Site Investigation Report

Helmrick Service Station (Johns Amoco)
280 Broadway Street
Berlin, Wisconsin

August 25, 2014
by METCO
WDNR File Reference #: 03-24-204915
PECFA Claim #: 54923-1704-80-B

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This document was prepared by:

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August 25, 2014

WDNR BRRTS#: 03-24-204915
PECFA Claim #: 54923-1704-80-B

John Helmrick
280 Broadway Street
Berlin, WI 54923-1704

Dear Mr. Helmrick,

Enclosed is our "Site Investigation Report" concerning the Helmrick Service Station (John's Amoco) site in Berlin, Wisconsin. This report presents the complete data from all investigation activities.

Based on the soil and groundwater sampling results, METCO recommends that the Helmrick Service Station site be "**Closed**" for the for the following reasons: 1) The extent and degree of petroleum contamination in soil and groundwater has been adequately defined. 2) The direct contact risk near GP-5 will be addressed via a Cap Maintenance Plan. 3) Groundwater has not been impacted above the NR140 Enforcement Standard values. 4) Vapor intrusion does not appear to pose a risk at this time.

We appreciate the opportunity to be of service to you on this project. Should you have any questions or require additional information, do not hesitate to contact our La Crosse office.

Sincerely,

J. T. Powell

Jason T. Powell
Staff Scientist

C: Tom Verstegen – WDNR

TABLE OF CONTENTS

Table of Contents

EXECUTIVE SUMMARY

The subject property was developed for use as a gas station around 1960, and continued to operate as a gas station until mid to late 2011. The property is currently used as a service garage.

In October 1992, four USTs (one 6,000-gallon leaded gasoline, one 6,000-gallon unleaded gasoline, one 2,000-gallon unleaded gasoline, and one 1,000-gallon diesel) and associated piping that existed north of the building were removed from the subject property. Site Assessment samples showed low level GRO detects, a release was subsequently reported, and a BRRTS number was assigned (03-24-001702). Environmental activities associated with these USTs were closed in August 1995 without any further action being required. These four removed USTs were upgraded with three new USTs (one 8,000-gallon unleaded gasoline and two 3,000-gallon unleaded gasoline).

On October 6, 1998, Envirogen performed a UST closure assessment for the waste oil (1,000-gallon) and fuel oil (550-gallon) USTs that existed south of the building. A soil sample collected beneath the waste oil UST indicated that a petroleum release had occurred (19,100 ppm DRO). The WDNR was subsequently notified of the release and the site was assigned a new BRRTS number (03-24-204915).

On November 8, 1999, Envirogen completed five Geoprobe borings (GP-1 thru GP-5) in the area of the removed waste oil and fuel oil USTs. Seven soil samples were collected for laboratory analysis.

On March 14, 2012, the three USTs, associated dispenser island, and piping that had been installed during the upgrade, were removed. Seven soil samples were collected beneath the removed UST systems for laboratory analysis (GRO, PVOC, and Naphthalene). The soil analytical results showed low level detects. However, it was concluded that the upgraded UST systems did not release any significant amounts of petroleum products.

In October 2012, METCO was retained to continue the investigation of the removed waste oil UST release. Our investigation consisted of a drilling project and two rounds of groundwater monitoring.

The Tank Closure Site Assessment, Geoprobe/Drilling Projects, and two rounds of groundwater monitoring clearly shows that released petroleum products have impacted the local soil and groundwater. Results of the investigation are as follows:

- Unconsolidated materials in the area of the investigation generally consist of very fine-coarse grained sand to silty/clayey sand from surface to depths ranging from 5-8 feet bgs. From depths ranging from 5 to 8 feet bgs and extending to at least 16 feet bgs exists a clay to sandy clay. Fill material consisting of silty sand with clay was

encountered in the area of the removed UST's.

- Bedrock was not encountered during the site investigation, but sandstone bedrock is estimated to exist at approximately 300 feet bgs.

- According to data collected from the monitoring wells, the depth to groundwater ranges from 3.48 to 5.78 feet bgs, depending on well location and time of year. Local horizontal groundwater flow in the immediate area of the subject property varied from the west to the northwest.

- The area oval shaped area of unsaturated soil contamination, which exceeds the NR720 Groundwater RCL's and/or Direct Contact RCLs, measures up to 29 feet long, up to 19 feet wide, and up to 4 feet thick (saturated contamination exists up to 8 feet bgs). One soil sample (GP-5) showed NR720 Direct Contact RCL exceedances for Ethylbenzene, Naphthalene, and 1-Methyl-Naphthalene.

- A dissolved phase contaminant plume exceeding the NR140 Preventive Action Limits (PAL) has formed at the watertable and has migrated toward the north. This plume is at least 33 feet long and 31 feet wide.

- Based on the groundwater analytical results from the two sampling events, none of the monitoring wells showed any NR140 ES exceedances. Monitoring well MW-1 did show PAL exceedances during each round, while MW-2 and MW-3 have never shown an exceedance for any contaminant of concern.

- Based on the receptor survey, there appears to be no risk associated with any municipal or private water supply wells. The utility corridors that the contamination comes into contact with does not appear to be acting as a preferential migration pathway, and vapor intrusion does not appear to be a risk either. Direct contact is a risk at the site near GP-5, however a Cap Maintenance Plan has been proposed to address this risk.

According to the data collected during the investigation, it is the conclusion of METCO that under existing conditions and limitations, the extent and degree of petroleum contamination has been adequately defined in soil and groundwater to warrant a completed investigation as defined by the WDNR guidelines and regulations.

Based on the soil and groundwater sampling results, METCO recommends that the Helmrick Service Station site be "**Closed**" for the for the following reasons: 1) The extent and degree of petroleum contamination in soil and groundwater has been adequately defined. 2) The direct contact risk near GP-5 will be addressed via a Cap Maintenance Plan. 3) Groundwater has not been impacted above the NR140 Enforcement Standard values. 4) Vapor intrusion does not appear to pose a risk at this time.

1.0 INTRODUCTION AND BACKGROUND

A Site Investigation is required by the Wisconsin Department of Natural Resources (WDNR) by authority of Section 292.11 of the Wisconsin Statutes. According to the WDNR, any soil that tests more than 10 ppm Gasoline Range Organics (GRO) or Diesel Range Organics (DRO) requires an investigation. Any soil that tests more than the Chapter NR720 Groundwater Residual Contaminant Levels (RCLs), Direct Contact RCLs, and/or Soil Saturation (C-sat) Values may require possible remediation. Any groundwater that tests more than the Preventive Action Limits (PAL) or Enforcement Standards (ES) for compounds listed in Chapter NR140 Groundwater Quality Standards requires an investigation and possible remediation. For a further explanation of WDNR rules and regulations, see Appendix E.

This report presents data collected during the Site Investigation. The purpose of this investigation was to:

1) Determine the extent and degree of petroleum contamination in the environment.
2) Determine if any risks exist to the environment or public health.
3) As conditions warrant, bring the site to closure.

1.1 Responsible Party Information

John Helmrick
280 Broadway Street
Berlin, WI 54923
(920) 361-0535

1.2 Consultant Information

Consultant

METCO
Ronald J. Anderson P.G.
Jason T. Powell
709 Gillette Street, Suite 3
La Crosse, WI 54603
(608) 781-8879

Subcontractors

DKS Transport Services, LLC
N7349 548th Street
Menomonie, WI 54751
(715) 556-2604

Fauerbach Surveying & Engineering
P.O. Box 140
Hillsboro, WI 54634
(608) 489-3363

Geiss Soil Samples, LLC
W4490 Pope Road
Merrill, WI 54452
(715) 539-3928

Synergy Environmental Lab
1990 Prospect Court
Appleton, WI 54914
(920) 830-2455

1.3 Site Location

Site address:
280 Broadway Street
Berlin, WI 54923

Latitude and Longitude:
43° 58' 5" N and 88° 57' 16" W

WTM Coordinates:
603876, 388864

Township/Range:
NW ¼, NE ¼, Section 09, Township 17 North, Range 13 East, Green Lake County

1.4 Site History

The subject property was developed for use as a gas station around 1960, and continued to operate as a gas station until mid to late 2011. The property is currently used as a service garage.

In October 1992, four USTs (one 6,000-gallon leaded gasoline, one 6,000-gallon unleaded gasoline, one 2,000-gallon unleaded gasoline, and one 1,000-gallon diesel) and associated piping that existed north of the building were removed from the subject property. Site assessment samples showed low level GRO detects, a release was subsequently reported, and a BRRTS number was assigned (03-24-001702). Environmental activities associated with these USTs were closed in August 1995 without any further action being required. These four removed USTs were upgraded with three new USTs (one 8,000-gallon unleaded gasoline and two 3,000-gallon unleaded gasoline).

On October 6, 1998, Envirogen performed a UST closure assessment for the waste oil (1,000-gallon) and fuel oil (550-gallon) USTs that existed south of the building. A soil sample collected beneath the waste oil UST indicated that a petroleum release had occurred (DRO – 19,100 ppm). The WDNR was subsequently notified of the release and the site was assigned a new BRRTS number (03-24-204915).

On November 8, 1999, Envirogen completed five Geoprobe borings (GP-1 thru GP-5) in the area of the removed waste oil and fuel oil USTs. Seven soil

samples were collected and analyzed for laboratory analysis.

On March 14, 2012, the three USTs, associated dispenser island, and piping that had been installed during the upgrade, were removed. Seven soil samples were collected beneath the removed UST systems for laboratory analysis (GRO, PVOC, and Naphthalene). The soil analytical results showed low level detects. However, it was concluded that the upgraded UST systems did not release any significant amounts of petroleum products.

The nearest known ERP site is the Berlin Brewing Co (Former) site (BRRTS #02-24-307043 "Closed") which exists approximately 300 feet to the north, and the nearest known LUST site is the West Side Garage site (BRRTS #03-24-000136) "Closed"), which is located approximately 300 feet to the east. Numerous other LUST, ERP, and Spill sites exist in the City of Berlin, however it does not appear that any of these are influencing or being influenced by the subject property.

2.0 GEOLOGY AND RECEPTORS

2.1 Regional and Local Geology and Hydrogeology

Topography and Regional Setting

According to the USGS Hydrologic Atlas, the Helmrick Service Station site is located in the southern portion of the Fox-Wolf River Basin. This area is characterized by relatively flat plains with some generally north-south ridges. The topography and drainage of this area is controlled by the topography of the bedrock surface, and modified by glacial erosion and deposition.

The elevation of the site is approximately 775 feet above Mean Sea Level (MSL). See Section 6.0 for site location.

Soil and Bedrock

Soil samples were described by METCO field personnel. Assisting literature included the Hydrologic Atlas, Wisconsin Geologic Logs, and Wisconsin Well Constructor Reports.

Geologic material in the area of investigation generally consists of the following in downward stratigraphic order:

- Fill materials consisting of brown to black silty sand with clay from surface to approximately 8 feet below ground surface (bgs) exists in the area of the removed UST's.
- From approximately surface to depths ranging from 5 to 8 feet bgs, exists a

brown to reddish brown very fine to coarse grained sand to silty sand with some clay.

- At depths ranging from 5 to 8 feet bgs and extending to at least 16 feet bgs, exists a red clay to sandy clay.
- Bedrock was not encountered during the site investigation, but sandstone bedrock is estimated to exist at approximately 300 feet bgs.

Please note that this is a generalization of the local geology and may not be consistent throughout the entire investigation area.

No other characteristics concerning the local sediments such as structures, voids, layering, lenses or secondary permeability are documented at this time.

Hydrogeology

According to data collected from the monitoring wells, the depth to groundwater ranges from 3.48 to 5.78 feet bgs, depending on well location and time of year.

According to the watertable measurements collected during groundwater sampling, local horizontal groundwater flow in the immediate area of the subject property varied from the west to the northwest. Groundwater Flow Direction Maps are presented in Section 6.

We are not currently aware of any existing aquitards or perched water in this area.

2.2 Receptors

Buildings, Basements, Sumps, Utility Corridors

The area of soil contamination appears to intersect an underground electric line and a gas line. The depth at which these utilities exists is unknown at this time, but is likely less than three feet bgs and they are likely backfilled with native material.

The NR140 PAL contaminant plume also intersects these underground electric and gas lines, as well as a sanitary sewer line. According to the City of Berlin, the sanitary sewer line in this area exists approximately 13.5 feet bgs (approximately 8-9 feet below the watertable). Based on the soil and groundwater contamination being defined to a relatively small area, and that the utility corridors are likely backfilled with native material, it does not appear that these utility corridors are acting as a preferential migration pathway for contamination.

The extent of the soil contamination appears to extend up to, but not underneath the on-site building, with contamination existing from 0-8 feet bgs. The groundwater contamination does appear to extend underneath the southeast corner of the on-site building, however contamination is below the NR140 ES. Based on soil contamination existing at relatively low levels, and that the groundwater contamination is below the NR140 ES, vapor intrusion does not appear to be a risk at this time.

Municipal and Private Water Supply Wells

The City of Berlin has three municipal wells, however none are located within 1,200 feet of the subject property. The nearest well (Well #5), is located approximately 2,300 feet to the west/southwest of the site. No private potable wells are known to exist within 1,200 feet of the site.

Surface Waters

The nearest surface water is the Fox River, which exists approximately 1,100 feet to the east of the subject property. It does not appear that the petroleum contamination has impacted any surface waters.

3.0 SITE INVESTIGATION RESULTS, RISK CRITERIA

3.1 Methods of Investigation

Workscope

The workscope performed for the LUST Investigation included the following:

1) Collected site background information.
2) On November 8, 1999, Envirogen completed five Geoprobe borings (GP-1 thru GP-5) in the area of the removed waste oil and fuel oil USTs. Seven soil samples were collected for laboratory analysis.
3) On August 6, 2013, METCO conducted three soil borings and installed three monitoring wells (MW-1, -2, and -3). Nine soil samples were collected for field and/or laboratory analysis. Upon completion, monitoring well MW-1 was properly developed. Monitoring wells MW-2 and MW-3 were not developed as they were dry.
4) On October 10, 2013, METCO surveyed and collected groundwater samples from the three monitoring wells for field and laboratory analysis (Round 1).
5) On January 15, 2014, METCO collected groundwater samples from the three monitoring wells for field and laboratory analysis (Round 2). METCO also conducted slug tests on monitoring wells MW-2 and MW-3.

Site Access Problems

No site access problems were encountered during the LUST investigation.

Analytical Methods

All samples were collected in a manner as to maintain their quality and to eliminate any possible cross contamination. METCO did not deviate from any WDNR or laboratory recommended procedures for sample collection, preservation, or transportation on this project to our knowledge.

Equipment advanced into the subsurface was cleaned between sampling locations. Cleaning consisted of washing with a biodegradable Alconox solution and rinsing with potable water. Disposable equipment was not cleaned, but immediately disposed of after use.

All samples were constantly kept on ice in a cooler and hand delivered to the laboratory.

3.2 Data Discussion

Soil Sampling Data

On October 6, 1998, Envirogen performed a UST closure assessment for the waste oil and fuel oil USTs that existed south of the building. A soil sample collected beneath the waste oil UST indicated that a petroleum release had occurred (DRO - 19,100 ppm).

On November 8, 1999, Envirogen completed five Geoprobe borings (GP-1 thru GP-5) in the area of the removed waste oil and fuel oil USTs. Seven soil samples were collected for field and/or laboratory analysis (PID, Lead, Cadmium, DRO, PAH, PVOC, Naphthalene, and/or 1,2-DCA).

On August 6, 2013, during the Drilling Project, METCO installed three monitoring wells (MW-1, -2, and -3). Nine soil samples were collected for field and/or laboratory analysis (PID, Lead, and Cadmium).

Soil analytical results are summarized in the Pre-remedial Soil Analytical Tables with exceedances of the NR720 Groundwater RCL's, and/or Direct Contact RCL's noted.

Soil sample locations are presented in the Detailed Site Map found in Section 6. All data is presented in the data tables in Section 7. The laboratory reports are presented in Appendix B.

Groundwater Sampling Data

On August 6, 2013, during the Drilling Project, three monitoring wells were installed (MW-1 thru MW-3).

On October 10, 2013, METCO personnel collected groundwater samples from the three monitoring wells for field and laboratory analysis (VOC, PAH, Dissolved Lead, Dissolved Iron, Dissolved Cadmium, Dissolved Manganese, Nitrate/Nitrite, and Sulfate). Field measurements for dissolved oxygen, pH, ORP, temperature, and specific conductance were also collected from the three monitoring wells.

On January 15, 2014, METCO personnel collected groundwater samples from the three monitoring wells for field and laboratory analysis (PVOC and Naphthalene). Field measurements for dissolved oxygen, pH, ORP, temperature, and specific conductance were also collected from the three monitoring wells.

Groundwater analytical results are summarized in the Groundwater Analytical Results with exceedances of the NR140 Preventive Action Limits (PAL) and Enforcement Standards (ES) noted.

The Geoprobe borings and monitoring well locations are presented in the Detailed Site Map in Section 6. All data is presented in the data tables in Section 7. The lab reports are presented in Appendix B.

Laboratory Certification

Synergy Environmental Lab
Wisconsin Lab Certification #445037560

3.3 Permeability and Hydraulic Conductivities

On January 15, 2014, METCO conducted slug tests on monitoring wells MW-2 and MW-3. The slug test data was evaluated using the curve fitting program "Hydro-Test for Windows" Produced by Dakota Environmental, Inc. Slug test data was evaluated using the Bouwer and Rice method. Hydrogeologic parameters were estimated as the following:

Monitoring Well MW-2
Hydraulic Conductivity (K) = 5.73E-04 cm/sec
Transmissivity = 1.42E-01 cm^2/sec
Flow Velocity (V=KI/n) = 6.20 m/yr

Monitoring Well MW-3
Hydraulic Conductivity (K) = 1.18E-04 cm/sec
Transmissivity = 2.59E-02 cm^2/sec
Flow Velocity (V=KI/n) = 1.27 m/yr

Since the thickness of the unconfined aquifer was unknown, the bottoms of monitoring wells MW-2 and MW-3 were assumed as the lower extent of the aquifer for calculation purposes. Slug test data is presented in Appendix E.

3.4 Vapor Intrusion Assessment

Regarding vapor intrusion, the extent of the soil contamination appears to extend up to, but not underneath the on-site building, with contamination existing from 0-8 feet bgs. The groundwater contamination does appear to extend underneath the southeast corner of the on-site building, however contamination is below the NR140 ES. Based on soil contamination existing at relatively low levels, and that the groundwater contamination is below the NR140 ES, vapor intrusion does not appear to be a risk at this time.

3.5 Discussion of Results

The Tank Closure Site Assessment, Geoprobe/Drilling Projects, and two rounds of groundwater monitoring clearly shows that released petroleum products have impacted the local soil and groundwater (however groundwater results are below the ES).

Unconsolidated materials in the area of the investigation generally consist of very fine-coarse grained sand to silty/clayey sand from surface to depths ranging from 5-8 feet bgs. From depths ranging from 5 to 8 feet bgs and extending to at least 16 feet bgs exists a clay to sandy clay. Fill material consisting of silty sand with clay was encountered in the area of the removed UST's.

Bedrock was not encountered during the site investigation, but sandstone bedrock is estimated to exist at approximately 300 feet bgs.

According to data collected from the monitoring wells, the depth to groundwater ranges from 3.48 to 5.78 feet bgs depending on well location and time of year. The local horizontal groundwater flow in the immediate area of the subject property varied from the west to the northwest.

The oval shaped area of unsaturated soil contamination, which exceeds the NR720 Groundwater RCL's and/or Direct Contact RCLs, measures up to 29 feet long, up to 19 feet wide, and up to 4 feet thick (saturated contamination exists up to 8 feet bgs). One soil sample (GP-5) showed NR720 Direct Contact RCL exceedances for Ethylbenzene, Naphthalene, and 1-Methyl- Naphthalene.

A dissolved phase contaminant plume exceeding the NR140 PAL has formed at the watertable and has migrated toward the north. This plume is at least 33 feet long and 31 feet wide.

Based on the groundwater analytical results from the two sampling events, none of the monitoring wells showed any NR140 ES exceedances. Monitoring well MW-1 did show PAL exceedances during each round, while MW-2 and MW-3 have never shown an exceedance for any contaminant of concern.

Based on the receptor survey, there appears to be no risk associated with any municipal or private water supply wells. The utility corridors that the contamination comes into contact with does not appear to be acting as a preferential migration pathway, and vapor intrusion does not appear to be a risk either. Direct contact is a risk at the site near GP-5, however a Cap Maintenance Plan has been proposed to address this risk.

To our knowledge, this investigation has not had any major difficulties, unanticipated results, or questionable results.

The Detailed Site Map, Pre-remedial Soil Contamination Map, Groundwater Flow Direction Maps, Groundwater Isoconcentration Map, and Geologic Cross-Section figures, which visually define the extent of contamination, are presented in Section 6.

3.6 Risk Assessment

Per the NR746.03 definitions a release from petroleum tanks is considered "high risk" if any of the four following criterion are met:

1. Verified contaminant concentrations in a private or public potable well that exceeds the preventive action limit established under Chapter, Stats. 160.
2. Petroleum product that is not in the dissolved phase (floating product) is present with a thickness of 0.01 feet or more, and verified by more than one sampling event.
3. An enforcement standard exceedance in groundwater within 1,000 feet of a well operated by a public utility, or within 100 feet of any other well used to provide water for human consumption.
4. An enforcement standard exceedance in fractured bedrock.

A "medium risk" site is defined as a site where contaminants have extended beyond the boundary of the source property, or there is confirmed contamination in the groundwater, but the site does not meet the definition of a "high risk" site.

A "low risk" site is defined as a site where contaminants are contained only within the soil on the source property and there is no confirmed contamination in groundwater.

Based on the NR746.03 definitions, the Helmrick Service Station site is currently a "medium risk" site, because there is contamination that has extended beyond the property boundary, and that contamination has been confirmed in the groundwater (only at NR140 PAL).

4.0 CONCLUSIONS

4.1 Investigation Summary

According to the data collected during the investigation, it is the conclusion of METCO that under existing conditions and limitations, the extent and degree of petroleum contamination has been adequately defined in soil and groundwater to warrant a completed investigation as defined by the WDNR guidelines and regulations.

4.2 Recommendations

Based on the soil and groundwater sampling results, METCO recommends that the Helmrick Service Station site be "**Closed**" for the for the following reasons: 1) The extent and degree of petroleum contamination in soil and groundwater has been adequately defined. 2) The direct contact risk near GP-5 will be addressed via a Cap Maintenance Plan. 3) Groundwater has not been impacted above the NR140 Enforcement Standard values. 4) Vapor intrusion does not appear to pose a risk at this time.

5.0 REFERENCES

Driscoll, F. G., 1986, Groundwater and Wells, St. Paul, Minnesota.

Fetter, C.W., 1988, Applied Hydrogeology, Columbus, Ohio.

Geologic Logs and Well Constructor Reports, Wisconsin Geological and Natural History Survey, Madison, Wisconsin.

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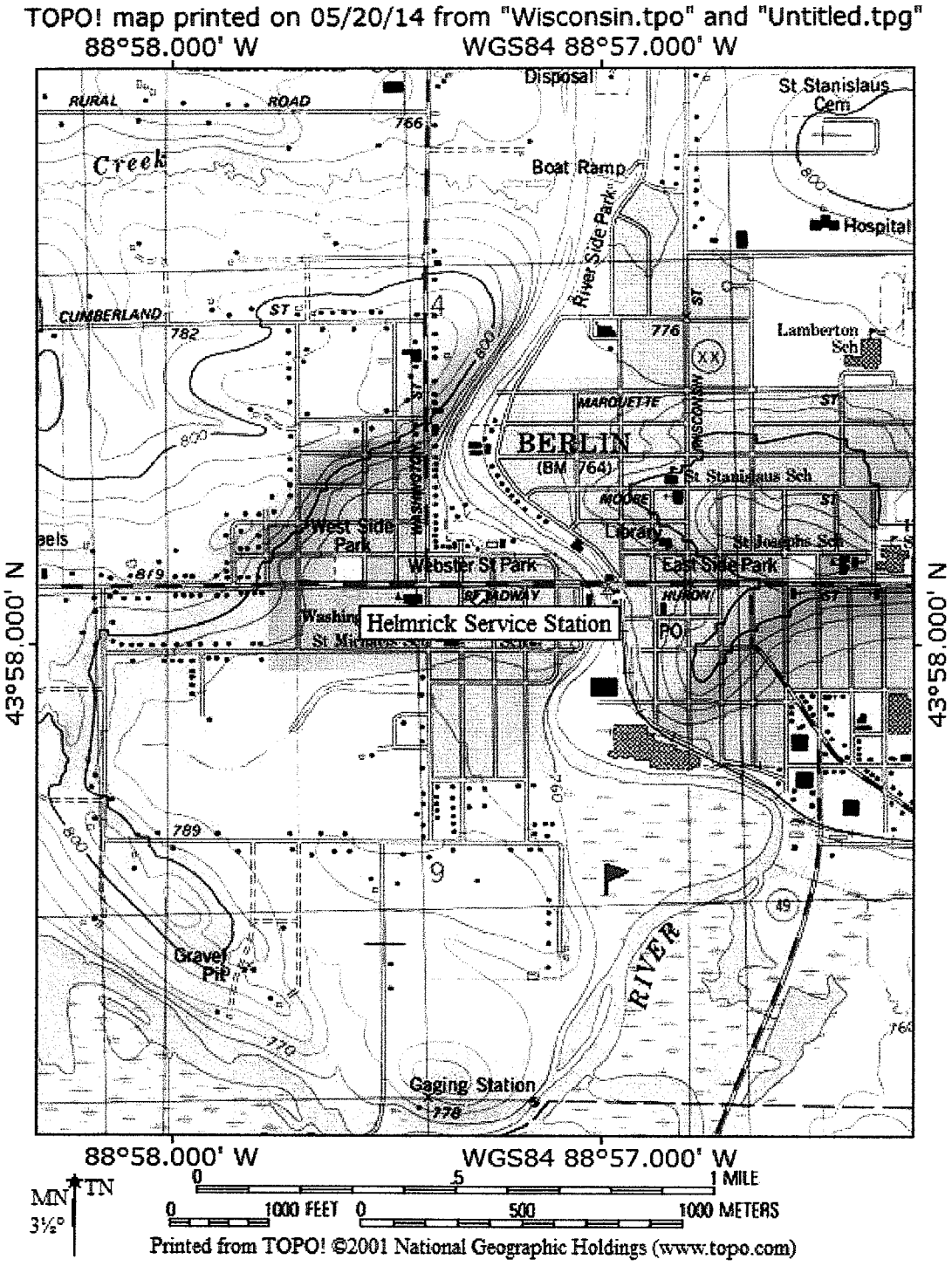
Walton, W.C., 1989, Groundwater Pumping Tests, Chelsea, Michigan.

Weston, R.F., 1987, Remedial Technologies for Leaking Underground Storage Tanks.

Other information and data was collected from John Helmrick, City of Berlin, Diggers Hotline, Geiss Soil Samples LLC, Synergy Environmental Lab, Fauerbach Surveying & Engineering, Wisconsin Department of Natural Resources, and local people.



B.1.a LOCATION MAP
CONTOUR INTERVAL 10 FEET
HELMRICK SERVICE STATION – BERLIN, WI
SEAMLESS USGS TOPOGRAPHIC MAPS ON CD-ROM

DETAILED SITE MAP

HELMRICK SERVICE STATION (JOHNS AMOCO)

METCO
709 Gillette Street, Suite 3
La Crosse, WI 54603
Tel: (608) 781-8879
Fax: (608) 781-8893
Excellence through experience™

BERLIN, WISCONSIN

DRAWN BY: RA 03/15/2012
MODIFIED BY: BW 04/08/2014

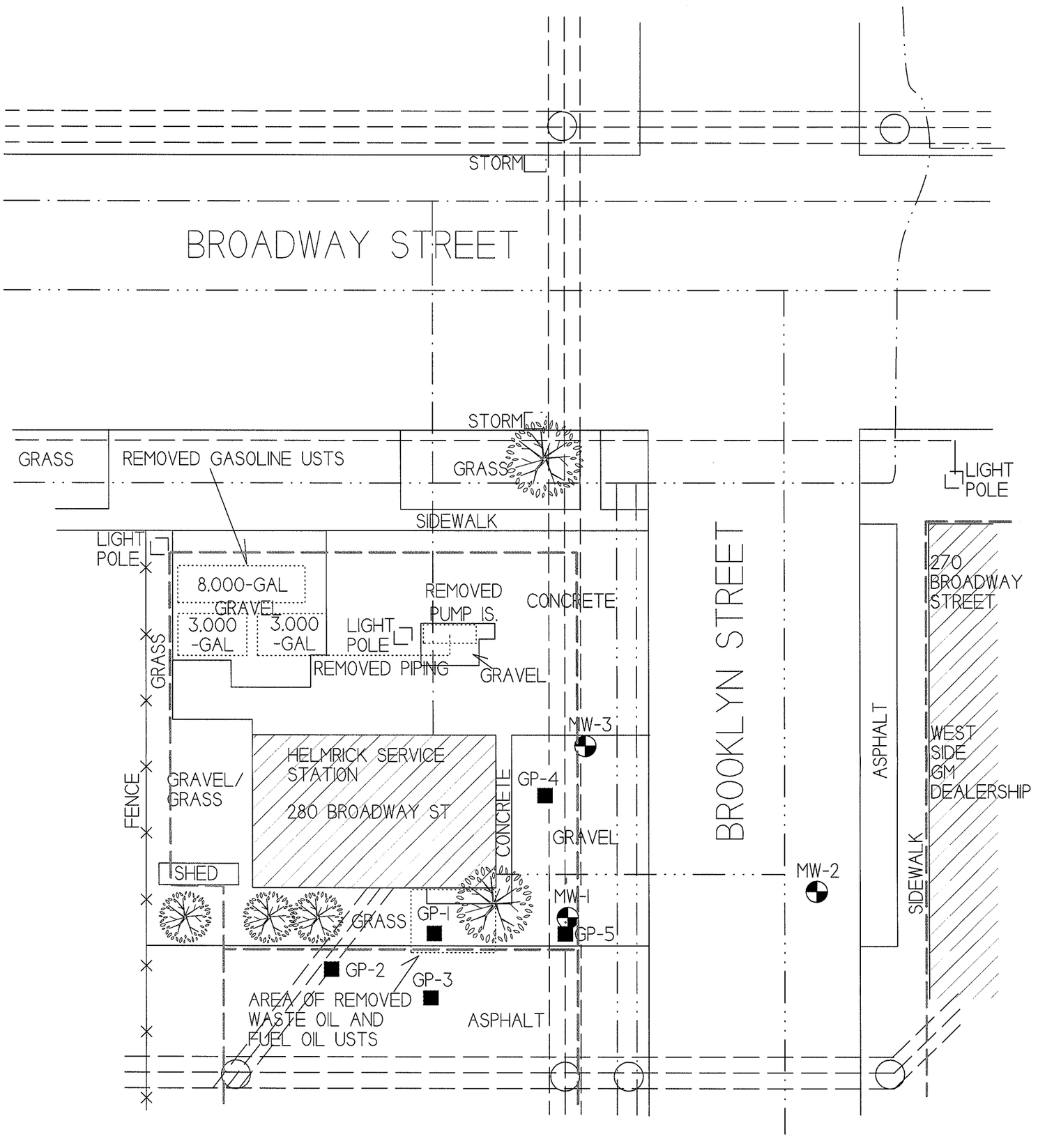
= SANITARY SEWER
= NATURAL GAS
= WATER LINE
= BURIED ELECTRIC
= OVERHEAD ELECTRIC
= PROPERTY BOUNDARY

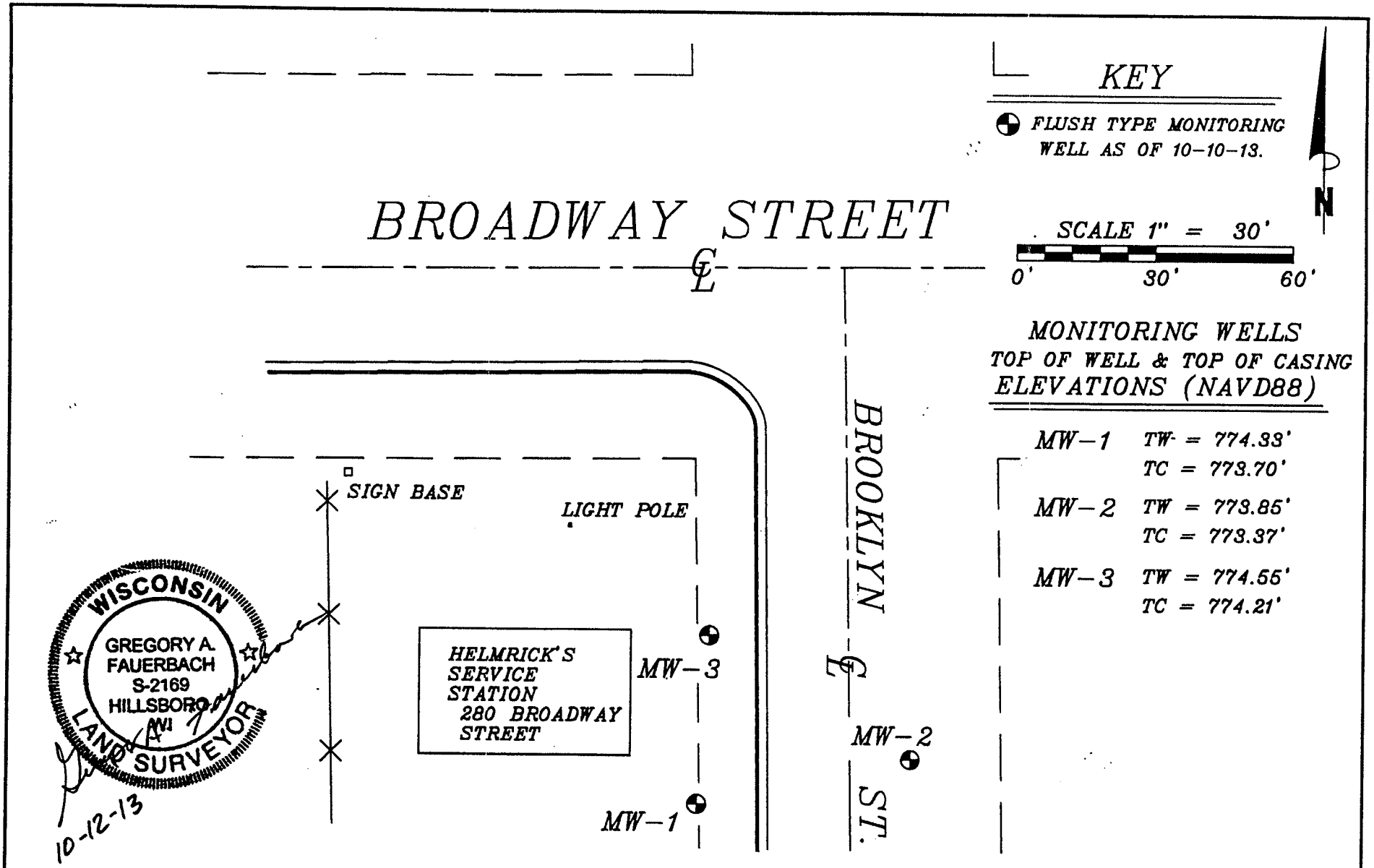
NOTE: INFORMATION BASED ON AVAILABLE DATA. ACTUAL CONDITIONS MAY DIFFER

SCALE:
1 INCH = 20 FEET
0 20

■ = GEOPROBE BORING LOCATON - ENVIROGEN 1999

⊕ = MONITORING WELL LOCATION - METCO 2013





DRAWN BY: G.FAUERBACH DATE: 10-10-13 FIELD DWG. NO.: 54113	REVISIONS FAUERBACH SURVEYING & ENG. PO BOX 140, HILLSBORO, WI 54634 PH/FAX 608-489-3363	PROJECT: HELMRICK'S SERVICE STATION 280 BROADWAY STREET BERLIN, WI 54923	SHEET NAME LOCATION MAP	PAGE 1 OF 1

WELL	GREEN LAKE COUNTY COORD. SYSTEM NAD83(2011) NORTH	EAST	TOP OF WELL ELEVATION (NAVD 88)	TOP OF PVC CASING ELEVATION (NAVD 88)
MW-1	318563.39	570635.16	774.33'	773.70'
MW-2	318573.47	570681.82	773.85'	773.37'
MW-3	318600.67	570637.60	774.55'	774.21'

WISCONSIN
GREGORY A. FAUERBACH
S-2169
HILLSBORO, WI
LAND SURVEYOR

10-12-13

DRAWN BY: G.FAUERBACH DATE: 10-10-13 FIELD DWG. NO.: 54113	REVISIONS FAUERBACH SURVEYING & ENG. PO BOX 140, HILLSBORO, WI 54634 PH/FAX 608-489-3363	PROJECT: HELMRICK'S SERVICE STATION 280 BROADWAY ST. BERLIN, WI 54923	SHEET NAME DATA SHEET	PAGE 1 OF 1

GEOLOGIC CROSS-SECTION
HELMRICK SERVICE STATION

METCO
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La Crosse, WI 54603
Tel: (608)781-8878
Fax: (608)781-8893
Excellence through experience

BERLIN, WISCONSIN
DRAWN BY: BW
DATE: 04/11/2014

A WEST — A' EAST

BROWN TO BLACK SILTY SAND W/CLAY (FILL MATERIAL)

BROWN TO REDDISH BROWN VERY FINE-COARSE GRAINED SAND TO SILTY SAND WITH SOME CLAY

RED CLAY TO SANDY CLAY

VERTICAL SCALE: 1 INCH = 3 FEET (0 – 15)

HORIZONTAL SCALE: 1 INCH = 15 FEET (0 – 15)

AREA OF FORMER USTS

GP-2 — ASPHALT — GRASS — GP-1 — GRASS — GRAVEL — GP-5 — MW-1 — GRAVEL — BROOKLYN STREET — MW-2

775' MSL
770' MSL
765' MSL
760' MSL

GP-2
4-8 FEET
PID = 0
NO PVOC DETECTS
NO PAH EXCEEDANCES

GP-1
4-8 FEET
PID = 0
NO PVOC DETECTS
NO PAH DETECTS

GP-5
0-4 FEET
PID = 206
0.32 B
9.8 E
42 N
46 1,2,4-TMB
14 1,3,5-TMB
27.3 X
57 1-M-N

GP-5
4-8 FEET
PID = 188
0.19 B
5 E
20 N
26 1,2,4-TMB
7.5 1,3,5-TMB
16 X

MW-1-1
3.5 FEET
PID = 1

MW-2-1
3.5 FEET
PID = 2

APPROXIMATE AREA OF REMOVED USTS

MW-1-2
8 FEET
PID = 85

MW-2-2
8 FEET
PID = 2

ESTIMATED EXTENT OF PETROLEUM CONTAMINATION IN SOIL AND GROUNDWATER (NR720 GROUNDWATER RCL's (PVOC's & PAH's), DIRECT CONTACT RCL's, AND/OR NR140 PAL)

MW-1-3
12 FEET
PID = 4

MW-2-3
12 FEET
PID = 2

GP-1
12-16 FEET
PID = 0
NO PVOC DETECTS
NO PAH DETECTS

MW-1
115 B
13.4 N

MW-2
NO PVOC DETECTS

INFORMATION BASED ON AVAILABLE DATA. ACTUAL CONDITIONS MAY DIFFER.

SOIL SAMPLE RESULTS ARE PRESENTED IN PARTS PER MILLION (PPM)

GROUNDWATER SAMPLE RESULTS ARE PRESENTED IN PPB.

