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PHASE II SITE INVESTIGATION REPORT
NAVISTAR INTERNATIONAL TRANSPORTATION CORPORATION/ BURLINGTON NORTHERN RAILROAD/ IOWA INTERSTATE RAILROAD PROPERTIES
ROCK ISLAND, ILLINOIS

April 1995

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April 15, 1995

Geraghty & Miller, Inc. is submitting this report to Navistar International Transportation Corporation and Burlington Northern Railroad for work performed at the Navistar International Transportation Company, Burlington Northern Railroad, Iowa Interstate Railroad, and Quad City Industrial Center properties located along the Sylvan Slough in Rock Island, Illinois. This report was prepared in conformance with Geraghty & Miller's strict quality assurance/quality control procedures to verify that the report meets industry standards in terms of the methods used and the information presented. If you have any questions or comments concerning this report, please contact one of the individuals listed below.

Respectfully submitted,

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CONTENTS

Page

1.0 INTRODUCTION 1-1

2.0 SITE DESCRIPTION 2-1

2.1 PHYSICAL SETTING 2-1
2.2 SURROUNDING LAND USE 2-2
2.3 REGIONAL GEOLOGICAL SETTING 2-3

3.0 PHASE II SOIL AND GROUNDWATER STUDY 3-1

3.1 SUBSURFACE SOIL INVESTIGATION 3-2

3.1.1 Field Sampling Methodology 3-3
3.1.2 Site-Specific Geology 3-4
3.1.3 Results of Subsurface Soil Analyses 3-6

3.2 GROUNDWATER INVESTIGATION 3-8

3.2.1 Well Construction and Groundwater Sampling Procedures 3-8
3.2.2 Free Product Thickness and Volume Estimate 3-10
3.2.3 Site-Specific Hydrogeology 3-12
3.2.4 Results of Groundwater Analyses 3-14

4.0 REMOVAL ACTION OBJECTIVES AND TECHNOLOGY SCREENING 4-1

4.1 REMEDIAL ACTION OBJECTIVES 4-1
4.2 TECHNOLOGY SCREENING 4-1

5.0 REMOVAL ACTION ALTERNATIVES 5-1

5.1 ALTERNATIVE 1: PASSIVE RECOVERY WELL POINT SYSTEM 5-1

5.1.1 Description 5-1
5.1.2 Effectiveness 5-3
5.1.3 Implementability 5-3
5.1.4 Cost 5-4

5.2 ALTERNATIVE 2: RECOVERY WELLS/TREATMENT 5-4

5.2.1 Description 5-4
5.2.2 Effectiveness 5-5
5.2.3 Implementability 5-7
5.2.4 Cost 5-8

CONTENTS (continued)

Page

5.3 ALTERNATIVE 3: RECOVERY DRAIN/TREATMENT 5-8

5.3.1 Description 5-8
5.3.2 Effectiveness 5-9
5.3.3 Implementability 5-10
5.3.4 Cost 5-11

5.4 ALTERNATIVE 4: SLURRY WALL/PRODUCT RECOVERY 5-11
5.4.1 Description 5-11
5.4.2 Effectiveness 5-13
5.4.3 Implementability 5-13
5.4.4 Cost 5-14

6.0 COMPARISON OF ALTERNATIVES 6-1

6.1 EFFECTIVENESS 6-1
6.2 IMPLEMENTABILITY 6-2
6.3 COST 6-3

7.0 RECOMMENDED ALTERNATIVE 7-1

8.0 REFERENCES 8-1

TABLES

3-1. Subsurface Soil Data, Navistar/BNR/IIR Site, Rock Island, Illinois.

3-2. July 1994 Groundwater Elevation Data, Navistar/BNR/IIR Site, Rock Island, Illinois.

3-3. September 1994 Groundwater Elevation Data, Navistar/BNR/IIR Site, Rock Island, Illinois.

3-4. Groundwater Data, Navistar/BNR/IIR Site, Rock Island, Illinois.

4-1. Removal Technology Screening, Navistar/BNR/IIR Site, Rock Island, Illinois.

5-1. Cost Estimate for Alternative 1, Passive Recovery Well Point System, Navistar/BNR/IIR Site, Rock Island, Illinois.

TABLES (continued)

5-2. Cost Estimate for Alternative 2, Conventional Recovery Wells, Navistar/BNR/IIR Site, Rock Island, Illinois.

5-3. Cost Estimate for Alternative 3, Product Recovery Trench and Treatment System, Navistar/BNR/IIR Site, Rock Island, Illinois.

5-4. Cost Estimate for Alternative 4, Slurry Wall with Product Recovery, Navistar/BNR/IIR Site, Rock Island, Illinois.

5-5. Cost Estimate Summary, Navistar/BNR/IIR Site, Rock Island, Illinois.

FIGURES

2-1. Site Location Map, Navistar/BNR/IIR Site, Rock Island, Illinois.

2-2. Site Layout/Surrounding Land Use Map, Navistar/BNR/IIR Site, Rock Island, Illinois.

3-1. Monitoring Well Location Map, Navistar/BNR/IIR Site, Rock Island, Illinois.

3-2. Geologic Cross-Section Location Map, Navistar/BNR/IIR Site, Rock Island, Illinois.

3-3. Geologic Cross-Sections, Navistar/BNR/IIR Site, Rock Island, Illinois.

3-4. Top of Shale/Clay Unit Elevation Contour Map, Navistar/BNR/IIR Site, Rock Island, Illinois.

3-5. Estimated Areal Extent of Residual and Free Product, Navistar/BNR/IIR Site, Rock Island, Illinois.

3-6. Water-Table Elevation Map for July 1994, Navistar/BNR/IIR Site, Rock Island, Illinois.

3-7. Water-Table Elevation Map for September 1994, Navistar/BNR/IIR Site, Rock Island, Illinois.

3-8. Saturated Thickness Above Shale/Clay Unit, Navistar/BNR/IIR Site, Rock Island, Illinois.

FIGURES (continued)

5-1. Alternative 1 Passive Recovery Well Point System, Navistar/BNR/IIR Site, Rock Island, Illinois.

5-2. Alternative 2 Recovery Wells/Treatment, Navistar/BNR/IIR Site, Rock Island, Illinois.

5-3. Groundwater Treatment System Process Flow Diagram, Navistar/BNR/IIR Site, Rock Island, Illinois.

5-4. Alternative 3 Subsurface Recovery Drain System, Navistar/BNR/IIR Site, Rock Island, Illinois.

5-5. Alternative 4 Slurry Wall/Product Recovery, Navistar/BNR/IIR Site, Rock Island, Illinois.

APPENDICES

A. Soil Boring Logs.

B. Phase II Site Investigation Subsurface Soil Data.

C. Well Development Logs.

D. Groundwater Sampling Logs.

E. Phase II Site Investigation Groundwater Data.

F. Engineering Analysis.

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1.0 INTRODUCTION

Geraghty & Miller, Inc. was retained by the Navistar International Transportation Corporation (Navistar) and Burlington Northern Railroad (BNR) to perform the Phase II soil and groundwater investigation activities described in the approved June 1994 Phase II Site Investigation Work Plan (Work Plan) (Geraghty & Miller 1994a). This Phase II Site Investigation Report has been prepared to describe the activities that were conducted, summarize and interpret the additional soil and groundwater data collected as part of the investigation, and develop an appropriate removal alternative to stop the discharge of oil to the Sylvan Slough. This report has been prepared to fulfill the obligations of Navistar and BNR under the terms of the United States Environmental Protection Agency (USEPA) Region V Administrative Order by Consent (Order) for removal actions associated with the Navistar, BNR, and Iowa Interstate Railroad, Ltd. (IIR) properties (Navistar/BNR/IIR site).

The purpose of the Phase II Site Investigation is twofold. The first objective of the Phase II Site Investigation is to collect and interpret additional hydrogeological data required to adequately define the nature and extent of petroleum hydrocarbon constituents found in the soil and groundwater at the Navistar/BNR/IIR site, as indicated in the Order. The second objective of the Phase II Site Investigation is to develop appropriate removal action goals and a removal action alternative to stop the discharge of oil to the Sylvan Slough. The removal action goals and removal action alternative are based on the nature and extent of impacted soils and groundwater defined by both the Initial and Phase II Site Investigations.

This Phase II Site Investigation Report is organized into four sections of text, each of which is briefly described below. Geraghty & Miller has also included several tables, figures,

and appendices in the Phase II Site Investigation Report that support the discussions presented in the main body of the text. A brief description of each section of the text is presented below.

