarding the Former Third Ward MGP Site.

Please feel free to call me at 540-5763 (please note this new telephone number) with any questions or comments. Thank you for your attention and assistance.

Very truly yours,

A handwritten signature in blue ink that reads "Art Covi".

Art Covi, PE
Research Engineer
Wisconsin Gas Company
5400 N. Green Bay Avenue
Milwaukee, Wisconsin 53209

ATTACHMENT

JULY, 1996
PROJECT QUARTERLY REPORT
THIRD WARD MGP SITE
MILWAUKEE, WISCONSIN

PROJECT STATUS

During the period since the March 1996 Project Quarterly Report, Wisconsin Gas has completed the following project activities:

- ❖ Finalized and submitted to the WDNR a Shallow Soil Predesign Investigation Report (SSPI) which includes detailed soils evaluation for the site and a second round of groundwater data.
- ❖ Received and reviewed proposals for remediation at the site from several qualified consultants.

PLANNED PROJECT ACTIVITIES

- ❖ Wisconsin Gas is currently finalizing an evaluation of remedial proposals for the site and will make a selection of proposals during July - August, 1996. Final selection will be made pending negotiations with current land-owners.
- ❖ Upon completion of these efforts, a description of proposed remedial alternatives for the site will be presented to the WDNR.



**SHALLOW SOIL
PREDESIGN INVESTIGATION REPORT
FORMER THIRD WARD MANUFACTURED
GAS PLANT SITE**

Prepared For:

WISCONSIN GAS COMPANY
Milwaukee, Wisconsin

Prepared By:

REMEDATION TECHNOLOGIES, INC.
St. Paul, Minnesota

RETEC Project No. 3-0887-603

MAY 1996



**SHALLOW SOIL
PREDESIGN INVESTIGATION REPORT
FORMER THIRD WARD MANUFACTURED
GAS PLANT SITE**

Prepared For:

WISCONSIN GAS COMPANY
Milwaukee, Wisconsin

Prepared By:

REMEDIATION TECHNOLOGIES, INC.
St. Paul, Minnesota

RETEC Project No. 3-0887-603

Prepared By: Mark Steinhilber RSM
Prepared By: [Signature]
Reviewed By: Christopher Carles

I, Jonathan S. Murer, hereby certify that I am a hydrogeologist as that term is defined in s. NR 712.03 (1), Wis. Adm. Code, and that, to the best of my knowledge, all of the information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code.

[Signature]
Signature and Title

668
Wisconsin P.G. No.

5-3-96
Date

MAY 1996

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1.0 INTRODUCTION

1.1 Background

This report provides the results of a Shallow Soil Predesign Investigation (SSPI) conducted at the former Third Ward Manufactured Gas Plant (MGP) site located in Milwaukee, Wisconsin (Site). The SSPI was conducted by Remediation Technologies, Inc., (RETEC) at the request of Wisconsin Gas Company (Wisconsin Gas). The SSPI was conducted in accordance with the document, Sampling and Analysis Plan, Shallow Soils Predesign Investigation, Former Third Ward Manufactured Gas Plant Site, dated April 1995 (SAP).

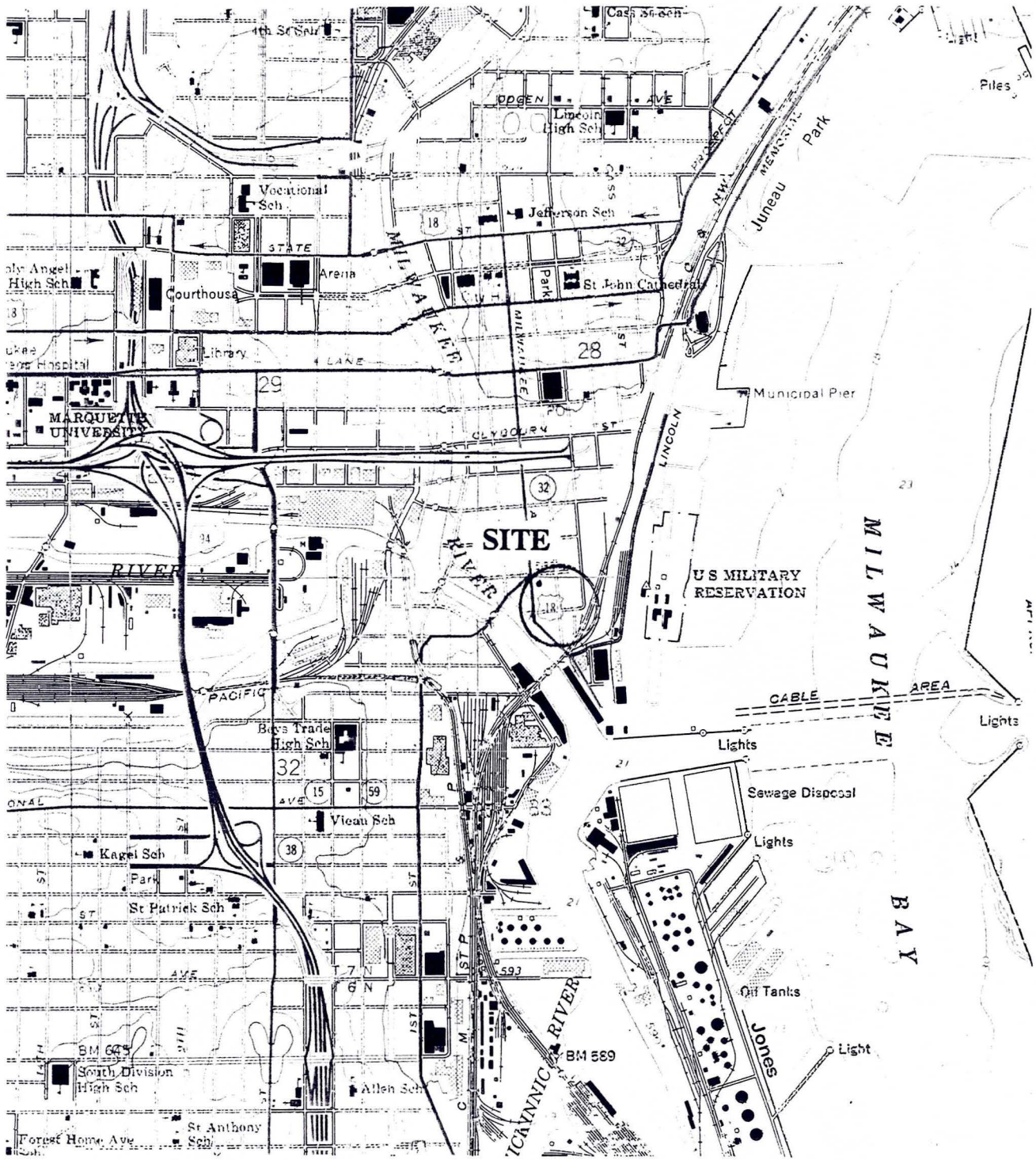
The objectives of the SSPI were as follows:

- to provide data to support the demolition of building foundations on City of Milwaukee property, including Block 158 (City Property);
- to evaluate the extent of impacted soils in the unsaturated zone on Blocks 116 and 157 (Peters=Johnson Property) and on the City Property;
- to collect data for the evaluation of impacted soil management options; and
- to provide additional groundwater quality data.

Another objective of the SSPI is to provide additional data related to non-aqueous phase liquids (NAPL) at the Site. The activities related to this objective will be conducted at a later date.

Information generated during the SSPI supplement data generated during previous investigations of the Site. The information generated during the SSPI will be added to an existing database which will be used to determine the appropriate remedial response for impacted soil, groundwater, and river sediments related to the Site.

The SSPI was conducted by RETEC with support from three primary subcontractors. Boart Longyear Environmental Drilling (Boart Longyear) provided subsurface drilling services. Dustcoating, Inc. provided excavation services, and Analytical Technologies, Inc. (ATI) provided analytical support services. Figure 1-1 identifies the location of the Site.



SOURCE: MILWAUKEE 7-1/2 MINUTE TOPOGRAPHIC QUADRANGLE



QUADRANGLE LOCATION

SCALE 1 inch = 2,000 feet



THIRD WARD MGP SITE SITE LOCATION MAP

**FIGURE
1-1**

1.2 Report Organization

Section 2.0 of this report provides certain background information related to the Site, including a brief description of previous investigations which have been completed at the Site. Section 3.0 of this report provides a description of the field investigation methods and procedures used during the SSPI. A description of the geologic and hydrogeologic conditions observed during the SSPI field activities is presented in Section 4.0. Section 5.0 of this report presents a summary of field observations and the results of field and laboratory analyses performed on samples collected during the SSPI. Section 6.0 provides a summary and conclusions which result from the SSPI. A list of references utilized during the preparation of this report is provided in Section 7.0.

2.0 SITE BACKGROUND

2.1 Location and Physical Setting

The Site is located in a section of Milwaukee known as the Third Ward. The Site is located within the Northwest 1/4 of Section 33, Township 7N, Range 22E. The Site is located in a portion of Milwaukee where historic land use has primarily been for industrial and commercial purposes. Lake Michigan is located 1,000 to 1,500 feet to the east of the Site. The Milwaukee River, which bounds the Site to the southwest, is a tributary of Lake Michigan. The Site is located adjacent to land currently occupied by buildings, parking areas, and other paved areas. Figure 2-1 shows the portion of the Site where SSPI soil investigative activities were conducted. Figure 2-2 shows the location of the monitoring wells at the Site.

Previous investigation and assessment work conducted at the Site is described in the document, Phase III Environmental Site Investigation Report, Former Third Ward Manufactured Gas Plant Site, dated April 1993, prepared by RETEC (Phase III ESI Report). The Phase III ESI Report contains background information for the Site and the surrounding area including topography, geology, hydrogeology, locations of groundwater supply wells, and land use.

2.2 Third Ward MGP Site History

Gas was made at the former Third Ward MGP from the 1850s to the 1950s. The methods used to manufacture gas evolved during the operation of the plant and involved three different gas manufacturing processes. The three MGP processes used coal, coke and oil, and oil as feedstocks.

MGP operations were conducted on land comprising an area of approximately 5.5 acres. All of the land on which the MGP was formerly located was sold to other parties after the decommissioning and demolition of certain facilities in 1959. Figure 2-2 shows selected MGP structures, from various years, which were formerly located at the Site. Figure 2-2 shows the parcels of land on which the former MGP operated. Figure 2-3 provides a detailed layout of the MGP structures formerly located on the City Property and on the Peters=Johnson Property.

EAST MENOMONEE AVE.

EXPLANATION

- LIMIT OF MGP OPERATIONS
- ▨ CONCRETE VAULT NOT RELATED TO FORMER MGP OPERATIONS
- ▤ EXISTING BUILDING

NORTH MILWAUKEE ST.

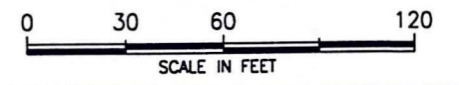
PETERS=JOHNSON PROPERTY

NORTH JEFFERSON ST.

CITY PROPERTY

NORTH JACKSON ST.

EAST CORCORAN AVE.



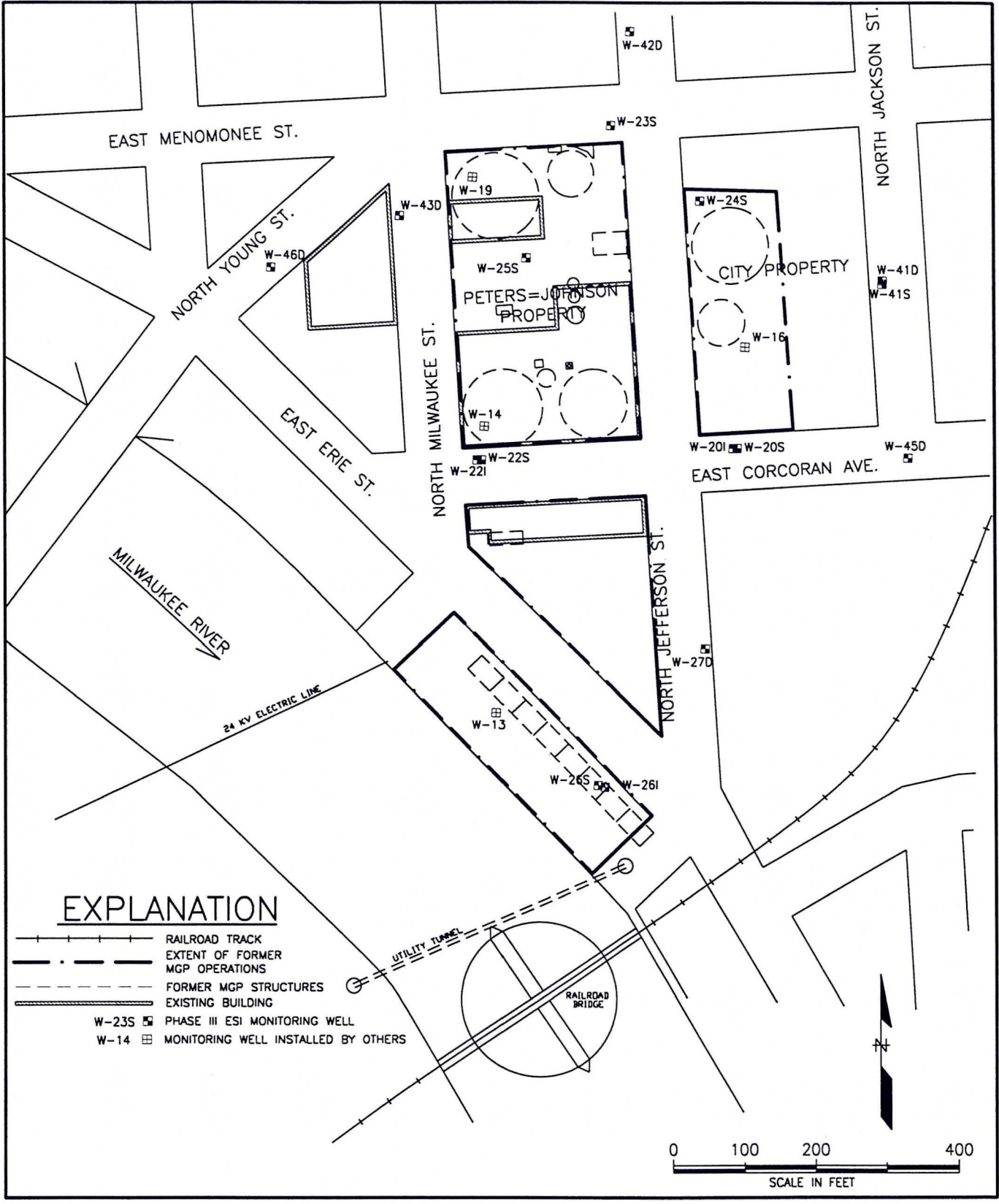
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**THIRD WARD MGP SITE
MILWAUKEE, WISCONSIN
3-0887-603**

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**LOCATION OF SSPI SOIL
SAMPLING ACTIVITIES**

RETEC
REMEDIATION
TECHNOLOGIES INC.
FIGURE 2-1



EXPLANATION

- RAILROAD TRACK
- EXTENT OF FORMER MGP OPERATIONS
- FORMER MGP STRUCTURES
- EXISTING BUILDING
- W-23S □ PHASE III ESI MONITORING WELL
- W-14 □ MONITORING WELL INSTALLED BY OTHERS

**LOCATION OF SSPI
GROUNDWATER SAMPLING ACTIVITIES
MILWAUKEE, WISCONSIN**

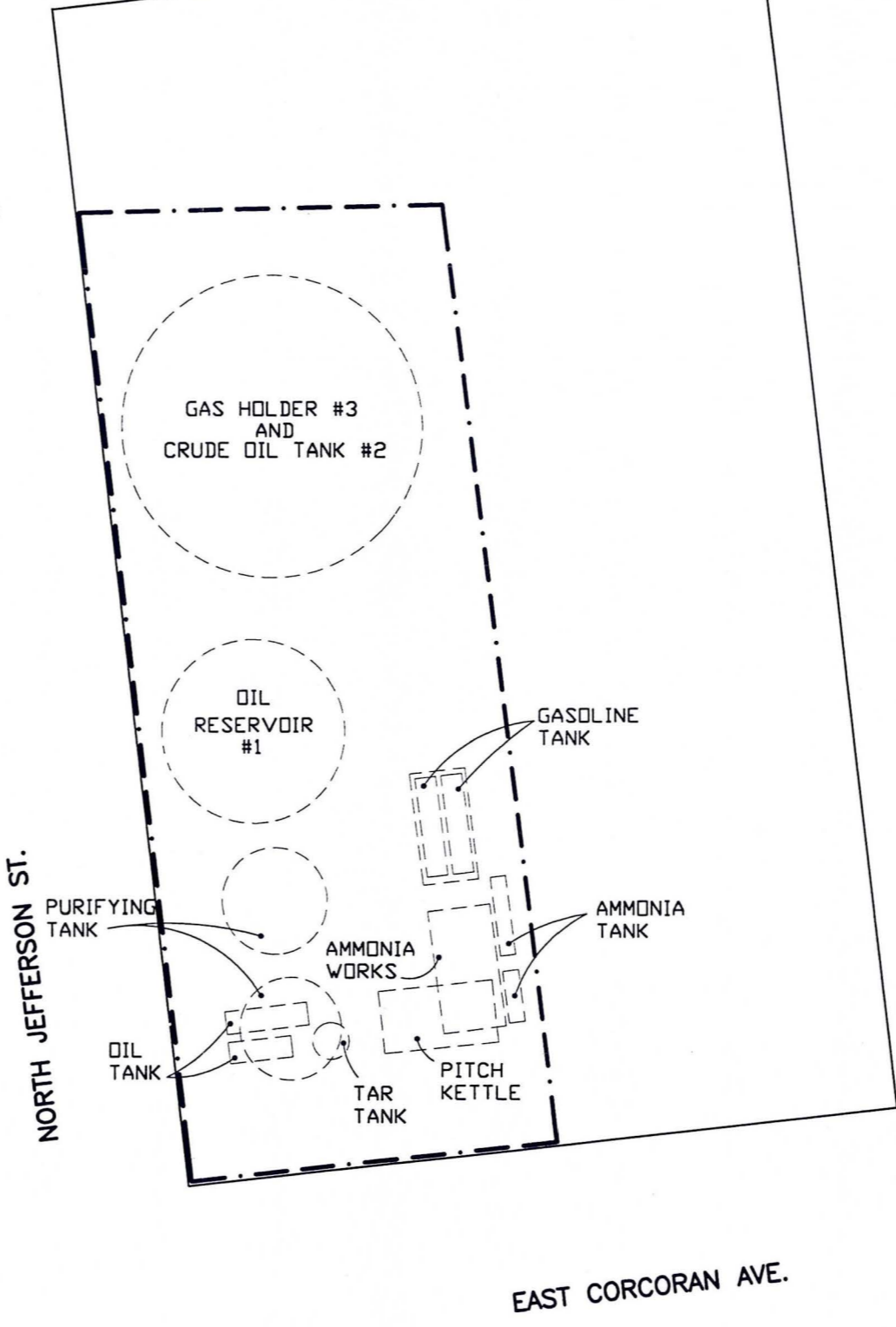
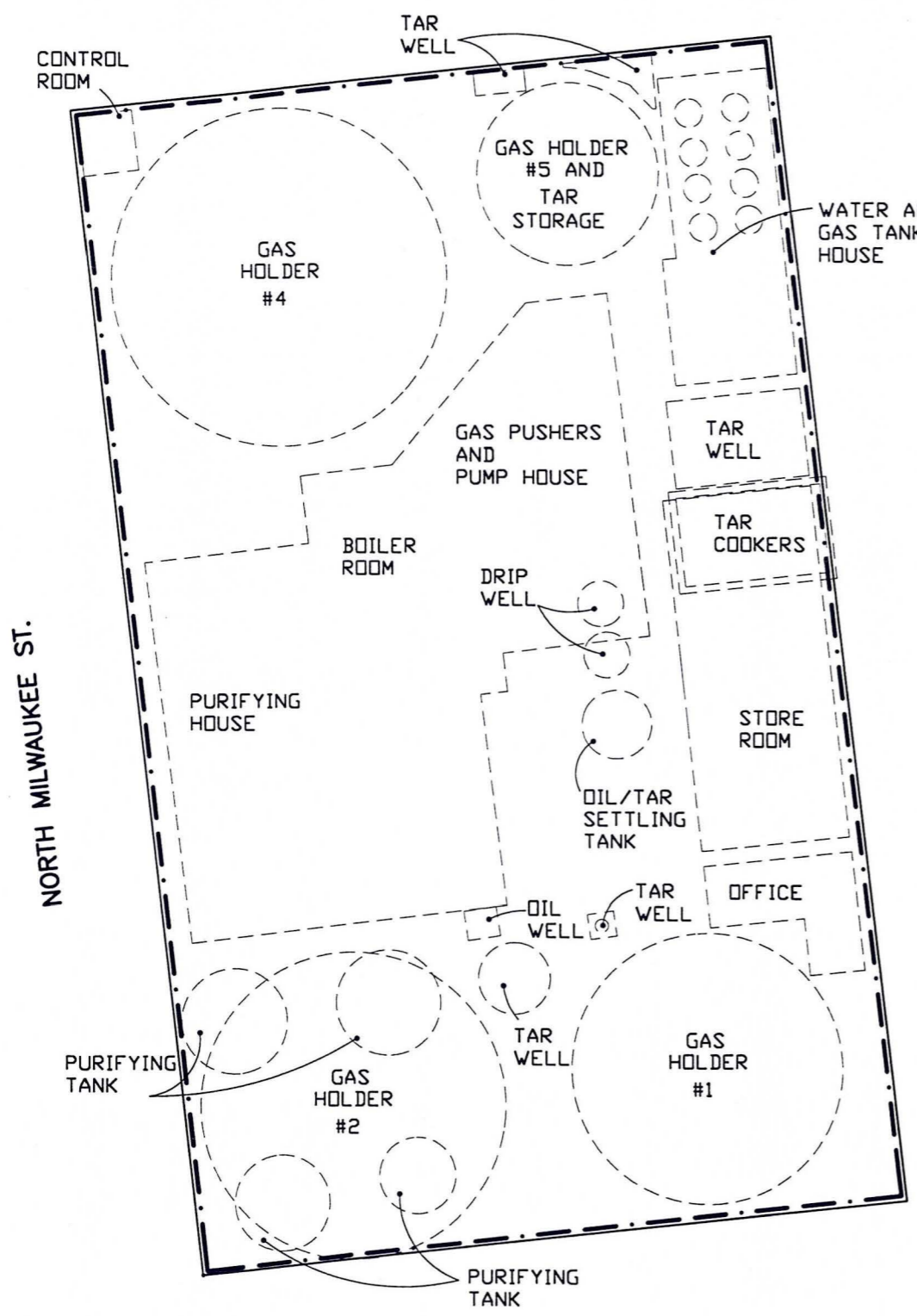
**FIGURE
2-2**

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EAST MENOMONEE AVE.

EXPLANATION

- LIMIT OF MGP OPERATIONS
- - - FORMER MGP STRUCTURES

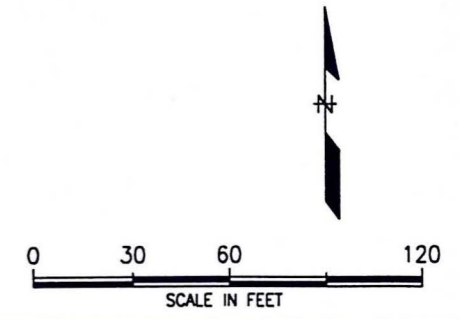


NORTH JACKSON ST.

NORTH MILWAUKEE ST.

NORTH JEFFERSON ST.

EAST CORCORAN AVE.



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**THIRD WARD MGP SITE
MILWAUKEE, WISCONSIN
3-0887-603**

**SELECTED FORMER MGP STRUCTURES
CITY AND PETERS-JOHNSON PROPERTIES
(VARIOUS YEARS)**

RETEC
REMEDIATION
TECHNOLOGIES INC.
FIGURE 2-3

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2.3 Previous Environmental Assessments

Three environmental assessments have been conducted at the Site to investigate the extent of impacts resulting from the former Third Ward MGP. The first investigation work consisted of an environmental assessment completed by Warzyn Engineering, Inc. (Warzyn). The Warzyn investigation included the completion of seven soil borings, the installation of four groundwater monitoring wells, and the collection and analyses of soil and groundwater samples. The soil and groundwater samples were analyzed for Polycyclic Aromatic Hydrocarbons (PAHs) and Total Organic Carbon (TOC), as well as other parameters. The results of the Warzyn investigation are presented in the document, Environmental Assessment of a Manufactured Gas Plant Site - Third Ward Site, May 1988 (Warzyn Report).

The Phase III ESI, conducted by RETEC in September and October 1992, involved the completion of 36 soil borings, the installation of 16 groundwater monitoring wells, and the collection and analysis of soil and groundwater samples. The soil and groundwater samples collected during the Phase III ESI were analyzed for a number of parameters including PAHs, and benzene, toluene, ethylbenzene, and xylenes (BTEX). A detailed review of historic activities was completed during the Phase III ESI. The Phase III ESI identified impacted soil and groundwater at the Site. The impacts were found to be related to the former Third Ward MGP operations and other non-MGP activities. The results of the Phase III ESI activities are provided in the Phase III ESI Report.

Phase III ESI river sediment sampling activities were conducted by RETEC in September and October 1993. The sediment sampling involved the completion of 11 river sediment borings and the collection of sediment samples for chemical analyses and physical classification. The sediment samples collected were submitted for semivolatile organic compound (SVOC), infrared spectroscopy, and oil and grease analyses. Results of the sediment sampling activities are presented in the document, Addendum No. 1 Phase III Environmental Site Investigation Report Former Third Ward Manufactured Gas Plant Site - River Sediment Sampling Report, dated June 1994 (RSSP Report).

3.0 SAMPLING PROGRAM

The project documents related to the Phase II ESI, including a Quality Assurance Project Plan (QAPP) and Site-Specific Health and Safety Plan (HASP), were used during the SSPI. The QAPP defines sampling procedures and identifies the laboratory quality assurance/quality control (QA/QC) procedures. The SSPI field activities were completed as described in the SAP. The HASP establishes procedures to ensure the safety of the field workers and others working at the Site during the SSPI.

3.1 Introduction

To facilitate field activities and data management for the soil investigation portion of the SSPI, the Peters=Johnson Property and the City Property were subdivided into separate investigation areas. These areas are Areas A, B and C for the Peters=Johnson Property and Areas E, F and G for the City Property. On the Peters=Johnson Property, SSPI activities were completed only on the northern half of the property, north of an existing building. Figure 3-1 shows these investigation areas. Test trenching and soil boring activities were completed between April 25 and April 28, 1995. It should be noted that MGP operations were formerly conducted only on Areas E and F of the City Property.

A RETEC geologist supervised the trenching and drilling operations during the SSPI. Excavation services were provided by Dustcoating, Inc. of Maple Plain, Minnesota. Drilling services were provided by Boart Longyear of Schofield, Wisconsin. Analytical Technologies, Inc. (ATI) of Fort Collins, Colorado, conducted the laboratory analysis of samples. ATI is certified in the State of Wisconsin to perform laboratory analyses (Wisconsin Laboratory ID No. 999889440). RETEC conducted field analyses (i.e., field immunoassay testing) on selected soil samples. After the field soil investigation was completed, the locations of the test trenches and soil borings were surveyed by Land Information Services of Milwaukee, Wisconsin, a Wisconsin registered land surveyor. All drilling, excavation, analytical, surveying services were conducted under terms of subcontract agreements between RETEC and the various subcontractors.

Groundwater sampling activities were conducted between October 11 and October 16, 1995. Groundwater samples were submitted to ATI for analyses.

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
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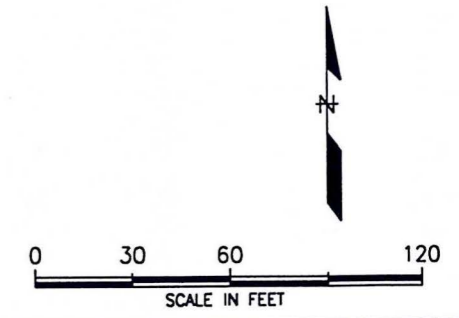
NORTH JEFFERSON ST.

NORTH JACKSON ST.

EAST CORCORAN AVE.

EXPLANATION

-  AREA G SSPI INVESTIGATION AREA
-  CONCRETE VAULT NOT RELATED TO FORMER MGP OPERATIONS
-  EXISTING BUILDING



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SSPI SOIL INVESTIGATION AREAS



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3.2 Soil Sampling Program

This section describes the procedures used during the SSPI to collect and classify soil samples.

3.2.1 Test Trenching and Sampling Methods

Eleven test trenches were completed on the City Property and 13 test trenches were completed on the Peters=Johnson Property. Test trenches were completed into the soils in the unsaturated zone and inside the limits of former MGP structures. The test trenches were completed using a tire mounted backhoe. Figure 3-2 shows the location of the test trenches completed during the SSPI and the locations of certain previous investigation sample locations.

On the Peters=Johnson Property, five test trenches were completed in Area A, three were completed in Area B, and five were completed in Area C. On the City Property, three test trenches were completed in Area E, three were completed in Area F, and five were completed in Area G.

The test trenches were completed to depths ranging from 4 to 14 feet below the ground surface. Each trench was logged and photographed. Test trench diagrams are presented in Appendix A of this report.

During trenching activities, soil samples were collected from soil retrieved by the backhoe bucket. The specific analyses conducted on the soil samples are described in Sections 3.2.4 and 3.2.5 of this report. Upon completion of soil sampling and logging of the trenches, individual test trenches were backfilled with the material removed from the excavation.

3.2.2 Soil Boring and Sampling Methods

Nine soil borings were completed on the City Property using a truck-mounted drill rig equipped with hollow-stem augers. The locations of the SSPI soil borings are shown on Figure 3-2.

The soil borings were completed using 3 1/4-inch inside diameter hollow-stem augers. A 2-foot long, 2-inch diameter split-spoon sampler was used for the retrieval of soil samples from the soil borings. A 2-foot long, 3-inch diameter split-spoon sampler was used when a large sample volume was required. During the advancement of the soil borings, soil samples were typically collected at 2-foot intervals. The blow counts required to drive the split-spoon over a six inch interval were recorded.

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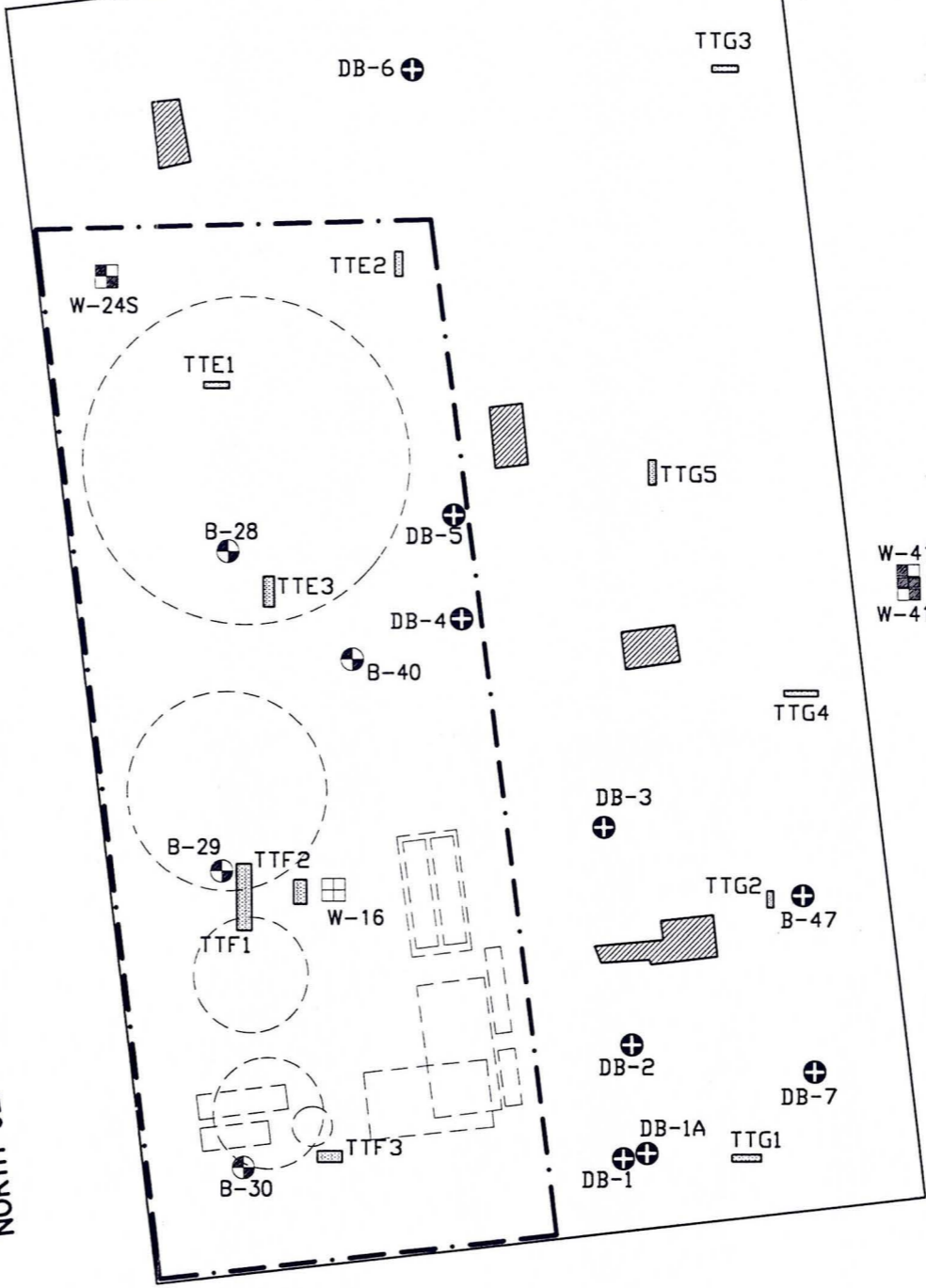
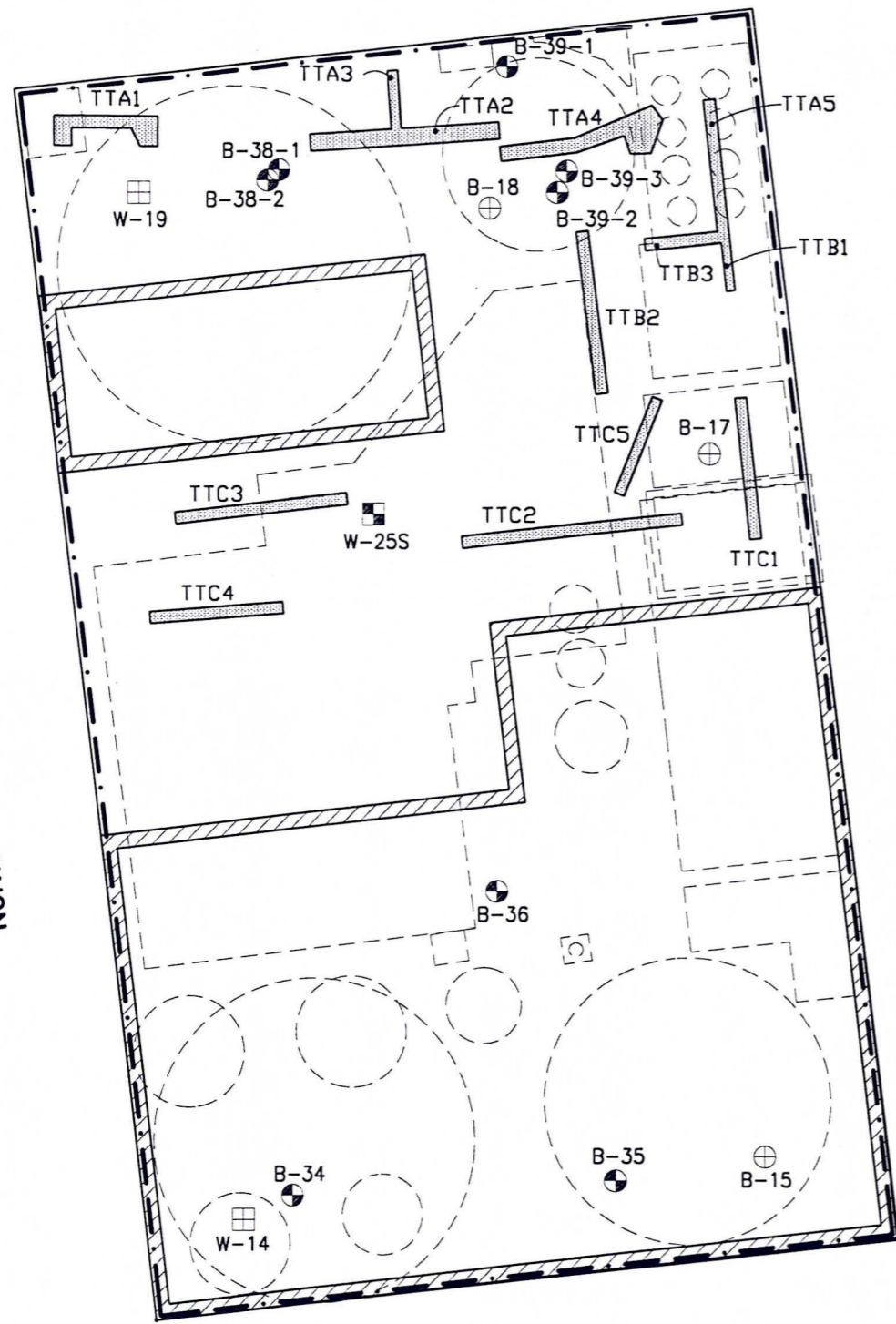
EXPLANATION

- FORMER MGP STRUCTURES
- TTA1 [Symbol] SSPI TEST TRENCH
- DB-7 [Symbol] SSPI DEMOLITION SUPPORT BORING
- B-21D [Symbol] PHASE III ESI BORING LOCATION
- W-46D [Symbol] PHASE III ESI MONITORING WELL LOCATION
- B-17 [Symbol] BORING COMPLETED BY OTHERS
- W-16 [Symbol] MONITORING WELL INSTALLED BY OTHERS
- [Symbol] CONCRETE VAULT NOT RELATED TO FORMER MGP OPERATIONS
- [Symbol] EXISTING BUILDING

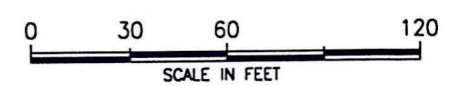
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**THIRD WARD MGP SITE
MILWAUKEE, WISCONSIN
3-0887-603**

**SSPI AND PREVIOUS INVESTIGATION
SAMPLING LOCATIONS**

RETEC
REMEDIATION TECHNOLOGIES INC.
FIGURE 3-2

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All soil borings were abandoned in accordance with Chapter NR 141 of the Wisconsin Administrative Code. Soil borings were abandoned with bentonite chips placed in the borings through the augers. Information related to soil boring abandonment was recorded on Wisconsin Department of Natural Resources (WDNR) Form 3300-5B (Monitoring Well/Drillhole/Borehole Abandonment Form, Rev. 12-91). The borehole abandonment forms generated for the SSPI are provided in Appendix B of this report.

Detailed field notes were maintained for each of the soil borings completed. Stratigraphic information related to each boring was recorded on WDNR Form 4400-122 (Rev. 5-92). Appendix C of this report provides the soil boring logs.

3.2.3 Soil Classification and Field Screening

Soil retrieved from the test trenches and soil borings was classified using the Unified Soil Classification System (USCS) and the Munsell color classification system. Soil samples retrieved from the test trenches and soil borings were screened in the field for the presence of volatile organic vapors using an HNu model DL-101 Photoionization Detector (PID), equipped with an 11.7 eV lamp. Field screening was conducted using the jar headspace technique. Field screening equipment was calibrated at the start of each day of work, or more frequently if considered necessary. Field screening of soil samples was performed to support the identification of samples to be submitted for field and laboratory analyses. During soil boring activities, field screening results were recorded on the boring log forms which are provided in Appendix C. The results of field screening activities completed during test trenching activities were recorded in field notes.

3.2.4 Field Analyses

Selected soil samples collected during trenching and soil boring activities were analyzed in the field for total PAHs using immunoassay screening kits. The immunoassay test kits were calibrated to 1, 10, and 100 parts per million (ppm) total PAHs and were supplied by EnSys, Inc. (i.e., PAH Ris[®] test method). These soil samples were selected based on field screening results and visual observations of potential impacts. The results of the field analyses are provided in Section 5.0 of this report.

3.2.5 Laboratory Analyses

Selected soil samples collected from the test trenches and soil borings were submitted to the laboratory for the following analyses:

- PAHs - EPA Method 8310;
- BTEX - EPA Method 8020;
- total cyanide - EPA Method 9010;
- RCRA characterization including ignitability, corrosivity, reactivity, TCLP volatiles, TCLP semivolatiles and TCLP metals - Various Methods; and
- remediation parameters including total recoverable petroleum hydrocarbons, alkali content, silica oxide, aluminum oxide, chloride, selected metals, TOC, moisture content, bulk density, and grain size distribution - Various Methods.

Twenty-one discrete soil samples collected during the SSPI were submitted for PAH, BTEX, and total cyanide analyses. The sample identification number for each discrete soil sample submitted for laboratory analyses identifies the trench or soil boring from which the sample was collected and the depth of the sample. For example, sample TTB2-5 (8-9) was a sample collected from test trench TTB2 at a depth of 8 to 9 feet.

Ten soil samples collected during the SSPI were submitted for RCRA characterization analyses. One of these samples was a discrete sample and the remaining nine samples were composite samples. Appendix D contains a summary of the discrete samples used to create the composite samples.

Five soil samples collected during the SSPI were submitted for remediation parameter analyses. All five of these samples were composite samples. Appendix D provides a summary of the discrete samples which were used to create these composite samples.

Soil samples were placed into sample jars supplied by the analytical laboratory. Certain field QA/QC samples including duplicates, equipment rinse blanks, and trip blanks were also submitted for analyses. Two duplicate soil samples and two equipment rinse blanks were submitted to the laboratory for PAH, BTEX and total cyanide analyses. Two trip blanks were submitted for BTEX analyses. Standard RETEC chain-of-custody procedures were followed upon sample collection. The

packaging and shipment of the samples was conducted in accordance with the procedures described in RETEC SOP 110, which is provided in the QAPP for the project.

The methodology utilized by the analytical laboratory for analyses of the soil samples was in substantial compliance with the QAPP. The soil analytical results comply with Level III and Level IV data quality objectives (DQOs). These DQOs are for both Contract Laboratory Program (CLP) and non-CLP analytical procedures. To assess the validity of the soil analytical data generated during the SSPI, RETEC performed a laboratory QA/QC review on the data packages received from the laboratory (i.e., data validation). The results of the data validation are presented in a memorandum provided in Appendix E of this report. Copies of the chain-of-custody forms are provided in Appendix F.

3.3 Groundwater Sampling Program

This section describes the procedures used during the SSPI to collect groundwater samples.

3.3.1 Groundwater Sampling Methods

Groundwater samples were collected from 19 of the 20 monitoring wells at the Site. Figure 2-2 shows the locations of the monitoring wells. One well (i.e., monitoring well W-24S) could not be located during the groundwater sampling program due to building demolition activities recently completed on the City Property.

Prior to purging and sampling the wells, water level and total depth measurements were made as described in the QAPP. Using these measurements, the amount of water to be purged from each well was calculated. Where non-aqueous phase liquid (NAPL) was encountered, its thickness was measured using an electronic interface probe. Thicknesses of NAPL were not included in the calculation of water volumes for purging.

Wells were purged using low-flow peristaltic pumps. During purging, the field parameters of temperature, pH, conductivity, and reduction/oxidation (redox) potential were measured. After three well volumes of water had been removed and the field parameters stabilized, groundwater samples were collected.

Groundwater samples for all parameters except BTEX were collected directly from the pump tubing into appropriately preserved sample bottles supplied by the laboratory. Samples for BTEX

analysis were collected using disposable polyethylene bailers after the pump tubing was removed from the well. Samples for dissolved metals, PAH, and cyanide analyses were field-filtered using in-line 0.45 micron filters. Standard RETEC chain-of-custody procedures were followed after sample collection. The packaging and shipment of samples was in accordance with RETEC SOP 110, which is provided in the project QAPP. All disposable sampling materials were discarded after sample collection. Following groundwater sample collection, dissolved oxygen (DO) was measured in each well. All relevant information collected during purging and sampling was recorded on RETEC groundwater sampling forms, which are provided in Appendix I.

QA/QC samples were collected during the groundwater sampling program. The QA/QC samples consisted of two duplicate samples, two equipment rinse blanks, and one trip blank for each cooler used to ship samples for BTEX analysis.

3.3.2 Groundwater Sample Analyses

Groundwater samples were submitted to the laboratory for the following analyses:

- PAHs - EPA Method 8310;
- BTEX - EPA Method 8020;
- dissolved metals - EPA Method 6010;
- total and weak acid dissociable cyanide - EPA Method 9010 and Standard Methods No. 4500-I;
- nutrient and inorganic parameters including nitrate nitrogen, ammonia nitrogen, total phosphate phosphorus, soluble phosphorus, sulfide, and sulfate - Various Methods; and
- microbial enumerations.

Not all groundwater samples were analyzed for all of the above parameters; specifically, the nutrient and inorganic parameters and microbial enumerations analyses were only performed on samples collected from selected wells. Microbial enumerations were performed by RETEC's Seattle, Washington treatability laboratory.

The methodology utilized by the analytical laboratory for the analyses of the groundwater samples was in substantial compliance with the QAPP. The groundwater analytical results comply with Level III and Level IV DQOs. To assess the validity of the groundwater analytical data

generated during the SSPI, RETEC performed a laboratory QA/QC review on the data packages received from the laboratory. The results of the groundwater data validation are presented in a memorandum provided in Appendix E of this report. Copies of the chain-of-custody forms are provided in Appendix F.

3.4 Decontamination Procedures

3.4.1 Soil Sampling Program

The backhoe bucket was steam cleaned as necessary during the test trenching. All downhole drilling equipment was steamed cleaned between borings. All soil sampling equipment utilized by the field geologist (e.g., split-spoons, knives and spoons) was decontaminated in accordance with RETEC SOP 120, which is provided in the project QAPP. In general, the decontamination procedure utilized for the soil sampling equipment consisted of the following steps:

- removal of soil which adhered to the sampling equipment;
- tap water andalconox solution wash;
- distilled water rinse;
- 50% methanol/50% distilled water rinse; and
- final distilled water rinse.

3.4.2 Groundwater Sampling Program

Field instruments used during groundwater sampling were decontaminated according to RETEC SOP 120, which is provided in the project QAPP. Decontamination was not necessary for groundwater sampling devices, because the sampling devices used (tubing and bailers) were disposable and were discarded after use. In general, the decontamination procedure for field instruments consisted of the following steps:

- distilled water rinse;
- 50% methanol/50% distilled water wash; and
- final distilled water rinse.

3.5 Residuals Management

3.5.1 Soil Sampling Program

Soil removed from each test trench was placed back into the associated trench after soil sampling and logging activities were completed. The trenches completed on the Peters=Johnson Property were backfilled with excavated materials to a depth of three feet below ground surface with periodic compaction of the backfill using the backhoe bucket. Backfilling above a depth of three feet was conducted with a hand-operated tamping unit in approximately 1-foot lifts. The surface of the test trenches completed on the Peters=Johnson Property were capped with new asphalt. The test trenches completed on the City Property were backfilled with excavated materials and periodically compacted with the backhoe. Because building demolition activities were on-going, the test trenches completed on the City Property were not capped with asphalt. Drill cuttings generated during the SSPI were placed on the ground surface adjacent to the associated soil boring.

Decontamination fluids produced during the SSPI soil sampling program were containerized in 55-gallon drums. A total of three drums of decontamination fluids are temporarily being stored at the Site until the appropriate treatment/disposal method is identified.

3.5.2 Groundwater Sampling Program

Water generated during well purging and decontamination was collected and placed into 55-gallon drums and is temporarily being stored at the Site until the appropriate treatment/disposal method is identified.

4.0 GEOLOGY AND HYDROGEOLOGY

The information gathered during the SSPI supplements the geologic/hydrogeologic data presented in the Phase III ESI Report. The geology of the Site is described in detail in the Phase III ESI Report. Soil borings completed during the Phase III ESI were used to develop a description of the geology at the Site. The Phase III ESI Report identified three generalized zones of geology at the Site which are designated as the upper, middle, and lower zones. These zones are described in the Phase III ESI Report as follows:

- Upper Stratigraphic Zone (Upper Zone) - this zone is composed of soil and non-soil fill material. The fill material is primarily sandy silty soil with of gravel, wood and brick fragments. The fill was placed in the area prior to the construction of structures;
- Middle Stratigraphic Zone (Middle Zone) - this zone is composed of discontinuous beds of sediments including silty sand, silty clay and peat. These deposits are related to estuarine and fluvial depositional environments. The Middle Zone contains a peat layer which is 1 to 2 feet in thickness and is present at depths ranging from 10.5 to 17 feet below the ground surface. The peat layer was not present in a north-south trending area in the western portion of the Site; and
- Lower Stratigraphic Zone (Lower Zone) - this zone is composed of a laterally continuous, estuarine clay unit. The clay is present at depths ranging from 30 to 40 feet below the ground surface.

4.1 Geology

4.1.1 Peters=Johnson Property

Thirteen test trenches were completed on the Peters=Johnson Property to depths ranging from 4 to 14 feet. The test trenching activities were completed in a parking area with an approximate thickness of three inches of asphalt. During test trenching activities, the materials encountered outside of subsurface structures were generally consistent with the Upper Zone as defined during the Phase III ESI. Generally, the upper one to two feet of the Upper Zone is composed of compacted silty sand and gravel. Below a depth of two feet, the Upper Zone is composed primarily of brick and concrete debris in a matrix of silty clay, silty sand, or silty gravel containing coal slag, cinder, ash, metal, and wood.

Numerous former subsurface MGP structures were encountered during the test trenching in Areas A, B, and C. The types of former MGP structures encountered include the subsurface portion of a gas holder, a tar well, a gas holder foundation, building foundations, floors, and piping. The locations of the subsurface structures observed during test trenching activities are presented on the test trench diagrams provided in Appendix A of this report.

In some areas of the Peters=Johnson Property, outside of structures, non-soil fill materials (e.g., bricks and concrete) comprised up to 80% of the materials encountered. Inside of Gas Holder #4, located in Area A (Figure 2-3), bricks composed 20 to 70% of the materials encountered. Gas Holder #5, located in Area A, was found to have an approximate 10-foot concrete foundation, indicating that this gas holder was constructed such that gas was stored only above the ground surface. The tar well, located in Areas B and C, was found to contain numerous bricks and other debris.

Outside of structures, the water table was generally encountered at depths of approximately nine feet below the ground surface. Within the tar well, water was found at a depth of approximately 2.5 feet below the ground surface, indicating that water is being held above the water table within the former tar well structure. Within Gas Holder #4, water was encountered at a depth of approximately nine feet below the ground surface (i.e., approximate depth of water table on this property).

4.1.2 City Property

Eleven test trenches and nine soil borings were completed on the City Property during the building demolition. The test trenches ranged in depth from 5 to 13 feet, and the soil borings ranged in depth from 6 to 18 feet. During trenching and soil boring activities, the materials encountered were consistent with the Upper Zone and Middle Zone as defined during the Phase III ESI. Outside of structures, silty clay with sand and gravel was generally encountered in Areas E and F, while silty sand and gravel with less clay was encountered in Area G. Non-soil fill materials including coal slag, ash, cinders, wood, bricks, concrete, and metal debris were observed throughout the property within the Upper Zone to depths ranging from 2 to 12 feet.

The Middle Zone was encountered outside of structures generally at depths at or below the water table. On the City Property, the silty sand and gravels of the Middle Zone were observed at/or below the water table to a depth of approximately 18 feet.

A set of former subsurface MGP structures were encountered during the trenching activities completed in Areas E and F. The types of structures encountered include the subsurface portion of

a former gas holder, a former subsurface oil reservoir, building foundations/ floors, and piping. The locations of the subsurface structures observed during test trenching activities are presented on the test trench diagrams provided in Appendix A of this report.

Outside of structures in Areas E and F, non-soil fill materials were less prevalent than on the Peters=Johnson Property. The fill materials inside of Gas Holder #3 contained only scattered bricks or other large debris. However, significant quantities of bricks and other large debris were observed in Oil Reservoir #1.

In Area G, where no MGP operations existed, no subsurface structures were observed. However, based upon observations made during ongoing demolition activities, concrete footings and concrete vaults exist on this portion of the property. The concrete vaults are assumed to have been related to the operations of an animal feed milling company that formerly operated on this portion of the City Property. The fill materials in the Upper Zone of Area G consisted primarily of silty sand and gravel with scattered non-soil fill materials.

Outside of structures in Areas E, F, and G, water was encountered at depths ranging from 4 to 11 feet below the ground surface. Inside of Gas Holder #3 and Oil Reservoir #1, the depth to water was approximately seven feet.

4.2 Hydrogeology

Groundwater elevations were measured during the SSPI groundwater sampling activities. The water level data collected were generally consistent with measurements made during the Phase III ESI. Figure 4-1 is a water table contour map based on groundwater elevations measured in October 1995. Figure 4-1 represents the inferred configuration of the water table based upon water level elevation data from the shallow wells at the Site. Water level measurements collected during the October 1995 groundwater sampling round are presented on the groundwater sampling forms provided in Appendix I.

Based on the data collected during October 1995 groundwater sampling activities, the direction of groundwater flow at the water table is generally toward the south-southeast.

5.0 RESULTS OF SAMPLING AND LABORATORY ANALYSES

This section summarizes field observations of potential impacts (e.g., field screening results, odors, sheens, and NAPLs), along with the results of the field and laboratory analyses of soil and groundwater samples. Appendix G provides the tabulated data. Copies of the laboratory data sheets are provided in Appendix H.

To assess the validity of the laboratory analytical data generated during the SSPI, a QA/QC review (i.e., data validation) was performed. The results of the QA/QC review are presented in Appendix E of this report. The results of the QA/QC review indicate that the analytical data generated during the SSPI are valid. Results of certain field QA/QC analyses (i.e., trip blanks and equipment rinse blanks) related to the soil sampling program are summarized in Table G-7. Results of field QA/QC analyses related to the groundwater sampling program are summarized in Table G-8.

During the SSPI, field personnel made several types of observations that provide an indication of the impacts to shallow soils and groundwater at the Site. These observations include field screening results, olfactory indications, and the presence of sheens and NAPLs. Such field observations are noted on the test trench diagrams presented in Appendix A, on the soil boring logs provided in Appendix C, and on the groundwater sampling forms provided in Appendix I. Field observations provide insight as to the presence of chemical compounds and other residues in shallow soils. The field observations supplement the results of the chemical analyses performed during the SSPI.

5.1 Soils

For the purpose of this report, field observations noted during subsurface investigation activities are discussed separately for the Peters=Johnson Property and City Property.

5.1.1 Field Observations

Peterson=Johnson Property

The majority of the soil samples exhibiting a field screening result above background levels were collected from test trenches completed near the following structures:

- Gas Holder #5 (trenches TTA2, TTA3, TTA4 and TTB2);
- location of former underground storage tank, not related to former MGP operations, (trenches TTA2, TTA3, and TTA4); and
- tar well (trenches TTB2, TTB3, TTC1 and TTC5).

The highest field screening results were measured in samples collected from test trench TTA2 and were associated with gasoline-like odors noted in the soil. Field screening results for Peters=Johnson property are summarized in Table 5-1.

The following is a summary of the odor, sheen and NAPL observations noted for the test trenches completed on the Peters=Johnson Property.

Area A

- Test trench TTA1 - no significant odors, sheens or NAPL were noted outside or within Gas Holder #4.
- Test trench TTA2 - gasoline-like odors were observed between Gas Holder #4 and Gas Holder #5. The location of former Gas Holder #5 was found to have a concrete pad and footing with approximately one foot of gravel fill material and three inches of asphalt located above the pad and footing. Attempts to break through the concrete pad were unsuccessful. Pipes were observed within the portion of trench TTA2 on top of the Gas Holder #5 concrete pad. The pipes were present near the area of a former UST, where a relatively new asphalt patch existed. Gray-green colored staining and gasoline-like odors were noted within the fill material on top of the concrete pad.
- Test trench TTA3 - a sulfide-like odor was noted from 2 to 6 feet in depth. naphthalene-like odors were noted below a depth of six feet.
- Test trench TTA4 - gasoline-like odors and gray-green colored staining were noted within the fill material on top of the Gas Holder #5 pad. On the east side of the Gas Holder #5 pad, gasoline-like odors were noted to a depth of approximately eight feet, and naphthalene-like odors were noted below a depth of eight feet.
- Test trench TTA5 - the presence of numerous floor and subfloor structures prevented excavation below one foot depth for the majority of trench TTA5. No significant odors were noted in this trench.



**TABLE 5-1
FIELD SCREENING RESULTS
PETERS=JOHNSON PROPERTY
THIRD WARD MGP SITE**

SAMPLE LOCATION	SAMPLE DEPTH (Feet)	FIELD SCREENING RESULTS (ppm)¹
TTA1-1	3	0.1
TTA1-2	5-6	0.1
TTA1-3	6-8	0.1
TTA2-1	5-6	0.1
TTA2-2	9	0.3
TTA2-3	2	1.0
TTA2-4	7	14.4
TTA2-5	5	59.5
TTA2-6	5	65.0
TTA2-7	1	4.8
TTA3-1	4	1.6
TTA3-2	7	16.1
TTA4-1	1-2	12.0
TTA4-2	7	34.9
TTA4-3	5	26.8
TTB1-1	3	0.1
TTB2-1	3-4	0.2
TTB2-2	5	0.2
TTB2-3	7	24.9
TTB2-4	9	29.4
TTB2-5	8-9	13.0
TTB2-6	5-6	5.4
TTB3-1	3	5.2
TTB3-2	6-7	16.9
TTC1-1	2	0.3
TTC1-2	2-3	9.5
TTC1-3	3	3.1
TTC1-4	3-4	19.7
TTC2-1	3	0.4
TTC2-2	3-4	0.5
TTC2-3	3	0.4
TTC2-4	2.5	0.4
TTC3-1	4	0.3
TTC3-2	3	0.2
TTC3-3	4	2.0
TTC4-1	2.5	0.7
TTC4-2	4-5	0.8
TTC5-1	6-7	0.2
TTC5-2	8-9	10.1
TTC5-3	7	1.4

Notes:

(1) PID measurements recorded as above background readings of 0.3 to 1.5 ppm.

Area B

- Test trench TTB1 - no significant odors, sheens or NAPL were noted.
- Test trench TTB2 - slight to moderate naphthalene-like odors were noted from a depth range of 3 to 7 feet.
- Test trench TTB3 - naphthalene-like odors and gray-green colored staining were noted above a brick structure (i.e., footing or floor) encountered at a depth of seven feet.

Area C

- Test trench TTC1- the northern portion of TTC1 was completed within a former tar well. Perched groundwater with a sheen and strong naphthalene-like odors was encountered at approximately 2.5 feet below ground surface within the former tar well. Numerous concrete structures were encountered in this trench which prevented excavation below a depth of 4 feet. Naphthalene-like odors were common in this trench.
- Test trench TTC2 - numerous footings and floors prevented excavation below a depth of five feet. Scattered zones of naphthalene-like odors were noted.
- Test trench TTC3 - numerous footings and floors prevented excavation below a depth of six feet. No significant odors, sheens or NAPL were noted.
- Test trench TTC4 - numerous footings and floors prevented excavation below a depth of six feet. No significant odors, sheens or NAPL were noted.
- Test trench TTC5 - numerous pipes and a large concrete footing were encountered during excavation of TTC5. Slight naphthalene-like odors were noted at the southwest end of the trench and more significant naphthalene-like odors were noted at the northeast end of the trench. An 8-inch diameter steel pipe was observed extending from the northeast side of the concrete footing. A viscous tar-like material with strong naphthalene-like odors was observed inside of the open portion of this pipe.

The approximate alignment of structures and the approximate locations where odors and sheens were encountered during test trenching activities completed on the Peters=Johnson Property are presented on the test trench diagrams provided in Appendix A.

City Property

At least one sample from Areas E, F and G exhibited a field screening result above background levels. Generally, the lowest field screening results were found in samples collected from Area F (i.e., 0.0 to 30.0 ppm). Soil samples collected from Areas E and G exhibited higher field screening results (i.e., 0.0 to 67 ppm and 0.0 to 95 ppm, respectively). Field screening results for soil samples collected on the City Property are presented on Table 5-2.

The following is a summary of the odor, sheen, and NAPL observations for the soil borings and test trenches completed on the City Property.

Area E

- Soil borings DB-4 and DB-5 - petroleum-like odors were noted at a depth range of 2 to 6 feet. Groundwater was encountered at a depth of 4 to 5 feet below ground surface.
- Test trench TTE1 - completed within Gas Holder No. 3, no significant odors, sheens or NAPL were noted.
- Test trench TTE2 - decaying organic material with a strong odor was noted from a depth of 1 to 7 feet. Scattered zones of petroleum-like odors were observed at and below a depth of seven feet.
- Test trench TTE3 - completed within Gas Holder No. 3, scattered zones of slight petroleum-like odors were noted above the water table at a depth of approximately seven feet. A green colored stain and sheen, with a strong petroleum-like odor, was noted at the water table. Small zones of gold-brown colored oil-like material with a strong petroleum-like odor was observed at and below the water table.

Area F

- Test trench TTF1 - the north half of TTF1 was completed within former Oil Reservoir #1. Groundwater was encountered at a depth of five feet inside of the structure. Strong naphthalene and petroleum-like odors and sheens were noted within the structure. A thick concrete floor was encountered at a depth of two feet in this trench outside of Oil Reservoir #1.
- Test trench TTF2 - petroleum-like odors were noted above the water table. Groundwater was encountered at a depth of seven feet. An olive-green

TABLE 5-2
FIELD SCREENING RESULTS
CITY OF MILWAUKEE PROPERTY AREAS E, F AND G
THIRD WARD MGP SITE



SAMPLE LOCATION	SAMPLE DEPTH (Feet)	FIELD SCREENING RESULTS (ppm) ¹
TTE1-2	10-11	0.4
TTE2-1	7	0.2
TTF1-1	5-6	19.5
TTF1-2	8-10	16.5
TTF2-1	3	30.0
TTF2-2	7-8	25.0
TTF3-1	7	3.7
TTF3-2	12	3.5
TTG1-1	4-6	14.0
TTG2-2	5-6	4.3
TTG3-1	7-8	0.7
TTG4-2	6-7	30.0
TTG5-1	4-5	3.2
DB-1A	6-8	75.0
DB-1A	8-10	1.6
DB-2	0-2	0.0
DB-2	2-4	0.0
DB-2	4-6	21.0
DB-2	6-8	22.0
DB-3	0-2	0.0
DB-3	2-4	18.0
DB-3	4-6	95.0
DB-4	0-2	0.0
DB-4	4-6	47.0
DB-4	6-8	67.0
DB-4	8-10	13.0
DB-5	2-4	10.0
DB-5	4-6	18.0
DB-5	6-8	3.3
DB-5	8-10	2.3
DB-6	2-4	18.5
DB-6	4-6	16.0
DB-6	8-10	1.5
DB-7	2-4	0.2
DB-7	4-6	2.9
B-47	0-2	0.0
B-47	4-6	18
B-47	16-18	20

Notes:

¹PID measurements recorded as above background (0.3 to 1.5 ppm)

color, semi-transparent, oil-like material and sheen with a strong petroleum-like odor was noted at the water table. Small areas of the olive-green material and strong petroleum-like odors were noted below the water table.

- Test trench TTF3 - greenish stain and strong petroleum-like odors were observed at and below the water table at depths ranging from 5 to 12 feet.

Area G

- Test trench TTG1 - petroleum-like odors were noted at and immediately above the water table at a depth of approximately five feet.
- Test trench TTG2 - a green colored stain and sheen with a petroleum-like odor was observed at and below the water table which is located at a depth of approximately five feet.
- Test trench TTG3 - organic-like odor was noted at and immediately above the water table at a depth of approximately six feet.
- Test trench TTG4 - strong petroleum-like odors were noted at and below the water table which is located at a depth of approximately five feet.
- Test trench TTG5 - petroleum-like odors were noted at depths ranging from 2 to 5 feet.

5.1.2 Field Analysis

The following subsections described the results of the immunoassay field analysis testing completed during the SSPI.

Peters=Johnson Property

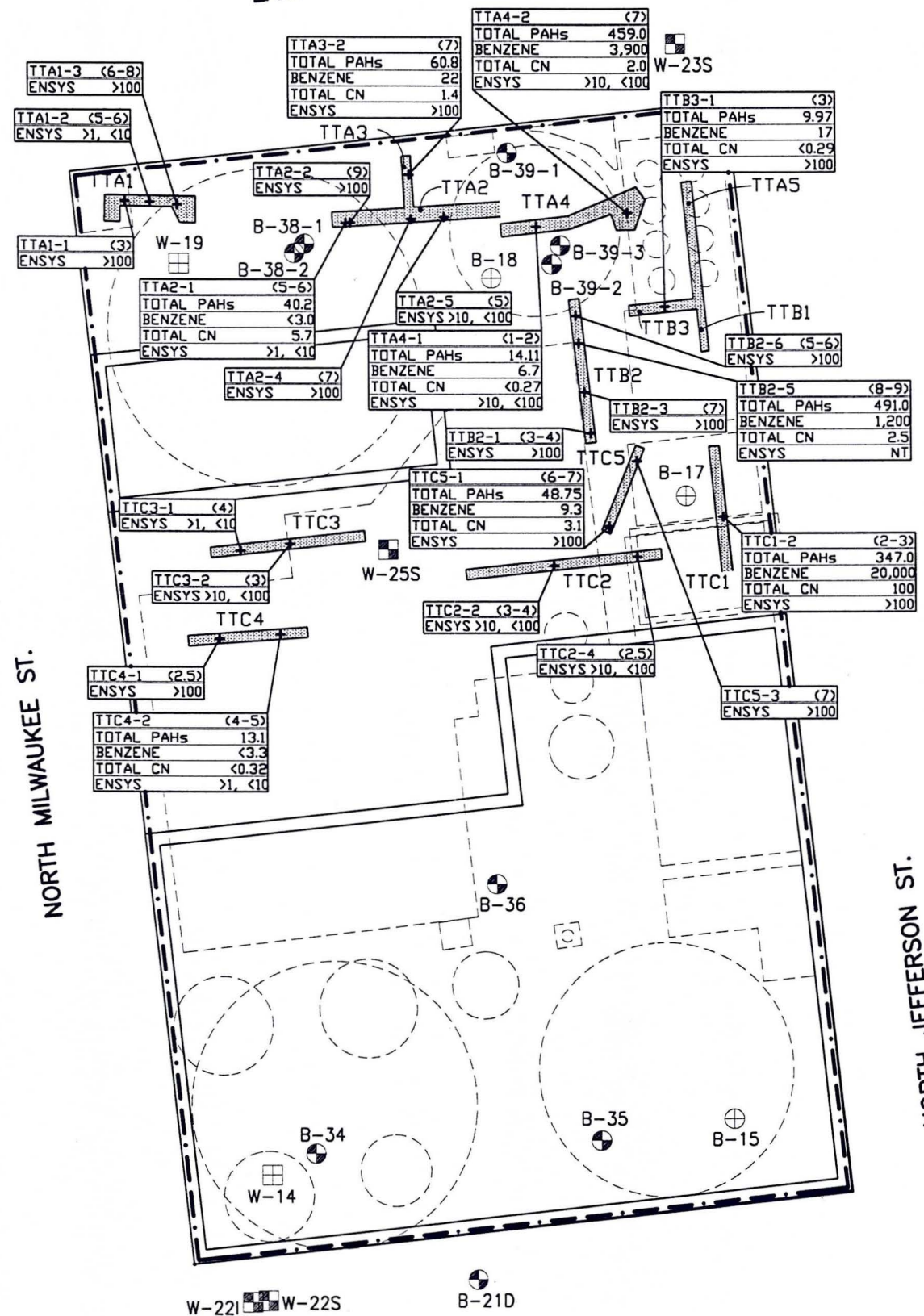
A total of 23 soil samples were collected for field analysis during test trenching activities conducted on the Peters=Johnson Property. All of the soil samples subjected to field analysis were found to contain total PAHs at a level above 1 ppm. Nineteen of the 23 samples exhibited total PAHs at levels between 10 and 100 ppm. Thirteen of the 23 samples exhibited total PAHs at a level above 100 ppm. All of the samples collected from Area B that were subjected to field analysis had total PAH concentrations at or above 100 ppm. Field analysis results for samples collected on the Peters=Johnson Property are summarized in Table 5-3. Figure 5-1 is a plan-view map showing the results of the field and laboratory analyses completed on soil samples collected from the Peters=Johnson Property.



TABLE 5-3
FIELD ANALYTICAL RESULTS
PETERS=JOHNSON PROPERTY AREAS A, B AND C
THIRD WARD MGP SITE

SAMPLE ID	FIELD ANALYSIS RESULTS		
	1 PPM TOTAL PAHs	10 PPM TOTAL PAHs	100 PPM TOTAL PAHs
TTA1-1 (3)	yes	yes	yes
TTA1-2 (5-6)	yes	no	no
TTA1-3 (6-8)	yes	yes	yes
TTA2-1 (5-6)	yes	no	no
TTA2-2 (9)	yes	yes	yes
TTA2-4 (7)	yes	yes	yes
TTA2-5 (5)	yes	yes	no
TTA3-2 (7)	yes	yes	yes
TTA4-1 (1-2)	yes	yes	no
TTA4-2 (7)	yes	yes	no
TTB2-1 (3-4)	yes	yes	yes
TTB2-3 (7)	yes	yes	yes
TTB2-6 (5-6)	yes	yes	yes
TTB3-1 (3)	yes	yes	yes
TTC1-2 (2-3)	yes	yes	yes
TTC2-2 (3-4)	yes	yes	no
TTC2-4 (2.5)	yes	yes	no
TTC3-1 (4)	yes	no	no
TTC3-2 (3)	yes	yes	no
TTC4-1 (2.5)	yes	yes	yes
TTC4-2 (4-5)	yes	no	no
TTC5-1 (6-7)	yes	yes	yes
TTC5-3 (7)	yes	yes	yes

EAST MENOMONEE AVE.



EXPLANATION

- LIMIT OF MGP OPERATIONS
- - - FORMER MGP STRUCTURES
- ▭ EXISTING BUILDING
- TTA3-2 + TRENCH SAMPLE LOCATION
- TTA3 SSPI TEST TRENCH
- B-210 PHASE III ESI BORING LOCATION
- W-460 PHASE III ESI MONITORING WELL LOCATION
- B-17 BORING COMPLETED BY OTHERS
- W-16 MONITORING WELL INSTALLED BY OTHERS

SAMPLE DEPTH (FEET)	
TOTAL PAHs	mg/Kg
BENZENE	ug/Kg
TOTAL CN	mg/Kg
ENSYS	ppm TOT. PAHs

SAMPLE DEPTH (FEET)	
ENSYS	ppm TOT. PAHs

NT = NOT TESTED



NO	DRWN	DATE	REVISION	CHKD	DATE	APPVD	DATE
5							
4							
3							
2							
1							
0	MLA	6/6/95	DRAFT				

THIRD WARD MGP SITE
MILWAUKEE, WISCONSIN
3-0887-803

SELECTED SOIL FIELD AND LABORATORY
ANALYTICAL RESULTS
PETERS-JOHNSON PROPERTY



This drawing is sent to you subject to return upon demand, with the understanding that it is not to be reproduced, copied or used, directly or indirectly, in any way detrimental to our interests. All rights reserved.
CURRENT DATE: 09/01/95 TIME: 12:44 PLOT SCALE: LAY CFG: FG2 0887C075

City Property

A total of 24 soil samples were collected for field analysis during soil boring and test trenching activities conducted on the City Property. All of the samples subjected to field analysis were found to contain total PAHs at a level above 1 ppm. Twenty of the 24 samples exhibited total PAHs at a level between 10 and 100 ppm. Twelve of the 24 samples exhibited total PAHs at a level at or above 100 ppm. Field analysis results for samples collected from the City Property are summarized in Table 5-4. Figure 5-2 is a plan-view map showing the results of the field and laboratory analyses completed on soil samples collected from the City Property.

5.1.3 Laboratory Analytical Results

The following is a summary of laboratory analytical results for soil samples collected during the SSPI. Tabulated analytical results are provided in Tables G-1 through G-7 of Appendix G. Figure 5-1 and 5-2 are plan-view maps showing the results of the PAH, BTEX, and cyanide analyses completed on soil samples collected from the Peters=Johnson Property and the City Property, respectively.

Peters=Johnson Property

PAHs Ten soil samples were submitted for PAH analysis. The 10 samples included one field duplicate. The results presented in Table G-1 provide the concentrations detected for individual PAH compounds and a summation of total PAHs. Individual PAH compound concentrations are reported in micrograms per kilogram (ug/Kg). Total PAH results are presented in milligrams per kilogram (mg/Kg).

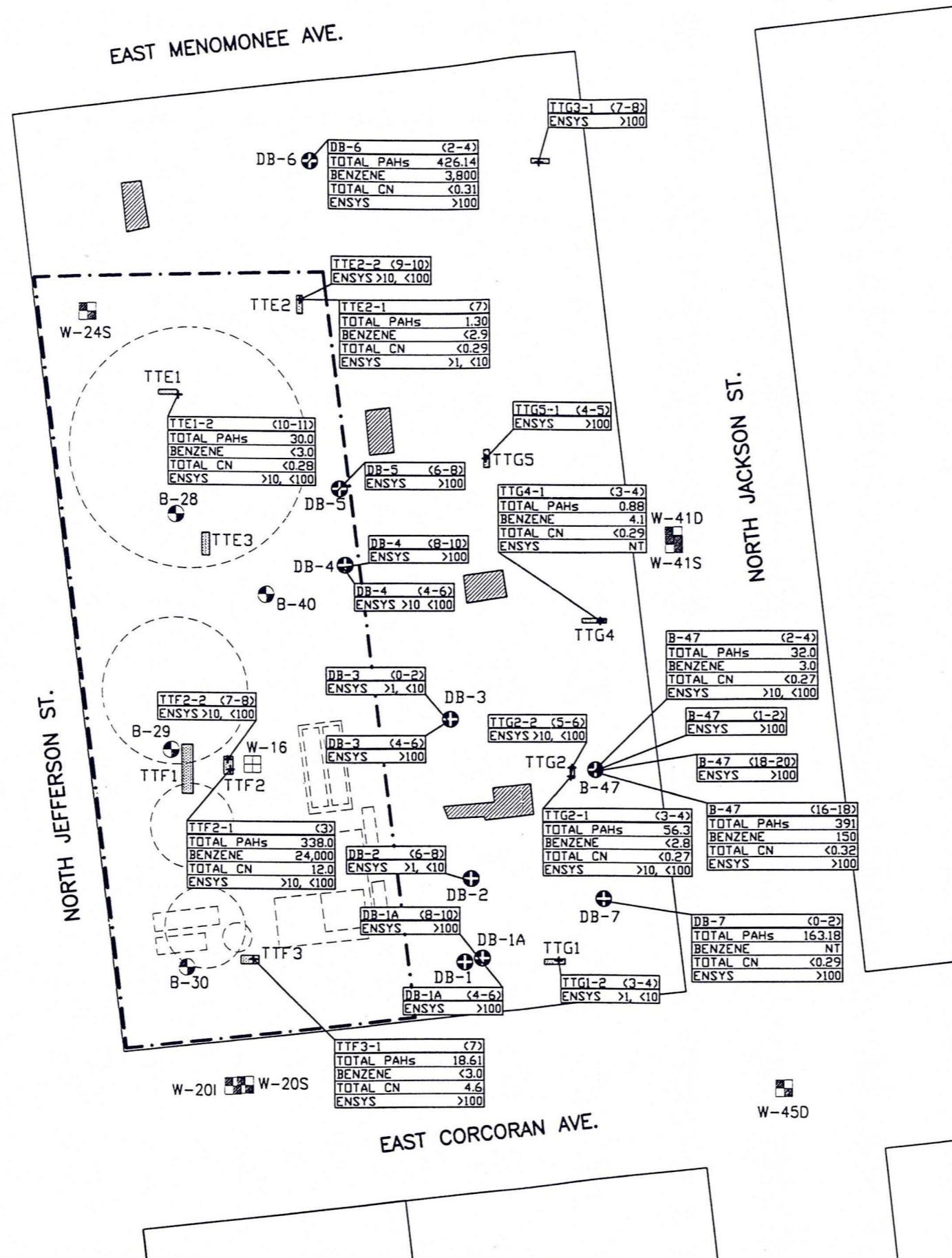
Laboratory analyses indicate the presence of at least one individual PAH compound in all 10 soil samples submitted for analysis. Total PAH concentrations detected ranged from 9.98 to 491 mg/Kg. The highest concentration of total PAHs detected was found in a sample collected from test trench TTB2.

BTEX Ten soil samples were submitted for BTEX analysis. The ten samples included one field duplicate. Analytical results shown in Table G-1 are reported in ug/Kg.



TABLE 5-4
FIELD ANALYTICAL RESULTS
CITY OF MILWAUKEE PROPERTY AREAS E, F AND G
THIRD WARD MGP SITE

SAMPLE ID	FIELD ANALYSIS RESULTS		
	1 ppm TOTAL PAHs	10 ppm TOTAL PAHs	100 ppm TOTAL PAHs
TTE1-2 (10-11)	yes	yes	no
TTE2-1 (7)	yes	no	no
TTE2-2 (9-10)	yes	yes	no
DB-4 (4-6)	yes	yes	no
DB-4 (8-10)	yes	yes	yes
DB-5 (6-8)	yes	yes	yes
TTF2-1 (3)	yes	yes	no
TTF2-2 (7-8)	yes	yes	no
TTF3-1 (7)	yes	yes	yes
TTG1-2 (3-4)	yes	no	no
TTG2-1 (3-4)	yes	yes	no
TTG2-2 (5-6)	yes	yes	no
TTG3-1 (7-8)	yes	yes	yes
TTG5-1 (4-5)	yes	yes	yes
B-47 (1-2)	yes	yes	yes
B-47 (2-4)	yes	yes	no
B-47 (16-18)	yes	yes	yes
DB-1A (4-6)	yes	yes	yes
DB-1A (8-10)	yes	yes	yes
DB-2(6-8)	yes	no	no
DB-3 (0-2)	yes	no	no
DB-3 (4-6)	yes	yes	yes
DB-6 (2-4)	yes	yes	yes
DB-7 (0-2)	yes	yes	yes



EXPLANATION

- LIMIT OF MGP OPERATIONS
 - - - FORMER MGP STRUCTURES
 - EXISTING BUILDING
 - TTA3-2 + TRENCH SAMPLE LOCATION
 - TTA3 SSPI TEST TRENCH
 - DB-1 DEMOLITION SOIL BORING
 - B-210 PHASE III ESI BORING LOCATION
 - W-460 PHASE III ESI MONITORING WELL LOCATION
 - B-17 BORING COMPLETED BY OTHERS
 - W-16 MONITORING WELL INSTALLED BY OTHERS
 - CONCRETE VAULT - NOT RELATED TO MGP OPERATIONS
- | SAMPLE DEPTH (FEET) | TOTAL PAHs | BENZENE | TOTAL CN | ENSYS |
|---------------------|------------|---------|----------|-----------|
| (1-2) | 32.0 | 3.0 | <0.27 | >10, <100 |
| (16-18) | 391 | 150 | <0.32 | >100 |
- NT = NOT TESTED

NO.	ORWN	DATE	REVISION	CHKD	DATE	APPRD	DATE
6							
5							
4							
3							
2							
1	MLA	6/6/95	DRAFT				

**THIRD WARD MGP SITE
MILWAUKEE, WISCONSIN
3-0887-603**

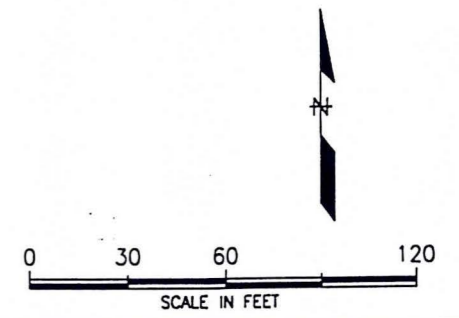
This drawing is sent to you subject to return upon demand, with the understanding that it is not to be reproduced, copied or used, directly or indirectly, in any way detrimental to our interests. All rights reserved.

CURRENT DATE: 06/26/95 TIME: 15:34 PLOT SCALE: LAY: CFG: F02 08870075

**SELECTED SOIL FIELD AND LABORATORY
ANALYTICAL RESULTS
CITY PROPERTY**

RETEC
REMEDIATION
TECHNOLOGIES, INC.

FIGURE 5-2



The laboratory analyses indicated that at least one BTEX compound was detected in nine of the 10 samples submitted for analysis. BTEX compounds were not detected in the sample collected from test trench TTC4 at a depth of 4 to 5 feet. Individual BTEX compounds were detected in the following concentration ranges:

- benzene - 6.7 to 20,000 ug/Kg;
- toluene - 3.2 to 13,000 ug/Kg;
- ethylbenzene - 4.2 to 250,000 ug/Kg; and
- total xylenes - 12 to 380,000 ug/Kg.

The highest concentration of BTEX was detected in a sample collected from test trench TTB2.

Cyanide Ten soil samples were submitted to the laboratory for total cyanide analysis. The 10 samples included one field duplicate. Total cyanide results provided in Table G-1 are reported in mg/Kg.

Laboratory analysis indicated the presence of total cyanide in 7 of the 10 samples submitted for analysis. Total cyanide concentrations detected ranged from 1.4 to 100 mg/Kg. The highest concentration of total cyanide detected was found in a sample collected from trench TTC1.