NOTE: ONLY SOIL AND GROUNDWATER EXCEEDANCES HAVE BEEN DOCUMENTED ON THE MAP. SEE DATA TABLES AND/OR LABORATORY REPORTS FOR ALL RESULTS

NOTE: SOIL AND GROUNDWATER SAMPLE DATA IS BASED ON LABORATORY RESULTS FROM SAMPLES COLLECTED DURING THE:
GEOPROBE PROJECT - (11/08/1999)
DRILLING PROJECT - (08/06/2013)
ROUND 2 GW SAMPLING - (01/15/2014)

- GEOPROBE BORING LOCATION
- GEOPROBE SOIL SAMPLE LOCATION
- MONITORING WELL LOCATION
- MONITORING WELL SAMPLING LOCATION
- WATERTABLE

PID - PHOTO IONIZATION DETECTOR
PVOC - PETROLEUM VOLATILE ORGANIC COMPOUNDS
PAH - POLYNUCLEAR AROMATIC HYDROCARBONS
B - BENZENE
E - ETHYLBENZENE
MTBE - METHYL TERT-BUTYL ETHER
N - NAPHTHALENE
TMB - TRIMETHYLBENZENE
X - XYLENE
1-M-N - 1-METHYLNAPHTHALENE

GROUNDWATER CONTOUR
OCTOBER 10, 2013
HELMRICK SERVICE STATION
(JOHNS AMOCO)

METCO
709 Gillette Street, Suite 3
La Crosse, WI 54603
Tel: (608) 781-8879
Fax: (608) 781-8893
Excellence through experience

BERLIN,
WISCONSIN

DRAWN BY: RA 03/15/2012
MODIFIED BY: BW 04/08/2014

= SANITARY SEWER
= NATURAL GAS
= WATER LINE
= BURIED ELECTRIC
= OVERHEAD ELECTRIC
= PROPERTY BOUNDARY

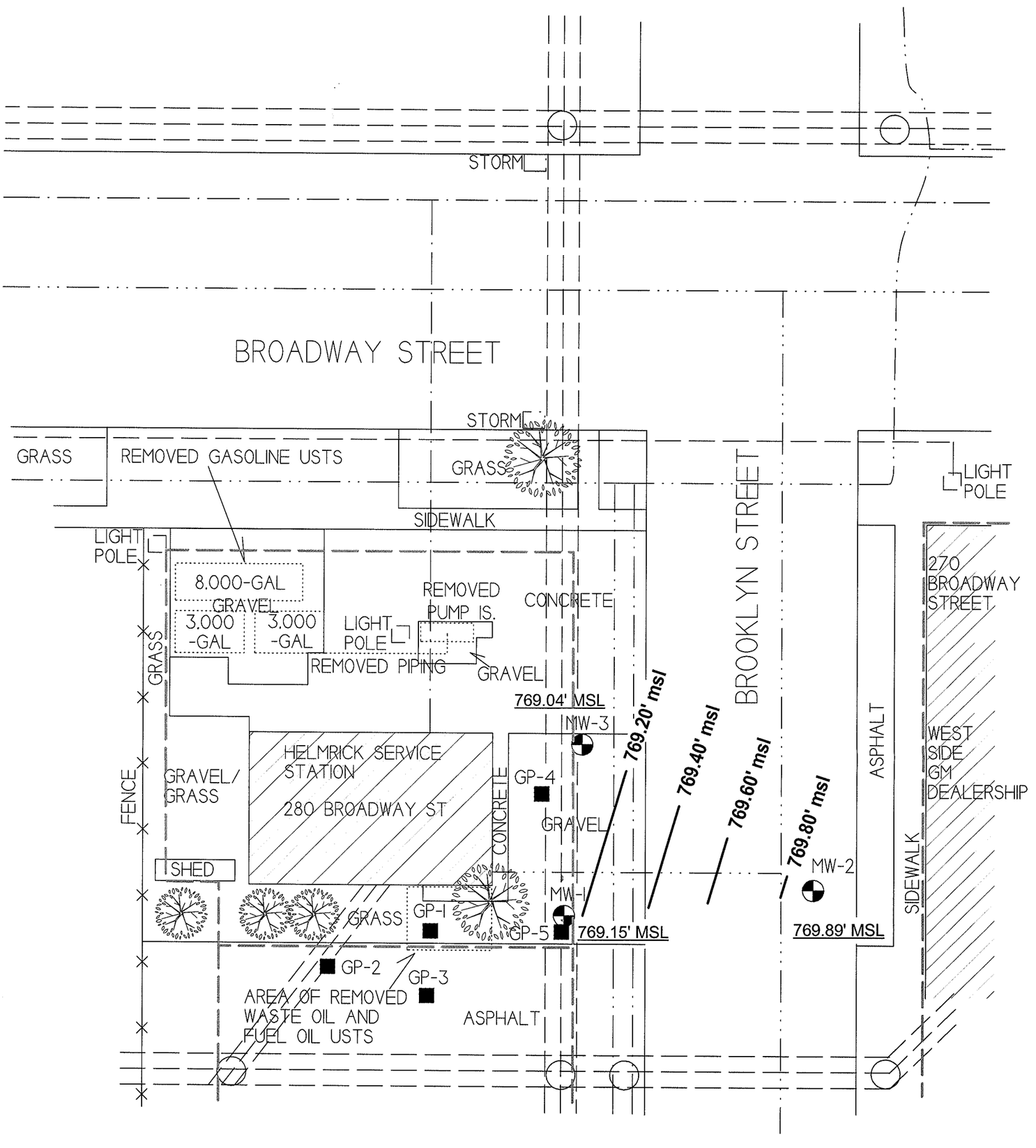
NOTE: INFORMATION BASED ON AVAILABLE DATA. ACTUAL CONDITIONS MAY DIFFER

SCALE:
1 INCH = 20 FEET
0 20

DATA COLLECTED ON OCTOBER 10, 2013

■ = GEOPROBE BORING LOCATON - ENVIROGEN 1999

⊕ = MONITORING WELL LOCATION - METCO 2013



GROUNDWATER CONTOUR
JANUARY 15, 2014
HELMRICK SERVICE STATION
(JOHNS AMOCO)

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= OVERHEAD ELECTRIC
= PROPERTY BOUNDARY

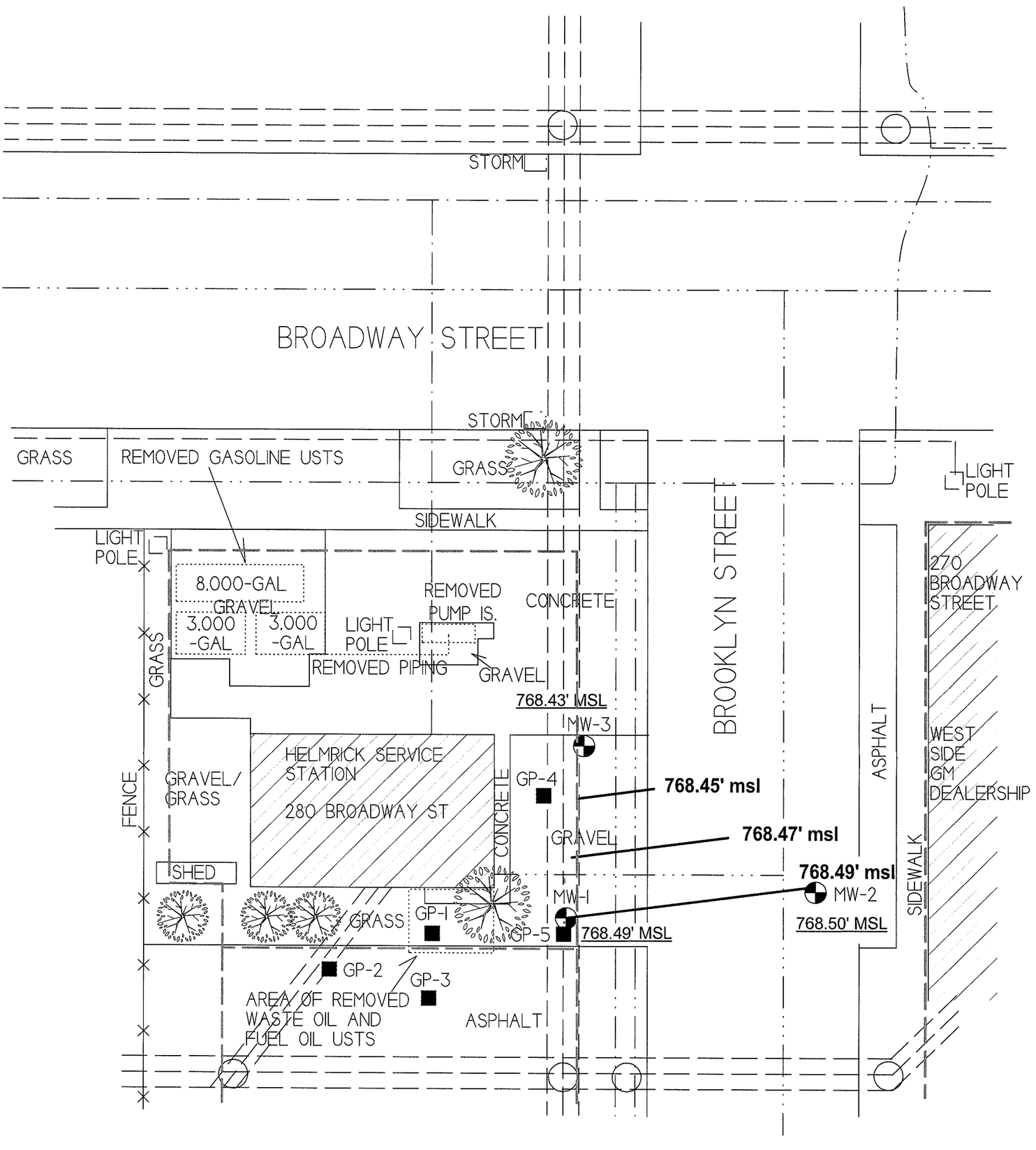
NOTE: INFORMATION BASED ON AVAILABLE DATA. ACTUAL CONDITIONS MAY DIFFER

SCALE:
1 INCH = 20 FEET
0 20

DATA COLLECTED ON JANUARY 15, 2014

■ = GEOPROBE BORING LOCATON - ENVIROGEN 1999

⊕ = MONITORING WELL LOCATION - METCO 2013



SOIL CONTAMINATION AUGUST 6, 2013

HELMRICK SERVICE STATION (JOHNS AMOCO)

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BERLIN, WISCONSIN

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MODIFIED BY: BW 04/08/2014

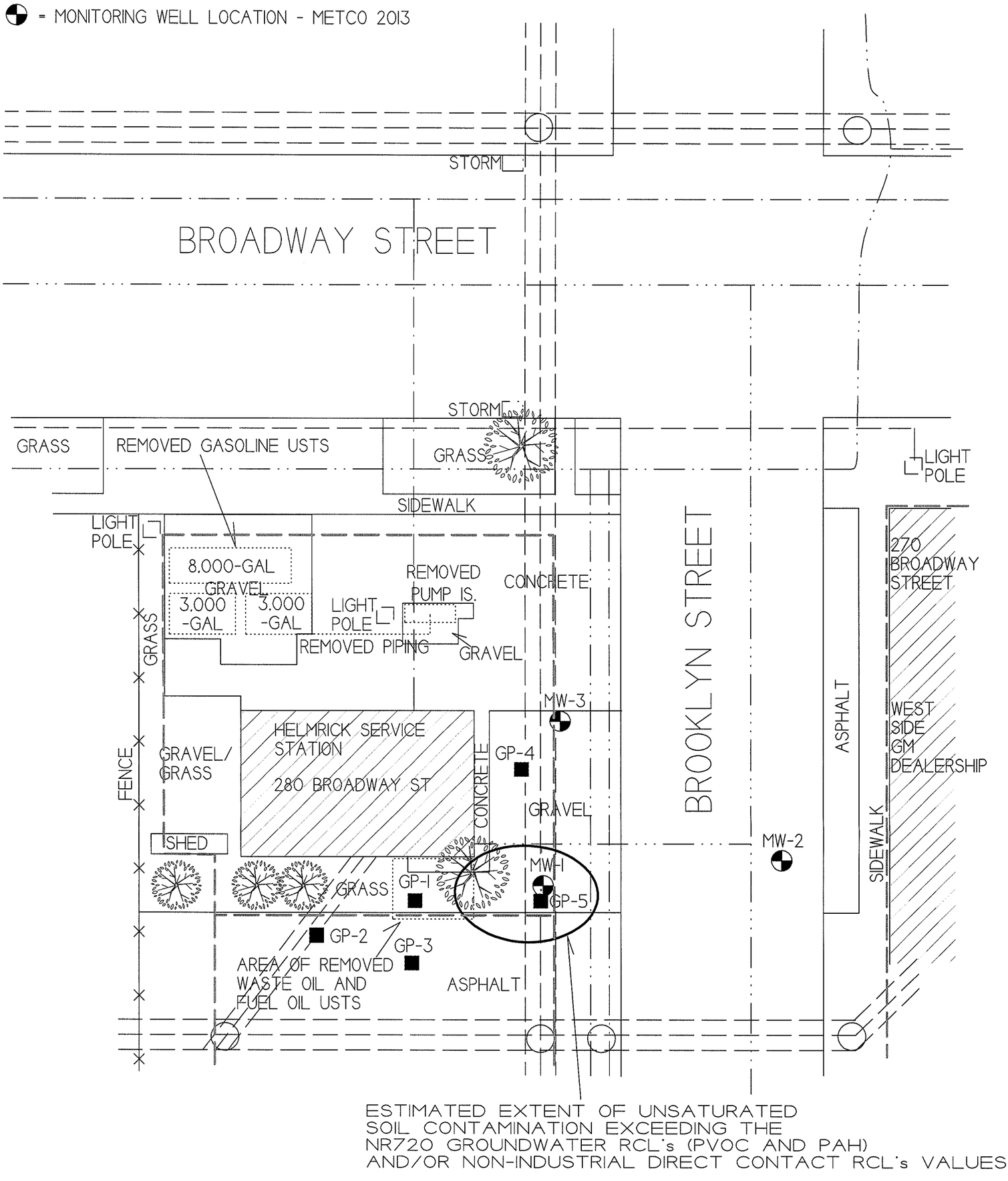
= SANITARY SEWER
= NATURAL GAS
= WATER LINE
= BURIED ELECTRIC
= OVERHEAD ELECTRIC
= PROPERTY BOUNDARY

NOTE: INFORMATION BASED ON AVAILABLE DATA. ACTUAL CONDITIONS MAY DIFFER

SCALE:
1 INCH = 20 FEET
0 20

■ = GEOPROBE BORING LOCATON - ENVIROGEN 1999

⊕ = MONITORING WELL LOCATION - METCO 2013



ESTIMATED EXTENT OF UNSATURATED SOIL CONTAMINATION EXCEEDING THE NR720 GROUNDWATER RCL's (PVOC AND PAH) AND/OR NON-INDUSTRIAL DIRECT CONTACT RCL's VALUES.

GROUNDWATER CONTAMINATION
JANUARY 15, 2014

HELMRICK SERVICE STATION
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DRAWN BY: RA 03/15/2012
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= SANITARY SEWER
= NATURAL GAS
= WATER LINE
= BURIED ELECTRIC
= OVERHEAD ELECTRIC
= PROPERTY BOUNDARY

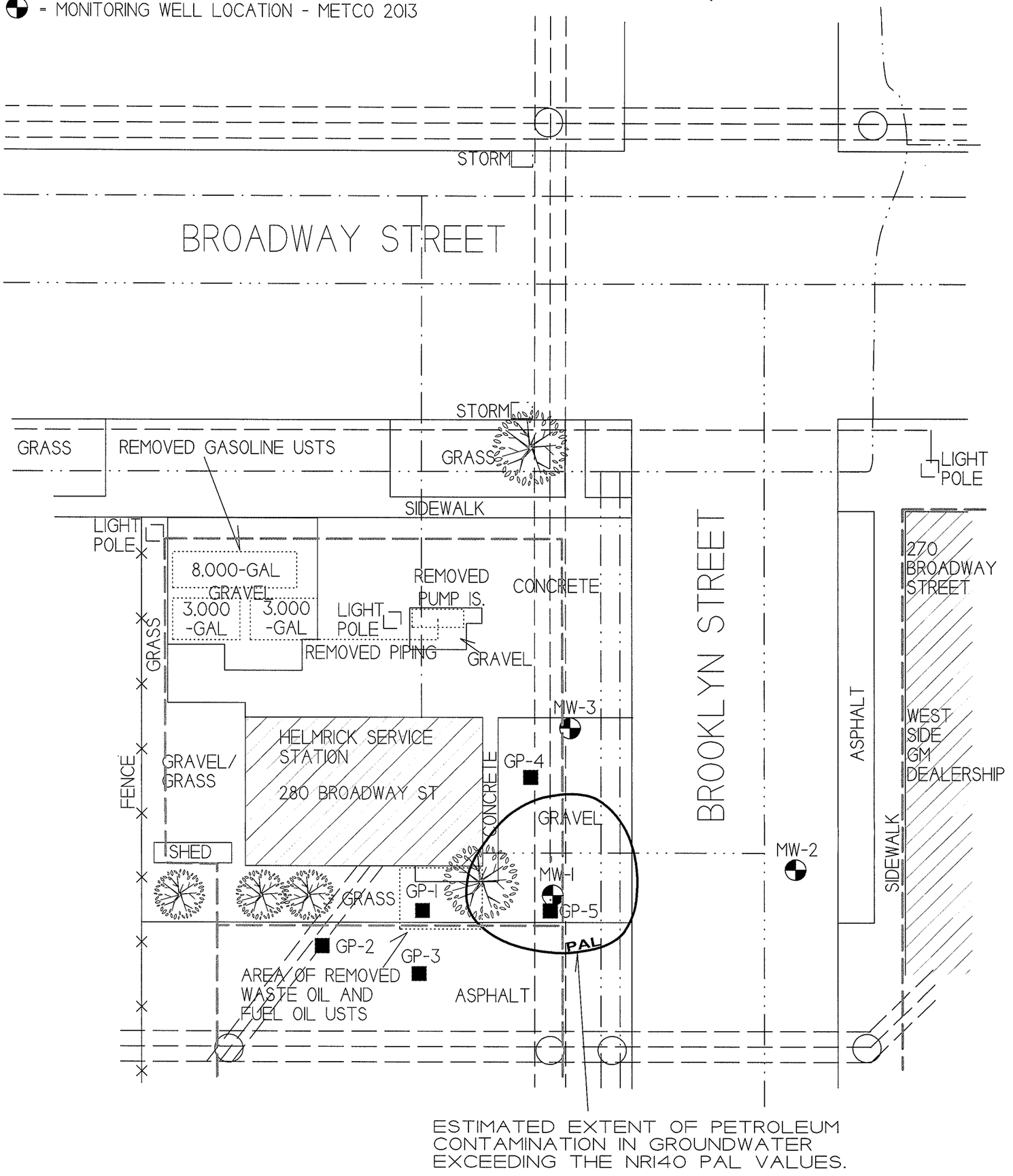
NOTE: INFORMATION BASED ON AVAILABLE DATA. ACTUAL CONDITIONS MAY DIFFER

SCALE:
1 INCH = 20 FEET
0 20

GROUNDWATER FLOW DIRECTION JANUARY 15, 2014

■ = GEOPROBE BORING LOCATON - ENVIROGEN 1999

⊕ = MONITORING WELL LOCATION - METCO 2013



ESTIMATED EXTENT OF PETROLEUM CONTAMINATION IN GROUNDWATER EXCEEDING THE NR140 PAL VALUES.

CROSS-SECTION

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DRAWN BY: RA 03/15/2012
MODIFIED BY: BW 04/08/2014

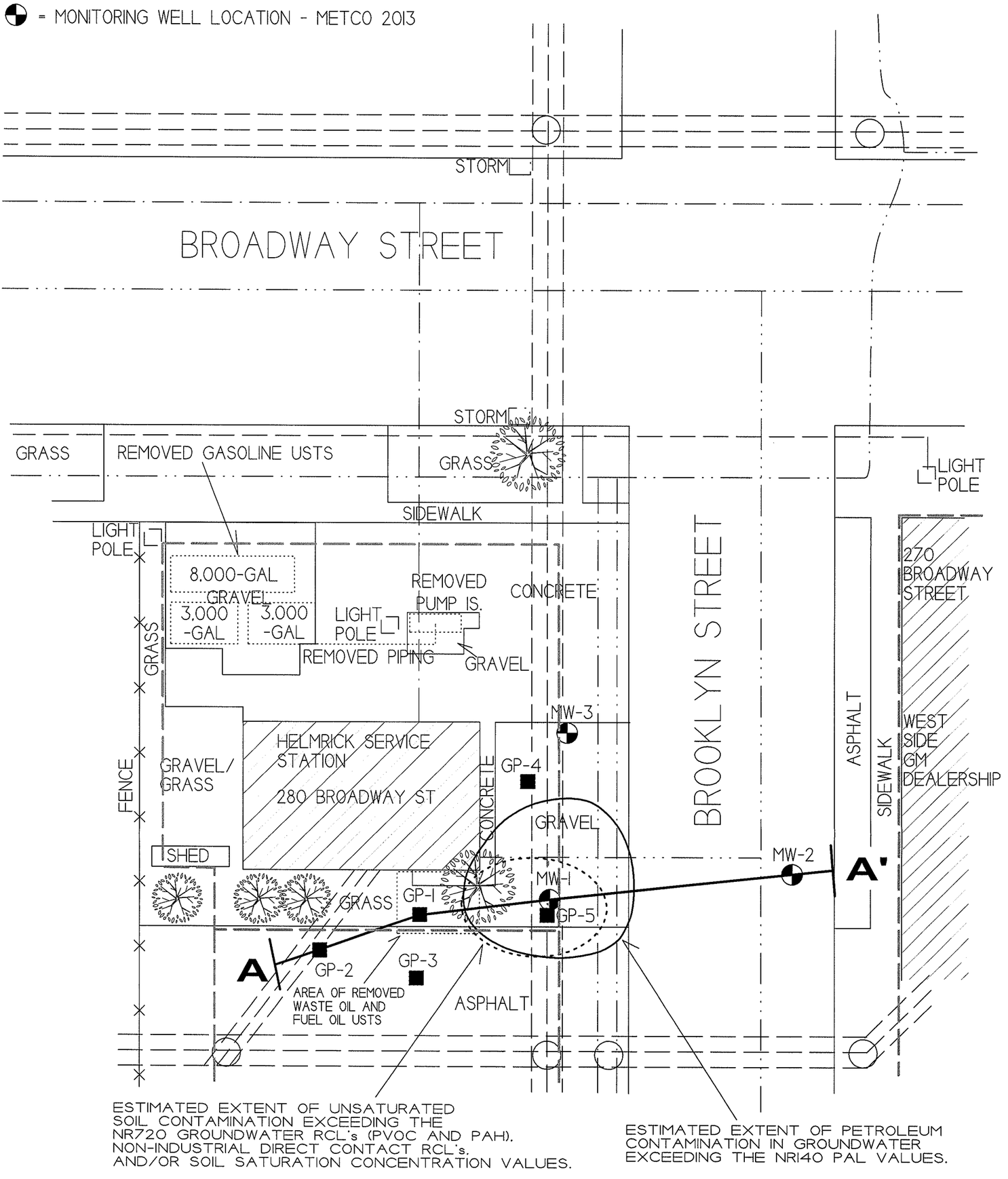
= SANITARY SEWER
= NATURAL GAS
= WATER LINE
= BURIED ELECTRIC
= OVERHEAD ELECTRIC
= PROPERTY BOUNDARY

NOTE: INFORMATION BASED ON AVAILABLE DATA. ACTUAL CONDITIONS MAY DIFFER

SCALE:
1 INCH = 20 FEET
0 20

■ = GEOPROBE BORING LOCATON - ENVIROGEN 1999

⊕ = MONITORING WELL LOCATION - METCO 2013



GEOLOGIC CROSS-SECTION FIGURE (CLOSE-UP)

HELMRICK SERVICE STATION (JOHNS AMOCO)

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MODIFIED BY: BW 04/08/2014

NOTE: INFORMATION BASED ON AVAILABLE DATA. ACTUAL CONDITIONS MAY DIFFER

■ = GEOPROBE BORING LOCATON - ENVIROGEN 1999

◓ = MONITORING WELL LOCATION - METCO 2013

= SANITARY SEWER

= NATURAL GAS

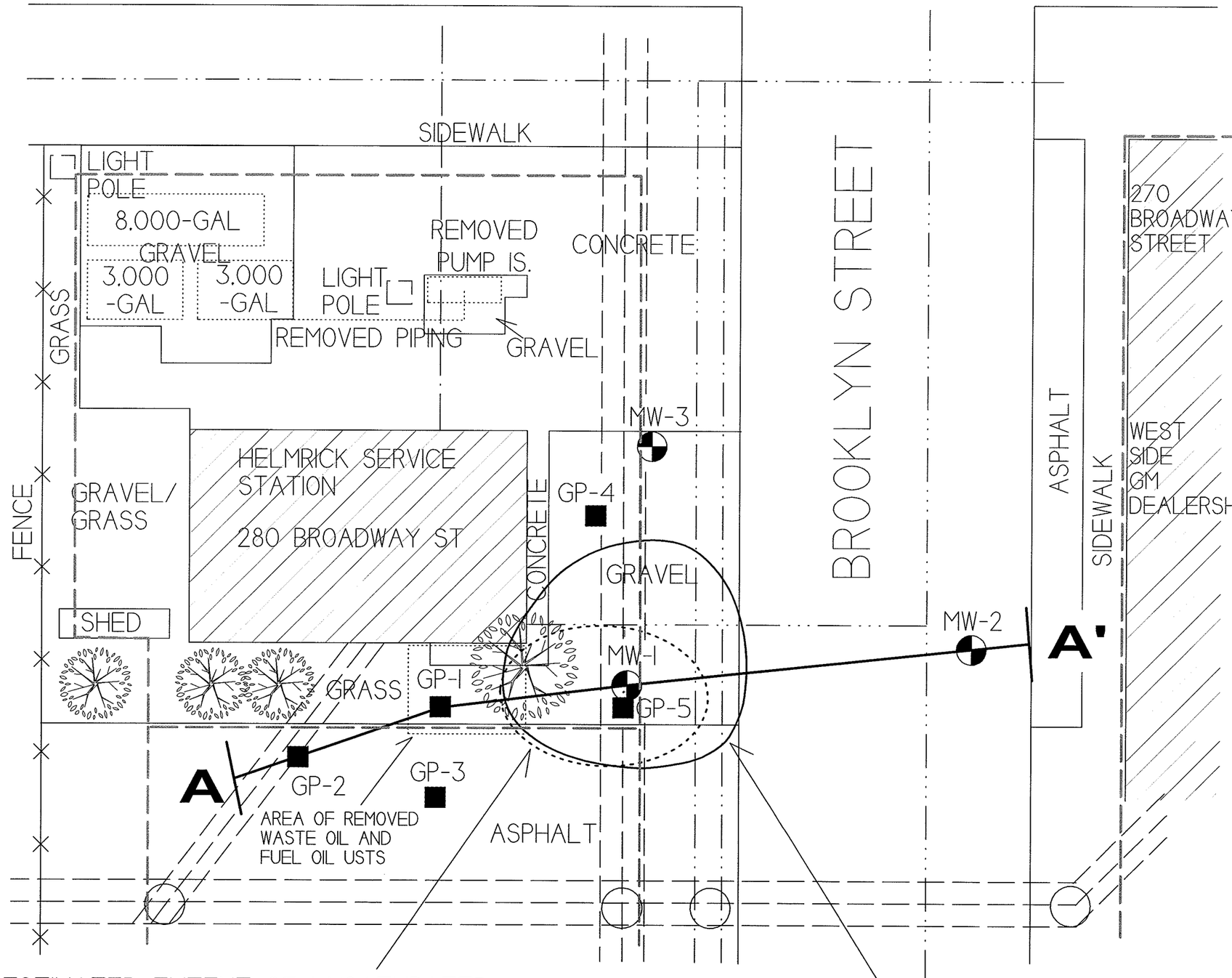
= WATER LINE

= BURIED ELECTRIC

= OVERHEAD ELECTRIC

= PROPERTY BOUNDARY

SCALE:
1 INCH = 15 FEET
0 15



ESTIMATED EXTENT OF UNSATURATED SOIL CONTAMINATION EXCEEDING THE NR720 GROUNDWATER RCL's (PVOC AND PAH). NON-INDUSTRIAL DIRECT CONTACT RCL's. AND/OR SOIL SATURATION CONCENTRATION VALUES.

ESTIMATED EXTENT OF PETROLEUM CONTAMINATION IN GROUNDWATER EXCEEDING THE NR140 PAL VALUES.

7.0 DATA TABLES, GRAPHS, AND STATISTICAL ANALYSIS

A.2. Pre-remedial Soil Analytical Table
Helmrick Service Station (John's Amoco) Site BRRTS# 03-24-204915

Sample ID	Depth (feet)	Date	PID	Lead (ppm)	Cadmium (ppm)	GRO (ppm)	DRO (ppm)	Benzene (ppm)	1,2-DCA (ppm)	Ethyl Benzene (ppm)	MTBE (ppm)	Naph-thalene (ppm)	Toluene (ppm)	1,2,4-Trime-thylbenzene (ppm)	1,3,5-Trime-thylbenzene (ppm)	Xylene (Total) (ppm)	Other VOC's (ppm)	PVOC & PAH COMBINED: Individual Exeedance Count	PVOC & PAH COMBINED: Hazard Index	PVOC & PAH COMBINED: Cumulative Cancer Risk
GP-1	4-8	11/08/99	0	6.6	0.11	NS	30	<0.025	<0.025	<0.025	NS	<0.025	<0.025	<0.025	<0.025	<0.050	NS			
GP-1	12-16	11/08/99	0	5.7	0.092	NS	5	<0.025	<0.025	<0.025	NS	<0.025	<0.025	<0.025	<0.025	<0.050	NS			
GP-2	4-8	11/08/99	0	NS	NS	NS	<4.4	<0.025	<0.025	<0.025	NS	<0.025	<0.025	<0.025	<0.025	<0.050	NS			
GP-3	4-8	11/08/99	0	NS	NS	NS	<4.8	<0.025	<0.025	<0.025	NS	<0.025	<0.025	<0.025	<0.025	<0.050	NS			
GP-4	4-8	11/08/99	22	NS	NS	NS	65	<0.025	<0.025	<0.025	NS	<0.025	<0.025	<0.025	<0.025	<0.050	NS			
GP-5	0-4	11/08/99	206	NS	NS	NS	7700	**0.32**	<0.250	**9.8**	NS	**42**	0.36	**46**	**14**	**27.3**	NS	**3**	1.32E+00	1.8E-05
GP-5	4-8	11/08/99	188	NS	NS	NS	15000	**0.19**	<0.100	**5**	NS	**20**	0.22	**26**	**7.5**	**16**	NS			
MW-1-1	3.5	08/06/13	1	<1.5	<0.08	NOT SAMPLED											NS			
MW-1-2	8.0	08/06/13	85	NOT SAMPLED													NS			
MW-1-3	12.0	08/06/13	4	NOT SAMPLED													NS			
MW-2-1	3.5	08/06/13	2	NOT SAMPLED													NS			
MW-2-2	8.0	08/06/13	2	NOT SAMPLED													NS			
MW-2-3	12.0	08/06/13	2	NOT SAMPLED													NS			
MW-3-1	0-4	08/06/13	NM	NO RECOVERY													NS			
MW-3-2	8.0	08/06/13	1	NOT SAMPLED													NS			
MW-3-3	12.0	08/06/13	1	NOT SAMPLED													NS			
Groundwater RCL				**27**	**0.752**	-	-	**0.00512**	-	**1.57**	**0.027**	**0.659**	**1.11**	**1.38**		**3.94**	-			
Non-Industrial Direct Contact RCL				**400**	**70.2**	-	-	**1.49**	-	**7.47**	**59.4**	**5.15**	**818**	**89.8**	**182**	**258**	-	0	1.00E+00	1.00E-05
Soil Saturation Concentration (C-sat)*				-	-	-	-	**1820***	-	**480***	**8870***	-	**818***	**219***	**182***	**258***	-			

Bold = Groundwater RCL Exceedance
Bold & Underline = Non Industrial Direct Contact RCL Exceedance
Bold & Asteric * = C-sat Exceedance
NS = Not Sampled NM = Not Measured
(ppm) = parts per million
DRO = Diesel Range Organics
GRO = Gasoline Range Organics
PID = Photoionization Detector
PVOC's = Petroleum Volatile Organic Compounds

A.2. Pre-remedial Soil Analytical Table
(PAH)
Helmrick Service Station (John's Amoco) Site BRRTS# 03-24-204915

Sample	Depth (feet)	Date	Acenaph-thene (ppm)	Acenaph-thylene (ppm)	Anthracene (ppm)	Benzo(a) anthracene (ppm)	Benzo(a) pyrene (ppm)	Benzo(b) fluoranthene (ppm)	Benzo(g,h,i) perylene (ppm)	Benzo(k) fluoranthene (ppm)	Chrysene (ppm)	Dibenzo(a,h) anthracene (ppm)	Fluoranthene (ppm)	Fluorene (ppm)	Indeno(1,2,3-cd) pyrene (ppm)	1-Methyl-naphthalene (ppm)	2-Methyl-naphthalene (ppm)	Naph-thalene (ppm)	Phenan-threne (ppm)	Pyrene (ppm)	PVOC & PAH COMBINED		
																					Individual Exeedance Count	Hazard Index	Cumulative Cancer Risk
GP-1	4-8	11/08/99	<0.017	NS	NS	NS	NS	NS	NS	NS	<0.019	NS	NS	<0.017	NS	<0.019	<0.017	<0.020	<0.016	<0.019			
GP-1	12-16	11/08/99	<0.017	NS	NS	NS	NS	NS	NS	NS	<0.019	NS	NS	<0.017	NS	<0.019	<0.017	<0.020	<0.016	<0.019			
GP-2	4-8	11/08/99	<0.015	NS	NS	NS	NS	NS	NS	NS	0.028	NS	NS	<0.016	NS	<0.017	<0.017	<0.018	<0.014	<0.017			
GP-3	4-8	11/08/99	<0.017	NS	NS	NS	NS	NS	NS	NS	<0.019	NS	NS	<0.018	NS	<0.019	<0.017	<0.021	<0.016	<0.019			
GP-4	4-8	11/08/99	<0.016	NS	NS	NS	NS	NS	NS	NS	0.027	NS	NS	<0.017	NS	<0.018	<0.016	<0.020	0.038	0.040			
GP-5	0-4	11/08/99	4.3	NS	NS	NS	NS	NS	NS	NS	<1.3	NS	NS	10	NS	**57**	88	**24**	17	1.7	3	1.32E+00	1.8E-05
GP-5	4-8	11/08/99	1.2	NS	NS	NS	NS	NS	NS	NS	<0.39	NS	NS	3.1	NS	17	26	**6.7**	5.5	0.57			
Groundwater RCL			---	---	197	---	0.47	0.48	---	---	0.145	---	88.8	14.8	---	---	---	0.659	---	54.5			
Non-Industrial Direct Contact RCL			3440	---	17200	0.148	0.0148	0.148	---	1.48	14.8	0.0148	2290	2290	0.148	15.6	229	5.15	---	1720		1.00E+00	1.00E-05
Soil Saturation Concentration (C-sat)*			---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---			

Bold = Groundwater RCL Exceedance
Bold & Underline = Non Industrial Direct Contact RCL Exceedance
Bold &Asteric * = C-sat Exceedance
NS = Not Sampled
(ppm) = parts per million
PAH = Polynuclear Aromatic Hydrocarbons
PID = Photoionization Detector
VOC's = Volatile Organic Compounds

Site Name: Helmrick Service Station (John's Amoco)

Sample ID: GP-5 (0-4 feet)

Contaminant	CAS Number	NC RCL (mg/kg)	C RCL (mg/kg)	Not-To-Exceed D-C RCL (mg/kg)	Basis	INPUT Site Data (mg/kg)	Comparison / Hazard Index / Cumulative Cancer Risk: Flag E = Individual Exceedance!	Hazard Quotient (HQ) from Data	Target CR used: 1.00E-06 Cancer Risk (CR) from Data
Benzene	71-43-2	111	1.49	1.49	ca	0.320		2.88E-03	2.1E-07
Ethylbenzene	100-41-4	4220	7.47	7.47	ca	**9.800**	E	2.32E-03	1.3E-06
Toluene	108-88-3	5300	-	818	Csat	0.360		6.79E-05	
Xylenes	1330-20-7	890	-	258	Csat	27.300		3.07E-02	
Methyl tert-Butyl Ether (MTBE)	1634-04-4	23800	59.4	59.4	ca				
Dichloroethane, 1,2-	107-06-2	46.7	0.61	0.61	ca				
Dibromoethane, 1,2-	106-93-4	107	0.05	0.05	ca				
Trimethylbenzene, 1,2,4-	95-63-6	89.8	-	89.8	nc	46.000		5.12E-01	
Trimethylbenzene, 1,3,5-	108-67-8	782	-	182	Csat	14.000		1.79E-02	
Naphthalene	91-20-3	188	5.15	5.15	ca	**66.000**	E	3.51E-01	1.3E-05
Benzo[a]pyrene	50-32-8	-	0.01	0.01	ca				
Acenaphthene	83-32-9	3440	-	3440	nc	4.300		1.25E-03	
Anthracene	120-12-7	17200	-	17200	nc				
Benz[a]anthracene	56-55-3	-	0.15	0.15	ca				
Benzo(j)fluoranthene	205-82-3	-	0.38	0.38	ca				
Benzo[b]fluoranthene	205-99-2	-	0.15	0.15	ca				
Benzo[k]fluoranthene	207-08-9	-	1.48	1.48	ca				
Chrysene	218-01-9	-	14.8	14.8	ca				
Dibenz[a,h]anthracene	53-70-3	-	0.01	0.01	ca				
Dibenzo(a,e)pyrene	192-65-4	-	0.04	0.04	ca				
Dimethylbenz(a)anthracene, 7,12-	57-97-6	-	0	0	ca				
Fluoranthene	206-44-0	2290	-	2290	nc				
Fluorene	86-73-7	2290	-	2290	nc				
Indeno[1,2,3-cd]pyrene	193-39-5	-	0.15	0.15	ca				
Methylnaphthalene, 1-	90-12-0	4010	15.6	15.6	ca	**57.000**	E	1.42E-02	3.7E-06
Methylnaphthalene, 2-	91-57-6	229	-	229	nc	88.000		3.84E-01	
Nitropyrene, 4-	57835-92-4	-	0.38	0.38	ca				
Pyrene	129-00-0	1720	-	1720	nc	1.700		9.88E-04	
Lead and Compounds	7439-92-1	400	-	400	nc				

03-24-204915

Exceedance Count / Hazard Index / Cumulative Cancer Risk: 3 1.32E+00 1.8E-05

To Pass, data must meet all these criteria: Exceedance Count = 0 HI 1.00E+00 ≤ Cumulative CR ≤ 1e-05

Bottom-Line: **NO! This NON-INDUSTRIAL site sampling location will need either further cleanup to lower contaminant levels or the construction of a cap/cover to address the direct-contact pathway.**

A.1 Groundwater Analytical Table
Helmrick Service Station (John's Amoco) Site BRRTS# 03-24-204915

Well Sampling Conducted on October 10, 2013

VOC's Well Name	MW-1	MW-2	MW-3	ENFORCE MENT STANDARD = ES – Bold	*PREVENTIVE ACTION LIMIT = PAL - Italics*
Cadmium, dissolved/ppb	< 0.5	< 0.5	< 0.5		
Lead, dissolved/ppb	< 0.7	< 0.7	< 0.7	**15**	*1.5*
Benzene/ppb	*2.12*	< 0.24	0.40 "J"	**5**	*0.5*
Bromobenzene/ppb	< 0.32	< 0.32	< 0.32	==	==
Bromodichloromethane/ppb	< 0.37	< 0.37	< 0.37	==	==
Bromoform/ppb	< 0.35	< 0.35	< 0.35	==	==
tert-Butylbenzene/ppb	< 0.36	< 0.36	< 0.36	==	==
sec-Butylbenzene/ppb	6.2	< 0.33	< 0.33	==	==
n-Butylbenzene/ppb	5.1	< 0.35	< 0.35	==	==
Carbon Tetrachloride/ppb	< 0.33	< 0.33	< 0.33	**5**	*0.5*
Chlorobenzene/ppb	< 0.24	< 0.24	< 0.24	==	==
Chloroethane/ppb	< 0.63	< 0.63	< 0.63	==	==
Chloroform/ppb	< 0.28	< 0.28	< 0.28	**6**	*0.6*
Chloromethane/ppb	< 0.81	< 0.81	< 0.81	==	==
2-Chlorotoluene/ppb	< 0.21	< 0.21	< 0.21	==	==
4-Chlorotoluene/ppb	< 0.21	< 0.21	< 0.21	==	==
1,2-Dibromo-3-chloropropane/ppb	< 0.88	< 0.88	< 0.88	==	==
Dibromochloromethane/ppb	< 0.22	< 0.22	< 0.22	==	==
1,4-Dichlorobenzene/ppb	< 0.3	< 0.3	< 0.3	==	==
1,3-Dichlorobenzene/ppb	< 0.28	< 0.28	< 0.28	==	==
1,2-Dichlorobenzene/ppb	< 0.36	< 0.36	< 0.36	==	==
Dichlorodifluoromethane/ppb	< 0.44	< 0.44	< 0.44	**1000**	*200*
1,2-Dichloroethane/ppb	< 0.41	< 0.41	< 0.41	**5**	*0.5*
1,1-Dichloroethane/ppb	< 0.3	< 0.3	< 0.3	==	==
1,1-Dichloroethene/ppb	< 0.4	< 0.4	< 0.4	==	==
cis-1,2-Dichloroethene/ppb	< 0.38	< 0.38	< 0.38	**70**	*7*
trans-1,2-Dichloroethene/ppb	< 0.35	< 0.35	< 0.35	==	==
1,2-Dichloropropane/ppb	< 0.32	< 0.32	< 0.32	==	==
2,2-Dichloropropane/ppb	< 0.36	< 0.36	< 0.36	==	==
1,3-Dichloropropane/ppb	< 0.33	< 0.33	< 0.33	==	==
Di-isopropyl ether/ppb	< 0.23	< 0.23	< 0.23	==	==
EDB (1,2-Dibromoethane)/ppb	< 0.44	< 0.44	< 0.44	**0.05**	*0.005*
Ethylbenzene/ppb	14.6	< 0.55	< 0.55	**700**	*140*
Hexachlorobutadiene/ppb	< 1.5	< 1.5	< 1.5	==	==
Isopropylbenzene/ppb	6.9	< 0.3	< 0.3	==	==
p-Isopropyltoluene/ppb	1.66	< 0.31	< 0.31	==	==
Methylene chloride/ppb	< 0.5	< 0.5	< 0.5	==	==
Methyl tert-butyl ether (MTBE)/ppb	< 0.23	< 0.23	1.15	**60**	*12*
Naphthalene/ppb	*28.4*	< 1.7	< 1.7	**100**	*10*
n-Propylbenzene/ppb	8.2	< 0.25	< 0.25	==	==
1,1,2,2-Tetrachloroethane/ppb	< 0.45	< 0.45	< 0.45	==	==
1,1,1,2-Tetrachloroethane/ppb	< 0.33	< 0.33	< 0.33	==	==
Tetrachloroethene (PCE)/ppb	< 0.33	< 0.33	< 0.33	**5**	*0.5*
Toluene/ppb	< 0.69	< 0.69	< 0.69	**800**	*160*
1,2,4-Trichlorobenzene/ppb	< 0.98	< 0.98	< 0.98	==	==
1,2,3-Trichlorobenzene/ppb	< 1.8	< 1.8	< 1.8	==	==
1,1,1-Trichloroethane/ppb	< 0.33	< 0.33	< 0.33	==	==
1,1,2-Trichloroethane/ppb	< 0.34	< 0.34	< 0.34	==	==
Trichloroethene (TCE)/ppb	< 0.33	< 0.33	< 0.33	**5**	*0.5*
Trichlorofluoromethane/ppb	< 0.71	< 0.71	< 0.71	==	==
1,2,4-Trimethylbenzene/ppb	< 2.2	< 2.2	< 2.2		
1,3,5-Trimethylbenzene/ppb	5.3	< 1.4	< 1.4	**Total TMB's 480**	*Total TMB's 96*
Vinyl Chloride/ppb	< 0.18	< 0.18	< 0.18	==	==
m&p-Xylene/ppb	0.86 "J"	< 0.69	< 0.69		
o-Xylene/ppb	1.11 "J"	< 0.63	< 0.63	**Total Xylenes 2000**	*Total Xylenes 400*

NS = not sampled, NM = Not Measured
Q = Analyte detected above laboratory method detection limit but below practical quantitation limit.
= = No Exceedences
(ppb) = parts per billion
(ppm) = parts per million

A.1 Groundwater Analytical Table
Helmrick Service Station (John's Amoco) Site BRRTS# 03-24-204915

Well MW-1
PVC Elevation = 773.70 (feet) (MSL)

Date	Water Elevation (in feet msl)	Depth to Water (in feet)	Lead (ppb)	Cadmium (ppb)	Benzene (ppb)	Ethyl Benzene (ppb)	MTBE (ppb)	Naph-thalene (ppb)	Toluene (ppb)	Trimethyl-benzenes (ppb)	Xylene (Total) (ppb)
10/10/13	769.15	4.55	<0.7	<0.5	*2.12*	14.6	<0.23	*28.4*	<0.69	5.3-7.5	1.97
01/15/14	768.49	5.21	NS	NS	*1.15*	7.4	<0.37	*13.4*	<0.8	5.92	<2.41
ENFORCE MENT STANDARD ES = Bold			15	---	5	700	60	100	800	480	2000
PREVENTIVE ACTION LIMIT *PAL = Italics*			1.5	---	0.5	140	12	10	160	96	400

(ppb) = parts per billion (ppm) = parts per million
ns = not sampled nm = not measured
Note: Elevations are presented in feet mean sea level (msl).

Well MW-2
PVC Elevation = 773.37 (feet) (MSL)

Date	Water Elevation (in feet msl)	Depth to Water (in feet)	Lead (ppb)	Cadmium (ppb)	Benzene (ppb)	Ethyl Benzene (ppb)	MTBE (ppb)	Naph-thalene (ppb)	Toluene (ppb)	Trimethyl-benzenes (ppb)	Xylene (Total) (ppb)
10/10/13	769.89	3.48	<0.7	<0.5	<0.24	<0.55	<0.23	<1.7	<0.69	<3.6	<1.32
01/15/14	768.50	4.87	NS	NS	<0.27	<0.82	<0.37	<1.2	<0.8	<1.69	<2.41
ENFORCE MENT STANDARD ES = Bold			15	---	5	700	60	100	800	480	2000
PREVENTIVE ACTION LIMIT *PAL = Italics*			1.5	---	0.5	140	12	10	160	96	400

(ppb) = parts per billion (ppm) = parts per million
ns = not sampled nm = not measured
Note: Elevations are presented in feet mean sea level (msl).

Well MW-3
PVC Elevation = 774.21 (feet) (MSL)

Date	Water Elevation (in feet msl)	Depth to Water (in feet)	Lead (ppb)	Cadmium (ppb)	Benzene (ppb)	Ethyl Benzene (ppb)	MTBE (ppb)	Naph-thalene (ppb)	Toluene (ppb)	Trimethyl-benzenes (ppb)	Xylene (Total) (ppb)
10/10/13	769.04	5.17	<0.7	<0.5	0.4	<0.55	1.15	<1.7	<0.69	<3.6	<1.32
01/15/14	768.43	5.78	NS	NS	<0.27	<0.82	<0.37	<1.2	<0.8	<1.69	<2.41
ENFORCE MENT STANDARD ES = Bold			15	---	5	700	60	100	800	480	2000
PREVENTIVE ACTION LIMIT *PAL = Italics*			1.5	---	0.5	140	12	10	160	96	400

(ppb) = parts per billion (ppm) = parts per million
ns = not sampled nm = not measured
Note: Elevations are presented in feet mean sea level (msl).

A.1 Groundwater Analytical Table
(PAH)
Helmrick Service Station (John's Amoco) Site BRRTS# 03-24-204915

Well MW-1
PVC Elevation = (feet) (MSL)

Date	Ace-naphthene (ppb)	Acenaph-thylene (ppb)	Anthracene (ppb)	Benzo(a) anthracene (ppb)	Benzo(a) pyrene (ppb)	Benzo(b) fluoranthene (ppb)	Benzo(g,h,i) Perylene (ppb)	Benzo(k) fluoranthene (ppb)	Chrysene (ppb)	Dibenzo(a,h) anthracene (ppb)	Fluoran-thene (ppb)	Fluorene (ppb)	Indeno(1,2,3-cd) pyrene (ppb)	1-Methyl-naphthalene (ppb)	2-Methyl-naphthalene (ppb)	Naph-thalene (ppb)	Phenan-threne (ppb)	Pyrene (ppb)
10/10/13	6.8	1.29	2.29	<0.25	<0.18	<0.2	<0.23	<0.27	<0.18	<0.23	0.73	7.9	<0.27	7.1	21.9	*10.9*	26.8	2.69
ENFORCE MENT STANDARD = **ES – Bold**			3000	-	0.2	0.2	-	-	0.2	-	400	400	-	-	-	100	-	250
PREVENTIVE ACTION LIMIT = *PAL - Italics*			600	-	0.02	0.02	-	-	0.02	-	80	80	-	-	-	10	-	50

(ppb) = parts per billion (ppm) = parts per million
ns = not sampled nm = not measured
Note: Elevations are presented in feet mean sea level (msl).

Well MW-2
PVC Elevation = (feet) (MSL)

Date	Ace-naphthene (ppb)	Acenaph-thylene (ppb)	Anthracene (ppb)	Benzo(a) anthracene (ppb)	Benzo(a) pyrene (ppb)	Benzo(b) fluoranthene (ppb)	Benzo(g,h,i) Perylene (ppb)	Benzo(k) fluoranthene (ppb)	Chrysene (ppb)	Dibenzo(a,h) anthracene (ppb)	Fluoran-thene (ppb)	Fluorene (ppb)	Indeno(1,2,3-cd) pyrene (ppb)	1-Methyl-naphthalene (ppb)	2-Methyl-naphthalene (ppb)	Naph-thalene (ppb)	Phenan-threne (ppb)	Pyrene (ppb)
10/10/13	<0.021	<0.02	<0.02	<0.025	<0.0.18	<0.02	<0.023	<0.027	<0.018	<0.023	<0.026	<0.02	<0.027	<0.019	<0.016	<0.023	<0.018	<0.025
ENFORCE MENT STANDARD = **ES – Bold**			3000	-	0.2	0.2	-	-	0.2	-	400	400	-	-	-	100	-	250
PREVENTIVE ACTION LIMIT = *PAL - Italics*			600	-	0.02	0.02	-	-	0.02	-	80	80	-	-	-	10	-	50

(ppb) = parts per billion (ppm) = parts per million
ns = not sampled nm = not measured
Note: Elevations are presented in feet mean sea level (msl).