Section 1.0, *Introduction*, provides the introduction to, and states the intended purpose of this report.

Section 2.0, *Site Description*, presents a description of the location of the Navistar/BNR/IIR site.

Section 3.0, *Phase II Soil and Groundwater Study*, presents a summary of the Phase II soil and groundwater investigation that was performed. This section also presents a description of the geological and hydrogeological setting and a profile of the impacted soil and groundwater found at the Navistar/BNR/IIR site using the data generated from both the Initial and Phase II Site Investigations.

Section 4.0, *Removal Action Objectives and Technology Screening*, presents an overview of the removal action objectives that have been developed for the Navistar/BNR/IIR site. This section also provides a screening and evaluation of potential removal alternatives that may be used to stop the discharge of oil to the Sylvan Slough.

Section 5.0, *Removal Action Alternatives*, presents an analysis of the effectiveness, implementability, and cost of the removal alternatives that have been developed for the Navistar/BNR/IIR site.

Section 6.0, *Comparison of Alternatives*, presents a comparative analysis of the removal action alternatives evaluated in the *Removal Action Alternatives* section of this report. This section also identifies the relative advantages and disadvantages of each alternative.

Section 7.0, *Recommended Alternative*, describes the removal action alternative that Geraghty & Miller recommends for implementation at the Navistar/BNR/IIR site.

2.0 SITE DESCRIPTION

This section of the report consists of a review of the physical setting, current land use, and geological setting of the Navistar/BNR/IIR site. The information presented in this section was obtained by Geraghty & Miller during previous site inspections, conversations with Navistar and BNR representatives, previous site investigation reports, regulatory agency files, and from published information. A detailed discussion of the site history and previous site investigations performed prior to the Initial Site Investigation is provided in the March 1994 Initial Site Investigation Report prepared by Geraghty & Miller (Geraghty & Miller 1994b).

2.1 PHYSICAL SETTING

The Navistar/BNR/IIR site is located immediately along the Sylvan Slough between the IIR bridge and the former International Harvester Farmall (Farmall) manufacturing facility in the City of Rock Island, Rock Island County, Illinois (Figure 2-1). The Sylvan Slough is a tributary of the Mississippi River that flows between the Navistar/BNR/IIR site and the Rock Island Arsenal. More specifically, the Navistar/BNR/IIR site and the western third of the former Farmall facility is located at Township 18 North, Range 2 West, Section 36 while the remaining two-thirds of the former Farmall facility is located at Township 18 North, Range 1 West, Section 31 (USGS 1991).

The former Farmall facility occupied an 80-acre tract of land, 20 acres of which are currently owned by Navistar. The portion of the former Farmall property that is currently owned by Navistar consists of a linear tract of land located along the Sylvan Slough that extends from the eastern property boundary at 46th Street (the boundary between the Cities of Rock Island and Moline) and the IIR Bridge. The Navistar-owned portion of the former Farmall property consists primarily of the roadway along the north side of the former Farmall facility and a vacant tract of land located to the west of the former Farmall facility.

The remaining 60 acres of the former Farmall facility, most of which is occupied by the former Farmall manufacturing building, are owned by L.R. Christenson Company. The former

Farmall facility is currently known as the Quad City Industrial Center (QCIC) and is managed by the L.R. Christenson Company. The QCIC is operated as an industrial park complex that leases space to a variety of private firms. Figure 2-2 depicts the current ownership of the former Farmall property.

BNR currently owns two separate parcels of land at the Navistar/BNR/IIR site, the first 5 feet (ft) of land immediately along the Sylvan Slough and a parcel of property located immediately west of the QCIC property and south of the Navistar property. Besides the use of its railroad right-of-way for the transport of goods via railcar, the BNR property is vacant and unused. The location of the BNR property is shown on Figure 2-2.

IIR operates the parcel of land located immediately south of the BNR and QCIC properties that currently houses a railroad service yard and switching center. The IIR property is currently owned by Heartland Rail Corporation. The IIR service yard and railroad rights-of-way were formerly owned and operated by the Rock Island Railroad. Based on a review of historical aerial photographs and Sanborn Fire Insurance maps conducted by Geraghty & Miller, the Rock Island Railroad operated a roundhouse service facility from sometime before 1898 until the mid-1960s (Geraghty & Miller 1994b). Geraghty & Miller also observed aboveground oil storage tanks at the IIR property during both visual site inspections and the review of historical aerial photographs and Sanborn maps. Geraghty & Miller reviewed historical information documenting a major spill of diesel fuel from a former aboveground storage tank on the order of several tens of thousands of gallons of product during 1963 and 1964 (Geraghty & Miller 1994b). A complete description of the diesel fuel spill is provided in Geraghty & Miller's March 1994 Initial Site Investigation Report for the Navistar and BNR properties. The location of the IIR property is also shown on Figure 2-2.

2.2 SURROUNDING LAND USE

The Navistar/BNR/IIR site is located in an area of heavy industry along the Sylvan Slough. The nearest residential area is located less than ¼ mile south of 5th Avenue, the

southern property boundary of the IIR property and former Rock Island Railroad passenger facilities. The campus of Augustana College is also located within the residential area south of the Navistar/BNR/IIR site. Surrounding properties of note are also depicted in Figure 2-2.

As discussed previously, the Sylvan Slough forms the northern property boundary of the Navistar, BNR, and QCIC properties. Rock Island Arsenal Island and Sylvan Island Park are located north of the Navistar/BNR/IIR site between the Sylvan Slough and the Mississippi River. The City of Davenport, Iowa is located north of the Navistar/BNR/IIR site immediately along the northern bank of the Mississippi River.

The southern property boundary of the Navistar, BNR, and QCIC properties consists of the BNR railroad right-of-way that consists of two tracks. The IIR railroad service yard and switching center property is located immediately south of the BNR right-of-way and includes several sets of railroad tracks. The southern property boundary of the IIR property is formed by 5th Avenue, south of which is Augustana College and a residential area.

The property west of the Navistar/BNR/IIR site opposite the IIR Bridge is primarily undeveloped except for a river water pump station for the City of Rock Island that is reportedly located downstream (Pilko & Associates 1987). Properties to the west-southwest of the IIR-owned portion of the site consist primarily of light industrial and commercial facilities including, but not limited to, facilities operated by Iowa Illinois Gas & Electric and the Rock Island Metropolitan Mass Transit District. A portion of the Navistar/BNR/IIR site also includes the QCIC which is located immediately to the east. The property immediately to the east of QCIC is the inactive Midway Oil Company terminal facility, a former distributor for Exxon Oil. Other properties located east of QCIC include the City of Moline Wastewater Treatment Plant, an Iowa Illinois Electric Company Generating Station, and a John Deere manufacturing facility.

2.3 REGIONAL GEOLOGICAL SETTING

The Navistar, BNR, IIR, and QCIC properties are located on predominantly sand and gravel river deposits and man-made fill overlying either Pleistocene to recent-aged alluvium or

Devonian-aged shale and limestone. The western portion of the Navistar-owned portion of the site has approximately 15 to 20 ft of fill in-place. Prior to filling this area, it was frequently inundated by flood waters of the Sylvan Slough and Mississippi River as observed in historical aerial photographs (Geraghty & Miller 1994b).

The fill materials encountered at the Navistar/BNR/IIR site consist primarily of black sands and cinders which likely originated from the on-site foundry that was in operation until 1967 (Pilko & Associates 1989). Below the fill material is approximately 10 ft of sand and gravel deposited by the Mississippi River. The sand and gravel directly overlie the limestone and shale.

Based on the soil boring data from the Initial Site Investigation, no fill material is present at the BNR property located south of the Navistar property. The soils encountered at the BNR property consist of alluvial (river) sand and gravel deposits. As determined by soil borings advanced on-site, the average thickness of the unconsolidated sand and gravel river deposits across the BNR property is 15 ft. Limestone and shale were encountered at approximately 15 feet below land surface (ft bls) across the southern portion of the BNR property beneath the sand and gravel.

The limestone and shale encountered at the Navistar/BNR/IIR site belong to the Cedar Valley Formation of the Devonian Age. The Cedar Valley Formation consists primarily of a highly-fossiliferous, crystalline, light gray limestone that contains some fine-grained argillaceous beds, thin shaley partings, and sandstone (Willman, et.al. 1975). Near the City of Rock Island, the Cedar Valley Formation is approximately 60 ft thick and overlies the Wapsipinicon Limestone which is only exposed in the Rock Island area within the State of Illinois. The Devonian-aged Wapsipinicon Limestone with a maximum thickness of about 60 ft near the Mississippi River consists of dominantly fine-grained to lithographic, pure limestone with some argillaceous and dolomitic beds (Willman, et.al 1975). The Cedar Valley and Wapsipinicon Formations along with the underlying Silurian-aged dolomite and limestone form the Hunton Limestone Megagroup.

