



**Report
15151**

**Soil Investigation
Mobil Bulk Plant No. 48-356
Merrill, Wisconsin**

Prepared for:
**Mobil Oil Corporation
Schaumburg, Illinois**

Prepared by:
**Warzyn Engineering Inc.
Madison, Wisconsin**

July 1990



July 16, 1990

Mr. Peter D. Gates
Mobil Oil Corporation
Woodfield Engineering Center
600 Woodfield Drive
Schaumburg, IL 60196

RE: Soil Investigation Report
Mobil Bulk Plant No. 48-356

Dear Pete:

Enclosed are three copies of the soil investigation report for the Mobil Bulk Plant in Merrill, Wisconsin. The results of the investigation and Warzyn's recommendations for further action at the site are outlined on the attached Executive Summary.

Please call if you have any questions or comments concerning this report. Warzyn appreciates this opportunity to provide environmental services to Mobil Oil Corporation.

Sincerely,

WARZYN ENGINEERING INC.

Kevin D. Swanson
24 DJB

Kevin D. Swanson
Hydrogeologist

Douglas J. Bach, P.E.
Project Manager

DJB/jkk
[jkk-107-72]
15151-MD

cc: L. Smith, Warzyn

Enclosures: As Stated

THE PERFECT BALANCE
BETWEEN TECHNOLOGY
AND CREATIVITY.

MADISON
ONE SCIENCE COURT
P.O. BOX 5385
MADISON, WI 53705
(608) 231-4747
FAX (608) 273-2513



WARZYN

Soil Investigation
Mobil Bulk Plant No. 48-356
Merrill, Wisconsin

July 1990

**SOIL INVESTIGATION
MOBIL BULK PLANT NO. 48-356**

EXECUTIVE SUMMARY

Mobil Oil Company (Mobil) retained Warzyn Engineering Inc. (Warzyn) to investigate possible petroleum contamination of soil and groundwater at Mobil Bulk Plant No. 48-356 in Merrill, Wisconsin. The plant had been the site of a 400-gallon fuel oil spill in 1985, and a soil gas survey performed by Target Environmental Services, Inc. in August 1989 indicated that volatile organic compounds were present in soil vapor along the northern and southern edge of the property.

Although the Work Plan had proposed the installation of both monitoring wells and soil borings, shallow bedrock conditions encountered at the time of drilling limited the investigation to soil borings only. Thirteen soil borings were drilled and soils were collected for laboratory analysis of Total Petroleum Hydrocarbons (TPH); benzene, ethyl benzene, toluene and xylene (BETX); and polynuclear aromatic hydrocarbons (PAH).

Soil analytical results indicated that soils with significant concentrations of petroleum hydrocarbons were generally limited to the area south of the aboveground storage tanks and beneath the pipe fill valves. The aboveground tanks and fill pipes are not equipped with secondary containment (e.g., dikes), as required by federal Spill Prevention Control and Countermeasures (SPCC) regulations (40 CFR 112).

Warzyn's field observations and previous investigation reports indicate that a thin layer of groundwater occurs intermittently above shallow granite bedrock. When present, this groundwater may drain to the sewer trench which has been dynamited into bedrock along the south edge of the site.

Based on the results of this investigation, Warzyn recommends the following actions at the site.

- Petroleum affected soils in the area south of the aboveground tanks and fill pipes should be excavated and properly disposed. Before excavation occurs, soils in the immediate vicinity of the aboveground tanks should be sampled and analyzed to determine if petroleum contamination extends to that area.
- If the site is to continue to be used as a bulk plant facility, the present storage and loading facilities should be upgraded to comply with SPCC requirements for secondary containment.

TABLE OF CONTENTS

	<u>Page No.</u>
INTRODUCTION	1
SITE BACKGROUND	1
HYDROGEOLOGIC SETTING	2
SITE INVESTIGATION	3
Soil Borings	3
Soil Sampling and Organic Vapor Field-Screening	3
Well Installation and Groundwater Occurrence	4
Soil Analytical Results	5
CONCLUSIONS	7

TABLES

Table 1 - Soil Photoionization Detector Results Field Headspace Method March 5 and 6, 1990
Table 2 - Volatile Organic Compounds March 5 and 6, 1990
Table 3 - Summary of Soil Analytical Results March 5 and 6, 1990
Table 4 - Summary of Soil Analytical Results March 5 and 6, 1990

DRAWINGS

Drawing A1 - Site Location Map
Drawing B1 - Site Features Map
Drawing B2 - Soil Analytical Results

APPENDICES

Appendix A - Field Boring Logs
Appendix B - Well Construction Detail
Appendix C - Soil Analytical Results

**SOIL INVESTIGATION
MOBIL BULK PLANT NO. 48-356
MERRILL, WISCONSIN**

INTRODUCTION

This report presents the results of the soil investigation at Mobil Bulk Plant No. 48-356 in Merrill, Wisconsin. The investigation was performed by Warzyn Engineering Inc. (Warzyn) in accordance with the October 23, 1989 Work Plan prepared by Warzyn for Mobil and Contract No. 999XL7-9L35 between Mobil and Warzyn. The objective of this investigation was to define the extent of potential petroleum product contamination of soil and groundwater.

Investigation activities performed by Warzyn between March 5 and April 5, 1990 included the following:

- Soil borings and analytical soil sampling;
- Installation of a monitoring well;
- Laboratory analysis of soil samples;
- Evaluation of potential receptors.

SITE BACKGROUND

Mobil Bulk Plant No. 48-356 is located on South Park Street, one block east of U.S. Highway Business 51 in Merrill, Wisconsin (Section 12, T.31N., R.6E.). The site location is shown on Drawing 15151-A1. The site is located in an industrial area and is bordered by railroad tracks and right-of-way (Wisconsin Central Limited) on the north, vacant property on the east, a gravel drive and lumber storage sheds to the south, and an abandoned Standard Oil Bulk Plant to the west. No private residences are located in the immediate vicinity. The ground surface slopes south toward the Wisconsin River, which is located approximately 100 yds from the site.

Aboveground storage tanks are used at the site to store fuel oil and gasoline. Background information provided to Warzyn indicates that approximately 400 gallons of fuel oil spilled from an above ground tank in June of 1985. The tank was removed and soils excavated on June 28, 1985. A Twin City Testing Corp. (TCT) report indicates that the excavation was 10 ft deep with the floor consisting of fractured rock. A well constructed with 12 in. diameter PVC pipe with vertical saw cut perforations was reportedly placed in the excavation before

backfilling with sand. TCT reported that on July 2, 1985 the water in the well was 5.1 ft below ground surface and that a trace of product was present on the surface of a groundwater sample collected the excavation well. As reported by TCT, the water in the excavation well was 7.3 ft below groundwater surface on August 9, 1985. TCT reported that no oil products were apparent on groundwater collected from the excavation well on August 9, 1985.

Several different organic compound vapors were detected in a soil gas survey conducted by Target Environmental Services, Inc. on August 8, 1989. Concentrations of tert-butyl methyl ether (MTBE), toluene, xylenes, benzene and ethyl benzene were elevated along the northern and southern property boundaries.

HYDROGEOLOGIC SETTING

The Mobil Bulk Plant site is located in an area of moderate relief, where glacial drift overlies Precambrian crystalline bedrock. The bedrock is a southern extension of the Precambrian Canadian Shield and consists of igneous and metamorphic rock. In the region around Merrill, the thickness of the glacial drift ranges from zero to over 100 ft. The drift consists of outwash and ice-contact sand and gravel deposits as well as ground moraine till.

Groundwater supplies all communities and most rural domestic needs in the region. Nearly all wells draw water from the glacial drift. The bedrock does not yield much water, though it is tapped locally for small domestic supplies where glacial drift is thin. The City of Merrill municipal wells draw water from the outwash sand and gravel.

The site is located approximately one mile south of the Prairie River which flows into the Wisconsin River one-half mile to the west. A search of well constructors reports available at the Wisconsin Geologic and Natural History Survey (WGNHS) indicates that several Merrill municipal wells draw from unconsolidated glacial deposits in Section 7, T.31N., R.7E., approximately one-half to one mile east and northeast of the bulk plant site. No indication of private residential supply wells on the north side of the Wisconsin River within one half mile of the site were found in the WGNHS records.

Although an observation well network does not exist at the site, groundwater flow is likely to the south, coinciding with regional discharge to the Wisconsin River.

SITE INVESTIGATION

SOIL BORINGS

Thirteen borings were drilled and one well installed by Environmental and Foundation Drilling, Inc. on March 5 and 6, 1990, under the supervision of Warzyn personnel. To minimize the possibility of cross-contamination, the drilling equipment was decontaminated by steam pressure washing prior to drilling each well or, where the previous boring was not advanced below 5 ft and no split spoon samples were taken through the auger flights, with trisodium phosphate detergent followed by a clear water rinse. Each boring was drilled using 4 1/4 in. or 2 1/4 in. inside diameter hollow-stem augers.

The borings were advanced to the point of auger refusal at the weathered bedrock surface, which was shallower than anticipated, based on previous information available to Warzyn. In general, was not possible to advance the boreholes deeper than seven feet. In several cases, the boreholes were advanced less than 4 to 5 ft before auger refusal was reached. Boreholes were abandoned by filling with granular bentonite to within one foot of the ground surface and topping off with native soil or gravel.

Overhead utilities and private water and sewer lines to the Bulk Plant office necessitated adjustments to several proposed boring locations. The boring locations are shown on Drawing 15151-B1.

SOIL SAMPLING AND ORGANIC VAPOR FIELD-SCREENING

Three-inch diameter split spoon samples were collected at 2.5 ft intervals at each boring. Samples were logged for lithologic characteristics and screened for organic vapors with a photoionization detector (PID) using the field headspace analytical technique. Descriptions of the field headspace methodology and PID calibration technique are included in Appendix A. Split spoons and sampling accessories were decontaminated with trisodium phosphate detergent followed by a clear water rinse between samples. Boring logs showing the encountered lithologies and field PID screening results are included in Appendix B.

Unconsolidated material overlying the bedrock consists of predominantly clayey, silty fine sand, and is primarily residual weathered granite bedrock.

Field PID screening indicated relatively large headspace concentrations of organic vapors from soil samples south of the existing above ground tanks (borings B2 and B3) and near the truck transport pipe fill lines (boring B4). Lower headspace vapor concentrations were detected in samples from borings W1 and B5. The results of field PID screening are summarized in Table 1. Strong fuel-like odors and apparent residual petroleum product were observed in samples from depths of 3 to 6 ft at borings B2, B3 and B4. No elevated PID detections were observed in soil from borings along the northern perimeter of the site (borings B6, B7, B8 and B9).

Soil samples with headspace PID readings greater than 10 ppm as benzene equivalents were transferred to labelled glass analytical jars. At least one analytical sample was also collected from each boring in which elevated field PID readings were not observed. Samples were stored on ice for transport to the Warzyn analytical laboratory. The samples were analyzed for Total Petroleum Hydrocarbons (TPH), benzene, ethylbenzene, toluene, xylenes (BETX) and Polynuclear Aromatic Hydrocarbons (PAHs).

WELL INSTALLATION AND GROUNDWATER OCCURRENCE

One monitoring well (W1) was installed at the southwest corner of the fenced storage tank area (Drawing 15151-B1). The well was constructed of threaded flush joint, 2 in. inside diameter Schedule 40 PVC. The 4.5 ft well screen (screened from 4.9 to 9.4 ft depth) has 0.010 in. factory cut slots. A uniform washed coarse sand was placed around and extended one foot above the top of the screen slots to serve as a filter pack. Granular bentonite was extended from the filter pack to within one foot of ground surface as an annular space seal. One foot of native soil was placed on top of the bentonite. A locking steel protective casing was placed over the 2 ft of PVC casing stick-up. The well detail is included in Appendix B.

Although groundwater was not encountered in this boring before auger refusal occurred, historic water levels in the TCT well in the former excavation area suggested the possibility

of the water table intersecting the slotted portion of well W1 in the future. It was impossible to advance the boring for W1 any deeper with hollow stem augers. The existing TCT well in the former excavation had no standing water on March 5 and 6, 1990. Groundwater was encountered at 14 ft while drilling boring B5. Boring B5 was located in back-fill for a sewer trench blasted into the bedrock to a reported depth of approximately 20 ft. A well was not installed in boring B5.

The water table at the site exists below the weathered bedrock surface. Unconsolidated glacial deposits are thin to non-existent at the site. The depth of the weathered bedrock zone which could be penetrated by auger drilling methods ranged from less than 1 to approximately 9 ft. The thickness of the weathered bedrock zone is not known, although the inability to advance boreholes to depths greater than 5 to 8 ft suggests that the transition from weathered bedrock to relatively impermeable non-weathered bedrock begins at depths between 5 and 10 feet. This shallow depth to competent bedrock is further supported by the need to dynamite bedrock to install the sanitary sewer line located near the site.

No groundwater was encountered above the depth of auger refusal in any borings performed in natural material. Thus, the volume of shallow groundwater flowing beneath the site above the non-weathered bedrock appears to be small. Shallow groundwater flow may be diverted into and along the sewer line trench backfill, which may have a hydraulic conductivity value orders of magnitude higher than the bedrock itself. Deeper groundwater flow in fractures in the granite should coincide with regional movement south toward the Wisconsin River, located approximately 100 yds to the south (Drawing 15151-A1).

SOIL ANALYTICAL RESULTS

Laboratory analytical results for soil samples analyzed for BETX, TPH and PAH compounds are summarized in Table 2 through Table 4 and are included in Appendix C. Soil analytical results for each boring are summarized schematically on Drawing 15151-B2.

BETX analytical results are summarized in Table 2 and shown on Drawing 15151-B2. Ethylbenzene and/or xylenes were detected in samples from borings B2, B3 and B4 south of

the above ground storage tank and fuel truck transport fill lines. The soils were apparently affected to the bottom of each of these three borings (depths of 6 to 8 ft). Boring B3 split spoon sample 1 (B3-SS1, 1-2.5 ft) and boring B4 split spoon sample 3 (B4-SS3, 6-7.5 ft) had the highest detected xylenes concentrations of 15 and 44.5 mg/kg, respectively. The detected concentrations in the remaining samples from borings B2, B3 and B4 were generally between 0.1 and 1.5 mg/kg. Analytical results also indicated a 0.18 mg/kg xylenes concentration in a boring B6 sample (B6-SS2, 3.5-5 ft), and detectable, but below quantitation limits (<0.05 mg/kg), toluene and xylenes in boring B8 (B8-SS3, 6-7.5 ft). The BETX chromatograms for most of the samples contain unidentified compounds other than benzene, ethylbenzene, toluene or xylenes.