Remediation Parameters Three composite samples (i.e., Composite #11, Composite #12, and Composite #13) collected during test trenching activities conducted on the Peters=Johnson Property were submitted for remediation parameter analyses. A summary of the discrete soil samples used to create the composite samples is provided in Appendix D. Table G-3 provides the results of these analyses.

RCRA Characterization Five samples collected from the Peters=Johnson Property were submitted for hazardous waste characterization analyses. Four samples were composites (i.e., Composite #2, Composite #3, Composite #4, and Composite #5) and one sample was a discrete sample collected from trench TTC1. A summary of the discrete soil samples used to create the composite samples is provided in Appendix D.

As indicated in Table G-5, sample TTC1-4 (3-4) was the only sample which demonstrated a RCRA characteristic (i.e., benzene concentration of 1.0 mg/L).

City Property

PAHs Eleven soil samples were submitted for PAH analysis. The 11 samples included one field duplicate. The results presented in Table G-2 provide the concentrations detected for individual PAH compounds and a summation of total PAHs.

Laboratory analyses indicated the presence of at least one individual PAH compound in all 11 soil samples submitted for analysis. Total PAH concentrations detected ranged from 0.88 to 426 mg/Kg. The highest concentration of total PAHs detected was found in a sample collected from soil boring DB-6.

BTEX Ten soil samples were submitted for BTEX analysis. The 10 samples included one field duplicate.

As shown in Table G-2, laboratory analyses indicated that at least one BTEX compound was detected in eight of the 10 samples submitted for analysis. Individual BTEX compounds were detected in the following concentration ranges:

- benzene - 3.0 to 24,000 ug/Kg;
- toluene - 5.1 to 1,800 ug/Kg;
- ethylbenzene - 3.7 to 110,000 ug/Kg; and
- total xylenes - 9.1 to 53,000 ug/Kg.

The highest concentration of BTEX was detected in a sample collected from soil boring DB-6.

Cyanide Eleven soil samples were submitted for total cyanide analysis. The 11 samples included one field duplicate.

Laboratory analysis indicated the presence of total cyanide in 2 of the 11 samples submitted for analysis. Total cyanide was detected at concentrations of 4.6 and 12 mg/Kg in samples collected from test trenches TTF3 and TTF2, respectively.

Remediation Parameters Two composite samples (i.e., Composite #14 and Composite #15) collected during drilling and test trenching activities conducted on the City Property were submitted for treatment parameter analyses as describe din Section 3.0 of this report. A summary of the discrete soil samples used to create the composite samples is provided in Appendix D. Table G-4 provides the results of these analyses.

RCRA Characterization Five soil samples collected from the City Property were submitted for hazardous waste characterization analyses. All five of the samples were composites (i.e., Composite #6 through Composite #10). A summary of the discrete soil samples used to create the composite samples is provide in Appendix D.

As indicated by the results provided in Table G-6, none of the five samples collected on the City Property demonstrated a RCRA characteristic.

5.2 Groundwater

This section presents the field observations made during the groundwater sampling program and the results of laboratory analyses completed on groundwater samples.

5.2.1 Field Observations

Field observations of potential impacts to groundwater include the presence of odors, sheens, or NAPLs. Field observations of impacts to groundwater were recorded on the groundwater sampling forms provided in Appendix I.

Field observations of impacts to groundwater (i.e., odors, sheens, or NAPL) were noted in all of the monitoring wells sampled, with the exception of wells W-42D and W-45D. Tar or naphthalene-like odors were the most commonly noted field indication of impacts, and were observed while purging 10 of the monitoring wells. A sulfur-like odor was noted in monitoring well W-13. Sheens were observed on the surface of water purged from eight monitoring wells. A dense NAPL (DNAPL) and brown material floating on the water surface, was observed in monitoring wells W-20I and W-43D. Light NAPL (LNAPL) was observed in monitoring well W-16. These field observations are generally consistent with observations made during the Phase III ESI groundwater sampling program.

5.2.2 Laboratory Analytical Results

The following is a summary of laboratory analytical results for groundwater samples collected during the SSPI. Tabulated analytical results are provided in Table G-8 of Appendix G. The laboratory data sheets are provided in Appendix H. Figure 5-3 is a plan-view map showing the results of selected analyses completed on groundwater samples.

PAHs

Twenty-one groundwater samples, including two field duplicates, were submitted for PAH analysis. Table G-8 presents the concentrations detected for individual PAH compounds and a summation of total PAHs. Laboratory results for PAHs are reported in micrograms per liter (ug/L). Table G-8 presents the calculated total PAH concentrations in both ug/L and mg/L.

Laboratory analyses indicate the presence of at least one individual PAH compound in 17 of the 21 groundwater samples submitted for analysis. Total PAH concentrations detected ranged from 26 to 9,487 ug/L (0.026 to 9.5 mg/L). The highest concentration of total PAHs was detected in a sample collected from W-20I.

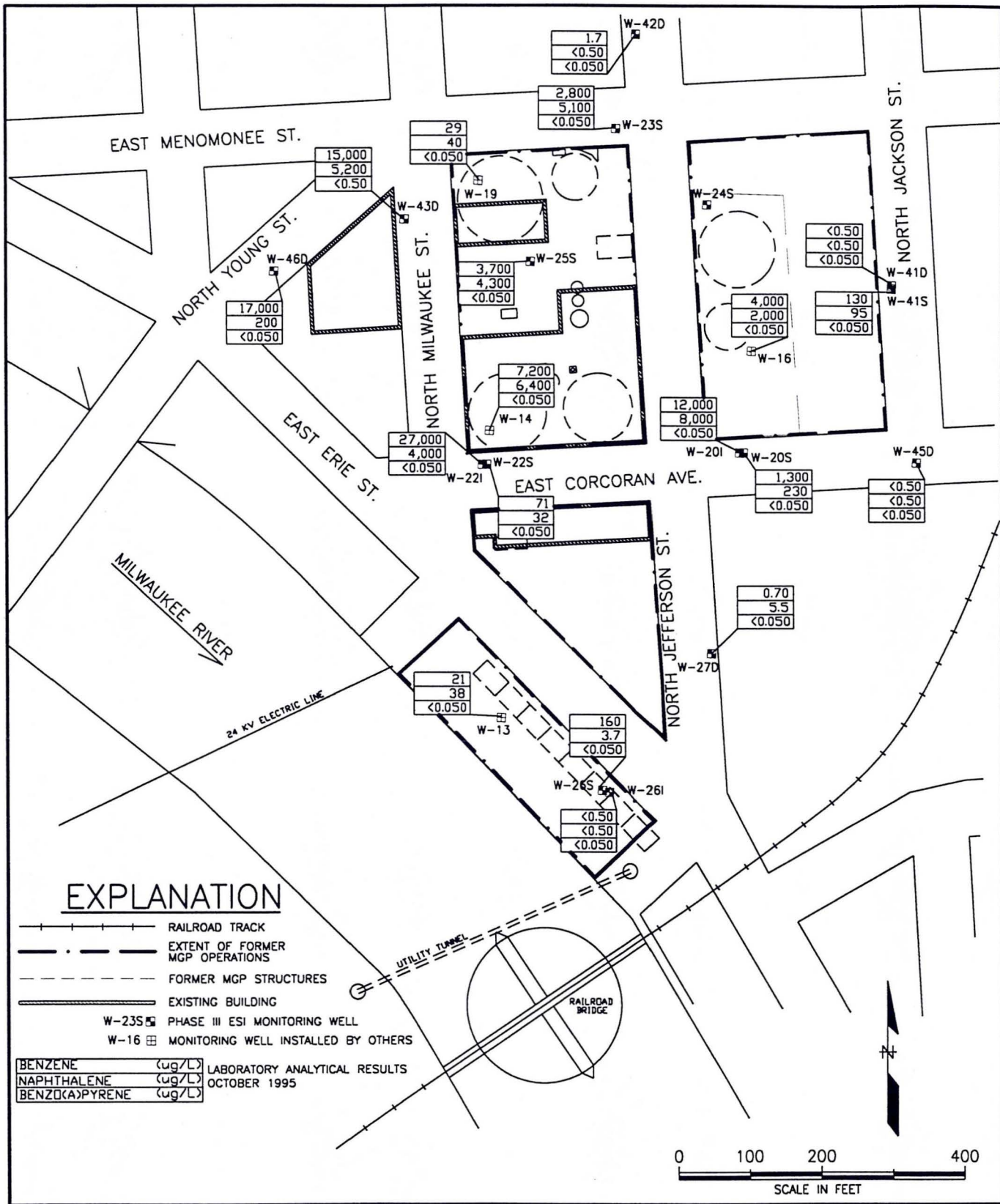
BTEX

Twenty-one groundwater samples, including 2 field duplicates, were submitted for BTEX analysis. Table G-8 presents the BTEX results in ug/L.

Laboratory analyses indicated the presence of at least one BTEX compound in 18 of the 21 groundwater samples submitted for analysis. Individual BTEX compounds were detected in the following concentration ranges:

- benzene - 0.7 to 27,000 ug/L;
- toluene - 0.7 to 5,500 ug/L;
- ethylbenzene - 1.6 to 4,400 ug/L; and
- total xylenes - 4.9 to 7,200 ug/L.

The highest concentration of total BTEX was detected in the sample collected from W-22I.



**SELECTED GROUNDWATER ANALYTICAL RESULTS - OCTOBER 1995
WISCONSIN GAS COMPANY
THIRD WARD MGP SITE**

**FIGURE
5-3**

REV.	1	0887C14S
M/LA	FINAL	N/A

Cyanide

Twenty-one groundwater samples, including two field duplicates, were submitted for total cyanide analysis. If total cyanide was detected in a sample, the sample was then analyzed for weak acid dissociable (WAD) cyanide. Total and WAD cyanide results shown in Table G-8 are reported in mg/L.

Total cyanide was detected in 19 of the 21 groundwater samples analyzed. The total cyanide concentrations reported ranged from 0.018 to 20 mg/L. For these samples, the corresponding WAD cyanide analyses detected WAD cyanide in nine samples at concentrations ranging from 0.008 to 0.13 mg/L. The highest concentrations of total and WAD cyanide were detected in a sample collected from W-26S.

Dissolved Metals

Twenty-one groundwater samples including, 2 field duplicates, were submitted for analysis of dissolved calcium, iron, and magnesium. Table G-8 presents the results of the dissolved metals analyses in ug/L.

Nutrient and Inorganic Parameters

Ten groundwater samples were submitted for nutrient and inorganic parameter analyses. Duplicate samples for these parameters were not collected. Table G-8 presents the results of these analyses in mg/L. As is indicated in Table G-8, certain nitrogen and phosphorus compounds were detected in groundwater at the Site.

Microbial Enumerations

Ten groundwater samples were submitted for microbial enumerations as described in Section 3.0 of this report. Duplicate samples for microbial enumerations were not collected. The results of the microbial enumerations analyses are presented in Appendix J. As is indicated in the data tables provided in Appendix J, microbial populations were detected in 5 of the 10 samples submitted for analysis.

6.0 SUMMARY AND CONCLUSIONS

The following provides a summary of the findings resulting from the SSPI. Summary statements are organized into the following topics:

- geology and occurrence of former subsurface MGP structures;
- soil conditions; and
- groundwater conditions.

6.1 Geology and Occurrence of Structures

6.1.1 Peters=Johnson Property

- Numerous subsurface structures were encountered during test trenching activities.
- In some areas of this property, non-soil fill materials (e.g., bricks and concrete) comprise up to 80% of the materials encountered in the Upper Zone.
- A portion of Gas Holder #4 contained 20 to 70% of brick materials.
- Gas Holder #5 was found to have a concrete foundation which extended to a depth of 10 feet below ground surface.
- Numerous bricks were observed inside of the Area B tar well.
- Inside of Gas Holder #4 water was encountered at a depth of approximately nine feet.
- Inside of the Area B tar well, water was encountered at a depth of approximately 2.5 feet below the ground surface.

6.1.2 City Property

- Below the water table, silty sand and gravel consistent with the Middle Zone was encountered to depths of 18 feet below the ground surface in Area G.
- Numerous subsurface structures (e.g., gas storage structures, floors and piping) were encountered during test trenching activities completed in Areas E and F.
- Concrete vaults and building foundations, not related to former MGP operations, were noted to exist in Area G.
- Non-soil fill materials consisting of bricks, concrete, wood, coal slag, ash and cinders were encountered throughout the Upper Zone.
- Outside of structures the depth to water varied between 4 and 11 feet below the ground surface.
- Inside of Gas Holder #3 and Oil Reservoir #1, the depth to water was approximately seven feet.

6.2 Soil Conditions

6.2.1 Field Observations of Impacts

Peters=Johnson Property

- Gasoline-like odors, gray colored staining, and elevated field screening results were noted above and adjacent to the Gas Holder #5 foundation, which is located in Area A near the location of a former UST which is not related to MGP operations.
- Naphthalene-like odors and elevated field screening results were noted in soil adjacent to and nearby Gas Holder #5 and the Area B tar well.
- Strong naphthalene-like odors and sheen were noted in the debris and water encountered in the Area B tar well.

City Property

- Green colored soils and strong petroleum-like odors were noted in the southern part of Gas Holder #3.
- No significant field screening results, odors, or staining were noted in the northern part of Gas Holder #3.
- Strong odors and sheens were noted at the water table within Oil Reservoir #1.
- Petroleum-like odors and green colored staining was observed at the water table in the southern part of Area E, all of Area F, and the southern three-quarters of Area G.

6.2.2 Results of Field Analysis

Peters=Johnson Property

- Thirteen of the 23 soil samples subjected to field analysis had results greater than 100 ppm total PAHs.
- Five of the 10 samples collected from Area A had results greater than 100 ppm total PAHs.
- All four of the samples collected from Area B had results greater than 100 ppm total PAHs.
- Four of the nine samples collected from Area C had results greater than 100 ppm total PAHs.

City Property

- Twelve of the 24 soil samples subjected to field analysis had results greater than 100 ppm total PAHs.
- Two of the six samples collected from Area E had results greater than 100 ppm total PAHs.
- One of the three samples collected from Area F had results greater than 100 ppm total PAHs.
- Nine of the 15 samples collected from Area G had greater than 100 ppm total PAHs.

6.2.3 Results of Laboratory Analyses

Peters=Johnson Property

- Total PAHs were detected at concentrations ranging from 9.98 to 491 mg/Kg with the highest concentration detected in a sample collected from test trench TTB2.
- Benzene was detected at concentrations ranging from 6.7 to 20,000 ug/Kg with the highest concentration detected in a sample collected from test trench TTC1.
- Total cyanide was detected at concentrations ranging from 1.4 to 100 mg/Kg with the highest concentration detected in a sample collected from test trench TTC1.
- One sample (i.e., sample TTC1-4 (3-4)) collected from the Peters=Johnson Property exhibited the characteristics of hazardous waste according to 40 CFR Part 261.

City Property

- Total PAHs were detected at concentrations ranging from 0.88 to 426 mg/Kg with the highest concentration detected in a sample collected from soil boring DB-6.
- Benzene was detected at concentrations ranging from 3.0 to 24,000 ug/Kg with the highest concentration detected in a sample collected from test trench TTF2.
- Total cyanide was detected in two samples (i.e., samples collected from trenches TTF3 and TTF2) at concentrations of 4.6 and 12 mg/Kg, respectively.
- None of the five composite samples collected from the City Property exhibited characteristics of a hazardous waste according to 40 CFR Part 261.

6.3 Groundwater Conditions

6.3.1 Hydrogeology

- Water level measurements indicate that the direction of groundwater flow at the water table is generally towards the south-southeast.

6.3.2 Field Observations of Impacts

- Field indications of impacts (i.e., odors, sheens, or NAPLs) to groundwater were noted in all of the monitoring wells sampled at the Site with the exception of wells W-42D and W-45D.
- Tar or naphthalene-like odors were the most commonly noted field indication of impacts, and were observed in 10 of the monitoring wells.
- DNAPL was observed in monitoring wells W-20I and W-43D.
- LNAPL was observed in monitoring well W-16.

6.3.3 Results of Laboratory Analyses

- Total PAH concentrations detected ranged from 26 to 9,487 ug/L (0.026 to 9.5 mg/L). The highest concentration of total PAHs was detected in a sample collected from well W-20I.
- benzene concentrations detected ranged from the 0.7 to 27,000 ug/L. The highest concentration of benzene was detected in the sample collected from well W-22I.
- Total cyanide concentrations detected ranged from 0.018 to 20 mg/L. The corresponding WAD cyanide analyses detected WAD cyanide at concentrations ranging from 0.008 mg/L to 0.13 mg/L. The highest concentrations of total and WAD cyanide were detected in the sample collected from well W-26S.
- Microbial enumerations analyses indicated that microbial populations were detected in 5 of the 10 groundwater samples submitted for this analysis.

APPENDIX A

TEST TRENCH DIAGRAMS



Project No. 3-0987 - 303

Client WISCONSIN GAS

Site 3rd WARD

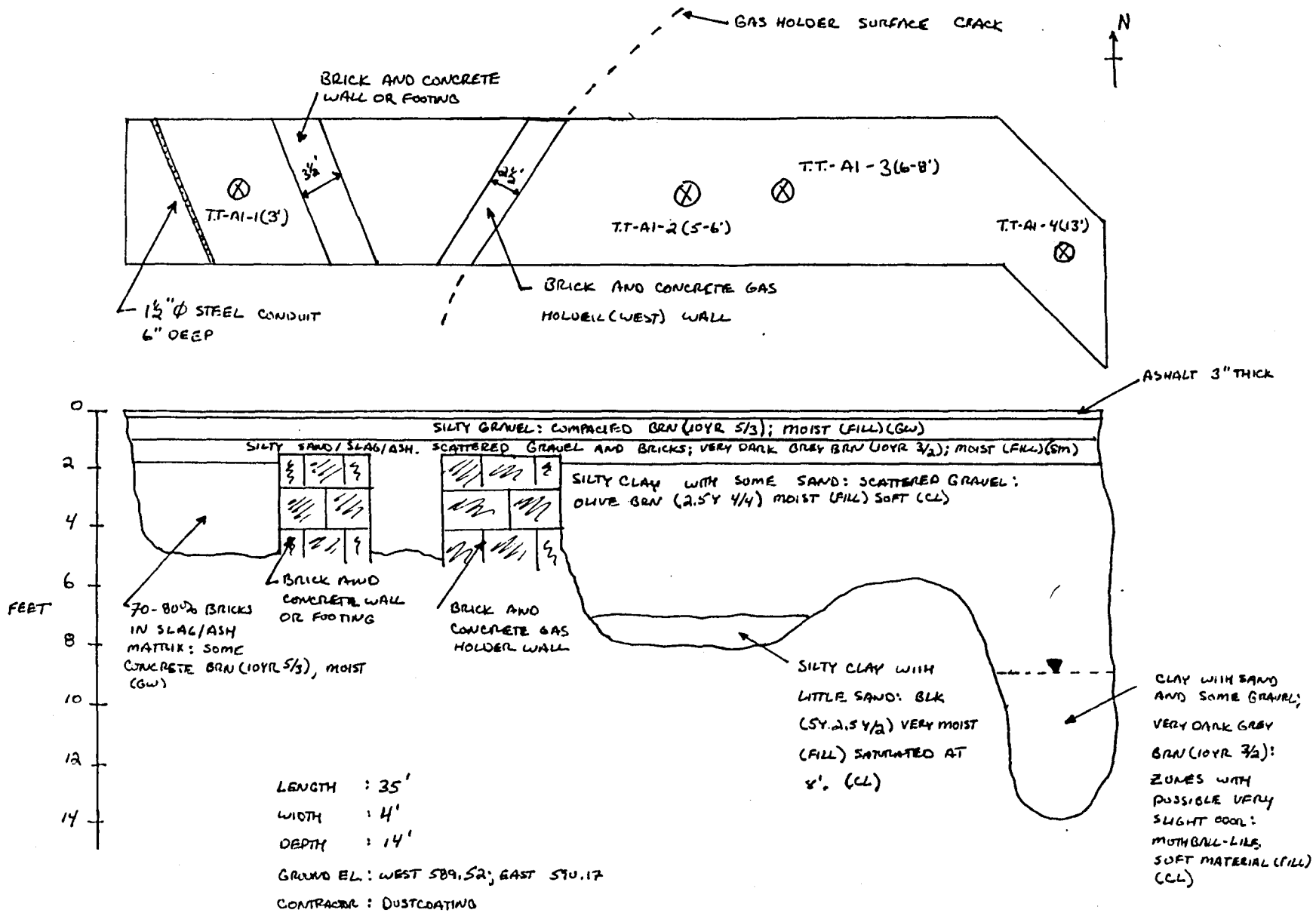
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Page 1 of 1

Date 4/25 - 4/28/95

By TAD

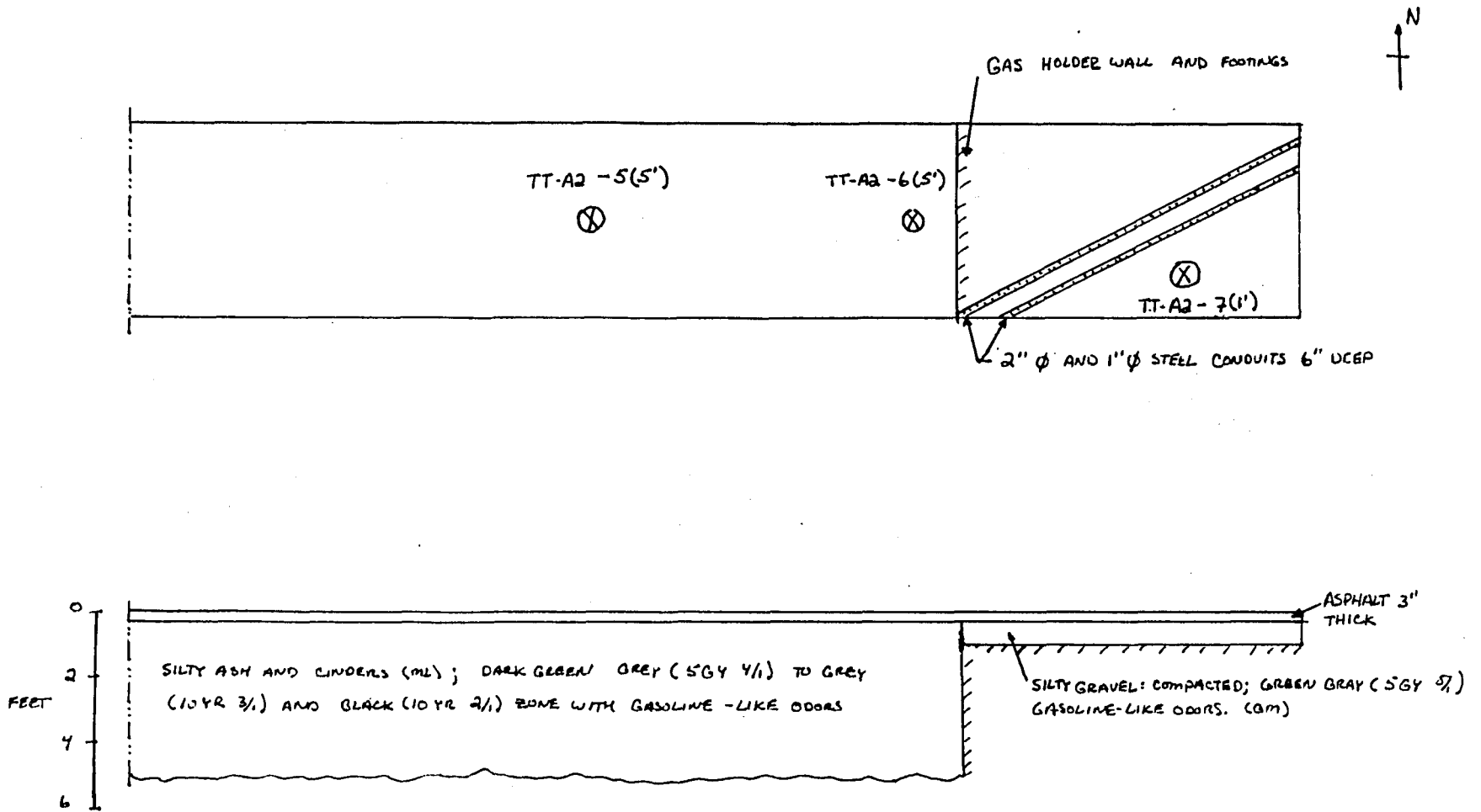
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Project No. 3-C887-303
Client WISCONSIN GAS
Site 3RD WARD
Subject T. T. A2 - EAST

Page 2 of 2
Date 4/25 - 4/26/95
By TAD
App.

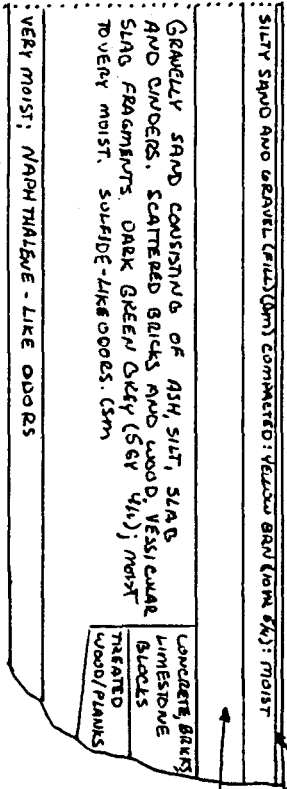
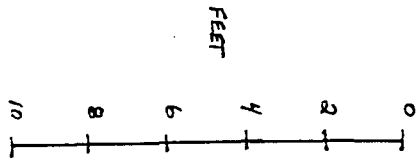


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CONTRACTOR: DUSTCOATING



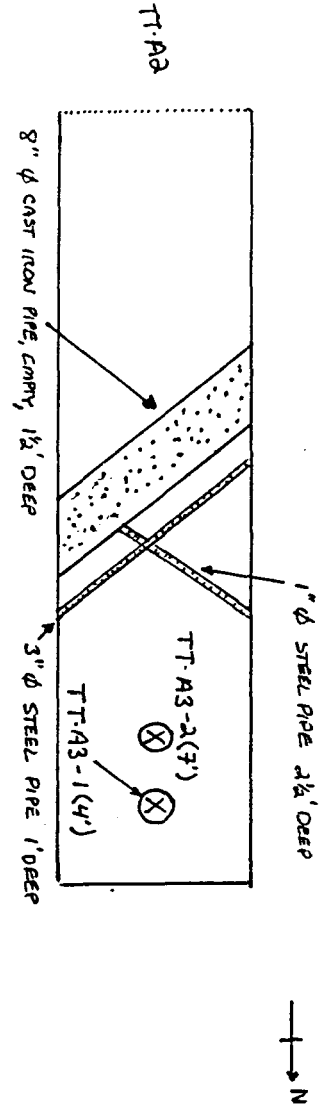
Project No. 3-0887-303
 Client WISCONSIN GAS
 Site 3RD WARD
 Subject TT-A3

Page 1 of 1
 Date 4/25/95
 By TAO
 App. _____



SILTY SAND WITH GRAVEL (SM)
 CONSISTS OF SLAG, COAL GANUIS,
 (ALSO LOSE 2/1): MOIST. SOURCE
 LIKE ODORE

LENGTH : 20'
 WIDTH : 4'
 DEPTH : 7'
 Ground EL: 589.83
 CONTRACTOR: DISTRICTING





Project No. 3-0887-303

Client WISCONSIN GAS

Site 3RD WARD

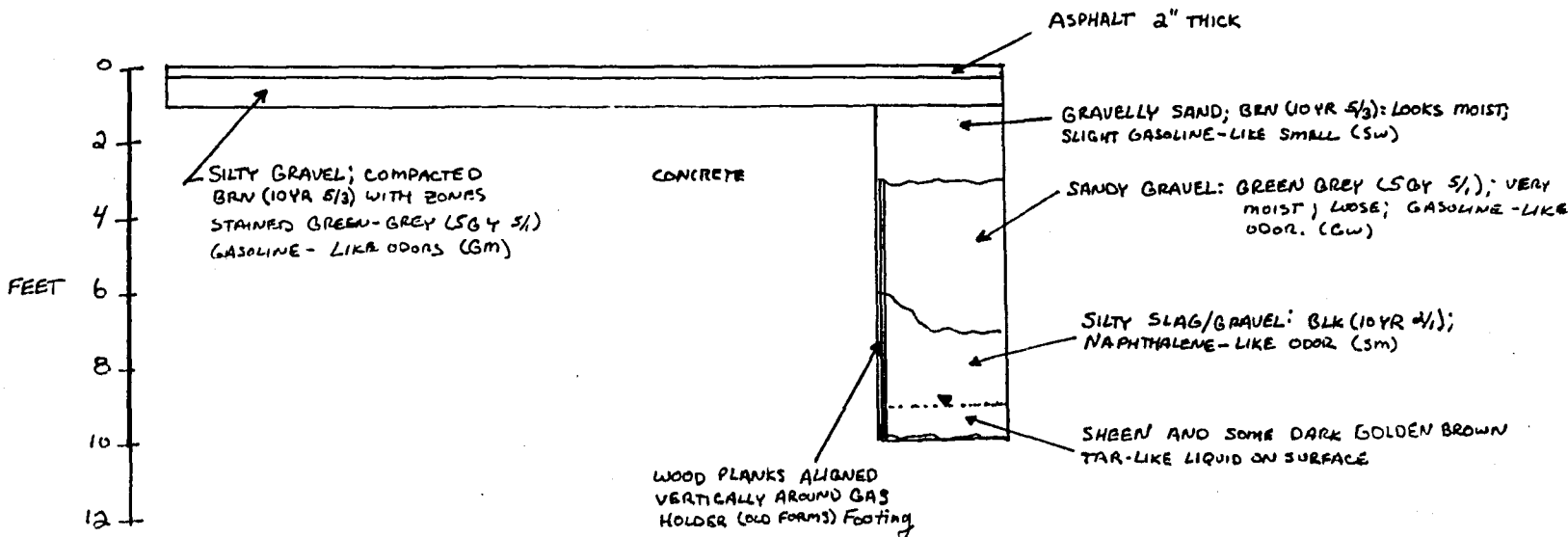
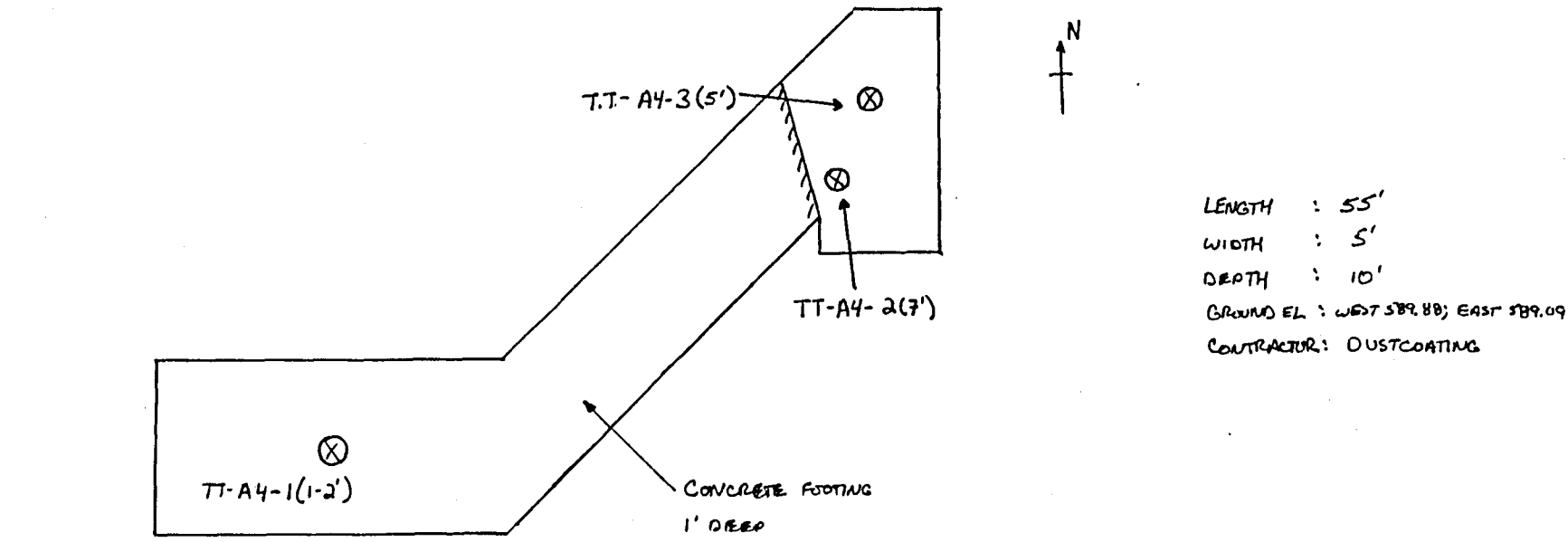
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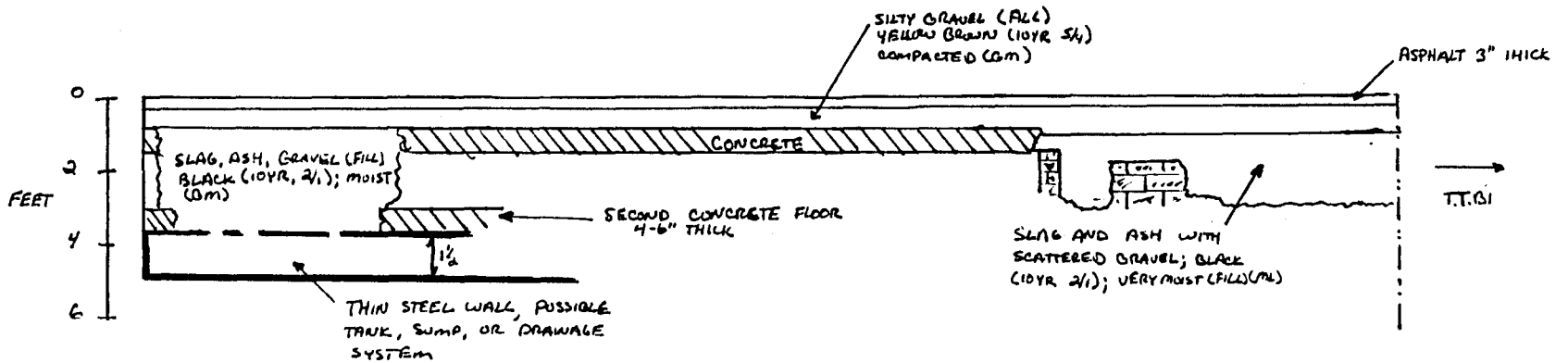
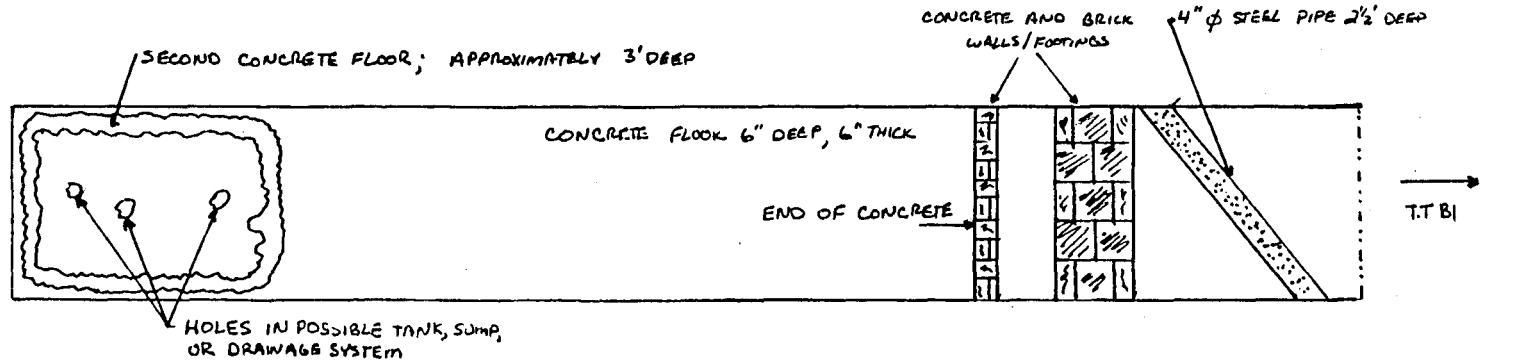
Page 1 of 1

Date 4/26/95

By TAD

App.





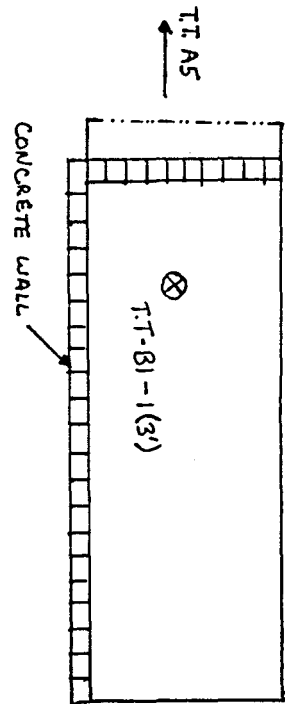
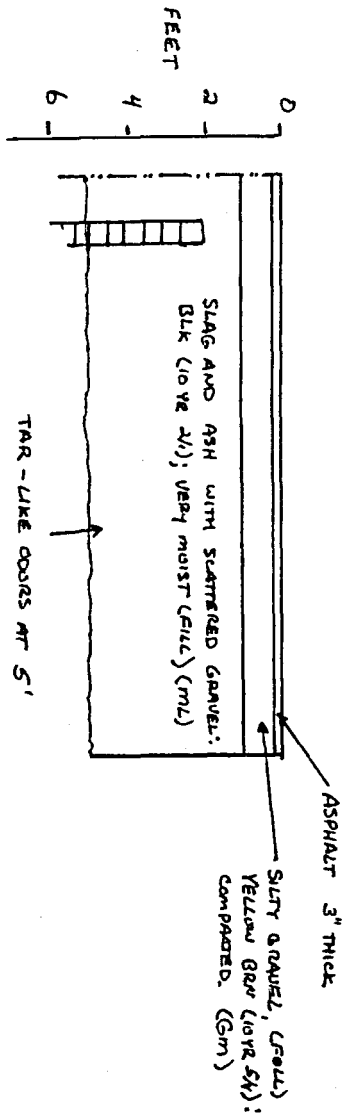
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 CONTRACTOR: DUSTCOATING



Project No. 3-0887-303
Client WISCONSIN GAS
Site 3RD WARD
Subject T.T- B1

Page 1 of 1
Date 4/25/95
By TAD
App. _____



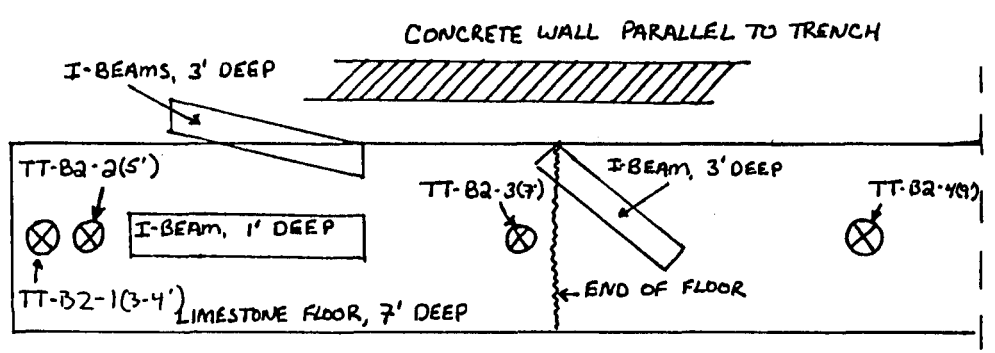
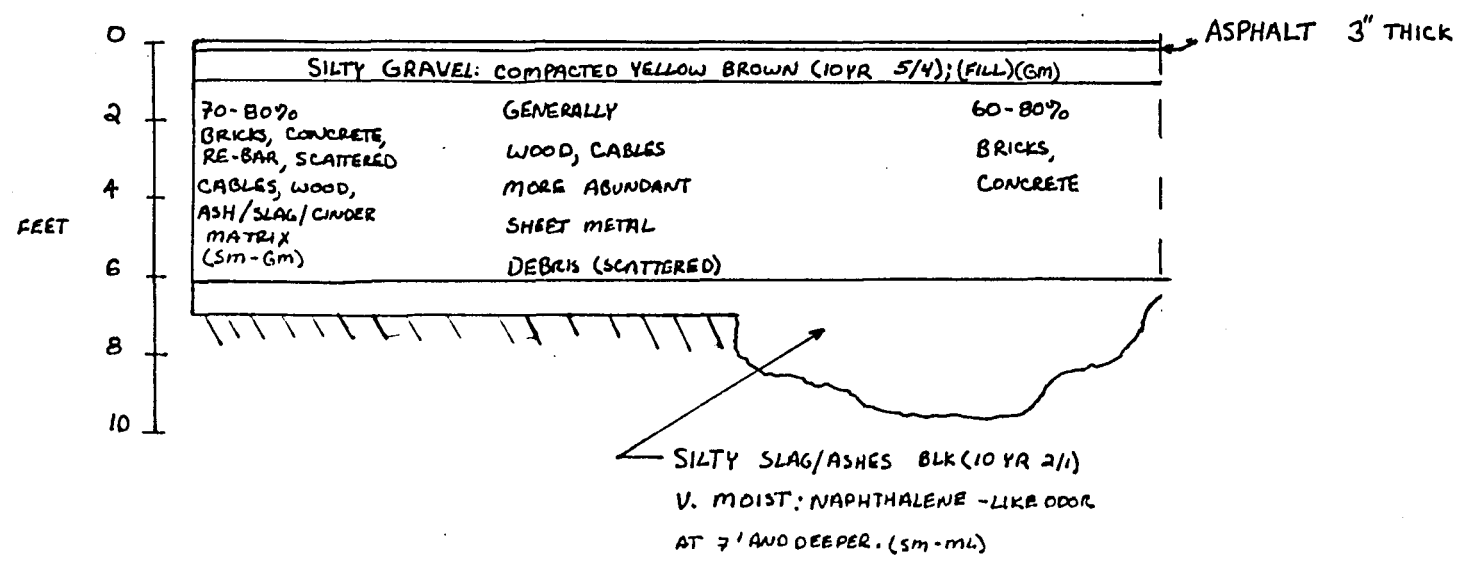
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DEPTH : 5'
GROUND EL. : 589.37
CONTRACTOR : DUSTROATING





Project No. 3-0887-303
 Client WISCONSIN GAS
 Site 3rd WARD
 Subject T.I. - 62 SOUTH

Page 1 of 2
 Date 4/25/95
 By TAD
 App.





Project No. 3-0887 - 303

Client WISCONSIN GAS

Site 3RD WARD

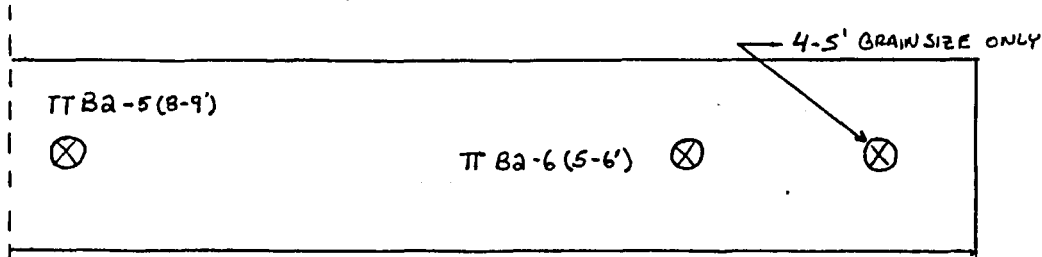
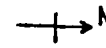
Subject TT-B2 - NORTH

Page 2 of 2

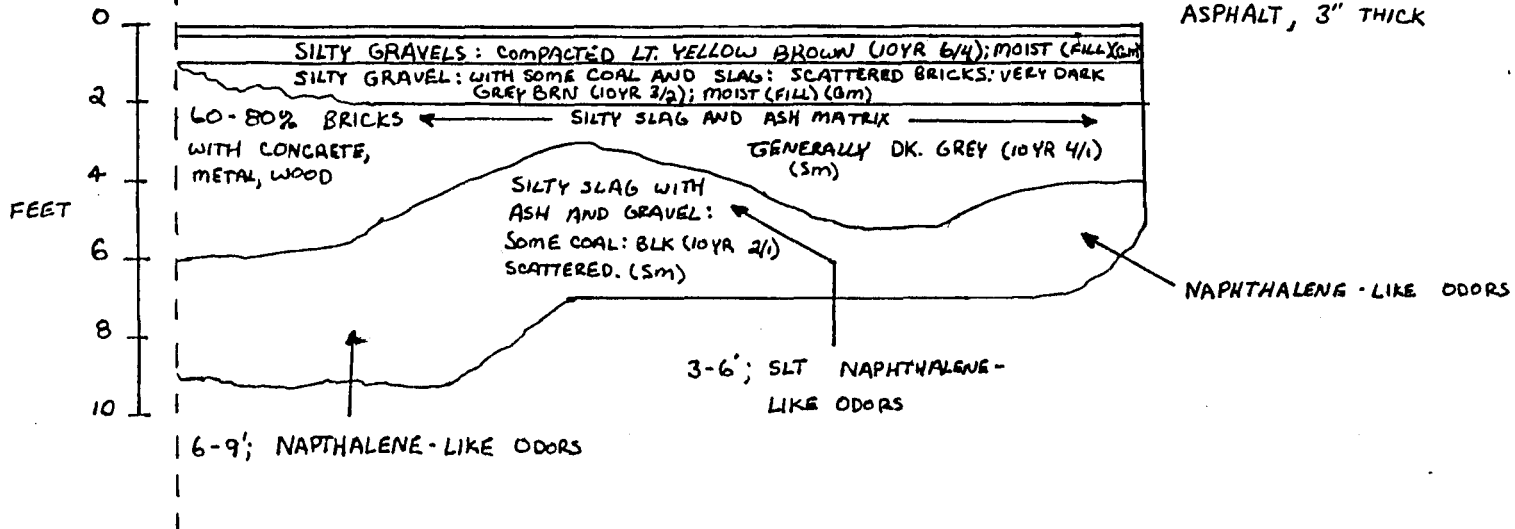
Date 4/26/95

By TAD

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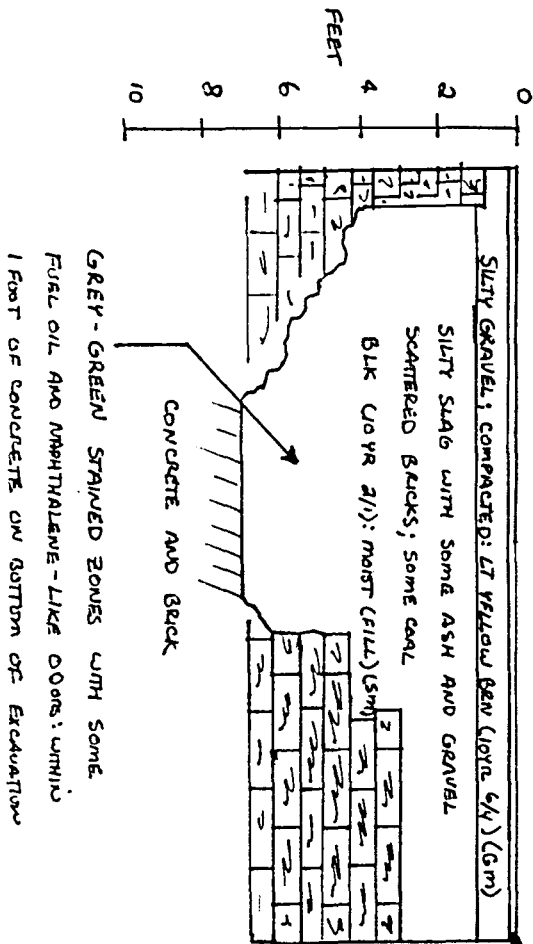
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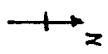
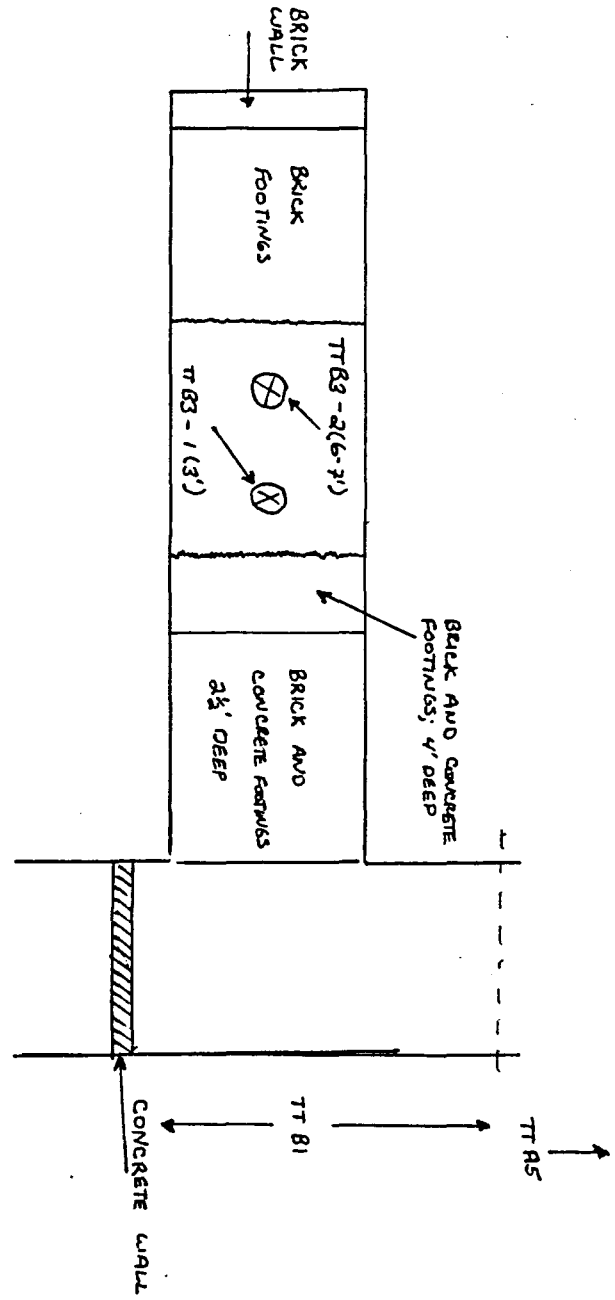
Project No. 3-0887-303
 Client WISCONSIN GAS
 Site 3rd WARD
 Subject TT-B3

Page 1 of 1
 Date 4/26/95
 By TAD
 App. _____



GREY-GREEN STAINED ZONES WITH SOME
 FUEL OIL AND ANTHRACENE-LIKE OILS; WITHIN
 1 FOOT OF CONCRETE ON BOTTOM OF EXCAVATION

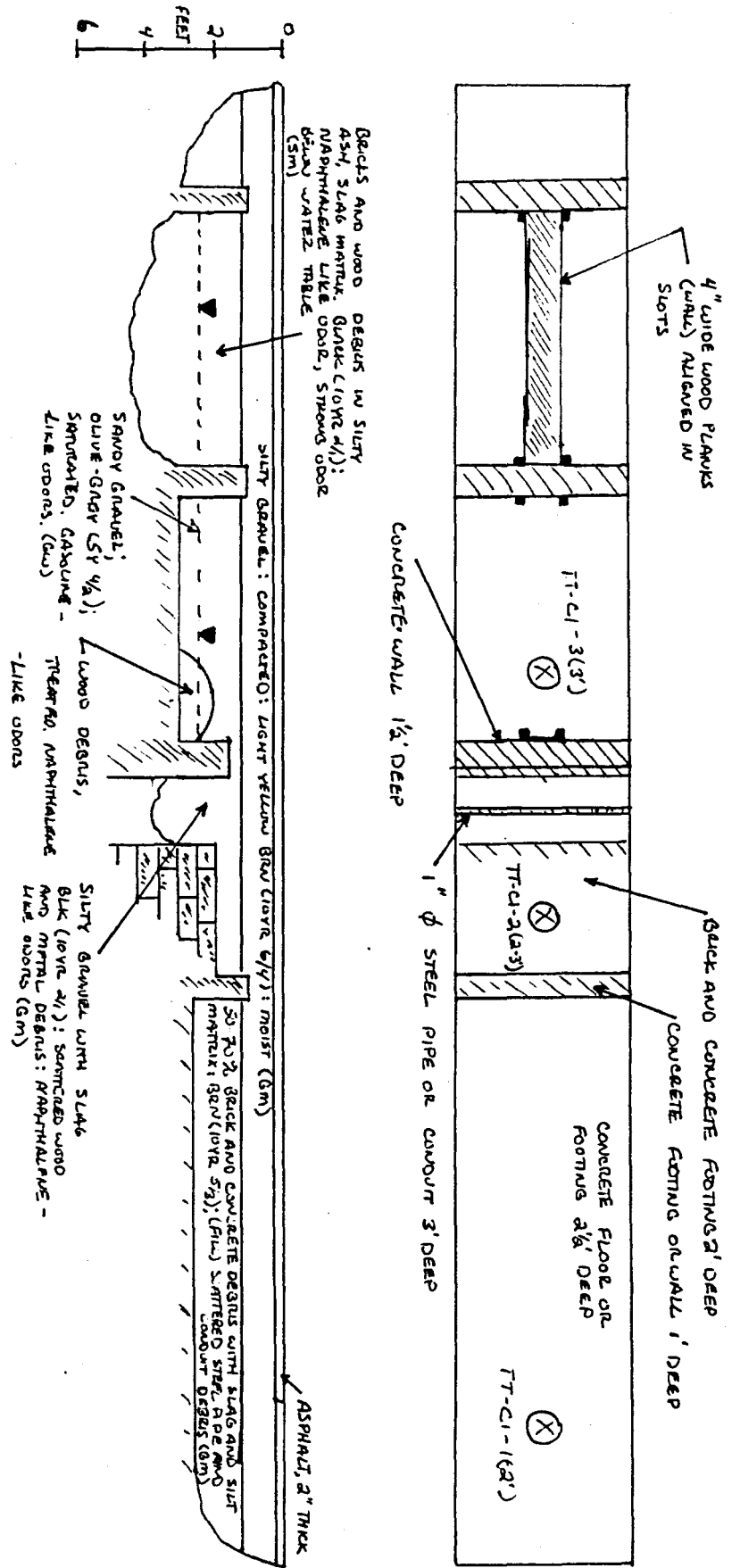
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 CONTRACTOR: DISCREETIVE





Project No. 3-C887-303
 Client WISCONSIN GAS
 Site 3RD WARD
 Subject TTCL

Page 1 of 1
 Date 4/26/95
 By TND
 App. _____



N ←

LENGTH : 48'
 WIDTH : 4'
 DEPTH : 4'
 GROUND EL.: NORTH STPO. 12; SOUTH STPO. 37
 CONTRACTOR: DUST CONTAINING

Project No. 3-0887-303

Client WISCONSIN GAS

Site 3rd WARD

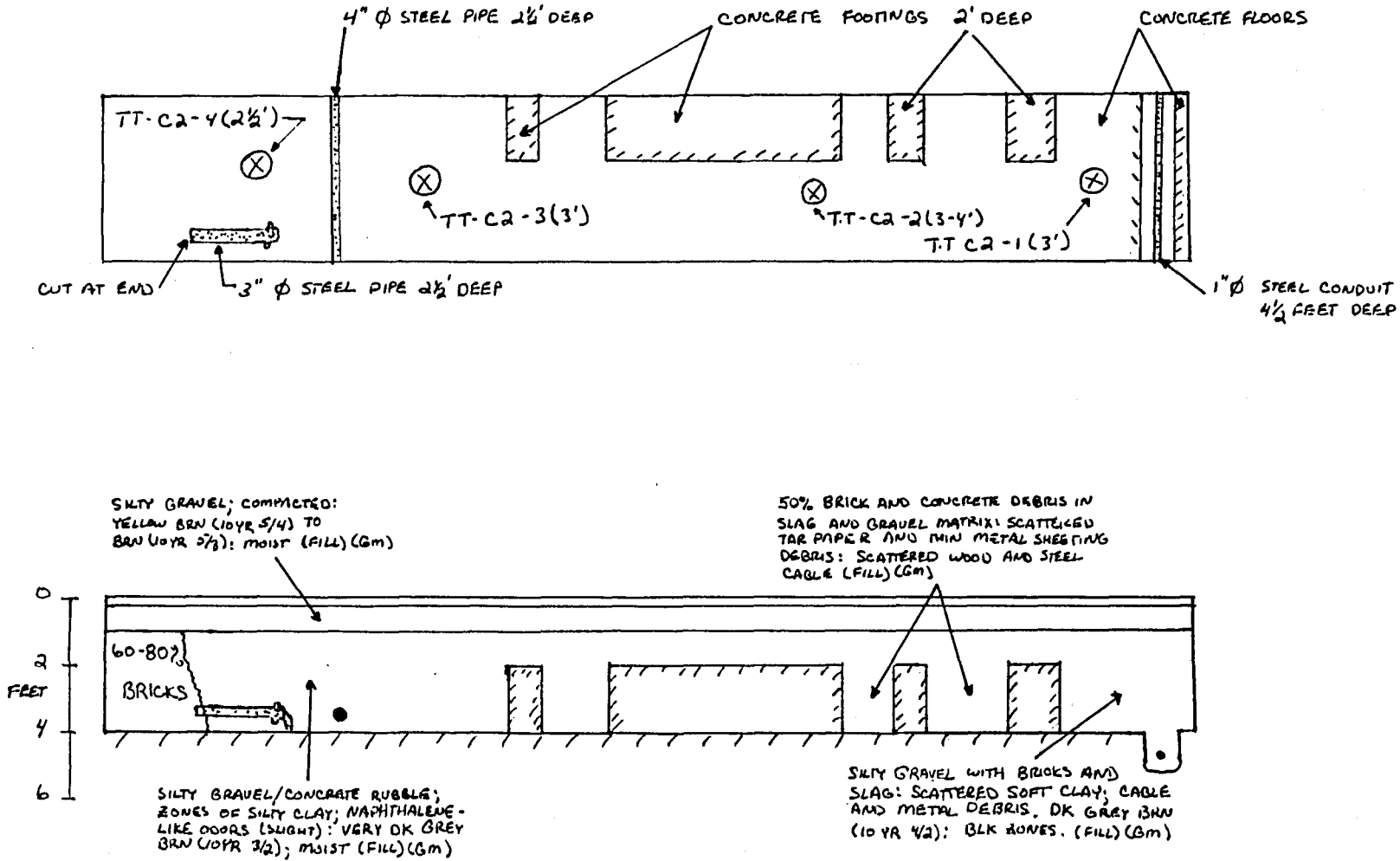
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Page 1 of 1

Date 4/26/95

By TAD

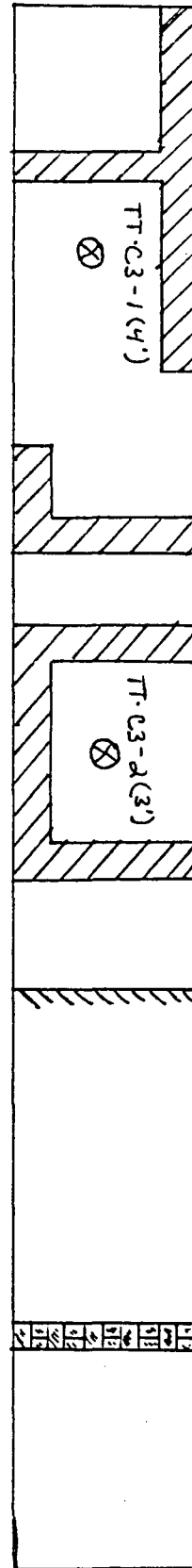
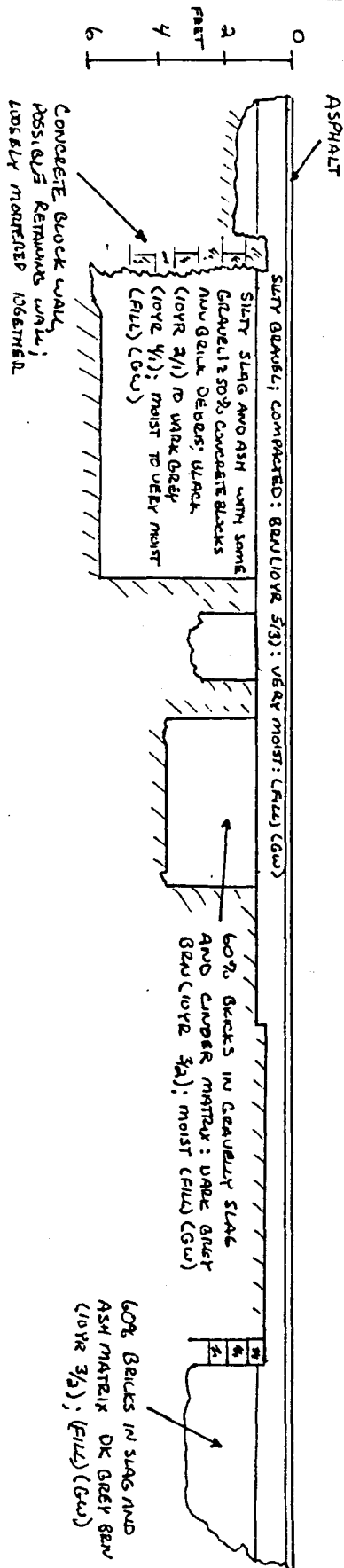
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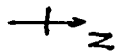


Project No. 3-0887-303
 Client WISCONSIN GAS
 Site 3RD WARD
 Subject TTC3

Page _____ of _____
 Date 4/25/95
 By TAD
 App. _____



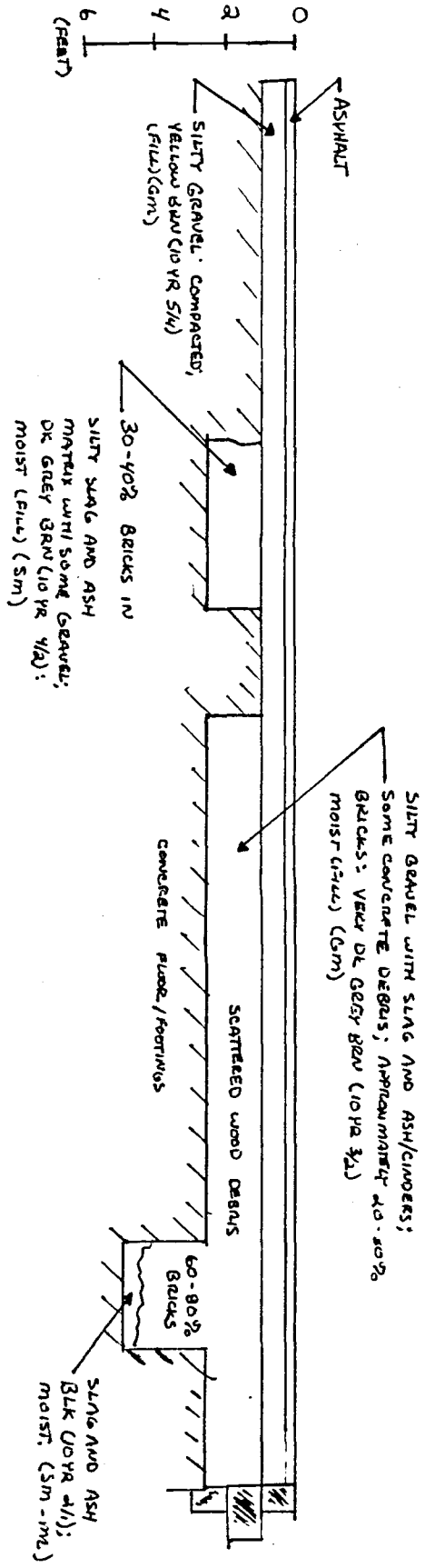
LENGTH : 60'
 WIDTH : 4'
 DEPTH : 6'
 GRAVITY EL.: WEST 590.4V, EAST 590.25
 CONSTRUCTION: DUSTCONTAINING



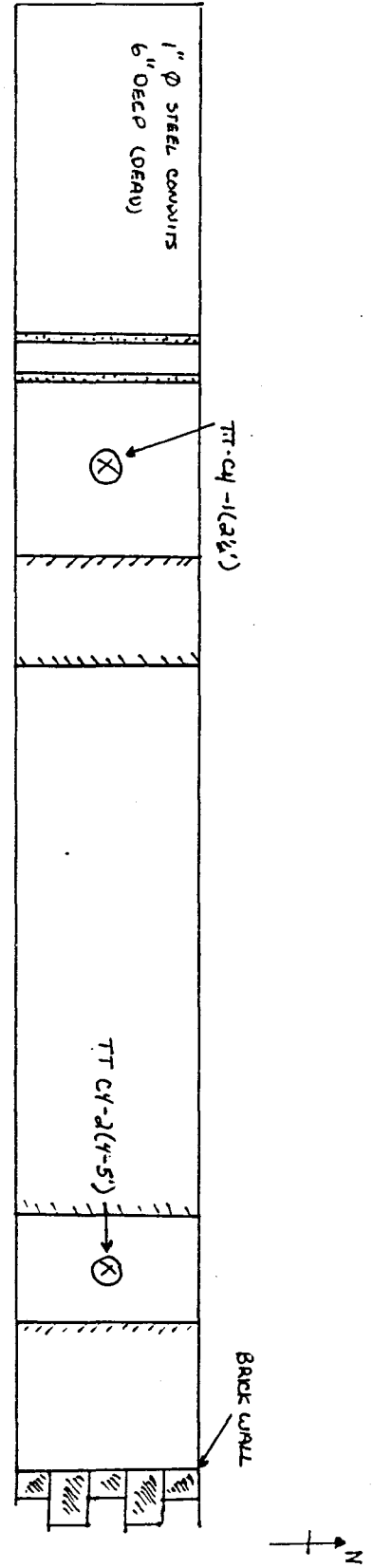


Project No. 3-0887 - 303
 Client WISCONSIN GAS
 Site 3rd WARD
 Subject TT-C4

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 Date 4/27/95
 By TAD
 App. _____



LENGTH : 45'
 WIDTH : 4'
 DEPTH : 5'
 Ground El.: WEST ST. 0.01; EAST ST. 0.60
 CONTRACTOR: DUSTCOAST INC



Project No. 3-C887-303

Client WISCONSIN GAS

Site 3rd WARD

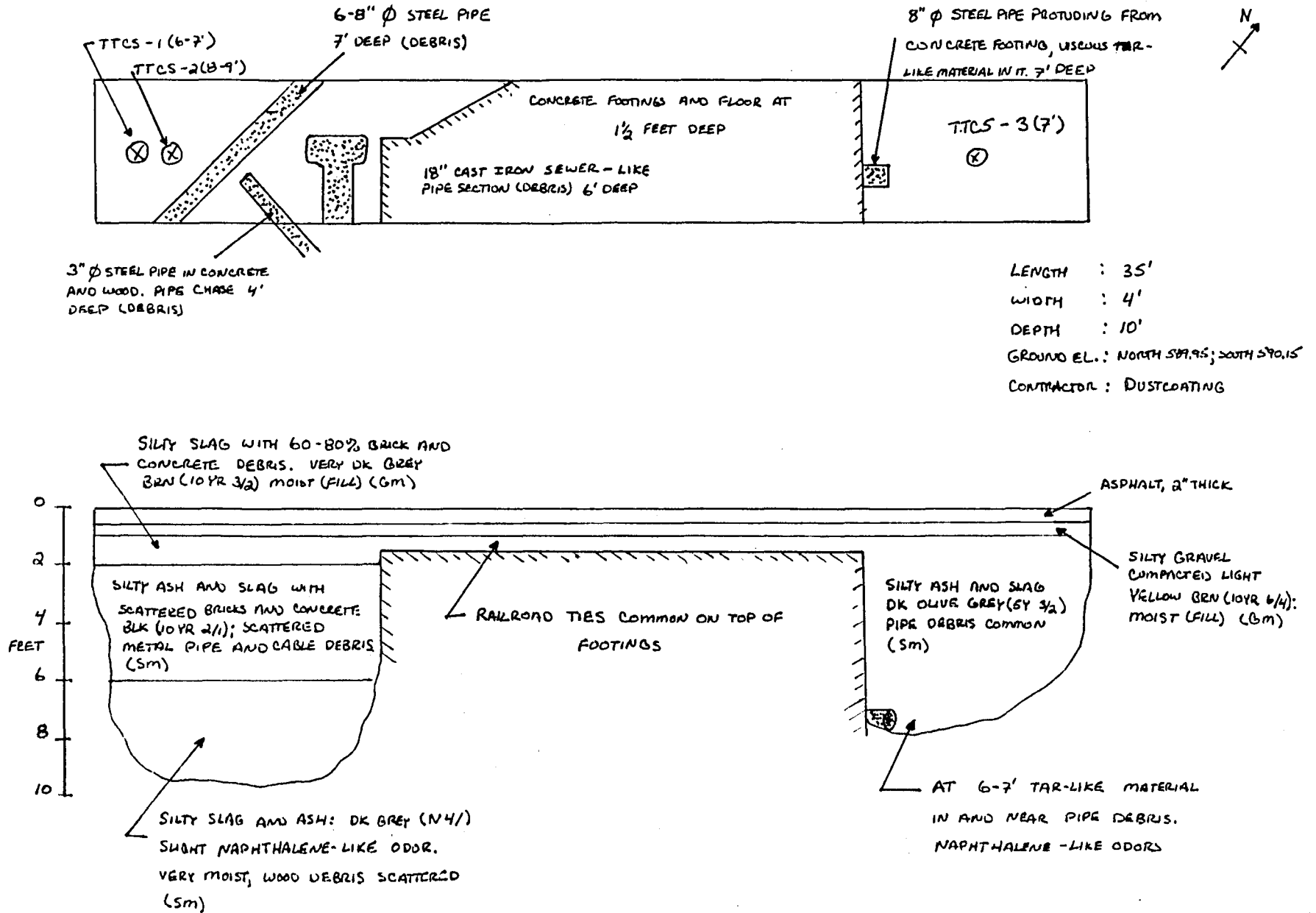
Subject TT-C5

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Date 4/26/95

By TAD

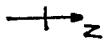
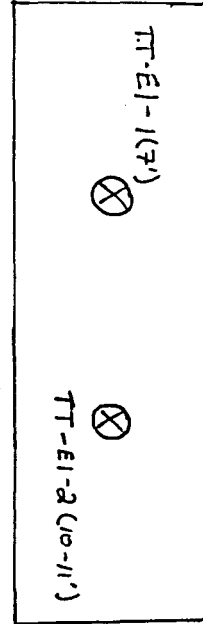
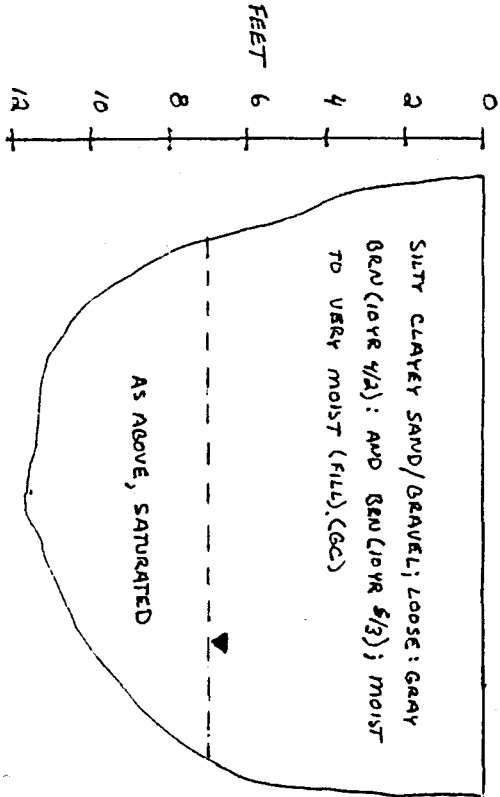
App.





Project No. 3-0887-303
 Client WISCONSIN GAS
 Site 32ND WARD
 Subject TT-E1

Page 1 of 1
 Date 4/29/95
 By TAD
 App. _____

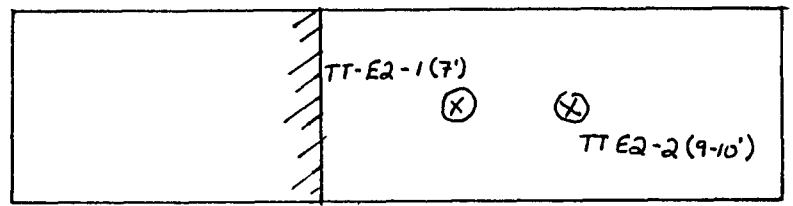
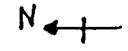


LENGTH : 10'
 WIDTH : 4'
 DEPTH : 12'
 Ground El. : 587.17
 CONTRACTOR : DUSTCOATING

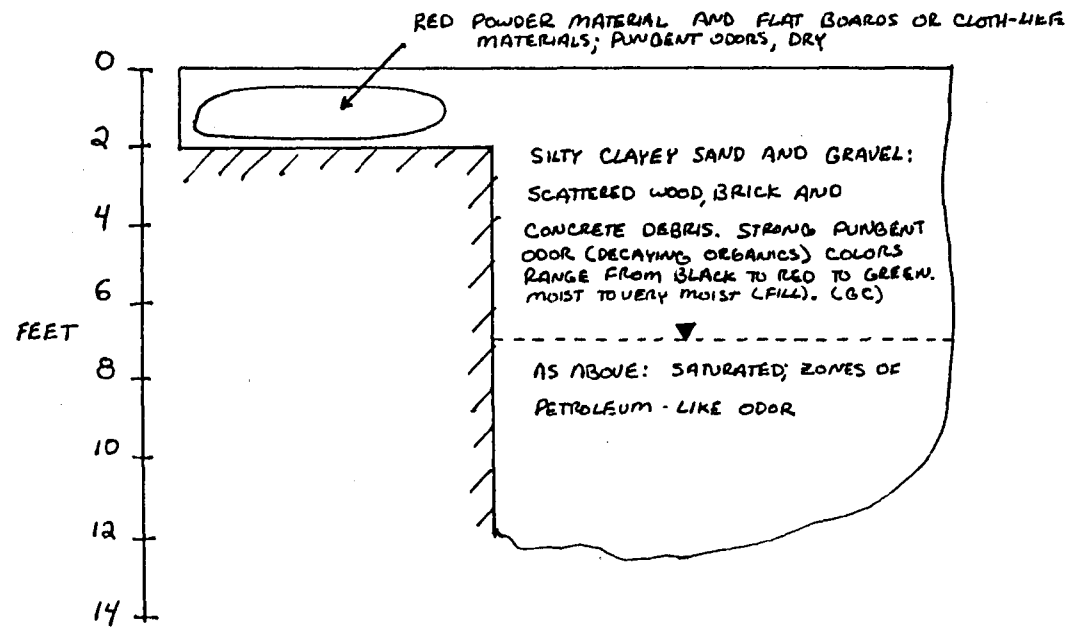


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Date 4/27/95
By TAD
App.

Project No. 3-0887-303
Client WISCONSIN GAS
Site 3RD WARD
Subject TT-E2



- COLLECTED FROM RESIDUAL TAR-LIKE ZONE. NOT REPRESENTATIVE OF SOIL IN THAT DEPTH INTERVAL

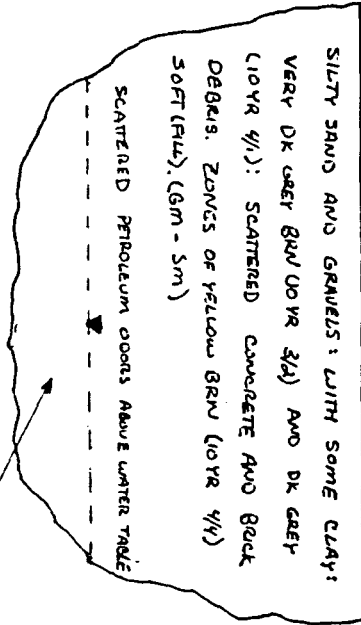
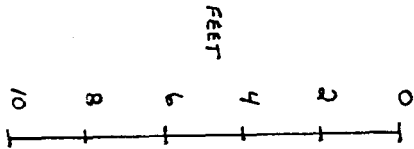


LENGTH : 9'
WIDTH : 4'
DEPTH : 13'
GROUND EL. :
CONTRACTOR : DUSTCOATING

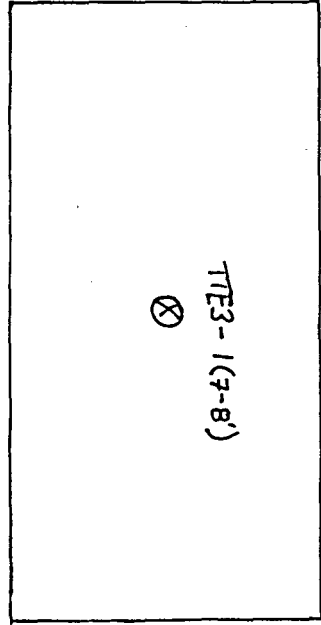


Project No. 3-CSS7-303
 Client WISCONSIN GAS
 Site 3RD WARD
 Subject TT- E3

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 Date 4/28/95
 By TAD
 App. _____

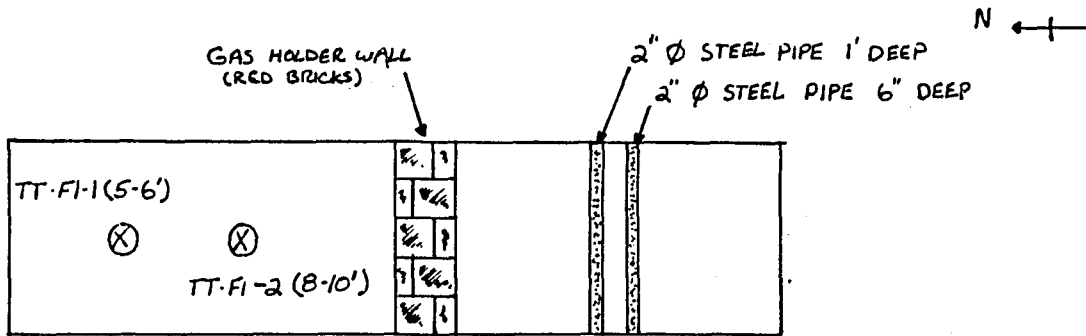


AS ABOVE: HIGHER CLAY CONTENT (GO)
 STRONG PETROLEUM - LIKE OODS AT WATER TABLE.
 GREEN TINT AND SHEEN: OIL LIKE MATERIAL THROUGHOUT.
 SPECKS OF GOLD-BROWN MATERIALS.