Well MW-3
PVC Elevation = (feet) (MSL)

Date	Ace-naphthene (ppb)	Acenaph-thylene (ppb)	Anthracene (ppb)	Benzo(a) anthracene (ppb)	Benzo(a) pyrene (ppb)	Benzo(b) fluoranthene (ppb)	Benzo(g,h,i) Perylene (ppb)	Benzo(k) fluoranthene (ppb)	Chrysene (ppb)	Dibenzo(a,h) anthracene (ppb)	Fluoran-thene (ppb)	Fluorene (ppb)	Indeno(1,2,3-cd) pyrene (ppb)	1-Methyl-naphthalene (ppb)	2-Methyl-naphthalene (ppb)	Naph-thalene (ppb)	Phenan-threne (ppb)	Pyrene (ppb)
10/10/13	<0.021	<0.02	<0.02	<0.025	<0.0.18	<0.02	<0.023	<0.027	<0.018	<0.023	<0.026	<0.02	<0.027	0.022	0.024	<0.023	0.022	<0.025
ENFORCE MENT STANDARD = **ES – Bold**			3000	-	0.2	0.2	-	-	0.2	-	400	400	-	-	-	100	-	250
PREVENTIVE ACTION LIMIT = *PAL - Italics*			600	-	0.02	0.02	-	-	0.02	-	80	80	-	-	-	10	-	50

(ppb) = parts per billion (ppm) = parts per million
ns = not sampled nm = not measured
Note: Elevations are presented in feet mean sea level (msl).

A.7 Water Level Elevations
Helmrick Service Station (John's Amoco)
BRRTS# 03-24-204915
Berlin, Wisconsin

	MW-1	MW-2	MW-3
ground surface (ft)	774.33	773.85	774.55
pvc top (ft)	773.70	773.37	774.21

Date			
10/10/13	769.15	769.89	769.04
01/15/14	768.49	768.50	768.43

Note: Elevations are presented in feet mean sea level (msl).

A.8 Other

Groundwater NA Indicator Results
Helmrick Service Station (John's Amoco) Site BRRTS# 03-24-204915

Well MW-1

Date	Dissolved Oxygen (ppm)	pH	ORP	Temp (C)	Specific Conductance	Nitrate + Nitrite (ppm)	Total Sulfate (ppm)	Dissolved Iron (ppm)	Man-ganese (ppb)
10/10/13	0.66	6.75	81	18.2	1135	1.84	48	<0.06	**451**
01/15/14	1.06	6.56	180	7.8	1116	NS	NS	NS	NS
ENFORCE MENT STANDARD = **ES -- Bold**						10	-	-	300
PREVENTIVE ACTION LIMIT = *PAL - Italics*						2	-	-	60

(ppb) = parts per billion (ppm) = parts per million
ns = not sampled nm = not measured
Note: Elevations are presented in feet mean sea level (msl).

Well MW-2

Date	Dissolved Oxygen (ppm)	pH	ORP	Temp (C)	Specific Conductance	Nitrate + Nitrite (ppm)	Total Sulfate (ppm)	Dissolved Iron (ppm)	Man-ganese (ppb)
10/10/13	0.65	7.03	102	19.8	972	0.29	50.3	0.10	58.1
01/15/14	2.31	7.07	231	7.6	873	NS	NS	NS	NS
ENFORCE MENT STANDARD = **ES -- Bold**						10	-	-	300
PREVENTIVE ACTION LIMIT = *PAL - Italics*						2	-	-	60

(ppb) = parts per billion (ppm) = parts per million
ns = not sampled nm = not measured
Note: Elevations are presented in feet mean sea level (msl).

Well MW-3

Date	Dissolved Oxygen (ppm)	pH	ORP	Temp (C)	Specific Conductance	Nitrate + Nitrite (ppm)	Total Sulfate (ppm)	Dissolved Iron (ppm)	Man-ganese (ppb)
10/10/13	0.94	6.66	148	17.8	1138	0.27	31.6	<0.06	*190*
01/15/14	0.95	6.78	241	8.2	1103	NS	NS	NS	NS
ENFORCE MENT STANDARD = **ES -- Bold**						10	-	-	300
PREVENTIVE ACTION LIMIT = *PAL - Italics*						2	-	-	60

(ppb) = parts per billion (ppm) = parts per million
ns = not sampled nm = not measured
Note: Elevations are presented in feet mean sea level (msl).

APPENDIX A/ METHODS OF INVESTIGATION

Site Investigation Report - METCO
Helmrick Service Station (Johns Amoco)

Drilling Project

Soil borings were conducted by Geiss Soil Samples, LLC of Merrill, Wisconsin, under the supervision of METCO personnel. Using a truck or track-mounted auger drill rig, all borings were completed in accordance with ASTM D-1452, "Soil Investigation and Sampling by Auger Boring," using 4.25-inch, inside-diameter (ID) hollow stem augers. Soil sampling was conducted using a geoprobe. Using this procedure an assembled stainless steel sampler is advanced to the top of the interval to be sampled, a stop-pin is then removed, and the sampler driven until filled.

Field observations such as soil characteristics, petroleum odors, and petroleum staining were continuously noted throughout the drilling process.

The purpose of the Drilling Project and subsequent well installation/sampling was to investigate subsurface conditions and characteristics, verify the extent of petroleum contamination in local soil and groundwater, and collect aquifer data.

Field Screening

Selected soil samples were scanned with a Model DL102 HNU Photo-ionization Meter equipped with a 10.6 eV lamp. Metered calibrations were done at the beginning of each workday using an isobutylene standard. A quart sized Ziploc bag was filled, by gloved hand, one-third full with the sample. The Ziploc bags were sealed and shaken vigorously for 30 seconds. Headspace development was established by allowing the sample to rest for at least 15 minutes. If ambient temperatures are below 70 degrees Fahrenheit, headspace development takes place in a heated environment, which allows the sample enough time to establish satisfactory headspace. To take readings, the HNU probe was inserted through the Ziploc seal and the highest meter response recorded.

Throughout the field projects the HNU Meter did not encounter any vast temperature or humidity changes, malfunctions, repairs, or any other obvious interferences that would affect its results.

Monitoring Well Installation, Development, and Sampling

Monitoring well installation was completed by Geiss Soil Samples, LLC under the supervision of METCO personnel and done in accordance with Wisconsin Department of Natural Resources Chapter NR141, "Groundwater Monitoring Well Requirements." The monitoring wells were constructed of flush threaded, 2-inch inside-diameter schedule 40 polyvinyl chloride (PVC) piping. Ten-foot well screens with 0.010-inch slots were installed partially into the groundwater, with the watertable intersecting the screen. Uniform washed sand was installed around the well screens to serve as a filter pack. Bentonite was used above the filter pack to provide an annular space seal.

Locking watertight caps along with steel flush-mounted covers were installed with the wells for protection. Monitoring Well Construction Forms and a Groundwater Monitoring Well Information Form are presented in Appendix C.

The wells were surveyed by Fauerbach Surveying & Engineering of Hillsboro, Wisconsin. Measurements were recorded in feet mean sea level.

Monitoring well MW-1 was alternately surged and purged by METCO personnel with a bottom loading, disposable, polyethylene bailer for 15-20 minutes to remove fines from the well screen. Approximately 45 gallons of groundwater was then removed with a small electrical submersible pump. Monitoring wells MW-2 and MW-3 were dry after installation. Well Development Forms are presented in Appendix C.

Groundwater samples for laboratory analysis were collected using a bottom loading, disposable, polyethylene bailer and disposable, polyethylene twine. A minimum of four well volumes was purged from the well immediately before sampling.

Field observations such as color, turbidity, petroleum odors, and petroleum sheens associated with the collected samples were continuously noted throughout sampling.

Sample Preparation

The volume of sample, size of container, and type of sample preservation was dependent on the specific parameter for which the sample was to be analyzed. Parameter specific information is presented in the LUST Sample Guidelines located in Appendix E.

Field Sampling and Transportation Quality Control

All samples were collected in a manner as to maintain their quality and to eliminate any possible cross contamination. METCO did not deviate from any WDNR or laboratory recommended procedures for sample collection, preservation, or transportation on this project.

Equipment advanced into the subsurface was cleaned between sampling locations. Cleaning consisted of washing with a biodegradable Alconox solution and rinsing with potable water. Disposable equipment was not cleaned, but immediately disposed of after use.

All samples were constantly kept on ice in a cooler and hand delivered to the laboratory.

Laboratory Quality Control

See Appendix B for the results of any field blanks, trip blanks, temperature blanks, lab spikes, split samples, replicate spikes, and duplicates.

Investigative Wastes

On October 31, 2013, DKS Transport Services, Inc. of Menomonie, Wisconsin picked-up and disposed of three drums of soil cuttings and one drum of purge water to the Advanced Disposal Seven Mile Creek Landfill in Eau Claire, Wisconsin.

APPENDIX B/ ANALYTICAL METHODS & LABORATORY DATA REPORTS

EN CHEM INC.

1795 Industrial Drive
Green Bay, WI 54302
920-469-2436
800-7-ENCHEM
FAX: 920-469-8827

REC'D NOV 24 1999

1896862

- Analytical Report -

Project Name : JOHN'S AMOCO

Project Number : 970425

WI DNR LAB ID : 405132750

Client: ENVIROGEN

Sample No.	Field ID	Collection Date	Sample No.	Field ID	Collection Date
896862-001	GP-1 4-8'	11/8/99			
896862-002	GP-1 12-16'	11/8/99			
896862-003	GP-2 4-8'	11/8/99			
896862-004	GP-3 4-8'	11/8/99			
896862-005	GP-4 4-8'	11/8/99			
896862-006	GP-5 0-4'	11/8/99			
896862-007	GP-5 4-8'	11/8/99			
896862-008	TRIP BLANK	11/8/99			

Please visit our Internet homepage at: www.encheminc.com

The "Q" flag is present when a parameter has been detected below the LOQ. This indicates the results are qualified due to the uncertainty of the parameter concentration between the LOD and the LOQ.

Soil VOC detects are corrected for the total solids, unless otherwise noted.

I certify that the data contained in this Final Report has been generated and reviewed in accordance with approved methods and Laboratory Standard Operating Procedure. Exceptions, if any, are discussed in the accompanying sample comments. Release of this final report is authorized by Laboratory management, as is verified by the following signature. Reported results shall not be reproduced, except in full, without the written approval of the lab. The sample results relate only to the analytes of interest tested.

J. Durancau
Approval Signature — Date: 11/23/99

Laurie Woelfel
Project Manager — Date: 11/23/99

En Chem Inc.

1795 Industrial Drive
Green Bay, WI 54302
920-469-2436
800-7-ENCHEM
Fax: 920-469-8827

Lab#:	TestGroupID:	Comment:
896862-	DRO-S	DRO+5 MINUTES were run on these samples. The extended 5 minute window was not quantitated but was used for qualitative analysis to see if heavier fuels such as oils were present.
896862-002 GP-1 12-16'	DRO-S	Hump was present late in chromatogram.
896862-003 GP-2 4-8'	DRO-S	Peaks present late in and beyond window.
896862-006 GP-5 0-4'	PAH+-S	Surrogate recoveries not available due to high dilution of sample.
	8260+-S-ME	The LCS was above control limits for 1,2,4-Trimethylbenzene(115%/117%) and p-Isopropyltoluene(116%/119%). Both Compounds were in control on the Daily Check Standard. (limit/actual)
896862-007 GP-5 4-8'	8260+-S-ME	The LCS was above control limits for 1,2,4-Trimethylbenzene(115%/117%) and p-Isopropyltoluene(116%/119%). Both Compounds were in control on the Daily Check Standard. (limit/actual)

PAH Sand Blank
Anal by: NJS
Anal date:11/15/99
Blank #:710-40

	LOD	LOQ	REPORTED RESULT	UNITS	QUALIFIER
Acenaphthene	13	41	ND	ug/kg	
Acenaphthylene	14	45	ND	ug/kg	
Anthracene	12	39	ND	ug/kg	
Benzo(a)anthracene	11	36	ND	ug/kg	
Benzo(a)pyrene	11	35	ND	ug/kg	
Benzo(b)fluoranthene	14	43	ND	ug/kg	
Benzo(g,h,i)perylene	13	41	ND	ug/kg	
Benzo(k)fluoranthene	13	41	ND	ug/kg	
Chrysene	12	39	ND	ug/kg	
Dibenzo(a,h)anthracene	18	59	ND	ug/kg	
Fluoranthene	13	41	ND	ug/kg	
Fluorene	16	50	ND	ug/kg	
Indeno(1,2,3-c,d)pyrene	12	39	ND	ug/kg	
1-Methylnaphthalene	16	50	ND	ug/kg	
2-Methylnaphthalene	15	47	ND	ug/kg	
Naphthalene	14	43	ND	ug/kg	
Phenanthrene	14	44	ND	ug/kg	
Pyrene	13	41	ND	ug/kg	
Nitobenzene-d5			101.4	% recov	
2-Fluorobiphenyl			98.6	% recov	
Terphenyl-d14			101.3	% recov	

Spike Recovery and RPD Summary Report - SOIL

Method : C:\HPCHEM\1\METHODS\PAHM1008.M
Title : 8270 CALIBRATION
Last Update : Wed Oct 13 09:40:03 1999
Response via : Initial Calibration

PAH-BLANK 710-40

Non-Spiked Sample: 11159911.D

	Spike Sample	Spike Duplicate Sample
File ID :	11159912.D	11159913.D
Sample :	MS 706-45-29 896862-004X1	MSD 706-45-30 896862-004X1
Acq Time:	15 Nov 99 3:01 pm	15 Nov 99 3:48 pm

Compound	Sample Conc	Spike Added	Spike Res	Dup Res	Spike %Rec	Dup %Rec	RPD	QC Limits RPD	QC Limits % Rec
Naphthalene	0.0	10	7	8	73	81	11	17	55-102
2-Methylnaphthalene	0.1	10	8	9	80	88	10	22	54-104
1-Methylnaphthalene	0.1	10	9	10	89	101	12	20	50-105
Acenaphthylene	0.0	10	9	9	87	87	0	21	51-114
Acenaphthene	0.0	10	9	9	86	86	0	23	50-116
Fluorene	0.0	10	9	9	87	89	2	21	54-122
Phenanthrene	0.0	10	7	8	73	75	3	20	46-125
Anthracene	0.0	10	10	10	97	95	2	18	41-123
Fluoranthene	0.0	10	10	10	97	97	1	24	49-126
Pyrene	0.0	10	7	7	72	70	2	18	39-118
Benzo[a]anthracene	0.1	10	9	9	86	86	1	25	41-123
Chrysene	0.1	10	9	9	86	86	0	16	39-120
Benzo[b]fluoranthene	0.0	10	9	9	88	88	0	21	40-131
Benzo[k]fluoranthene	0.0	10	8	8	79	79	0	18	45-120
Benzo[a]pyrene	0.0	10	9	9	92	93	1	13	50-124
Indeno[1,2,3-cd]pyre	0.0	10	10	10	99	103	4	16	43-125
Dibenz[a,h]anthracen	0.0	10	10	10	100	104	3	14	45-126
Benzo[g,h,i]perylene	0.0	10	10	10	97	99	2	14	38-118

VOC Methanol Blanks
Anal by:RJN MS#3
Anal date:11/13/99
Blank #:720-97
LCS/LCSD:711-11-07/711-11-08

	LOD	LOQ	REPORTED RESULT	UNITS	QUALIFIER
1,1,1,2-Tetrachloroethane	25	60	ND	ug/Kg	
1,1,1-Trichloroethane	25	60	ND	ug/Kg	
1,1,2,2-Tetrachloroethane	25	60	ND	ug/Kg	
1,1,2-Trichloroethane	25	60	ND	ug/Kg	
1,1-Dichloroethane	25	60	ND	ug/Kg	
1,1-Dichloroethene	25	60	ND	ug/Kg	
1,1-Dichloropropene	25	60	ND	ug/Kg	
1,2,3-Trichlorobenzene	25	60	ND	ug/Kg	
1,2,3-Trichloropropane	25	60	ND	ug/Kg	
1,2,4-Trichlorobenzene	25	60	ND	ug/Kg	
1,2,4-Trimethylbenzene	25	60	ND	ug/Kg	
1,2-Dibromo-3chloropropane	25	60	ND	ug/Kg	
1,2-Dibromoethane	25	60	ND	ug/Kg	
1,2-Dichlorobenzene	25	60	ND	ug/Kg	
1,2-Dichloroethane	25	60	ND	ug/Kg	
1,2-Dichloropropane	25	60	ND	ug/Kg	
1,3,5-Trimethylbenzene	25	60	ND	ug/Kg	
1,3-Dichlorobenzene	25	60	ND	ug/Kg	
1,3-Dichloropropane	25	60	ND	ug/Kg	
1,4-Dichlorobenzene	25	60	ND	ug/Kg	
2,2-Dichloropropane	25	60	ND	ug/Kg	
2-Chlorotoluene	25	60	ND	ug/Kg	
4-Chlorotoluene	25	60	ND	ug/Kg	
Benzene	25	60	ND	ug/Kg	
Bromobenzene	25	60	ND	ug/Kg	
Bromochloromethane	25	60	ND	ug/Kg	
Bromodichloromethane	25	60	ND	ug/Kg	
Bromoform	25	60	ND	ug/Kg	
Bromomethane	25	60	ND	ug/Kg	
Carbon Tetrachloride	25	60	ND	ug/Kg	
Chlorobenzene	25	60	ND	ug/Kg	
Chlorodibromomethane	25	60	ND	ug/Kg	
Chloroethane	25	60	ND	ug/Kg	
Chloroform	25	60	ND	ug/Kg	
Chloromethane	25	60	ND	ug/Kg	
cis-1,2-Dichloroethene	25	60	ND	ug/Kg	
cis-1,3-Dichloropropene	25	60	ND	ug/Kg	
Di-isopropyl ether	25	60	ND	ug/Kg	
Dibromomethane	25	60	ND	ug/Kg	
Dichlorodifluoromethane	25	60	ND	ug/Kg	

VOC Methanol Blanks
Anal by:RJN MS#3
Anal date:11/13/99
Blank #:720-97
LCS/LCSD:711-11-07/711-11-08

	LOD	LOQ	REPORTED RESULT	UNITS	QUALIFIER
Ethylbenzene	25	60	ND	ug/Kg	
Hexachlorobutadiene	25	60	ND	ug/Kg	
Isopropylbenzene	25	60	ND	ug/Kg	
m/p-Xylene	25	60	ND	ug/Kg	
Methyl tert-butyl ether	25	60	ND	ug/Kg	
Methylene Chloride	25	60	ND	ug/Kg	
n-Butylbenzene	25	60	ND	ug/Kg	
n-Propylbenzene	25	60	ND	ug/Kg	
Naphthalene	25	60	ND	ug/Kg	
o-Xylene	25	60	ND	ug/Kg	
p-Isopropyltoluene	25	60	ND	ug/Kg	
sec-Butylbenzene	25	60	ND	ug/Kg	
Styrene	25	60	ND	ug/Kg	
tert-Butylbenzene	25	60	ND	ug/Kg	
Tetrachloroethene	25	60	ND	ug/Kg	
Toluene	25	60	ND	ug/Kg	
trans-1,2-Dichloroethene	25	60	ND	ug/Kg	
trans-1,3-Dichloropropene	25	60	ND	ug/Kg	
Trichloroethene	25	60	ND	ug/Kg	
Trichlorofluoromethane	25	60	ND	ug/Kg	
Vinyl Chloride	25	60	ND	ug/Kg	
Dibromofluoromethane			115.34	% recov	
Toluene-d8			107.6	% recov	
4-Bromofluorobenzene			100.1	% recov	

Spike Recovery and RPD Summary Report - WATER

Method : C:\HPCHEM\1\METHODS\2MNM1029.M
Title : SW846 Method 8260 Volatiles-Methanol Extracts
Last Update : Fri Nov 05 13:15:47 1999
Response via : Initial Calibration

Non-Spiked Sample: 11139905.D

	Spike Sample	Spike Duplicate Sample
File ID :	11139925.D	11139926.D
Sample :	LCS 711-11-07	LCSD 711-11-08
Acq Time:	13 Nov 99 7:37 pm	13 Nov 99 8:06 pm

Compound	Sample Conc	Spike Added	Spike Res	Dup Res	Spike %Rec	Dup %Rec	RPD	QC Limits RPD	QC Limits % Rec
Chloromethane	0.1	50	36	38	73	77	6	15	40-127
Bromomethane	1.3	50	45	48	86	94	8	20	54-124
Dichlorodifluorometh	0.0	50	28	30	57	61	6	20	1-139
Vinyl Chloride	0.0	50	42	45	85	90	6	13	56-128
Chloroethane	0.2	50	49	50	98	100	2	14	52-138
Methylene Chloride	0.0	50	49	52	98	104	6	16	79-119
Trichlorofluorometha	0.0	50	113	111	226#	221#	2	22	50-133
Acetone	0.1	50	60	66	119	132	10	25	50-150
1,1-Dichloroethene	0.0	50	52	57	105	113	8	20	72-122
trans-1,2-Dichloroet	0.0	50	50	54	99	109	9	15	82-115
Methyl tert-butyl et	0.0	50	50	51	99	103	4	14	74-126
1,1-Dichloroethane	0.0	50	51	56	103	113	9	16	80-118
2-Butanone	0.0	50	48	55	96	110	14	25	50-150
Di-isopropyl ether	0.0	50	52	56	104	113	8	16	78-119
cis-1,2-Dichloroethe	0.0	50	51	56	101	111	9	15	83-114
2,2-Dichloropropane	0.0	50	43	47	87	95	9	12	33-107
Bromochloromethane	0.0	50	52	56	104	111	7	13	79-123
Chloroform	0.0	50	52	55	104	110	6	16	80-117
1,1,1-Trichloroethan	0.0	50	54	59	108	118	9	16	73-120
Carbon Tetrachloride	0.0	50	50	55	100	110	9	15	69-123
1,1-Dichloropropene	0.0	50	51	55	102	110	8	14	79-121
Bromodichloromethane	0.0	50	51	54	101	108	7	16	79-114
1,2-Dichloropropane	0.0	50	49	54	98	109	11	14	81-116
Dibromomethane	0.0	50	48	53	96	106	10	13	78-126
Trichloroethene	0.0	50	52	57	103	113	9	15	71-137
Benzene	0.0	50	50	53	99	106	7	14	83-115
1,2-Dichloroethane	0.0	50	50	55	101	110	9	12	68-130
1,1,2-Trichloroethan	0.0	50	51	57	103	114	10	16	82-119
1,2-Dibromoethane	0.0	50	51	56	102	111	8	15	81-121
Toluene	0.0	50	50	54	100	108	8	15	85-114
Chlorobenzene	0.0	50	51	55	101	110	8	17	83-114
1,1,1,2-Tetrachloroe	0.0	50	51	55	102	111	8	18	76-119
cis-1,3-Dichloroprop	0.0	50	51	56	101	112	10	20	75-125
trans-1,3-Dichloropr	0.0	50	51	57	102	114	10	20	75-125
Tetrachloroethene	0.0	50	52	56	103	112	8	18	83-116
1,3-Dichloropropane	0.0	50	52	58	104	116#	11	19	83-114
Dibromochloromethane	0.0	50	53	59	105	117	11	17	68-123
Ethylbenzene	0.0	50	53	56	105	112	6	18	85-113
Styrene	0.0	50	49	53	98	107	8	20	84-114
Bromoform	0.0	50	48	53	96	106	9	18	69-129
m/p-Xylene	0.0	100	104	113	104	113	8	18	83-115
o-Xylene	0.0	50	51	56	103	112	9	17	85-112
Isopropylbenzene	0.0	50	58	59	117	118	2	15	76-119

Bromobenzene	0.0	50	57	58	113	117#	3	14	82-115
1,2,3-Trichloropropa	0.0	50	59	62	118	125	6	12	65-130
1,1,2,2-Tetrachloroe	0.0	50	51	53	102	106	4	14	61-119
2-Chlorotoluene	0.0	50	56	58	112	116	3	14	76-118
n-Propylbenzene	0.0	50	58	62	117	123#	5	15	75-119
4-Chlorotoluene	0.0	50	57	59	113	118	4	15	75-118
1,3,5-Trimethylbenze	0.0	50	58	58	116	117	1	14	78-118
tert-Butylbenzene	0.0	50	58	60	117	121#	3	13	73-120
1,2,4-Trimethylbenze	0.0	50	59	59	117#	119#	1	14	78-115
sec-Butylbenzene	0.0	50	58	59	116	118	1	15	71-120
1,3-Dichlorobenzene	0.0	50	56	57	111	114#	3	16	80-114
1,4-Dichlorobenzene	0.0	50	54	55	107	110	3	17	77-116
p-Isopropyltoluene	0.0	50	59	62	119#	123#	4	14	75-116
1,2-Dichlorobenzene	0.0	50	56	58	112	116	4	16	78-116
n-Butylbenzene	0.0	50	61	63	122#	126#	3	14	69-118
1,2-Dibromo-3-chloro	0.0	50	53	58	105	116	10	19	68-126
1,2,4-Trichlorobenze	0.0	50	52	54	104	107	3	15	74-115
Naphthalene	0.0	50	57	60	113	120	5	14	74-120
Hexachlorobutadiene	0.0	50	51	54	103	107	4	20	63-111
1,2,3-Trichlorobenze	0.0	50	54	57	108	114#	5	16	73-110

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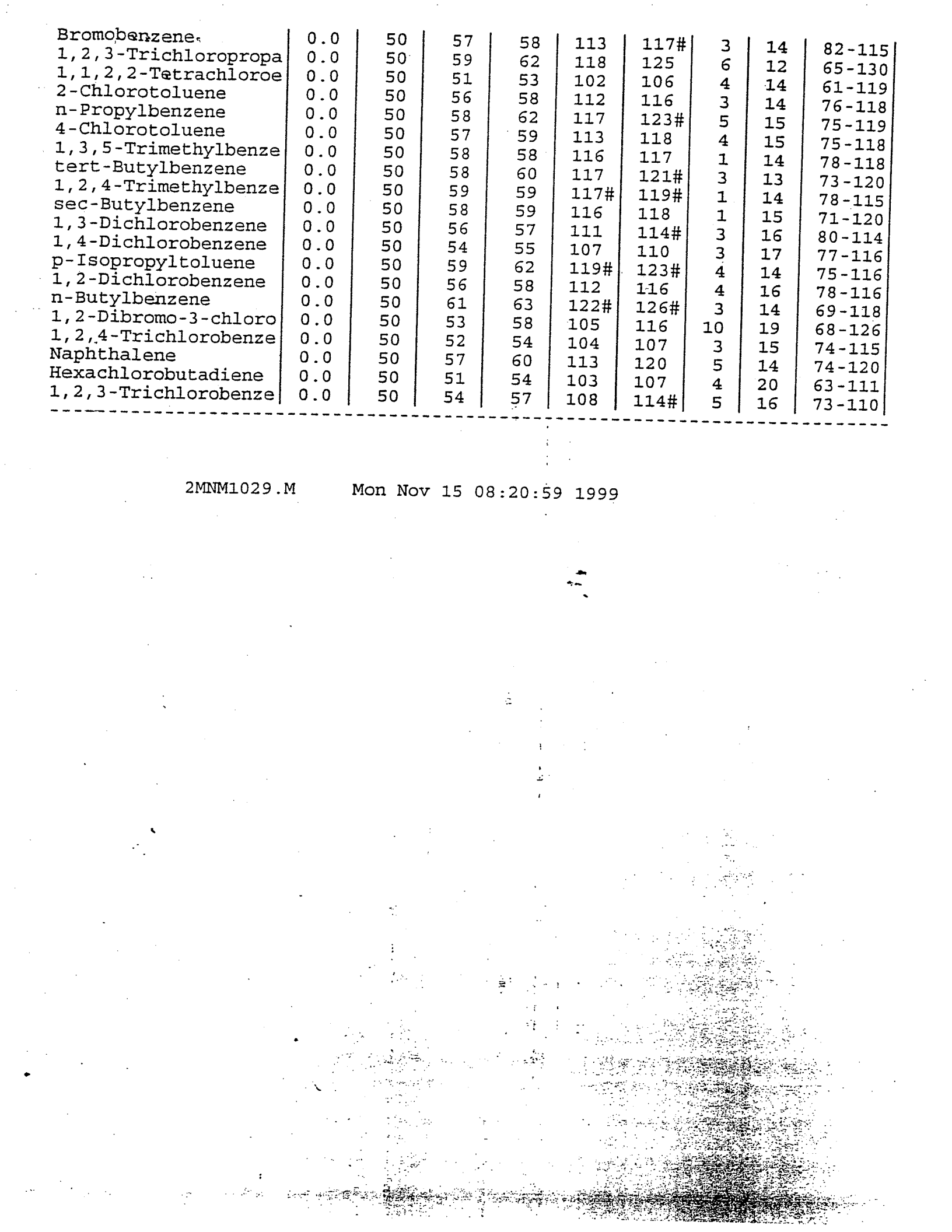

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- Analytical Report -

Project Name : JOHN'S AMOCO
Project Number : 970425
Field ID : GP-1 4-8'
Lab Sample Number : 896862-001
WI DNR LAB ID : 405132750

Client : ENVIROGEN
Report Date : 11/23/99
Collection Date : 11/8/99
Matrix Type : SOIL

Inorganic Results

Test	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Prep Method	Analysis Method	Analys
Cadmium	0.11	0.083	0.26		mg/kg	Q	11/22/99	SW846 3051	SW846 6010B	*MD
Lead	6.6	0.37	1.2		mg/kg		11/18/99	SW846 3051	SW846 6010B	*MD
Solids, percent	78.2				%		11/11/99	SM2540G	SM2540G	DJB

Organic Results

Preservation Date : 11/11/99

DIESEL RANGE ORGANICS - SOIL Prep Method: WI MOD DRO Prep Date: 11/15/99 Analyst: djb

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
DIESEL RANGE ORGANICS	30			4.9	mg/kg		11/15/99	WI MOD DRO
Blank spike	87.0			1.00	%recov		11/15/99	WI MOD DRO
Blank spike duplicate	105			1.00	% recov		11/15/99	WI MOD DRO
Blank	< 100			100	mg/kg		11/15/99	WI MOD DRO

Organic Results

EPA 8260 VOLATILE LIST - SOIL/METHANOL Prep Method: SW846 5030B Prep Date: 11/12/99 Analyst: RJN

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
Benzene	< 25	25	60		ug/kg		11/15/99	SW846 8260B
Bromobenzene	< 25	25	60		ug/kg		11/15/99	SW846 8260B
Bromochloromethane	< 25	25	60		ug/kg		11/15/99	SW846 8260B
Bromodichloromethane	< 25	25	60		ug/kg		11/15/99	SW846 8260B
Bromoform	< 25	25	60		ug/kg		11/15/99	SW846 8260B
Bromomethane	< 25	25	60		ug/kg		11/15/99	SW846 8260B
s-Butylbenzene	< 25	25	60		ug/kg		11/15/99	SW846 8260B
t-Butylbenzene	< 25	25	60		ug/kg		11/15/99	SW846 8260B
n-Butylbenzene	< 25	25	60		ug/kg		11/15/99	SW846 8260B
Carbon tetrachloride	< 25	25	60		ug/kg		11/15/99	SW846 8260B
Chloroform	< 25	25	60		ug/kg		11/15/99	SW846 8260B
Chlorobenzene	< 25	25	60		ug/kg		11/15/99	SW846 8260B
Chlorodibromomethane	< 25	25	60		ug/kg		11/15/99	SW846 8260B
Chloroethane	< 25	25	60		ug/kg		11/15/99	SW846 8260B
Chloromethane	< 25	25	60		ug/kg		11/15/99	SW846 8260B
2-Chlorotoluene	< 25	25	60		ug/kg		11/15/99	SW846 8260B

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- Analytical Report -

Project Name : JOHN'S AMOCO

Project Number : 970425

Client : ENVIROGEN

Field ID : GP-1 4-8'

Report Date : 11/23/99

Lab Sample Number : 896862-001

Collection Date : 11/8/99

WI DNR LAB ID : 405132750

Matrix Type : SOIL

4-Chlorotoluene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,2-Dibromo-3-chloropropane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,2-Dibromoethane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Dibromomethane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,3-Dichlorobenzene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,4-Dichlorobenzene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,2-Dichloroethane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,2-Dichlorobenzene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,1-Dichloroethene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
cis-1,2-Dichloroethene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Dichlorodifluoromethane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
trans-1,2-Dichloroethene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,2-Dichloropropane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,1-Dichloroethane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,3-Dichloropropane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
2,2-Dichloropropane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,1-Dichloropropene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
cis-1,3-Dichloropropene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
trans-1,3-Dichloropropene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Diisopropyl ether	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Ethylbenzene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Fluorotrichloromethane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Hexachlorobutadiene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Isopropylbenzene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
p-Isopropyltoluene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Methylene chloride	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Methyl-tert-butyl-ether	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Naphthalene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
n-Propylbenzene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Styrene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,1,2,2-Tetrachloroethane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,1,1,2-Tetrachloroethane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Tetrachloroethene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Toluene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,2,3-Trichlorobenzene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,2,4-Trichlorobenzene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,1,1-Trichloroethane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,1,2-Trichloroethane	< 25	25	60	ug/kg	11/15/99	SW846 8260B

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- Analytical Report -

Project Name : JOHN'S AMOCO
Project Number : 970425
Field ID : GP-1 4-8'
Lab Sample Number : 896862-001
WI DNR LAB ID : 405132750
Client : ENVIROGEN
Report Date : 11/23/99
Collection Date : 11/8/99
Matrix Type : SOIL

1,2,4-Trimethylbenzene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Trichloroethene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,2,3-Trichloropropane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,3,5-Trimethylbenzene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Vinyl chloride	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Xylenes, -m, -p	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Xylene, -o	< 25	25	60	ug/kg	11/15/99	SW846 8260B
4-Bromofluorobenzene	98			%Recov	11/15/99	SW846 8260B
Dibromofluoromethane	105			%Recov	11/15/99	SW846 8260B
Toluene-d8	100			%Recov	11/15/99	SW846 8260B

Organic Results

PAH - SEMIVOLATILES **Prep Method:** SW846 3550 **Prep Date:** 11/15/99 **Analyst:** NJS

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
Acenaphthene	< 17	17	54		ug/kg		11/15/99	SW846 8270
Acenaphthylene	< 19	19	61		ug/kg		11/15/99	SW846 8270
Anthracene	< 18	18	57		ug/kg		11/15/99	SW846 8270
Benzo(a)anthracene	< 19	19	61		ug/kg		11/15/99	SW846 8270
Benzo(a)pyrene	< 17	17	54		ug/kg		11/15/99	SW846 8270
Benzo(b)fluoranthene	< 19	19	61		ug/kg		11/15/99	SW846 8270
Benzo(g,h,i)perylene	< 20	20	64		ug/kg		11/15/99	SW846 8270
Benzo(k)fluoranthene	< 19	19	61		ug/kg		11/15/99	SW846 8270
Chrysene	< 19	19	61		ug/kg		11/15/99	SW846 8270
Dibenzo(a,h)anthracene	< 20	20	64		ug/kg		11/15/99	SW846 8270
Fluoranthene	< 17	17	54		ug/kg		11/15/99	SW846 8270
Fluorene	< 17	17	54		ug/kg		11/15/99	SW846 8270
Indeno(1,2,3-cd)pyrene	< 20	20	64		ug/kg		11/15/99	SW846 8270
1-Methylnaphthalene	< 19	19	61		ug/kg		11/15/99	SW846 8270
2-Methylnaphthalene	< 17	17	54		ug/kg		11/15/99	SW846 8270
Naphthalene	< 20	20	64		ug/kg		11/15/99	SW846 8270
Phenanthrene	< 16	16	51		ug/kg		11/15/99	SW846 8270
Pyrene	< 19	19	61		ug/kg		11/15/99	SW846 8270
Nitrobenzene-d5	79				%Recov		11/15/99	SW846 8270
2-Fluorobiphenyl	79				%Recov		11/15/99	SW846 8270
Terphenyl-d14	59				%Recov		11/15/99	SW846 8270

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- Analytical Report -

Project Name : JOHN'S AMOCO

Project Number : 970425 | Client : ENVIROGEN

Field ID : GP-1 4-8' | Report Date : 11/23/99

Lab Sample Number : 896862-001 | Collection Date : 11/8/99

WI DNR LAB ID : 405132750 | Matrix Type : SOIL

Organic Results

PAH-BLANK | Prep Method: SW846 8270C | Prep Date: 11/15/99 | Analyst: NJS

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
PAH-BLANK	710-40						11/15/99	SW846 8270C

Organic Results

PCB LIST - SOIL | Prep Method: SW846 3550 | Prep Date: | Analyst: *MD

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
Aroclor 1016	< 13	13	41		ug/kg		11/17/99	SW846 8082
Aroclor 1221	< 13	13	41		ug/kg		11/17/99	SW846 8082
Aroclor 1232	< 13	13	41		ug/kg		11/17/99	SW846 8082
Aroclor 1242	< 13	13	41		ug/kg		11/17/99	SW846 8082
Aroclor 1248	< 13	13	41		ug/kg		11/17/99	SW846 8082
Aroclor 1254	< 13	13	41		ug/kg		11/17/99	SW846 8082
Aroclor 1260	< 13	13	41		ug/kg		11/17/99	SW846 8082
Decachlorobiphenyl (ss)	96				%Recov		11/17/99	SW846 8082
Tetrachloro-m-xylene (ss)	87				%Recov		11/17/99	SW846 8082

Organic Results

VOC-BLK | Prep Method: SW846 5030B | Prep Date: 11/12/99 | Analyst: RJN

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
VOC-BLK	720-97						11/13/99	SW846 8260

All soil results are reported on a dry weight basis unless otherwise noted.

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- Analytical Report -

Project Name : JOHN'S AMOCO

Project Number : 970425 | Client : ENVIROGEN

Field ID : GP-1 12-16' | Report Date : 11/23/99

Lab Sample Number : 896862-002 | Collection Date : 11/8/99

WI DNR LAB ID : 405132750 | Matrix Type : SOIL

Inorganic Results

Test	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Prep Method	Analysis Method	Analys
Cadmium	0.092	0.083	0.26		mg/kg	Q	11/22/99	SW846 3051	SW846 6010B	*MD
Lead--	5.7	0.37	1.2		mg/kg		11/18/99	SW846 3051	SW846 6010B	*MD
Solids, percent	78.2				%		11/11/99	SM2540G	SM2540G	DJB

Organic Results

Preservation Date : 11/11/99

DIESEL RANGE ORGANICS - SOIL — Prep Method: WI MOD DRO — Prep Date: 11/15/99 — Analyst: djb

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
DIESEL RANGE ORGANICS	5.0			5.0	mg/kg		11/15/99	WI MOD DRO
Blank spike	87.0			1.00	%recov		11/15/99	WI MOD DRO
Blank spike duplicate	105			1.00	% recov		11/15/99	WI MOD DRO
Blank	< 100			100	mg/kg		11/15/99	WI MOD DRO

Organic Results

EPA 8260 VOLATILE LIST - SOIL/METHANOL — Prep Method: SW846 5030B — Prep Date: 11/12/99 — Analyst: RJN

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
Benzene	< 25	25	60		ug/kg		11/15/99	SW846 8260B
Bromobenzene	< 25	25	60		ug/kg		11/15/99	SW846 8260B
Bromochloromethane	< 25	25	60		ug/kg		11/15/99	SW846 8260B
Bromodichloromethane	< 25	25	60		ug/kg		11/15/99	SW846 8260B
Bromoform	< 25	25	60		ug/kg		11/15/99	SW846 8260B
Bromomethane	< 25	25	60		ug/kg		11/15/99	SW846 8260B
s-Butylbenzene	< 25	25	60		ug/kg		11/15/99	SW846 8260B
t-Butylbenzene	< 25	25	60		ug/kg		11/15/99	SW846 8260B
n-Butylbenzene	< 25	25	60		ug/kg		11/15/99	SW846 8260B
Carbon tetrachloride	< 25	25	60		ug/kg		11/15/99	SW846 8260B
Chloroform	< 25	25	60		ug/kg		11/15/99	SW846 8260B
Chlorobenzene	< 25	25	60		ug/kg		11/15/99	SW846 8260B
Chlorodibromomethane	< 25	25	60		ug/kg		11/15/99	SW846 8260B
Chloroethane	< 25	25	60		ug/kg		11/15/99	SW846 8260B
Chloromethane	< 25	25	60		ug/kg		11/15/99	SW846 8260B
2-Chlorotoluene	< 25	25	60		ug/kg		11/15/99	SW846 8260B

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- Analytical Report -

Project Name : JOHN'S AMOCO

Project Number : 970425

Client : ENVIROGEN

Field ID : GP-1 12-16'

Report Date : 11/23/99

Lab Sample Number : 896862-002

Collection Date : 11/8/99

WI DNR LAB ID : 405132750

Matrix Type : SOIL

4-Chlorotoluene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,2-Dibromo-3-chloropropane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,2-Dibromoethane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Dibromomethane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,3-Dichlorobenzene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,4-Dichlorobenzene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,2-Dichloroethane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,2-Dichlorobenzene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,1-Dichloroethene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
cis-1,2-Dichloroethene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Dichlorodifluoromethane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
trans-1,2-Dichloroethene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,2-Dichloropropane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,1-Dichloroethane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,3-Dichloropropane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
2,2-Dichloropropane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,1-Dichloropropene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
cis-1,3-Dichloropropene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
trans-1,3-Dichloropropene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Diisopropyl ether	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Ethylbenzene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Fluorotrichloromethane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Hexachlorobutadiene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Isopropylbenzene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
p-Isopropyltoluene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Methylene chloride	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Methyl-tert-butyl-ether	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Naphthalene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
n-Propylbenzene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Styrene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,1,2,2-Tetrachloroethane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,1,1,2-Tetrachloroethane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Tetrachloroethene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Toluene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,2,3-Trichlorobenzene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,2,4-Trichlorobenzene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,1,1-Trichloroethane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,1,2-Trichloroethane	< 25	25	60	ug/kg	11/15/99	SW846 8260B

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- Analytical Report -

Project Name : JOHN'S AMOCO

Project Number : 970425

Client : ENVIROGEN

Field ID : GP-1 12-16'

Report Date : 11/23/99

Lab Sample Number : 896862-002

Collection Date : 11/8/99

WI DNR LAB ID : 405132750

Matrix Type : SOIL

1,2,4-Trimethylbenzene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Trichloroethene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,2,3-Trichloropropane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,3,5-Trimethylbenzene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Vinyl chloride	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Xylenes, -m, -p	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Xylene, -o	< 25	25	60	ug/kg	11/15/99	SW846 8260B
4-Bromofluorobenzene	97			%Recov	11/15/99	SW846 8260B
Dibromofluoromethane	100			%Recov	11/15/99	SW846 8260B
Toluene-d8	97			%Recov	11/15/99	SW846 8260B

Organic Results

PAH - SEMIVOLATILES

Prep Method: SW846 3550 Prep Date: 11/15/99 Analyst: NJS

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
Acenaphthene	< 17	17	54		ug/kg		11/15/99	SW846 8270
Acenaphthylene	< 19	19	61		ug/kg		11/15/99	SW846 8270
Anthracene	< 18	18	57		ug/kg		11/15/99	SW846 8270
Benzo(a)anthracene	< 19	19	61		ug/kg		11/15/99	SW846 8270
Benzo(a)pyrene	< 17	17	54		ug/kg		11/15/99	SW846 8270
Benzo(b)fluoranthene	< 19	19	61		ug/kg		11/15/99	SW846 8270
Benzo(g,h,i)perylene	< 20	20	64		ug/kg		11/15/99	SW846 8270
Benzo(k)fluoranthene	< 19	19	61		ug/kg		11/15/99	SW846 8270
Chrysene	< 19	19	61		ug/kg		11/15/99	SW846 8270
Dibenzo(a,h)anthracene	< 20	20	64		ug/kg		11/15/99	SW846 8270
Fluoranthene	< 17	17	54		ug/kg		11/15/99	SW846 8270
Fluorene	< 17	17	54		ug/kg		11/15/99	SW846 8270
Indeno(1,2,3-cd)pyrene	< 20	20	64		ug/kg		11/15/99	SW846 8270
1-Methylnaphthalene	< 19	19	61		ug/kg		11/15/99	SW846 8270
2-Methylnaphthalene	< 17	17	54		ug/kg		11/15/99	SW846 8270
Naphthalene	< 20	20	64		ug/kg		11/15/99	SW846 8270
Phenanthrene	< 16	16	51		ug/kg		11/15/99	SW846 8270
Pyrene	< 19	19	61		ug/kg		11/15/99	SW846 8270
Nitrobenzene-d5	75				%Recov		11/15/99	SW846 8270
2-Fluorobiphenyl	76				%Recov		11/15/99	SW846 8270
Terphenyl-d14	73				%Recov		11/15/99	SW846 8270

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- Analytical Report -

Project Name : JOHN'S AMOCO

Project Number : 970425

Client : ENVIROGEN

Field ID : GP-1 12-16'

Report Date : 11/23/99

Lab Sample Number : 896862-002

Collection Date : 11/8/99

WI DNR LAB ID : 405132750

Matrix Type : SOIL

Organic Results

PAH-BLANK

Prep Method: SW846 8270C Prep Date: 11/15/99 Analyst: NJS

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
PAH-BLANK	710-40						11/15/99	SW846 8270C

Organic Results

PCB LIST - SOIL

Prep Method: SW846 3550 Prep Date: Analyst: *MD

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
Aroclor 1016	< 13	13	41		ug/kg		11/17/99	SW846 8082
Aroclor 1221	< 13	13	41		ug/kg		11/17/99	SW846 8082
Aroclor 1232	< 13	13	41		ug/kg		11/17/99	SW846 8082
Aroclor 1242	< 13	13	41		ug/kg		11/17/99	SW846 8082
Aroclor 1248	< 13	13	41		ug/kg		11/17/99	SW846 8082
Aroclor 1254	< 13	13	41		ug/kg		11/17/99	SW846 8082
Aroclor 1260	< 13	13	41		ug/kg		11/17/99	SW846 8082
Decachlorobiphenyl (ss)	95				%Recov		11/17/99	SW846 8082
Tetrachloro-m-xylene (ss)	84				%Recov		11/17/99	SW846 8082

Organic Results

VOC-BLK

Prep Method: SW846 5030B Prep Date: 11/12/99 Analyst: RJN

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
VOC-BLK	720-97						11/13/99	SW846 8260

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- Analytical Report -

Project Name : JOHN'S AMOCO
Project Number : 970425
Field ID : GP-2 4-8'
Lab Sample Number : 896862-003
WI DNR LAB ID : 405132750

Client : ENVIROGEN
Report Date : 11/17/99
Collection Date : 11/8/99
Matrix Type : SOIL

Inorganic Results

Test	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Prep Method	Analysis Method	Analys
Solids, percent	86.8				%		11/12/99	SM2540G	SM2540G	DJB

Organic Results

Preservation Date : 11/11/99

DIESEL RANGE ORGANICS - SOIL Prep Method: WI MOD DRO Prep Date: 11/15/99 Analyst: djb

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
DIESEL RANGE ORGANICS	< 4.4			4.4	mg/kg		11/15/99	WI MOD DRO
Blank spike	87.0			1.00	%recov		11/15/99	WI MOD DRO
Blank spike duplicate	105			1.00	% recov		11/15/99	WI MOD DRO
Blank	< 100			100	mg/kg		11/15/99	WI MOD DRO

Organic Results

EPA 8260 VOLATILE LIST - SOIL/METHANOL Prep Method: SW846 5030B Prep Date: 11/12/99 Analyst: RJN

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
Benzene	< 25	25	60		ug/kg		11/15/99	SW846 8260B
Bromobenzene	< 25	25	60		ug/kg		11/15/99	SW846 8260B
Bromochloromethane	< 25	25	60		ug/kg		11/15/99	SW846 8260B
Bromodichloromethane	< 25	25	60		ug/kg		11/15/99	SW846 8260B
Bromoform	< 25	25	60		ug/kg		11/15/99	SW846 8260B
Bromomethane	< 25	25	60		ug/kg		11/15/99	SW846 8260B
s-Butylbenzene	< 25	25	60		ug/kg		11/15/99	SW846 8260B
t-Butylbenzene	< 25	25	60		ug/kg		11/15/99	SW846 8260B
n-Butylbenzene	< 25	25	60		ug/kg		11/15/99	SW846 8260B
Carbon tetrachloride	< 25	25	60		ug/kg		11/15/99	SW846 8260B
Chloroform	< 25	25	60		ug/kg		11/15/99	SW846 8260B
Chlorobenzene	< 25	25	60		ug/kg		11/15/99	SW846 8260B
Chlorodibromomethane	< 25	25	60		ug/kg		11/15/99	SW846 8260B
Chloroethane	< 25	25	60		ug/kg		11/15/99	SW846 8260B
Chloromethane	< 25	25	60		ug/kg		11/15/99	SW846 8260B
2-Chlorotoluene	< 25	25	60		ug/kg		11/15/99	SW846 8260B
4-Chlorotoluene	< 25	25	60		ug/kg		11/15/99	SW846 8260B
1,2-Dibromo-3-chloropropane	< 25	25	60		ug/kg		11/15/99	SW846 8260B

All soil results are reported on a dry weight basis unless otherwise noted.