Total petroleum hydrocarbon (TPH) analytical results are summarized in Table 3 and shown on Drawing 15151-B2. TPH results suggest that petroleum hydrocarbon mixtures in soil were generally limited to the area of borings B2, B3 and B4, south of the fill valves and above ground storage tank area (see Drawings 15151-B1 and 15151-B2). TPH mixtures were detected in soil samples taken near the surface to the bottom of each of borings B2, B3 and B4 (6 to 8 ft). Detected concentrations generally increased with depth (see Table 3). Soil TPH concentrations at boring B2 ranged from approximately 5,000 to 7,000 mg/kg calculated as No. 2 fuel oil. Soil TPH concentrations detected at boring B3 ranged from approximately 600 to 4,000 mg/kg, calculated as kerosene. Soil TPH concentrations detected at boring B4 ranged from approximately 100 to 6,000 mg/kg, calculated as No. 2 fuel oil. TPH compounds were also detected in soil sampled from 1 to 1.5 ft at boring B10, approximately 15 ft south of borings B2 and B3. Auger refusal prohibited the sampling of deeper soil in the vicinity of boring B10. Overhead and buried drilling hazards precluded drilling and sampling of soils in the areas south of borings B3 and B4 and east of boring B4. Relatively low concentrations of TPH were detected in soil sampled from 3.5 to 5 ft in borings B5 and B9, (5.36 and 14.2 mg/kg, respectively, as No. 2 fuel oil).

Polynuclear Aromatic Hydrocarbon (PAH) analyses of 16 soil samples (including one field duplicate) were performed by High Performance Liquid Chromatography (HPLC) at Hazelton Laboratories America, Inc. in Madison, Wisconsin. The PAH analytical results are summarized in Table 4 and shown on Drawing 15151-B2. Low levels of PAH compounds

were detected in fourteen of the sixteen samples. With the exception of naphthalene in the boring B3 3.5-5 ft sample (B3, SS2), no individual PAH compounds were detected at concentrations greater than one part per million (1000 ug/kg). Soil sample B3, SS2 had a total PAH concentration of 1.3 ppm. Total PAH concentrations of greater than 0.1 ppm (100 ug/kg) in natural soils are limited to samples from borings B2 and B3. Boring B5, SS2 (total PAH of 342 ug/kg) was drilled and sampled in fill (see Well Installation and Groundwater Occurrence section, above).

CONCLUSIONS

Based on the results of its investigation at the Merrill Mobil Bulk Plant Site, Warzyn concludes:

- Soil with significant concentrations of petroleum derived compounds was generally limited to the area south of the above ground storage tanks and pipe fill valves (boring B2, B3, B4 and B10). Soil in this area was apparently affected to depths of at least 7.5 ft. Deeper samples could not be obtained using auger drilling methods. The horizontal extent of potentially affected soil to the south of this area and within the fenced area has not been determined.
- Relatively minor amounts of petroleum hydrocarbon compounds were detected in soil sampled from 3.5 to 5 ft at boring B9 (approximately 14 ppm as No. 2 fuel oil) and in the fill at boring B5 (approximately 5 ppm as No. 2 fuel oil).
- The shallow depth of the bedrock surface prohibited the installation of monitoring wells to evaluate groundwater quality. Previous site investigations and Warzyn soil boring results indicate that a thin layer of shallow groundwater exists only intermittently above the granite bedrock. This groundwater is not a usable source of drinking water supply. This groundwater, when present, may drain to the sewer trench blasted into rock along the south edge of the site. Deeper regional groundwater is located within granite bedrock fractures and reportedly flows south toward the Wisconsin River.

TABLE 1
Soil Photoionization Detector Results (1)
Field Headspace Method (2)
March 5 and 6, 1990
Mobil Bulk Plant, Merrill, Wisconsin

Split Spoon Sample No.	Depth (ft)	Boring No.											
		W1	B1A	B2	B3	B4	B5	B6	B7	B8	B9	B10	B10A
SS1	1-2.5	0	0	20	140	15	2.0	0	0	0	0	0	--
SS2	3.5-5	0	--	40	200	17	1.5	0	0	0	0	--	--
SS3	6-7.5	0	--	50	180	180	0	--	--	0	--	--	--
SS4	8.5-10	2.5	--	--	--	--	0	--	--	--	--	--	--
SS5	13.5-15	--	--	--	--	--	0	--	--	--	--	--	--

Notes:

- (1) Values reported in parts per million, as benzene equivalents
- (2) A description of field method and calibration procedures is included in Appendix A.

TABLE 2

**Summary of Soil Analytical Results
Volatile Organic Compounds
March 5 and 6, 1990
Mobil Bulk Plant, Merrill, Wisconsin**

<u>Boring and Sample No.</u>	<u>Sample Depth (ft)</u>	<u>Benzene ug/kg</u>	<u>Ethylbenzene ug/kg</u>	<u>Toluene ug/kg</u>	<u>Xylenes ug/kg</u>
W1-SS4	8.5-10	X	X	X	X
B1A-SS1	1-2.5	X	X	X	X
B2-SS1(1)	1-2.5	X	125	X	307
B2-SS2(1)	3.5-5	X	X	X	58.8
B2-SS3(1)	6-7.0	X	276	X	523
B3-SS1(1)	1-2.5	X	325	X	15,000
B3-SS2(1)	3.5-5	X	269	X	1,550
B4-SS1(1)	1-2.5	X	X	X	81.7
B4-SS2(1)	3.5-5	X	X	X	108
B4 SS3(1)(2)	6-7.5	X	5,520	BMQL	44,500
B5-SS2(1)	3.5-5	X	X	X	X
B5-SS5(1)	13.5-15	X	X	X	X
B6-SS2(1)	3.5-5	X	X	X	182
B7-SS2(1)	3.5-5	X	X	X	X
B8-SS3(1)	6-7.5	X	X	BMQL	BMQL
B9-SS2(1)	3.5-5	X	X	X	X
B10-SS1(1)	1-2.5	X	X	X	X
Reportable Detection Limit		25.0	50.0	50.0	50.0

X - Analyzed but not detected.

BMQL - Detected, value below method quantitation limit

(1) - Sample contains unidentified compounds other than BETX compounds.

(2) - Elevated detection limits for benzene (500 ug/L) and toluene (1000 ug/L) due to interfering unidentified compounds

TABLE 3

Summary of Soil Analytical Results
Total Petroleum Hydrocarbons
Samples Collected March 5 and 6, 1990
Mobil Bulk Plant, Merrill, Wisconsin

Boring and Sample No.	Sample Depth (ft)	Reportable Detection Limit	Total Hydrocarbon (mg/kg) as:			
			Gasoline	Kerosene	No. 2 Fuel Oil	No. 6 Fuel Oil
W1-SS4	8.5-10	A	X	X	X	X
B1A-SS1	1-2.5	A	X	X	X	X
B2-SS1	1-2.5	F	X	X	5,250	X
B2-SS2	3.5-5	D	X	X	7,340	X
B2-SS3	6-7.5	D	X	X	6,460	X
B3-SS1	1-2.5	C	X	627(1)	X	X
B3-SS2	3.5-5	F	X	4040(1)	X	X
B3-SS2 Dup	3.5-5	E	X	6280(1)	X	X
B4-SS1	1-2.5	B	X	X	122(2)	X
B4-SS2	3.5-5	C	X	X	363	X
B4-SS3	6-7.5	E	X	X	4,820	X
B5-SS2	3.5-5	A	X	X	5.36(2)	X
B5-SS5	13.5-15	A	X	X	X	X
B6-SS2	3.5-5	A	X	X	X	X
B7-SS2	3.5-5	A	X	X	X	X
B8-SS3	6-7.5	A	X	X	X	X
B9-SS2	3.5-5	A	X	X	14.2(2)	X
B10-SS1	1-1.5	A	X	X	11.2(2)	130(3)
Detection Limit	A		5.00	5.00	5.00	20.0
	B		25.0	25.0	25.0	100
	C		125	125	125	500
	D		250	250	250	1,000
	E		500	500	500	2,000
	F		625	625	625	2,500

X - Analyzed but not detected.

Notes - (1), (2) and (3) explained on next page.

Explanatory Notes:

- (1) Sample contains what appears to be a hydrocarbon fraction eluting off of the gas chromatograph with a retention time in the range of kerosene. These unknowns do not match any of the reference standards. Estimated concentrations of the unknowns are calculated against a kerosene reference standard.
- (2) Sample contains what appears to be a hydrocarbon fraction eluting off of the gas chromatograph with a retention time in the range of No. 2 fuel oil. These unknowns do not match any of the reference standards. Estimated concentrations of the unknowns are calculated against a No. 2 fuel oil reference standard.
- (3) Sample contains what appears to be a hydrocarbon fraction eluting off of the gas chromatograph with a retention time in the range of No. 6 fuel oil. This unknown does not match any of the reference standards. The estimated concentration of the unknown is calculated against No. 6 fuel oil reference standard.

The concentrations reported are determined against reference standard mixtures. Variables such as differences in petroleum product formulations, weathering and other environmental factors may preclude positive identification as one of the target hydrocarbon standard mixtures.

TABLE 4

Summary of Soil Analytical Results
 Polynuclear Aromatic Hydrocarbons
 Samples Collected March 5 and 6, 1990
 Mobil Bulk Plant, Merrill, Wisconsin

Boring No., Split Spoon Sample No., and Sampled Interval (ft)

Compound Name	W1 SS4 8.5-10	B1A SS1 1-2.5	B2 SS1 1-2.5	B2 SS2 3.5-5	B2 SS3 6.5-7	B3 SS1 1-2.5	B3 SS2 3.5-5	B4 SS1 1-2.5	B4 SS2 3.5-5	B5 SS2 3.5-5	B5 SS5 13.5-15	B6 SS2 3.5-5	B7 SS2 3.5-5	B8 SS3 6-7.5	B9 SS2 3.5-5	B3 Dup SS2 3.5-5
Naphthalene	X	X	X	X	X	X	1300	X	X	X	X	X	X	X	X	330
Acenaphthene	X	X	X	X	X	X	900	X	X	X	X	X	X	X	X	X
Fluorene	X	X	X	X	400	X	90	X	X	X	X	X	X	X	X	X
Phenanthrene	X	X	110	27	330	X	130	X	X	56	X	X	22	X	X	93
Anthracene	X	X	X	X	190	X	X	X	X	X	X	X	X	X	X	X
Fluoranthene	2.9	X	88	22	120	X	X	X	X	62	3.6	8.6	16	9.0	12	X
Pyrene	X	X	X	X	640	X	X	X	X	X	X	X	X	X	X	X
Benzo(a)Anthracene	1.1	X	38	1.5	56	X	2.1	6.7	5.7	26	1.4	2.8	6.6	3.7	4.0	X
Chrysene	X	X	X	X	X	X	X	X	X	38	X	X	X	X	X	X
Benzo(b)Fluoranthene	X	X	X	5.2	X	X	X	19	16	51	2.6	4.3	11	4.6	9.6	X
Benzo(k)Fluoranthene	X	X	X	2.8	X	X	X	9.9	6.2	25	1.3	X	4.9	2.5	4.1	X
Benzo(a)Pyrene	1.1	X	X	3.4	X	X	X	14	8.8	37	1.8	3.2	8.2	4.2	7.6	X
Benzo(g,h,i)Perylene	X	X	X	3.5	X	X	X	X	X	23	2.2	X	11	4.6	18	X
Indeno(1,2,3-cd)Pyrene	X	X	X	X	X	X	X	X	X	24	X	X	X	X	11	X
Total PAH Compounds	5.1	X	236	65	1736	X	2422	50	37	342	13	19	80	29	66	423

Concentrations reported in ug/kg.

X - Analyzed but not detected. Detection limits are compound and sample dependent, ranging from 1 to 2000 ug/kg. Calculated total PAH concentrations reflect only those compounds which were detected at or above the compound detection limit. Individual detection limits are given in Appendix C.

Acenaphthylene and Dibenzo(a,h)anthracene were analyzed, but not detected in any of the samples.

Analyses performed by high performance liquid chromatography.

KDS/jkk/TAPB
 [vlr-400-52c]
 15151.00-MD

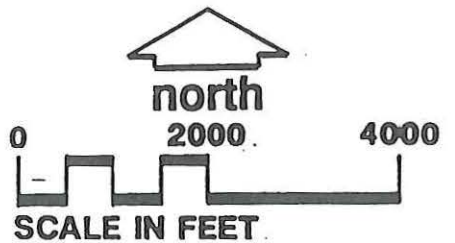
QUALITY CONTROL
 INITIAL DATE TIME
 INITIAL DATE TIME
 Drafting Standards PM 7:12.90
 Lead Professional KDS 7:12.90 Division
 Section Other



SITE LOCATION

NOTES

1. SITE LOCATION MAP DEVELOPED FROM THE MERRILL, WISCONSIN 7½ MINUTE U.S.G.S. TOPOGRAPHIC QUADRANGLE MAP, DATED 1982.



SITE LOCATION MAP
 SOIL INVESTIGATION
 MOBIL BULK PLANT NO. 48-356
 MERRILL, WISCONSIN

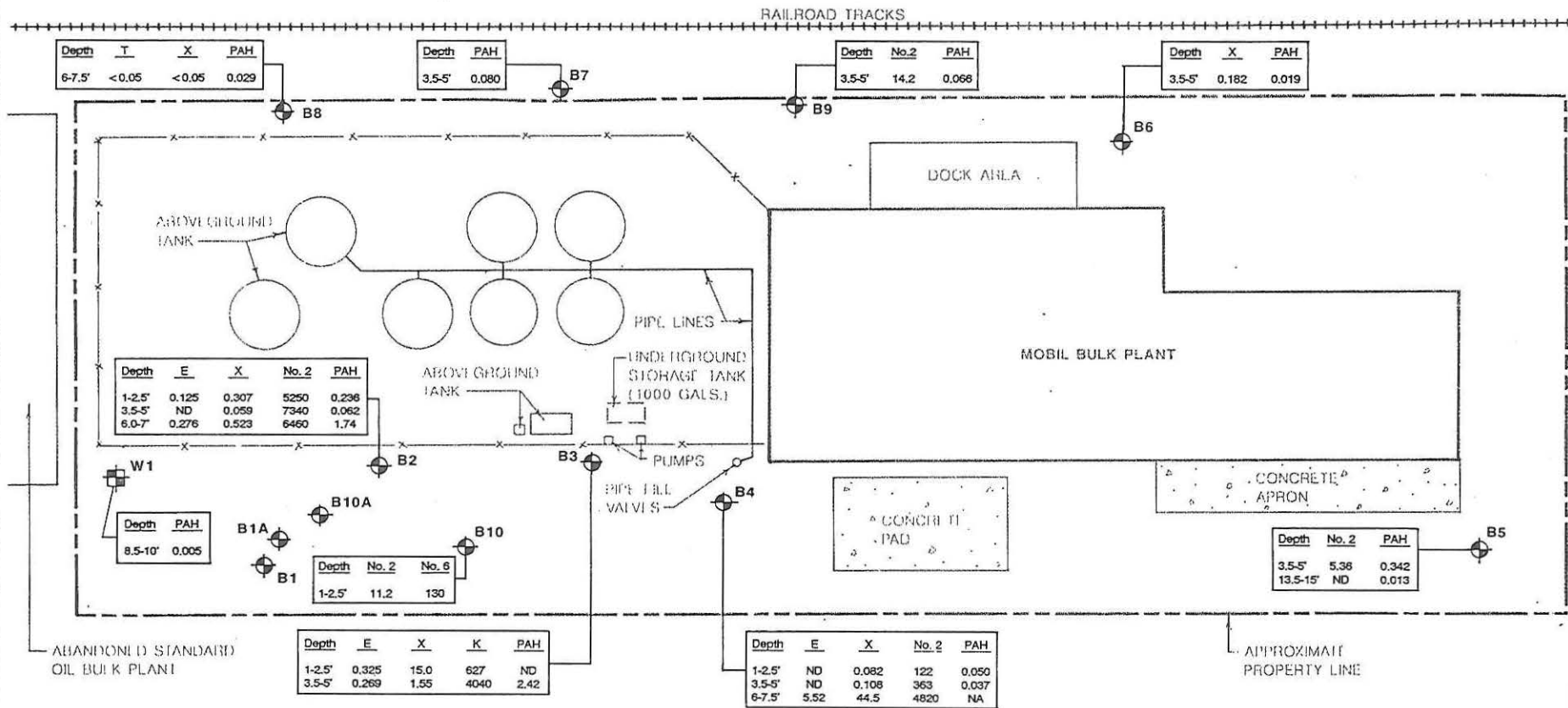
Drawn **DLF**
 Revisions

Checked **KDS**

App'd. **DJB**

Date **7/13/90**

15151 A1



LEGEND

- B1 SOIL BORING LOCATION AND NUMBER
- W1 MONITORING WELL LOCATION AND NUMBER
- | Depth | PAH |
|---------|-------|
| 8.5-10' | 0.005 |

