03-26-000788 X

Phase IV Environmental Site Assessment- Petroleum Impacted Soil Removal and Disposal Monitoring Services

Thomas Service Station Property STH 77, STA. 329+10 to 330+70 Montreal, Iron County, Wisconsin WISDOT Project No. 9250-09-70

Prepared for:
Wisconsin Dept. of Transportation
Bureau of Environment
Madison, Wisconsin

August 29, 1997

Giles Project No. 1E-9703039

GILES
ENGINEERING ASSOCIATES, INC.

TABLE OF CONTENTS

PHASE IV ENVIRONMENTAL SITE ASSESSMENT
PETROLEUM-IMPACTED SOIL REMOVAL
AND DISPOSAL MONITORING SERVICES

THOMAS SERVICE STATION PROPERTY
STH 77, STA. 329+10 TO 330+70
CITY OF MONTREAL, IRON COUNTY, WISCONSIN
WISDOT PROJECT NO. 9250-09-70
GILES PROJECT NO. 1E-9703039

TABLE OF CONTENTS (Continued)
Project No. 1E-9703039

(1e970339.toc/djr)

GILES
ENGINEERING ASSOCIATES, INC.
GEOTECHNICAL, ENVIRONMENTAL & CONSTRUCTION MATERIALS CONSULTANTS

• Dallas, TX
• Los Angeles, CA
• Madison, WI
• Milwaukee, WI
• Seattle, WA
• Washington, D.C.

August 29, 1997

WISDOT
Division of Transportation Infrastructure Development (DTID)
Bureau of Environment, Room 451
4802 Sheboygan Avenue
P.O. Box 7965
Madison, WI 53707-7965

Attention: Mr. Bob Pearson

Subject: Phase IV Environmental Site Assessment
Thomas Service Station Property
STH 77, STA. 329+10 to 330+70
City of Montreal, Iron County, Wisconsin
WISDOT Project No. 9250-09-70
Giles Project No. 1E-9703039

Dear Mr. Pearson:

In accordance with your request and the subsequent Giles Engineering Associates, Inc. (*Giles*) Work Order, a *Phase IV Environmental Site Assessment* (ESA) - Petroleum Impacted Soil Removal and Disposal Monitoring Services has been performed for the above referenced property (herein referenced as the subject property). An overview of the *Phase IV ESA* performed, and the corresponding conclusions and recommendations are provided within the Executive Summary provided as Section 1.0.

We appreciate the opportunity to be of service on this project. If there are any questions regarding the information contained herein, or if we can be of any additional service, please feel free to contact the undersigned at your convenience.

Very truly yours,

GILES ENGINEERING ASSOCIATES, INC.

Charley C. Wang, E.I.T.
Staff Engineer

Paul J. Giese, P.E.
Environmental Division Manager

Distribution: WISDOT
Attn: Mr. Bob Pearson (2)
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PHASE IV ENVIRONMENTAL SITE ASSESSMENT
PETROLEUM IMPACTED SOIL REMOVAL AND
DISPOSAL MONITORING SERVICES

THOMAS SERVICE STATION PROPERTY
STH 77, STA. 329+10 TO 330+70
CITY OF MONTREAL, IRON COUNTY, WISCONSIN
WISDOT PROJECT NO. 9250-09-70
GILES PROJECT NO. 1E-9703039

1.0 EXECUTIVE SUMMARY

1.1 Findings and Conclusions

1) Approximately 168 cubic yards (252 tons) of soils were removed from the existing STH 77 right-of-way adjacent to the former Thomas service station property in association with the STH 77 roadway construction activities. The potentially petroleum-impacted soils were removed between approximately WISDOT Station Nos. 329+10 and 330+70 on July 8-9, 1997 by Lakeland Enterprise, Inc. The excavated soils were transported to another section of the same road reconstruction for use as backfill material.

2) Results of chemical analyses performed on soil samples collected from the resulting roadway excavation during the soil excavation activities between approximately WISDOT Station Nos. 329+10 and 330+70 indicate that the DRO concentration (260 milligrams per kilogram (mg/kg)) in Soil Sample No. S-2 at a depth of approximately 5.0 feet exceeds the WDNR current cleanup level guidelines. However, concentrations of GRO and PVOC in Soil Sample No. S-2 and concentrations of DRO, GRO, and PVOC in the other submitted soil samples are either below the WDNR guidelines, below detection limits, or there are no WDNR standards for comparison.

1.2 Recommendations

1) Due to DRO concentrations detected in Soil Sample No. S-2 which exceeds the current WDNR soil cleanup guidelines and based upon results from the previous *Phase II* and *Phase II½ Environmental Site Assessments* which indicate that the soils in the area of the subject property are contaminated with DRO above current WDNR soil cleanup guidelines, it is recommended that a copy of this report be provided to the responsible party and the progress of the remediation activities associated with the adjacent former Thomas Service Station property be monitored to determine the impact on WISDOT STH 77 right-of-way.

2) It is recommended that if future construction activities are initiated in the area where petroleum-impacted soils remain, that a contingency plan be developed to properly handle and treat petroleum-impacted soils that may be encountered during construction activities.

3) A copy of this report is being provided to the WDNR Northwest District LUST Coordinator.

2.0 SITE INVESTIGATION

2.1 Site Background

Enviroscience completed a *Phase II ESA* (Project No. 94-059.11, dated July 12, 1994) within the existing State Trunk Highway (STH) 77 right-of-way immediately adjacent to the former Thomas service station property. Two test borings were performed for the *Phase II ESA*. One and two soil samples were collected from Test Boring No. SB-5 and SB-6, respectively, and submitted for DRO and GRO analysis. The analytical results showed that the soil sample collected from Test Boring No. SB-5 had a DRO concentration which exceeded the Wisconsin Department of Natural Resources (WDNR) cleanup guidelines in effect at that time. The DRO concentrations in the two soil samples collected from Test Boring No. SB-6 and the GRO concentrations from all three soil samples were below the WDNR guidelines in effect at that time or were below instrument detection limits. In addition, one groundwater sample collected from a temporary groundwater monitoring well (installed at SB-6) had no measurable concentration of petroleum volatile organic compounds (PVOC). Due to the results of the *Phase II ESA* and considering the former underground storage tank (UST) system and pump islands in the area of the two performed test borings, Enviroscience recommended additional investigation of soil contamination in the anticipated construction zone (surface to five feet) within the existing STH 77 right-of-way to further define the extent of contaminated soils and groundwater within the existing STH 77 right-of-way.

At the request of the WISDOT, Enviroscience completed the recommended *Phase II½ ESA* (dated September 22, 1995) within the existing STH 77 right-of-way, adjacent to the former Thomas service station property. Five test borings were performed within the existing STH 77 right-of-way during the *Phase II½ ESA*. Ten soil samples (two from each test boring) were obtained for laboratory analysis. Each test boring had one soil sample for DRO analysis only and one for DRO and PVOCs. The two soil samples collected from SB-1A at depths of 2.5 to 4.5 feet and 5.0 to 7.0 feet were impacted with DRO contaminants at concentrations that exceeded the WDNR guidelines in effect at that time. One soil sample from SB-3A indicated a DRO concentration which also

exceeded the WDNR guideline in affect at that time. No other analyzed parameters were detected. Groundwater was encountered at 4.5 to 10 feet below grade in the five test borings. Three test borings were converted to groundwater monitoring wells. Two rounds of groundwater sampling were performed at these three monitoring wells. The first round of groundwater samples were analyzed for DRO, VOCs and polynuclear aromatic hydrocarbons (PAHs). The second round of groundwater samples were submitted for DRO and PVOC analysis. Concentrations of the analyzed parameters were not measured in the two rounds of groundwater samples.

Based upon the results of the *Phase II and II½ ESAs*, Enviroscience recommended that "if excavation occurs within STA. 329+10 to 330+70 from the WISDOT right-of-way northwest approximately 25 feet toward the centerline and to a depth of 2.5 to 7.0 feet, Wisconsin Department of Natural Resources (WDNR) guidelines pertaining to the proper removal and treatment or disposal of contaminated soil will need to be followed." Enviroscience also recommended that a general permit under the Wisconsin Pollutant Discharge Elimination System (WPDES) for the discharge of water in connection with dewatering operations be applied with the WDNR Northwest District office. In addition, Enviroscience concluded that groundwater was not impacted in the vicinity of the WISDOT right-of-way adjacent to the former Thomas service station property, and therefore recommended no action in respect to groundwater within the WISDOT right-of-way. Enviroscience concluded that there is a potential for encountering approximately 237 cubic yards (356 tons) of petroleum-impacted soil during roadway construction activities in the areas of Test Boring No. SB-3A and between Test Boring Nos. SB-5 and SB-1A (approximately between WISDOT Station Nos. 329+10 and 330+70) within the planned 6 foot excavation depth for the storm sewer.

On September 6, 1996, Enviroscience prepared a *Phase IV Site Remediation Report* for the subject property. That report summarized the information available and gave recommendations regarding the soil contamination at the subject property. The information summarized in the report indicated that petroleum impacted soils were encountered from a depth of greater than 3 feet to 7 feet from Station 329+10 to 330+70 during environmental assessments. This will place the storm sewer excavation in a zone where impacted soils exist. It was estimated that approximately 237 cubic yards of impacted soil might need to be removed as part of the STH 77 reconstruction. Additionally, as part of the storm sewer installation, dewatering activities may be required, due to the presence of a shallow groundwater table. The groundwater sampling results indicated no impacts to groundwater in the vicinity of the subject property. Enviroscience recommended that petroleum contaminated soils removed as part of storm sewer trenching activities be transported and stockpiled until asphalt operations began. At that time, the impacted soils stockpiled would be transported to the asphalt plant for asphalt incorporation or transported to an approved asphalt plant for asphalt incorporation

or treatment. Additionally, Enviroscience recommended that the water generated as part of the dewatering operations be discharged to the City of Montreal Wastewater Treatment Plant.

Enviroscience prepared the following maps and figures in association with the previous *Phase II* and *Phase II½ ESAs*, which are included in Section 6.1 (Appendix 1):

- Map 3-Former Site Feature Plan (dated September 22, 1995);
- Map 4-Groundwater Elevations and Flow Direction (dated September 22, 1995)
- Map 5-Test Boring/Monitoring Well and Cross Section Locations, and Lateral Extent of Soil Contamination (dated September 22, 1995);
- Map 6-A-A' Cross Section with Analytical Results and Vertical Extent of Soil Contamination (dated September 22, 1995); and
- Map 7-B-B' Cross Section with Analytical Results and Vertical Extent of Soil Contamination (dated September, 1995).

2.2 Purpose and Scope of Work

The *Phase IV Environmental Site Assessment* conducted by our firm consisted of monitoring the removal and disposal of petroleum-impacted soils from the existing STH 77 right-of-way (ROW) between approximately WISDOT Station Nos. 329+10 to 330+70 adjacent to the former Thomas service station, documenting the extent of removal, collecting soil samples from excavated soils and the soils remaining in-place, and performing chemical analysis on select soil samples.

A summary of the complete scope of services included for completion of this *Phase IV ESA* is included in Section 6.2 (Appendix 2).

2.3 Regulatory Agency Record Review

A comprehensive discussion of the regulatory agency record review previously conducted for the subject property is included in the previously submitted *Phase II and II½ ESA* reports and the *Phase IV Site Remediation Report*, prepared by Enviroscience and dated July 12, 1994; September 22, 1995; and September 6, 1996, respectively.

2.4 Site History

The history of the former Thomas service station property was discussed in detail in the previously submitted *Phase II Environmental Site Assessment* report (dated July 12, 1994).

Additional information regarding the history of the former Thomas service station property was also included in the previously completed *Phase II½ Environmental Site Assessment* report (dated September 22, 1995) and the *Phase IV Site Remediation Report* (dated September 6, 1996).

2.5 Site Visit/Field Procedures

The former Thomas service station property is located approximately one-fifth of one mile north of the Montreal City Hall on STH 77, in the City of Montreal, Iron County, Wisconsin. The subject property is situated in the northwest one-quarter of the southwest one-quarter of U.S. Public Land Survey Section 27, Township 47 North, Range 2 East. The location of the former Thomas service station property is indicated on Map 1 enclosed in Section 2.6. The features of the former Thomas service station property, as well as the adjacent property usages, are described in the previously completed *Phase II½ Environmental Site* Assessment report (dated September 22, 1995).

Lakeland Enterprise, Inc. provided on-site soil excavation and removal services on July 8-9, 1997. Approximately 168 cubic yards (252 tons) of soils were removed from the STH 77 roadway construction zone (storm sewer installation) between WISDOT Station 329+10 to 330+100 (adjacent to the former Thomas service station property) and transported to another section of the same road reconstruction for use as backfill material. We provided soil excavation and removal monitoring services. The storm sewer installation consisted of removal of soils to a depth of approximately 6 feet, the placement of concrete sewer pipes, and backfill with gravel. The soil excavation monitoring services were performed to monitor the removal of excavated soils located within the STH 77 right-of-way during storm sewer installation activities, collect soil samples from the excavated soils prior to removal, collect soil samples from the resulting excavation walls/bottom to document the conditions of the remaining soils, subject the collected soil samples to a head space volatile organic vapor scan, and submit selected soil samples for chemical analysis for GRO, DRO, and petroleum volatile organic compounds (PVOCs) to *Giles* Environmental Laboratory (Waukesha, Wisconsin). The scope of services were performed in accordance with Wisconsin Department of Natural Resources (WDNR) guidelines.

Visual and relative odor observations as well as a head space vapor scan were utilized to evaluate the soils requiring removal from the existing STH 77 ROW during the storm sewer installation activities. A soil sample was collected from approximately every 15 cubic yards (approximately one tri-axle dump truck) of petroleum-impacted soil excavated for VOC vapor scanning as required by the WDNR. The petroleum-impacted soil removal activities from the existing STH 77 ROW were terminated at the planned storm sewer installation grade of approximately 6 feet below the ground surface.

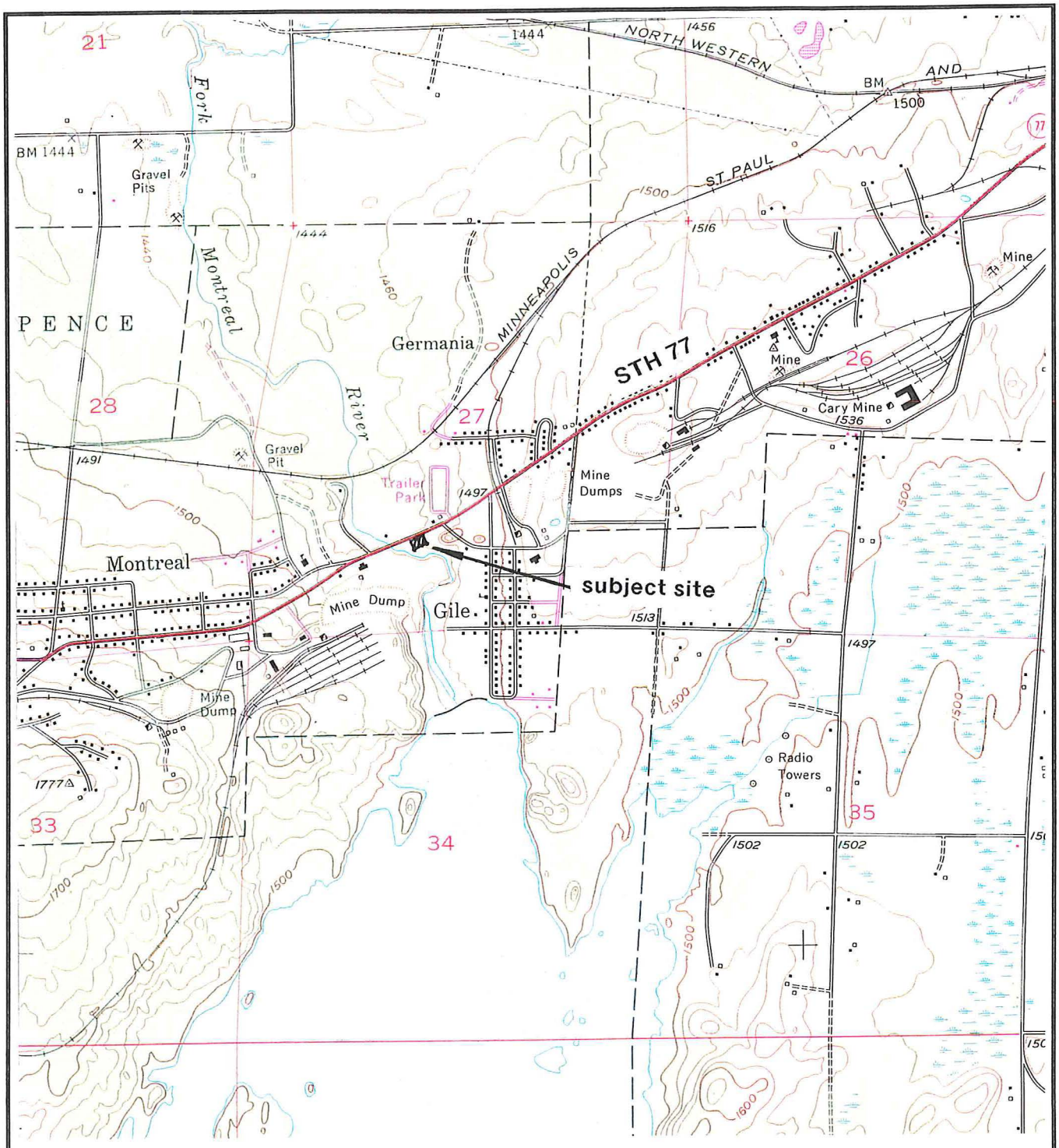
A diagram illustrating the location and extent of soil removal activities associated with the STH 77 storm sewer installation is shown on Map 2 enclosed in Section 2.6. Photographs taken during the soil removal activities are enclosed in Section 6.3 (Appendix 3).

Approximately 168 cubic yards (252 tons) of soils were excavated and removed from the existing STH 77 ROW between approximately Stations Nos. 329+10 and 330+100. The original estimate of petroleum-impacted soils to be removed during this project was approximately 237 cubic yards (356 tons). The excavated soils were transported by Lakeland Enterprises, Inc. to a disposal location selected by Lakeland Enterprise, Inc. and used as roadway fill materials within the STH 77 roadway reconstruction limits. Because the field PID screening did not detect any VOCs in the collected soil samples, no stockpiling and treatment was performed for the excavated soils. Consequently, there was no need to file the WDNR Application to Treat or Dispose of Petroleum Contaminated Soils (Form No. 4400-121).

During the storm sewer installation activities associated with the STH 77 roadway reconstruction, a total of fifteen soil samples were collected, including six samples of the soils removed from the storm sewer excavation which were collected from the bucket of the excavation equipment and nine from the sidewall or bottom of the resulting excavations. The depth of storm sewer was approximately 6 feet below grade. The width and length of the storm sewer excavation associated with this study were approximately 10 and 200 feet, respectively. The locations of the soil samples collected from the STH 77 roadway reconstruction excavation are indicated on the previously referenced Map 2 included in Section 2.6.

2.6 Site Maps

The generalized location of the former Thomas service station property is shown on the following Map 1. The soil sample locations from within the existing STH 77 ROW are illustrated on Map 2. Map 3-Former Site Feature Plan; Map 4-Groundwater Elevations and Flow Direction; Map 5-Test Boring/Monitoring Well and Cross Section Locations, and Lateral Extent of Soil Contamination; Map 6-A-A' Cross Section with Analytical Results and Vertical Extent of Soil Contamination; and Map 7-B-B' Cross Section with Analytical Results and Vertical Extent of Soil Contamination from the previous Phase II and Phase II½ ESAs performed by Enviroscience associated with this project, are included in the previously referenced Section 6.1 (Appendix 1).



Source: USGS Topographic Map, Ironwood Quadrangle
1955; Photorevised 1975; Photoinspected 1981

Scale: 1:24,000 (1"=2000')

Contour Interval: 20 Feet

QUADRANGLE LOCATION

MAP 1
GENERALIZED SITE LOCATION

Thomas Service Station Property
STH 77, STA. 329+10 to 330+70
City of Montreal, Iron County, Wisconsin
WISDOT Project No. 9250-09-70
Project No. 1E-9703039

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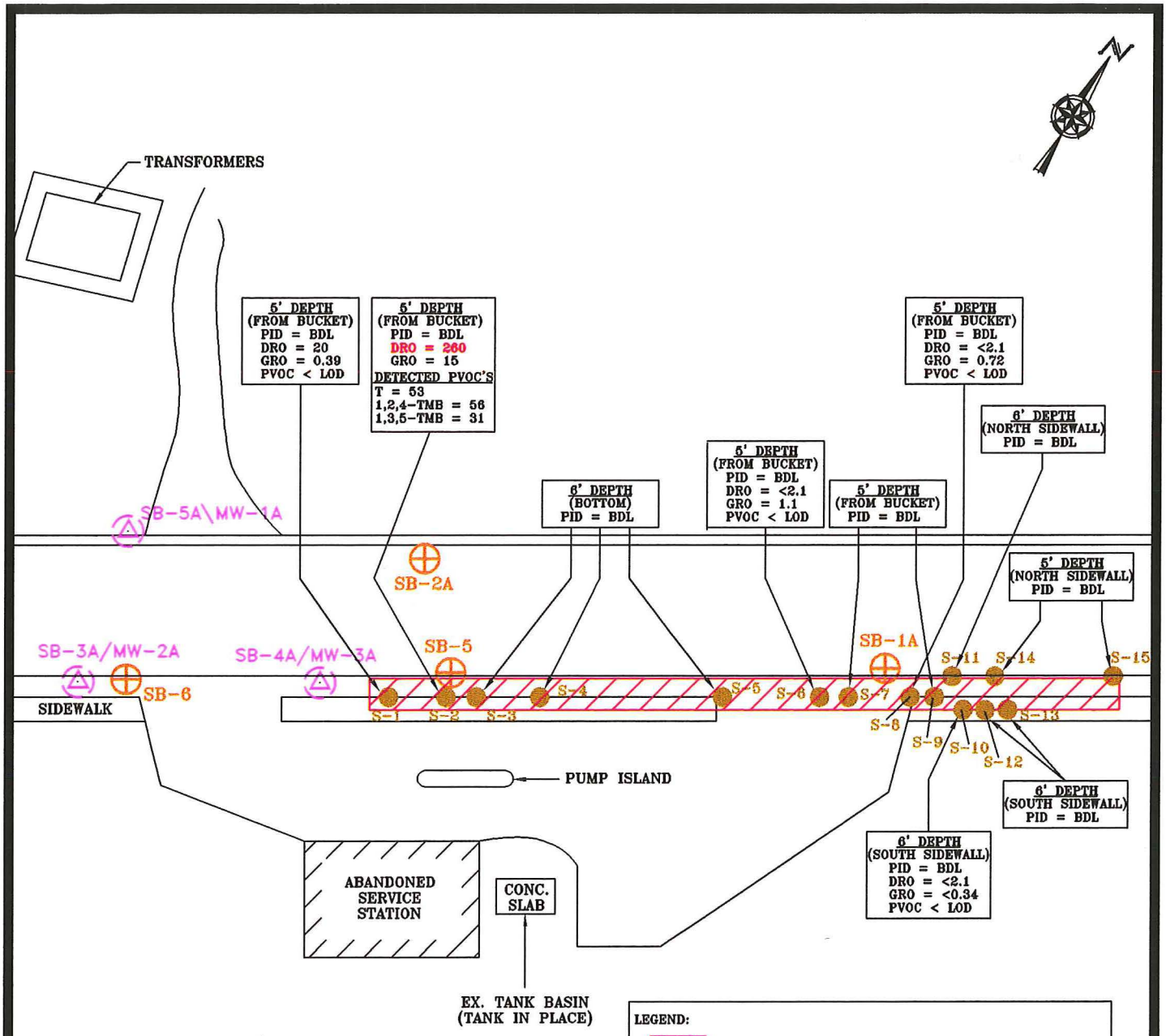

LEGEND:

- APPROXIMATE LATERAL EXTENT OF EXCAVATION TRENCH
- S-1 — SOIL SAMPLE NUMBER AND LOCATION
- SB-2A — SOIL BORING INSTALLED BY OTHERS
- MW-2A — MONITORING WELL INSTALLED BY OTHERS

CHEMICAL KEY:
- -T: TOLUENE
- -1,2,4-TMB: 1,2,4 TRIMETHYLBENZENE
- -1,3,5-TMB: 1,3,5 TRIMETHYLBENZENE

ABBREVIATIONS:
- -BDL: BELOW DETECTION LIMIT
- -DRO: DIESEL RANGE ORGANICS
- -GRO: GASOLINE RANGE ORGANICS
- -LOD: LIMIT OF DETECTION
- -PID: PHOTOIONIZATION DETECTOR (FIELD)
- -PVOC: PETROLEUM VOLATILE ORGANIC COMPOUNDS

NOTES:
FIELD PID RESULTS EXPRESSED IN HNU UNITS

GRO AND DRO RESULTS EXPRESSED IN MILLIGRAMS PER KILOGRAM (mg/kg) EQUIVALENT TO PARTS PER MILLION (ppm)

VOC AND PVOC RESULTS EXPRESSED IN MICROGRAMS PER KILOGRAM (ug/kg) EQUIVALENT TO PARTS PER BILLION (ppb)

RESULTS INDICATED IN RED ARE ABOVE THE WDNR SOIL RESIDUAL CONTAMINANT LEVEL (RCL) ACCORDING TO NR.720.09 OF THE WISCONSIN ADMINISTRATIVE CODE.