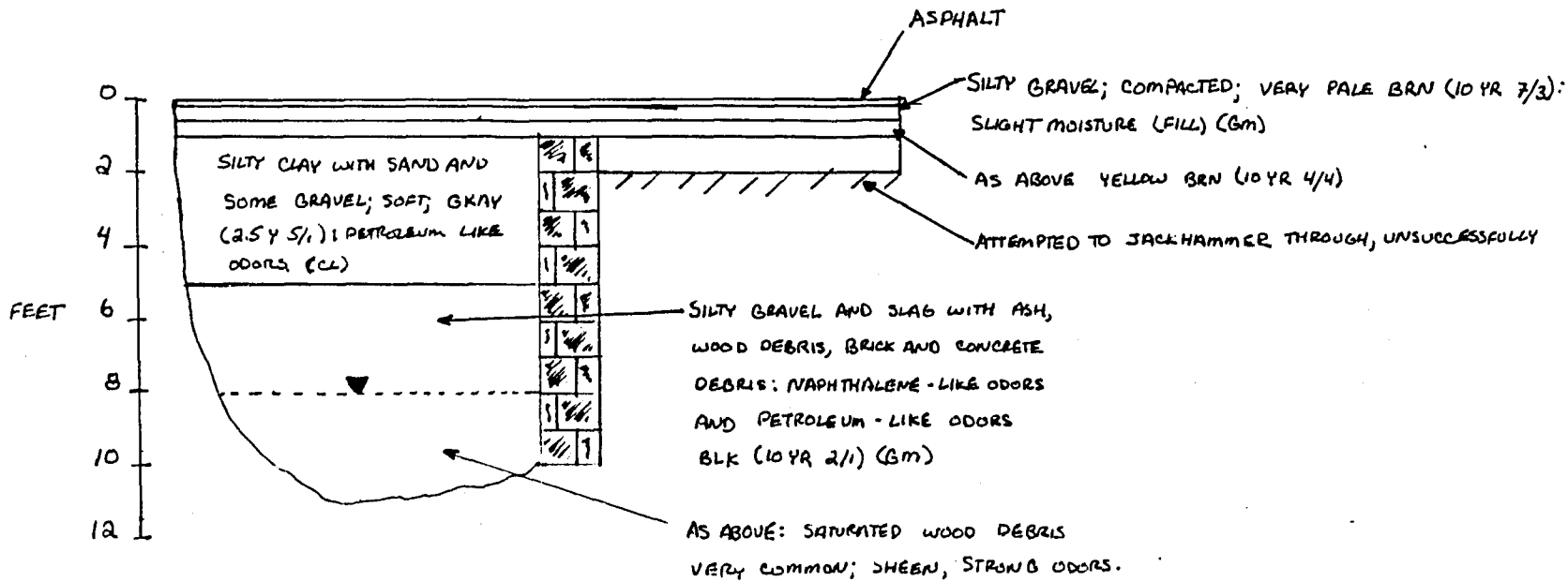


N ←

LENGTH : 8'
 WIDTH : 4'
 DEPTH : 4'
 GROUND E.L. : NORTH SB 11; SOUTH SB 106
 CONTAMINANT : DISTURBANCE



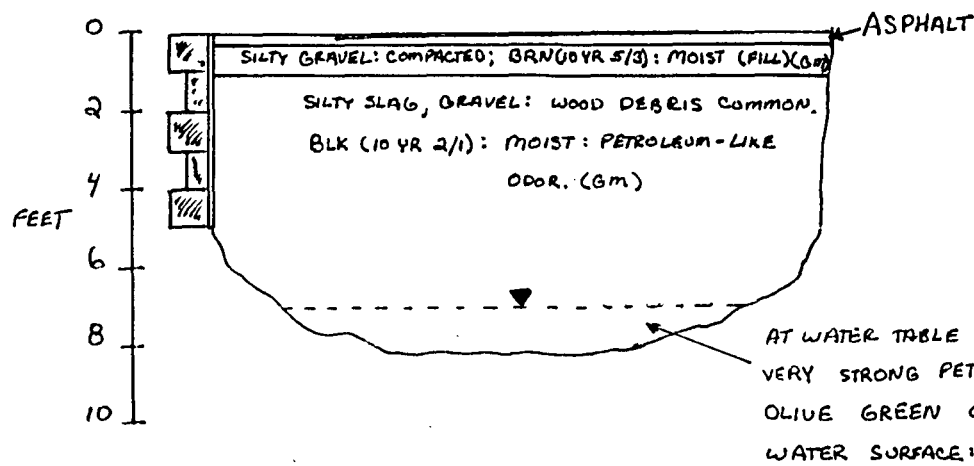
LENGTH : 21'
 WIDTH : 4'
 DEPTH : 11'
 GROUND EL : 587.06
 CONTRACTOR: DUST COATING



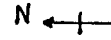
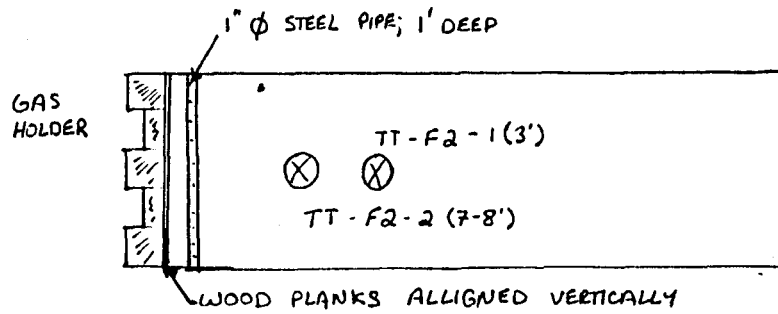


Project No. 3-0887-303
Client WISCONSIN GAS
Site 3RD WARD
Subject TT F2

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Date 4/27/95
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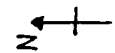
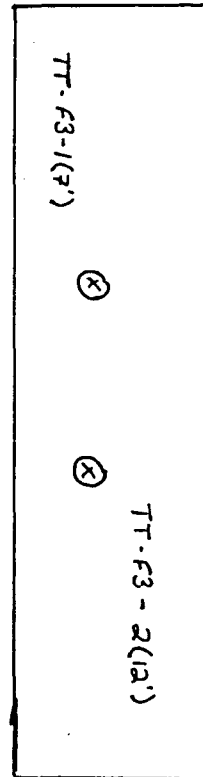
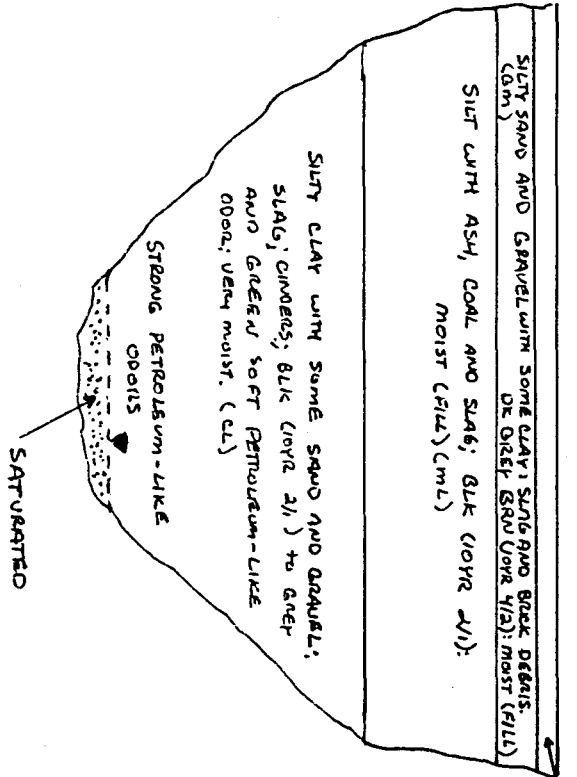
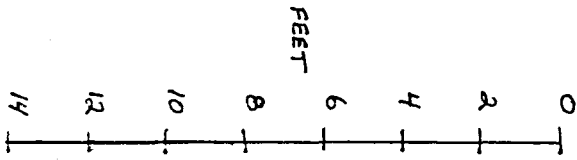
LENGTH : 9'
WIDTH : 4'
DEPTH : 8'
GROUND EL : NORTH 587.30; SOUTH 586.87
CONTRACTOR : DUSTCOATING





Project No. 3-0887-303
 Client WISCONSIN GAS
 Site 3RD WARD
 Subject TT-F3

Page 1 of 1
 Date 4/27/95
 By TRD
 App. _____

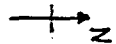
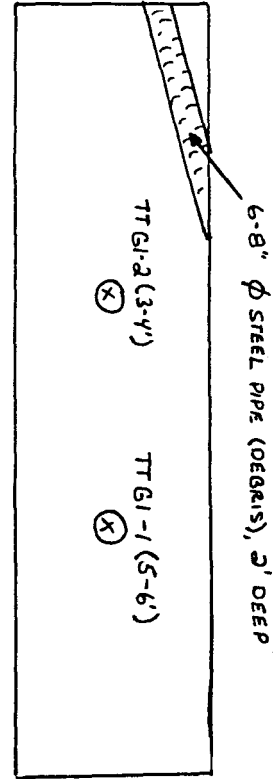
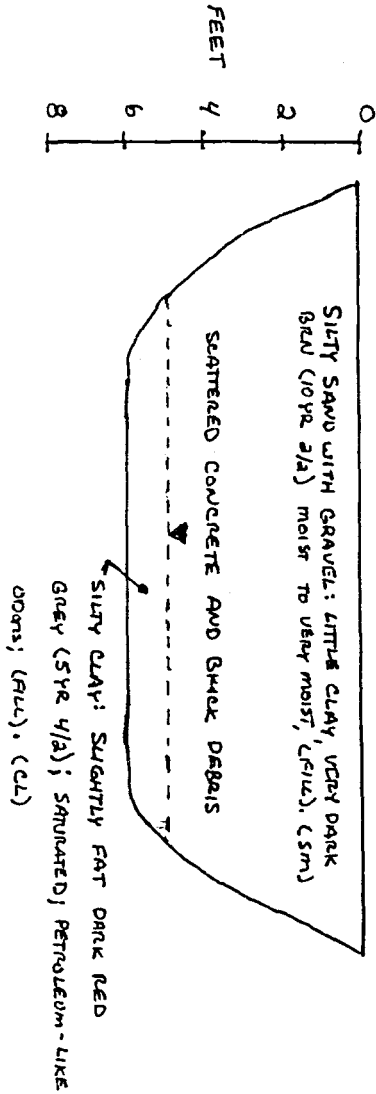


LENGTH : 8'
 WIDTH : 4'
 DEPTH : 12'
 GRADO EL: WEST 5^B 7.50; EAST 5^B 7.56
 COMPANION: DUSTCOATING



Project No. 3-0887 - 303
 Client WISCONSIN GAS
 Site 3rd WARD
 Subject TT - GI

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 Date 4/27/95
 By TAD
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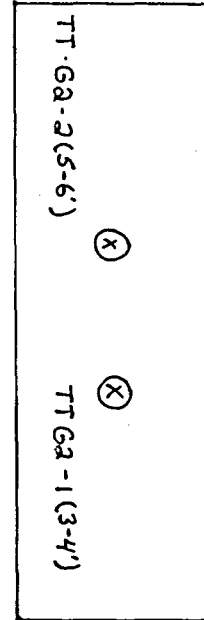
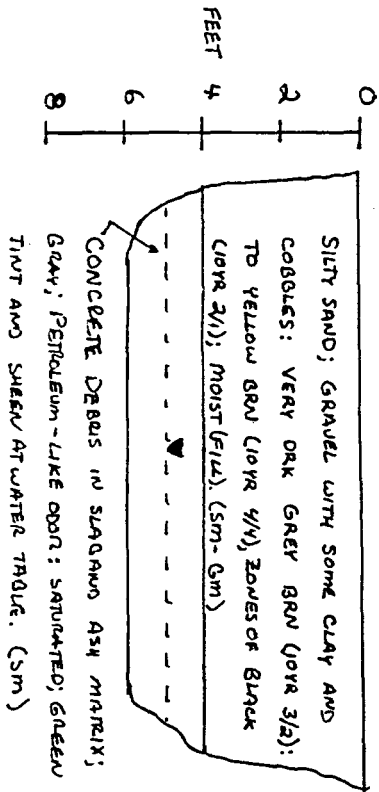


LENGTH : 10'
 WIDTH : 4'
 DEPTH : 6'
 Ground EL : WEST 585.81; EAST 585.64
 CONTRACTOR : DUSTBORNING



Project No. 3-0887-303
 Client WISCONSIN GAS
 Site 3RD WARD
 Subject TT-G2

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 Date 4/27/95
 By TAO
 App. _____

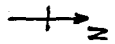
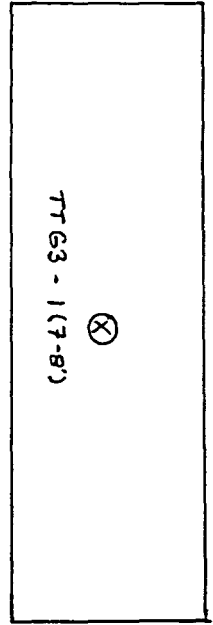
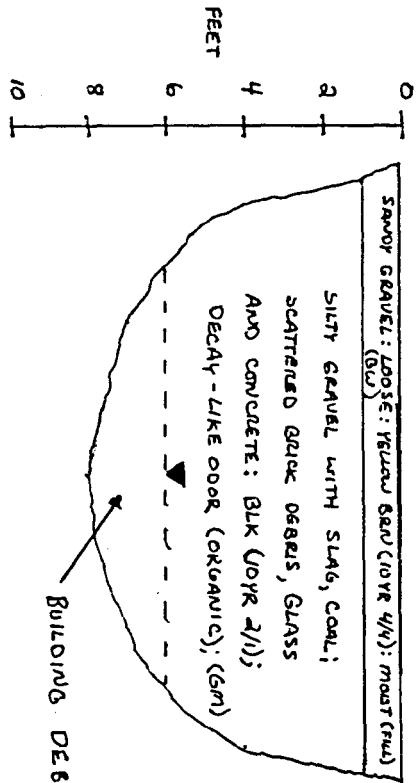


LENGTH : 6'
 WIDTH : 4'
 DEPTH : 6'
 GRAVIM. EL.1 NORTH 585.60; SOUTH 585.63
 CHARACTER: DUST COATING



Project No. 3-0887-303
 Client WISCONSIN GAS
 Site 3rd WARD
 Subject TT-G3

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 Date 4/27/95
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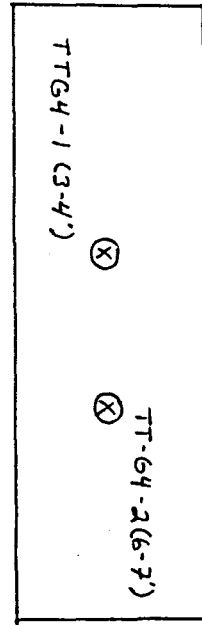
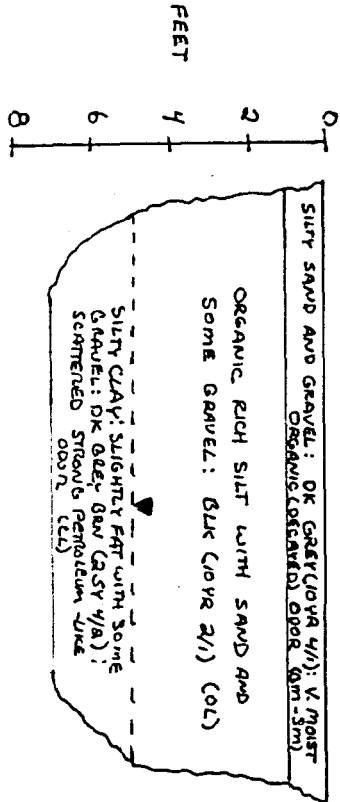
BUILDING DEBRIS (ROOFING MATERIAL - TAR PAPER, STEEL, TIN)

LENGTH : 10'
 WIDTH : 4'
 DEPTH : 8'
 Ground EL : NORTH 586.05; SOUTH 585.63
 CONTRACTOR : DU STEGARTING



Project No. 3-0887-303
 Client WISCONSIN GAS
 Site 3RD WARD
 Subject TT-64

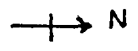
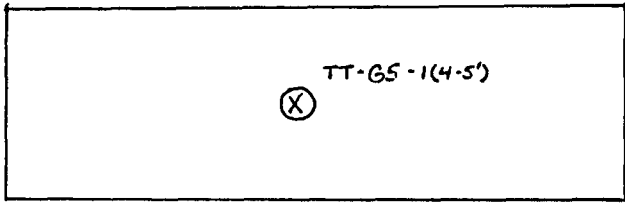
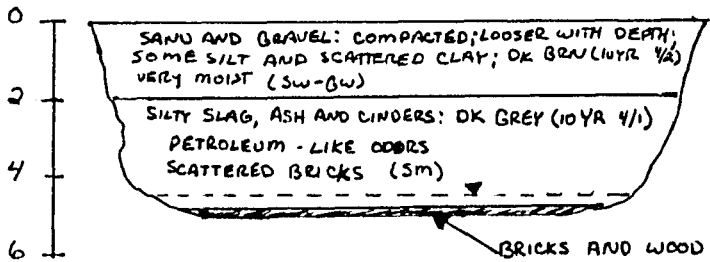
Page 1 of 1
 Date 4/27/95
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LENGTH : 10'
 WIDTH : 4'
 DEPTH : 7'
 GROUND EL : WEST SRS. 45; EAST SRS. 61
 CONTRACTOR : DUSTCOATING

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Client WISCONSIN GAS Date 4/27/95
Site 3rd WARD By TAD
Subject TT-65 App. _____

FEET



LENGTH : 10'
WIDTH : 4'
DEPTH : 5'
GROUND EL. : NORTH SB4.42'; SOUTH SB4.37'
CONTRACTOR : DUSTCOATING

APPENDIX B

BOREHOLE ABANDONMENT FORMS

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION		(2) FACILITY NAME	
Well/Drillhole/Borehole Location <i>NW 1/4 of NW 1/4 of Sec. 33 ; T. 7 N. R. 22</i> <small>(If applicable)</small>	County <i>Milwaukee</i>	Original Well Owner (If Known) <i>Wisconsin Gas Company</i>	
Gov't Lot _____	Grid Number _____	Present Well Owner <i>Wisconsin Gas Company</i>	
Grid Location <i>4925.12 ft.</i> <input checked="" type="checkbox"/> N. <input type="checkbox"/> S., <i>5122.09 ft.</i> <input checked="" type="checkbox"/> E. <input type="checkbox"/> W.		Street or Route <i>5400 N. Green Bay Ave</i>	
Civil Town Name		City, State, Zip Code <i>Milwaukee, WI 53209</i>	
Street Address of Well		Facility Well No. and/or Name (If Applicable) <i>DB-1</i>	WI Unique Well No. _____
City, Village <i>Milwaukee</i>		Reason For Abandonment <i>Sampling Complete</i>	
		Date of Abandonment <i>4-25-95</i>	

WELL/DRILLHOLE/BOREHOLE INFORMATION	
(3) Original Well/Drillhole/Borehole Construction Completed On (Date) <i>4-25-95</i> <input type="checkbox"/> Monitoring Well <input type="checkbox"/> Construction Report Available? <input type="checkbox"/> Water Well <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Drillhole <input checked="" type="checkbox"/> Borehole Construction Type: <input checked="" type="checkbox"/> Drilled <input type="checkbox"/> Driven (Sandpoint) <input type="checkbox"/> Dug <input type="checkbox"/> Other (Specify) _____ Formation Type: <input checked="" type="checkbox"/> Unconsolidated Formation <input type="checkbox"/> Bedrock Total Well Depth (ft.) _____ Casing Diameter (ins.) _____ (From ground surface) Casing Depth (ft.) _____ Was Well Annular Space Grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown If Yes, To What Depth? _____ Feet	(4) Depth to Water (Feet) Pump & Piping Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable Liner(s) Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable Screen Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable Casing Left in Place? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If No, Explain <i>Bore hole</i> Was Casing Cut Off Below Surface? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Did Sealing Material Rise to Surface? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Did Material Settle After 24 Hours? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, Was Hole Retopped? <input type="checkbox"/> Yes <input type="checkbox"/> No
	(5) Required Method of Placing Sealing Material <input checked="" type="checkbox"/> Conductor Pipe-Gravity <input type="checkbox"/> Conductor Pipe-Pumped <input type="checkbox"/> Dump Bailer <input type="checkbox"/> Other (Explain) _____
	(6) Sealing Materials For monitoring wells and monitoring well boreholes only <input type="checkbox"/> Near Cement Grout <input type="checkbox"/> Sand-Cement (Concrete) Grout <input type="checkbox"/> Concrete <input type="checkbox"/> Bentonite Pellets <input type="checkbox"/> Clay-Sand Slurry <input type="checkbox"/> Granular Bentonite <input type="checkbox"/> Bentonite-Sand Slurry <input type="checkbox"/> Bentonite - Cement Grout <input checked="" type="checkbox"/> Chipped Bentonite

Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume	(Circle One)	Mix Ratio or Mud Weight
<i>Bentonite Chips</i>	<i>Surface</i>	<i>3.5</i>	<i>1.5 x 50 LB</i>		

Comments: _____

Name of Person or Firm Doing Sealing Work <i>Remediation Technologies, Inc.</i>	
Signature of Person Doing Work <i>[Signature]</i>	Date Signed <i>6-1-95</i>
Street or Route <i>413 Wacouta #400</i>	Telephone Number <i>(612) 222-0841</i>
City, State, Zip Code <i>St. Paul, MN 55101</i>	

(10) FOR DNR OR COUNTY USE ONLY	
Date Received/Inspected	District/County
Reviewer/Inspector	<input type="checkbox"/> Complying Work <input type="checkbox"/> Noncomplying Work
Follow-up Necessary	

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION		(2) FACILITY NAME	
Well/Drillhole/Borehole Location	County <u>Milwaukee</u>	Original Well Owner (If Known) <u>Wisconsin Gas Company</u>	
(If applicable) <u>NW 1/4 of NW 1/4 of Sec. 33</u> ; T. <u>7</u> N. R. <u>22</u> <input checked="" type="checkbox"/> E <input type="checkbox"/> W Gov't Lot _____ Grid Number _____		Present Well Owner <u>Wisconsin Gas Company</u>	
Grid Location <u>4926.82 ft.</u> <input checked="" type="checkbox"/> N. <input type="checkbox"/> S. <u>5129.86 ft.</u> <input checked="" type="checkbox"/> E. <input type="checkbox"/> W.		Street or Route <u>5400 N. Green Bay Ave.</u>	
Civil Town Name		City, State, Zip Code <u>Milwaukee, WI 53209</u>	
Street Address of Well		Facility Well No. and/or Name (If Applicable) <u>DB-1A</u>	WI Unique Well No. _____
City, Village <u>Milwaukee</u>		Reason For Abandonment <u>Sampling Complete</u>	
		Date of Abandonment <u>4-25-95</u>	

WELL/DRILLHOLE/BOREHOLE INFORMATION			
(3) Original Well/Drillhole/Borehole Construction Completed On (Date) <u>4-25-95</u> <input type="checkbox"/> Monitoring Well <input type="checkbox"/> Construction Report Available? <input type="checkbox"/> Water Well <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Drillhole <input checked="" type="checkbox"/> Borehole Construction Type: <input checked="" type="checkbox"/> Drilled <input type="checkbox"/> Driven (Sandpoint) <input type="checkbox"/> Dug <input type="checkbox"/> Other (Specify) _____		(4) Depth to Water (Feet) <u>7</u> Pump & Piping Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable Liner(s) Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable Screen Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable Casing Left in Place? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If No, Explain <u>Bore hole</u>	
Formation Type: <input checked="" type="checkbox"/> Unconsolidated Formation <input type="checkbox"/> Bedrock Total Well Depth (ft.) _____ Casing Diameter (ins.) _____ (From ground surface) Casing Depth (ft.) _____		(5) Required Method of Placing Sealing Material <input checked="" type="checkbox"/> Conductor Pipe-Gravity <input type="checkbox"/> Conductor Pipe-Pumped <input type="checkbox"/> Dump Bailer <input type="checkbox"/> Other (Explain) _____	
Was Well Annular Space Grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown If Yes, To What Depth? _____ Feet		(6) Sealing Materials For monitoring wells and monitoring well boreholes only <input type="checkbox"/> Neat Cement Grout <input type="checkbox"/> Sand-Cement (Concrete) Grout <input type="checkbox"/> Concrete <input type="checkbox"/> Bentonite Pellets <input type="checkbox"/> Clay-Sand Slurry <input type="checkbox"/> Granular Bentonite <input type="checkbox"/> Bentonite-Sand Slurry <input type="checkbox"/> Bentonite - Cement Grout <input checked="" type="checkbox"/> Chipped Bentonite	

(7) Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume	(Circle One)	Mix Ratio or Mud Weight
<u>Bentonite Chips</u>	<u>Surface</u>	<u>10</u>	<u>3</u> x 50 lb		

(8) Comments: _____

Name of Person or Firm Doing Sealing Work <u>Remediation Technologies, Inc</u>	
Signature of Person Doing Work <u>[Signature]</u>	Date Signed <u>6-1-95</u>
Street or Route <u>413 Wacouta #400</u>	Telephone Number <u>(612) 222-0841</u>
City, State, Zip Code <u>St. Paul, MN 55101</u>	

(10) FOR DNR OR COUNTY USE ONLY	
Date Received/Inspected	District/County
Reviewer/Inspector	<input type="checkbox"/> Complying Work <input type="checkbox"/> Noncomplying Work
Follow-up Necessary	

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION		(2) FACILITY NAME	
Well/Drillhole/Borehole Location	County <i>Milwaukee</i>	Original Well Owner (If Known) <i>Wisconsin Gas Company</i>	
<i>NW 1/4 of NW 1/4 of Sec. 33 ; T. 7 N. R. 22</i> (If applicable)	<input checked="" type="checkbox"/> E <input type="checkbox"/> W	Present Well Owner <i>Wisconsin Gas Company</i>	
Gov't Lot	Grid Number	Street or Route <i>5400 N. Green Bay Ave.</i>	
Grid Location <i>4962.46 ft. <input checked="" type="checkbox"/> N. <input type="checkbox"/> S., 5125.03 ft. <input checked="" type="checkbox"/> E. <input type="checkbox"/> W.</i>		City, State, Zip Code <i>Milwaukee, WI 53209</i>	
Civil Town Name		Facility Well No. and/or Name (If Applicable) <i>DB-2</i>	WI Unique Well No. -----
Street Address of Well		Reason For Abandonment <i>Sampling Complete</i>	
City, Village <i>Milwaukee</i>		Date of Abandonment <i>4/25/95</i>	

WELL/DRILLHOLE/BOREHOLE INFORMATION		(4) Depth to Water (Feet) <u>8</u>	
Original Well/Drillhole/Borehole Construction Completed On (Date) <i>4/25/95</i>	Construction Report Available? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Pump & Piping Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable Liner(s) Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable Screen Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable Casing Left in Place? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If No, Explain <u>Borehole</u>	
<input type="checkbox"/> Monitoring Well <input type="checkbox"/> Water Well <input type="checkbox"/> Drillhole <input checked="" type="checkbox"/> Borehole	Construction Type: <input checked="" type="checkbox"/> Drilled <input type="checkbox"/> Driven (Sandpoint) <input type="checkbox"/> Dug <input type="checkbox"/> Other (Specify) _____	Was Casing Cut Off Below Surface? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Did Sealing Material Rise to Surface? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Did Material Settle After 24 Hours? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, Was Hole Retopped? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Formation Type: <input checked="" type="checkbox"/> Unconsolidated Formation <input type="checkbox"/> Bedrock		(5) Required Method of Placing Sealing Material	
Total Well Depth (ft.) _____ Casing Diameter (ins.) _____		<input checked="" type="checkbox"/> Conductor Pipe-Gravity <input type="checkbox"/> Conductor Pipe-Pumped <input type="checkbox"/> Dump Bailer <input type="checkbox"/> Other (Explain) _____	
Casing Depth (ft.) _____		(6) Sealing Materials	
Was Well Annular Space Grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown If Yes, To What Depth? _____ Feet		For monitoring wells and monitoring well boreholes only <input type="checkbox"/> Neat Cement Grout <input type="checkbox"/> Sand-Cement (Concrete) Grout <input type="checkbox"/> Concrete <input type="checkbox"/> Bentonite Pellets <input type="checkbox"/> Clay-Sand Slurry <input type="checkbox"/> Granular Bentonite <input type="checkbox"/> Bentonite-Sand Slurry <input type="checkbox"/> Bentonite - Cement Grout <input checked="" type="checkbox"/> Chipped Bentonite	

Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume	(Circle One)	Mix Ratio or Mud Weight
<i>Bentonite Chips</i>	<i>Surface</i>	<i>10</i>	<i>3 x 50 lb</i>		

(8) Comments: _____

(9) Name of Person or Firm Doing Sealing Work
Remediation Technologies, Inc

Signature of Person Doing Work _____ Date Signed *6-1-95*

Street or Route *413 Wacouta #100* Telephone Number *(612) 222-0841*

City, State, Zip Code *St. Paul, MN 55101*

(10) FOR DNR OR COUNTY USE ONLY	
Date Received/Inspected	District/County
Reviewer/Inspector	<input type="checkbox"/> Complying Work <input type="checkbox"/> Noncomplying Work
Follow-up Necessary	

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION		(2) FACILITY NAME	
Well/Drillhole/Borehole Location	County <u>Milwaukee</u>	Original Well Owner (If Known) <u>Wisconsin Gas Company</u>	
NW 1/4 of NW 1/4 of Sec. <u>33</u> ; T. <u>7</u> N. R. <u>22</u> (If applicable)		Present Well Owner <u>Wisconsin Gas Company</u>	
Gov't Lot _____ Grid Number _____		Street or Route <u>5400 N. Green Bay Ave.</u>	
Grid Location <u>5034.12</u> ft. <input checked="" type="checkbox"/> N. <input type="checkbox"/> S., <u>5116.28</u> ft. <input checked="" type="checkbox"/> E. <input type="checkbox"/> W.		City, State, Zip Code <u>Milwaukee, WI 53209</u>	
Civil Town Name _____		Facility Well No. and/or Name (If Applicable) <u>DB-3</u>	WI Unique Well No. _____
Street Address of Well _____		Reason For Abandonment <u>Sampling Complete</u>	
City, Village <u>Milwaukee</u>		Date of Abandonment <u>4-25-95</u>	

WELL/DRILLHOLE/BOREHOLE INFORMATION			
(3) Original Well/Drillhole/Borehole Construction Completed On (Date) <u>4-25-95</u>		(4) Depth to Water (Feet) <u>5</u>	
<input type="checkbox"/> Monitoring Well <input type="checkbox"/> Water Well <input type="checkbox"/> Drillhole <input checked="" type="checkbox"/> Borehole	Construction Report Available? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Pump & Piping Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable Liner(s) Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable Screen Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable Casing Left in Place? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If No, Explain <u>Borehole</u>	
Construction Type: <input checked="" type="checkbox"/> Drilled <input type="checkbox"/> Driven (Sandpoint) <input type="checkbox"/> Dug <input type="checkbox"/> Other (Specify) _____	Was Casing Cut Off Below Surface? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Did Sealing Material Rise to Surface? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Did Material Settle After 24 Hours? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, Was Hole Retopped? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Formation Type: <input checked="" type="checkbox"/> Unconsolidated Formation <input type="checkbox"/> Bedrock	(5) Required Method of Placing Sealing Material <input checked="" type="checkbox"/> Conductor Pipe-Gravity <input type="checkbox"/> Conductor Pipe-Pumped <input type="checkbox"/> Dump Bailer <input type="checkbox"/> Other (Explain) _____		
Total Well Depth (ft.) _____ Casing Diameter (ins.) _____ (From ground surface) Casing Depth (ft.) _____ Was Well Annular Space Grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown If Yes, To What Depth? _____ Feet	(6) Sealing Materials For monitoring wells and monitoring well boreholes only <input type="checkbox"/> Neat Cement Grout <input type="checkbox"/> Sand-Cement (Concrete) Grout <input type="checkbox"/> Concrete <input type="checkbox"/> Bentonite Pellets <input type="checkbox"/> Clay-Sand Slurry <input type="checkbox"/> Granular Bentonite <input type="checkbox"/> Bentonite-Sand Slurry <input type="checkbox"/> Bentonite - Cement Grout <input checked="" type="checkbox"/> Chipped Bentonite		

Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume	(Circle One)	Mix Ratio or Mud Weight
<u>Bentonite Chips</u>	<u>Surface</u>	<u>10</u>	<u>3 x 50 Lb</u>		

(8) Comments: _____

(9) Name of Person or Firm Doing Sealing Work
Remediation Technologies, Inc

Signature of Person Doing Work _____ Date Signed 6-1-95

Street or Route 113 W9204th #00 Telephone Number (612) 222-0841

City, State, Zip Code St. Paul MN 55101

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected _____	District/County _____
Reviewer/Inspector _____	<input type="checkbox"/> Complying Work <input type="checkbox"/> Noncomplying Work
Follow-up Necessary _____	



All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location _____ County Milwaukee

NW 1/4 of NW 1/4 of Sec. 33 ; T. 7 N. R. 22 E W
(If applicable)

Gov't Lot _____ Grid Number _____

Grid Location 5105.12 ft. N. S., 5071.75 ft. E. W.

Civil Town Name _____

Street Address of Well _____

City, Village Milwaukee

(2) FACILITY NAME

Original Well Owner (If Known)
Wisconsin Gas Company

Present Well Owner
Wisconsin Gas Company

Street or Route
5400 N. Green Bay Ave.

City, State, Zip Code
Milwaukee, WI 53209

Facility Well No. and/or Name (If Applicable) DB-4 WI Unique Well No. _____

Reason For Abandonment
Sampling Complete

Date of Abandonment
4-25-95

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On
(Date) 4-25-95

Monitoring Well Water Well Drillhole Borehole

Construction Report Available? Yes No

Construction Type:
 Drilled Driven (Sandpoint) Dug
 Other (Specify) _____

Formation Type:
 Unconsolidated Formation Bedrock

Total Well Depth (ft.) _____ Casing Diameter (ins.) _____
(From ground surface)

Casing Depth (ft.) _____

Was Well Annular Space Grouted? Yes No Unknown
If Yes, To What Depth? _____ Feet

(4) Depth to Water (Feet) 5

Pump & Piping Removed? Yes No Not Applicable
Liner(s) Removed? Yes No Not Applicable
Screen Removed? Yes No Not Applicable
Casing Left in Place? Yes No
If No, Explain Borehole

Was Casing Cut Off Below Surface? Yes No
Did Sealing Material Rise to Surface? Yes No
Did Material Settle After 24 Hours? Yes No
If Yes, Was Hole Retopped? Yes No

(5) Required Method of Placing Sealing Material

Conductor Pipe-Gravity Conductor Pipe-Pumped
 Dump Bailer Other (Explain) _____

(6) Sealing Materials

Neat Cement Grout Sand-Cement (Concrete) Grout
 Concrete Clay-Sand Slurry
 Bentonite-Sand Slurry Chipped Bentonite

For monitoring wells and monitoring well boreholes only:
 Bentonite Pellets
 Granular Bentonite
 Bentonite - Cement Grout

Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume	(Circle One)	Mix Ratio or Mud Weight
<u>Bentonite chips</u>	<u>Surface</u>	<u>10</u>	<u>3 x 50 lb</u>		

(8) Comments: _____

(9) Name of Person or Firm Doing Sealing Work
Remediation Technologies, Inc.

Signature of Person Doing Work _____ Date Signed 6-1-95

Street or Route 43 Wacouta #400 Telephone Number (612) 222-0841

City, State, Zip Code St. Paul, MN 55101

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected _____ District/County _____

Reviewer/Inspector _____ Complying Work
 Noncomplying Work

Follow-up Necessary _____

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION		(2) FACILITY NAME	
Well/Drillhole/Borehole Location	County <i>Milwaukee</i>	Original Well Owner (If Known) <i>Wisconsin Gas Company</i>	
<i>NW 1/4 of NW 1/4 of Sec. 33 ; T. 7 N; R. 22</i> <input checked="" type="checkbox"/> E <input type="checkbox"/> W		Present Well Owner <i>Wisconsin Gas Company</i>	
(If applicable) Gov't Lot	Grid Number	Street or Route <i>5400 N. Green Bay Ave.</i>	
Grid Location _____ ft. <input type="checkbox"/> N. <input type="checkbox"/> S., _____ ft. <input type="checkbox"/> E. <input type="checkbox"/> W.		City, State, Zip Code <i>Milwaukee, WI 53209</i>	
Civil Town Name		Facility Well No. and/or Name (If Applicable)	WI Unique Well No.
Street Address of Well		<i>DB-5</i>	_____
City, Village <i>Milwaukee</i>		Reason For Abandonment <i>Sampling Complete</i>	
		Date of Abandonment <i>4-25-95</i>	

WELL/DRILLHOLE/BOREHOLE INFORMATION		(3) Original Well/Drillhole/Borehole Construction Completed On		(4) Depth to Water (Feet)	
(Date) <i>4-25-95</i>				<i>4</i>	
<input type="checkbox"/> Monitoring Well	Construction Report Available? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Pump & Piping Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable		<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable	
<input type="checkbox"/> Water Well		<input type="checkbox"/> Liner(s) Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable		<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable	
<input type="checkbox"/> Drillhole		<input type="checkbox"/> Screen Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
<input checked="" type="checkbox"/> Borehole		<input type="checkbox"/> Casing Left in Place? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		If No, Explain <i>Bore hole</i>	
Construction Type: <input checked="" type="checkbox"/> Drilled <input type="checkbox"/> Driven (Sandpoint) <input type="checkbox"/> Dug <input type="checkbox"/> Other (Specify) _____		Was Casing Cut Off Below Surface? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Did Sealing Material Rise to Surface? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Formation Type: <input checked="" type="checkbox"/> Unconsolidated Formation <input type="checkbox"/> Bedrock		Did Material Settle After 24 Hours? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		If Yes, Was Hole Retopped? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Total Well Depth (ft.) _____ Casing Diameter (ins.) _____ (From ground surface)		(5) Required Method of Placing Sealing Material			
Casing Depth (ft.) _____		<input checked="" type="checkbox"/> Conductor Pipe-Gravity <input type="checkbox"/> Conductor Pipe-Pumped <input type="checkbox"/> Dump Bailer <input type="checkbox"/> Other (Explain) _____			
Was Well Annular Space Grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown If Yes, To What Depth? _____ Feet		(6) Sealing Materials			
		For monitoring wells and monitoring well boreholes only			
		<input type="checkbox"/> Neat Cement Grout <input type="checkbox"/> Sand-Cement (Concrete) Grout <input type="checkbox"/> Concrete <input type="checkbox"/> Clay-Sand Slurry <input type="checkbox"/> Bentonite-Sand Slurry <input checked="" type="checkbox"/> Chipped Bentonite			
		<input type="checkbox"/> Bentonite Pellets <input type="checkbox"/> Granular Bentonite <input type="checkbox"/> Bentonite - Cement Grout			

Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume	(Circle One)	Mix Ratio or Mud Weight
<i>Bentonite Chips</i>	<i>Surface</i>	<i>10</i>	<i>3 x 50 lb</i>		

Comments: _____

(9) Name of Person or Firm Doing Sealing Work
Remediation Technologies, Inc.

Signature of Person Doing Work <i>[Signature]</i>	Date Signed <i>6-1-95</i>
Street or Route <i>413 Wagon #400</i>	Telephone Number <i>(612) 222-0841</i>
City, State, Zip Code <i>St. Paul MN 55101</i>	

(10) FOR DNR OR COUNTY USE ONLY	
Date Received/Inspected	District/County
Reviewer/Inspector	<input type="checkbox"/> Complying Work <input type="checkbox"/> Noncomplying Work
Follow-up Necessary	

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION		(2) FACILITY NAME	
Well/Drillhole/Borehole Location	County <i>Milwaukee</i>	Original Well Owner (If Known) <i>Wisconsin Gas Company</i>	
<i>NW 1/4 of NW 1/4 of Sec. 33 ; T. 7 N. R. 22</i>		Present Well Owner <i>Wisconsin Gas Company</i>	
(If applicable) Gov't Lot _____ Grid Number _____		Street or Route <i>5400 N. Green Bay Ave.</i>	
Grid Location <i>5282.15 ft.</i> <input checked="" type="checkbox"/> N. <input type="checkbox"/> S., <i>5054.98 ft.</i> <input checked="" type="checkbox"/> E. <input type="checkbox"/> W.		City, State, Zip Code <i>Milwaukee WI 53209</i>	
Civil Town Name		Facility Well No. and/or Name (If Applicable)	WI Unique Well No.
Street Address of Well		<i>DB-6</i>	_____
City, Village <i>Milwaukee</i>		Reason For Abandonment <i>Sampling Complete</i>	Date of Abandonment <i>4-25-95</i>

WELL/DRILLHOLE/BOREHOLE INFORMATION		(4) Depth to Water (Feet)	
Original Well/Drillhole/Borehole Construction Completed On (Date) <i>4-25-95</i>		Pump & Piping Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable Liner(s) Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable Screen Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable Casing Left in Place? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If No, Explain <i>Borehole</i>	
<input type="checkbox"/> Monitoring Well <input type="checkbox"/> Water Well <input type="checkbox"/> Drillhole <input checked="" type="checkbox"/> Borehole	Construction Report Available? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Was Casing Cut Off Below Surface? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Did Sealing Material Rise to Surface? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Did Material Settle After 24 Hours? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, Was Hole Retopped? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Construction Type: <input checked="" type="checkbox"/> Drilled <input type="checkbox"/> Driven (Sandpoint) <input type="checkbox"/> Dug <input type="checkbox"/> Other (Specify) _____	Formation Type: <input checked="" type="checkbox"/> Unconsolidated Formation <input type="checkbox"/> Bedrock	(5) Required Method of Placing Sealing Material <input checked="" type="checkbox"/> Conductor Pipe-Gravity <input type="checkbox"/> Conductor Pipe-Pumped <input type="checkbox"/> Dump Bailer <input type="checkbox"/> Other (Explain) _____	
Total Well Depth (ft.) _____ Casing Diameter (ins.) _____ (From ground surface) Casing Depth (ft.) _____ Was Well Annular Space Grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown If Yes, To What Depth? _____ Feet	(6) Sealing Materials For monitoring wells and monitoring well boreholes only <input type="checkbox"/> Neat Cement Grout <input type="checkbox"/> Sand-Cement (Concrete) Grout <input type="checkbox"/> Concrete <input type="checkbox"/> Clay-Sand Slurry <input type="checkbox"/> Bentonite-Sand Slurry <input checked="" type="checkbox"/> Chipped Bentonite <input type="checkbox"/> Bentonite Pellets <input type="checkbox"/> Granular Bentonite <input type="checkbox"/> Bentonite - Cement Grout		

Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume	(Circle One)	Mix Ratio or Mud Weight
<i>Bentonite Chips</i>	<i>Surface</i>	<i>10</i>	<i>3 x 50 lb</i>		

Comments: _____

(9) Name of Person or Firm Doing Sealing Work
Remediation Technologies, Inc.
 Signature of Person Doing Work _____ Date Signed *6-1-95*
 Street or Route *413 Wisconsin #400* Telephone Number *(612) 222-0841*
 City, State, Zip Code *St. Paul WI 55101*

(10) FOR DNR OR COUNTY USE ONLY	
Date Received/Inspected	District/County
Reviewer/Inspector	<input type="checkbox"/> Complying Work <input type="checkbox"/> Noncomplying Work
Follow-up Necessary	

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION		(2) FACILITY NAME	
Well/Drillhole/Borehole Location	County <i>Milwaukee</i>	Original Well Owner (If Known) <i>Wisconsin Gas Company</i>	
<i>NW 1/4 of NW 1/4 of Sec. 33 ; T. 7 N. R. 22</i>		Present Well Owner <i>Wisconsin Gas Company</i>	
(If applicable)		Street or Route <i>5400 N. Green Bay Ave.</i>	
Grid Location	Gov't Lot	Grid Number	City, State, Zip Code <i>Milwaukee, WI 53209</i>
<i>4953.40 ft.</i> <input checked="" type="checkbox"/> N. <input type="checkbox"/> S., <i>5185.09 ft.</i> <input checked="" type="checkbox"/> E. <input type="checkbox"/> W.			Facility Well No. and/or Name (If Applicable) <i>DB-7</i>
Civil Town Name	Street Address of Well		WI Unique Well No. -----
City, Village <i>Milwaukee</i>	Reason For Abandonment <i>Sampling Complete</i>		Date of Abandonment <i>4-25-95</i>

WELL/DRILLHOLE/BOREHOLE INFORMATION		(4) Depth to Water (Feet)	
(3) Original Well/Drillhole/Borehole Construction Completed On (Date) <i>4-25-95</i>		<input type="checkbox"/> Pump & Piping Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Liner(s) Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Screen Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Casing Left in Place? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If No, Explain <i>Borehole</i>	
<input type="checkbox"/> Monitoring Well <input type="checkbox"/> Water Well <input type="checkbox"/> Drillhole <input checked="" type="checkbox"/> Borehole	Construction Report Available? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Was Casing Cut Off Below Surface? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Did Sealing Material Rise to Surface? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Did Material Settle After 24 Hours? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, Was Hole Retopped? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Construction Type: <input checked="" type="checkbox"/> Drilled <input type="checkbox"/> Driven (Sandpoint) <input type="checkbox"/> Dug <input type="checkbox"/> Other (Specify) _____	(5) Required Method of Placing Sealing Material <input checked="" type="checkbox"/> Conductor Pipe-Gravity <input type="checkbox"/> Conductor Pipe-Pumped <input type="checkbox"/> Dump Bailer <input type="checkbox"/> Other (Explain) _____		
Formation Type: <input checked="" type="checkbox"/> Unconsolidated Formation <input type="checkbox"/> Bedrock	(6) Sealing Materials For monitoring wells and monitoring well boreholes only <input type="checkbox"/> Neat Cement Grout <input type="checkbox"/> Sand-Cement (Concrete) Grout <input type="checkbox"/> Concrete <input type="checkbox"/> Bentonite Pellets <input type="checkbox"/> Clay-Sand Slurry <input type="checkbox"/> Granular Bentonite <input type="checkbox"/> Bentonite-Sand Slurry <input type="checkbox"/> Bentonite - Cement Grout <input checked="" type="checkbox"/> Chipped Bentonite		
Total Well Depth (ft.) _____ Casing Diameter (ins.) _____ (From ground surface) Casing Depth (ft.) _____ Was Well Annular Space Grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown If Yes, To What Depth? _____ Feet			

Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume	(Circle One)	Mix Ratio or Mud Weight
<i>Bentonite chips</i>	<i>Surface</i>	<i>6</i>	<i>2x 50 lb</i>		

Comments: _____

(9) Name of Person or Firm Doing Sealing Work
Remediation Technologies, Inc
 Signature of Person Doing Work _____ Date Signed *6-1-95*
 Street or Route *113 Wacouta #700* Telephone Number *(612) 222-0891*
 City, State, Zip Code *St. Paul MN 55101*

(10) FOR DNR OR COUNTY USE ONLY	
Date Received/Inspected	District/County
Reviewer/Inspector	<input type="checkbox"/> Complying Work <input type="checkbox"/> Noncomplying Work
Follow-up Necessary	

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION		(2) FACILITY NAME	
Well/Drillhole/Borehole Location	County <i>Milwaukee</i>	Original Well Owner (If Known) <i>Wisconsin Gas Company</i>	
<i>NW 1/4 of NW 1/4 of Sec. 33 ; T. 7 N. R. 22</i>		Present Well Owner <i>Wisconsin Gas Company</i>	
(If applicable)	Gov't Lot _____ Grid Number _____	Street or Route <i>5400 N. Green Bay Ave.</i>	
Grid Location <i>5011.26 ft. N. 5181.58 ft. E.</i>	<input checked="" type="checkbox"/> N. <input type="checkbox"/> S., <input checked="" type="checkbox"/> E. <input type="checkbox"/> W.	City, State, Zip Code <i>Milwaukee, WI 53209</i>	
Civil Town Name	Street Address of Well	Facility Well No. and/or Name (If Applicable) <i>B-47</i>	WI Unique Well No. _____
City, Village <i>Milwaukee</i>	Reason For Abandonment <i>Sampling Complete</i>	Date of Abandonment <i>4-26-95</i>	

WELL/DRILLHOLE/BOREHOLE INFORMATION		(4) Depth to Water (Feet) <u>5</u>	
(3) Original Well/Drillhole/Borehole Construction Completed On (Date) <u>4-26-95</u>		Pump & Piping Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable Liner(s) Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable Screen Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable Casing Left in Place? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If No, Explain <u>Bore hole</u>	
<input type="checkbox"/> Monitoring Well <input type="checkbox"/> Water Well <input type="checkbox"/> Drillhole <input checked="" type="checkbox"/> Borehole	Construction Report Available? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Was Casing Cut Off Below Surface? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Did Sealing Material Rise to Surface? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Did Material Settle After 24 Hours? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, Was Hole Retopped? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Construction Type: <input checked="" type="checkbox"/> Drilled <input type="checkbox"/> Driven (Sandpoint) <input type="checkbox"/> Dug <input type="checkbox"/> Other (Specify) _____	Formation Type: <input checked="" type="checkbox"/> Unconsolidated Formation <input type="checkbox"/> Bedrock	(5) Required Method of Placing Sealing Material <input checked="" type="checkbox"/> Conductor Pipe-Gravity <input type="checkbox"/> Conductor Pipe-Pumped <input type="checkbox"/> Dump Bailer <input type="checkbox"/> Other (Explain) _____	
Total Well Depth (ft.) _____ Casing Diameter (ins.) _____ (From ground surface) Casing Depth (ft.) _____ Was Well Annular Space Grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown If Yes, To What Depth? _____ Feet	(6) Sealing Materials For monitoring wells and monitoring well boreholes only <input type="checkbox"/> Neat Cement Grout <input type="checkbox"/> Sand-Cement (Concrete) Grout <input type="checkbox"/> Concrete <input type="checkbox"/> Clay-Sand Slurry <input type="checkbox"/> Bentonite-Sand Slurry <input checked="" type="checkbox"/> Chipped Bentonite <input type="checkbox"/> Bentonite Pellets <input type="checkbox"/> Granular Bentonite <input type="checkbox"/> Bentonite - Cement Grout		

Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume	(Circle One)	Mix Ratio or Mud Weight
<i>Bentonite Chips</i>	<i>Surface</i>	<i>18</i>	<i>6 x 50 lb</i>		

Comments: _____

(9) Name of Person or Firm Doing Sealing Work
Remediation Technologies, Inc.

Signature of Person Doing Work _____ Date Signed *6-1-95*

Street or Route *413 Wacouta #100* Telephone Number *(612) 222-0841*

City, State, Zip Code *St. Paul MN 55101*

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected	District/County
Reviewer/Inspector	<input type="checkbox"/> Complying Work <input type="checkbox"/> Noncomplying Work
Follow-up Necessary	

APPENDIX C

BORING LOGS

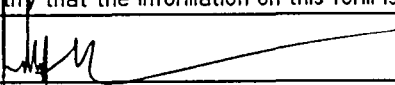


- Route To:
- Solid Waste
 - Emergency Response
 - Wastewater
 - Superfund
 - Haz. Waste
 - Underground Tanks
 - Water Resources
 - Other:

Facility/Project Name <i>Third Ward Manufactured Gas Plant Site</i>			License/Permit/Monitoring Number		Boring Number <i>DB-1</i>	
Boring Drilled By (Firm name and name of crew chief) <i>Boart Longyear Dan Zielazowski</i>			Date Drilling Started <i>04/25/95</i>		Date Drilling Completed <i>04/25/95</i>	
DNR Facility Well No.			WI Unique Well No.		Common Well Name	
Final Static Water Level <i>Feet MSL</i>			Surface Elevation <i>585.85 Feet MSL</i>		Borehole Diameter <i>7.25 inches</i>	
Boring Location State Plane <i>NE 1/4 of NW 1/4 of Section 33, T 7 N, R 22 E</i>			Lat Long		Local Grid Location (if applicable) <i>4925.12 feet</i> <input checked="" type="checkbox"/> N <i>5122.09 feet</i> <input checked="" type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> N	
County <i>Milwaukee</i>			DNR County Code <i>41</i>		Civil Town/City/ or Village <i>Milwaukee</i>	

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
									Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	
0-2	60%	4 12 8 12	1	SILTY SAND with horizons of cinder and ash; gray brown (10YR 3/2); moist (Fill)	SM									
2-3.5	100%	9 10 29 3	2	AS ABOVE; refusal at 3.5 feet										
			3	E.O.B. at 3.5'										
			4											
			5											
			6											
			7											
			8											
			9											
			10											
			11											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

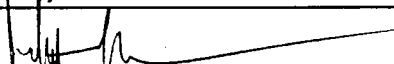
Signature:  Firm: *Remediation Technologies, Inc.*

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Facility/Project Name Third Ward Manufactured Gas Plant Site			License/Permit/Monitoring Number		Boring Number DB-1A	
Boring Drilled By (Firm name and name of crew chief) Boart Longyear Dan Zielazowski			Date Drilling Started 04/25/95		Date Drilling Completed 04/25/95	
DNR Facility Well No.			WI Unique Well No.		Common Well Name	
Final Static Water Level 578.98 Feet MSL			Surface Elevation 585.98 Feet MSL		Borehole Diameter 7.25 inches	
Boring Location State Plane NE 1/4 of NW 1/4 of Section 33, T 7 N, R 22 E			Lat Long		Local Grid Location (if applicable) 4926.82 feet <input checked="" type="checkbox"/> N 5129.86 feet <input checked="" type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W	
County Milwaukee			DNR County Code 41		Civil Town/City/ or Village Milwaukee	

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments	
									Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200		
			1	SILTY SAND with horizons of cinder and ash; gray brown (10YR 3/2); moist (Fill)											
			2	AS ABOVE	SM										
			3												
4-6	75%	14 8 12 6	4	GRAVELLY SAND; with coal slag, bottom ash, and cinders; dark brown (10YR 3/3); moist-damp (Fill)	GM										
			5												
			6	AS ABOVE											
6-8	75%	9 4 11 5	7	SILTY CLAY with SILTY SAND interlayered; dark gray (10YR 5/1); wet; strong petroleum-like odor	CL SM			75							
			8												
8-10	85%	5 3 5 4	9	SILTY CLAY with sand; gray to black (10YR 5/1 to 2/1); wet; moderate plasticity; petroleum-like odor no longer present	CL			1.6							
			10												
			11	E.O.B. at 10.0'											

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Facility/Project Name Third Ward Manufactured Gas Plant Site			License/Permit/Monitoring Number		Boring Number DB-2	
Boring Drilled By (Firm name and name of crew chief) Boart Longyear Dan Zielazowski			Date Drilling Started 04/25/95		Date Drilling Completed 04/25/95	
DNR Facility Well No.			WI Unique Well No.		Common Well Name	
Final Static Water Level 577.63 Feet MSL			Surface Elevation 585.63 Feet MSL		Borehole Diameter 7.25 inches	
Boring Location State Plane NE 1/4 of NW 1/4 of Section 33, T 7 N, R 22 E			Lat Long		Local Grid Location (if applicable) 4962.46 feet <input checked="" type="checkbox"/> N 5125.03 feet <input checked="" type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W	
County Milwaukee			DNR County Code 41		Civil Town/City/ or Village Milwaukee	

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RGD/ Comments
									Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	
0-2	75%	5 22 36 27	1	SILTY SAND; with trace of gravel; yellow brown (10YR 6/6); moist (Fill)	SM			0.0						
				GRAVELLY SAND with cinder, coal slag, and ash; black (10YR 2/1); moist (Fill)	GM									
2-4	100%	10 8 10 7	2 3	SILTY SAND and CLAYEY SILT interlayered; yellowish brown to dark gray (10YR 5/4 to 4/1); wet with moderate petroleum-like odor at 4 feet	SM ML			0.0						
4-6	85%	7 6 4 4	4 5	SILT with trace of sand; very dark gray (10YR 3/1); wet; slight petroleum-like odor	ML			21						
6-8	90%	5 50/5"	6 7	AS ABOVE					22					
8-10	90%	24 10 11 14	8 9	CLAYEY SAND; gray brown (10YR 5/2); wet; petroleum-like odor no longer present	SC			-						
			10 11	E.O.B. at 10.0'										

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Facility/Project Name Third Ward Manufactured Gas Plant Site			License/Permit/Monitoring Number		Boring Number DB-3	
Boring Drilled By (Firm name and name of crew chief) Boart Longyear Dan Zielazowski			Date Drilling Started 04/25/95		Date Drilling Completed 04/25/95	
DNR Facility Well No.			WI Unique Well No.		Common Well Name	
Final Static Water Level 580.60 Feet MSL			Surface Elevation 585.60 Feet MSL		Borehole Diameter 7.25 inches	
Boring Location State Plane NE 1/4 of NW 1/4 of Section 33, T 7 N, R 22 E			Lat Long		Local Grid Location (if applicable) 5034.12 feet <input checked="" type="checkbox"/> N 5116.28 feet <input checked="" type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W	
County Milwaukee			DNR County Code 41		Civil Town/City/ or Village Milwaukee	

Sample		Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	
0-2	75%	6 6 7 10	1	GRAVELLY SAND with wood and brick material; black (10YR 2/1); moist (Fill)	GM			0.0						
2-4	65%	23 50/4"	2 3	SILTY SAND with cinder and ash; black (10YR 2/1); moist with petroleum-like odor (Fill)				18						
4-6	70%	19 40 100/5"	4 5	AS ABOVE with less cinder; strong petroleum-like odor	SM			95						
6-8	0%	35 34 7 5	6 7	NO RECOVERY; pushed a stone in front of the split spoon sampler				-						
8-10	0%	15 18 10 10	8 9	AS ABOVE				-						
			10	E.O.B. at 10.0'										
			11											

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Facility/Project Name Third Ward Manufactured Gas Plant Site			License/Permit/Monitoring Number		Boring Number DB-4
Boring Drilled By (Firm name and name of crew chief) Boart Longyear Dan Zielazowski			Date Drilling Started 04/25/95	Date Drilling Completed 04/25/95	Drilling Method 3.25-inch HSA
DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level 581.01 Feet MSL	Surface Elevation 586.01 Feet MSL	Borehole Diameter 7.25 inches
Boring Location State Plane NE 1/4 of NW 1/4 of Section 33, T 7 N, R 22 E			Lat Long	Local Grid Location (if applicable) 5105.12 feet <input checked="" type="checkbox"/> N 5071.75 feet <input checked="" type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W	
County Milwaukee			DNR County Code 41	Civil Town/City/ or Village Milwaukee	

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RGD/ Comments
									Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	
0-2	75%	10 14 27 25	1	SANDY GRAVEL; very pale brown (10YR 6/3); moist (Fill)	GP			0.0						
				SILTY SAND; dark brown (10YR 3/3); moist (Fill)	SM									
2-4	0%	18 9 6 5	3	NO RECOVERY 2-4 feet; pushed a cobble in front of the split spoon sampler; lithology logged by observing the drill cuttings				-						
4-6	25%	8 5 7 6	5	GRAVELLY SAND; black (10YR 2/1); with slight petroleum-like odor; wet at 5 feet	GM			47						
6-8	50%	6 10 17 19	7	AS ABOVE with some petroleum-like odor and organic-like (Feed Mill) odor				67						
8-10	75%	7 12 12 12	9	AS ABOVE				13						
			10	SANDY SILT with trace of shells; mottled dark gray (10YR 4/1) and black (10YR 2/1); wet	ML									
			11	E.O.B. at 10.0'										

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Facility/Project Name Third Ward Manufactured Gas Plant Site			License/Permit/Monitoring Number		Boring Number DB-5		
Boring Drilled By (Firm name and name of crew chief) Boart Longyear Dan Zielazowski			Date Drilling Started 04/25/95		Date Drilling Completed 04/25/95		
DNR Facility Well No.			WI Unique Well No.		Common Well Name		
Final Static Water Level 582.00 Feet MSL			Surface Elevation 586.00 Feet MSL		Borehole Diameter 7.25 inches		
Boring Location State Plane NE 1/4 of NW 1/4 of Section 33, T 7 N, R 22 E				Lat Long		Local Grid Location (if applicable) <input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W	
County Milwaukee			DNR County Code 41		Civil Town/City/ or Village Milwaukee		

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
									Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	
0-2	25%	8 7 7 7	1	GRAVELLY SAND; pale brown (10YR 6/3); moist (Fill)				-						
2-4	25%	14 9 8 7	2-3	SANDY GRAVEL; black (10YR 2/1); moist to very moist; moderate petroleum-like odor (Fill)	GM			10						
4-6	25%	16 7 15 9	4-5	AS ABOVE; wet				18						
6-8	75%	18 10 12 13	6-7	SILTY SAND with trace of gravel; gray (10YR 4/1); wet with no petroleum-like odor	SM			3.3						
8-10	5%	4 1 6 7	8-9	AS ABOVE; poor recovery				2.3						
			10	E.O.B. at 10.0'										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

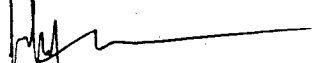
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Facility/Project Name Third Ward Manufactured Gas Plant Site			License/Permit/Monitoring Number		Boring Number DB-6	
Boring Drilled By (Firm name and name of crew chief) Boart Longyear Dan Zielazowski			Date Drilling Started 04/25/95		Date Drilling Completed 04/25/95	
DNR Facility Well No.			WI Unique Well No.		Common Well Name	
Final Static Water Level 582.00 Feet MSL			Surface Elevation 586.00 Feet MSL		Borehole Diameter 7.25 inches	
Boring Location State Plane NE 1/4 of NW 1/4 of Section 33, T 7 N, R 22 E			Lat Long		Local Grid Location (if applicable) 5282.15 feet <input checked="" type="checkbox"/> N 5054.98 feet <input checked="" type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W	
County Milwaukee			DNR County Code 41		Civil Town/City/ or Village Milwaukee	

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
									Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	
0-2	25%	7 12 19 23	1	GRAVELLY SAND; gray brown (10YR 5/2); moist (Fill)	GM			-						
2-4	75%	31 20 15 8	2 3	SILTY SAND with some gravel and wood; black (10YR 2/1); moist with moderate petroleum-like odor (Fill)				18.5						
4-6	75%	1 2 1 2	4 5	AS ABOVE; wet	SM			16						
6-8	0%	6 7 3 4	6 7	NO RECOVERY; pushed a cobble in front of split spoon sampler				-						
8-10	50%	1 3 5 2	8 9	GRAVELLY SAND; gray brown (10YR 5/2); wet	GM			1.5						
			10 11	E.O.B. at 10.0'										




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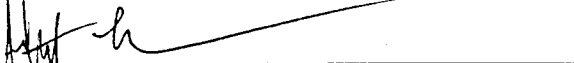
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- Route To:
- Solid Waste
 - Emergency Response
 - Wastewater
 - Superfund
 - Haz. Waste
 - Underground Tanks
 - Water Resources
 - Other:

Facility/Project Name <i>Third Ward Manufactured Gas Plant Site</i>			License/Permit/Monitoring Number		Boring Number <i>DB-7</i>	
Boring Drilled By (Firm name and name of crew chief) <i>Boart Longyear</i> <i>Dan Zielazowski</i>			Date Drilling Started <i>04/25/95</i>		Date Drilling Completed <i>04/25/95</i>	
DNR Facility Well No.			WI Unique Well No.		Common Well Name	
Final Static Water Level <i>581.98 Feet MSL</i>			Surface Elevation <i>585.98 Feet MSL</i>		Borehole Diameter <i>7.25 inches</i>	
Boring Location State Plane <i>NE 1/4 of NW 1/4 of Section 33, T 7 N, R 22 E</i>			Lat Long		Local Grid Location (if applicable) <i>4953.40 feet</i> <input checked="" type="checkbox"/> N <i>5185.09 feet</i> <input checked="" type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> N	
County <i>Milwaukee</i>			DNR County Code <i>41</i>		Civil Town/City/ or Village <i>Milwaukee</i>	

Sample		Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	
0-2	50%	4 5 7 11	1	SILTY SAND with trace of ash and cinder; some coal; black (10YR 2/1); moist (Fill)	SM			-						
2-4	75%	5 6 9 11	2	AS ABOVE				0.2						
4-6	75%	7 12 8 20	3	SILTY CLAY with trace of sand; reddish yellow (7.5YR 6/8); moist (Fill)	CL									
			4	GRAVELLY SAND with trace of clay and brick fragments; mottled light gray (10YR 7/1) and dark brown (10YR 3/3); wet with slight petroleum-like odor at 5 feet (Fill)	GM			2.9						
			5	E.O.B. at 6.0'										
			6											
			7											
			8											
			9											
			10											
			11											

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Facility/Project Name Third Ward Manufactured Gas Plant Site			License/Permit/Monitoring Number		Boring Number B-47	
Boring Drilled By (Firm name and name of crew chief) Boart Longyear Dan Zielazowski			Date Drilling Started 04/26/95		Date Drilling Completed 04/26/95	
DNR Facility Well No.			WI Unique Well No.		Common Well Name	
Final Static Water Level 581.12 Feet MSL			Surface Elevation 586.12 Feet MSL		Borehole Diameter 7.25 inches	
Boring Location State Plane NE 1/4 of NW 1/4 of Section 33, T 7 N, R 22 E			Lat Long		Local Grid Location (if applicable) 5011.26 feet <input checked="" type="checkbox"/> N 5181.58 feet <input checked="" type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W	
County Milwaukee			DNR County Code 41		Civil Town/City/ or Village Milwaukee	

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments	
									Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200		
0-2	85%		2	GRAVELLY SAND with trace of silt; pale brown (10YR 7/4); moist (FIII)	GW			0.0							
2-4	60%		4	ORGANIC RICH SILT; dark brown (10YR 3/3); soft; moist (FIII)	OL			-							
			4	AS ABOVE	SM										
4-6	75%		6	GRAVELLY SAND with coke, cinders, and ash; dark brown (10YR 3/3); loose; moist (FIII)	OL SM			18							
6-8	25%		8	ORGANIC RICH SILT with interlayered SILTY SAND; dark brown (10YR 3/3); moist	SM			-							
8-10	25%		10	SILTY SAND with trace clay; gray (10YR 5/1); wet with strong petroleum-like odor	SM			-							
			10	AS ABOVE; dark brown (10YR 3/3); sheen and slight petroleum-like odor				-							
			10	AS ABOVE				-							
10-12	0%		12	NO RECOVERY; pushed a cobble in front of split spoon sampler				-							
12-14	0%		14	NO RECOVERY; pushed wood in front of split spoon sampler				-							
14-16	0%		16	NO RECOVERY as above				-							
16-18	100%		18	SILTY SAND with some shells; gray (10YR 5/1); wet; strong naphthalene-like odor	SM			20							
			18	E.O.B. at 18.0'											
			20												
			22												

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APPENDIX D

COMPOSITE SAMPLE DESCRIPTIONS

**REMEDICATION PARAMETERS
SUMMARY OF COMPOSITE SAMPLES**

- Composite #11 - Soil and debris inside of Gas Holder #4.
- Discrete samples used:
- TTA1-2(5-6')
 - TTA1-3(6-8")
 - TTA2-1(5-6')
 - TTA2-2(9')
 - TTA1-4(13')
- Composite #12 - Soil and debris outside of structures in Areas A, B, and C from depths of 0 to 5 feet.
- Discrete samples used:
- TTA1-1(3')
 - TTA2-3(2')
 - TTA2-5(5')
 - TTA2-7(1')
 - TTA4-3(5')
 - TTB2-1(3-4)
 - TTC2-2(3-4')
 - TTC4-2(4-5')
 - TTC3-1(4')
- Composite #13 - Soil and debris outside of structures in Areas A, B, and C from depths of 5 to 9 feet.
- Discrete samples used:
- TTA2-4(7')
 - TTA4-2(7')
 - TTB3-2(6-7')
 - TTB2-4(9')
 - TTB2-3(7')
 - TTC5-3(7')
 - TTC5-2(8-9')
 - TTC5-1(6-7')
-

Composite #14 - Soil and debris outside of structures in Areas E, F, and G from depths of 0 to 7 feet.

Discrete samples used:
TTE2-1(7')
TTF3-1(7')
TTF2-1(3')
TTG2-1(3-4')
TTG1-2(3-4')
TTG5-1(4-5')

Composite #15 - Soil and debris inside of Gas Holder #3 on City Property and tar well on Peters=Johnson Property.

Discrete samples used:
TTC1-4(3-4')
TTE1-2(10-11')
TTE1-1(7')
TTF1-1(5-6')
TTF1-2(8-10')



**RCRA CHARACTERIZATION
SUMMARY OF COMPOSITE SAMPLES**

Composite #2 - Unsaturated soil and debris outside of structures in Area A.

Discrete samples used: TTA4-2(7')
TTA3-2(7')
TTA3-1(4')
TTA1-1(3')

Composite #3 - Unsaturated soil and debris outside of structures in Area B.

Discrete samples used: TTB1-1(3')
TTB3-2(6-7')
TTB2-5(8-9')
TTB2-4(9')
TTB2-3(7')

Composite #4 - Unsaturated soil and debris outside of structures in Area C
from depths of 6 to 9 feet.

Discrete samples used: TTC5-1(6-7')
TTC5-2(8-9')
TTC5-3(7')

Composite #5 - Unsaturated soil and debris outside of structures in Area C
from depths of 0 to 6 feet.

Discrete samples used: TTC3-1(4')
TTC2-2(3-4')
TTC2-4(2.5')
TTC1-3(3')
TTC2-3(2')

Composite #6 - Unsaturated soil and debris outside of structures in Areas E and F.

Discrete samples used: TTF3-1(7')
TTF2-1(3')
TTE2-1(7')

Composite #7 - Saturated soil in Oil Reservoir #1.

Discrete samples used: TTF1-1(5-6')
TTF1-2(8-10')

Composite #8 - Saturated soil in Gas Holder #3.

Discrete samples used: TTE3-1(7-8')
TTE1-1(7')
TTE1-2(10-11')

Composite #9 - Unsaturated soil from Area G.

Discrete samples used: TTG4-1(3-4')
TTG1-2(3-4')
TTG2-1(3-4')

Composite #10 - Saturated soil from Area G.

Discrete samples used: TTG4-2(6-7')
TTG2-2(5-6')
TTG1-1(5-6')

APPENDIX E

QA/QC REVIEW

APRIL 1995 SOIL DATA



400 Gilbert Building
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St. Paul, MN 55101
(612) 222-0841
Fax (612) 222-5914

DATA VALIDATION REPORT

TO: Jonathan Murer
FROM: Kim Lofgren
DATE: September 6, 1995
RE: Review of April 1995 Analytical Data

1.0 GENERAL

PROJECT: Third Ward MGP - SSPI #3-0887-403
DATE SAMPLED: April 25-29, 1995
RECEIVING LAB: Analytical Technologies, Inc.
ANALYTICAL METHODS: TCLP Semivolatile Organic Analytes (SVOA), SW846-8270
TCLP Volatile Organic Analytes (VOA), SW846-8240
TCLP Metals, SW846-6000/7000 series
Polynuclear Aromatic Hydrocarbons (PAH), SW846-8310
Benzene, Toluene, Ethylbenzene, Xylenes Extractables (BTEX), SW846-8020
Total Cyanide (TCN), SW846-9010
Cyanide and Sulfide Reactivity, SW846-9010 and 9030
Corrosivity/pH, SW846-9045
Ignitability, SW846-1010
Grain Size Distribution, Bulk Density, Silicon Oxide, Aluminum Oxide, Total Extractable Petroleum (TEPH), Total Organic Carbon (TOC), Chloride (Cl), and Total Metals
Hydrocarbons

NUMBER OF SAMPLES: 41
MATRIX: 37 Soil, 2 Equipment Blanks, and 2 Trip Blanks
DATE(S) EXTRACTED: all samples were extracted within the holding time limits with the exception of sample TTA4-1 (1-2') for PAH analysis
DATE(S) ANALYZED: all samples were analyzed within the holding time limits



- All the samples and all of the quality assurance/quality control (A/QC) in this data set have been reviewed with respect to holding times, method blanks, surrogate recoveries, matrix spikes, sample results, and any other QC measures (field blanks, lab blank spikes, field duplicates, etc.).

2.0 VALIDITY AND COMMENTS

2.1 GENERAL COMMENTS

The objectives of this review were to determine the quality of the analytical data collected in April 1995 for the Third Ward MGP site, by examining the level of precision, accuracy, completeness, representativeness, and comparability as stated in the Quality Assurance Project Plan (QAPP). Precision is a measure of the mutual agreement among individual measurements of the same property, usually under prescribed similar conditions. Precision is determined through analysis of field duplicate samples and field blanks. The accuracy of data is the degree of agreement of a measurement with an accepted reference or true value. The level of accuracy is determined by examination of laboratory matrix spike analyses, laboratory control spike analysis, method blanks, and surrogate recoveries for organic analyses. Completeness is determined by assessing the number of samples where valid results are reported versus the number of samples which were submitted to the laboratory for analysis. The overall measure of completeness will be the ratio of valid analyses received compared to the expected amount of data to be obtained under correct or normal conditions. Representativeness is the degree to which data accurately and precisely represent a characteristic population, process control, or an environmental condition. Appropriate sampling procedures ensure sample representative of the environmental matrices sampled. Comparability refers to the degree to which one data set can be compared to another and is controlled through use of appropriate sampling and analytical processes.

The QAPP required that field QC, which measures precision to include, analyses of duplicate samples, equipment rinseate blanks, and trip blanks. Duplicate field QC samples will be collected for 10% of the collected samples and will be analyzed for PAH, TCN, and BTEX. Evaluation of duplicate samples for precision was done using the relative percent difference (RPD). RPD is defined as the difference between two duplicate samples divided by the mean and expressed as a percent. The criteria for acceptable RPD values are 0-50% for soil samples. One equipment blank will be submitted for 20% of the collected samples and analyzed for PAH, TCN, and BTEX. In addition, one trip blank per cooler will be submitted for BTEX analysis to determine shipping, storage, and bottle related contamination.

The QAPP required that Laboratory QC, which measured accuracy, include a method blank (reagent blank) for approximately 20 actual samples for each parameter, a spike/spike duplicate for approximately one out of every 20 samples for each parameter, and analysis of

surrogate standards for organic analyses. Method blanks were analyzed to identify compounds which could be introduced during the laboratory extraction or analysis phase (i.e. laboratory contaminants). Matrix spike/spike duplicate (MS/MSD), blank spike/spike duplicate (BS/BSD), or laboratory control spike/spike duplicate (LCS/LCSD), percent recoveries (%Rs) and spike RPD values reported are compared to published QC limits. Surrogates are compounds that are structurally similar to the compounds requested for analysis, but are not generally found in nature (i.e., deuterated compounds). They are analyzed to demonstrate that structurally similar compounds can be recovered and quantified by the lab. Full laboratory data validation packages were included with this data set and are stored in the project file.

The completeness goal was the overall measure of the ratio of samples planned versus the number of samples with valid analyses. The data quality objective for Third Ward MGP-SSPI data was to achieve 90-100% completeness of the data collected.

For the RETEC A/QC process, the chain of custody (COC) records were first checked to ensure that the sample results were complete and the laboratory did not mislabel samples during sample log-in and analysis. The COC records are complete and contain all necessary information for all sets of analytical data. Samples were analyzed by Analytical Technologies, Inc. (ATI), in Fort Collins, Colorado. All appropriate data were found in the forms provided from ATI. The amount extracted, dilution factor and amount analyzed was included for all of the samples in this data set. Soil samples were analyzed for PAHs, BTEX, toxicity characteristic leachate procedure (TCLP) VOA, TCLP SVOA, TCLP metals, TOC, TEPH, chloride (Cl), corrosivity (pH), reactivity, and ignitability. Analytical results comply with EPA Level III and Level IV (EPA, 1987) data, meaning non-Contract Laboratory Program (CLP) and CLP analytical procedures were used, as appropriate. Table 2-1 provides a summary of the soil data. Not all samples were analyzed for each parameter, refer to Table 2-1 for exact analyses completed for each sample. Parameters identified in the A/QC review as outside the control limits are shown in bold and shaded. Parameters identified in the A/QC review as questionable are shown in bold.

2.2 HOLDING TIMES

For the purpose of this review, the holding times stated in SW-846 were used to qualify data. The times and dates for sampling were taken from RETEC's COC. The dates for extraction and analyses were taken from the ATI organic analysis data sheets. All samples met the holding time requirements for the preparation type with the exception of sample TTA4-1 (1-2') for PAH analysis. Sample TTA4-1 (1-2') was extracted 12 days past the recommended holding time, and the results have been qualified as estimated.

2.3 POLYNUCLEAR AROMATIC HYDROCARBONS

Twenty-one soil samples and two equipment blanks were reviewed for PAH validity in this data set. Sample TTA4-1 (1-2') was extracted 12 days past the recommended holding time of 14 days for soil samples. The positive results have been qualified with J qualifiers (the associated numerical value is an estimated quantity), and the non-positive with UJ qualifiers (the material was analyzed for, but was not detected, and the sample quantitation limit is an estimated quantity), due to holding time violations. Twenty samples were reanalyzed at higher dilutions due to high analyte concentrations exceeding the linear range of the detector.

2.3.1 Method Blank and Equipment Blank

Method Blank - Four method blanks were extracted, analyzed, and reported with the PAH samples. Target analytes were detected in the method blank associated with the equipment blank samples. The results for target analytes in the two equipment blanks have been qualified with U qualifiers (the material was analyzed for, but was not detected, and the associated numerical value is the sample quantitation limit), based on the 5X rule. The 5X rule states if a sample result is less than five times the blank result, then the sample result is qualified as non-detect.

Equipment Blank - Two equipment blanks (EB1 and EB2) were submitted with the PAH data set. 1-methylnaphthalene, fluorene, phenanthrene, anthracene, fluoranthene, benzo(a)anthracene were detected in EB1 and phenanthrene and 1-methylnaphthalene were detected in EB2. Certain results from each of these samples have been qualified with U qualifiers due to blank contamination.

2.3.2 Surrogate Recovery

Surrogate percent recoveries (%Rs) for chloroanthracene were reported with each sample on the Organics Analysis Data Sheet (Form-1) and on the PAH Surrogate Recovery Form (Form II PAH). The surrogate %R for chloroanthracene was not recovered due to high analyte concentrations in samples TTC4-2 (4-5'), TT3-1 (7'), TTF2-1(3'), TTE1-2 (10-11'), TTG2-1 (3-4'), DB-6 (2-4'), DB-7 (0-2'), B-47 (2-4'), B-47 (16-18'), Duplicate #1, TTA3-2 (7'), TTA2-1 (5-6'), TTB2-5 (8-9'), Duplicate #2, TTC5-1 (6-7'), and TTC1-2 (2-3'). The surrogate %R for chloroanthracene was 91% in sample TTE1-2 (7'), 117% for sample TTG21 (3-4'), 85% in sample EB1, and 99% in sample EB2, which were within acceptable control limits of 15-117%. The Surrogate %R for chloroanthracene in the BSs and BSDs were also within acceptable control limits of 15-117%, indicating acceptable laboratory procedures.

2.3.3 Matrix Spike/Matrix Spike Duplicate (MS/MSD) and Blank Spike/Blank Spike Duplicate (BS/BSD)

MS/MSD - Two sample MS/MSD summary reports (TTE1-2 (10-11') and Duplicate #1) were submitted with the PAH data set. The samples were spiked with a spiking solution

containing five different analytes. These samples contained high concentrations of the analytes of interest; and therefore, the MSs and MSDs were outside acceptable control limits, and should not be used for QC purposes.

BS/BSD - Four BS/BSD reports were submitted with the PAH data set. The samples were spiked with a spiking solution containing five different analytes. The BS %Rs ranged from 41-83%, the BSD %Rs ranged from 38-102%, which were with acceptable control limit of 23-123%. The RPD values ranged from 4-39%. Three RPD values exceeded the upper control limit of 20%. The RPD value was 39% for phenanthrene and 27% for pyrene in SB/BSD 5/1/95; and 23% for phenanthrene in SB3,4 5/22/95. All other BS/BSD RPD values were within acceptable control limits of 0-20%. No qualifiers were warranted based on the RPD values and laboratory procedures are considered acceptable.

2.3.4 Field Duplicate

Two "blind" field duplicates were included in this data set. Sample Duplicate #1 is a field duplicate of sample B-47 (2-4') and sample Duplicate #2 is a field duplicate of sample TTB2-5 (8-9'). Thirteen RPD values were calculated ranging from 14-115%. Two RPD values exceeded the upper 50% for field duplicate analysis. Sample non-homogeneity could contribute to the high variable RPD values. Field sampling techniques are acceptable based on the field duplicate analyses.

2.3.5 Overall Assessment of Data

The quantity of soil extracted, the amounts analyzed and the dilution factors were included in this data set for all of the samples. All compounds were reviewed based on the holding time limits, detection limits, method blank, surrogate %Rs, MS/MSD %Rs, BS/BSD %Rs, RPD values, and field duplicates. Sample TTA4-1 (1-2') results have been qualified as estimated, due to holding time violation; and selected results from samples EB1 and EB2 results have been qualified as non-detects due to method blank contamination. The data was found to be acceptable based on the information given.

Field precision has been determined acceptable based on the field blanks and duplicate analyses.

Laboratory accuracy has been determined acceptable based on method blanks, surrogate %Rs, and BS %Rs.

2.4 BENZENE, TOLUENE, ETHYLBENZENE, AND XYLENES EXTRACTABLES

Twenty soil samples, two equipment blanks, and two trip blanks were submitted for BTEX analysis.

2.4.1 Method Blank, Equipment Blank, and Trip Blank

Method Blank - Nine method blanks were extracted, analyzed, and reported for BTEX with this sample set. Target analytes were not detected in the method blanks, indicating acceptable laboratory techniques.

Equipment Blank - Two equipment blanks (EB1 and EB2) were submitted with the BTEX sample for this sample set. Target analytes were not detected in the equipment blanks, indicating acceptable field techniques.

Trip Blank - Two trip blanks were included with the BTEX sample set. Target analytes were not detected in the trip blanks, indicating acceptable field and laboratory techniques.

2.4.2 Surrogate Recoveries

Surrogate %R for trifluorotoluene was reported with each sample on the Organics Analysis Data Sheet (Form I). The surrogate %R for trifluorotoluene was not reported for TTTTE1-2 (10-11')² (10-12') and EB1 MS and MSD. All other surrogate %Rs were reported and within acceptable control limits of 75-109%.

2.4.3 MS/MSD

Two MS/MSD (TTE1-2 (10-11') and EB1) summary reports were submitted with the BTEX samples. The samples were spiked with a spiking solution containing four different analytes. The MS and MSD %Rs ranged from 97-103% in sample TTE1-2 (10-11'), and 96-102% in sample EB, which were within acceptable control limits 75-135%. The RPD values ranged from 0-3% for sample TTE1-2 (10-11') and 2-3% for EB1, which were within acceptable control limits of 0-22%.

2.4.4 Reference Calibration Check (RCC)

Twelve RCC percent differences (%D) were reported with this data set. The RCC %Ds ranged from 0.6-5%, which were within acceptable control limits of 0-20%.

2.4.5 Field Duplicate

Two "blind" field duplicates were included in this data set. Sample Duplicate #1 is a field duplicate of sample B-47 (2-4') and sample Duplicate #2 is a field duplicate of sample TTB2-5 (8-9'). Eight RPD values were calculated, ranging from 5-131%. The four RPD values calculated for the sample TTB2-5 (8-9')/Duplicate #2 exceeded the upper control limit of 50% for soil samples, suggesting sample non-homogeneity. Field sampling techniques are acceptable based on the results of the B-47 (2-4')/Duplicate #1 field duplicate analysis.

2.4.6 Overall Assessment of Data

The quantity of soil extracted, amounts analyzed and dilution factors were included in this data set for all of the samples. All compounds were reviewed based on the holding time limits, detection limits, method blanks, equipment blanks, trip blanks, MS/MSD %Rs and RPD value, the RCC %D, and field duplicate analyses. The data was found to be acceptable based on the information given.

Field precision has been determined acceptable based on the equipment blanks, trip blanks, and field duplicate analyses.

Laboratory accuracy has been determined acceptable based on method blanks, trip blanks, surrogate %Rs, MS %R, MSD %R, and RPD values, and RCC %Ds.

2.5 TOTAL CYANIDE

Twenty-one soil samples and two equipment blanks were submitted for total cyanide analysis.

2.5.1 Method Blank and Equipment Blank

Method Blank - Five method blanks were extracted, analyzed, and reported for total cyanide with this sample set. Total cyanide was not detected in the method blanks.

Equipment Blank - Two equipment Blanks (EB1 and EB2) were extracted, analyzed, and reported for total cyanide with this sample set. Total cyanide was not detected in the equipment blanks.

2.5.2 Initial Calibration Verification (ICV)

Three ICVs for total cyanide were extracted, analyzed, and reported with this data set. The ICV %Rs ranged from 95-104%, which were within acceptable control limits of 75-125%.

2.5.3 Laboratory Check Sample (LCS)

Two LCSs were reported with the TCN sample set. The LCS %Rs were 87% and 94%, which were within acceptable control limits of 75-125%.

2.5.4 MS

One MS was reported with the TCN sample set. The MS %R for TCN was 118%, which was within the acceptable control limits of 75-125%.