 SAMPLED INTERVAL AND SOIL ANALYTICAL RESULTS IN mg/kg

NOTES

- BASE MAP DEVELOPED FROM MAP PROVIDED BY TARGET ENVIRONMENTAL SERVICES, INC. AND FIELD OBSERVATIONS BY WARZYN ENGINEERING INC. BORING AND WELL LOCATIONS ARE APPROXIMATE.
- SOIL BORING AND WELL LOCATIONS MEASURED RELATIVE TO SITE FEATURES BY WARZYN ENGINEERING INC. BORING AND WELL LOCATIONS ARE APPROXIMATE.
- RESULTS REPORTED HERE ARE ONLY FOR COMPOUNDS WHICH WERE DETECTED AT THE INDIVIDUAL BORING LOCATIONS. FULL ANALYTICAL RESULTS ARE INCLUDED IN TABLE 2 TO TABLE 4 AND APPENDIX C. RESULTS REPORTED AS mg/kg.
 E = ETHYL BENZENE
 T = TOLUENE
 X = XYLENES
 K = TPH AS KEROSENE
 NO. 2 = TPH AS NO. 2 FUEL OIL
 NO. 6 = TPH AS NO. 6 FUEL OIL
 PAH = TOTAL POLYNUCLEAR AROMATIC HYDROCARBONS
 ND = ANALYZED BUT NOT DETECTED
 NA = NOT ANALYZED



Designed by *[Signature]*
 Drawn by PLF
 Checked by KDS
 Date 7/13/90

WARZYN
 ENGINEERING INC.

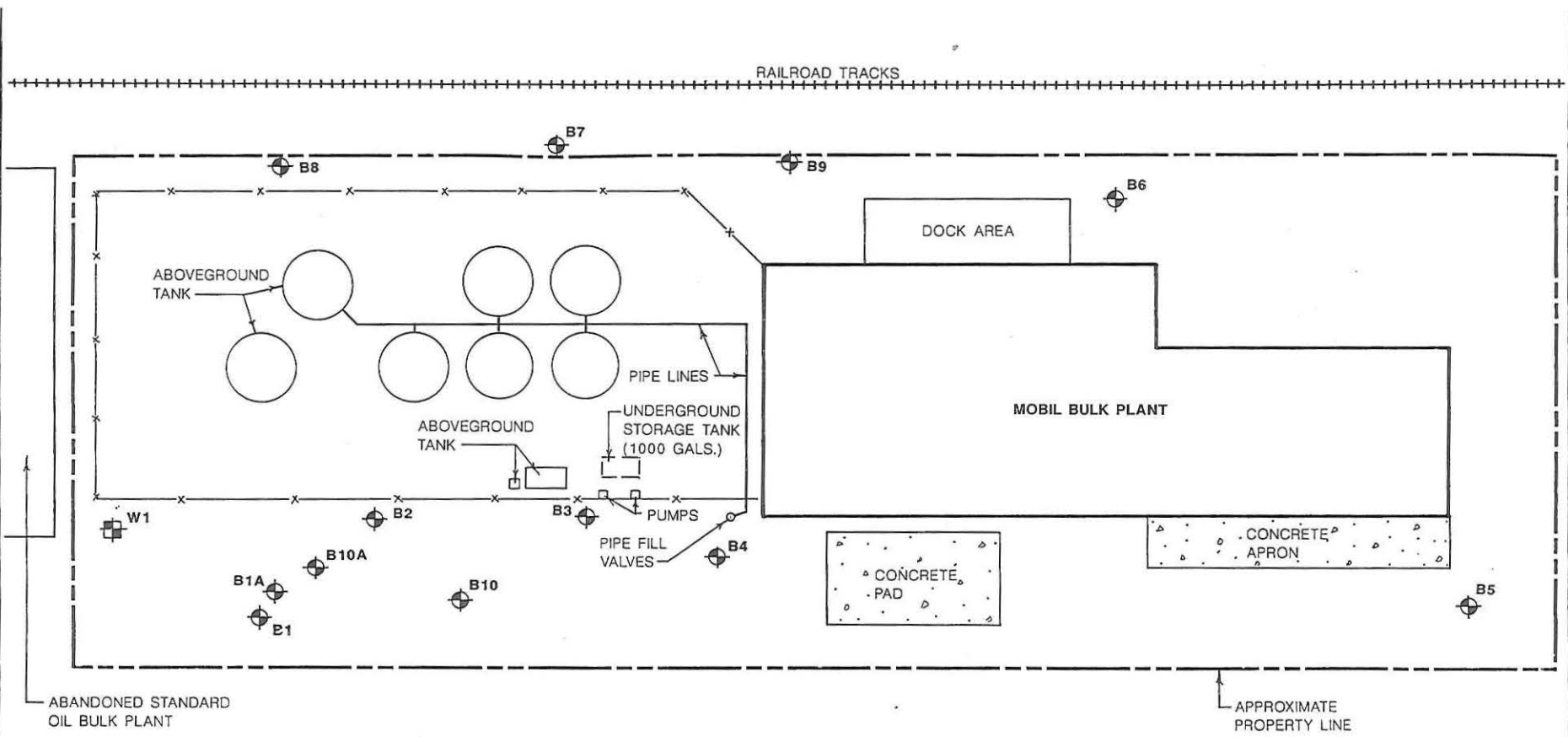
Date: 7/13/90

SOIL ANALYTICAL RESULTS

JUL 1 1990
 Project Number
 15151
 WARZYN

SOIL INVESTIGATION
 MOBIL BULK PLANT NO. 4B-356
 MERRILL, WISCONSIN

ASTER BLUE PRINT INC. 614028



LEGEND

- B1 SOIL BORING LOCATION AND NUMBER
- W1 MONITORING WELL LOCATION AND NUMBER

NOTES

1. BASE MAP DEVELOPED FROM MAP PROVIDED BY TARGET ENVIRONMENTAL SERVICES, INC. AND FIELD OBSERVATIONS BY WARZYN ENGINEERING INC. ON MARCH 5 & 6, 1990.
2. SOIL BORING AND WELL LOCATIONS MEASURED RELATIVE TO SITE FEATURES BY WARZYN ENGINEERING INC. BORING AND WELL LOCATIONS ARE APPROXIMATE.



Created By: K.D.S. Date: 7/13/96
 Drawn By: PLF
 Designed By: [Signature]
 Approved By: [Signature]
WARZYN
 WARZYN ENGINEERING INC.
 Project Number: 15151
 JUL 13
 SITE FEATURES MAP
 SOIL INVESTIGATION
 MOBIL BULK PLANT NO. 48-356
 Reference:

APPENDIX A

**Field Boring Logs
Description of Field PID Procedures
PID Calibration Record**

PID Screening of Soil Samples

All soil collected in split-spoon samples was screened for the presence of volatile organic vapors using a photoionization detector (PID). Following soil classification, the soil was transferred to a labelled, sealable plastic bag.

The plastic bags were labeled with the boring number, the sample depth and the time of sample collection. The sample was placed out of direct sunlight for several minutes prior to field screening.

Field screening was accomplished by unsealing the plastic bag just enough to allow the PID probe to be inserted into the air space in the sample container. PID screening results were recorded on the soil boring log.

Calibration of PID and Weather Conditions

The PID was calibrated each day using an isobutylene - air mixture of known composition. The calibration record for each day and temperature range during field operations are summarized below.

<u>Date</u>	<u>PID Lamp</u>	<u>PID Calibration</u>	<u>Calibration Gas Concentration*</u>	<u>Field Temperature Range</u>
3/5/90	10.2eV	60 ppm	58 ppm	25-30°F
3/6/90	10.2eV	54 ppm	58 ppm	20-30°F

* parts per million as benzene equivalents

KS/jkk
[vlr-600-70b]
15151.00-MD

WARZYN

LOG OF TEST BORING

Project Mobil Bulk Plant
S. Park Street
 Location Merrill, Wisconsin

Boring No. W1
 Surface Elevation _____
 Job No. 15151.00
 Sheet 1 of 1

ONE SCIENCE COURT • P.O. BOX 5385, MADISON, WIS. 53705 • TEL.(608) 273-0440

SAMPLE					VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	TYPE	Rec (in.)	Moist	N		Depth	qu (qa) (tsf)	HNu	Explo- sive Gas	Field VOC Water
					TOPSOIL: Black Clayey Sandy					
1		18	D	18	Medium Dense, Brown Silty SAND, Trace Gravel & Clay (SM)		0.0			
2		18	D	38	Dense to Very Dense, Brown Silty Clayey Fine SAND with Cobbles (SM-SC)		0.0			
3		18	D-M	57	(Weathered Granite Bedrock)		0.0			
4		14	D-M	100	(Weathered Granite Bedrock)		2.5			
					End Boring at 9.5' PID background = 0 ppm					

WATER LEVEL OBSERVATIONS

GENERAL NOTES

While Drilling Upon Completion of Drilling _____
 Time After Drilling _____
 Depth to Water _____
 Depth to Cave in _____

Start 3/5/90 End 3/5/90
 Driller E&F Chief GM Rig CME
 Logger KDS Editor KDS 75
 Drill Method 4 1/4" HSA

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

WARZYN



LOG OF TEST BORING

Project Mobil Bulk Plant
S. Park Street
 Location Merrill, Wisconsin

Boring No. B1
 Surface Elevation _____
 Job No. 15151.00
 Sheet 1 of 1

ONE SCIENCE COURT • P.O. BOX 5385, MADISON, WIS. 53705 • TEL.(608) 273-0440

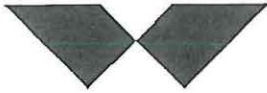
SAMPLE					VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	TYPE	Rec (in.)	Moist	N		Depth	qu (qa) (tsf)	HNu	Explo- sive Gas	Field VOC Water
1		6	D	100	2 1/2" Asphalt Dark Brown Clayey SAND and GRAVEL (Cobbles-Boulders)					
					End Boring and Auger Refusal at 3.0'					

WATER LEVEL OBSERVATIONS				
While Drilling	<input checked="" type="checkbox"/>	Upon Completion of Drilling	<input type="checkbox"/>	
Time After Drilling	_____	_____	_____	_____
Depth to Water	_____	_____	_____	_____
Depth to Cave in	_____	_____	_____	_____

GENERAL NOTES				
Start	<u>3/5/90</u>	End	<u>3/5/90</u>	
Driller	<u>E&F</u>	Chief	<u>GM</u>	Rig <u>CME</u>
Logger	<u>KDS</u>	Editor	<u>KDS</u>	<u>75</u>
Drill Method	<u>4 1/4" HSA</u>			

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

WARZYN



LOG OF TEST BORING

Project Mobil Bulk Plant
S. Park Street
 Location Merrill, Wisconsin

Boring No. B1A
 Surface Elevation _____
 Job No. 15151.00
 Sheet 1 of 1

ONE SCIENCE COURT • P.O. BOX 5385, MADISON, WIS. 53705 • TEL.(608) 273-0440

SAMPLE					VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	Rec (in.)	Moist	N	Depth		qu (qa) (tsf)	HNu	Explo- sive Gas	Field VOC Water	Monoto
1	18	D	62		2" Asphalt Brown Fine SAND					
					Gravelly SAND (Weathered Granite Bedrock)		0.0			
				5	End Boring and Auger Refusal at 4.0'					
				10						
				15						
				20						

WATER LEVEL OBSERVATIONS

While Drilling Upon Completion of Drilling _____
 Time After Drilling _____
 Depth to Water _____
 Depth to Cave in _____

GENERAL NOTES

Start 3/5/90 End 3/5/90
 Driller E&F Chief GM Rig CME
 Logger KDS Editor KDS 75
 Drill Method 4 1/4" HSA

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

WARZYN



LOG OF TEST BORING

Project Mobil Bulk Plant
S. Park Street
 Location Merrill, Wisconsin

Boring No. B2
 Surface Elevation _____
 Job No. 15151.00
 Sheet 1 of 1

ONE SCIENCE COURT • P.O. BOX 5385, MADISON, WIS. 53705 • TEL. (608) 273-0440

SAMPLE					VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES					
No.	TYPE	Rec (in.)	Moist	N		Depth	qu (qa) (tsf)	HNu	Explosive Gas	Field VOC Water	Monoto
1		18	D	89	TOPSOIL Brown Fine SAND and GRAVEL (Pebbles to Boulders) 3" Wet Clayey Silty Sand at 4.8' (Fuel Odor) Brown/Gray Fine SAND & Granite Boulder (Fuel Odor)		20.0				
2		16	D/W	100				40.0			
3		12	D	81				50.0			
					End Boring and Auger Refusal at 7'						

WATER LEVEL OBSERVATIONS

While Drilling Upon Completion of Drilling _____
 Time After Drilling _____
 Depth to Water _____
 Depth to Cave in _____