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MAP 2
EXTENT OF SOIL EXCAVATION AND SAMPLE LOCATIONS WITH ANALYTICAL RESULTS
FORMER THOMAS SERVICE STATION
STATE HIGHWAY 77, STATION 329+10 TO 330+70
STATE HIGHWAY 77, STATION 329+10 TO 330+70

DESIGNED	DRAWN	APPROVED	SCALE	DATE
CJW	DOC	X	1" = 40'	08-11-97
PROJECT NO.: 1E-9703039			CAD No. E7030392	

2.7 Geology

2.7.1 Subsurface Conditions

The soil conditions encountered during the STH 77 storm sewer installation activities generally consisted of fine to coarse sand and gravel with various amounts of silt and clay. Groundwater was encountered between Station 330+55 to 330+100 during the soil overexcavation activities.

2.7.2 Area Geology and Hydrogeology

As documented in the previous *Phase II* (Project No. 94-059.11, dated July 12, 1994) and *Phase II½ Environmental Site Assessments* (dated September 22, 1995) prepared by Enviroscience, Inc., the City of Montreal is in the northern part of Iron County in the Lake Superior Basin. The subsurface geology in this area is composed of Precambrian crystalline rocks (undifferentiated igneous and metamorphic rocks to the south of Montreal and basaltic lava flows to the north). The soils are Quaternary ground moraine (glaciolacusterine unstratified clay, silt, sand, gravel, and cobbles). Bedrock is encountered at an average depth of 10 feet. The topography is deeply dissected lake plane. The groundwater table in the subject property area is approximately 4.5 to 10 feet below grade and the groundwater flows west towards the Montreal River.

2.8 Soil Collection and Analytical Procedures

Soil samples were collected during excavation activities from the STH 77 roadway excavation using a properly cleaned hand trowel. The contents of the hand trowel were transferred to laboratory approved sampling containers.

Soil samples collected for volatile organic compound (VOC) vapor scanning with a photoionization detector (PID) were collected in 8 ounce sample jars. The sample jars were filled approximately ½ full, covered with aluminum foil and a lid, agitated and allowed to warm to about room temperature prior to the vapor scans. The VOC vapor readings were taken by piercing the foil layer with the PID probe. The PID meter was properly calibrated before, during and after soil sampling procedures. Documentation of PID calibration is included in Section 6.4 (Appendix 5).

Five select soil samples from the fifteen soil samples collected from the existing STH 77 ROW between approximately WISDOT Station Nos. 329+10 to 330+100 were submitted to *Giles* Environmental Laboratory, a WDNR accredited analytical laboratory, for chemical analysis for the

presence and concentrations of GRO, DRO, and PVOCs. The number of collected soil samples was determined on the basis of the field vapor scan and to allow for a general evaluation of the soils removed from the storm sewer excavation and that remained in place at the limits of the excavation.

Because field PID scanning did not measure any volatile organic compounds, no excavated soils were stockpiled or treated. And, therefore, no soil samples were collected for waste characterization purposes relative to asphalt incorporation.

Specifics of the soil sampling and VOC vapor scanning standard procedures utilized for completion of this study are included in Section 6.5 (Appendix 5). The sample collection, storage and transportation was performed in general accordance with ASTM and other applicable specifications, and at all times followed standard "Chain-of-Custody" requirements. The Chain-of-Custody forms for the soil analyses performed are included in Section 6.6 (Appendix 6). The standard soil chemical analyses procedures for this specific project are included in Section 6.7 (Appendix 7).

2.9 Results of Soil Analyses

2.9.1 Volatile Vapor Scan Results

The results of the photoionization detector (PID) volatile organic compound (VOC) vapor scan performed on the fifteen soil samples collected from the bucket of excavation equipment and the STH 77 roadway excavation limits indicated no detectable VOC vapor concentrations in the soil samples collected.

A summary of the soil sampling location depths, time of collection, sample classification and the results of the VOC vapor scan for the soil samples is included on the following Table 1.

Because the field PID screening showed no VOC vapor in the soil samples collected from the bucket of excavation equipment and excavation limits, and visual and relative odor observation indicated no petroleum contamination, excavated soils were not stockpiled for treatment or asphalt incorporation.

TABLE 1

GILES SOIL SAMPLING FIELD LOG

RESULTS OF VOLATILE ORGANIC COMPOUND (VOC) VAPOR SCAN OF SOIL SAMPLES

PROJECT NO. 1E-9703039 INSPECTOR: Charley C. Wang

DATE: July 8-9, 1997

PROJECT NAME AND LOCATION: Thomas Service Station Property
STH 77, STA. 329+10 to 330+70
City of Montreal, Iron County, Wisconsin
WISDOT Project No. 9250-09-70

SMPL DESC.	REF NO.	Sampling Location	Depth (feet)	Time	Sample Classification	Field HNU[1]
Soil	S-1	Storm sewer excavated soils-bucket	5	4:35 p.m.	fine to coarse Sand with Gravel - Moist	BDL[2]
Soil	S-2	Storm sewer excavated soils-bucket	5	5:05 p.m.	fine to coarse Sand with Gravel - Moist	BDL[2]
Soil	S-3	storm sewer excavation - bottom	6	5:30 p.m.	fine to coarse Sand with Gravel - Moist	BDL
Soil	S-4	storm sewer excavation - bottom	6	6:10 p.m.	fine to coarse Sand with Gravel - Moist	BDL
Soil	S-5	storm sewer excavation - bottom	6	6:40 p.m.	fine to coarse Sand with Gravel - Moist	BDL
Soil	S-6	Storm sewer excavated soils- bucket	5	7:20 a.m.	fine to coarse Sand with Gravel - Moist	BDL[2]
Soil	S-7	Storm sewer excavated soils-bucket	5	7:40 a.m.	fine to coarse Sand with Gravel - Moist	BDL
Soil	S-8	Storm sewer excavated soils-bucket	5	7:50 a.m.	Sand with Organic Matter - Wet	BDL[2]
Soil	S-9	Storm sewer excavated soils-bucket	5	7:58 a.m.	fine to coarse Sand with Gravel - Moist	BDL
Soil	S-10	storm sewer excavation - south side wall	6	8:15 a.m.	fine to coarse Sand - Moist	BDL[2]
Soil	S-11	storm sewer excavation - north side wall	6	8:25 a.m.	Silty Sand - Moist	BDL

TABLE 1 (Continued)

GILES SOIL SAMPLING FIELD LOG

SMPL DESC.	REF NO.	Sampling Location	Depth (feet)	Time	Sample Classification	Field HNU[1]
Soil	S-12	storm sewer excavation - south side wall	6	8:40 a.m.	Silty Sand	BDL
Soil	S-13	storm sewer excavation - south side wall	6	8:50 a.m.	Silty Sand	BDL
Soil	S-14	storm sewer excavation - north side wall	5	9:40 a.m.	fine to coarse Sand - Moist	BDL
Soil	S-15	storm sewer excavation - north side wall	5	10:20 a.m.	fine to coarse Sand - Moist	BDL

[1]Results of volatile vapor scan conducted on collected soil samples utilizing a HNU photoionization detector (PID) equipped with an 11.7 eV lamp and calibrated to a benzene standard. Results expressed in HNU-units. BDL - Below Detection Level.

[2]Sample submitted to *Giles* Analytical Laboratory for GRO, DRO, and PVOC analyses.

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2.9.2 Results of Soil Chemical Analyses

Five select soil samples were submitted for DRO, GRO and PVOC analysis. The results of the chemical analyses indicate that a DRO concentration of 260 mg/kg, GRO concentration of 15 mg/kg, toluene concentration of 53 µg/kg, 1,2,4-trimethylbenzene concentration of 56 µg/kg and 1,3,5-trimethylbenzene concentration of 31 µg/kg were measured in soil Sample No. S-2 collected from the bucket at a depth of 5 feet below grade. Soil sample No. S-2 was taken from storm sewer excavated soils that were used as backfill materials on another section of the same road reconstruction. The DRO concentration in Sample S-2 exceeds the WDNR soil cleanup guidelines (100 mg/kg for soils with a hydraulic conductivity of $1x10^{-6}$ cm/s or greater). However, the DRO, GRO and PVOC concentrations measured in the remaining submitted soil samples are either below the relevant WDNR guidelines, are below the limit of detection, or there are no guidelines available for comparison. The results of the soil analyses performed in the soil samples are summarized on the following Table 2 and on the previously referenced Map 2. The results of the soil chemical analysis, as provided by *Giles* Environmental Laboratory are included in the previously referenced Section 6.6 (Appendix 6).

3.0 SUMMARY

1) Approximately 168 cubic yards (252 tons) of soils were removed from the existing STH 77 right-of-way adjacent to the former Thomas service station in association with the storm sewer installation activities. The petroleum-impacted soils were removed between approximately WISDOT Station Nos. 329+10 and 330+100 on July 8-9, 1997 by Lakeland Enterprise, Inc. The excavated soils were transported to another section of the same road reconstruction for use as roadway backfill material.

2) Results of chemical analyses performed on soil samples collected from the resulting roadway excavation during storm sewer installation activities between approximately WISDOT Station Nos. 329+10 and 330+100 indicate that DRO concentration in Soil Sample No. S-2 at a depth of approximately 5 feet exceeds the WDNR current cleanup level guidelines. Soil sample No. S-2 was taken from storm sewers excavated soils that were used as backfill materials on another section of the same road reconstruction. Concentrations of GRO and PVOC for soil sample No. S-2 and concentrations of DRO, GRO and PVOC for all other soil samples are either below the WDNR soil cleanup guidelines, were below the limit of detection, or there are no WDNR guidelines for comparison.

TABLE 2

RESULTS OF CHEMICAL ANALYSES-SOIL SAMPLES

Thomas Service Station Property
STH 77, STA. 329+10 to 330+70
City of Montreal, Iron County, Wisconsin
WISDOT Project No. 9250-09-70
Giles Project No. 1E-9703039

Date Collected: July 8-9, 1997

Sample Number[1]	Sample Depth (Feet)	PID Reading HNU Units	DRO[2]	GRO[2]	Detected Petroleum Volatile Organic Compounds[3]					
					Benzene	Ethylbenzene	1,2,4-Trimethyl-benzene	1,3,5-Trimethyl-benzene	Toluene	Total Xylenes
S-1	5	BDL	20	0.39	<16	<18	<23	<16	<15	<51
S-2	5	BDL	**260**	15	<16	<18	56	31	53	<51
S-6	5	BDL	<2.1	1.1	<16	<18	<23	<16	<15	<51
S-8	5	BDL	<2.1	0.72	<16	<18	<23	<16	<15	<51
S-10	6	BDL	<2.1	<0.34	<16	<18	<23	<16	<15	<51
WDNR Current Cleanup Guideline[4]	N/A	N/A	100	100	5.5	2,900	--	--	1,500	4,100

NOTES:

[1]Soil sample locations shown on Map 2.

[2]Chemical analyses results expressed in milligrams per kilogram (mg/kg), equivalent to parts per million (ppm).

[3]Chemical analyses results expressed in micrograms per kilogram (μg/kg), equivalent to parts per billion (ppb).

[4]Wisconsin Administrative Code NR 720 Standard for soils with a hydraulic conductivity of $1x10^{-6}$ cm/s or greater.

GRO: Gasoline range organics
DRO: Diesel range organics
PID: Photoionization detector
BDL: Below detection limit
--: No published soil standard.

Results indicated in **bold** exceed current WDNR 720 soil cleanup guideline.

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4.0 RECOMMENDATIONS

1) Due to DRO concentration detected in Soil Sample No. S-2 which exceeds the current WDNR soil cleanup guidelines and based upon results from the previous *Phase II* and *Phase II½ Environmental Site Assessments* which indicate that the soils in the area of the subject property are contaminated with DRO above current WDNR soil clean up guidelines, it is recommended that a copy of this report be provided to the responsible party to assist in their evaluation and remediation efforts and that the progress of the remediation activities associated with the adjacent former Thomas Service Station property be monitored to evaluate the impact on the WISDOT STH 77 ROW.

2) It is recommended that if future construction activities are initiated in the area where petroleum-impacted soils remain, that a contingency plan be developed to properly handle and treat petroleum-impacted soils that may be encountered during construction activities.

3) A copy of this report is being provided to the WDNR Northwest District LUST Coordinator.

5.0 SUBMITTAL CERTIFICATION

I, Paul J. Giese, hereby certify that I am a registered professional engineer in the State of Wisconsin, registered in accordance with the requirements of ch. A-E 4, Wis. Adm. Code; that this document has been prepared in accordance with the Rules of Professional Conduct in ch. A-E 8, Wis. Adm. Code; and that, to the best of my knowledge, all 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.

Paul J. Giese
Env. Division Manager #27163

Signature, Title, and P.E. Number

P.E. Stamp

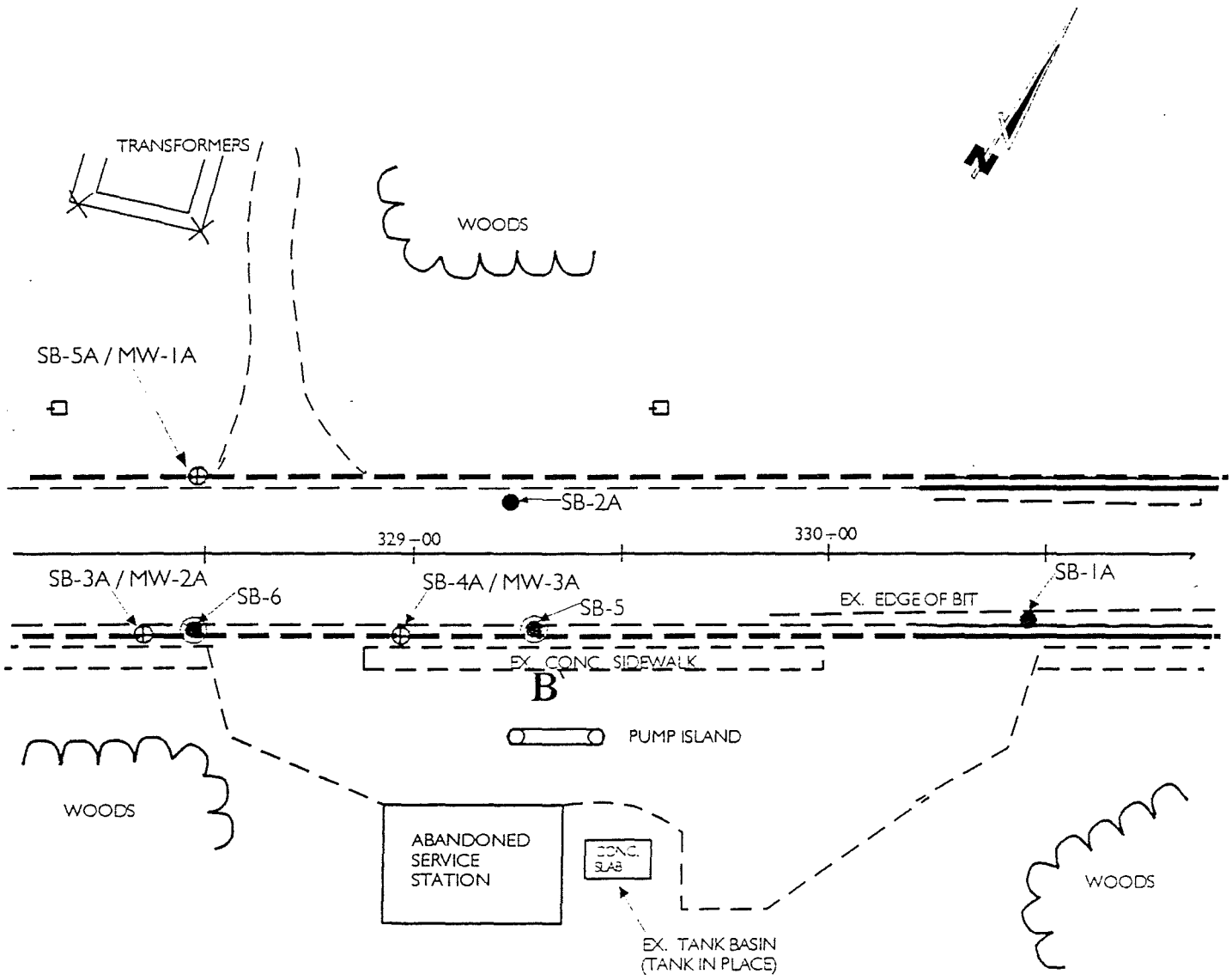
SECTION 6.0

APPENDICES

SECTION 6.1

APPENDIX 1

MAPS FROM PREVIOUS ESAs
PERFORMED BY ENVIROSCIENCE, INC.



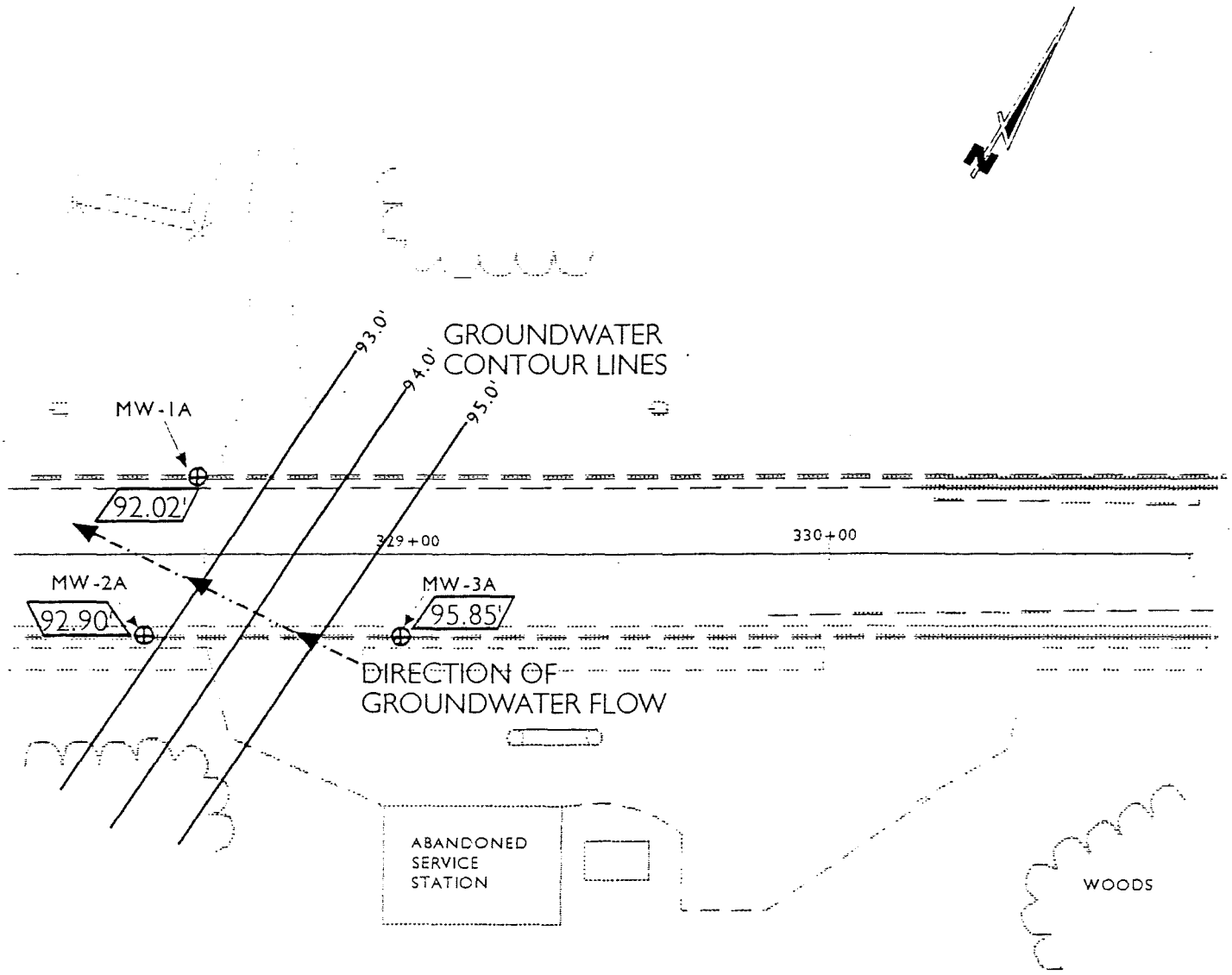
LEGEND
● SOIL BORING
⊕ SOIL BORING COVERTED TO MONITORING WELL
◉ SOIL BORING FROM PREVIOUS INVESTIGATION

APPROX. SCALE: 1" = 40'

FIGURE 2.2	THOMAS ABANDONED SERVICE STATION MONTREAL, WI
SITE MAP	

MAP 3
FORMER SITE FEATURE PLAN

(from Phase II½ ESA report prepared by Enviroscience, dated September 22, 1995)



LEGEND	
⊕	MONITORING WELL
92.90'	GROUNDWATER ELEVATION IN WELL (6-26-95)

APPROX. SCALE: 1" = 40'

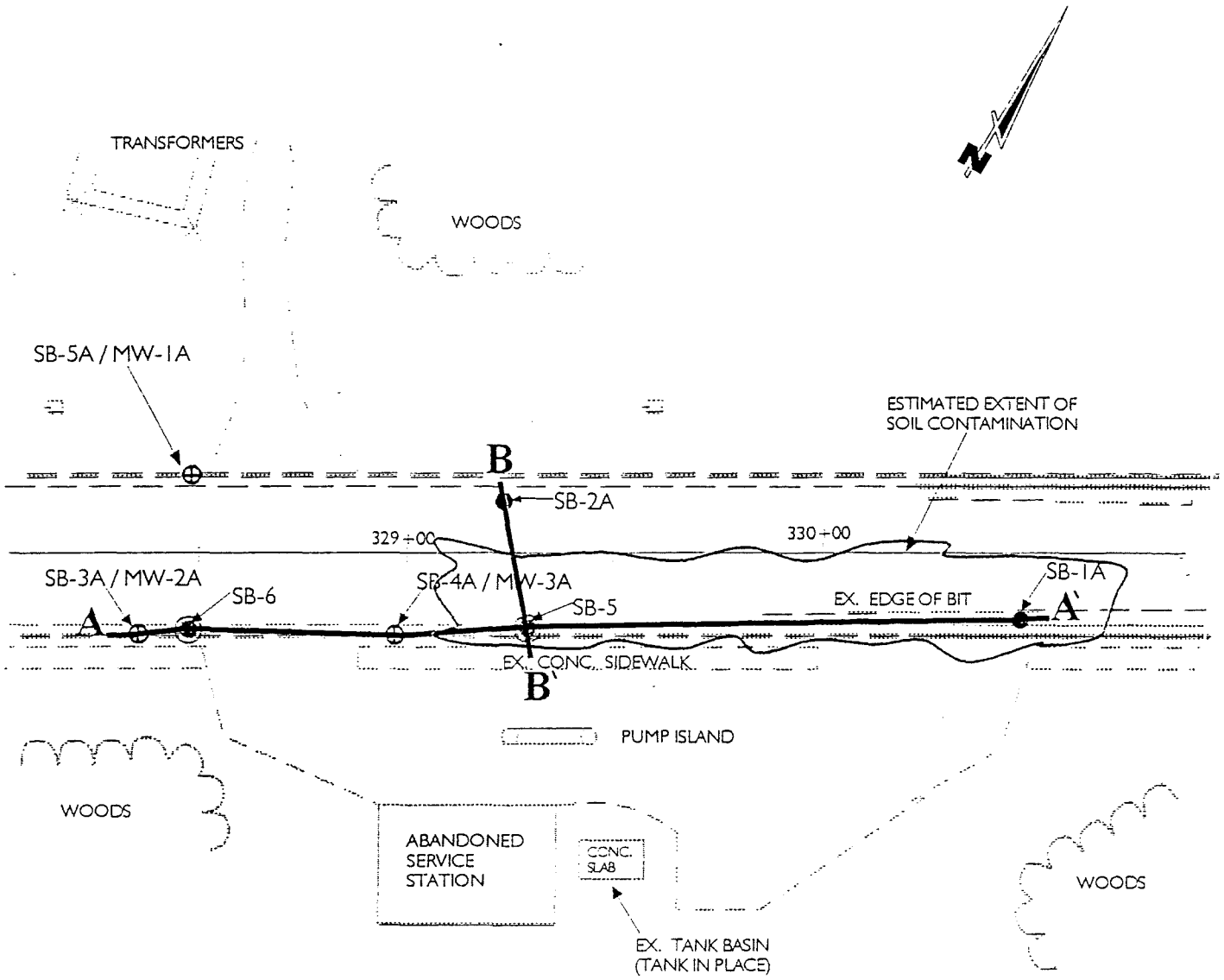
FIGURE 2.3

GROUNDWATER FLOW MAP

THOMAS ABANDONED SERVICE STATION
MONTREAL, WI

MAP 4
GROUNDWATER ELEVATIONS AND
FLOW DIRECTION

(from Phase II½ ESA report prepared by
Enviroscience, dated September 22, 1995)