2.5.5 Field Duplicate and Laboratory Duplicate

Field Duplicate - Two "blind" field duplicates were submitted with the TCN sample set. Sample Duplicate #1 is a field duplicate of sample B-47 (2-4') and sample Duplicate #2 is a field duplicate of sample TTB2-5 (8-9'). The RPD value for B-47 (2-4')/Duplicate #1 could not be calculated because TCN was not detected in the sample nor the corresponding duplicate. The RPD value for sample TTB2-5 (8-9')/Duplicate #2 exceeded the upper control limit of 50% for soil samples, suggesting sample non-homogeneity. Table 2-3 summarizes the results of the field duplicates. Field sampling techniques are acceptable based on sample B-47 (2-4')/Duplicate #1 field duplicate analysis.

Laboratory Duplicate - One laboratory duplicate was reported with the TCN sample set. The RPD value could not be calculated because TCN was not detected in the sample nor the corresponding duplicate.

2.5.6 Overall Assessment of the Data

The quantity of soil extracted, amounts analyzed and dilution factors were included in this data set for all of the samples. All compounds were reviewed based on holding time limits, detection limits, method blanks, equipment blanks, ICV %Rs, MS %Rs, LCS %Rs, field duplicates, and laboratory duplicate. The data was found to be acceptable based on the information given.

Field precision has been determined acceptable based on the equipment blanks and field duplicate analyses.

Laboratory accuracy has been determined acceptable based on method blanks, ICV %Rs, MS %Rs, LCS %Rs, and laboratory duplicate analyses.

2.6 TCLP SEMIVOLATILE ORGANIC ANALYTES (SVOC)

Ten samples were submitted for TCLP SVOC analysis.

2.6.1 Method Blank

Two method blanks were extracted, analyzed, and reported with the TCLP SVOC samples. Target analytes were not detected in the method blanks.

2.6.2 Surrogate Recovery

Surrogate percent recoveries (%Rs) for 2-fluorophenol, phenol-d5, nitrobenzene-d5, 2-fluorobiphenyl, 2,4,6-tribromophenol, and terphenyl-d14 were reported with each sample on the

Organics Analysis Data Sheet (Form-1) and on the SVOC Surrogate Recovery Form (Form II SVOC). The surrogate %R for 2-fluorophenol and 2,4,6-tribromophenol were below the acceptable control limits of 43-116% for 2-fluorophenol 10-123% for 2,4,6-tribromophenol in samples Composite #2, Composite #8, and Composite #9; and the surrogate %R for 2-fluorophenol was below the acceptable control limit of 43% for sample Composite #10. These samples were reextracted and reanalyzed with similar results, confirming matrix interference. Sample Composite #2 was reanalyzed with surrogate %Rs within control limits of 10-141% with all surrogates within acceptable control limits, indicating acceptable laboratory procedures.

2.6.3 MS and BS

MS - One sample MS summary report (Composite #2) was submitted with this sample set. Sample Composite #2 was spiked with a spiking solution containing twelve different analytes. The MS %Rs ranged from 27-75%, which were within acceptable control limits of 1-123% for SVOC MSs.

BS - One BS was submitted with this data set. The BS was spiked with a spiking solution containing twelve different analytes. The BS %Rs ranged from 26-82%, which were with acceptable control limit of 1-111%.

2.6.4 Overall Assessment of Data

The quantity of soil extracted, the amounts analyzed and the dilution factors were included in this data set for all of the samples. All compounds were reviewed based on the holding time limits, detection limits, method blank, surrogate %Rs, MS %Rs, and BS %Rs. The data was found to be acceptable based on the information given.

Laboratory accuracy has been determined acceptable based on method blanks, surrogate %Rs, MS %Rs and BS %Rs.

2.7 TCLP VOLATILE ORGANIC ANALYTES (VOC)

Ten samples were submitted for TCLP VOC analysis.

2.7.1 Method Blank

Four method blanks were extracted, analyzed, and reported with the TCLP VOC samples. Target analytes were not detected in the method blanks.

2.7.2 Surrogate Recovery

Surrogate percent recoveries (%Rs) for 1,2-dichloroethane-d4, toluene-d8, and bromofluorobenzene were reported with each sample on the Organics Analysis Data Sheet (Form-

1). The surrogate %Rs ranged from for 96-105%. All %Rs were within acceptable control limits of 76-114% for 1,2-dichloroethane-d4, 88-110% for toluene-d8, and 86-115% for bromofluorobenzene.

2.7.3 MS and BS

MS - One sample MS summary report (Composite #9) was submitted with the TCLP VOC sample set. Sample Composite #9 was spiked with a spiking solution containing ten different analytes. The MS %Rs ranged from 89-103%, which were within acceptable control limits of 26-156% for VOC MSs.

BS - One BS was submitted with the TCLP VOC sample set. The BS was spiked with a spiking solution containing ten different analytes. The BS %Rs ranged from 26-82%, which were within acceptable control limit of 1-111%.

2.7.4 Overall Assessment of Data

The quantity of soil extracted, the amounts analyzed and the dilution factors were included in this data set for all of the samples. All compounds were reviewed based on the holding time limits, detection limits, method blank, surrogate %Rs, MS %Rs, and BS %Rs. The data was found to be acceptable based on the information given.

Laboratory accuracy and precision have been determined acceptable based on method blanks, MS %Rs and BS %Rs.

2.8 TCLP METALS

Ten samples were submitted for TCLP metals analysis.

2.8.1 Method Blank, Initial Calibration Blank, and Continuing Calibration Blank

Method Blank - Two method blanks were extracted, analyzed, and reported with the TCLP metal samples. Arsenic, barium, cadmium, and lead were detected in the method blanks.

Initial Calibration Blank - One initial calibration blank was submitted with the TCLP metal samples. Barium and cadmium were detected in the initial calibration blank.

Continuing Calibration Blank - Four continuing calibration blanks were submitted with the TCLP metals samples. Arsenic, barium, cadmium, and chromium were detected in the continuing calibration blanks.

2.8.2 Initial Calibration Verification (ICV) and Continuing Calibration Verification (CCV)

Initial Calibration Verification - One ICV sample was submitted with the TCLP metals. The IVC %Rs ranged from 101-107%, which were within the acceptable control limits of 80-120%.

Continuing Calibration Verification - Two CCV samples were submitted with the TCLP metals. The CCV %Rs ranged from 96-104%, which were within the acceptable control limits of 80-120%.

2.8.3 CRDL Standard (CRDLS), ICP Interference Check Sample (ICS), and Laboratory Control Sample (LCS)

CRDL Standard - Two CRDL Standards were submitted with the TCLP metals. The CRDLS %Rs ranged from 80-124%, which were within acceptable control limits of 75-125%.

ICP Interference Check Sample - One ICP ICS was submitted with the TCLP metals. The ICP ICS %Rs ranged from 84-105%, which were within acceptable control limits of 75-125%.

Laboratory Control Sample - One LCS was submitted with the TCLP metals. The LCS %Rs ranged from 90-120%, which were within acceptable control limits of 75-125%.

2.8.4 MS

MS - One sample MS summary report (Composite #9) was submitted with this sample set. Sample Composite #9 was spiked with a spiking solution containing eight different analytes. The MS %Rs ranged from 89-115%, which were within acceptable control limits of 75-125% for TCLP metals.

2.8.5 Laboratory Duplicate and Laboratory Serial Dilution

Laboratory Duplicate - One laboratory duplicate (Composite #2) was submitted with the TCLP metals. The RPD values ranged from 0-200%. Two RPD values were above the acceptable control limits of 20%. The RPD value for selenium was 200% and arsenic was 74%. No qualifiers were warranted based on diluted RPD values.

Laboratory Serial Dilution - One laboratory serial dilution (Composite #2) was submitted with the TCLP metals. Three % Differences (%D) exceeded the upper control limit of 20%. The %D for selenium was 295%, arsenic was 263%, and cadmium was 459%. No qualifiers were warranted based on the high %Ds; however, the data interpreter should be careful when interpreting this data.

2.8.6 Overall Assessment of Data

The quantity of soil extracted, the amounts analyzed and the dilution factors were included in this data set for all of the samples. All compounds were reviewed based on the holding time limits, detection limits, method blank, initial calibration blank, continuing calibration blanks, ICS %Rs, LCS %Rs, MS %Rs, ICV %Rs, CCV %Rs, CRDLS %Rs, and laboratory duplicate. The data was found to be acceptable based on the information given.

Laboratory accuracy has been determined acceptable based on method blank, initial calibration blank, continuing calibration blanks, ICS %Rs, LCS %Rs, MS %Rs, ICV %Rs, CCV %Rs, CRDLS %Rs, and laboratory duplicate.

2.9 IGNITABILITY, REACTIVITY, AND CORROSIVITY

Ten soil samples were submitted for ignitability, reactivity, and corrosivity analyses. No QA/QC support documentation was submitted with these samples.

2.10 TOTAL EXTRACTABLE PETROLEUM HYDROCARBONS (TEPH)

Five soil samples were submitted for total extractable petroleum hydrocarbon analysis.

2.10.1 Method Blank

One method blank was extracted, analyzed, and reported with the TEPH samples. Target analytes were not detected in the method blank.

2.10.2 MS and BS

MS - MS - One sample MS summary report (Composite #11) was submitted with this sample set. The MS %R was not recovered, due to high target analyte concentration.

BS - One BS was submitted with this data set. The BS %R was 104%, which was with acceptable control limit of 75-125%. indicating acceptable laboratory procedures.

2.10.3 Overall Assessment of Data

The quantity of soil extracted, the amounts analyzed and the dilution factors were included in this data set for all of the samples. All compounds were reviewed based on the holding time limits, detection limits, method blank, MS %R and BS %R. The data was found to be acceptable based on the information given.

Laboratory accuracy has been determined acceptable based on method blanks and BS %Rs.

2.11 CHLORIDE (Cl)

Five soil samples were submitted for Cl analysis.

2.11.1 Method Blank

One method blank was extracted, analyzed, and reported with the TOC samples. Chloride was not detected in the method blank.

2.11.2 MS

One sample MS summary report (Composite #11) was submitted with this sample set. Sample Composite #11 was spiked with a spiking solution containing chloride. The MS %R was 101%, within acceptable control limits of 75-125%, indicating acceptable laboratory procedures.

2.11.3 Overall Assessment of Data

The quantity of soil extracted, the amounts analyzed and the dilution factors were included in this data set for all of the samples. All compounds were reviewed based on the holding time limits, detection limits, method blank and MSD %R. The data was found to be acceptable based on the information given.

Laboratory accuracy has been determined acceptable based on method blanks and MS

2.12 TOTAL METALS

Five soil samples were submitted for total metals analysis.

2.12.1 Method Blank

One method blank was extracted, analyzed, and reported with the total metals samples. Target analytes were not detected in the method blank.

2.12.2 MS/MSD and Post Digestion Spike (PS)

MS/MSD - One sample MS/MSD summary report (Composite #11) was submitted with this sample set. Sample Composite #11 was spiked with a spiking solution containing twelve

different analytes. The MS %Rs and MSD %Rs were within acceptable control limits of 75-125%, with the exception of antimony. The MS %R was 70%. The RPD values were within acceptable control limits of 0-20% with the exception of lead. The RPD for nickel was 26%.

PS - One PS for antimony and lead was submitted with this data set. The PS %R was 93% for antimony and 85% for lead, which were within acceptable control limits of 75-125%, indicating acceptable laboratory procedures.

2.12.3 Overall Assessment of Data

The quantity of soil extracted, the amounts analyzed and the dilution factors were included in this data set for all of the samples. All compounds were reviewed based on the holding time limits, detection limits, method blank, MS %Rs, MSD %Rs, PS %Rs, and RPD values. The data was found to be acceptable based on the information given.

Laboratory accuracy has been determined acceptable based on method blanks, MS %Rs, MSD %Rs, PS %Rs, and RPD values.

2.13 TOTAL ORGANIC CARBON (TOC)

Five soil samples were submitted for TOC analysis.

2.13.1 Method Blank

One method blank was extracted, analyzed, and reported with the TOC samples. TOC was not detected in the method blank.

2.13.2 MS

One sample MS summary report (Composite #11) was submitted with this sample set. Sample Composite #11 was spiked with a spiking solution containing TOC. The MS %R was 101%, which was within acceptable control limits of 75-125%, indicating acceptable laboratory procedures.

2.13.3 Laboratory Duplicate

One laboratory duplicate (Composite #11) was submitted with the TOC analysis. The RPD value was 16%, which was within acceptable control limits of 0-20%, indicating acceptable laboratory procedures.

2.13.4 Overall Assessment of Data

The quantity of soil extracted, the amounts analyzed and the dilution factors were included in this data set for all of the samples. All compounds were reviewed based on the holding time limits, detection limits, method blank, MS %R, and laboratory duplicate. The data was found to be acceptable based on the information given.

Laboratory accuracy has been determined acceptable based on method blanks, MS %R, and laboratory duplicate RPD value.

3.0 CONCLUSION

Completeness is determined by assessing the number of samples where valid results are reported versus the number of samples that are submitted to the laboratory for analysis. The overall completeness goal is to achieve 90% valid data. A completeness goal of 90% was met for the soil samples. All soil sample results have been determined usable for this data set. Representiveness is the degree to which data accurately and precisely represents a characteristic population, a process control, or an environmental condition. Appropriate sampling procedures ensure samples are representative of the environmental matrices sampled. Comparability refers to the degree to which one data set can be compared to another and is controlled through use of appropriate sampling and analytical processes. Both of these criteria were met for this QA/QC review. Precision and accuracy of the soil data as measured by duplicate samples, surrogate recoveries, blanks, and spike/spike duplicates is determined acceptable.

3.1 FIELD DATA

For field QA/QC, a completeness goal of 90% was obtained for duplicate analyses, equipment blanks, and trip blanks. Two equipment blanks and duplicate samples were submitted with the twenty-one samples submitted for PAH, BTEX, and TCN analyses. Two trip blanks were submitted with twenty BTEX samples. Precision of the data was determined by the analysis of the equipment blanks and duplicate samples. Analytes were detected in the equipment blanks as well as in the associated method blank for PAH analysis, indicating laboratory cross-contamination. Twenty-two RPD values were calculated ranging from 5-133%. Seven RPD values exceeded the upper control limit of 50% for sample TTB2-5 (8-9')/Duplicate #2, indicating sample non-homogeneity. All field data has been determined acceptable based on the available information.

3.2 LABORATORY DATA

For laboratory QA/QC, a completeness goal of 90% was achieved for the method blanks, laboratory duplicates, MS/MSDs, BS/BSDs, and surrogate %Rs. Surrogate recoveries, MS/MSDs, and BS/BSDs, unless otherwise noted, were within control limits. Method blanks and MS/MSDs, BS/BSDs, or LCSs were extracted and analyzed for every sample batch for PAHs, BTEX, TCLP VOA, TCLP SVOA, TCLP metals, TOC, TEPH, and Cl. For PAH analysis, twenty samples required large dilutions for PAH analysis, due to high analyte concentrations. The high levels of PAHs present in these samples precluded surrogate and sample matrix spike recoveries. Certain results from samples EB1 and EB2 PAH analyses were qualified as non-detects, due to method blank contamination. Sample TTA-4 (1-2') results have been qualified as estimated, due to holding time violation. For TEPH, the MS was not recovered due to high analyte concentration. All laboratory data has been found to be acceptable based on the available information.

Explanation of qualifiers:

"U" = The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

"J" = The associated numerical value is an estimated quantity.

"UJ" = The material was analyzed for, but was not detected. The sample quantitation limit is an estimated quantity.

References:

EPA, 1987 "Data Quality Objectives for Remedial Response Activities; Volume I - Development Process. EPA Document 540-GO/003A, OSWWR - March

EPA has defined five analytical levels as follows:

- Level I - Field screening or analysis using portable instruments.
- Level II - Field analyses using more sophisticated portable analytical instruments.
- Level III - All analyses performed in an off-site analytical laboratory. The laboratory may or may not be a Contract Laboratory Program (CLP) laboratory.

- Level IV - CLP routine analytical services.
- Level V - Analysis by non-standard methods. The laboratory may or may not be a CLP laboratory.

EPA, 1988. Laboratory Data Validation Functional Guidelines For Evaluating Organics Analyses. Prepared by The USEPA Data Review Work Group.

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THIRD WARD MGP - SSPI
 PROJECT # 3-0887-403
 SOIL DATA VALIDATION
 APRIL 1995
 ATI LABORATORY

SAMPLE ID	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	PARAMETERS ANALYZED	COMMENTS
TTC4-2 (4-5')	04/27/95	05/01/95	05/06/95	PAH (8310)	(1) 1:1,000 dilution, 2-Chloroanthracene %R = I, outside QC limits (15-117%),
		05/08/95	05/15/95	TCN (9010)	(1) BDL BDL, Laboratory Duplicate - RPD value = NC MS - %R = 118%, w/in QC limits (75-125%)
		NA	05/03/95	BTEX (8020)	(1) BDL, Trifluorotoluene %R = 83%, w/in QC limits (75-109%)
TTF3-1 (7')	04/27/95	05/01/95	05/09/95	PAH (8310)	(1) 1:100 dilution, 2-Chloroanthracene %R = I, outside QC limits (15-117%),
		05/08/95	05/15/95	TCN (9010)	(1)
			05/05/95	BTEX (8020)	(1) Trifluorotoluene %R = 96%, w/in QC limits (75-109%)
TTF2-1 (3')	04/27/95	05/01/95	05/09/95	PAH (8310)	(1) 1:10,000 dilution, 2-Chloroanthracene %R = I, outside QC limits (15-117%),
		05/08/95	05/15/95	TCN (9010)	(1)
			05/05/95	BTEX (8020)	(1) 1:500 Dilution, Trifluorotoluene %R = 103%, W/in QC limits (75-109%)

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THIRD WARD MGP - SSPI
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ATI LABORATORY

SAMPLE ID	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	PARAMETERS ANALYZED	COMMENTS
TTE1-2 (10-11')	04/27/95	05/01/95	05/06/95	PAH (8310)	(1) 1:1,000 dilution, 2-Chloroanthracene %R = I, outside QC limits (15-117%), MS - %Rs = 0-2356%, outside QC limits (23-123%) 2-chloroanthracene %R = I, outside QC limits (15-117%) MSD - %Rs = 1-25572%, outside QC limits (23-123%) 2-chloroanthracene %R = I, outside QC limits (15-117%) RPD - RPD values = NA- 158% outside QC limits (0-20%)
		05/08/95	05/15/95	TCN (9010)	(1) BDL
			05/03/95	BTEX (8020)	(1) Trifluorotoluene %R = 93%, W/in QC limits (75-109%) MS - %Rs = 99-101%, w/in QC limits (67-135%) MS - Trifluorotoluene %R = NA, QC limits (75-109%) MSD - %Rs = 97-103%, w/in QC limits (67-135%) MSD - Trifluorotoluene %R = NA, QC limits (75-109%) MS/MSD - RPD values = 0.2-3%, w/in QC limits (0-20%)
TTE2-1 (7')	04/27/95	05/01/95	05/12/95	PAH (8310)	(1) 1:10 Dilution, 2-Chloroanthracene %R = 91%, w/in QC limits (15-117%)
		05/08/95	05/15/95	TCN (9010)	(1)
			05/03/95	BTEX (8020)	(1) BDL, Trifluorotoluene %R = 94%, W/in QC limits (75-109%)
TTG2-1 (3-4')	04/27/95	05/01/95	05/06/95	PAH (8310)	(1) 1:1,000 dilution, 2-Chloroanthracene %R = I, outside QC limits (15-117%),
		05/08/95	05/15/95	TCN (9010)	(1)
			05/03/95	BTEX (8020)	(1) BDL, Trifluorotoluene %R = 90%, W/in QC limits (75-109%)
TTG4-1 (3-4')	04/27/95		05/12/95	PAH (8310)	(1) 1:10 Dilution, 2-Chloroanthracene %R = 117%, w/in QC limits (15-123%)
		05/08/95	05/15/95	TCN (9010)	(1)
			05/05/95	BTEX (8020)	(1) Trifluorotoluene %R = 85%, W/in QC limits (75-109%)
Trip Blank	04/27/95 (Date Submitted)		05/03/95	BTEX (8020)	(1) BDL, Trifluorotoluene %R = 97%, W/in QC limits (75-109%)

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SAMPLE ID	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	PARAMETERS ANALYZED	COMMENTS
Composite #1	04/28/95			Reacitivity - CN (9010) Reacitivity - Sulfide (9030) TCLP VOA (8240) TCLP SVOA (8270) TCLP METALS pH Ignitibility	NA, Called 5/01/95 and cancelled analyses NA
Composite #2	04/28/95	05/10/95 Prep Date	05/10/95	Reacitivity - CN (9010) Reacitivity - Sulfide (9030)	BDL BDL
		05/04/95	05/08/95	TCLP VOA (8240) (8240)	(1) BDL, Surrogates %Rs = 99-104%, w/in QC limits (76-115%)
		05/03/95	05/08/95	TCLP SVOA (8270)	(1) BDL, Surrogates %Rs = 4-69%, 2 outside QC limits (10-141%) 2-Fluorophenol %R = 4% and 2,4,6-tribromophenol %R = 5% MS- %Rs = 27-75%, w/in QC limits (1-123%) MS - Surrogates %Rs = 65-80%, w/in QC limits (10-141%)
		05/09/95	05/11/95		Reanalyzed, BDL, Surrogates %Rs = 55-85%, w/in QC limits (10-141%)
				TCLP METALS (As, Ba, Cd, Cr, Pb, Hg, Se, Ag)	(1) MS - %Rs = 87.8-114.6%, w/in QC limits (75-125%) Laboratory Duplicate - RPD values = 0.2-200%, two outside QC limits (0-20%) Selenium RPD = 200%, Arsenic = 74.3% Serial Dilution - %D = 3.2-458.5%, three outside QC limits (0-20%) Selenium %D = 295%, Arsenic %D = 263%, Cadmium %D = 459%
		NA	05/02/95	pH	
		NA	05/13/95	Ignitibility	BDL

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SAMPLE ID	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	PARAMETERS ANALYZED	COMMENTS
Composite #3	04/28/95	05/10/95	05/10/95	Reactivity - CN (9010)	BDL
		Prep Date		Reactivity - Sulfide (9030)	BDL
		05/04/95	05/08/95	TCLP VOA (8240)	(1) Surrogates %Rs = 99-103%, w/in QC limits (76-115%)
		05/03/95	05/08/95	TCLP SVOA (8270)	(1) BDL, Surrogates %Rs = 63-74%, w/in QC limits (10-141%)
				TCLP METALS (As, Ba, Cd, Cr, Pb, Hg, Se, Ag)	(1)
		NA	05/02/95	pH	
	NA	05/13/95	Ignitibility	BDL	
TTC1-4 (3-4')	04/26/95	05/10/95	05/10/95	Reactivity - CN (9010)	BDL
		Prep Date		Reactivity - Sulfide (9030)	
		05/04/95	05/08/95	TCLP VOA (8240)	(1) Surrogates %Rs = 99-105%, w/in QC limits (76-115%)
		05/03/95	05/08/95	TCLP SVOA (8270)	BDL, Surrogates %Rs = 55-79%, w/in QC limits (10-141%)
				TCLP METALS (As, Ba, Cd, Cr, Pb, Hg, Se, Ag)	(1)
		NA	05/02/95	pH	
	NA	05/13/95	Ignitibility	BDL	

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SAMPLE ID	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	PARAMETERS ANALYZED	COMMENTS
Composite #4	04/28/95	05/10/95	05/10/95	Reactivity - CN (9010)	BDL
		Prep Date		Reactivity - Sulfide (9030)	BDL
		05/04/95	05/08/95	TCLP VOA (8240)	(1) Surrogates %Rs = 97-103%, w/in QC limits (76-115%)
		05/03/95	05/08/95	TCLP SVOA (8270)	(1) BDL, Surrogates %Rs = 64-76%, w/in QC limits (10-141%)
				TCLP METALS (As, Ba, Cd, Cr, Pb, Hg, Se, Ag)	(1)
		NA	05/02/95	pH	
	NA	05/13/95	Ignitibility	BDL	
Composite #5	04/28/95	05/10/95	05/10/95	Reactivity - CN (9010)	BDL
		Prep Date		Reactivity - Sulfide (9030)	BDL
		05/04/95	05/08/95	TCLP VOA (8240)	(1) Surrogates %Rs = 98-103%, w/in QC limits (76-115%)
		05/03/95	05/08/95	TCLP SVOA (8270)	(1) BDL, Surrogates %Rs = 43-74%, w/in QC limits (10-141%)
				TCLP METALS (As, Ba, Cd, Cr, Pb, Hg, Se, Ag)	(1)
		NA	05/02/95	pH	
	NA	05/13/95	Ignitibility	BDL	

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SAMPLE ID	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	PARAMETERS ANALYZED	COMMENTS
Composite #6	04/28/95	05/10/95	05/10/95	Reactivity - CN (9010)	BDL
		Prep Date		Reactivity - Sulfide (9030)	
		05/04/95	05/08/95	TCLP VOA (8240)	(1) BDL, Surrogates %Rs = 98-103%, w/in QC limits (76-115%)
		05/03/95	05/08/95	TCLP SVOA (8270)	(1) BDL, Surrogates %Rs = 58-78%, w/in QC limits (10-141%)
				TCLP METALS (As, Ba, Cd, Cr, Pb, Hg, Se, Ag)	(1)
		NA	05/02/95	pH	
		NA	05/13/95	Ignitibility	BDL
Composite #7	04/28/95	05/10/95	05/10/95	Reactivity - CN (9010)	BDL
		Prep Date		Reactivity - Sulfide (9030)	BDL
		05/04/95	05/08/95	TCLP VOA (8240)	(1) BDL, Surrogates %Rs = 96-103%, w/in QC limits (76-115%)
		05/03/95	05/08/95	TCLP SVOA (8270)	(1) BDL, Surrogates %Rs = 67-78%, w/in QC limits (10-141%)
				TCLP METALS (As, Ba, Cd, Cr, Pb, Hg, Se, Ag)	(1)
		NA	05/02/95	pH	
		NA	05/13/95	Ignitibility	BDL

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SAMPLE ID	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	PARAMETERS ANALYZED	COMMENTS
Composite #8	04/28/95	05/10/95	05/10/95	Reactivity - CN (9010)	BDL
		Prep Date		Reactivity - Sulfide (9030)	BDL
		05/04/95	05/08/95	TCLP VOA (8240)	(1) BDL, Surrogates %Rs = 98-104%, w/in QC limits (76-115%)
		05/03/95	05/08/95	TCLP SVOA (8270)	(1) BDL, Surrogates %Rs = 5-73%, 2 outside QC limits (10-141%) 2-Fluorophenol %R = 8% and 2,4,6-tribromophenol %R = 5%
				TCLP METALS (As, Ba, Cd, Cr, Pb, Hg, Se, Ag)	(1)
		NA	05/02/95	pH	
		NA	05/13/95	Ignitibility	BDL
Composite #9	04/28/95	05/10/95	05/10/95	Reactivity - CN (9010)	BDL
		Prep Date		Reactivity - Sulfide (9030)	BDL
		05/05/95	05/08/95	TCLP VOA (8240)	(1) BDL, Surrogates %Rs = 97-104%, w/in QC limits (76-115%) MS - %Rs = 89-103%, w/in QC limits (26-156) Surrogates %Rs = 98-104%, w/in QC limits (76-115%)
		05/03/95	05/08/95	TCLP SVOA (8270)	(1) BDL, Surrogates %Rs = 1-67%, 2 outside QC limits (10-141%) 2-Fluorophenol %R = 1% and 2,4,6-tribromophenol %R = 3%
				TCLP METALS (As, Ba, Cd, Cr, Pb, Hg, Se, Ag)	(1)
		NA	05/02/95	pH	
		NA	05/13/95	Ignitibility	BDL

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SAMPLE ID	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	PARAMETERS ANALYZED	COMMENTS
Composite #10	04/28/95	05/10/95	05/10/95	Reactivity - CN (9010)	BDL
		Prep Date		Reactivity - Sulfide (9030)	
		05/05/95	05/08/95	TCLP VOA (8240)	(1) BDL, Surrogates %Rs = 99-103%, w/in QC limits (76-115%)
		05/03/95	05/08/95	TCLP SVOA (8270)	(1) BDL, Surrogates %Rs = 5-78%, 1 outside QC limits (10-141%)
		NA	05/02/95	TCLP METALS (As, Ba, Cd, Cr, Pb, Hg, Se, Ag)	(1)
		NA	05/13/95	pH	BDL
DB-6 (2-4')	04/25/95	05/03/95	05/10/95	PAH (8310)	(1) 1:1000 Dilution, 2-Chloroanthracene %R = 1, outside QC limits (15-117%)
		05/05/95	05/15/95	TCN (9010)	(1) BDL BDL, Laboratory Duplicate - RPD value = NC MS - %R = 68%, outside QC limits (75-125%)
		NA	05/04/95	BTEX (8020)	(1) Trifluorotoluene %R = 90%, w/in QC limits (75-109%) Headspace
DB-7 (0-2')	04/25/95	05/03/95	05/10/95	PAH (8310)	(1) 1:1000 Dilution, 2-Chloroanthracene %R = 1, outside QC limits (15-117%)
		05/05/95	05/15/95	TCN (9010)	(1) BDL
				BTEX (8020)	(1)

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SAMPLE ID	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	PARAMETERS ANALYZED	COMMENTS
B-47 (2-4')	04/25/95	05/03/95	05/10/95	PAH (8310)	(1) 1:1000 Dilution, 2-Chloroanthracene %R = I, outside QC limits (15-117%)
		05/05/95	05/15/95	TCN (9010)	(1) BDL
		NA	05/05/95	BTEX (8020)	(1) Trifluorotoluene %R = 80%, w/in QC limits (75-109%)
B-47 (16-18')	04/25/95	05/03/95	05/10/95	PAH (8310)	(1) 1:10,000 Dilution, 2-Chloroanthracene %R = I, outside QC limits (15-117%)
		05/05/95	05/15/95	TCN (9010)	(1) BDL
		NA	05/04/95	BTEX (8020)	(1) Trifluorotoluene %R = 100%, w/in QC limits (75-109%)
Duplicate #1 Field Duplicate of B-47 (2-4')	04/25/95	05/03/95	05/10/95	PAH (8310)	(1) 1:1000 Dilution, 2-Chloroanthracene %R = I, outside QC limits (15-117%) MS - %R = -16944-1%, outside QC limits (23-123%) MS - 2-Chloroanthracene %R = I, outside QC limits (15-117%) MSD - %R = -1922-1%, outside QC limits (23-123%) MSD - 2-Chloroanthracene %R = I, outside QC limits (15-117%)
		05/05/95	05/15/95	TCN (9010)	(1) BDL
		NA	05/03/95	BTEX (8020)	(1) Trifluorotoluene %R = 90%, w/in QC limits (75-109%) Headspace
EB-1 (Split Spoon) Water	04/26/95	05/03/95	05/10/95	PAH (8310)	2-Chloroanthracene %R = 85%, w/in QC limits (15-117%) Acenaphthene 0.098 ug/l, phenanthrene 0.17 ug/l, anthracene 0.024 ug/l, fluoranthene 0.075 ug/l, benzo(a)anthracene 0.018 ug/l, results qualified with "U" due to blank contamination
		05/03/95	05/11/95	TCN (9010)	(1) BDL
		NA	05/03/95	BTEX (8020)	(1) BDL, Trifluorotoluene %R = 80%, w/in QC limits (78-113%) MS - %Rs = 98-102%, w/in QC limits (75-135%) MS - Trifluorotoluene %R = NA%, w/in QC limits (78-113%) MSD - %Rs = 96-100%, w/in QC limits (75-135%) MS - Trifluorotoluene %R = NA%, w/in QC limits (78-113%) MS/MSD - RPD values = 2-3%, w/in QC limits (0-20%)

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SAMPLE ID	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	PARAMETERS ANALYZED	COMMENTS
EB-2 (Sample Spoon) Water	04/26/95	05/03/95	05/10/95	PAH (8310)	(1) 2-Chloroanthracene %R = 99%, w/in QC limits (15-117%) Phenanthrene 0.17 ug/l, result qualified w/ "U" qualifier due to blank contamination
		05/03/95	05/11/95	TCN (9010)	(1) BDL
		NA	05/03/95	BTEX (8020)	(1) BDL, Trifluorotoluene %R = 98%, w/in QC limits (78-113%)
Trip Blank Water	04/26/95 (Date Submitted)	NA	05/03/95	BTEX (8020)	(1) BDL, Trifluorotoluene %R = 97%, w/in QC limits (78-113%)
TTA3-2 (7')	04/25/95	05/03/95	05/10/95	PAH (8310)	(1) 1 :1000 Dilution, 2-Chloroanthracene %R = 1, outside QC limits (15-117%)
		05/05/95	05/15/95	TCN (9010)	(1)
		NA	05/05/95	BTEX (8020)	(1) Trifluorotoluene %R = 106%, w/in QC limits (75-109%) Headspace
TTA2-1 (5-6')	04/25/95	05/03/95	05/10/95	PAH (8310)	(1) 1 :1000 Dilution, 2-Chloroanthracene %R = 1, outside QC limits (15-117%)
		05/05/95	05/15/95	TCN (9010)	(1)
		NA	05/04/95	BTEX (8020)	(1) Trifluorotoluene %R = 94%, w/in QC limits (75-109%) Headspace
TTB2-5 (8-9')	04/25/95	05/03/95	05/10/95	PAH (8310)	(1) 1 :10,000 Dilution, 2-Chloroanthracene %R = 1, outside QC limits (15-117%)
		05/05/95	05/15/95	TCN (9010)	(1)
		NA	05/04/95	BTEX (8020)	(1) Trifluorotoluene %R = 107%, w/in QC limits (75-109%)
Duplicate #2	04/26/95	05/05/95	05/13/95	PAH (8310)	(1) 1 :2,000 Dilution, 2-Chloroanthracene %R = 1, outside QC limits (15-117%)
		05/05/95	05/15/95	TCN (9010)	(1)
		NA	05/04/95	BTEX (8020)	(1) Trifluorotoluene %R = 97%, w/in QC limits (75-109%) Headspace

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SAMPLE ID	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	PARAMETERS ANALYZED	COMMENTS
TTC5-1 (6-7')	04/27/95	05/03/95	05/10/95	PAH (8310)	(1) 1:1000 Dilution, 2-Chloroanthracene %R = I, outside QC limits (15-117%)
		05/05/95	05/15/95	TCN (9010)	(1)
				BTEX (8020)	(1) Trifluorotoluene %R = 88%, w/in QC limits (75-109%) Headspace
TTA4-2 (7')	04/26/95	05/03/95	05/12/95	PAH (8310)	(1) 1:10,000 Dilution, 2-Chloroanthracene %R = I, outside QC limits (15-117%)
		05/05/95	05/15/95	TCN (9010)	(1)
		NA	05/05/95	BTEX (8020)	(1) Trifluorotoluene %R = 87%, w/in QC limits (75-109%) Headspace
TTB3-1 (3')	04/26/95	05/03/95	05/12/95	PAH (8310)	(1) 1:1000 Dilution, 2-Chloroanthracene %R = I, outside QC limits (15-117%)
		05/08/95	05/15/95	TCN (9010)	(1) BDL
		NA	05/03/95	BTEX (8020)	(1) Trifluorotoluene %R = 96%, w/in QC limits (75-109%) Headspace
TTA4-1 (1-2')	04/26/95	05/22/95	05/25/95	PAH (8310)	Holding time violation , exceeded holding time by 12 days Surrogate %Rs = I, outside QC limits (23-123%), Postive results qualified w/ "J", and non-postive w/ "LJ"
		05/08/95	05/15/95	TCN (9010)	(1) BDL
		NA	05/03/95	BTEX (8020)	(1)
TTC1-2 (2-3')	04/26/95	05/03/95	05/12/95	PAH (8310)	(1) 1:1000 Dilution, 2-Chloroanthracene %R = I, outside QC limits (15-117%)
		05/08/95	05/15/95	TCN (9010)	(1) BDL
		NA	05/05/95	BTEX (8020)	(1) Trifluorotoluene %R = 104%, w/in QC limits (75-109%) Headspace

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 APRIL 1995
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SAMPLE ID	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	PARAMETERS ANALYZED	COMMENTS
Composite #11	04/29/95	05/10/95	05/11/95	TEPH (418.1)	(1) MS - %R = NR, Outside QC limits
		NA	05/10/95	Chloride (SM 4500-Cl)	(1) BDL MS - %R = 101%, w/in QC limits (75-125%)
		NA	05/10/95	TOC (9060)	(1) Laboratory Duplicate - RPD value = 16%, w/in QC limits (0-20%) MS - %R = 101%, w/in QC limits (75-125%)
		05/09/95 Prep Date	05/09-12/95	Metals (6010) (Sb, As, Ba, Be, Cd, Cr, Cu Pb, Ni, K, Se, Tl) Grain Size, Bulk Density, Aluminum and Silcon Oxide, and Alkali Content	(1) MS - %Rs = 70-104%, one outside QC limits (75-125%), Antimony %R = 70% MSD - %Rs = 67-157%, two outside QC limits (75-125%), An %R = 67%, Pb %R = 157% MS/MSD - RPD values = 0-26%, one outside QC limits (0-20%), Pb RPD value = 26% PS %Rs = 85% for Pb and 93% for An, w/in QC limits (75-125%)
Composite #12	04/29/95	05/10/95	05/11/95	TEPH (418.1)	(1)
		NA	05/10/95	Chloride (SM 4500-Cl)	(1) BDL
		NA	05/10/95	TOC (9060)	(1)
		05/09/95 Prep Date	05/09-12/95	Metals (6010) (Sb, As, Ba, Be, Cd, Cr, Cu Pb, Ni, K, Se, Tl) Grain Size, Bulk Density, Aluminum and Silcon Oxide, and Alkali Content	(1)

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SAMPLE ID	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	PARAMETERS ANALYZED	COMMENTS
Composite #13	04/29/95	05/10/95	05/11/95	TEPH (418.1)	(1)
		NA	05/10/95	Chloride (SM 4500-Cl)	(1) BDL
		NA	05/10/95	TOC (9060)	(1)
		05/09/95 Prep Date	05/09-12/95	Metals (6010) (Sb, As, Ba, Be, Cd, Cr, Cu Pb, Ni, K, Se, Tl)	(1)
				Grain Size, Bulk Density, Aluminum and Silicon Oxide, and Alkali Content	
Composite #14	04/29/95	05/10/95	05/11/95	TEPH (418.1)	(1)
		NA	05/10/95	Chloride (SM 4500-Cl)	(1) BDL
		NA	05/10/95	TOC (9060)	(1)
		05/09/95 Prep Date	05/09-12/95	Metals (6010) (Sb, As, Ba, Be, Cd, Cr, Cu Pb, Ni, K, Se, Tl)	(1)
				Grain Size, Bulk Density, Aluminum and Silicon Oxide, and Alkali Content	
Composite #15	04/29/95	05/10/95	05/11/95	TEPH (418.1)	(1)
		NA	05/10/95	Chloride (SM 4500-Cl)	(1) BDL
		NA	05/10/95	TOC (9060)	(1)
		05/09/95 Prep Date	05/09-12/95	Metals (6010) (Sb, As, Ba, Be, Cd, Cr, Cu Pb, Ni, K, Se, Tl)	(1)
				Grain Size, Bulk Density, Aluminum and Silicon Oxide, and Alkali Content	

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SAMPLE ID	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	PARAMETERS ANALYZED	COMMENTS
Reagent Blank SRB1 05/01/95 Soil	NA	05/01/95	05/05/95	PAH (8310)	BDL, 2-Chloroanthracene %R = 54%, within QC limits (15-117%)
BS/BSD SBS1/SBS2 Soil	NA	05/01/95	05/09/95	PAH (8310)	BS - %Rs = 41-82% w/in QC limits (23-123%) BS - 2-Chloroanthracene %R = 78%, within QC limits (15-117%) BSD - %Rs = 43-102% w/in QC limits (23-123%) BSD - 2-Chloroanthracene %R = 78%, within QC limits (15-117%) RPD - values range from 4-39%, two outside QC limits (0-20%), Phenanthrene RPD value = 39%, Pyrene RPD value = 27%, no qualifiers warranted
Reagent Blank SRB1 05/03/95 Soil	NA	NA	05/03/95 05/05/95	BTEX (8020) BTEX (8020)	BDL, Trifluorotoluene %R = 99%, w/in QC limits (75-109%) BDL, Trifluorotoluene %R = 98%, w/in QC limits (75-109%)
Methanol Blank MeOH SRB1 05/05/95 Soil	NA	NA	05/05/95	BTEX (8020)	BDL, Trifluorotoluene %R = 100%, w/in QC limits (75-109%)
Reagent Blank WRB1 05/03/91 Water	NA	NA	05/03/95	BTEX (8020)	BDL, Trifluorotoluene %R = 98%, w/in QC limits (78-113%)
Reference Calibration Check	NA	NA	04/26/95	BTEX (8020)	RCC - %Ds = 0.6-3%, w/in QC limits (0-20%)
Reference Calibration Check	NA	NA	05/01/95	BTEX (8020)	RCC - %Ds = 2-5%, w/in QC limits (0-20%)
Reference Calibration Check	NA	NA	05/03/95	BTEX (8020)	RCC - %Ds = 3%, w/in QC limits (0-20%)
Reference Calibration Check	NA	NA	05/03/95	BTEX (8020)	RCC - %Ds = 1-3%, w/in QC limits (0-20%)
Reference Calibration Check	NA	NA	05/04/95	BTEX (8020)	RCC - %Ds = 2-3%, w/in QC limits (0-20%)
Reference Calibration Check	NA	NA	05/05/95	BTEX (8020)	RCC - %Ds = 2-3%, w/in QC limits (0-20%)
Reagent Blank 95-04-222-RB Soil	NA	05/10/95 Prep Date	05/10/95	Reactivity - CN (9010) Reactivity - Sulfide (9030)	BDL BDL
Method Blank TCLPRB1 05/04/95 Water	NA	05/04/95	05/08/95	TCLP VOA (8240)	BDL, Surrogates %Rs = 99-101%, w/in QC limits (76-115%)
Method Blank TCLPRB1 05/05/95 Water	NA	05/04/95	05/09/95	TCLP VOA (8240)	BDL, Surrogates %Rs = 99-103%, w/in QC limits (76-115%)

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SAMPLE ID	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	PARAMETERS ANALYZED	COMMENTS
Method Blank WRB1 05/09/95 Water	NA	NA	05/09/95	TCLP VOA (8240)	BDL, Surrogates %Rs = 99-102%, w/in QC limits (76-115%)
Method Blank WRB1 05/08/95 Water	NA	NA	05/08/95	TCLP VOA (8240)	BDL, Surrogates %Rs = 99-101%, w/in QC limits (76-115%)
TCLP Blank RB1 05/03/95 Soil	NA	05/03/95	05/08/95	TCLP SVOA (8270)	BDL, Surrogates %Rs = 88-102%, w/in QC limits (21-141%)
TCLP Blank RX RB1 05/09/95 RX Soil	NA	05/09/95	05/11/95	TCLP SVOA (8270)	BDL, Surrogates %Rs = 51-83%, w/in QC limits (D-141%)
Blank Spike SBS1 05/03/95 Soil	NA	05/03/95	05/08/95	TCLP SVOA (8270)	BDL, Surrogates %Rs = 51-83%, w/in QC limits (21-141%) BS - %Rs = 38-78%, w/in QC limits (1-111%)
Blank Spike RX SBS1 05/09/95 RX Soil	NA	05/09/95	05/11/95	TCLP SVOA (8270)	BDL, Surrogates %Rs = 52-89%, w/in QC limits (21-141%) BS - %Rs = 26-82%, w/in QC limits (1-111%)
Reagent Blank Soil	NA	05/10/95	05/11/95	TEPH (418.1)	BDL
Blank Spike Soil	NA	05/10/95	05/11/95	TEPH (418.1)	BS - %R = 104%, w/in QC limits (75-125%)
Reagent Blank RB 95-05-005 Soil	NA	NA	05/10/95	Chloride (SM4500-Cl)	BDL
Reagent Blank RB 95-05-005 Soil	NA	NA	05/10/95	TOC (9060)	BDL
Reagent Blank RB 95-05-005 Soil	NA	05/09/95 Prep Date	05/09-12/95	Metals (6010) (Sb, As, Ba, Be, Cd, Cr, Cu Pb, Ni, K, Se, Tl)	BDL
Reagent Blank 95-04-222-RB Soil	NA	05/08/95 Prep Date	05/15/95	TCN (9010)	BDL
Initial Calibration Verification Soil	NA	05/08/95	05/15/95	TCN (9010)	ICV - %R = 104%, w/in QC limits (90-110%)
Laboratory Control Sample Soil	NA	05/08/95	05/15/95	TCN (9010)	LCS - %R = 94%, w/in QC limits (63-115%)
Initial Calibration Verification	NA	NA	NA	TCLP METALS (As, Ba, Cd, Cr, Pb, Hg, Se, Ag)	ICV - %Rs = 101-107%, w/in QC limits (80-120%)

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SAMPLE ID	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	PARAMETERS ANALYZED	COMMENTS
Continuing Calibration Verification	NA	NA	NA	TCLP METALS (As, Ba, Cd, Cr, Pb, Hg, Se, Ag)	CCV - %Rs = 96.2-103%, w/in QC limits (80-120%)
Continuing Calibration Verification	NA	NA	NA	TCLP METALS (As, Ba, Cd, Cr, Pb, Hg, Se, Ag)	CCV - %Rs = 97.1-104%, w/in QC limits (80-120%)
CRDL Standard	NA	NA	NA	TCLP METALS Hg	CRDLS - Mercury %R = 80%, w/in QC limits
CRDL Standard	NA	NA	NA	TCLP METALS (As, Ba, Cd, Cr, Pb, Se, Ag)	CRDLS - %Rs = 97-124%, w/in QC limits
Initial Calibration Blank	NA	NA	NA	TCLP METALS (As, Ba, Cd, Cr, Pb, Hg, Se, Ag)	Barium -1.5 ug/l, cadmium 0.8 ug/l
Continuing Calibration Blank 1	NA	NA	NA	TCLP METALS (As, Ba, Cd, Cr, Pb, Hg, Se, Ag)	Arsenic 2.4 ug/l , barium 0.6 ug/l, cadmium 1.2 ug/l, chromium 0.7 ug/l
Continuing Calibration Blank 2	NA	NA	NA	TCLP METALS (As, Ba, Cd, Cr, Pb, Hg, Se, Ag)	Arsenic 3.3 ug/l , barium 0.8 ug/l, cadmium 1.3 ug/l, chromium 0.8 ug/l
Continuing Calibration Blank 3	NA	NA	NA	TCLP METALS (As, Ba, Cd, Cr, Pb, Hg, Se, Ag)	Arsenic 2.9 ug/l , barium 0.8 ug/l, cadmium 1.3 ug/l, chromium 0.9 ug/l
Preparation Blank	NA	NA	NA	TCLP METALS (As, Ba, Cd, Cr, Pb, Hg, Se, Ag)	Arsenic 1.6 ug/l , barium - 0.7 ug/l, cadmium 0.71 ug/l, lead -1.440 ug/l
Continuing Calibration Blank	NA	NA	NA	TCLP METALS (As, Ba, Cd, Cr, Pb, Hg, Se, Ag)	Arsenic 2.4 ug/l , barium 0.4 ug/l, cadmium 1.2 ug/l, chromium 0.6 ug/l

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SAMPLE ID	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	PARAMETERS ANALYZED	COMMENTS
Preparation Blank	NA	NA	NA	TCLP METALS (As, Ba, Cd, Cr, Pb, Hg, Se, Ag)	Arsenic 23.3 ug/l, barium - 13.6 ug/l, cadmium 6.4 ug/l, lead -11.70 ug/l
ICP Interference Check Sample	NA	NA	NA	TCLP METALS (Ba, Cd, Cr, Pb, Ag)	IICS - %Rs = 88.4-104.8%, w/in QC limits FICS - %Rs = 89.4-105.7%, w/in QC limits
Laboratory Control sample	NA	NA	NA	TCLP METALS (Ba, Cd, Cr, Pb, Ag)	LCS - %Rs = 90-120%, w/in QC limits (75-125%)
Reagent Blank SRB1 05/03/91 Soil	NA	NA	05/03/95	BTEX (8020)	BDL, Trifluorotoluene %R = 99%, w/in QC limits (75-109%)
Reagent Blank SRB1 05/04/91 Soil	NA	NA	05/03/95	BTEX (8020)	BDL, Trifluorotoluene %R = 98%, w/in QC limits (75-109%)
Methanol Blank MeOH SRB1 05/04/95 Soil	NA	NA	05/04/95	BTEX (8020)	BDL, Trifluorotoluene %R = 98%, w/in QC limits (75-109%)
Reagent Blank SRB1 05/05/91 Soil	NA	NA	05/05/95	BTEX (8020)	BDL, Trifluorotoluene %R = 98%, w/in QC limits (75-109%)
Methanol Blank MeOH SRB1 05/05/95 Soil	NA	NA	05/04/95	BTEX (8020)	BDL, Trifluorotoluene %R = 100%, w/in QC limits (75-109%)
Reagent Blank WRB1 05/03/91 Water	NA	NA	05/03/95	BTEX (8020)	BDL, Trifluorotoluene %R = 98%, w/in QC limits (78-113%)
Reference Calibration Check	NA	NA	04/26/95	BTEX (8020)	RCC - %Ds = 0.6-3%, w/in QC limits (0-20%)
Reference Calibration Check	NA	NA	05/01/95	BTEX (8020)	RCC - %Ds = 2-5%, w/in QC limits (0-20%)
Reference Calibration Check	NA	NA	05/03/95	BTEX (8020)	RCC - %Ds = 3%, w/in QC limits (0-20%)
Reference Calibration Check	NA	NA	05/03/95	BTEX (8020)	RCC - %Ds = 1-3%, w/in QC limits (0-20%)
Reference Calibration Check	NA	NA	05/04/95	BTEX (8020)	RCC - %Ds = 2-3%, w/in QC limits (0-20%)
Reference Calibration Check	NA	NA	05/05/95	BTEX (8020)	RCC - %Ds = 2-3%, w/in QC limits (0-20%)

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SAMPLE ID	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	PARAMETERS ANALYZED	COMMENTS
Reagent Blank 95-04-222-RB Soil	NA	05/08/95 Prep Date	05/15/95	TCN (9010)	BDL
Initial Calibration Verification Soil	NA	05/08/95	05/15/95	TCN (9010)	ICV - %R = 95%, w/in QC limits (90-110%)
Laboratory Control Sample Soil	NA	05/08/95	05/15/95	TCN (9010)	LCS - %R = 87%, w/in QC limits (63-115%)
Reagent Blank 95-04-222-RB Soil	NA	05/05/95 Prep Date	05/15/95	TCN (9010)	BDL
Reagent Blank 95-04-222-RB Soil	NA	05/05/95 Prep Date	05/15/95	TCN (9010)	BDL
Initial Calibration Verification Soil	NA	05/03/95	05/11/95	TCN (9010)	ICV - %R = 104%, w/in QC limits (90-110%)
Reagent Blank 95-04-222-RB Water	NA	05/03/95 Prep Date	05/15/95	TCN (9010)	BDL
Reagent Blank WRB1 5/3/95 Water	NA	05/03/95	05/10/95	PAH (8310)	2-Chloroanthracene %R = 119%, outside QC limits (15-117%) Flourene 0.053 ug/l, phenanthrene 0.26 ug/l, anthracene 0.088 ug/l, fluoranthene 1.0 ug/l, benzo (b)fluoranthene 0.30 ug/l, benzo(k)fluranthene 0.15 ug/l, and benzo(a)pyrene 0.43 ug/l
Reagent Blank SRB1 05/03/95 Soil	NA	05/03/95	05/05/95	PAH (8310)	BDL, 2-Chloroanthracene %R = 67%, within QC limits (15-117%)
BS/BSD SBS1/SBS2 Soil	NA	05/03/95	05/10/95	PAH (8310)	BS - %Rs = 43-73%, w/in QC limits (23-123%) BS - 2-Chloroanthracene %R = 78%, within QC limits (15-117%) BSD - %Rs = 38-82%, w/in QC limits (23-123%) BSD - 2-Chloroanthracene %R = 100%, within QC limits (15-117%) RPD - values range from 1-12%, w/in QC limits (0-20%),
Reagent Blank SRB1 05/05/95 Soil	NA	05/05/95	05/13/95	PAH (8310)	BDL, 2-Chloroanthracene %R = 70%, within QC limits (15-117%)
WBS1/WBS2 Water	NA	05/03/95	05/10/95	PAH (8310)	BS - %Rs = 76-88%, w/in QC limits (23-123%) BS - 2-Chloroanthracene %R = 88%, within QC limits (15-117%) BSD - %Rs = 89-98%, w/in QC limits (23-123%) BSD - 2-Chloroanthracene %R = 100%, within QC limits (15-117%)

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SAMPLE ID	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	PARAMETERS ANALYZED	COMMENTS
BS/BSD SBS1/SBS2 Soil	NA	05/05/95	05/12/95	PAH (8310)	BS - %Rs = 40-74%, w/in QC limits (23-123%) BS - 2-Chloroanthracene %R = 100%, within QC limits (15-117%) BSD - %Rs = 38-71%, w/in QC limits (23-123%) BSD - 2-Chloroanthracene %R = 67%, within QC limits (15-117%) RPD - values range from 1-12%, w/in QC limits (0-20%),
Reagent Blank SRB32 05/22/95 Soil	NA	05/22/95	05/25/95	PAH (8310)	BDL, 2-Chloroanthracene %R = 85%, within QC limits (15-117%)
BS/BSD SBS3/SBS4 Soil	NA	05/22/95	05/25/95	PAH (8310)	BS - %Rs = 44-57%, w/in QC limits (23-123%) BS - 2-Chloroanthracene %R = 68%, within QC limits (15-117%) BSD - %Rs = 45-68%, w/in QC limits (23-123%) BSD - 2-Chloroanthracene %R = 88%, within QC limits (15-117%) RPD - values range from 4-23%, w/in QC limits (0-20%), one exceeded QC limits Phenanthrene RPD value = 23%

ABBEVIATIONS/DEFINITIONS

(1) - Standard QA/QC including methods, analysis, detection limits, holding times, etc., are within QA/QC limits unless otherwise noted.

QA - Quality assurance

QC - Quality control

CN - Cyanide

BTEX - Benzene, toluene, ethyl benzene, xylenes extractables

PAH - Polynuclear aromatic hydrocarbons

VOA - Volatile organic analytes

TCLP - Toxicity Characteristics Leachate Program

TEPH - Total extractable petroleum hydrocarbons

TOC - Total organic carbon

TCN - Total cyanide

SVOA - Semivolatile organic analytes

BS - Blank spike

MS - Matrix spike

MSD - Matrix spike duplicate

RPD - Relative percent difference

PS - post digestion spike

I - Diluted out

%R - Percent recovery

%D - Percent Difference

ICP - Inductively Coupled Plasma

IICS - Initial Interference Check Sample

FICS - Final Interference Check Sample

RCC - Reference calibration check

Sb - Antimony, As - Arsenic, Ba - Barium, Be - Beryllium, Cd - Cadmium, Cr - Chromium, Cu - Copper

Pb - Lead, Hg - Mercury, Ni - Nickel, K - Potassium, Se - Selenium, Ag - Silver, and Tl - Thallium

NC - Not calculated

NR - Not recovered

NA - Not applicable

LCS - Laboratory Check/Calibration Check

SRM - Standard reference material

J - Qualifier denoting an estimated value

UJ - Qualifier denoting the sample quantitation limit is an estimated quantity

D - Detected

OCTOBER 1995 GROUNDWATER DATA



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**QA/QC SUMMARY FOR THIRD WARD MGP - SSPI #3-0887-403
ANALYTICAL LABORATORY DATA
OCTOBER 1995**

1.0 QA/QC Review - Outline and Objectives

A Quality Assurance/Quality Control (QA/QC) review was performed by Remediation Technologies, Inc. (RETEC) on laboratory data of water samples collected at the Third Ward MGP site in October 1995. The objectives of this review were to determine the level of precision, accuracy and completeness of the laboratory data. Table 1 presents a summary of the QA/QC information. Where data were outside of QC limits, the table is shaded. Where the sample results were reported as below detection limit (BDL), the results are noted as such in the table.

Precision is the measure of variability of individual sample measurements. The level of precision was determined through analysis of equipment rinse blanks, trip blanks, and field duplicate samples. Accuracy is a measure of the system bias. The level of accuracy was determined by examination of instrument calibrations, method blanks, laboratory spike recoveries like those obtained from matrix spike/matrix spike duplicates (MS/MSDs) and blank spike/blank spike duplicates (BS/BSDs), laboratory duplicates, and surrogate recoveries. Completeness is determined by assessing the number of samples with valid results versus the number of samples which were submitted for analysis.

Field QC, which measured precision, included duplicate analysis of 10% of the collected samples and involved submittal of blind field duplicates. Evaluation of duplicates for precision was done using Relative Percent Difference (RPD). The RPD is defined as the difference between two duplicate samples divided by the mean and expressed as a percent. An industry recognized goal of less than 30% RPD was used to evaluate the precision of field duplicates submitted for analysis. In addition, three equipment rinse blanks used to monitor any contamination occurring during sample collection, and three trip blanks, which screen for shipping, field, or bottle related volatile organics contamination, were also submitted for analysis.

Laboratory QC, which measured accuracy, included one method blank for every 20 samples per matrix, an MS/MSD, BS/BSD, or laboratory duplicate analysis for every 20 samples per matrix as required by method, instrument calibrations, and analysis of surrogate standards for organic analyses. Method blanks were analyzed to identify compounds which could be introduced during the extraction process or analytical phase of the method. Spike and duplicate recoveries and RPDs were compared to published or laboratory control charted QC limits, and were analyzed to demonstrate the percent recovery (%R) of the method used by the laboratory. Instrument calibrations were checked to monitor analytical system conformance. Surrogates are compounds that are structurally similar to the compounds requested for analysis, but are generally not found in nature. They were analyzed to demonstrate the %R of the method used by the laboratory.

Completeness was the overall measure of the ratio of samples planned versus the number of samples with valid analyses. The data quality objective for the Third Ward MGP site laboratory data was to achieve 90-100% completeness of data collected.

2.0 Data Quality Audit - General Comments

For the QA/QC process, the chain of custody (COC) records were first checked to ensure that sample results were all present and that the laboratory did not mislabel or omit any samples during sample log in and analysis. The COC records were complete and contained all necessary information. The samples were received by the laboratory on ice, intact, and with custody seals in place as noted on the COCs and "Condition of Sample Upon Receipt" forms provided by the laboratory. Samples submitted for BTEX analysis and received by the laboratory on 10/13/95 and 10/14/95 were received with headspace, except for the trip blank received on 10/14/95. Samples W-41D, W-41S, and W-26S submitted for Dissolved Metals were received with a visible precipitate present. Samples W-14, W-25S, Blind Dup 2, W-20I, W-20S, and W-46D also submitted for Dissolved Metals were received with a pH greater than 2. Additional nitric acid (HNO₃) was added by the laboratory to bring the pH of these samples within range. Sample W-20S and Equip Rinse Blank collected on 10/13/95 were not scheduled for BTEX analysis on the COC, however, results for BTEX analysis on these two samples were submitted by the laboratory.

Samples were analyzed for Polynuclear Aromatic Hydrocarbons (PAH) by method 8310, BTEX by method 8020, Dissolved Metals (iron, magnesium, and calcium only) by method 6010, Total Cyanide by method 9010, and Weak Acid Dissociable (WAD) Cyanide by method 4500I where applicable. Not all samples were analyzed for every parameter. Please refer to Table 1 for the exact analyses requested for each sample. All samples were analyzed by Analytical Technologies, Inc. of Fort Collins, Colorado.

The analytical data were reviewed for QA/QC compliance. The overall quality of the data has been validated as acceptable. The QA/QC package is complete and covers all applicable areas outlined. Parameters identified as outside of QC limits, or deserving of special note, are bolded and shaded in Table 1 for easy reference. The data qualifier flags used in this review were "J" and "UJ". The "J" flag is used to indicate an estimated value. Results reported as such should be considered as qualitative, not quantitative. The compound reported can be assumed to be present in the sample, but the concentration reported could be imprecise due to its presence below the normal reporting range of the instrument, or due to noncompliance with other QC criteria such as holding time. The "UJ" flag is used to denote a compound that was not detected, however, other factors such as missed holding times or poor surrogate recovery are causing that non-detection to come under suspicion due to a possible low bias by the system towards that compound.

2.1 Holding Times

Holding times were met for all samples except during PAH and Cyanide analyses. For the PAH analysis, samples W-41D, W-14, and W-22S were extracted outside of holding times. Sample W-41D was extracted 5 days outside the method specified holding time of 7 days from sample

collection. The sample was BDL for all compounds. A "UJ" flag has been attributed to the PAH results for this sample to indicate possible low system bias. Samples W-14 and W-22S were extracted one day outside of the method specified holding time. Only the non-detect values for sample W-22S have been "UJ"-flagged. Professional judgement deems that additional flags are unwarranted since the holding time exceedence was so small. For the Total and WAD Cyanide analyses, samples W-27D, W-42D, W-22I, W-16, ERB-2, W-13, W-45D, and W-43D were analyzed 8 to 11 days outside of the method required holding time of 14 days from sample collection. All positive results are qualified with a "J" and all non-detects are qualified with a "UJ". Professional judgement deems that no cyanide data be qualified as unusable since holding times were not exceeded by twice the allotted amount of time.

2.2 Polynuclear Aromatic Hydrocarbons (PAH)

Twenty-one water samples and two equipment rinse blanks were analyzed for PAHs by method 8310. Many samples required dilutions to bring contaminants within instrument calibration range. Sample W-41D was extracted 5 days out of method specified holding times. This sample, which was reported as being BDL, has been "UJ" qualified to denote estimated non-detect values due to possible low system bias. Samples W-14 and W-22S were extracted one day out of holding time. Since sample W-22S was not analyzed undiluted, all non-detect values for this sample have been flagged with a "UJ" qualifier. Positive results for sample W-22S and all results for sample W-14 have not been qualified. Professional judgement deems that additional flags are not necessary since these samples required 1:10 to 1:1000 dilutions due to high sample concentrations, and all other associated QC was within QC criteria. The fluorene value for sample W-27D has been "J"-flagged as an estimated value due to detection below the practical quantitation limit (PQL) of the instrument. The phenanthrene value for sample W-42D has been "J"-flagged as an estimated value due to detection below the PQL. Anthracene and chrysene values for sample W-16 have been "J"-flagged as estimated values due to detection below the PQLs. The chrysene value for sample W-13 has been "J"-flagged as an estimated value due to detection below the PQL.

2.2.1 Instrument Calibration

Retention times (RTs) and percent differences (%D) were acceptable for both detectors for all method 8310 analytical sequences.

2.2.2 Method Blanks and Equipment Rinse Blanks

Method Blanks - Method blanks were extracted and analyzed at an appropriate frequency. All method blanks were BDL for PAH compounds.

Equipment Rinse Blanks - Two equipment rinse blanks were submitted for PAH analysis. The rinse blank collected on 10/13/95 had trace amounts of acenaphthylene, 2-methylnaphthalene, and phenanthrene detected. Acenaphthylene and phenanthrene were "J"-flagged as estimated values due to detection below the PQL. The rinse blank collected on 10/16/95 had trace amounts of

naphthalene, 2-methylnaphthalene, and fluorene detected. All three compounds were "J"-flagged as estimated values due to detection below the PQL.

2.2.3 Surrogate Recovery

Surrogate recoveries were reported for the least-diluted PAH runs of each sample, and for all QC analyses where appropriate. All surrogate recoveries met the QC limits of 15 - 117%. Sample W-45D, which was reported as being BDL, had a low surrogate recovery of 16% due to extraction difficulties. Although still within QC limits, the recovery is low enough to warrant a "UJ" flag for all non-detect compounds due to possible low system bias.

2.2.4 MS/MSD and BS/BSD

MS/MSD - No MS/MSDs were analyzed.

BS/BSD - BS/BSDs were extracted and analyzed at an appropriate frequency. All %Rs were within the QC limits of 23 - 123%. All RPDs were below the QC limit of 20%.

2.2.5 Field Duplicates

Two blind field duplicates were analyzed for PAHs. Sample Blind Dup was a field duplicate of sample W-41S. Sample Blind Dup 2 was a field duplicate of sample W-25S. The only RPDs to meet the QC limit of <30% were acenaphthene (RPD 22.2) for Blind Dup, and naphthalene (RPD 20.5) for Blind Dup 2. Other RPDs ranged from 35.9 to 120 for Blind Dup and 35.3 to 181 for Blind Dup 2. Refer to Table 1 for the exact compounds and RPDs calculated.

2.2.6 Overall Assessment of Data

Extraction benchesheets and analytical report forms contained all necessary dates, extraction and analysis volumes, dilution factors, and detection limits necessary for sample data review. All compounds were reviewed based on holding time, surrogate and spike recoveries, instrument calibration criteria, method blank results, and RPD values for duplicate analyses. Samples W-41D and W-22S have been "UJ"-flagged due to holding time exceedences. Holding times were not exceeded by more than twice the allotted time, and so sample results are deemed useable, but estimated for non-detect values. Samples Equipment Rinse Blank, W-27D, W-42D, W-16, ERB-2, and W-13 contain various compounds which have been "J"-flagged as estimated values due to detection below the PQL. Sample W-45D has been "UJ"-flagged due to low, but still within QC limits, surrogate recovery. All instrument calibrations, method blanks, surrogates, and spikes were within QC criteria.

Field duplicate results had high RPDs for the majority of compounds measured. The QC RPD limit for water samples is <30%. Out of limit RPDs ranged from 35.3 to 181 percent for the two blind field duplicates as indicated in Table 1. Trace amounts of target analytes were found in both equipment rinse blanks submitted for PAH analysis. Field precision is suspect when reviewing field QA/QC data for PAHs.

Laboratory accuracy has been determined to be acceptable based upon favorable calibration, method blank, surrogate, and spike results.

2.3 Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX)

Twenty-one water samples, three equipment rinse blanks and three trip blanks were analyzed for BTEX by method 8020. Many samples required dilutions to bring target compounds within instrument calibration range. The least diluted results that met QC criteria have been reported. All samples received at the laboratory on 10/13/95 and 10/14/95, with the exception of sample Equip Rinse Blank, were received with headspace. BTEX results were provided for samples Equip Rinse Blank and W-20S, even though this analysis was not requested on the COC. These results have been validated. A method deviation was observed in the initial calibration of 09/29/95. Due to a low correlation coefficient for m,p-Xylene, xylene results were quantitated off of a four-point calibration curve rather than a five-point calibration curve. Since all xylene results for the submitted samples fell within the linear, lower range of the calibration curve, professional judgement deems no flags are warranted for the BTEX data.

2.3.1 Instrument Calibration

The correlation coefficient was <0.995 for the five-point m,p-Xylene due to a low response for the high standard. All sample results for xylenes were found to fall within the lower, linear range of the calibration curve. The high standard of the curve was consequently discarded, resulting in a correlation coefficient of 1.000 for the four-point m,p-Xylene curve. Although it is a method deviation to use a four-point instead of a five-point curve, validation requirements state that data qualifiers are not necessary as long as the sample results fall within the linear range of the curve. All continuing calibration verifications met QC criteria. Professional judgement deems no flags warranted.

2.3.2 Method Blanks, Equipment Rinse Blanks, and Trip Blanks

Method Blanks - Method blanks were analyzed at an appropriate frequency and were BDL for all BTEX compounds.

Equipment Rinse Blanks - ERB-1 had all BTEX analytes detected above the PQL. The remaining two equipment rinse blanks (Equip Rinse Blank and ERB-2) were BDL for all target compounds. ERB-1 was received with headspace.

Trip Blanks - All three trip blanks were BDL for BTEX compounds. The trip blank received on 10/13/95 was received with headspace.

2.3.3 Surrogate Recovery

Surrogate recovery was within the QC limits of 78 - 113% for all samples and associated QA/QC.

2.3.4 MS/MSD and BS/BSD

MS/MSD - Three MS/MSD sample pairs were analyzed for BTEX. The Blind Dup 2 MS/MSD had high %Rs for benzene (140%) and ethylbenzene (136)% which exceeded QC limits. The high %Rs have been attributed to matrix interference, since these compounds were observed in the unspiked sample at significant levels. All other MS/MSD %Rs were between 84 - 107 % which met QC limits. All RPDs were between 0 and 9% which were below the 20% limit.

BS/BSD - Three BS/BSD sample pairs were analyzed for BTEX. All %Rs were between 84 - 108% which met QC limits of 80-124% for benzene, 79-125% for toluene, 75-135% for ethylbenzene, and 77-134% for xylenes. All RPDs were between 2 and 5% which were below the 20% limit.

2.3.5 Field Duplicates

Two blind field duplicates were analyzed for BTEX. Sample Blind Dup was a field duplicate of sample W-41S. Sample Blind Dup 2 was a field duplicate of sample W-25S. Toluene exceeded the RPD QC limit of <30% for sample Blind Dup at 40. All RPDs were within QC limits for sample Blind Dup 2. Refer to Table 1 for the exact RPDs calculated.

2.3.6 Overall Assessment of Data

Analytical report forms contained all necessary dates, sample volumes, dilution factors, and detection limits for sample data review. All compounds were reviewed based on holding time, surrogate and spike recoveries, instrument calibration criteria, method blank results, and RPD values for duplicate analyses. All samples were analyzed within holding times. All method blanks, surrogates, and spike recoveries and RPDs met QC objectives. A QC failure involving the m,p-Xylene initial calibration curve was rectified by using a four-point calibration curve rather than a five-point calibration curve. Although a method modification, this procedure is allowed under data validation guidelines since sample data met the required criteria for the modification.

Field precision has been validated as acceptable due to favorable trip blank, equipment rinse blank, and field duplicate results.

Laboratory accuracy has been validated as acceptable due to favorable method blank, calibration, surrogate, and spike results.

2.4 Dissolved Metals

Twenty-one water samples and one equipment rinse blank were analyzed for Dissolved Metals by method 6010. The metals analyzed were iron, magnesium, and calcium. All samples were field filtered and preserved before receipt at the laboratory. Samples W-41D, W-41S, and W-26S were received at the laboratory with a visible precipitate present. Samples W-14, W-25S, Blind Dup 2, W-20I, W-20S, and W-46D required additional preservation upon laboratory receipt due to a pH

value greater than 2. Magnesium and calcium were "J"-flagged in sample Equip Rinse Blank due to detection below the PQL.

2.4.1 Instrument Calibration and Interference Check Sample

All initial and continuing calibration verifications (ICV and CCV) %Rs were within the QC limits of 90 - 110%. All interference check sample (ICS) results were within the QC limits of 80 - 120 %R and <20 %D. All sample concentrations were below the ICS concentrations.

2.4.2 Method Blanks and Equipment Rinse Blanks

Method Blanks - Method blanks were analyzed at an appropriate frequency and were BDL for all target analytes.

Equipment Rinse Blank - Calcium and magnesium were "J"-flagged as estimated values due to detection below the PQL in sample Equip Rinse Blank.

2.4.3 ICP Serial Dilution

Three serial dilutions were analyzed. The dilution factor was 1:5. All %Ds were below the QC limit of 10%. Refer to Table 1 for the exact %Ds calculated.

2.4.4 Duplicates and Spikes

Duplicates - Three duplicates were analyzed. All RPDs were below the QC limit of 20%. Refer to Table 1 for the exact RPDs calculated.

Spikes - Three spikes were analyzed for dissolved iron only. All %Rs were within the QC limits of 75 - 125%. Refer to Table 1 for the exact %Rs calculated.

2.4.5 Field Duplicates

Two blind field duplicates were analyzed for Dissolved Metals. Sample Blind Dup was a field duplicate of sample W-41S. Sample Blind Dup 2 was a field duplicate of sample W-25S. All RPDs were below the QC limit of <30% for both field duplicates. Refer to Table 1 for the exact RPDs calculated.

2.4.6 Overall Assessment of Data

Analytical report forms contained all necessary dates, dilution factors, and detection limits for sample data review. All compounds were reviewed based on holding time, instrument calibration criteria, method blank results, and duplicate and spike recoveries and RPDs. Calcium and magnesium were "J"-flagged as estimated values for sample Equip Rinse Blank due to detection below the PQL. All holding times, method blanks, instrument calibrations, serial dilutions, duplicates, and spike recoveries were within QC criteria.

Field precision is validated as acceptable based upon favorable field duplicate and equipment rinse blank results.

Laboratory accuracy is validated as acceptable based upon favorable method blank, instrument calibration, serial dilutions, duplicate, and spike results.

2.5 Total Cyanide

Twenty-one water samples and two equipment rinse blanks were analyzed for Total Cyanide by method 9010. Many samples required dilutions to bring analytes into calibration range of the method. Samples W-22I, W-16, ERB-2, W-45D, and W-43D were analyzed 8 days outside of method required holding times. Samples W-27D, W-42D, and W-13 were analyzed 9 days outside of method required holding times. Since the holding time exceedence was less than twice the holding time allowed, sample results are considered useable, but estimated. All samples analyzed outside of holding times were flagged with a "UJ" for non-detects, and with a "J" for positive results.

2.5.1 Instrument Calibration

All %Rs were within the QC limits of 90 - 110%.

2.5.2 Method Blanks and Equipment Rinse Blanks

Method Blanks - Method blanks were analyzed at an appropriate frequency and were BDL for Total Cyanide.

Equipment Rinse Blanks - Both equipment rinse blanks (Equip Rinse Blank and ERB-2) were BDL for cyanide. ERB-2 was analyzed 8 days outside of method required holding times, and was "UJ"-flagged as an estimated value.

2.5.3 Duplicates and Spikes

Duplicates - Two duplicates were analyzed for Total Cyanide. The RPD value for W-27D Dup was 6 and the RPD value for W-23S Dup was 0 which were both below the QC limit of 30%. Sample W-27D Dup was qualified with a "J" flag due to analysis 9 days outside of required holding times.

Spikes - Two matrix spikes were analyzed for Total Cyanide. The %R for W-27D MS was 108 which was within QC limits of 63 - 114%. This sample was qualified with a "J" flag due to analysis 9 days outside of required holding times. The %R for W-23S MS was 33, which was outside QC limits (low). The spike failure for W-23S MS was due to diluting the spike 1:2.5 without diluting the sample.

2.5.4 Field Duplicates

Two blind field duplicates were analyzed for Total Cyanide. Sample Blind Dup was a field duplicate of sample W-41S. Sample Blind Dup 2 was a field duplicate of sample W-25S. All RPDs were below the QC limit of <30% for both field duplicates. Refer to Table 1 for the exact RPDs calculated.

2.5.5 Overall Assessment of Data

Analytical benchsheets and report forms contained all necessary dates, sample volumes, dilution factors, and detection limits for sample data review. Analytical results were reviewed based on holding time, instrument calibration, method blanks, duplicate RPDs, and spike recoveries. Samples W-22I, W-16, ERB-2, W-45D, W-43D, W-27D, W-42D, and W-13 were flagged "UJ" for non-detects, and "J" for positive results to denote estimated values due to holding time nonconformance. Dilution of the MS for sample W-23S while not diluting the initial sample, resulted in low spike recovery.

Field precision was validated as acceptable based upon favorable field duplicate and equipment rinse blank results.

Laboratory precision was validated as acceptable based on method blanks, calibration criteria, duplicates, and spike recoveries. It should be noted, however, that holding time exceedances, although not excessive, were significant for some samples.

2.6 Weak Acid Dissociable (WAD) Cyanide

Nineteen water samples were analyzed for WAD Cyanide. Samples ERB-2 and W-45D were not analyzed for WAD Cyanide due to BDL values for Total Cyanide. Samples W-27D, W-42D, W-22I, W-16, W-13, and W-43D were analyzed 10 to 11 days outside of method specified holding times. Since the holding time exceedance was less than twice the holding time allowed, sample results are considered useable, but estimated. All samples analyzed outside of holding times were flagged with a "UJ" for non-detects, and with a "J" for positive results.

2.6.1 Instrument Calibration

All %Rs were within the QC limits of 90 - 110%.

2.6.2 Method Blanks and Equipment Rinse Blanks

Method Blanks - Method blanks were analyzed at an appropriate frequency and were BDL for WAD Cyanide.

Equipment Rinse Blanks - One equipment rinse blank (ERB-2) was scheduled for WAD Cyanide analysis. The analysis was not applicable, however, due to a BDL result for Total Cyanide.

2.6.3 Duplicates and Spikes

Duplicates - Two duplicates were analyzed for WAD Cyanide. The RPD values for W-27D Dup and the RPD value for W-23S Dup were not applicable due to BDL values in the samples and their duplicates. The BDL result for sample W-27D Dup was flagged with a "UJ" qualifier due to analysis 11 days outside of required holding times.

Spikes - Two matrix spikes were analyzed for WAD Cyanide. The %R for W-27D MS was 106 and the %R for W-23S MS was 111. Both %Rs were within the QC limits of 63 - 114%. The results for sample W-27D MS were flagged with a "UJ" due to analysis 11 days outside of required holding times.

2.6.4 Field Duplicates

Two blind field duplicates were analyzed for WAD Cyanide. Sample Blind Dup was a field duplicate of sample W-41S. Sample Blind Dup 2 was a field duplicate of sample W-25S. Both RPDs were not applicable due to BDL values.

2.6.5 Overall Assessment of Data

Analytical benchsheets and report forms contained all necessary dates, sample volumes, dilution factors, and detection limits for sample data review. Analytical results were reviewed based on holding time, instrument calibration, method blanks, duplicate RPDs, and spike recoveries. Samples W-22I, W-16, ERB-2, W-45D, W-43D, W-27D, W-42D, and W-13 were flagged "UJ" for non-detects, and "J" for positive results to denote estimated values due to holding time nonconformance.

Field precision was validated as acceptable since contamination was not evident in the equipment rinse blank as evidenced by the BDL value for Total Cyanide. Field duplicates, along with their initial samples, were also BDL.

Laboratory precision was validated as acceptable based on method blanks, calibration criteria, duplicates, and spike recoveries.

2.7 Data Completeness

The level of completeness was determined by the ratio of samples planned versus the number of samples with valid analyses. As no sample analyses were deemed unusable, the data met the 90-100% completeness criteria and are considered acceptable.

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SAMPLE ID	MATRIX	DATE SAMPLED	DATE PREP/EXT.	DATE ANAL.	PARAMETERS ANALYZED	METHOD	COMMENTS
W-41D	Water	10/12/95	10/24/95	10/27/95	PAH	8310	(1) Sample was BDL, extracted 5 days outside of method specified holding times. Flag all results as "UJ" to denote estimated values. Surrogate was within QC limits of 15-117 % R at 92%.
			NA	10/13/95	BTEX	8020	(1) Sample was BDL. Surrogate was within QC limits of 78-113 %R at 101%. Sample received with headspace.
			NA	10/17/95	Dissolved Metals (Fe, Mg, Ca)	6010	(1) Precipitate present.
			10/17/95	10/17/95	Cyanide, Total	9010	(1) Sample was diluted 1:2.5.
			10/18/95	10/18/95	Cyanide, WAD	4500I	(1)
W-23S	Water	10/12/95	10/19/95	11/08/95	PAH	8310	(1) Sample was analyzed undiluted except for 1-methylnaphthalene, 2-methylnaphthalene, and fluorene analyzed at a 1:100 dilution; and naphthalene analyzed at a 1:1000 dilution due to high sample concentration. Surrogate was within QC limits of 15-117 %R at 89%.
			NA	10/18/95	BTEX	8020	(1) Sample was diluted 1:100 due to high sample concentration. Surrogate was within QC limits of 78-113% at 100%. Sample received with headspace.
			NA	10/17/95	Dissolved Metals (Fe, Mg, Ca)	6010	(1)
			10/17/95	10/17/95	Cyanide, Total	9010	(1)
			10/18/95	10/18/95	Cyanide, WAD	4500I	(1) Sample was BDL.
W-41S	Water	10/12/95	10/19/95	11/08/95	PAH	8310	(1) Sample was analyzed undiluted except for naphthalene, 1-methylnaphthalene, and fluorene which were analyzed at a 1:10 dilution due to high sample concentration. Surrogate was within QC limits of 15-117 %R at 94%.
			NA	10/13-18/95	BTEX	8020	(1) Sample was analyzed undiluted except for benzene which was analyzed at a 1:5 dilution due to high sample concentration. Surrogate was within QC limits of 78-113 %R at 116% for the undiluted run, and 103% for the 1:5 run. Sample received with headspace.
			NA	10/17/95	Dissolved Metals (Fe, Mg, Ca)	6010	(1) Precipitate present.
			10/17/95	10/17/95	Cyanide, Total	9010	(1)
			10/18/95	10/18/95	Cyanide, WAD	4500I	(1) Sample was BDL.
Blind Dup (Field Dup of W-41S)	Water	10/12/95	10/19/95	11/08/95	PAH	8310	(1) Sample was analyzed undiluted except for naphthalene which was analyzed at a 1:10 dilution due to high sample concentration. Surrogate was within QC limits of 15-117 %R at 95%. Naphthalene RPD = 95, 1-methylnaphthalene RPD = 35.9, 2-methylnaphthalene RPD = 120, fluorene RPD = 57.1, acenaphthene RPD = 22.2. RPD QC limit is 30%.
			NA	10/13-18/95	BTEX	8020	(1) Sample was analyzed undiluted except for benzene which was analyzed at a 1:5 dilution due to high sample concentration.