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- Analytical Report -

Project Name : JOHN'S AMOCO

Project Number : 970425

Client : ENVIROGEN

Field ID : GP-2 4-8'

Report Date : 11/17/99

Lab Sample Number : 896862-003

Collection Date : 11/8/99

WI DNR LAB ID : 405132750

Matrix Type : SOIL

1,2-Dibromoethane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Dibromomethane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,3-Dichlorobenzene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,4-Dichlorobenzene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,2-Dichloroethane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,2-Dichlorobenzene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,1-Dichloroethene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
cis-1,2-Dichloroethene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Dichlorodifluoromethane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
trans-1,2-Dichloroethene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,2-Dichloropropane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,1-Dichloroethane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,3-Dichloropropane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
2,2-Dichloropropane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,1-Dichloropropene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
cis-1,3-Dichloropropene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
trans-1,3-Dichloropropene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Diisopropyl ether	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Ethylbenzene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Fluorotrichloromethane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Hexachlorobutadiene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Isopropylbenzene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
p-Isopropyltoluene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Methylene chloride	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Methyl-tert-butyl-ether	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Naphthalene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
n-Propylbenzene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Styrene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,1,2,2-Tetrachloroethane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,1,1,2-Tetrachloroethane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Tetrachloroethene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Toluene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,2,3-Trichlorobenzene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,2,4-Trichlorobenzene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,1,1-Trichloroethane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,1,2-Trichloroethane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,2,4-Trimethylbenzene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Trichloroethene	< 25	25	60	ug/kg	11/15/99	SW846 8260B

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- Analytical Report -

Project Name : JOHN'S AMOCO

Project Number : 970425

Client : ENVIROGEN

Field ID : GP-2 4-8'

Report Date : 11/17/99

Lab Sample Number : 896862-003

Collection Date : 11/8/99

WI DNR LAB ID : 405132750

Matrix Type : SOIL

1,2,3-Trichloropropane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,3,5-Trimethylbenzene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Vinyl chloride	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Xylenes, -m, -p	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Xylene, -o	< 25	25	60	ug/kg	11/15/99	SW846 8260B
4-Bromofluorobenzene	83			%Recov	11/15/99	SW846 8260B
Dibromofluoromethane	92			%Recov	11/15/99	SW846 8260B
Toluene-d8	88			%Recov	11/15/99	SW846 8260B

Organic Results

PAH - SEMIVOLATILES Prep Method: SW846 3550 Prep Date: 11/15/99 Analyst: NJS

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
Acenaphthene	< 15	15	48		ug/kg		11/16/99	SW846 8270
Acenaphthylene	< 17	17	54		ug/kg		11/16/99	SW846 8270
Anthracene	< 16	16	51		ug/kg		11/16/99	SW846 8270
Benzo(a)anthracene	< 17	17	54		ug/kg		11/16/99	SW846 8270
Benzo(a)pyrene	< 15	15	48		ug/kg		11/16/99	SW846 8270
Benzo(b)fluoranthene	< 17	17	54		ug/kg		11/16/99	SW846 8270
Benzo(g,h,i)perylene	< 18	18	57		ug/kg		11/16/99	SW846 8270
Benzo(k)fluoranthene	< 17	17	54		ug/kg		11/16/99	SW846 8270
Chrysene	28	17	54		ug/kg	Q	11/16/99	SW846 8270
Dibenzo(a,h)anthracene	< 18	18	57		ug/kg		11/16/99	SW846 8270
Fluoranthene	17	16	51		ug/kg	Q	11/16/99	SW846 8270
Fluorene	< 16	16	51		ug/kg		11/16/99	SW846 8270
Indeno(1,2,3-cd)pyrene	< 18	18	57		ug/kg		11/16/99	SW846 8270
1-Methylnaphthalene	< 17	17	54		ug/kg		11/16/99	SW846 8270
2-Methylnaphthalene	17	15	48		ug/kg	Q	11/16/99	SW846 8270
Naphthalene	< 18	18	57		ug/kg		11/16/99	SW846 8270
Phenanthrene	< 14	14	45		ug/kg		11/16/99	SW846 8270
Pyrene	< 17	17	54		ug/kg		11/16/99	SW846 8270
Nitrobenzene-d5	83				%Recov		11/16/99	SW846 8270
2-Fluorobiphenyl	86				%Recov		11/16/99	SW846 8270
Terphenyl-d14	72				%Recov		11/16/99	SW846 8270

All soil results are reported on a dry weight basis unless otherwise noted.

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- Analytical Report -

Project Name : JOHN'S AMOCO

Project Number : 970425

Field ID : GP-2 4-8'

Lab Sample Number : 896862-003

WI DNR LAB ID : 405132750

Client : ENVIROGEN

Report Date : 11/17/99

Collection Date : 11/8/99

Matrix Type : SOIL

Organic Results

PAH-BLANK Prep Method: SW846 8270C Prep Date: 11/15/99 Analyst: NJS

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
PAH-BLANK	710-40						11/15/99	SW846 8270C

Organic Results

VOC-BLK Prep Method: SW846 5030B Prep Date: 11/12/99 Analyst: RJN

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
VOC-BLK	720-97						11/13/99	SW846 8260

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- Analytical Report -

Project Name : JOHN'S AMOCO

Project Number : 970425

Field ID : GP-3 4-8'

Lab Sample Number : 896862-004

WI DNR LAB ID : 405132750

Client : ENVIROGEN

Report Date : 11/17/99

Collection Date : 11/8/99

Matrix Type : SOIL

Inorganic Results

Test	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Prep Method	Analysis Method	Analys
Solids, percent	76.2				%		11/12/99	SM2540G	SM2540G	DJB

Organic Results

Preservation Date : 11/11/99

DIESEL RANGE ORGANICS - SOIL Prep Method: WI MOD DRO Prep Date: 11/15/99 Analyst: djb

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
DIESEL RANGE ORGANICS	< 4.8			4.8	mg/kg		11/15/99	WI MOD DRO
Blank spike	87.0			1.00	%recov		11/15/99	WI MOD DRO
Blank spike duplicate	105			1.00	% recov		11/15/99	WI MOD DRO
Blank	< 100			100	mg/kg		11/15/99	WI MOD DRO

Organic Results

EPA 8260 VOLATILE LIST - SOIL/METHANOL Prep Method: SW846 5030B Prep Date: 11/12/99 Analyst: RJN

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
Benzene	< 25	25	60		ug/kg		11/15/99	SW846 8260B
Bromobenzene	< 25	25	60		ug/kg		11/15/99	SW846 8260B
Bromochloromethane	< 25	25	60		ug/kg		11/15/99	SW846 8260B
Bromodichloromethane	< 25	25	60		ug/kg		11/15/99	SW846 8260B
Bromoform	< 25	25	60		ug/kg		11/15/99	SW846 8260B
Bromomethane	< 25	25	60		ug/kg		11/15/99	SW846 8260B
s-Butylbenzene	< 25	25	60		ug/kg		11/15/99	SW846 8260B
t-Butylbenzene	< 25	25	60		ug/kg		11/15/99	SW846 8260B
n-Butylbenzene	< 25	25	60		ug/kg		11/15/99	SW846 8260B
Carbon tetrachloride	< 25	25	60		ug/kg		11/15/99	SW846 8260B
Chloroform	< 25	25	60		ug/kg		11/15/99	SW846 8260B
Chlorobenzene	< 25	25	60		ug/kg		11/15/99	SW846 8260B
Chlorodibromomethane	< 25	25	60		ug/kg		11/15/99	SW846 8260B
Chloroethane	< 25	25	60		ug/kg		11/15/99	SW846 8260B
Chloromethane	< 25	25	60		ug/kg		11/15/99	SW846 8260B
2-Chlorotoluene	< 25	25	60		ug/kg		11/15/99	SW846 8260B
4-Chlorotoluene	< 25	25	60		ug/kg		11/15/99	SW846 8260B
1,2-Dibromo-3-chloropropane	< 25	25	60		ug/kg		11/15/99	SW846 8260B

All soil results are reported on a dry weight basis unless otherwise noted.

En Chem Inc.

1795 Industrial Drive
Green Bay, WI 54302
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Fax: 920-469-8827

- Analytical Report -

Project Name : JOHN'S AMOCO

Project Number : 970425 | Client : ENVIROGEN

Field ID : GP-3 4-8' | Report Date : 11/17/99

Lab Sample Number : 896862-004 | Collection Date : 11/8/99

WI DNR LAB ID : 405132750 | Matrix Type : SOIL

1,2-Dibromoethane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Dibromomethane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,3-Dichlorobenzene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,4-Dichlorobenzene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,2-Dichloroethane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,2-Dichlorobenzene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,1-Dichloroethene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
cis-1,2-Dichloroethene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Dichlorodifluoromethane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
trans-1,2-Dichloroethene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,2-Dichloropropane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,1-Dichloroethane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,3-Dichloropropane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
2,2-Dichloropropane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,1-Dichloropropene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
cis-1,3-Dichloropropene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
trans-1,3-Dichloropropene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Diisopropyl ether	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Ethylbenzene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Fluorotrichloromethane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Hexachlorobutadiene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Isopropylbenzene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
p-Isopropyltoluene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Methylene chloride	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Methyl-tert-butyl-ether	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Naphthalene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
n-Propylbenzene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Styrene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,1,2,2-Tetrachloroethane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,1,1,2-Tetrachloroethane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Tetrachloroethene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Toluene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,2,3-Trichlorobenzene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,2,4-Trichlorobenzene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,1,1-Trichloroethane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,1,2-Trichloroethane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,2,4-Trimethylbenzene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Trichloroethene	< 25	25	60	ug/kg	11/15/99	SW846 8260B

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- Analytical Report -

Project Name : JOHN'S AMOCO
Project Number : 970425
Field ID : GP-3 4-8'
Lab Sample Number : 896862-004
WI DNR LAB ID : 405132750

Client : ENVIROGEN
Report Date : 11/17/99
Collection Date : 11/8/99
Matrix Type : SOIL

1,2,3-Trichloropropane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,3,5-Trimethylbenzene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Vinyl chloride	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Xylenes, -m, -p	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Xylene, -o	< 25	25	60	ug/kg	11/15/99	SW846 8260B
4-Bromofluorobenzene	93			%Recov	11/15/99	SW846 8260B
Dibromofluoromethane	103			%Recov	11/15/99	SW846 8260B
Toluene-d8	98			%Recov	11/15/99	SW846 8260B

Organic Results

PAH - SEMIVOLATILES — Prep Method: SW846 3550 — Prep Date: 11/15/99 — Analyst: NJS

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
Acenaphthene	< 17	17	54		ug/kg		11/15/99	SW846 8270
Acenaphthylene	< 20	20	64		ug/kg		11/15/99	SW846 8270
Anthracene	< 18	18	57		ug/kg		11/15/99	SW846 8270
Benzo(a)anthracene	< 19	19	61		ug/kg		11/15/99	SW846 8270
Benzo(a)pyrene	< 17	17	54		ug/kg		11/15/99	SW846 8270
Benzo(b)fluoranthene	< 19	19	61		ug/kg		11/15/99	SW846 8270
Benzo(g,h,i)perylene	< 20	20	64		ug/kg		11/15/99	SW846 8270
Benzo(k)fluoranthene	< 19	19	61		ug/kg		11/15/99	SW846 8270
Chrysene	< 19	19	61		ug/kg		11/15/99	SW846 8270
Dibenzo(a,h)anthracene	< 20	20	64		ug/kg		11/15/99	SW846 8270
Fluoranthene	< 18	18	57		ug/kg		11/15/99	SW846 8270
Fluorene	< 18	18	57		ug/kg		11/15/99	SW846 8270
Indeno(1,2,3-cd)pyrene	< 20	20	64		ug/kg		11/15/99	SW846 8270
1-Methylnaphthalene	< 19	19	61		ug/kg		11/15/99	SW846 8270
2-Methylnaphthalene	< 17	17	54		ug/kg		11/15/99	SW846 8270
Naphthalene	< 21	21	67		ug/kg		11/15/99	SW846 8270
Phenanthrene	< 16	16	51		ug/kg		11/15/99	SW846 8270
Pyrene	< 19	19	61		ug/kg		11/15/99	SW846 8270
Nitrobenzene-d5	81				%Recov		11/15/99	SW846 8270
2-Fluorobiphenyl	86				%Recov		11/15/99	SW846 8270
Terphenyl-d14	76				%Recov		11/15/99	SW846 8270

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- Analytical Report -

Project Name : JOHN'S AMOCO

Project Number : 970425

Field ID : GP-3 4-8'

Lab Sample Number : 896862-004

WI DNR LAB ID : 405132750

Client : ENVIROGEN

Report Date : 11/17/99

Collection Date : 11/8/99

Matrix Type : SOIL

Organic Results

PAH-BLANK Prep Method: SW846 8270C Prep Date: 11/15/99 Analyst: NJS

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
PAH-BLANK	710-40						11/15/99	SW846 8270C

Organic Results

VOC-BLK Prep Method: SW846 5030B Prep Date: 11/12/99 Analyst: RJN

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
VOC-BLK	720-97						11/13/99	SW846 8260

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- Analytical Report -

Project Name : JOHN'S AMOCO
Project Number : 970425
Field ID : GP-4 4-8'
Lab Sample Number : 896862-005
WI DNR LAB ID : 405132750

Client : ENVIROGEN
Report Date : 11/17/99
Collection Date : 11/8/99
Matrix Type : SOIL

Inorganic Results

Test	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Prep Method	Analysis Method	Analys
Solids, percent	81.0				%		11/12/99	SM2540G	SM2540G	DJB

Organic Results

Preservation Date : 11/11/99

DIESEL RANGE ORGANICS - SOIL Prep Method: WI MOD DRO Prep Date: 11/15/99 Analyst: djb

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
DIESEL RANGE ORGANICS	65			4.5	mg/kg		11/15/99	WI MOD DRO
Blank spike	87.0			1.00	%recov		11/15/99	WI MOD DRO
Blank spike duplicate	105			1.00	% recov		11/15/99	WI MOD DRO
Blank	< 100			100	mg/kg		11/15/99	WI MOD DRO

Organic Results

EPA 8260 VOLATILE LIST - SOIL/METHANOL Prep Method: SW846 5030B Prep Date: 11/12/99 Analyst: RJN

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
Benzene	< 25	25	60		ug/kg		11/15/99	SW846 8260B
Bromobenzene	< 25	25	60		ug/kg		11/15/99	SW846 8260B
Bromochloromethane	< 25	25	60		ug/kg		11/15/99	SW846 8260B
Bromodichloromethane	< 25	25	60		ug/kg		11/15/99	SW846 8260B
Bromoform	< 25	25	60		ug/kg		11/15/99	SW846 8260B
Bromomethane	< 25	25	60		ug/kg		11/15/99	SW846 8260B
s-Butylbenzene	< 25	25	60		ug/kg		11/15/99	SW846 8260B
t-Butylbenzene	< 25	25	60		ug/kg		11/15/99	SW846 8260B
n-Butylbenzene	< 25	25	60		ug/kg		11/15/99	SW846 8260B
Carbon tetrachloride	< 25	25	60		ug/kg		11/15/99	SW846 8260B
Chloroform	< 25	25	60		ug/kg		11/15/99	SW846 8260B
Chlorobenzene	< 25	25	60		ug/kg		11/15/99	SW846 8260B
Chlorodibromomethane	< 25	25	60		ug/kg		11/15/99	SW846 8260B
Chloroethane	< 25	25	60		ug/kg		11/15/99	SW846 8260B
Chloromethane	< 25	25	60		ug/kg		11/15/99	SW846 8260B
2-Chlorotoluene	< 25	25	60		ug/kg		11/15/99	SW846 8260B
4-Chlorotoluene	< 25	25	60		ug/kg		11/15/99	SW846 8260B
1,2-Dibromo-3-chloropropane	< 25	25	60		ug/kg		11/15/99	SW846 8260B

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- Analytical Report -

Project Name : JOHN'S AMOCO

Project Number : 970425

Field ID : GP-4 4-8'

Lab Sample Number : 896862-005

WI DNR LAB ID : 405132750

Client : ENVIROGEN

Report Date : 11/17/99

Collection Date : 11/8/99

Matrix Type : SOIL

1,2-Dibromoethane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Dibromomethane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,3-Dichlorobenzene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,4-Dichlorobenzene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,2-Dichloroethane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,2-Dichlorobenzene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,1-Dichloroethene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
cis-1,2-Dichloroethene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Dichlorodifluoromethane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
trans-1,2-Dichloroethene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,2-Dichloropropane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,1-Dichloroethane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,3-Dichloropropane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
2,2-Dichloropropane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,1-Dichloropropene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
cis-1,3-Dichloropropene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
trans-1,3-Dichloropropene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Diisopropyl ether	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Ethylbenzene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Fluorotrichloromethane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Hexachlorobutadiene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Isopropylbenzene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
p-Isopropyltoluene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Methylene chloride	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Methyl-tert-butyl-ether	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Naphthalene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
n-Propylbenzene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Styrene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,1,2,2-Tetrachloroethane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,1,1,2-Tetrachloroethane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Tetrachloroethene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Toluene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,2,3-Trichlorobenzene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,2,4-Trichlorobenzene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,1,1-Trichloroethane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,1,2-Trichloroethane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,2,4-Trimethylbenzene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Trichloroethene	< 25	25	60	ug/kg	11/15/99	SW846 8260B

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- Analytical Report -

Project Name : JOHN'S AMOCO

Project Number : 970425

Client : ENVIROGEN

Field ID : GP-4 4-8'

Report Date : 11/17/99

Lab Sample Number : 896862-005

Collection Date : 11/8/99

WI DNR LAB ID : 405132750

Matrix Type : SOIL

1,2,3-Trichloropropane	< 25	25	60	ug/kg	11/15/99	SW846 8260B
1,3,5-Trimethylbenzene	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Vinyl chloride	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Xylenes, -m, -p	< 25	25	60	ug/kg	11/15/99	SW846 8260B
Xylene, -o	< 25	25	60	ug/kg	11/15/99	SW846 8260B
4-Bromofluorobenzene	100			%Recov	11/15/99	SW846 8260B
Dibromofluoromethane	109			%Recov	11/15/99	SW846 8260B
Toluene-d8	107			%Recov	11/15/99	SW846 8260B

Organic Results

PAH - SEMIVOLATILES Prep Method: SW846 3550 Prep Date: 11/15/99 Analyst: NJS

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
Acenaphthene	< 16	16	51		ug/kg		11/15/99	SW846 8270
Acenaphthylene	< 19	19	61		ug/kg		11/15/99	SW846 8270
Anthracene	< 17	17	54		ug/kg		11/15/99	SW846 8270
Benzo(a)anthracene	24	18	57		ug/kg	Q	11/15/99	SW846 8270
Benzo(a)pyrene	23	16	51		ug/kg	Q	11/15/99	SW846 8270
Benzo(b)fluoranthene	18	18	57		ug/kg	Q	11/15/99	SW846 8270
Benzo(g,h,i)perylene	22	19	61		ug/kg	Q	11/15/99	SW846 8270
Benzo(k)fluoranthene	18	18	57		ug/kg	Q	11/15/99	SW846 8270
Chrysene	27	18	57		ug/kg	Q	11/15/99	SW846 8270
Dibenzo(a,h)anthracene	< 19	19	61		ug/kg		11/15/99	SW846 8270
Fluoranthene	62	17	54		ug/kg		11/15/99	SW846 8270
Fluorene	< 17	17	54		ug/kg		11/15/99	SW846 8270
Indeno(1,2,3-cd)pyrene	19	19	61		ug/kg	Q	11/15/99	SW846 8270
1-Methylnaphthalene	< 18	18	57		ug/kg		11/15/99	SW846 8270
2-Methylnaphthalene	< 16	16	51		ug/kg		11/15/99	SW846 8270
Naphthalene	< 20	20	64		ug/kg		11/15/99	SW846 8270
Phenanthrene	38	15	48		ug/kg	Q	11/15/99	SW846 8270
Pyrene	40	18	57		ug/kg	Q	11/15/99	SW846 8270
Nitrobenzene-d5	82				%Recov		11/15/99	SW846 8270
2-Fluorobiphenyl	74				%Recov		11/15/99	SW846 8270
Terphenyl-d14	62				%Recov		11/15/99	SW846 8270

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- Analytical Report -

Project Name : JOHN'S AMOCO
Project Number : 970425
Field ID : GP-4 4-8'
Lab Sample Number : 896862-005
WI DNR LAB ID : 405132750

Client : ENVIROGEN
Report Date : 11/17/99
Collection Date : 11/8/99
Matrix Type : SOIL

Organic Results

PAH-BLANK Prep Method: SW846 8270C Prep Date: 11/15/99 Analyst: NJS

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
PAH-BLANK	710-40						11/15/99	SW846 8270C

Organic Results

VOC-BLK Prep Method: SW846 5030B Prep Date: 11/12/99 Analyst: RJN

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
VOC-BLK	720-97						11/13/99	SW846 8260

All soil results are reported on a dry weight basis unless otherwise noted.

En Chem Inc.

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- Analytical Report -

Project Name : JOHN'S AMOCO

Project Number : 970425

Client : ENVIROGEN

Field ID : GP-5 0-4'

Report Date : 11/17/99

Lab Sample Number : 896862-006

Collection Date : 11/8/99

WI DNR LAB ID : 405132750

Matrix Type : SOIL

Inorganic Results

Test	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Prep Method	Analysis Method	Analys
Solids, percent	86.5				%		11/12/99	SM2540G	SM2540G	DJB

Organic Results

Preservation Date : 11/11/99

DIESEL RANGE ORGANICS - SOIL Prep Method: WI MOD DRO Prep Date: 11/15/99 Analyst: djb

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
DIESEL RANGE ORGANICS	7700			280	mg/kg		11/15/99	WI MOD DRO
Blank spike	87.0			1.00	%recov		11/15/99	WI MOD DRO
Blank spike duplicate	105			1.00	% recov		11/15/99	WI MOD DRO
Blank	< 100			100	mg/kg		11/15/99	WI MOD DRO

Organic Results

EPA 8260 VOLATILE LIST - SOIL/METHANOL Prep Method: SW846 5030B Prep Date: 11/12/99 Analyst: RJN

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
Benzene	320	290	700		ug/kg	Q	11/15/99	SW846 8260B
Bromobenzene	< 250	250	600		ug/kg		11/15/99	SW846 8260B
Bromochloromethane	< 250	250	600		ug/kg		11/15/99	SW846 8260B
Bromodichloromethane	< 250	250	600		ug/kg		11/15/99	SW846 8260B
Bromoform	< 250	250	600		ug/kg		11/15/99	SW846 8260B
Bromomethane	< 250	250	600		ug/kg		11/15/99	SW846 8260B
s-Butylbenzene	11000	290	700		ug/kg		11/15/99	SW846 8260B
t-Butylbenzene	< 250	250	600		ug/kg		11/15/99	SW846 8260B
n-Butylbenzene	< 250	250	600		ug/kg		11/15/99	SW846 8260B
Carbon tetrachloride	< 250	250	600		ug/kg		11/15/99	SW846 8260B
Chloroform	< 250	250	600		ug/kg		11/15/99	SW846 8260B
Chlorobenzene	< 250	250	600		ug/kg		11/15/99	SW846 8260B
Chlorodibromomethane	< 250	250	600		ug/kg		11/15/99	SW846 8260B
Chloroethane	< 250	250	600		ug/kg		11/15/99	SW846 8260B
Chloromethane	< 250	250	600		ug/kg		11/15/99	SW846 8260B
2-Chlorotoluene	< 250	250	600		ug/kg		11/15/99	SW846 8260B
4-Chlorotoluene	< 250	250	600		ug/kg		11/15/99	SW846 8260B
1,2-Dibromo-3-chloropropane	< 250	250	600		ug/kg		11/15/99	SW846 8260B

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En Chem Inc.

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Fax: 920-469-8827

- Analytical Report -

Project Name : JOHN'S AMOCO

Project Number : 970425

Client : ENVIROGEN

Field ID : GP-5 0-4'

Report Date : 11/17/99

Lab Sample Number : 896862-006

Collection Date : 11/8/99

WI DNR LAB ID : 405132750

Matrix Type : SOIL

1,2-Dibromoethane	< 250	250	600	ug/kg		11/15/99	SW846 8260B
Dibromomethane	< 250	250	600	ug/kg		11/15/99	SW846 8260B
1,3-Dichlorobenzene	< 250	250	600	ug/kg		11/15/99	SW846 8260B
1,4-Dichlorobenzene	< 250	250	600	ug/kg		11/15/99	SW846 8260B
1,2-Dichloroethane	< 250	250	600	ug/kg		11/15/99	SW846 8260B
1,2-Dichlorobenzene	< 250	250	600	ug/kg		11/15/99	SW846 8260B
1,1-Dichloroethene	< 250	250	600	ug/kg		11/15/99	SW846 8260B
cis-1,2-Dichloroethene	< 250	250	600	ug/kg		11/15/99	SW846 8260B
Dichlorodifluoromethane	< 250	250	600	ug/kg		11/15/99	SW846 8260B
trans-1,2-Dichloroethene	< 250	250	600	ug/kg		11/15/99	SW846 8260B
1,2-Dichloropropane	< 250	250	600	ug/kg		11/15/99	SW846 8260B
1,1-Dichloroethane	< 250	250	600	ug/kg		11/15/99	SW846 8260B
1,3-Dichloropropane	< 250	250	600	ug/kg		11/15/99	SW846 8260B
2,2-Dichloropropane	< 250	250	600	ug/kg		11/15/99	SW846 8260B
1,1-Dichloropropene	< 250	250	600	ug/kg		11/15/99	SW846 8260B
cis-1,3-Dichloropropene	< 250	250	600	ug/kg		11/15/99	SW846 8260B
trans-1,3-Dichloropropene	< 250	250	600	ug/kg		11/15/99	SW846 8260B
Diisopropyl ether	< 250	250	600	ug/kg		11/15/99	SW846 8260B
Ethylbenzene	9800	290	700	ug/kg		11/15/99	SW846 8260B
Fluorotrichloromethane	< 250	250	600	ug/kg		11/15/99	SW846 8260B
Hexachlorobutadiene	< 250	250	600	ug/kg		11/15/99	SW846 8260B
Isopropylbenzene	5900	290	700	ug/kg		11/15/99	SW846 8260B
p-Isopropyltoluene	7300	290	700	ug/kg		11/15/99	SW846 8260B
Methylene chloride	< 250	250	600	ug/kg		11/15/99	SW846 8260B
Methyl-tert-butyl-ether	< 250	250	600	ug/kg		11/15/99	SW846 8260B
Naphthalene	42000	290	700	ug/kg		11/15/99	SW846 8260B
n-Propylbenzene	11000	290	700	ug/kg		11/15/99	SW846 8260B
Styrene	< 250	250	600	ug/kg		11/15/99	SW846 8260B
1,1,2,2-Tetrachloroethane	< 250	250	600	ug/kg		11/15/99	SW846 8260B
1,1,1,2-Tetrachloroethane	< 250	250	600	ug/kg		11/15/99	SW846 8260B
Tetrachloroethene	< 250	250	600	ug/kg		11/15/99	SW846 8260B
Toluene	360	290	700	ug/kg	Q	11/15/99	SW846 8260B
1,2,3-Trichlorobenzene	< 250	250	600	ug/kg		11/15/99	SW846 8260B
1,2,4-Trichlorobenzene	< 250	250	600	ug/kg		11/15/99	SW846 8260B
1,1,1-Trichloroethane	< 250	250	600	ug/kg		11/15/99	SW846 8260B
1,1,2-Trichloroethane	< 250	250	600	ug/kg		11/15/99	SW846 8260B
1,2,4-Trimethylbenzene	46000	290	700	ug/kg		11/15/99	SW846 8260B
Trichloroethene	< 250	250	600	ug/kg		11/15/99	SW846 8260B

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- Analytical Report -

Project Name : JOHN'S AMOCO

Project Number : 970425

Client : ENVIROGEN

Field ID : GP-5 0-4'

Report Date : 11/17/99

Lab Sample Number : 896862-006

Collection Date : 11/8/99

WI DNR LAB ID : 405132750

Matrix Type : SOIL

1,2,3-Trichloropropane	< 250	250	600	ug/kg	11/15/99	SW846 8260B
1,3,5-Trimethylbenzene	14000	290	700	ug/kg	11/15/99	SW846 8260B
Vinyl chloride	< 250	250	600	ug/kg	11/15/99	SW846 8260B
Xylenes, -m, -p	19000	290	700	ug/kg	11/15/99	SW846 8260B
Xylene, -o	8300	290	700	ug/kg	11/15/99	SW846 8260B
4-Bromofluorobenzene	99			%Recov	11/15/99	SW846 8260B
Dibromofluoromethane	113			%Recov	11/15/99	SW846 8260B
Toluene-d8	114			%Recov	11/15/99	SW846 8260B

Organic Results

PAH - SEMIVOLATILES Prep Method: SW846 3550 Prep Date: 11/15/99 Analyst: NJS

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
Acenaphthene	4300	1200	3800		ug/kg		11/16/99	SW846 8270
Acenaphthylene	< 1400	1400	4500		ug/kg		11/16/99	SW846 8270
Anthracene	< 1300	1300	4100		ug/kg		11/16/99	SW846 8270
Benzo(a)anthracene	< 1300	1300	4100		ug/kg		11/16/99	SW846 8270
Benzo(a)pyrene	< 1200	1200	3800		ug/kg		11/16/99	SW846 8270
Benzo(b)fluoranthene	< 1300	1300	4100		ug/kg		11/16/99	SW846 8270
Benzo(g,h,i)perylene	< 1400	1400	4500		ug/kg		11/16/99	SW846 8270
Benzo(k)fluoranthene	< 1300	1300	4100		ug/kg		11/16/99	SW846 8270
Chrysene	< 1300	1300	4100		ug/kg		11/16/99	SW846 8270
Dibenzo(a,h)anthracene	< 1400	1400	4500		ug/kg		11/16/99	SW846 8270
Fluoranthene	< 1200	1200	3800		ug/kg		11/16/99	SW846 8270
Fluorene	10000	1200	3800		ug/kg		11/16/99	SW846 8270
Indeno(1,2,3-cd)pyrene	< 1400	1400	4500		ug/kg		11/16/99	SW846 8270
1-Methylnaphthalene	57000	1300	4100		ug/kg		11/16/99	SW846 8270
2-Methylnaphthalene	88000	1200	3800		ug/kg		11/16/99	SW846 8270
Naphthalene	24000	1500	4800		ug/kg		11/16/99	SW846 8270
Phenanthrene	17000	1200	3800		ug/kg		11/16/99	SW846 8270
Pyrene	1700	1300	4100		ug/kg	Q	11/16/99	SW846 8270
Nitrobenzene-d5	< NA				%Recov		11/16/99	SW846 8270
2-Fluorobiphenyl	NA				%Recov		11/16/99	SW846 8270
Terphenyl-d14	NA				%Recov		11/16/99	SW846 8270

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- Analytical Report -

Project Name : JOHN'S AMOCO

Project Number : 970425

Client : ENVIROGEN

Field ID : GP-5 0-4'

Report Date : 11/17/99

Lab Sample Number : 896862-006

Collection Date : 11/8/99

WI DNR LAB ID : 405132750

Matrix Type : SOIL

Organic Results

PAH-BLANK

Prep Method: SW846 8270C Prep Date: 11/15/99 Analyst: NJS

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
PAH-BLANK	710-40						11/15/99	SW846 8270C

Organic Results

VOC-BLK

Prep Method: SW846 5030B Prep Date: 11/12/99 Analyst: RJN

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
VOC-BLK	720-97						11/13/99	SW846 8260

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- Analytical Report -

Project Name : JOHN'S AMOCO
Project Number : 970425
Field ID : GP-5 4-8'
Lab Sample Number : 896862-007
WI DNR LAB ID : 405132750

Client : ENVIROGEN
Report Date : 11/17/99
Collection Date : 11/8/99
Matrix Type : SOIL

Inorganic Results

Test	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Prep Method	Analysis Method	Analys
Solids, percent	74.8				%		11/12/99	SM2540G	SM2540G	DJB

Organic Results

Preservation Date : 11/11/99

DIESEL RANGE ORGANICS - SOIL Prep Method: WI MOD DRO Prep Date: 11/15/99 Analyst: djb

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
DIESEL RANGE ORGANICS	15000			580	mg/kg		11/15/99	WI MOD DRO
Blank spike	87.0			1.00	%recov		11/15/99	WI MOD DRO
Blank spike duplicate	105			1.00	% recov		11/15/99	WI MOD DRO
Blank	< 100			100	mg/kg		11/15/99	WI MOD DRO

Organic Results

EPA 8260 VOLATILE LIST - SOIL/METHANOL Prep Method: SW846 5030B Prep Date: 11/12/99 Analyst: RJN

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
Benzene	190	130	310		ug/kg	Q	11/16/99	SW846 8260B
Bromobenzene	< 100	100	240		ug/kg		11/16/99	SW846 8260B
Bromochloromethane	< 100	100	240		ug/kg		11/16/99	SW846 8260B
Bromodichloromethane	< 100	100	240		ug/kg		11/16/99	SW846 8260B
Bromoform	< 100	100	240		ug/kg		11/16/99	SW846 8260B
Bromomethane	< 100	100	240		ug/kg		11/16/99	SW846 8260B
s-Butylbenzene	6600	130	310		ug/kg		11/16/99	SW846 8260B
t-Butylbenzene	< 100	100	240		ug/kg		11/16/99	SW846 8260B
n-Butylbenzene	< 100	100	240		ug/kg		11/16/99	SW846 8260B
Carbon tetrachloride	< 100	100	240		ug/kg		11/16/99	SW846 8260B
Chloroform	< 100	100	240		ug/kg		11/16/99	SW846 8260B
Chlorobenzene	< 100	100	240		ug/kg		11/16/99	SW846 8260B
Chlorodibromomethane	< 100	100	240		ug/kg		11/16/99	SW846 8260B
Chloroethane	< 100	100	240		ug/kg		11/16/99	SW846 8260B
Chloromethane	< 100	100	240		ug/kg		11/16/99	SW846 8260B
2-Chlorotoluene	< 100	100	240		ug/kg		11/16/99	SW846 8260B
4-Chlorotoluene	< 100	100	240		ug/kg		11/16/99	SW846 8260B
1,2-Dibromo-3-chloropropane	< 100	100	240		ug/kg		11/16/99	SW846 8260B

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- Analytical Report -

Project Name : JOHN'S AMOCO

Project Number : 970425

Client : ENVIROGEN

Field ID : GP-5 4-8'

Report Date : 11/17/99

Lab Sample Number : 896862-007

Collection Date : 11/8/99

WI DNR LAB ID : 405132750

Matrix Type : SOIL

1,2-Dibromoethane	< 100	100	240	ug/kg		11/16/99	SW846 8260B
Dibromomethane	< 100	100	240	ug/kg		11/16/99	SW846 8260B
1,3-Dichlorobenzene	< 100	100	240	ug/kg		11/16/99	SW846 8260B
1,4-Dichlorobenzene	< 100	100	240	ug/kg		11/16/99	SW846 8260B
1,2-Dichloroethane	< 100	100	240	ug/kg		11/16/99	SW846 8260B
1,2-Dichlorobenzene	< 100	100	240	ug/kg		11/16/99	SW846 8260B
1,1-Dichloroethene	< 100	100	240	ug/kg		11/16/99	SW846 8260B
cis-1,2-Dichloroethene	< 100	100	240	ug/kg		11/16/99	SW846 8260B
Dichlorodifluoromethane	< 100	100	240	ug/kg		11/16/99	SW846 8260B
trans-1,2-Dichloroethene	< 100	100	240	ug/kg		11/16/99	SW846 8260B
1,2-Dichloropropane	< 100	100	240	ug/kg		11/16/99	SW846 8260B
1,1-Dichloroethane	< 100	100	240	ug/kg		11/16/99	SW846 8260B
1,3-Dichloropropane	< 100	100	240	ug/kg		11/16/99	SW846 8260B
2,2-Dichloropropane	< 100	100	240	ug/kg		11/16/99	SW846 8260B
1,1-Dichloropropene	< 100	100	240	ug/kg		11/16/99	SW846 8260B
cis-1,3-Dichloropropene	< 100	100	240	ug/kg		11/16/99	SW846 8260B
trans-1,3-Dichloropropene	< 100	100	240	ug/kg		11/16/99	SW846 8260B
Diisopropyl ether	< 100	100	240	ug/kg		11/16/99	SW846 8260B
Ethylbenzene	5000	130	310	ug/kg		11/16/99	SW846 8260B
Fluorotrichloromethane	< 100	100	240	ug/kg		11/16/99	SW846 8260B
Hexachlorobutadiene	< 100	100	240	ug/kg		11/16/99	SW846 8260B
Isopropylbenzene	3200	130	310	ug/kg		11/16/99	SW846 8260B
p-Isopropyltoluene	4100	130	310	ug/kg		11/16/99	SW846 8260B
Methylene chloride	< 100	100	240	ug/kg		11/16/99	SW846 8260B
Methyl-tert-butyl-ether	< 100	100	240	ug/kg		11/16/99	SW846 8260B
Naphthalene	20000	130	310	ug/kg		11/16/99	SW846 8260B
n-Propylbenzene	6300	130	310	ug/kg		11/16/99	SW846 8260B
Styrene	< 100	100	240	ug/kg		11/16/99	SW846 8260B
1,1,2,2-Tetrachloroethane	< 100	100	240	ug/kg		11/16/99	SW846 8260B
1,1,1,2-Tetrachloroethane	< 100	100	240	ug/kg		11/16/99	SW846 8260B
Tetrachloroethene	< 100	100	240	ug/kg		11/16/99	SW846 8260B
Toluene	220	130	310	ug/kg	Q	11/16/99	SW846 8260B
1,2,3-Trichlorobenzene	< 100	100	240	ug/kg		11/16/99	SW846 8260B
1,2,4-Trichlorobenzene	< 100	100	240	ug/kg		11/16/99	SW846 8260B
1,1,1-Trichloroethane	< 100	100	240	ug/kg		11/16/99	SW846 8260B
1,1,2-Trichloroethane	< 100	100	240	ug/kg		11/16/99	SW846 8260B
1,2,4-Trimethylbenzene	26000	130	310	ug/kg		11/16/99	SW846 8260B
Trichloroethene	< 100	100	240	ug/kg		11/16/99	SW846 8260B

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- Analytical Report -

Project Name : JOHN'S AMOCO

Project Number : 970425

Field ID : GP-5 4-8'

Lab Sample Number : 896862-007

WI DNR LAB ID : 405132750

Client : ENVIROGEN

Report Date : 11/17/99

Collection Date : 11/8/99

Matrix Type : SOIL

1,2,3-Trichloropropane	< 100	100	240	ug/kg		11/16/99	SW846 8260B
1,3,5-Trimethylbenzene	7500	130	310	ug/kg		11/16/99	SW846 8260B
Vinyl chloride	< 100	100	240	ug/kg		11/16/99	SW846 8260B
Xylenes, -m, -p	11000	130	310	ug/kg		11/16/99	SW846 8260B
Xylene, -o	5000	130	310	ug/kg		11/16/99	SW846 8260B
4-Bromofluorobenzene	84			%Recov		11/16/99	SW846 8260B
Dibromofluoromethane	92			%Recov		11/16/99	SW846 8260B
Toluene-d8	92			%Recov		11/16/99	SW846 8260B

Organic Results

PAH - SEMIVOLATILES — Prep Method: SW846 3550 — Prep Date: 11/15/99 — Analyst: NJS

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
Acenaphthene	1200	350	1100		ug/kg		11/15/99	SW846 8270
Acenaphthylene	< 400	400	1300		ug/kg		11/15/99	SW846 8270
Anthracene	< 370	370	1200		ug/kg		11/15/99	SW846 8270
Benzo(a)anthracene	< 390	390	1200		ug/kg		11/15/99	SW846 8270
Benzo(a)pyrene	< 350	350	1100		ug/kg		11/15/99	SW846 8270
Benzo(b)fluoranthene	< 390	390	1200		ug/kg		11/15/99	SW846 8270
Benzo(g,h,i)perylene	< 410	410	1300		ug/kg		11/15/99	SW846 8270
Benzo(k)fluoranthene	< 390	390	1200		ug/kg		11/15/99	SW846 8270
Chrysene	< 390	390	1200		ug/kg		11/15/99	SW846 8270
Dibenzo(a,h)anthracene	< 410	410	1300		ug/kg		11/15/99	SW846 8270
Fluoranthene	< 360	360	1100		ug/kg		11/15/99	SW846 8270
Fluorene	3100	360	1100		ug/kg		11/15/99	SW846 8270
Indeno(1,2,3-cd)pyrene	< 410	410	1300		ug/kg		11/15/99	SW846 8270
1-Methylnaphthalene	17000	390	1200		ug/kg		11/15/99	SW846 8270
2-Methylnaphthalene	26000	350	1100		ug/kg		11/15/99	SW846 8270
Naphthalene	6700	430	1400		ug/kg		11/15/99	SW846 8270
Phenanthrene	5500	330	1100		ug/kg		11/15/99	SW846 8270
Pyrene	570	390	1200		ug/kg	Q	11/15/99	SW846 8270
Nitrobenzene-d5	81				%Recov		11/15/99	SW846 8270
2-Fluorobiphenyl	76				%Recov		11/15/99	SW846 8270
Terphenyl-d14	79				%Recov		11/15/99	SW846 8270

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- Analytical Report -

Project Name : JOHN'S AMOCO

Project Number : 970425

Client : ENVIROGEN

Field ID : GP-5 4-8'

Report Date : 11/17/99

Lab Sample Number : 896862-007

Collection Date : 11/8/99

WI DNR LAB ID : 405132750

Matrix Type : SOIL

Organic Results

PAH-BLANK

Prep Method: SW846 8270C Prep Date: 11/15/99 Analyst: NJS

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
PAH-BLANK	710-40						11/15/99	SW846 8270C

Organic Results

VOC-BLK

Prep Method: SW846 5030B Prep Date: 11/12/99 Analyst: RJN

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
VOC-BLK	720-97						11/13/99	SW846 8260

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- Analytical Report -

Project Name : JOHN'S AMOCO

Project Number : 970425

Client : ENVIROGEN

Field ID : TRIP BLANK

Report Date : 11/16/99

Lab Sample Number : 896862-008

Collection Date : 11/8/99

WI DNR LAB ID : 405132750

Matrix Type : METHANOL

Organic Results

EPA 8260 VOLATILE LIST - METHANOL

Prep Method: SW846 5030B Prep Date: 11/12/99 Analyst: RJN

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
Benzene	< 25	25	60		ug/L		11/15/99	SW846 8260B
Bromobenzene	< 25	25	60		ug/L		11/15/99	SW846 8260B
Bromochloromethane	< 25	25	60		ug/L		11/15/99	SW846 8260B
Bromodichloromethane	< 25	25	60		ug/L		11/15/99	SW846 8260B
Bromoform	< 25	25	60		ug/L		11/15/99	SW846 8260B
Bromomethane	< 25	25	60		ug/L		11/15/99	SW846 8260B
s-Butylbenzene	< 25	25	60		ug/L		11/15/99	SW846 8260B
t-Butylbenzene	< 25	25	60		ug/L		11/15/99	SW846 8260B
n-Butylbenzene	< 25	25	60		ug/L		11/15/99	SW846 8260B
Carbon tetrachloride	< 25	25	60		ug/L		11/15/99	SW846 8260B
Chloroform	< 25	25	60		ug/L		11/15/99	SW846 8260B
Chlorobenzene	< 25	25	60		ug/L		11/15/99	SW846 8260B
Chlorodibromomethane	< 25	25	60		ug/L		11/15/99	SW846 8260B
Chloroethane	< 25	25	60		ug/L		11/15/99	SW846 8260B
Chloromethane	< 25	25	60		ug/L		11/15/99	SW846 8260B
2-Chlorotoluene	< 25	25	60		ug/L		11/15/99	SW846 8260B
4-Chlorotoluene	< 25	25	60		ug/L		11/15/99	SW846 8260B
1,2-Dibromo-3-chloropropane	< 25	25	60		ug/L		11/15/99	SW846 8260B
1,2-Dibromoethane	< 25	25	60		ug/L		11/15/99	SW846 8260B
Dibromomethane	< 25	25	60		ug/L		11/15/99	SW846 8260B
1,3-Dichlorobenzene	< 25	25	60		ug/L		11/15/99	SW846 8260B
1,4-Dichlorobenzene	< 25	25	60		ug/L		11/15/99	SW846 8260B
1,2-Dichloroethane	< 25	25	60		ug/L		11/15/99	SW846 8260B
1,2-Dichlorobenzene	< 25	25	60		ug/L		11/15/99	SW846 8260B
1,1-Dichloroethene	< 25	25	60		ug/L		11/15/99	SW846 8260B
cis-1,2-Dichloroethene	< 25	25	60		ug/L		11/15/99	SW846 8260B
Dichlorodifluoromethane	< 25	25	60		ug/L		11/15/99	SW846 8260B
trans-1,2-Dichloroethene	< 25	25	60		ug/L		11/15/99	SW846 8260B
1,2-Dichloropropane	< 25	25	60		ug/L		11/15/99	SW846 8260B
1,1-Dichloroethane	< 25	25	60		ug/L		11/15/99	SW846 8260B
1,3-Dichloropropane	< 25	25	60		ug/L		11/15/99	SW846 8260B
2,2-Dichloropropane	< 25	25	60		ug/L		11/15/99	SW846 8260B

En Chem Inc.