3.0 PHASE II SOIL AND GROUNDWATER STUDY

The primary reason why the USEPA issued an Order to Navistar, BNR, and IIR under the direction of its Enforcement and Emergency Response Branch was to stop the discharge of oil to the Sylvan Slough. A periodic oily discharge exhibiting a strong fuel oil odor has been observed as a sheen on the water surface of the Sylvan Slough and along the banks of the Sylvan Slough at a point located approximately 600 ft upstream of the IIR Bridge. Based on the results of the Initial Site Investigation, Geraghty & Miller concluded that the discharge of impacted groundwater was the most likely source of the oil seeping into Sylvan Slough (Geraghty & Miller 1994b).

The results of the Initial Site Investigation showed that a groundwater plume was evident across the Navistar and BNR properties. The contaminant plume appeared to be centered about Monitoring Wells GM-4, GM-5, GM-6, MW-6, and MW-9 where free product was evident and the highest concentrations of polynuclear aromatic hydrocarbons (PNAs) in groundwater were detected (Geraghty & Miller 1994b). The monitoring well locations sampled as part of the Initial Site Investigation are depicted on Figure 3-1. A floating product layer with thicknesses ranging from 0.03 to 3.1 ft was observed on the water table at Monitoring Wells GM-4, GM-5, MW-6, and MW-9 (Geraghty & Miller 1994b). Under normal conditions, Geraghty & Miller expected groundwater to flow from the IIR property across the BNR and Navistar properties to the north-northwest, and ultimately discharge into the Sylvan Slough. The location of the plume was consistent with Geraghty & Miller's expectations that the impacted groundwater and floating free-product layer were the primary sources of the discharge of oil to the Sylvan Slough (Geraghty & Miller 1994b).

Due to the expected direction of groundwater flow to the north-northwest, the presence of PNA contamination in the soils and groundwater at Monitoring Wells GM-1, GM-2, GM-3, and GM-4 indicated an upgradient source. The upgradient source identified by Geraghty & Miller during the Initial Site Investigation was the 1964 release of tens of thousands of gallons of diesel fuel from the former Rock Island Railroad storage tank (Geraghty & Miller 1994b). Based on the visual observations and analytical results of soil samples indicating the presence

of a hydrocarbon "smear" zone across the BNR property, the visible free product observed floating on the water table, and the documented large scale release of diesel fuel at the IIR property located immediately upgradient of the Navistar and BNR properties, Geraghty & Miller recommended that any further site characterization include the IIR property (Geraghty & Miller 1994b).

The Phase II Site Investigation was designed to expand upon the findings of the Initial Site Investigation such that the nature and extent of impacted soils and groundwater at the Navistar/BNR/IIR site could be determined. A total of 13 additional soil boring were advanced at the Navistar/BNR/IIR site and completed as monitoring wells during the Phase II Site Investigation (GM-7 through GM-19). Monitoring Wells GM-7 and GM-8 were designed to determine the eastern extent of impacted groundwater at the Navistar/BNR/IIR site. Monitoring Well GM-7 replaced Monitoring Well MW-10 which had become damaged sometime in the past. Based on visual observations made by Geraghty & Miller during the abandonment of Monitoring Well MW-10, an additional monitoring well (GM-19) was installed approximately 500 ft east of Monitoring Well GM-7 in an effort to determine the eastern extent of impacted soil and groundwater. Even though Monitoring Well GM-19 was not included as part of the approved Work Plan, the USEPA On-Scene Coordinator (OSC) concurred with the decision to install the additional monitoring well. Monitoring Wells GM-9 through GM-15 were designed to evaluate the soil and groundwater beneath the IIR property and Monitoring Wells GM-16 through GM-18 were designed to evaluate background conditions. The Phase II Site Investigation monitoring well locations are depicted on Figure 3-1.

3.1 SUBSURFACE SOIL INVESTIGATION

This section summarizes the field sampling methodology, site-specific geology, and analytical results of the subsurface soil conducted as part of the Phase II Site Investigation. An evaluation of the subsurface soil conditions at the Navistar/BNR/IIR site that incorporates the results of both the Initial and Phase II Site Investigations is also provided.

3.1.1 Field Sampling Methodology

The Phase II Site Investigation soil borings were installed with a truck-mounted drill rig using the conventional hollow-stem auger technique. Soil borings were terminated approximately 7 to 10 ft below the water table dependent upon the location of the screened monitoring well interval. Detailed discussion related to the methodology used during monitoring well construction is presented in the *Well Construction and Groundwater Sampling Methodology* section of this report. All drilling work was supervised by Geraghty & Miller and performed by Rock & Soil Drilling Corporation of St. Charles, Illinois. The Phase II Site Investigation drilling activities were conducted from Monday, July 11, 1994 to Saturday, July 16, 1994.

The soil borings were advanced using a 4¼-inch hollow-stem augers. Continuous formation samples were collected using two-inch diameter split-barrel samplers from the surface to the terminus of the boring. This sampling procedure was conducted in accordance with American Society of Testing Materials (ASTM) Standard D1586-84. Decontamination procedures were utilized to minimize the potential for cross-contamination prior to the start of drilling at the Navistar/BNR/IIR site and between borings and individual sampling locations. The soil sampling equipment was cleaned with a non-phosphate detergent and triple-rinsed with distilled water between samples. All downhole drilling equipment, including the drill rig, was steam-cleaned between boring locations.

Split-spoon formation samples from each soil boring location were logged by Geraghty & Miller from the surface to the bottom of the borehole. The boring logs include descriptions of the soil and notations on any secondary features, such as color, grain size, moisture, soil staining, and odors. Geraghty & Miller also field-screened the soil samples for the presence of volatile organic compounds (VOCs) with a photoionization detector (PID). The field screening results were recorded on the soil boring logs. Copies of the soil boring logs prepared during the Phase II Site Investigation are provided in Appendix A. To assist in the evaluation of the Navistar/BNR/IIR site geology, Geraghty & Miller has also provided the soil boring logs prepared for Monitoring Wells GM-1 through GM-6 as part of the Initial Site Investigation and

those prepared by Pilko & Associates for Monitoring Wells MW-5, MW-6, MW-7, MW-8, and MW-9 in Appendix A.

Two soil samples from each soil boring location were submitted to an outside laboratory for chemical analyses. Each soil sample was analyzed for the presence of VOCs, PNAs, and polychlorinated biphenyls (PCBs). The soil samples from each boring location that were sent to the laboratory for chemical analyses consisted of the sampling interval located immediately above the water table, and the soil sample that exhibited the highest PID reading above background levels.

3.1.2 Site-Specific Geology

Soil and bedrock information collected during the installation of the fifteen additional groundwater monitoring wells (GM-5 through GM-19) during the Phase II Investigation was used to supplement the geologic information from previous investigations. The locations of the monitoring wells at the Navistar/BNR/IIR site are depicted on Figure 3-1. In an effort to show the geology across the Navistar/BNR/IIR site, Geraghty & Miller prepared three geologic cross-sections. A map depicting the location of the three geologic cross-sections is provided in Figure 3-2. The geologic cross-sections, which are presented on Figure 3-3, were prepared based on the soils information contained on the boring logs (Appendix A) for the groundwater monitoring wells at the site.

The stratigraphy at the Navistar/BNR/IIR site varies with proximity to the Sylvan Slough. In areas adjacent to Sylvan Slough, fine to coarse sands and silty sands with gravel seams overlie a clay unit with occasional interbedded sand seams. In many areas of the site adjacent to Sylvan Slough, fill, composed primarily of black sands and cinders, is present above the native sands. Maximum fill thicknesses of 19 ft were encountered at Monitoring Wells GM-7 and MW-9. The clay unit, in areas adjacent to Sylvan Slough, is present at a minimum depth of 19 ft bls at Monitoring Well MW-6 and a maximum depth of 27 ft bls at Monitoring Well MW-9. At

several locations, the soil borings used for monitoring well installation were terminated above the clay unit, indicating that if the clay is present, it is located at a depth in excess of 27 ft bls.