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							Surrogate was within QC limits of 78-113 %R at 117% for the undiluted run, and 103% for the 1:5 run. Benzene RPD = 17; ethylbenzene RPD = 0; xylene RPD = 16; toluene RPD = 40. RPD QC limit is 30%. Sample received with headspace.
			NA	10/17/95	Dissolved Metals (Fe, Mg, Ca)	6010	(1) Fe RPD = 12; Mg RPD = 0.7; Ca RPD = 2.5. All RPDs are below the QC limit of <30%.
			10/17/95	10/17/95	Cyanide, Total	9010	(1) RPD = 27.3% which is below the QC limit of <30%.
			10/18/95	10/18/95	Cyanide, WAD	4500I	(1) Sample was BDL. RPDs are NA.
W-26S	Water	10/12/95	10/19/95	11/08/95	PAH	8310	(1) Sample was analyzed undiluted except for acenaphthene which was analyzed at a 1:10 dilution, and fluorene which was analyzed at a 1:100 dilution due to high sample concentration. Surrogate was within QC limits of 15-117 %R at 85%.
			NA	10/13-18/95	BTEX	8020	(1) Sample was analyzed undiluted except for benzene which was analyzed at a 1:5 dilution due to high sample concentration. Surrogate was within QC limits of 78-113 %R at 107% for the undiluted run, and 100% for the 1:5 run. Sample received with headspace.
			NA	10/17/95	Dissolved Metals (Fe, Mg, Ca)	6010	(1) Precipitate present.
			10/17/95	10/17/95	Cyanide, Total	9010	(1) Sample was diluted 1:50.
			10/18/95	10/18/95	Cyanide, WAD	4500I	(1)
W-26I	Water	10/12/95	10/19/95	11/08/95	PAH	8310	(1) Sample was BDL. Surrogate was within QC limits of 15-117 %R at 92%.
			NA	10/13/95	BTEX	8020	(1) Sample was BDL. Surrogate was within QC limits of 78-113 %R at 103%. Sample received with headspace.
			NA	10/17/95	Dissolved Metals (Fe, Mg, Ca)	6010	(1)
			10/17/95	10/17/95	Cyanide, Total	9010	(1) Sample was diluted 1:12.5.
			10/18/95	10/18/95	Cyanide, WAD	4500I	(1)
W-19	Water	10/12/95	10/19/95	11/08/95	PAH	8310	(1) Sample was analyzed undiluted except for naphthalene and fluorene which were analyzed at a 1:10 dilution due to high sample concentration. Surrogate was within QC limits of 15-117 %R at 93%.
			NA	10/13/95	BTEX	8020	(1) Surrogate was within QC limits of 78-113 %R at 105%. Sample received with headspace.
			NA	10/17/95	Dissolved Metals (Fe, Mg, Ca)	6010	(1)
			10/17/95	10/17/95	Cyanide, Total	9010	(1) Sample was diluted 1:12.5.
			10/18/95	10/18/95	Cyanide, WAD	4500I	(1) Sample was BDL.
W-14	Water	10/11/95 (10/12/95 for BTEX)	10/19/95	11/08/95	PAH	8310	(1) Sample was extracted one day outside of method specified holding times. Professional judgement deems

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			NA	10/13-18/95	BTEX	8020	<p>no flags warranted. Sample was analyzed undiluted except for acenaphthene which was analyzed at a 1:10 dilution; 1-methylnaphthalene, 2-methylnaphthalene and fluorene which were analyzed at a 1:100 dilution; and naphthalene which was analyzed at a 1:1000 dilution. All dilutions were the result of high sample concentration. Surrogate was within QC limits of 15-117 %R at 90%.</p> <p>(1) Toluene and xylene were analyzed at a 1:20 dilution. Benzene and ethylbenzene were analyzed at a 1:100 dilution. All dilutions were due to high sample concentration. Surrogate was within QC limits of 78-113 %R at 103% for the 1:20 run, and 98% for the 1:100 run.</p> <p>Sample received with headspace. (1) Received with pH > 2. Additional HNO3 added by lab.</p>
			NA	10/17/95	Dissolved Metals (Fe, Mg, Ca)	6010	(1) Sample was diluted 1:5.
			10/17/95	10/17/95	Cyanide, Total	9010	(1)
			10/18/95	10/18/95	Cyanide, WAD	45001	(1)
ERB-1	Water	10/12/95	NA	10/13/95	BTEX	8020	<p>(1) All analytes were detected above the PQL. Surrogate was within QC limits of 78-113 %R at 104%.</p> <p>Sample received with headspace.</p>
W-22S	Water	10/11/95	10/19/95	11/08/95	PAH	8310	<p>(1) Sample was extracted one day outside of method specified holding times. Sample was not analyzed undiluted. Flag all non-detects with "UJ" for estimated values. Positive hits do not warrant a flag. Sample was analyzed at a 1:10 dilution except for fluorene and 1-methylnaphthalene which were analyzed at a 1:100 dilution due to high sample concentration. Surrogate recovery was within QC limits of 15-117 %R at 88%.</p>
			NA	10/13/95	BTEX	8020	(1) Surrogate was within QC limits of 78-113 %R at 106%. Sample received with headspace.
			NA	10/17/95	Dissolved Metals (Fe, Mg, Ca)	6010	(1)
			10/17/95	10/17/95	Cyanide, Total	9010	(1) Sample was diluted 1:12.5.
			10/18/95	10/18/95	Cyanide, WAD	45001	(1)
Trip Blank	Water	NA	NA	10/18/95	BTEX	8020	<p>(1) Sample was BDL. Surrogate was within QC limits of 78-113 %R at 100%.</p> <p>Sample received with headspace.</p>
W-25S	Water	10/13/95	10/20/95	10/26-31/95	PAH	8310	(1) Sample was analyzed at a 1:10 dilution except for fluorene, 1-methylnaphthalene, and acenaphthene which were analyzed at a 1:100 dilution; and naphthalene which was analyzed at a 1:1000 dilution due to high sample concentration. Surrogate was within QC limits of 15-117 %R at 87%.
			NA	10/17/95	BTEX	8020	(1) Sample was diluted 1:50 due to high sample concentration.

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			NA	10/18/95	Dissolved Metals (Fe, Mg, Ca)	6010	Surrogate was within QC limits of 78-113 %R at 101%. Sample received with headspace. (1) Received with pH > 2. Additional HNO3 added by lab.
			10/17/95	10/17/95	Cyanide, Total	9010	(1) Sample was diluted 1:5.
			10/18/95	10/18/95	Cyanide, WAD	4500I	(1) Sample was BDL.
Blind Dup 2 (Field Dup of W-25S)	Water	10/13/95	10/20/95	10/26-31/95	PAH	8310	(1) Sample was analyzed undiluted except for 1-methylnaphthalene and fluorene which were analyzed at a 1:100 dilution; and naphthalene which was analyzed at a 1:1000 dilution due to high sample concentration. Surrogate recovery was within QC limits of 15-117 %R at 91%. 1-Methylnaphthalene RPD = 41; 2-methylnaphthalene RPD = 108; fluorene RPD = 35.3; phenanthrene RPD = 181. naphthalene RPD = 20.5 RPD QC limit is 30%.
			NA	10/17/95	BTEX	8020	(1) Sample was diluted 1:50 due to high sample concentration. Surrogate was within QC limits of 78-113 %R at 100%. Benzene RPD = 2.7; ethylbenzene RPD = 4.4; xylene RPD = 8.7; toluene RPD = 7.2. RPD QC limit is 30%. Sample received with headspace.
			NA	10/18/95	Dissolved Metals (Fe, Mg, Ca)	6010	(1) Received with pH > 2. Additional HNO3 added by lab. Fe RPD = 6.5; Mg RPD = 2.5; Ca RPD = 1.2. All RPDs are below the QC limit of <30%.
			10/17/95	10/17/95	Cyanide, Total	9010	(1) Sample was diluted 1:5. RPD = 23% which is below QC limit of <30%.
			10/18/95	10/18/95	Cyanide, WAD	4500I	(1) Sample was BDL. RPDs are NA.
Equip. Rinse Blank	Water	10/13/95	10/20/95	10/26/95	PAH	8310	(1) Trace amounts of acenaphthylene, 2-methylnaphthalene, and phenanthrene were detected. Acenaphthylene and phenanthrene were "J"-flagged as estimated values found below the PQL. Surrogate was within QC limits of 15-117 %R at 92%.
			NA	10/17/95	BTEX	8020	(1) Sample was BDL. Surrogate was within QC limits of 78-113 %R at 102%. BTEX analysis was not requested on the COC.
			NA	10/18/95	Dissolved Metals (Fe, Mg, Ca)	6010	(1) Ca and Mg are "J"-flagged as estimated values due to detection below the PQL (CRDL).
			10/17/95	10/17/95	Cyanide, Total	9010	(1) Sample was BDL.
W-20I	Water	10/13/95	10/20/95	10/26-11/03/95	PAH	8310	(1) Sample was analyzed at a 1:10 dilution except for 1-methylnaphthalene, 2-methylnaphthalene, fluorene, and phenanthrene which were analyzed at a 1:100 dilution; and naphthalene which was analyzed at a 1:1000 dilution. Dilutions were due to high sample concentration. Surrogate was within QC limits of 15-117 %R at 87%.

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			NA	10/17/95	BTEX	8020	(1) Sample was diluted 1:250 due to high sample concentration. Surrogate was within QC limits of 78-113 %R at 99%. Sample received with headspace.
			NA	10/18/95	Dissolved Metals (Fe, Mg, Ca)	6010	(1) Received with pH > 2. Additional HNO3 added by lab.
			10/17/95	10/17/95	Cyanide, Total	9010	(1)
			10/18/95	10/18/95	Cyanide, WAD	4500I	(1)
W-20S	Water	10/13/95	10/20/95	10/26-31/95	PAH	8310	(1) Sample was analyzed undiluted except for 1-methylnaphthalene, acenaphthene, and phenanthrene which were analyzed at a 1:10 dilution; and naphthalene and fluorene which were analyzed at a 1:100 dilution. Dilutions were due to high sample concentration. Surrogate was within QC limits of 15-117 %R at 87%.
			NA	10/17/95	BTEX	8020	(1) Sample was diluted 1:25 due to high sample concentration. Surrogate was within QC limits of 78-113 %R at 100%. Sample received with headspace. BTEX analysis was not requested on the COC.
			NA	10/18/95	Dissolved Metals (Fe, Mg, Ca)	6010	(1) Received with pH > 2. Additional HNO3 added by lab.
			10/17/95	10/17/95	Cyanide, Total	9010	(1) Sample was diluted 1:25.
			10/18/95	10/18/95	Cyanide, WAD	4500I	(1)
W-46D	Water	10/13/95	10/20/95	10/26-31/95	PAH	8310	(1) Sample was analyzed undiluted except for 1-methylnaphthalene which was analyzed at a 1:10 dilution, and naphthalene which was analyzed at a 1:100 dilution. Surrogate recovery was within QC limits of 15-117 %R at 85%.
			NA	10/17/95	BTEX	8020	(1) Sample was analyzed at a 1:10 dilution except for benzene which was analyzed at a 1:250 dilution. All dilutions were due to high sample concentration. Surrogate was within QC limits of 78-113 %R at 98% for both runs. Sample received with headspace.
			NA	10/18/95	Dissolved Metals (Fe, Mg, Ca)	6010	(1) Received with pH > 2. Additional HNO3 added by lab.
			10/17/95	10/17/95	Cyanide, Total	9010	(1)
			10/18/95	10/18/95	Cyanide, WAD	4500I	(1)
Trip Blank	Water	NA	NA	10/17/95	BTEX	8020	(1) Sample was BDL. Surrogate was within QC limits of 78-113 %R at 102%.
W-27D	Water	10/15/95	10/20/95	10/26/95	PAH	8310	(1) Fluorene is "J"-flagged as estimated value due to detection below the PQL. Surrogate was within QC limits of 15-117 %R at 91%.
			NA	10/20/95	BTEX	8020	(1) Surrogate was within QC limits of 78-113 %R at 101%.
			NA	10/23/95	Dissolved Metals (Fe, Mg, Ca)	6010	(1)
			11/06/95	11/07/95	Cyanide, Total	9010	(1) Sample was analyzed 9 days out of holding time.

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			11/09/95	11/09/95	Cyanide, WAD	4500I	Result was "J"-flagged to denote an estimated value. (1) Sample was BDL - analyzed 11 days out of holding time. Result was "UJ"-flagged to denote an estimated non-detect.
W-42D	Water	10/15/95	10/20/95	10/26/95	PAH	8310	(1) Sample was analyzed undiluted except for 1-methylnaphthalene and fluorene which were analyzed at a 1:10 dilution due to high sample concentration. Surrogate was within limits of 15-117 %R at 91%. Phenanthrene is "J"-flagged as estimated value due to detection below the PQL.
			NA	10/20/95	BTEX	8020	(1) Surrogate was within QC limits of 78-113 %R at 102%.
			NA	10/23/95	Dissolved Metals (Fe, Mg, Ca)	6010	(1)
			11/06/95	11/07/95	Cyanide, Total	9010	(1) Sample was BDL - analyzed 9 days out of holding time. Result was "UJ"-flagged to denote an estimated non-detect.
			11/09/95	11/09/95	Cyanide, WAD	4500I	(1) Sample was BDL - analyzed 11 days out of holding time. Result was "UJ"-flagged to denote an estimated non-detect.
W-22I	Water	10/16/95	10/20/95	10/26-31/95	PAH	8310	(1) Sample was analyzed undiluted except for 1-methylnaphthalene which was analyzed at a 1:10 dilution; 2-methylnaphthalene which was analyzed at a 1:100 dilution; and naphthalene which was analyzed at a 1:1000 dilution due to high sample concentration. Surrogate was within QC limits of 15-117 %R at 73%.
			NA	10/24-25/95	BTEX	8020	(1) Sample was analyzed at a 1:100 dilution except for benzene which was analyzed at a 1:1000 dilution. All dilutions were due to high sample concentration. Surrogate was within QC limits of 78-113 %R at 102% for the 1:100 run and at 105% for the 1:1000 run.
			NA	10/23/95	Dissolved Metals (Fe, Mg, Ca)	6010	(1)
			11/06/95	11/07/95	Cyanide, Total	9010	(1) Sample was analyzed 8 days out of holding time at a 1:5 dilution. Result was "J"-flagged to denote an estimated value.
			11/09/95	11/09/95	Cyanide, WAD	4500I	(1) Sample was analyzed 10 days out of holding time. Result was "J"-flagged to denote an estimated value.
W-16	Water	10/16/95	10/20/95	10/26-11/01/95	PAH	8310	(1) Sample was analyzed undiluted except for 1-methylnaphthalene and fluorene which were analyzed at a 1:10 dilution; 2-methylnaphthalene and acenaphthene which were analyzed at a 1:100 dilution; and naphthalene which was analyzed at a 1:1000 dilution. All dilutions were due to high sample concentra-

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			NA	10/20-24/95	BTEX	8020	tion. Surrogate was within QC limits of 15-117 %R at 89%. Anthracene and chrysene are "J"-flagged as estimated values due to detection below the PQL. (1) Sample was analyzed at a 1:10 dilution except for benzene which was analyzed at a 1:100 dilution. All dilutions were due to high sample concentration. Surrogate was within QC limits of 78-113 %R at 109% for the 1:10 run and at 106% for the 1:100 run.
			NA	10/23/95	Dissolved Metals (Fe, Mg, Ca)	6010	(1)
		11/06/95	11/07/95		Cyanide, Total	9010	(1) Sample was analyzed 8 days out of holding time. Result was "J"-flagged to denote an estimated value.
		11/09/95	11/09/95		Cyanide, WAD	4500I	(1) Sample was BDL - analyzed 10 days out of holding time. Result was "UJ"-flagged to denote an estimated non-detect.
ERB-2	Water	10/16/95	10/20/95	10/26/95	PAH	8310	(1) Trace amounts of naphthalene, 2-methylnaphthalene, and fluorene detected. These three compounds were "J"-flagged as estimated values found below the PQL. Surrogate was within QC limits of 15-117 %R at 89%.
			NA	10/20/95	BTEX	8020	(1) Sample was BDL. Surrogate was within QC limits of 78-113 %R at 101%.
		11/06/95	11/07/95		Cyanide, Total	9010	(1) Sample was BDL - analyzed 8 days out of holding time. Result was "UJ"-flagged to denote an estimated non-detect.
		11/09/95	11/09/95		Cyanide, WAD	4500I	(1) Not analyzed due to BDL value for Total Cyanide.
W-13	Water	10/15/95	10/20/95	10/26-11/01/95	PAH	8310	(1) Sample was analyzed undiluted except for naphthalene, acenaphthene and anthracene which were analyzed at a 1:10 dilution; 1--methylnaphthalene, fluorene, and phenanthrene which were analyzed at a 1:100 dilution. All dilutions were due to high sample concentration. Surrogate was within QC limits of 15-117 %R at 92%. Chrysene was "J"-flagged as an estimated value due to detection below the PQL.
			NA	10/24/95	BTEX	8020	(1) Sample was analyzed undiluted except for ethylbenzene which was analyzed at a 1:5 dilution due to high sample concentration. Surrogate was within QC limits of 78-113 %R at 106% for the undiluted run, and 105% for the 1:5 run.
			NA	10/23/95	Dissolved Metals (Fe, Mg, Ca)	6010	(1)
		11/06/95	11/07/95		Cyanide, Total	9010	(1) Sample was analyzed 9 days out of holding time at a 1:5 dilution. Result was "J"-flagged

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			11/09/95	11/09/95	Cyanide, WAD	45001	to denote an estimated value. (1) Sample was BDL - analyzed 11 days out of holding time. Result was "UJ"-flagged to denote an estimated non-detect.
W-45D	Water	10/16/95	10/20/95	10/26/95	PAH	8310	(1) Problems with the extraction caused low surrogate recovery of 16% (still within limits). Sample was BDL. All compounds have been "UJ"-flagged as estimated non-detects, since values could be biased low.
			NA	10/20/95	BTEX	8020	(1) Sample was BDL. Surrogate was within QC limits of 78-113 %R at 100%.
			NA	10/23/95	Dissolved Metals (Fe, Mg, Ca)	6010	(1)
			11/06/95	11/07/95	Cyanide, Total	9010	(1) Sample was BDL - analyzed 8 days out of holding time. Result was "UJ"-flagged to denote an estimated non-detect.
			11/09/95	11/09/95	Cyanide, WAD	45001	(1) Not analyzed due to BDL value for Total Cyanide.
W-43D	Water	10/16/95	10/20/95	10/27-11/01/95	PAH	8310	(1) Sample was analyzed at a 1:10 dilution except for 1-methylnaphthalene, 2-methylnaphthalene, and fluorene which were analyzed at a 1:100 dilution; and naphthalene which was analyzed at a 1:1000 dilution. Dilutions were due to high sample concentration. Surrogate was within QC limits of 15-117 %R at 80%.
			NA	10/24/95	BTEX	8020	(1) Sample was analyzed at a 1:100 dilution except for benzene which was analyzed at a 1:250 dilution. All dilutions were due to high sample concentration. Surrogate was within QC limits of 78-113 %R at 105% for the 1:100 run and at 104% for the 1:250 run.
			NA	10/23/95	Dissolved Metals (Fe, Mg, Ca)	6010	(1)
			11/06/95	11/07/95	Cyanide, Total	9010	(1) Sample was analyzed 8 days out of holding time. Result was "J"-flagged to denote an estimated value.
			11/09/95	11/09/95	Cyanide, WAD	45001	(1) Sample was BDL - analyzed 10 days out of holding time. Result was "UJ"-flagged to denote an estimated non-detect.
Trip Blank	Water	NA	NA	10/20/95	BTEX	8020	(1) Sample was BDL. Surrogate was within QC limits of 78-113% at 99%.
Method Blanks	Water	NA	10/19/95	11/07/95	PAH	8310	(1) Blank was BDL. Surrogate within QC limits of 15-117 %R at 89%.
	Water	NA	10/20/95	10/26/95	PAH	8310	(1) Blank was BDL. Surrogate within QC limits of 15-117 %R at 91%.
	Water	NA	10/24/95	10/27/95	PAH	8310	(1) Blank was BDL. Surrogate within QC limits of 15-117 %R at 58%.
	Water	NA	NA	10/13/95	BTEX	8020	(1) Blank was BDL. Surrogate within QC limits of 78-113 %R at 102%.
	Water	NA	NA	10/16/95	BTEX	8020	(1) Blank was BDL. Surrogate within QC limits of 78-113 %R at 99%.
	Water	NA	NA	10/17/95	BTEX	8020	(1) Blank was BDL. Surrogate within QC limits of 78-113 %R at 99%.

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	Water	NA	NA	10/18/95	BTEX	8020	(1) Blank was BDL. Surrogate within QC limits of 78-113 %R at 99%.
	Water	NA	NA	10/20/95	BTEX	8020	(1) Blank was BDL. Surrogate within QC limits of 78-113 %R at 100%.
	Water	NA	NA	10/23/95	BTEX	8020	(1) Blank was BDL. Surrogate within QC limits of 78-113 %R at 106%.
	Water	NA	NA	10/24/95	BTEX	8020	(1) Blank was BDL. Surrogate within QC limits of 78-113 %R at 105%.
	Water	NA	NA	10/25/95	BTEX	8020	(1) Blank was BDL. Surrogate within QC limits of 78-113 %R at 105%.
	Water	NA	NA	10/17/95	Dissolved Metals (Fe, Mg, Ca)	6010	(1) Blank was BDL.
	Water	NA	NA	10/18/95	Dissolved Metals (Fe, Mg, Ca)	6010	(1) Blank was BDL.
	Water	NA	NA	10/23/95	Dissolved Metals (Fe, Mg, Ca)	6010	(1) Blank was BDL.
	Water	NA	10/17/95	10/17/95	Cyanide, Total	9010	(1) Blank was BDL.
	Water	NA	11/06/95	11/07/95	Cyanide, Total	9010	(1) Blank was BDL.
	Water	NA	10/18/95	10/18/95	Cyanide, WAD	4500I	(1) Blank was BDL.
	Water	NA	11/09/95	11/09/95	Cyanide, WAD	4500I	(1) Blank was BDL.
ICV	Water	NA	NA	09/29/95	BTEX	8020	(1) Correlation coefficient was <0.995 for m,p-xylenes curve due to low response of high standard. High standard was omitted, and all xylene results are calculated off of a four point curve rather than a five point curve. No flags warranted. (Method deviation)
	Water	NA	NA	10/17/95	Dissolved Metals (Fe, Mg, Ca)	6010	(1) Fe %R = 103; Mg %R = 102; Ca %R = 102. All %Rs are within QC limits of 90-110%.
	Water	NA	NA	10/18/95	Dissolved Metals (Fe, Mg, Ca)	6010	(1) Fe %R = 100; Mg %R = 100; Ca %R = 102. All %Rs are within QC limits of 90-110%.
	Water	NA	NA	10/23/95	Dissolved Metals (Fe, Mg, Ca)	6010	(1) Fe %R = 106; Mg %R = 104; Ca %R = 102. All %Rs are within QC limits of 90-110%.
CCV	Water	NA	10/26/95	10/26/95	PAH	8310	(1) RTs and %Ds were acceptable for both detectors.
	Water	NA	10/26/95	10/26/95	PAH	8310	(1) RTs and %Ds were acceptable for both detectors.
	Water	NA	10/26/95	10/26/95	PAH	8310	(1) RTs and %Ds were acceptable for both detectors.
	Water	NA	10/27/95	10/27/95	PAH	8310	(1) RTs and %Ds were acceptable for both detectors.
	Water	NA	10/27/95	10/27/95	PAH	8310	(1) RTs and %Ds were acceptable for both detectors.
	Water	NA	11/01/95	11/01/95	PAH	8310	(1) RTs and %Ds were acceptable for both detectors.
	Water	NA	11/03/95	11/03/95	PAH	8310	(1) RTs and %Ds were acceptable for both detectors.
	Water	NA	11/08/95	11/08/95	PAH	8310	(1) RTs and %Ds were acceptable for both detectors.
	Water	NA	11/08/95	11/08/95	PAH	8310	(1) RTs and %Ds were acceptable for both detectors.
	Water	NA	11/08/95	11/08/95	PAH	8310	(1) RTs and %Ds were acceptable for both detectors.
	Water	NA	NA	10/13/95	BTEX	8020	(1) Benzene %R = 88; toluene %R = 95; ethylbenzene 97; xylenes %R = 103. All %Rs are within QC limits All %Ds were below the QC %D limit of 25%.
	Water	NA	NA	10/17/95	BTEX	8020	(1) Benzene %R = 91; toluene %R = 100; ethylbenzene 104; xylenes %R = 112. All %Rs are within QC limits All %Ds were below the QC %D limit of 25%.

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	Water	NA	NA	10/17/95	BTEX	8020	(1) Benzene %R = 91; toluene %R = 99; ethylbenzene 104; xylenes %R = 110. All %Rs are within QC limits All %Ds were below the QC %D limit of 25%.
	Water	NA	NA	10/18/95	BTEX	8020	(1) Benzene %R = 89; toluene %R = 99; ethylbenzene 102; xylenes %R = 105. All %Rs are within QC limits All %Ds were below the QC %D limit of 25%.
	Water	NA	NA	10/20/95	BTEX	8020	(1) Benzene %R = 108; toluene %R = 101; ethylbenzene 100; xylenes %R = 106. All %Rs are within QC limits All %Ds were below the QC %D limit of 25%.
	Water	NA	NA	10/24/95	BTEX	8020	(1) Benzene %R = 112; toluene %R = 104; ethylbenzene 105; xylenes %R = 112. All %Rs are within QC limits All %Ds were below the QC %D limit of 25%.
	Water	NA	NA	10/24/95	BTEX	8020	(1) Benzene %R = 111; toluene %R = 104; ethylbenzene 106; xylenes %R = 112. All %Rs are within QC limits All %Ds were below the QC %D limit of 25%.
	Water	NA	NA	10/25/95	BTEX	8020	(1) Benzene %R = 107; toluene %R = 99; ethylbenzene 99; xylenes %R = 106. All %Rs are within QC limits All %Ds were below the QC %D limit of 25%.
	Water	NA	NA	10/17/95	Dissolved Metals (Fe, Mg, Ca)	6010	(1) Fe %Rs = 100, 96, 98; Mg %Rs = 100, 96, 98; Ca %Rs = 100, 96, 98. All %Rs are within QC limits of 90-110%.
	Water	NA	NA	10/18/95	Dissolved Metals (Fe, Mg, Ca)	6010	(1) Fe %Rs = 98, 98; Mg %Rs = 99, 99; Ca %Rs = 98, 98. All %Rs are within QC limits of 90-110%.
	Water	NA	NA	10/23/95	Dissolved Metals (Fe, Mg, Ca)	6010	(1) Fe %Rs = 103, 103; Mg %Rs = 102, 102; Ca %Rs = 99, 99. All %Rs are within QC limits of 90-110%.
	Water	NA	10/17/95	10/17/95	Cyanide, Total	9010	(1) %R = 98% which is within QC limits of 90-110%.
	Water	NA	10/17/95	10/17/95	Cyanide, Total	9010	(1) %R = 109% which is within QC limits of 90-110%.
	Water	NA	11/07/95	11/07/95	Cyanide, Total	9010	(1) %R = 96% which is within QC limits of 90-110%.
	Water	NA	11/07/95	11/07/95	Cyanide, Total	9010	(1) %R = 99% which is within QC limits of 90-110%.
	Water	NA	10/18/95	10/18/95	Cyanide, WAD	4500I	(1) %R = 104% which is within QC limits of 90-110%.
	Water	NA	10/18/95	10/18/95	Cyanide, WAD	4500I	(1) %R = 102% which is within QC limits of 90-110%.
	Water	NA	11/09/95	11/09/95	Cyanide, WAD	4500I	(1) %R = 109% which is within QC limits of 90-110%.
	Water	NA	11/09/95	11/09/95	Cyanide, WAD	4500I	(1) %R = 110% which is within QC limits of 90-110%.
ICS	Water	NA	NA	10/17/95	Dissolved Metals (Fe, Mg, Ca)	6010	(1) All %Rs are within QC limits of 80-120%. All %Ds are <20%. All sample concentrations are below the ICS concentrations.
	Water	NA	NA	10/18/95	Dissolved Metals (Fe, Mg, Ca)	6010	(1) All %Rs are within QC limits of 80-120%. All %Ds are <20%. All sample concentrations are below the ICS concentrations.
	Water	NA	NA	10/23/95	Dissolved Metals (Fe, Mg, Ca)	6010	(1) All %Rs are within QC limits of 80-120%. All %Ds are <20%. All sample concentrations are below the ICS concentrations.
W-41D ICP Serial Dilution	Water	10/12/95	NA	10/17/95	Dissolved Metals (Fe, Mg, Ca)	6010	(1) Sample was diluted 1:5. Fe %D = 1.2; Mg %D = 3.8; Ca %D = 1.9. All %Ds are below QC %D limit of 10%.
W-25S ICP Serial Dilution	Water	10/13/95	NA	10/18/95	Dissolved Metals (Fe, Mg, Ca)	6010	(1) Sample was diluted 1:5. Fe %D = 12.4; Mg %D = 0.8; Ca %D = 2.3. All %Ds are below QC %D limit of 10%.
W-27D ICP Serial Dilution	Water	10/15/95	NA	10/23/95	Dissolved Metals	6010	(1) Sample was diluted 1:5. Fe %D = 1.3; Mg %D = 4.6;

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					(Fe, Mg, Ca)		Ca %D = 2.2. All %Ds are below QC %D limit of 10%.
W-41D Dup	Water	10/12/95	NA	10/17/95	Dissolved Metals	6010	(1) Fe RPD = 0.7; Mg RPD = 0.5; Ca RPD = 0.8. All RPDs are below QC RPD limit of <20%.
W-25S Dup	Water	10/13/95	NA	10/18/95	Dissolved Metals	6010	(1) Fe RPD = 8.5; Mg RPD = 0.5; Ca RPD = 0.2. All RPDs are below QC RPD limit of <20%.
W-27D Dup	Water	10/15/95	NA	10/23/95	Dissolved Metals	6010	(1) Fe RPD = 1.1; Mg RPD = 0.6; Ca RPD = 0.9. All RPDs are below QC RPD limit of <20%.
W-23S Dup	Water	10/12/95	10/17/95	10/17/95	Cyanide, Total	9010	(1) RPD = 0% which is below QC limit of 30%.
W-27D Dup	Water	10/15/95	11/06/95	11/07/95	Cyanide, Total	9010	(1) RPD = 6% which is below QC limit of 30%. Sample was analyzed 9 days out of holding time. Result was "J"-flagged to denote an estimated value.
W-23S Dup	Water	10/12/95	10/18/95	10/18/95	Cyanide, WAD	4500I	(1) RPD was NA due to BDL results.
W-27D Dup	Water	10/15/95	11/09/95	11/09/95	Cyanide, WAD	4500I	(1) RPD was NA due to BDL results. Sample was analyzed 11 days out of holding time. Result was "UJ"-flagged to denote an estimated non-detect.
BS/BSD	Water	NA	10/19/95	11/08/95	PAH	8310	(1) %Rs were 67-103% which were within QC limits of 23-123%. RPDs were 0.1-2% which were below the 20% limit. Surrogate was within QC limits of 15-117 %R at 89 and 92%.
	Water	NA	10/20/95	10/26/95	PAH	8310	(1) %Rs were 66-101% which were within QC limits of 23-123%. RPDs were 3-9% which were below the 20% limit. Surrogate was within QC limits of 15-117 %R at 92 and 88%.
	Water	NA	10/24/95	10/31/95	PAH	8310	(1) %Rs were 65-101% which were within QC limits of 23-123%. RPDs were 0.3-10% which were below the 20% limit. Surrogate was within QC limits of 15-117 %R at 89 and 92%.
	Water	NA	NA	10/17/95	BTEX	8020	(1) %Rs were 84-104% which were within QC limits of 77-135%. RPDs were 2-5% which were below the 20% limit. Surrogate was within QC limits of 78-113 %R at 100 and 99%.
	Water	NA	NA	10/18/95	BTEX	8020	(1) %Rs were 84-105% which were within QC limits of 77-135%. RPDs were 4-5% which were below the 20% limit. Surrogate was within QC limits of 78-113 %R at 100 and 100%.
	Water	NA	NA	10/20/95	BTEX	8020	(1) %Rs were 99-108% which were within QC limits of 77-135%. RPDs were 2-3% which were below the 20% limit. Surrogate was within QC limits of 78-113 %R at 100 and 100%.
W-41D Post Spike	Water	10/12/95	NA	10/17/95	Dissolved Fe	6010	(1) %R = 90 which is within QC limits of 75-125%.
W-25S Post Spike	Water	10/13/95	NA	10/18/95	Dissolved Fe	6010	(1) %R = 93 which is within QC limits of 75-125%.
W-27D Post Spike	Water	10/15/95	NA	10/23/95	Dissolved Fe	6010	(1) %R = 100 which is within QC limits of 75-125%.
Blind Dup 2 MS/MSD	Water	10/13/95	NA	10/17/95	BTEX	8020	(1) Benzene %Rs in MS and MSD were out of QC limits (80-124%) at 140% and 140%. Ethylbenzene %R was out of QC limits (75-135%) in MSD at 136%. All other %Rs were within QC limits.

TABLE 1
QA/QC SUMMARY REVIEW OF
ANALYTICAL DATA FOR THIRD WARD MGP SITE, SSPI
OCTOBER 1995

Project : 3-0887-403

SAMPLE ID	MATRIX	DATE SAMPLED	DATE PREP/EXT.	DATE ANAL.	PARAMETERS ANALYZED	METHOD	COMMENTS
							RPDs were 0-2% which were below the 20% limit. Surrogate was within QC limits of 78-113 %R at 100 and 102%.
W-41D MS/MSD	Water	10/12/95	NA	10/18/95	BTEX	8020	(1) %Rs were 84-104% which were within QC limits. RPDs were 2-3% which were below the 20% limit. Surrogate was within QC limits of 78-113 %R at 101 and 100%.
ERB-2 MS/MSD	Water	10/16/95	NA	10/20/95	BTEX	8020	(1) %Rs were 93-107% which were within QC limits. RPDs were 7-9% which were below the 20% limit. Surrogate was within QC limits of 78-113 %R at 101 and 100%.
W-23S MS	Water	10/12/95	10/17/95	10/17/95	Cyanide, Total	9010	(1) %R = 33 which is outside QC limits of 63-114% Spike failure is due to diluting spike without diluting sample.
W-27D MS	Water	10/15/95	11/06/95	11/07/95	Cyanide, Total	9010	(1) %R = 108 which is within QC limits of 63-114%. Sample was analyzed 9 days out of holding time. Result was "J"-flagged to denote an estimated value.
W-14 MS	Water	10/11/95	10/18/95	10/18/95	Cyanide, WAD	45001	(1) %R = 111 which is within QC limits of 63-114%
W-27D MS	Water	10/15/95	11/09/95	11/09/95	Cyanide, WAD	45001	(1) %R = 106 which is within QC limits of 63-114%. Sample was analyzed 11 days out of holding time. Result was "UJ"-flagged to denote an estimated non-detect.

(1) Standard QA/QC including: methods for analysis, detection limits, holding times, surrogates, matrix spike/matrix spike duplicate recoveries, laboratory duplicates and laboratory control sample recoveries were within QC limits unless otherwise noted under the comments section. Shaded comments indicate that the QC was outside of control limits or method specifications, or denote occurrences warranting extra attention.

Note: All surrogate recoveries reported are from the least diluted analyses for PAH.

ABBREVIATIONS AND DEFINITIONS :

- BDL - Below Detection Limit
- RPD - Relative Percent Difference
- RT - Retention Time
- %R - Percent Recovery
- %D - Percent Difference
- PQL - Practical Quantitation Limit
- PAH - Polynuclear Aromatic Hydrocarbons
- BTEX - Benzene, Toluene, Ethylbenzene, Total Xylenes
- Fe, Mg, Ca - Iron, Magnesium, Calcium
- WAD Cyanide - Weak Acid Dissociable Cyanide
- NA - Not Applicable

Sample Suffix Designations:

- Dup/DUP - Duplicate
- MS, MSD - Matrix Spike, Matrix Spike Duplicate

TABLE 1
QA/QC SUMMARY REVIEW OF
ANALYTICAL DATA FOR THIRD WARD MGP SITE, SSPI
OCTOBER 1995

Project : 3-0887-403

SAMPLE ID	MATRIX	DATE SAMPLED	DATE PREP/EXT.	DATE ANAL.	PARAMETERS ANALYZED	METHOD	COMMENTS
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LCS/LCSD - Laboratory Control Sample, Laboratory Control Sample Duplicate

APPENDIX F

CHAIN-OF-CUSTODY RECORDS

No. 0307

CHAIN OF CUSTODY RECORD

95-04-221

PROJ. NO.		PROJECT NAME		NO. OF CONTAINERS	REMARKS						
3-0887-303		Third Ward - SSPI			PAH-(BIO)/TCN(940) BTEX (8020) PAH-(SOL)/TCN(940) BTEX (8020)						
SAMPLERS:											
J. Murer, T. Dahl, A. Rupert											
RECEIVING LABORATORY:											
ATI											
SAMPLE NO.	DATE	TIME	SAMPLE LOCATION								
01	4-25-95	1440	DB-6(2-4) (S) 1	1	1			IVOA	City Property RR ROW		
02	4-25-95	1510	DB-7(0-2) (S) 2	1				IVOA LEXT	City Property E. of RR ROW		
03	4-26-95	0730	B-47(2-4) (S) 2	1	1				City Property E. of RR ROW		
04			B-47(10-18) B-47(10-18) (S) 2	1	1						
05	4-25-95	—	Duplicate 1 (S) 2	1	1				Duplicate 1		
06	4-26-95	1400	EB-1 (solid spoon) (W) 4	2	2			IVOA LEXT			
07	4-26-95	1400	EB-2 (solid spoon) (W) 4	2	2						
08	4-26-95	1900	TRD Bknk (W) 1		1			IVOA			
09	4-25-95	12:45	TTA3-2 (7') (S) 2	1	1			IVOA LEXT			
10	4-25-95	1330	TTA2-1 (5') (S) 2	1	1						
11	4-26-95	0720	TTB2-5 (8') (S) 2	1	1						
12	4-25-95	0730	Duplicate 2 (S) 2	1	1						
13	4-26-95	12:50	TTC5-1 (6') (S) 2	1	1						
14	4-26-95	1430	TTA4-2 (7') (S) 10 → TTA4-1 1-2' (S) 2	1	1			IVOA LEXT	2 1 1 IVOA LEXT		
15	4-26-95	1405	TTB3-1 (3') (S) 10 → TTC1-2 2-3' (S) 2	1	1				2 1 1		
Relinquished by: (Signature)		Date/Time		Received by: (Signature)		Relinquished by: (Signature)		Date/Time		Received by: (Signature)	
[Signature]		4-29-95 19:30		FED-X		FED-X		4-29-95 19:30		[Signature]	
Relinquished by: (Signature)		Date/Time		Received by: (Signature)		Relinquished by: (Signature)		Date/Time		Received by: (Signature)	
[Signature]											
Relinquished by: (Signature)		Date/Time		Received for laboratory by: (Signature)		Date/Time					
[Signature]											
REMARKS: SAMPLER DB-6(2-4) HAS ONLY ONE CONTAINER FOR ALL ANALYSES. SAMPLER DB-7(0-2)-2 CONTAINERS WERE RECEIVED.											



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NO 0376 95-04-222

CHAIN OF CUSTODY RECORD

Page #1 of 2

PROJ. NO.		PROJECT NAME		NO. OF CONTAINERS	ANALYSES						REMARKS
3-0887-203		Third Ward MGR-SSPI			PAH (800)	TCV (900)	BTEX (800)	Reactivity	TCLP VOC	TCLP SVOC	
SAMPLE NO	DATE	TIME	SAMPLE LOCATION								
01	4-27-95	0945	TTCY-2 (4-5)	2	1	1				IVDA 1.5	P-5 / S. of Carecab
02	4-27-95	1345	TTF3-1 (7)	2	1	1					City S. of holders
03	11	1525	TTF2-1 (3)	2	1	1					City E. of Southern holder
04	11	1620	TTE1-2 (10-11)	2	1	1					City in Northern Holder
05	11	1645	TTE2-1 (7)	2	1	1					City NW NE of North Holder
06	11	1230	TTC2-1 (3-4)	2	1	1					City E. of RR ROW
07	11	1200	TTC4-1 (3-4)	2	1	1					Adj. to Jackson on City
08	-	-	Trip Blank	1						IVDA	Trip Blank
09	4-28-95	0900	Composite #1	3			1	1	1	IVDA 1.5 1.5	Composite 4-28-95
10	11	1000	Composite #2	3			1	1	1		"
11	11	1015	Composite #3	3			1	1	1		"
12	4-26-95	1200	TTC1-4 (3-4)	3			1	1	1		Grab - Tar well
13	4-28-95	1030	Composite #4	3			1	1	1		Composite 4-28-95
14	11	1045	Composite #5	3			1	1	1		"
15	11	1100	Composite #6	3			1	1	1		"
16	11	1115	Composite #7	3			1	1	1		"
17	11	1130	Composite #8	3			1	1	1		"

Relinquished by: (Signature) <i>[Signature]</i>	Date / Time 4-28-95 1400	Received by: (Signature) Fed Ex Airbill # 2758571944	Relinquished by: (Signature) <i>[Signature]</i>	Date / Time 4-29-95 9:30	Received by: (Signature) <i>[Signature]</i>
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)

Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time
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REMARKS: Please extract TCLP & VOCs by Monday 5-1-95



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CHAIN OF CUSTODY RECORD

Page 2 of 2

PROJ. NO. 3-0887-303			PROJECT NAME Third Ward MGP-SSPI			NO. OF CONTAINERS	Reactivity TCCLP/VOC TCCLP/SVOC/TCCLP/MS/PH/IGN					
SAMPLERS: <i>[Signature]</i>			RECEIVING LABORATORY: ATI									
SAMPLE NO.	DATE	TIME	SAMPLE LOCATION									
18	4.28.95	1145	Composite #9			3	1	1	1			Composited 4/28 - Area G
19	4.28.95	1200	Composite #10			3	1	1	1			Composited 4/28 - Area G (WT)
<i>[Signature]</i>												
Relinquished by: <i>[Signature]</i>		Date/Time 4.28.95 1400	Received by: <i>[Signature]</i> # REDEX Airbill # 2758571944		Relinquished by: <i>[Signature]</i> FED-X		Date/Time 4.29.95 9:30	Received by: <i>[Signature]</i> I. K. P. P.				
Relinquished by: <i>[Signature]</i>		Date/Time	Received by: <i>[Signature]</i>		Relinquished by: <i>[Signature]</i>		Date/Time	Received by: <i>[Signature]</i>				
Relinquished by: <i>[Signature]</i>		Date/Time	Received for laboratory by: <i>[Signature]</i>		Date/Time							
REMARKS:												

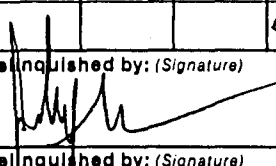
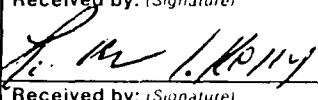


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NO 0378

CHAIN OF CUSTODY RECORD

95-05-005

PROJ. NO.		PROJECT NAME		NO. OF CONTAINERS	ALK, SiO ₂ , Al ₂ O ₃ , K ₂ O, Cl, H ₂ O, SO ₄	TDC, Moisture	Metals *	TEPH (2)	Grain Size, Bulk Density	REMARKS
3-0887-307		Third Ward MGP-SSPI								
SAMPLERS (Signature)										
SAMPLE NO.	DATE	TIME	SAMPLE LOCATION							
01	4.29.95	1400	Composite #11	5	1	1	1	1	1	TOX EXT 3 SUB ↓ (2) TOX (2) TPH (48.1) *Metals List: Sb, Ar, Be, Ba, Cd, Cr, Cu, Pb, Ni, Se, Th
02	"	1430	Composite #12	5	1	1	1	1	1	
03	"	1500	Composite #13	5	1	1	1	1	1	
04	"	1530	Composite #14	5	1	1	1	1	1	
05	"	1600	Composite #15	5	1	1	1	1	1	
Relinquished by: (Signature)  Date / Time 5.1.95 1200 Received by: (Signature) FedEx airbill # 2758571874 Relinquished by: (Signature) FID-X Date / Time 5.2.95 9:00 Received by: (Signature) 										
Relinquished by: (Signature) Date / Time Received by: (Signature) Relinquished by: (Signature) Date / Time Received by: (Signature)										
Relinquished by: (Signature) Date / Time Received for Laboratory by: (Signature) Date / Time										
REMARKS:										



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No. 0763

95-10-124

CHAIN OF CUSTODY RECORD

Cyanide to Cyanide
Dissolved Fe, Ni, Cu

PROJ. NO.		PROJECT NAME		NO. OF CONTAINERS						REMARKS
3-0887-303		Third Ward MGP								
SAMPLERS: Marta Stewart / Rachel O'Brien (MS)										
RECEIVING LABORATORY: ATI - Fort Collins										
SAMPLE NO.	DATE (1995)	TIME	SAMPLE LOCATION		PAHs S310	STEX P220	Total Cyanide	Weak Acid Dissociable Cyanide		
01	10/13	17:15	W-255	8	X	X	X	X	X	* Asterisk indicates impacts observed in field.
02	10/13		Blind Dup 2	8	X	X	X	X	X	
03	10/13	13:30	Equip Rinse - Blank	4	X		X	X		
04	10/13	14:30	W-201	3		X				Run total weak acid dissociable cyanide only is total cyanide is detected
05	10/13	14:15	W-205							
06	10/13	11:00	W-46D	3	X					
07			TRIP BLANK	2	X					
<p>Samples for PAHs, cyanides, & metals analyses were field-filtered.</p> <p>Samples were used immediately after collection & shipped in a cooler with ice.</p>										

Relinquished by: (Signature) <i>Marta Stewart</i>	Date/Time 10/13/95	Received by: (Signature) Fed Ex air bill # 2758571501	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature) <i>Heidi</i>	Date/Time 10-14-95 10:30	Received by: (Signature) <i>[Signature]</i>	Relinquished by: (Signature)	Date/Time	Received by: (Signature)

Relinquished by: (Signature)	Date/Time	Received for laboratory by: (Signature)	Date/Time
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REMARKS:



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95-10-124

CHAIN OF CUSTODY RECORD

PROJ. NO.		PROJECT NAME		NO. OF CONTAINERS	PATE S.310 Total Cyanide Weak Acid Dissociable Cyanide Dissolved Fe, Ni, Cu				REMARKS
SAMPLERS:									
RECEIVING LABORATORY:									
SAMPLE NO.	DATE (1995)	TIME	SAMPLE LOCATION						
06	10/13	11:00	W-46D	5	X	X	X	X	* Asterisk indicates impacts observed in field
05	10/13	14:15	W-20S	5	X	X	X	X	
04	10/13	14:30	W-20I	5	X	X	X	X	
									Run weak acid dissociable cyanide only if total cyanide is detected
									Samples for PATEs, total + w.a.d. cyanide, & metals were field-filtered.
									Samples were used immediately after collection & shipped in cooler with ice.

Relinquished by: (Signature) <i>Matthew Stinkert</i>	Date/Time 10/13/95	Received by: (Signature) <i>Red Ex. Art Lill</i>	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature) <i>Red Ex.</i>	Date/Time 10-14-95 10:30	Received by: (Signature) <i>[Signature]</i>	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received for laboratory by: (Signature)	Date/Time		

REMARKS:



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No. 0753

CHAIN OF CUSTODY RECORD

95-10-102

PROJ. NO. 3-0887-303		PROJECT NAME Third Ward MBP Site			NO. OF CONTAINERS	PATs 8310 Total Cyanide Weak Acid Dissolvable Dissolved Fe, Mg, Ca					PS 40/4	
SAMPLERS: Marta Stewart Rachel Colld												
RECEIVING LABORATORY: ATE - Fort Collins												
SAMPLE NO.	DATE (1995)	TIME	SAMPLE LOCATION		NO. OF CONTAINERS	REMARKS						
1	10/12	18:30	W-26S *	05		5	X	X	X	X	X	* Asterisk indicates field impacts
2	10/12	18:30	W-26I *	06	5	X	X	X	X	X		
4	10/13/95										Samples for PATs, Cyanides, + metals field filtered Run weak acid dissolvable cyanide only if total cyanide is detected Samples were iced immediately after collection - shipped in a cooler with ice.	
Relinquished by: (Signature) Marta Stewart		Date/Time 10/12/95 10am		Received by: (Signature) Fedor		Relinquished by: (Signature) Fedor		Date/Time		Received by: (Signature) PS 118 GO, AITCO		
Relinquished by: (Signature)		Date/Time		Received by: (Signature)		Relinquished by: (Signature)		Date/Time		Received by: (Signature)		
Relinquished by: (Signature)		Date/Time		Received for laboratory by: (Signature)		Date/Time						
REMARKS:												



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No. 0752

CHAIN OF CUSTODY RECORD

95-10-102

PROJ. NO.		PROJECT NAME		NO. OF CONTAINERS	ANALYSES					REMARKS
3-0887-303		Third Ward MGP Site			PAHs 8310	BTEX 8320	Total Cyanide	Weak Acid Dissociable Cyanide	Dissolved R+Mn+Cu	
SAMPLERS:										
Matthew Kunkel & Rachel Allen										
RECEIVING LABORATORY:										
A.T.I. - Fort Collins										
SAMPLE NO.	DATE (YYYY)	TIME	SAMPLE LOCATION							
15	10/11	12:00	W-225 *	10	X	X	X	X		
16	10/11	15:15	W-14 *	08	X	X	X	X		
17	10/12	16:00	W-19 *	07	X	X	X	X	* Asterisk next to sample ID indicates impacts observed in field.	
<p>Samples for PAHs, Cyanide, and metals analyses were field-filtered</p> <p>Run weak acid dissociable cyanide only if total cyanide is detected.</p> <p>Samples were iced immediately after collection & shipped in a cooler with ice.</p>										
Relinquished by: (Signature)		Date/Time		Received by: (Signature)		Date/Time		Received by: (Signature)		
Matthew Kunkel		10/12/15 10pm		Federal Express		FedEx		OK 3:05 PM 10/12/15		
Relinquished by: (Signature)		Date/Time		Received by: (Signature)		Date/Time		Received by: (Signature)		
Relinquished by: (Signature)		Date/Time		Received for laboratory by: (Signature)		Date/Time				
REMARKS:										

pg 3 of 4



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No. 0750

CHAIN OF CUSTODY RECORD

95-10-P2

pg 1 of 4

PROJ. NO.		PROJECT NAME		NO. OF CONTAINERS	<i>PAHs 8310</i> <i>Leak Acid Cyanide</i> <i>Dissolved Fe, Mg, Ca</i>					REMARKS	
3-0887-303		Third Windy MGP Site									
SAMPLERS: <i>Matthew Stant</i> <i>Rocky Cole</i>											
RECEIVING LABORATORY: <i>ATT Fort Collins</i>											
SAMPLE NO.	DATE	TIME	SAMPLE LOCATION								
01	10/12	11:50	W-41D *	5	X	X	X	X		EXT SUB	
02	10/12	16:30	W-235 * mes <i>no asterisk!</i>	5	X	X	X	X		* Asterisk next to Sample ID indicates field observation of impacts	
										* Samples for PAHs, cyanide, and metals field-filtered	
										Run weak acid dissolvable cyanide only if total cyanide is detected	
										Samples were iced immediately after collection & shipped in a cooler with ice.	
Relinquished by: (Signature) <i>Matthew Stant</i>		Date/Time 10/12/95 10pm		Received by: (Signature) <i>Fed Ex</i> 275 857 1616		Relinquished by: (Signature) <i>Fed Ex</i>		Date/Time		Received by: (Signature) <i>Shell</i> 09/12/95 A120	
Relinquished by: (Signature)		Date/Time		Received by: (Signature)		Relinquished by: (Signature)		Date/Time		Received by: (Signature)	
Relinquished by: (Signature)		Date/Time		Received for laboratory by: (Signature)				Date/Time			
REMARKS:											



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No. 0751

CHAIN OF CUSTODY RECORD

95.10.102
PJ:off 4

PROJ. NO.		PROJECT NAME		NO. OF CONTAINERS							REMARKS
3-0887-303		MGF Third Ward Site									
SAMPLERS:		Matthew Stankard									
RECEIVING LABORATORY:		ATTI - Fort Collins									
SAMPLE NO.	DATE	TIME	SAMPLE LOCATION		PAHS B310	BTEX B020	Total Cyanide	Weak Acid Dissociable Cyanide	Dissolved Fe/Mn/P	Other Metals	
03	10/12	10:45	W-415 *	03	10	X	X	X	X	X	
04			Blind Dup	04	8	X	X	X	X	X	
05	10/12	18:30	W-265 *	05	3	X					* Asterisk next to sample ID indicates impacts observed in field
06	10/12	18:30	W-261 *	06	3	X					
07	10/12	10:00	W-19 *	07	3	X					
08	10/12	14:15	W-14 *	08	3	X					Samples for PAHS, Cyanide, and metals analyses were field filtered.
09	10/12	11:50	W-41D *	09	3	X					
10	10/12	12:20	ERB-1	10	3	X					
11	10/12	12:00	W-225 *	11	3	X					Weak acid dissociable cyanide should be run only if total cyanide is detected.
12	10/12	10:45	W-415 *	12	3	X					
13	-	-	TRIP BLANK	13	2	X					
02	10/12	16:30	W-235	02	3	X					Samples were iced immediately after collection & shipped in a cooler with ice.
Relinquished by: (Signature)		Date/Time		Received by: (Signature)		Date/Time		Received by: (Signature)			
Matthew Stankard		10/12/95 10pm		Federal Express Airbill # 715857161 (6)		Federal		D. Hill 01/13/95 + ITCU			
Relinquished by: (Signature)		Date/Time		Received by: (Signature)		Date/Time		Received by: (Signature)			
Relinquished by: (Signature)		Date/Time		Received for laboratory by: (Signature)		Date/Time					
REMARKS:											

PAHS B310
BTEX B020
Total Cyanide
Weak Acid Dissociable Cyanide
Dissolved Fe/Mn/P
Other Metals

MPHS
these tests sent to ATTI Pensacola.



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No. 0755

CHAIN OF CUSTODY RECORD

95-10-155

PROJ. NO.		PROJECT NAME		NO. OF CONTAINERS	PAHs PCBs BTX DOA Dissolved Fe, Mn, Cu Total Cyanide Weak Acid Dissociable Cyanide					REMARKS
SAMPLERS:										
RECEIVING LABORATORY:										
3-0887-303		Third Ward MGP Site								
martha Steinbart										
ATI - Fort Collins										
SAMPLE NO.	DATE (1993)	TIME	SAMPLE LOCATION							
01	10/15	16:15	W-27 D	3	X	X	X	X	X	# Asterisk indicates field observation of impacts.
02	10/15	17:45	W-42 D	3	X	X	X	X	X	
03	10/16	9:30	W-22 I *	3	X	X	X	X	X	
04	10/16	12:00	W-16 *	3		X				Run weak acid dissociable cyanide only if total cyanide is detected
05	10/16	15:15	W-22 I (MPS) ERR-2	3		X				
06	10/15	19:15	W-13	3		X				PAH, metals, + cyanides samples all field-filtered.
07	10/16	15:45	W-45 D	3		X				
08	10/16	18:45	W-43 D *	3		X				
09			TRIP BLANK	2		X				Samples were placed on ice immediately after collection, + maintained + shipped in a cooler with ice.

Ps 143

Relinquished by: (Signature) <i>Martha Steinbart</i>	Date/Time 10/17/93 15:00	Received by: (Signature) <i>Federle</i>	Date/Time 10/17/93 15:00	Relinquished by: (Signature) <i>Federle</i>	Date/Time	Received by: (Signature) <i>[Signature]</i>	Date/Time
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time

Relinquished by: (Signature)	Date/Time	Received for laboratory by: (Signature)	Date/Time
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REMARKS:



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 Fax# (612) 222-8914

No. 0756

CHAIN OF CUSTODY RECORD


95-10-155

PROJ. NO.		PROJECT NAME		NO. OF CONTAINERS					REMARKS
3-0887-303		Third Ward M&P Site							
SAMPLERS:		Matthew Stanhart							
RECEIVING LABORATORY:		ATI - Fort Collins							
SAMPLE NO.	DATE	TIME	SAMPLE LOCATION						
06	10/15	14:15	W-13	5	X	X	X	X	* Asterisk next to sample ID
04	10/16	12:00	W-16 *	5	X	X	X	X	indicates field observation of impact
05	10/16	15:15	ERB-2	4	X	X	X		
									Run Weak Acid Dissolvable Cyanide only if total cyanide is detected
									Samples were placed in a cooler within immediately after collection, maintained + shipped in the cooler with ice.

py 2-13

Relinquished by: (Signature) MRS Stanhart Date/Time 10/17/15
 Received by: (Signature) Rede Date/Time 10/12/15 15:00
 Relinquished by: (Signature) _____ Date/Time _____
 Received by: (Signature) _____ Date/Time _____
 Relinquished by: (Signature) _____ Date/Time _____
 Received for laboratory by: (Signature) _____ Date/Time _____

REMARKS:



RETEC
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No. 0759

CHAIN OF CUSTODY RECORD

9510155

PROJ. NO. 30887-303	PROJECT NAME Third Ward MGP Site
SAMPLERS: Mantle Stairhart	
RECEIVING LABORATORY: ATI - Fort Collins	

SAMPLE NO.	DATE (1995)	TIME	SAMPLE LOCATION	NO. OF CONTAINERS	PARAMS				REMARKS
					Total Cyanide	Weak Acid Dissolvable Cyanide	Free Cyanide	Other	
07	10/16	15:45	W-45D	5	X	X	X	X	# Asterisk indicates field observation of impacts
08	10/16	18:45	W-43D *	5	X	X	X	X	
									Run weak acid dissolvable cyanide only if total cyanide is detected.
									Samples were placed in a cooler with ice immediately after collection; maintained & shipped in a cooler with ice.

Relinquished by: (Signature) Mantle Stairhart	Date/Time 10/17/95 10/16/95 15:00	Received by: (Signature) # Fed Ex # 27585-71572	Relinquished by: (Signature) Fed Ex	Date/Time	Received by: (Signature) Hill
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)

Relinquished by: (Signature)	Date/Time	Received for laboratory by: (Signature)	Date/Time
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REMARKS:




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No. 0758

CHAIN OF CUSTODY RECORD

510308

PROJ. NO. 3-0887-303			PROJECT NAME Third Ward MBP Site		NO. OF CONTAINERS	Total P, Ammonia-N, Nitrate Soluble P, Nitrate & Sulfides / / / /						REMARKS				
SAMPLERS: Martha Stanhart																
RECEIVING LABORATORY: ATI - Pensacola																
SAMPLE NO.	DATE	TIME	SAMPLE LOCATION		NO. OF CONTAINERS	Total P	Ammonia-N	Nitrate	Soluble P	Nitrate & Sulfides	REMARKS					
1	10/16	9:20	W-22I		3	✓	✓	✓								
2	10/16	18:15	W-43D		3	✓	✓	✓								
3	10/15	19:15 <i>(1975)</i>	W-13		2	✓			✓							
												Samples were placed on ice immediately after collection, & maintained & shipped in a cooler with ice.				
Relinquished by: (Signature) Martha Stanhart					Date/Time 10/16/15 12:00	Received by: (Signature) Pd Ex Mic'bill # 748 2913174					Relinquished by: (Signature)		Date/Time	Received by: (Signature)		
Relinquished by: (Signature)					Date/Time	Received by: (Signature)					Relinquished by: (Signature)		Date/Time	Received by: (Signature)		
Relinquished by: (Signature)					Date/Time	Received for laboratory by: (Signature) Bob Edger					Date/Time 10/17/15 0930					
REMARKS:													 <p>REMEDICATION TECHNOLOGIES 413 Wacouta Street Suite 800 St. Paul, MN 55101 (612) 222-0841 Fax# (612) 222-8914</p>			

No. 0704

CHAIN OF CUSTODY RECORD

510 281

PROJ. NO.		PROJECT NAME		NO. OF CONTAINERS	Total P, Ammonia, Nitrate, Soluble P, Nitrate, Sulfides					REMARKS
3-0887-303		Third Ward MGP Site								
SAMPLERS: Marko Stanburd; Rachel Callahan (MRS)										
RECEIVING LABORATORY: ATI - Pensacola										
SAMPLE NO.	DATE	TIME	SAMPLE LOCATION							
1	10/13	12:15	W-25S	3	X	X	X			
2	10/13	14:15	W-20S	3	X	X	X			
3	10/13	14:30	W-20I	3	X	X	X			
4	10/13	11:00	W-46D	3	X	X	X			
Samples were iced immediately after collection & shipped in a cooler with ice.										
Relinquished by: (Signature) Marko Stanburd		Date/Time 10/13/01	Received by: (Signature) FedEx Airbill # 748 291 3163		Relinquished by: (Signature)		Date/Time	Received by: (Signature)		
Relinquished by: (Signature)		Date/Time	Received by: (Signature)		Relinquished by: (Signature)		Date/Time	Received by: (Signature)		
Relinquished by: (Signature)		Date/Time	Received for laboratory by: (Signature) Toby Espen		Date/Time 10/14/01 09:30					
REMARKS:										

PINK COPY - Sampler

YELLOW COPY - Laboratory

WHITE COPY - RETEC



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No. 0754

CHAIN OF CUSTODY RECORD

510258

PROJ. NO.		PROJECT NAME		NO. OF CONTAINERS	Total P, Ammonia - N, Nitrate	Soluble P, Nitrate, Sulfate	Sulfides					REMARKS	
3-0887-303		Third Ward MGP Site											
SAMPLERS:		<i>Matthew Stewart</i>											
RECEIVING LABORATORY:		ATI - Pensacola											
SAMPLE NO.	DATE (1915)	TIME	SAMPLE LOCATION										
	10/12	18:30	W-26 I	3	X	X	X						
	10/12	10:45	W-41 S	3	X	X	X						
	10/12	16:30	W-23 S	3	X	X	X						
												Samples were iced immediately after collection & shipped in a cooler with ice.	
Relinquished by: (Signature)		Date/Time		Received by: (Signature)		Date/Time		Relinquished by: (Signature)		Date/Time		Received by: (Signature)	
<i>Matthew Stewart</i>		10/12/15 10 pm		Fed Ex Airbill # 7482913152									
Relinquished by: (Signature)		Date/Time		Received by: (Signature)		Date/Time		Relinquished by: (Signature)		Date/Time		Received by: (Signature)	
Relinquished by: (Signature)		Date/Time		Received for laboratory by: (Signature)		Date/Time							
				<i>Robt Esp</i>		10/13/15 0949							
REMARKS:													



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No. 0760

CHAIN OF CUSTODY RECORD

PROJ. NO.		PROJECT NAME		NO. OF CONTAINERS	<i>Total heterotrophs</i> <i>PAH-degraders</i> <i>Benzene-degraders</i>			REMARKS
SAMPLERS:		RECEIVING LABORATORY:						
SAMPLE NO.	DATE (MM/YY)	TIME	SAMPLE LOCATION					
3-0887-303		Third Wind MGP						
Martha Starkent / Rachel Callahan (MMS)		RETEC Seattle						
	10/15	14:15	W-13	2	✓	✓	Second vials, if included, are extra.	
	10/16	9:30	W-22I	2	✓	✓		
	10/13	14:15	W-20S	2	✓	✓		
	10/13	17:15	W-25S	2	✓	✓		
	10/12	10:45	W-41S	1	✓	✓		
	10/13	11:00	W-46D	2	✓	✓		
	10/13	14:30	W-20I	2	✓	✓		
	10/12	16:30	W-23S	1	✓	✓		
	10/12	18:30	W-26S	2	✓	✓		
	10/16	18:45	W-43D	2	✓	✓		
							Samples were placed on ice immediately after collection, maintained on ice, shipped in a cooler with ice.	

Relinquished by: (Signature) <i>Martha Starkent</i>	Date/Time 10/16/95	Received by: (Signature) # <i>RETEC</i> 89555 05 053	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received for Laboratory by: (Signature) <i>John Boyd</i>	Date/Time 10/17/95		
REMARKS:					



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04/19/98 07:02 FAX 208 824 2839 RETEC-SEATTLE, WA RETEC ST PAUL 002/002

APPENDIX G

TABULATED ANALYTICAL DATA

TABLE G-1
LABORATORY ANALYTICAL RESULTS FOR PAHs, BTEX AND TOTAL CYANIDE
PETERS = JOHNSON PROPERTY, AREAS A, B AND C
THIRD WARD MGP SITE

RETEC SAMPLE ID LABORATORY ID SAMPLE DEPTH (Feet)	TTA2-1 (5-6) 95-04-221-10 5-6'	TTA3-2 (7') 95-04-221-09 7'	TTA4-1 (1-2') 95-04-221-16 1-2'	TTA4-2 (7') 95-04-221-14 7'	TTB2-5 (8-9') 95-04-221-11 8-9'	Duplicate 2 (1) 95-04-221-12	TTB3-1 (3') 95-04-221-15 3'	TTC1-2 (2-3') 95-04-221-17 2-3'	TTC4-2 (4-5') 95-04-221-01 4-5'	TTC5-1 (6-7') 95-04-221-13 6-7'
PAHS										
Method 8310 (ug/Kg)										
Naphthalene	<12000	<12000	<2200 UJ	<140000	250000	67000	<1200	140000	<13000	<12000
Acenaphthylene	<12000	<12000	<2200 UJ	<140000	<150000	<30000	<1200	<130000	<13000	<12000
1-Methylnaphthalene	<12000	<12000	<2200 UJ	<140000	<150000	<30000	<1200	<130000	<13000	<12000
2-Methylnaphthalene	<12000	<12000	<2200 UJ	<140000	<150000	<30000	<1200	<130000	<13000	<12000
Acenaphthene	<20000	<20000	<3600 UJ	<230000	<250000	<49000	<1900	<220000	<22000	<20000
Fluorene	<1600	3500	500 J	45000	37000	17000	<150	28000	<1800	<1600
Phenanthrene	4700	10000	4800 J	150000	87000	57000	1400	62000	7200	3400
Anthracene	1000	3700	<72 UJ	49000	24000	16000	150	23000	<440	550
Fluoranthene	8100	<1200	<220 UJ	92000	51000	38000	1600	60000	5900	<1200
Pyrene	6700	9400	2900 J	85000	28000	34000	1700	<18000	<1800	14000
Benzo(a)anthracene	3600	5300	1700 J	5200	<5000	13000	750	16000	<440	5000
Chrysene	4200	6400	2400 J	27000	14000	17000	1600	18000	<890	8700
Benzo(b)fluoranthene	2600	5400	<72 UJ	<4600	<5000	4200	620	<4500	<440	3700
Benzo(k)fluoranthene	1300	2900	<72 UJ	<4600	<5000	<990	<39	<4500	<440	<400
Benzo(a)pyrene	3500	8600	<72 UJ	5800	<5000	8700	950	<4500	<440	7100
Dibenzo(a,h)anthracene	<1200	<1200	<220 UJ	<14000	<15000	<3000	<120	<13000	<1300	1200
Benzo(g,h,i)perylene	2400	3100	1100 J	<18000	<20000	4100	1200	<18000	<1800	3100
Indeno(1,2,3-cd)pyrene	2100	2500	710 J	<14000	<15000	3300	<120	<13000	<1300	2000
Total PAHs (mg/Kg)	40.20	60.80	14.11 J	459.00	491.00	279.30	9.97	347.00	13.10	48.75
BTEX Method 8020 (ug/Kg)										
Benzene	<3.0	22	6.7	3900	1200	5000	17	20000	<3.3	9.3
Toluene	3.2	15	4.8	2300	130	620	<2.9	13000	<3.3	22
Ethylbenzene	<3.0	1500	16	84000	8100	16000	4.2	250000	<3.3	4.9
Total Xylenes	<6.0	1600	30	170000	6200	12000	12	380000	<6.6	19
CYANIDE Method 9010 (mg/Kg)										
Total Cyanide	5.7	1.4	<0.27	2.0	2.5	1.4	<0.29	100	<0.32	3.1

Notes:

(1) Duplicate of sample TTB2-5 (8-9')

J = Result qualified as estimated due to holding time violation.

UJ = Sample quantitation limit is estimated due to holding time violation.

TABLE G-2
LABORATORY ANALYTICAL RESULTS FOR PAHs, BTEX AND TOTAL CYANIDE
CITY PROPERTY
THIRD WARD MGP SITE

RETEC SAMPLE ID LABORATORY ID SAMPLE DEPTH (Feet)	TTE1-2 (10-11') 95-04-222-04 10-11'	TTE2-1 (7') 95-04-222-05 7'	TTF2-1 (3') 95-04-222-03 3'	TTF3-1 (7') 95-04-222-02 7'	TTG2-1 (3-4') 95-04-222-06 3-4'	TTG4-1 (3-4') 95-04-222-07 3-4'	DB-6 (2-4') 95-04-221-01 2-4'	DB-7 (0-2') 95-04-221-02 0-2'	B-47 (2-4') 95-04-221-03 2-4'	Duplicate 1' 95-04-221-05	B-47 (16-18') 95-04-221-04 16-18'
PAHs											
Method 8310 (ug/Kg)											
Naphthalene	<12000	<120	<130000	1700	<11000	<120	220000	<12000	<11000	<11000	150000
Acenaphthylene	<12000	<120	<130000	<1200	<11000	<120	<13000	<12000	<11000	<11000	<120000
1-Methylnaphthalene	<12000	<120	<130000	<1200	<11000	<120	49000	<12000	<11000	<11000	<120000
2-Methylnaphthalene	<12000	<120	140000	<1200	<11000	240	75000	<12000	<11000	<11000	<120000
Acenaphthene	<20000	<190	<210000	<2000	<19000	<200	<22000	<20000	<18000	<18000	<210000
Fluorene	<1600	<15	40000	530	<1500	24	12000	<1600	<1500	<1500	62000
Phenanthrene	3300	160	65000	1700	7200	230	32000	11000	2300	1900	130000
Anthracene	1300	35	18000	800	3200	22	6800	680	<370	<370	27000
Fluoranthene	8300	260	58000	2100	13000	200	26000	30000	7200	5000	<12000
Pyrene	6300	250	<17000	1700	12000	33	<1800	17000	4700	4100	22000
Benzo(a)anthracene	2500	<3.9	17000	760	4700	<3.9	<440	16000	3900	3300	<4100
Chrysene	2700	<7.7	<8500	1200	5600	110	3500	20000	6500	5000	<8200
Benzo(b)fluoranthene	1700	130	<4300	<39	3600	27	890	24000	7400	5700	<4100
Benzo(k)fluoranthene	800	<3.9	<4300	<39	1600	<3.9	<440	6900	<370	1900	<4100
Benzo(a)pyrene	1900	200	<4300	3200	<370	<3.9	950	14000	<370	3700	<4100
Dibenzo(a,h)anthracene	<1200	<12	<13000	420	<1100	<12	<1300	1600	<1100	<1100	<12000
Benzo(g,h,i)perylene	<1600	130	<17000	2600	3000	<16	<1800	11000	<1500	4000	<16000
Indeno(1,2,3-cd)pyrene	1200	100	<13000	1900	2400	<12	<1300	11000	<1100	<1100	<12000
Total PAHs (mg/Kg)	30.00	1.27	338.00	18.61	56.30	0.89	426.14	163.18	32.00	34.60	391.00
BTEX Method 8020 (ug/Kg)											
Benzene	<3.0	<2.9	24000	<3.0	<2.8	4.1	3800	NA	3.0	3.8	150
Toluene	5.1	<2.9	1800	9.5	<2.8	15	<66	NA	57	54	180
Ethylbenzene	<3.0	<2.9	110000	88	<2.8	5.1	14000	NA	3.7	4.2	2000
Total Xylenes	<5.9	<5.8	53000	56	<5.6	9.1	29000	NA	10	13	6200
CYANIDE Method 9010 (mg/Kg)											
Total Cyanide	<0.28	<0.29	12	4.6	<0.27	<0.29	<0.31	<0.29	<0.27	<0.28	<0.32

Notes:

'Duplicate of sample of B-47(2-4')

TABLE G-3
RESULTS OF REMEDIATION PARAMETER ANALYSES
PETERS=JOHNSON PROPERTY
THIRD WARD MGP SITE¹

PARAMETER	COMPOSITE #11	COMPOSITE #12	COMPOSITE #13
ALKALI CONTENT			
pH (standard units)	7.3	7.5	7.5
SAR (standard units)	1.1	1.2	0.9
EC (mmhos/cm)	3.3	3.4	1.5
Calcium (meq/L)	22	26.4	5.5
Magnesium (meq/L)	15.6	14.0	11.5
Sodium (meq/L)	4.7	5.5	2.7
Potassium (meq/L)	1.9	1.3	2.7
SILICA OXIDE			
SiO ₂ (%)	65	53	43
ALUMINUM OXIDE			
Al ₂ O ₃ (%)	8.8	7.1	5.1
CHLORIDE			
Chloride (mg/Kg)	<120	<120	<130
TOTAL ORGANIC CARBON			
TOC (%)	1.1	3.3	7.6
PERCENT MOISTURE			
Moisture (%)	16.57	15.29	25.27
TOTAL METALS (mg/Kg)			
Antimony	<3	<2	<3
Arsenic	4	5	5
Barium	50	320	50
Beryllium	<0.6	<0.6	<0.7
Cadmium	<0.6	0.8	<0.7
Chromium	11	13	9
Copper	21	21	24
Lead	36	180	120
Nickel	13	10	7
Potassium	1800	1600	1100
Selenium	1.2	1.0	1.8
Thallium	<2	<1	<1
TRPH			
TRPH (mg/Kg)	590	1500	5500
GRAIN SIZE DISTRIBUTION			
Sand (%)	68	77	81
Silt (%)	17	11	9
Clay (%)	15	12	10
Texture	Sandy Loam	Sandy Loam	Sandy Loam
BULK DENSITY			
Bulk Density (g/cm ³)	1.7	1.6	1.2

Notes:

¹See Appendix D for a description of samples used to create composites.

TABLE G-4
RESULTS OF REMEDIATION PARAMETER ANALYSES
CITY PROPERTY
THIRD WARD MGP SITE¹

PARAMETER	Composite #14	Composite #15
ALKALI CONTENT		
pH (standard units)	7.7	8.1
SAR (standard units)	1.5	3.2
EC (mmhos/cm)	3.6	1.2
Calcium (meq/L)	12.5	2.4
Magnesium (meq/L)	23.8	4.9
Sodium (meq/L)	6.3	6.2
Potassium (meq/L)	6.3	6.2
SILICA OXIDE		
SiO ₂ (%)	59	55
ALUMINUM OXIDE		
Al ₂ O ₃ (%)	7.7	8.9
CHLORIDE		
Chloride (mg/Kg)	<130	<120
TOTAL ORGANIC CARBON		
TOC (%)	4.0	2.9
PERCENT MOISTURE		
Moisture (%)	20.02	16.24
TOTAL METALS (mg/Kg)		
Antimony	<3	<2
Arsenic	8	7
Barium	50	80
Beryllium	<0.6	<0.6
Cadmium	0.6	0.7
Chromium	13	29
Copper	22	40
Lead	780	160
Nickel	14	21
Potassium	1700	1900
Selenium	2.9	1.2
Thallium	<1	<1
TRPH		
TRPH (mg/Kg)	5800	2200
GRAIN SIZE DISTRIBUTION		
Sand (%)	78	70
Silt (%)	10	10
Clay (%)	12	20
Texture	Sandy Loam	Sandy Loam
BULK DENSITY		
Bulk Density (g/cm ³)	2.0	1.9

Notes:

¹See Appendix D for a description of samples used to create composites.

TABLE G-5
RESULTS OF HAZARDOUS WASTE CHARACTERIZATION ANALYSES
PETERS=JOHNSON PROPERTY
THIRD WARD MGP SITE

PARAMETER	TTC1-4 (3-4')	Composite #2	Composite #3	Composite #4	Composite #5
IGNITABILITY (°F)	>100	>100	>100	>100	>100
REACTIVITY					
Reactive Sulfide (mg/Kg)	200	<6	<6	<6	<5
Reactive Cyanide (mg/Kg)	<0.34	<0.30	<0.32	<0.31	<0.26
CORROSIVITY (pH St. Units)	9.02	8.79	9.20	9.04	9.44
TOXICITY					
TCLP METALS (ug/L)					
Arsenic	24.5	40.6	21.1	25.5	21.3
Barium	681	994	891	654	824
Cadmium	7.3	6.8	7.9	6.3	7.5
Chromium	<6.0	<6.0	<6.0	<6.0	<6.0
Lead	11.4	<9.0	73.4	58.7	<9.0
Mercury	<0.80	<0.80	<0.80	<0.80	<0.80
Selenium	<19.0	60.7	19.8	<19.0	<19.0
Silver	<8.0	<8.0	<8.0	<8.0	<8.0
TCLP VOCs (mg/L)					
Vinyl Chloride	<0.1	<0.1	<0.1	<0.1	<0.1
1,1-Dichloroethene	<0.1	<0.1	<0.1	<0.1	<0.1
Chloroform	<0.1	<0.1	<0.1	<0.1	0.03 J
1,2-Dichloroethene	<0.1	<0.1	<0.1	<0.1	<0.1
Methyl Ethyl Ketone	<0.1	<0.1	<0.1	<0.1	<0.1
Carbon Tetrachloride	<0.1	<0.1	<0.1	<0.1	<0.1
Trichloroethene	<0.1	<0.1	<0.1	<0.1	<0.1
Benzene	1.0	<0.1	0.03 J ¹	0.08 J	<0.1
Tetrachloroethene	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorobenzene	<0.1	<0.1	<0.1	<0.1	<0.1
TCLP SVOCs (mg/L)					
o-Cresol	<0.1	<0.1	<0.1	<0.1	<0.1
m-Cresol	<0.1	<0.1	<0.1	<0.1	<0.1
p-cresol	<0.1	<0.1	<0.1	<0.1	<0.1
Total o,m,p-Cresol	<0.1	<0.1	<0.1	<0.1	<0.1
1,4-Dichlorobenzene	<0.1	<0.1	<0.1	<0.1	<0.1
2,4-Dinitrotoluene	<0.1	<0.1	<0.1	<0.1	<0.1
Hexachlorobenzene	<0.1	<0.1	<0.1	<0.1	<0.1
Hexachlorobutadiene	<0.1	<0.1	<0.1	<0.1	<0.1
Hexachloroethane	<0.1	<0.1	<0.1	<0.1	<0.1
Nitrobenzene	<0.1	<0.1	<0.1	<0.1	<0.1
Pentachlorophenol	<0.5	<0.5	<0.5	<0.5	<0.5
Pyridine	<0.1	<0.1	<0.1	<0.1	<0.1
2,4,5-Trichlorophenol	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,6-Trichlorophenol	<0.1	<0.1	<0.1	<0.1	<0.1

Notes:

¹Estimated value, analyte found below detection limit

TABLE G-6
RESULTS OF HAZARDOUS WASTE CHARACTERIZATION ANALYSES
CITY PROPERTY
THIRD WARD MGP SITE

PARAMETER	Composite #6	Composite #7	Composite #8	Composite #9	Composite #10
IGNITABILITY (°F)	>100	>100	>100	>100	>100
REACTIVITY					
Reactive Sulfide (mg/Kg)	18	<6	<6	<6	120
Reactive Cyanide (mg/Kg)	<0.30	<0.30	<0.29	<0.30	<0.29
CORROSIVITY (pH St. Units)	9.24	9.70	9.37	9.07	9.34
TOXICITY					
TCLP METALS (ug/L)					
Arsenic	<16.0	<16.0	18.2	16.7	20.5
Barium	743	1200	907	776	592
Cadmium	7.7	6.1	8.5	7.6	8.2
Chromium	<6.0	<6.0	<6.0	<6.0	<6.0
Lead	<9.0	<9.0	<9.0	<9.0	31.4
Mercury	<0.80	<0.80	<0.80	<0.80	<0.80
Selenium	<19.0	<19.0	<19.0	<19.0	<19.0
Silver	<8.0	<8.0	<8.0	<8.0	<8.0
TCLP VOCs (mg/L)					
Vinyl Chloride	<0.1	<0.1	<0.1	<0.1	<0.1
1,1-Dichloroethene	<0.1	<0.1	<0.1	<0.1	<0.1
Chloroform	<0.1	<0.1	<0.1	<0.1	<0.1
1,2-Dichloroethene	<0.1	<0.1	<0.1	<0.1	<0.1
Methyl Ethyl Ketone	<0.1	<0.1	<0.1	<0.1	<0.1
Carbon Tetrachloride	<0.1	<0.1	<0.1	<0.1	<0.1
Trichloroethene	<0.1	<0.1	<0.1	<0.1	<0.1
Benzene	<0.1	<0.1	<0.1	<0.1	<0.1
Tetrachloroethene	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorobenzene	<0.1	<0.1	<0.1	<0.1	<0.1
TCLP SVOCs (mg/L)					
o-Cresol	<0.1	<0.1	<0.1	<0.1	<0.1
m-Cresol	<0.1	<0.1	<0.1	<0.1	<0.1
p-cresol	<0.1	<0.1	<0.1	<0.1	<0.1
Total o,m,p-Cresol	<0.1	<0.1	<0.1	<0.1	<0.1
1,4-Dichlorobenzene	<0.1	<0.1	<0.1	<0.1	<0.1
2,4-Dinitrotoluene	<0.1	<0.1	<0.1	<0.1	<0.1
Hexachlorobenzene	<0.1	<0.1	<0.1	<0.1	<0.1
Hexachlorobutadiene	<0.1	<0.1	<0.1	<0.1	<0.1
Hexachloroethane	<0.1	<0.1	<0.1	<0.1	<0.1
Nitrobenzene	<0.1	<0.1	<0.1	<0.1	<0.1
Pentachlorophenol	<0.5	<0.5	<0.5	<0.5	<0.5
Pyridine	<0.1	<0.1	<0.1	<0.1	<0.1
2,4,5-Trichlorophenol	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,6-Trichlorophenol	<0.1	<0.1	<0.1	<0.1	<0.1

TABLE G-7
RESULTS OF TRIP BLANK AND EQUIPMENT BLANK ANALYSES
THIRD WARD MGP SITE

RETEC SAMPLE ID LABORATORY ID	Trip Blank 95-04-221-08	Trip Blank 95-04-222-08	EB-1 95-04-221-06	EB-2 95-04-221-07
PAHs				
Method 8310 (ug/Kg)				
Naphthalene	NA ¹	NA	<0.30	<0.30
Acenaphthylene	NA	NA	<0.30	<0.30
1-Methylnaphthalene	NA	NA	0.70	0.86
2-Methylnaphthalene	NA	NA	<0.30	<0.30
Acenaphthene	NA	NA	<0.50	<0.50
Fluorene	NA	NA	0.098 BU	<0.040
Phenanthrene	NA	NA	0.17 BU	0.031 BU
Anthracene	NA	NA	0.024 BU	<0.010
Fluoranthene	NA	NA	0.075 BU	<0.030
Pyrene	NA	NA	<0.040	<0.040
Benzo(a)anthracene	NA	NA	0.018	<0.010
Chrysene	NA	NA	<0.020	<0.020
Benzo(b)fluoranthene	NA	NA	<0.010	<0.010
Benzo(k)fluoranthene	NA	NA	<0.010	<0.010
Benzo(a)pyrene	NA	NA	<0.010	<0.010
Dibenzo(a,h)anthracene	NA	NA	<0.030	<0.030
Benzo(g,h,i)perylene	NA	NA	<0.040	<0.040
Indeno(1,2,3-cd)pyrene	NA	NA	<0.030	<0.030
BTEX Method 8020 (ug/Kg)				
Benzene	<0.5	<0.5	<0.5	<0.5
Toluene	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	<0.5	<0.5	<0.5	<0.5
Total Xylenes	<1.0	<1.0	<1.0	<1.0
CYANIDE Method 9010 (mg/Kg)				
Total Cyanide	NA	NA	<0.005	<0.005

Notes:

¹Not analyzed.