1795 Industrial Drive
Green Bay, WI 54302
920-469-2436
800-7-ENCHEM
Fax: 920-469-8827

- Analytical Report -

Project Name : JOHN'S AMOCO

Project Number : 970425

Client : ENVIROGEN

Field ID : TRIP BLANK

Report Date : 11/16/99

Lab Sample Number : 896862-008

Collection Date : 11/8/99

WI DNR LAB ID : 405132750

Matrix Type : METHANOL

1,1-Dichloropropene	< 25	25	60	ug/L	11/15/99	SW846 8260B
cis-1,3-Dichloropropene	< 25	25	60	ug/L	11/15/99	SW846 8260B
trans-1,3-Dichloropropene	< 25	25	60	ug/L	11/15/99	SW846 8260B
Diisopropyl ether	< 25	25	60	ug/L	11/15/99	SW846 8260B
Ethylbenzene	< 25	25	60	ug/L	11/15/99	SW846 8260B
Fluorotrichloromethane	< 25	25	60	ug/L	11/15/99	SW846 8260B
Hexachlorobutadiene	< 25	25	60	ug/L	11/15/99	SW846 8260B
Isopropylbenzene	< 25	25	60	ug/L	11/15/99	SW846 8260B
p-Isopropyltoluene	< 25	25	60	ug/L	11/15/99	SW846 8260B
Methylene chloride	< 25	25	60	ug/L	11/15/99	SW846 8260B
Methyl-tert-butyl-ether	< 25	25	60	ug/L	11/15/99	SW846 8260B
Naphthalene	< 25	25	60	ug/L	11/15/99	SW846 8260B
n-Propylbenzene	< 25	25	60	ug/L	11/15/99	SW846 8260B
Styrene	< 25	25	60	ug/L	11/15/99	SW846 8260B
1,1,2,2-Tetrachloroethane	< 25	25	60	ug/L	11/15/99	SW846 8260B
1,1,1,2-Tetrachloroethane	< 25	25	60	ug/L	11/15/99	SW846 8260B
Tetrachloroethene	< 25	25	60	ug/L	11/15/99	SW846 8260B
Toluene	< 25	25	60	ug/L	11/15/99	SW846 8260B
1,2,3-Trichlorobenzene	< 25	25	60	ug/L	11/15/99	SW846 8260B
1,2,4-Trichlorobenzene	< 25	25	60	ug/L	11/15/99	SW846 8260B
1,1,1-Trichloroethane	< 25	25	60	ug/L	11/15/99	SW846 8260B
1,1,2-Trichloroethane	< 25	25	60	ug/L	11/15/99	SW846 8260B
1,2,4-Trimethylbenzene	< 25	25	60	ug/L	11/15/99	SW846 8260B
Trichloroethene	< 25	25	60	ug/L	11/15/99	SW846 8260B
1,2,3-Trichloropropane	< 25	25	60	ug/L	11/15/99	SW846 8260B
1,3,5-Trimethylbenzene	< 25	25	60	ug/L	11/15/99	SW846 8260B
Vinyl chloride	< 25	25	60	ug/L	11/15/99	SW846 8260B
Xylenes, -m, -p	< 25	25	60	ug/L	11/15/99	SW846 8260B
Xylene, -o	< 25	25	60	ug/L	11/15/99	SW846 8260B
4-Bromofluorobenzene	99			%Recov	11/15/99	SW846 8260B
Dibromofluoromethane	101			%Recov	11/15/99	SW846 8260B
Toluene-d8	94			%Recov	11/15/99	SW846 8260B

Organic Results

VOC-BLK

Prep Method: SW846 5030B Prep Date: 11/12/99 Analyst: RJN

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
VOC-BLK	720-97						11/13/99	SW846 8260

EN CHEM INC.

☐ 1241 Bellevue St., Suite 9, Green Bay, WI 54302, 920-469-2436 • 1-800-736-2436, FAX 920-469-8827

☐ 802 Deming Way, Madison, WI 53717, 608-827-5501 • 1-888-536-2436, Fax: 608-827-5503

☐ 1423 N. 8th Street, Suite 122, Superior, WI 54880, 715-392-5844 • 1-800-837-8238, FAX 715-392-5843

BW

CHAIN OF CUSTODY

20158

Company Name: Envirogen
Branch or Location: Pewaukee
Project Contact: D. J. Burns
Telephone: (414) 549-6595
Project Number: 970425
Project Name: John's Amoco
Project Location: Berlin, WI
Sampled By (Print): Chris Jimieson

Regulatory Program (circle): (UST circled) RCRA CLP SDWA NPDES/WPDES CAA NR____ Other ____

NR720 Confirmation Analysis Required? (circle): Y N
(En Chem will not confirm unless otherwise instructed.)

Page 1 of 1
P.O. # ____ Quote # ____
Mail Report To: DJ Burns
Company: Envirogen
Address: 2835 N. Grandview Blvd, Pewaukee, WI
Invoice To: ____
Company: ____
Address: ____
Mail Invoice To: ____

ANALYSES REQUESTED

	Dry Weight	PAHs	VOCs	DRO13 *	Lead	Cd	PCB	
FILTERED? (YES/NO)	N	N	N	N	N	N	N	
PRESERVATION (CODE)*	A	A	F	A	A	A	A	

FIELD ID	SAMPLE DESCRIPTION	COLLECTION DATE	COLLECTION TIME	Dry Weight	PAHs	VOCs	DRO13 *	Lead	Cd	PCB		FIELD SCREEN	MATRIX	GOOD COND.	TOTAL BOTTLES	COMMENTS	LABORATORY NUMBER
	GP-1 4'-8'	11-8-99	11:00	X	X	X	X	X	X	X		0.3	Soil	✓	2-8L 1-703m	1-703	001
	GP-1 12'-16'	↓	1145	X	X	X	X	X	X	X		0	↓	↓	↓		002
	GP-2 4-5'	↓	1225	X	X	X	X					1.0	↓	↓	1-8L 1-503	1-703-m 1-703	003
	GP-3 4-5'	↓	2:00	X	X	X	X					0	↓	↓	↓		004
	GP-4 4-8'	↓	3:00	X	X	X	X					22	↓	↓	↓		005
	GP-5 1-4'	↓	3:30	X	X	X	X					206	↓	↓	↓		006
	GP-5 4-9'	↓	3:40	X	X	X	X					1448	↓	↓	↓		007
	Trip Blank	↓	9:00am			X						—	Meth.	✓	1-703m		008

SHADED AREA FOR LABORATORY USE ONLY

* Report DRO, Cd and only ... per DJ LW 11/12/99

Relinquished By:	Date/Time:	Received By:	Date/Time:
Chris Jimieson	11/8/99 6:45pm	[signature]	11/10/99 11:a
[signature]	11/10/99 12:30	[signature]	11/10/99 1230
[signature]	11/10/99 1620		
		Received By (En Chem): [signature]	11/...

En Chem Project No.: 896862
Sample Receipt Temp.: ROI
Sample Receipt pH (Wet/Metals): ____

*Preservation Code
A=None B=HCL C=H2SO4
D=HN03 E=EnCore F=Methanol**
G=NaOH O=Other (Indicate)

**If not using En Chem's methanol, indicate volume of methanol added and mark the appropriate samples.

Synergy Environmental Lab,

1990 Prospect Ct., Appleton, WI 54914 *P 920-830-2455 * F 920-733-0631

RON ANDERSON
METCO
1421 U.S. HIGHWAY 16
LA CROSSE, WI 54601

Report Date *22-Mar-12*

Project Name HELMRICK SERVICE STATION **Invoice #** E23536
Project #

Lab Code 5023536A
Sample ID SA-1
Sample Matrix Soil
Sample Date 3/14/2012

	Result	Units	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
General										
General										
Solids Percent	74.7	%			1	5021		3/16/2012	MJR	1
Organic										
GRO/PVOC + Naphthalene										
Gasoline Range Organics	< 10	mg/kg	1.6	5.2	1	GRO95/8021		3/21/2012	CJR	1
Benzene	126	ug/kg	2.9	9.3	1	GRO95/8021		3/21/2012	CJR	1
Ethylbenzene	< 25	ug/kg	2.6	8.2	1	GRO95/8021		3/21/2012	CJR	1
Methyl tert-butyl ether (MTBE)	< 25	ug/kg	8.1	26	1	GRO95/8021		3/21/2012	CJR	1
Naphthalene	< 25	ug/kg	8.4	27	1	GRO95/8021		3/21/2012	CJR	1
Toluene	< 25	ug/kg	3.6	11	1	GRO95/8021		3/21/2012	CJR	1
1,2,4-Trimethylbenzene	< 25	ug/kg	2.7	8.6	1	GRO95/8021		3/21/2012	CJR	1
1,3,5-Trimethylbenzene	< 25	ug/kg	3	9.6	1	GRO95/8021		3/21/2012	CJR	1
m&p-Xylene	< 50	ug/kg	5.2	17	1	GRO95/8021		3/21/2012	CJR	1
o-Xylene	< 25	ug/kg	6.3	20	1	GRO95/8021		3/21/2012	CJR	1

Lab Code 5023536B
Sample ID SA-2
Sample Matrix Soil
Sample Date 3/14/2012

	Result	Units	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
General										
General										
Solids Percent	68.3	%			1	5021		3/16/2012	MJR	1
Organic										
GRO/PVOC + Naphthalene										
Gasoline Range Organics	< 10	mg/kg	1.6	5.2	1	GRO95/8021		3/21/2012	CJR	1
Benzene	233	ug/kg	2.9	9.3	1	GRO95/8021		3/21/2012	CJR	1
Ethylbenzene	< 25	ug/kg	2.6	8.2	1	GRO95/8021		3/21/2012	CJR	1

Project Name HELMRICK SERVICE STATION **Invoice #** E23536
Project #

Lab Code 5023536B
Sample ID SA-2
Sample Matrix Soil
Sample Date 3/14/2012

	Result	Units	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
Methyl tert-butyl ether (MTBE)	< 25	ug/kg	8.1	26	1	GRO95/8021		3/21/2012	CJR	1
Naphthalene	< 25	ug/kg	8.4	27	1	GRO95/8021		3/21/2012	CJR	1
Toluene	< 25	ug/kg	3.6	11	1	GRO95/8021		3/21/2012	CJR	1
1,2,4-Trimethylbenzene	< 25	ug/kg	2.7	8.6	1	GRO95/8021		3/21/2012	CJR	1
1,3,5-Trimethylbenzene	25.7	ug/kg	3	9.6	1	GRO95/8021		3/21/2012	CJR	1
m&p-Xylene	< 50	ug/kg	5.2	17	1	GRO95/8021		3/21/2012	CJR	1
o-Xylene	< 25	ug/kg	6.3	20	1	GRO95/8021		3/21/2012	CJR	1

Lab Code 5023536C
Sample ID SA-3
Sample Matrix Soil
Sample Date 3/14/2012

	Result	Units	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
General										
General										
Solids Percent	73.3	%			1	5021		3/16/2012	MJR	1
Organic										
GRO/PVOC + Naphthalene										
Gasoline Range Organics	< 10	mg/kg	1.6	5.2	1	GRO95/8021		3/21/2012	CJR	1
Benzene	94	ug/kg	2.9	9.3	1	GRO95/8021		3/21/2012	CJR	1
Ethylbenzene	< 25	ug/kg	2.6	8.2	1	GRO95/8021		3/21/2012	CJR	1
Methyl tert-butyl ether (MTBE)	< 25	ug/kg	8.1	26	1	GRO95/8021		3/21/2012	CJR	1
Naphthalene	< 25	ug/kg	8.4	27	1	GRO95/8021		3/21/2012	CJR	1
Toluene	< 25	ug/kg	3.6	11	1	GRO95/8021		3/21/2012	CJR	1
1,2,4-Trimethylbenzene	< 25	ug/kg	2.7	8.6	1	GRO95/8021		3/21/2012	CJR	1
1,3,5-Trimethylbenzene	< 25	ug/kg	3	9.6	1	GRO95/8021		3/21/2012	CJR	1
m&p-Xylene	< 50	ug/kg	5.2	17	1	GRO95/8021		3/21/2012	CJR	1
o-Xylene	< 25	ug/kg	6.3	20	1	GRO95/8021		3/21/2012	CJR	1

Lab Code 5023536D
Sample ID SA-4
Sample Matrix Soil
Sample Date 3/14/2012

	Result	Units	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
General										
General										
Solids Percent	71.6	%			1	5021		3/16/2012	MJR	1
Organic										
GRO/PVOC + Naphthalene										
Gasoline Range Organics	< 10	mg/kg	1.6	5.2	1	GRO95/8021		3/21/2012	CJR	1
Benzene	41	ug/kg	2.9	9.3	1	GRO95/8021		3/21/2012	CJR	1
Ethylbenzene	< 25	ug/kg	2.6	8.2	1	GRO95/8021		3/21/2012	CJR	1
Methyl tert-butyl ether (MTBE)	< 25	ug/kg	8.1	26	1	GRO95/8021		3/21/2012	CJR	1
Naphthalene	< 25	ug/kg	8.4	27	1	GRO95/8021		3/21/2012	CJR	1
Toluene	28.9	ug/kg	3.6	11	1	GRO95/8021		3/21/2012	CJR	1
1,2,4-Trimethylbenzene	< 25	ug/kg	2.7	8.6	1	GRO95/8021		3/21/2012	CJR	1
1,3,5-Trimethylbenzene	29.2	ug/kg	3	9.6	1	GRO95/8021		3/21/2012	CJR	1
m&p-Xylene	< 50	ug/kg	5.2	17	1	GRO95/8021		3/21/2012	CJR	1
o-Xylene	< 25	ug/kg	6.3	20	1	GRO95/8021		3/21/2012	CJR	1

Project Name HELMRICK SERVICE STATION **Invoice #** E23536
Project #

Lab Code 5023536E
Sample ID SA-5
Sample Matrix Soil
Sample Date 3/14/2012

	Result	Units	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
General										
General										
Solids Percent	72.9	%			1	5021		3/16/2012	MJR	1
Organic										
GRO/PVOC + Naphthalene										
Gasoline Range Organics	< 10	mg/kg	1.6	5.2	1	GRO95/8021		3/21/2012	CJR	1
Benzene	79	ug/kg	2.9	9.3	1	GRO95/8021		3/21/2012	CJR	1
Ethylbenzene	< 25	ug/kg	2.6	8.2	1	GRO95/8021		3/21/2012	CJR	1
Methyl tert-butyl ether (MTBE)	< 25	ug/kg	8.1	26	1	GRO95/8021		3/21/2012	CJR	1
Naphthalene	< 25	ug/kg	8.4	27	1	GRO95/8021		3/21/2012	CJR	1
Toluene	< 25	ug/kg	3.6	11	1	GRO95/8021		3/21/2012	CJR	1
1,2,4-Trimethylbenzene	< 25	ug/kg	2.7	8.6	1	GRO95/8021		3/21/2012	CJR	1
1,3,5-Trimethylbenzene	< 25	ug/kg	3	9.6	1	GRO95/8021		3/21/2012	CJR	1
m&p-Xylene	< 50	ug/kg	5.2	17	1	GRO95/8021		3/21/2012	CJR	1
o-Xylene	< 25	ug/kg	6.3	20	1	GRO95/8021		3/21/2012	CJR	1

Lab Code 5023536F
Sample ID SA-6
Sample Matrix Soil
Sample Date 3/14/2012

	Result	Units	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
General										
General										
Solids Percent	73.5	%			1	5021		3/16/2012	MJR	1
Organic										
GRO/PVOC + Naphthalene										
Gasoline Range Organics	< 10	mg/kg	1.6	5.2	1	GRO95/8021		3/22/2012	CJR	1
Benzene	53	ug/kg	2.9	9.3	1	GRO95/8021		3/22/2012	CJR	1
Ethylbenzene	< 25	ug/kg	2.6	8.2	1	GRO95/8021		3/22/2012	CJR	1
Methyl tert-butyl ether (MTBE)	< 25	ug/kg	8.1	26	1	GRO95/8021		3/22/2012	CJR	1
Naphthalene	< 25	ug/kg	8.4	27	1	GRO95/8021		3/22/2012	CJR	1
Toluene	< 25	ug/kg	3.6	11	1	GRO95/8021		3/22/2012	CJR	1
1,2,4-Trimethylbenzene	< 25	ug/kg	2.7	8.6	1	GRO95/8021		3/22/2012	CJR	1
1,3,5-Trimethylbenzene	< 25	ug/kg	3	9.6	1	GRO95/8021		3/22/2012	CJR	1
m&p-Xylene	< 50	ug/kg	5.2	17	1	GRO95/8021		3/22/2012	CJR	1
o-Xylene	< 25	ug/kg	6.3	20	1	GRO95/8021		3/22/2012	CJR	1

Lab Code 5023536G
Sample ID SA-7
Sample Matrix Soil
Sample Date 3/14/2012

	Result	Units	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
General										
General										
Solids Percent	75.5	%			1	5021		3/16/2012	MJR	1
Organic										
GRO/PVOC + Naphthalene										
Gasoline Range Organics	< 10	mg/kg	1.6	5.2	1	GRO95/8021		3/22/2012	CJR	1
Benzene	144	ug/kg	2.9	9.3	1	GRO95/8021		3/22/2012	CJR	1

Project Name HELMRICK SERVICE STATION **Invoice #** E23536
Project #

Lab Code 5023536G
Sample ID SA-7
Sample Matrix Soil
Sample Date 3/14/2012

	Result	Units	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
Ethylbenzene	< 25	ug/kg	2.6	8.2	1	GRO95/8021		3/22/2012	CJR	1
Methyl tert-butyl ether (MTBE)	< 25	ug/kg	8.1	26	1	GRO95/8021		3/22/2012	CJR	1
Naphthalene	< 25	ug/kg	8.4	27	1	GRO95/8021		3/22/2012	CJR	1
Toluene	< 25	ug/kg	3.6	11	1	GRO95/8021		3/22/2012	CJR	1
1,2,4-Trimethylbenzene	< 25	ug/kg	2.7	8.6	1	GRO95/8021		3/22/2012	CJR	1
1,3,5-Trimethylbenzene	< 25	ug/kg	3	9.6	1	GRO95/8021		3/22/2012	CJR	1
m&p-Xylene	< 50	ug/kg	5.2	17	1	GRO95/8021		3/22/2012	CJR	1
o-Xylene	< 25	ug/kg	6.3	20	1	GRO95/8021		3/22/2012	CJR	1

"J" Flag: Analyte detected between LOD and LOQ LOD Limit of Detection LOQ Limit of Quantitation

Code	*Comment*
1	Laboratory QC within limits.

All solid sample results reported on a dry weight basis unless otherwise indicated. All LOD's and LOQ's are adjusted for dilutions but not dry weight. Subcontracted results are denoted by SUB in the analyst field.

Authorized Signature Michael J. Ricker

CHAIN OF CUSTODY RECORD

Synergy Environmental Lab, Inc.

1990 Prospect Ct. • Appleton, WI 54914
920-830-2455 • FAX 920-733-0631

Chain # No 3161
Page 1 of 1

Sample Handling Request
___ Rush Analysis Date Required ____
(Rushes accepted only with prior authorization)
X Normal Turn Around

Lab I.D. #
Account No. : Quote No.:
Project #:
Sampler: (signature)

Project (Name / Location): Helmrick Service Station

Reports To: Mepco	Invoice To: Mepco
Company	Company
Address	Address
City State Zip	City State Zip
Phone	Phone
FAX	FAX

Lab I.D.	Sample I.D.	Collection Date	Collection Time	Comp	Grab	Filtered Y/N	No. of Containers	Sample Type (Matrix)*	Preservation	DRO (Mod DRO Sep 95)	GRO (Mod GRO Sep 95)	IRON	LEAD	NITRATE / NITRITE	PAH (EPA 8270)	PVOC (EPA 8021)	PVOC + NAPHTHALENE	SULFATE	VOC DW (EPA 524.2)	VOC (EPA 8260)	8-RCRA METALS	PID/ FID
502536-A	SA-1	3/14/12	1245		X		1	S	Meoh		X						X					
B	SA-2	"	1250		X		1	S	"		X						X					
C	SA-3	"	1253		X		1	S	"		X						X					
D	SA-4	"	1259		X		1	S	"		X						X					
E	SA-5	"	103		X		1	S	"		X						X					
F	SA-6	"	106		X		1	S	"		X						X					
G	SA-7	"	143		X		1	S	"		X						X					

Comments/Special Instructions (*Specify groundwater "GW", Drinking Water "DW", Waste Water "WW", Soil "S", Air "A", Oil, Sludge etc.)

Sample Integrity - To be completed by receiving lab.
Method of Shipment: Driven
Temp. of Temp. Blank. ____ °C On Ice: Y
Cooler seal intact upon receipt: ____ Yes ____ No

Relinquished By: (sign)	Time	Date	Received By: (sign)	Time	Date

Received in Laboratory By: [signature] Time: 8:10 Date: 3.16.12

Synergy Environmental Lab,

1990 Prospect Ct., Appleton, WI 54914 *P 920-830-2455 * F 920-733-0631

JOHN HELMRICK
JOHN HELMRICK
280 BROADWAY STREET
BERLIN, WI 54923

Report Date *20-Aug-13*

Project Name HELMRICK SERVICE STATION **Invoice #** E25576
Project #

Lab Code 5025576A
Sample ID MW-1-1
Sample Matrix Soil
Sample Date 8/6/2013

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
General										
General										
Solids Percent	91.5	%			1	5021		8/9/2013	MDK	1
Inorganic										
Metals										
Cadmium, Total	< 0.08	mg/Kg	0.08	0.25	1	6010B		8/13/2013	CWT	1
Lead, Total	< 1.5	mg/Kg	1.5	4.8	5	6010B		8/14/2013	CWT	1 49

"J" Flag: Analyte detected between LOD and LOQ LOD Limit of Detection LOQ Limit of Quantitation

Code	*Comment*
1	Laboratory QC within limits.
49	Sample diluted to compensate for matrix interference.

CWT denotes sub contract lab - Certification #445126660

All solid sample results reported on a dry weight basis unless otherwise indicated. All LOD's and LOQ's are adjusted for dilutions but not dry weight. Subcontracted results are denoted by SUB in the analyst field.

Authorized Signature *Michael Ricker*

CHAIN OF CUSTODY RECORD

Synergy Environmental Lab, Inc.

1990 Prospect Ct. • Appleton, WI 54914
920-830-2455 • FAX 920-733-0631

Chain # No 0688

Page 1 of 1

Sample Handling Request
___ Rush Analysis Date Required ____
(Rushes accepted only with prior authorization)
X Normal Turn Around

Lab I.D. #

Account No. : **Quote No.:**

Project #:

Sampler: (signature)

Project (Name / Location): Helmrich Service Station

Reports To: John Helmrich	Invoice To: John Helmrich c/o Jason Powell
Company Johns Amoco	Company METCO
Address 280 Broadway St	Address 709 Gillette St, Suite 3
City State Zip Berlin, WI 54923	City State Zip La Crosse WI 54603
Phone (920) 361-0535	Phone (608) 781-5579
FAX	FAX 8893

Analysis Requested | **Other Analysis**

Lab I.D.	Sample I.D.	Collection Date	Collection Time	Comp	Grab	Filtered Y/N	No. of Containers	Sample Type (Matrix)*	Preservation	DRO (Mod DRO Sep 95)	GRO (Mod GRO Sep 95)	IRON	LEAD	NITRATE / NITRITE	PAH (EPA 8270)	PVOC (EPA 8021)	PVOC + NAPHTHALENE	SULFATE	VOC DW (EPA 524.2)	VOC (EPA 8260)	8-RCRA METALS	Cadmium	PID/ FID
5e25576A	MW-1-1	8/6/13	9:00		X		1	S	None				X								X		

Comments/Special Instructions (*Specify groundwater "GW", Drinking Water "DW", Waste Water "WW", Soil "S", Air "A", Oil, Sludge etc.)

Lab to send copy of report to METCO

UEC Rates . Agent Status

Sample Integrity - To be completed by receiving lab.
Method of Shipment :
Temp. of Temp. Blank. ____ °C On Ice: X
Cooler seal intact upon receipt: X Yes ____ No

Relinquished By: (sign)	Time	Date	Received By: (sign)	Time	Date
	8:30 AM	8/9/13			

Received in Laboratory By: Time: 8:00 Date: 8/8/13

Synergy Environmental Lab,

1990 Prospect Ct., Appleton, WI 54914 *P 920-830-2455 * F 920-733-0631

JOHN'S AMOCO
JOHN HELMRICK
280 BROADWAY STREET
BERLIN, WI 54923

Report Date *27-Nov-13*

Project Name HELMRICK SERVICE STATION **Invoice #** E25931
Project #

Lab Code 5025931A
Sample ID MW-2
Sample Matrix water
Sample Date 10/10/2013

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
Inorganic										
Metals										
Cadmium, Dissolved	< 0.5	ug/L	0.5	1.7	1	200.7		10/17/2013	CWT	1
Iron, Dissolved	0.10 "J"	mg/l	0.06	0.21	1	200.7		10/17/2013	CWT	1
Lead, Dissolved	< 0.7	ug/L	0.7	2.5	1	7421		10/18/2013	CWT	1
Manganese, Dissolved	58.1	ug/l	4.8	15.4	1	200.7		10/17/2013	CWT	1
Organic										
PAH SIM										
Acenaphthene	< 0.021	ug/l	0.021	0.068	1	M8270D	10/17/2013	10/19/2013	MDK	1
Acenaphthylene	< 0.02	ug/l	0.02	0.063	1	M8270D	10/17/2013	10/19/2013	MDK	1
Anthracene	< 0.02	ug/l	0.02	0.064	1	M8270D	10/17/2013	10/19/2013	MDK	1
Benzo(a)anthracene	< 0.025	ug/l	0.025	0.078	1	M8270D	10/17/2013	10/19/2013	MDK	1
Benzo(a)pyrene	< 0.018	ug/l	0.018	0.058	1	M8270D	10/17/2013	10/19/2013	MDK	1
Benzo(b)fluoranthene	< 0.02	ug/l	0.02	0.063	1	M8270D	10/17/2013	10/19/2013	MDK	1
Benzo(g,h,i)perylene	< 0.023	ug/l	0.023	0.075	1	M8270D	10/17/2013	10/19/2013	MDK	1
Benzo(k)fluoranthene	< 0.027	ug/l	0.027	0.087	1	M8270D	10/17/2013	10/19/2013	MDK	1
Chrysene	< 0.018	ug/l	0.018	0.058	1	M8270D	10/17/2013	10/19/2013	MDK	1
Dibenzo(a,h)anthracene	< 0.023	ug/l	0.023	0.072	1	M8270D	10/17/2013	10/19/2013	MDK	1
Fluoranthene	< 0.026	ug/l	0.026	0.084	1	M8270D	10/17/2013	10/19/2013	MDK	1
Fluorene	< 0.02	ug/l	0.02	0.063	1	M8270D	10/17/2013	10/19/2013	MDK	1
Indeno(1,2,3-cd)pyrene	< 0.027	ug/l	0.027	0.085	1	M8270D	10/17/2013	10/19/2013	MDK	1
1-Methyl naphthalene	< 0.019	ug/l	0.019	0.061	1	M8270D	10/17/2013	10/19/2013	MDK	1
2-Methyl naphthalene	< 0.016	ug/l	0.016	0.052	1	M8270D	10/17/2013	10/19/2013	MDK	1
Naphthalene	< 0.023	ug/l	0.023	0.075	1	M8270D	10/17/2013	10/19/2013	MDK	1
Phenanthrene	< 0.018	ug/l	0.018	0.059	1	M8270D	10/17/2013	10/19/2013	MDK	1
Pyrene	< 0.025	ug/l	0.025	0.08	1	M8270D	10/17/2013	10/19/2013	MDK	1
VOC's										
Benzene	< 0.24	ug/l	0.24	0.77	1	8260B		10/17/2013	CJR	1
Bromobenzene	< 0.32	ug/l	0.32	1	1	8260B		10/17/2013	CJR	1
Bromodichloromethane	< 0.37	ug/l	0.37	1.2	1	8260B		10/17/2013	CJR	1
Bromoform	< 0.35	ug/l	0.35	1.1	1	8260B		10/17/2013	CJR	1
tert-Butylbenzene	< 0.36	ug/l	0.36	1.2	1	8260B		10/17/2013	CJR	1
sec-Butylbenzene	< 0.33	ug/l	0.33	1	1	8260B		10/17/2013	CJR	1

Project Name HELMRICK SERVICE STATION **Invoice #** E25931
Project #

Lab Code 5025931A
Sample ID MW-2
Sample Matrix water
Sample Date 10/10/2013

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
n-Butylbenzene	< 0.35	ug/l	0.35	1.1	1	8260B		10/17/2013	CJR	1
Carbon Tetrachloride	< 0.33	ug/l	0.33	1.1	1	8260B		10/17/2013	CJR	1
Chlorobenzene	< 0.24	ug/l	0.24	0.77	1	8260B		10/17/2013	CJR	1
Chloroethane	< 0.63	ug/l	0.63	2	1	8260B		10/17/2013	CJR	1
Chloroform	< 0.28	ug/l	0.28	0.88	1	8260B		10/17/2013	CJR	1
Chloromethane	< 0.81	ug/l	0.81	2.6	1	8260B		10/17/2013	CJR	1
2-Chlorotoluene	< 0.21	ug/l	0.21	0.66	1	8260B		10/17/2013	CJR	1
4-Chlorotoluene	< 0.21	ug/l	0.21	0.68	1	8260B		10/17/2013	CJR	1
1,2-Dibromo-3-chloropropane	< 0.88	ug/l	0.88	2.8	1	8260B		10/17/2013	CJR	1
Dibromochloromethane	< 0.22	ug/l	0.22	0.7	1	8260B		10/17/2013	CJR	1
1,4-Dichlorobenzene	< 0.3	ug/l	0.3	0.96	1	8260B		10/17/2013	CJR	1
1,3-Dichlorobenzene	< 0.28	ug/l	0.28	0.89	1	8260B		10/17/2013	CJR	1
1,2-Dichlorobenzene	< 0.36	ug/l	0.36	1.2	1	8260B		10/17/2013	CJR	1
Dichlorodifluoromethane	< 0.44	ug/l	0.44	1.4	1	8260B		10/17/2013	CJR	1
1,2-Dichloroethane	< 0.41	ug/l	0.41	1.3	1	8260B		10/17/2013	CJR	1
1,1-Dichloroethane	< 0.3	ug/l	0.3	0.97	1	8260B		10/17/2013	CJR	1
1,1-Dichloroethene	< 0.4	ug/l	0.4	1.3	1	8260B		10/17/2013	CJR	1
cis-1,2-Dichloroethene	< 0.38	ug/l	0.38	1.2	1	8260B		10/17/2013	CJR	1
trans-1,2-Dichloroethene	< 0.35	ug/l	0.35	1.1	1	8260B		10/17/2013	CJR	1
1,2-Dichloropropane	< 0.32	ug/l	0.32	1	1	8260B		10/17/2013	CJR	1
2,2-Dichloropropane	< 0.36	ug/l	0.36	1.2	1	8260B		10/17/2013	CJR	1
1,3-Dichloropropane	< 0.33	ug/l	0.33	1	1	8260B		10/17/2013	CJR	4 8
Di-isopropyl ether	< 0.23	ug/l	0.23	0.73	1	8260B		10/17/2013	CJR	1
EDB (1,2-Dibromoethane)	< 0.44	ug/l	0.44	1.4	1	8260B		10/17/2013	CJR	1
Ethylbenzene	< 0.55	ug/l	0.55	1.7	1	8260B		10/17/2013	CJR	1
Hexachlorobutadiene	< 1.5	ug/l	1.5	4.8	1	8260B		10/17/2013	CJR	1
Isopropylbenzene	< 0.3	ug/l	0.3	0.96	1	8260B		10/17/2013	CJR	1
p-Isopropyltoluene	< 0.31	ug/l	0.31	0.98	1	8260B		10/17/2013	CJR	1
Methylene chloride	< 0.5	ug/l	0.5	1.6	1	8260B		10/17/2013	CJR	1
Methyl tert-butyl ether (MTBE)	< 0.23	ug/l	0.23	0.74	1	8260B		10/17/2013	CJR	1
Naphthalene	< 1.7	ug/l	1.7	5.5	1	8260B		10/17/2013	CJR	1
n-Propylbenzene	< 0.25	ug/l	0.25	0.81	1	8260B		10/17/2013	CJR	1
1,1,2,2-Tetrachloroethane	< 0.45	ug/l	0.45	1.4	1	8260B		10/17/2013	CJR	1
1,1,1,2-Tetrachloroethane	< 0.33	ug/l	0.33	1.1	1	8260B		10/17/2013	CJR	1
Tetrachloroethene	< 0.33	ug/l	0.33	1.1	1	8260B		10/17/2013	CJR	1
Toluene	< 0.69	ug/l	0.69	2.2	1	8260B		10/17/2013	CJR	1
1,2,4-Trichlorobenzene	< 0.98	ug/l	0.98	3.1	1	8260B		10/17/2013	CJR	1
1,2,3-Trichlorobenzene	< 1.8	ug/l	1.8	5.8	1	8260B		10/17/2013	CJR	1
1,1,1-Trichloroethane	< 0.33	ug/l	0.33	1	1	8260B		10/17/2013	CJR	1
1,1,2-Trichloroethane	< 0.34	ug/l	0.34	1.1	1	8260B		10/17/2013	CJR	1
Trichloroethene (TCE)	< 0.33	ug/l	0.33	1	1	8260B		10/17/2013	CJR	1
Trichlorofluoromethane	< 0.71	ug/l	0.71	2.3	1	8260B		10/17/2013	CJR	1
1,2,4-Trimethylbenzene	< 2.2	ug/l	2.2	6.9	1	8260B		10/17/2013	CJR	1
1,3,5-Trimethylbenzene	< 1.4	ug/l	1.4	4.5	1	8260B		10/17/2013	CJR	1
Vinyl Chloride	< 0.18	ug/l	0.18	0.57	1	8260B		10/17/2013	CJR	1
m&p-Xylene	< 0.69	ug/l	0.69	2.2	1	8260B		10/17/2013	CJR	1
o-Xylene	< 0.63	ug/l	0.63	2	1	8260B		10/17/2013	CJR	1
SUR - Toluene-d8	100	REC %			1	8260B		10/17/2013	CJR	1
SUR - 1,2-Dichloroethane-d4	98	REC %			1	8260B		10/17/2013	CJR	1
SUR - 4-Bromofluorobenzene	100	REC %			1	8260B		10/17/2013	CJR	1
SUR - Dibromofluoromethane	99	REC %			1	8260B		10/17/2013	CJR	1
Wet Chemistry										
General										
Nitrite Plus Nitrate, Dissolved	0.29 "J"	mg/l	0.1	0.31	1	4500B/F		10/15/2013	CWT	1
Sulfate, Dissolved	50.3	mg/l	3.4	10.6	2	300.0		10/21/2013	CWT	1

Project Name HELMRICK SERVICE STATION **Invoice #** E25931
Project #

Lab Code 5025931B
Sample ID MW-3
Sample Matrix water
Sample Date 10/10/2013

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
Inorganic										
Metals										
Cadmium, Dissolved	< 0.5	ug/L	0.5	1.7	1	200.7		10/17/2013	CWT	1
Iron, Dissolved	< 0.06	mg/l	0.06	0.21	1	200.7		10/17/2013	CWT	1
Lead, Dissolved	< 0.7	ug/L	0.7	2.5	1	7421		10/18/2013	CWT	1
Manganese, Dissolved	190	ug/l	4.8	15.4	1	200.7		10/17/2013	CWT	1
Organic										
PAH SIM										
Acenaphthene	< 0.021	ug/l	0.021	0.068	1	M8270D	10/17/2013	10/19/2013	MDK	1
Acenaphthylene	< 0.02	ug/l	0.02	0.063	1	M8270D	10/17/2013	10/19/2013	MDK	1
Anthracene	< 0.02	ug/l	0.02	0.064	1	M8270D	10/17/2013	10/19/2013	MDK	1
Benzo(a)anthracene	< 0.025	ug/l	0.025	0.078	1	M8270D	10/17/2013	10/19/2013	MDK	1
Benzo(a)pyrene	< 0.018	ug/l	0.018	0.058	1	M8270D	10/17/2013	10/19/2013	MDK	1
Benzo(b)fluoranthene	< 0.02	ug/l	0.02	0.063	1	M8270D	10/17/2013	10/19/2013	MDK	1
Benzo(g,h,i)perylene	< 0.023	ug/l	0.023	0.075	1	M8270D	10/17/2013	10/19/2013	MDK	1
Benzo(k)fluoranthene	< 0.027	ug/l	0.027	0.087	1	M8270D	10/17/2013	10/19/2013	MDK	1
Chrysene	< 0.018	ug/l	0.018	0.058	1	M8270D	10/17/2013	10/19/2013	MDK	1
Dibenzo(a,h)anthracene	< 0.023	ug/l	0.023	0.072	1	M8270D	10/17/2013	10/19/2013	MDK	1
Fluoranthene	< 0.026	ug/l	0.026	0.084	1	M8270D	10/17/2013	10/19/2013	MDK	1
Fluorene	< 0.02	ug/l	0.02	0.063	1	M8270D	10/17/2013	10/19/2013	MDK	1
Indeno(1,2,3-cd)pyrene	< 0.027	ug/l	0.027	0.085	1	M8270D	10/17/2013	10/19/2013	MDK	1
1-Methyl naphthalene	0.022 "J"	ug/l	0.019	0.061	1	M8270D	10/17/2013	10/19/2013	MDK	1
2-Methyl naphthalene	0.024 "J"	ug/l	0.016	0.052	1	M8270D	10/17/2013	10/19/2013	MDK	1
Naphthalene	< 0.023	ug/l	0.023	0.075	1	M8270D	10/17/2013	10/19/2013	MDK	1
Phenanthrene	0.022 "J"	ug/l	0.018	0.059	1	M8270D	10/17/2013	10/19/2013	MDK	1
Pyrene	< 0.025	ug/l	0.025	0.08	1	M8270D	10/17/2013	10/19/2013	MDK	1
VOC's										
Benzene	0.40 "J"	ug/l	0.24	0.77	1	8260B		10/17/2013	CJR	1
Bromobenzene	< 0.32	ug/l	0.32	1	1	8260B		10/17/2013	CJR	1
Bromodichloromethane	< 0.37	ug/l	0.37	1.2	1	8260B		10/17/2013	CJR	1
Bromoform	< 0.35	ug/l	0.35	1.1	1	8260B		10/17/2013	CJR	1
tert-Butylbenzene	< 0.36	ug/l	0.36	1.2	1	8260B		10/17/2013	CJR	1
sec-Butylbenzene	< 0.33	ug/l	0.33	1	1	8260B		10/17/2013	CJR	1
n-Butylbenzene	< 0.35	ug/l	0.35	1.1	1	8260B		10/17/2013	CJR	1
Carbon Tetrachloride	< 0.33	ug/l	0.33	1.1	1	8260B		10/17/2013	CJR	1
Chlorobenzene	< 0.24	ug/l	0.24	0.77	1	8260B		10/17/2013	CJR	1
Chloroethane	< 0.63	ug/l	0.63	2	1	8260B		10/17/2013	CJR	1
Chloroform	< 0.28	ug/l	0.28	0.88	1	8260B		10/17/2013	CJR	1
Chloromethane	< 0.81	ug/l	0.81	2.6	1	8260B		10/17/2013	CJR	1
2-Chlorotoluene	< 0.21	ug/l	0.21	0.66	1	8260B		10/17/2013	CJR	1
4-Chlorotoluene	< 0.21	ug/l	0.21	0.68	1	8260B		10/17/2013	CJR	1
1,2-Dibromo-3-chloropropane	< 0.88	ug/l	0.88	2.8	1	8260B		10/17/2013	CJR	1
Dibromochloromethane	< 0.22	ug/l	0.22	0.7	1	8260B		10/17/2013	CJR	1
1,4-Dichlorobenzene	< 0.3	ug/l	0.3	0.96	1	8260B		10/17/2013	CJR	1
1,3-Dichlorobenzene	< 0.28	ug/l	0.28	0.89	1	8260B		10/17/2013	CJR	1
1,2-Dichlorobenzene	< 0.36	ug/l	0.36	1.2	1	8260B		10/17/2013	CJR	1
Dichlorodifluoromethane	< 0.44	ug/l	0.44	1.4	1	8260B		10/17/2013	CJR	1
1,2-Dichloroethane	< 0.41	ug/l	0.41	1.3	1	8260B		10/17/2013	CJR	1
1,1-Dichloroethane	< 0.3	ug/l	0.3	0.97	1	8260B		10/17/2013	CJR	1
1,1-Dichloroethene	< 0.4	ug/l	0.4	1.3	1	8260B		10/17/2013	CJR	1
cis-1,2-Dichloroethene	< 0.38	ug/l	0.38	1.2	1	8260B		10/17/2013	CJR	1
trans-1,2-Dichloroethene	< 0.35	ug/l	0.35	1.1	1	8260B		10/17/2013	CJR	1
1,2-Dichloropropane	< 0.32	ug/l	0.32	1	1	8260B		10/17/2013	CJR	1
2,2-Dichloropropane	< 0.36	ug/l	0.36	1.2	1	8260B		10/17/2013	CJR	4 8
1,3-Dichloropropane	< 0.33	ug/l	0.33	1	1	8260B		10/17/2013	CJR	1
Di-isopropyl ether	< 0.23	ug/l	0.23	0.73	1	8260B		10/17/2013	CJR	1
EDB (1,2-Dibromoethane)	< 0.44	ug/l	0.44	1.4	1	8260B		10/17/2013	CJR	1
Ethylbenzene	< 0.55	ug/l	0.55	1.7	1	8260B		10/17/2013	CJR	1