South of the IIR railyard, the typical stratigraphy consists of a clay unit with occasional interbedded sand seams above a shale unit. Shale was encountered at Monitoring Wells GM-13 through GM-18, at depths ranging from 10 to 16 ft bls. The shale is fissile, black to grey in color with occasional iron stains. At the top of the shale unit, interbedded clay and shale or clays were encountered, apparently the result of weathering. At Soil Boring GM-15A and Monitoring Wells GM-16 and GM-17, the unconsolidated materials encountered above the shale consisted predominantly of stiff clay. The stiff clay was mottled, varied in color from olive green to brown to black, and contained varying amounts of interbedded sand and silt.

The stratigraphy at Monitoring Wells GM-11, GM-13, GM-14, GM-15 and GM-18 represents a transition from the outwash sand or sand and gravel deposits encountered adjacent to Sylvan Slough and the clay units encountered further to the south. Interbedded sands, silts and clays of varying thicknesses were present in the transition zone. The fine-grained deposits present in the transition zone, are of fluvial origin except for the bottom fine-grained deposit that appear to be derived from weathered shale.

An elevation contour map of the top of the shale/clay unit is depicted on Figure 3-4. As is evident from this discussion of geology of the Navistar/BNR/IIR site, the top of the shale/clay unit drops towards Sylvan Slough. The top of the shale/clay unit varies in elevation from approximately 570 ft msl at Monitoring Well GM-17, located at the southern boundary of the IIR site, to less than 540 ft msl at Monitoring Well MW-7, located immediately adjacent to Sylvan Slough.

Vadose zone or unsaturated zone soils in Monitoring Wells GM-1 through GM-6 and GM-8 through GM-12, were stained and/or exhibited a strong hydrocarbon odor. The thickness of the hydrocarbon residual varied from a few feet at Monitoring Well GM-8 to virtually the

entire vadose zone at many locations. The strong hydrocarbon odor was further substantiated by the field screening results for VOCs, which were as high as 10,000 parts per million (ppm).

3.1.3 Results of Subsurface Soil Analyses

A total of 29 soil samples were submitted to the laboratory for chemical analyses, three of which were duplicates. Two soil samples were submitted from each boring location for laboratory analyses, one sample from the interval immediately above the water table and one that exhibited the highest PID reading. The soil samples were submitted to Heritage Environmental Services, Inc. (Heritage) of Romeoville, Illinois for chemical analyses under strict chain-of-custody.

Soil samples submitted to Heritage were analyzed for VOCs using USEPA Method 8240A; PNAs using USEPA Method 8310; and PCBs using USEPA Method 8080. Table 3-1 summarizes the analytical results for the soil samples collected at the Navistar/BNR/IIR site during the Phase II Site Investigation. The complete set of analytical data for the soil samples collected during the Phase II Site Investigation is provided in Appendix B.

The results of the laboratory analyses of the soil samples collected during the Phase II Site Investigation were initially validated by Heritage in accordance with its internal quality assurance and quality control (QA/QC) practices. The results of the laboratory analyses were then further validated by Geraghty & Miller consistent with "Laboratory Data Validation Functional Guidelines for Evaluating Organics Analyses" prepared by the USEPA Data Review Work Group (USEPA 1988). Pertinent information from Heritage and the professional judgement of the validator were also used in the data validation process. A summary of the data validation performed by Geraghty & Miller for the soil samples collected during the Phase II Site Investigation is also provided in Appendix B.

Based on the results of the data validation process, the soil data are considered to be acceptable and can be used for quantitative purposes. As appropriate, data qualifiers were

placed next to individual datum on the table summarizing the results of the soil analytical data (Table 3-1) to document the quality of the analytical results. Data qualifiers assigned by Geraghty & Miller during the data validation process took precedence over the data qualifiers assigned by the laboratory.

Twelve VOCs were detected in subsurface soil samples collected during the Phase II Site Investigation. The VOCs that were detected included acetone, carbon disulfide, 1,1-dichloroethene (1,1-DCE), 1,2-dichloroethene (1,2-DCE), ethylbenzene, 4-methyl-2-pentanone, methylene chloride, methyl ethyl ketone (MEK), tetrahydrofuran, toluene, trichlorofluoromethane, and xylene. Eight of the 12 VOCs were detected in four or less soil samples collected during the Phase II Investigation. Carbon disulfide, 1,1-DCE, 1,2-DCE, and ethylbenzene were detected in only 1 of 29 samples, toluene and trichlorofluoromethane in 2 of 29 samples, xylenes in 3 of 29 samples, and MEK in 4 of 29 samples.

The four remaining VOCs, acetone, 4-methyl-2-pentanone, methylene chloride, and tetrahydrofuran, were detected more frequently. Tetrahydrofuran was detected in 10 of 29 soil samples with concentrations ranging from 20 to 300 micrograms per kilogram (μg/kg); 4-methyl-2-pentanone in 12 of 29 soil samples from 24 to an estimated value of 1,200 μg/kg; acetone in 24 of 29 soil samples from 23 to 730 μg/kg; and methylene chloride in 24 of 29 soil samples from 6.0 to 1,000 μg/kg.

PNAs were detected in 26 of the 29 soil samples collected during the Phase II Site Investigation. PNAs were not detected in the two soil samples collected from Monitoring Well GM-13 and from the soil sample collected above the water table (6 to 8 ft bls) at Monitoring Well GM-14. The most significant concentrations of PNAs were detected at those monitoring wells located downgradient of the former aboveground diesel fuel tank location, GM-9, GM-10, GM-11, and GM-12. Individual PNA constituents were consistently detected at concentrations exceeding 1,000 μg/kg in these monitoring well locations. PNA concentrations were also found at the same order of magnitude at Monitoring Well GM-14 near the surface (2 to 4 ft bls); however, PNAs were not detected at Monitoring Well GM-14 at a depth of 6 to 8 ft bls.

The remaining monitoring well locations (GM-7, GM-8, GM-15, GM-16, GM-17, GM-18, and GM-19) exhibited individual PNA concentrations on the order of 100 to 1,000 μg/kg or less. Monitoring Wells GM-7 and GM-19, which are the easternmost wells immediately along the Sylvan Slough, exhibited a minimal amount of PNAs with concentrations ranging from 2 to 62 μg/kg at GM-7 (2.4 to 12 μg/kg immediately above the water table) and 2.1 to 7.5 μg/kg at GM-19.

The soil samples collected during the Phase II Site Investigation were also analyzed for the presence of PCBs. PCBs were not detected in any of the soil samples submitted to the laboratory for analysis during the Phase II Site Investigation.

3.2 GROUNDWATER INVESTIGATION

Geraghty & Miller installed 13 additional groundwater monitoring wells at the Navistar/BNR/IIR property to supplement the existing monitoring well network. The additional 13 monitoring wells were intended to define the lateral extent of the floating layer of free product and to determine the nature and extent of impacted groundwater. Ten of the 13 new monitoring wells were placed on the IIR property (GM-9 through GM-18), two of the wells were placed on Navistar property (GM-7 and GM-19), and one was placed on BNR property (GM-8).

3.2.1 Well Construction and Groundwater Sampling Procedures

The additional 13 monitoring wells (GM-7 through GM-19) were installed at the Navistar/BNR/IIR site on Monday, July 10, 1994 through Saturday, July 16, 1994 by Rock & Soil Drilling Corporation under the direction of Geraghty & Miller. The borehole for each monitoring well was advanced using a truck-mounted drill rig equipped with continuous flight, hollow-stem augers. The screened interval for each of the monitoring wells was selected such that the well screen intersected the water-table elevation observed during well construction. Seasonal fluctuations of the water table were also considered during the placement of the screened interval. The soil borings for each monitoring well were terminated at a depth of 7

to 10 ft into the saturated zone. The field procedures used for borehole advancement, soil sampling, selection of samples for laboratory analyses, and decontamination are described in the *Subsurface Soil Investigation* section of this report (Section 3.1).

The monitoring wells were constructed with 2-inch inside diameter, flush-joint threaded, Schedule 40 polyvinyl chloride (PVC) riser pipe and 10 slot (0.01 inch), factory-cut, stainless steel, 10-foot long well screens. The monitoring wells were installed such that the well screens were 2 to 3 ft above the water-table elevation observed during well construction to account for the seasonal fluctuation of the water table.

Following the placement of the riser pipe and well screen in the borehole, a filter pack of clean, coarse-grained silica sand was placed in the annular space between the well and the borehole to a point approximately 2 ft above the top of the well screen. Bentonite pellets were then placed in the annular space above the filter pack to approximately 2 ft bls followed by a concrete seal. A protective steel casing with a locking cap designed to protect the well casing above the ground surface was then placed over each monitoring well upon completion. Flush-mounted protective casings were used for Monitoring Wells GM-7 and GM-19 due the presence of regular vehicle traffic. Detailed well construction information for Monitoring Wells GM-7 through GM-19 is included on the soil boring logs provided in Appendix A.