GENERAL NOTES

Start 3/5/90 End 3/5/90
 Driller E&F Chief GM Rig CME
 Logger KDS Editor KDS 75
 Drill Method 4 1/4" HSA

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

WARZYN

LOG OF TEST BORING

Project Mobil Bulk Plant
 Location S. Park Street
Merrill, Wisconsin

Boring No. B3
 Surface Elevation _____
 Job No. 15151.00
 Sheet 1 of 1

ONE SCIENCE COURT • P.O. BOX 5385, MADISON, WIS. 53705 • TEL. (608) 273-0440

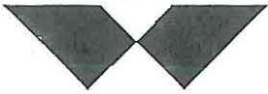
SAMPLE					VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	TYPE	Rec (in.)	Moist	N		Depth	qu (qa) (tsf)	HNu	Explo- sive Gas	Field VOC Water
1		16	D-M	78	TOPSOIL Dark Red-Brown Silty Fine SAND with Trace Gravel (Fuel Odor)		140.0			
2		18	M	82	Brown Silty Clayey Fine SAND & Granite Pebbles (Fuel Odor) (Granite Boulder at 4.5') Weathered Granite Bedrock		200.0			
3		4	D-M	60			180.0			
					End Boring and Auger Refusal at 6.5'					

WATER LEVEL OBSERVATIONS				
While Drilling	<input checked="" type="checkbox"/>	Upon Completion of Drilling	<input type="checkbox"/>	
Time After Drilling	_____	_____	_____	_____
Depth to Water	_____	_____	_____	<input checked="" type="checkbox"/>
Depth to Cave in	_____	_____	_____	_____

GENERAL NOTES				
Start	<u>3/5/90</u>	End	<u>3/5/90</u>	
Driller	<u>E&F</u>	Chief	<u>GM</u>	Rig <u>CME</u>
Logger	<u>KDS</u>	Editor	<u>KDS</u>	<u>75</u>
Drill Method	<u>4 1/4" HSA</u>			

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

WARZYN



LOG OF TEST BORING

Project Mobil Bulk Plant
S. Park Street
 Location Merrill, Wisconsin

Boring No. B4
 Surface Elevation _____
 Job No. 15151.00
 Sheet 1 of 1

ONE SCIENCE COURT • P.O. BOX 5385, MADISON, WIS. 53705 • TEL.(608) 273-0440

SAMPLE					VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	Rec (in.)	Moist	N	Depth		qu (qa) (tsf)	H _{Nu}	Explo- sive Gas	Field VOC Water	Monoto
1	18	D			2" Asphalt Brown Silty Fine SAND, Trace Gravel		15.0			
					Medium to Coarse SAND and GRAVEL (Cobbles) Trace Silt (Faint Fuel Odor)					
2	16	D			Brown Silty Fine to Medium SAND with Coarse Sand & Gravel (Odor)		17.0			
				5	Dark Brown Silty Clayey Fine SAND & Granite Boulder (Strong Fuel Oil Odor)					
3	8	M-W					180.0			
				10	End Boring and Auger Refusal at 8.0' Note: Moisture in Sample 3 is petroleum product					
				15						
				20						

WATER LEVEL OBSERVATIONS

While Drilling Upon Completion of Drilling _____
 Time After Drilling _____
 Depth to Water _____
 Depth to Cave in _____

GENERAL NOTES

Start 3/5/90 End 3/5/90
 Driller E&F Chief GM Rig CME
 Logger KDS Editor KDS 75
 Drill Method 4 1/4" HSA

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

WARZYN

LOG OF TEST BORING

Project Mobil Bulk Plant
S. Park Street
 Location Merrill, Wisconsin

Boring No. B5
 Surface Elevation _____
 Job No. 15151.00
 Sheet 1 of 1

ONE SCIENCE COURT • P.O. BOX 5385, MADISON, WIS. 53705 • TEL. (608) 273-0440

SAMPLE					VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	Rec (in.)	Moist	N	Depth		qu (qa) (tsf)	HNu	Explo- sive Gas	Field VOC Water	Monoto
					Asphalt/Gravel Drive					
1	8	D	100		FILL: Brown Silty Fine Sand & Gravel		2.0			
2	18	D	17				1.5			
3	8	D	11				0.0			
4	12	D-M	12				0.0			
5	16	W	10				0.0			
					End Boring at 18'					

WATER LEVEL OBSERVATIONS

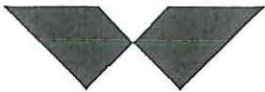
While Drilling 14.0 Upon Completion of Drilling _____
 Time After Drilling _____
 Depth to Water _____
 Depth to Cave in _____

GENERAL NOTES

Start 3/5/90 End 3/6/90
 Driller E&F Chief GM Rig CME
 Logger KDS Editor KDS 75
 Drill Method 4 1/4" HSA

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

WARZYN



LOG OF TEST BORING

Project Mobil Bulk Plant
S. Park Street
 Location Merrill, Wisconsin

Boring No. B6
 Surface Elevation _____
 Job No. 15151.00
 Sheet 1 of 1

ONE SCIENCE COURT • P.O. BOX 5385, MADISON, WIS. 53705 • TEL.(608) 273-0440

SAMPLE					VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	TYPE	Rec (in.)	Moist	N		Depth	qu (qa) (tsf)	Hnu	Explo- sive Gas	Field VOC Water
					TOPSOIL					
1		18	D	60	Black Clayey Fine SAND Brown Silty Fine SAND, Trace Coarse Sand & Gravel		0.0			
2		14	D	100	Green Silty Fine SAND & GRAVEL (Weathered Schist)		0.0			
					End Boring and Auger Refusal at 5'					

WATER LEVEL OBSERVATIONS

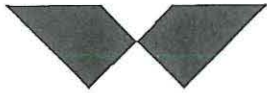
While Drilling Upon Completion of Drilling _____
 Time After Drilling _____
 Depth to Water _____
 Depth to Cave in _____

GENERAL NOTES

Start 3/6/90 End 3/6/90
 Driller E&F Chief GM Rig CME
 Logger KDS Editor KDS 75
 Drill Method 4 1/4" HSA

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

WARZYN



LOG OF TEST BORING

Project Mobil Bulk Plant
 Location S. Park Street
Merrill, Wisconsin

Boring No. B7
 Surface Elevation _____
 Job No. 15151.00
 Sheet 1 of 1

ONE SCIENCE COURT • P.O. BOX 5385, MADISON, WIS. 53705 • TEL.(608) 273-0440

SAMPLE					VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	TYPE	Rec (in.)	Moist	N		Depth	qu (qa) (tsf)	H _{Nu}	Explosive Gas	Field VOC Water
					TOPSOIL					
1		18	D	46	Black Clayey Silty Fine SAND, Trace Gravel		0.0			
					Brown Fine to Medium SAND & GRAVEL (Pebbles to Boulders)					
2		15	D	100	Brown Silty Fine to Medium SAND & GRAVEL (Pebbles to Boulders)		0.0			
					5 End Boring and Auger Refusal at 4.5'					
					10					
					15					
					20					

WATER LEVEL OBSERVATIONS

While Drilling Upon Completion of Drilling _____
 Time After Drilling _____
 Depth to Water _____
 Depth to Cave in _____

GENERAL NOTES

Start 3/6/90 End 3/6/90
 Driller E&F Chief GM Rig CME
 Logger KDS Editor KDS 75
 Drill Method 4 1/4" HSA

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

WARZYN

LOG OF TEST BORING

Project Mobil Bulk Plant
 Location S. Park Street
Merrill, Wisconsin

Boring No. B9
 Surface Elevation _____
 Job No. 15151.00
 Sheet 1 of 1

ONE SCIENCE COURT • P.O. BOX 5385, MADISON, WIS. 53705 • TEL.(608) 273-0440

SAMPLE					VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	TYPE	Rec (in.)	Moist	N		Depth	qu (qa) (tsf)	HNu	Explo- sive Gas	Field VOC Water
1		18	D	24	TOPSOIL Brown Silty Fine to Medium SAND, Trace Gravel (Pebbles-Boulders)		0.0			
2		14	D	73	Brown Silty Sandy Weathered Granite Bedrock		0.0			
					End Boring and Auger Refusal at 5'					

WATER LEVEL OBSERVATIONS

While Drilling Upon Completion of Drilling _____
 Time After Drilling _____
 Depth to Water _____
 Depth to Cave in _____

GENERAL NOTES

Start 3/8/90 End 3/8/90
 Driller E&F Chief GM Rig CME
 Logger KDS Editor KDS 75
 Drill Method 4 1/4" HSA

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

APPENDIX B
Well Construction Detail

City/Project Name <u>Mobil Merrill/15151</u>	Grid Location _____ ft. <input type="checkbox"/> N. <input type="checkbox"/> S. _____ ft. <input type="checkbox"/> E. <input type="checkbox"/> W.	Well Name <u>W1</u>
City License, Permit or Monitoring Number _____		Wis. Unique Well Number: _____ DNR Well Number: _____
Type of Well Water Table Observation Well <input checked="" type="checkbox"/> 11 Piezometer <input type="checkbox"/> 12	Section Location SW 1/4 of SE 1/4 of Section <u>12</u> T <u>31</u> N, R <u>6</u> <input checked="" type="checkbox"/> E <input type="checkbox"/> W	Date Well Installed <u>03/05/90</u> m m d d y y
Distance Well Is From Waste/Source Boundary _____ ft.	Location of Well Relative to Waste/Source <input type="checkbox"/> Upgradient <input type="checkbox"/> Sidegradient <input type="checkbox"/> Downgradient <input checked="" type="checkbox"/> Not Known	Well Installed By: (Person's Name and Firm) <u>Kevin Swanson</u> <u>Warzyn Engineering Inc.</u>
Well A Point of Enforcement Std. Application? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		

Protective pipe, top elevation _____ ft. MSL Well casing, top elevation _____ ft. MSL Ground surface elevation _____ ft. MSL Surface seal, bottom _____ ft. MSL or <u>1.0</u> ft. USCS classification of soil near screen: <input type="checkbox"/> GP <input type="checkbox"/> GM <input type="checkbox"/> GC <input type="checkbox"/> GW <input type="checkbox"/> SW <input type="checkbox"/> SP <input type="checkbox"/> SM <input type="checkbox"/> SC <input type="checkbox"/> ML <input type="checkbox"/> MH <input type="checkbox"/> CL <input type="checkbox"/> CH <input type="checkbox"/> Bedrock Sieve analysis attached? <input type="checkbox"/> Yes <input type="checkbox"/> No Drilling method used: Rotary <input type="checkbox"/> 50 Hollow Stem Auger <input checked="" type="checkbox"/> 41 Other <input type="checkbox"/> _____ Drilling fluid used: Water <input type="checkbox"/> 02 Air <input type="checkbox"/> 01 Drilling Mud <input type="checkbox"/> 03 None <input checked="" type="checkbox"/> 99 Drilling additives used? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Describe _____ Source of water (attach analysis): _____	1. Cap and lock? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No 2. Protective cover pipe: a. Inside diameter: <u>4.0</u> in. b. Length: <u>5.0</u> ft. c. Material: Steel <input checked="" type="checkbox"/> 04 Other <input type="checkbox"/> _____ d. Additional protection? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, describe: _____ 3. Surface seal: Bentonite <input type="checkbox"/> 30 Concrete <input type="checkbox"/> 01 Soil <input checked="" type="checkbox"/> _____ Other <input type="checkbox"/> _____ 4. Material between well casing and protective pipe: Bentonite <input type="checkbox"/> 30 Annular space seal <input checked="" type="checkbox"/> _____ Other <input type="checkbox"/> _____ 5. Annular space seal: Granular Bentonite <input checked="" type="checkbox"/> 33 _____ Lbs/gal mud weight . . . Bentonite-sand slurry <input type="checkbox"/> 35 _____ Lbs/gal mud weight Bentonite slurry <input type="checkbox"/> 31 _____ % Bentonite Bentonite-cement grout <input type="checkbox"/> 50 <u>1.3</u> Ft ³ volume added for any of the above How installed: Tremie <input type="checkbox"/> 01 Tremie pumped <input type="checkbox"/> 02 Gravity <input checked="" type="checkbox"/> 08 6. Bentonite seal: Bentonite granules <input type="checkbox"/> 33 <input type="checkbox"/> 1/4 in. <input type="checkbox"/> 3/8 in. <input type="checkbox"/> 1/2 in. Bentonite pellets <input type="checkbox"/> 32 NA Other <input type="checkbox"/> _____ 7. Fine sand material: Manufacturer, product name and mesh size NA Volume added _____ ft ³ 8. Filter pack material: Manufacturer, product name and mesh size <u>#20 Red Flint Sand, Eau Claire</u> Volume added <u>1.2</u> ft ³ 9. Well casing: Flush threaded PVC schedule 40 <input checked="" type="checkbox"/> 23 Flush threaded PVC schedule 80 <input type="checkbox"/> 24 Other <input type="checkbox"/> _____ 10. Screen material: <u>SCH 40 PVC</u> Screen type: Factory cut <input checked="" type="checkbox"/> 11 Continuous slot <input type="checkbox"/> 01 Other <input type="checkbox"/> _____ Manufacturer <u>Northern Air</u> Slot size: <u>0.01</u> in. Sighted length: <u>4.7</u> ft. 11. Backfill material (below filter pack): None <input checked="" type="checkbox"/> _____ Other <input type="checkbox"/> _____
Bentonite seal, top _____ ft. MSL or <u>1.0</u> ft. Fine sand, top _____ ft. MSL or _____ ft. Filter pack, top _____ ft. MSL or <u>3.8</u> ft. Well screen, top _____ ft. MSL or <u>4.9</u> ft. Well screen, bottom _____ ft. MSL or <u>9.4</u> ft. Filter pack, bottom _____ ft. MSL or <u>8.6</u> ft. Borehole, bottom _____ ft. MSL or <u>9.4</u> ft. Borehole, diameter <u>8.25</u> in. O.D. well casing <u>2.30</u> in. I.D. well casing <u>2.00</u> in.	

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

Use complete and return both sides of this form as required by chs. 144, 147 and 160, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with ch. 144, Wis. Stats., failure to file this form may result in a forfeiture of not less than \$10, nor more than \$5,000 for each day of violation. In accordance with ch. 147, Wis. Stats., failure to file this form may result in a forfeiture of not more than \$10,000 for each day of violation.

APPENDIX C

Soil Analytical Results Benzene, Ethylbenzene, Toluene, Xylenes Polynuclear Aromatic Hydrocarbons

Note:

The Field designation of the well installed on the southwest corner of the tank are as W5 has been changed to W1. The change was prompted by the inability to install the other proposed wells using auger drilling methods.

The designation of lab sample number 695-001 as W5 should be amended to read W1.