Project Name HELMRICK SERVICE STATION **Invoice #** E25931
Project #

Lab Code 5025931B
Sample ID MW-3
Sample Matrix water
Sample Date 10/10/2013

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
Hexachlorobutadiene	< 1.5	ug/l	1.5	4.8	1	8260B		10/17/2013	CJR	1
Isopropylbenzene	< 0.3	ug/l	0.3	0.96	1	8260B		10/17/2013	CJR	1
p-Isopropyltoluene	< 0.31	ug/l	0.31	0.98	1	8260B		10/17/2013	CJR	1
Methylene chloride	< 0.5	ug/l	0.5	1.6	1	8260B		10/17/2013	CJR	1
Methyl tert-butyl ether (MTBE)	1.15	ug/l	0.23	0.74	1	8260B		10/17/2013	CJR	1
Naphthalene	< 1.7	ug/l	1.7	5.5	1	8260B		10/17/2013	CJR	1
n-Propylbenzene	< 0.25	ug/l	0.25	0.81	1	8260B		10/17/2013	CJR	1
1,1,2,2-Tetrachloroethane	< 0.45	ug/l	0.45	1.4	1	8260B		10/17/2013	CJR	1
1,1,1,2-Tetrachloroethane	< 0.33	ug/l	0.33	1.1	1	8260B		10/17/2013	CJR	1
Tetrachloroethene	< 0.33	ug/l	0.33	1.1	1	8260B		10/17/2013	CJR	1
Toluene	< 0.69	ug/l	0.69	2.2	1	8260B		10/17/2013	CJR	1
1,2,4-Trichlorobenzene	< 0.98	ug/l	0.98	3.1	1	8260B		10/17/2013	CJR	1
1,2,3-Trichlorobenzene	< 1.8	ug/l	1.8	5.8	1	8260B		10/17/2013	CJR	1
1,1,1-Trichloroethane	< 0.33	ug/l	0.33	1	1	8260B		10/17/2013	CJR	1
1,1,2-Trichloroethane	< 0.34	ug/l	0.34	1.1	1	8260B		10/17/2013	CJR	1
Trichloroethene (TCE)	< 0.33	ug/l	0.33	1	1	8260B		10/17/2013	CJR	1
Trichlorofluoromethane	< 0.71	ug/l	0.71	2.3	1	8260B		10/17/2013	CJR	1
1,2,4-Trimethylbenzene	< 2.2	ug/l	2.2	6.9	1	8260B		10/17/2013	CJR	1
1,3,5-Trimethylbenzene	< 1.4	ug/l	1.4	4.5	1	8260B		10/17/2013	CJR	1
Vinyl Chloride	< 0.18	ug/l	0.18	0.57	1	8260B		10/17/2013	CJR	1
m&p-Xylene	< 0.69	ug/l	0.69	2.2	1	8260B		10/17/2013	CJR	1
o-Xylene	< 0.63	ug/l	0.63	2	1	8260B		10/17/2013	CJR	1
SUR - Dibromofluoromethane	101	REC %			1	8260B		10/17/2013	CJR	1
SUR - Toluene-d8	98	REC %			1	8260B		10/17/2013	CJR	1
SUR - 4-Bromofluorobenzene	101	REC %			1	8260B		10/17/2013	CJR	1
SUR - 1,2-Dichloroethane-d4	92	REC %			1	8260B		10/17/2013	CJR	1
Wet Chemistry										
General										
Nitrite Plus Nitrate, Dissolved	0.27 "J"	mg/l	0.1	0.31	1	4500B/F		10/15/2013	CWT	1
Sulfate, Dissolved	31.6	mg/l	3.4	10.6	2	300.0		10/21/2013	CWT	1

Project Name HELMRICK SERVICE STATION **Invoice #** E25931
Project #

Lab Code 5025931C
Sample ID MW-1
Sample Matrix water
Sample Date 10/10/2013

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
Inorganic										
Metals										
Cadmium, Dissolved	< 0.5	ug/L	0.5	1.7	1	200.7		10/17/2013	CWT	1
Iron, Dissolved	< 0.06	mg/l	0.06	0.21	1	200.7		10/17/2013	CWT	1
Lead, Dissolved	< 0.7	ug/L	0.7	2.5	1	7421		10/18/2013	CWT	1
Manganese, Dissolved	451	ug/l	4.8	15.4	1	200.7		10/17/2013	CWT	1
Organic										
PAH SIM										
Acenaphthene	6.8	ug/l	0.21	0.68	10	M8270D	10/17/2013	10/19/2013	MDK	1
Acenaphthylene	1.29	ug/l	0.2	0.63	10	M8270D	10/17/2013	10/19/2013	MDK	1
Anthracene	2.29	ug/l	0.2	0.64	10	M8270D	10/17/2013	10/19/2013	MDK	1
Benzo(a)anthracene	< 0.25	ug/l	0.25	0.78	10	M8270D	10/17/2013	10/19/2013	MDK	1
Benzo(a)pyrene	< 0.18	ug/l	0.18	0.58	10	M8270D	10/17/2013	10/19/2013	MDK	1
Benzo(b)fluoranthene	< 0.2	ug/l	0.2	0.63	10	M8270D	10/17/2013	10/19/2013	MDK	1
Benzo(g,h,i)perylene	< 0.23	ug/l	0.23	0.75	10	M8270D	10/17/2013	10/19/2013	MDK	1
Benzo(k)fluoranthene	< 0.27	ug/l	0.27	0.87	10	M8270D	10/17/2013	10/19/2013	MDK	1
Chrysene	< 0.18	ug/l	0.18	0.58	10	M8270D	10/17/2013	10/19/2013	MDK	1
Dibenzo(a,h)anthracene	< 0.23	ug/l	0.23	0.72	10	M8270D	10/17/2013	10/19/2013	MDK	1
Fluoranthene	0.73 "J"	ug/l	0.26	0.84	10	M8270D	10/17/2013	10/19/2013	MDK	1
Fluorene	7.9	ug/l	0.2	0.63	10	M8270D	10/17/2013	10/19/2013	MDK	1
Indeno(1,2,3-cd)pyrene	< 0.27	ug/l	0.27	0.85	10	M8270D	10/17/2013	10/19/2013	MDK	1
1-Methyl naphthalene	7.1	ug/l	0.19	0.61	10	M8270D	10/17/2013	10/19/2013	MDK	1
2-Methyl naphthalene	21.9	ug/l	0.16	0.52	10	M8270D	10/17/2013	10/19/2013	MDK	1
Naphthalene	10.9	ug/l	0.23	0.75	10	M8270D	10/17/2013	10/19/2013	MDK	1
Phenanthrene	26.8	ug/l	0.18	0.59	10	M8270D	10/17/2013	10/19/2013	MDK	1
Pyrene	2.69	ug/l	0.25	0.8	10	M8270D	10/17/2013	10/19/2013	MDK	1
VOC's										
Benzene	2.12	ug/l	0.24	0.77	1	8260B		10/17/2013	CJR	1
Bromobenzene	< 0.32	ug/l	0.32	1	1	8260B		10/17/2013	CJR	1
Bromodichloromethane	< 0.37	ug/l	0.37	1.2	1	8260B		10/17/2013	CJR	1
Bromoform	< 0.35	ug/l	0.35	1.1	1	8260B		10/17/2013	CJR	1
tert-Butylbenzene	< 0.36	ug/l	0.36	1.2	1	8260B		10/17/2013	CJR	1
sec-Butylbenzene	6.2	ug/l	0.33	1	1	8260B		10/17/2013	CJR	1
n-Butylbenzene	5.1	ug/l	0.35	1.1	1	8260B		10/17/2013	CJR	1
Carbon Tetrachloride	< 0.33	ug/l	0.33	1.1	1	8260B		10/17/2013	CJR	1
Chlorobenzene	< 0.24	ug/l	0.24	0.77	1	8260B		10/17/2013	CJR	1
Chloroethane	< 0.63	ug/l	0.63	2	1	8260B		10/17/2013	CJR	1
Chloroform	< 0.28	ug/l	0.28	0.88	1	8260B		10/17/2013	CJR	1
Chloromethane	< 0.81	ug/l	0.81	2.6	1	8260B		10/17/2013	CJR	1
2-Chlorotoluene	< 0.21	ug/l	0.21	0.66	1	8260B		10/17/2013	CJR	1
4-Chlorotoluene	< 0.21	ug/l	0.21	0.68	1	8260B		10/17/2013	CJR	1
1,2-Dibromo-3-chloropropane	< 0.88	ug/l	0.88	2.8	1	8260B		10/17/2013	CJR	1
Dibromochloromethane	< 0.22	ug/l	0.22	0.7	1	8260B		10/17/2013	CJR	1
1,4-Dichlorobenzene	< 0.3	ug/l	0.3	0.96	1	8260B		10/17/2013	CJR	1
1,3-Dichlorobenzene	< 0.28	ug/l	0.28	0.89	1	8260B		10/17/2013	CJR	1
1,2-Dichlorobenzene	< 0.36	ug/l	0.36	1.2	1	8260B		10/17/2013	CJR	1
Dichlorodifluoromethane	< 0.44	ug/l	0.44	1.4	1	8260B		10/17/2013	CJR	1
1,2-Dichloroethane	< 0.41	ug/l	0.41	1.3	1	8260B		10/17/2013	CJR	1
1,1-Dichloroethane	< 0.3	ug/l	0.3	0.97	1	8260B		10/17/2013	CJR	1
1,1-Dichloroethene	< 0.4	ug/l	0.4	1.3	1	8260B		10/17/2013	CJR	1
cis-1,2-Dichloroethene	< 0.38	ug/l	0.38	1.2	1	8260B		10/17/2013	CJR	1
trans-1,2-Dichloroethene	< 0.35	ug/l	0.35	1.1	1	8260B		10/17/2013	CJR	1
1,2-Dichloropropane	< 0.32	ug/l	0.32	1	1	8260B		10/17/2013	CJR	1
2,2-Dichloropropane	< 0.36	ug/l	0.36	1.2	1	8260B		10/17/2013	CJR	4 8
1,3-Dichloropropane	< 0.33	ug/l	0.33	1	1	8260B		10/17/2013	CJR	1
Di-isopropyl ether	< 0.23	ug/l	0.23	0.73	1	8260B		10/17/2013	CJR	1
EDB (1,2-Dibromoethane)	< 0.44	ug/l	0.44	1.4	1	8260B		10/17/2013	CJR	1
Ethylbenzene	14.6	ug/l	0.55	1.7	1	8260B		10/17/2013	CJR	1

Project Name HELMRICK SERVICE STATION **Invoice #** E25931
Project #

Lab Code 5025931C
Sample ID MW-1
Sample Matrix water
Sample Date 10/10/2013

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
Hexachlorobutadiene	< 1.5	ug/l	1.5	4.8	1	8260B		10/17/2013	CJR	1
Isopropylbenzene	6.9	ug/l	0.3	0.96	1	8260B		10/17/2013	CJR	1
p-Isopropyltoluene	1.66	ug/l	0.31	0.98	1	8260B		10/17/2013	CJR	1
Methylene chloride	< 0.5	ug/l	0.5	1.6	1	8260B		10/17/2013	CJR	1
Methyl tert-butyl ether (MTBE)	< 0.23	ug/l	0.23	0.74	1	8260B		10/17/2013	CJR	1
Naphthalene	28.4	ug/l	1.7	5.5	1	8260B		10/17/2013	CJR	1
n-Propylbenzene	8.2	ug/l	0.25	0.81	1	8260B		10/17/2013	CJR	1
1,1,2,2-Tetrachloroethane	< 0.45	ug/l	0.45	1.4	1	8260B		10/17/2013	CJR	1
1,1,1,2-Tetrachloroethane	< 0.33	ug/l	0.33	1.1	1	8260B		10/17/2013	CJR	1
Tetrachloroethene	< 0.33	ug/l	0.33	1.1	1	8260B		10/17/2013	CJR	1
Toluene	< 0.69	ug/l	0.69	2.2	1	8260B		10/17/2013	CJR	1
1,2,4-Trichlorobenzene	< 0.98	ug/l	0.98	3.1	1	8260B		10/17/2013	CJR	1
1,2,3-Trichlorobenzene	< 1.8	ug/l	1.8	5.8	1	8260B		10/17/2013	CJR	1
1,1,1-Trichloroethane	< 0.33	ug/l	0.33	1	1	8260B		10/17/2013	CJR	1
1,1,2-Trichloroethane	< 0.34	ug/l	0.34	1.1	1	8260B		10/17/2013	CJR	1
Trichloroethene (TCE)	< 0.33	ug/l	0.33	1	1	8260B		10/17/2013	CJR	1
Trichlorofluoromethane	< 0.71	ug/l	0.71	2.3	1	8260B		10/17/2013	CJR	1
1,2,4-Trimethylbenzene	< 2.2	ug/l	2.2	6.9	1	8260B		10/17/2013	CJR	1
1,3,5-Trimethylbenzene	5.3	ug/l	1.4	4.5	1	8260B		10/17/2013	CJR	1
Vinyl Chloride	< 0.18	ug/l	0.18	0.57	1	8260B		10/17/2013	CJR	1
m&p-Xylene	0.86 "J"	ug/l	0.69	2.2	1	8260B		10/17/2013	CJR	1
o-Xylene	1.11 "J"	ug/l	0.63	2	1	8260B		10/17/2013	CJR	1
SUR - Dibromofluoromethane	97	REC %			1	8260B		10/17/2013	CJR	1
SUR - Toluene-d8	98	REC %			1	8260B		10/17/2013	CJR	1
SUR - 4-Bromofluorobenzene	98	REC %			1	8260B		10/17/2013	CJR	1
SUR - 1,2-Dichloroethane-d4	94	REC %			1	8260B		10/17/2013	CJR	1
Wet Chemistry										
General										
Nitrite Plus Nitrate, Dissolved	1.84	mg/l	0.1	0.31	1	4500B/F		10/15/2013	CWT	1
Sulfate, Dissolved	48.0	mg/l	3.4	10.6	2	300.0		10/21/2013	CWT	1

Project Name HELMRICK SERVICE STATION **Invoice #** E25931
Project #

Lab Code 5025931D
Sample ID TB
Sample Matrix water
Sample Date 10/10/2013

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
Organic										
VOC's										
Benzene	< 0.24	ug/l	0.24	0.77	1	8260B		10/17/2013	CJR	1
Bromobenzene	< 0.32	ug/l	0.32	1	1	8260B		10/17/2013	CJR	1
Bromodichloromethane	< 0.37	ug/l	0.37	1.2	1	8260B		10/17/2013	CJR	1
Bromoform	< 0.35	ug/l	0.35	1.1	1	8260B		10/17/2013	CJR	1
tert-Butylbenzene	< 0.36	ug/l	0.36	1.2	1	8260B		10/17/2013	CJR	1
sec-Butylbenzene	< 0.33	ug/l	0.33	1	1	8260B		10/17/2013	CJR	1
n-Butylbenzene	< 0.35	ug/l	0.35	1.1	1	8260B		10/17/2013	CJR	1
Carbon Tetrachloride	< 0.33	ug/l	0.33	1.1	1	8260B		10/17/2013	CJR	1
Chlorobenzene	< 0.24	ug/l	0.24	0.77	1	8260B		10/17/2013	CJR	1
Chloroethane	< 0.63	ug/l	0.63	2	1	8260B		10/17/2013	CJR	1
Chloroform	< 0.28	ug/l	0.28	0.88	1	8260B		10/17/2013	CJR	1
Chloromethane	< 0.81	ug/l	0.81	2.6	1	8260B		10/17/2013	CJR	1
2-Chlorotoluene	< 0.21	ug/l	0.21	0.66	1	8260B		10/17/2013	CJR	1
4-Chlorotoluene	< 0.21	ug/l	0.21	0.68	1	8260B		10/17/2013	CJR	1
1,2-Dibromo-3-chloropropane	< 0.88	ug/l	0.88	2.8	1	8260B		10/17/2013	CJR	1
Dibromochloromethane	< 0.22	ug/l	0.22	0.7	1	8260B		10/17/2013	CJR	1
1,4-Dichlorobenzene	< 0.3	ug/l	0.3	0.96	1	8260B		10/17/2013	CJR	1
1,3-Dichlorobenzene	< 0.28	ug/l	0.28	0.89	1	8260B		10/17/2013	CJR	1
1,2-Dichlorobenzene	< 0.36	ug/l	0.36	1.2	1	8260B		10/17/2013	CJR	1
Dichlorodifluoromethane	< 0.44	ug/l	0.44	1.4	1	8260B		10/17/2013	CJR	1
1,2-Dichloroethane	< 0.41	ug/l	0.41	1.3	1	8260B		10/17/2013	CJR	1
1,1-Dichloroethane	< 0.3	ug/l	0.3	0.97	1	8260B		10/17/2013	CJR	1
1,1-Dichloroethene	< 0.4	ug/l	0.4	1.3	1	8260B		10/17/2013	CJR	1
cis-1,2-Dichloroethene	< 0.38	ug/l	0.38	1.2	1	8260B		10/17/2013	CJR	1
trans-1,2-Dichloroethene	< 0.35	ug/l	0.35	1.1	1	8260B		10/17/2013	CJR	1
1,2-Dichloropropane	< 0.32	ug/l	0.32	1	1	8260B		10/17/2013	CJR	1
2,2-Dichloropropane	< 0.36	ug/l	0.36	1.2	1	8260B		10/17/2013	CJR	1
1,3-Dichloropropane	< 0.33	ug/l	0.33	1	1	8260B		10/17/2013	CJR	4 8
Di-isopropyl ether	< 0.23	ug/l	0.23	0.73	1	8260B		10/17/2013	CJR	1
EDB (1,2-Dibromoethane)	< 0.44	ug/l	0.44	1.4	1	8260B		10/17/2013	CJR	1
Ethylbenzene	< 0.55	ug/l	0.55	1.7	1	8260B		10/17/2013	CJR	1
Hexachlorobutadiene	< 1.5	ug/l	1.5	4.8	1	8260B		10/17/2013	CJR	1
Isopropylbenzene	< 0.3	ug/l	0.3	0.96	1	8260B		10/17/2013	CJR	1
p-Isopropyltoluene	< 0.31	ug/l	0.31	0.98	1	8260B		10/17/2013	CJR	1
Methylene chloride	< 0.5	ug/l	0.5	1.6	1	8260B		10/17/2013	CJR	1
Methyl tert-butyl ether (MTBE)	< 0.23	ug/l	0.23	0.74	1	8260B		10/17/2013	CJR	1
Naphthalene	< 1.7	ug/l	1.7	5.5	1	8260B		10/17/2013	CJR	1
n-Propylbenzene	< 0.25	ug/l	0.25	0.81	1	8260B		10/17/2013	CJR	1
1,1,2,2-Tetrachloroethane	< 0.45	ug/l	0.45	1.4	1	8260B		10/17/2013	CJR	1
1,1,1,2-Tetrachloroethane	< 0.33	ug/l	0.33	1.1	1	8260B		10/17/2013	CJR	1
Tetrachloroethene	< 0.33	ug/l	0.33	1.1	1	8260B		10/17/2013	CJR	1
Toluene	< 0.69	ug/l	0.69	2.2	1	8260B		10/17/2013	CJR	1
1,2,4-Trichlorobenzene	< 0.98	ug/l	0.98	3.1	1	8260B		10/17/2013	CJR	1
1,2,3-Trichlorobenzene	< 1.8	ug/l	1.8	5.8	1	8260B		10/17/2013	CJR	1
1,1,1-Trichloroethane	< 0.33	ug/l	0.33	1	1	8260B		10/17/2013	CJR	1
1,1,2-Trichloroethane	< 0.34	ug/l	0.34	1.1	1	8260B		10/17/2013	CJR	1
Trichloroethene (TCE)	< 0.33	ug/l	0.33	1	1	8260B		10/17/2013	CJR	1
Trichlorofluoromethane	< 0.71	ug/l	0.71	2.3	1	8260B		10/17/2013	CJR	1
1,2,4-Trimethylbenzene	< 2.2	ug/l	2.2	6.9	1	8260B		10/17/2013	CJR	1
1,3,5-Trimethylbenzene	< 1.4	ug/l	1.4	4.5	1	8260B		10/17/2013	CJR	1
Vinyl Chloride	< 0.18	ug/l	0.18	0.57	1	8260B		10/17/2013	CJR	1
m&p-Xylene	< 0.69	ug/l	0.69	2.2	1	8260B		10/17/2013	CJR	1
o-Xylene	< 0.63	ug/l	0.63	2	1	8260B		10/17/2013	CJR	1
SUR - Toluene-d8	98	REC %			1	8260B		10/17/2013	CJR	1
SUR - 1,2-Dichloroethane-d4	98	REC %			1	8260B		10/17/2013	CJR	1
SUR - 4-Bromofluorobenzene	98	REC %			1	8260B		10/17/2013	CJR	1
SUR - Dibromofluoromethane	98	REC %			1	8260B		10/17/2013	CJR	1

Project Name HELMRICK SERVICE STATION **Invoice #** E25931
Project #

"J" Flag: Analyte detected between LOD and LOQ LOD Limit of Detection LOQ Limit of Quantitation

Code	*Comment*
1	Laboratory QC within limits.
4	The continuing calibration standard not within established limits.
8	Closing calibration standard not within established limits.

CWT denotes sub contract lab - Certification #445126660

All solid sample results reported on a dry weight basis unless otherwise indicated. All LOD's and LOQ's are adjusted for dilutions but not dry weight. Subcontracted results are denoted by SUB in the analyst field.

Authorized Signature Michael Ricker

CHAIN OF CUSTODY RECORD

Synergy
Environmental Lab, Inc.

1990 Prospect Ct. • Appleton, WI 54914
920-830-2455 • FAX 920-733-0631

Chain # № 2689

Page 1 of 1

Sample Handling Request
___ Rush Analysis Date Required ___
(Rushes accepted only with prior authorization)
X Normal Turn Around

Lab I.D. #	
Account No.:	Quote No.:
Project #:	
Sampler: (signature)	[illegible signature]
Project (Name / Location):	Helmrich Service Station / Berlin, WI

Reports To: John Helmrich	Invoice To: J. Helmrich c/o METCO
Company: John's Amoco	Company: METCO
Address: 280 Broadway St.	Address: 709 Gillette St., Ste 3
City State Zip: Berlin, WI 54923	City State Zip: LaCrosse, WI 54603
Phone: (920) 361-0535	Phone: (608) 781-8879
FAX	FAX

Lab I.D.	Sample I.D.	Collection Date	Collection Time	Comp	Grab	Filtered Y/N	No. of Containers	Sample Type (Matrix)*	Preservation	DRO (Mod DRO Sep 95)	GRO (Mod GRO Sep 95)	LEAD + Cadmium	NITRATE/NITRITE	OIL & GREASE	PAH (EPA 8270)	PVOC (EPA 8021)	PVOC + NAPHTHALENE	SULFATE	TOTAL SUSPENDED SOLIDS	VOC DW (EPA 542.2)	VOC (EPA 8260)	8-RCRA METALS	Dissolved	PID/FID
5025151A	MW-2	9/10	1:00		X	Y	7	GW	HCL, HNO3, H2SO4			X	X		X			X			X		X	
B	MW-3	↓	11:00		X	Y	7	↓	↓			X	X		X			X			X		X	
C	MW-1	↓	2:10		X	Y	7	↓	↓			X	X		X			X			X		X	
D	TB						1														X			

Comments/Special Instructions ("Specify groundwater "GW", Drinking Water "DW", Waste Water "WW", Soil "S", Air "A", Oil, Sludge etc.)

Note: UWC Rates Apply

"Agent Status"

Lab to send copy of report to METCO/Jason P. (Invoice to METCO)

ADD DISS Fe/Mn per Jason on 11-27-13 - MR

Sample Integrity - To be completed by receiving lab.
Method of Shipment: Dunham
Temp. of Temp. Blank ___ °C On Ice X
Cooler seal intact upon receipt: X Yes ___ No

Relinquished By: (sign)	Time	Date	Received By: (sign)	Time	Date
[illegible signature]	11:00	10/11/13			

Received in Laboratory By: [illegible signature] Time: 10:00 Date: 10/14/13

Synergy Environmental Lab,

1990 Prospect Ct., Appleton, WI 54914 *P 920-830-2455 * F 920-733-0631

JOHN HELMRICK
JOHN HELMRICK
280 BROADWAY STREET
BERLIN, WI 54923

Report Date *24-Jan-14*

Project Name HELMRICK SERVICE STATION **Invoice #** E26420
Project #

Lab Code 5026420A
Sample ID MW-2
Sample Matrix water
Sample Date 1/15/2014

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
Organic										
PVOC + Naphthalene										
Benzene	< 0.27	ug/l	0.27	0.85	1	GRO95/8021		1/20/2014	CJR	1
Ethylbenzene	< 0.82	ug/l	0.82	2.6	1	GRO95/8021		1/20/2014	CJR	1
Methyl tert-butyl ether (MTBE)	< 0.37	ug/l	0.37	1.2	1	GRO95/8021		1/20/2014	CJR	1
Naphthalene	< 1.2	ug/l	1.2	3.8	1	GRO95/8021		1/20/2014	CJR	1
Toluene	< 0.8	ug/l	0.8	2.6	1	GRO95/8021		1/20/2014	CJR	1
1,2,4-Trimethylbenzene	< 0.83	ug/l	0.83	2.6	1	GRO95/8021		1/20/2014	CJR	1
1,3,5-Trimethylbenzene	< 0.86	ug/l	0.86	2.7	1	GRO95/8021		1/20/2014	CJR	1
m&p-Xylene	< 1.6	ug/l	1.6	5.2	1	GRO95/8021		1/20/2014	CJR	1
o-Xylene	< 0.81	ug/l	0.81	2.6	1	GRO95/8021		1/20/2014	CJR	1

Lab Code 5026420B
Sample ID MW-3
Sample Matrix water
Sample Date 1/15/2014

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
Organic										
PVOC + Naphthalene										
Benzene	< 0.27	ug/l	0.27	0.85	1	GRO95/8021		1/20/2014	CJR	1
Ethylbenzene	< 0.82	ug/l	0.82	2.6	1	GRO95/8021		1/20/2014	CJR	1
Methyl tert-butyl ether (MTBE)	< 0.37	ug/l	0.37	1.2	1	GRO95/8021		1/20/2014	CJR	1
Naphthalene	< 1.2	ug/l	1.2	3.8	1	GRO95/8021		1/20/2014	CJR	1
Toluene	< 0.8	ug/l	0.8	2.6	1	GRO95/8021		1/20/2014	CJR	1
1,2,4-Trimethylbenzene	< 0.83	ug/l	0.83	2.6	1	GRO95/8021		1/20/2014	CJR	1
1,3,5-Trimethylbenzene	< 0.86	ug/l	0.86	2.7	1	GRO95/8021		1/20/2014	CJR	1
m&p-Xylene	< 1.6	ug/l	1.6	5.2	1	GRO95/8021		1/20/2014	CJR	1
o-Xylene	< 0.81	ug/l	0.81	2.6	1	GRO95/8021		1/20/2014	CJR	1

Project Name HELMRICK SERVICE STATION **Invoice #** E26420
Project #

Lab Code 5026420C
Sample ID MW-1
Sample Matrix water
Sample Date 1/15/2014

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
Organic										
PVOC + Naphthalene										
Benzene	1.15	ug/l	0.27	0.85	1	GRO95/8021		1/20/2014	CJR	1
Ethylbenzene	7.4	ug/l	0.82	2.6	1	GRO95/8021		1/20/2014	CJR	1
Methyl tert-butyl ether (MTBE)	< 0.37	ug/l	0.37	1.2	1	GRO95/8021		1/20/2014	CJR	1
Naphthalene	13.4	ug/l	1.2	3.8	1	GRO95/8021		1/20/2014	CJR	1
Toluene	< 0.8	ug/l	0.8	2.6	1	GRO95/8021		1/20/2014	CJR	1
1,2,4-Trimethylbenzene	3.01	ug/l	0.83	2.6	1	GRO95/8021		1/20/2014	CJR	1
1,3,5-Trimethylbenzene	2.91	ug/l	0.86	2.7	1	GRO95/8021		1/20/2014	CJR	1
m&p-Xylene	< 1.6	ug/l	1.6	5.2	1	GRO95/8021		1/20/2014	CJR	1
o-Xylene	< 0.81	ug/l	0.81	2.6	1	GRO95/8021		1/20/2014	CJR	1

Lab Code 5026420D
Sample ID TB
Sample Matrix water
Sample Date 1/15/2014

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
Organic										
PVOC + Naphthalene										
Benzene	< 0.27	ug/l	0.27	0.85	1	GRO95/8021		1/20/2014	CJR	1
Ethylbenzene	< 0.82	ug/l	0.82	2.6	1	GRO95/8021		1/20/2014	CJR	1
Methyl tert-butyl ether (MTBE)	< 0.37	ug/l	0.37	1.2	1	GRO95/8021		1/20/2014	CJR	1
Naphthalene	< 1.2	ug/l	1.2	3.8	1	GRO95/8021		1/20/2014	CJR	1
Toluene	< 0.8	ug/l	0.8	2.6	1	GRO95/8021		1/20/2014	CJR	1
1,2,4-Trimethylbenzene	< 0.83	ug/l	0.83	2.6	1	GRO95/8021		1/20/2014	CJR	1
1,3,5-Trimethylbenzene	< 0.86	ug/l	0.86	2.7	1	GRO95/8021		1/20/2014	CJR	1
m&p-Xylene	< 1.6	ug/l	1.6	5.2	1	GRO95/8021		1/20/2014	CJR	1
o-Xylene	< 0.81	ug/l	0.81	2.6	1	GRO95/8021		1/20/2014	CJR	1

"J" Flag: Analyte detected between LOD and LOQ LOD Limit of Detection LOQ Limit of Quantitation

Code	*Comment*
1	Laboratory QC within limits.

All solid sample results reported on a dry weight basis unless otherwise indicated. All LOD's and LOQ's are adjusted for dilutions but not dry weight. Subcontracted results are denoted by SUB in the analyst field.

Authorized Signature Michael Ricker

CHAIN OF CUSTODY RECORD

Synergy Environmental Lab, Inc.

1990 Prospect Ct. • Appleton, WI 54914
920-830-2455 • FAX 920-733-0631

Chain # No 739

Page 1 of 1

Sample Handling Request
___ Rush Analysis Date Required ____
(Rushes accepted only with prior authorization)
X Normal Turn Around

Lab I.D. #

Account No. : Quote No.:

Project #:

Sampler: (signature)

Project (Name / Location): Helmrich Service Station

Reports To: John Helmrich	Invoice To: J. Helmrich c/o METCO
Company John's Amoco	Company METCO
Address 280 Broadway St.	Address 709 Gillette St, Ste 3
City State Zip Berlin, WI 54823	City State Zip LaCrosse, WI 54603
Phone (920) 361-0535	Phone (608) 781-8879
FAX	FAX

Lab I.D.	Sample I.D.	Collection Date	Collection Time	Comp	Grab	Filtered Y/N	No. of Containers	Sample Type (Matrix)*	Preservation	DRO (Mod DRO Sep 95)	GRO (Mod GRO Sep 95)	IRON	LEAD	NITRATE / NITRITE	PAH (EPA 8270)	PVOC (EPA 8021)	PVOC + NAPHTHALENE	SULFATE	VOC DW (EPA 524.2)	VOC (EPA 8260)	8-RCRA METALS	PID/ FID
502620A	MW-2	01/15	11:20		G	N	3	GW	HCL								X					
B	MW-3	↓	12:15		G	N	↓	↓	↓								X					
C	MW-1	↓	10:30		G	N	↓	↓	↓								X					
D	TB						1		↓								X					

Comments/Special Instructions (*Specify groundwater "GW", Drinking Water "DW", Waste Water "WW", Soil "S", Air "A", Oil, Sludge etc.)

Note: UST Rates Apply — "Agent Status"

Lab to send copy of Report to METCO / Jason P. (Invoice to METCO)

Sample Integrity - To be completed by receiving lab

Method of Shipment: Client

Temp. of Temp. Blank: ___ °C On Ice: Y

Cooler seal intact upon receipt: Yes ___ No

Relinquished By: (sign)	Time	Date	Received By: (sign)	Time	Date
	2:15pm	01/16/14			

Received in Laboratory By: -SEC Time: 2:15 PM Date: 1-16-14

APPENDIX C/ WELL AND BOREHOLE DOCUMENTATION

State of Wisconsin
Department of Natural Resources

GROUNDWATER MONITORING WELL INFORMATION FORM

Chapter 281 and 289, Wis. Stats.
Form 4400-89

Rev. 7- 98

Facility Name	Facility ID Number	License, Permit or Monitoring No.	Date	Completed By (Name and Firm)
Helmrick Service Station			5/20/2014	B. Walker/METCO

WI Unique Well No	Well Name	DNR Well ID Number	Well Location	Dir. N/E	Dir. S/W	Date Established	Well Casing Diam.	Well Casing Type	Elevations Top of Well Casing	Elevations Ground Surface	Reference MSL (√)	Reference Site Datum (√)	Depths Screen Top	Depths Initial Groundwater	Depths Well Depth	Screen Length	Well Type	Well Status	Enf. Stds.	Grad-ient	Distance to Waste
			318563.39	X																	
VN035	MW-1		570635.16	X		8/6/2013	2	P	773.7	774.33	X		764.33	5.15	13	10	11/mw	A	X	N	10
			318573.47	X																	
VN036	MW-2		570681.82	X		8/6/2013	2	P	773.37	773.85	X		763.85	Dry	13	10	11/mw	A	X	S	60
			318600.67	X																	
VN037	MW-3		570637.6	X		8/6/2013	2	P	774.21	774.55	X		764.55	Dry	13	10	11/mw	A	X	D	35

Location Coordinates Are:
☐ State Plane Coordinate ☐ Northern ☐ Central ☐ Southern
|X| Local Grid System

Grid Origin Location: (Check if estimated: ☐)

Lat. 43 ° 58 ' 5 " Long. 88 ° 57 ' 16 " or

St. Plane _____ ft. N. _____ ft. E. S/C/N Zone

Remarks:

Completion of this form is mandatory under s. NR 507.14 and NR 110.25 Wis. Adm. Code. Failure to file this form may result in forfeiture of not less than $10 nor more than $5,000 for each day of violation. Personally identifiable information provided is intended to be used by the Department for the purposes related to the waste management program.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☒ Other ☐

MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

Facility/Project Name: Hemrick Service Station	Local Grid Location of Well: ____ ft. ☐N ☐S ____ ft. ☐E ☐W	Well Name: MW-1
Facility License, Permit or Monitoring No.: (John's Amoco)	Local Grid Origin ☐ (estimated: ☐) or Well Location ☐ Lat. 43° 58' 28.5" Long. 88° 57' 16" or	Wis. Unique Well No.: VN035 / DNR Well ID No.:
Facility ID	St. Plane ____ ft. N. ____ ft. E. S/C/N	Date Well Installed: 08/06/2013 (m m d d y y y y)
Type of Well: Well Code 11 / MW	Section Location of Waste/Source: NW 1/4 of NE 1/4 of Sec. 9 T. 17 N. R. 13 ☒E ☐W	Well Installed By: Name (first, last) and Firm: Darrin Prentice, Geiss Soil & Samples LLC
Distance from Waste/Source ____ ft. / Enf. Stds. Apply ☐	Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known	Gov. Lot Number:

A. Protective pipe, top elevation _____ ft. MSL
B. Well casing, top elevation _____ ft. MSL
C. Land surface elevation _____ ft. MSL
D. Surface seal, bottom _____ ft. MSL or 0 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☒
SM ☐ SC ☐ ML ☐ MH ☐ CL ☒ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ 50 / Hollow Stem Auger ☒ 41 / Other ☐

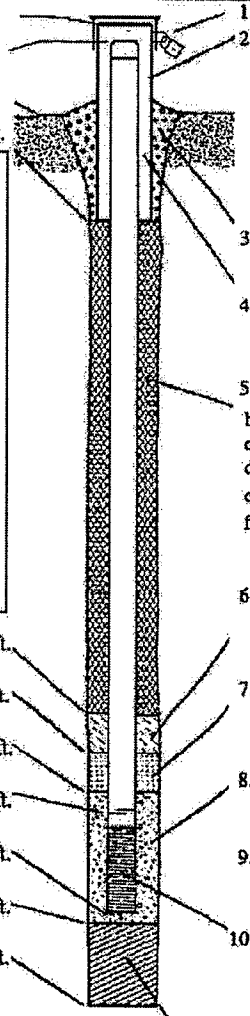
15. Drilling fluid used: Water ☐ 02 / Air ☐ 01 / Drilling Mud ☐ 03 / None ☒ 99

16. Drilling additives used? ☐ Yes ☒ No

Describe _____

17. Source of water (attach analysis, if required):

E. Bentonite seal, top _____ ft. MSL or 5 ft.
F. Fine sand, top _____ ft. MSL or 2 ft.
G. Filter pack, top _____ ft. MSL or 2.5 ft.
H. Screen joint, top _____ ft. MSL or 3 ft.
I. Well bottom _____ ft. MSL or 13 ft.
J. Filter pack, bottom _____ ft. MSL or 14 ft.
K. Borehole, bottom _____ ft. MSL or 14 ft.
L. Borehole, diameter 8.25 in.
M. O.D. well casing 2.40 in.
N. I.D. well casing 2.06 in.



1. Cap and lock? ☒ Yes ☐ No
2. Protective cover pipe:
a. Inside diameter: 8 in.
b. Length: 1 ft.
c. Material: Steel ☒ 04 / Other ☐
d. Additional protection? ☐ Yes ☒ No
If yes, describe: _____
3. Surface seal: Bentonite ☒ 30 / Concrete ☒ 01 / Other ☐
4. Material between well casing and protective pipe: Bentonite ☒ 30 / Other ☐
5. Annular space seal: a. Granular/Chipped Bentonite ☒ 33
b. ____ Lbs/gal mud weight... Bentonite-sand slurry ☐ 35
c. ____ Lbs/gal mud weight..... Bentonite slurry ☐ 31
d. ____ % Bentonite ..... Bentonite-cement grout ☐ 50
e. ____ Ft^3 volume added for any of the above
f. How installed: Tremie ☐ 01 / Tremie pumped ☐ 02 / Gravity ☒ 08
6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐1/4 in. ☒3/8 in. ☐1/2 in. Bentonite chips ☒ 32
c. _____ Other ☐
7. Fine sand material: Manufacturer, product name & mesh size
a. #15 Red Flint
b. Volume added _____ ft^3
8. Filter pack material: Manufacturer, product name & mesh size
a. #40 Red Flint
b. Volume added _____ ft^3
9. Well casing: Flush threaded PVC schedule 40 ☒ 23 / Flush threaded PVC schedule 80 ☐ 24 / Other ☐
10. Screen material: PVC
a. Screen type: Factory cut ☒ 11 / Continuous slot ☐ 01 / Other ☐
b. Manufacturer Johnson
c. Slot size: 0.010 in.
d. Slotted length: 10 ft.
11. Backfill material (below filter pack): None ☐ 14 / Other ☒

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

Signature: Darrin Prentice | Firm: Geiss Soil & Samples LLC

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☒ Other ☐

MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

Facility/Project Name: Hemrick Service Station
Facility License, Permit or Monitoring No.: (John's Amoco)
Facility ID:
Type of Well — Well Code: 11 / MW
Distance from Waste/Source: ____ ft. | Enf. Stds. Apply ☐

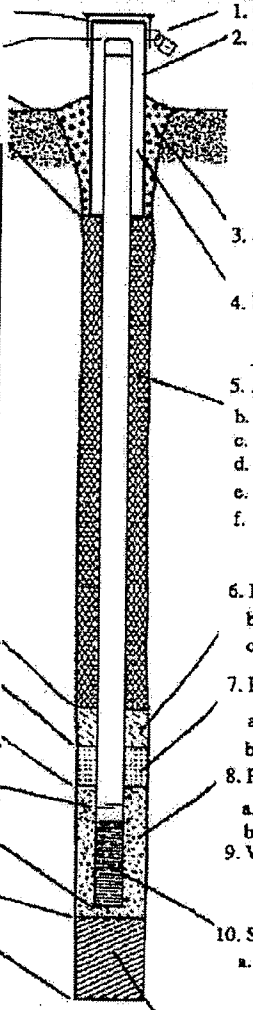
Local Grid Location of Well: ____ ft. ☐N. ☐S. ____ ft. ☐E. ☐W.
Local Grid Origin ☐ (estimated: ☐) or Well Location ☐
Lat. 43° 58' 5" Long. 88° 57' 16" or
St. Plane ____ ft. N, ____ ft. E. S/C/N
Section Location of Waste/Source: NW 1/4 of NE 1/4 of Sec. 9 T. 17 N, R. 13 ☒E ☐W
Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known
Gov. Lot Number:

Well Name: MW-2
Wis. Unique Well No.: VN036 | DNR Well ID No.:
Date Well Installed: 08/06/2013 (m m d d y y y y)
Well Installed By: Name (first, last) and Firm: Darrin Prentice, Geiss Soil & Samples LLC

A. Protective pipe, top elevation ____ ft. MSL
B. Well casing, top elevation ____ ft. MSL
C. Land surface elevation ____ ft. MSL
D. Surface seal, bottom ____ ft. MSL or 0 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☒
SM ☐ SC ☐ ML ☐ MH ☐ CL ☒ CH ☐
Bedrock ☐
13. Sieve analysis performed? ☐ Yes ☒ No
14. Drilling method used: Rotary ☐ 50 | Hollow Stem Auger ☒ 41 | Other ☐
15. Drilling fluid used: Water ☐ 02 | Air ☐ 01 | Drilling Mud ☐ 03 | None ☒ 99
16. Drilling additives used? ☐ Yes ☒ No
Describe ____
17. Source of water (attach analysis, if required):

E. Bentonite seal, top ____ ft. MSL or 5 ft.
F. Fine sand, top ____ ft. MSL or 2 ft.
G. Filter pack, top ____ ft. MSL or 2.5 ft.
H. Screen joint, top ____ ft. MSL or 3 ft.
I. Well bottom ____ ft. MSL or 13 ft.
J. Filter pack, bottom ____ ft. MSL or 14 ft.
K. Borehole, bottom ____ ft. MSL or 14 ft.
L. Borehole, diameter 8.25 in.
M. O.D. well casing 2.40 in.
N. I.D. well casing 2.06 in.



1. Cap and lock? ☒ Yes ☐ No
2. Protective cover pipe:
a. Inside diameter: 8 in.
b. Length: 1 ft.
c. Material: Steel ☒ 04 | Other ☐
d. Additional protection? ☐ Yes ☒ No
If yes, describe: ____
3. Surface seal: Bentonite ☒ 30 | Concrete ☒ 01 | Other ☐
4. Material between well casing and protective pipe: Bentonite ☒ 30 | Other ☐
5. Annular space seal: a. Granular/Chipped Bentonite ☒ 33
b. ____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. ____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. ____ % Bentonite . . . . . Bentonite-cement grout ☐ 50
e. ____ Ft^3 volume added for any of the above
f. How installed: Tremie ☐ 01 | Tremie pumped ☐ 02 | Gravity ☒ 08
6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐1/4 in. ☒3/8 in. ☐1/2 in. Bentonite chips ☒ 32
c. ____ Other ☐
7. Fine sand material: Manufacturer, product name & mesh size
a. #15 Red Flint
b. Volume added ____ ft^3
8. Filter pack material: Manufacturer, product name & mesh size
a. #40 Red Flint
b. Volume added ____ ft^3
9. Well casing: Flush threaded PVC schedule 40 ☒ 23 | Flush threaded PVC schedule 80 ☐ 24 | Other ☐
10. Screen material: PVC
a. Screen type: Factory cut ☒ 11 | Continuous slot ☐ 01 | Other ☐
b. Manufacturer Johnson
c. Slot size: 0.010 in.
d. Slotted length: 10 ft.
11. Backfill material (below filter pack): None ☐ 14 | Other ☒

I hereby certify that the information on this form is true and correct to the best of my knowledge.
Signature: Darrin Prentice | Firm: Geiss Soil & Samples LLC

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐ _____

MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

Facility/Project Name: Hemrick Service Station
Facility License, Permit or Monitoring No.: (John's Amoco)
Facility ID: _____
Type of Well — Well Code: 11 / MW
Distance from Waste/Source: _____ ft. | Enf. Stds. Apply: ☐

Local Grid Location of Well: _____ ft. ☐N ☐S _____ ft. ☐E ☐W
Local Grid Origin ☐ (estimated: ☐) or Well Location ☐
Lat. 43° 58' 5" Long. 88° 57' 16" or
St. Plane _____ ft. N, _____ ft. E. S/C/N
Section Location of Waste/Source: MW 1/4 of NE 1/4 of Sec. 9, T. 17 N, R. 13 ☒E ☐W
Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known
Gov. Lot Number: _____

Well Name: MW-3
Wis. Unique Well No.: VN037 | DNR Well ID No.: _____
Date Well Installed: 08/06/2013 (m m d d y y y y)
Well Installed By: Name (first, last) and Firm: Darrin Prentice, Geiss Soil & Samples LLC

A. Protective pipe, top elevation _____ ft. MSL
B. Well casing, top elevation _____ ft. MSL
C. Land surface elevation _____ ft. MSL
D. Surface seal, bottom _____ ft. MSL or 0 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☒
SM ☐ SC ☐ ML ☐ MH ☐ CL ☒ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☒ No

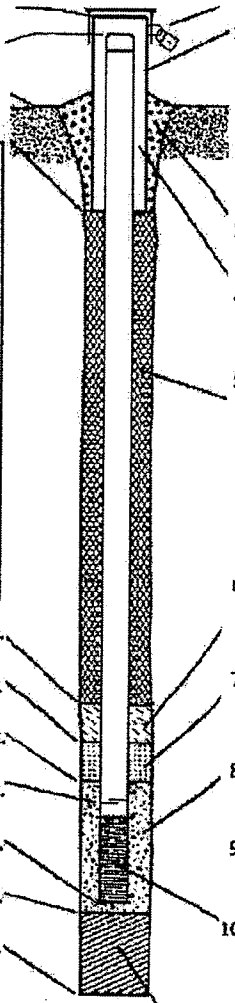
14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☒ 41; Other ☐ _____

15. Drilling fluid used: Water ☐ 02; Air ☐ 01; Drilling Mud ☐ 03; None ☒ 99

16. Drilling additives used? ☐ Yes ☒ No
Describe _____

17. Source of water (attach analysis, if required):
_____

E. Bentonite seal, top _____ ft. MSL or 5 ft.
F. Fine sand, top _____ ft. MSL or 2 ft.
G. Filter pack, top _____ ft. MSL or 2.5 ft.
H. Screen joint, top _____ ft. MSL or 3 ft.
I. Well bottom _____ ft. MSL or 13 ft.
J. Filter pack, bottom _____ ft. MSL or 14 ft.
K. Borehole, bottom _____ ft. MSL or 14 ft.
L. Borehole, diameter 8.25 in.
M. O.D. well casing 2.40 in.
N. I.D. well casing 2.06 in.