Following the completion of the monitoring well installation, a water-level measurement was taken for each well using an electronic water-level indicator. Each of the new monitoring well locations was then developed by evacuating 10 well volumes using a dedicated, disposable bailer. Well development for the 13 new monitoring wells was performed by Geraghty & Miller on July 15 and 16, 1994 and July 18 and 19, 1994. In addition, pH, temperature, and conductivity measurements were also obtained from water samples collected during well development. Well development continued until the pH and conductivity measurements stabilized. Well development logs are provided in Appendix C. After each new monitoring well was developed, it was allowed to equilibrate for approximately 48 hours prior to groundwater sampling.

Groundwater samples were collected from the 13 monitoring wells installed during the Phase II Site Investigation (GM-7 through GM-19) as well as the existing Navistar/BNR monitoring well network (GM-1 through GM-6, MW-5, MW-6, MW-8, and MW-9). Geraghty & Miller collected groundwater samples from Wednesday, July 20, 1994 to Saturday, July 23, 1994. To ensure that the newly installed and developed monitoring wells were allowed to equilibrate, the existing Navistar/BNR monitoring wells were sampled prior to the new monitoring wells.

Three well volumes were purged from each monitoring well prior to collecting a groundwater sample using a dedicated, disposable bailer. Groundwater samples were submitted to the laboratory for the presence of VOCs, PNAs, and PCBs. Where possible, free product samples were also collected and submitted to the laboratory for a hydrocarbon scan to identify the specific type of hydrocarbon that is present. In addition to the groundwater samples collected from the 23 monitoring wells that were sampled, Geraghty & Miller also collected three duplicate groundwater samples, three field blanks, three equipment blanks, and one trip blank for quality assurance/quality control (QA/QC) purposes. Groundwater sampling logs are provided in Appendix D.

3.2.2 Free Product Thickness and Volume Estimate

On July 20, 1994, prior to collecting groundwater samples at the Navistar/BNR/IIR site, Geraghty & Miller used an oil/water interface probe to collect a complete round of water levels and product thickness from the complete Navistar/BNR/IIR monitoring well network. Table 3-2 summarizes the free product thickness measurements and water-level data. Free product was evident in Monitoring Wells GM-1, GM-2, GM-5, and MW-6 at a thickness of 0.05 ft or less, Monitoring Well GM-3 at a thickness of 0.32 ft, Monitoring Well GM-6 at a thickness of 3.27 ft, and Monitoring Well MW-9 at a thickness of 2.36 ft.

A second round of water levels and product thicknesses were collected by Geraghty & Miller on September 21, 1994. Free product was evident during the September 1994 round of

well gauging in Monitoring Wells GM-4, GM-5, GM-7, GM-9, GM-10, GM-11, GM-13, GM-14, GM-15, GM-17, and MW-6 at a thickness of 0.05 ft or less, Monitoring Well GM-2 at 0.20 ft, Monitoring Well GM-1 at 0.75 ft, Monitoring Well GM-3 at 2.00 ft, Monitoring Well GM-6 at 2.32 ft, and Monitoring Well MW-9 at 6.50 ft. The discussion related to the water-level elevation data is presented in the *Site-Specific Hydrogeology* section of this report (Section 3.2.3).

Limited documentation is available regarding the volume of free product released that was released at the Navistar/BNR/IIR site. A significant release occurred between late 1963 and early 1964 from an aboveground diesel fuel storage tank formerly operated by the Rock Island Railroad at the IIR portion of the site. Based on the review of historical site information, the magnitude of the spill was estimated as "tens of thousands of gallons". The areal extent of free product has been assessed through apparent thickness measurements in monitoring wells. In December 1993, free product was measured in Monitoring Wells GM-4, GM-5, MW-6, and MW-9. In July 1994, free product was measured in Monitoring Wells GM-1, GM-2, GM-3, GM-5, GM-6, MW-6, and MW-9. In September 1994, free product was measured in Monitoring Wells GM-1 through GM-7, GM-9 through GM-11, GM-13 through GM-15, GM-17, MW-6, and MW-9.

In general, the measured product thicknesses have been less than 0.1 ft, except for Monitoring Wells GM-3, GM-6, and MW-9, in which 2.00 to 6.50 ft of product has been measured in the past. A map depicting the areal extent of free product that was estimated from the free product thickness measurements and the area where oil has historically been observed on Sylvan Slough is provided on Figure 3-5. In addition to the estimated extent of free product, the map also depicts the estimated smear zone (product present in the unsaturated zone soil) that was plotted based on observations made from boring logs.

It is well-documented that product thickness measurements collected from monitoring wells overestimate the actual thickness of product in the formation. Since there is no capillary fringe inside a monitoring well, product that has been spilled in sufficient volume or that has

accumulated over time tends to accumulate in the well from an elevated position and depresses the water table until the buoyant force counters the weight of the product. No field tests have been conducted to date at the Navistar/BNR/IIR site to determine the true formation thickness. Since most of the wells exhibited a product thickness of less than 0.1 ft, Geraghty & Miller used an assumed value of 0.05 ft as the true free product thickness across the formation to estimate the total volume of free product in the subsurface. Therefore, Geraghty & Miller has estimated the volume of free product within the formation using the following calculation:

$$V = \rho\eta AT(7.48 \text{ gallons/cubic foot})$$

where:
- V = Volume of product in the formation
- ρ = Product density = 0.87
- η = Formation porosity = 0.25 to 0.4 for sand
- A = Area of free product in square feet = 522,720 square feet
- T = True product thickness in formation = 0.05 ft (assumed)

From the above calculation, the estimated volume of free product in the formation is between 43,000 and 68,000 gallons, consistent with the known magnitude of the release of diesel fuel at the IIR portion of the site. However, due to surface tension effects, much of this volume is not directly recoverable using wells or other means that rely on gravity drainage. Assuming a "specific yield" of between 0.1 and 0.3 to account for this phenomenon, the calculated recoverable volume of free product is between 4,300 and 20,000 gallons. As noted above, these calculations rely on an assumed value of true product thickness that needs to be verified in the field by a bail-down test or other method.

3.2.3 Site-Specific Hydrogeology

As discussed in *Site-Specific Geology* section of this report (Section 3.1.2), the geology at the Navistar/BNR/IIR site is dependent upon the proximity to Sylvan Slough of a given area. Adjacent to Sylvan Slough, fill and outwash derived sand or sand and gravel deposits are encountered. Beneath the outwash deposits, a clay unit is present. In the southern portion of

the IIR railyard, clays that appear to be weathered residuals of the underlying shale are present. A transition area consisting of interbedded sands, silts and clays of varying thicknesses was present between the outwash deposits and the weathered shale clays across the central portion of the IIR railyard.

Two sets of depth to groundwater and product thickness measurements were collected by Geraghty & Miller. The initial set of readings were collected on July 20, 1994 concurrent with the Phase II groundwater sampling. A second set of measurements was collected on September 21, 1994. Table 3-3 provides a summary of the water-level data and product thickness measurements collected on September 21, 1994. The September readings had depth to water readings which were approximately one foot lower than the July readings. The drop in groundwater levels allowed additional product to drain from the vadose zone, resulting in an increase in the free product thicknesses measured at several monitoring well locations.

Water-table elevation maps are presented on Figures 3-6 and 3-7 based on the depth to water readings obtained on July 20, 1994 and September 21, 1994, respectively. The general groundwater flow pattern is to the north-northwest, a flow direction which is consistent with the location of Sylvan Slough and the prevailing river current direction. The prevailing regional flow direction towards Sylvan Slough is consistent with previous observations of groundwater flow at the Navistar/BNR/IIR site.

During periods of high river levels, flow maybe from the river toward the uplands areas. The bank storage effect associated with high river levels is a transitory phenomenon and typically is only present during the spring thaw or in times of flooding such as the summer of 1993. The groundwater system will lag behind the changes in surface-water levels. Water levels that result in local flow directions which are not consistent with the regional flow direction may represent the remnants of a bank storage event.

The presence of a clay unit associated with the shale, provides a relatively thin saturated thickness of unconsolidated materials above the clay. Figure 3-8 depicts the saturated thickness

of sediments above the shale or shale derived clay. The saturated unconsolidated materials are thickest adjacent to Sylvan Slough in the northern portion of the Navistar/BNR/IIR site. In the southern portion of the IIR site, where no significant unconsolidated materials are present except the clay resultant from the weathering of the shale, no saturated sediments are present above the shale.