LEGEND
● SOIL BORING
⊕ SOIL BORING COVERTED TO MONITORING WELL
◉ SOIL BORING FROM PREVIOUS INVESTIGATION

APPROX. SCALE: 1" = 40'

FIGURE 2.4

PLAN VIEW OF CROSS-SECTIONS

THOMAS ABANDONED SERVICE STATION MONTREAL, WI

MAP 5
TEST BORING/MONITORING WELL AND CROSS SECTION LOCATIONS, AND LATERAL EXTENT OF SOIL CONTAMINATION

(from Phase II½ ESA report prepared by Enviroscience, dated September 22, 1995)

MAP 6
A-A' CROSS SECTION WITH ANALYTICAL RESULTS AND VERTICAL EXTENT OF SOIL CONTAMINATION

(from Phase II½ ESA report prepared by Enviroscience, dated September 22, 1995)

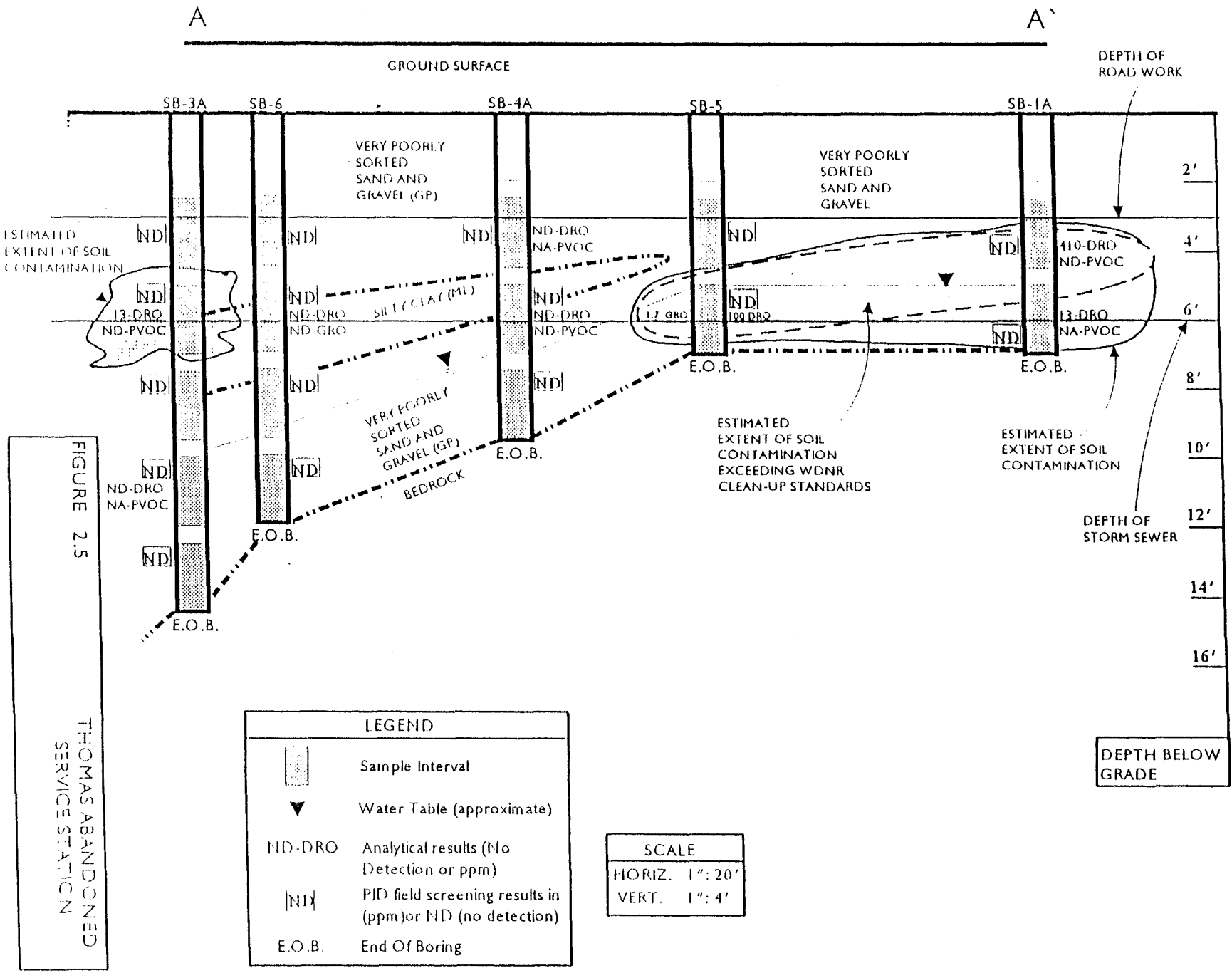


FIGURE 2.5

THOMAS ABANDONED SERVICE STATION

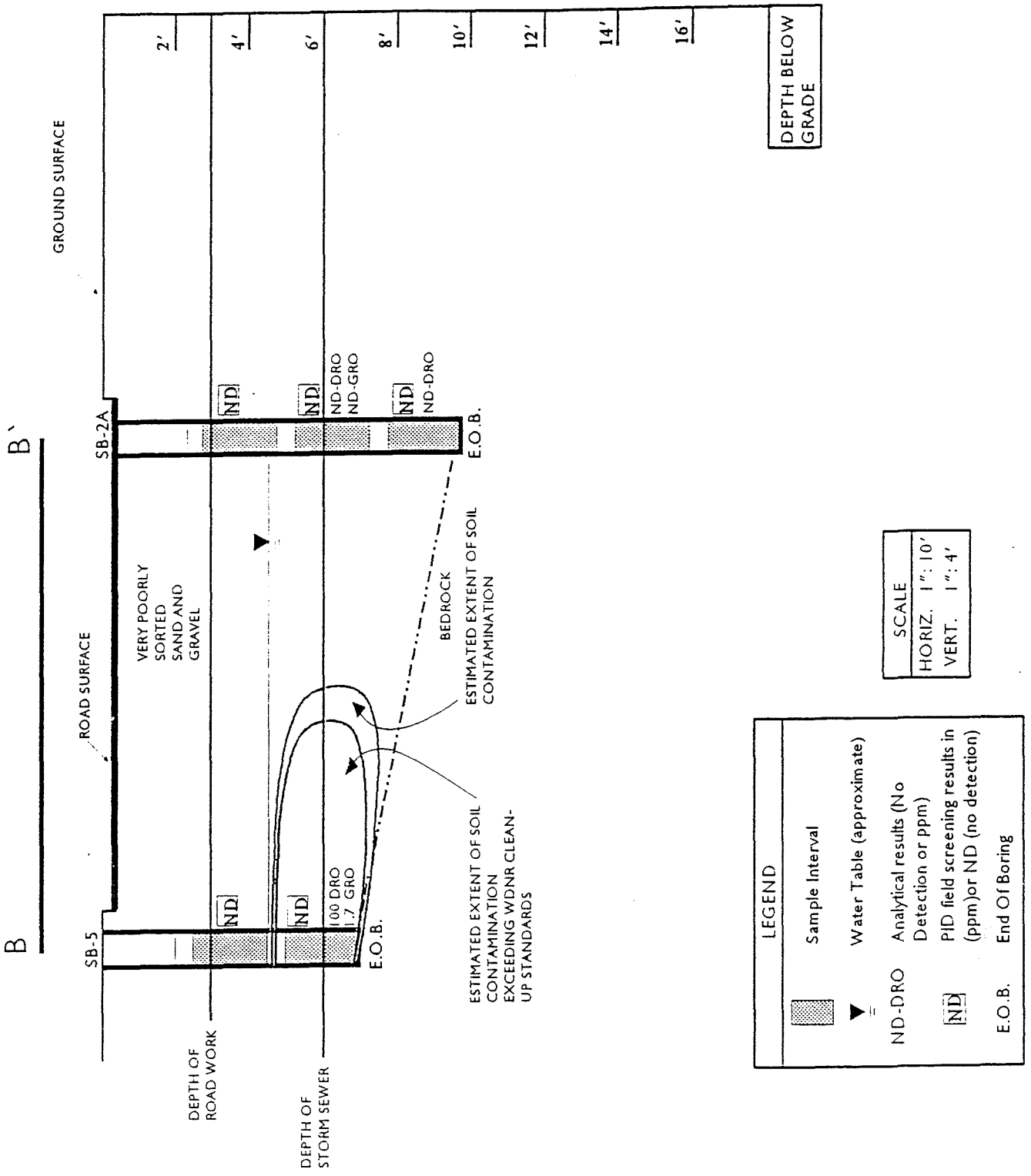


FIGURE 2.6 THOMAS ABANDONED SERVICE STATION

CROSS-SECTION B-B`

MAP 7
B-B' CROSS SECTION WITH ANALYTICAL RESULTS AND VERTICAL EXTENT OF SOIL CONTAMINATION

(from Phase II½ ESA report prepared by Enviroscience, dated September 22, 1995)

SECTION 6.2

APPENDIX 2

PHASE IV SCOPE OF SERVICES

The scope of services for the *Phase IV Environmental Assessment* included the following:

1) Monitoring the removal of the potentially petroleum-impacted soil from the roadway by the excavation contractor (Lakeland Enterprise, Inc.);

2) Collecting representative samples of the excavated petroleum-impacted soils (one for every 15± cubic yards as required by the WDNR) for photoionization detector (PID) volatile organic compound (VOC) vapor scanning prior to transport to a disposal location;

3) Collecting soil samples from bucket of excavation equipment from the bottom and sidewalls of the resulting roadway excavation during the storm sewer installation activities to document the conditions of excavated and remaining soils at the limits of excavation;

4) Subjecting the collected soil samples to a head space volatile organic vapor scan utilizing a PID and submitting select soil samples for chemical analyses to *Giles* Environmental Laboratory for GRO, DRO, and petroleum volatile organic compounds (PVOCs); and

5) Summarizing the activities performed in a written report which provides conclusions and recommendations regarding the results of the soil removal activities and the soil analytical testing relative to current Wisconsin Department of Natural Resources (WDNR) guidelines and regulations.

(1e970339.scp/djr)

SECTION 6.3

APPENDIX 3

SITE PHOTOGRAPHS

Photograph #1: View of the former Thomas service station (facing southwest).

Photograph #2: View of the former Thomas service station with the installed storm sewer (facing southeast).

PHOTOGRAPHS
July 9, 1997

Thomas Service Station Property
STH 77, STA. 329+10 to 330+70
City of Montreal, Iron County, Wisconsin
WISDOT Project No. 9250-09-70
Project No. 1E-9703039

GILES
ENGINEERING ASSOCIATES, INC.

Photograph #3: A closer view of the former Thomas service station with the pump island (facing southeast).

Photograph #4: View of the excavation and transportation equipment.

PHOTOGRAPHS
July 9, 1997

Thomas Service Station Property
STH 77, STA. 329+10 to 330+70
City of Montreal, Iron County, Wisconsin
WISDOT Project No. 9250-09-70
Project No. 1E-9703039

GILES
ENGINEERING ASSOCIATES, INC.

Photograph #5: View of storm sewer installation activities (facing northeast).

Photograph #6: View of dewatering activities in installing the storm sewer.

PHOTOGRAPHS
July 9, 1997

Thomas Service Station Property
STH 77, STA. 329+10 to 330+70
City of Montreal, Iron County, Wisconsin
WISDOT Project No. 9250-09-70
Project No. 1E-9703039

Giles Engineering Associates, Inc.
Geotechnical, Environmental
and Construction Materials Consultants

Photograph #7: Closer view of the installed storm sewer (facing east).

Photograph #8: View of the installed storm sewer (facing southeast).

PHOTOGRAPHS
July 9, 1997

Thomas Service Station Property
STH 77, STA. 329+10 to 330+70
City of Montreal, Iron County, Wisconsin
WISDOT Project No. 9250-09-70
Project No. 1E-9703039

GILES
ENGINEERING ASSOCIATES, INC.

SECTION 6.4

APPENDIX 4

PID METER CALIBRATION

PID METER CALIBRATION

The Photoionization Detector (PID Model PI-101, 11.7 electron Volt (eV), Serial No. 401173) was calibrated with HNu Span Gas (No. 101-350) Isobutylene standard gas to Benzene equivalents in the *Giles* laboratory and in the field before, during and after soil sampling procedures. The PID meter span dial was placed on the 0 - 200 HNu-unit setting and was set at a span for a PID reading of 72 HNu-units. The photoionization detector calibration documentation is included with this appendix. While in the laboratory, the battery pack of the PID meter was recharged using an HNu converter/charger. The results of the PID field screening are indicated on Table 1 - *Giles* Soil Sampling Field Log of this report.

1e970339.pid/djr

PHOTOIONIZATION DETECTOR CALIBRATION DOCUMENTATION

Facility Name Former Thomas Service Station
Location STH 77, STA. 329+10 to 330+70
Montreal, Iron County, Wisconsin
Project No. 1E-9703039

Photoionization Calibration Record (1) Giles Staff: Charley C. Wang Weather Conditions: Sunshine, 60's			
Time	**Calibration Gas Concentration (2)**	**Response (HNU® Units)**	**Span Pot Setting**
4:30 pm; July 8, 1997	100 ppm	72 ppm	0.68
7:00 am; July 9, 1997	100 ppm	72 ppm	0.68
11:00 am; July 9, 1997	100 ppm	72 ppm	0.68

(1) Photoionization Meter Name and Type: HNU Systems, Inc.®
Model No. PI 101
Serial No. 401173

(2) Calibrated with Isobutylene to benzene equivalents.

1e970339.pdl

SECTION 6.5

APPENDIX 5

STANDARD PROCEDURES

STANDARD PROCEDURES

Soil Classification and Sampling Procedures

The collected soil samples were placed in new, laboratory approved 60 milliliter (mL) glass sampling jars with Teflon® lined lids, 4 ounce polystyrene plastic jars and 8 ounce glass sampling jars. The select soil samples collected for GRO and PVOC chemical analyses were field weighed, placed in 60 mL glass sampling jars with Teflon® lined lids, methanol preserved in accordance with current WDNR guidelines, sealed, and placed in a controlled environment. The select soil samples collected for DRO chemical analysis were field weighed, placed in 60 mL glass sampling jars with Teflon® lined lids, sealed, and placed in a controlled environment.

The soil samples collected in 8 ounce sampling jars were subjected to a head-space volatile vapor scan using a properly maintained and charged 11.7 electron volt (eV) HNu photoionization detector (PID). The volatile vapor scan technique is a screening method used to evaluate the presence of volatile organic vapor emissions. The head space sample containers were filled ½ to ¾ full, covered with a layer of aluminum foil, a metal lid, and allowed to warm to approximately room temperature prior to the vapor scan. The head space samples were also agitated for 30± seconds prior to the vapor scan. The PID was calibrated in the field before, during, and after the vapor scan.

(1e970339.std/djr)

SECTION 6.6

APPENDIX 6

CHAIN-OF-CUSTODY AND LABORATORY REPORTS

GILES ENGINEERING ASSOCIATES, INC. **CHAIN-OF-CUSTODY**

- ☐ N8 W22350 Johnson Road Suite A1, Waukesha, WI 53186 tel: 414-544-0118 fax: 414-549-5868
- ☐ 4875 East La Palma Avenue Suite 607, Anaheim, CA 92807 tel: 714-779-0052 fax: 714-779-0068
- ☐ 12240 Indian Creek Court Suite 105, Beltsville, MD 20705 tel: 301-210-1212 fax: 301-210-1215
- ☐ 10031 Monroe Drive Suite 101, Dallas, TX 75229 tel: 214-358-5885 fax: 214-358-5884

☐ closure sample
☐ confirmation required

Site: WDOT - HWY 77
Address: Hurley
Wisconsin

Sample Collector	Charley Wang	Project Manager	Paul Gieke	Project Number	1E-9705039
Laboratory Used	Giles Engineering Ass.	Lab Contact	DDM	Lab Job Number	97.0037

Sample Description	(Sample Depth)	Sample Matrix (Soil, Water, etc.)	Date Collected	Time Collected	Field Screen	GRO (WI mod)	DRO (WI mod)	TPH (gasoline) 8015	TPH (diesel) 8015	VOC (EPA 8021)	PVOC (EPA 8020)	BTEX (EPA 8020)	Lead	Cadmium	Copper	Silver	Asbestos	TCLP metals	Semi-volatile Org (625/8270)	Purgable Halocarbons	Purgable Aromatics					Number and Type of Containers	Sample Preservative	Due Date	Lab ID 97/11	Sample Temperature
S-1	5'	Soil	7/8	7:35	BDL	X	X				X															3C 1F	MeOH	7/22/97	487	ROI
S-2	5'	"	"	5:05																									488	
S-6	5'	"	"	7:20																									489	
~~S-7~~	~~5'~~	~~"~~	~~7/9~~	~~7:40~~											Canceled. CW 7/11/97														490	
S-8	5'	"	"	7:50																									491	
~~S-9~~	~~5'~~	~~"~~	~~"~~	~~7:58~~											Canceled. CW 7/11/97														492	
S-10	6'	"	SI	8:15																									493	
~~S-11~~	~~6'~~	~~"~~	~~"~~	~~8:25~~												Canceled CW 7/11/97													494	
~~S-13~~	~~6'~~	~~"~~	~~"~~	~~9:05~~												Canceled. CW 7/10/97													495	
~~S-14~~	~~5'~~	~~"~~	~~"~~	~~9:40~~													Canceled CW 7/11/97												496	
Method blank						X					X															1C	MeOH		497	
										DRO samples Hexane preserved 7/11/97 (c) 9:00 AM																				

container code:
A = 8 oz/250 ml
B = 4 oz/ 120 ml Teflon lined
C = 2 oz/ 60 ml Teflon lined
D = 40 mL VOA vial
E = Quart Teflon lined
F = 250 mL plastic
G = poly bag
H = ______
I = ______
J = ______

Relinquished By	Date	Time	Received By
[signature]	7/10	8:45	[signature]

PAGE 1 OF 1

BILL TO: ☐ send copy of invoice to Giles

Site Information

WDOT - HWY 77

Hurley, WI

GILES
ENGINEERING ASSOCIATES, INC.

Giles Project #: 1E-9703039
ient: Paul Giese

Lab Job #: 97.0095
Date Received 7/10/97

DRO (WISCONSIN MODIFIED METHOD)

SAMPLE DESCRIPTION	SAMPLE MATRIX	SAMPLE NUMBER	DATE ANALYZED	DATE SAMPLED	DATE EXTRACTED	DRO RESULT	FLAGS		LIMIT OF DETECTION	LIMIT OF QUANTITATION	DILUTION	PERCENT SOLIDS
S-1 5'	Soil	97.487	7/16/97	7/8/97	7/10/97	20 mg/kg	L		2.1 mg/kg	6.9 mg/kg	1	88.1%
S-2 5'	Soil	97.488	7/15/97	7/8/97	7/10/97	260 mg/kg	L	D	21 mg/kg	69 mg/kg	10	86.5%
S-6 5'	Soil	97.489	7/15/97	7/8/97	7/10/97	<			2.1 mg/kg	6.9 mg/kg	1	81.9%
S-8 5'	Soil	97.491	7/15/97	7/9/97	7/10/97	<			2.1 mg/kg	6.9 mg/kg	1	83.2%
S-10 6'	Soil	97.493	7/15/97	7/9/97	7/10/97	<			2.1 mg/kg	6.9 mg/kg	1	85.3%

QC DATA SUMMARY

Batch #: 970715-1A

Blank: <
Spike: 74%
Dup Spike: 82%
RPD: 11%

Begin Calibration Check: 84%
End Calibration Check: 103%
Second Source Calibration Check: 90%
Hexane Blank: <

DATA FLAGS

Soil analysis reported on a dry weight basis
< = Below the Limit of Detection

D = Elevated reporting limits due to sample dilution
L = Late eluting peaks detected

proved By: _____ Date: 7/16/97

Dwight E. Montague, Laboratory Supervisor
WDNR #268305180

Site Information

WDOT - HWY 77

Hurley, WI

GILES
ENGINEERING ASSOCIATES, INC.

Giles Project #: 1E-9703039
Client: Paul Giese

Lab Job #: 97.0095
Date Received: 7/10/97

GRO (WISCONSIN MODIFIED METHOD)

SAMPLE DESCRIPTION	SAMPLE MATRIX	SAMPLE NUMBER	DATE ANALYZED	DATE SAMPLED	GRO RESULT	FLAGS	LIMIT OF DETECTION	LIMIT OF QUANTITATION	DILUTION	PERCENT SOLIDS
S-1 5'	Soil	97.487	7/10/97	7/8/97	0.39 mg/kg	J	0.34 mg/kg	1.1 mg/kg	1	88.1%
S-2 5'	Soil	97.488	7/10/97	7/8/97	15 mg/kg	L	0.34 mg/kg	1.1 mg/kg	1	86.5%
S-6 5'	Soil	97.489	7/10/97	7/8/97	1.1 mg/kg	J	0.34 mg/kg	1.1 mg/kg	1	81.9%
S-8 5'	Soil	97.491	7/11/97	7/9/97	0.72 mg/kg	J	0.34 mg/kg	1.1 mg/kg	1	83.2%
S-10 6'	Soil	97.493	7/11/97	7/9/97	<		0.34 mg/kg	1.1 mg/kg	1	85.3%
DNR trip blank (MeOH	Other	97.497	7/10/97	7/9/97	<		0.34 mg/kg	1.1 mg/kg	1	

QC DATA SUMMARY

Batch #: 970710-1I

Blank:	<
Spike:	99%
Dup Spike:	95%
RPD:	3.7%

Begin Calibration Check: 100%
End Calibration Check: 96%
Second Source Calibration Check: 105%
MeOH Blank: <

DATA FLAGS

Soil analysis reported on a dry weight basis

< = Below the Limit of Detection

J = Estimated value between the Limit of Detection and the Limit of Quantitation

L = Late eluting peaks detected

Approved By: _____ Date: 7/15/97

Dwight E. Montague, Laboratory Supervisor
WDNR #268305180

PVOC Analytical Report

Site Information:
WDOT - HWY 77

Hurley WI

GILES ENGINEERING ASSOCIATES, INC.

client	Paul Giese	EPA method	8020B
project	1E-9703039	matrix	Soil
date analyzed	7/14/97	dilution	1: 50.00
date sampled	7/8/97	analyzed by	DEM
date extracted	7/8/97	sample	97.487
percent solids	88.1%	lab job #	97.0095

sample # 97.487 S-1 5'

analyte	result (ug/kg)	LOD (ug/kg)	LOQ (ug/kg)	Flags	MeOH Blank (ug/kg)	Blank times dilution
Benzene	<	16	53		<	<
Toluene	<	15	51		<	<
Ethylbenzene	<	18	59		<	<
Total Xylenes	<	51	170		<	<
Methyl tertiary butyl ether	<	13	44		<	<
1,2,4-Trimethylbenzene	<	23	77	s	<	<
1,3,5-Trimethylbenzene	<	16	54		<	<

QC SUMMARY

Initial Calibration Check	100.0% passing
Second Source Calibration Check	85.7% passing
methanol blank	100.0% passing
water blank	100.0% passing
spike recovery	100.0% passing
duplicate spike recovery	100.0% passing
RPD	100.0% passing
end calibration check standard	100.0% passing

QC batch number g14ef2x
Sequence file c:\z\03\g14ef.seq
Calibration file A c:\z\bu\03\03ewg077
B c:\z\bu\03\03fwg077

Surrogates
97.1% Fluorobenzene (PID)
115.7% 2-Bromofluorobenzene
100.2% 2-Bromoclorobenzene

data file A c:\z\03\g14e004.rst
data file B c:\z\03\g14f004.rst

DATA FLAGS

¤ Soil analysis reported on a dry weight basis

¤ Elevated LOD due to methanol extraction
LOQ - limit of quantitation LOD - limit of detection < - less than LOD
QC outside in-house limits; s - 2nd source,

Approved by: _____ Date: 07/15/97
Dwight E. Montague, Laboratory Supervisor
WDNR #268305180

97_487.XLS

PVOC Analytical Report

Site Information:
WDOT - HWY 77

Hurley WI

GILES
ENGINEERING ASSOCIATES, INC.

client	Paul Giese	EPA method	8020B
project	1E-9703039	matrix	Soil
date analyzed	7/15/97	dilution	1: 50.00
date sampled	7/8/97	analyzed by	DEM
date extracted	7/8/97	sample	97.488
percent solids	86.5%	lab job #	97.0095

sample # 97.488 S-2 5'

analyte	result (ug/kg)	LOD (ug/kg)	LOQ (ug/kg)		Flags	MeOH Blank (ug/kg)	Blank times dilution
Benzene	<	16	53			<	<
Toluene	53	15	51			<	<
Ethylbenzene	<	18	59			<	<
Total Xylenes	<	51	170			<	<
Methyl tertiary butyl ether	<	13	44			<	<
1,2,4-Trimethylbenzene	56	23	77	J	s	<	<
1,3,5-Trimethylbenzene	31	16	54	J		<	<

QC SUMMARY

Initial Calibration Check	100.0% passing
Second Source Calibration Check	85.7% passing
methanol blank	100.0% passing
water blank	100.0% passing
spike recovery	100.0% passing
duplicate spike recovery	100.0% passing
RPD	100.0% passing
end calibration check standard	100.0% passing

QC batch number		g14ef2x
Sequence file		c:\z\03\g14ef.seq
Calibration file	A	c:\z\bu\03\03ewg077
	B	c:\z\bu\03\03fwg077

Surrogates
98.8% Fluorobenzene (PID)
116.6% 2-Bromofluorobenzene
104.0% 2-Bromoclorobenzene

data file	A	c:\z\03\g14e021.rst
data file	B	c:\z\03\g14f021.rst

DATA FLAGS

¤ J - Estimated value between the LOD and the LOQ

¤ Results not confirmed by second column analysis
¤ Soil analysis reported on a dry weight basis

¤ Elevated LOD due to methanol extraction
LOQ - limit of quantitation LOD - limit of detection < - less than LOD
QC outside in-house limits/ s - 2nd source.