1. Cap and lock? ☒ Yes ☐ No
2. Protective cover pipe:
a. Inside diameter: 8 in.
b. Length: 1 ft.
c. Material: Steel ☒ 04; Other ☐ _____
d. Additional protection? ☐ Yes ☒ No
If yes, describe: _____
3. Surface seal: Bentonite ☒ 30; Concrete ☒ 01; Other ☐ _____
4. Material between well casing and protective pipe: Bentonite ☒ 30; Other ☐ _____
5. Annular space seal: a. Granular/Chipped Bentonite ☒ 33
b. _____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. _____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. _____ % Bentonite . . . . . Bentonite-cement grout ☐ 50
e. _____ Ft^3 volume added for any of the above
f. How installed: Tremie ☐ 01; Tremie pumped ☐ 02; Gravity ☒ 08
6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐1/4 in. ☒3/8 in. ☐1/2 in. Bentonite chips ☒ 32
c. _____ Other ☐ _____
7. Fine sand material: Manufacturer, product name & mesh size
a. #15 Red Flint
b. Volume added _____ ft^3
8. Filter pack material: Manufacturer, product name & mesh size
a. #40 Red Flint
b. Volume added _____ ft^3
9. Well casing: Flush threaded PVC schedule 40 ☒ 23; Flush threaded PVC schedule 80 ☐ 24; Other ☐ _____
10. Screen material: PVC
a. Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; Other ☐ _____
b. Manufacturer Johnson
c. Slot size: 0.010 in.
d. Slotted length: 10 ft.
11. Backfill material (below filter pack): None ☐ 14; Other ☒ _____

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

Signature: Darrin Prentice | Firm: Geiss Soil & Samples LLC

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment [X] Other ☐ _____

Facility/Project Name	County Name	Well Name
Helmrick Service Station (John's Amoco)	GREEN LAKE	MW-1

Facility License, Permit or Monitoring Number	County Code	Wis. Unique Well Number	DNR Well ID Number
	24	VN035	

1. Can this well be purged dry? [X] Yes ☐ No

2. Well development method

surged with bailer and bailed	☐ 41
surged with bailer and pumped	[X] 61
surged with block and bailed	☐ 42
surged with block and pumped	☐ 62
surged with block, bailed and pumped	☐ 70
compressed air	☐ 20
bailed only	☐ 10
pumped only	☐ 51
pumped slowly	☐ 50
Other _____	☐

3. Time spent developing well 110 min.

4. Depth of well (from top of well casisng) 13 ft.

5. Inside diameter of well 2 in.

6. Volume of water in filter pack and well casing 8.6 gal.

7. Volume of water removed from well 45 gal.

8. Volume of water added (if any) ____ gal.

9. Source of water added _____

10. Analysis performed on water added? ☐ Yes ☐ No
(If yes, attach results)

	Before Development	After Development
11. Depth to Water (from top of well casing)	a. 5.15 ft.	7.35 ft.
Date	b. 08 / 06 / 2013 (m m d d y y y y)	8/ /6 / 13 (m m d d y y y y)
Time	c. 11 : 05 [X] a.m. ☐ p.m.	12 : 55 ☐ a.m. [X] p.m.
12. Sediment in well bottom	6 inches	____ inches
13. Water clarity	Clear ☐ 10 Turbid [X] 15 (Describe) Red	Clear [X] 20 Turbid ☐ 25 (Describe) Clear
	High Turbidity	Low Turbidity

Fill in if drilling fluids were used and well is at solid waste facility:

14. Total suspended solids	____ mg/l	____ mg/l
15. COD	____ mg/l	____ mg/l

16. Well developed by: Name (first, last) and Firm
First Name: Eric Last Name: Dahl
Firm: METCO

17. Additional comments on development:

Name and Address of Facility Contact/Owner/Responsible Party
First Name: John Last Name: Helmrick
Facility/Firm: John's Amoco
Street: 280 Broadway Street
City/State/Zip: Berlin WI 54923-

I hereby certify that the above information is true and correct to the best of my knowledge.
Signature: [signature]
Print Name: Eric Dahl
Firm: METCO

NOTE: See instructions for more information including a list of county codes and well type codes.

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION

Form 4400-122 Rev. 7-98

Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Revelopment ☒ Other ☐ _____

Facility/Project Name: Helmrick Service Station (John's Amoco)	License/Permit/Monitoring Number	Boring Number: MW-1	
Boring Drilled By: Name of crew chief (first, last) and Firm — First Name: Darrin Last Name: Prentice; Firm: Geiss Soil & Samples, LLC	Date Drilling Started: 08/06/2013	Date Drilling Completed: 08/06/2013	Drilling Method: Geoprobe/HSA
WI Unique Well No.: VN035	DNR Well ID No.:	Well Name: MW-1	Final Static Water Level: ____ Feet MSL
Surface Elevation: ____ Feet MSL	Borehole Diameter: 8.25 inches		
Local Grid Origin ☐ (estimated: ☐) or Boring Location ☐ State Plane ____ N, ____ E	Lat 43° 58' 5"	Local Grid Location ☐ N ☐ E ____ Feet ☐ S ____ Feet ☐ W	
NW 1/4 of NE 1/4 of Section 9, T 17 N, R 13 E	Long 88° 57' 16"		
Facility ID	County: Green Lake	County Code: 24	Civil Town/City/or Village: Berlin

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet (Below ground surface)	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
MW-1-1 (0-4 ft)	48 / 30		2–4	Orange vf-f grained sand	SP			1		M				No petro odor
MW-1-2 (4-8 ft)	48 / 42		6–8	Orange to gray f-c grained sand	SP			85		M/W				Petro odor and staining
MW-1-3 (8-12 ft)	48 / 48		10–12	Red clay	CL			4		W				Slight petro odor
			14	EOB @14 feet. Installed MW-1 to 13 feet.										
			16–24											

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

Signature: _____ Firm: METCO

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION

Form 4400-122 Rev. 7-98

Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Revelopment ☒ Other ☐ ____________

Facility/Project Name: Helmrick Service Station (John's Amoco)	License/Permit/Monitoring Number		Boring Number: MW-2
Boring Drilled By: Name of crew chief (first, last) and Firm First Name: Darrin Last Name: Prentice Firm: Geiss Soil & Samples, LLC	Date Drilling Started: 08/06/2013 (mm dd yyyy)	Date Drilling Completed: 08/06/2013 (mm dd yyyy)	Drilling Method: Geoprobe/HSA
WI Unique Well No.: VN036 · DNR Well ID No.: ___ · Well Name: MW-2	Final Static Water Level: _____ Feet MSL	Surface Elevation: _____ Feet MSL	Borehole Diameter: 8.25 inches
Local Grid Origin ☐ (estimated: ☐) or Boring Location ☐ State Plane ______ N, ______ E NW 1/4 of NE 1/4 of Section 9, T 17 N, R 13 E	Lat 43° 58' 5" Long 88° 57' 16"	Local Grid Location _____ Feet ☐ N ☐ S	_____ Feet ☐ E ☐ W
Facility ID · County: Green Lake	County Code: 24	Civil Town/(City)/or Village: Berlin	

Sample: Number and Type	Sample: Length Att. & Recovered (in)	Blow Counts	Depth in Feet (Below ground surface)	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/Comments
			0–4.5	Tan vf-f grained sand	SP									
MW-2-1 (0-4 ft)	48 30							2		M				No petro odor
MW-2-2 (4-8 ft)	48 36		4.5–7.5	Red clay	CL			2		M/W				No petro odor
			7.5–8.5	Tan vf-f grained sand	SP									
MW-2-3 (8-12 ft)	48 48		8.5–14	Red clay	CL			2		W				No petro odor
			14	EOB @14 feet. Installed MW-2 to 13 feet.										

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

Signature: [signature] Firm: METCO

This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completion of this form is mandatory. Failure to file this form may result in forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION

Form 4400-122 Rev. 7-98

Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Revelopment ☒ Other ☐ _____

Page 1 of 1

Facility/Project Name: Helmrick Service Station (John's Amoco)	License/Permit/Monitoring Number	Boring Number: MW-3	
Boring Drilled By: Name of crew chief (first, last) and Firm — First Name: Darrin Last Name: Prentice; Firm: Geiss Soil & Samples, LLC	Date Drilling Started: 08/06/2013 (m m d d y y y y)	Date Drilling Completed: 08/06/2013	Drilling Method: Geoprobe/HSA
WI Unique Well No.: VN037	DNR Well ID No.:	Well Name: MW-3	Final Static Water Level: ____ Feet MSL
Surface Elevation: ____ Feet MSL	Borehole Diameter: 8.25 inches		
Local Grid Origin ☐ (estimated: ☐) or Boring Location ☐ State Plane ____ N, ____ E	Lat 43° 58' 5" Long 88° 57' 16"	Local Grid Location: ☐ N ☐ E ____ Feet ☐ S ____ Feet ☐ W	
NW 1/4 of NE 1/4 of Section 9, T 17 N, R 13 E			
Facility ID	County: Green Lake	County Code: 24	Civil Town/City/or Village: Berlin

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet (Below ground surface)	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
				Concrete										
MW-3-1 (0-4 ft)	48 / 0		2	No Recovery										
			4	Tan f-c grained sand	SP									
MW-3-2 (4-8 ft)	48 / 18		6					1		M/W				Slight petro odor
			8	Red Clay	CL									
MW-3-3 (8-12 ft)	48 / 48		10											
			12					1		W				Petro odor from 8-9 feet
			14	EOB @ 14 feet. Installed MW-3 to 13 feet.										
			16											
			18											
			20											
			22											
			24											

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

Signature: [signature] Firm: METCO

This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completion of this form is mandatory. Failure to file this form may result in forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

APPENDIX D/ WASTE DISPOSAL DOCUMENTATION

DKS Transport Services, LLC
N7349 548th Street
Menomonie, WI 54751
715-556-2604

INVOICE

10-3 2013

CUSTOMER: John Helmrick % Metco
709 Gillette St
La Crosse WI 54603

JOB NAME: Helmrick Service Station
280 Broadway St
Berlin WI

☐ CASH ☐ CHECK # _____ ☒ IN-HOUSE ACCOUNT

QUANTITY DATE	QUANTITY SHIPPED	DESCRIPTION	QTY.	UNIT PRICE	AMOUNT
	1	Mobilization	1	274 -	274 -
	3	Haul soil drums to Advanced Disposal	3	103 -	309 -
	1	Haul water drum to Advanced Disposal	1	40 10	40 10
		Thank You			
				TOTAL	623 10

Due upon receipt of invoice.
1.5% per month Service Charge (18% Annual Percentage Rate) will be added to past due accounts.

SIGNATURE _____

80

Tw Waste Disposal
Reviewed 11/5/13
OK

APPENDIX E/ OTHER DOCUMENTATION

Petroleum Substance Discharged	Analysis of Samples Collected for UST Tank Closure Assessments	Solid Waste Program Requirements for Soils to be landfilled[5]	Site Investigation, Pretreatment and Posttreatment Sample Analysis[11]
Regular Gasoline	GRO[2]	Free Liquids[6] GRO Benzene[7] Pb[7] Haz. Waste Deter.[8]	GRO VOC/PVOC[15] Pb[12]
Unleaded Gasoline; Grades 80 100, and 100 LL (Low Lead) Aviation Fuel	GRO[2]	Free Liquids[6] GRO Benzene[7] Pb[7] Haz. Waste Deter.[8]	GRO PVOC
Diesel; Jet Fuels; and No's 1, 2, and 4 Fuel Oil	DRO[3]	Free Liquids[6] DRO Benzene[7] Haz. Waste Deter.[8]	DRO[3] PVOC PAH[13 14]
Crude Oil; Lubricating Oils; No. 6 Fuel Oil	DRO[3]	Free Liquids[6] DRO Haz. Waste Deter.[8]	DRO[3] PAH[13 14]
Unknown Petroleum	GRO[7] and DRO[3 4]	Free Liquids[6] GRO and DRO Pb, Cd[7] Haz. Waste Deter.[8] CN[19] S[2 10]	GRO and DRO[3 4] VOC/PVOC[15] PAH[13 14] Pb, Cd[12]
Waste Oil	DRO[3]	Free Liquids[6] DRO Pb, Cd[7] Haz. Waste Deter.[8] CN[19] S[2 10]	DRO[3] VOC/PVOC[15] PAH[13 14] PCBs[16] Pb, Cd[12]

Abbreviations:

GRO - Gasoline Range Organics, Determined by the Wisconsin Modified GRO Method

DRO - Diesel Range Organics, Determined by the Wisconsin Modified DRO Method

VOC - Volatile Organic Compounds (See Section 11.1 for a list of VOC compounds)

PVOC - Petroleum Organic Compounds (See Section 11.2 for a list of PVOC compounds)

PAH - Polynuclear Aromatic Hydrocarbons (See Section 11.3 for a list of the PAH compounds)

PCBs - Polychlorinated Biphenyls

Pb - Lead

SYNERGY ENVIRONMENTAL LAB – Sample Bottle Requirements

TABLE 1
SAMPLE & PRESERVATION REQUIREMENTS FOR WATER and DRINKING WATER SAMPLES

Test	Original Sample Container	Preserved	Holding Time to Analysis
WET CHEMISTRY			
Alkalinity SM2320B/EPA 310.2	250 mL HDPE	4°C	14 days
Ammonia EPA 350.1	250 mL HDPE	4°C, pH<2 with H_2SO_4	28 days
BOD, cBOD SM5210B	500 ml HDPE	4°C	48 hrs.
COD EPA 410.4	500 ml HDPE	4°C, pH<2 with H_2SO_4	28 days
Chloride EPA 300.0/EPA 325.2	250 mL HDPE	4°C	28 days
Cyanide SW846 9012A/SM4500-CN-C	1000 mL HDPE	4°C, pH>12 with NaOH	14 days
Flashpoint SW846 1010	250 mL HDPE	4°C	28 days
Fluoride EPA 300.0	250 mL HDPE	4°C	28 days
Hardness SW846 6010B	250 mL HDPE	4°C, pH<2 with HNO_3	180 days
TKN EPA 351.2	1 Liter HDPE	4°C, pH<2 with H_2SO_4	28 days
Nitrate EPA 300.0	250 mL HDPE	4°C	48 hours
Nitrate+Nitrite EPA 300.0	250 mL HDPE	4°C, pH<2 with H_2SO_4	28 days
Nitrite EPA 300.0	250 mL HDPE	4°C	48 hours
Oil & Grease EPA 1664	1 Liter Glass	4°C, pH<2 with H_2SO_4	28 days
Organic Carbon SW846 9060/ EPA 415.1	40 ml Glass	4°C, pH<2 with H_2SO_4 or HCL	28 days
Phenol, Total EPA 420.1	1 Liter Glass	4°C, pH<2 with H_2SO_4	28 days
Phosphorus, Total EPA 365.3	250 mL HDPE	4°C, pH<2 with H_2SO_4	28 days
Sulfate EPA 300.0	250 mL HDPE	4°C	28 days
Total Dissolved Solids EPA 160.1	250 ml HDPE	4°C	7 days
Total Solids EPA 160.3	250 ml HDPE	4°C	7 days
Total Suspended Solids EPA 160.2	250 mL HDPE	4°C	7 days
METALS			
Metals	250 mL HDPE	4°C, pH<2 with HNO_3	6 months
Mercury SW8467470/EPA 245.1	250 mL HDPE	4°C, pH<2 with HNO_3	28 days
ORGANICS			
Semivolatiles SW846 8270C	1 Liter amber glass, collect 2 for one of the samples submitted .	4°C	7 days extr. 40 days following extr
PAH SW846 8270C	1 Liter amber glass, collect 2 for one of the samples submitted	4°C	7 days extr. 40 days following extr
PCB SW846 8082	1 Liter amber glass, collect 2 for one of the samples submitted.	4°C	7 days extr. 40 days following extr
DRO, Modified DNR Sep 95	1 Liter amber glass with Teflon lined cap	4°C, 5 mL 50% HCl	7 days extr. 40 days following extr
VOC'S SW846 8260B/EPA524.2	(3) 40 mL glass vials with Teflon lined septum caps	4°C, 0.5 mL 50% HCl, No Headspace	14 days
GRO/VOC	(4) 40 mL glass vials with Teflon lined septum caps	4°C, 0.5 mL 50% HCl prior to adding sample to jar	14 days
GRO, Modified DNR Sep 95	(2) 40 mL glass vials with Teflon lined septum caps	4°C, 0.5 mL 50% HCl prior to adding sample to jar	14 days
GRO/PVOC	(2) 40 mL glass vials with Teflon lined septum caps	4°C, 0.5 mL 50% HCl prior to adding sample to jar	14 days
PVOC	(2) 40 mL glass vials with Teflon lined septum caps	4°C, 0.5 mL 50% HCl prior to adding sample to jar	14 days

All samples are to be cooled to 4°C until tested.
HDPE = High Density Polyethylene.

SYNERGY ENVIRONMENTAL LAB – Sample Bottle Requirements

TABLE 2
SAMPLE & PRESERVATION REQUIREMENTS FOR SOIL SAMPLES

Test	Original Sample Container	Preserved	Holding Times from Date and Time of Collection			
			Solvent Addition	Shipping	Extraction	Analysis
METALS						
Metals	2 oz glass or soil cup	4°C	NA	NA	NA	180 days
Mercury SW846 7471	2 oz glass or soil cup	4°C	NA	NA	NA	28 days
Chromium Hexavalent SM3500-Cr	2 oz glass or soil cup	4°C	NA	NA	NA	24 hours
ORGANICS						
Any combinations of GRO, VOC, PVOC	1- tared VOC vial with 10 mls methanol, 13 grams of soil collected with syringe	4°C, 1:1 with methanol	Immediately	4 days	21 days	21 days
DRO, Modified	1- tared VOC vial, 13 grams of soil collected with syringe jar	4°C, Hexane	10 days	4 days	47 days	47 days
PAH, SW846 8270C	2 oz glass untared	4°C	NA	NA	14 days	40 days
Semivolatile SW846 8270C	2 oz glass untared	4°C	NA	NA	14 days	40 days
PCB SW846 8082	2 oz glass untared	4°C	NA	NA	14 days	40 days

All samples are to be cooled to 4°C until tested.

Residential setting. Not-To-Exceed D-C RCLs from web-calculator at: *http://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search* (Chicago as climatic zone). Basis: ca

= cancer; nc = non-cancer; Csat = soil saturation concentration; ceiling = 10%.

------> If web-calculator result or Csat exceeds 10% by weight (the ceiling limit concentration defined in RSL Users Guide), Not-to-Exceed D-C RCL defaults to 100,000 ppm.

1. *Enter data in yellow cells.* Numeric only values under "INPUT Site Data." For ND, use detection limit. Do not type '-', 'NA' nor 'space bar.' Leave purple cells "as is."

2. *After completing data entry, See Summary in Row 872.*

Site Name:

Sample ID:

Contaminant	CAS Number	NC RCL (mg/kg)	CA RCL (mg/kg)	Not-to-Exceed RCL (mg/kg)	Basis	INPUT Site Data (mg/kg)	Flag (>) Individual Exceedance	Hazard Quotient (HQ) from Data	Cancer Risk (CR) from Data
Benzene	71-43-2	111	1.49	1.49	ca				
Ethylbenzene	100-41-4	4220	7.47	7.47	ca				
Toluene	108-88-3	5300	-	818	Csat				
Xylenes	1330-20-7	890	-	258	Csat				
Methyl tert-Butyl Ether (MTBE)	1634-04-4	23800	59.4	59.4	ca				
Dichloroethane, 1,2-	107-06-2	46.7	0.61	0.61	ca				
Dibromoethane, 1,2-	106-93-4	107	0.05	0.05	ca				
Trichloroethylene	79-01-6	6.05	0.64	0.64	ca				
Tetrachloroethylene	127-18-4	115	30.7	30.7	ca				
Vinyl Chloride	75-01-4	93.3	0.07	0.07	ca				
Dichloroethylene, 1,1-	75-35-4	342	-	342	nc				
Dichloroethylene, 1,2-trans-	156-60-5	211	-	211	nc				
Dichloroethylene, 1,2-cis-	156-59-2	156	-	156	nc				
Trichloroethane, 1,1,1-	71-55-6	12300	-	640	Csat				
Carbon Tetrachloride	56-23-5	137	0.85	0.85	ca				
Trimethylbenzene, 1,2,4-	95-63-6	89.8	-	89.8	nc				
Trimethylbenzene, 1,3,5-	108-67-8	782	-	182	Csat				
Naphthalene	91-20-3	186	5.15	5.15	ca				
Benzo[a]pyrene	50-32-8	-	0.01	0.01	ca				
Acenaphthene	83-32-9	3440	-	3440	nc				
Anthracene	120-12-7	17200	-	17200	nc				
Benz[a]anthracene	56-55-3	-	0.15	0.15	ca				
Benzo(j)fluoranthene	205-82-3	-	0.36	0.36	ca				
Benzo[b]fluoranthene	205-99-2	-	0.15	0.15	ca				
Benzo[k]fluoranthene	207-08-9	-	1.48	1.48	ca				
Chrysene	218-01-9	-	14.8	14.8	ca				
Dibenz[a,h]anthracene	53-70-3	-	0.01	0.01	ca				
Dibenzo(a,e)pyrene	192-65-4	-	0.04	0.04	ca				
Dimethylbenz(a)anthracene, 7,12-	57-97-6	-	0	0	ca				
Fluoranthene	206-44-0	2290	-	2290	nc				
Fluorene	86-73-7	2290	-	2290	nc				
Indeno[1,2,3-cd]pyrene	193-39-5	-	0.15	0.15	ca				
Methylnaphthalene, 1-	90-12-0	4010	15.6	15.6	ca				
Methylnaphthalene, 2-	91-57-6	229	-	229	nc				
Nitropyrene, 4-	57835-92-4	-	0.38	0.38	ca				
Pyrene	129-00-0	1720	-	1720	nc				
Cadmium (Diet)	7440-43-9	70.2	2110	70.2	nc				
Lead and Compounds	7439-92-1	400	-	400	nc				
Test1Chem(DRO)	Wis. DRO			100					
Test2Chem(GRO)	Wis. GRO			100					

Comparison / Hazard Index / Cumulative Cancer Risk

Target CR used: 1.00E-06

Type BRRTS No. Here (If Known)

Exceedance Count / Hazard Index / Cumulative Cancer Risk: 0 | 0.00E+00 | 0.0E+00

To Pass, data must meet all these criteria: Exceedance Count = 0 | HI ≤ 1.00E+00 | ≤ Cumulative CR ≤ 1e-05

Bottom-Line: Soil Data Entry Needed!

DRAFT

Residual Contaminant Levels Protective of Groundwater Quality
(Soil-to-Groundwater Scenario Results from: *http://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search*)

NR140 Substance	NR 140 CAS	Fed MCL (ug/l) (If Red, MCL>ES)	NR 140 ES (ug/l)	RCL-gw (mg/kg) DF=1	Use 2, or input the calculated site-specific DF --> 2.00	INPUT NUMERIC Site Data Max (mg/kg)	Flag (=> Individual Exceedance)	*Type BRRTS No. Here (If Known). Assess groundwater levels separately.*
Acetochlor	34256-82-1	-	7	5.58E-03				
Acetone	67-64-1	-	9000	1.85E+00				
Alachlor	15972-60-8	2	2	1.65E-03				
Aldicarb	116-06-3	3	10	2.49E-03				
Aluminum	7429-90-5	-	200	3.01E+02				
Antimony	7440-36-0	6	6	2.71E-01				
Anthracene	120-12-7	-	3000	9.84E+01				
Arsenic	7440-38-2	10	10	2.92E-01				
Atrazine, total chlorinated residues	1912-24-9	3	3	1.95E-03				
Barium	7440-39-3	2000	2000	8.24E+01				
Bentazon	25057-89-0	-	300	6.59E-02				
Benzene	71-43-2	5	5	2.56E-03				
Benzo(a)pyrene (PAH)	50-32-8	0.2	0.2	2.35E-01				
Benzo(b)fluoranthene (PAH)	205-99-2	-	0.2	2.40E-01				
Beryllium	7440-41-7	4	4	3.16E+00				
Boron	7440-42-8	-	1000	3.20E+00				
Bromodichloromethane (THM)	75-27-4	80	0.6	1.63E-04				
Bromoform (THM)	75-25-2	80	4.4	1.17E-03				
Bromomethane	74-83-9	-	10	2.53E-03				
Butylate	2008-41-5	-	400	3.88E-01				
Cadmium	7440-43-9	5	5	3.76E-01				
Carbaryl	63-25-2	-	40	3.64E-02				
Carbofuran	1563-66-2	40	40	1.56E-02				
Carbon disulfide	75-15-0	-	1000	2.97E-01				
Carbon tetrachloride	56-23-5	5	5	1.94E-03				
Chloramben	133-90-4	-	150	3.63E-02				
Chlorodifluoromethane	75-45-6	-	7000	2.89E+00				
Chloroethane	75-00-3	-	400	1.13E-01				
Chloroform (THM)	67-66-3	80	6	1.67E-03				
Chlorpyrifos	2921-88-2	-	2	2.95E-02				
Chloromethane	74-87-3	-	30	7.76E-03				
Chromium (total)	7440-47-3	100	100	1.80E+05				
Chrysene (PAH)	218-01-9	-	0.2	7.25E-02				Re-assess if Cr-VI present
Cobalt	7440-48-4	-	40	1.81E+00				
Copper	7440-50-8	1300	1300	4.58E+01				
Cyanazine	21725-46-2	-	1	4.68E-04				
Cyanide, free	57-12-5	200	200	2.02E+00				
Dacthal (DCPA)	1861-32-1	-	70	8.56E-02				
1,2-Dibromoethane	106-93-4	0.05	0.05	1.41E-05				
Dibromochloromethane (THM)	124-48-1	80	60	1.60E-02				
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	0.2	0.2	8.64E-05				
Dibutyl phthalate	84-74-2	-	1000	2.52E+00				
Dicamba	1918-00-9	-	300	7.76E-02				
1,2-Dichlorobenzene	95-50-1	600	600	5.84E-01				
1,3-Dichlorobenzene	541-73-1	-	600	5.76E-01				
1,4-Dichlorobenzene	106-46-7	75	75	7.20E-02				
Dichlorodifluoromethane	75-71-8	-	1000	1.54E+00				
1,1-Dichloroethane	75-34-3	-	850	2.42E-01				
1,2-Dichloroethane	107-06-2	5	5	1.42E-03				
1,1-Dichloroethylene	75-35-4	7	7	2.51E-03				
1,2-Dichloroethylene (cis)	156-59-2	70	70	2.06E-02				
1,2-Dichloroethylene (trans)	156-60-5	100	100	2.94E-02				
2,4-Dichlorophenoxyacetic acid (2,4-D)	94-75-7	70	70	1.81E-02				
1,2-Dichloropropane	78-87-5	5	5	1.66E-03				
1,3-Dichloropropene (cis/trans) (Telone)	542-75-6	-	0.4	1.43E-04				
Di (2-ethylhexyl) phthalate	117-81-7	6	6	1.44E+00				
Dimethoate	60-51-5	-	2	4.51E-04				
2,4-Dinitrotoluene	121-14-2	-	0.05	6.76E-05				
2,6-Dinitrotoluene	606-20-2	-	0.05	6.88E-05				
Dinitrotoluene, Total Residues	25321-14-6	-	0.05	6.89E-05				
Dinoseb	88-85-7	7	7	6.15E-02				
1,4-Dioxane (p-dioxane)	123-91-1	-	3	6.18E-04				
Dioxin (2,3,7,8-TCDD)	1746-01-6	0	0	1.50E-05				
Endrin	72-20-8	2	2	8.08E-02				
EPTC	759-94-4	-	250	1.32E-01				

No RSL result for: Asbestos; Bacteria; 1,3-DCB; Hydrogen Sulfide; Nitrate/Nitrite; Tetrahydrofuran; Perchlorate.

Only use DAF=2 (or site-specific DAF) RCL after clearly defining gw plume. RCL < 0.0001 ppm is in "E" notation.

Residual Contaminant Levels Protective of Groundwater Quality
(Soil-to-Groundwater Scenario Results from: *http://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search*)

NR140 Substance	NR 140 CAS	Fed MCL (ug/l) (If Red, MCL>ES)	NR 140 ES (ug/l)	RCL-gw (mg/kg) DF=1	Use 2, or input the calculated site-specific DF –> 2.00	INPUT NUMERIC Site Data Max (mg/kg)	Flag E= Individual Exceedance
Ethylbenzene	100-41-4	700	700	7.85E-01			
Ethyl Ether (Diethyl Ether)	60-29-7	-	1000	2.24E-01			
Ethylene glycol	107-21-1	-	14000	2.82E+00			
Fluoranthene	206-44-0	-	400	4.44E+01			
Fluorene (PAH)	86-73-7	-	400	7.41E+00			
Fluoride	7782-41-4	4000	4000	6.01E+02			
Fluorotrichloromethane	75-69-4	-	3490	2.23E+00			
Formaldehyde	50-00-0	-	1000	2.02E-01			
Heptachlor	76-44-8	0.4	0.4	3.31E-02			
Heptachlor epoxide	1024-57-3	0.2	0.2	4.08E-03			
Hexachlorobenzene	118-74-1	1	1	1.26E-02			
n-Hexane	110-54-3	-	600	4.22E+00			
Lead	7439-92-1	15	15	1.35E+01			
Lindane	58-89-9	0.2	0.2	1.16E-03			
Manganese	7439-96-5	-	300	1.96E+01			
Mercury	7439-97-6	2	2	1.04E-01			
Methanol	67-56-1	-	5000	1.01E+00			
Methoxychlor	72-43-5	40	40	2.16E+00			
Methylene chloride	75-09-2	5	5	1.28E-03			
Methyl ethyl ketone (MEK)	78-93-3	-	4000	8.39E-01			
Methyl Isobutyl ketone (MIBK)	108-10-1	-	500	1.13E-01			
Methyl tert-butyl ether (MTBE)	1634-04-4	-	60	1.35E-02			
Metolachlor/s-Metolachlor	51218-45-2	-	100	1.17E-01			
Metribuzin	21087-64-9	-	70	2.14E-02			
Molybdenum	7439-98-7	-	40	8.08E-01			
Monochlorobenzene	108-90-7	100	100	6.79E-02			
Naphthalene	91-20-3	-	100	3.29E-01			
Nickel	7440-02-0	-	100	6.50E+00			
N-Nitrosodiphenylamine (NDPA)	86-30-6	-	7	3.82E-02			
Pentachlorophenol (PCP)	87-86-5	1	1	1.01E-02			
Phenol	108-95-2	-	2000	1.15E+00			
Picloram	1918-02-1	500	500	1.39E-01			
Polychlorinated biphenyls (PCBs)	1336-36-3	0.5	0.03	4.69E-03			
Prometon	1610-18-0	-	100	4.75E-02			
Propazine	139-40-2	-	10	8.86E-03			
Pyrene (PAH)	129-00-0	-	250	2.72E+01			
Pyridine	110-86-1	-	10	3.44E-03			
Selenium	7782-49-2	50	50	2.60E-01			
Silver	7440-22-4	-	50	4.25E-01			
Simazine	122-34-9	4	4	1.97E-03			
Styrene	100-42-5	100	100	1.10E-01			
Tertiary Butyl Alcohol (TBA)	75-65-0	-	12	2.45E-03			
1,1,1,2-Tetrachloroethane	630-20-6	-	70	2.67E-02			
1,1,2,2-Tetrachloroethane	79-34-5	-	0.2	7.80E-05			
Tetrachloroethylene (PCE)	127-18-4	5	5	2.27E-03			
Tetrahydrofuran	109-99-9	-	50	1.11E-02			
Thallium	7440-28-0	2	2	1.42E-01			
Toluene	108-88-3	1000	800	5.54E-01			
Toxaphene	8001-35-2	3	3	4.64E-01			
1,2,4-Trichlorobenzene	120-82-1	70	70	2.04E-01			
1,1,1-Trichloroethane	71-55-6	200	200	7.01E-02			
1,1,2-Trichloroethane	79-00-5	5	5	1.62E-03			
Trichloroethylene (TCE)	79-01-6	5	5	1.79E-03			
2,4,5-Trichlorophenoxypropionic acid (2,4,5-TP)(Silvex)	93-72-1	50	50	2.75E-02			
1,2,3-Trichloropropane	96-18-4	-	60	2.60E-02			
Trifluralin	1582-09-8	-	7.5	2.48E-01			
Trimethylbenzenes (1,2,4- and 1,3,5- combined)	95-63-6 / 108-67-8	-	480	6.90E-01			
Vanadium	7440-62-2						
Vinyl chloride	75-01-4	2	0.2	6.90E-05			
Xylenes (m-, o-, p- combined)	1330-20-7	10000	2000	1.97E+00			

Type BRRTS No. Here (If Known). Assess groundwater levels separately.

No RSL result for: Asbestos; Bacteria; 1,3-DCB; Hydrogen Sulfide; Nitrate/Nitrite; Tetrahydrofuran; Perchlorate.

Only use DAF=2 (or site-specific DAF) RCL after clearly defining gw plume. RCL < 0.0001 ppm is in "E" notation

Site-specific

Resident Equation Inputs for Soil

Variable	Value
TR (target cancer risk) unitless	1.0E-6
ED_r (exposure duration - resident) year	30
ET_{rs} (exposure time - resident) hour	24
ED_c (exposure duration - child) year	6
ED_a (exposure duration - adult) year	24
BW_a (body weight - adult) kg	70
BW_c (body weight - child) kg	15
SA_a (skin surface area - adult) cm^2/day	5700
SA_c (skin surface area - child) cm^2/day	2800
THQ (target hazard quotient) unitless	1
LT (lifetime - resident) year	70
EF_r (exposure frequency) day/year	350
IRS_a (soil intake rate - adult) mg/day	100
IRS_c (soil intake rate - child) mg/day	200
AF_a (skin adherence factor - adult) mg/cm^2	0.07
AF_c (skin adherence factor - child) mg/cm^2	0.2
IFS_{adj} (age-adjusted soil ingestion factor) mg-year/kg-day	114
DFS_{adj} (age-adjusted soil dermal factor) mg-year/kg-day	361
$IFSM_{adj}$ (mutagenic age-adjusted soil ingestion factor) mg-year/kg-day	489.5
$DFSM_{adj}$ (mutagenic age-adjusted soil dermal factor) mg-year/kg-day	1445
ED_{0-2} (exposure duration first phase) year	2
ED_{2-6} (exposure duration second phase) year	4
ED_{6-16} (exposure duration third phase) year	10
ED_{16-30} (exposure duration fourth phase) year	14
City (Climate Zone) PEF Selection	Chicago, IL (7)
A_s (acres) PEF Selection	0.5
Q/C_{wp} (g/m^2-s per kg/m^3) PEF Selection	98.43071
PEF (particulate emission factor) m^3/kg	1560521108
A (PEF Dispersion Constant)	16.8653

Site-specific

Resident Equation Inputs for Soil

Variable	Value
B (PEF Dispersion Constant)	18.7848
C (PEF Dispersion Constant)	215.0624
V (fraction of vegetative cover) unitless	0.5
U_m (mean annual wind speed) m/s	4.65
U_t (equivalent threshold value)	11.32
F(x) (function dependant on U_m/U_t) unitless	0.182
City (Climate Zone) VF Selection	Chicago, IL (7)
A_s (acres) VF Selection	0.5
Q/C_{wp} (g/m^2-s per kg/m^3) VF Selection	98.43071
foc (fraction organic carbon in soil) g/g	0.006
ρ$_b$ (dry soil bulk density) g/cm^3	1.5
ρ$_s$ (soil particle density) g/cm^3	2.65
θ$_w$ (water-filled soil porosity) L_{water}/L_{soil}	0.15
T (exposure interval) s	9.5e8
A (VF Dispersion Constant)	16.8653
B (VF Dispersion Constant)	18.7848
C (VF Dispersion Constant)	215.0624

Site-specific

Resident Screening Levels (RSL) for Soil

ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide), sat=SL exceeds csat,
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide),
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Mutagen?	VOC?	Ingestion SF ($(mg/kg\text{-}day)^{-1}$)	SFO Ref	Inhalation Unit Risk ($(ug/m^3)^{-1}$)	IUR Ref	Chronic RfD (mg/kg-day)	RfD Ref	Chronic RfC (mg/m^3)	RfC Ref	GIABS	ABS	RBA
Benzene	71-43-2	No	Yes	5.50E-02	I	7.80E-06	I	4.00E-03	I	3.00E-02	I	1	-	1
Cadmium (Diet)	7440-43-9	No	No	-		1.80E-03	I	1.00E-03	I	1.00E-05	A	0.025	0.001	1
Carbon Tetrachloride	56-23-5	No	Yes	7.00E-02	I	6.00E-06	I	4.00E-03	I	1.00E-01	I	1	-	1
Dibromoethane, 1,2-	106-93-4	No	Yes	2.00E+00	I	6.00E-04	I	9.00E-03	I	9.00E-03	I	1	-	1
Dichloroethane, 1,2-	107-06-2	No	Yes	9.10E-02	I	2.60E-05	I	6.00E-03	X	7.00E-03	P	1	-	1
Dichloroethylene, 1,1-	75-35-4	No	Yes	-		-		5.00E-02	I	2.00E-01	I	1	-	1
Dichloroethylene, 1,2-cis-	156-59-2	No	Yes	-		-		2.00E-03	I	-		1	-	1
Dichloroethylene, 1,2-trans-	156-60-5	No	Yes	-		-		2.00E-02	I	6.00E-02	P	1	-	1
Ethylbenzene	100-41-4	No	Yes	1.10E-02	C	2.50E-06	C	1.00E-01	I	1.00E+00	I	1	-	1
Lead and Compounds	7439-92-1	No	No	-		-		-		-		1	-	1
Methyl tert-Butyl Ether (MTBE)	1634-04-4	No	Yes	1.80E-03	C	2.60E-07	C	-		3.00E+00	I	1	-	1
Acenaphthene	83-32-9	No	Yes	-		-		6.00E-02	I	-		1	0.13	1
Anthracene	120-12-7	No	Yes	-		-		3.00E-01	I	-		1	0.13	1
Benz[a]anthracene	56-55-3	Yes	No	7.30E-01	W	1.10E-04	C	-		-		1	0.13	1
Benzo(j)fluoranthene	205-82-3	No	No	1.20E+00	C	1.10E-04	C	-		-		1	0.13	1
Benzo[a]pyrene	50-32-8	Yes	No	7.30E+00	I	1.10E-03	C	-		-		1	0.13	1
Benzo[b]fluoranthene	205-99-2	Yes	No	7.30E-01	W	1.10E-04	C	-		-		1	0.13	1
Benzo[k]fluoranthene	207-08-9	Yes	No	7.30E-02	W	1.10E-04	C	-		-		1	0.13	1
Chrysene	218-01-9	Yes	No	7.30E-03	W	1.10E-05	C	-		-		1	0.13	1
Dibenz[a,h]anthracene	53-70-3	Yes	No	7.30E+00	W	1.20E-03	C	-		-		1	0.13	1
Dibenzo(a,e)pyrene	192-65-4	No	No	1.20E+01	C	1.10E-03	C	-		-		1	0.13	1
Dimethylbenz(a)anthracene, 7,12-	57-97-6	Yes	No	2.50E+02	C	7.10E-02	C	-		-		1	0.13	1
Fluoranthene	206-44-0	No	No	-		-		4.00E-02	I	-		1	0.13	1
Fluorene	86-73-7	No	Yes	-		-		4.00E-02	I	-		1	0.13	1
Indeno[1,2,3-cd]pyrene	193-39-5	Yes	No	7.30E-01	W	1.10E-04	C	-		-		1	0.13	1
Methylnaphthalene, 1-	90-12-0	No	Yes	2.90E-02	P	-		7.00E-02	A	-		1	0.13	1
Methylnaphthalene, 2-	91-57-6	No	Yes	-		-		4.00E-03	I	-		1	0.13	1
Naphthalene	91-20-3	No	Yes	-		3.40E-05	C	2.00E-02	I	3.00E-03	I	1	0.13	1

Site-specific

Resident Screening Levels (RSL) for Soil

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Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide),
Ssat=Soil Inhalation SL exceeds csat and has been substituted with the csat

Chemical	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL Child HQ=1 (mg/kg)	Dermal SL Child HQ=1 (mg/kg)	Inhalation SL Child HQ=1 (mg/kg)
Benzene	5.49E+03	1.82E+03	1.56E+09	1.16E+01	-	1.71E+00	1.49E+00	3.13E+02	-	1.72E+02
Cadmium (Diet)	-	-	1.56E+09	-	-	2.11E+03	2.11E+03	7.82E+01	6.98E+02	1.63E+04
Carbon Tetrachloride	2.32E+03	4.58E+02	1.56E+09	9.15E+00	-	9.42E-01	8.54E-01	3.13E+02	-	2.42E+02
Dibromoethane, 1,2-	1.34E+04	1.34E+03	1.56E+09	3.20E-01	-	5.45E-02	4.65E-02	7.04E+02	-	1.26E+02
Dichloroethane, 1,2-	7.11E+03	2.98E+03	1.56E+09	7.04E+00	-	6.65E-01	6.08E-01	4.69E+02	-	5.19E+01
Dichloroethylene, 1,1-	1.80E+03	1.19E+03	1.56E+09	-	-	-	-	3.91E+03	-	3.75E+02
Dichloroethylene, 1,2-cis-	3.88E+03	2.37E+03	1.56E+09	-	-	-	-	1.56E+02	-	-
Dichloroethylene, 1,2-trans-	3.90E+03	1.67E+03	1.56E+09	-	-	-	-	1.56E+03	-	2.44E+02
Ethylbenzene	8.81E+03	4.80E+02	1.56E+09	5.82E+01	-	8.57E+00	7.47E+00	7.82E+03	-	9.18E+03
Lead and Compounds	-	-	1.56E+09	-	-	-	-	-	-	-
Methyl tert-Butyl Ether (MTBE)	7.62E+03	8.87E+03	1.56E+09	3.56E+02	-	7.13E+01	5.94E+01	-	-	2.38E+04
Acenaphthene	2.19E+05	-	1.56E+09	-	-	-	-	4.69E+03	1.29E+04	-
Anthracene	8.13E+05	-	1.56E+09	-	-	-	-	2.35E+04	6.45E+04	-
Benz[a]anthracene	-	-	1.56E+09	2.04E-01	5.32E-01	1.36E+04	1.48E-01	-	-	-
Benzo(j)fluoranthene	-	-	1.56E+09	5.34E-01	1.30E+00	3.45E+04	3.78E-01	-	-	-
Benzo[a]pyrene	-	-	1.56E+09	2.04E-02	5.32E-02	1.36E+03	1.48E-02	-	-	-
Benzo[b]fluoranthene	-	-	1.56E+09	2.04E-01	5.32E-01	1.36E+04	1.48E-01	-	-	-
Benzo[k]fluoranthene	-	-	1.56E+09	2.04E+00	5.32E+00	1.36E+04	1.48E+00	-	-	-
Chrysene	-	-	1.56E+09	2.04E+01	5.32E+01	1.36E+05	1.48E+01	-	-	-
Dibenz[a,h]anthracene	-	-	1.56E+09	2.04E-02	5.32E-02	1.25E+03	1.48E-02	-	-	-
Dibenzo(a,e)pyrene	-	-	1.56E+09	5.34E-02	1.30E-01	3.45E+03	3.78E-02	-	-	-
Dimethylbenz(a)anthracene, 7,12-	-	-	1.56E+09	5.97E-04	1.55E-03	2.11E+01	4.31E-04	-	-	-
Fluoranthene	-	-	1.56E+09	-	-	-	-	3.13E+03	8.59E+03	-
Fluorene	4.37E+05	-	1.56E+09	-	-	-	-	3.13E+03	8.59E+03	-
Indeno[1,2,3-cd]pyrene	-	-	1.56E+09	2.04E-01	5.32E-01	1.36E+04	1.48E-01	-	-	-
Methylnaphthalene, 1-	9.11E+04	-	1.56E+09	2.21E+01	5.36E+01	-	1.56E+01	5.48E+03	1.50E+04	-
Methylnaphthalene, 2-	9.01E+04	-	1.56E+09	-	-	-	-	3.13E+02	8.59E+02	-
Naphthalene	7.20E+04	-	1.56E+09	-	-	5.15E+00	5.15E+00	1.56E+03	4.30E+03	2.25E+02

Site-specific

Resident Screening Levels (RSL) for Soil

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Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide),
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	Noncarcinogenic SL Child HI=1 (mg/kg)	Ingestion SL Adult HQ=1 (mg/kg)	Dermal SL Adult HQ=1 (mg/kg)	Inhalation SL Adult HQ=1 (mg/kg)	Noncarcinogenic SL Adult HI=1 (mg/kg)	Screening Level (mg/kg)
Benzene	1.11E+02	2.92E+03	-	1.72E+02	1.62E+02	1.49E+00 ca**
Cadmium (Diet)	7.00E+01	7.30E+02	4.57E+03	1.63E+04	6.06E+02	7.00E+01 nc
Carbon Tetrachloride	1.37E+02	2.92E+03	-	2.42E+02	2.24E+02	8.54E-01 ca
Dibromoethane, 1,2-	1.07E+02	6.57E+03	-	1.26E+02	1.24E+02	4.65E-02 ca
Dichloroethane, 1,2-	4.67E+01	4.38E+03	-	5.19E+01	5.13E+01	6.08E-01 ca*
Dichloroethylene, 1,1-	3.42E+02	3.65E+04	-	3.75E+02	3.71E+02	3.42E+02 nc
Dichloroethylene, 1,2-cis-	1.56E+02	1.46E+03	-	-	1.46E+03	1.56E+02 nc
Dichloroethylene, 1,2-trans-	2.11E+02	1.46E+04	-	2.44E+02	2.40E+02	2.11E+02 nc
Ethylbenzene	4.22E+03	7.30E+04	-	9.18E+03	8.16E+03	7.47E+00 ca
Lead and Compounds	-	-	-	-	-	4.00E+02 nc
Methyl tert-Butyl Ether (MTBE)	2.38E+04	-	-	2.38E+04	2.38E+04	5.94E+01 ca
Acenaphthene	3.44E+03	4.38E+04	8.44E+04	-	2.88E+04	3.44E+03 nc
Anthracene	1.72E+04	2.19E+05	4.22E+05	-	1.44E+05	1.72E+04 nc
Benz[a]anthracene	-	-	-	-	-	1.48E-01 ca
Benzo(j)fluoranthene	-	-	-	-	-	3.78E-01 ca
Benzo[a]pyrene	-	-	-	-	-	1.48E-02 ca
Benzo[b]fluoranthene	-	-	-	-	-	1.48E-01 ca
Benzo[k]fluoranthene	-	-	-	-	-	1.48E+00 ca
Chrysene	-	-	-	-	-	1.48E+01 ca
Dibenz[a,h]anthracene	-	-	-	-	-	1.48E-02 ca
Dibenzo(a,e)pyrene	-	-	-	-	-	1.78E-02 ca
Dimethylbenz(a)anthracene, 7,12-	-	-	-	-	-	1.31E-04 ca
Fluoranthene	2.29E+03	2.92E+04	5.63E+04	-	1.92E+04	2.29E+03 nc
Fluorene	2.29E+03	2.92E+04	5.63E+04	-	1.92E+04	2.29E+03 nc
Indeno[1,2,3-cd]pyrene	-	-	-	-	-	1.48E-01 ca
Methylnaphthalene, 1-	4.01E+03	5.11E+04	9.85E+04	-	3.36E+04	4.01E+01 nc
Methylnaphthalene, 2-	2.29E+02	2.92E+03	5.63E+03	-	1.92E+03	2.29E+02 nc
Naphthalene	1.88E+02	1.46E+04	2.81E+04	2.25E+02	2.20E+02	5.15E+00 ca*

Site-specific

Resident Screening Levels (RSL) for Soil

ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide), sat=SL exceeds csat,
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide),
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	CAS Number	Mutagen?	VOC?	Ingestion SF ($(mg/kg\text{-}day)^{-1}$)	SFO Ref	Inhalation Unit Risk ($(ug/m^3)^{-1}$)	IUR Ref	Chronic RfD (mg/kg-day)	RfD Ref	Chronic RfC (mg/m^3)	RfC Ref	GIABS	ABS	RBA
Nitropyrene, 4-	57835-92-4	No	No	1.20E+00	C	1.10E-04	C	-		-		1	0.13	1
Pyrene	129-00-0	No	Yes	-		-		3.00E-02	I	-		1	0.13	1
Tetrachloroethylene	127-18-4	No	Yes	2.10E-03	I	2.60E-07	I	6.00E-03	I	4.00E-02	I	1	-	1
Toluene	108-88-3	No	Yes	-		-		8.00E-02	I	5.00E+00	I	1	-	1
Trichloroethane, 1,1,1-	71-55-6	No	Yes	-		-		2.00E+00	I	5.00E+00	I	1	-	1
Trichloroethylene	79-01-6	Yes	Yes	4.60E-02	I	4.10E-06	I	5.00E-04	I	2.00E-03	I	1	-	1
Trimethylbenzene, 1,2,4-	95-63-6	No	Yes	-		-		-		7.00E-03	P	1	-	1
Trimethylbenzene, 1,3,5-	108-67-8	No	Yes	-		-		1.00E-02	X	-		1	-	1
Vinyl Chloride	75-01-4	Yes	Yes	7.20E-01	I	4.40E-06	I	3.00E-03	I	1.00E-01	I	1	-	1
Xylenes	1330-20-7	No	Yes	-		-		2.00E-01	I	1.00E-01	I	1	-	1

Site-specific

Resident Screening Levels (RSL) for Soil

ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide), sat=SL exceeds csat,
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide),
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)	Ingestion SL Child HQ=1 (mg/kg)	Dermal SL Child HQ=1 (mg/kg)	Inhalation SL Child HQ=1 (mg/kg)
Nitropyrene, 4-	-	-	1.56E+09	5.34E-01	1.30E+00	3.45E+04	3.78E-01	-	-	-
Pyrene	3.70E+06	-	1.56E+09	-	-	-	-	2.35E+03	6.45E+03	-
Tetrachloroethylene	3.65E+03	1.66E+02	1.56E+09	3.05E+02	-	3.41E+01	3.07E+01	4.69E+02	-	1.52E+02
Toluene	6.66E+03	8.18E+02	1.56E+09	-	-	-	-	6.26E+03	-	3.47E+04
Trichloroethane, 1,1,1-	2.56E+03	6.40E+02	1.56E+09	-	-	-	-	1.56E+05	-	1.34E+04
Trichloroethylene	3.43E+03	6.92E+02	1.56E+09	3.24E+00	-	8.04E-01	6.44E-01	3.91E+01	-	7.16E+00
Trimethylbenzene, 1,2,4-	1.23E+04	2.19E+02	1.56E+09	-	-	-	-	-	-	8.98E+01
Trimethylbenzene, 1,3,5-	1.03E+04	1.82E+02	1.56E+09	-	-	-	-	7.82E+02	-	-
Vinyl Chloride	1.49E+03	3.92E+03	1.56E+09	9.32E-02	-	2.39E-01	6.71E-02	2.35E+02	-	1.55E+02
Xylenes	9.05E+03	2.58E+02	1.56E+09	-	-	-	-	1.56E+04	-	9.44E+02

Site-specific

Resident Screening Levels (RSL) for Soil

ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide), sat=SL exceeds csat,
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide),
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	Noncarcinogenic SL Child HI=1 (mg/kg)	Ingestion SL Adult HQ=1 (mg/kg)	Dermal SL Adult HQ=1 (mg/kg)	Inhalation SL Adult HQ=1 (mg/kg)	Noncarcinogenic SL Adult HI=1 (mg/kg)	Screening Level (mg/kg)
Nitropyrene, 4-	-	-	-	-	-	3.78E-01 ca
Pyrene	1.72E+03	2.19E+04	4.22E+04	-	1.44E+04	1.72E+03 nc
Tetrachloroethylene	1.15E+02	4.38E+03	-	1.52E+02	1.47E+02	3.07E+01 ca**
Toluene	5.30E+03	5.84E+04	-	3.47E+04	2.18E+04	5.30E+03 sat
Trichloroethane, 1,1,1-	1.23E+04	1.46E+06	-	1.34E+04	1.32E+04	1.23E+04 sat
Trichloroethylene	6.05E+00	3.65E+02	-	7.16E+00	7.02E+00	6.44E-01 ca*
Trimethylbenzene, 1,2,4-	8.98E+01	-	-	8.98E+01	8.98E+01	8.98E+01 nc
Trimethylbenzene, 1,3,5-	7.82E+02	7.30E+03	-	-	7.30E+03	7.82E+02 sat
Vinyl Chloride	9.33E+01	2.19E+03	-	1.55E+02	1.45E+02	6.71E-02 ca
Xylenes	8.90E+02	1.46E+05	-	9.44E+02	9.37E+02	8.90E+02 sat

(22) "Wastewater and sludge storage or treatment lagoon" means a natural or man–made containment structure, constructed primarily of earthen materials for the treatment or storage of wastewater or sludge, which is not a land disposal system.