The hydraulic conductivity of the subsurface formation into which the monitoring wells were installed was evaluated by performing slug tests at Monitoring Wells GM-1, GM-2, and GM-6 during the Initial Site Investigation. The slug test locations were selected based on the lack of free product and their relative location such that a representative reading was obtained across the length of the northern half of the Navistar/BNR/IIR site. The data obtained during the slug tests were analyzed by the Hvorslev and Bouwer & Rice methods to calculated hydraulic conductivity values. The hydraulic conductivity value (K) for the Navistar/BNR/IIR site ranged from a minimum of 4.1×10^{-4} centimeters per second (cm/sec) at Monitoring Well GM-6 to a maximum of 2.8×10^{-2} cm/sec at Monitoring Well GM-1. The hydraulic conductivity values demonstrated at the northern portion of the Navistar/BNR/IIR site are consistent with those that would be expected for fill and outwash-derived sand or sand and gravel deposits.

3.2.4 Results of Groundwater Analyses

The groundwater samples were submitted to the laboratory under strict chain-of-custody at the end of each sampling day. Groundwater sample analyses were performed by Heritage. Groundwater samples were analyzed for the presence of VOCs using USEPA Method 8240A; PNAs using USEPA Method 8310; and PCBs using USEPA Method 8080. In addition, free product samples were submitted to the laboratory from Monitoring Wells GM-3, GM-6, and MW-9 and underwent a hydrocarbon scan with a gas chromatograph/flame ionization detector (GC/FID) using USEPA Method 8015A. The hydrocarbon scan by GC/FID was performed to identify the specific type of hydrocarbon that comprises the floating product layer. A summary of the groundwater data is provided in Table 3-4, and a complete set of the analytical data is provided in Appendix E.

The results of the laboratory analyses of the groundwater samples collected during the Phase II Site Investigation were initially validated by Heritage in accordance with its internal quality assurance and quality control (QA/QC) practices. The results of the laboratory analyses were then further validated by Geraghty & Miller consistent with "Laboratory Data Validation Functional Guidelines for Evaluating Organics Analyses" prepared by the USEPA Data Review Work Group (USEPA 1988). Pertinent information from Heritage and the professional judgement of the validator were also used in the data validation process. A summary of the data validation performed by Geraghty & Miller for the groundwater samples collected during the Phase II Site Investigation is also provided in Appendix E.

Based on the results of the data validation process, the groundwater data are considered to be acceptable and can be used for quantitative purposes. As appropriate, data qualifiers were placed next to individual datum on the table summarizing the results of the groundwater analytical data (Table 3-4) to document the quality of the analytical results. Data qualifiers assigned by Geraghty & Miller during the data validation process took precedence over the data qualifiers assigned by the laboratory.

Four VOCs were detected in the groundwater samples collected during the Phase II Site Investigation. The VOCs that were detected included acetone, benzene, carbon disulfide, and xylene. Benzene and xylene were detected only in Monitoring Well MW-9 at a concentration of 6.0 and 7.0 micrograms per liter ($\mu g/\ell$), respectively. Carbon disulfide was detected only in Monitoring Wells GM-1 and MW-8 at concentrations of 5,200 and 6.0 $\mu g/\ell$, respectively. Acetone, a common laboratory artifact, was detected only in Monitoring Wells GM-9, GM-11, GM-17, and MW-9 at concentrations ranging from 30 to 42 $\mu g/\ell$. Evidence that the detectable concentrations of acetone may be either a laboratory or field artifact is due to the fact that acetone was detected in one of the three field blanks at a concentration of 28 $\mu g/\ell$, and two of the three equipment blanks at concentrations of 52 and 47 $\mu g/\ell$.

PNAs were detected in 16 of the 22 monitoring wells that were sampled. The groundwater sample collected from Monitoring Well GM-6 for PNA analysis was broken during

shipment to the laboratory; therefore, the laboratory analysis for PNAs could not be performed. PNAs were not detected in the six monitoring well locations, GM-14, GM-15, GM-16, GM-17, GM-18, and MW-8, defining the lateral extent of impacted groundwater to the west and south. It would also appear that the eastern extent of impacted groundwater has been determined based on the results of the PNA analysis from the groundwater sample collected from Monitoring Well GM-7. Benzo(ghi)perylene at a concentration of 0.22 $\mu g/\ell$ is the only PNA constituent detected in Monitoring Well GM-7. However, PNAs were found in Monitoring Well GM-19, located approximately 400 ft east of Monitoring Well GM-7 at concentrations ranging from 0.13 to 1.1 $\mu g/\ell$.

The groundwater samples collected from the Navistar/BNR/IIR monitoring well network during the Phase II Site Investigation were also analyzed for the presence of PCBs. PCBs were detected only in Monitoring Wells GM-5 and MW-9. Arochlor-1254 was detected at a concentration of 0.0000033 $\mu g/\ell$ in Monitoring Well GM-5. Arochlor-1254 and Arochlor-1260 were detected at concentrations of 0.000058 and 0.000013 $\mu g/\ell$, respectively, in Monitoring Well MW-9. Because the PCB concentrations are below 1.0 part per trillion, it is believed that the PCBs do not present a potential risk to human health or the environment.

4.0 REMOVAL ACTION OBJECTIVES AND TECHNOLOGY SCREENING

Potentially applicable technologies and processes have been identified and screened to determine their effectiveness in achieving the removal action objectives that have been established for the Navistar/BNR/IIR site. The results of the screening process are presented in the following sections.

4.1 REMEDIAL ACTION OBJECTIVES

The nature and extent of the free product in the subsurface has been described previously in the *Well Construction and Groundwater Sampling Procedures* section of this report (Section 3.2.1). The results of these investigations indicate that free product is present in the subsurface, ranging in thickness from approximately 0.1 ft to as much as 6 ft in monitoring wells placed across a 1,000-foot length of Sylvan Slough. The removal action objectives have been developed to mitigate the release of the free product into the Sylvan Slough. To accomplish this objective, the free product will either be removed from the subsurface or a barrier will be constructed to prevent the migration of product into the slough.

4.2 TECHNOLOGY SCREENING

This section presents the results of the screening of potentially applicable technologies and process options based on a consideration of the known physical conditions at the Navistar/BNR/IIR site. The goal of this screening step is to select representative process options that can be retained for analysis and can attain the removal action objectives. A brief description of each process option and the associated screening comments are presented in Table 4-1. The evaluation and selection of technologies involves the use of screening with respect to effectiveness, implementability, and cost.

Effectiveness is defined as the degree to which a technology can attain the removal action objectives, ensure the protection of human health and the environment during its implementation,

and be considered reliable and proven with respect to the conditions at the Navistar/BNR/IIR site.

Implementability, which considers both technical and institutional implementability, is defined as the ability of a given technology to be compatible with the constituents and conditions at the site, the ability to obtain any necessary permits, the availability of treatment, storage, or disposal capacity, and the availability of required equipment and trained personnel.

The cost evaluation includes the relative capital and operation and maintenance (O&M) costs associated with each given technology. Relative costs are estimated on the basis of engineering judgment, and each process is evaluated relative to the process options in the same technology type. The costs are presented as present worth values for operating periods of 5, 10, and 30 years.

5.0 REMOVAL ACTION ALTERNATIVES

This section describes assembled removal action alternatives using technologies discussed in the *Removal Action Objectives and Technology Screening* section of this report (Section 4.0) that were retained for further analysis. The following alternatives are discussed in detail:

Alternative 1: Passive Recovery Well Point System;
Alternative 2: Recovery Wells/Treatment;
Alternative 3: Recovery Drain/Treatment; and
Alternative 4: Slurry Wall/Product Recovery.

5.1 ALTERNATIVE 1: PASSIVE RECOVERY WELL POINT SYSTEM

Under Alternative 1, a passive recovery well point system would be installed at the Navistar/BNR/IIR site to intercept free product before reaching Sylvan Slough. It is assumed that the passive recovery wells would be installed in a line parallel to the slough along the entire downgradient face of the free product area observed at the Navistar/BNR/IIR site.

5.1.1 Description

At the Navistar/BNR/IIR site, the passive recovery well point system would consist of a series of 56 passive recovery wells spaced on 20-foot centers. Figure 5-1 depicts the orientation of the 56 passive recovery wells. The passive recovery wells, constructed of 4-inch diameter Schedule 40 polyvinyl chloride (PVC) well screens and riser, would be installed using hollow-stem auger drilling techniques to a depth of approximately 35 ft bls or until bedrock is encountered. The well screens would extend upward from the bottom of the borehole to the highest recorded seasonal fluctuation of the water-table elevation. Solid PVC riser would extend from the well screen to within 1 foot of the ground surface.