B = Analyte found in laboratory blank.

U = Material analyzed for but has been qualified as not detected due to blank contamination (5X Rule).

**TABLE G-8
GROUNDWATER ANALYTICAL RESULTS - OCTOBER 1995
THIRD WARD MGP SITE**

SAMPLE LOCATION RETEC SAMPLE ID LABORATORY ID	W-13 W-13 95-10-155-06	W-14 W-14 95-10-102-08	W-16 W-16 95-10-155-04	W-19 W-19 95-10-102-07	W-20I W-20I 95-10-124-04	W-20S W-20S 95-10-124-05
PAHs						
Method 8310 (ug/L)						
Naphthalene	38	6,400	2,000	40	8,000	230
Acenaphthylene	<1.0	<1.0	<1.0	<1.0	<10	<1.0
Acenaphthene	73	46	45 J	1.8	<10	40
Fluorene	29	83	11	2.9	47	72
Phenanthrene	27	0.79	0.62	<0.050	30	1.3
Anthracene	3.0	<0.10	0.029 J	<0.10	4.3	<0.10
Fluoranthene	<0.10	<0.10	<0.10	<0.10	<1.0	<0.10
Pyrene	<0.050	<0.050	<0.050	<0.050	<0.50	<0.050
Benzo(a)anthracene	<0.050	<0.050	<0.050	<0.050	<0.50	<0.050
Chrysene	0.015 J	<0.050	0.012 J	<0.050	<0.50	<0.050
Benzo(b)fluoranthene	<0.10	<0.10	<0.10	<0.10	<1.0	<0.10
Benzo(k)fluoranthene	<0.050	<0.050	<0.050	<0.050	<0.50	<0.050
Benzo(a)pyrene	<0.050	<0.050	<0.050	<0.050	<0.50	<0.050
Dibenzo(a,h)anthracene	<0.10	<0.10	<0.10	<0.10	<1.0	<0.10
Benzo(g,h,i)perylene	<0.10	<0.10	<0.10	<0.10	<1.0	<0.10
Indeno(1,2,3-cd)pyrene	<0.10	<0.10	<0.10	<0.10	<1.0	<0.10
1-Methylnaphthalene	240	480	180	5.2	630	190
2-Methylnaphthalene	<1.0	530	220	2.3	780	<1.0
Total PAHs (ug/L)	407	7,539	2,456	40	9,487	532
Total PAHs (mg/L)	0.407	7.539	2.456	0.04	9.487	0.532
BTEX						
Method 8020 (ug/L)						
Benzene	21	7,200	4,000	29	12,000	1,300
Toluene	3.3	81	35	0.7	5,500	<12.5
Ethylbenzene	100	3,300	770	5.3	4,300	750
Total Xylenes	40	1,600	210	6.4	3,900	84
CYANIDE						
Method 9010 and 4500-I						
Total Cyanide (mg/L)	2 J	1.4	0.39	1.1	0.243	1.1
Cyanide, Weak Acid Dissociable (mg/L)	<0.005 J	0.008	<0.005	<0.005	0.009	0.009
DISSOLVED METALS						
Method 6010 (ug/L)						
Calcium	258,000	241,000	135,000	252,000	229,000	344,000
Iron	1,500	915	461	710	17,300	1,250
Magnesium	106,000	371,000	126,000	93,100	84,900	230,000
NUTRIENTS/INORGANICS						
N03 as Nitrogen (mg/L)	<0.1	NA	NA	NA	<0.1	<0.1
Ammonia as Nitrogen (mg/L)	9.6	NA	NA	NA	41	14
Total Phosphate as P (mg/L)	0.35	NA	NA	NA	0.55	1.3
Sulfide (mg/L)	NA	NA	NA	NA	<1	19
Sulfate (mg/L)	NA	NA	NA	NA	<10	330
Phosphate Soluble as P (mg/L)	<1	NA	NA	NA	0.55	1.2

Notes:

(1) Equipment Rinse Blank

ND = Not detected.

J - Value is an estimate. See data validation report.

TABLE G-8 (Continued)
GROUNDWATER ANALYTICAL RESULTS - OCTOBER 1995
THIRD WARD MGP SITE

SAMPLE LOCATION RETEC SAMPLE ID LABORATORY ID	W-221 W-221 95-10-155-03	W-22S W-22S 95-10-102-10	W-23S W-23S 95-10-102-02	W-25S W-25S 95-10-124-01	W-25S Blind Dup 2 95-10-124-02	W-26S W-26S 95-10-102-05
PAHs						
Method 8310 (ug/L)						
Naphthalene	4,000	32	5,100	4,300	3,500	3.7
Acenaphthylene	<1.0	<10 J	<1.0	<10	<1.0	<1.0
Acenaphthene	<1.0	95	<1.0	160	<1.0	36
Fluorene	<0.10	30	27	120	84	17
Phenanthrene	0.24	<0.050 J	<0.050	9.2	0.45	<0.050
Anthracene	<0.10	<0.10 J	<0.10	<1.0	<0.10	<0.10
Fluoranthene	<0.10	<0.10 J	<0.10	<1.0	<0.10	<0.10
Pyrene	<0.050	<0.050 J	<0.050	<0.50	<0.050	<0.050
Benzo(a)anthracene	<0.050	<0.050 J	<0.050	<0.50	<0.050	<0.050
Chrysene	<0.050	<0.050 J	<0.050	<0.50	<0.050	<0.050
Benzo(b)fluoranthene	<0.10	<0.10 J	<0.10	<1.0	<0.10	<0.10
Benzo(k)fluoranthene	<0.050	<0.050 J	<0.050	<0.50	<0.050	<0.050
Benzo(a)pyrene	<0.050	<0.050 J	<0.050	<0.50	<0.050	<0.050
Dibenzo(a,h)anthracene	<0.10	<0.10 J	<0.10	<1.0	<0.10	<0.10
Benzo(g,h,i)perylene	<0.10	<0.10 J	<0.10	<1.0	<0.10	<0.10
Indeno(1,2,3-cd)pyrene	<0.10	<0.10 J	<0.10	<1.0	<0.10	<0.10
1-Methylnaphthalene	170	310	360	470	310	2.6
2-Methylnaphthalene	190	<10 J	460	60	18	<1.0
Total PAHs (ug/L)	4,360	467	5,947	5,110	3,912	53
Total PAHs (mg/L)	4.36	0.467	5.947	5.11	3.912	0.053
BTEX						
Method 8020 (ug/L)						
Benzene	27,000	71	2,800	3,700	3,600	160
Toluene	5,000	2.4	1,200	43	40	0.8
Ethylbenzene	4,400	69	4,100	2,300	2,200	1.6
Total Xylenes	3,600	26	7,200	1,300	1,200	4.9
CYANIDE						
Method 9010 and 4500-I						
Total Cyanide (mg/L)	2.4 J	3.4	0.18	0.525	0.66	20
Cyanide, Weak Acid Dissociable (mg/L)	0.008 J	0.023	<0.005	<0.005	<0.005	0.13
DISSOLVED METALS						
Method 6010 (ug/L)						
Calcium	122,000	108,000	63,200	168,000	170,000	163,000
Iron	2,280	1,910	3,530	335	314	10,700
Magnesium	173,000	99,300	192,000	326,000	318,000	455,000
NUTRIENTS/INORGANICS						
N03 as Nitrogen (mg/L)	<0.1	NA	<0.1	<0.1	NA	NA
Ammonia as Nitrogen (mg/L)	37	NA	5.5	5.5	NA	NA
Total Phosphate as P (mg/L)	1.2	NA	0.95	0.69	NA	NA
Sulfide (mg/L)	15	NA	<1	32	NA	NA
Sulfate (mg/L)	<10	NA	<10	52	NA	NA
Phosphate Soluble as P (mg/L)	1.1	NA	0.87	0.69	NA	NA

Notes:

(1) Equipment Rinse Blank

ND = Not detected.

J - Value is an estimate. See data validation report.

TABLE G-8 (Continued)
GROUNDWATER ANALYTICAL RESULTS - OCTOBER 1995
THIRD WARD MGP SITE

SAMPLE LOCATION RETEC SAMPLE ID LABORATORY ID	W-26I W-26I 95-10-102-06	W-27D W-27D 95-10-155-01	W-41S W-41S 95-10-102-03	W-41S Blind Dup 95-10-102-04	W-41D W-41D 95-10-102-01	W-42D W-42D 95-10-155-02
PAHs						
Method 8310 (ug/L)						
Naphthalene	<0.50	5.5	95	69	<0.50 J	<0.50
Acenaphthylene	<1.0	<1.0	<1.0	<1.0	<1.0 J	<1.0
Acenaphthene	<1.0	<1.0	5.5	4.4	<1.0 J	<1.0
Fluorene	<0.10	0.042 J	2.7	1.5	<0.10 J	2.0
Phenanthrene	<0.050	<0.050	<0.050	<0.050	<0.050 J	0.035 J
Anthracene	<0.10	<0.10	<0.10	<0.10	<0.10 J	<0.10
Fluoranthene	<0.10	<0.10	<0.10	<0.10	<0.10 J	<0.10
Pyrene	<0.050	<0.050	<0.050	<0.050	<0.050 J	<0.050
Benzo(a)anthracene	<0.050	<0.050	<0.050	<0.050	<0.050 J	<0.050
Chrysene	<0.050	<0.050	<0.050	<0.050	<0.050 J	<0.050
Benzo(b)fluoranthene	<0.10	<0.10	<0.10	<0.10	<0.10 J	<0.10
Benzo(k)fluoranthene	<0.050	<0.050	<0.050	<0.050	<0.050 J	<0.050
Benzo(a)pyrene	<0.050	<0.050	<0.050	<0.050	<0.050 J	<0.050
Dibenzo(a,h)anthracene	<0.10	<0.10	<0.10	<0.10	<0.10 J	<0.10
Benzo(g,h,i)perylene	<0.10	<0.10	<0.10	<0.10	<0.10 J	<0.10
Indeno(1,2,3-cd)pyrene	<0.10	<0.10	<0.10	<0.10	<0.10 J	<0.10
1-Methylnaphthalene	<1.0	<1.0	23	16	<1.0 J	26
2-Methylnaphthalene	<1.0	<1.0	12	3.0	<1.0 J	<1.0
Total PAHs (ug/L)	ND	ND	130	85	ND	26
Total PAHs (mg/L)	ND	ND	0.13	0.085	ND	0.026
BTEX						
Method 8020 (ug/L)						
Benzene	<0.5	0.7	130	110	<0.5	1.7
Toluene	<0.5	<0.5	3.3	2.2	<0.5	<0.5
Ethylbenzene	<0.5	7.1	13	13	<0.5	<0.5
Total Xylenes	<1.0	6.4	23	20	<1.0	<1.0
CYANIDE						
Method 9010 and 4500-I						
Total Cyanide (mg/L)	2.2	0.018 J	0.05	0.038	0.53	<0.005 J
Cyanide, Weak Acid Dissociable (mg/L)	0.038	<0.005 J	<0.005	<0.005	0.01	<0.005 J
DISSOLVED METALS						
Method 6010 (ug/L)						
Calcium	311,000	166,000	76,500	74,600	172,000	188,000
Iron	4,980	33,900	11,500	10,200	30,700	25,300
Magnesium	98,000	105,000	153,000	152,000	90,900	71,800
NUTRIENTS/INORGANICS						
NO3 as Nitrogen (mg/L)	<0.1	NA	<0.1	NA	NA	NA
Ammonia as Nitrogen (mg/L)	85	NA	66	NA	NA	NA
Total Phosphate as P (mg/L)	0.71	NA	2.5	NA	NA	NA
Sulfide (mg/L)	10	NA	<1	NA	NA	NA
Sulfate (mg/L)	1,500	NA	<10	NA	NA	NA
Phosphate Soluble as P (mg/L)	0.66	NA	2.4	NA	NA	NA

Notes:

(1) Equipment Rinse Blank

ND = Not detected.

J - Value is an estimate. See data validation report.

TABLE G-8 (Continued)
GROUNDWATER ANALYTICAL RESULTS - OCTOBER 1995
THIRD WARD MGP SITE

SAMPLE LOCATION RETEC SAMPLE ID LABORATORY ID	W-43D W-43D 95-10-155-08	W-45D W-45D 95-10-155-07	W-46D W-46D 95-10-124-06	Equip. Rinse Blank Equip. Rinse Blank 95-10-124-03	ERB-1 ERB-1 95-10-102-09	ERB-2 ERB-2 95-10-155-05
PAHs						
Method 8310 (ug/L)						
Naphthalene	5,200	<0.50 J	200	<0.50	NA	0.44 J
Acenaphthylene	<10	<1.0 J	<1.0	0.65 J	NA	<1.0
Acenaphthene	<10	<1.0 J	<1.0	<1.0	NA	<1.0
Fluorene	54	<0.10 J	<0.10	<0.10	NA	0.051 J
Phenanthrene	9.3	<0.050 J	<0.050	0.011 J	NA	<0.050
Anthracene	1.0	<0.10 J	<0.10	<0.10	NA	<0.10
Fluoranthene	<1.0	<0.10 J	<0.10	<0.10	NA	<0.10
Pyrene	<0.50	<0.050 J	<0.050	<0.050	NA	<0.050
Benzo(a)anthracene	<0.50	<0.050 J	<0.050	<0.050	NA	<0.050
Chrysene	<0.50	<0.050 J	<0.050	<0.050	NA	<0.050
Benzo(b)fluoranthene	<1.0	<0.10 J	<0.10	<0.10	NA	<0.10
Benzo(k)fluoranthene	<0.50	<0.050 J	<0.050	<0.050	NA	<0.050
Benzo(a)pyrene	<0.50	<0.050 J	<0.050	<0.050	NA	<0.050
Dibenzo(a,h)anthracene	<1.0	<0.10 J	<0.10	<0.10	NA	<0.10
Benzo(g,h,i)perylene	<1.0	<0.10 J	<0.10	<0.10	NA	<0.10
Indeno(1,2,3-cd)pyrene	<1.0	<0.10 J	<0.10	<0.10	NA	<0.10
1-Methylnaphthalene	540	<1.0 J	21	<1.0	NA	<1.0
2-Methylnaphthalene	620	<1.0 J	12	1.3	NA	0.64 J
Total PAHs (ug/L)	6,414	ND	233	ND	NA	ND
Total PAHs (mg/L)	6.414	ND	0.233	ND	NA	ND
BTEX						
Method 8020 (ug/L)						
Benzene	15,000	<0.5	17,000	<0.5	1.9	<0.5
Toluene	130	<0.5	9.1	<0.5	1.1	<0.5
Ethylbenzene	2,300	<0.5	67	<0.5	1.3	<0.5
Total Xylenes	2,300	<1.0	<10	<1.0	3.3	<1.0
CYANIDE						
Method 9010 and 4500-I						
Total Cyanide (mg/L)	0.24 J	<0.005 J	0.484	<0.005	NA	<0.005 J
Cyanide, Weak Acid Dissociable (mg/L)	<0.005 J	NA	0.013	NA	NA	NA
DISSOLVED METALS						
Method 6010 (ug/L)						
Calcium	168,000	150,000	183,000	43 J	ND	NA
Iron	7,830	30,900	16,200	<6.8	ND	NA
Magnesium	161,000	91,100	211,000	43 J	ND	NA
NUTRIENTS/INORGANICS						
N03 as Nitrogen (mg/L)	<0.1	NA	<0.1	NA	NA	NA
Ammonia as Nitrogen (mg/L)	11	NA	57	NA	NA	NA
Total Phosphate as P (mg/L)	0.87	NA	2	NA	NA	NA
Sulfide (mg/L)	<1	NA	<1	NA	NA	NA
Sulfate (mg/L)	<10	NA	<10	NA	NA	NA
Phosphate Soluble as P (mg/L)	0.82	NA	1.9	NA	NA	NA

Notes:

(1) Equipment Rinse Blank

ND = Not detected.

J - Value is an estimate. See data validation report.

TABLE G-8 (Continued)
GROUNDWATER ANALYTICAL RESULTS - OCTOBER 1995
THIRD WARD MGP SITE

SAMPLE LOCATION RETEC SAMPLE ID LABORATORY ID	Trip Blank Trip Blank 95-10-155-09	Trip Blank Trip Blank 95-10-102-11	Trip Blank Trip Blank 95-10-124-07
PAHs			
Method 8310 (ug/L)			
Naphthalene	NA	NA	NA
Acenaphthylene	NA	NA	NA
Acenaphthene	NA	NA	NA
Fluorene	NA	NA	NA
Phenanthrene	NA	NA	NA
Anthracene	NA	NA	NA
Fluoranthene	NA	NA	NA
Pyrene	NA	NA	NA
Benzo(a)anthracene	NA	NA	NA
Chrysene	NA	NA	NA
Benzo(b)fluoranthene	NA	NA	NA
Benzo(k)fluoranthene	NA	NA	NA
Benzo(a)pyrene	NA	NA	NA
Dibenzo(a,h)anthracene	NA	NA	NA
Benzo(g,h,i)perylene	NA	NA	NA
Indeno(1,2,3-cd)pyrene	NA	NA	NA
1-Methylnaphthalene	NA	NA	NA
2-Methylnaphthalene	NA	NA	NA
Total PAHs (ug/L)	NA	NA	NA
Total PAHs (mg/L)	NA	NA	NA
BTEX			
Method 8020 (ug/L)			
Benzene	<0.5	<0.5	<0.5
Toluene	<0.5	<0.5	<0.5
Ethylbenzene	<0.5	<0.5	<0.5
Total Xylenes	<1.0	<1.0	<1.0
CYANIDE			
Method 9010 and 4500-I			
Total Cyanide (mg/L)	NA	NA	NA
Cyanide, Weak Acid Dissociable (mg/L)	NA	NA	NA
DISSOLVED METALS			
Method 6010 (ug/L)			
Calcium	NA	NA	NA
Iron	NA	NA	NA
Magnesium	NA	NA	NA
NUTRIENTS/INORGANICS			
N03 as Nitrogen (mg/L)	NA	NA	NA
Ammonia as Nitrogen (mg/L)	NA	NA	NA
Total Phosphate as P (mg/L)	NA	NA	NA
Sulfide (mg/L)	NA	NA	NA
Sulfate (mg/L)	NA	NA	NA
Phosphate Soluble as P (mg/L)	NA	NA	NA

Notes:

(1) Equipment Rinse Blank

ND = Not detected.

J - Value is an estimate. See data validation report.

APPENDIX H

LABORATORY DATA SHEETS

POLYNUCLEAR AROMATIC HYDROCARBONS

Method 8310

Sample ID

Lab Name: Analytical Technologies Inc.
 Client Name: Remediation Technologies, Inc.
 Client Project ID: 3-0887-303 Third Ward - SSPI
 Lab Sample ID: 95-04-221-10

TTA2-1 (5-6')

Date Collected: 4/25/95
 Date Extracted: 05/03/95
 Date Analyzed: 05/10/95

Sample Matrix: Soil
 Cleanup: N/A

Sample Weight: 30.0 g
 Final Volume: 1000 mL

Results based on dry weight

Analyte	Conc (ug/kg)	Detection Limit (ug/kg)
Naphthalene	ND	12000
Acenaphthylene	ND	12000
1-Methylnaphthalene	ND	12000
2-Methylnaphthalene	ND	12000
Acenaphthene	ND	20000
Fluorene	ND	1600
Phenanthrene	4700	1200
Anthracene	1000	400
Fluoranthene	8100	1200
Pyrene	6700	1600
Benzo(a)anthracene	3600	400
Chrysene	4200	800
Benzo(b)fluoranthene	2600	400
Benzo(k)fluoranthene	1300	400
Benzo(a)pyrene	3500	400
Dibenzo(a,h)anthracene	ND	1200
Benzo(g,h,i)perylene	2400	1600
Indeno(1,2,3-c,d)pyrene	2100	1200

SURROGATE RECOVERY

Analyte	% Recovery	% Rec Limits
2-Chloroanthracene	I	15 - 117

ND = Not Detected at or above client requested detection limit.
 I = Surrogate not reported due to a high sample dilution.

POLYNUCLEAR AROMATIC HYDROCARBONS

Method 8310

Sample ID

TTA3-2 (7')

Lab Name: Analytical Technologies Inc.
 Client Name: Remediation Technologies, Inc.
 Client Project ID: 3-0887-303 Third Ward - SSPI
 Lab Sample ID: 95-04-221-09

Date Collected: 4/25/95
 Date Extracted: 05/03/95
 Date Analyzed: 05/10/95

Sample Matrix: Soil
 Cleanup: N/A

Sample Weight: 30.0 g
 Final Volume: 1000 mL

Results based on dry weight

Analyte	Conc (ug/kg)	Detection Limit (ug/kg)
Naphthalene	ND	12000
Acenaphthylene	ND	12000
1-Methylnaphthalene	ND	12000
2-Methylnaphthalene	ND	12000
Acenaphthene	ND	20000
Fluorene	3500	1600
Phenanthrene	10000	1200
Anthracene	3700	410
Fluoranthene	ND	1200
Pyrene	9400	1600
Benzo(a)anthracene	5300	410
Chrysene	6400	810
Benzo(b)fluoranthene	5400	410
Benzo(k)fluoranthene	2900	410
Benzo(a)pyrene	8600	410
Dibenzo(a,h)anthracene	ND	1200
Benzo(g,h,i)perylene	3100	1600
Indeno(1,2,3-c,d)pyrene	2500	1200

SURROGATE RECOVERY

Analyte	% Recovery	% Rec Limits
2-Chloroanthracene	I	15 - 117

ND = Not Detected at or above client requested detection limit.

I = Surrogate not reported due to a high sample dilution.

POLYNUCLEAR AROMATIC HYDROCARBONS

Method 8310



Sample ID

TTA4-1 (1-2')

Lab Name: Analytical Technologies Inc.
 Client Name: Remediation Technologies, Inc.
 Client Project ID: 3-0887-303 Third Ward - SSPI
 Lab Sample ID: 95-04-221-16

Date Collected: 04/26/95
 Date Extracted: 05/22/95
 Date Analyzed: 05/25/95

Sample Matrix: Soil
 Cleanup: N/A

Sample Weight: 30.0 g
 Final Volume: 200 mL

Results based on dry weight

Analyte	Conc (ug/kg)	Detection Limit (ug/kg)
Naphthalene	ND	2200
Acenaphthylene	ND	2200
1-Methylnaphthalene	ND	2200
2-Methylnaphthalene	ND	2200
Acenaphthene	ND	3600
Fluorene	500	290
Phenanthrene	4800	220
Anthracene	ND	72
Fluoranthene	ND	220
Pyrene	2900	290
Benzo(a)anthracene	1700	72
Chrysene	2390	140
Benzo(b)fluoranthene	ND	72
Benzo(k)fluoranthene	ND	72
Benzo(a)pyrene	ND	72
Dibenzo(a,h)anthracene	ND	220
Benzo(g,h,i)perylene	1100	290
Indeno(1,2,3-c,d)pyrene	710	220

SURROGATE RECOVERY

Analyte	% Recovery	% Rec Limits
2-Chloroanthracene	I	15 - 117

ND = Not Detected at or above client requested detection limit.

I = Surrogate not recovered/reported due to high sample dilution.

POLYNUCLEAR AROMATIC HYDROCARBONS

Method 8310

Sample ID

Lab Name: Analytical Technologies Inc.
 Client Name: Remediation Technologies, Inc.
 Client Project ID: 3-0887-303 Third Ward - SSPI
 Lab Sample ID: 95-04-221-14

TTA4-2 (7')

Date Collected: 4/26/95
 Date Extracted: 05/03/95
 Date Analyzed: 05/12/95

Sample Matrix: Soil
 Cleanup: N/A

Sample Weight: 30.0 g
 Final Volume: 10000 mL

Results based on dry weight

Analyte	Conc (ug/kg)	Detection Limit (ug/kg)
Naphthalene	ND	140000
Acenaphthylene	ND	140000
1-Methylnaphthalene	ND	140000
2-Methylnaphthalene	ND	140000
Acenaphthene	ND	230000
Fluorene	45000	18000
Phenanthrene	150000	14000
Anthracene	49000	4600
Fluoranthene	92000	14000
Pyrene	85000	18000
Benzo(a)anthracene	5200	4600
Chrysene	27000	9200
Benzo(b)fluoranthene	ND	4600
Benzo(k)fluoranthene	ND	4600
Benzo(a)pyrene	5800	4600
Dibenzo(a,h)anthracene	ND	14000
Benzo(g,h,i)perylene	ND	18000
Indeno(1,2,3-c,d)pyrene	ND	14000

SURROGATE RECOVERY

Analyte	% Recovery	% Rec Limits
2-Chloroanthracene	I	15 - 117

ND = Not Detected at or above client requested detection limit.

I = Surrogate not reported due to a high sample dilution.

POLYNUCLEAR AROMATIC HYDROCARBONS

Method 8310

Sample ID

Lab Name: Analytical Technologies Inc.
 Client Name: Remediation Technologies, Inc.
 Client Project ID: 3-0887-303 Third Ward - SSPI
 Lab Sample ID: 95-04-221-11

TTB2-5 (8-9')

Date Collected: 4/26/95
 Date Extracted: 05/03/95
 Date Analyzed: 05/12/95

Sample Matrix: Soil
 Cleanup: N/A

Sample Weight: 30.0 g
 Final Volume: 10000 mL

Results based on dry weight

Analyte	Conc (ug/kg)	Detection Limit (ug/kg)
Naphthalene	250000	150000
Acenaphthylene	ND	150000
1-Methylnaphthalene	ND	150000
2-Methylnaphthalene	ND	150000
Acenaphthene	ND	250000
Fluorene	37000	20000
Phenanthrene	87000	15000
Anthracene	24000	5000
Fluoranthene	51000	15000
Pyrene	28000	20000
Benzo(a)anthracene	ND	5000
Chrysene	14000	9900
Benzo(b)fluoranthene	ND	5000
Benzo(k)fluoranthene	ND	5000
Benzo(a)pyrene	ND	5000
Dibenzo(a,h)anthracene	ND	15000
Benzo(g,h,i)perylene	ND	20000
Indeno(1,2,3-c,d)pyrene	ND	15000

SURROGATE RECOVERY

Analyte	% Recovery	% Rec Limits
2-Chloroanthracene	I	15 - 117

ND = Not Detected at or above client requested detection limit.

I = Surrogate not reported due to a high sample dilution.

000019

POLYNUCLEAR AROMATIC HYDROCARBONS

Method 8310

Sample ID

Duplicate 2

Lab Name: Analytical Technologies Inc.
 Client Name: Remediation Technologies, Inc.
 Client Project ID: 3-0887-303 Third Ward - SSPI
 Lab Sample ID: 95-04-221-12 rx

Date Collected: 04/26/95
 Date Extracted: 05/05/95
 Date Analyzed: 05/13/95

Sample Matrix: Soil
 Cleanup: Silica gel

Sample Weight: 30.0 g
 Final Volume: 2000 mL

Results based on dry weight

Analyte	Conc (ug/kg)	Detection Limit (ug/kg)
Naphthalene	67000	30000
Acenaphthylene	ND	30000
1-Methylnaphthalene	ND	30000
2-Methylnaphthalene	ND	30000
Acenaphthene	ND	49000
Fluorene	17000	3900
Phenanthrene	57000	3000
Anthracene	16000	990
Fluoranthene	38000	3000
Pyrene	34000	3900
Benzo(a)anthracene	13000	990
Chrysene	17000	2000
Benzo(b)fluoranthene	4200	990
Benzo(k)fluoranthene	ND	990
Benzo(a)pyrene	8700	990
Dibenzo(a,h)anthracene	ND	3000
Benzo(g,h,i)perylene	4100	3900
Indeno(1,2,3-c,d)pyrene	3300	3000

SURROGATE RECOVERY

Analyte	% Recovery	% Rec Limits
2-Chloroanthracene	I	15 - 117

ND = Not Detected at or above client requested detection limit.
 I = Surrogate not recovered/reported due to high sample dilution.

POLYNUCLEAR AROMATIC HYDROCARBONS

Method 8310

Sample ID

Lab Name: Analytical Technologies Inc.
 Client Name: Remediation Technologies, Inc.
 Client Project ID: 3-0887-303 Third Ward - SSPI
 Lab Sample ID: 95-04-221-15

TTB3-1 (3')

Date Collected: 4/26/95
 Date Extracted: 05/03/95
 Date Analyzed: 05/12/95

Sample Matrix: Soil
 Cleanup: N/A

Sample Weight: 30.0 g
 Final Volume: 100 mL

Results based on dry weight

Analyte	Conc (ug/kg)	Detection Limit (ug/kg)
Naphthalene	ND	1200
Acenaphthylene	ND	1200
1-Methylnaphthalene	ND	1200
2-Methylnaphthalene	ND	1200
Acenaphthene	ND	1900
Fluorene	ND	150
Phenanthrene	1400	120
Anthracene	150	39
Fluoranthene	1600	120
Pyrene	1700	150
Benzo(a)anthracene	750	39
Chrysene	1600	77
Benzo(b)fluoranthene	620	39
Benzo(k)fluoranthene	ND	39
Benzo(a)pyrene	950	39
Dibenzo(a,h)anthracene	ND	120
Benzo(g,h,i)perylene	1200	150
Indeno(1,2,3-c,d)pyrene	ND	120

SURROGATE RECOVERY

Analyte	% Recovery	% Rec Limits
2-Chloroanthracene	I	15 - 117

ND = Not Detected at or above client requested detection limit.

I = Surrogate not reported due to a high sample dilution.

POLYNUCLEAR AROMATIC HYDROCARBONS

Method 8310

Sample ID

Lab Name: Analytical Technologies Inc.
 Client Name: Remediation Technologies, Inc.
 Client Project ID: 3-0887-303 Third Ward - SSPI
 Lab Sample ID: 95-04-221-17

TTC1-2 (2-3')

Date Collected: 4/26/95
 Date Extracted: 05/03/95
 Date Analyzed: 05/12/95

Sample Matrix: Soil
 Cleanup: N/A

Sample Weight: 30.0 g
 Final Volume: 10000 mL

Results based on dry weight

Analyte	Conc (ug/kg)	Detection Limit (ug/kg)
Naphthalene	140000	130000
Acenaphthylene	ND	130000
1-Methylnaphthalene	ND	130000
2-Methylnaphthalene	ND	130000
Acenaphthene	ND	220000
Fluorene	28000	18000
Phenanthrene	62000	13000
Anthracene	23000	4500
Fluoranthene	60000	13000
Pyrene	ND	18000
Benzo(a)anthracene	16000	4500
Chrysene	18000	8900
Benzo(b)fluoranthene	ND	4500
Benzo(k)fluoranthene	ND	4500
Benzo(a)pyrene	ND	4500
Dibenzo(a,h)anthracene	ND	13000
Benzo(g,h,i)perylene	ND	18000
Indeno(1,2,3-c,d)pyrene	ND	13000

SURROGATE RECOVERY

Analyte	% Recovery	% Rec Limits
2-Chloroanthracene	I	15 - 117

ND = Not Detected at or above client requested detection limit.

I = Surrogate not reported due to a high sample dilution.

POLYNUCLEAR AROMATIC HYDROCARBONS

Method 8310

Sample ID

Lab Name: Analytical Technologies Inc.
 Client Name: Remediation Technologies, Inc.
 Client Project ID: 3-0887-303 Third Ward - SSPI
 Lab Sample ID: 95-04-222-01

TTC4-2 (4-5')

Date Collected: 04/27/95
 Date Extracted: 05/01/95
 Date Analyzed: 05/06/95

Sample Matrix: Soil
 Cleanup: Silica

Sample Weight: 30.0 g
 Final Volume: 1000 mL

Results based on dry weight

Analyte	Conc (ug/kg)	Detection Limit (ug/kg)
Naphthalene	ND	13000
Acenaphthylene	ND	13000
1-Methylnaphthalene	ND	13000
2-Methylnaphthalene	ND	13000
Acenaphthene	ND	22000
Fluorene	ND	1800
Phenanthrene	7200	1300
Anthracene	ND	440
Fluoranthene	5900	1300
Pyrene	ND	1800
Benzo(a)anthracene	ND	440
Chrysene	ND	890
Benzo(b)fluoranthene	ND	440
Benzo(k)fluoranthene	ND	440
Benzo(a)pyrene	ND	440
Dibenzo(a,h)anthracene	ND	1300
Benzo(g,h,i)perylene	ND	1800
Indeno(1,2,3-c,d)pyrene	ND	1300

SURROGATE RECOVERY

Analyte	% Recovery	% Rec Limits
2-Chloroanthracene	I	15 - 117

ND = Not Detected at or above client requested detection limit.
 I = Surrogate not reported due to a high sample dilution.

000009

POLYNUCLEAR AROMATIC HYDROCARBONS

Method 8310

Sample ID

Lab Name: Analytical Technologies Inc.
 Client Name: Remediation Technologies, Inc.
 Client Project ID: 3-0887-303 Third Ward - SSPI
 Lab Sample ID: 95-04-221-13

TTC5-1 (6-7')

Date Collected: 4/26/95
 Date Extracted: 05/03/95
 Date Analyzed: 05/10/95

Sample Matrix: Soil
 Cleanup: N/A

Sample Weight: 30.0 g
 Final Volume: 1000 mL

Results based on dry weight

Analyte	Conc (ug/kg)	Detection Limit (ug/kg)
Naphthalene	ND	12000
Acenaphthylene	ND	12000
1-Methylnaphthalene	ND	12000
2-Methylnaphthalene	ND	12000
Acenaphthene	ND	20000
Fluorene	ND	1600
Phenanthrene	3400	1200
Anthracene	550	400
Fluoranthene	ND	1200
Pyrene	14000	1600
Benzo(a)anthracene	5000	400
Chrysene	8700	800
Benzo(b)fluoranthene	3700	400
Benzo(k)fluoranthene	ND	400
Benzo(a)pyrene	7100	400
Dibenzo(a,h)anthracene	1200	1200
Benzo(g,h,i)perylene	3100	1600
Indeno(1,2,3-c,d)pyrene	2000	1200

SURROGATE RECOVERY

Analyte	% Recovery	% Rec Limits
2-Chloroanthracene	I	15 - 117

ND = Not Detected at or above client requested detection limit.

I = Surrogate not reported due to a high sample dilution.

POLYNUCLEAR AROMATIC HYDROCARBONS

Method 8310

Sample ID

Lab Name: Analytical Technologies Inc.
 Client Name: Remediation Technologies, Inc.
 Client Project ID: 3-0887-303 Third Ward - SSPI
 Lab Sample ID: 95-04-222-04

TTE1-2 (10-11')

Date Collected: 04/27/95
 Date Extracted: 05/01/95
 Date Analyzed: 05/06/95

Sample Matrix: Soil
 Cleanup: Silica

Sample Weight: 30.0 g
 Final Volume: 1000 mL

Results based on dry weight

Analyte	Conc (ug/kg)	Detection Limit (ug/kg)
Naphthalene	ND	12000
Acenaphthylene	ND	12000
1-Methylnaphthalene	ND	12000
2-Methylnaphthalene	ND	12000
Acenaphthene	ND	20000
Fluorene	ND	1600
Phenanthrene	3300	1200
Anthracene	1300	400
Fluoranthene	8300	1200
Pyrene	6300	1600
Benzo(a)anthracene	2500	400
Chrysene	2700	790
Benzo(b)fluoranthene	1700	400
Benzo(k)fluoranthene	800	400
Benzo(a)pyrene	1900	400
Dibenzo(a,h)anthracene	ND	1200
Benzo(g,h,i)perylene	ND	1600
Indeno(1,2,3-c,d)pyrene	1200	1200

SURROGATE RECOVERY

Analyte	% Recovery	% Rec Limits
2-Chloroanthracene	I	15 - 117

ND = Not Detected at or above client requested detection limit.

I = Surrogate not reported due to a high sample dilution.

000012

POLYNUCLEAR AROMATIC HYDROCARBONS

Method 8310

Sample ID

Lab Name: Analytical Technologies Inc.
 Client Name: Remediation Technologies, Inc.
 Client Project ID: 3-0887-303 Third Ward - SSPI
 Lab Sample ID: 95-04-222-05

TTE2-1 (7')

Date Collected: 04/27/95
 Date Extracted: 05/01/95
 Date Analyzed: 05/12/95

Sample Matrix: Soil
 Cleanup: Silica

Sample Weight: 30.0 g
 Final Volume: 10 mL

Results based on dry weight

Analyte	Conc (ug/kg)	Detection Limit (ug/kg)
Naphthalene	ND	120
Acenaphthylene	ND	120
1-Methylnaphthalene	ND	120
2-Methylnaphthalene	ND	120
Acenaphthene	ND	190
Fluorene	ND	15
Phenanthrene	160	12
Anthracene	35	3.9
Fluoranthene	260	12
Pyrene	250	15
Benzo(a)anthracene	ND	3.9
Chrysene	ND	7.7
Benzo(b)fluoranthene	130	3.9
Benzo(k)fluoranthene	ND	3.9
Benzo(a)pyrene	200	3.9
Dibenzo(a,h)anthracene	ND	12
Benzo(g,h,i)perylene	130	15
Indeno(1,2,3-c,d)pyrene	100	12

SURROGATE RECOVERY

Analyte	% Recovery	% Rec Limits
2-Chloroanthracene	91	15 - 117

ND = Not Detected at or above client requested detection limit.

000013

POLYNUCLEAR AROMATIC HYDROCARBONS

Method 8310

Sample ID

Lab Name: Analytical Technologies Inc.
 Client Name: Remediation Technologies, Inc.
 Client Project ID: 3-0887-303 Third Ward - SSPI
 Lab Sample ID: 95-04-222-03

TTF2-1 (3')

Date Collected: 04/27/95
 Date Extracted: 05/01/95
 Date Analyzed: 05/09/95

Sample Matrix: Soil
 Cleanup: Silica

Sample Weight: 30.0 g
 Final Volume: 10000 mL

Results based on dry weight

Analyte	Conc (ug/kg)	Detection Limit (ug/kg)
Naphthalene	ND	130000
Acenaphthylene	ND	130000
1-Methylnaphthalene	ND	130000
2-Methylnaphthalene	140000	130000
Acenaphthene	ND	210000
Fluorene	40000	17000
Phenanthrene	65000	13000
Anthracene	18000	4300
Fluoranthene	58000	13000
Pyrene	ND	17000
Benzo(a)anthracene	17000	4300
Chrysene	ND	8500
Benzo(b)fluoranthene	ND	4300
Benzo(k)fluoranthene	ND	4300
Benzo(a)pyrene	ND	4300
Dibenzo(a,h)anthracene	ND	13000
Benzo(g,h,i)perylene	ND	17000
Indeno(1,2,3-c,d)pyrene	ND	13000

SURROGATE RECOVERY

Analyte	% Recovery	% Rec Limits
2-Chloroanthracene	I	15 - 117

ND = Not Detected at or above client requested detection limit.

I = Surrogate not reported due to a high sample dilution.

000011

POLYNUCLEAR AROMATIC HYDROCARBONS

Method 8310

Sample ID

Lab Name: Analytical Technologies Inc.
 Client Name: Remediation Technologies, Inc.
 Client Project ID: 3-0887-303 Third Ward - SSPI
 Lab Sample ID: 95-04-222-02

TTF3-1 (7')

Date Collected: 04/27/95
 Date Extracted: 05/01/95
 Date Analyzed: 05/09/95

Sample Matrix: Soil
 Cleanup: Silica

Sample Weight: 30.0 g
 Final Volume: 100 mL

Results based on dry weight

Analyte	Conc (ug/kg)	Detection Limit (ug/kg)
Naphthalene	1700	1200
Acenaphthylene	ND	1200
1-Methylnaphthalene	ND	1200
2-Methylnaphthalene	ND	1200
Acenaphthene	ND	2000
Fluorene	530	160
Phenanthrene	1700	120
Anthracene	800	39
Fluoranthene	2100	120
Pyrene	1700	160
Benzo(a)anthracene	760	39
Chrysene	1200	79
Benzo(b)fluoranthene	ND	39
Benzo(k)fluoranthene	ND	39
Benzo(a)pyrene	3200	39
Dibenzo(a,h)anthracene	420	120
Benzo(g,h,i)perylene	2600	160
Indeno(1,2,3-c,d)pyrene	1900	120

SURROGATE RECOVERY

Analyte	% Recovery	% Rec Limits
2-Chloroanthracene	I	15 - 117

ND = Not Detected at or above client requested detection limit.

I = Surrogate not reported due to a high sample dilution.

000010

POLYNUCLEAR AROMATIC HYDROCARBONS

Method 8310

Sample ID

Lab Name: Analytical Technologies Inc.
 Client Name: Remediation Technologies, Inc.
 Client Project ID: 3-0887-303 Third Ward - SSPI
 Lab Sample ID: 95-04-222-06

TTG2-1 (3-4')

Date Collected: 04/27/95
 Date Extracted: 05/01/95
 Date Analyzed: 05/06/95

Sample Matrix: Soil
 Cleanup: Silica

Sample Weight: 30.0 g
 Final Volume: 1000 mL

Results based on dry weight

Analyte	Conc (ug/kg)	Detection Limit (ug/kg)
Naphthalene	ND	11000
Acenaphthylene	ND	11000
1-Methylnaphthalene	ND	11000
2-Methylnaphthalene	ND	11000
Acenaphthene	ND	19000
Fluorene	ND	1500
Phenanthrene	7200	1100
Anthracene	3200	370
Fluoranthene	13000	1100
Pyrene	12000	1500
Benzo(a)anthracene	4700	370
Chrysene	5600	750
Benzo(b)fluoranthene	3600	370
Benzo(k)fluoranthene	1600	370
Benzo(a)pyrene	ND	370
Dibenzo(a,h)anthracene	ND	1100
Benzo(g,h,i)perylene	3000	1500
Indeno(1,2,3-c,d)pyrene	2400	1100

SURROGATE RECOVERY

Analyte	% Recovery	% Rec Limits
2-Chloroanthracene	I	15 - 117

ND = Not Detected at or above client requested detection limit.

I = Surrogate not reported due to a high sample dilution.

000014

POLYNUCLEAR AROMATIC HYDROCARBONS

Method 8310

Sample ID

Lab Name: Analytical Technologies Inc.
 Client Name: Remediation Technologies, Inc.
 Client Project ID: 3-0887-303 Third Ward - SSPI
 Lab Sample ID: 95-04-222-07

TTG4-1 (3-4')

Date Collected: 04/27/95
 Date Extracted: 05/01/95
 Date Analyzed: 05/12/95

Sample Matrix: Soil
 Cleanup: Silica

Sample Weight: 30.0 g
 Final Volume: 10 mL

Results based on dry weight

Analyte	Conc (ug/kg)	Detection Limit (ug/kg)
Naphthalene	ND	120
Acenaphthylene	ND	120
1-Methylnaphthalene	ND	120
2-Methylnaphthalene	240	120
Acenaphthene	ND	200
Fluorene	24	16
Phenanthrene	230	12
Anthracene	22	3.9
Fluoranthene	200	12
Pyrene	33	16
Benzo(a)anthracene	ND	3.9
Chrysene	110	7.9
Benzo(b)fluoranthene	27	3.9
Benzo(k)fluoranthene	ND	3.9
Benzo(a)pyrene	ND	3.9
Dibenzo(a,h)anthracene	ND	12
Benzo(g,h,i)perylene	ND	16
Indeno(1,2,3-c,d)pyrene	ND	12

SURROGATE RECOVERY

Analyte	% Recovery	% Rec Limits
2-Chloroanthracene	117	15 - 117

ND = Not Detected at or above client requested detection limit.

000015

POLYNUCLEAR AROMATIC HYDROCARBONS

Method 8310

Sample ID

Lab Name: Analytical Technologies Inc.
 Client Name: Remediation Technologies, Inc.
 Client Project ID: 3-0887-303 Third Ward - SSPI
 Lab Sample ID: 95-04-221-01

DB-6 (2-4')

Date Collected: 4/25/95
 Date Extracted: 05/03/95
 Date Analyzed: 05/10/95

Sample Matrix: Soil
 Cleanup: N/A

Sample Weight: 30.0 g
 Final Volume: 1000 mL

Results based on dry weight

Analyte	Conc (ug/kg)	Detection Limit (ug/kg)
Naphthalene	220000	13000
Acenaphthylene	ND	13000
1-Methylnaphthalene	49000	13000
2-Methylnaphthalene	75000	13000
Acenaphthene	ND	22000
Fluorene	12000	2000
Phenanthrene	32000	1300
Anthracene	6800	440
Fluoranthene	26000	1300
Pyrene	ND	1800
Benzo(a)anthracene	ND	440
Chrysene	3500	880
Benzo(b)fluoranthene	890	440
Benzo(k)fluoranthene	ND	440
Benzo(a)pyrene	950	440
Dibenzo(a,h)anthracene	ND	1300
Benzo(g,h,i)perylene	ND	1800
Indeno(1,2,3-c,d)pyrene	ND	1300

SURROGATE RECOVERY

Analyte	% Recovery	% Rec Limits
2-Chloroanthracene	I	15 - 117

ND = Not Detected at or above client requested detection limit.

I = Surrogate not reported due to a high sample dilution.

POLYNUCLEAR AROMATIC HYDROCARBONS

Method 8310

Sample ID

Lab Name: Analytical Technologies Inc.
 Client Name: Remediation Technologies, Inc.
 Client Project ID: 3-0887-303 Third Ward - SSPI
 Lab Sample ID: 95-04-221-02

DB-7 (0-2')

Date Collected: 4/25/95
 Date Extracted: 05/03/95
 Date Analyzed: 05/10/95

Sample Matrix: Soil
 Cleanup: N/A

Sample Weight: 30.0 g
 Final Volume: 1000 mL

Results based on dry weight

Analyte	Conc (ug/kg)	Detection Limit (ug/kg)
Naphthalene	ND	12000
Acenaphthylene	ND	12000
1-Methylnaphthalene	ND	12000
2-Methylnaphthalene	ND	12000
Acenaphthene	ND	20000
Fluorene	ND	1600
Phenanthrene	11000	1200
Anthracene	680	400
Fluoranthene	30000	1200
Pyrene	17000	1600
Benzo(a)anthracene	16000	400
Chrysene	20000	790
Benzo(b)fluoranthene	24000	400
Benzo(k)fluoranthene	6900	400
Benzo(a)pyrene	14000	400
Dibenzo(a,h)anthracene	1600	1200
Benzo(g,h,i)perylene	11000	1600
Indeno(1,2,3-c,d)pyrene	11000	1200

SURROGATE RECOVERY

Analyte	% Recovery	% Rec Limits
2-Chloroanthracene	I	15 - 117

ND = Not Detected at or above client requested detection limit.

I = Surrogate not reported due to a high sample dilution.

POLYNUCLEAR AROMATIC HYDROCARBONS

Method 8310

Sample ID

Lab Name: Analytical Technologies Inc.
 Client Name: Remediation Technologies, Inc.
 Client Project ID: 3-0887-303 Third Ward - SSPI
 Lab Sample ID: 95-04-221-03

B-47 (2-4')

Date Collected: 4/26/95
 Date Extracted: 05/03/95
 Date Analyzed: 05/10/95

Sample Matrix: Soil
 Cleanup: N/A

Sample Weight: 30.0 g
 Final Volume: 1000 mL

Results based on dry weight

Analyte	Conc (ug/kg)	Detection Limit (ug/kg)
Naphthalene	ND	11000
Acenaphthylene	ND	11000
1-Methylnaphthalene	ND	11000
2-Methylnaphthalene	ND	11000
Acenaphthene	ND	18000
Fluorene	ND	1500
Phenanthrene	2300	1100
Anthracene	ND	370
Fluoranthene	7200	1100
Pyrene	4700	1500
Benzo(a)anthracene	3900	370
Chrysene	6500	740
Benzo(b)fluoranthene	7400	370
Benzo(k)fluoranthene	ND	370
Benzo(a)pyrene	ND	370
Dibenzo(a,h)anthracene	ND	1100
Benzo(g,h,i)perylene	ND	1500
Indeno(1,2,3-c,d)pyrene	ND	1100

SURROGATE RECOVERY

Analyte	% Recovery	% Rec Limits
2-Chloroanthracene	I	15 - 117

ND = Not Detected at or above client requested detection limit.

I = Surrogate not reported due to a high sample dilution.

POLYNUCLEAR AROMATIC HYDROCARBONS

Method 8310

Lab Name: Analytical Technologies Inc.
 Client Name: Remediation Technologies, Inc.
 Client Project ID: 3-0887-303 Third Ward - SSPI
 Lab Sample ID: 95-04-221-05

Sample ID

Duplicate 1

Date Collected: 4/25/95
 Date Extracted: 05/03/95
 Date Analyzed: 05/10/95

Sample Matrix: Soil
 Cleanup: N/A

Sample Weight: 30.0 g
 Final Volume: 1000 mL

Results based on dry weight

Analyte	Conc (ug/kg)	Detection Limit (ug/kg)
Naphthalene	ND	11000
Acenaphthylene	ND	11000
1-Methylnaphthalene	ND	11000
2-Methylnaphthalene	ND	11000
Acenaphthene	ND	18000
Fluorene	ND	1500
Phenanthrene	1900	1100
Anthracene	ND	370
Fluoranthene	5000	1100
Pyrene	4100	1500
Benzo(a)anthracene	3300	370
Chrysene	5000	740
Benzo(b)fluoranthene	5700	370
Benzo(k)fluoranthene	1900	370
Benzo(a)pyrene	3700	370
Dibenzo(a,h)anthracene	ND	1100
Benzo(g,h,i)perylene	4000	1500
Indeno(1,2,3-c,d)pyrene	ND	1100

SURROGATE RECOVERY

Analyte	% Recovery	% Rec Limits
2-Chloroanthracene	I	15 - 117

ND = Not Detected at or above client requested detection limit.

I = Surrogate not reported due to a high sample dilution.

POLYNUCLEAR AROMATIC HYDROCARBONS

Method 8310

Sample ID

Lab Name: Analytical Technologies Inc.
 Client Name: Remediation Technologies, Inc.
 Client Project ID: 3-0887-303 Third Ward - SSPI
 Lab Sample ID: 95-04-221-04

B-47 (16-18')

Date Collected: Not Submitted
 Date Extracted: 05/03/95
 Date Analyzed: 05/10/95

Sample Matrix: Soil
 Cleanup: N/A

Sample Weight: 3.0 g
 Final Volume: 1000 mL

Results based on dry weight

Analyte	Conc (ug/kg)	Detection Limit (ug/kg)
Naphthalene	150000	120000
Acenaphthylene	ND	120000
1-Methylnaphthalene	ND	120000
2-Methylnaphthalene	ND	120000
Acenaphthene	ND	210000
Fluorene	62000	16000
Phenanthrene	130000	12000
Anthracene	27000	4100
Fluoranthene	ND	12000
Pyrene	22000	16000
Benzo(a)anthracene	ND	4100
Chrysene	ND	8200
Benzo(b)fluoranthene	ND	4100
Benzo(k)fluoranthene	ND	4100
Benzo(a)pyrene	ND	4100
Dibenzo(a,h)anthracene	ND	12000
Benzo(g,h,i)perylene	ND	16000
Indeno(1,2,3-c,d)pyrene	ND	12000

SURROGATE RECOVERY

Analyte	% Recovery	% Rec Limits
2-Chloroanthracene	I	15 - 117

ND = Not Detected at or above client requested detection limit.

I = Surrogate not reported due to a high sample dilution.

POLYNUCLEAR AROMATIC HYDROCARBONS

Method 8310

Sample ID

Lab Name: Analytical Technologies Inc.
 Client Name: Remediation Technologies, Inc.
 Client Project ID: 3-0887-303 Third Ward - SSPI
 Lab Sample ID: 95-04-221-06

EB-1

Date Collected: 4/26/95
 Date Extracted: 05/03/95
 Date Analyzed: 05/10/95

Sample Matrix: Water
 Cleanup: N/A

Sample Volume: 1000 mL
 Final Volume: 1 mL

Analyte	Conc (ug/kg)	Detection Limit (ug/L)
Naphthalene	ND	0.30
Acenaphthylene	ND	0.30
1-Methylnaphthalene	0.70	0.30
2-Methylnaphthalene	ND	0.30
Acenaphthene	ND	0.50
Fluorene	0.098 B	0.040
Phenanthrene	0.17 B	0.030
Anthracene	0.024 B	0.010
Fluoranthene	0.075 B	0.030
Pyrene	ND	0.040
Benzo(a)anthracene	0.018	0.010
Chrysene	ND	0.020
Benzo(b)fluoranthene	ND	0.010
Benzo(k)fluoranthene	ND	0.010
Benzo(a)pyrene	ND	0.010
Dibenzo(a,h)anthracene	ND	0.030
Benzo(g,h,i)perylene	ND	0.040
Indeno(1,2,3-c,d)pyrene	ND	0.030

SURROGATE RECOVERY

Analyte	% Recovery	% Rec Limits
2-Chloroanthracene	85	15 - 117

ND = Not Detected at or above client requested detection limit.
 B = Analyte found in blank. Refer to case narrative.

POLYNUCLEAR AROMATIC HYDROCARBONS

Method 8310

Sample ID

Lab Name: Analytical Technologies Inc.
 Client Name: Remediation Technologies, Inc.
 Client Project ID: 3-0887-303 Third Ward - SSPI
 Lab Sample ID: 95-04-221-07

EB-2

Date Collected: 4/26/95
 Date Extracted: 05/03/95
 Date Analyzed: 05/10/95

Sample Matrix: Water
 Cleanup: N/A

Sample Volume: 1000 mL
 Final Volume: 1 mL

Analyte	Conc (ug/kg)	Detection Limit (ug/L)
Naphthalene	ND	0.30
Acenaphthylene	ND	0.30
1-Methylnaphthalene	0.86	0.30
2-Methylnaphthalene	ND	0.30
Acenaphthene	ND	0.50
Fluorene	ND	0.040
Phenanthrene	0.031 B	0.030
Anthracene	ND	0.010
Fluoranthene	ND	0.030
Pyrene	ND	0.040
Benzo(a)anthracene	ND	0.010
Chrysene	ND	0.020
Benzo(b)fluoranthene	ND	0.010
Benzo(k)fluoranthene	ND	0.010
Benzo(a)pyrene	ND	0.010
Dibenzo(a,h)anthracene	ND	0.030
Benzo(g,h,i)perylene	ND	0.040
Indeno(1,2,3-c,d)pyrene	ND	0.030

SURROGATE RECOVERY

Analyte	% Recovery	% Rec Limits
2-Chloroanthracene	99	15 - 117

ND = Not Detected at or above client requested detection limit.
 B= Analyte found in blank. Refer to case narrative.

000009

BTEX ANALYSIS
Modified Method 8020

Lab Name: Analytical Technologies, Inc.

Date Collected: 04/27/95

Client Name: Remediation Technologies, Inc.

Date Analyzed: 05/03,05/95

Client Project ID: 3-0887-303 Third Ward-SSPI

Sample Matrix: Soil

Lab Workorder Number: 95-04-222

Results are reported on a dry weight basis.

Sample ID	Lab Sample ID	Sample Weight (g)	Conc. Benzene (ug/kg)	Conc. Toluene (ug/kg)	Conc. Ethyl Benzene (ug/kg)	Conc. Xylenes (ug/kg)	Surrogate Percent Recovery (TFT)	% Moist
Reagent Blank	SRB1 05/03/95	1.0	<2.5	<2.5	<2.5	<5.0	99	N/A
Reagent Blank	SRB1 05/05/95	1.0	<2.5	<2.5	<2.5	<5.0	98	N/A
Methanol Blank	MeOH SRB1 05/05/95	1.0	<2.5	<2.5	<2.5	<5.0	100	N/A
TTC4-2 (4-5')	95-04-222-01	1.0	<3.3	<3.3	<3.3	<6.6	83	25
TTF3-1 (7')	95-04-222-02	1.0	<3.0	9.5	88	56	96	15
TTF2-1 (3')	95-04-222-03	0.010	24000	1800	110000	53000	103	22
TTE1-2 (10-11')	95-04-222-04	1.0	<3.0	5.1	<3.0	<5.9	93	16
TTE2-1 (7')	95-04-222-05	1.0	<2.9	<2.9	<2.9	<5.8	94	14
TTG2-1 (3-4')	95-04-222-06	1.0	<2.8	<2.8	<2.8	<5.6	90	11
TTG4-1 (3-4')	95-04-222-07	1.0	4.1	15	5.1	9.1	85	15

000008

BTEX ANALYSIS
Modified Method 8020



Lab Name: Analytical Technologies, Inc.

Date Collected: 04/25,26/95

Client Name: Remediation Technologies, Inc.

Date Analyzed: 05/03,04,05/95

Client Project ID: 3-0887-303 Third Ward-SSPI

Sample Matrix: Soil

Lab Workorder Number: 95-04-221

Results are reported on a dry weight basis.

Sample ID	Lab Sample ID	Sample Weight (g)	Conc. Benzene (ug/kg)	Conc. Toluene (ug/kg)	Conc. Ethyl Benzene (ug/kg)	Conc. Xylenes (ug/kg)	Surrogate Percent Recovery (TFT)	% Moist
Reagent Blank	SRB1 05/03/95	1.0	< 2.5	< 2.5	< 2.5	< 5.0	99	N/A
Reagent Blank	SRB1 05/04/95	1.0	< 2.5	< 2.5	< 2.5	< 5.0	98	N/A
Methanol Blank	MeOH SRB1 05/04/95	1.0	< 2.5	< 2.5	< 2.5	< 5.0	98	N/A
Reagent Blank	SRB1 05/05/95	1.0	< 2.5	< 2.5	< 2.5	< 5.0	98	N/A
Methanol Blank	MeOH SRB1 05/05/95	1.0	< 2.5	< 2.5	< 2.5	< 5.0	100	N/A
DB-6 (2-4')	95-04-221-01	0.050	3800	< 66	14000	29000	90	24
B-47 (2-4')	95-04-221-03	1.0	3.0	57	3.7	10	80	9.5
B-47 (16-18')	95-04-221-04	0.050	150	180	2000	6200	100	19
Duplicate 1	95-04-221-05	1.0	3.8	54	4.2	13	90	9.6
TTA3-2 (7')	95-04-221-09	0.50	22	15	1500	1600	106	18
TTA2-1 (5-6')	95-04-221-10	1.0	< 3.0	3.2	< 3.0	< 6.0	94	16
TTB2-5 (8-9')	95-04-221-11	0.050	1200	130	8100	6200	107	33
Duplicate 2	95-04-221-12	0.050	5000	620	16000	12000	97	32
TTC5-1 (6-7')	95-04-221-13	1.0	9.3	22	4.9	19	88	17
TTA4-2 (7')	95-04-221-14	0.010	3900	2300	84000	170000	93	28
TTB3-1 (3')	95-04-221-15	1.0	17	< 2.9	4.2	12	87	14
TTB3-1 (3')	95-04-221-16	1.0	6.7	4.8	16	30	96	7.0
TTA4-1 (1-2)	95-04-221-17	0.0050	20000	13000	250000	380000	104	26

000007

BTEX ANALYSIS
Modified Method 8020



Lab Name: Analytical Technologies, Inc.

Date Collected: 04/26/95

Client Name: Remediation Technologies, Inc.

Date Analyzed: 05/03/95

Client Project ID: 3-0887-303 Third Ward-SSPI

Sample Matrix: Water

Lab Workorder Number: 95-04-221

Sample ID	Lab Sample ID	Sample Volume (ml)	Conc. Benzene (ug/L)	Conc. Toluene (ug/L)	Conc. Ethyl Benzene (ug/L)	Conc. Xylenes (ug/L)	Surrogate Percent Recovery (TFT)
Reagent Blank	WRB1 05/03/95	5.0	< 0.5	< 0.5	< 0.5	< 1.0	98
EB-1	95-04-221-06	5.0	< 0.5	< 0.5	< 0.5	< 1.0	97
EB-2	95-04-221-07	5.0	< 0.5	< 0.5	< 0.5	< 1.0	98
Trip Blank	95-04-221-08	5.0	< 0.5	< 0.5	< 0.5	< 1.0	97

000008

BTEX ANALYSIS
Modified Method 8020

Lab Name: Analytical Technologies, Inc.

Date Collected: N/A

Client Name: Remediation Technolgies, Inc.

Date Analyzed: 05/03/95

Client Project ID: 3-0887-303 Third Ward-SSPI

Sample Matrix: Water

Lab Workorder Number: 95-04-222

Sample ID	Lab Sample ID	Sample Volume (ml)	Conc. Benzene (ug/L)	Conc. Toluene (ug/L)	Conc. Ethyl Benzene (ug/L)	Conc. Xylenes (ug/L)	Surrogate Percent Recovery (TFT)
Reagent Blank	WRB1 05/03/95	5.0	< 0.5	< 0.5	< 0.5	< 1.0	98
Trip Blank	95-04-222-08	5.0	< 0.5	< 0.5	< 0.5	< 1.0	97

000009

CYANIDE
Method 9010



Lab Name: Analytical Technologies, Inc.

Date Collected: 04/25-26/95

Client Name: Remediation Technologies, Inc.

Prep Date: 05/05/95

Client Project ID: 3-0887-303 Third Ward-SSPI

Date Analyzed: 05/15/95

Lab Workorder Number: 95-04-221

Sample Matrix: Soil

Results are reported on a dry weight basis.

Sample ID	Lab Sample ID	Total Cyanide (mg/kg)	Detection Limit (mg/kg)
Reagent Blank	95-04-222-RB	ND	0.25
DB-6 (2-4')	95-04-221-01	ND	0.31
DB-7 (0-2')	95-04-221-02	ND	0.29
B-47 (2-4')	95-04-221-03	ND	0.27
B-47 (16-18')	95-04-221-04	ND	0.32
Duplicate 1	95-04-221-05	ND	0.28
TTA3-2 (7')	95-04-221-09	1.4	0.34
TTA2-1 (5-6')	95-04-221-10	5.7	0.30
TTB2-5 (8-9')	95-04-221-11	2.5	0.34
Duplicate 2	95-04-221-12	1.4	0.38
TTC5-1 (6-7')	95-04-221-13	3.1	0.31
TTA4-2 (7')	95-04-221-14	2.0	0.33

ND = Not Detected

CYANIDE
Method 9010



Lab Name: Analytical Technologies, Inc.

Date Collected: 04/26/95

Client Name: Remediation Technologies, Inc.

Prep Date: 05/08/95

Client Project ID: 3-0887-303 Third Ward-SSPI

Date Analyzed: 05/15/95

Lab Workorder Number: 95-04-221

Sample Matrix: Soil

Results are reported on a dry weight basis.

Sample ID	Lab Sample ID	Total Cyanide (mg/kg)	Detection Limit (mg/kg)
Reagent Blank	95-04-222-RB	ND	0.25
TTB3-1 (3')	95-04-221-15	ND	0.29
TTA4-1 (1-2')	95-04-221-16	ND	0.27
TTC1-2 (2-3')	95-04-221-17	100	0.31

ND = Not Detected

CYANIDE
Method 9010



Lab Name: Analytical Technologies, Inc.

Date Collected: 04/27/95

Client Name: Remediation Technologies, Inc.

Prep Date: 05/08/95

Client Project ID: 3-0887-303 Third Ward-SSPI

Date Analyzed: 05/15/95

Lab Workorder Number: 95-04-222

Sample Matrix: Soil

Results are reported on a dry weight basis.

Sample ID	Lab Sample ID	Total Cyanide (mg/kg)	Detection Limit (mg/kg)
Reagent Blank	95-04-222-RB	ND	0.25
TTC4-2 (4-5)	95-04-222-01	ND	0.32
TTF3-1 (7)	95-04-222-02	4.6	0.30
TTF2-1 (3)	95-04-222-03	12	0.33
TTE1-2 (10-11)	95-04-222-04	ND	0.28
TTE2-1 (7)	95-04-222-05	ND	0.29
TTG2-1 (3-4)	95-04-222-06	ND	0.27
TTG4-1 (3-4)	95-04-222-07	ND	0.29

ND = Not Detected

CYANIDE
Method 9010



Lab Name: Analytical Technologies, Inc.

Date Collected: 04/26/95

Client Name: Remediation Technologies, Inc.

Prep Date: 05/03/95

Client Project ID: 3-0887-303 Third Ward-SSPI

Date Analyzed: 05/11/95

Lab Workorder Number: 95-04-221

Sample Matrix: Water

Sample ID	Lab Sample ID	Total Cyanide (mg/L)	Detection Limit (mg/L)
Reagent Blank	95-04-222-RB	ND	0.25
EB-1	95-04-221-06	ND	0.005
EB-2	95-04-221-07	ND	0.005

ND = Not Detected

IGNITABILITY
Method 1010



Lab Name: Analytical Technologies, Inc.

Date Collected: 04/26-28/95

Client Name: Remediation Technologies, Inc.

Date Analyzed: 05/13/95

Client Project ID: 3-0887-303 Third Ward-SSPI

Sample Matrix: Soil

Lab Workorder Number: 95-04-222

Sample ID	Lab Sample ID	Ignitable At (deg C)	Non-ignitable Below (deg C)
Composite #2	95-04-222-10		100
Composite #3	95-04-222-11		100
TTCL-4 (3-4)	95-04-222-12		100
Composite #4	95-04-222-13		100
Composite #5	95-04-222-14		100
Composite #6	95-04-222-15		100
Composite #7	95-04-222-16		100
Composite #8	95-04-222-17		100
Composite #9	95-04-222-18		100
Composite #10	95-04-222-19		100



REACTIVITY

Method 9010 (CN) and Method 9030 (Sulfide)

Lab Name: Analytical Technologies, Inc.

Date Collected: 04/26,28/95

Client Name: Remediation Technologies, Inc.

Prep Date: 05/10/95

Client Project ID: 3-0887-303 Third Ward-SSPI

Date Analyzed: 05/10/95

Lab Workorder Number: 95-04-222

Sample Matrix: Soil

Results are reported on a dry weight basis.

Sample ID	Lab Sample ID	Reactive Cyanide (mg/kg)	Cyanide Reporting Limit (mg/kg)	Reactive Sulfide (mg/kg)	Sulfide Reporting Limit (mg/kg)
Reagent Blank	95-04-222-RB	ND	0.25	ND	5
Composite #2	95-04-222-10	ND	0.30	ND	6
Composite #3	95-04-222-11	ND	0.32	ND	6
TTCL 4(3-4)	95-04-222-12	ND	0.34	200	7
Composite #4	95-04-222-13	ND	0.31	ND	6
Composite #5	95-04-222-14	ND	0.26	ND	5
Composit #6	95-04-222-15	ND	0.30	18	6
Composite #7	95-04-222-16	ND	0.30	ND	6
Composite #8	95-04-222-17	ND	0.29	ND	6
Composite #9	95-04-222-18	ND	0.30	ND	6
Composite #10	95-04-222-19	ND	0.29	120	6

ND = Not Detected

CORROSIVITY/pH
Method 9045



Lab Name: Analytical Technologies, Inc.

Date Collected: 04/26-28/95

Client Name: Remediation Technologies, Inc.

Date Analyzed: 05/02/95

Client Project ID: 3-0887-303 Third Ward-SSPI

Sample Matrix: Soil

Lab Workorder Number: 95-04-222

Sample ID	Lab Sample ID	pH
Composite #2	95-04-222-10	8.79
Composite #3	95-04-222-11	9.20
TTCL-4 (3-4)	95-04-222-12	9.02
Composite #4	95-04-222-13	9.04
Composite #5	95-04-222-14	9.44
Composite #6	95-04-222-15	9.24
Composite #7	95-04-222-16	9.70
Composite #8	95-04-222-17	9.37
Composite #9	95-04-222-18	9.07
Composite #10	95-04-222-19	9.34

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TTC1-4(3-4')

Lab Name: ANALYTICAL TECHNOLOGIES Contract: _____

Lab Code: NA Case No.: _____ SAS No.: _____ SDG No.: 950422

Matrix (soil/water): WATER Lab Sample ID: T222-12

Level (low/med): LOW Date Received: 04/29/95

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	24.5	B		P
7440-39-3	Barium	681	B		P
7440-43-9	Cadmium	7.3	B		P
7440-47-3	Chromium	6.0	U		P
7439-92-1	Lead	11.4	B		P
7439-97-6	Mercury	0.80	U		AV
7782-49-2	Selenium	19.0	U		P
7440-22-4	Silver	8.0	U		P

Color Before: COLORLESS Clarity Before: CLEAR Texture: N/A

Color After: COLORLESS Clarity After: CLEAR Artifacts: _____

Comments:

000013

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

COMPOSITE#2

Lab Name: ANALYTICAL TECHNOLOGIES Contract: _____

Lab Code: NA Case No.: _____ SAS No.: _____ SDG No.: 950422

Matrix (soil/water): WATER Lab Sample ID: T222-10

Level (low/med): LOW Date Received: 04/29/95

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	40.6	B		P
7440-39-3	Barium	994	B		P
7440-43-9	Cadmium	6.8	B		P
7440-47-3	Chromium	6.0	U		P
7439-92-1	Lead	9.0	U		P
7439-97-6	Mercury	0.80	U		AV
7782-49-2	Selenium	60.7			P
7440-22-4	Silver	8.0	U		P

Color Before: COLORLESS Clarity Before: CLEAR Texture: N/A
 Color After: COLORLESS Clarity After: CLEAR Artifacts: _____

Comments:

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

COMPOSITE#3

Lab Name: ANALYTICAL_TECHNOLOGIES Contract: _____

Lab Code: NA Case No.: SAS No.: SDG No.: 950422

Matrix (soil/water): WATER

Lab Sample ID: T222-11

Level (low/med): LOW

Date Received: 04/29/95

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	21.1	B		P
7440-39-3	Barium	891	B		P
7440-43-9	Cadmium	7.9	B		P
7440-47-3	Chromium	6.0	U		P
7439-92-1	Lead	73.4			P
7439-97-6	Mercury	0.80	U		AV
7782-49-2	Selenium	19.8	B		P
7440-22-4	Silver	8.0	U		P

Color Before: COLORLESS Clarity Before: CLEAR Texture: N/A

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

COMPOSITE#4

Lab Name: ANALYTICAL TECHNOLOGIES Contract: _____

Lab Code: NA Case No.: SAS No.: SDG No.: 950422

Matrix (soil/water): WATER Lab Sample ID: T222-13

Level (low/med): LOW Date Received: 04/29/95

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	25.5	B		P
7440-39-3	Barium	654	B		P
7440-43-9	Cadmium	6.3	B		P
7440-47-3	Chromium	6.0	U		P
7439-92-1	Lead	58.7			P
7439-97-6	Mercury	0.80	U		AV
7782-49-2	Selenium	19.0	U		P
7440-22-4	Silver	8.0	U		P

Color Before: COLORLESS Clarity Before: CLEAR Texture: N/A
Color After: COLORLESS Clarity After: CLEAR Artifacts: _____

Comments:

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

COMPOSITE#5

Lab Name: ANALYTICAL TECHNOLOGIES Contract: _____

Lab Code: NA Case No.: SAS No.: SDG No.: 950422

Matrix (soil/water): WATER Lab Sample ID: T222-14

Level (low/med): LOW Date Received: 04/29/95

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	21.3	B		P
7440-39-3	Barium	824	B		P
7440-43-9	Cadmium	7.5	B		P
7440-47-3	Chromium	6.0	U		P
7439-92-1	Lead	9.0	U		P
7439-97-6	Mercury	0.80	U		AV
7782-49-2	Selenium	19.0	U		P
7440-22-4	Silver	8.0	U		P

Color Before: COLORLESS Clarity Before: CLEAR Texture: N/A

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

COMPOSITE#6

Lab Name: ANALYTICAL TECHNOLOGIES Contract: _____

Lab Code: NA Case No.: SAS No.: SDG No.: 950422

Matrix (soil/water): WATER Lab Sample ID: T222-15

Level (low/med): LOW Date Received: 04/29/95

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	16.0	U		P
7440-39-3	Barium	743	B		P
7440-43-9	Cadmium	7.7	B		P
7440-47-3	Chromium	6.0	U		P
7439-92-1	Lead	9.0	U		P
7439-97-6	Mercury	0.80	U		AV
7782-49-2	Selenium	19.0	U		P
7440-22-4	Silver	8.0	U		P

Color Before: COLORLESS Clarity Before: CLEAR Texture: N/A

Color After: COLORLESS Clarity After: CLEAR Artifacts: _____

Comments:

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

COMPOSITE#7

Lab Name: ANALYTICAL_TECHNOLOGIES Contract: _____

Lab Code: NA Case No.: SAS No.: SDG No.: 950422

Matrix (soil/water): WATER Lab Sample ID: T222-16

Level (low/med): LOW Date Received: 04/29/95

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	16.0	U		P
7440-39-3	Barium	1200	B		P
7440-43-9	Cadmium	6.1	B		P
7440-47-3	Chromium	6.0	U		P
7439-92-1	Lead	9.0	U		P
7439-97-6	Mercury	0.80	U		AV
7782-49-2	Selenium	19.0	U		P
7440-22-4	Silver	8.0	U		P

Color Before: COLORLESS Clarity Before: CLEAR Texture: N/A

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

COMPOSITE#8

Lab Name: ANALYTICAL_TECHNOLOGIES Contract: _____

Lab Code: NA Case No.: SAS No.: SDG No.: 950422

Matrix (soil/water): WATER

Lab Sample ID: T222-17

Level (low/med): LOW

Date Received: 04/29/95

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	18.2	B		P
7440-39-3	Barium	907	B		P
7440-43-9	Cadmium	8.5	B		P
7440-47-3	Chromium	6.0	U		P
7439-92-1	Lead	9.0	U		P
7439-97-6	Mercury	0.80	U		AV
7782-49-2	Selenium	19.0	U		P
7440-22-4	Silver	8.0	U		P

Color Before: COLORLESS Clarity Before: CLEAR Texture: N/A
Color After: COLORLESS Clarity After: CLEAR Artifacts: _____

Comments:

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

COMPOSITE#9

Lab Name: ANALYTICAL TECHNOLOGIES Contract: _____

Lab Code: NA Case No.: SAS No.: SDG No.: 950422

Matrix (soil/water): WATER Lab Sample ID: T222-18

Level (low/med): LOW Date Received: 04/29/95

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	16.7	B		P
7440-39-3	Barium	776	B		P
7440-43-9	Cadmium	7.6	B		P
7440-47-3	Chromium	6.0	U		P
7439-92-1	Lead	9.0	U		P
7439-97-6	Mercury	0.80	U		AV
7782-49-2	Selenium	19.0	U		P
7440-22-4	Silver	8.0	U		P

Color Before: COLORLESS Clarity Before: CLEAR Texture: N/A

Color After: COLORLESS Clarity After: CLEAR Artifacts: _____

Comments:

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

COMPOSITE#10

Lab Name: ANALYTICAL TECHNOLOGIES Contract: _____

Lab Code: NA Case No.: SAS No.: SDG No.: 950422

Matrix (soil/water): WATER Lab Sample ID: T222-19

Level (low/med): LOW Date Received: 04/29/95

Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	20.5	B		P
7440-39-3	Barium	592	B		P
7440-43-9	Cadmium	8.2	B		P
7440-47-3	Chromium	6.0	U		P
7439-92-1	Lead	31.4			P
7439-97-6	Mercury	0.80	U		AV
7782-49-2	Selenium	19.0	U		P
7440-22-4	Silver	8.0	U		P

Color Before: COLORLESS Clarity Before: CLEAR Texture: N/A
Color After: COLORLESS Clarity After: CLEAR Artifacts: _____

Comments:

TCLP VOLATILE ORGANICS
Method 8240

Sample ID

TTC1-4(3-4')

Lab Name: Analytical Technologies, Inc.
Client Name: Remediation Technologies, Inc.
Client Project ID: 3 - 0887 - 303 Third Ward - SSPI
Lab Sample ID: 95-04-222-12

Date Collected: 04/26/95
Date Extracted: 05/04/95
Date Analyzed: 05/08/95

Sample Matrix: TCLP Leachate
Sample Volume: 0.5 mL

EPA HW Number	Analyte	CAS Number	Result (mg/L)	Detection Limit (mg/L)
D043	Vinyl chloride	75-01-4	ND	0.1
D029	1,1-Dichloroethylene	75-35-4	ND	0.1
D022	Chloroform	67-66-3	ND	0.1
D028	1,2-Dichloroethane	107-06-2	ND	0.1
D035	Methyl ethyl ketone	78-93-3	ND	0.1
D019	Carbon tetrachloride	56-23-5	ND	0.1
D040	Trichloroethylene	79-01-6	ND	0.1
D018	Benzene	71-43-2	1.0	0.1
D039	Tetrachloroethylene	127-18-4	ND	0.1
D021	Chlorobenzene	108-90-7	ND	0.1

SURROGATE RECOVERIES

Analyte	% Recovery	% Rec Limits
1,2-Dichloroethane-d4	105	76 - 114
Toluene-d8	99	88 - 110
Bromofluorobenzene	99	86 - 115

ND = Not Detected

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TCLP VOLATILE ORGANICS
Method 8240

Sample ID

Composite # 2

Lab Name: Analytical Technologies, Inc.
Client Name: Remediation Technologies, Inc.
Client Project ID: 3 - 0887 - 303 Third Ward - SSPI
Lab Sample ID: 95-04-222-10

Date Collected: 04/28/95
Date Extracted: 05/04/95
Date Analyzed: 05/08/95

Sample Matrix: TCLP Leachate
Sample Volume: 0.5 mL

EPA HW Number	Analyte	CAS Number	Result (mg/L)	Detection Limit (mg/L)
D043	Vinyl chloride	75-01-4	ND	0.1
D029	1,1-Dichloroethylene	75-35-4	ND	0.1
D022	Chloroform	67-66-3	ND	0.1
D028	1,2-Dichloroethane	107-06-2	ND	0.1
D035	Methyl ethyl ketone	78-93-3	ND	0.1
D019	Carbon tetrachloride	56-23-5	ND	0.1
D040	Trichloroethylene	79-01-6	ND	0.1
D018	Benzene	71-43-2	ND	0.1
D039	Tetrachloroethylene	127-18-4	ND	0.1
D021	Chlorobenzene	108-90-7	ND	0.1

SURROGATE RECOVERIES

Analyte	% Recovery	% Rec Limits
1,2-Dichloroethane-d4	104	76 - 114
Toluene-d8	99	88 - 110
Bromofluorobenzene	100	86 - 115

ND = Not Detected

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TCLP VOLATILE ORGANICS

Method 8240

Sample ID

Composite # 3

Lab Name: Analytical Technologies, Inc.
 Client Name: Remediation Technologies, Inc.
 Client Project ID: 3 - 0887 - 303 Third Ward - SSPI
 Lab Sample ID: 95-04-222-11

Date Collected: 04/28/95
 Date Extracted: 05/04/95
 Date Analyzed: 05/08/95

Sample Matrix: TCLP Leachate
 Sample Volume: 0.5 mL

EPA HW Number	Analyte	CAS Number	Result (mg/L)	Detection Limit (mg/L)
D043	Vinyl chloride	75-01-4	ND	0.1
D029	1,1-Dichloroethylene	75-35-4	ND	0.1
D022	Chloroform	67-66-3	ND	0.1
D028	1,2-Dichloroethane	107-06-2	ND	0.1
D035	Methyl ethyl ketone	78-93-3	ND	0.1
D019	Carbon tetrachloride	56-23-5	ND	0.1
D040	Trichloroethylene	79-01-6	ND	0.1
D018	Benzene	71-43-2	0.03 J	0.1
D039	Tetrachloroethylene	127-18-4	ND	0.1
D021	Chlorobenzene	108-90-7	ND	0.1

SURROGATE RECOVERIES

Analyte	% Recovery	% Rec Limits
1,2-Dichloroethane-d4	103	76 - 114
Toluene-d8	99	88 - 110
Bromofluorobenzene	99	86 - 115

ND = Not Detected
 J = Estimated value, analyte found below detection limit

TCLP VOLATILE ORGANICS
Method 8240

Sample ID

Composite # 4

Lab Name: Analytical Technologies, Inc.
Client Name: Remediation Technologies, Inc.
Client Project ID: 3 - 0887 - 303 Third Ward - SSPI
Lab Sample ID: 95-04-222-13