REPORT OF ANALYSIS

WARZYN ENGINEERING, INC.
 BARB CHRISTEL
 1 SCIENCE COURT
 UNIVERSITY RESEARCH PARK
 MADISON, WI 53711

SAMPLE NUMBER: 00301561

DATE ENTERED: 03/08/90

REPORT PRINTED: 04/05/90

SOIL: WEI # 695-001; ^{WI (KDS)} W5, SS4; 3/5/90
 PROJECT NO. 15151.00695

PURCHASE ORDER NUMBER: PROJ. NO. 15151

POLYNUCLEAR AROMATIC HYDROCARBONS-HPLC

COMPOUND NAME	MCG/KG
NAPHTHALENE	LESS THAN 100
ACENAPHTHYLENE	LESS THAN 200
ACENAPHTHENE	LESS THAN 100
FLUORENE	LESS THAN 20
PHENANTHRENE	LESS THAN 10
ANTHRACENE	LESS THAN 10
FLUORANTHENE	2.9
PYRENE	LESS THAN 10
BENZO(a)ANTHRACENE	1.1
CHRYSENE	LESS THAN 10
BENZO (b) FLOUORANTHENE	LESS THAN 2
BENZO(k)FLUORANTHENE	LESS THAN 1
BENZO(a)PYRENE	1.1
DIBENZO(a,h)ANTHRACENE	LESS THAN 2
BENZO(g,h,i)PERYLENE	LESS THAN 2
INDENO(1,2,3-cd)PYRENE	LESS THAN 5

METHOD REFERENCES

POLYNUCLEAR AROMATIC HYDROCARBONS-HPLC
 DETERMINATION OF POLYNUCLEAR AROMATIC HYDROCARBONS BY HIGH PERFORMANCE LIQUID
 CHROMATOGRAPHY.



REPORT OF ANALYSIS

WARZYN ENGINEERING, INC.
BARB CHRISTEL
1 SCIENCE COURT
UNIVERSITY RESEARCH PARK
MADISON, WI 53711

SAMPLE NUMBER: 00301562

DATE ENTERED: 03/08/90

REPORT PRINTED: 04/05/90

SOIL: WEI # 695-002; B1A,SS1; 3/5/90
PROJECT NO. 15151.00695

PURCHASE ORDER NUMBER: PROJ. NO. 15151

POLYNUCLEAR AROMATIC HYDROCARBONS-HPLC

<u>COMPOUND NAME</u>	<u>MCG/KG</u>
NAPHTHALENE	LESS THAN 100
ACENAPHTHYLENE	LESS THAN 200
ACENAPHTHENE	LESS THAN 100
FLUORENE	LESS THAN 20
PHENANTHRENE	LESS THAN 10
ANTHRACENE	LESS THAN 10
FLUORANTHENE	LESS THAN 2
PYRENE	LESS THAN 10
BENZO(a)ANTHRACENE	LESS THAN 1
CHRYSENE	LESS THAN 10
BENZO (b) FLOUORANTHENE	LESS THAN 2
BENZO(k)FLUORANTHENE	LESS THAN 1
BENZO(a)PYRENE	LESS THAN 1
DIBENZO(a, h)ANTHRACENE	LESS THAN 2
BENZO(g, h, i)PERYLENE	LESS THAN 2
INDENO(1, 2, 3-cd)PYRENE	LESS THAN 5

METHOD REFERENCES

POLYNUCLEAR AROMATIC HYDROCARBONS-HPLC
DETERMINATION OF POLYNUCLEAR AROMATIC HYDROCARBONS BY HIGH PERFORMANCE LIQUID
CHROMATOGRAPHY.



REPORT OF ANALYSIS

WARZYN ENGINEERING, INC.
 BARB CHRISTEL
 1 SCIENCE COURT
 UNIVERSITY RESEARCH PARK
 MADISON, WI 53711

SAMPLE NUMBER: 00301563

DATE ENTERED: 03/08/90

REPORT PRINTED: 04/05/90

SOIL: WEI # 695-003; B2,SS1; 3/5/90
 PROJECT NO. 15151.00695

PURCHASE ORDER NUMBER: PROJ. NO. 15151

POLYNUCLEAR AROMATIC HYDROCARBONS-HPLC

<u>COMPOUND NAME</u>	<u>MCG/KG</u>
NAPHTHALENE	LESS THAN 1000
ACENAPHTHYLENE	LESS THAN 2000
ACENAPHTHENE	LESS THAN 1000
FLUORENE	LESS THAN 200
PHENANTHRENE	110
ANTHRACENE	LESS THAN 100
FLUORANTHENE	88
PYRENE	LESS THAN 100
BENZO(a)ANTHRACENE	38
CHRYSENE	LESS THAN 100
BENZO (b) FLOUORANTHENE	LESS THAN 20
BENZO(k)FLUORANTHENE	LESS THAN 10
BENZO(a)PYRENE	LESS THAN 10
DIBENZO(a,h)ANTHRACENE	LESS THAN 20
BENZO(g,h,i)PERYLENE	LESS THAN 20
INDENO(1,2,3-cd)PYRENE	LESS THAN 50

METHOD REFERENCES

POLYNUCLEAR AROMATIC HYDROCARBONS-HPLC
 DETERMINATION OF POLYNUCLEAR AROMATIC HYDROCARBONS BY HIGH PERFORMANCE LIQUID
 CHROMATOGRAPHY.



HAZLETON
 LABORATORIES AMERICA, INC.
 3301 KINSMAN BLVD., P.O. BOX 7545
 MADISON, WI 53707 USA

REPORT OF ANALYSIS

WARZYN ENGINEERING, INC.
 BARB CHRISTEL
 1 SCIENCE COURT
 UNIVERSITY RESEARCH PARK
 MADISON, WI 53711

SAMPLE NUMBER: 00301564

DATE ENTERED: 03/08/90

REPORT PRINTED: 04/05/90

SOIL: WEI # 695-004; B2,SS2; 3/5/90
 PROJECT NO. 15151.00695

PURCHASE ORDER NUMBER: PROJ. NO. 15151

POLYNUCLEAR AROMATIC HYDROCARBONS-HPLC

<u>COMPOUND NAME</u>	<u>MCG/KG</u>
NAPHTHALENE	LESS THAN 100
ACENAPHTHYLENE	LESS THAN 200
ACENAPHTHENE	LESS THAN 100
FLUORENE	LESS THAN 20
PHENANTHRENE	27
ANTHRACENE	LESS THAN 10
FLUORANTHENE	22
PYRENE	LESS THAN 10
BENZO(a)ANTHRACENE	1.5
CHRYSENE	LESS THAN 10
BENZO (b) FLOUORANTHENE	5.2
BENZO(k)FLUORANTHENE	2.8
BENZO(a)PYRENE	3.4
DIBENZO(a,h)ANTHRACENE	LESS THAN 2
BENZO(g,h,i)PERYLENE	3.5
INDENO(1,2,3-cd)PYRENE	LESS THAN 5

METHOD REFERENCES

POLYNUCLEAR AROMATIC HYDROCARBONS-HPLC
 DETERMINATION OF POLYNUCLEAR AROMATIC HYDROCARBONS BY HIGH PERFORMANCE LIQUID
 CHROMATOGRAPHY.



HAZLETON
 LABORATORIES AMERICA, INC.
 3301 KINSMAN BLVD., P.O. BOX 7545
 MADISON, WI 53707 USA

REPORT OF ANALYSIS

WARZYN ENGINEERING, INC.
 BARB CRISTEL
 1 SCIENCE COURT
 UNIVERSITY RESEARCH PARK
 MADISON, WI 53711

SAMPLE NUMBER: 00301565

DATE ENTERED: 03/08/90

REPORT PRINTED: 04/05/90

SOIL: WEI # 695-005; B2,SS3; 3/5/90
 PROJECT NO. 15151.00695

PURCHASE ORDER NUMBER: PROJ. NO. 15151

POLYNUCLEAR AROMATIC HYDROCARBONS-HPLC

<u>COMPOUND NAME</u>	<u>MCG/KG</u>
NAPHTHALENE	LESS THAN 100
ACENAPHTHYLENE	LESS THAN 200
ACENAPHTHENE	LESS THAN 100
FLUORENE	400
PHENANTHRENE	330
ANTHRACENE	190
FLUORANTHENE	120
PYRENE	640
BENZO(a)ANTHRACENE	56
CHRYSENE	LESS THAN 50
BENZO (b) FLOUORANTHENE	LESS THAN 2
BENZO(k)FLUORANTHENE	LESS THAN 1
BENZO(a)PYRENE	LESS THAN 1
DIBENZO(a,h)ANTHRACENE	LESS THAN 2
BENZO(g,h,i)PERYLENE	LESS THAN 2
INDENO(1,2,3-cd)PYRENE	LESS THAN 5

METHOD REFERENCES

POLYNUCLEAR AROMATIC HYDROCARBONS-HPLC
 DETERMINATION OF POLYNUCLEAR AROMATIC HYDROCARBONS BY HIGH PERFORMANCE LIQUID
 CHROMATOGRAPHY.



HAZLETON
 LABORATORIES AMERICA, INC.
 3301 KINSMAN BLVD., P.O. BOX 7545
 MADISON, WI 53707 USA

REPORT OF ANALYSIS

WARZYN ENGINEERING, INC.
 BARB CHRISTEL
 1 SCIENCE COURT
 UNIVERSITY RESEARCH PARK
 MADISON, WI 53711

SAMPLE NUMBER: 00301566

DATE ENTERED: 03/08/90

REPORT PRINTED: 04/05/90

SOIL: WEI # 695-006; B3,SS1; 3/5/90
 PROJECT NO. 15151.00695

PURCHASE ORDER NUMBER: PROJ. NO. 15151

POLYNUCLEAR AROMATIC HYDROCARBONS-HPLC

<u>COMPOUND NAME</u>	<u>MCG/KG</u>
NAPHTHALENE	LESS THAN 400
ACENAPHTHYLENE	LESS THAN 800
ACENAPHTHENE	LESS THAN 400
FLUORENE	LESS THAN 80
PHENANTHRENE	LESS THAN 40
ANTHRACENE	LESS THAN 40
FLUORANTHENE	LESS THAN 8
PYRENE	LESS THAN 40
BENZO(a)ANTHRACENE	LESS THAN 4
CHRYSENE	LESS THAN 40
BENZO (b) FLOUORANTHENE	LESS THAN 8
BENZO(k)FLUORANTHENE	LESS THAN 4
BENZO(a)PYRENE	LESS THAN 4
DIBENZO(a, h)ANTHRACENE	LESS THAN 8
BENZO(g, h, i)PERYLENE	LESS THAN 8
INDENO(1,2,3-cd)PYRENE	LESS THAN 20

METHOD REFERENCES

POLYNUCLEAR AROMATIC HYDROCARBONS-HPLC
 DETERMINATION OF POLYNUCLEAR AROMATIC HYDROCARBONS BY HIGH PERFORMANCE LIQUID
 CHROMATOGRAPHY.



HAZLETON

LABORATORIES AMERICA, INC.
3301 KINSMAN BLVD., P.O. BOX 7545
MADISON, WI 53707 USA

REPORT OF ANALYSIS

WARZYN ENGINEERING, INC.
BARB CRISTEL
1 SCIENCE COURT
UNIVERSITY RESEARCH PARK
MADISON, WI 53711

SAMPLE NUMBER: 00301567

DATE ENTERED: 03/08/90

REPORT PRINTED: 04/05/90

SOIL: WEI # 695-007; B3,SS2; 3/5/90
PROJECT NO. 15151.00695

PURCHASE ORDER NUMBER: PROJ. NO. 15151

POLYNUCLEAR AROMATIC HYDROCARBONS-HPLC

<u>COMPOUND NAME</u>	<u>MCG/KG</u>
NAPHTHALENE	1300
ACENAPHTHYLENE	LESS THAN 400
ACENAPHTHENE	900
FLUORENE	90
PHENANTHRENE	130
ANTHRACENE	LESS THAN 20
FLUORANTHENE	LESS THAN 10
PYRENE	LESS THAN 20
BENZO(a)ANTHRACENE	2.1
CHRYSENE	LESS THAN 20
BENZO (b) FLOUORANTHENE	LESS THAN 4
BENZO(k)FLUORANTHENE	LESS THAN 2
BENZO(a)PYRENE	LESS THAN 2
DIBENZO(a, h)ANTHRACENE	LESS THAN 4
BENZO(g, h, i)PERYLENE	LESS THAN 4
INDENO(1,2,3-cd)PYRENE	LESS THAN 10

METHOD REFERENCES

POLYNUCLEAR AROMATIC HYDROCARBONS-HPLC
DETERMINATION OF POLYNUCLEAR AROMATIC HYDROCARBONS BY HIGH PERFORMANCE LIQUID
CHROMATOGRAPHY.



HAZLETON
 LABORATORIES AMERICA, INC.
 3301 KINSMAN BLVD., P.O. BOX 7545
 MADISON, WI 53707 USA

REPORT OF ANALYSIS

WARZYN ENGINEERING, INC.
 BARB CHRISTEL
 1 SCIENCE COURT
 UNIVERSITY RESEARCH PARK
 MADISON, WI 53711

SAMPLE NUMBER: 00301568

DATE ENTERED: 03/08/90

REPORT PRINTED: 04/05/90

SOIL: WEI # 695-008; B4,SS1; 3/5/90
 PROJECT NO. 15151.00695

PURCHASE ORDER NUMBER: PROJ. NO. 15151

POLYNUCLEAR AROMATIC HYDROCARBONS-HPLC

<u>COMPOUND NAME</u>	<u>MCG/KG</u>
NAPHTHALENE	LESS THAN 400
ACENAPHTHYLENE	LESS THAN 800
ACENAPHTHENE	LESS THAN 400
FLUORENE	LESS THAN 80
PHENANTHRENE	LESS THAN 40
ANTHRACENE	LESS THAN 40
FLUORANTHENE	LESS THAN 8
PYRENE	LESS THAN 40
BENZO(a)ANTHRACENE	6.7
CHRYSENE	LESS THAN 40
BENZO (b) FLOUORANTHENE	19
BENZO(k)FLUORANTHENE	9.9
BENZO(a)PYRENE	14
DIBENZO(a,h)ANTHRACENE	LESS THAN 8
BENZO(g,h,i)PERYLENE	LESS THAN 8
INDENO(1,2,3-cd)PYRENE	LESS THAN 20

METHOD REFERENCES

POLYNUCLEAR AROMATIC HYDROCARBONS-HPLC
 DETERMINATION OF POLYNUCLEAR AROMATIC HYDROCARBONS BY HIGH PERFORMANCE LIQUID
 CHROMATOGRAPHY.