Approved by: _____ Date: 07/15/97

Dwight E. Montague, Laboratory Supervisor

WDNR #268305180

97_488.XLS

PVOC Analytical Report

Site Information:
WDOT - HWY 77

Hurley WI

GILES ENGINEERING ASSOCIATES, INC.

client	Paul Giese	EPA method	8020B
project	1E-9703039	matrix	Soil
date analyzed	7/14/97	dilution	1: 50.00
date sampled	7/8/97	analyzed by	DEM
date extracted	7/8/97	sample	97.489
percent solids	81.9%	lab job #	97.0095

sample # 97.489 S-6 5'

analyte	result (ug/kg)	LOD (ug/kg)	LOQ (ug/kg)	Flags	MeOH Blank (ug/kg)	Blank times dilution
Benzene	<	16	53		<	<
Toluene	<	15	51		<	<
Ethylbenzene	<	18	59		<	<
Total Xylenes	<	51	170		<	<
Methyl tertiary butyl ether	<	13	44		<	<
1,2,4-Trimethylbenzene	<	23	77	s	<	<
1,3,5-Trimethylbenzene	<	16	54		<	<

QC SUMMARY

Initial Calibration Check	100.0% passing
Second Source Calibration Check	85.7% passing
methanol blank	100.0% passing
water blank	100.0% passing
spike recovery	100.0% passing
duplicate spike recovery	100.0% passing
RPD	100.0% passing
end calibration check standard	100.0% passing

QC batch number		g14ef2x
Sequence file		c:\z\03\g14ef.seq
Calibration file	A	c:\z\bu\03\03ewg077
	B	c:\z\bu\03\03fwg077

Surrogates
- 103.6% Fluorobenzene (PID)
- 120.9% 2-Bromofluorobenzene
- 103.5% 2-Bromoclorobenzene

data file	A	c:\z\03\g14e012.rst
data file	B	c:\z\03\g14f012.rst

DATA FLAGS

¤ Soil analysis reported on a dry weight basis

¤ Elevated LOD due to methanol extraction
LOQ - limit of quantitation LOD - limit of detection < - less than LOD
QC outside in-house limits: s - 2nd source,

Approved by: _____
Dwight E. Montague, Laboratory Supervisor

Date: 07/15/97

WDNR #268305180

97_489.XLS

PVOC Analytical Report

Site Information:
WDOT - HWY 77

Hurley WI

GILES
ENGINEERING ASSOCIATES, INC.

client	Paul Giese	EPA method	8020B
project	1E-9703039	matrix	Soil
date analyzed	7/14/97	dilution	1: 50.00
date sampled	7/9/97	analyzed by	DEM
date extracted	7/9/97	sample	97.491
percent solids	83.2%	lab job #	97.0095

sample # 97.491 S-8 5'

analyte	result (ug/kg)	LOD (ug/kg)	LOQ (ug/kg)	Flags	MeOH Blank (ug/kg)	Blank times dilution
Benzene	<	16	53		<	<
Toluene	<	15	51		<	<
Ethylbenzene	<	18	59		<	<
Total Xylenes	<	51	170		<	<
Methyl tertiary butyl ether	<	13	44		<	<
1,2,4-Trimethylbenzene	<	23	77	s	<	<
1,3,5-Trimethylbenzene	<	16	54		<	<

QC SUMMARY

Initial Calibration Check	100.0% passing
Second Source Calibration Check	85.7% passing
methanol blank	100.0% passing
water blank	100.0% passing
spike recovery	100.0% passing
duplicate spike recovery	100.0% passing
RPD	100.0% passing
end calibration check standard	100.0% passing

QC batch number		g14ef2x
Sequence file		c:\z\03\g14ef.seq
Calibration file	A	c:\z\bu\03\03ewg077
	B	c:\z\bu\03\03fwg077

Surrogates
100.6% Fluorobenzene (PID)
118.3% 2-Bromofluorobenzene
99.3% 2-Bromoclorobenzene

data file	A	c:\z\03\g14e013.rst
data file	B	c:\z\03\g14f013.rst

DATA FLAGS

¤ Soil analysis reported on a dry weight basis

¤ Elevated LOD due to methanol extraction
LOQ - limit of quantitation LOD - limit of detection < - less than LOD
QC outside in-house limits: s - 2nd source,

Approved by: _____ Date: 07/15/97

Dwight E. Montague, Laboratory Supervisor

WDNR #268305180

97_491.XLS

PVOC Analytical Report

Site Information:
WDOT - HWY 77

Hurley WI

GILES
ENGINEERING ASSOCIATES, INC.

client	Paul Giese	EPA method	8020B
project	1E-9703039	matrix	Soil
date analyzed	7/14/97	dilution	1: 50.00
date sampled	7/9/97	analyzed by	DEM
date extracted	7/9/97	sample	97.493
percent solids	85.3%	lab job #	97.0095

sample # 97.493 S-10 6'

analyte	result (ug/kg)	LOD (ug/kg)	LOQ (ug/kg)	Flags	MeOH Blank (ug/kg)	Blank times dilution
Benzene	<	16	53		<	<
Toluene	<	15	51		<	<
Ethylbenzene	<	18	59		<	<
Total Xylenes	<	51	170		<	<
Methyl tertiary butyl ether	<	13	44		<	<
1,2,4-Trimethylbenzene	<	23	77	s	<	<
1,3,5-Trimethylbenzene	<	16	54		<	<

QC SUMMARY

Initial Calibration Check	100.0% passing
Second Source Calibration Check	85.7% passing
methanol blank	100.0% passing
water blank	100.0% passing
spike recovery	100.0% passing
duplicate spike recovery	100.0% passing
RPD	100.0% passing
end calibration check standard	100.0% passing

QC batch number g14ef2x
Sequence file c:\z\03\g14ef.seq
Calibration file A c:\z\bu\03\03ewg077
B c:\z\bu\03\03fwg077

Surrogates
103.4% Fluorobenzene (PID)
121.4% 2-Bromofluorobenzene
100.4% 2-Bromoclorobenzene

data file A c:\z\03\g14e014.rst
data file B c:\z\03\g14f014.rst

DATA FLAGS

¤ Soil analysis reported on a dry weight basis
¤ Sample transferred to second container after methanol preservation to determine sample weight

¤ Elevated LOD due to methanol extraction
LOQ - limit of quantitation LOD - limit of detection < - less than LOD
QC outside in-house limits: s - 2nd source,

Approved by: _____ Date: 07/15/97
Dwight E. Montague, Laboratory Supervisor
WDNR #268305180

97_493.XLS

PVOC Analytical Report

Site Information:
WDOT - HWY 77

Hurley WI

GILES
ENGINEERING ASSOCIATES, INC.

client	Paul Giese	EPA method	8020B
project	1E-9703039	matrix	Other
date analyzed	7/15/97	dilution	1: 50.00
date sampled	7/9/97	analyzed by	DEM
		sample	97.497
		lab job #	97.0095

sample # 97.497 WDNR trip blank (MeOH)

analyte	result (ug/kg)	LOD (ug/kg)	LOQ (ug/kg)	Flags	MeOH Blank (ug/kg)	Blank times dilution
Benzene	<	16	53		<	<
Toluene	<	15	51		<	<
Ethylbenzene	<	18	59		<	<
Total Xylenes	<	51	170		<	<
Methyl tertiary butyl ether	<	13	44		<	<
1,2,4-Trimethylbenzene	<	23	77	s	<	<
1,3,5-Trimethylbenzene	<	16	54		<	<

QC SUMMARY

Initial Calibration Check	100.0% passing
Second Source Calibration Check	85.7% passing
methanol blank	100.0% passing
water blank	100.0% passing
spike recovery	100.0% passing
duplicate spike recovery	100.0% passing
RPD	100.0% passing
end calibration check standard	100.0% passing

QC batch number		g14ef2x
Sequence file		c:\z\03\g14ef.seq
Calibration file	A	c:\z\bu\03\03ewg077
	B	c:\z\bu\03\03fwg077

Surrogates
- 99.2% Fluorobenzene (PID)
- 119.2% 2-Bromofluorobenzene
- 100.6% 2-Bromoclorobenzene

data file	A	c:\z\03\g14e015.rst
data file	B	c:\z\03\g14f015.rst

DATA FLAGS

¤ Elevated LOD due to methanol extraction
LOQ - limit of quantitation LOD - limit of detection < - less than LOD
QC outside in-house limits: s - 2nd source,

Approved by: _____
Dwight E. Montague, Laboratory Supervisor

Date: 07/15/97
WDNR #268305180

97_497.XLS

SECTION 6.7

APPENDIX 7

STANDARD SOIL CHEMICAL ANALYSIS PROCEDURES

SOIL CHEMICAL ANALYSIS PROCEDURES

Chemical Analysis	Method
Soil	
- Gasoline Range Organics (GRO)	Wisconsin Modified*
- Diesel Range Organics (DRO)	Wisconsin Modified
- Petroleum Volatile Organic Compounds (PVOCs)	USEPA 8020*

See Section 6.6 (Appendix 6) for complete results of soil chemical analysis.

* Soil samples submitted for Gasoline Range Organic (GRO) and Petroleum Volatile Organic Compounds (PVOCs) analyses were methanol preserved in the field in accordance with current WDNR requirements.

(1e970339.sca/djr)

SECTION 6.8

APPENDIX 8

GENERAL COMMENTS

GENERAL COMMENTS

This report has been prepared specifically for the Wisconsin Department of Transportation (WISDOT). Reproduction and/or distribution of this report should not be performed without consent from the WISDOT and *Giles*.

The information presented in this report is based on field observations and sampling of soils performed within the property boundaries at specific locations at a specific point in time. The opinions formulated regarding the petroleum related compounds encountered on this property are based upon reasonable judgements made in light of this information and the data obtained from the specific site.

The conclusions and recommendations presented in this report have been promulgated in accordance with generally accepted professional practice in the field of environmental consulting at the time of this report. No other warranty is either expressed or implied.

(1e970339.gen/djr)

APPENDIX A

of

Phase IV - Site Remediation

Phase II Environmental Assessment for
Thomas Abandoned Service Station

PHASE II

ENVIRONMENTAL ASSESSMENT

FOR

THOMAS ABANDONED SERVICE STATION

STATE T.H. 77

IRON COUNTY

WDOT PROJECT ID 9250-09-00

PREPARED FOR:

WISCONSIN DEPARTMENT

OF TRANSPORTATION

JUNE, 1994

SUBMITTED BY:

ENVIROSCIENCE

ENGINEERS • SCIENTISTS • LAND SURVEYORS

1101 WEST CLAIREMONT AVENUE - SUITE 2D

EAU CLAIRE, WISCONSIN 54701

(715) 835-9311

July 12, 1994

Mr. Mark Kohler
Level One, Inc.
P.O. Box 345, 302 E. Thomas
Rice Lake, WI 54868

Dear Mr. Kohler:

Enclosed is the Phase II Environmental Assessment Report for the Thomas Abandoned Service Station site located in Montreal, Wisconsin. WDOT Project ID 9250-09-00. Enviroscience Project No. 94-059.11.

Four reports are included for you to disperse to the WDOT and other parties.

Enviroscience recommends that one copy of the report be submitted to the WDNR to determine if additional investigation is warranted by the property owner.

If you have any questions regarding this investigation, please do not hesitate to contact me at (715) 835-9311.

Sincerely,

ENVIROSCIENCE, INC.

Steven J. Palzkill
Environmental Manager

enclosure

PHASE II

ENVIRONMENTAL ASSESSMENT

FOR

THOMAS ABANDONED SERVICE STATION

STATE T.H. 77

IRON COUNTY

WDOT PROJECT ID 9250-09-00

Prepared By: Steven J. Palzkill Date: 7-12-94

Steven J. Palzkill
Environmental Manager
Enviroscience, Inc.

Reviewed By: Daryl E. Zuelke Date: 7-12-94

Daryl E. Zuelke
P.E. Vice President
Enviroscience, Inc.

Table of Contents

FIGURES

TABLES

ABBREVIATIONS

AA	Atomic Absorption, technique used to test for metals
ASTM	American Society for Testing Metals
bg	Below Grade
Cd	Cadmium
DHSS	Department of Health and Human Services
DILHR	Department of Industry, Labor and Human Relations
DRO	Diesel Range Organic
EPA	Environmental Protection Agency
ERP	Environmental Repair Program
FID	Flame Ionization Detector
GC-MS	Gas Chromatograph-Mass Spectrometer
GRO	Gasoline Range Organic
LUST	Leaking Underground Storage Tank
MDL	Minimum Detection Limits
ND	not detected
Pb	Lead
PID	Photo Ionization Detector
ppb	parts per billion
ppm	parts per million, which is equivalent to mg/kg
PVOC	Petroleum Volatile Organic Compound
QC	Quality Control
RP	Responsible Party
TCLP	Toxicity Characteristic Leaching Procedure
UST	Underground Storage Tank
VOC	Volatile Organic Compound
WDOT	Wisconsin Department of Transportation

Section One EXECUTIVE SUMMARY

1.1 Results and Conclusions

Enviroscience Inc. has completed a Phase II Environmental Assessment of the Thomas Abandoned Service Station site located in the City of Montreal, WI. The Phase II Environmental Assessment was conducted on May 23-26 for the Wisconsin Department of Transportation (WDOT) State Trunk Highway (STH) 77, Montreal to Hurley, Project I.D.# 9250-09-00.

The proposed project is located on State Trunk Highway 77 in Iron County. It begins west of the City of Montreal's corporate limits, at Elm Street, and extends easterly approximately 4.0 miles through the City of Montreal, into the City of Hurley to 6th Avenue. The existing roadway consists of both rural and urban sections.

The urban portion of the project would involve reconstructing the section in the City of Montreal from Bessemer Street approximately 2.0 miles into the City of Hurley to 5th Street. The urban section will be constructed as a 36-foot wide face to face curb and gutter section, with a storm sewer system.

The results of the assessment are as follows:

* The site ceased operations in 1989. Prior to 1989 the site operated as a gasoline service station. The investigator was unable to determine the date that the station began operations.

* The properties to the east and west sides of the Thomas site are undeveloped woods. State Trunk Highway 77 runs along the north side

1.2 Recommendations

Based on the results of this investigation, Enviroscience recommends additional investigation of soil contamination in the anticipated construction zone (surface to five feet) within the Wisconsin Department of Transportation (WDOT) right-of-way at this site. It should be noted that a 100 ppm level of Diesel Range Organics was identified in the 2.5 to 4.5-foot zone of SB-5. The Wisconsin Department of Natural Resources (WDNR) remedial action guideline for Diesel Range Organics (DRO) and Gasoline Range Organics (GRO) soil contamination is 10 ppm. Also a low level of Gasoline Range Organics, 1.7 ppm, were identified in SB-5 in the 2.5 to 4.5-foot zone. Diesel Range Organics (DRO) were also detected (9.7 ppm) in the 5.0 to 7.0-foot zone of SB-6. It is possible that higher concentrations of petroleum contamination exist on the site in areas that were not investigated.

The potential exists to encounter soil contamination during construction. The extent and degree of soil contamination within the right-of-way needs to be defined in order to determine the best method of soil handling and remediation.

Sampled ground water did not contain Petroleum Volatile Organic Compounds (PVOC's), but because the ground water is so close to the surface (within 2.5 to 4.5 feet in both soil borings) impacts to the ground water may exist elsewhere on the site. Current construction plans involve excavation for new storm sewers to a

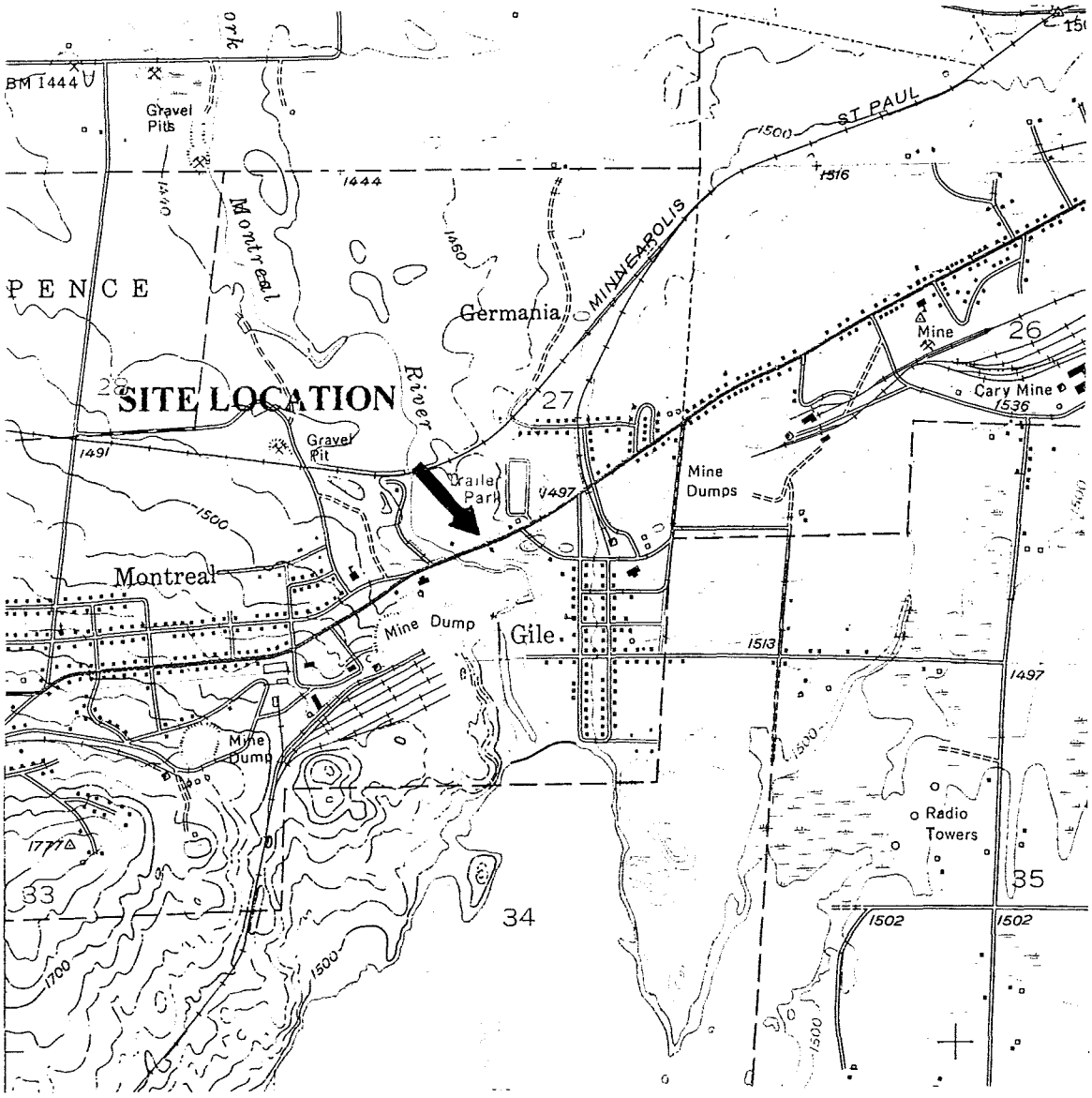
Section Two SITE INVESTIGATION

2.1 Purpose and Scope

The Phase II Site Assessment was performed to determine if soil and/or groundwater in the State Trunk Highway (STH) 77 right-of-way has been impacted by the possible release of petroleum products from past operations on the Thomas Abandoned Service Station site. Highway construction is currently being proposed for STH 77 through the City of Montreal, to Hurley, WI. The Thomas Abandoned Service Station Site is located within the right-of-way of the proposed construction (see Figure 2-1). Current construction plans include increasing the width of the urban section of STH 77 from 22 to 36 feet, resurfacing the roadway and installing storm sewers. This assessment was conducted for Level One, Inc. on May 24-26 as part of WDOT Project I.D. # 9250-09-00.

The assessment for this site consisted of the following:

* a review of the site history,
* a review of topographic maps, United States Geological Survey (USGS) Water Resources Maps, soils and bedrock identification maps,
* interviews of people familiar with the site,
* a review of regulatory lists,
* a reconnaissance inspection of the site and surrounding area to identify potential contamination sources,
* the advancement of two soil borings, SB-5 to 7 feet below grade (bg) and SB-6 to 12 feet below grade (bg),



SITE LOCATION

Thomas Abandoned Service Station Site

FIGURE 2-1

ENVIROSCIENCE

encountered at an average depth of 10 feet. The topography is deeply dissected lake plane. Ground water in the area of the site generally flows toward the Montreal River.

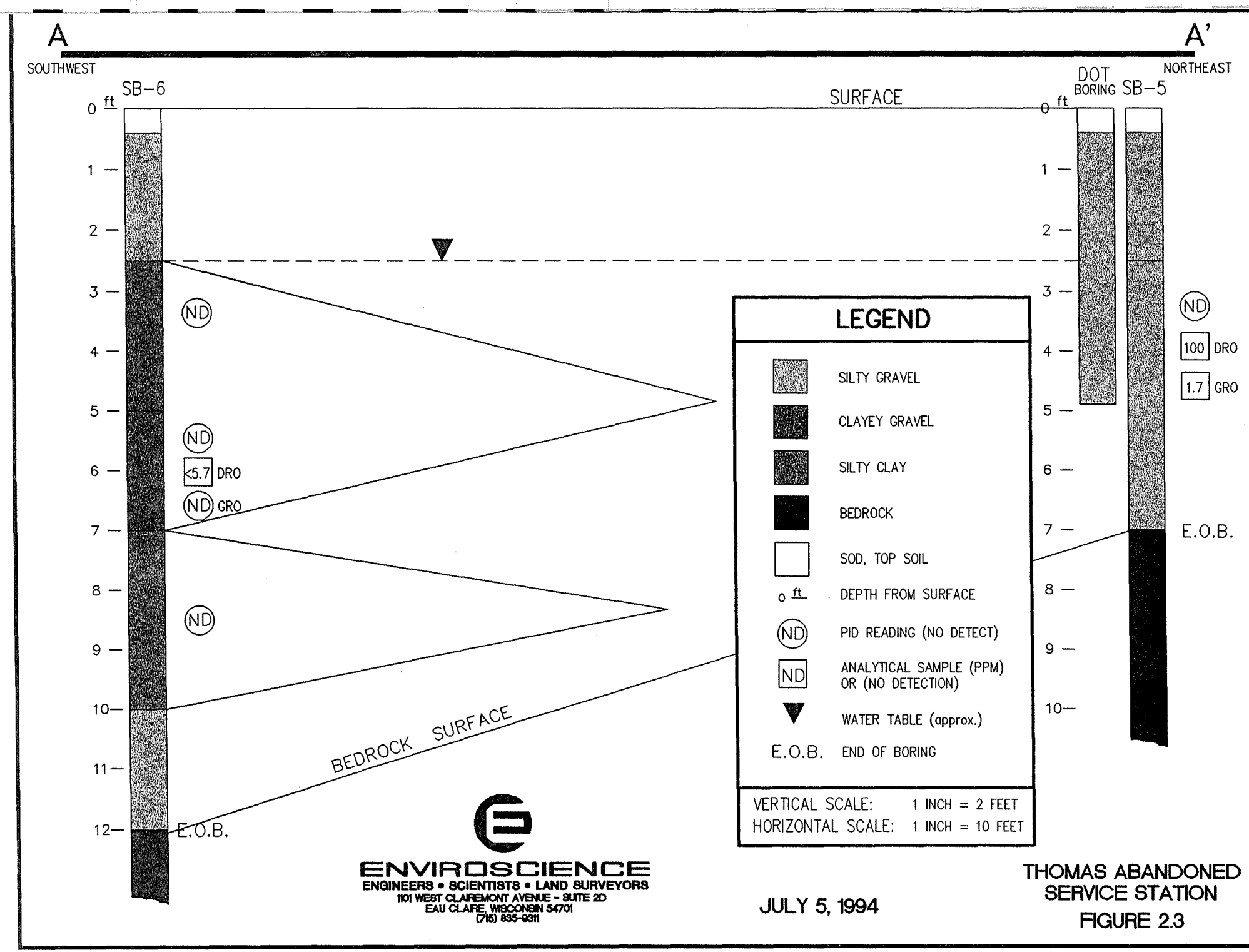
2.4 Regulatory Review

A record search was performed to uncover any previous spills or other enforcement actions that may have been reported on or around the Thomas Site. The search referenced the Wisconsin Department of Industry, Labor and Human Relations (WDILHR) Computer Inventory of Underground Petroleum Storage Tanks. The Thomas UST's were not, but should have been, listed on this inventory.