Date Collected: 04/28/95
Date Extracted: 05/04/95
Date Analyzed: 05/08/95

Sample Matrix: TCLP Leachate
Sample Volume: 0.5 mL

EPA HW Number	Analyte	CAS Number	Result (mg/L)	Detection Limit (mg/L)
D043	Vinyl chloride	75-01-4	ND	0.1
D029	1,1-Dichloroethylene	75-35-4	ND	0.1
D022	Chloroform	67-66-3	ND	0.1
D028	1,2-Dichloroethane	107-06-2	ND	0.1
D035	Methyl ethyl ketone	78-93-3	ND	0.1
D019	Carbon tetrachloride	56-23-5	ND	0.1
D040	Trichloroethylene	79-01-6	ND	0.1
D018	Benzene	71-43-2	0.08 J	0.1
D039	Tetrachloroethylene	127-18-4	ND	0.1
D021	Chlorobenzene	108-90-7	ND	0.1

SURROGATE RECOVERIES

Analyte	% Recovery	% Rec Limits
1,2-Dichloroethane-d4	103	76 - 114
Toluene-d8	97	88 - 110
Bromofluorobenzene	100	86 - 115

ND = Not Detected
J = Estimated value, analyte found below detection limit

TCLP VOLATILE ORGANICS

Method 8240

Sample ID

Composite # 5

Lab Name: Analytical Technologies, Inc.
 Client Name: Remediation Technologies, Inc.
 Client Project ID: 3 - 0887 - 303 Third Ward - SSPI
 Lab Sample ID: 95-04-222-14

Date Collected: 04/28/95
 Date Extracted: 05/04/95
 Date Analyzed: 05/08/95

Sample Matrix: TCLP Leachate
 Sample Volume: 0.5 mL

EPA HW Number	Analyte	CAS Number	Result (mg/L)	Detection Limit (mg/L)
D043	Vinyl chloride	75-01-4	ND	0.1
D029	1,1-Dichloroethylene	75-35-4	ND	0.1
D022	Chloroform	67-66-3	0.03 J	0.1
D028	1,2-Dichloroethane	107-06-2	ND	0.1
D035	Methyl ethyl ketone	78-93-3	ND	0.1
D019	Carbon tetrachloride	56-23-5	ND	0.1
D040	Trichloroethylene	79-01-6	ND	0.1
D018	Benzene	71-43-2	ND	0.1
D039	Tetrachloroethylene	127-18-4	ND	0.1
D021	Chlorobenzene	108-90-7	ND	0.1

SURROGATE RECOVERIES

Analyte	% Recovery	% Rec Limits
1,2-Dichloroethane-d4	103	76 - 114
Toluene-d8	98	88 - 110
Bromofluorobenzene	101	86 - 115

ND = Not Detected

J = Estimated value, analyte found below detection limit

TCLP VOLATILE ORGANICS
Method 8240

Sample ID

Composite # 6

Lab Name: Analytical Technologies, Inc.
Client Name: Remediation Technologies, Inc.
Client Project ID: 3 - 0887 - 303 Third Ward - SSPI
Lab Sample ID: 95-04-222-15

Date Collected: 04/28/95
Date Extracted: 05/04/95
Date Analyzed: 05/08/95

Sample Matrix: TCLP Leachate
Sample Volume: 0.5 mL

EPA HW Number	Analyte	CAS Number	Result (mg/L)	Detection Limit (mg/L)
D043	Vinyl chloride	75-01-4	ND	0.1
D029	1,1-Dichloroethylene	75-35-4	ND	0.1
D022	Chloroform	67-66-3	ND	0.1
D028	1,2-Dichloroethane	107-06-2	ND	0.1
D035	Methyl ethyl ketone	78-93-3	ND	0.1
D019	Carbon tetrachloride	56-23-5	ND	0.1
D040	Trichloroethylene	79-01-6	ND	0.1
D018	Benzene	71-43-2	ND	0.1
D039	Tetrachloroethylene	127-18-4	ND	0.1
D021	Chlorobenzene	108-90-7	ND	0.1

SURROGATE RECOVERIES

Analyte	% Recovery	% Rec Limits
1,2-Dichloroethane-d4	103	76 - 114
Toluene-d8	98	88 - 110
Bromofluorobenzene	101	86 - 115

ND = Not Detected

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TCLP VOLATILE ORGANICS
Method 8240

Sample ID

Composite # 7

Lab Name: Analytical Technologies, Inc.
Client Name: Remediation Technologies, Inc.
Client Project ID: 3 - 0887 - 303 Third Ward - SSPI
Lab Sample ID: 95-04-222-16

Date Collected: 04/28/95
Date Extracted: 05/04/95
Date Analyzed: 05/08/95

Sample Matrix: TCLP Leachate
Sample Volume: 0.5 mL

EPA HW Number	Analyte	CAS Number	Result (mg/L)	Detection Limit (mg/L)
D043	Vinyl chloride	75-01-4	ND	0.1
D029	1,1-Dichloroethylene	75-35-4	ND	0.1
D022	Chloroform	67-66-3	ND	0.1
D028	1,2-Dichloroethane	107-06-2	ND	0.1
D035	Methyl ethyl ketone	78-93-3	ND	0.1
D019	Carbon tetrachloride	56-23-5	ND	0.1
D040	Trichloroethylene	79-01-6	ND	0.1
D018	Benzene	71-43-2	ND	0.1
D039	Tetrachloroethylene	127-18-4	ND	0.1
D021	Chlorobenzene	108-90-7	ND	0.1

SURROGATE RECOVERIES

Analyte	% Recovery	% Rec Limits
1,2-Dichloroethane-d4	103	76 - 114
Toluene-d8	96	88 - 110
Bromofluorobenzene	100	86 - 115

ND = Not Detected

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TCLP VOLATILE ORGANICS
Method 8240

Sample ID

Composite # 8

Lab Name: Analytical Technologies, Inc.
Client Name: Remediation Technologies, Inc.
Client Project ID: 3 - 0887 - 303 Third Ward - SSPI
Lab Sample ID: 95-04-222-17

Date Collected: 04/28/95
Date Extracted: 05/04/95
Date Analyzed: 05/08/95

Sample Matrix: TCLP Leachate
Sample Volume: 0.5 mL

EPA HW Number	Analyte	CAS Number	Result (mg/L)	Detection Limit (mg/L)
D043	Vinyl chloride	75-01-4	ND	0.1
D029	1,1-Dichloroethylene	75-35-4	ND	0.1
D022	Chloroform	67-66-3	ND	0.1
D028	1,2-Dichloroethane	107-06-2	ND	0.1
D035	Methyl ethyl ketone	78-93-3	ND	0.1
D019	Carbon tetrachloride	56-23-5	ND	0.1
D040	Trichloroethylene	79-01-6	ND	0.1
D018	Benzene	71-43-2	ND	0.1
D039	Tetrachloroethylene	127-18-4	ND	0.1
D021	Chlorobenzene	108-90-7	ND	0.1

SURROGATE RECOVERIES

Analyte	% Recovery	% Rec Limits
1,2-Dichloroethane-d4	104	76 - 114
Toluene-d8	98	88 - 110
Bromofluorobenzene	100	86 - 115

ND = Not Detected

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000061

TCLP VOLATILE ORGANICS
Method 8240

Sample ID

Composite # 9

Lab Name: Analytical Technologies, Inc.
Client Name: Remediation Technologies, Inc.
Client Project ID: 3 - 0887 - 303 Third Ward - SSPI
Lab Sample ID: 95-04-222-18

Date Collected: 04/28/95
Date Extracted: 05/05/95
Date Analyzed: 05/08/95

Sample Matrix: TCLP Leachate
Sample Volume: 0.5 mL

EPA HW Number	Analyte	CAS Number	Result (mg/L)	Detection Limit (mg/L)
D043	Vinyl chloride	75-01-4	ND	0.1
D029	1,1-Dichloroethylene	75-35-4	ND	0.1
D022	Chloroform	67-66-3	ND	0.1
D028	1,2-Dichloroethane	107-06-2	ND	0.1
D035	Methyl ethyl ketone	78-93-3	ND	0.1
D019	Carbon tetrachloride	56-23-5	ND	0.1
D040	Trichloroethylene	79-01-6	ND	0.1
D018	Benzene	71-43-2	ND	0.1
D039	Tetrachloroethylene	127-18-4	ND	0.1
D021	Chlorobenzene	108-90-7	ND	0.1

SURROGATE RECOVERIES

Analyte	% Recovery	% Rec Limits
1,2-Dichloroethane-d4	104	76 - 114
Toluene-d8	97	88 - 110
Bromofluorobenzene	101	86 - 115

ND = Not Detected

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000065

TCLP VOLATILE ORGANICS
Method 8240

Sample ID

Composite # 10

Lab Name: Analytical Technologies, Inc.
Client Name: Remediation Technologies, Inc.
Client Project ID: 3 - 0887 - 303 Third Ward - SSPI
Lab Sample ID: 95-04-222-19

Date Collected: 04/28/95
Date Extracted: 05/05/95
Date Analyzed: 05/09/95

Sample Matrix: TCLP Leachate
Sample Volume: 0.5 mL

EPA HW Number	Analyte	CAS Number	Result (mg/L)	Detection Limit (mg/L)
D043	Vinyl chloride	75-01-4	ND	0.1
D029	1,1-Dichloroethylene	75-35-4	ND	0.1
D022	Chloroform	67-66-3	ND	0.1
D028	1,2-Dichloroethane	107-06-2	ND	0.1
D035	Methyl ethyl ketone	78-93-3	ND	0.1
D019	Carbon tetrachloride	56-23-5	ND	0.1
D040	Trichloroethylene	79-01-6	ND	0.1
D018	Benzene	71-43-2	ND	0.1
D039	Tetrachloroethylene	127-18-4	ND	0.1
D021	Chlorobenzene	108-90-7	ND	0.1

SURROGATE RECOVERIES

Analyte	% Recovery	% Rec Limits
1,2-Dichloroethane-d4	99	76 - 114
Toluene-d8	103	88 - 110
Bromofluorobenzene	99	86 - 115

ND = Not Detected

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TCLP SEMIVOLATILE ORGANICS

Modified Method 8270

Sample ID

TTCI-4 (3-4')

Lab Name: Analytical Technologies, Inc.
 Client Name: Remediation Technologies, Inc.
 Client Project: 3-0887-303 Third Ward - SSPI
 Sample Matrix: TCLP Leachate
 Sample wt/vol: 100 mL
 Level (Low/Med): Low
 Extraction (SepF/Cont/Sonc): Cont
 GPC Cleanup (Y/N): N

Date Collected: 04-26-95
 Date Extracted: 05-03-95
 Date Analyzed: 05-08-95
 Lab Sample ID: 95-04-222-12
 Lab File ID: 50895S07.D
 Final Volume: 1 mL

EPA HW Number	Analyte	CAS Number	Result (mg/L)	Detection Limit (mg/L)
D023	o-Cresol	95-48-7	ND	0.1
D024	m-Cresol	108-39-4	ND	0.1
D025	p-Cresol	106-44-5	ND	0.1
D026	Total o,m,p-Cresol		ND	0.1
D027	1,4-Dichlorobenzene	106-46-7	ND	0.1
D030	2,4-Dinitrotoluene	121-14-2	ND	0.1
D032	Hexachlorobenzene	118-74-1	ND	0.1
D033	Hexachlorobutadiene	87-68-3	ND	0.1
D034	Hexachloroethane	67-72-1	ND	0.1
D036	Nitrobenzene	98-95-3	ND	0.1
D037	Pentachlorophenol	87-86-5	ND	0.5
D038	Pyridine	110-86-1	ND	0.1
D041	2,4,5-Trichlorophenol	95-95-4	ND	0.5
D042	2,4,6-Trichlorophenol	88-06-2	ND	0.1

SURROGATE RECOVERIES

Analyte	% Recovery	% Rec Limits
2-Fluorophenol	55	21-110
Phenol-d5	61	10-110
Nitrobenzene-d5	72	35-114
2-Fluorobiphenyl	72	43-116
2,4,6-Tribromophenol	56	10-123
Terphenyl-d14	79	33-141

ND = Not detected

TCLP SEMIVOLATILE ORGANICS

Modified Method 8270

Sample ID

Composite #2

Lab Name: Analytical Technologies, Inc.
 Client Name: Remediation Technologies, Inc.
 Client Project: 3-0887-303 Third Ward - SSPI
 Sample Matrix: TCLP Leachate
 Sample wt/vol: 100 mL
 Level (Low/Med): Low
 Extraction (SepF/Cont/Sonc): Cont
 GPC Cleanup (Y/N): N

Date Collected: 04-28-95
 Date Extracted: 05-03-95
 Date Analyzed: 05-08-95
 Lab Sample ID.: 95-04-222-10
 Lab File ID: 50895S04.D
 Final Volume: 1 mL

EPA HW Number	Analyte	CAS Number	Result (mg/L)	Detection Limit (mg/L)
D023	o-Cresol	95-48-7	ND	0.1
D024	m-Cresol	108-39-4	ND	0.1
D025	p-Cresol	106-44-5	ND	0.1
D026	Total o,m,p-Cresol		ND	0.1
D027	1,4-Dichlorobenzene	106-46-7	ND	0.1
D030	2,4-Dinitrotoluene	121-14-2	ND	0.1
D032	Hexachlorobenzene	118-74-1	ND	0.1
D033	Hexachlorobutadiene	87-68-3	ND	0.1
D034	Hexachloroethane	67-72-1	ND	0.1
D036	Nitrobenzene	98-95-3	ND	0.1
D037	Pentachlorophenol	87-86-5	ND	0.5
D038	Pyridine	110-86-1	ND	0.1
D041	2,4,5-Trichlorophenol	95-95-4	ND	0.5
D042	2,4,6-Trichlorophenol	88-06-2	ND	0.1

SURROGATE RECOVERIES

Analyte	% Recovery	% Rec Limits
2-Fluorophenol	4*	21-110
Phenol-d5	13	10-110
Nitrobenzene-d5	68	35-114
2-Fluorobiphenyl	69	43-116
2,4,6-Tribromophenol	5*	10-123
Terphenyl-d14	63	33-141

ND = Not detected
 * = Outside QC Limits

TCLP SEMIVOLATILE ORGANICS

Modified Method 8270

Sample ID

Composite #2 RX

Lab Name: Analytical Technologies, Inc.
 Client Name: Remediation Technologies, Inc.
 Client Project: 3-0887-303 Third Ward - SSPI
 Sample Matrix: TCLP Leachate
 Sample wt/vol: 100 mL
 Level (Low/Med): Low
 Extraction (SepF/Cont/Sonc): Cont
 GPC Cleanup (Y/N): N

Date Collected: 04-28-95
 Date Extracted: 05-09-95
 Date Analyzed: 05-11-95
 Lab Sample ID.: 95-04-222-10 RX
 Lab File ID: 51195S05.D
 Final Volume: 1 mL

EPA HW Number	Analyte	CAS Number	Result (mg/L)	Detection Limit (mg/L)
D023	o-Cresol	95-48-7	ND	0.1
D024	m-Cresol	108-39-4	ND	0.1
D025	p-Cresol	106-44-5	ND	0.1
D026	Total o,m,p-Cresol		ND	0.1
D027	1,4-Dichlorobenzene	106-46-7	ND	0.1
D030	2,4-Dinitrotoluene	121-14-2	ND	0.1
D032	Hexachlorobenzene	118-74-1	ND	0.1
D033	Hexachlorobutadiene	87-68-3	ND	0.1
D034	Hexachloroethane	67-72-1	ND	0.1
D036	Nitrobenzene	98-95-3	ND	0.1
D037	Pentachlorophenol	87-86-5	ND	0.5
D038	Pyridine	110-86-1	ND	0.1
D041	2,4,5-Trichlorophenol	95-95-4	ND	0.5
D042	2,4,6-Trichlorophenol	88-06-2	ND	0.1

SURROGATE RECOVERIES

Analyte	% Recovery	% Rec Limits
2-Fluorophenol	55	21-110
Phenol-d5	59	10-110
Nitrobenzene-d5	62	35-114
2-Fluorobiphenyl	65	43-116
2,4,6-Tribromophenol	73	10-123
Terphenyl-d14	85	33-141

ND = Not detected

000011

TCLP SEMIVOLATILE ORGANICS

Modified Method 8270

Sample ID

Composite # 3

Lab Name: Analytical Technologies, Inc.
 Client Name: Remediation Technologies, Inc.
 Client Project: 3-0887-303 Third Ward - SSPI
 Sample Matrix: TCLP Leachate
 Sample wt/vol: 100 mL
 Level (Low/Med): Low
 Extraction (SepF/Cont/Sonc): Cont
 GPC Cleanup (Y/N): N

Date Collected: 04-28-95
 Date Extracted: 05-03-95
 Date Analyzed: 05-08-95
 Lab Sample ID: 95-04-222-11
 Lab File ID: 50895S06.D
 Final Volume: 1 mL

EPA HW Number	Analyte	CAS Number	Result (mg/L)	Detection Limit (mg/L)
D023	o-Cresol	95-48-7	ND	0.1
D024	m-Cresol	108-39-4	ND	0.1
D025	p-Cresol	106-44-5	ND	0.1
D026	Total o,m,p-Cresol		ND	0.1
D027	1,4-Dichlorobenzene	106-46-7	ND	0.1
D030	2,4-Dinitrotoluene	121-14-2	ND	0.1
D032	Hexachlorobenzene	118-74-1	ND	0.1
D033	Hexachlorobutadiene	87-68-3	ND	0.1
D034	Hexachloroethane	67-72-1	ND	0.1
D036	Nitrobenzene	98-95-3	ND	0.1
D037	Pentachlorophenol	87-86-5	ND	0.5
D038	Pyridine	110-86-1	ND	0.1
D041	2,4,5-Trichlorophenol	95-95-4	ND	0.5
D042	2,4,6-Trichlorophenol	88-06-2	ND	0.1

SURROGATE RECOVERIES

Analyte	% Recovery	% Rec Limits
2-Fluorophenol	63	21-110
Phenol-d5	67	10-110
Nitrobenzene-d5	66	35-114
2-Fluorobiphenyl	69	43-116
2,4,6-Tribromophenol	70	10-123
Terphenyl-d14	74	33-141

ND = Not detected

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TCLP SEMIVOLATILE ORGANICS

Modified Method 8270

Sample ID

Composite #4

Lab Name: Analytical Technologies, Inc.
 Client Name: Remediation Technologies, Inc.
 Client Project: 3-0887-303 Third Ward - SSPI
 Sample Matrix: TCLP Leachate
 Sample wt/vol: 100 mL
 Level (Low/Med): Low
 Extraction (SepF/Cont/Sonc): Cont
 GPC Cleanup (Y/N): N

Date Collected: 04-28-95
 Date Extracted: 05-03-95
 Date Analyzed: 05-08-95
 Lab Sample ID: 95-04-222-13
 Lab File ID: 50895S08.D
 Final Volume: 1 mL

EPA HW Number	Analyte	CAS Number	Result (mg/L)	Detection Limit (mg/L)
D023	o-Cresol	95-48-7	ND	0.1
D024	m-Cresol	108-39-4	ND	0.1
D025	p-Cresol	106-44-5	ND	0.1
D026	Total o,m,p-Cresol		ND	0.1
D027	1,4-Dichlorobenzene	106-46-7	ND	0.1
D030	2,4-Dinitrotoluene	121-14-2	ND	0.1
D032	Hexachlorobenzene	118-74-1	ND	0.1
D033	Hexachlorobutadiene	87-68-3	ND	0.1
D034	Hexachloroethane	67-72-1	ND	0.1
D036	Nitrobenzene	98-95-3	ND	0.1
D037	Pentachlorophenol	87-86-5	ND	0.5
D038	Pyridine	110-86-1	ND	0.1
D041	2,4,5-Trichlorophenol	95-95-4	ND	0.5
D042	2,4,6-Trichlorophenol	88-06-2	ND	0.1

SURROGATE RECOVERIES

Analyte	% Recovery	% Rec Limits
2-Fluorophenol	64	21-110
Phenol-d5	66	10-110
Nitrobenzene-d5	69	35-114
2-Fluorobiphenyl	71	43-116
2,4,6-Tribromophenol	72	10-123
Terphenyl-d14	76	33-141

ND = Not detected

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000014

TCLP SEMIVOLATILE ORGANICS

Modified Method 8270

Sample ID

Composite #5

Lab Name: Analytical Technologies, Inc.
 Client Name: Remediation Technologies, Inc.
 Client Project: 3-0887-303 Third Ward - SSPI
 Sample Matrix: TCLP Leachate
 Sample wt/vol: 100 mL
 Level (Low/Med): Low
 Extraction (SepF/Cont/Sonc): Cont
 GPC Cleanup (Y/N): N

Date Collected: 04-28-95
 Date Extracted: 05-03-95
 Date Analyzed: 05-08-95
 Lab Sample ID: 95-04-222-14
 Lab File ID: 50895S09.D
 Final Volume: 1 mL

EPA HW Number	Analyte	CAS Number	Result (mg/L)	Detection Limit (mg/L)
D023	o-Cresol	95-48-7	ND	0.1
D024	m-Cresol	108-39-4	ND	0.1
D025	p-Cresol	106-44-5	ND	0.1
D026	Total o,m,p-Cresol		ND	0.1
D027	1,4-Dichlorobenzene	106-46-7	ND	0.1
D030	2,4-Dinitrotoluene	121-14-2	ND	0.1
D032	Hexachlorobenzene	118-74-1	ND	0.1
D033	Hexachlorobutadiene	87-68-3	ND	0.1
D034	Hexachloroethane	67-72-1	ND	0.1
D036	Nitrobenzene	98-95-3	ND	0.1
D037	Pentachlorophenol	87-86-5	ND	0.5
D038	Pyridine	110-86-1	ND	0.1
D041	2,4,5-Trichlorophenol	95-95-4	ND	0.5
D042	2,4,6-Trichlorophenol	88-06-2	ND	0.1

SURROGATE RECOVERIES

Analyte	% Recovery	% Rec Limits
2-Fluorophenol	43	21-110
Phenol-d5	49	10-110
Nitrobenzene-d5	66	35-114
2-Fluorobiphenyl	68	43-116
2,4,6-Tribromophenol	55	10-123
Terphenyl-d14	74	33-141

ND = Not detected

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TCLP SEMIVOLATILE ORGANICS

Modified Method 8270

Sample ID

Composite #6

Lab Name: Analytical Technologies, Inc.
 Client Name: Remediation Technologies, Inc.
 Client Project: 3-0887-303 Third Ward - SSPI
 Sample Matrix: TCLP Leachate
 Sample wt/vol: 100 mL
 Level (Low/Med): Low
 Extraction (SepF/Cont/Sonc): Cont
 GPC Cleanup (Y/N): N

Date Collected: 04-28-95
 Date Extracted: 05-03-95
 Date Analyzed: 05-08-95
 Lab Sample ID: 95-04-222-15
 Lab File ID: 50895S10.D
 Final Volume: 1 mL

EPA HW Number	Analyte	CAS Number	Result (mg/L)	Detection Limit (mg/L)
D023	o-Cresol	95-48-7	ND	0.1
D024	m-Cresol	108-39-4	ND	0.1
D025	p-Cresol	106-44-5	ND	0.1
D026	Total o,m,p-Cresol		ND	0.1
D027	1,4-Dichlorobenzene	106-46-7	ND	0.1
D030	2,4-Dinitrotoluene	121-14-2	ND	0.1
D032	Hexachlorobenzene	118-74-1	ND	0.1
D033	Hexachlorobutadiene	87-68-3	ND	0.1
D034	Hexachloroethane	67-72-1	ND	0.1
D036	Nitrobenzene	98-95-3	ND	0.1
D037	Pentachlorophenol	87-86-5	ND	0.5
D038	Pyridine	110-86-1	ND	0.1
D041	2,4,5-Trichlorophenol	95-95-4	ND	0.5
D042	2,4,6-Trichlorophenol	88-06-2	ND	0.1

SURROGATE RECOVERIES

Analyte	% Recovery	% Rec Limits
2-Fluorophenol	58	21-110
Phenol-d5	60	10-110
Nitrobenzene-d5	69	35-114
2-Fluorobiphenyl	72	43-116
2,4,6-Tribromophenol	60	10-123
Terphenyl-d14	78	33-141

ND = Not detected

000016

TCLP SEMIVOLATILE ORGANICS
Modified Method 8270

Sample ID

Composite #7

Lab Name: Analytical Technologies, Inc.
Client Name: Remediation Technologies, Inc.
Client Project: 3-0887-303 Third Ward - SSPI
Sample Matrix: TCLP Leachate
Sample wt/vol: 100 mL
Level (Low/Med): Low
Extraction (SepF/Cont/Sonc): Cont
GPC Cleanup (Y/N): N

Date Collected: 04-28-95
Date Extracted: 05-03-95
Date Analyzed: 05-08-95
Lab Sample ID: 95-04-222-16
Lab File ID: 50895S11.D
Final Volume: 1 mL

EPA HW Number	Analyte	CAS Number	Result (mg/L)	Detection Limit (mg/L)
D023	o-Cresol	95-48-7	ND	0.1
D024	m-Cresol	108-39-4	ND	0.1
D025	p-Cresol	106-44-5	ND	0.1
D026	Total o,m,p-Cresol		ND	0.1
D027	1,4-Dichlorobenzene	106-46-7	ND	0.1
D030	2,4-Dinitrotoluene	121-14-2	ND	0.1
D032	Hexachlorobenzene	118-74-1	ND	0.1
D033	Hexachlorobutadiene	87-68-3	ND	0.1
D034	Hexachloroethane	67-72-1	ND	0.1
D036	Nitrobenzene	98-95-3	ND	0.1
D037	Pentachlorophenol	87-86-5	ND	0.5
D038	Pyridine	110-86-1	ND	0.1
D041	2,4,5-Trichlorophenol	95-95-4	ND	0.5
D042	2,4,6-Trichlorophenol	88-06-2	ND	0.1

SURROGATE RECOVERIES

Analyte	% Recovery	% Rec Limits
2-Fluorophenol	67	21-110
Phenol-d5	70	10-110
Nitrobenzene-d5	74	35-114
2-Fluorobiphenyl	72	43-116
2,4,6-Tribromophenol	74	10-123
Terphenyl-d14	78	33-141

ND = Not detected

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TCLP SEMIVOLATILE ORGANICS

Modified Method 8270

Sample ID

Composite #8

Lab Name: Analytical Technologies, Inc.
 Client Name: Remediation Technologies, Inc.
 Client Project: 3-0887-303 Third Ward - SSPI
 Sample Matrix: TCLP Leachate
 Sample wt/vol: 100 mL
 Level (Low/Med): Low
 Extraction (SepF/Cont/Sonc): Cont
 GPC Cleanup (Y/N): N

Date Collected: 04-28-95
 Date Extracted: 05-03-95
 Date Analyzed: 05-08-95
 Lab Sample ID: 95-04-222-17
 Lab File ID: 50895S12.D
 Final Volume: 1 mL

EPA HW Number	Analyte	CAS Number	Result (mg/L)	Detection Limit (mg/L)
D023	o-Cresol	95-48-7	ND	0.1
D024	m-Cresol	108-39-4	ND	0.1
D025	p-Cresol	106-44-5	ND	0.1
D026	Total o,m,p-Cresol		ND	0.1
D027	1,4-Dichlorobenzene	106-46-7	ND	0.1
D030	2,4-Dinitrotoluene	121-14-2	ND	0.1
D032	Hexachlorobenzene	118-74-1	ND	0.1
D033	Hexachlorobutadiene	87-68-3	ND	0.1
D034	Hexachloroethane	67-72-1	ND	0.1
D036	Nitrobenzene	98-95-3	ND	0.1
D037	Pentachlorophenol	87-86-5	ND	0.5
D038	Pyridine	110-86-1	ND	0.1
D041	2,4,5-Trichlorophenol	95-95-4	ND	0.5
D042	2,4,6-Trichlorophenol	88-06-2	ND	0.1

SURROGATE RECOVERIES

Analyte	% Recovery	% Rec Limits
2-Fluorophenol	8*	21-110
Phenol-d5	18	10-110
Nitrobenzene-d5	64	35-114
2-Fluorobiphenyl	66	43-116
2,4,6-Tribromophenol	5*	10-123
Terphenyl-d14	73	33-141

ND = Not detected
 * = Outside QC limits

TCLP SEMIVOLATILE ORGANICS

Modified Method 8270

Sample ID

Composite #9

Lab Name: Analytical Technologies, Inc.
 Client Name: Remediation Technologies, Inc.
 Client Project: 3-0887-303 Third Ward - SSPI
 Sample Matrix: TCLP Leachate
 Sample wt/vol: 100 mL
 Level (Low/Med): Low
 Extraction (SepF/Cont/Sonc): Cont
 GPC Cleanup (Y/N): N

Date Collected: 04-28-95
 Date Extracted: 05-03-95
 Date Analyzed: 05-08-95
 Lab Sample ID: 95-04-222-18
 Lab File ID: 50895S13.D
 Final Volume: 1 mL

EPA HW Number	Analyte	CAS Number	Result (mg/L)	Detection Limit (mg/L)
D023	o-Cresol	95-48-7	ND	0.1
D024	m-Cresol	108-39-4	ND	0.1
D025	p-Cresol	106-44-5	ND	0.1
D026	Total o,m,p-Cresol		ND	0.1
D027	1,4-Dichlorobenzene	106-46-7	ND	0.1
D030	2,4-Dinitrotoluene	121-14-2	ND	0.1
D032	Hexachlorobenzene	118-74-1	ND	0.1
D033	Hexachlorobutadiene	87-68-3	ND	0.1
D034	Hexachloroethane	67-72-1	ND	0.1
D036	Nitrobenzene	98-95-3	ND	0.1
D037	Pentachlorophenol	87-86-5	ND	0.5
D038	Pyridine	110-86-1	ND	0.1
D041	2,4,5-Trichlorophenol	95-95-4	ND	0.5
D042	2,4,6-Trichlorophenol	88-06-2	ND	0.1

SURROGATE RECOVERIES

Analyte	% Recovery	% Rec Limits
2-Fluorophenol	1*	21-110
Phenol-d5	10	10-110
Nitrobenzene-d5	55	35-114
2-Fluorobiphenyl	61	43-116
2,4,6-Tribromophenol	3*	10-123
Terphenyl-d14	67	33-141

ND = Not detected
 * = Outside QC limits

TCLP SEMIVOLATILE ORGANICS

Modified Method 8270

Sample ID

Composite #10

Lab Name: Analytical Technologies, Inc.
 Client Name: Remediation Technologies, Inc.
 Client Project: 3-0887-303 Third Ward - SSPI
 Sample Matrix: TCLP Leachate
 Sample wt/vol: 100 mL
 Level (Low/Med): Low
 Extraction (SepF/Cont/Sonc): Cont
 GPC Cleanup (Y/N): N

Date Collected: 04-28-95
 Date Extracted: 05-03-95
 Date Analyzed: 05-08-95
 Lab Sample ID: 95-04-222-19
 Lab File ID: 50895S14.D
 Final Volume: 1 mL

EPA HW Number	Analyte	CAS Number	Result (mg/L)	Detection Limit (mg/L)
D023	o-Cresol	95-48-7	ND	0.1
D024	m-Cresol	108-39-4	ND	0.1
D025	p-Cresol	106-44-5	ND	0.1
D026	Total o,m,p-Cresol		ND	0.1
D027	1,4-Dichlorobenzene	106-46-7	ND	0.1
D030	2,4-Dinitrotoluene	121-14-2	ND	0.1
D032	Hexachlorobenzene	118-74-1	ND	0.1
D033	Hexachlorobutadiene	87-68-3	ND	0.1
D034	Hexachloroethane	67-72-1	ND	0.1
D036	Nitrobenzene	98-95-3	ND	0.1
D037	Pentachlorophenol	87-86-5	ND	0.5
D038	Pyridine	110-86-1	ND	0.1
D041	2,4,5-Trichlorophenol	95-95-4	ND	0.5
D042	2,4,6-Trichlorophenol	88-06-2	ND	0.1

SURROGATE RECOVERIES

Analyte	% Recovery	% Rec Limits
2-Fluorophenol	5*	21-110
Phenol-d5	17	10-110
Nitrobenzene-d5	69	35-114
2-Fluorobiphenyl	73	43-116
2,4,6-Tribromophenol	24	10-123
Terphenyl-d14	78	33-141

ND = Not detected

* = Outside QC limits



ALKALI CONTENT

Lab Name: Analytical Technologies, Inc.

Client Name: Remediation Technologies, Inc.

Client Project ID: 3-0887-303/Third Ward MGP-SSPI

Lab Sample ID: 95-05-005-01 .

Sample ID

Composite 11

Date Collected: 04/29/95

Date Reported: 05/17/95

Sample Matrix: Soil

Analyte	Concentration	Units
pH	7.3	
Electrical Conductivity	3.3	mmhos/cm
Calcium	22	meg/L
Magnesium	15.6	meg/L
Sodium	4.7	meg/L
Potassium	1.9	meg/L
Sodium Adsorption Ratio	1.1	



ALKALI CONTENT

Lab Name: Analytical Technologies, Inc.

Client Name: Remediation Technologies, Inc.

Client Project ID: 3-0887-303/Third Ward MGP-SSPI

Lab Sample ID: 95-05-005-02.

Sample ID

Composite #12

Date Collected: 04/29/95

Date Reported: 05/17/95

Sample Matrix: Soil

Analyte	Concentration	Units
pH	7.5	
Electrical Conductivity	3.4	mmhos/cm
Calcium	26.4	meg/L
Magnesium	14.0	meg/L
Sodium	5.5	meg/L
Potassium	1.3	meg/L
Sodium Adsorption Ratio	1.2	



ALKALI CONTENT

Sample ID

Composite #13

Lab Name: Analytical Technologies, Inc.

Client Name: Remediation Technologies, Inc.

Client Project ID: 3-0887-303/Third Ward MGP-SSPI

Lab Sample ID: 95-05-005-03

Date Collected: 04/29/95

Date Reported: 05/17/95

Sample Matrix: Soil

Analyte	Concentration	Units
pH	7.5	
Electrical Conductivity	1.5	mmhos/cm
Calcium	5.5	meg/L
Magnesium	11.5	meg/L
Sodium	2.7	meg/L
Potassium	2.7	meg/L
Sodium Adsorption Ratio	0.9	



ALKALI CONTENT

Lab Name: Analytical Technologies, Inc.

Sample ID

Composite #14

Client Name: Remediation Technologies, Inc.

Date Collected: 04/26/95

Client Project ID: 3-0887-303/Third Ward MGP-SSPI

Date Reported: 05/17/95

Lab Sample ID: 95-05-005-04

Sample Matrix: Soil

Analyte	Concentration	Units
pH	7.7	
Electrical Conductivity	3.6	mmhos/cm
Calcium	12.5	meg/L
Magnesium	23.8	meg/L
Sodium	6.3	meg/L
Potassium	6.3	meg/L
Sodium Adsorption Ratio	1.5	



ALKALI CONTENT

Lab Name: Analytical Technologies, Inc.

Client Name: Remediation Technologies, Inc.

Client Project ID: 3-0887-303/Third Ward MGP-SSPI

Lab Sample ID: 95-05-005-05

Sample ID

Composite #15

Date Collected: 04/29/95

Date Reported: 05/17/95

Sample Matrix: Soil

Analyte	Concentration	Units
pH	8.1	
Electrical Conductivity	1.2	mmhos/cm
Calcium	2.4	meg/L
Magnesium	4.9	meg/L
Sodium	6.2	meg/L
Potassium	6.2	meg/L
Sodium Adsorption Ratio	3.2	

SILICON OXIDE



Lab Name: Analytical Technologies, Inc.

Date Collected: 04/29/95

Client Name: Remediation Technologies, Inc.

Date Reported: 05/17/95

Client Project ID: 3-0087-303/Third Ward MPG-SSPI Sample Matrix: Soil

Lab Workorder Number: 95-05-005

Sample ID	Lab Sample ID	Silicon Oxide %
Composite #11	95-05-005-01	65
Composite #12	95-05-005-02	53
Composite #13	95-05-005-03	43
Composite #14	95-05-005-04	59
Composite #15	95-05-005-05	55

ALUMINUM OXIDE



Lab Name: Analytical Technologies, Inc.

Date Collected: 04/29/95

Client Name: Remediation Technologies, Inc.

Date Reported: 05/17/95

Client Project ID: 3-0087-303/Third Ward MPG-SSPI Sample Matrix: Soil

Lab Workorder Number: 95-05-005

Sample ID	Lab Sample ID	Aluminum Oxide %
Composite #11	95-05-005-01	8.8
Composite #12	95-05-005-02	7.1
Composite #13	95-05-005-03	5.1
Composite #14	95-05-005-04	7.7
Composite #15	95-05-005-05	8.9



INORGANIC ANALYSES
NONMETALS

Lab Name: Analytical Technologies, Inc.

Sample ID

Composite #11

Client Name: Remediation Technologies, Inc.

Date Collected: 04/29/95

Client Project ID: 3-0887-303 / Third Ward MGP-SSPI

Sample Matrix: Soil

Lab Sample ID: 95-05-005-01

Analyte	Method*	Concentration (mg/kg)**	Detection Limit (mg/kg)	Analysis Date
Chloride	4500-Cl B.	ND	120	05/10/95

ND = Not Detected

* Methods are from Standard Methods for the Examination of Water and Wastewater, 17th edition 1989

**Results are based on dry weight.

TOTAL ORGANIC CARBON



Lab Name: Analytical Technologies, Inc.

Date Collected: 04/29/95

Client Name: Remediation Technologies, Inc.

Date Analyzed: 05/10/95

Client Project ID: 3-0887-303 / Third Ward MGP-SSPI

Sample Matrix: Soil

Lab Workorder Number: 95-05-005

Results are reported on a dry weight basis.

Sample ID	Lab Sample ID	TOC %	Reporting Limit %
Reagent Blank	95-05-005-RB	ND	0.01
Composite #11	95-05-005-01	1.1	0.01
Composite #12	95-05-005-02	3.3	0.01
Composite #13	95-05-005-03	7.6	0.01
Composite #14	95-05-005-04	4.0	0.01
Composite #15	95-05-005-05	2.9	0.01

ND = Not Detected

PERCENT MOISTURE



Lab Name: Analytical Technologies, Inc.

Date Collected: 04/29/95

Client Name: Remediation Technologies, Inc.

Date Analyzed: 05/08/95

Client Project ID: 3-0087-303/Third Ward MPG-SSPI Sample Matrix: Soil

Lab Workorder Number: 95-05-005

Sample ID	Lab Sample ID	% Moisture
Composite #11	95-05-005-01	16.6
Composite #12	95-05-005-02	15.3
Composite #13	95-05-005-03	25.3
Composite #14	95-05-005-04	20.0
Composite #15	95-05-005-05	16.2



INORGANIC ANALYSES
NONMETALS

Lab Name: Analytical Technologies, Inc.

Sample ID

Composite #14

Client Name: Remediation Technologies, Inc.

Date Collected: 04/29/95

Client Project ID: 3-0887-303 / Third Ward MGP-SSPI

Sample Matrix: Soil

Lab Sample ID: 95-05-005-04

Analyte	Method*	Concentration (mg/kg)**	Detection Limit (mg/kg)	Analysis Date
Chloride	4500-Cl B.	ND	130	05/10/95

ND = Not Detected

* Methods are from Standard Methods for the Examination of Water and Wastewater, 17th edition 1989

** Results are based on dry weight.



INORGANIC ANALYSES
NONMETALS

Lab Name: Analytical Technologies, Inc.

Sample ID

Composite #15

Client Name: Remediation Technologies, Inc.

Date Collected: 04/29/95

Client Project ID: 3-0887-303 / Third Ward MGP-SSPI

Sample Matrix: Soil

Lab Sample ID: 95-05-005-05

Analyte	Method*	Concentration (mg/kg)**	Detection Limit (mg/kg)	Analysis Date
Chloride	4500-Cl B.	ND	120	05/10/95

ND = Not Detected

* Methods are from Standard Methods for the Examination of Water and Wastewater, 17th edition 1989

**Results are based on dry weight.



INORGANIC ANALYSES
NONMETALS

Lab Name: Analytical Technologies, Inc.

Sample ID

Composite #12

Client Name: Remediation Technologies, Inc.

Date Collected: 04/29/95

Client Project ID: 3-0887-303 / Third Ward MGP-SSPI

Sample Matrix: Soil

Lab Sample ID: 95-05-005-02

Analyte	Method*	Concentration (mg/kg)**	Detection Limit (mg/kg)	Analysis Date
Chloride	4500-Cl B.	ND	120	05/10/95

ND = Not Detected

* Methods are from Standard Methods for the Examination of Water and Wastewater, 17th edition 1989

**Results are based on dry weight.



INORGANIC ANALYSES
NONMETALS

Lab Name: Analytical Technologies, Inc.

Sample ID

Composite #13

Client Name: Remediation Technologies, Inc.

Date Collected: 04/29/95

Client Project ID: 3-0887-303 / Third Ward MGP-SSPI

Sample Matrix: Soil

Lab Sample ID: 95-05-005-03

Analyte	Method*	Concentration (mg/kg)**	Detection Limit (mg/kg)	Analysis Date
Chloride	4500-Cl B.	ND	130	05/10/95

ND = Not Detected

* Methods are from Standard Methods for the Examination of Water and Wastewater, 17th edition 1989

** Results are based on dry weight.

TOTAL METALS



Sample ID

Composite #11

Lab Name: Analytical Technologies, Inc.

Client Name: Remediation Technologies, Inc.

Client Project ID: 3-0887-303/Third Ward MGP-SSPI

Lab Sample ID: 95-05-005-01

Sample Matrix: Soil

Date Collected: 04/29/95

Prep Date: 05/09/95

Date Analyzed: 05/09,12/95

Percent Solids: 83%

Results are reported on a dry weight basis.

Analyte	Modified Method	Concentration (mg/kg)	Detection Limits (mg/kg)
Antimony	6010	ND	3
Arsenic	6010	4	2
Barium	6010	50	20
Beryllium	6010	ND	0.6
Cadmium	6010	ND	0.6
Chromium	6010	11	2
Copper	6010	21	2
Lead*	6010	36	0.4
Nickel	6010	13	3
Potassium*	6010	1,800	200
Selenium	6010	1.2	0.6
Thallium	6010	ND	2

ND = Not Detected

* Poor duplicate precision noted.

TOTAL METALS



Sample ID

Lab Name: Analytical Technologies, Inc.

Composite #12

Client Name: Remediation Technologies, Inc.

Date Collected: 04/29/95

Client Project ID: 3-0887-303/Third Ward MGP-SSPI

Prep Date: 05/09/95

Lab Sample ID: 95-05-005-02

Date Analyzed: 05/09,12/95

Sample Matrix: Soil

Percent Solids: 85%

Results are reported on a dry weight basis.

Analyte	Modified Method	Concentration (mg/kg)	Detection Limits (mg/kg)
Antimony	6010	ND	2
Arsenic	6010	5	1
Barium	6010	320	20
Beryllium	6010	ND	0.6
Cadmium	6010	0.8	0.6
Chromium	6010	13	1
Copper	6010	21	1
Lead*	6010	180	0.4
Nickel	6010	10	2
Potassium*	6010	1,600	200
Selenium	6010	1.0	0.6
Thallium	6010	ND	1

ND = Not Detected

* Poor duplicate precision noted.

TOTAL METALS



Sample ID

Composite #13

Lab Name: Analytical Technologies, Inc.

Client Name: Remediation Technologies, Inc.

Client Project ID: 3-0887-303/Third Ward MGP-SSPI

Lab Sample ID: 95-05-005-03

Sample Matrix: Soil

Results are reported on a dry weight basis.

Date Collected: 04/29/95

Prep Date: 05/09/95

Date Analyzed: 05/09,12/95

Percent Solids: 75%

Analyte	Method	Concentration (mg/kg)	Detection Limits (mg/kg)
Antimony	6010	ND	3
Arsenic	6010	5	1
Barium	6010	50	20
Beryllium	6010	ND	0.7
Cadmium	6010	ND	0.7
Chromium	6010	9	1
Copper	6010	24	1
Lead*	6010	120	0.4
Nickel	6010	7	3
Potassium*	6010	1,100	200
Selenium	6010	1.8	0.7
Thallium	6010	ND	1

ND = Not Detected

* Poor duplicate precision noted.

TOTAL METALS



Sample ID

Composite #14

Lab Name: Analytical Technologies, Inc.

Client Name: Remediation Technologies, Inc.

Date Collected: 04/29/95

Client Project ID: 3-0887-303/Third Ward MGP-SSPI

Prep Date: 05/09/95

Lab Sample ID: 95-05-005-04

Date Analyzed: 05/09,12/95

Sample Matrix: Soil

Percent Solids: 80%

Results are reported on a dry weight basis.

Analyte	Method	Concentration (mg/kg)	Detection Limits (mg/kg)
Antimony	6010	ND	3
Arsenic	6010	8	1
Barium	6010	50	20
Beryllium	6010	ND	0.6
Cadmium	6010	0.6	0.6
Chromium	6010	13	1
Copper	6010	22	1
Lead*	6010	780	0.4
Nickel	6010	14	3
Potassium*	6010	1,700	200
Selenium	6010	2.9	0.6
Thallium	6010	ND	1

ND = Not Detected

* Poor duplicate precision noted.

TOTAL METALS



Sample ID

Lab Name: Analytical Technologies, Inc.

Composite #15

Client Name: Remediation Technologies, Inc.

Date Collected: 04/29/95

Client Project ID: 3-0887-303/Third Ward MGP-SSPI

Prep Date: 05/09/95

Lab Sample ID: 95-05-005-05

Date Analyzed: 05/09,12/95

Sample Matrix: Soil

Percent Solids: 84%

Results are reported on a dry weight basis.

Analyte	Method	Concentration (mg/kg)	Detection Limits (mg/kg)
Antimony	6010	ND	2
Arsenic	6010	7	1
Barium	6010	80	20
Beryllium	6010	ND	0.6
Cadmium	6010	0.7	0.6
Chromium	6010	29	1
Copper	6010	40	1
Lead*	6010	160	0.4
Nickel	6010	21	2
Potassium*	6010	1,900	200
Selenium	6010	1.2	0.6
Thallium	6010	ND	1

ND = Not Detected

* Poor duplicate precision noted.

TOTAL PETROLEUM HYDROCARBONS BY IR
Method 418.1



Lab Name: Analytical Technologies, Inc.

Date Collected: 04/29/95

Client Name: Remediation Technologies, Inc.

Date Extracted: 05/10/95

Client Project ID: 3-0887-303/Third Ward MGP-SSPI

Date Analyzed: 05/11/95

Lab Workorder Number: 95-05-005

Sample Matrix: Soil

Results are reported on dry weight basis.

Sample ID	Lab Sample ID	Final Volume (mL)	TPH (mg/kg)	Detection Limit (mg/kg)
Reagent Blank	SRB1 05/10/95	40	ND	10
Composite #11	95-05-005-01	400	590	120
Composite #12	95-05-005-02	4000	1500	1200
Composite #13	95-05-005-03	4000	5500	1300
Composite #14	95-05-005-04	400	5800	130
Composite #15	95-05-005-05	400	2200	120

ND=Not detected at or above the client requested detection limit.

1/3

GRAIN SIZE



Lab Name: Analytical Technologies, Inc.

Date Collected: 04/29/95

Client Name: Remediation Technologies, Inc.

Date Reported: 05/17/95

Client Project ID: 3-0087-303/Third Ward MPG-SSPI

Sample Matrix: Soil

Lab Workorder Number: 95-05-005

Sample ID	Lab Sample ID	Sand %	Silt %	Clay %	Texture
Composite #11	95-05-005-01	68	17	15	SandyLoam
Composite #12	95-05-005-02	77	11	12	SandyLoam
Composite #13	95-05-005-03	81	9	10	SandyLoam
Composite #14	95-05-005-04	78	10	12	SandyLoam
Composite #15	95-05-005-05	70	10	20	SandyLoam

BULK DENSITY



Lab Name: Analytical Technologies, Inc.

Date Collected: 04/29/95

Client Name: Remediation Technologies, Inc.

Date Reported: 05/17/95

Client Project ID: 3-0087-303/Third Ward MPG-SSPI Sample Matrix: Soil

Lab Workorder Number: 95-05-005

Sample ID	Lab Sample ID	Bulk Density g/cm ³
Composite #11	95-05-005-01	1.7
Composite #12	95-05-005-02	1.6
Composite #13	95-05-005-03	1.2
Composite #14	95-05-005-04	2.0
Composite #15	95-05-005-05	1.9

POLYNUCLEAR AROMATIC HYDROCARBONS

Method 8310

Sample ID

Lab Name: Analytical Technologies Inc.

Client Name: Retec

Client Project ID: Third Ward MGP Site -- 3-0887-303

Lab Sample ID: 95-10-155-06

W-13

Date Collected: 10/15/95

Date Extracted: 10/20/95

Sample Matrix: Water

Cleanup: N/A

Date Analyzed: 10/26/95

Date Analyzed: 11/01/95

Sample Volume: 1000 mL

Final Volume: 1 mL

Analyte	Conc (ug/L)	Detection Limit (ug/L)
Naphthalene	38 *	5 *
Acenaphthylene	ND	1.0
1-Methylnaphthalene	240 **	100 **
2-Methylnaphthalene	ND	1.0
Acenaphthene	73 *	10 *
Fluorene	29 **	10 **
Phenanthrene	27 **	5 **
Anthracene	3.0 *	1.0 *
Fluoranthene	ND	0.10
Pyrene	ND	0.050
Benzo(a)anthracene	ND	0.050
Chrysene	0.015 J	0.050
Benzo(b)fluoranthene	ND	0.10
Benzo(k)fluoranthene	ND	0.050
Benzo(a)pyrene	ND	0.050
Dibenzo(a,h)anthracene	ND	0.10
Benzo(g,h,i)perylene	ND	0.10
Indeno(1,2,3-c,d)pyrene	ND	0.10

SURROGATE RECOVERY

Analyte	% Recovery	% Rec Limits
2-Chloroanthracene	92	15 - 117

ND = Not Detected at or above client requested detection limit.

* = Detection limit and sample concentration base on a 1:10 fold dilution of extract.

** = Detection limit and sample concentration base on a 1:100 fold dilution of extract.

J = Estimated value. Below requested detection limits.

000016

POLYNUCLEAR AROMATIC HYDROCARBONS

Method 8310

Sample ID

Lab Name: Analytical Technologies of Colorado, Inc.
 Client Name: Retec
 Client Project ID: Third Ward MGP Site -- 3-0887-303
 Lab Sample ID: 95-10-102-08

W-14

Date Collected: 10/11/95
 Date Extracted: 10/19/95
 Date Analyzed: 11/8/95

Sample Matrix: Water
 Cleanup: N/A

Sample Volume: 1000 mL
 Final Volume: 1 mL

Analyte	Conc (ug/L)	Detection Limit (ug/L)
Naphthalene	6400 +	500 +
Acenaphthylene	ND	1.0
1-Methylnaphthalene	480 **	100 **
2-Methylnaphthalene	530 **	100 **
Acenaphthene	46 *	10 *
Fluorene	83 **	10.00 **
Phenanthrene	0.79	0.050
Anthracene	ND	0.10
Fluoranthene	ND	0.10
Pyrene	ND	0.050
Benzo(a)anthracene	ND	0.050
Chrysene	ND	0.050
Benzo(b)fluoranthene	ND	0.10
Benzo(k)fluoranthene	ND	0.050
Benzo(a)pyrene	ND	0.050
Dibenzo(a,h)anthracene	ND	0.10
Benzo(g,h,i)perylene	ND	0.10
Indeno(1,2,3-c,d)pyrene	ND	0.10

SURROGATE RECOVERY

Analyte	% Recovery	% Rec Limits
2-Chloroanthracene	90	15 - 117

ND = Not Detected at or above client requested detection limit.

* = Sample concentration and detection limits adjusted for 1:10 fold dilution

** = Sample concentration and detection limits adjusted for 1:100 fold dilution

+ = Sample concentration and detection limits adjusted for 1:1000 fold dilution

000010

POLYNUCLEAR AROMATIC HYDROCARBONS

Method 8310

Sample ID

Lab Name: Analytical Technologies Inc.

Client Name: Retec

Client Project ID: Third Ward MGP Site -- 3-0887-303

Lab Sample ID: 95-10-155-04

W-16

Date Collected: 10/16/95

Date Extracted: 10/20/95

Sample Matrix: Water

Cleanup: N/A

Date Analyzed: 10/26/95

Date Analyzed: 11/01/95

Sample Volume: 1000 mL

Final Volume: 1 mL

Analyte	Conc (ug/L)	Detection Limit (ug/L)
Naphthalene	2000 +	500 +
Acenaphthylene	ND	1.0
1-Methylnaphthalene	180 *	10 *
2-Methylnaphthalene	220 **	100 **
Acenaphthene	45 J**	100 **
Fluorene	11 *	1.0 *
Phenanthrene	0.62	0.050
Anthracene	0.029 J	0.10
Fluoranthene	ND	0.10
Pyrene	ND	0.050
Benzo(a)anthracene	ND	0.050
Chrysene	0.012 J	0.050
Benzo(b)fluoranthene	ND	0.10
Benzo(k)fluoranthene	ND	0.050
Benzo(a)pyrene	ND	0.050
Dibenzo(a,h)anthracene	ND	0.10
Benzo(g,h,i)perylene	ND	0.10
Indeno(1,2,3-c,d)pyrene	ND	0.10

SURROGATE RECOVERY

Analyte	% Recovery	% Rec Limits
2-Chloroanthracene	89	15 - 117

ND = Not Detected at or above client requested detection limit.

* = Detection limit and sample concentration base on a 1:10 fold dilution of extract.

** = Detection limit and sample concentration base on a 1:100 fold dilution of extract.

+ = Detection limit and sample concentration base on a 1:1000 fold dilution of extract.

J = Estimated value. Below requested detection limits.

00014

POLYNUCLEAR AROMATIC HYDROCARBONS

Method 8310

Sample ID

Lab Name: Analytical Technologies of Colorado, Inc.

Client Name: Retec

Client Project ID: Third Ward MGP Site -- 3-0887-303

Lab Sample ID: 95-10-102-07

Sample Matrix: Water

Cleanup: N/A

W-19

Date Collected: 10/12/95

Date Extracted: 10/19/95

Date Analyzed: 11/8/95

Sample Volume: 1000 mL

Final Volume: 1 mL

Analyte	Conc (ug/L)	Detection Limit (ug/L)
Naphthalene	40 *	5.0 *
Acenaphthylene	ND	1.0
1-Methylnaphthalene	5.2	1.0
2-Methylnaphthalene	2.3	1.0
Acenaphthene	1.8	1.0
Fluorene	2.9 *	1.0 *
Phenanthrene	ND	0.050
Anthracene	ND	0.10
Fluoranthene	ND	0.10
Pyrene	ND	0.050
Benzo(a)anthracene	ND	0.050
Chrysene	ND	0.050
Benzo(b)fluoranthene	ND	0.10
Benzo(k)fluoranthene	ND	0.050
Benzo(a)pyrene	ND	0.050
Dibenzo(a,h)anthracene	ND	0.10
Benzo(g,h,i)perylene	ND	0.10
Indeno(1,2,3-c,d)pyrene	ND	0.10

SURROGATE RECOVERY

Analyte	% Recovery	% Rec Limits
2-Chloroanthracene	93	15 - 117

ND = Not Detected at or above client requested detection limit.

* = Sample concentration and detection limits adjusted for 1:10 fold dilution

100019

POLYNUCLEAR AROMATIC HYDROCARBONS

Method 8310

Lab Name: Analytical Technologies Inc.
 Client Name: Retec
 Client Project ID: Third Ward MGP
 Lab Sample ID: 95-10-124-05

Sample Matrix: Water
 Cleanup: N/A

Sample ID

W-20S

Date Collected: 10/13/95
 Date Extracted: 10/20/95
 Date Analyzed: 10/26,31/95

Sample Volume: 1000 mL
 Final Volume: 1 mL

Analyte	Conc (ug/L)	Detection Limit (ug/L)
Naphthalene	230 **	50 **
Acenaphthylene	ND	1.0
1-Methylnaphthalene	190 *	10 *
2-Methylnaphthalene	ND	1.0
Acenaphthene	40 *	10 *
Fluorene	72 **	10 **
Phenanthrene	1.3 *	0.50 *
Anthracene	ND	0.10
Fluoranthene	ND	0.10
Pyrene	ND	0.050
Benzo(a)anthracene	ND	0.050
Chrysene	ND	0.050
Benzo(b)fluoranthene	ND	0.10
Benzo(k)fluoranthene	ND	0.050
Benzo(a)pyrene	ND	0.050
Dibenzo(a,h)anthracene	ND	0.10
Benzo(g,h,i)perylene	ND	0.10
Indeno(1,2,3-c,d)pyrene	ND	0.10

SURROGATE RECOVERY

Analyte	% Recovery	% Rec Limits
2-Chloroanthracene	87	15 - 117

ND = Not Detected at or above client requested detection limit.

* = Sample concentration and detection limits adjusted for 1:10 fold dilution.

** = Sample concentration and detection limits adjusted for 1:100 fold dilution.

000013

POLYNUCLEAR AROMATIC HYDROCARBONS

Method 8310

Lab Name: Analytical Technologies Inc.
 Client Name: Retec
 Client Project ID: Third Ward MGP
 Lab Sample ID: 95-10-124-04

Sample Matrix: Water
 Cleanup: N/A

Sample ID

W-201

Date Collected: 10/13/95
 Date Extracted: 10/20/95
 Date Analyzed: 10/26/95
 Date Analyzed: 11/03/95

Sample Volume: 1000 mL
 Final Volume: 10 mL

Analyte	Conc (ug/L)	Detection Limit (ug/L)
Naphthalene	8000 **	500 **
Acenaphthylene	ND	10
1-Methylnaphthalene	630 *	100 *
2-Methylnaphthalene	780 *	100 *
Acenaphthene	ND	10
Fluorene	47 *	10 *
Phenanthrene	30 *	5.0 *
Anthracene	4.3	1.0
Fluoranthene	ND	1.0
Pyrene	ND	0.50
Benzo(a)anthracene	ND	0.50
Chrysene	ND	0.50
Benzo(b)fluoranthene	ND	1.0
Benzo(k)fluoranthene	ND	0.50
Benzo(a)pyrene	ND	0.50
Dibenzo(a,h)anthracene	ND	1.0
Benzo(g,h,i)perylene	ND	1.0
Indeno(1,2,3-c,d)pyrene	ND	1.0

SURROGATE RECOVERY

Analyte	% Recovery	% Rec Limits
2-Chloroanthracene	87	15 - 117

ND = Not Detected at or above client requested detection limit.

* = Sample concentration and detection limits adjusted for 1:100 fold dilution.

** = Sample concentration and detection limits adjusted for 1:1000 fold dilution.

000012

POLYNUCLEAR AROMATIC HYDROCARBONS

Method 8310

Sample ID

Lab Name: Analytical Technologies of Colorado, Inc.
 Client Name: Retec
 Client Project ID: Third Ward MGP Site -- 3-0887-303
 Lab Sample ID: 95-10-102-10

W-22S

Sample Matrix: Water
 Cleanup: N/A

Date Collected: 10/11/95
 Date Extracted: 10/19/95
 Date Analyzed: 11/8/95

Sample Volume: 1000 mL
 Final Volume: 10 mL

Analyte	Conc (ug/L)	Detection Limit (ug/L)
Naphthalene	32	5.0
Acenaphthylene	ND	10
1-Methylnaphthalene	310 *	100 *
2-Methylnaphthalene	ND	10
Acenaphthene	95	10
Fluorene	30 *	10.0 *
Phenanthrene	ND	0.50
Anthracene	ND	1.0
Fluoranthene	ND	1.0
Pyrene	ND	0.50
Benzo(a)anthracene	ND	0.50
Chrysene	ND	0.50
Benzo(b)fluoranthene	ND	1.0
Benzo(k)fluoranthene	ND	0.50
Benzo(a)pyrene	ND	0.50
Dibenzo(a,h)anthracene	ND	1.0
Benzo(g,h,i)perylene	ND	1.0
Indeno(1,2,3-c,d)pyrene	ND	1.0

SURROGATE RECOVERY

Analyte	% Recovery	% Rec Limits
2-Chloroanthracene	88	15 - 117

ND = Not Detected at or above client requested detection limit.

* = Sample concentration and detection limits adjusted for 1:100 dilution

000021

POLYNUCLEAR AROMATIC HYDROCARBONS

Method 8310

Sample ID

Lab Name: Analytical Technologies Inc.

Client Name: Retec

Client Project ID: Third Ward MGP Site -- 3-0887-303

Lab Sample ID: 95-10-155-03

W-221

Date Collected: 10/16/95

Date Extracted: 10/20/95

Date Analyzed: 10/26,31/95

Sample Matrix: Water

Cleanup: N/A

Sample Volume: 1000 mL

Final Volume: 1 mL

Analyte	Conc (ug/L)	Detection Limit (ug/L)
Naphthalene	4000 +	500 +
Acenaphthylene	ND	1.0
1-Methylnaphthalene	170 *	10 *
2-Methylnaphthalene	190 **	100 **
Acenaphthene	ND	1.0
Fluorene	ND	0.10
Phenanthrene	0.24	0.050
Anthracene	ND	0.10
Fluoranthene	ND	0.10
Pyrene	ND	0.050
Benzo(a)anthracene	ND	0.050
Chrysene	ND	0.050
Benzo(b)fluoranthene	ND	0.10
Benzo(k)fluoranthene	ND	0.050
Benzo(a)pyrene	ND	0.050
Dibenzo(a,h)anthracene	ND	0.10
Benzo(g,h,i)perylene	ND	0.10
Indeno(1,2,3-c,d)pyrene	ND	0.10

SURROGATE RECOVERY

Analyte	% Recovery	% Rec Limits
2-Chloroanthracene	73	15 - 117

ND = Not Detected at or above client requested detection limit.

* = Detection limit and sample concentration base on a 1:10 fold dilution of extract.

** = Detection limit and sample concentration base on a 1:100 fold dilution of extract.

+ = Detection limit and sample concentration base on a 1:1000 fold dilution of extract.

000013

POLYNUCLEAR AROMATIC HYDROCARBONS

Method 8310

Sample ID

Lab Name: Analytical Technologies of Colorado, Inc.
 Client Name: Retec
 Client Project ID: Third Ward MGP Site -- 3-0887-303
 Lab Sample ID: 95-10-102-02

W-23S

Date Collected: 10/12/95
 Date Extracted: 10/19/95
 Date Analyzed: 11/8/95

Sample Matrix: Water
 Cleanup: N/A

Sample Volume: 1000 mL
 Final Volume: 1 mL

Analyte	Conc (ug/L)	Detection Limit (ug/L)
Naphthalene	5100 **	500 **
Acenaphthylene	ND	1.0
1-Methylnaphthalene	360 *	100 *
2-Methylnaphthalene	460 *	100 *
Acenaphthene	ND	1.0
Fluorene	27 *	10 *
Phenanthrene	ND	0.050
Anthracene	ND	0.10
Fluoranthene	ND	0.10
Pyrene	ND	0.050
Benzo(a)anthracene	ND	0.050
Chrysene	ND	0.050
Benzo(b)fluoranthene	ND	0.10
Benzo(k)fluoranthene	ND	0.050
Benzo(a)pyrene	ND	0.050
Dibenzo(a,h)anthracene	ND	0.10
Benzo(g,h,i)perylene	ND	0.10
Indeno(1,2,3-c,d)pyrene	ND	0.10

SURROGATE RECOVERY

Analyte	% Recovery	% Rec Limits
2-Chloroanthracene	89	15 - 117

ND = Not Detected at or above client requested detection limit.

* = Sample concentration and detection limits adjusted for 1:100 fold dilution

** = Sample concentration and detection limits adjusted for 1:1000 fold dilution

00014

POLYNUCLEAR AROMATIC HYDROCARBONS

Method 8310

Sample ID

Lab Name: Analytical Technologies Inc.

Client Name: Retec

Client Project ID: Third Ward MGP

Lab Sample ID: 95-10-124-01

W-25S

Date Collected: 10/13/95

Date Extracted: 10/20/95

Date Analyzed: 10/26,31/95

Sample Matrix: Water

Cleanup: N/A

Sample Volume: 1000 mL

Final Volume: 10 mL

Analyte	Conc (ug/L)	Detection Limit (ug/L)
Naphthalene	4300 **	500 **
Acenaphthylene	ND	10
1-Methylnaphthalene	470 *	100 *
2-Methylnaphthalene	60	10
Acenaphthene	160 *	100 *
Fluorene	120 *	10 *
Phenanthrene	9.2	0.50
Anthracene	ND	1.0
Fluoranthene	ND	1.0
Pyrene	ND	0.50
Benzo(a)anthracene	ND	0.50
Chrysene	ND	0.50
Benzo(b)fluoranthene	ND	1.0
Benzo(k)fluoranthene	ND	0.50
Benzo(a)pyrene	ND	0.50
Dibenzo(a,h)anthracene	ND	1.0
Benzo(g,h,i)perylene	ND	1.0
Indeno(1,2,3-c,d)pyrene	ND	1.0

SURROGATE RECOVERY

Analyte	% Recovery	% Rec Limits
2-Chloroanthracene	87	15 - 117

ND = Not Detected at or above client requested detection limit.

* = Sample concentration and detection limits adjusted for 1:100 fold dilution.

** = Sample concentration and detection limits adjusted for 1:1000 fold dilution.

000009

POLYNUCLEAR AROMATIC HYDROCARBONS

Method 8310

Sample ID

Lab Name: Analytical Technologies of Colorado, Inc.
 Client Name: Retec
 Client Project ID: Third Ward MGP Site -- 3-0887-303
 Lab Sample ID: 95-10-102-05

W-26S

Sample Matrix: Water
 Cleanup: N/A

Date Collected: 10/12/95
 Date Extracted: 10/19/95
 Date Analyzed: 11/8/95

Sample Volume: 1000 mL
 Final Volume: 1 mL

Analyte	Conc (ug/L)	Detection Limit (ug/L)
Naphthalene	3.7	0.50
Acenaphthylene	ND	1.0
1-Methylnaphthalene	2.6	1.0
2-Methylnaphthalene	ND	1.0
Acenaphthene	36 *	10 *
Fluorene	17 **	10 **
Phenanthrene	ND	0.050
Anthracene	ND	0.10
Fluoranthene	ND	0.10
Pyrene	ND	0.050
Benzo(a)anthracene	ND	0.050
Chrysene	ND	0.050
Benzo(b)fluoranthene	ND	0.10
Benzo(k)fluoranthene	ND	0.050
Benzo(a)pyrene	ND	0.050
Dibenzo(a,h)anthracene	ND	0.10
Benzo(g,h,i)perylene	ND	0.10
Indeno(1,2,3-c,d)pyrene	ND	0.10

SURROGATE RECOVERY

Analyte	% Recovery	% Rec Limits
2-Chloroanthracene	85	15 - 117

ND = Not Detected at or above client requested detection limit.

* = Sample concentration and detection limits adjusted for 1:10 fold dilution

** = Sample concentration and detection limits adjusted for 1:100 fold dilution

00017

POLYNUCLEAR AROMATIC HYDROCARBONS

Method 8310

Sample ID

Lab Name: Analytical Technologies of Colorado, Inc.
 Client Name: Retec
 Client Project ID: Third Ward MGP Site -- 3-0887-303
 Lab Sample ID: 95-10-102-06

W-261

Date Collected: 10/12/95
 Date Extracted: 10/19/95
 Date Analyzed: 11/8/95

Sample Matrix: Water
 Cleanup: N/A

Sample Volume: 1000 mL
 Final Volume: 1 mL

Analyte	Conc (ug/L)	Detection Limit (ug/L)
Naphthalene	ND	0.50
Acenaphthylene	ND	1.0
1-Methylnaphthalene	ND	1.0
2-Methylnaphthalene	ND	1.0
Acenaphthene	ND	1.0
Fluorene	ND	0.10
Phenanthrene	ND	0.050
Anthracene	ND	0.10
Fluoranthene	ND	0.10
Pyrene	ND	0.050
Benzo(a)anthracene	ND	0.050
Chrysene	ND	0.050
Benzo(b)fluoranthene	ND	0.10
Benzo(k)fluoranthene	ND	0.050
Benzo(a)pyrene	ND	0.050
Dibenzo(a,h)anthracene	ND	0.10
Benzo(g,h,i)perylene	ND	0.10
Indeno(1,2,3-c,d)pyrene	ND	0.10

SURROGATE RECOVERY

Analyte	% Recovery	% Rec Limits
2-Chloroanthracene	92	15 - 117

ND = Not Detected at or above client requested detection limit.

000613

POLYNUCLEAR AROMATIC HYDROCARBONS

Method 8310

Sample ID

Lab Name: Analytical Technologies Inc.

Client Name: Retec

Client Project ID: Third Ward MGP Site -- 3-0887-303

Lab Sample ID: 95-10-155-01

W-27D

Date Collected: 10/15/95

Date Extracted: 10/20/95

Date Analyzed: 10/26/95

Sample Matrix: Water

Cleanup: N/A

Sample Volume: 1000 mL

Final Volume: 1 mL

Analyte	Conc (ug/L)	Detection Limit (ug/L)
Naphthalene	5.5	0.50
Acenaphthylene	ND	1.0
1-Methylnaphthalene	ND	1.0
2-Methylnaphthalene	ND	1.0
Acenaphthene	ND	1.0
Fluorene	0.042 J	0.10
Phenanthrene	ND	0.050
Anthracene	ND	0.10
Fluoranthene	ND	0.10
Pyrene	ND	0.050
Benzo(a)anthracene	ND	0.050
Chrysene	ND	0.050
Benzo(b)fluoranthene	ND	0.10
Benzo(k)fluoranthene	ND	0.050
Benzo(a)pyrene	ND	0.050
Dibenzo(a,h)anthracene	ND	0.10
Benzo(g,h,i)perylene	ND	0.10
Indeno(1,2,3-c,d)pyrene	ND	0.10

SURROGATE RECOVERY

Analyte	% Recovery	% Rec Limits
2-Chloroanthracene	91	15 - 117

ND = Not Detected at or above client requested detection limit.

J = Estimated value. Below requested detection limits.

000011

POLYNUCLEAR AROMATIC HYDROCARBONS

Method 8310

Sample ID

Lab Name: Analytical Technologies of Colorado, Inc.
 Client Name: Retec
 Client Project ID: Third Ward MGP Site -- 3-0887-303
 Lab Sample ID: 95-10-102-03

W-41S

Sample Matrix: Water
 Cleanup: N/A

Date Collected: 10/12/95
 Date Extracted: 10/19/95
 Date Analyzed: 11/8/95

Sample Volume: 1000 mL
 Final Volume: 1 mL

Analyte	Conc (ug/L)	Detection Limit (ug/L)
Naphthalene	95 *	5.0 *
Acenaphthylene	ND	1.0
1-Methylnaphthalene	23 *	10 *
2-Methylnaphthalene	12	1.0
Acenaphthene	5.5	1.0
Fluorene	2.7 *	1.0 *
Phenanthrene	ND	0.050
Anthracene	ND	0.10
Fluoranthene	ND	0.10
Pyrene	ND	0.050
Benzo(a)anthracene	ND	0.050
Chrysene	ND	0.050
Benzo(b)fluoranthene	ND	0.10
Benzo(k)fluoranthene	ND	0.050
Benzo(a)pyrene	ND	0.050
Dibenzo(a,h)anthracene	ND	0.10
Benzo(g,h,i)perylene	ND	0.10
Indeno(1,2,3-c,d)pyrene	ND	0.10

SURROGATE RECOVERY

Analyte	% Recovery	% Rec Limits
2-Chloroanthracene	94	15 - 117

ND = Not Detected at or above client requested detection limit.

* = Sample concentration and detection limits adjusted for 1:10 fold dilution

00015

POLYNUCLEAR AROMATIC HYDROCARBONS

Method 8310

Sample ID

Lab Name: Analytical Technologies of Colorado, Inc.

Client Name: Retec

Client Project ID: Third Ward MGP Site -- 3-0887-303

Lab Sample ID: 95-10-102-01RX

W-41D

Date Collected: 10/12/95

Date Extracted: 10/24/95

Date Analyzed: 10/27/95

Sample Matrix: Water

Cleanup: N/A

Sample Volume: 1000 mL

Final Volume: 1 mL

Analyte	Conc (ug/L)	Detection Limit (ug/L)
Naphthalene	ND	0.50
Acenaphthylene	ND	1.0
1-Methylnaphthalene	ND	1.0
2-Methylnaphthalene	ND	1.0
Acenaphthene	ND	1.0
Fluorene	ND	0.10
Phenanthrene	ND	0.050
Anthracene	ND	0.10
Fluoranthene	ND	0.10
Pyrene	ND	0.050
Benzo(a)anthracene	ND	0.050
Chrysene	ND	0.050
Benzo(b)fluoranthene	ND	0.10
Benzo(k)fluoranthene	ND	0.050
Benzo(a)pyrene	ND	0.050
Dibenzo(a,h)anthracene	ND	0.10
Benzo(g,h,i)perylene	ND	0.10
Indeno(1,2,3-c,d)pyrene	ND	0.10

SURROGATE RECOVERY

Analyte	% Recovery	% Rec Limits
2-Chloroanthracene	92	15 - 117

ND = Not Detected at or above client requested detection limit.

00013

POLYNUCLEAR AROMATIC HYDROCARBONS

Method 8310

Sample ID

Lab Name: Analytical Technologies Inc.

Client Name: Retec

Client Project ID: Third Ward MGP Site -- 3-0887-303

Lab Sample ID: 95-10-155-02

W-42D

Date Collected: 10/15/95

Date Extracted: 10/20/95

Date Analyzed: 10/26/95

Sample Matrix: Water

Cleanup: N/A

Sample Volume: 1000 mL

Final Volume: 1 mL

Analyte	Conc (ug/L)	Detection Limit (ug/L)
Naphthalene	ND	0.50
Acenaphthylene	ND	1.0
1-Methylnaphthalene	26 *	10 *
2-Methylnaphthalene	ND	1.0
Acenaphthene	ND	1.0
Fluorene	2.0 *	1.0 *
Phenanthrene	0.035 J	0.050
Anthracene	ND	0.10
Fluoranthene	ND	0.10
Pyrene	ND	0.050
Benzo(a)anthracene	ND	0.050
Chrysene	ND	0.050
Benzo(b)fluoranthene	ND	0.10
Benzo(k)fluoranthene	ND	0.050
Benzo(a)pyrene	ND	0.050
Dibenzo(a,h)anthracene	ND	0.10
Benzo(g,h,i)perylene	ND	0.10
Indeno(1,2,3-c,d)pyrene	ND	0.10

SURROGATE RECOVERY

Analyte	% Recovery	% Rec Limits
2-Chloroanthracene	91	15 - 117

ND = Not Detected at or above client requested detection limit.

* = Detection limit and sample concentration base on a 1:10 fold dilution of extract.

J = Estimated value. Below requested detection limits.

200012

POLYNUCLEAR AROMATIC HYDROCARBONS

Method 8310

Sample ID

Lab Name: Analytical Technologies Inc.

Client Name: Retec

Client Project ID: Third Ward MGP Site -- 3-0887-303

Lab Sample ID: 95-10-155-08

W-43D

Date Collected: 10/16/95

Date Extracted: 10/20/95

Sample Matrix: Water

Cleanup: N/A

Date Analyzed: 10/27/95

Date Analyzed: 11/01/95

Sample Volume: 1000 mL

Final Volume: 10 mL

Analyte	Conc (ug/L)	Detection Limit (ug/L)
Naphthalene	5200 **	500 **
Acenaphthylene	ND	10
1-Methylnaphthalene	540 *	100 *
2-Methylnaphthalene	620 *	100 *
Acenaphthene	ND	10
Fluorene	54 *	10 *
Phenanthrene	9.3	0.50
Anthracene	1.0	1.0
Fluoranthene	ND	1.0
Pyrene	ND	0.50
Benzo(a)anthracene	ND	0.50
Chrysene	ND	0.50
Benzo(b)fluoranthene	ND	1.0
Benzo(k)fluoranthene	ND	0.50
Benzo(a)pyrene	ND	0.50
Dibenzo(a,h)anthracene	ND	1.0
Benzo(g,h,i)perylene	ND	1.0
Indeno(1,2,3-c,d)pyrene	ND	1.0

SURROGATE RECOVERY

Analyte	% Recovery	% Rec Limits
2-Chloroanthracene	80	15 - 117

ND = Not Detected at or above client requested detection limit.

* = Detection limit and sample concentration base on a 1:10 fold dilution of extract.

** = Detection limit and sample concentration base on a 1:100 fold dilution of extract.

000618

POLYNUCLEAR AROMATIC HYDROCARBONS

Method 8310

Sample ID

Lab Name: Analytical Technologies Inc.

Client Name: Retec

Client Project ID: Third Ward MGP Site -- 3-0887-303

Lab Sample ID: 95-10-155-07

Sample Matrix: Water

Cleanup: N/A

W-45D

Date Collected: 10/16/95

Date Extracted: 10/20/95

Date Analyzed: 10/26/95

Sample Volume: 1000 mL

Final Volume: 1 mL

Analyte	Conc (ug/L)	Detection Limit (ug/L)
Naphthalene	ND	0.50
Acenaphthylene	ND	1.0
1-Methylnaphthalene	ND	1.0
2-Methylnaphthalene	ND	1.0
Acenaphthene	ND	1.0
Fluorene	ND	0.10
Phenanthrene	ND	0.050
Anthracene	ND	0.10
Fluoranthene	ND	0.10
Pyrene	ND	0.050
Benzo(a)anthracene	ND	0.050
Chrysene	ND	0.050
Benzo(b)fluoranthene	ND	0.10
Benzo(k)fluoranthene	ND	0.050
Benzo(a)pyrene	ND	0.050
Dibenzo(a,h)anthracene	ND	0.10
Benzo(g,h,i)perylene	ND	0.10
Indeno(1,2,3-c,d)pyrene	ND	0.10

SURROGATE RECOVERY

Analyte	% Recovery	% Rec Limits
2-Chloroanthracene	16	15 - 117

ND = Not Detected at or above client requested detection limit.

000017

POLYNUCLEAR AROMATIC HYDROCARBONS

Method 8310

Lab Name: Analytical Technologies Inc.
 Client Name: Retec
 Client Project ID: Third Ward MGP
 Lab Sample ID: 95-10-124-06

Sample ID

W-46D

Sample Matrix: Water
 Cleanup: N/A

Date Collected: 10/13/95
 Date Extracted: 10/20/95
 Date Analyzed: 10/26,31/95

Sample Volume: 1000 mL
 Final Volume: 1 mL

Analyte	Conc (ug/L)	Detection Limit (ug/L)
Naphthalene	200 **	50 **
Acenaphthylene	ND	1.0
1-Methylnaphthalene	21 *	10 *
2-Methylnaphthalene	12	1.0
Acenaphthene	ND	1.0
Fluorene	ND	0.10
Phenanthrene	ND	0.050
Anthracene	ND	0.10
Fluoranthene	ND	0.10
Pyrene	ND	0.050
Benzo(a)anthracene	ND	0.050
Chrysene	ND	0.050
Benzo(b)fluoranthene	ND	0.10
Benzo(k)fluoranthene	ND	0.050
Benzo(a)pyrene	ND	0.050
Dibenzo(a,h)anthracene	ND	0.10
Benzo(g,h,i)perylene	ND	0.10
Indeno(1,2,3-c,d)pyrene	ND	0.10

SURROGATE RECOVERY

Analyte	% Recovery	% Rec Limits
2-Chloroanthracene	85	15 - 117

ND = Not Detected at or above client requested detection limit.

* = Sample concentration and detection limits adjusted for 1:10 fold dilution.

** = Sample concentration and detection limits adjusted for 1:100 fold dilution.

000014

POLYNUCLEAR AROMATIC HYDROCARBONS

Method 8310

Sample ID

Lab Name: Analytical Technologies of Colorado, Inc.
 Client Name: Retec
 Client Project ID: Third Ward MGP Site -- 3-0887-303
 Lab Sample ID: 95-10-102-04

Blind Dup

Sample Matrix: Water
 Cleanup: N/A

Date Collected: NA
 Date Extracted: 10/19/95
 Date Analyzed: 11/8/95

Sample Volume: 1000 mL
 Final Volume: 1 mL

Analyte	Conc (ug/L)	Detection Limit (ug/L)
Naphthalene	69 *	5.0 *
Acenaphthylene	ND	1.0
1-Methylnaphthalene	16	1.0
2-Methylnaphthalene	3.0	1.0
Acenaphthene	4.4	1.0
Fluorene	1.5	0.10
Phenanthrene	ND	0.050
Anthracene	ND	0.10
Fluoranthene	ND	0.10
Pyrene	ND	0.050
Benzo(a)anthracene	ND	0.050
Chrysene	ND	0.050
Benzo(b)fluoranthene	ND	0.10
Benzo(k)fluoranthene	ND	0.050
Benzo(a)pyrene	ND	0.050
Dibenzo(a,h)anthracene	ND	0.10
Benzo(g,h,i)perylene	ND	0.10
Indeno(1,2,3-c,d)pyrene	ND	0.10

SURROGATE RECOVERY

Analyte	% Recovery	% Rec Limits
2-Chloroanthracene	95	15 - 117

ND = Not Detected at or above client requested detection limit.

* = Sample concentration and detection limits adjusted for 1:10 fold dilution

230016

POLYNUCLEAR AROMATIC HYDROCARBONS

Method 8310

Sample ID

Lab Name: Analytical Technologies Inc.

Client Name: Retec

Client Project ID: Third Ward MGP

Lab Sample ID: 95-10-124-02

Sample Matrix: Water

Cleanup: N/A

Date Collected: 10/13/95

Date Extracted: 10/20/95

Date Analyzed: 10/26,31/95

Sample Volume: 1000 mL

Final Volume: 1 mL

Blind Dup 2

Analyte	Conc (ug/L)	Detection Limit (ug/L)
Naphthalene	3500 **	500 **
Acenaphthylene	ND	1.0
1-Methylnaphthalene	310 *	100 *
2-Methylnaphthalene	18	1.0
Acenaphthene	ND	1.0
Fluorene	84 *	10 *
Phenanthrene	0.45	0.050
Anthracene	ND	0.10
Fluoranthene	ND	0.10
Pyrene	ND	0.050
Benzo(a)anthracene	ND	0.050
Chrysene	ND	0.050
Benzo(b)fluoranthene	ND	0.10
Benzo(k)fluoranthene	ND	0.050
Benzo(a)pyrene	ND	0.050
Dibenzo(a,h)anthracene	ND	0.10
Benzo(g,h,i)perylene	ND	0.10
Indeno(1,2,3-c,d)pyrene	ND	0.10

SURROGATE RECOVERY

Analyte	% Recovery	% Rec Limits
2-Chloroanthracene	91	15 - 117

ND = Not Detected at or above client requested detection limit.