HAZLETON
LABORATORIES AMERICA, INC.
3301 KINSMAN BLVD., P.O. BOX 7545
MADISON, WI 53707 USA

REPORT OF ANALYSIS

WARZYN ENGINEERING, INC.
BARB CHRISTEL
1 SCIENCE COURT
UNIVERSITY RESEARCH PARK
MADISON, WI 53711

SAMPLE NUMBER: 00301569

DATE ENTERED: 03/08/90

REPORT PRINTED: 04/05/90

SOIL: WEI # 695-009; B4,SS2; 3/5/90
PROJECT NO. 15151.00695

PURCHASE ORDER NUMBER: PROJ. NO. 15151

POLYNUCLEAR AROMATIC HYDROCARBONS-HPLC

<u>COMPOUND NAME</u>	<u>MCG/KG</u>
NAPHTHALENE	LESS THAN 400
ACENAPHTHYLENE	LESS THAN 800
ACENAPHTHENE	LESS THAN 400
FLUORENE	LESS THAN 80
PHENANTHRENE	LESS THAN 40
ANTHRACENE	LESS THAN 40
FLUORANTHENE	LESS THAN 8
PYRENE	LESS THAN 40
BENZO(a)ANTHRACENE	5.7
CHRYSENE	LESS THAN 40
BENZO (b) FLOUORANTHENE	16
BENZO(k)FLUORANTHENE	6.2
BENZO(a)PYRENE	8.8
DIBENZO(a,h)ANTHRACENE	LESS THAN 8
BENZO(g,h,i)PERYLENE	LESS THAN 8
INDENO(1,2,3-cd)PYRENE	LESS THAN 20

METHOD REFERENCES

POLYNUCLEAR AROMATIC HYDROCARBONS-HPLC
DETERMINATION OF POLYNUCLEAR AROMATIC HYDROCARBONS BY HIGH PERFORMANCE LIQUID
CHROMATOGRAPHY.



HAZLETON
 LABORATORIES AMERICA, INC.
 3301 KINSMAN BLVD., P.O. BOX 7545
 MADISON, WI 53707 USA

REPORT OF ANALYSIS

WARZYN ENGINEERING, INC.
 BARB CHRISTEL
 1 SCIENCE COURT
 UNIVERSITY RESEARCH PARK
 MADISON, WI 53711

SAMPLE NUMBER: 00301570

DATE ENTERED: 03/08/90

REPORT PRINTED: 04/05/90

SOIL: WEI # 695-010; B5,SS2; 3/5/90
 PROJECT NO. 15151.00695

PURCHASE ORDER NUMBER: PROJ. NO. 15151

POLYNUCLEAR AROMATIC HYDROCARBONS-HPLC

COMPOUND NAME	MCG/KG
NAPHTHALENE	LESS THAN 200
ACENAPHTHYLENE	LESS THAN 400
ACENAPHTHENE	LESS THAN 200
FLUORENE	LESS THAN 40
PHENANTHRENE	56
ANTHRACENE	LESS THAN 20
FLUORANTHENE	62
PYRENE	LESS THAN 20
BENZO(a)ANTHRACENE	26
CHRYSENE	38
BENZO (b) FLOUORANTHENE	51
BENZO(k)FLUORANTHENE	25
BENZO(a)PYRENE	37
DIBENZO(a,h)ANTHRACENE	LESS THAN 4
BENZO(g,h,i)PERYLENE	23
INDENO(1,2,3-cd)PYRENE	24

METHOD REFERENCES

POLYNUCLEAR AROMATIC HYDROCARBONS-HPLC
 DETERMINATION OF POLYNUCLEAR AROMATIC HYDROCARBONS BY HIGH PERFORMANCE LIQUID
 CHROMATOGRAPHY.



HAZLETON
 LABORATORIES AMERICA, INC.
 3301 KINSMAN BLVD., P.O. BOX 7545
 MADISON, WI 53707 USA

REPORT OF ANALYSIS

WARZYN ENGINEERING, INC.
 BARB CHRISTEL
 1 SCIENCE COURT
 UNIVERSITY RESEARCH PARK
 MADISON, WI 53711

SAMPLE NUMBER: 00301571

DATE ENTERED: 03/08/90

REPORT PRINTED: 04/05/90

SOIL: WEI # 695-011; B5,SS5; 3/6/90
 PROJECT NO. 15151.00695

PURCHASE ORDER NUMBER: PROJ. NO. 15151

POLYNUCLEAR AROMATIC HYDROCARBONS-HPLC

COMPOUND NAME	MCG/KG
NAPHTHALENE	LESS THAN 100
ACENAPHTHYLENE	LESS THAN 200
ACENAPHTHENE	LESS THAN 100
FLUORENE	LESS THAN 20
PHENANTHRENE	LESS THAN 10
ANTHRACENE	LESS THAN 10
FLUORANTHENE	3.6
PYRENE	LESS THAN 20
BENZO(a)ANTHRACENE	1.4
CHRYSENE	LESS THAN 10
BENZO(b) FLOUORANTHENE	2.6
BENZO(k)FLUORANTHENE	1.3
BENZO(a)PYRENE	1.8
DIBENZO(a,h)ANTHRACENE	LESS THAN 2
BENZO(g,h,i)PERYLENE	2.2
INDENO(1,2,3-cd)PYRENE	LESS THAN 5

METHOD REFERENCES

POLYNUCLEAR AROMATIC HYDROCARBONS-HPLC
 DETERMINATION OF POLYNUCLEAR AROMATIC HYDROCARBONS BY HIGH PERFORMANCE LIQUID
 CHROMATOGRAPHY.



HAZLETON
 LABORATORIES AMERICA, INC.
 3301 KINSMAN BLVD., P.O. BOX 7545
 MADISON, WI 53707 USA

REPORT OF ANALYSIS

WARZYN ENGINEERING, INC.
 BARB CRISTEL
 1 SCIENCE COURT
 UNIVERSITY RESEARCH PARK
 MADISON, WI 53711

SAMPLE NUMBER: 00301572

DATE ENTERED: 03/08/90

REPORT PRINTED: 04/05/90

SOIL: WEI # 695-012; B6,SS2; 3/6/90
 PROJECT NO. 15151.00695

PURCHASE ORDER NUMBER: PROJ. NO. 15151

POLYNUCLEAR AROMATIC HYDROCARBONS-HPLC

<u>COMPOUND NAME</u>	<u>MCG/KG</u>
NAPHTHALENE	LESS THAN 200
ACENAPHTHYLENE	LESS THAN 400
ACENAPHTHENE	LESS THAN 200
FLUORENE	LESS THAN 40
PHENANTHRENE	LESS THAN 20
ANTHRACENE	LESS THAN 20
FLUORANTHENE	8.6
PYRENE	LESS THAN 20
BENZO(a)ANTHRACENE	2.8
CHRYSENE	LESS THAN 20
BENZO (b) FLOURANTHENE	4.3
BENZO(k)FLUORANTHENE	LESS THAN 2
BENZO(a)PYRENE	3.2
DIBENZO(a,h)ANTHRACENE	LESS THAN 4
BENZO(g,h,i)PERYLENE	LESS THAN 4
INDENO(1,2,3-cd)PYRENE	LESS THAN 10

METHOD REFERENCES

POLYNUCLEAR AROMATIC HYDROCARBONS-HPLC
 DETERMINATION OF POLYNUCLEAR AROMATIC HYDROCARBONS BY HIGH PERFORMANCE LIQUID
 CHROMATOGRAPHY.



HAZLETON
 LABORATORIES AMERICA, INC.
 3301 KINSMAN BLVD., P.O. BOX 7545
 MADISON, WI 53707 USA

REPORT OF ANALYSIS

WARZYN ENGINEERING, INC.
 BARB CHRISTEL
 1 SCIENCE COURT
 UNIVERSITY RESEARCH PARK
 MADISON, WI 53711

SAMPLE NUMBER: 00301573
 DATE ENTERED: 03/08/90
 REPORT PRINTED: 04/05/90

SOIL: WEI # 695-013; B7,SS2; 3/6/90
 PROJECT NO. 15151.00695

PURCHASE ORDER NUMBER: PROJ. NO. 15151

POLYNUCLEAR AROMATIC HYDROCARBONS-HPLC

COMPOUND NAME	MCG/KG
NAPHTHALENE	LESS THAN 200
ACENAPHTHYLENE	LESS THAN 400
ACENAPHTHENE	LESS THAN 200
FLUORENE	LESS THAN 40
PHENANTHRENE	22
ANTHRACENE	LESS THAN 20
FLUORANTHENE	16
PYRENE	LESS THAN 20
BENZO(a)ANTHRACENE	6.6
CHRYSENE	LESS THAN 20
BENZO (b) FLOUORANTHENE	11
BENZO(k)FLUORANTHENE	4.9
BENZO(a)PYRENE	8.2
DIBENZO(a,h)ANTHRACENE	LESS THAN 4
BENZO(g,h,i)PERYLENE	11
INDENO(1,2,3-cd)PYRENE	LESS THAN 10

METHOD REFERENCES

POLYNUCLEAR AROMATIC HYDROCARBONS-HPLC
 DETERMINATION OF POLYNUCLEAR AROMATIC HYDROCARBONS BY HIGH PERFORMANCE LIQUID
 CHROMATOGRAPHY.



HAZLETON
 LABORATORIES AMERICA, INC.
 3301 KINSMAN BLVD., P.O. BOX 7545
 MADISON, WI 53707 USA

REPORT OF ANALYSIS

WARZYN ENGINEERING, INC.
 BARB CHRISTEL
 1 SCIENCE COURT
 UNIVERSITY RESEARCH PARK
 MADISON, WI 53711

SAMPLE NUMBER: 00301574
 DATE ENTERED: 03/08/90
 REPORT PRINTED: 04/05/90

SOIL: WEI # 695-014; B8,SS3; 3/6/90
 PROJECT NO. 15151.00695

PURCHASE ORDER NUMBER: PROJ. NO. 15151

POLYNUCLEAR AROMATIC HYDROCARBONS-HPLC

<u>COMPOUND NAME</u>	<u>MCG/KG</u>
NAPHTHALENE	LESS THAN 100
ACENAPHTHYLENE	LESS THAN 200
ACENAPHTHENE	LESS THAN 100
FLUORENE	LESS THAN 20
PHENANTHRENE	LESS THAN 10
ANTHRACENE	LESS THAN 10
FLUORANTHENE	9.0
PYRENE	LESS THAN 10
BENZO(a)ANTHRACENE	3.7
CHRYSENE	LESS THAN 10
BENZO (b) FLOURANTHENE	4.6
BENZO(k)FLUORANTHENE	2.5
BENZO(a)PYRENE	4.2
DIBENZO(a,h)ANTHRACENE	LESS THAN 2
BENZO(g,h,i)PERYLENE	4.6
INDENO(1,2,3-cd)PYRENE	LESS THAN 5

METHOD REFERENCES

POLYNUCLEAR AROMATIC HYDROCARBONS-HPLC
 DETERMINATION OF POLYNUCLEAR AROMATIC HYDROCARBONS BY HIGH PERFORMANCE LIQUID.
 CHROMATOGRAPHY.



REPORT OF ANALYSIS

WARZYN ENGINEERING, INC.
BARB CRISTEL
1 SCIENCE COURT
UNIVERSITY RESEARCH PARK
MADISON, WI 53711

SAMPLE NUMBER: 00301575

DATE ENTERED: 03/08/90

REPORT PRINTED: 04/05/90

SOIL: WEI # 695-015; B9,SS2; 3/6/90
PROJECT NO. 15151.00695

PURCHASE ORDER NUMBER: PROJ. NO. 15151

POLYNUCLEAR AROMATIC HYDROCARBONS-HPLC

COMPOUND NAME	MCG/KG
NAPHTHALENE	LESS THAN 200
ACENAPHTHYLENE	LESS THAN 400
ACENAPHTHENE	LESS THAN 200
FLUORENE	LESS THAN 40
PHENANTHRENE	LESS THAN 20
ANTHRACENE	LESS THAN 20
FLUORANTHENE	12
PYRENE	LESS THAN 20
BENZO(a)ANTHRACENE	4.0
CHRYSENE	LESS THAN 20
BENZO (b) FLOUORANTHENE	9.6
BENZO(k)FLUORANTHENE	4.1
BENZO(a)PYRENE	7.6
DIBENZO(a, h)ANTHRACENE	LESS THAN 4
BENZO(g, h, i)PERYLENE	18
INDENO(1,2,3-cd)PYRENE	11

METHOD REFERENCES

POLYNUCLEAR AROMATIC HYDROCARBONS-HPLC
DETERMINATION OF POLYNUCLEAR AROMATIC HYDROCARBONS BY HIGH PERFORMANCE LIQUID
CHROMATOGRAPHY.

REPORT OF ANALYSIS

WARZYN ENGINEERING, INC.
BARB CHRISTEL
1 SCIENCE COURT
UNIVERSITY RESEARCH PARK
MADISON, WI 53711

SAMPLE NUMBER: 00301576

DATE ENTERED: 03/08/90

REPORT PRINTED: 04/05/90

SOIL: WEI # 695-018; B3,SS2 DUP; 3/5/90
PROJECT NO. 15151.00695

PURCHASE ORDER NUMBER: PROJ. NO. 15151

POLYNUCLEAR AROMATIC HYDROCARBONS-HPLC

<u>COMPOUND NAME</u>	<u>MCG/KG</u>
NAPHTHALENE	330
ACENAPHTHYLENE	LESS THAN 400
ACENAPHTHENE	LESS THAN 200
FLUORENE	LESS THAN 40
PHENANTHRENE	93
ANTHRACENE	LESS THAN 20
FLUORANTHENE	LESS THAN 4
PYRENE	LESS THAN 20
BENZO(a)ANTHRACENE	LESS THAN 2
CHRYSENE	LESS THAN 20
BENZO (b) FLOUORANTHENE	LESS THAN 4
BENZO(k)FLUORANTHENE	LESS THAN 2
BENZO(a)PYRENE	LESS THAN 2
DIBENZO(a,h)ANTHRACENE	LESS THAN 4
BENZO(g,h,i)PERYLENE	LESS THAN 4
INDENO(1,2,3-cd)PYRENE	LESS THAN 10

METHOD REFERENCES

POLYNUCLEAR AROMATIC HYDROCARBONS-HPLC
DETERMINATION OF POLYNUCLEAR AROMATIC HYDROCARBONS BY HIGH PERFORMANCE LIQUID
CHROMATOGRAPHY.



CHAIN OF CUSTODY RECORD

Unive P... Madison, Wisconsin (608) 275...