The Wisconsin Department of Natural Resources (WDNR) Leaking Underground Storage Tank (LUST) List and the WDNR Statewide Spills and Hazardous Incident Report were reviewed. One active LUST site was identified within the area at the Montreal City Hall. The Montreal River separates the two sites so any ground water or soil impact on the Thomas Site from the City Hall site is not anticipated.

2.5 Sampling Procedures and Locations

Two soil borings (SB-5 and SB-6) were advanced using a hollow stem auger drill rig and one sample from each boring was collected using split-spoon samplers and one duplicate sample was also taken (See Appendix D). Boring locations are illustrated in Figure 2-2.



ENVIROSCIENCE
ENGINEERS • SCIENTISTS • LAND SURVEYORS
1101 WEST CLAIREMONT AVENUE - SUITE 2D
EAU CLAIRE, WISCONSIN 54701
(715) 835-9311

JULY 5, 1994

THOMAS ABANDONED SERVICE STATION
FIGURE 2.3

TABLE 2-2

SOIL SAMPLE CHEMICAL ANALYSIS.

SAMPLE NUMBER	SAMPLE DEPTH (ft)	COLLECTION DATE	DRO ppm	GRO ppm	SOLIDS (%)
SB-5	2.5 - 4.5	5-24-94	100	1.7	87.5
SB-6	5.0 - 7.0	5-24-94	<5.7	<1.1	87.1
SB-6 (dupl.)	5.0 - 7.0	5-24-94	9.4	<1.1	87.1

PVOC's were not detected in ground water sample SB-6 above laboratory detection limits. The results of laboratory analysis of ground water samples are illustrated below in Table 2-3.

TABLE 2-3

GROUND WATER SAMPLE ANALYSIS

SAMPLE NUMBER	COLLECTION DATE	PVOC's (ug/L)
SB-6	5-25-94	<1.0
SB-6 (dupl.)	5-25-94	<1.0

Based on the results of field screening and laboratory analysis, the areas near soil boring SB-5 which are anticipated to be encountered during construction activities in the STH 77 right-of-way at this site are impacted by DRO at a concentration sufficient to require additional work.

Field observation of ground water did not indicate any obvious signs of contamination (e.g. odor, petroleum sheen, or discolorations). Laboratory results did not indicate the presence of any PVOC. Ground water was encountered at a depth of 2.5 to 4.5 feet (bg). The current construction plans for the highway do include excavating at depths sufficient to encounter ground water.

Mr. Chris Sarri of WDNR, Northwest District was notified of the release on June 20, 1994. Mr Sarri indicated that a responsible party letter would be issued to the property owner. The possibility exists that the property owner may not respond in a timely manner. Delay of the proposed highway construction project may occur as a result.

2.8 Recommendations

Based on the results of this investigation, Enviroscience recommends additional investigation of soil contamination in the anticipated construction zone (surface to five feet) within the WDOT right-of-way at this site. It should be noted that a 100 ppm level of DRO was identified in the 2.5 to 4.5-foot zone of SB-5. The

2.9 Standard of Care

The conclusions contained in this report represent our professional opinions. Our opinions are arrived at in accordance with currently accepted hydrogeologic and engineering practices at this time and location. Enviroscience observed the degree of care and skill generally exercised by the profession under similar circumstances and conditions. No other warranty is expressed or implied.

Information in this report obtained during interviews was accepted in good faith. Information in this report obtained through databases is limited to the accuracy of those databases.

Section Three

APPENDICES

A Site Photographs

SITE PHOTOGRAPHS

SITE NAME: Thomas Abandoned Service Station

DATE: 5-26-94

TIME: 11:05am

DIRECTION OF PHOTOGRAPH:

Southeast

WEATHER CONDITIONS:

sunny, dry, 60 degrees

PHOTOGRAPHED BY:

Steven Palzkill

DESCRIPTION: The orange cone designates SB-6 located in the boulevard portion of sidewalk.

SITE NAME: Thomas Abandoned Service Station

DATE: 5-26-94

TIME: 11:07 am

DIRECTION OF PHOTOGRAPH:

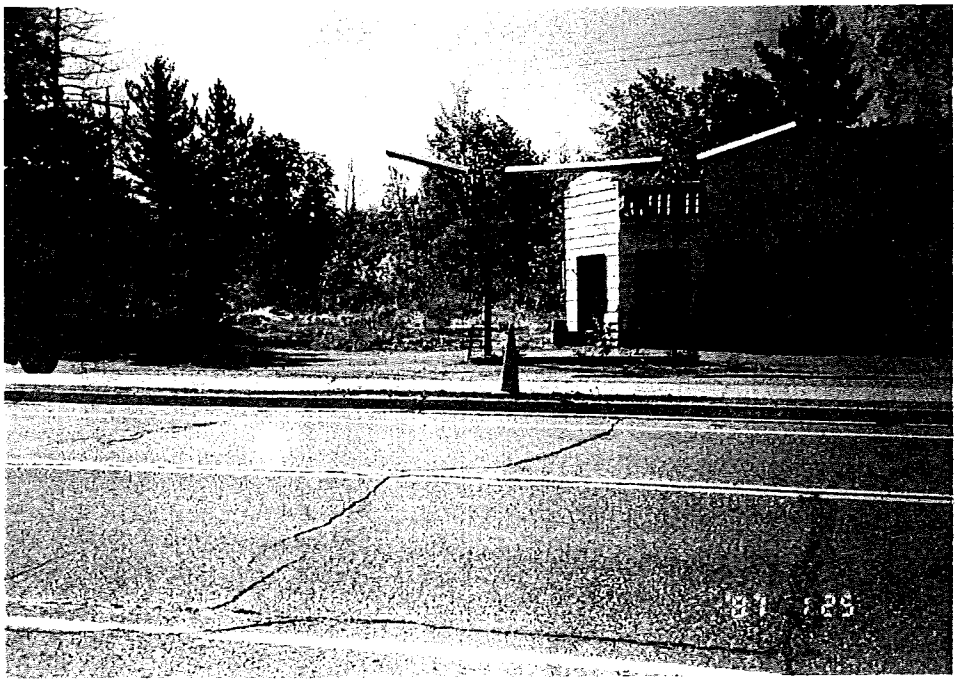
Due South

WEATHER CONDITIONS:

sunny, dry, 60 degrees

PHOTOGRAPHED BY:

Steven Palzkill



DESCRIPTION: The orange cone designates SB-5 located in the boulevard portion of the sidewalk.

B WDNR Soil Boring Logs and Borehole Abandonment Forms

State of Wisconsin
Department of Natural Resources

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

Soil Boring Log Information
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
STH 77		SB5

Boring Drilled By (Firm name and name of crew chief)	Date Drilling Started	Date Drilling Completed	Drilling Method
WTD, Mark Thuot	5/24/94	5/24/94	HSA

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
			Feet MSL	Feet MSL	8.0 Inches

Boring Location
State Plane N, E Lat ° ' "
NW 1/4 of SW 1/4 of Section 27 T 46 N,R 2 Long ° ' "

Local Grid Location (If applicable)
Feet ☐ N ☐ S Feet ☐ E ☐ W

County	DNR County Code	Civil Town/City/ or Village
Iron	26	Montreal

Sample Number	Sample Length (in) Recovered	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Standard Penetration	Moisture Content	Liquid Limit	Plastic Limit	P 200	RQD/ Comments
1	.5	3 8 13 21	1–2–3–4	Br. F-C SAND, w/Gravel					21	W				
2	.5	31 50 42 50	5–6–7–8–9–10–11–12						92	W				

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

Signature

Firm WTD Environmental Drilling
101 Alderson Schofield, WI 54476-0109
Tel: (715) 359-7090 Fax: (715) 355-5715

This form is authorized by Chapters 144, 147 and 162, Wis. Stats. Completion of this report is mandatory. Penalties: Forfeit not less than $10 nor more than $5,000 for each violation. Fined not less than $10 or more than $100 or imprisoned not less than 30 days, or both for each violation. Each day of continued violation is a separate offense, pursuant to ss 144.99 and 162.06, Wis. Stats.

State of Wisconsin
Department of Natural Resources

Soil Boring Log Information Supplement
Form 4400-122A 7-91

Boring Number **SB5** Use only as an attachment to Form 4400-122. Page 2 of 2

Sample Number	Sample Length (in) Recovered	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties: Standard Penetration	Soil Properties: Moisture Content	Soil Properties: Liquid Limit	Soil Properties: Plastic Limit	Soil Properties: P 200	RQD/ Comments
				E.O.B. 12.0										

Ç♣@♦♦

Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5B Rev. 8-89

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

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location

County: Iron

NW 1/4 of SW 1/4 of Sec. 27 : T. 46 N; R. 2 ☒ E ☐ W

(If applicable) _____ Gov't Lot _____ Grid Number

Grid Location _____ ft. ☐ N. ☐ S., _____ ft. ☐ E. ☐ W.

Civil Town Name

Street Address of Well

City, Village: Montreal, WI

(2) FACILITY NAME

Original Well Owner (If Known)

Present Well Owner: STH 77

Street or Route

City, State, Zip Code: Montreal, WI

Facility Well No. and/or Name (If Applicable): SB5

WI Unique Well No.: _ _ _ _ _ _

Reason For Abandonment: No longer needed

Date of Abandonment: 5/24/94

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On (Date): 5/24/94

☐ Monitoring Well
☐ Water Well
☒ Drillhole
☐ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify):

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

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

Casing Depth (ft.) _____

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

(4) Depth to Water (Feet): 30

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☐ Yes	☐ No	

If No, Explain: _____

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

(5) Required Method of Placing Sealing Material:
☒ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

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

Sealing Material Used	From Ft.	To Ft.	No. Units or Sacks Sealant Used (By Volume)	Mix Ratio or Mud Weight
Bentonite Chips	Surface	12.0	2 bags	

(7) Comments: _____

(8) Name of Person or Firm Doing Sealing Work: WTD Environmental Drilling

Signature of Person Doing Work: [signature] Date Signed: 6/3/94

Street or Route: 101 Alderson Street

Telephone Number: (715) 359-7090

City, State, Zip Code: Schfield, WI 54476

(9) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected | District/County

Reviewed/Inspector

Follow-up Necessary

DNR/COUNTY

State of Wisconsin
Department of Natural Resources

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

Soil Boring Log Information
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
STH 77		SB6

Boring Drilled By (Firm name and name of crew chief)	Date Drilling Started	Date Drilling Completed	Drilling Method
WTD, Mark Thuot	5/24/94	5/24/94	HSA

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
			Feet MSL	Feet MSL	8.0 Inches

Boring Location
State Plane N, (E)
NW 1/4 of SW 1/4 of Section 27 T 46 N,R 2
Lat ° ' "
Long ° ' "

Local Grid Location (If applicable)
Feet ☐ N ☐ S Feet ☐ E ☐ W

County	DNR County Code	Civil Town/City/ or Village
Iron	26	Montreal

Sample Number	Sample Length (in) Recovered	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Standard Penetration	Moisture Content	Liquid Limit	Plastic Limit	P 200	RQD/ Comments
1	1.5	6 12 23 31	1 2 3 4	F-C SAND					35	M				
2	1.0	3 5 5 17	5 6						10	W				
3	1.5	5 7 5 8	7 8	F-C SAND, w/Gravel					12	M				
			9	Br. Silty CLAY										
4	1.5	17 31 24 50	10 11	Br. F-C SAND, w/Gravel					55	W				
			12											

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

Signature: Tom Thuot

Firm: WTD Environmental Drilling
101 Alderson Schofield, WI 54476-0109
Tel: (715) 359-7090 Fax: (715) 355-5715

Boring Number **SB6** Use only as an attachment to Form 4400-122. Page 2 of 2

Sample									Soil Properties					
Number	Length (in) Recovered	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Standard Penetration	Moisture Content	Liquid Limit	Plastic Limit	P 200	RQD/ Comments
				E.O.B. 12.0										

Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5B

Rev. 8-89

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

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location

County: Iron

NW 1/4 of SW 1/4 of Sec. 27 ; T. 46 N; R. 2 ☒ E ☐ W

(If applicable) _____ Gov't Lot _____ Grid Number

Grid Location _____ ft. ☐ N. ☐ S., _____ ft. ☐ E. ☐ W.

Civil Town Name

Street Address of Well

City, Village: Montreal, WI

(2) FACILITY NAME

Original Well Owner (If Known)

Present Well Owner: STH 77

Street or Route

City, State, Zip Code: Montreal, WI

Facility Well No. and/or Name (If Applicable): S86

WI Unique Well No. _ _ _ _ _ _

Reason For Abandonment: No longer needed

Date of Abandonment: 5/24/94

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On (Date): 5/24/94

☐ Monitoring Well
☐ Water Well
☒ Drillhole
☐ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify):

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

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

Casing Depth (ft.) _____

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

(4) Depth to Water (Feet): 5.0

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☐ Yes	☐ No	

If No, Explain: _____

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

(5) Required Method of Placing Sealing Material:
☒ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

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

Sealing Material Used	From (Ft.)	To (Ft.)	Sacks Sealant or Volume	Mix Ratio or Mud Weight
Bentonite Chips	Surface	12.0	3 bags	

(7) Comments: _____

(8) Name of Person or Firm Doing Sealing Work: WTD Environmental Drilling

Signature of Person Doing Work: [signature] Date Signed: 6/3/94

Street or Route: 101 Alderson Street

Telephone Number: (715) 359-7090

City, State, Zip Code: Schfield, WI 54476

(9) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected | District/County

Reviewer/Inspector

Follow-up Necessary

DNR/COUNTY

C Analytical Results and Chain of Custody

MID-STATE ASSOCIATES, INC.

Laboratory Services
1230 Lange Ct.
Baraboo, WI 53913
608-356-2760

ANALYTICAL REPORT

ENVIROSCIENCE
RICK KRONK
6474 CITY WEST PARKWAY
EDEN PRAIRIE, MN 55344

Client I.D. No.:1223
Work Order No.:9405000666
Project Name:HURLEY/HWY 77
Project Number:W94001.31
Arrival Temperature:ON ICE
Date Recieved: 05/27/94
Report Date: 06/13/94

Sample I.D. #:67447 **Sample Description:**SB-5 **Date Sampled:**05/24/94

Analyte	Result	Units
Diesel Range Organics- WDNR Modified DRO Sample contains fractions lighter than diesel range organic hydrocarbons.	100	mg/Kg
Extraction Date DRO	05/27/94	
Analysis Date DRO	06/02/94	
Gasoline Range Organics- WDNR Modified GRO	1.7	mg/Kg
Extraction Date GRO	06/01/94	
Analysis Date GRO	06/01/94	
LUST Total Percent Solids	87.5	%

Sample I.D. #:67448 **Sample Description:**SB-6 **Date Sampled:**05/24/94

Analyte	Result	Units
Diesel Range Organics- WDNR Modified DRO Sample contains one peak before the diesel range organic hydrocarbon window.	<5.7	mg/Kg
Extraction Date DRO	05/27/94	
Analysis Date DRO	06/02/94	
Gasoline Range Organics- WDNR Modified GRO	<1.1	mg/Kg
Extraction Date GRO	06/01/94	
Analysis Date GRO	06/02/94	
LUST Total Percent Solids	87.1	%

Sample I.D. #:67449 **Sample Description:**SB-7 **Date Sampled:**05/25/94

Analyte	Result	Units
Diesel Range Organics- WDNR Modified DRO	36	mg/Kg
Extraction Date DRO	05/27/94	
Analysis Date DRO	06/02/94	
Gasoline Range Organics- WDNR Modified GRO	<1.1	mg/Kg
Extraction Date GRO	06/01/94	
Analysis Date GRO	06/02/94	
LUST Total Percent Solids	88.8	%

Submitted By:

Wisconsin DNR Laboratory Certification Number: 157066030
DHSS Certification Number: MW0289

MID-STATE ASSOCIATES, INC.

Laboratory Services
1230 Lange Ct.
Baraboo, WI 53913
608-356-2760

ANALYTICAL REPORT

ENVIROSCIENCE
RICK KRONK
6474 CITY WEST PARKWAY
EDEN PRAIRIE, MN 55344

Client I.D. No.:1223
Work Order No.:9405000666
Project Name:HURLEY/HWY 77
Project Number:W94001.31
Arrival Temperature:ON ICE
Date Recieved: 05/27/94
Report Date: 06/13/94

Sample I.D. #:67450 **Sample Description:**SB-8 **Date Sampled:**05/25/94

Analyte	Result	Units
Diesel Range Organics- WDNR Modified DRO Sample contains two peaks before the diesel range organic hydrocabon window.	<5.5	mg/Kg
Extraction Date DRO	05/27/94	
Analysis Date DRO	06/02/94	
Gasoline Range Organics- WDNR Modified GRO	<1.1	mg/Kg
Extraction Date GRO	06/01/94	
Analysis Date GRO	06/02/94	
LUST Total Percent Solids	90.8	%

Sample I.D. #:67451 **Sample Description:**SB-6 DUP **Date Sampled:**05/24/94

Analyte	Result	Units
Diesel Range Organics- WDNR Modified DRO	9.4	mg/Kg
Extraction Date DRO	05/27/94	
Analysis Date DRO	06/02/94	
Gasoline Range Organics- WDNR Modified GRO	<1.1	mg/Kg
Extraction Date GRO	06/01/94	
Analysis Date GRO	06/02/94	
LUST Total Percent Solids	87.1	%

Sample I.D. #:67452 **Sample Description:**SB-1 **Date Sampled:**05/24/94

Analyte	Result	Units
Methyl t-Butyl Ether	<1.0	ug/L
Benzene	<1.0	ug/L
Toluene	<1.0	ug/L
Ethylbenzene	<1.0	ug/L
m & p- Xylene	<1.0	ug/L
o-Xylene	<1.0	ug/L
1,3,5-Trimethylbenzene	<1.0	ug/L
1,2,4-Trimethylbenzene	<1.0	ug/L
Analysis Date PVOC	05/31/94	

Submitted By:

Wisconsin DNR Laboratory Certification Number: 157066030
DHSS Certification Number: MW0289

MID-STATE ASSOCIATES, INC.

Laboratory Services
1230 Lange Ct.
Baraboo, WI 53913
608-356-2760

ANALYTICAL REPORT

ENVIROSCIENCE
RICK KRONK
6474 CITY WEST PARKWAY
EDEN PRAIRIE, MN 55344

Client I.D. No.:1223
Work Order No.:9405000666
Project Name:HURLEY/HWY 77
Project Number:W94001.31
Arrival Temperature:ON ICE
Date Recieved: 05/27/94
Report Date: 06/13/94

Sample I.D. #:67453 **Sample Description:**SB-3 **Date Sampled:**05/25/94

Analyte	Result	Units
Methyl t-Butyl Ether	< 1.0	ug/L
Benzene	< 1.0	ug/L
Toluene	< 1.0	ug/L
Ethylbenzene	< 1.0	ug/L
m & p- Xylene	< 1.0	ug/L
o-Xylene	< 1.0	ug/L
1,3,5-Trimethylbenzene	< 1.0	ug/L
1,2,4-Trimethylbenzene	< 1.0	ug/L
Analysis Date PVOC	05/31/94	

Sample I.D. #:67454 **Sample Description:**SB-6 **Date Sampled:**05/25/94

Analyte	Result	Units
Methyl t-Butyl Ether	< 1.0	ug/L
Benzene	< 1.0	ug/L
Toluene	< 1.0	ug/L
Ethylbenzene	< 1.0	ug/L
m & p- Xylene	< 1.0	ug/L
o-Xylene	< 1.0	ug/L
1,3,5-Trimethylbenzene	< 1.0	ug/L
1,2,4-Trimethylbenzene	< 1.0	ug/L
Analysis Date PVOC	05/31/94	

Sample I.D. #:67455 **Sample Description:**SB-6 DUP **Date Sampled:**05/25/94

Analyte	Result	Units
Methyl t-Butyl Ether	< 1.0	ug/L
Benzene	< 1.0	ug/L
Toluene	< 1.0	ug/L
Ethylbenzene	< 1.0	ug/L
m & p- Xylene	< 1.0	ug/L
o-Xylene	< 1.0	ug/L
1,3,5-Trimethylbenzene	< 1.0	ug/L
1,2,4-Trimethylbenzene	< 1.0	ug/L
Analysis Date PVOC	05/31/94	

Submitted By: [signature]

Wisconsin DNR Laboratory Certification Number: 157066030
DHSS Certification Number: MW0289

MID-STATE ASSOCIATES, INC.

Laboratory Services
1230 Lange Ct.
Baraboo, WI 53913
608-356-2760

ANALYTICAL REPORT

ENVIROSCIENCE
RICK KRONK
6474 CITY WEST PARKWAY
EDEN PRAIRIE, MN 55344

Client I.D. No.:1223
Work Order No.:9405000666
Project Name:HURLEY/HWY 77
Project Number:W94001.31
Arrival Temperature:ON ICE
Date Recieved: 05/27/94
Report Date: 06/13/94

Sample I.D. #:67480 **Sample Description:**TRIP BLANK **Date Sampled:**05/25/94

Analyte	Result	Units
Methyl t-Butyl Ether	< 1.0	ug/L
Benzene	< 1.0	ug/L
Toluene	< 1.0	ug/L
Ethylbenzene	< 1.0	ug/L
m & p- Xylene	< 1.0	ug/L
o-Xylene	< 1.0	ug/L
1,3,5-Trimethylbenzene	< 1.0	ug/L
1,2,4-Trimethylbenzene	< 1.0	ug/L
Analysis Date PVOC	05/31/94	

Sample pH was 6.5. Air bubble present in sample vial (6 mm diameter).

Submitted By:

Wisconsin DNR Laboratory Certification Number: 157066030
DHSS Certification Number: MW0289

MSA
MID-STATE ASSOCIATES, INC.

Chain of Custody:
MID-STATE ASSOCIATES, INC.
1-800-228-3012

1230 Lange Court
Baraboo, WI 53913
(608) 356-2760
FAX: (608) 356-2766

Is this a PECFA project? (Please indicate "yes" or "no") (no circled)

SAMPLE COLLECTOR: S. Patzkill | COMPANY: Enviroscience | TELEPHONE NUMBER (INCLUDE AREA CODE): 715-835-9311

PROJECT NUMBER: W94061.31 | PROJECT NAME: Hurley / Hwy 77

I HEREBY CERTIFY THAT I RECEIVED, PROPERLY HANDLED, AND DISPOSED OF THESE SAMPLES AS NOTED BELOW:

INVOICE ADDRESS (MUST BE COMPLETED): 1101 West Clairemont Ave Suite 20 Eau Claire, WI 54701

REPORT ADDRESS (MUST BE COMPLETED): 1101 West Clairemont Ave Suite 20 Eau Claire, WI 54701

DATE & TIME OF RELINQUISHMENT:	RELINQUISHED BY (SIGNATURE):	RECEIVED BY (SIGNATURE):	DATE/TIME OF RECEPTION:
5-26-94 11:00 AM	Steve Patzkill		

DATE & TIME OF RELINQUISHMENT:	RELINQUISHED BY (SIGNATURE):	RECEIVED BY LABORATORY (SIGNATURE):	DATE/TIME OF RECEPTION:
		[signature]	5/27 11:00

FIELD ID NUMBER	DATE COLLECTED	TIME COLLECTED	SAMPLE TYPE	SAMPLE DEVICE	PRESERV. TYPE	LOCATION/DESCRIPTION	TYPE OF ANALYSIS REQUIRED (PLEASE CIRCLE)	LAB USE ONLY Pres. w/MEOH? "X" if yes	NO./TYPE OF CONTAINERS	LAB I.D.
SB-1	5-24-94	5:30pm	Water	Grab	HCL	Temp. well located at SB-1, Post office	DRO GRO GRO/PVOC (PVOC) Pb Cd %SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER PAH	Small bubble in 1 of 3	3-40 ml vial	67452
SB-3	5-25-94	12:30pm	water	Grab	HCL	Temp. well at SB-3 City Hall	DRO GRO GRO/PVOC (PVOC) Pb Cd %SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER PAH		3-40 ml vial	67453
SB-6	5-25-94	11:55AM	water	Grab	HCL	Temp well at SB-6 Abandoned Gas Station	DRO GRO GRO/PVOC (PVOC) Pb Cd %SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER PAH		3-40 ml vial	67454
SB-6 Dup	5-25-94	12:14pm	water	Grab	HCL	Temp well at SB-6 Abandoned Gas Station	DRO GRO GRO/PVOC (PVOC) Pb Cd %SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER PAH		3-40 ml vial	67455
						TRIP BLANK	DRO GRO GRO/PVOC (PVOC) Pb Cd %SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER PAH			67480
							DRO GRO GRO/PVOC PVOC Pb Cd %SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER PAH			
							DRO GRO GRO/PVOC PVOC Pb Cd %SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER PAH			
							DRO GRO GRO/PVOC PVOC Pb Cd %SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER PAH			
							DRO GRO GRO/PVOC PVOC Pb Cd %SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER PAH			
							DRO GRO GRO/PVOC PVOC Pb Cd %SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER PAH			

SAMPLE CONDITIONS/COMMENTS:

ARRIVAL TEMPERATURE
DEG.