History: Cr. Register, September, 1985, No. 357, eff. 10–1–85; cr. (1m), am. (7), (17) and (18), Register, October, 1988, No. 394, eff. 11–1–88; am. (6), cr. (20h) and (20m), Register, March, 1994, No. 459, eff. 4–1–94; cr. (1s), (10e), (10s), (20k), r. and recr. (12), (13), Register, August, 1995, No. 476, eff. 9–1–95; cr. (14m), Register, October, 1996, No. 490, eff. 11–1–96; am. (20), Register, December, 1998, No. 516, eff. 1–1–99; correction in (9) made under s. 13.93 (2m) (b) 7., Stats., Register, April, 2001, No. 544; CR 02–134: cr. (1u), (1w), (1y) and (20s) Register June 2003 No. 570, eff. 7–1–03.

Subchapter II — Groundwater Quality Standards

NR 140.10 Public health related groundwater standards. The groundwater quality standards for substances of public health concern are listed in Table 1.

Note: For all substances that have carcinogenic, mutagenic or teratogenic properties or interactive effects, the preventive action limit is 10% of the enforcement standard. The preventive action limit is 20% of the enforcement standard for all other substances that are of public health concern. Enforcement standards and preventive action limits for additional substances will be added to Table I as recommendations are developed pursuant to ss. 160.07, 160.13 and 160.15, Stats.

Table 1
Public Health Groundwater Quality Standards

Substance[1]	Enforcement Standard (micrograms per liter – except as noted)	Preventive Action Limit (micrograms per liter – except as noted)
Acetochlor	7	0.7
Acetochlor ethane sulfonic acid + oxanilic acid (Acetochlor – ESA + OXA)	230	46
Acetone	9 mg/l	1.8 mg/l
Alachlor	2	0.2
Alachlor ethane sulfonic acid (Alachlor – ESA)	20	4
Aldicarb	10	2
Aluminum	200	40
Ammonia (as N)	9.7 mg/l	0.97 mg/l
Antimony	6	1.2
Anthracene	3000	600
Arsenic	10	1
Asbestos	7 million fibers per liter (MFL)	0.7 MFL
Atrazine, total chlorinated residues	3[2]	0.3[2]
Bacteria, Total Coliform	0[3]	0[3]
Barium	2 milligrams/liter (mg/l)	0.4 mg/l
Bentazon	300	60
Benzene	5	0.5
Benzo(b)fluoranthene	0.2	0.02
Benzo(a)pyrene	0.2	0.02
Beryllium	4	0.4
Boron	1000	200
Bromodichloromethane	0.6	0.06
Bromoform	4.4	0.44
Bromomethane	10	1
Butylate	400	80
Cadmium	5	0.5
Carbaryl	40	4
Carbofuran	40	8
Carbon disulfide	1000	200
Carbon tetrachloride	5	0.5
Chloramben	150	30
Chlordane	2	0.2
Chlorodifluoromethane	7 mg/l	0.7 mg/l
Chloroethane	400	80
Chloroform	6	0.6
Chlorpyrifos	2	0.4
Chloromethane	30	3
Chromium (total)	100	10
Chrysene	0.2	0.02

Table 1 – Continued
Public Health Groundwater Quality Standards

Substance[1]	Enforcement Standard (micrograms per liter – except as noted)	Preventive Action Limit (micrograms per liter – except as noted)
Cobalt	40	8
Copper	1300	130
Cyanazine	1	0.1
Cyanide, free[4]	200	40
Dacthal	70	14
1,2–Dibromoethane (EDB)	0.05	0.005
Dibromochloromethane	60	6
1,2–Dibromo–3–chloropropane (DBCP)	0.2	0.02
Dibutyl phthalate	1000	100
Dicamba	300	60
1,2–Dichlorobenzene	600	60
1,3–Dichlorobenzene	600	120
1,4–Dichlorobenzene	75	15
Dichlorodifluoromethane	1000	200
1,1–Dichloroethane	850	85
1,2–Dichloroethane	5	0.5
1,1–Dichloroethylene	7	0.7
1,2–Dichloroethylene (cis)	70	7
1,2–Dichloroethylene (trans)	100	20
2,4–Dichlorophenoxyacetic Acid (2,4–D)	70	7
1,2–Dichloropropane	5	0.5
1,3–Dichloropropene (cis/trans)	0.4	0.04
Di (2–ethylhexyl) phthalate	6	0.6
Dimethenamid/Dimethenamid–P	50	5
Dimethoate	2	0.4
2,4–Dinitrotoluene	0.05	0.005
2,6–Dinitrotoluene	0.05	0.005
Dinitrotoluene, Total Residues[5]	0.05	0.005
Dinoseb	7	1.4
1,4–Dioxane	3	0.3
Dioxin (2, 3, 7, 8–TCDD)	0.00003	0.000003
Endrin	2	0.4
EPTC	250	50
Ethylbenzene	700	140
Ethyl ether	1000	100
Ethylene glycol	14 mg/l	2.8 mg/l
Fluoranthene	400	80
Fluorene	400	80
Fluoride	4 mg/l	0.8 mg/l
Fluorotrichloromethane	3490	698
Formaldehyde	1000	100
Heptachlor	0.4	0.04
Heptachlor epoxide	0.2	0.02
Hexachlorobenzene	1	0.1
N–Hexane	600	120
Hydrogen sulfide	30	6
Lead	15	1.5
Lindane	0.2	0.02
Manganese	300	60
Mercury	2	0.2

Table 1 – Continued
Public Health Groundwater Quality Standards

Substance[1]	Enforcement Standard (micrograms per liter – except as noted)	Preventive Action Limit (micrograms per liter – except as noted)
Methanol	5000	1000
Methoxychlor	40	4
Methylene chloride	5	0.5
Methyl ethyl ketone (MEK)	4 mg/l	0.8 mg/l
Methyl isobutyl ketone (MIBK)	500	50
Methyl tert–butyl ether (MTBE)	60	12
Metolachlor/s–Metolachlor	100	10
Metolachlor ethane sulfonic acid + oxanilic acid (Metolachlor – ESA + OXA)	1.3 mg/l	0.26 mg/l
Metribuzin	70	14
Molybdenum	40	8
Monochlorobenzene	100	20
Naphthalene	100	10
Nickel	100	20
Nitrate (as N)	10 mg/l	2 mg/l
Nitrate + Nitrite (as N)	10 mg/l	2 mg/l
Nitrite (as N)	1 mg/l	0.2 mg/l
N–Nitrosodiphenylamine	7	0.7
Pentachlorophenol (PCP)	1	0.1
Perchlorate	1	0.1
Phenol	2 mg/l	0.4 mg/l
Picloram	500	100
Polychlorinated biphenyls (PCBs)	0.03	0.003
Prometon	100	20
Propazine	10	2
Pyrene	250	50
Pyridine	10	2
Selenium	50	10
Silver	50	10
Simazine	4	0.4
Styrene	100	10
Tertiary Butyl Alcohol (TBA)	12	1.2
1,1,1,2–Tetrachloroethane	70	7
1,1,2,2–Tetrachloroethane	0.2	0.02
Tetrachloroethylene	5	0.5
Tetrahydrofuran	50	10
Thallium	2	0.4
Toluene	800	160
Toxaphene	3	0.3
1,2,4–Trichlorobenzene	70	14
1,1,1–Trichloroethane	200	40
1,1,2–Trichloroethane	5	0.5
Trichloroethylene (TCE)	5	0.5
2,4,5–Trichlorophenoxy–propionic acid (2,4,5–TP)	50	5
1,2,3–Trichloropropane	60	12
Trifluralin	7.5	0.75
Trimethylbenzenes (1,2,4– and 1,3,5– combined)	480	96
Vanadium	30	6

Table 1 – Continued
Public Health Groundwater Quality Standards

Substance[1]	Enforcement Standard (micrograms per liter – except as noted)	Preventive Action Limit (micrograms per liter – except as noted)
Vinyl chloride	0.2	0.02
Xylene[6]	2 mg/l	0.4 mg/l

[1] Appendix I contains Chemical Abstract Service (CAS) registry numbers, common synonyms and trade names for most substances listed in Table 1.

[2] Total chlorinated atrazine residues includes parent compound and the following metabolites of health concern: 2–chloro–4–amino–6–isopropylamino–s–triazine (formerly deethylatrazine), 2–chloro–4–amino–6–ethylamino–s–triazine (formerly deisopropylatrazine) and 2–chloro–4,6–diamino–s–triazine (formerly diaminoatrazine).

[3] Total coliform bacteria may not be present in any 100 ml sample using either the membrane filter (MF) technique, the presence–absence (P–A) coliform test, the minimal medium ONPG–MUG (MMO–MUG) test or not present in any 10 ml portion of the 10–tube multiple tube fermentation (MTF) technique.

[4] "Cyanide, free" refers to the simple cyanides (HCN, CN^-) and /or readily dissociable metal–cyanide complexes. Free cyanide is regulatorily equivalent to cyanide quantified by approved analytical methods for "amenable cyanide" or "available cyanide".

[5] Dinitrotoluene, Total Residues includes the dinitrotoluene (DNT) isomers: 2,3–DNT, 2,4–DNT, 2,5–DNT, 2,6–DNT, 3,4–DNT and 3,5–DNT.

[6] Xylene includes meta–, ortho–, and para–xylene combined.

History: Cr. Register, September, 1985, No. 357, eff. 10–1–85; am. table 1, Register, October, 1988, No. 394, eff. 11–1–88; am. table 1, Register, September, 1990, No. 417, eff. 10–1–90; am. Register, January, 1992, No. 433, eff. 2–1–92; am. Table 1, Register, March, 1994, No. 459, eff. 4–1–94; am. Table 1, Register, August, 1995, No. 476, eff. 9–1–95; am. Table 1, Register, December, 1998, No. 516, eff. 1–1–99; am. Table 1, boron, Register, December, 1998, No. 516, eff. 12–31–99; am. Table 1, Register, March, 2000, No. 531, eff. 4–1–00; CR 03–063: am Table 1, Register February 2004 No. 578, eff. 3–1–04; CR 02–095: am. Table 1, Register November 2006 No. 611, eff. 12–1–06; reprinted to correct errors in Table 1, Register January 2007 No. 613; CR 07–034: am. Table 1 Register January 2008 No. 625, eff. 2–1–08; CR 09–102: am. Table 1 Register December 2010 No. 660, eff. 1–1–11.

NR 140.12 Public welfare related groundwater standards. The groundwater quality standards for substances of public welfare concern are listed in Table 2.

Note: For each substance of public welfare concern, the preventive action limit is 50% of the established enforcement standard.

Table 2
Public Welfare Groundwater Quality Standards

Substance	Enforcement Standard (milligrams per liter – except as noted)	Preventive Action Limit (milligrams per liter – except as noted)
Chloride	250	125
Color	15 color units	7.5 color units
Foaming agents MBAS (Methylene–Blue Active Substances)	0.5	0.25
Iron	0.3	0.15
Manganese	0.05	0.025
Odor	3 (Threshold Odor No.)	1.5 (Threshold Odor No.)
Sulfate	250	125
Zinc	5	2.5

History: Cr. Register, September, 1985, No. 357, eff. 10–1–85; am. table 2, Register, October, 1990, No. 418, eff. 11–1–90; am. Table 2, Register, March, 1994, No. 459, eff. 4–1–94.

NR 140.14 Statistical procedures. (1) If a preventive action limit or an enforcement standard for a substance listed in Table 1 or 2, an alternative concentration limit issued in accordance with s. NR 140.28 or a preventive action limit for an indicator parameter established according to s. NR 140.20 (2) is attained or exceeded at a point of standards application:

(a) The owner or operator of the facility, practice or activity at which a standard is attained or exceeded shall notify the appropriate regulatory agency that a standard has been attained or exceeded; and

(b) The regulatory agency shall require a response in accordance with the rules promulgated under s. 160.21, Stats. No response shall be required if it is demonstrated to the satisfaction of the appropriate regulatory agency that a scientifically valid determination cannot be made that the preventive action limit or enforcement standard for a substance in Table 1 or 2 has been attained or exceeded based on consideration of sampling procedures or laboratory precision and accuracy, at a significance level of 0.05.

(2) The regulatory agency shall use one or more valid statistical procedures to determine if a change in the concentration of a substance has occurred. A significance level of 0.05 shall be used for all tests.

(3) In addition to sub. (2), the following applies when a preventive action limit or enforcement standard is equal to or less than the limit of quantitation:

(a) If a substance is not detected in a sample, the regulatory agency may not consider the preventive action limit or enforcement standard to have been attained or exceeded.

(b) If the preventive action limit or enforcement standard is less than the limit of detection, and the concentration of a substance is reported between the limit of detection and the limit of quantitation, the regulatory agency shall consider the preventive action limit or enforcement standard to be attained or exceeded only if:

1. The substance has been analytically confirmed to be present in the same sample using an equivalently sensitive analytical method or the same analytical method, and

2. The substance has been statistically confirmed to be present above the preventive action limit or enforcement standard, determined by an appropriate statistical test with sufficient samples at a significance level of 0.05.

(c) If the preventive action limit or enforcement standard is between the limit of detection and the limit of quantitation, the regulatory agency shall consider the preventive action limit or

Helmrick Service Station
Slug Test Calculations

MW-2

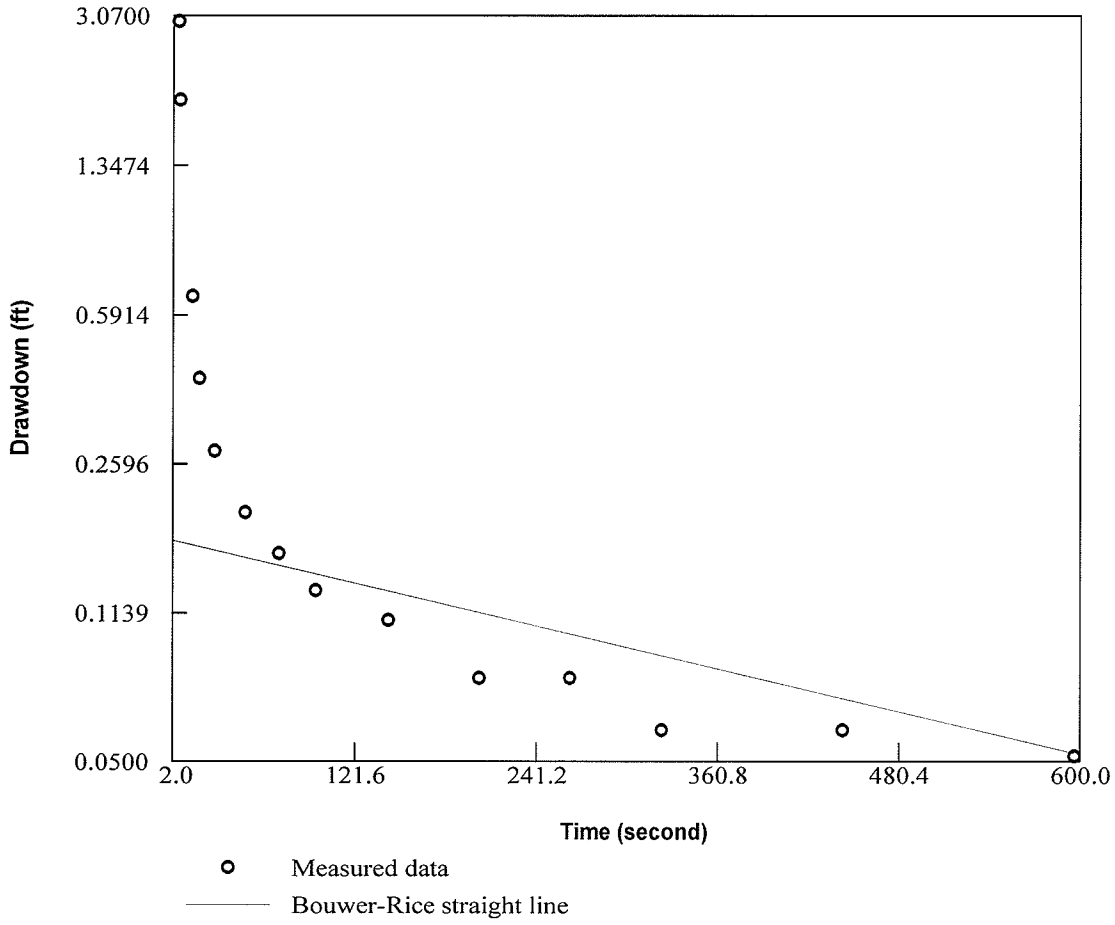
	ft/s	cm/s	m/yr
K	1.88E-05	5.73E-04	180.71
	sq ft/s	**sq cm/s**	
T	1.53E-04	1.42E-01	

MW-3

	ft/s	cm/s	m/yr
K	3.86E-06	1.18E-04	37.10
	sq ft/s	**sq cm/s**	
T	2.79E-05	2.59E-02	

Date	Elv. (High)	Elv. (Low)	Distance (ft)	Hyd Grad (I)
10/10/2013	769.89	769.04	35	0.0242857
1/15/2014	768.50	768.43	22	0.0031818
Average				0.0137337

	K (m/yr)	I	n	Flow Velocity (m/yr)
MW-2	180.71	0.0137337	0.4	6.20454
MW-3	37.1	0.0137337	0.4	1.27380



Aquifer Parameters by the Bouwer and Rice Slug Test	
Hydraulic Conductivity (ft/s):	1.88e-005
Transmissivity (sq ft/s):	1.53e-004

Helmrick Service Station MW-2

Helmrick Service Station
MW-2 Slug-Out

SE20 0
Environmeal Logger
01/01 0 1:01

Unit# 281 Test 1

Setups: INPUT 1
---------- ---------
Type Level (F)
Mode TOC
I.D.

Reference 4.87
PSI at Ref. 9.47
SG 1
Linearity 0
Scale facto 16
Offset 4
Delay mSE(50

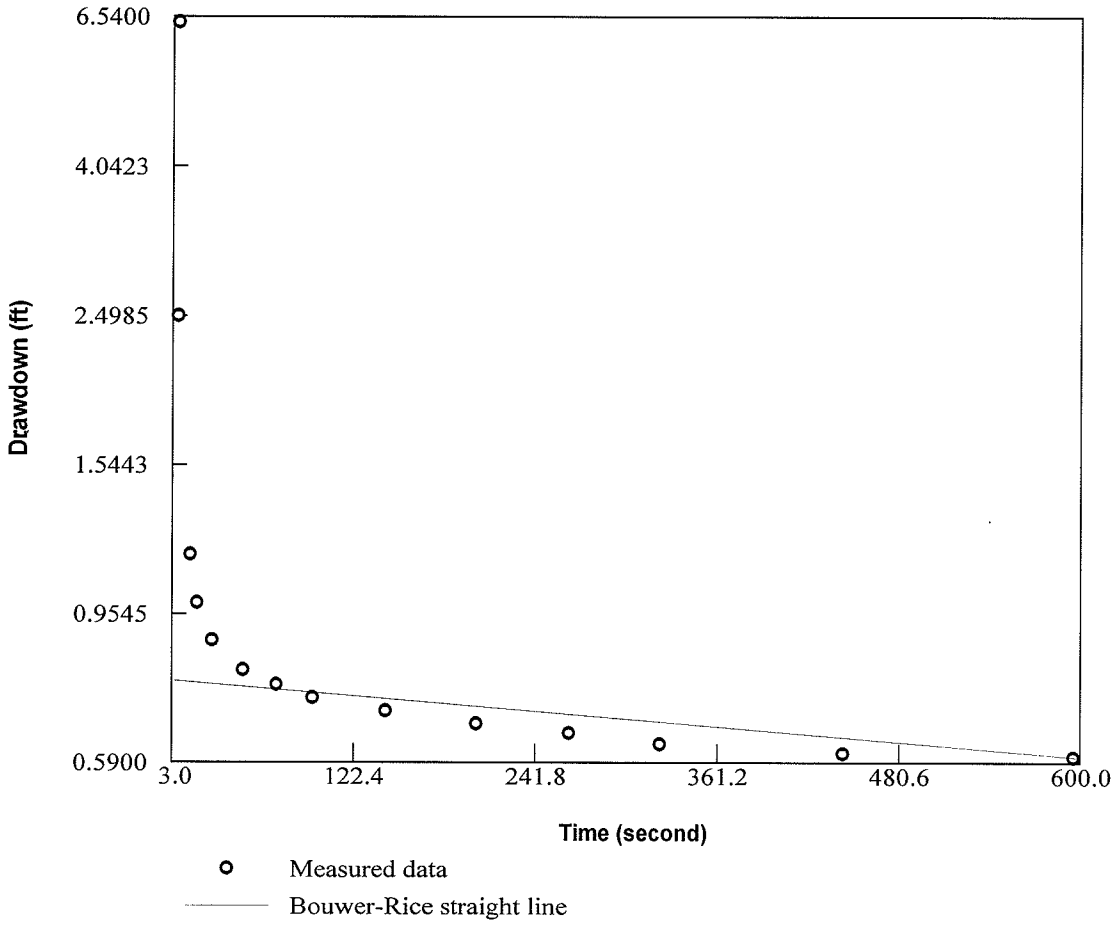
Step 0 01/ 0:37:04

Elapsed TirINPUT 1		Time (s)	Drawdown
0	4.04	0	-0.83
0.01	4.04	0.5	-0.83
0.02	5.32	1	0.45
0.03	11.01	1.5	6.14
0.03	7.94	2	3.07
0.04	10.19	2.5	5.32
0.05	8.02	3	3.15
0.06	7.02	3.5	2.15
0.07	7.59	4	2.72
0.08	7.69	4.5	2.82
0.08	7.29	5	2.42
0.09	7.12	5.5	2.25
0.1	7.11	6	2.24
0.11	6.98	6.5	2.11
0.12	6.82	7	1.95
0.13	6.73	7.5	1.86
0.13	6.63	8	1.76
0.14	6.51	8.5	1.64
0.15	6.4	9	1.53
0.16	6.31	9.5	1.44

0.17	6.21	10	1.34
0.18	6.12	10.5	1.25
0.18	6.04	11	1.17
0.19	5.95	11.5	1.08
0.2	5.87	12	1
0.21	5.8	12.5	0.93
0.22	5.74	13	0.87
0.23	5.68	13.5	0.81
0.23	5.62	14	0.75
0.24	5.57	14.5	0.7
0.25	5.53	15	0.66
0.26	5.49	15.5	0.62
0.27	5.46	16	0.59
0.28	5.43	16.5	0.56
0.28	5.41	17	0.54
0.29	5.38	17.5	0.51
0.3	5.36	18	0.49
0.31	5.34	18.5	0.47
0.32	5.32	19	0.45
0.33	5.31	19.5	0.44
0.33	5.29	20	0.42
0.35	5.27	21	0.4
0.37	5.25	22	0.38
0.38	5.23	23	0.36
0.4	5.22	24	0.35
0.42	5.2	25	0.33
0.43	5.19	26	0.32
0.45	5.18	27	0.31
0.47	5.17	28	0.3
0.48	5.16	29	0.29
0.5	5.15	30	0.28
0.52	5.14	31	0.27
0.53	5.14	32	0.27
0.55	5.13	33	0.26
0.57	5.13	34	0.26
0.58	5.12	35	0.25
0.6	5.12	36	0.25
0.62	5.11	37	0.24
0.63	5.11	38	0.24
0.65	5.1	39	0.23
0.67	5.1	40	0.23
0.68	5.09	41	0.22
0.7	5.09	42	0.22
0.72	5.09	43	0.22
0.73	5.09	44	0.22
0.75	5.08	45	0.21
0.77	5.08	46	0.21
0.78	5.07	47	0.2

0.8	5.07	48	0.2
0.82	5.07	49	0.2
0.83	5.07	50	0.2
0.85	5.07	51	0.2
0.87	5.06	52	0.19
0.88	5.06	53	0.19
0.9	5.06	54	0.19
0.92	5.05	55	0.18
0.93	5.05	56	0.18
0.95	5.05	57	0.18
0.97	5.05	58	0.18
0.98	5.04	59	0.17
1	5.04	60	0.17
1.2	5.03	72	0.16
1.4	5.01	84	0.14
1.6	5	96	0.13
1.8	5	108	0.13
2	4.99	120	0.12
2.2	4.98	132	0.11
2.4	4.98	144	0.11
2.6	4.97	156	0.1
2.8	4.97	168	0.09
3	4.96	180	0.09
3.2	4.96	192	0.08
3.4	4.96	204	0.08
3.6	4.95	216	0.08
3.8	4.95	228	0.08
4	4.95	240	0.08
4.2	4.95	252	0.08
4.4	4.95	264	0.08
4.6	4.94	276	0.07
4.8	4.94	288	0.07
5	4.94	300	0.07
5.2	4.94	312	0.07
5.4	4.94	324	0.06
5.6	4.94	336	0.06
5.8	4.94	348	0.06
6	4.93	360	0.06
6.2	4.93	372	0.06
6.4	4.93	384	0.05
6.6	4.93	396	0.06
6.8	4.93	408	0.06
7	4.93	420	0.06
7.2	4.93	432	0.06
7.4	4.93	444	0.06
7.6	4.93	456	0.05
7.8	4.93	468	0.05
8	4.93	480	0.05

8.2	4.93	492	0.05
8.4	4.93	504	0.05
8.6	4.93	516	0.05
8.8	4.93	528	0.05
9	4.92	540	0.05
9.2	4.93	552	0.05
9.4	4.92	564	0.05
9.6	4.92	576	0.05
9.8	4.93	588	0.05
10	4.92	600	0.05
11	4.93	660	0.05
12	4.92	720	0.04
13	4.92	780	0.04
14	4.92	840	0.04
15	4.92	900	0.05
16	4.92	960	0.04
17	4.92	1020	0.04
18	4.91	1080	0.04
19	4.91	1140	0.04
20	4.91	1200	0.04
21	4.91	1260	0.04
22	4.91	1320	0.04
23	4.91	1380	0.04
24	4.91	1440	0.04
25	4.91	1500	0.04
26	4.91	1560	0.04
27	4.91	1620	0.04
28	4.91	1680	0.04
29	4.91	1740	0.04
30	4.91	1800	0.04



Aquifer Parameters by the Bouwer and Rice Slug Test	
Hydraulic Conductivity (ft/s):	3.86e-006
Transmissivity (sq ft/s):	2.79e-005

Helmrick Service Station MW-3

Helmrick Service Station
MW-3 Slug-Out

SE20 0
Environmeal Logger
01/01 0 0:53

Unit# 281 Test 5

Setups: INPUT 1
---------- ---------
Type Level (F)
Mode TOC
I.D.

Reference 5.78
PSI at Ref. 9.06
SG 1
Linearity 0
Scale facto 16
Offset 4
Delay mSE(50

Step 0 01/ 1:55:41

Elapsed Tir	INPUT 1	Time (s)	Drawdown
0	5.35	0	-0.44
0.01	5.35	0.5	-0.44
0.02	5.35	1	-0.44
0.03	5.35	1.5	-0.43
0.03	6.45	2	0.67
0.04	16.4	2.5	10.62
0.05	12.32	3	6.54
0.06	10.53	3.5	4.75
0.07	9.68	4	3.9
0.08	9.32	4.5	3.54
0.08	8.86	5	3.08
0.09	8.79	5.5	3.01
0.1	8.56	6	2.78
0.11	8.42	6.5	2.64
0.12	8.29	7	2.51
0.13	8.16	7.5	2.38
0.13	8.03	8	2.25
0.14	7.91	8.5	2.13
0.15	7.78	9	2
0.16	7.67	9.5	1.89

0.17	7.56	10	1.78
0.18	7.46	10.5	1.68
0.18	7.37	11	1.59
0.19	7.29	11.5	1.51
0.2	7.21	12	1.43
0.21	7.15	12.5	1.37
0.22	7.09	13	1.31
0.23	7.05	13.5	1.27
0.23	7.01	14	1.23
0.24	6.97	14.5	1.19
0.25	6.94	15	1.16
0.26	6.91	15.5	1.13
0.27	6.89	16	1.11
0.28	6.87	16.5	1.09
0.28	6.85	17	1.07
0.29	6.83	17.5	1.05
0.3	6.81	18	1.03
0.31	6.8	18.5	1.02
0.32	6.79	19	1.01
0.33	6.78	19.5	1
0.33	6.77	20	0.99
0.35	6.75	21	0.97
0.37	6.73	22	0.95
0.38	6.72	23	0.94
0.4	6.71	24	0.93
0.42	6.7	25	0.92
0.43	6.69	26	0.91
0.45	6.68	27	0.9
0.47	6.67	28	0.89
0.48	6.67	29	0.89
0.5	6.66	30	0.88
0.52	6.65	31	0.87
0.53	6.65	32	0.87
0.55	6.64	33	0.86
0.57	6.64	34	0.86
0.58	6.63	35	0.85
0.6	6.63	36	0.85
0.62	6.62	37	0.84
0.63	6.62	38	0.84
0.65	6.62	39	0.84
0.67	6.61	40	0.83
0.68	6.61	41	0.83
0.7	6.61	42	0.83
0.72	6.6	43	0.82
0.73	6.6	44	0.82
0.75	6.59	45	0.81
0.77	6.59	46	0.81
0.78	6.59	47	0.81

0.8	6.59	48	0.81
0.82	6.58	49	0.8
0.83	6.58	50	0.8
0.85	6.58	51	0.8
0.87	6.58	52	0.8
0.88	6.57	53	0.79
0.9	6.57	54	0.79
0.92	6.57	55	0.79
0.93	6.57	56	0.79
0.95	6.56	57	0.78
0.97	6.56	58	0.78
0.98	6.56	59	0.78
1	6.56	60	0.78
1.2	6.54	72	0.76
1.4	6.52	84	0.74
1.6	6.51	96	0.73
1.8	6.5	108	0.72
2	6.49	120	0.71
2.2	6.48	132	0.7
2.4	6.48	144	0.7
2.6	6.47	156	0.69
2.8	6.46	168	0.68
3	6.46	180	0.68
3.2	6.45	192	0.67
3.4	6.45	204	0.67
3.6	6.44	216	0.66
3.8	6.44	228	0.66
4	6.44	240	0.66
4.2	6.43	252	0.65
4.4	6.43	264	0.65
4.6	6.43	276	0.65
4.8	6.43	288	0.65
5	6.42	300	0.64
5.2	6.42	312	0.64
5.4	6.41	324	0.63
5.6	6.41	336	0.63
5.8	6.41	348	0.63
6	6.41	360	0.63
6.2	6.41	372	0.63
6.4	6.4	384	0.62
6.6	6.4	396	0.62
6.8	6.4	408	0.62
7	6.4	420	0.62
7.2	6.4	432	0.62
7.4	6.39	444	0.61
7.6	6.39	456	0.61
7.8	6.39	468	0.61
8	6.39	480	0.61

8.2	6.39	492	0.61
8.4	6.38	504	0.6
8.6	6.38	516	0.6
8.8	6.38	528	0.6
9	6.38	540	0.6
9.2	6.38	552	0.6
9.4	6.37	564	0.59
9.6	6.37	576	0.59
9.8	6.37	588	0.59
10	6.37	600	0.59

APPENDIX F/ QUALIFICATIONS OF METCO PERSONNEL

Ronald J. Anderson, P.G.

Professional Titles

- Senior Hydrogeologist
- Project Manager

Credentials

- Licensed Professional Geologist in Wisconsin
- Licensed Professional Geologist in Minnesota
- Recognized by the State of Wisconsin Department of Natural Resources (Chapter NR712) as a qualified Hydrogeologist
- Certified by State of Wisconsin/DSPS to conduct PECFA-funded LUST projects
- Certified tank closure site assessor (#41861) in Wisconsin
- Member of the Wisconsin Groundwater Association
- Member of the Minnesota Groundwater Association
- Member of the Federation of Environmental Technologist, Inc.
- Member of the Wisconsin Fabricare Institute

Education

Includes a BA in Earth Science from the University of Minnesota-Duluth. Applicable courses successfully completed include Hydrogeology, Applied Hydrogeology, Environmental Geology, Geological Field Methods, Geology Field Camp, Geomorphology, Structural Geology, Stratigraphy/Tectonics, Mineralogy/Petrology, Glacial/Quaternary Geology, Geology of North America, Oceanography, General Chemistry, Organic Chemistry, and Environmental Conservation

Post-Graduate Education

Includes Personnel Protection and Safety, Conducting Comprehensive Environmental Property Assessments, Groundwater Flow and Well Hydraulics, Effective Techniques for Contaminated Groundwater Treatment, and numerous other continuing education classes and conferences.

Work Experience

Includes nine months with the Wisconsin Department of Natural Resources Leaking Underground Storage Tank Program regulating LUST sites and since June 1990, with METCO as a Hydrogeologist and Project Manager. Duties have included: managing, conducting, and reporting tank closure assessments; property assessment, LUST investigations; spill investigations; agricultural chemical investigations, dry cleaning chemical investigations, general geotechnical/environmental investigations; Geoprobe projects (soil, groundwater, soil gas sampling); drilling projects (soil boring and monitoring wells); and remedial projects. Since 1989, METCO has sampled/consulted over 700 environmental sites.

Jason T. Powell

Professional Title

- Staff Scientist

Credentials

- Recognized by the State of Wisconsin Department of Natural Resources (Chapter NR712) as a qualified Scientist.

Education

Includes a BS in Groundwater Management from the University of Wisconsin- Stevens Point. Applicable courses successfully completed include Hydrogeology, Applied Hydrogeology, Environmental Geology, Hydrogeology-Groundwater Flow Modeling, Groundwater Management, Structural Geology, Mineralogy, Glacial Geology, Soils, Soil Physics, Hydrology, Geochemistry, Water Chemistry, Organic Chemistry, General Chemistry, Environmental Issues.

Post-Graduate Education

40-hour OSHA Hazardous Materials Safety Training course with 8-hour refresher course.

Work Experience

With METCO since May 1992 as a Geoprobe Assistant and Geoprobe Operator. In June 1995 to July 1996 as a Environmental Technician. In July 1996 as a Staff Scientist. Duties have included: LUST investigations; general geotechnical/environmental investigations; Geoprobe projects (soil, groundwater sampling); drilling projects (soil boring and monitoring wells); remedial projects (sampling, pilot tests, system operation/maintenance) and project management.

Eric J. Dahl

Professional Title

- Hydrogeologist

Credentials

- Recognized by the State of Wisconsin Department of Natural Resources (Chapter NR712) as a qualified Hydrogeologist.
- Registered through the Wisconsin Department of Safety and Professional Services as a PECFA consultant (#823519).
- Member of the Geological Society of America

Education

Includes B.S. in Geology from the University of Wisconsin-Eau Claire. Applicable courses successfully completed include Environmental Geology, Physical Hydrogeology, Chemical Hydrogeology, Computer Modeling in Hydrogeology, Aqueous Geochemistry, Field Geology I and II, Mineralogy and Petrology I and II, Sedimentology and Stratigraphy, Petroleum and Economic Geology, Earth Resources, Earth History, and Structural Geology.

Post-Graduate Education

40-hour OSHA Hazardous Materials Safety Training course with 8-hour refresher course.

Work Experience

With METCO since November 1999 as a Hydrogeologist. Duties have included: Site Investigations, Phase I and Phase II Environmental Site Assessments, Case Closure Requests/GIS Registry, geoprobe projects (oversight, direction, and sampling), drilling projects/monitoring well installation (oversight, direction, and sampling), soil excavation projects (oversight, direction, and sampling), geoprobe operation, and operation and maintenance of remedial systems.

Thomas P. Pignet, P.E.

Professional Titles

- Chemical Engineer
- Industrial Engineer

Credentials

- Licensed Professional Engineer in Wisconsin

Education

Undergraduate: B.S. in Chemical Engineering from the University of Wisconsin. Applicable courses include the standard chemistry curriculum - basic, physical, organic, etc. - plus engineering transport phenomena, chemical unit operations (e.g. separations), fluid mechanics, etc.

Post-Graduate Education

Ph.D. in Chemical Engineering from the University of Minnesota - with applicable special training in absorption & catalysis; M.S. in Industrial Engineering from the University of Wisconsin - Milwaukee - with special emphasis on statistical techniques and data analysis. Applicable further training: continuing education, semester-length courses in [1] Understanding Environmental & Safety Regulation; [2] Hazardous & Toxic Waste Management; plus a number of 1-2 day workshops - Fire & Explosion Safety; Small Quantity Generations of Hazardous Waste.

Work Experience

Includes ten years as a research chemical engineer with a large chemical manufacturer; one year as process development engineer and demonstration-scale test analyst on a unique coal gasification project; ten years in association with UW-M, teaching and consulting to industry on energy efficiency, waste minimization and productivity improvement. One year working with a small engineering consulting firm on energy, environmental, and process improvement projects, including LUST Investigations and Remediations. With METCO since February 2000. Duties include Remedial Action Plan preparation, pilot test design and performance, remedial systems design and implementation, and general management of METCO's remedial projects.

Brandon A. Walker

Professional Title

- Staff Scientist

Credentials

- Registered through the Wisconsin Department of Safety and Professional Services as a PECFA consultant (#1052577).

Education

Includes B.S. in Geography and a minor in Environmental Studies from the University of Wisconsin- La Crosse. Applicable courses successfully completed include Water Resources, Ecology, Climate Systems, Earth Science, Zoology, Fundamentals of Cartography, Interpretation of Aerial Photography, Global Issues, Urban Geography, Environmental Sociology, and Environmental Studies.

Work Experience

With METCO since April 2007 as a Staff Scientist. Duties have included: soil and groundwater sampling, operation and maintenance of remedial systems, geoprobe projects (oversight, direction, and sampling), site mapping, data reduction and analysis, and reporting.

Matt Michalski

Professional Title

- Staff Scientist

Credentials

- Registered through the Wisconsin Department of Safety and Professional Services as a PECFA consultant (# 1228116).

Education

Includes B.S. in Geography with and Earth Science minor from University of Wisconsin – La Crosse: Applicable courses successfully completed include Geographic Field Methods, Water Resources, Environmental Hazards and Land Use, and Advanced Map Design.

Work Experience

With METCO since August 2012 as Staff Scientist. Duties include: soil and groundwater sampling, operation and maintenance of remedial systems, geoprobe projects (oversight, direction, and sampling), site mapping, data reduction and analysis, and reporting.

APPENDIX G/ STANDARD OF CARE

Site Investigation Report - METCO
Helmrick Service Station (Johns Amoco)

STANDARD OF CARE

The analysis and conclusions expressed in this report are based upon data obtained from the indicated subsurface locations and from other sources discussed in this report. Actual subsurface conditions may vary and may not become evident without further assessment.

All work conducted by METCO is in accordance with currently accepted hydrogeologic and engineering practices and they neither imply nor intend warranty.

We appreciate the opportunity to be of service to you. If you have any questions or require additional information, please do not hesitate to contact us.

"I Jason T. Powell, hereby certify that I am a scientist as that term is defined in s.NR 712.03 (3), 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."

Jason T. Powell
Staff Scientist

8/25/14
Date

"I Ronald J. Anderson, 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."

Ronald J. Anderson PG
Senior Hydrogeologist/Project Manager

8/25/14
Date