PROJ. NO. 15151		PROJECT NAME Mobil Merrill				NO. OF CONTAINERS	REMARKS Soil															
LOCATION: Merrill WI		SAMPLERS: (Signature) Kevin Swansa																				
LAB NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION								TPH	BEXT	PAH							
045-012	3/4/90	10am	X		B6, SS2	3	✓	✓	✓													Hold for Analytical request
-013	3/4/90	11am			B7, SS2	3	✓	✓	✓													
-014	3/6/90	11:30			B8, SS3	3	✓	✓	✓													
-015	3/6/90	2pm			B9, SS2	3	✓	✓	✓													
-016	3/6/90	3pm	✓		B10, SS1	2	✓	✓														
999-22	3/5/90	3pm	X		B2, SS2 Dup	1																No Analysis
Relinquished by: (Signature) Kevin Swansa			Date / Time 3/7/90 5pm		Received by: (Signature)			Relinquished by: (Signature)			Date / Time		Received by: (Signature)									
Relinquished by: (Signature)			Date / Time		Received by: (Signature)			Relinquished by: (Signature)			Date / Time		Received by: (Signature)									
Relinquished by: (Signature)			Date / Time		Received for Laboratory by: (Signature) Kari-Ann Lind					Date / Time 3/8/90 11:00 am												
Remarks						PROJECT MANAGER: Doug Bach																



CHAIN OF CUSTODY RECORD

U.S. P.O.
Madison, Wisconsin
(608) 273-...

PROJ. NO. 15151		PROJECT NAME Mobil Merrill				NO. OF CONTAINERS	REMARKS Soil				
LOCATION: Merrill WI		SAMPLERS: (Signature) Kevin Swanson									
LAB NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION						TPH
695-001	3/5/90	1pm	X		W5, SS 4	3	✓	✓	✓	Hold for analytical request	
-002	"	2pm			B1A, SS1	3	✓	✓	✓		
-003	"	3pm			B2, SS1	3	✓	✓	✓		
-004	"	3pm			B2, SS 2	3/8/90 20543	✓	✓	✓		
-005	"	3pm			B2, SS3	3	✓	✓	✓		
-006	"	4pm			B3, SS1	3	✓	✓	✓		
-007	"	4pm			B3, SS2	3/8/90 20543	✓	✓	✓		
-008	"	5pm			B4, SS1	3	✓	✓	✓		
-009	"	5pm			B4, SS2	3	✓	✓	✓		
-017	"	5pm			B4, SS3	2	✓	✓			
-010	"	6pm			B5, SS2	3	✓	✓	✓		
-011	3/6/90	9am	✓		B5, SS5	3	✓	✓	✓		
-018	3/5/90	4pm	X		B3, SS2 Disp	2	✓	✓	✓		
Relinquished by: (Signature) Kevin Swanson		Date / Time 3/7/90 5:00pm		Received by: (Signature)		Relinquished by: (Signature)		Date / Time		Received by: (Signature)	
Relinquished by: (Signature)		Date / Time		Received by: (Signature)		Relinquished by: (Signature)		Date / Time		Received by: (Signature)	
Relinquished by: (Signature)		Date / Time		Received for Laboratory by: (Signature) Kari Ann Link				Date / Time 3/8/90 11:00 am			
Remarks						PROJECT MANAGER: Doug Bach					



VOLATILE ORGANIC COMPOUND RESULTS
WI LAB CERTIFICATION ID#: 113138300
PROJECT: MOBIL
LOCATION: MERRILL, WISCONSIN
C#: 15151.00

PAGE 1 OF 9
CK'D: BSC APP'D: D/E
DATE ISSUED: 3/27/90 ^D BSC

METHOD REFERENCE: SW846, "TEST METHODS FOR EVALUATING SOLID WASTE", SEPTEMBER, 1986.
METHOD 8020 WITH MODIFICATIONS.

BMQL - DETECTED, VALUE BELOW METHOD QUANTITATION LIMIT.
X = ANALYZED, BUT NOT DETECTED.

(1) SAMPLE CHROMATOGRAM CONTAINS UNIDENTIFIED COMPOUNDS.

COMPOUND =====	REPORTABLE DETECTION LIMIT (UG/KG AS REC'D) =====	695-001 WI #5, SS4 (KDS) 03/05/90 =====	695-002 B1A, SS1 03/05/90 =====
BENZENE	25.0	X	X
ETHYL BENZENE	50.0	X	X
TOLUENE	50.0	X	X
XYLENES	50.0	X	X



VOLATILE ORGANIC COMPOUND RESULTS
WI LAB CERTIFICATION ID#: 113138300
PROJECT: MOBIL
LOCATION: MERRILL, WISCONSIN
C#: 15151.00

PAGE 2 OF 9
CK'D: BJC APP'D: D/E
DATE ISSUED: 3/27/90

METHOD REFERENCE: SW846, "TEST METHODS FOR EVALUATING
SOLID WASTE", SEPTEMBER, 1986.
METHOD 8020 WITH MODIFICATIONS.

BMQL - DETECTED, VALUE BELOW METHOD QUANTITATION LIMIT.
X = ANALYZED, BUT NOT DETECTED.

(1) SAMPLE CHROMATOGRAM CONTAINS UNIDENTIFIED COMPOUNDS.

COMPOUND =====	REPORTABLE DETECTION LIMIT (UG/KG AS REC'D) =====	695-003(1) B2,SS1 03/05/90 =====	695-004(1) B2,SS2 03/05/90 =====
BENZENE	25.0	X	X
ETHYL BENZENE	50.0	125	X
TOLUENE	50.0	X	X
XYLENES	50.0	307	58.8



VOLATILE ORGANIC COMPOUND RESULTS
WI LAB CERTIFICATION ID#: 113138300
PROJECT: MOBIL
LOCATION: MERRILL, WISCONSIN
C#: 15151.00

PAGE 3 OF 9
CK'D: BJC APP'D: D/E
DATE ISSUED: 3/27/90

METHOD REFERENCE: SW846, "TEST METHODS FOR EVALUATING
SOLID WASTE", SEPTEMBER, 1986.
METHOD 8020 WITH MODIFICATIONS.

BMQL - DETECTED, VALUE BELOW METHOD QUANTITATION LIMIT.
X = ANALYZED, BUT NOT DETECTED.

(1) SAMPLE CHROMATOGRAM CONTAINS UNIDENTIFIED COMPOUNDS.

COMPOUND =====	REPORTABLE DETECTION LIMIT (UG/KG AS REC'D) =====	695-005(1) B2, SS3 03/05/90 =====	695-006(1) B3, SS1 03/05/90 =====
BENZENE	25.0	X	X
ETHYL BENZENE	50.0	276	325
TOLUENE	50.0	X	X
XYLENES	50.0	523	15000



VOLATILE ORGANIC COMPOUND RESULTS
WI LAB CERTIFICATION ID#: 113138300
PROJECT: MOBIL
LOCATION: MERRILL, WISCONSIN
C#: 15151.00

PAGE 4 OF 9
CK'D: BJC APP'D: DJS
DATE ISSUED: 3/27/90

METHOD REFERENCE: SW846, "TEST METHODS FOR EVALUATING
SOLID WASTE", SEPTEMBER, 1986.
METHOD 8020 WITH MODIFICATIONS.

BMQL - DETECTED, VALUE BELOW METHOD QUANTITATION LIMIT.
X = ANALYZED, BUT NOT DETECTED.

(1) SAMPLE CHROMATOGRAM CONTAINS UNIDENTIFIED COMPOUNDS.

COMPOUND =====	REPORTABLE DETECTION LIMIT (UG/KG AS REC'D) =====	695-007(1) B3,SS2 03/05/90 =====	695-008(1) B4,SS1 03/05/90 =====
BENZENE	25.0	X	X
ETHYL BENZENE	50.0	269	X
TOLUENE	50.0	X	X
XYLENES	50.0	1550	81.7



VOLATILE ORGANIC COMPOUND RESULTS
WI LAB CERTIFICATION ID#: 113138300
PROJECT: MOBIL
LOCATION: MERRILL, WISCONSIN
C#: 15151.00

PAGE 5 OF 9
CK'D: BJC APP'D: D/E
DATE ISSUED: 3/27/90

METHOD REFERENCE: SW846, "TEST METHODS FOR EVALUATING
SOLID WASTE", SEPTEMBER, 1986.
METHOD 8020 WITH MODIFICATIONS.

BMQL - DETECTED, VALUE BELOW METHOD QUANTITATION LIMIT.
X = ANALYZED, BUT NOT DETECTED.

(1) SAMPLE CHROMATOGRAM CONTAINS UNIDENTIFIED COMPOUNDS.

COMPOUND =====	REPORTABLE DETECTION LIMIT (UG/KG AS REC'D) =====	695-009(1) B4, SS2 03/05/90 =====	695-010(1) B5, SS2 03/05/90 =====
BENZENE	25.0	X	X
ETHYL BENZENE	50.0	X	X
TOLUENE	50.0	X	X
XYLENES	50.0	108	X



VOLATILE ORGANIC COMPOUND RESULTS
WI LAB CERTIFICATION ID#: 113138300
PROJECT: MOBIL
LOCATION: MERRILL, WISCONSIN
C#: 15151.00

PAGE 6 OF 9
CK'D: BIC APP'D: DJE
DATE ISSUED: 3/27/90

METHOD REFERENCE: SW846, "TEST METHODS FOR EVALUATING
SOLID WASTE", SEPTEMBER, 1986.
METHOD 8020 WITH MODIFICATIONS.

BMQL - DETECTED, VALUE BELOW METHOD QUANTITATION LIMIT.
X = ANALYZED, BUT NOT DETECTED.

(1) SAMPLE CHROMATOGRAM CONTAINS UNIDENTIFIED COMPOUNDS.

COMPOUND =====	REPORTABLE DETECTION LIMIT (UG/KG AS REC'D) =====	695-011(1) B5, SS5 03/06/90 =====	695-012(1) B6, SS2 03/06/90 =====
BENZENE	25.0	X	X
ETHYL BENZENE	50.0	X	X
TOLUENE	50.0	X	X
XYLENES	50.0	X	182



VOLATILE ORGANIC COMPOUND RESULTS
WI LAB CERTIFICATION ID#: 113138300
PROJECT: MOBIL
LOCATION: MERRILL, WISCONSIN
C#: 15151.00

PAGE 7 OF 9
CK'D: BJC APP'D: D/E
DATE ISSUED: 3/27/90

METHOD REFERENCE: SW846, "TEST METHODS FOR EVALUATING
SOLID WASTE", SEPTEMBER, 1986.
METHOD 8020 WITH MODIFICATIONS.

BMQL - DETECTED, VALUE BELOW METHOD QUANTITATION LIMIT.
X = ANALYZED, BUT NOT DETECTED.

(1) SAMPLE CHROMATOGRAM CONTAINS UNIDENTIFIED COMPOUNDS.

COMPOUND =====	REPORTABLE DETECTION LIMIT (UG/KG AS REC'D) =====	695-013(1) B7,SS2 03/06/90 =====	695-014(1) B8,SS3 03/06/90 =====
BENZENE	25.0	X	X
ETHYL BENZENE	50.0	X	X
TOLUENE	50.0	X	BMQL
XYLENES	50.0	X	BMQL



VOLATILE ORGANIC COMPOUND RESULTS
WI LAB CERTIFICATION ID#: 113138300
PROJECT: MOBIL
LOCATION: MERRILL, WISCONSIN
C#: 15151.00

PAGE 8 OF 9
CK'D: BJC APP'D: D/E
DATE ISSUED: 3/27/90

METHOD REFERENCE: SW846, "TEST METHODS FOR EVALUATING
SOLID WASTE", SEPTEMBER, 1986.
METHOD 8020 WITH MODIFICATIONS.

BMQL - DETECTED, VALUE BELOW METHOD QUANTITATION LIMIT.
X = ANALYZED, BUT NOT DETECTED.

(1) SAMPLE CHROMATOGRAM CONTAINS UNIDENTIFIED COMPOUNDS.

COMPOUND =====	REPORTABLE DETECTION LIMIT (UG/KG AS REC'D) =====	695-015(1) B9, SS2 03/06/90 =====	695-016(1) B10, SS1 03/06/90 =====
BENZENE	25.0	X	X
ETHYL BENZENE	50.0	X	X
TOLUENE	50.0	X	X
XYLENES	50.0	X	X



VOLATILE ORGANIC COMPOUND RESULTS
WI LAB CERTIFICATION ID#: 113138300
PROJECT: MOBIL
LOCATION: MERRILL, WISCONSIN
C#: 15151.00

PAGE 9 OF 9
CK'D: BJC APP'D: P/E
DATE ISSUED: 3/27/90

METHOD REFERENCE: SW846, "TEST METHODS FOR EVALUATING SOLID WASTE", SEPTEMBER, 1986. METHOD 8020 WITH MODIFICATIONS.

BMQL - DETECTED, VALUE BELOW METHOD QUANTITATION LIMIT.
X = ANALYZED, BUT NOT DETECTED.

- (1) SAMPLE CHROMATOGRAM CONTAINS UNIDENTIFIED COMPOUNDS.
- (2) ELEVATED DETECTION LIMITS DUE TO INTERFERING UNIDENTIFIED COMPOUNDS.

COMPOUND =====	REPORTABLE DETECTION LIMIT (UG/KG AS REC'D) =====	695-017(1)(2) B4,SS3 03/05/90 =====
BENZENE	500	X
ETHYL BENZENE	1000	5520
TOLUENE	1000	BMQL
XYLENES	1000	44500



TOTAL PETROLEUM HYDROCARBONS
WI LAB CERTIFICATION ID#: 113138300
PROJECT: MOBIL
LOCATION: MERRILL, WISCONSIN
C#: 15151.00

PAGE 1 of 9
CK'D: BJC APP'D: DJE
DATE ISSUED: 3/27/90

METHOD
REFERENCE: SW846, "TEST METHODS FOR EVALUATING
SOLID WASTES", SEPTEMBER, 1986.
METHOD 3550.

ASTM, "ANNUAL BOOK OF ASTM STANDARDS",
1983. METHOD D-3328 WITH MODIFICATIONS.

NOTE: THE ANALYSIS OF SAMPLES FOR TOTAL PETROLEUM
HYDROCARBONS IS A SCREENING PROCEDURE.
ANALYTICAL RESULTS ARE COMPARED AND QUANTIFIED
AGAINST KNOWN REFERENCE STANDARD MIXTURES. DUE TO
VARIABLES SUCH AS DIFFERENCES IN PETROLEUM PRODUCT
FORMULATIONS, WEATHERING AND OTHER ENVIRONMENTAL
FACTORS, POSITIVE IDENTIFICATION AS ONE OF THE
TARGET HYDROCARBON MIXTURES MAY NOT BE POSSIBLE.
THE VALUES REPORTED ARE TENTATIVELY IDENTIFIED
WITH ESTIMATED CONCENTRATIONS.

COMPOUND =====	REPORTABLE DETECTION LIMIT (MG/KG AS REC'D) =====	695-001 w.l. #5, SS4 (KOS) 03/05/90	695-002 B1A, SS1 03/05/90	695-010 B5, SS2 03/05/90
TOTAL HYDROCARBON AS:				
GASOLINE	5.00	X	X	X
KEROSENE	5.00	X	X	X
#2 FUEL OIL	5.00	X	X	X(2)
#6 FUEL OIL	20.0	X	X	X



TOTAL PETROLEUM HYDROCARBONS
WI LAB CERTIFICATION ID#: 113138300
PROJECT: MOBIL
LOCATION: MERRILL, WISCONSIN
C#: 15151.00

PAGE 2 OF 9
CK'D: BJC APP'D: DJE
DATE ISSUED: 3/27/90

METHOD
REFERENCE: SW846, "TEST METHODS FOR EVALUATING
SOLID WASTES", SEPTEMBER, 1986.
METHOD 3550.