A pneumatic free product recovery skimmer and bladder pump would be placed inside each passive recovery well. The free product recovery system would utilize an oleophilic

cartridge to collect the free product that accumulates in the recovery well and a downwell pneumatic bladder pump to remove the free product from the well. An air compressor would supply air to the regulators that control the cycle time of up to six individual bladder pumps. The bladder pumps would continuously cycle and remove the free product that accumulates in the reservoir of the free product skimmer which is positioned at the free product/water interface. If no product is present in the recovery well, the bladder pump would continue to cycle, but pump only air. The product recovered from the wells would then be pumped to an aboveground storage tank where the product would be stored on a temporary basis prior to disposal.

A vault would be placed around each individual passive recovery well for access to the well and recovery equipment. The process lines that are used to convey the air and recovered free product would be installed in subsurface trenches below the frostline. Enclosures would also be constructed along the line of passive recovery wells to house the air regulators. To prevent freezing of the passive recovery well equipment inside the enclosures during sub-zero temperatures, the enclosure would be equipped with insulation and a heater. Excess spoil material from drilling and trenching operations would be loaded onto trucks and transported off-site to an approved disposal facility.

Free product recovered from the passive recovery wells by the bladder pumps would be pumped to a main header that transfers the product to an aboveground storage tank. Secondary containment would be placed around the outside of the free product storage tank. The tank would also be equipped with an automatic shut-off device that would deactivate the pumping system if the tank were to become filled with free product. The storage tank would be located adjacent to the equipment enclosure that would be constructed to house the pneumatic equipment. The equipment enclosure would house an air compressor used to supply air to the bladder pumps and a dryer that would remove moisture from the air lines to reduce the chance of the air lines freezing during the winter.

Design details of the passive recovery well point system including recovery well construction, well spacing, air supply and product recovery line sizes, and expected flow rate,

would be determined during a detailed design phase. In addition, a pilot study would need to be conducted at the Navistar/BNR/IIR site to determine the ability of the passive recovery wells to capture the free product.

5.1.2 Effectiveness

The passive free product recovery well point system would be effective in removing the free product present in the subsurface. The thickness of product in the recovery well is reduced to less than 0.01 inch with less than 2% of the liquid recovered being water. The skimmer pump is designed to travel unattended with the fluctuation of the water-table elevation within a 2-foot zone. No treatment equipment would be required since groundwater is not being pumped from the subsurface. The recovered liquids would be pumped directly to the free product storage tank. However, since the system operates passively, it is only capable of removing product that flows into the recovery wells under static conditions. The spacing of the passive recovery well points is based on a practical approach to product recovery but is not expected to instantly prevent the flow of product into Sylvan Slough.

Monitoring the effectiveness of the passive recovery system is accomplished by collecting regular liquid level readings and adjusting the individual pumps to concentrate the pumping in the areas of greatest product accumulation. The depth of the skimmer would be adjusted if the water-table elevation fluctuated more than the 2-foot travel variation of the skimmer pump.

5.1.3 Implementability

Construction of the passive recovery well system could be performed using conventional equipment. The transfer line trenches would be constructed to a maximum depth of 4 ft bls to eliminate the need for shoring the walls of the excavation during construction. Since the drilling and trenching would occur near or within free product, special precautions would need to be taken to ensure the safety of site workers, including the use of proper personal protective equipment.

5.1.4 Cost

Table 5-1 presents the estimated capital, annual O&M, and total present worth costs for Alternative 1. The present worth analysis has been performed for operating periods of 5, 10, and 30 years.

5.2 ALTERNATIVE 2: RECOVERY WELLS/TREATMENT

Under Alternative 2, an active recovery well and treatment system would be installed at the Navistar/BNR/IIR site to intercept free product and impacted groundwater and prevent the discharge of free product to the slough.

5.2.1 Description

The results of a preliminary well analysis indicate that a total of eight recovery wells would be required at the Navistar/BNR/IIR site under Alternative 2, each pumping at an average discharge rate of 0.5 gallons per minute (gpm). A copy of the preliminary well analysis is provided in Appendix F. The low well yields are a result of the extremely limited saturated thickness (5 to 10 ft) of the alluvial deposits.

The calculated pumping rate of 0.5 gpm for the recovery wells assumes best-case conditions. Each of the recovery wells uses the maximum available drawdown in the surficial deposits. In addition, the recovery wells are assumed to be 100 percent efficient. It is uncertain whether these pumping rates could actually be sustained in the field, due to the limited available drawdown and well inefficiencies that result from normal drilling damage during well installation. However, it has been determined that vacuum-enhanced recovery wells can increase the available drawdown by reducing the pressure inside the well, resulting in pumping rates that are 3 to 5 times higher than conventional recovery wells (Blake et.al. 1990). The actual pumping rates that could be achieved at the Navistar/BNR/IIR site for either conventional or vacuum-enhanced recovery would need to be confirmed from site-specific pilot studies.

The locations of the eight recovery wells are shown on Figure 5-2. The location and spacing of the individual recovery wells are based on the results of a preliminary capture zone analysis (Appendix F). The total fluids (free product and groundwater) from the eight recovery wells would be conveyed via a common header pipe to a centrally-located on-site treatment system. The total fluids would be pumped by pneumatically-operated bladder pumps installed in each of the recovery wells. The pneumatic pumps are recommended for the current application due to their ability to pump dry without sustaining damage to the pump assembly. Additionally, bladder pumps cause minimal agitation, preventing excessive emulsification of the free product and improving the separability of the recovered free product.

The recovered total liquids would be pumped to an oil/water separator for phase separation. The oil/water separator is also intended to remove any emulsified free-phase liquids from the influent to the treatment system. Any free-phase liquids which accumulate in the oil/water separator would be drained into a 1,000-gallon holding tank. The separated groundwater would then be pumped by a transfer pump to a liquid-phase granular activated carbon (GAC) unit where primary treatment for the removal of dissolved PNAs would occur. The evaluation of treatment process options conducted as part of this study is presented in Appendix F.

The treatment equipment including the oil/water separator, product storage tank, and liquid-phase GAC unit, would be housed in either a skid-mounted enclosure or a new equipment building. The enclosure or building would be placed on a reinforced concrete slab and secured by a chain-link fence. A process flow diagram for the groundwater treatment system is shown on Figure 5-3.

5.2.2 Effectiveness

Recovery wells have been used extensively for the containment and recovery of free product and groundwater. The effectiveness of this technique is a function of proper design and the hydrogeologic characteristics of the aquifer where it would be implemented. Preliminary

well hydraulic calculations indicate that the use of recovery wells for product recovery at the Navistar/BNR/IIR site is theoretically possible (Appendix F). However, geologic conditions at the site may limit the effectiveness of recovery wells for this application. As discussed in the *Site-Specific Hydrogeology* section of this report (Section 3.2.2), the saturated thickness of the shallow flow system is limited. Based on water-level measurements collected during the Phase II Site Investigation, the saturated thickness of the shallow unconsolidated unit across the site varies from 5 to 10 ft.

In situations where the saturated thickness of a water-bearing unit is limited, the capture zone of an individual recovery well cannot be increased by simply increasing the pumping rate since the added drawdown from increased pumping cannot exceed the total saturated thickness of the unit. Therefore, at sites with low transmissivities, a larger number of low capacity pumping wells are typically required to recover a zone of affected groundwater. The actual effectiveness of Alternative 2 at the Navistar/BNR/IIR site would need to be confirmed by pilot testing performed on-site. The pilot test would be designed to determine the discharge rate and influence of a test well installed in the shallow unconsolidated unit.

The unit processes for the separation and treatment of the total fluids recovered under Alternative 2 are well-established, proven processes that have been used effectively in similar applications. The function of the treatment system would be to recover the free-phase product, and to remove any soluble PNAs present in the recovered groundwater such that the effluent would comply with applicable discharge limits. The gravity oil/water separation process has been used extensively for the removal of oil in various water and wastewater treatment applications.

GAC has been used extensively for the removal of various organic compounds, including PNAs from liquid process streams. Assuming influent and effluent concentrations of 40 ppm and 0.1 ppm, respectively, the activated carbon usage rate is estimated to be 20 pounds per day based on information obtained from carbon vendors. GAC is especially well-suited for PNA removal since the adsorption process has an affinity for high molecular weight, non-polar

compounds such as the PNAs. A further advantage of the GAC process is that it will be able to fully remove any dissolved petroleum compounds in the process stream due to its adsorbent nature.