MID-STATE ASSOCIATES, INC.

1230 Lange Court
Baraboo, WI 53913
(608) 356-2760
FAX: (608) 356-2766

Chain of Custody:
MID-STATE ASSOCIATES, INC.
1-800-228-3012

Is this a PECFA project? (Please indicate "yes" or "no") no

SAMPLE COLLECTOR: S. Palzkill | COMPANY: EnviroScience | TELEPHONE NUMBER (INCLUDE AREA CODE): 715-835-9311

PROJECT NUMBER: W9400l.31 | PROJECT NAME: Hurley / Hwy 77

I HEREBY CERTIFY THAT I RECEIVED, PROPERLY HANDLED, AND DISPOSED OF THESE SAMPLES AS NOTED BELOW:

INVOICE ADDRESS (MUST BE COMPLETED): Suite 20 54701 1101 West Clairemont Av Eau Claire, WI

REPORT ADDRESS (MUST BE COMPLETED): 1101 West Clairemont Ave Suite 20 Eau Claire WI 54701

DATE & TIME OF RELINQUISHMENT:	RELINQUISHED BY (SIGNATURE):	RECEIVED BY (SIGNATURE):	DATE/TIME OF RECEPTION:
5-26-94 11:00 AM	Steve Palzkill		
DATE & TIME OF RELINQUISHMENT:	RELINQUISHED BY (SIGNATURE):	RECEIVED BY LABORATORY (SIGNATURE):	DATE/TIME OF RECEPTION:
			5/27 11:00

FIELD ID NUMBER	DATE COLLECTED	TIME COLLECTED	SAMPLE TYPE	SAMPLE DEVICE	PRESERV. TYPE	LOCATION/DESCRIPTION	TYPE OF ANALYSIS REQUIRED (PLEASE CIRCLE)	LAB USE ONLY: Pres. w/MEOH "X" if yes	NO./TYPE OF CONTAINERS	LAB I.D.
SB-1	5-24-94	10:16 AM	Soil	Grab	GRO-Methanol	Soil boring #1 At Post office, 7.5-9.5	DRO (GRO) GRO/PVOC PVOC Pb Cd %SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER PAH		4-60 ml Amber	67443
SB-2	5-24-94	11:16 Am	Soil	Grab	GRO-Methanol	SB-2 at Post office 7.5-9.5	DRO (GRO) GRO/PVOC PVOC Pb Cd %SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER PAH		4-60 ml Amber	67444
SB-3	5-24-94	2:30pm	Soil	Grab	GRO Methanol	SB-3 at City Hall 8.0-10.0	DRO (GRO) GRO/PVOC PVOC Pb Cd %SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER PAH		4-60 ml Amber	67445
SB-4	5-24-94	3:08pm	Soil	Grab	GRO Methanol	SB-4 at City Hall 7.5-9.5	DRO (GRO) GRO/PVOC PVOC Pb Cd %SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER PAH		4-60 ml Amber	67446
SB-5	5-24-94	4.00 pm	Soil	Grab	GRO Methanol	SB-5 at Abandoned Gas Station 2.5-4.5	DRO (GRO) GRO/PVOC PVOC Pb Cd %SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER PAH		4-60 ml Amber	67447
SB-6	5-24-94	4:30pm	Soil	Grab	GRO Methanol	SB-6 at Abandoned Gas Station 5.0-7.0	DRO (GRO) GRO/PVOC PVOC Pb Cd %SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER PAH		4-60 ml Amber	67448
SB-7	5-25-94	11:15 Am	Soil	Grab	GRO Methanol	SB-7 at Kopacz Garage 2.5-4.5	DRO (GRO) GRO/PVOC PVOC Pb Cd %SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER PAH		3-60 ml Amber	67449
SB-8	5-25-94	10:17AM	Soil	Grab	GRO Methanol	SB-8 at Kopacz Garage 5.0-7.0	DRO (GRO) GRO/PVOC PVOC Pb Cd %SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER PAH		4-60 ml Amber	67450
SB-6 Dup	5-24-94	4:30	Soil	Grab	GRO Methanol	SB-6 at Abandoned Gas Station 5.0-7.0 Duplicate	DRO (GRO) GRO/PVOC PVOC Pb Cd %SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER PAH		4-60 ml Amber	67451
							DRO GRO GRO/PVOC PVOC Pb Cd %SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER PAH			

SAMPLE CONDITIONS/COMMENTS:

[illegible]

CHILLED

ARRIVAL TEMPERATURE

[illegible] °C

D Standard Sampling and Analytical Procedures

D-1 Drilling and Soil Sampling

Drilling operations were performed by WTD Environmental Drilling, Schofield, Wisconsin, utilizing a truck mounted drill rig.

Split-barrel soil sampling in the standard penetration soil borings was performed using hollow-stem auger techniques in accordance with ASTM:D1586-84. Using this procedure, a 2" O.D. split barrel sampler was driven into the soil by a 140 lb. weight falling 30". Laboratory analysis samples were removed from the split-spoons using clean, stainless steel utensils and placed in laboratory supplied jars. After each sample was removed, the split-spoon was washed in an Alconox™ detergent and tap water solution, then rinsed with distilled water.

D-2 Soil Classification

As the samples were obtained in the field, they were visually and manually classified by the crew chief and site geologist in accordance with ASTM-D2488-84. Representative portions of the samples were then returned to the office for further examination and for verification of the field classification. Logs of the standard penetration borings were prepared indicating the depth and identification of the various strata, water level information and pertinent information regarding the method of maintaining and advancing the drill holes (Appendix B).

D-3 PID Calibration and Field Screening Procedures

The photoionization detector (PID) was used to monitor soil gas in samples for Volatile Organic Compounds (VOC's). The PID measures VOC's in equivalent ppm of benzene. Soil gas readings were taken at 2.5-foot intervals using the headspace method. Samples were put into heavy duty Ziploc™ bags and placed in (or out) of the sun and allowed to equilibrate to approximately 70° F. After equilibration the PID probe was inserted into the bag headspace and the reading was taken.

The PID was calibrated at the beginning of the day and at the completion of drilling, with the following information having been recorded:

Span Setting:	9.80
Beginning Reading:	57.4 ppm
Ending Reading:	57.9 ppm
Calibration Gas:	57 ppm Isobutylene
Model:	hNu Model 101
Probe:	10.2 eV Lamp
Air Temperature:	45° F

D-4 Temporary Monitoring Well Installation

The shallow temporary monitoring well was installed by placing a PVC screened well casing within the boring.

D-5 Monitoring Well Groundwater Sampling

Groundwater samples were collected using dedicated, bottom-loading, disposable plastic bailers and new nylon rope. The water samples for BETX analyses were

collected in 40 ml, laboratory-cleaned, glass purge-and-trap vials with Teflon-lined, septum-sealed caps containing HCl as a preservative.

D-6 Laboratory Analysis

All sample containers were placed in an ice-filled cooler immediately after collection and transported to Mid-State Associates, Inc., in Baraboo, Wisconsin, in the cooler. The samples were accompanied by proper chain-of-custody forms. Gasoline Range Organics (GRO) was performed by utilizing the Wisconsin GRO method. Diesel Range Organics (DRO) was performed by utilizing the Wisconsin DRO method. Petroleum Volatile Organic Compounds (PVOC) was performed utilizing gas chromatography according to SW-846, Method 8020.

D -7 Borehole Abandonment and Soil Cuttings Disposal

The temporary monitoring well was dismantled and both soil borings were completely backfilled with bentonite. A WDNR borehole abandonment form for each borehole is included with this report.

From field screening and olfactory perception there was no indication of the presence of petroleum constituents in the soil cuttings from either borehole. For this reason all soil cuttings were spread over the grassed area of the boulevard.

APPENDICES

A. Phase II Environmental Assessment for Thomas Abandoned Service Station

B. Phase II 1/2 Environmental Assessment for Thomas Abandoned Service Station

C. Notification to Treat or Dispose of Petroleum Contaminated Soil and Water (Form 4400-120)

D. General Permit Information and Application

FIGURES

1. Site Location

2. Potential Contamination Sources

ABBREVIATIONS

AA	Atomic Absorption, technique used to test for metals
ASTM	American Society for Testing Metals
bg	Below Grade
bgs	Below Ground Surface
Cd	Cadmium
DHSS	Department of Health and Human Services
DILHR	Department of Industry, Labor and Human Relations
DRO	Diesel Range Organic
EPA	Environmental Protection Agency
ERP	Environmental Repair Program
FID	Flame Ionization Detector
GC-MS	Gas Chromatograph-Mass Spectrometer
GRO	Gasoline Range Organic
LUST	Leaking Underground Storage Tank
MDL	Minimum Detection Limits
ND	not detected
Pb	Lead
PID	Photo Ionization Detector
ppb	parts per billion
ppm	parts per million, which is equivalent to mg/kg
PVOC	Petroleum Volatile Organic Compound
QC	Quality Control
RP	Responsible Party
STH	State Trunk Highway
TCLP	Toxicity Characteristic Leaching Procedure
UST	Underground Storage Tank
VOC	Volatile Organic Compound
WDNR	Wisconsin Department of Natural Resources
WDOT	Wisconsin Department of Transportation

Section One

EXECUTIVE SUMMARY

1.1 Results and Conclusions

As part of construction activities at the STH 77, Montreal to Hurley, Project I.D. 9250-09-00 the potential for contact with petroleum contaminated soil is possible. Impacted soils were encountered from a depth of greater than 3 feet to 7 feet from Station 329+10 to 333+70 during environmental assessments. This will place the storm sewer excavation in a zone where impacted soils exist.

Impacted soil removed as part of the excavation will have to be treated or disposed per WDNR requirements. It is estimated that approximately 237 cubic yards of impacted soil will need to be removed as part of this project. Additionally, as part of the storm sewer installation, dewatering activities may be required. This is due to the presence of groundwater at a depth of 5 feet below ground surface (bgs). At this time, through groundwater sampling, no impacts to groundwater in the vicinity of dewatering operation have been detected.

1.2 Recommendations

Based on the information available at this time, it is recommended that petroleum contaminated soils removed as part of storm sewer trenching activities be transported and stockpiled until asphalt operations begin. At this time impacted soils will be transported to the asphalt plant for asphalt incorporation or transported to an approved asphalt plant for asphalt incorporation or treatment.

Additionally, it is recommended that the water generated as part of the dewatering operation be discharged to the City of Montreal Wastewater Treatment Plant.

Section Two REMEDIATION PLANNING

2.1 Purpose and Scope

Past work completed for the Thomas Abandoned Service Station include a Phase II Environmental Assessment titled "Phase II Environmental Assessment for Thomas Abandoned Service Station, State T. H. 77, Iron County, WDOT Project I.D. 9250-09-00" prepared by Enviroscience in June, 1994 and a Phase II 1/2 Environmental Assessment titled "Phase II 1/2 Environmental Assessment for Thomas Abandoned Service Station" prepared by Enviroscience on September 22, 1995.

Recommendations based on the above reports recommends that if excavation occurs within Station 329+10 to 333+70 from the WDOT right-of-way northwest approximately 25 feet toward the centerline and for a depth of 3.0 to 7.0 feet, that Wisconsin Department of Natural Resources (WDNR) guidelines pertaining to the proper removal and treatment or disposal of contaminated soil will need to be followed.

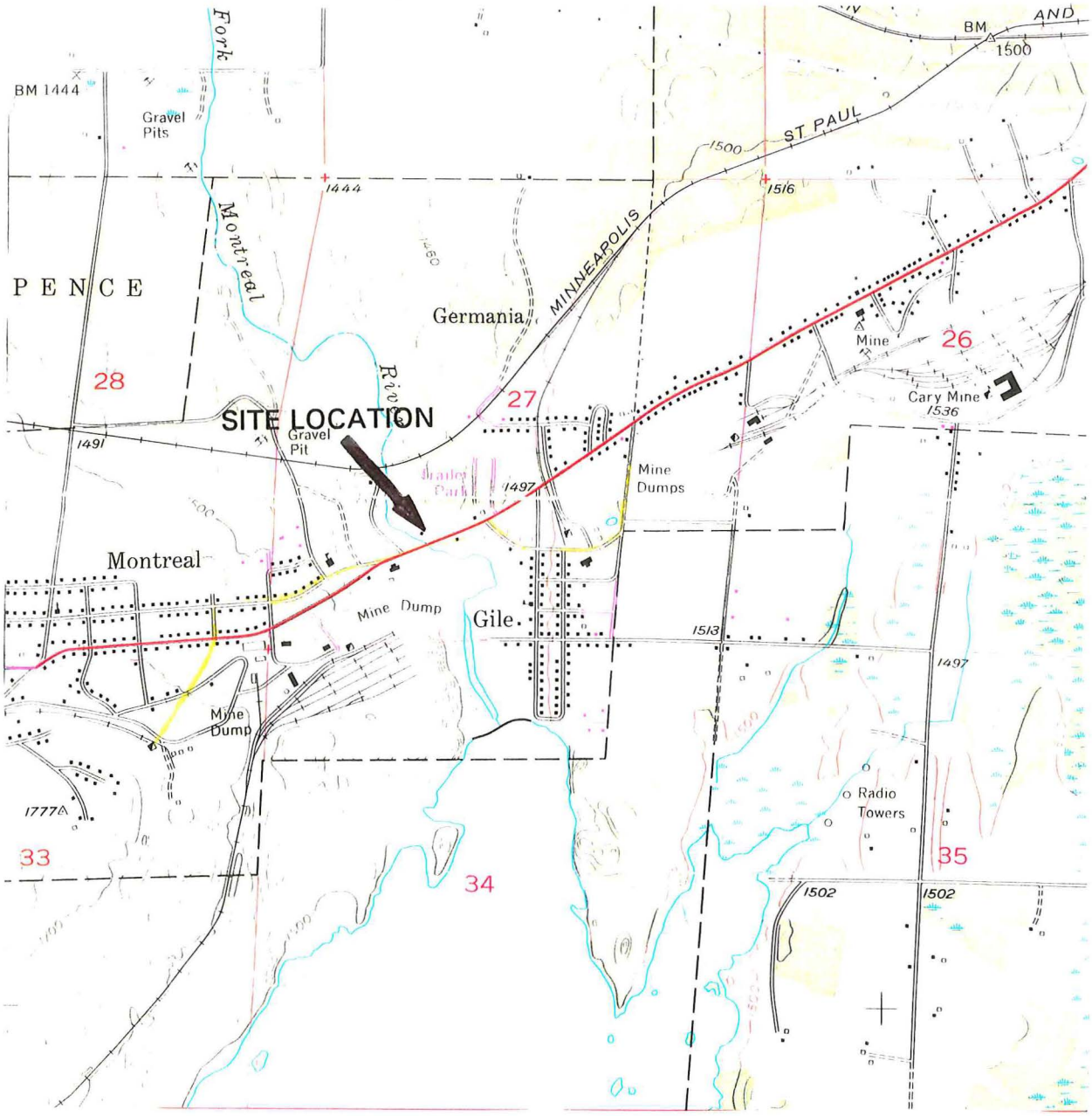
Additionally, Enviroscience recommends that a general permit under the Wisconsin Pollutant Discharge Elimination System (WPDES) for the discharge of water in connection with dewatering operations be applied for

LEVEL ONE, Inc. plan to complete the following activities as part of the Phase IV site remediation:

- Procedures for the removal and treatment or disposal of contaminated soil at the Thomas Abandoned Service Station.
- Incorporation of the above information into Design Special Provisions.
- Supply needed information for submittal to WDNR for approval of soil treatment or disposal as required.
- Supply needed information for submittal to WDNR for approval of discharge to the City sanitary sewer or general permit under the WPDES for the discharge of water in connection with dewatering operations.

2.2 Site Description and History

The Thomas site is located approximately one-fifth of one mile north of the Montreal City Hall on STH 77 in the NW 1/4, SW 1/4, Section 27, T46N, R2E, City of Montreal, Iron County, Wisconsin (Figure 1). The site is owned by Mr. Bill Thomas of 24 Nimikon, Gile, Wisconsin. The site consists of one building which is a single story service station with two service bays. The site is not in use for any business presently. The north side of the site is bounded by STH 77 and the adjacent properties to the east and west are undeveloped woods. The Montreal River runs along the south side of the property.



SITE LOCATION

STATE TRUNK HIGHWAY 77

Figure 1

LEVEL ONE, inc.
consulting engineers
RICE LAKE, WI
715-234-1009

From information obtained from Mr. Thomas, the site has been inactive since 1989. Prior to ownership by Mr. Thomas, the site was in operation as Saari Brothers Service Station. There are two 1,000 gallon gasoline underground storage tanks (USTs) still in place. A Phase II and II 1/2 Environmental Assessment Report was prepared by Enviroscience in relation to soil borings advanced during the May 24-26 and September 22, 1995 site investigations (See Appendix A & B). These soil borings showed indications that soil contamination was present.

Monitoring wells installed on site indicate that there is no impact to groundwater on site. Additionally, on May 16, 1996, Mr. Chris Saari with the Department of Natural Resources was contacted to determine the status of the Thomas Site. The site owner was issued a responsible party letter on June 20, 1994, and as of July 26, 1996, has not retained a consultant for the investigation and remediation of the site. This would indicate that any clean-up activities at this site would not occur in a timely manner to benefit construction activities of the STH 77 project in the Spring of 1997.

2.3 Geologic/Hydrogeologic Setting

The City of Montreal is in the northern part of Iron County in the Lake Superior Basin. The subsurface geology in this area is composed of Precambrian crystalline rocks (undifferentiated igneous and metamorphic rocks to the south of Montreal and basaltic lava flows to the north).

The soils are Quaternary ground moraine (glaciolacusterine unstratified clay, silt, sand, gravel, and cobbles). Bedrock is encountered at an average depth of 10 feet. The topography is deeply dissected lake plane. Groundwater in the area of the site generally flows toward the Montreal River.

2.4 Contaminated Soil Removal

As part of construction activities at the STH 77, Montreal to Hurley, Project I.D. 9250-09-00 the potential for contact with petroleum contamination is possible. Phase II and II 1/2 Environmental Assessments of the Thomas Abandoned Service Station have given indication that low level Diesel Range Organics (DRO) exist adjacent to the site within the right-of-way (ROW). Impacted soils were encountered from a depth of greater than 3 feet to 7 feet from Station 329+10 to 333+70. Depth of road construction work will not exceed 3 feet, but the storm sewer excavation will be to 6 feet. This will place the storm sewer excavation in a zone where impacted soils exist. Impacted soil removed as part of the excavation will have to be treated or disposed per WDNR requirements. The following procedures will need to be followed during excavation activities in this area. It is estimated that approximately 237 cubic yards of impacted soil will need to be removed as part of this project.

2.4.1 Soil Excavation and Soil Screening

Before the excavation work begins, the area of excavation within the contaminated zone will be staked under the supervision of the environmental consultant to denote the contamination area. Once excavation activities begin, soils will be field screened by the environmental consultant as outlined in the following procedures:

Soil Screening Samples will be collected from the bucket of the excavation equipment as the soil screening samples are recovered they will be field screened for organic vapors and for physical evidence of contamination. Samples will be screened with a photoionization detector (PID) equipped with a 10.6 eV lamp and calibrated for direct reading in parts per million (ppm) volume/volume of benzene. If the soils are determined to the clean from field screening results, they will be stockpiled for use as clean fill. Soils determined to be contaminated will be stockpiled on plastic or loaded directly into licensed hauling equipment.

2.4.2 Contaminated Soil Storage

Soils determined to be contaminated shall be stockpiled on an impervious surface (asphalt, concrete, or plastic) and covered with plastic sheeting 10-mil or better. The stockpiles shall be located in a secure area and shall be covered at the completion of each work day or whenever precipitation is expected. Sheeting shall be secured with rocks, non-impacted soil, tires, netting, or simlar material, to prevent displacement of the cover by wind. Impacted soils will be stockpiled to provide positive drainage and provide surface run-off controls, such as construction diversion berms. Contaminated soils shall be maintained in stockpiles prior to disposal or treatment, which should be about 30 days.

2.4.3 Soil Transportation

Contaminated soils shall be transported to and disposed of or treated at an approved treatment or disposal site. Prior to disposal or treatment a Notification to Treat or Dispose of Petroleum Contaminated Soil and Water (Form 4400-120) will be completed and sent to WDNR.

All vehicles used to transport impacted soil shall be licensed for such activities in accordance with applicable state and federal regulations. The environmental consultant will verify this prior to transportation.

2.5 Contaminated Soil Treatment or Disposal

All contaminated soil will be disposed of at, or treated at, an approved facility to handle such material. Options for disposing or treatment of impacted soils are asphalt incorporation, thermal treatment, on-site soil treatment, disposal (landfilling) and landspreading. These options are evaluated as follows.

2.5.1 Asphalt Incorporation

This method of disposal involves trucking the excavated waste to an approved asphalt manufacturing facility. These soils will be characterized and incorporated into the asphalt mixture. Any petroleum contamination will be locked into the asphalt matrix and rendered immobile.

This method of treatment is fast, requiring only that the waste be trucked to the asphalt plant. Another benefit is the fact that the liability to the generator ends once the waste soils are mixed into the asphalt and that post treatment samples are not required. A disadvantage is the cost of transporting the soil to the asphalt plant.

2.5.2 Thermal Treatment (Soil Roasting)

Soil roasting is a method of removing petroleum contaminants by heating the waste soils in an on-site incinerator. There are numerous types of on-site incinerators available, but a rotary kiln with auger feeder is one of the more effective for petroleum contaminated soils.

On site soil roasting eliminates the need for trucking the waste soils and the need for clean backfill since the incinerated soil can be used as backfill. The disadvantages are the incinerator rental and transport costs along with the increased time factor. Additionally, post treatment sampling will be required.

2.5.3 Disposal (Landfilling)

Landfilling is becoming increasingly less popular, but is still a relatively fast and efficient disposal method if a landfill is located relatively close to the generation site. Disadvantages of landfilling are the difficulty in finding a landfill authorized to accept contaminated soils, and the fact that the liability of futher problems caused by the waste soils remains with the generator.

2.5.4 Onsite Soil Treatment (BioPile)

This method incorporates the process of remediating soils by natural degredation by providing soil microbes with the proper amount of oxygen and nutrients. The microbes break down the petroleum contamination by consuming them and transforming them to harmless substances. Disadvantages of a biopile is that the natural process my take one to two years to complete, post treatment samples are required, and it requires some periodic maintenance.

2.6 Conclusions

Based on the fact that the project consists of paving STH 77 with an asphaltic surface the need for an asphalt plant will be required. This plant will be in close proximity to the site which will reduce transportation cost to a minimum. Asphalt incorporation will be fast and effective and place no liability on the generator. There will be no need for post treatment sampling which will further reduce cost. Impacted soils that are removed will be transported to a site where they will be stockpiled until asphalt plant operations begin. At that time the impacted soil will be transported to the plant for asphalt incorporation or transported to an approved asphalt plant for asphalt incorporation or treatment.

2.7 Recommendations

Based on the previous discussion it is recommended that soils removed as part of the trenching activities that are determined to be contaminated through field screening be transported and stockpiled until asphalt operations begin. At this time impacted soils will be transported to the asphalt plant for asphalt incorporation or transported to an approved asphalt plant for asphalt incorporation or treatment.

2.8 Dewatering Activities

As part of the storm sewer installation, dewatering activities may be required. This is due to the presence of groundwater at a depth of 5 feet below ground surface (bgs). Storm sewer installation will be to 6 feet bgs. The following options may be utilized for dewatering activities at this site.

2.8.1 WPDES General Discharge Permit

Groundwater removed as part of dewatering activities may be discharged directly to the West Fork Montreal River under a WPDES General Discharge Permit. This permit is applicable to facilities with point source discharges of water from low areas such as pits, trenches, ponds, etc. that do not contain process wastes that would contain pollutants other than suspended solids and

oil and grease. The requirements of the WPDES General Discharge Permit (pit/trench dewatering) are included in Appendix D of this report. Application for this permit would have to be made by the contractor awarded this contract who can furnish the details needed to complete the WPDES General Permit Application. (Also included in Appendix D.)

As part of the general permit application the following information may be needed concerning water quality in the area. Figure 2 identifies potential sources of groundwater that exist within or around a 1/4 mile from the project.

From Figure 2, four potential sources of groundwater contamination exist within or around a 1/4 mile area from the project.