ASTM, "ANNUAL BOOK OF ASTM STANDARDS",
1983. METHOD D-3328 WITH MODIFICATIONS.

NOTE: THE ANALYSIS OF SAMPLES FOR TOTAL PETROLEUM
HYDROCARBONS IS A SCREENING PROCEDURE.
ANALYTICAL RESULTS ARE COMPARED AND QUANTIFIED
AGAINST KNOWN REFERENCE STANDARD MIXTURES. DUE TO
VARIABLES SUCH AS DIFFERENCES IN PETROLEUM PRODUCT
FORMULATIONS, WEATHERING AND OTHER ENVIRONMENTAL
FACTORS, POSITIVE IDENTIFICATION AS ONE OF THE
TARGET HYDROCARBON MIXTURES MAY NOT BE POSSIBLE.
THE VALUES REPORTED ARE TENTATIVELY IDENTIFIED
WITH ESTIMATED CONCENTRATIONS.

COMPOUND =====	REPORTABLE DETECTION LIMIT (MG/KG AS REC'D) =====	695-003 B2,SS1 03/05/90 =====	695-007 B3,SS2 03/05/90 =====
TOTAL HYDROCARBON AS:			
GASOLINE	625	X	X
KEROSENE	625	X	X(1)
#2 FUEL OIL	625	5250	X
#6 FUEL OIL	2500	X	X



TOTAL PETROLEUM HYDROCARBONS
WI LAB CERTIFICATION ID#: 113138300
PROJECT: MOBIL
LOCATION: MERRILL, WISCONSIN
C#: 15151.00

PAGE 3 OF 9
CK'D: *BIC* APP'D: *D/S*
DATE ISSUED: 3/27/90

METHOD
REFERENCE: SW846, "TEST METHODS FOR EVALUATING
SOLID WASTES", SEPTEMBER, 1986.
METHOD 3550.

ASTM, "ANNUAL BOOK OF ASTM STANDARDS",
1983. METHOD D-3328 WITH MODIFICATIONS.

NOTE: THE ANALYSIS OF SAMPLES FOR TOTAL PETROLEUM
HYDROCARBONS IS A SCREENING PROCEDURE.
ANALYTICAL RESULTS ARE COMPARED AND QUANTIFIED
AGAINST KNOWN REFERENCE STANDARD MIXTURES. DUE TO
VARIABLES SUCH AS DIFFERENCES IN PETROLEUM PRODUCT
FORMULATIONS, WEATHERING AND OTHER ENVIRONMENTAL
FACTORS, POSITIVE IDENTIFICATION AS ONE OF THE
TARGET HYDROCARBON MIXTURES MAY NOT BE POSSIBLE.
THE VALUES REPORTED ARE TENTATIVELY IDENTIFIED
WITH ESTIMATED CONCENTRATIONS.

COMPOUND =====	REPORTABLE DETECTION LIMIT (MG/KG AS REC'D) =====	695-004	695-005
		B2,SS2 03/05/90	B2,SS3 03/05/90
=====			
TOTAL HYDROCARBON AS:			
GASOLINE	250	X	X
KEROSENE	250	X	X
#2 FUEL OIL	250	7340	6460
#6 FUEL OIL	1000	X	X



TOTAL PETROLEUM HYDROCARBONS
WI LAB CERTIFICATION ID#: 113138300
PROJECT: MOBIL
LOCATION: MERRILL, WISCONSIN
C#: 15151.00

PAGE 4 OF 9
CK'D: BJC APP'D: D/E
DATE ISSUED: 3/27/90

METHOD
REFERENCE: SW846, "TEST METHODS FOR EVALUATING
SOLID WASTES", SEPTEMBER, 1986.
METHOD 3550.

ASTM, "ANNUAL BOOK OF ASTM STANDARDS",
1983. METHOD D-3328 WITH MODIFICATIONS.

NOTE: THE ANALYSIS OF SAMPLES FOR TOTAL PETROLEUM
HYDROCARBONS IS A SCREENING PROCEDURE.
ANALYTICAL RESULTS ARE COMPARED AND QUANTIFIED
AGAINST KNOWN REFERENCE STANDARD MIXTURES. DUE TO
VARIABLES SUCH AS DIFFERENCES IN PETROLEUM PRODUCT
FORMULATIONS, WEATHERING AND OTHER ENVIRONMENTAL
FACTORS, POSITIVE IDENTIFICATION AS ONE OF THE
TARGET HYDROCARBON MIXTURES MAY NOT BE POSSIBLE.
THE VALUES REPORTED ARE TENTATIVELY IDENTIFIED
WITH ESTIMATED CONCENTRATIONS.

COMPOUND =====	REPORTABLE DETECTION LIMIT (MG/KG AS REC'D) =====	695-006 B3, SS1 03/05/90 =====	695-009 B4, SS2 03/05/90 =====
TOTAL HYDROCARBON AS:			
GASOLINE	125	X	X
KEROSENE	125	X(1)	X
#2 FUEL OIL	125	X	363
#6 FUEL OIL	500	X	X



TOTAL PETROLEUM HYDROCARBONS
WI LAB CERTIFICATION ID#: 113138300
PROJECT: MOBIL
LOCATION: MERRILL, WISCONSIN
C#: 15151.00

PAGE 5 OF 9
CK'D: BJC APP'D: P/E
DATE ISSUED: 3/27/90

METHOD
REFERENCE: SW846, "TEST METHODS FOR EVALUATING
SOLID WASTES", SEPTEMBER, 1986.
METHOD 3550.

ASTM, "ANNUAL BOOK OF ASTM STANDARDS",
1983. METHOD D-3328 WITH MODIFICATIONS.

NOTE: THE ANALYSIS OF SAMPLES FOR TOTAL PETROLEUM
HYDROCARBONS IS A SCREENING PROCEDURE.
ANALYTICAL RESULTS ARE COMPARED AND QUANTIFIED
AGAINST KNOWN REFERENCE STANDARD MIXTURES. DUE TO
VARIABLES SUCH AS DIFFERENCES IN PETROLEUM PRODUCT
FORMULATIONS, WEATHERING AND OTHER ENVIRONMENTAL
FACTORS, POSITIVE IDENTIFICATION AS ONE OF THE
TARGET HYDROCARBON MIXTURES MAY NOT BE POSSIBLE.
THE VALUES REPORTED ARE TENTATIVELY IDENTIFIED
WITH ESTIMATED CONCENTRATIONS.

COMPOUND =====	REPORTABLE DETECTION LIMIT (MG/KG AS REC'D) =====	695-008 B4, SS1 03/05/90 =====
TOTAL HYDROCARBON AS:		
GASOLINE	25.0	X
KEROSENE	25.0	X
#2 FUEL OIL	25.0	X(2)
#6 FUEL OIL	100	X



TOTAL PETROLEUM HYDROCARBONS
WI LAB CERTIFICATION ID#: 113138300
PROJECT: MOBIL
LOCATION: MERRILL, WISCONSIN
C#: 15151.00

PAGE 6 OF 9
CK'D: BJC APP'D: DJF
DATE ISSUED: 3/27/90

METHOD
REFERENCE: SW846, "TEST METHODS FOR EVALUATING
SOLID WASTES", SEPTEMBER, 1986.
METHOD 3550.

ASTM, "ANNUAL BOOK OF ASTM STANDARDS",
1983. METHOD D-3328 WITH MODIFICATIONS.

NOTE: THE ANALYSIS OF SAMPLES FOR TOTAL PETROLEUM
HYDROCARBONS IS A SCREENING PROCEDURE.
ANALYTICAL RESULTS ARE COMPARED AND QUANTIFIED
AGAINST KNOWN REFERENCE STANDARD MIXTURES. DUE TO
VARIABLES SUCH AS DIFFERENCES IN PETROLEUM PRODUCT
FORMULATIONS, WEATHERING AND OTHER ENVIRONMENTAL
FACTORS, POSITIVE IDENTIFICATION AS ONE OF THE
TARGET HYDROCARBON MIXTURES MAY NOT BE POSSIBLE.
THE VALUES REPORTED ARE TENTATIVELY IDENTIFIED
WITH ESTIMATED CONCENTRATIONS.

COMPOUND =====	REPORTABLE DETECTION LIMIT (MG/KG AS REC'D) =====	695-011	695-012	695-013
		B5,SS5 03/06/90	B6,SS2 03/06/90	B7,SS2 03/06/90
=====				
TOTAL HYDROCARBON AS:				
GASOLINE	5.00	X	X	X
KEROSENE	5.00	X	X	X
#2 FUEL OIL	5.00	X	X	X
#6 FUEL OIL	20.0	X	X	X



TOTAL PETROLEUM HYDROCARBONS
WI LAB CERTIFICATION ID#: 113138300
PROJECT: MOBIL
LOCATION: MERRILL, WISCONSIN
C#: 15151.00

PAGE 7 OF 9
CK'D: BJC APP'D: D/E
DATE ISSUED: 3/27/90

METHOD
REFERENCE: SW846, "TEST METHODS FOR EVALUATING
SOLID WASTES", SEPTEMBER, 1986.
METHOD 3550.

ASTM, "ANNUAL BOOK OF ASTM STANDARDS",
1983. METHOD D-3328 WITH MODIFICATIONS.

NOTE: THE ANALYSIS OF SAMPLES FOR TOTAL PETROLEUM
HYDROCARBONS IS A SCREENING PROCEDURE.
ANALYTICAL RESULTS ARE COMPARED AND QUANTIFIED
AGAINST KNOWN REFERENCE STANDARD MIXTURES. DUE TO
VARIABLES SUCH AS DIFFERENCES IN PETROLEUM PRODUCT
FORMULATIONS, WEATHERING AND OTHER ENVIRONMENTAL
FACTORS, POSITIVE IDENTIFICATION AS ONE OF THE
TARGET HYDROCARBON MIXTURES MAY NOT BE POSSIBLE.
THE VALUES REPORTED ARE TENTATIVELY IDENTIFIED
WITH ESTIMATED CONCENTRATIONS.

COMPOUND	REPORTABLE DETECTION LIMIT (MG/KG AS REC'D)	695-014 B8,SS3 03/06/90	695-015 B9,SS2 03/06/90	695-016 B10,SS1 03/06/90
TOTAL HYDROCARBON AS:				
GASOLINE	5.00	X	X	X
KEROSENE	5.00	X	X	X
#2 FUEL OIL	5.00	X	X(2)	X(2)
#6 FUEL OIL	20.0	X	X	X(3)



TOTAL PETROLEUM HYDROCARBONS
WI LAB CERTIFICATION ID#: 113138300
PROJECT: MOBIL
LOCATION: MERRILL, WISCONSIN
C#: 15151.00

PAGE 8 OF 9
CK'D: BJC APP'D: P/E
DATE ISSUED: 3/27/90

METHOD

REFERENCE: SW846, "TEST METHODS FOR EVALUATING SOLID WASTES", SEPTEMBER, 1986. METHOD 3550.

ASTM, "ANNUAL BOOK OF ASTM STANDARDS", 1983. METHOD D-3328 WITH MODIFICATIONS.

NOTE: THE ANALYSIS OF SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS IS A SCREENING PROCEDURE. ANALYTICAL RESULTS ARE COMPARED AND QUANTIFIED AGAINST KNOWN REFERENCE STANDARD MIXTURES. DUE TO VARIABLES SUCH AS DIFFERENCES IN PETROLEUM PRODUCT FORMULATIONS, WEATHERING AND OTHER ENVIRONMENTAL FACTORS, POSITIVE IDENTIFICATION AS ONE OF THE TARGET HYDROCARBON MIXTURES MAY NOT BE POSSIBLE. THE VALUES REPORTED ARE TENTATIVELY IDENTIFIED WITH ESTIMATED CONCENTRATIONS.

COMPOUND =====	REPORTABLE DETECTION LIMIT (MG/KG AS REC'D) =====	695-017	695-018
		B4, SS3 03/05/90	B3, SS2 DUP 03/05/90 =====
TOTAL HYDROCARBON AS:			
GASOLINE	500	X	X
KEROSENE	500	X	X(1)
#2 FUEL OIL	500	4820	X
#6 FUEL OIL	2000	X	X

TOTAL PETROLEUM HYDROCARBONS
WI LAB CERTIFICATION ID#: 113138300
PROJECT: MOBIL
LOCATION: MERRILL, WISCONSIN
C#: 15151.00

PAGE 9 OF 9
CK'D: BJC APP'D: DAE
DATE ISSUED: 3/27/90

X = ANALYZED, BUT NOT DETECTED.
BMQL = DETECTED, VALUE BELOW METHOD QUANTITATION LIMIT.

- (1) SAMPLES 695-006, 695-007, 695-018 CONTAIN WHAT APPEARS TO BE A HYDROCARBON FRACTION ELUTING OFF OF THE GAS CHROMATOGRAPH WITH A RETENTION TIME IN THE RANGE OF KEROSENE. THESE UNKNOWN DO NOT MATCH ANY OF THE REFERENCE STANDARDS. ESTIMATED CONCENTRATIONS OF THE UNKNOWN CALCULATED AGAINST A KEROSENE REFERENCE STANDARD ARE 627, 4040 AND 6280 MG/KG, RESPECTIVELY.
- (2) SAMPLES 695-008, 695-010, 695-015 AND 695-016 CONTAIN WHAT APPEARS TO BE A HYDROCARBON FRACTION ELUTING OFF OF THE GAS CHROMATOGRAPH WITH A RETENTION TIME IN THE RANGE OF #2 FUEL OIL. THESE UNKNOWN DO NOT MATCH ANY OF THE REFERENCE STANDARDS. ESTIMATED CONCENTRATIONS OF THE UNKNOWN CALCULATED AGAINST A #2 FUEL OIL REFERENCE STANDARD ARE 122, 5.36, 14.2 AND 11.2 MG/KG, RESPECTIVELY.
- (3) SAMPLE 695-016 CONTAINS WHAT APPEARS TO BE A HYDROCARBON FRACTION ELUTING OFF OF THE GAS CHROMATOGRAPH WITH A RETENTION TIME IN THE RANGE OF #6 FUEL OIL. THIS UNKNOWN DOES NOT MATCH ANY OF THE REFERENCE STANDARDS. AN ESTIMATED CONCENTRATION OF THE UNKNOWN CALCULATED AGAINST A #6 FUEL OIL REFERENCE STANDARD IS 130 MG/KG.