* = Sample concentration and detection limits adjusted for 1:100 fold dilution.

** = Sample concentration and detection limits adjusted for 1:1000 fold dilution.

000010

POLYNUCLEAR AROMATIC HYDROCARBONS

Method 8310

Sample ID

Lab Name: Analytical Technologies Inc.

Client Name: Retec

Client Project ID: Third Ward MGP

Lab Sample ID: 95-10-124-03

Sample Matrix: Water

Cleanup: N/A

Equip. Rinse Blank

Date Collected: 10/13/95

Date Extracted: 10/20/95

Date Analyzed: 10/26/95

Sample Volume: 1000 mL

Final Volume: 1 mL

Analyte	Conc (ug/L)	Detection Limit (ug/L)
Naphthalene	ND	0.50
Acenaphthylene	0.65 J	1.0
1-Methylnaphthalene	ND	1.0
2-Methylnaphthalene	1.3	1.0
Acenaphthene	ND	1.0
Fluorene	ND	0.10
Phenanthrene	0.011 J	0.050
Anthracene	ND	0.10
Fluoranthene	ND	0.10
Pyrene	ND	0.050
Benzo(a)anthracene	ND	0.050
Chrysene	ND	0.050
Benzo(b)fluoranthene	ND	0.10
Benzo(k)fluoranthene	ND	0.050
Benzo(a)pyrene	ND	0.050
Dibenzo(a,h)anthracene	ND	0.10
Benzo(g,h,i)perylene	ND	0.10
Indeno(1,2,3-c,d)pyrene	ND	0.10

SURROGATE RECOVERY

Analyte	% Recovery	% Rec Limits
2-Chloroanthracene	92	15 - 117

ND = Not Detected at or above client requested detection limit.

POLYNUCLEAR AROMATIC HYDROCARBONS

Method 8310

Sample ID

Lab Name: Analytical Technologies Inc.

Client Name: Retec

Client Project ID: Third Ward MGP Site -- 3-0887-303

Lab Sample ID: 95-10-155-05

ERB-2

Date Collected: 10/16/95

Date Extracted: 10/20/95

Date Analyzed: 10/26/95

Sample Matrix: Water

Cleanup: N/A

Sample Volume: 1000 mL

Final Volume: 1 mL

Analyte	Conc (ug/L)	Detection Limit (ug/L)
Naphthalene	0.44 J	0.50
Acenaphthylene	ND	1.0
1-Methylnaphthalene	ND	1.0
2-Methylnaphthalene	0.64 J	1.0
Acenaphthene	ND	1.0
Fluorene	0.051 J	0.10
Phenanthrene	ND	0.050
Anthracene	ND	0.10
Fluoranthene	ND	0.10
Pyrene	ND	0.050
Benzo(a)anthracene	ND	0.050
Chrysene	ND	0.050
Benzo(b)fluoranthene	ND	0.10
Benzo(k)fluoranthene	ND	0.050
Benzo(a)pyrene	ND	0.050
Dibenzo(a,h)anthracene	ND	0.10
Benzo(g,h,i)perylene	ND	0.10
Indeno(1,2,3-c,d)pyrene	ND	0.10

SURROGATE RECOVERY

Analyte	% Recovery	% Rec Limits
2-Chloroanthracene	89	15 - 117

ND = Not Detected at or above client requested detection limit.

J = Estimated value. Below requested detection limits.

000015

BTEX ANALYSIS
Modified Method 8020

Lab Name: Analytical Technologies, Inc.

Date Collected: 10/13/95

Client Name: Remediation Technologies, Inc.

Date Analyzed: 10/17/95

Client Project ID: Third Ward MGP

Sample Matrix: Water

Lab Workorder Number: 95-10-124

Sample ID	Lab Sample ID	Sample Volume (ml)	Conc. Benzene (ug/L)	Conc. Toluene (ug/L)	Conc. Ethyl Benzene (ug/L)	Conc. Xylenes (ug/L)	Surrogate Percent Recovery (TFT)	Date Analyzed	Time Analyzed
Reagent Blank	WRB1 10/16/95	5.0	< 0.5	< 0.5	< 0.5	< 1.0	99	10/17/95	05:49
Reagent Blank	WRB1 10/17/95	5.0	< 0.5	< 0.5	< 0.5	< 1.0	99	10/17/95	13:11
W-25S	95-10-124-01	0.10	3700	43	2300	1300	101	10/17/95	17:26
Blind Dup 2	95-10-124-02	0.10	3600	40	2200	1200	100	10/17/95	15:48
Equip. Rinse Blank	95-10-124-03	5.0	< 0.5	< 0.5	< 0.5	< 1.0	102	10/17/95	06:55
W-20I	95-10-124-04	0.02	12000	5500	4300	3900	99	10/17/95	14:11
W-20S	95-10-124-05	0.20	1300	< 12.5	750	84	100	10/17/95	16:21
W-46D	95-10-124-06	0.50	3800 E	9.1	67	< 10	98	10/17/95	16:53
W-46D	95-10-124-06DL	0.02	17000	< 125	< 125	< 250	98	10/17/95	14:43
Trip Blank	95-10-124-07	5.0	< 0.5	< 0.5	< 0.5	< 1.0	102	10/17/95	06:22

E = Exceeds calibration range. See dilution.

000009

BTEX ANALYSIS
Modified Method 8020

Lab Name: Analytical Technologies, Inc.

Date Collected: 10/12/95

Client Name: Remediation Technologies, Inc.

Date Analyzed: 10/13,18/95

Client Project ID: Third Ward MGP Site

Sample Matrix: Water

Lab Workorder Number: 95-10-102

Sample ID	Lab Sample ID	Sample Volume (ml)	Conc. Benzene (ug/L)	Conc. Toluene (ug/L)	Conc. Ethyl Benzene (ug/L)	Conc. Xylenes (ug/L)	Surrogate Percent Recovery (TFT)	Date Analyzed	Time Analyzed
Reagent Blank	WRB1 10/13/95	5.0	< 0.5	< 0.5	< 0.5	< 1.0	102	11/13/95	16:44
Reagent Blank	WRB1 10/18/95	5.0	< 0.5	< 0.5	< 0.5	< 1.0	99	11/18/95	12:21
W-41D	95-10-102-01	5.0	< 0.5	< 0.5	< 0.5	< 1.0	101	11/13/95	17:17
W-23S	95-10-102-02	0.05	2800	1200	4100	7200	100	11/18/95	15:30
W-41S	95-10-102-03	5.0	93 E	3.3	13	23	116	11/13/95	18:22
W-41S	95-10-102-03DL	1.0	130	4.8	12	18	103	11/18/95	16:02
Blind Dup	95-10-102-04	5.0	100 E	2.2	13	20	117	11/13/95	18:55
Blind Dup	95-10-102-04DL	1.0	110	3.5	10	13	103	11/18/95	16:35
W-26S	95-10-102-05	5.0	130 E	0.8	1.6	4.9	107	11/13/95	19:28
W-26S	95-10-102-05DL	1.0	160	< 2.5	< 2.5	< 5.0	100	11/18/95	17:07
W-26I	95-10-102-06	5.0	< 0.5	< 0.5	< 0.5	< 1.0	103	11/13/95	20:01
W-19	95-10-102-07	5.0	29	0.7	5.3	6.4	105	11/13/95	20:34
W-14	95-10-102-08	0.25	4500 E	81	2600 E	1600	103	11/13/95	21:07
W-14	95-10-102-08DL	0.05	7200	78	3300	1300	98	11/18/95	17:40
ERB-1	95-10-102-09	5.0	1.9	1.1	1.3	3.3	104	11/13/95	21:40
W-22S	95-10-102-10	5.0	71	2.4	69	26	106	11/13/95	22:13
Trip Blank	95-10-102-11	5.0	< 0.5	< 0.5	< 0.5	< 1.0	100	11/18/95	14:57

E = Exceeds calibration range - see dilution

000011

BTEX ANALYSIS
Modified Method 8020

Lab Name: Analytical Technologies, Inc.

Date Collected: 10/15,16/95

Client Name: Remediation Technologies, Inc.

Date Analyzed: 10/20,24,25/95

Client Project ID: 3-0887-303

Sample Matrix: Water

Lab Workorder Number: 95-10-155

Sample ID	Lab Sample ID	Sample Volume (ml)	Conc. Benzene (ug/L)	Conc. Toluene (ug/L)	Conc. Ethyl Benzene (ug/L)	Conc. Xylenes (ug/L)	Surrogate Percent Recovery (TFT)	Date Analyzed	Time Analyzed
Reagent Blank	WRB1 10/20/95	5.0	< 0.5	< 0.5	< 0.5	< 1.0	100	10/20/95	14:32
Reagent Blank	WRB1 10/23/95	5.0	< 0.5	< 0.5	< 0.5	< 1.0	106	10/24/95	02:25
Reagent Blank	WRB1 10/24/95	5.0	< 0.5	< 0.5	< 0.5	< 1.0	105	10/24/95	19:48
Reagent Blank	WRB1 10/25/95	5.0	< 0.5	< 0.5	< 0.5	< 1.0	105	10/25/95	11:19
W-27D	95-10-155-01	5.0	0.7	< 0.5	7.1	6.4	101	10/20/95	15:37
W-42D	95-10-155-02	5.0	1.7	< 0.5	< 0.5	< 1.0	102	10/20/95	16:09
W-22I	95-10-155-03	0.05	21000 E	5000	4400	3600	102	10/24/95	02:58
W-22I	95-10-155-03 DL	0.005	27000	4200	3300	2900	105	10/25/95	12:58
W-16	95-10-155-04	0.5	1500 E	35	770	210	109	10/20/95	18:19
W-16	95-10-155-04 DL	0.05	4000	70	1300	270	106	10/24/95	23:07
ERB-2	95-10-155-05	5.0	< 0.5	< 0.5	< 0.5	< 1.0	101	10/20/95	16:42
W-13	95-10-155-06	5.0	21	3.3	87 E	40	106	10/24/95	05:08
W-13	95-10-155-06 DL	1.0	22	4.1	100	37	105	10/24/95	04:36
W-45D	95-10-155-07	5.0	< 0.5	< 0.5	< 0.5	< 1.0	100	10/20/95	17:14
W-43D	95-10-155-08	0.05	10000 E	130	2300	2300	105	10/24/95	04:03
W-43D	95-10-155-08 DL	0.02	15000	210	2900	2800	104	10/24/95	23:40
Trip Blank	95-10-155-09	5.0	< 0.5	< 0.5	< 0.5	< 1.0	99	10/20/95	15:04

E = Exceeds calibration range. See dilution.

DL = Dilution

000010

CYANIDE
Method 9010



Lab Name: Analytical Technologies, Inc. Date Collected: 10/13/95
Client Name: Retec Prep Date: 10/17/95
Client Project ID: Third Ward MGP Site Date Analyzed: 10/17/95
Lab Workorder Number: 95-10-124 Sample Matrix: Water

Sample ID	Lab Sample ID	Cyanide (mg/L)	Detection Limit (mg/L)
Reagent Blank		ND	0.03
W-25S	95-10-124-01	0.525	0.03
Blind Dup 2	95-10-124-02	0.66	0.03
Equip Rinse Blank	95-10-124-03	ND	0.005
W-20I	95-10-124-04	0.243	0.005
W-20S	95-10-124-05	1.10	0.13
W-46D	95-10-124-06	0.484	0.005

ND = Not Detected
NA = Not Applicable

CYANIDE
Method 9010

Lab Name: Analytical Technologies, Inc. Date Collected: 10/12/95
Client Name: Retec Prep Date: 10/17/95
Client Project ID: Third Ward MGP Site Date Analyzed: 10/17/95
Lab Workorder Number: 95-10-102 Sample Matrix: Water

Sample ID	Lab Sample ID	Total Cyanide (mg/L)	Detection Limit (mg/L)
Reagent Blank		ND	0.005
W-41D	95-10-102-01	0.53	0.013
W-23S	95-10-102-02	0.18	0.005
W-41S	95-10-102-03	0.050	0.005
Blind Dup	95-10-102-04	0.038	0.005
W-26S	95-10-102-05	20	0.25
W-26I	95-10-102-06	2.2	0.06
W-19	95-10-102-07	1.1	0.06
W-14	95-10-102-08	1.4	0.03
W-22S	95-10-102-10	3.4	0.06

ND = Not Detected

CYANIDE
Weak Acid Dissociable Method 4500I



Lab Name: Analytical Technologies, Inc. Date Collected: 10/12/95
Client Name: Retec Prep Date: 10/18/95
Client Project ID: Third Ward MGP Site Date Analyzed: 10/18/95
Lab Workorder Number: 95-10-124 Sample Matrix: Water

Sample ID	Lab Sample ID	W. A. Dissoc. Cyanide(mg/L)	Detection Limit (mg/L)
Reagent Blank		ND	0.005
W-25S	95-10-124-01	ND	0.005
Blind Dup 2	95-10-124-02	ND	0.005
Equip Rinse Blank	95-10-124-03	NA	0.005
W-20I	95-10-124-04	0.009	0.005
W-20S	95-10-124-05	0.009	0.005
W-46D	95-10-124-06	0.013	0.005

ND = Not Detected
NA = Not Analyzed

CYANIDE

Weak Acid Dissociable Method 4500I

Lab Name: Analytical Technologies, Inc.

Date Collected: 10/12/95

Client Name: Retec

Prep Date: 10/18/95

Client Project ID: Third Ward MGP Site

Date Analyzed: 10/18/95

Lab Workorder Number: 95-10-102

Sample Matrix: Water

Sample ID	Lab Sample ID	W. A. Dissoc. Cyanide (mg/L)	Detection Limit (mg/L)
Reagent Blank		ND	0.005
W-41D	95-10-102-01	0.01	0.005
W-23S	95-10-102-02	ND	0.005
W-41S	95-10-102-03	ND	0.005
Blind Dup	95-10-102-04	ND	0.005
W-26S	95-10-102-05	0.13	0.005
W-26I	95-10-102-06	0.038	0.005
W-19	95-10-102-07	ND	0.005
W-14	95-10-102-08	0.008	0.005
W-22S	95-10-102-10	0.023	0.005

ND = Not Detected



INORGANICS

Lab Name: Analytical Technologies, Inc.

Client Name: Retec

Client Project ID: Third Ward MGP Site

Lab Sample ID: 95-10-155-06

Sample ID

W-13

Date Collected: 10/15/95

Prep Date: See Reagent Blank Report

Date Analyzed: See Reagent Blank Report

Sample Matrix: Water

Analyte	Method	Concentration (mg/L)	Detection Limit (mg/L)
Nitrate as N	353.2	ND	0.1
Ammonia as N	350.1	9.6	3
Total Phosphate as P	365.1	0.35	0.05
Sulfide	376.1	NA	1
Sulfate	375.4	NA	10
Soluble Phosphate as P	365.1	ND	1
Total Cyanide	9010	2.0	0.025 *
Cyanide, Weak Acid Dissoc.	4500I	ND	0.005

ND = Not Detected

NA = Not Analyzed

* Diluted 1:5.

S. J. J.
1/5/96

INORGANICS

Lab Name: Analytical Technologies, Inc.

Client Name: Retec

Client Project ID: Third Ward MGP Site

Lab Sample ID: 95-10-155-04

Sample ID

W-16

Date Collected: 10/16/95

Prep Date: See Reagent Blank Report

Date Analyzed: See Reagent Blank Report

Sample Matrix: Water

Analyte	Method	Concentration (mg/L)	Detection Limit (mg/L)
Total Cyanide	9010	0.39	0.005
Cyanide, Weak Acid Dissoc.	4500I	ND	0.005

ND = Not Detected

INORGANICS

Lab Name: Analytical Technologies, Inc.

Client Name: Retec

Client Project ID: Third Ward MGP Site

Lab Sample ID: 95-10-102-05

Sample ID

W-20S

Date Collected: 10/13/95

Prep Date: See Reagent Blank Report

Date Analyzed: See Reagent Blank Report

Sample Matrix: Water

Analyte	Method	Concentration (mg/L)	Detection Limit (mg/L)
Nitrate as N	353.2	ND	0.1
Ammonia as N	350.1	14	3.0
Total Phosphate as P	365.1	1.3	0.05
Sulfide	376.1	19	1
Sulfate	375.4	330	130
Soluble Phosphate as P	365.1	1.2	0.05

NA = Not Applicable

INORGANICS

Lab Name: Analytical Technologies, Inc.

Client Name: Retec

Client Project ID: Third Ward MGP Site

Lab Sample ID: 95-10-155-04

Sample ID

W-20I

Date Collected: 10/13/95

Prep Date: See Reagent Blank Report

Date Analyzed: See Reagent Blank Report

Sample Matrix: Water

Analyte	Method	Concentration (mg/L)	Detection Limit (mg/L)
Nitrate as N	353.2	ND	0.1
Ammonia as N	350.1	41	3.0
Total Phosphate as P	365.1	0.55	0.05
Sulfide	376.1	ND	1
Sulfate	375.4	ND	10
Soluble Phosphate as P	365.1	0.55	0.05

ND = Not Detected

INORGANICS

Sample ID

Lab Name: Analytical Technologies, Inc.

W-23S

Client Name: Retec

Date Collected: 10/12/95

Client Project ID: Third Ward MGP Site

Prep Date: See Reagent Blank Report

Date Analyzed: See Reagent Blank Report

Lab Sample ID: 95-10-102-02

Sample Matrix: Water

Analyte	Method	Concentration (mg/L)	Detection Limit (mg/L)
NO3 as N	353.2	ND	0.1
Ammonia as N	350.1	5.5	1.0
Total Phosphate as P	365.1	0.95	0.05
Sulfide	376.1	ND	1.0
Sulfate	375.4	ND	10
Soluble Phosphate as P	365.1	0.87	0.05

ND = Not Detected

NA = Not Applicable

INORGANICS



Lab Name: Analytical Technologies, Inc.

Client Name: Retec

Client Project ID: Third Ward MGP Site

Lab Sample ID: 95-10-155-03

Sample ID

W-22I

Date Collected: 10/16/95

Prep Date: See Reagent Blank Report

Date Analyzed: See Reagent Blank Report

Sample Matrix: Water

Analyte	Method	Concentration (mg/L)	Detection Limit (mg/L)
Nitrate as N	353.2	ND	0.1
Ammonia as N	350.1	37	3.0
Total Phosphate as P	365.1	1.2	0.05
Sulfide	376.1	15	1.0
Sulfate	375.4	ND	10
Soluble Phosphate as P	365.1	1.1	0.05
Total Cyanide	9010	2.4	0.025 *
Cyanide, Weak Acid Dissoc.	4500I	0.008	0.005

ND = Not Detected

NA = Not Applicable

* Diluted 1:5.

S-73

1/5/96

INORGANICS

Lab Name: Analytical Technologies, Inc.

Client Name: Retec

Client Project ID: Third Ward MGP Site

Lab Sample ID: 95-10-124-01

Sample ID

W-25S

Date Collected: 10/13/95

Prep Date: See Reagent Blank Report

Date Analyzed: See Reagent Blank Report

Sample Matrix: Water

Analyte	Method	Concentration (mg/L)	Detection Limit (mg/L)
Nitrate as N	353.2	ND	0.1
Ammonia as N	350.1	5.5	1.0
Total Phosphate as P	365.1	0.69	0.05
Sulfide	376.1	32	1
Sulfate	375.4	52	50
Soluble Phosphate as P	365.1	0.69	0.05

ND = Not Detected

INORGANICS

Lab Name: Analytical Technologies, Inc.

Client Name: Retec

Client Project ID: Third Ward MGP Site

Lab Sample ID: 95-10-102-06

Sample ID

W-26I

Date Collected: 10/12/95

Prep Date: See Reagent Blank Report

Date Analyzed: See Reagent Blank Report

Sample Matrix: Water

Analyte	Method	Concentration (mg/L)	Detection Limit (mg/L)
NO3 as N	353.2	ND	0.1
Ammonia as N	350.1	85	3
Total Phosphate as P	365.1	0.71	0.05
Sulfide	376.1	10	1.0
Sulfate	375.4	1500	500
Soluble Phosphate as P	365.1	0.66	0.05

ND = Not Detected

INORGANICS

Lab Name: Analytical Technologies, Inc.

Client Name: Retec

Client Project ID: Third Ward MGP Site

Lab Sample ID: 95-10-155-01

Sample ID

W-27D

Date Collected: 10/15/95

Prep Date: See Reagent Blank Report

Date Analyzed: See Reagent Blank Report

Sample Matrix: Water

Analyte	Method	Concentration (mg/L)	Detection Limit (mg/L)
Total Cyanide	9010	0.018	0.005
Cyanide, Weak Acid Dissoc.	4500I	ND	0.005

ND = Not Detected

INORGANICS

Lab Name: Analytical Technologies, Inc.

Client Name: Retec

Client Project ID: Third Ward MGP Site

Lab Sample ID: 95-10-102-03

Sample ID

W-41S

Date Collected: 10/12/95

Prep Date: See Reagent Blank Report

Date Analyzed: See Reagent Blank Report

Sample Matrix: Water

Analyte	Method	Concentration (mg/L)	Detection Limit (mg/L)
NO3 as N	353.2	ND	0.1
Ammonia as N	350.1	66	3
Total Phosphate as P	365.1	2.5	0.05
Sulfide	376.1	ND	1.0
Sulfate	375.4	ND	10
Soluble Phosphate as P	365.1	2.4	0.05

ND = Not Detected

NA = Not Applicable

INORGANICS

Sample ID

W-42D

Lab Name: Analytical Technologies, Inc.

Client Name: Retec

Client Project ID: Third Ward MGP Site

Lab Sample ID: 95-10-102-02

Date Collected: 10/15/95

Prep Date: See Reagent Blank Report

Date Analyzed: See Reagent Blank Report

Sample Matrix: Water

Analyte	Method	Concentration (mg/L)	Detection Limit (mg/L)
Total Cyanide	9010	ND	0.005
Cyanide, Weak Acid Dissoc.	4500I	ND	0.005

ND = Not Detected

INORGANICS

Lab Name: Analytical Technologies, Inc.

Client Name: Retec

Client Project ID: Third Ward MGP Site

Lab Sample ID: 95-10-155-08

Sample ID

W-43D

Date Collected: 10/16/95

Prep Date: See Reagent Blank Report

Date Analyzed: See Reagent Blank Report

Sample Matrix: Water

Analyte	Method	Concentration (mg/L)	Detection Limit (mg/L)
Nitrate as N	353.2	ND	0.1
Ammonia as N	350.1	11	3
Total Phosphate as P	365.1	0.87	0.05
Sulfide	376.1	ND	1
Sulfate	375.4	ND	10
Soluble Phosphate as P	365.1	0.82	1
Total Cyanide	9010	0.24	0.005
Cyanide, Weak Acid Dissoc.	4500I	ND	0.005

ND = Not Detected

INORGANICS

Lab Name: Analytical Technologies, Inc.

Client Name: Retec

Client Project ID: Third Ward MGP Site

Lab Sample ID: 95-10-155-07

Sample ID

W-45D

Date Collected: 10/16/95

Prep Date: See Reagent Blank Report

Date Analyzed: See Reagent Blank Report

Sample Matrix: Water

Analyte	Method	Concentration (mg/L)	Detection Limit (mg/L)
Total Cyanide	9010	ND	0.005
Cyanide, Weak Acid Dissoc.	4500I	NA	0.005

ND = Not Detected

NA = Not Applicable

INORGANICS

Lab Name: Analytical Technologies, Inc.

Client Name: Retec

Client Project ID: Third Ward MGP Site

Lab Sample ID: 95-10-155-06

Sample ID

W-46D

Date Collected: 10/13/95

Prep Date: See Reagent Blank Report

Date Analyzed: See Reagent Blank Report

Sample Matrix: Water

Analyte	Method	Concentration (mg/L)	Detection Limit (mg/L)
Nitrate as N	353.2	ND	0.1
Ammonia as N	350.1	57	3.0
Total Phosphate as P	365.1	2.0	0.05
Sulfide	376.1	ND	1
Sulfate	375.4	ND	10
Soluble Phosphate as P	365.1	1.9	0.05

ND = Not Detected

INORGANICS

Sample ID

Lab Name: Analytical Technologies, Inc.

Client Name: Retec

Client Project ID: Third Ward MGP Site

Lab Sample ID: 95-10-155-05

ERB-2

Date Collected: 10/16/95

Prep Date: See Reagent Blank Report

Date Analyzed: See Reagent Blank Report

Sample Matrix: Water

Analyte	Method	Concentration (mg/L)	Detection Limit (mg/L)
Total Cyanide	9010	ND	0.005
Cyanide, Weak Acid Dissoc.	4500I	NA	0.005

ND = Not Detected

NA = Not Applicable

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

W-13

Lab Name: ANALYTICAL TECHNOLOGIES Contract: _____

Lab Code: NA Case No.: SAS No.: SDG No.: 3-0887

Matrix (soil/water): WATER Lab Sample ID: WS155-06

Level (low/med): LOW Date Received: 10/18/95

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	258000			P
7439-89-6	Iron	1500			P
7439-95-4	Magnesium	106000			P

Color Before: Clarity Before: Texture:
Color After: Clarity After: Artifacts:

Comments:

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

W-16

Lab Name: ANALYTICAL TECHNOLOGIES Contract: _____

Lab Code: NA Case No.: SAS No.: SDG No.: 3-0887

Matrix (soil/water): WATER Lab Sample ID: WS155-04

Level (low/med): LOW Date Received: 10/18/95

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	135000	-	-	P
7439-89-6	Iron	461	-	-	P
7439-95-4	Magnesium	126000	-	-	P
			-	-	
			-	-	
			-	-	
			-	-	
			-	-	
			-	-	
			-	-	
			-	-	
			-	-	
			-	-	
			-	-	
			-	-	
			-	-	
			-	-	
			-	-	
			-	-	
			-	-	
			-	-	
			-	-	

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

W-19

Lab Name: ANALYTICAL TECHNOLOGIES Contract: _____

Lab Code: NA Case No.: _____ SAS No.: _____ SDG No.: 3-0887

Matrix (soil/water): WATER Lab Sample ID: WS102-07

Level (low/med): LOW Date Received: 10/13/95

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	252000			P
7439-89-6	Iron	710			P
7439-95-4	Magnesium	93100			P

Color Before: COLORLESS Clarity Before: CLEAR Texture: N/A

Color After: COLORLESS Clarity After: CLEAR Artifacts: _____

Comments:

APPENDIX I

GROUNDWATER SAMPLING FORMS

REMEDATION TECHNOLOGIES, INC.
Groundwater Sampling Form

PROJECT Third Ward MGP
PROJECT NO. 3-0887-303

WELL NO. W-13
SAMPLERS MRS

1. WELL CONDITION CHECKLIST

a. Bump posts N/A Pro. casing/lock Good Surface pad Good
b. Well visibility (paint) N/A
c. Well label Not present

2. WATER LEVEL MEASUREMENT

DATE 11-Oct-95 TIME _____

WEATHER CONDITIONS Clear, 50°, windy

a. Location of measuring point Top of inner casing
b. Depth of water table from measuring point 6.40 ft
c. Height of measuring point below ground surface 0.57 ft
d. Total depth of well below measuring point 13.05 ft
e. Length of water column (line 2d-2b) 6.65 ft

3. WELL PURGING

DATE 15-Oct-95 TIME _____

WEATHER CONDITIONS Clear, 50°, windy

a. Purge method Peristaltic pump and dedicated tygon tubing
b. Required purge volume at 3 well volumes 3.3 gallons

Volume Removed	DO	Redox	pH	Cond.*	T(C)	Appearance
1 gallon		-140	6.72	2370	17.7	Gray
1.5 gallons	NM	-225	7.17	2520	17.7	Gray

4. SAMPLE COLLECTION

DATE 15-Oct-95 TIME 7:15 p.m.

WEATHER CONDITIONS Clear, 50°, windy

a. Collection Method Peristaltic pump and dedicated tygon tubing

b. Meter Calibration: Date _____ Model _____
pH Meter 15-Oct-95 Y.S.I. 3560
D.O. Meter 15-Oct-95 Y.S.I. 50B

c. Sample Information pH 7.17 Cond. 2520 T(C) 17.7
Analysis Containers Sample Prep./Preservation
PAHs 8310/8270** 2 X 1-L amber Ice, darkness, field-filtered
BTEX 8020 3 x 40 mL voa Ice, darkness, HCl
Total Cyanide 9010*** 2 x 1-L plastic Ice, darkness, NaOH
Microbial Enumerations**** 2 x 40 mL voa Ice, darkness

d. Chain of Custody Form yes COC Tape yes

e. Shipping Container Cooler with ice cubes

5. COMMENTS: Sulfur-like odor. Well purged dry at 1 gallon. Shut off pump and waited 5 minutes. Started pump and well purged dry after removing 0.2 more gallons. Waited 10 minutes - well pumped dry at immediately. Let recharge and sample. (Can fill 1/2 of 1 L bottle before well goes dry when sampling).

*umho/cm

**PAHs will be run by EPA 8270 if high analyte concentrations pose interferences for Method 8310

***If total cyanide is detected, weak acid dissociable cyanide will be analyzed as well

****Total heterotrophs, PAH degraders, and benzene degraders

NM - Not measured

REMEDATION TECHNOLOGIES, INC.
Groundwater Sampling Form

PROJECT Third Ward MGP WELL NO. W-14
PROJECT NO. 3-0887-303 SAMPLERS RLC

1. WELL CONDITION CHECKLIST

a. Bump posts N/A Pro. casing/lock Good Surface pad Good
b. Well visibility (paint) N/A
c. Well label Not present

2. WATER LEVEL MEASUREMENT

DATE 10-Oct-95 TIME 2:30 p.m.
WEATHER CONDITIONS Sunny, 75°, light breeze
a. Location of measuring point Top of inner casing
b. Depth of water table from measuring point 9.06 ft
c. Height of measuring point below ground surface _____
d. Total depth of well below measuring point 16.54 ft
e. Length of water column (line 2d-2b) 7.48 ft

3. WELL PURGING

DATE 11-Oct-95 TIME 2:30 p.m.
WEATHER CONDITIONS Sunny, 75°, light breeze
a. Purge method Peristaltic pump and dedicated tygon tubing
b. Required purge volume at 3 well volumes 3.6 gallons

Volume Removed	DO	Redox	pH	Cond.*	T(C)	Appearance
1.2 gallons		-153	6.86	3190	18.3	Green/gray/odor/sheen
2.4 gallons		-157	6.91	2930	17.6	Green/gray/odor/sheen
3.6 gallons		-204	6.82	3940	18.2	Green/gray/odor/sheen

4. SAMPLE COLLECTION

DATE 11-Oct-95 TIME 3:15 p.m.
WEATHER CONDITIONS Sunny, 75°, light breeze
a. Collection Method Peristaltic pump and dedicated tygon tubing
b. Meter Calibration: _____
pH Meter 11-Oct-95 Y.S.I. 3560
D.O. Meter 11-Oct-95 Y.S.I. 50B
c. Sample Information _____
pH 6.82 Cond. 3940 T(C) 18.2
Analysis _____ Containers _____ Sample Prep./Preservation _____
PAHs 8310/8270** 2 x 1 L amber Ice, darkness, field-filtered
BTEX 8020 3 vials Ice, darkness, HCl
Total Cyanide 9010*** 2 x 1 L plastic Ice, darkness, NaOH, field-filtered
Dissolved Fe, Mg, Ca 1 x 1 L plastic Ice, darkness, HNO₃, field-filtered
d. Chain of Custody Form yes COC Tape yes
e. Shipping Container Cooler with ice cubes

5. COMMENTS: Volatiles and DO measurement were collected on 10/12/95. Difficulty collecting volatiles sample, the water was bubbly like carbonation.

*umho/cm

**PAHs will be run by EPA 8270 if high analyte concentrations pose interferences for Method 8310

***If total cyanide is detected, weak acid dissociable cyanide will be analyzed as well

REMEDATION TECHNOLOGIES, INC.
Groundwater Sampling Form

PROJECT Third Ward MGP
PROJECT NO. 3-0887-303

WELL NO. W-16
SAMPLERS MRS

1. WELL CONDITION CHECKLIST

a. Bump posts N/A Pro. casing/lock Good Surface pad Good
b. Well visibility (paint) N/A
c. Well label Not present

2. WATER LEVEL MEASUREMENT

DATE 16-Oct-95 TIME _____
WEATHER CONDITIONS Clear, sunny, upper 40's
a. Location of measuring point Top of inner casing
b. Depth of water table from measuring point 5.18 ft
c. Height of measuring point below ground surface 0.47 ft
d. Total depth of well below measuring point 14.49 ft
e. Length of water column (line 2d-2b) 9.31 ft

3. WELL PURGING

DATE 16-Oct-95 TIME _____
WEATHER CONDITIONS Clear, sunny, upper 40's
a. Purge method Peristaltic pump and dedicated tygon tubing
b. Required purge volume at 3 well volumes 4.5 gallons

Volume Removed	DO	Redox	pH	Cond.*	T(C)	Appearance
1.5 gallons		-225	6.90	1593	17.9	Gray/sheen
3.0 gallons		-235	6.95	1616	17.9	Gray/sheen
4.5 gallons		-237	6.94	1622	17.9	Gray/clear

4. SAMPLE COLLECTION

DATE 16-Oct-95 TIME 12:00 p.m.
WEATHER CONDITIONS Clear, sunny, upper 40's
a. Collection Method Peristaltic pump and dedicated tygon tubing
b. Meter Calibration:
Date _____ Model _____
pH Meter 16-Oct-95 Y.S.I. 3560
D.O. Meter 16-Oct-95 Y.S.I. 50B
c. Sample Information
pH 6.94 Cond. 1622 T(C) 17.9
Analysis Containers Sample Prep./Preservation
PAHs 8310/8270** 2 X 1-L amber Ice, darkness, field-filtered
BTEX 8020 3 x 40 mL voa Ice, darkness, HCl
Total Cyanide 9010*** 2 x 1-L plastic Ice, darkness, NaOH
Dissolved Fe, Mg, Ca
d. Chain of Custody Form yes COC Tape yes
e. Shipping Container Cooler with ice cubes

5. COMMENTS: Measured depth to water with ORS oil/water interface probe LNAPL in well. 5.15' - 5.18' brown with strong odor. Sheen, odor in purge water. Black specks initially. Filter clogged after filling PAH and cyanide plus 5/6 of WAD CN.

*umho/cm

**PAHs will be run by EPA 8270 if high analyte concentrations pose interferences for Method 8310

***If total cyanide is detected, weak acid dissociable cyanide will be analyzed as well

REMEDATION TECHNOLOGIES, INC.
Groundwater Sampling Form

PROJECT Third Ward MGP WELL NO. W-19
PROJECT NO. 3-0887-303 SAMPLERS MRS

1. WELL CONDITION CHECKLIST

a. Bump posts N/A Pro. casing/lock Good Surface pad Good
b. Well visibility (paint) N/A
c. Well label Not present

2. WATER LEVEL MEASUREMENT

DATE 12-Oct-95 TIME _____
WEATHER CONDITIONS Clear, 70°
a. Location of measuring point Top of inner casing
b. Depth of water table from measuring point 7.77 ft
c. Height of measuring point below ground surface Not available
d. Total depth of well below measuring point 18.40 ft
e. Length of water column (line 2d-2b) 10.63 ft

3. WELL PURGING

DATE 12-Oct-95 TIME _____
WEATHER CONDITIONS Clear, 70°
a. Purge method Peristaltic pump and dedicated tygon tubing
b. Required purge volume at 3 well volumes 5.2 gallons

Volume Removed	DO	Redox	pH	Cond.*	T(C)	Appearance
3 gallons		-269	7.24	2260	18.4	Clear w/sheen and black speck
6 gallons		-293	7.23	2480	18.2	Clear w/sheen and black speck
9 gallons	NM	-308	7.27	2630	18.2	Clear w/sheen and black speck

4. SAMPLE COLLECTION

DATE 12-Oct-95 TIME 4:00 p.m.
WEATHER CONDITIONS Clear, 70°
a. Collection Method Peristaltic pump and dedicated tygon tubing
b. Meter Calibration:

	Date	Model
pH Meter	12-Oct-95	Y.S.I. 3560
D.O. Meter	12-Oct-95	Y.S.I. 50B

c. Sample Information

	pH	Cond.	T(C)
	7.27	2630	18.2

Analysis	Containers	Sample Prep./Preservation
PAHs 8310/8270**	2 X 1-L amber	Ice, darkness, field-filtered
BTEX 8020	3 x 40 mL voa	Ice, darkness, HCl
Total Cyanide 9010***	2 x 1-L plastic	Ice, darkness, NaOH
Microbial Enumerations****	2 x 40 mL voa	Ice, darkness, HNO ₃ , field-filtered

d. Chain of Custody Form yes COC Tape yes
e. Shipping Container Cooler with ice cubes

5. COMMENTS: Odor, sheen, black specks. Purged one more gallon after last YSI readings, then sampled. Well was over purged because of lack of prior sampling history.

*umho/cm

**PAHs will be run by EPA 8270 if high analyte concentrations pose interferences for Method 8310

***If total cyanide is detected, weak acid dissociable cyanide will be analyzed as well

NM - Not measured

REMEDATION TECHNOLOGIES, INC.
Groundwater Sampling Form

PROJECT Third Ward MGP WELL NO. W-20I
PROJECT NO. 3-0887-303 SAMPLERS MRS

1. WELL CONDITION CHECKLIST

a. Bump posts N/A Pro. casing/lock Good Surface pad Good
b. Well visibility (paint) N/A
c. Well label Not present

2. WATER LEVEL MEASUREMENT

DATE 13-Oct-95 TIME _____
WEATHER CONDITIONS Clear, sunny, upper 70's
a. Location of measuring point Top of inner casing
b. Depth of water table from measuring point 6.16 ft
c. Height of measuring point below ground surface 0.32 ft
d. Total depth of well below measuring point 20.53 ft
e. Length of water column (line 2d-2b) 14.37 ft

3. WELL PURGING

DATE 13-Oct-95 TIME _____
WEATHER CONDITIONS Clear, sunny, upper 70's
a. Purge method Peristaltic pump and dedicated tygon tubing
b. Required purge volume at 3 well volumes 5.4 gallons

Volume Removed	DO	Redox	pH	Cond.*	T(C)	Appearance
1.8 gallons		-137	6.63	964	16.7	Gray/sheen
3.6 gallons		-093	6.45	910	15.7	Gray/sheen
5.4 gallons		-060	6.30	1748	15.0	Gray/sheen

4. SAMPLE COLLECTION

DATE 13-Oct-95 TIME 2:30 p.m.
WEATHER CONDITIONS Clear, sunny, upper 70's
a. Collection Method Peristaltic pump and dedicated tygon tubing
b. Meter Calibration: Date Model
pH Meter 13-Oct-95 Y.S.I. 3560
D.O. Meter 13-Oct-95 Y.S.I. 50B
c. Sample Information pH 6.30 Cond. 1748 T(C) 15.0
Analysis Containers Sample Prep./Preservation
PAHs 8310/8270** 2 X 1-L amber Ice, darkness, field-filtered
BTEX 8020 3 x 40 mL voa Ice, darkness, HCl
Total Cyanide 9010*** 2 x 1-L plastic Ice, darkness, NaOH
Microbial Enumerations**** 2 x 40 mL voa Ice, darkness
d. Chain of Custody Form yes COC Tape yes
e. Shipping Container Cooler with ice cubes

5. COMMENTS: Odor, sheen, floating brown material. Readings jumped at 3rd volume - just as some NAPL came through tubing.

*umho/cm
**PAHs will be run by EPA 8270 if high analyte concentrations pose interferences for Method 8310
***If total cyanide is detected, weak acid dissociable cyanide will be analyzed as well
****Total heterotrophs, PAH degraders, and benzene degraders

REMEDATION TECHNOLOGIES, INC.
Groundwater Sampling Form

PROJECT Third Ward MGP WELL NO. W-20S
PROJECT NO. 3-0887-303 SAMPLERS RLC

1. WELL CONDITION CHECKLIST

a. Bump posts N/A Pro. casing/lock Good Surface pad Good
b. Well visibility (paint) N/A
c. Well label Not present

2. WATER LEVEL MEASUREMENT

DATE 13-Oct-95 TIME _____
WEATHER CONDITIONS Sunny
a. Location of measuring point Top of inner casing
b. Depth of water table from measuring point 6.34 ft
c. Height of measuring point below ground surface 0.32 ft
d. Total depth of well below measuring point 13.98 ft
e. Length of water column (line 2d-2b) 7.64 ft

3. WELL PURGING

DATE 13-Oct-95 TIME _____
WEATHER CONDITIONS Sunny
a. Purge method Peristaltic pump and dedicated tygon tubing
b. Required purge volume at 3 well volumes 3.75 gallons

Volume Removed	DO	Redox	pH	Cond.*	T(C)	Appearance
1.25 gallons		-148	6.74	6280	18.7	Dark gray
2.50 gallons		-175	6.78	3250	18.6	Dark gray
3.75 gallons	0.50	-070	6.75	2830	18.6	Dark green/gray

4. SAMPLE COLLECTION

DATE 13-Oct-95 TIME 2:15 p.m.
WEATHER CONDITIONS Sunny
a. Collection Method Peristaltic pump and dedicated tygon tubing
b. Meter Calibration:
 Date Model
 pH Meter 13-Oct-95 Y.S.I. 3560
 D.O. Meter 13-Oct-95 Y.S.I. 50B
c. Sample Information
 pH 6.75 Cond. 2830 T(C) 18.6
 Analysis Containers Sample Prep./Preservation
 PAHs 8310/8270** 2 X 1-L amber Ice, darkness, field-filtered
 BTEX 8020 3 x 40 mL voa Ice, darkness, HCl
 Total Cyanide 9010*** 2 x 1-L plastic Ice, darkness, NaOH
 Microbial Enumerations**** 2 x 40 mL voa Ice, darkness
d. Chain of Custody Form yes COC Tape yes
e. Shipping Container Cooler with ice cubes

5. COMMENTS: _____

*umho/cm

**PAHs will be run by EPA 8270 if high analyte concentrations pose interferences for Method 8310

***If total cyanide is detected, weak acid dissociable cyanide will be analyzed as well

****Total heterotrophs, PAH degraders, and benzene degraders

REMEDATION TECHNOLOGIES, INC.
Groundwater Sampling Form

PROJECT Third Ward MGP
PROJECT NO. 3-0887-303

WELL NO. W-22I
SAMPLERS MRS

1. WELL CONDITION CHECKLIST

a. Bump posts N/A Pro. casing/lock Good Surface pad Good
b. Well visibility (paint) N/A
c. Well label Not present

2. WATER LEVEL MEASUREMENT

DATE 16-Oct-95 TIME _____
WEATHER CONDITIONS Clear, sunny, 40°
a. Location of measuring point Top of inner casing
b. Depth of water table from measuring point 7.69 ft
c. Height of measuring point below ground surface 0.23 ft
d. Total depth of well below measuring point 16.59 ft
e. Length of water column (line 2d-2b) 8.90 ft

3. WELL PURGING

DATE 16-Oct-95 TIME _____
WEATHER CONDITIONS Clear, sunny, 40°
a. Purge method Peristaltic pump and dedicated tygon tubing
b. Required purge volume at 3 well volumes 4.5 gallons

Volume Removed	DO	Redox	pH	Cond.*	T(C)	Appearance
1.5 gallons		-170	6.61	2820	14.1	Gray/sheen
3.0 gallons		-241	6.74	2770	14.1	Gray/sheen
4.5 gallons	0.33	-278	6.77	2730	14.1	Gray/sheen

4. SAMPLE COLLECTION

DATE 16-Oct-95 TIME 9:30 a.m.
WEATHER CONDITIONS Clear, sunny, 40°
a. Collection Method Peristaltic pump and dedicated tygon tubing
b. Meter Calibration:

	Date	Model
pH Meter	16-Oct-95	Y.S.I. 3560
D.O. Meter	16-Oct-95	Y.S.I. 50B

c. Sample Information

	pH	Cond.	T(C)
	6.77	2730	14.1

Analysis	Containers	Sample Prep./Preservation
PAHs 8310/8270**	2 X 1-L amber	Ice, darkness, field-filtered
BTEX 8020	3 x 40 mL voa	Ice, darkness, HCl
Total Cyanide 9010***	2 x 1-L plastic	Ice, darkness, NaOH
Microbial Enumerations****	2 x 40 mL voa	Ice, darkness

d. Chain of Custody Form yes COC Tape yes
e. Shipping Container Cooler with ice cubes

5. COMMENTS: Odor. Used 2 filters, first filter clogged after filling PAH bottles and metal bottle.

*umho/cm

**PAHs will be run by EPA 8270 if high analyte concentrations pose interferences for Method 8310

***If total cyanide is detected, weak acid dissociable cyanide will be analyzed as well

****Total heterotrophs, PAH degraders, and benzene degraders

REMEDATION TECHNOLOGIES, INC.
Groundwater Sampling Form

PROJECT Third Ward MGP
PROJECT NO. 3-0887-303

WELL NO. W-22S
SAMPLERS RLC

1. WELL CONDITION CHECKLIST

a. Bump posts N/A Pro. casing/lock Good Surface pad Good
b. Well visibility (paint) N/A
c. Well label Not present

2. WATER LEVEL MEASUREMENT

DATE 10-Oct-95 TIME 10:00 a.m.
WEATHER CONDITIONS Sunny, 75°, light breeze
a. Location of measuring point Top of inner casing
b. Depth of water table from measuring point 7.99 ft
c. Height of measuring point below ground surface 0.32 ft
d. Total depth of well below measuring point 9.86 ft
e. Length of water column (line 2d-2b) 1.87 ft

3. WELL PURGING

DATE 11-Oct-95 TIME 10:00 a.m.
WEATHER CONDITIONS Sunny, 75°, light breeze
a. Purge method Peristaltic pump and dedicated tygon tubing
b. Required purge volume at 3 well volumes 0.9 gallons

Volume Removed	DO	Redox	pH	Cond.*	T(C)	Appearance
0.9 gallons		123	6.97	6	18.6	Clear/black specks, odor
1.8 gallons		-177	7.29	5	18.5	Clear/black specks, odor
2.7 gallons		-178	7.20	2190	18.3	Clear/black specks, odor
4.5 gallons	0.33	-192	7.14	2270	18.4	Clear/black specks, odor

4. SAMPLE COLLECTION

DATE 11-Oct-95 TIME 12:00 p.m.
WEATHER CONDITIONS Sunny, 75°, light breeze
a. Collection Method Peristaltic pump and dedicated tygon tubing
b. Meter Calibration: Date 11-Oct-95 Model Y.S.I. 3560
pH Meter 11-Oct-95 Y.S.I. 50B
D.O. Meter 11-Oct-95
c. Sample Information pH 7.14 Cond. 2270 T(C) 18.4
Analysis Containers Sample Prep./Preservation
PAHs 8310/8270** 2 x 1 L amber Ice, darkness, field-filtered
BTEX 8020 3 voa Ice, darkness, HCl
Total Cyanide 9010*** 2 x 1 L plastic Ice, darkness, NaOH
Dissolved Fe, Mg, Ca 1 x 1 L plastic Ice, darkness, NaOH
d. Chain of Custody Form yes COC Tape yes
e. Shipping Container Cooler with ice cubes

5. COMMENTS:

*umho/cm

**PAHs will be run by EPA 8270 if high analyte concentrations pose interferences for Method 8310

***If total cyanide is detected, weak acid dissociable cyanide will be analyzed as well

REMEDATION TECHNOLOGIES, INC.
Groundwater Sampling Form

PROJECT Third Ward MGP
PROJECT NO. 3-0887-303

WELL NO. W-23S
SAMPLERS RLC

1. WELL CONDITION CHECKLIST

a. Bump posts N/A Pro. casing/lock Good Surface pad Good
b. Well visibility (paint) N/A
c. Well label Not present

2. WATER LEVEL MEASUREMENT

DATE 12-Oct-95 TIME 2:50 p.m.
WEATHER CONDITIONS Sunny, 80°, breezy
a. Location of measuring point Top of inner casing
b. Depth of water table from measuring point 5.92 ft
c. Height of measuring point below ground surface 0.31 ft
d. Total depth of well below measuring point 12.33 ft
e. Length of water column (line 2d-2b) 6.41 ft

3. WELL PURGING

DATE 12-Oct-95 TIME 2:50 p.m.
WEATHER CONDITIONS Sunny, 80°, breezy
a. Purge method Peristaltic pump and dedicated tygon tubing
b. Required purge volume at 3 well volumes 3.1 gallons

Volume Removed	DO	Redox	pH	Cond.*	T(C)	Appearance
1.1 gallons		-120	7.11	3850	18.7	Clear/lt green/slight odor
2.0 gallons		-145	7.10	3570	18.3	Clear/lt green/slight odor
3.1 gallons	0.55	-150	7.14	3540	18.3	Clear/lt green/slight odor

4. SAMPLE COLLECTION

DATE 12-Oct-95 TIME 4:30 p.m.
WEATHER CONDITIONS Sunny, 80°, breezy
a. Collection Method Peristaltic pump and dedicated tygon tubing
b. Meter Calibration:

	Date	Model
pH Meter	12-Oct-95	Y.S.I. 3560
D.O. Meter	12-Oct-95	Y.S.I. 50B

c. Sample Information

	pH	Cond.	T(C)
Analysis	7.14	3540	18.3

	Containers	Sample Prep./Preservation
PAHs 8310/8270**	2 x 1 L amber	Ice, darkness, field-filtered
BTEX 8020	3 x 40 mL voa	Ice, darkness, HCl
Total Cyanide 9010***	2 x 1 L plastic	Ice, darkness, NaOH
Microbial Enumerations****	2 x 40 mL voa	Ice, darkness
Soluble Phosphorus, Nitrate	1 x 1 L plastic	Ice, darkness
Nitrate, Ammonia, Nitrogen, Total Phosphorous		Ice, H ₂ SO ₄
Dissolved Fe, Mg	1 x 1 L plastic	Ice, HNO ₃

d. Chain of Custody Form yes COC Tape yes
e. Shipping Container Cooler with ice cubes

5. COMMENTS: _____

*umho/cm

**PAHs will be run by EPA 8270 if high analyte concentrations pose interferences for Method 8310

***If total cyanide is detected, weak acid dissociable cyanide will be analyzed as well

****Total heterotrophs, PAH degraders, and benzene degraders

REMEDATION TECHNOLOGIES, INC.
Groundwater Sampling Form

PROJECT Third Ward MGP **WELL NO.** W-25S and Blind Dup-2
PROJECT NO. 3-0887-303 **SAMPLERS** RLC

1. WELL CONDITION CHECKLIST

a. Bump posts N/A Pro. casing/lock Good Surface pad Good
 b. Well visibility (paint) N/A
 c. Well label Not present

2. WATER LEVEL MEASUREMENT

DATE 13-Oct-95 TIME 4:15 p.m.
 WEATHER CONDITIONS Sunny, 75°, windy
 a. Location of measuring point Top of inner casing
 b. Depth of water table from measuring point 0.53 ft
 c. Height of measuring point below ground surface _____
 d. Total depth of well below measuring point 14.90 ft
 e. Length of water column (line 2d-2b) 7.20 ft

3. WELL PURGING

DATE 13-Oct-95 TIME 4:15 p.m.
 WEATHER CONDITIONS Sunny, 75°, windy
 a. Purge method Peristaltic pump and dedicated tygon tubing
 b. Required purge volume at 3 well volumes 4.5 gallons

Volume Removed	DO	Redox	pH	Cond.*	T(C)	Appearance
1.5 gallons		-130	6.94	2520	19.5	Lt yellow/odor, sheen
3.0 gallons		-190	7.00	2780	19.0	Lt yellow/odor, sheen
4.5 gallons	0.50	-223	7.26	2840	19.0	Lt yellow/odor, sheen

4. SAMPLE COLLECTION

DATE 13-Oct-95 TIME 5:15 p.m.
 WEATHER CONDITIONS Sunny, 75°, windy
 a. Collection Method Peristaltic pump and dedicated tygon tubing
 b. Meter Calibration:

	Date	Model
pH Meter	13-Oct-95	Y.S.I. 3560
D.O. Meter	13-Oct-95	Y.S.I. 50B

c. Sample Information

	pH	Cond.	T(C)
	7.26	2840	19.0

Analysis Containers Sample Prep./Preservation

PAHs 8310/8270**	2 X 1-L amber	Ice, darkness, field-filtered
BTEX 8020	3 x 40 mL voa	Ice, darkness, HCl
Total Cyanide 9010***	2 x 1-L plastic	Ice, darkness, NaOH
Microbial Enumerations****	2 x 40 mL voa	Ice, darkness

d. Chain of Custody Form yes COC Tape yes
 e. Shipping Container Cooler with ice cubes

5. COMMENTS: Difficulty collecting BTEX voa vials - lots of bubbles. Collected Blind Dup-2 at MW-25S.

*umho/cm

**PAHs will be run by EPA 8270 if high analyte concentrations pose interferences for Method 8310

***If total cyanide is detected, weak acid dissociable cyanide will be analyzed as well

****Total heterotrophs, PAH degraders, and benzene degraders

REMEDATION TECHNOLOGIES, INC.
Groundwater Sampling Form

PROJECT Third Ward MGP
PROJECT NO. 3-0887-303

WELL NO. W-261
SAMPLERS RLC

1. WELL CONDITION CHECKLIST

a. Bump posts N/A Pro. casing/lock Good Surface pad Good
b. Well visibility (paint) N/A
c. Well label Not present

2. WATER LEVEL MEASUREMENT

DATE 11-Oct-95 TIME 5:30 p.m.
WEATHER CONDITIONS 75°, sunny, breezy
a. Location of measuring point Top of inner casing
b. Depth of water table from measuring point 7.37 ft
c. Height of measuring point below ground surface 0.22 ft
d. Total depth of well below measuring point 21.48 ft
e. Length of water column (line 2d-2b) 14.11 ft

3. WELL PURGING

DATE 12-Oct-95 TIME 5:30 p.m.
WEATHER CONDITIONS 75°, sunny, breezy
a. Purge method Peristaltic pump and dedicated tygon tubing
b. Required purge volume at 3 well volumes 6.9 gallons

Volume Removed	DO	Redox	pH	Cond.*	T(C)	Appearance
2.3 gallons		-103	6.71	1570	16.7	Yellow
4.6 gallons		-073	7.27	132	25.1	Yellow
6.9 gallons	1.23	-106	6.74	2920	16.4	Yellow

4. SAMPLE COLLECTION

DATE 12-Oct-95 TIME 6:30 p.m.
WEATHER CONDITIONS 75°, sunny, breezy
a. Collection Method Peristaltic pump and dedicated tygon tubing
b. Meter Calibration: Date 12-Oct-95 Model Y.S.I. 3560
pH Meter 12-Oct-95 Y.S.I. 50B
D.O. Meter 12-Oct-95
c. Sample Information pH 6.74 Cond. 2920 T(C) 16.4

Analysis	Containers	Sample Prep./Preservation
PAHs 8310/8270**	2 X 1-L amber	Ice, darkness, field-filtered
BTEX 8020	3 x 40 mL voa	Ice, darkness, HCl
Total Cyanide 9010***	2 x 1-L plastic	Ice, darkness, NaOH
Microbial Enumerations****	2 x 40 mL voa	Ice, darkness

d. Chain of Custody Form yes COC Tape yes
e. Shipping Container Cooler with ice cubes

5. COMMENTS:

*umho/cm

**PAHs will be run by EPA 8270 if high analyte concentrations pose interferences for Method 8310

***If total cyanide is detected, weak acid dissociable cyanide will be analyzed as well

****Total heterotrophs, PAH degraders, and benzene degraders

REMEDATION TECHNOLOGIES, INC.
Groundwater Sampling Form

PROJECT Third Ward MGP **WELL NO.** W-26S
PROJECT NO. 3-0887-303 **SAMPLERS** RLC

1. WELL CONDITION CHECKLIST

a. Bump posts N/A Pro. casing/lock Good Surface pad Good
b. Well visibility (paint) N/A
c. Well label Not present

2. WATER LEVEL MEASUREMENT

DATE 12-Oct-95 TIME 5:30 p.m.
WEATHER CONDITIONS Sunny, 75°, breezy
a. Location of measuring point Top of inner casing
b. Depth of water table from measuring point 6.82 ft
c. Height of measuring point below ground surface 0.54 ft
d. Total depth of well below measuring point 14.13 ft
e. Length of water column (line 2d-2b) 7.31 ft

3. WELL PURGING

DATE 12-Oct-95 TIME 5:30 p.m.
WEATHER CONDITIONS Sunny, 75°, breezy
a. Purge method Peristaltic pump and dedicated tygon tubing
b. Required purge volume at 3 well volumes 3.6 gallons

Volume Removed	DO	Redox	pH	Cond.*	T(C)	Appearance
1.20 gallons		-103	7.06	4210	23.0	Green/gray, odor
2.40 gallons		-140	7.23	3280	22.9	Green/gray, odor
3.60 gallons	0.40	-159	7.19	4350	22.6	Green/gray, odor

4. SAMPLE COLLECTION

DATE 12-Oct-95 TIME 6:30 p.m.
WEATHER CONDITIONS Sunny, 75°, breezy
a. Collection Method Peristaltic pump and dedicated tygon tubing
b. Meter Calibration:

	Date	Model
pH Meter	<u>12-Oct-95</u>	<u>Y.S.I. 3560</u>
D.O. Meter	<u>12-Oct-95</u>	<u>Y.S.I. 50B</u>

c. Sample Information

pH	<u>7.19</u>	Cond.	<u>9350</u>	T(C)	<u>22.0</u>
Analysis	Containers	Sample Prep./Preservation			
PAHs 8310/8270**	<u>2 X 1-L amber</u>	<u>Ice, darkness, field-filtered</u>			
BTEX 8020	<u>3 x 40 mL voa</u>	<u>Ice, darkness, HCl</u>			
Total Cyanide 9010***	<u>2 x 1-L plastic</u>	<u>Ice, darkness, NaOH</u>			

d. Chain of Custody Form yes COC Tape yes
e. Shipping Container Cooler with ice cubes

5. COMMENTS: _____

*umho/cm

**PAHs will be run by EPA 8270 if high analyte concentrations pose interferences for Method 8310

***If total cyanide is detected, weak acid dissociable cyanide will be analyzed as well

REMEDIATION TECHNOLOGIES, INC.
Groundwater Sampling Form

PROJECT Third Ward MGP
PROJECT NO. 3-0887-303

WELL NO. W-27D
SAMPLERS MRS

1. WELL CONDITION CHECKLIST

- a. Bump posts N/A Pro. casing/lock Good Surface pad Good
b. Well visibility (paint) N/A
c. Well label Not present

2. WATER LEVEL MEASUREMENT

- DATE 12-Oct-95 TIME _____
WEATHER CONDITIONS Sunny, windy, upper 50's
a. Location of measuring point Top of inner casing
b. Depth of water table from measuring point 9.28 ft
c. Height of measuring point below ground surface 0.37 ft
d. Total depth of well below measuring point 36.20 ft
e. Length of water column (line 2d-2b) 26.92 ft

3. WELL PURGING

- DATE 15-Oct-95 TIME _____
WEATHER CONDITIONS Sunny, windy, upper 50's
a. Purge method Peristaltic pump and dedicated tygon tubing
b. Required purge volume at 3 well volumes 13.5 gallons
- | Volume Removed | DO | Redox | pH | Cond.* | T(C) | Appearance |
|----------------|------|-------|------|--------|------|----------------------|
| 4.5 gallons | | -110 | 6.60 | 1441 | 13.8 | Clear w/black specks |
| 9.0 gallons | | -114 | 6.61 | 1441 | 13.5 | Clear |
| 13.5 gallons | 0.32 | -119 | 6.61 | 1443 | 13.5 | Clear |

4. SAMPLE COLLECTION

- DATE 15-Oct-95 TIME 4:15 p.m.
WEATHER CONDITIONS Sunny, windy, upper 50's
a. Collection Method Peristaltic pump and dedicated tygon tubing
b. Meter Calibration:
- | | Date | Model |
|------------|-----------|-------------|
| pH Meter | 15-Oct-95 | Y.S.I. 3560 |
| D.O. Meter | 15-Oct-95 | Y.S.I. 50B |
- c. Sample Information
- | | pH | Cond. | T(C) |
|--|------|-------|------|
| | 6.61 | 1443 | 13.5 |
- Analysis
- | | Containers | Sample Prep./Preservation |
|-----------------------|-----------------|---------------------------------|
| PAHs 8310/8270** | 2 X 1-L amber | Ice, darkness, field-filtered |
| BTEX 8020 | 3 x 40 mL voa | Ice, darkness, HCl |
| Total Cyanide 9010*** | 2 x 1-L plastic | Ice, darkness, NaOH |
| Dissolved Fe, Mg, Ca | | Ice, darkness, HNO ₃ |
- d. Chain of Custody Form Yes COC Tape Yes
e. Shipping Container Cooler with ice cubes

5. COMMENTS: _____

*umho/cm

**PAHs will be run by EPA 8270 if high analyte concentrations pose interferences for Method 8310

***If total cyanide is detected, weak acid dissociable cyanide will be analyzed as well

REMIEDIATION TECHNOLOGIES, INC.
Groundwater Sampling Form

PROJECT Third Ward MGP
PROJECT NO. 3-0887-303

WELL NO. W-41D
SAMPLERS RLC

1. WELL CONDITION CHECKLIST

- a. Bump posts N/A Pro. casing/lock Good Surface pad Good
 b. Well visibility (paint) N/A
 c. Well label Not present

2. WATER LEVEL MEASUREMENT

- DATE 10-Oct-95 TIME _____
 WEATHER CONDITIONS Sunny, 70°
 a. Location of measuring point Top of inner casing
 b. Depth of water table from measuring point 5.95 ft
 c. Height of measuring point below ground surface 0.41 ft
 d. Total depth of well below measuring point 45.01 ft
 e. Length of water column (line 2d-2b) 39.06 ft

3. WELL PURGING

- DATE 12-Oct-95 TIME 8:30 a.m.
 WEATHER CONDITIONS Sunny, 70°
 a. Purge method Peristaltic pump and dedicated tygon tubing
 b. Required purge volume at 3 well volumes 19.2 gallons
- | Volume Removed | DO | Redox | pH | Cond.* | T(C) | Appearance |
|----------------|------|-------|------|--------|------|------------|
| 6.4 gallons | | -103 | 6.54 | 1430 | 13.1 | Gray/green |
| 12.5 gallons | | -095 | 6.50 | 1500 | 15.6 | Gray/green |
| 19.2 gallons | 0.60 | -093 | 6.50 | 1500 | 15.5 | Gray/green |

4. SAMPLE COLLECTION

- DATE 12-Oct-95 TIME 11:50 a.m.
 WEATHER CONDITIONS Sunny, 70°
 a. Collection Method Peristaltic pump and dedicated tygon tubing
 b. Meter Calibration:
- | | Date | Model |
|------------|-----------|-------------|
| pH Meter | 12-Oct-95 | Y.S.I. 3560 |
| D.O. Meter | 12-Oct-95 | Y.S.I. 50B |
- c. Sample Information
- | | pH | Cond. | T(C) |
|--|------|-------|------|
| | 6.50 | 2830 | 15.5 |
- Analysis Containers Sample Prep./Preservation
- | | | |
|-----------------------|-----------------|---------------------------------|
| PAHs 8310/8270** | 2 x 1 L amber | Ice, darkness, field-filtered |
| BTEX 8020 | 3 vials | Ice, darkness, HCl |
| Total Cyanide 9010*** | 2 x 1 L plastic | Ice, darkness, NaOH |
| Dissolved Fe, Mg, Ca | 1 x 1 L plastic | Ice, darkness, HNO ₃ |
- d. Chain of Custody Form yes COC Tape yes
 e. Shipping Container Cooler with ice cubes

5. COMMENTS: _____

*umho/cm

**PAHs will be run by EPA 8270 if high analyte concentrations pose interferences for Method 8310

***If total cyanide is detected, weak acid dissociable cyanide will be analyzed as well

REMEDATION TECHNOLOGIES, INC.
Groundwater Sampling Form

PROJECT Third Ward MGP
PROJECT NO. 3-0887-303

WELL NO. W-41S and Blind Dup
SAMPLERS RLC

1. WELL CONDITION CHECKLIST

a. Bump posts N/A Pro. casing/lock Good Surface pad Good
b. Well visibility (paint) N/A
c. Well label Not present

2. WATER LEVEL MEASUREMENT

DATE 11-Oct-95 TIME 8:30 a.m.
WEATHER CONDITIONS Sunny, 75°, light breeze
a. Location of measuring point Top of inner casing
b. Depth of water table from measuring point 4.20 ft
c. Height of measuring point below ground surface 0.35 ft
d. Total depth of well below measuring point 14.97 ft
e. Length of water column (line 2d-2b) 10.77 ft

3. WELL PURGING

DATE 11-Oct-95 TIME 8:30 a.m.
WEATHER CONDITIONS Sunny, 75°, light breeze
a. Purge method Peristaltic pump and dedicated tygon tubing
b. Required purge volume at 3 well volumes 5.4 gallons

Volume Removed	DO	Redox	pH	Cond.*	T(C)	Appearance
1.8 gallons		-163	7.29	3660	18.7	Sheen/lt gray/green, odor
3.6 gallons		-141	7.22	3590	19.1	Sheen/lt gray/green, odor
5.4 gallons	0.70	-122	6.80	3690	19.1	Sheen/lt gray/green, odor

4. SAMPLE COLLECTION

DATE 12-Oct-95 TIME 10:45 a.m.
WEATHER CONDITIONS Sunny, 75°, light breeze
a. Collection Method Peristaltic pump and dedicated tygon tubing
b. Meter Calibration:

	Date	Model
pH Meter	12-Oct-95	Y.S.I. 3560
D.O. Meter	12-Oct-95	Y.S.I. 50B

c. Sample Information

	pH	Cond.	T(C)
	6.80	3690	19.1

Analysis	Containers	Sample Prep./Preservation
PAHs 8310/8270**	2 x 1 L amber	Ice, darkness, field-filtered
BTEX 8020	3 vials	Ice, darkness, HCl
Total Cyanide 9010***	2 x 1 L plastic	Ice, darkness, NaOH
Dissolved Fe, Mg, Ca	1 x 1 L plastic	

d. Chain of Custody Form yes COC Tape yes
e. Shipping Container Cooler with ice cubes

5. COMMENTS: Difficulty collecting volatile samples, a lot of air bubbles in the water.
Blind Duplicate sample collected.

*umho/cm

**PAHs will be run by EPA 8270 if high analyte concentrations pose interferences for Method 8310

***If total cyanide is detected, weak acid dissociable cyanide will be analyzed as well

REMEDIATION TECHNOLOGIES, INC.
Groundwater Sampling Form

PROJECT Third Ward MGP
PROJECT NO. 3-0887-303

WELL NO. W-42D
SAMPLERS MRS

1. WELL CONDITION CHECKLIST

a. Bump posts N/A Pro. casing/lock Good Surface pad Good
b. Well visibility (paint) N/A
c. Well label Not present

2. WATER LEVEL MEASUREMENT

DATE 10-Oct-95 TIME _____
WEATHER CONDITIONS Clear, sunny, 50's
a. Location of measuring point Top of inner casing
b. Depth of water table from measuring point 8.42 ft
c. Height of measuring point below ground surface 0.41 ft
d. Total depth of well below measuring point 29.62 ft
e. Length of water column (line 2d-2b) 21.20 ft

3. WELL PURGING

DATE 15-Oct-95 TIME _____
WEATHER CONDITIONS Clear, sunny, 50's
a. Purge method Peristaltic pump and dedicated tygon tubing
b. Required purge volume at 3 well volumes 10.5 gallons

Volume Removed	DO	Redox	pH	Cond.*	T(C)	Appearance
3.5 gallons		-088	6.54	1700	14.2	Clear/colorless
7.0 gallons		-082	6.48	1702	14.0	Clear/colorless
10.5 gallons	0.48	-087	6.56	1699	14.0	Clear/colorless

4. SAMPLE COLLECTION

DATE 15-Oct-95 TIME 5:45 p.m.
WEATHER CONDITIONS Clear, sunny, 50's
a. Collection Method Peristaltic pump and dedicated tygon tubing
b. Meter Calibration:
Date 15-Oct-95 Model Y.S.I. 3560
pH Meter 15-Oct-95
D.O. Meter 15-Oct-95 Model Y.S.I. 50B
c. Sample Information
pH 6.56 Cond. 1699 T(C) 14.0
Analysis Containers Sample Prep./Preservation
PAHs 8310/8270** 2 X 1-L amber Ice, darkness, field-filtered
BTEX 8020 3 x 40 mL voa Ice, darkness, HCl
Total Cyanide 9010*** 2 x 1-L plastic Ice, darkness, NaOH
d. Chain of Custody Form yes COC Tape yes
e. Shipping Container Cooler with ice cubes

5. COMMENTS:

*umho/cm

**PAHs will be run by EPA 8270 if high analyte concentrations pose interferences for Method 8310

***If total cyanide is detected, weak acid dissociable cyanide will be analyzed as well

REMEDATION TECHNOLOGIES, INC.
Groundwater Sampling Form

PROJECT Third Ward MGP WELL NO. W-43D
PROJECT NO. 3-0887-303 SAMPLERS MRS

1. WELL CONDITION CHECKLIST

a. Bump posts N/A Pro. casing/lock Good Surface pad Good
b. Well visibility (paint) N/A
c. Well label Not present

2. WATER LEVEL MEASUREMENT

DATE 16-Oct-95 TIME _____
WEATHER CONDITIONS Clear, 50°, windy
a. Location of measuring point Top of inner casing
b. Depth of water table from measuring point 9.99 ft
c. Height of measuring point below ground surface 0.35 ft
d. Total depth of well below measuring point 29.48 ft
e. Length of water column (line 2d-2b) 15.70 ft (see note)

3. WELL PURGING

DATE 16-Oct-95 TIME _____
WEATHER CONDITIONS Clear, 50°, windy
a. Purge method Peristaltic pump and dedicated tygon tubing
b. Required purge volume at 3 well volumes 7.5 gallons

Volume Removed	DO	Redox	pH	Cond.*	T(C)	Appearance
2.5 gallons		-087	6.82	3170	13.6	Gray/sheen
5.0 gallons		-095	6.87	2720	13.3	Gray/sheen
7.5 gallons	NM	-092	6.88	2640	13.3	Gray/sheen

4. SAMPLE COLLECTION

DATE 16-Oct-95 TIME 6:45 p.m.
WEATHER CONDITIONS Clear, 50°, windy
a. Collection Method Peristaltic pump and dedicated tygon tubing
b. Meter Calibration:
Date 16-Oct-95 Model Y.S.I. 3560
pH Meter 16-Oct-95
D.O. Meter 16-Oct-95 Model Y.S.I. 50B
c. Sample Information
pH 6.88 Cond. 2640 T(C) 13.3
Analysis Containers Sample Prep./Preservation
PAHs 8310/8270** 2 X 1-L amber Ice, darkness, field-filtered
BTEX 8020 3 x 40 mL voa Ice, darkness, HCl
Total Cyanide 9010*** 2 x 1-L plastic Ice, darkness, NaOH
Microbial Enumerations**** 2 x 40 mL voa Ice, darkness
d. Chain of Custody Form Yes COC Tape Yes
e. Shipping Container Cooler with ice cubes

5. COMMENTS: Brown floating material and DNAPL in well. Depth to top of DNAPL: 25.69 ft.
Water column height was calculated based on top of DNAPL to top of water.

*umho/cm

**PAHs will be run by EPA 8270 if high analyte concentrations pose interferences for Method 8310

***If total cyanide is detected, weak acid dissociable cyanide will be analyzed as well

****Total heterotrophs, PAH degraders, and benzene degraders

NM - Not Measured

REMEDATION TECHNOLOGIES, INC.
Groundwater Sampling Form

PROJECT Third Ward MGP WELL NO. W-45D
PROJECT NO. 3-0887-303 SAMPLERS MRS

1. WELL CONDITION CHECKLIST

a. Bump posts N/A Pro. casing/lock Good Surface pad Good
b. Well visibility (paint) N/A
c. Well label Not present

2. WATER LEVEL MEASUREMENT

DATE 10-Oct-95 TIME _____
WEATHER CONDITIONS Clear, 50°, windy
a. Location of measuring point Top of inner casing
b. Depth of water table from measuring point 6.44 ft
c. Height of measuring point below ground surface 0.52 ft
d. Total depth of well below measuring point 42.68 ft
e. Length of water column (line 2d-2b) 36.24 ft

3. WELL PURGING

DATE 16-Oct-95 TIME _____
WEATHER CONDITIONS Clear, 50°, windy
a. Purge method Peristaltic pump and dedicated tygon tubing
b. Required purge volume at 3 well volumes 18 gallons

Volume Removed	DO	Redox	pH	Cond.*	T(C)	Appearance
6 gallons		-108	6.53	1434	12.7	Clear
12 gallons		-112	6.54	1426	12.5	Clear
18 gallons	0.40	-112	6.56	1427	12.4	Clear

4. SAMPLE COLLECTION

DATE 16-Oct-95 TIME 3:45 p.m.
WEATHER CONDITIONS Clear, 50°, windy
a. Collection Method Peristaltic pump and dedicated tygon tubing
b. Meter Calibration: Date 16-Oct-95 Model Y.S.I. 3560
pH Meter 16-Oct-95 Y.S.I. 50B
D.O. Meter 16-Oct-95
c. Sample Information pH 6.56 Cond. 1427 T(C) 12.4
Analysis Containers 2 X 1-L amber Sample Prep./Preservation Ice, darkness, field-filtered
PAHs 8310/8270** 3 x 40 mL voa Ice, darkness, HCl
BTEX 8020 2 x 1-L plastic Ice, darkness, NaOH
Total Cyanide 9010***
d. Chain of Custody Form yes COC Tape yes
e. Shipping Container Cooler with ice cubes

5. COMMENTS: _____

*umho/cm

**PAHs will be run by EPA 8270 if high analyte concentrations pose interferences for Method 8310

***If total cyanide is detected, weak acid dissociable cyanide will be analyzed as well

REMEDATION TECHNOLOGIES, INC.
Groundwater Sampling Form

PROJECT Third Ward MGP
PROJECT NO. 3-0887-303

WELL NO. W-46D
SAMPLERS RLC

1. WELL CONDITION CHECKLIST

a. Bump posts N/A Pro. casing/lock Good Surface pad Good
b. Well visibility (paint) N/A
c. Well label Not present

2. WATER LEVEL MEASUREMENT

DATE 13-Oct-95 TIME 9:45 a.m.
WEATHER CONDITIONS Sunny, 70°
a. Location of measuring point Top of inner casing
b. Depth of water table from measuring point 11.49 ft
c. Height of measuring point below ground surface 0.26 ft
d. Total depth of well below measuring point 27.70 ft
e. Length of water column (line 2d-2b) 16.21 ft

3. WELL PURGING

DATE 13-Oct-95 TIME 9:45 a.m.
WEATHER CONDITIONS Sunny, 70°
a. Purge method Peristaltic pump and dedicated tygon tubing
b. Required purge volume at 3 well volumes 10.0 gallons

Volume Removed	DO	Redox	pH	Cond.*	T(C)	Appearance
3.3 gallons		-068	6.51	3120	14.9	Light yellow/slight odor
6.6 gallons		-071	6.54	3070	15.4	Light yellow/slight odor
10.0 gallons	0.60	-079	6.48	2980	15.4	Light yellow/slight odor

4. SAMPLE COLLECTION

DATE 13-Oct-95 TIME 11:00 a.m.
WEATHER CONDITIONS Sunny, 70°
a. Collection Method Peristaltic pump and dedicated tygon tubing
b. Meter Calibration:

	Date	Model
pH Meter	13-Oct-95	Y.S.I. 3560
D.O. Meter	13-Oct-95	Y.S.I. 50B

c. Sample Information

	pH	Cond.	T(C)
	6.48	2980	15.4

Analysis	Containers	Sample Prep./Preservation
PAHs 8310/8270**	2 x 2 x 1 L amber	Ice, darkness, field-filtered
BTEX 8020	3 vi 3 vials	Ice, darkness, HCl
Total Cyanide 9010***	2 x 2 x 1 L plastic	Ice, darkness, NaOH
Microbial Enumerations****	2 x 2 x 40 mL voa	Ice, darkness
Dissolved Fe, Mg, Ca	1 x 1 x 1 L plastic	Ice, darkness, HNO ₃
Ttl Phosphorus, ammonia, nitrogen, nitrate	1 x 1 x 1 L plastic	H ₂ SO ₄ , Ice, darkness
Soluble Nitrate, Sulfates	1 x 1 x 1 L plastic	Ice, darkness
Sulfides		Ice, zinc acetate

d. Chain of Custody Form yes COC Tape yes
e. Shipping Container Cooler with ice cubes

5. COMMENTS:

*umho/cm

**PAHs will be run by EPA 8270 if high analyte concentrations pose interferences for Method 8310

***If total cyanide is detected, weak acid dissociable cyanide will be analyzed as well

****Total heterotrophs, PAH degraders, and benzene degraders

APPENDIX J

MICROBIAL ENUMERATION RESULTS

LABORATORY REPORT

Analysis: Enumeration of Total Heterotroph, Specific Volatile, and PAH Degraders

Project: Third Ward MGP

Contract #: 3-0887-303

Project Contact: Martha Steinhart

Report Date: 10/26/95

Lab ID: 9510-015

Water samples were received from the Third Ward MGP project on October 17, 1995, and were collected on October 12-16.

METHODS

A. Total Plate Counts:

For each water sample, one mL was placed in 9 mL of saline solution. From this first dilution, each subsample was serially diluted further into sterile saline solution. Aliquots (0.1-ml) were plated on plate count agar from the appropriate dilution tubes. The plates were then incubated at room temperature for approximately 48 hours before being counted ("Agar-Plate Method for Total Microbial Count", F. Clark, Methods of Soil Analysis, vol. 2, pp. 1460-65). The results are shown in Tables 1 and 2.

B. VOA Degraders

Serial dilutions were performed for each water sample as described in section A. Aliquots (0.1-mL) from the appropriate dilution tubes were plated on a minimal salts agar media. The plates were then incubated at room temperature in an atmosphere of benzene vapors as the sole carbon source. The plates were counted with a colony counter after approximately five days. The results are shown in Tables 1 and 2.

C. Specific PAH Degraders

To enumerate PAH degraders, dilutions from water subsamples were plated on an agar medium containing phenanthrene as the sole carbon source. Serial dilutions were performed for each soil sample as described in section A. Aliquots (0.1-mL) from the appropriate dilution tubes were plated on phenanthrene-acetone plates. The plates were prepared by spreading 0.2-mL portions of a phenanthrene-acetone mixture (5 grams/liter phenanthrene) on a prepared media of mineral salts and Noble agar. The acetone was allowed to evaporate overnight. ("Replica Plating Method for Estimating Phenanthrene-Utilizing and Phenanthrene-Cometabolizing Microorganisms", Shiaris M., Cooney J., Applied and Environmental Microbiology. Feb. 1983, vol. 45, no. 2, pp. 706-710.)

The inoculated plates were incubated at room temperature for 5 days. The PAH degrading colonies were identified as having zones of clearing surrounding them. The results are shown in Tables 1 and 2.

TABLE 1

**Number of Total Heterotrophs and Specific PAH and Volatile Degraders
in Third Ward MGP Water Samples**

Sample ID	Total Heterotroph^b x10³ CFU/mL sample	PAH Degradere^c x10³ CFU/mL sample	Volatile Degradere^d x10³ CFU/mL sample
9510-015-01 W-13 mean +/- std. dev.	< 0.10	< 0.10	< 0.10
9510-015-02 W-22I mean +/- std. dev.	5.3 +/- 0.76	< 0.10	2.4 +/- 0.31
9510-015-03 W-20S mean +/- std. dev.	< 0.10	< 0.10	< 0.10
9510-015-04 W-25S mean +/- std. dev.	< 0.10	< 0.10	< 0.10
9510-015-05 W-41S mean +/- std. dev.	0.23 +/- 0.15	< 0.10	< 0.10

NOTE:

^a Results represent the mean value and standard deviation of triplicate platings.

^b Results are reported as colony forming units (CFU)/mL of sample.

^c PAH degraders represent the cell growth in the presence of phenanthrene as the sole carbon source.

^d Volatile degraders represent the cell growth in the presence of benzene as the sole carbon source

Released by: _____

Heidi Raymond
Project Scientist

TABLE 2

**Number of Total Heterotrophs and Specific PAH and Volatile Degraders
in Third Ward MGP Water Samples**

Sample ID	Total Heterotroph^b x10³ CFU/mL sample	PAH Degrader^c x10³ CFU/mL sample	Volatile Degrader^d x10³ CFU/mL sample
9510-015-06 W-20I mean +/- std. dev.	0.63 +/- 0.23	< 0.10	< 0.10
9510-015-07 W-23S mean +/- std. dev.	1.9 +/- 0.46	0.70 +/- 0.26	1.9 +/- 0.23
9510-015-08 W-26S mean +/- std. dev.	< 0.10	< 0.10	< 0.10
9510-015-09 W-46D mean +/- std. dev.	< 0.10	< 0.10	< 0.10
9510-015-10 W-43D mean +/- std. dev.	0.35 +/- 0.071	0.10 +/- 0.001	0.35 +/- 0.21

NOTE:

- ^a Results represent the mean value and standard deviation of triplicate platings.
- ^b Results are reported as colony forming units (CFU)/mL of sample.
- ^c PAH degraders represent the cell growth in the presence of phenanthrene as the sole carbon source.
- ^d Volatile degraders represent the cell growth in the presence of benzene as the sole carbon source

Released by: _____
Heidi Raymond
Project Scientist