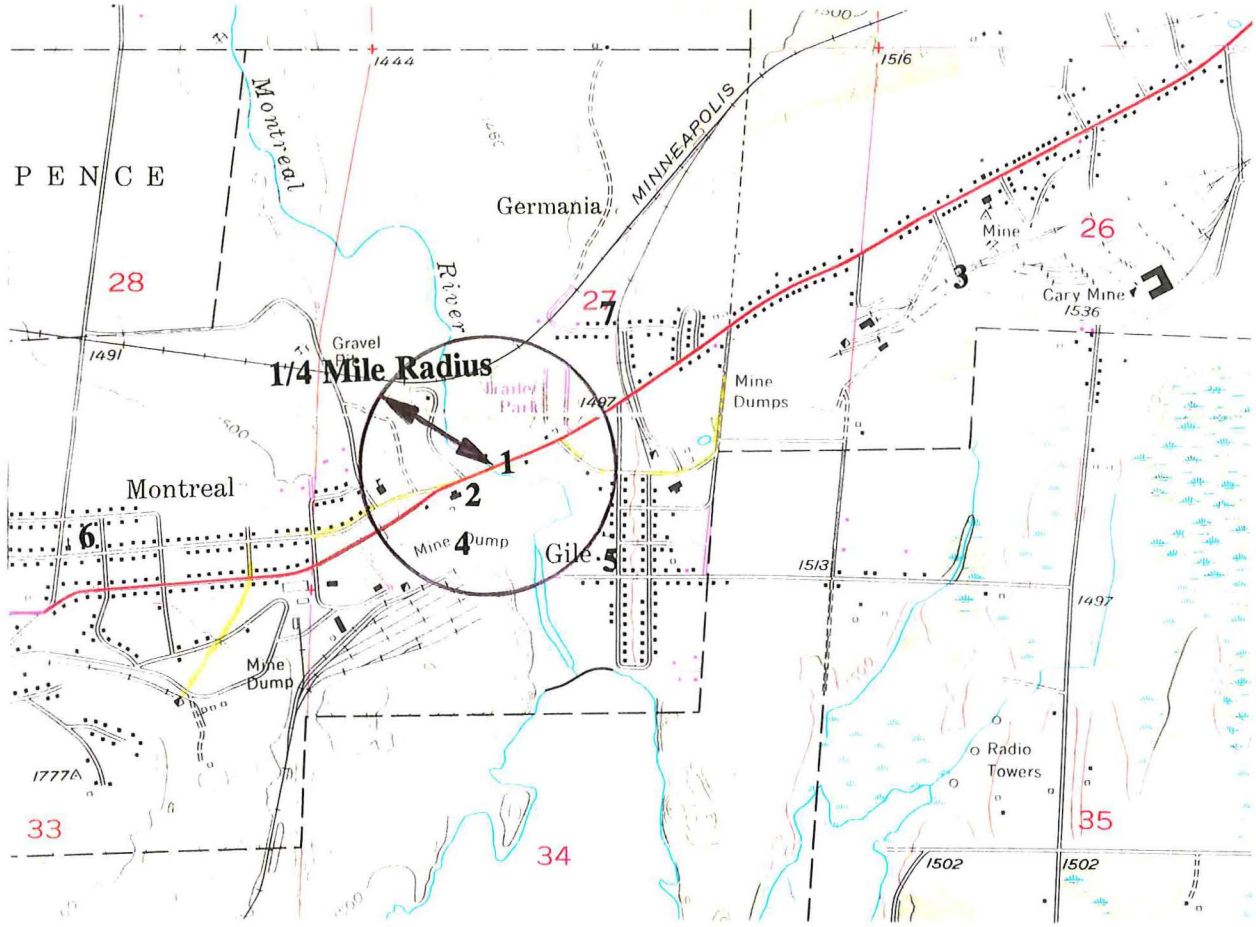
Site 1 is the former Thomas Service Station site which operated as a service station. A release of petroleum was discovered and a responsible party letter (RP) was sent on June 20, 1994. A Phase II and II 1/2 DOT Site Assessment have been completed (Appendix A & B). As part of the Phase II 1/2 site assessment. Three monitoring wells have been installed and sampled for Diesel Range Organics (DRO), Petroleum Volatile Organic Compounds (PVOC's), and Polynuclear Aromatic Hydrocarbons (PAH's). At this time no impacts to groundwater have been detected.

Site 2 is the Montreal City Shop which is a Leaking Underground Storage Tank (LUST) site #03-26-000567. This site is a high priority site where groundwater has been impacted. This site would not pose any problem for the site due to its location on the other side of the West Fork of the Montreal River from the project location which is the local groundwater discharge for the area.

Site 4 is an old mine tailings dump site associated with mining operations in the area. This site would not pose any problem for the site due to its location and the nature of mine spoil.

Site 5 is Hiawatha Vending. This site has two leaded underground storage tanks (UST's) located on it. Due to the distance from the site and that no release has been determined, it does not pose any risk to the site.

Information review as part of this evaluation was the DILHR Tank Inventory, WDNR Hazardous Waste Generators List, Registry of Waste Disposal Sites (June 1993 updated Publ. SW-108-93), WDNR Leaking Underground Storage Tank List (May 24, 1996), WDNR Spills List (January 1978-Present) and the Hazard Ranking List (Publ. SW-501-94 {Rev}), July 1994.



1. **Thomas Service Station Former**
   ***Leaking Underground Storage Tank (LUST) #03-26-00078, Unknown priority**

2. **Montreal City Shop**
   ***City Garage, LUST #03-26-000567, High priority**

3. **North Star Beverage**
   ***Very small hazardous waste generator**

4. **Mine Tailings Area**

5. **Hiawatha Vending**
   ***Underground Storage Tank Site (UST) - No release determined**

6. **Sacred Heart Church**
   ***UST Site - No release determined**

7. **Zanella Bus Garage**
   ***UST Site - No release determined**

POTENTIAL CONTAMINATION SOURCES

STATE TRUNK HIGHWAY 77

Figure 2

LEVEL ONE, inc.
consulting engineers
RICE LAKE, WI
715-234-1009

In consideration of the above information we believe that there is no impacts to groundwater as part of the project.

2.8.2 Discharge to the Sanitary Sewer

Another option for dewatering activities for the project would be direct discharge to the City of Monteal's wastewater treatment facility or containerization and discharge to an approved wastewater treatment facility. Due to the nature of groundwater in the vicinity of the dewatering operation this would be an acceptable option.

Groundwater in the vicinity of the dewatering operation does not contain any free petroleum product (no detection of any petroleum product has been determined) and the volume of dewatering will be minimal due to low storativity or specific yield of the perched aquifer in the project area. (See Appendix B - Phase II 1/2 Environmental Assessment).

2.9 Conclusions

As part of the storm sewer installation dewatering activities may be required in the vicinity of the former Thomas Service Station. Two options for the handling of water as part of the dewatering operation are to apply for a WPDES General Discharge Permit and discharge directly to the West Fork of the Montreal River or discharge to the sanitary sewer.

3.0 Recommendations

It is recommended that water generated as part of the dewatering operation be discharged to the City of Montreal Wastewater Treatment Plant.

3.1 Standard of Care

This Phase IV Remediation Planning report includes data produced by LEVEL ONE, Inc. and their subcontractors through the placement of soil borings and monitoring wells and collection and analysis of soil and groundwater samples. Soil and groundwater qualities reported herein apply only to the specific locations and times at which this work was performed. Variation may occur at other locations between soil borings and monitoring wells.

Conclusions and recommendations made represent our professional engineering judgement in interpreting this data as well as data obtained from reports prepared by others, relative to soil and groundwater conditions in the study area.

PHASE IV

SITE REMEDIATION

FOR

STATE TRUNK HIGHWAY 77

IRON COUNTY

WDOT PROJECT ID 9250-09-00

Prepared By: _____ Date: 9-6-96

Steven J. Palzkill
Environmental Manager

Reviewed By: _____ Date: 9-6-96

Russell "Greg" Fischer
Professional Engineer

Table of Contents

APPENDIX B

of

Phase IV - Site Remediation

Phase II 1/2 Environmental Assessment for
Thomas Abandoned Service Station

PHASE II½ ENVIRONMENTAL ASSESSMENT

FOR

THOMAS ABANDONED SERVICE STATION

Prepared for:

Wisconsin Department of Transportation

September 22, 1995

ENVIROSCIENCE, INC.
2224 Heimstead Rd.
Eau Claire, WI 54703
Tel 715/835-9311
Fax 715/835-9352

SIGNATURE PAGE

FOR

PHASE II½ ENVIRONMENTAL ASSESSMENT

FOR

THOMAS ABANDONED SERVICE STATION
STATE T.H. 77
IRON COUNTY
WDOT PROJECT ID 9250-09-00

Prepared By: Robert D. Powers Date: 9-22-95

Robert D. Powers
Geologist
Enviroscience, Inc.

Reviewer: Steve Palzkill Date: 9-22-95

Steve Palzkill
Environmental Manager
Enviroscience, Inc.

TABLE OF CONTENTS

Section One

EXECUTIVE SUMMARY

1.1 Results and Conclusions

Enviroscience, Inc. has completed a Phase II½ Environmental Assessment of the Thomas Abandoned Service Station site located in the City of Montreal, Wisconsin. The Phase II½ Environmental Assessment was conducted on May 2-4, 1995 for the Wisconsin Department of Transportation (WDOT) State Trunk Highway (STH) 77, Montreal to Hurley, Project I.D. #9250-09-00.

The proposed project is located on State Trunk Highway 77 in Iron County. It begins west of the City of Montreal's corporate limits, at Elm Street, and extends easterly approximately 4.0 miles through the City of Montreal, into the city of Hurley to 6th Avenue. The existing roadway consists of both rural and urban sections.

The urban portion of the project would involve reconstructing the section in the City of Montreal from Bessemer Street approximately 2.0 miles into the City of Hurley to 5th Street. The urban section will be constructed as a 36-foot wide face-to-face curb and gutter section with a storm sewer system.

The results of this assessment are as follows:

- Five soil borings were drilled to depths ranging from 6.5 to 14.5 feet below grade. All borings were located within the existing STH 77 right-of-way.

- Groundwater was encountered at ranges of 4.5 to 10.0 feet below grade in the five borings. Bedrock was encountered in SB-5A.

- Photoionization detector (PID) field screening of soil samples did not indicate the presence of petroleum constituents. Also, visual and olfactory inspection gave no evidence that contamination was present.

- Ten soil samples (two from each boring) were obtained for laboratory analysis. Each boring had one sample for only Diesel Range Organics (DRO) and one for DRO and Petroleum Volatile Organic Compounds (PVOCs). The two samples obtained from SB-1A had detects for DRO at 13 parts per million (ppm) at a depth of 2.5-4.5 feet and 410 ppm at a depth of 5.0-7.0 feet. One sample from SB-3A had a detect also for DRO at 13 ppm. All other sampling parameters did not have any detects.

- Three monitoring wells were installed from SB-3A (MW-2A), SB-4A (MW-3A) and SB-5A (MW-1A). These three wells were sampled on May 4, 1995 for DRO, Volatile Organic Compounds (VOCs) and Polynuclear Aromatic Hydrocarbons (PAHs). There were no detects found in any of these groundwater samples. A second round of sampling on these wells was conducted on June 28, 1995. These samples were analyzed for DRO and PVOC. Again, no detects were found to be above the Method Detection Limits (MDLs).

1.2 Recommendations

Based on the results of this investigation, Enviroscience recommends that if excavation occurs within Station 329+10 to 330+70 from the WDOT right-of-way northwest approximately 25 feet toward the centerline and to a depth of 2.5 to 7.0 feet, Wisconsin Department of Natural Resources (WDNR) guidelines pertaining to the proper removal and treatment or disposal of contaminated soil will need to be followed.

Additionally, Enviroscience recommends that a general permit under the Wisconsin Pollutant Discharge Elimination System (WPDES) for the discharge of water in connection with dewatering operations be applied for by contacting Ms. Kathy Bartilson at the WDNR Northwest District Office in Spooner at 715/635-4053.

Section Two

SITE INVESTIGATION

2.1 Purpose and Scope

The Phase II½ Environmental Site Assessment was performed to determine if soil and/or groundwater in the STH 77 right-of-way has been impacted by the possible release of petroleum products from past operations on the Thomas Abandoned Service Station site. Highway construction is currently being proposed for STH 77 through the City of Montreal to Hurley, WI. The Thomas Abandoned Service Station site is located within the right-of-way of the proposed construction. Current construction plans include increasing the width of the urban section of STH 77 from 22 to 36 feet, resurfacing the roadway and installing storm sewers. This assessment was conducted for Level One, inc. on May 2-4 as part of WDOT Project I.D. #9250-09-00.

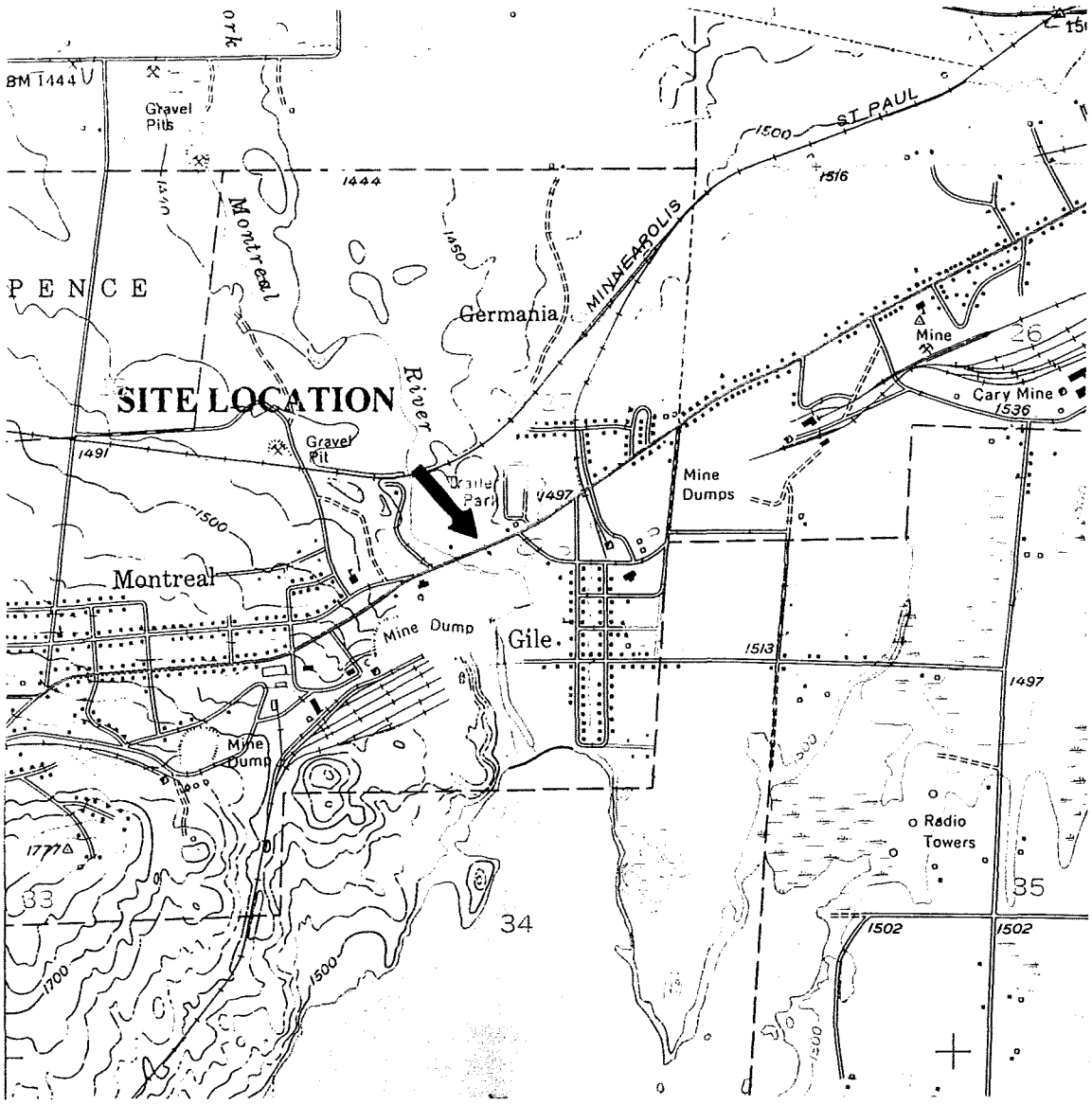
The assessment for this site consisted of the following:

- the advancement of five soil borings;
- field screening of subsurface soil samples every 2.5 feet in depth for the presence of petroleum organic vapors and for visual evidence of petroleum contamination;
- collection and laboratory analysis for of one sample from each boring for DRO and one for DRO and PVOC's;
- installation of three monitoring wells; and
- collection and laboratory analysis of two rounds of groundwater samples from each well with one round being analyzed for DRO, PAHs and VOC's and the second round for DRO and PVOC's.

2.2 Site Description and History

The Thomas site is located approximately one-fifth of one mile north of the Montreal City Hall on STH 77 in the NW¼SW¼, Section 27, T46N, R2E, City of Montreal, Iron County, Wisconsin (Figure 2.1). The site is owned by Mr. Bill Thomas of 24 Nimikon, Gile, Wisconsin. The site consists of one building which is a single story service station with two service bays. The site is not in use for any business presently. The north side of the site is bounded by STH 77 and the adjacent properties to the east and west are undeveloped woods. The Montreal River runs along the south side of the property. The site is illustrated in Figure 2.2.

From information obtained from Mr. Thomas, the site has been inactive since 1989. Prior to ownership by Mr. Thomas, the site was in operation as Saari Brothers Service Station. There are two 1,000 gallon gasoline underground storage tanks (USTs) still in place. A Phase II Environmental Assessment Report was prepared by Enviroscience in relation to soil borings advanced during the May 24-26 site investigation (See Appendix A). These soil borings showed indications that soil contamination was present. Based on that report, further investigation was recommended.

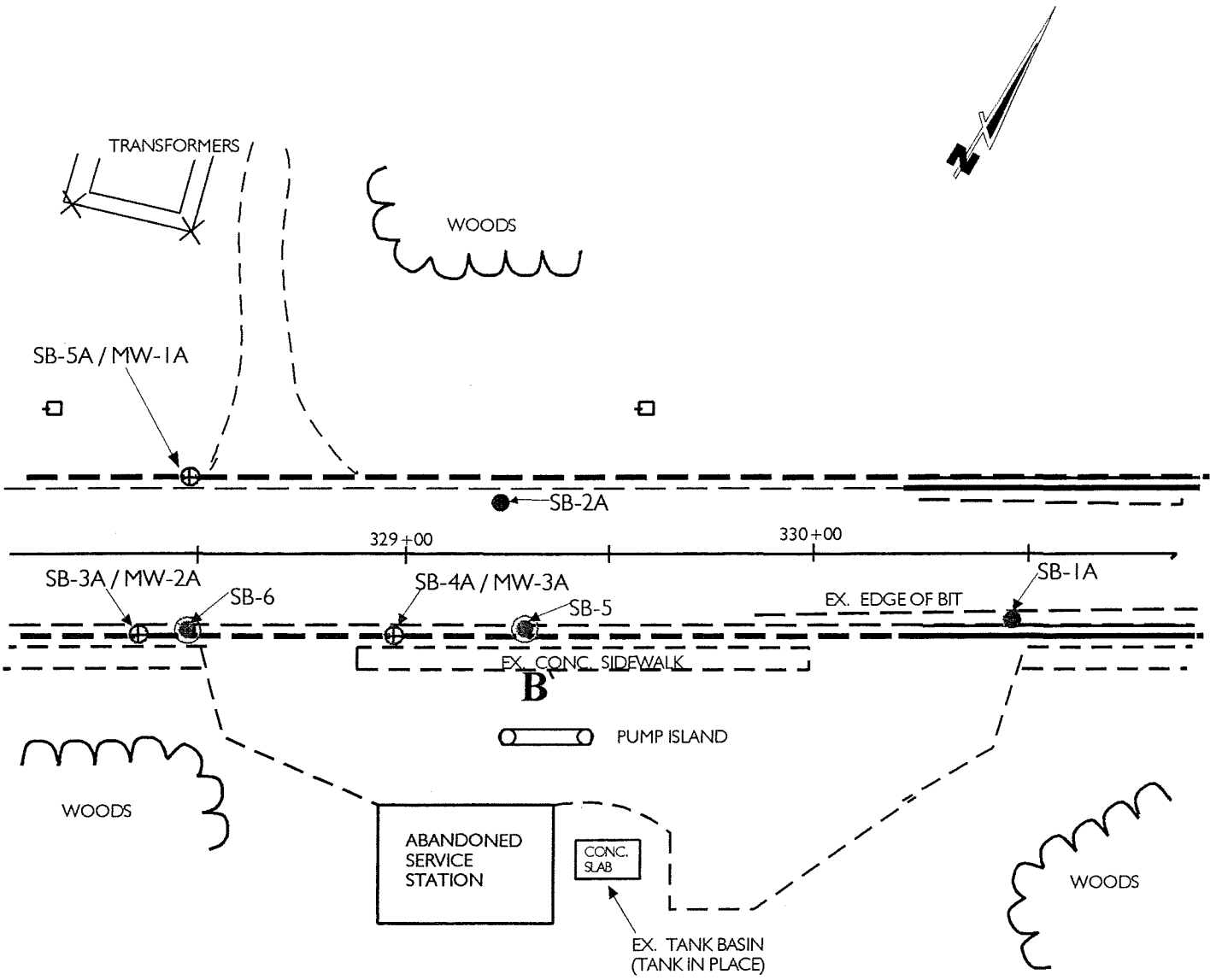


SITE LOCATION

Thomas Abandoned Service Station Site

FIGURE 2-1

ENVIROSCIENCE



LEGEND
● SOIL BORING
⊕ SOIL BORING COVERTED TO MONITORING WELL
◉ SOIL BORING FROM PREVIOUS INVESTIGATION

APPROX. SCALE: 1" = 40'

FIGURE 2.2

SITE MAP

THOMAS ABANDONED SERVICE STATION
MONTREAL, WI

2.3 Geologic/Hydrogeologic Setting

The City of Montreal is in the northern part of Iron County in the Lake Superior Basin. The subsurface geology in this area is composed of Precambrian crystalline rocks (undifferentiated igneous and metamorphic rocks to the south of Montreal and basaltic lava flows to the north).

The soils are Quaternary ground moraine (glaciolacusterine unstratified clay, silt, sand, gravel, and cobbles). Bedrock is encountered at an average depth of 10 feet. The topography is deeply dissected lake plane. Groundwater in the area of the site generally flows toward the Montreal River.

2.4 Soil Sampling

2.4.1 Sampling Procedures and Locations

Five soil borings were advanced using a hollow stem auger drill rig (Figure 2.2). Soil samples were collected at various intervals for field screening and laboratory analysis. Field methodology is documented in Appendix B. Soil boring logs and abandonment forms are located in Appendix C.

2.4.2 Results of Soil Sampling

A total of 16 headspace samples and ten laboratory samples were collected from the six borings. Organic vapor screening of the soils indicated no detects (ND) as isobutylene gas. Laboratory results are summarized in Table 2.1. Actual laboratory analysis results can be found in Appendix D. All soil samples were analyzed for DRO and one sample from each boring for PVOC's. There were no detects for the PVOC parameters on any of the samples. However, three of the ten samples did indicate a detection for DRO. Both samples from SB-1A taken at the 2.5-4.5 foot interval and the 5.0-7.0 foot interval showed detects for DRO at 79 ppm and 410 ppm respectively. The sample obtained from the 5.0-7.0 foot interval in SB-3A also indicated a detection for DRO at 13 ppm.

2.5 Groundwater Sampling

2.5.1 Installation, Development and Sampling Collection

Three monitoring wells were installed in accordance with the Wisconsin Administrative Code, Chapter NR 141. Monitoring well construction consisted of installation of a 2-inch diameter schedule 40 PVC casing with a ten foot long No. 10 slot well screen. The filter pack consisted of 45-55 red flint sand which was installed from the base of the boring to two feet above the top of the well screen. A filter pack seal, consisting of two feet of find sand, was installed above the filter pack. An annular space seal, consisting of granular bentonite, was installed from

TABLE 2.1
Soil Analytical Results
for
Thomas Abandonded Service Station, Eau Claire, WI
May 3, 1995

SAMPLE #	DRO- 8015	PVOC/GRO- 8020/8015	PID FIELD SCREENING
SB-1A 2.5'-4.5'	13	ND	ND
SB-1A 5.0'-7.0'	410	ND	ND
SB-2A 5.0'-7.0'	ND	ND	ND
SB-2A 7.5'-9.5'	ND	ND	ND
SB-3A 5.0'-7.0'	13	ND	ND
SB-3A 10.0'-12.0'	ND	ND	ND
SB-4 2.5'-4.5	ND	ND	ND
SB-4A 5.0'-7.0'	ND	ND	ND
SB-5A 5.0'-7.0'	ND	ND	ND
SB-5A 10.0'-12.0'	ND	ND	ND

NOTES:
-All results are reported in mg/Kg.
-ND - No Detection
-All analytes not listed were reported by the lab as No Detection in all samples.
-Field screening was performed utilizing a photo ionization detector (PID).

the top of the fine sand to within 1.0 feet of the ground surface. The bentonite was hydrated after installation. A locking protective cover was installed at each well. Monitoring Well Construction Forms (WDNR Form 4400-113A) are included in Appendix E.

Monitoring well development consisted of surging and bailing each well, utilizing a disposable bailer. In accordance with Wisconsin Administrative Code, Chapter NR 141, ten pore volumes of water were removed from each well. Monitoring Well Development Forms (WDNR Form 4400-113B) are included in Appendix E.

The first round of groundwater samples were collected from Monitoring Wells #1 through #3 on May 4, 1995. The second round of groundwater samples was collected on June 26, 1995. Sampling was conducted by an Enviroscience technician in accordance with WDNR "Groundwater Sampling Procedure Guidelines", 1987. Groundwater sampling procedures are documented in Appendix F. Prior to sampling, water levels were measured and four well volumes of water were purged using a disposable bailer. Samples were obtained by lowering the disposable bailer into the well using a nylon line. Samples were transferred directly from the bailers into laboratory provided sample containers.

2.5.2 Groundwater Laboratory Analysis Results

Groundwater samples from both rounds of sampling were transported on ice to PACE Laboratories, Inc. in Minneapolis, Minnesota. The first round of samples were analyzed for DRO, PVOCs and PAHs. The second round was analyzed only for DRO and PVOCs due to the fact that no detects for any of the PAH parameters were found in the first round. Complete laboratory results are included in Appendix G. A summary of the laboratory results are listed in Table 2.2.

In general, the results indicate that no groundwater contamination exists in the WDOT right-of-way associated with the Thomas Abandoned Service Station.

2.5.3 Groundwater Flow

Groundwater elevations at the site were measured by Enviroscience personnel on May 4, 1995 and June 26, 1995. Well data and groundwater elevations for each date are listed in Table 2.3. From the above results, groundwater flow is to the west (Figures 2.3). The local benchmark is the south side of the light pole base located at the south end of the pump island and is set at 100.00 feet.

2.6 Conclusions

This section discusses field observations and analytical data pertaining to observed or potential contamination that may be attributed to the Thomas Abandoned Service Station in Montreal, Wisconsin.

TABLE 2.2
Ground Water Analytical Results
for
Thomas Abandoned Service Station, Montreal, WI

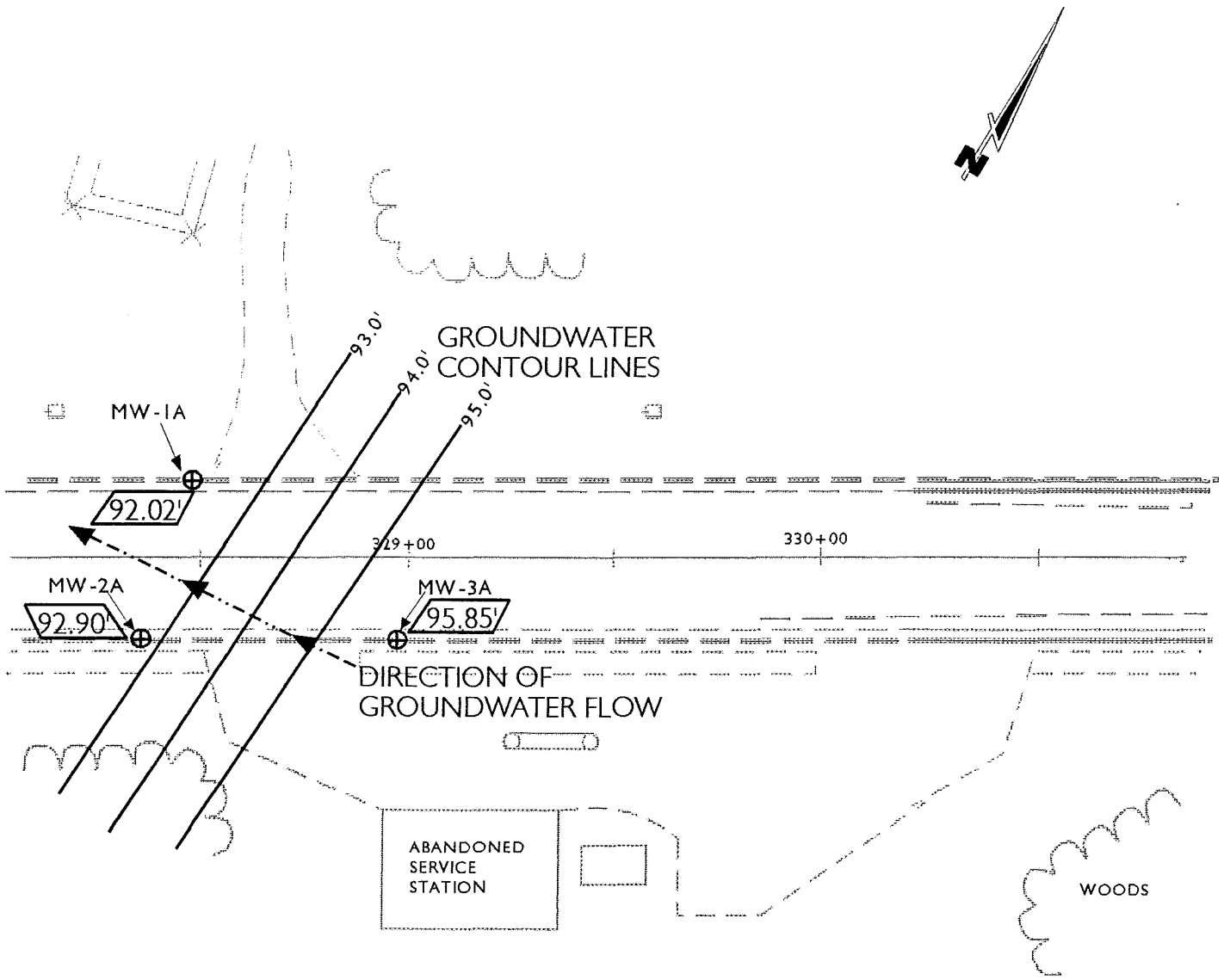
SAMPLE DESCRIPTION	MW-1A		MW-1A DUP		MW-2A		MW-3A	
SAMPLE DATE	05/04/95	06-26-95	05/04/95	06-26-95	05/04/95	06-26-95	05/04/95	06-26-95
GRO-MODIFIED 8015:	NA	ND	NA	ND	NA	ND	NA	ND
PVOC-EPA 8020	NA	ND	NA	ND	NA	ND	NA	ND
DRO-MODIFIED 8015:	ND	ND	ND	ND	ND	ND	ND	ND
PAH-EPA 8310:	ND	NA	ND	NA	ND	NA	ND	NA
VOC's-EPA 8021:	ND	NA	ND	NA	ND	NA	ND	NA

NOTES:
-All results were reported in µg/L.
-ND - No Detection
-NA - Not Analyzed
-All analytes not listed were reported by the lab as No Detection in all samples.

TABLE 2.3
Monitoring Well Data
for
Thomas Abandoned Service Station, Montreal, WI

Well #	Total Well Depth (Ft.)	Top of Well Casing (Ft.)	Ground Water Elevation	
			5-4-95	6-26-95
MW-1A	13.0	98.25	92.25	92.02
MW-2A	14.5	98.73	93.39	92.90
MW-3A	9.5	99.12	96.27	95.85

NOTES:
-Total Well Depth is measured from ground surface.
-Well casing and ground water elevations are measured relative to benchmark set by Enviroscience.
-Benchmark is the south side of the light base on the south end of the pump island. Benchmark was set at 100.00.



LEGEND	
⊕	MONITORING WELL
92.90'	GROUNDWATER ELEVATION IN WELL (6-26-95)

APPROX. SCALE: 1" = 40'

FIGURE 2.3

GROUNDWATER FLOW MAP

THOMAS ABANDONED SERVICE STATION
MONTREAL, WI

2.6.1 Soil Contamination

Laboratory analysis revealed DRO contamination in SB-1A at 2.5 to 4.5 feet and 5.0 to 7.0 feet at 13 ppm and 410 ppm respectively. SB-3A showed levels of DRO contamination of 13 ppm at 5.0 to 7.0 feet. Additionally, from the Phase II Environmental Assessment for the Thomas Abandoned Service Station dated June 1994, SB-5 showed a concentration for DRO of 100 ppm at 5.0 to 7.0 feet. Analysis of soil samples from the borings for PVOCs indicated no detects above the MDLs.

No field screening, visual or olfactory evidence of petroleum contamination was observed during the May 2-4, 1995 site investigation.

The WDNR have set action limits of 100 ppm or greater for removal and treatment of contaminated soils. No petroleum constituents of concern were detected in the samples obtained during this site investigation.

Soil contamination of concern exists from Station 329+10 to 330+70 at depths of 5.0 to 7.0 feet and 2.5 to 4.5 feet respectively (Figures 2.4, 2.5 and 2.6). It is estimated that approximately 237 cubic yards of impacted soil exists within the WDOT right-of-way.

2.6.2 Groundwater Sampling

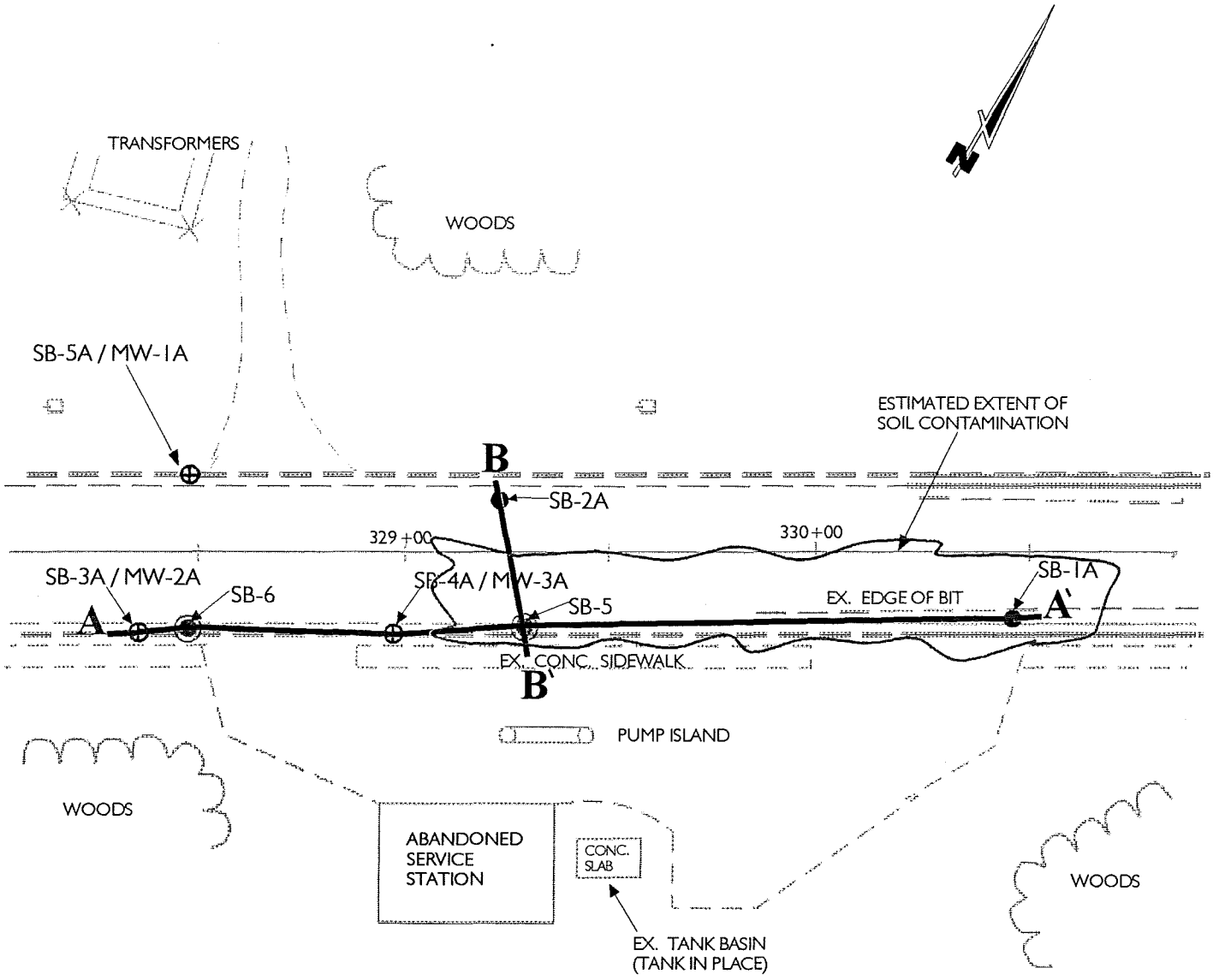
Field observations of groundwater did not indicate any obvious signs of contamination (e.g. odor or petroleum sheen). Laboratory results did not indicate the presence of any PAH, PVOC or DRO parameters. Groundwater was encountered at a depth of five to ten feet.

Based on the facts that two rounds of laboratory analysis have been conducted and no detection of PAHs, PVOCs or DRO have been found in the groundwater in the vicinity of the Thomas Abandoned Service Station, the WDOT right-of-way is not impacted.

2.7 Recommendations

Based on the results of this investigation, Enviroscience recommends that certain actions be taken in relation to activities that are to be anticipated in the right-of-way construction zone:

- The removal and proper treatment or disposal of contaminated soils adjacent to the Thomas Abandoned Service Station site and within the right-of-way construction zone if construction activities occur within the vicinity of soil contamination to a depth where contamination is present.
- Obtain a dewatering permit, if needed, due to a high groundwater table located within this area.



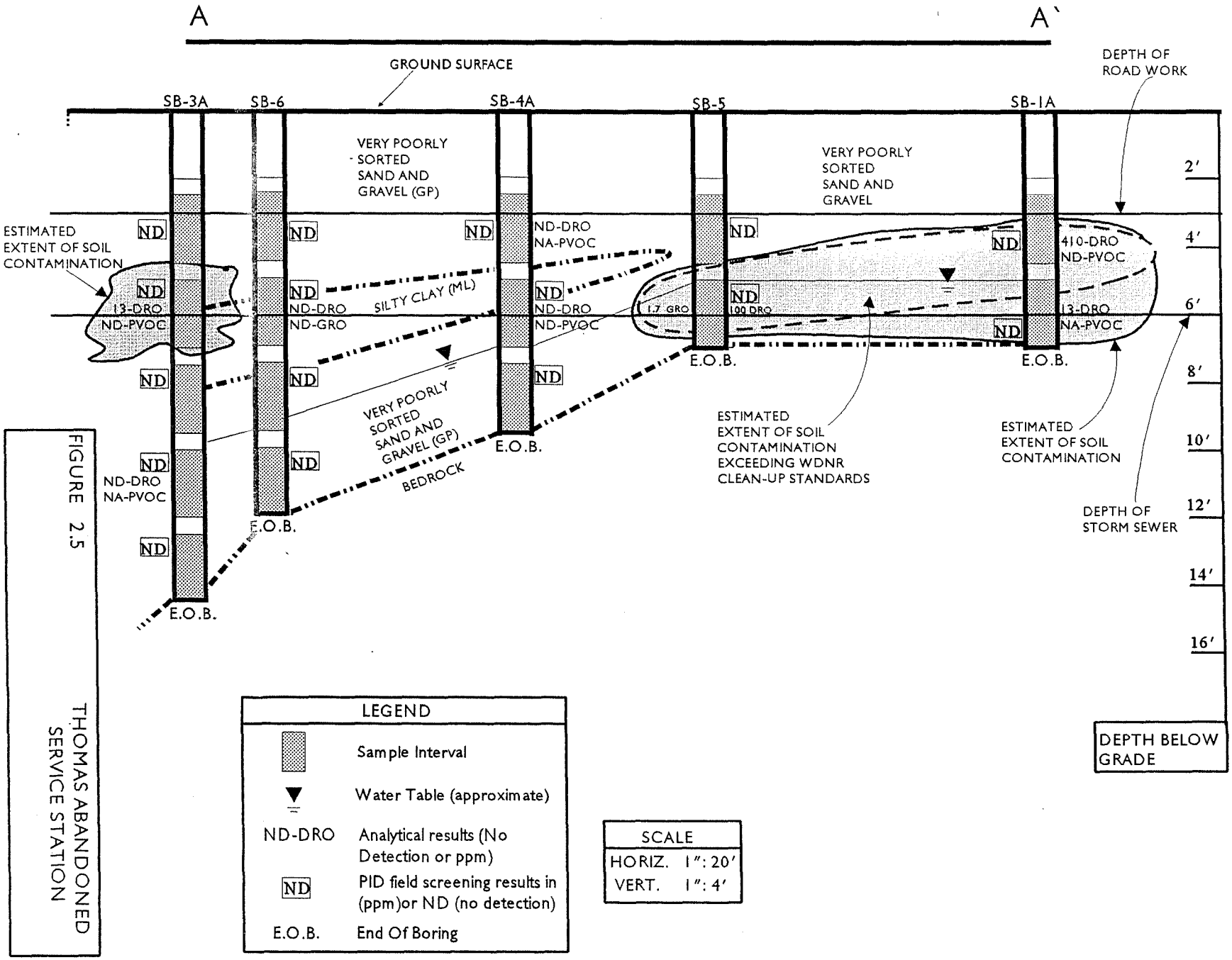
LEGEND
● SOIL BORING
⊕ SOIL BORING COVERTED TO MONITORING WELL
◉ SOIL BORING FROM PREVIOUS INVESTIGATION

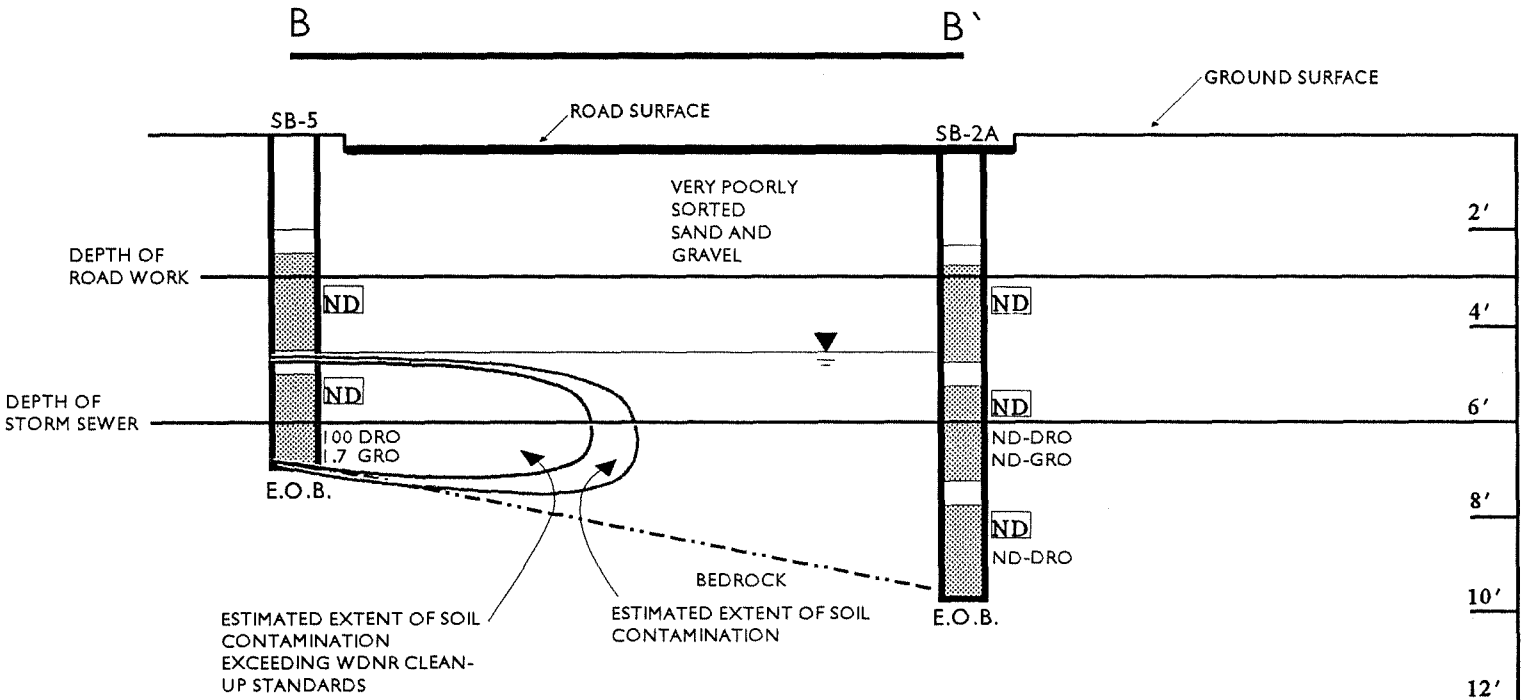
APPROX. SCALE: 1" = 40'

FIGURE 2.4

PLAN VIEW OF CROSS-SECTIONS

THOMAS ABANDONED SERVICE STATION
MONTREAL, WI


A
A'
GROUND SURFACE
DEPTH OF ROAD WORK
SB-3A
SB-6
SB-4A
SB-5
SB-1A
VERY POORLY SORTED SAND AND GRAVEL (GP)
VERY POORLY SORTED SAND AND GRAVEL
ESTIMATED EXTENT OF SOIL CONTAMINATION
ND
13-DRO
ND-PVOC
ND-DRO
ND-GRO
SILTY CLAY (ML)
ND-DRO
NA-PVOC
1.7 GRO
100 DRO
410-DRO
ND-PVOC
13-DRO
NA-PVOC
E.O.B.
VERY POORLY SORTED SAND AND GRAVEL (GP)
BEDROCK
ESTIMATED EXTENT OF SOIL CONTAMINATION EXCEEDING WDNR CLEAN-UP STANDARDS
ESTIMATED EXTENT OF SOIL CONTAMINATION
DEPTH OF STORM SEWER
2'
4'
6'
8'
10'
12'
14'
16'
DEPTH BELOW GRADE
LEGEND
Sample Interval
Water Table (approximate)
ND-DRO Analytical results (No Detection or ppm)
ND PID field screening results in (ppm)or ND (no detection)
E.O.B. End Of Boring
SCALE
HORIZ. 1": 20'
VERT. 1": 4'
FIGURE 2.5
THOMAS ABANDONED SERVICE STATION



LEGEND	
	Sample Interval
▼	Water Table (approximate)
ND-DRO	Analytical results (No Detection or ppm)
ND	PID field screening results in (ppm)or ND (no detection)
E.O.B.	End Of Boring

SCALE	
HORIZ.	1": 10'
VERT.	1": 4'

FIGURE 2.6
THOMAS ABANDONED SERVICE STATION
CROSS-SECTION B-B`

2.7.1 Soil Contamination

Soil contamination of concern exists from Station 329+10 to Station 330+70 at depths of 5.0 to 7.0 feet and 2.5 to 4.5 feet respectively. It is estimated that approximately 237 cubic yards of impacted soil exists within the WDOT right-of-way. If excavation of soil within the above stations and at a depth where soil contamination exceeds the WDNR action limits of 100 ppm, proper removal and treatment or disposal following WDNR guidelines will need to be followed.

2.7.2 Groundwater Contamination

Laboratory results do not indicate the presence of any PAH, PVOC or DRO parameters. Field observations of groundwater did not indicate any obvious signs of contamination (e.g. odor or petroleum sheen). Based on the above information, Enviroscience concludes that groundwater is not impacted in the vicinity of the WDOT right-of-way adjacent to the Thomas Abandoned Service Station site. Our recommendation is that no action be taken in respect to groundwater within the WDOT right-of-way.

2.7.3 Dewatering Permit

A General Permit to discharge under the WPDES is needed if dewatering activities are required. Dewatering may not be needed due to low storativity (volume of water an aquifer releases) in the vicinity of MW-3A (SB-4A) on Station 329+30. During monitoring well development, MW-3A purged dry giving indication that the volume of water may be limited to a depth of ten feet. MW-1A and MW-2A did not purge dry during development, but are screened to a deeper depth. This gives an indication that storativity in the aquifer may be much higher at depths exceeding ten feet or in close proximity to fractured bedrock.

If dewatering is needed, a WPDES permit would be required to discharge water to the Montreal River. This dewatering operation will comply with the provisions of the General Permit (Appendix H) due to the fact that during groundwater sampling rounds, there were no detects of DRO, PVOCs or PAH parameters. In addition, impacted soil adjacent to the right-of-way showed detects for DRO only. No PVOCs were present in these soils. Dewatering operations could be achieved by the use of wells (not exceeding a 100,000 gallon/day capacity) or trash pumps within the trench.

It is Enviroscience's recommendation that a General Permit under WPDES be applied for in connection with the dewatering operation in this project. This can be accomplished by contacting Ms. Kathy Bartilson at the WDNR Northwest District Office in Spooner at 715/635-4053.

2.8 Standard of Care

The conclusions contained in this report represent our professional opinions. Our opinions are arrived at in accordance with currently accepted hydrogeologic and engineering practices at this time and location. Enviroscience observed the degree of care and skill generally exercised by the profession under similar circumstances and conditions. No other warranty is expressed or implied.