It is anticipated that the effluent from the treatment system will be discharged to surface water via one of the existing outfall structures on the Navistar property. The applicable effluent discharge limits to be met are those set forth in the National Pollutant Discharge Elimination System (NPDES) permit for the existing outfall. In the absence of specific limits for the discharge of PNAs, the estimated PNA standard to be imposed by the Illinois Environmental Protection Agency (IEPA) is 0.1 ppm total PNAs (monthly average).

5.2.3 Implementability

The construction methods for Alternative 2 are conventional in nature and well documented. These methods include rotary drilling, well installation, installation of underground piping, installation of mechanical equipment, and electrical power supply and connections.

Since the use of recovery wells would result in the collection of total fluids (free-phase liquids and groundwater) within the zone of influence of the system, treatment of the recovered liquids would require equipment for phase separation and treatment of the soluble phase constituents. The recovery, separation and treatment equipment including bladder pumps, an air compressor, an oil/water separator, and liquid-phase GAC is readily available from several equipment manufacturers.

Although compliance with the administrative requirements associated with Alternative 2 would be feasible, these requirements would be more extensive then those for Alternative 1. The additional requirements would be associated with the wastewater discharge permit for the treated groundwater.

5.2.4 Cost

Table 5-2 presents the estimated capital, annual O&M, and total present worth costs for Alternative 2. The present worth analysis has been performed for operating periods of 5, 10, and 30 years.

5.3 ALTERNATIVE 3: RECOVERY DRAIN/TREATMENT

Under Alternative 3, a subsurface recovery drain would be installed at the Navistar/BNR/IIR site to intercept free product and prevents its discharge to Sylvan Slough.

5.3.1 Description

For this discussion, it is assumed that the drains would be installed parallel to Sylvan Slough along the entire downgradient face of the free product area. Two separate drain systems are envisioned: one along the western portion of the site and one along the middle portion of the site. Two different drain systems were evaluated to account for changes in the saturated thickness of the upper water-bearing zone near the bank of the Slough. Figure 5-4 depicts the layout of the two subsurface drain systems.

Each drain would be 4 to 6 inches in diameter and constructed of slotted PVC or high-density polyethylene (HDPE). Based on preliminary drain calculations, the invert of the drain pipes would be installed approximately 3 to 4 ft below the water table and sloped to one or more extraction sumps along the axis of the drains to promote drainage. In this configuration, the estimated flow rates in the eastern and western drains are 2 and 5 gpm, respectively. The depth to the water table along the proposed drain route is approximately 19 ft bls based on the July 1994 water-level measurements.

Geraghty & Miller has assumed that only minor subsurface obstructions exist along the proposed drain route and that conventional trenching equipment can be used. Based on July

1994 water-level data, excavation would occur to a maximum depth of approximately 22 ft bls. During construction, groundwater that infiltrates into the trench would be pumped and temporarily stored on-site. To optimize free product recovery, an envelope of permeable material would be placed below the drain pipe and above the drain pipe to a point located immediately above the water table. Excess spoil material and groundwater from trenching operations would be loaded into trucks and transported to off-site to an approved disposal facility.

Recovered product and groundwater from the drains would be pumped from the sumps to an on-site treatment system via buried discharge lines. To simplify the required pumping equipment, Geraghty & Miller assumed that a total fluids approach would be adopted that would allow constant dewatering of the sumps through the use of air-operated diaphragm pumps. This approach would have the added benefit of eliminating the need for sump level switches that would be susceptible to fouling, electrical failure, or mechanical breakdown. However, total fluids pumping would require the installation of an oil/water separator in the treatment process line. The groundwater treatment system and discharge limits under Alternative 3 would be the same as described under Alternative 2.

Design details of the drain including diameter, length, and expected flow rate would be determined during detailed design. In addition, a pilot-scale recovery drain system may be necessary to verify the effectiveness of the drain and to develop final design parameters for a full-scale system.

5.3.2 Effectiveness

A properly designed recovery drain would be very effective in intercepting free product discharging to Sylvan Slough since it would act as an infinite series of extraction wells. All proposed equipment and materials would be expected to perform well with minimal maintenance. The depth of the drain is a parameter that will need to be optimized to ensure the maximum success of the drain. Redevelopment through jetting or other means should abate such problems.

Long-term system O&M would be required, although the amount of time required for active free product recovery will depend on the actual thickness of the formation. Over time, the drain pipes would be susceptible to biological fouling or decreased yield from siltation of the permeable envelope. O&M costs include routine inspection and maintenance of equipment, periodic disposal of accumulated free product, energy costs, gauging and sampling of monitoring points, redevelopment of the recovery drain system, and periodic reporting of system performance.

Monitoring the effectiveness of the recovery drain system would be readily accomplished using monitoring wells or piezometers installed downgradient from the drain and through visual observations of the water surface of the slough. The measured rate and volume of recovered product would help provide an indication of the long-term effectiveness of the drain.

If the drain is not effective in preventing free product discharge to the slough, a potential modification would be to apply vacuum-enhanced recovery techniques within the drain. However, in order for this technique to be effective, the initial drain design would need to account for potential short-circuiting of vacuum from the surface and surrounding drainage envelope. Therefore, a permeable envelope extending to the water table would likely prevent the implementation of a vacuum-enhanced recovery scheme.

5.3.3 Implementability

Construction of the recovery drain system could be performed using conventional equipment, although some type of excavation support system will be required due to the depth of the drain. An alternative trench construction technique would be to use horizontal drilling. Although typically more expensive per linear foot than conventional trenching, additional costs associated with the depth of the drain and disposal of excess spoil (which would be minimal using horizontal drilling) would tend to equalize the overall installation cost. Dewatering of the excavation may be necessary depending on the final depth of the drain below the water table. Since trenching would occur near or within free product, special precautions would need to be

taken to ensure the safety of site workers, including the use of proper personal protective equipment.

5.3.4 Cost

Table 5-3 presents the estimated capital, annual O&M, and total present worth costs for Alternative 3. The present worth analysis has been performed for operating periods of 5, 10, and 30 years.

5.4 ALTERNATIVE 4: SLURRY WALL/PRODUCT RECOVERY

Alternative 4 consists of a downgradient, vertical cut-off wall in combination with a passive product recovery system.

5.4.1 Description

Alternative 4 would include installation of a vertical cut-off wall for containment of free product in combination with passive wells along the inside face of the wall for product recovery. The proposed alignment of the cut-off wall is shown on Figure 5-5. The wall would extend perpendicular to the direction of groundwater flow approximately 1500 ft across the width of the interpreted free product area (see Figure 3-5). Due to its relative ease of construction and wide range of chemical compatibilities, a soil/bentonite slurry wall was selected as the most appropriate type of cut-off wall for application at the Navistar/BNR/IIR site.

To ensure adequate containment, the bottom of the slurry wall must be keyed into a low permeability confining layer. Prior to implementing Alternative 4, a soil boring program would have to be conducted along the alignment of the slurry wall to establish the depth to the contact with the clay/shale unit beneath the site. The elevation of the interpreted contact with the clay/shale unit is shown on Figure 3-4. This corresponds to a slurry wall depth ranging from

approximately 15 to 30 ft over the length of the wall. For reasons of practicality, standard slurry wall construction is generally limited to trench depths of approximately 50 ft bls.

A backhoe would be used to excavate a 30 to 36-inch wide trench to the required depth. The excavated soil would be mixed with bentonite and water to form the soil/bentonite slurry. This mixing operation would occur adjacent to the trench and would proceed even with the rate of excavation. The width of the working area required for installation of a slurry wall is approximately 50 ft. An initial amount of slurry would be continually placed just after the trench is opened to coat the side walls of the trench with a thin filter-cake layer in order to reduce cave-ins and the amount of groundwater inflow into the trench. A bulldozer is used to place the soil/bentonite mixture into the trench.

It may be necessary to amend the soil/bentonite mixture with imported clayey soils due to the coarse-grained nature of the unconsolidated deposits at the Navistar/BNR/IIR site. Prior to installation of the cut-off wall, bench-scale testing would be conducted to determine soil/bentonite permeabilities for both on-site soil and amended soil slurry mixes.

A passive recovery well system, similar to Alternative 1, would also be installed as part of Alternative 4. The passive recovery well system that would be installed at the Navistar/BNR/IIR site in conjunction with the cut-off wall would consist of a series of 31 recovery well spaced on 50-foot centers. Figure 5-5 also depicts the orientation of the 31 passive recovery wells. The passive recovery wells would be installed along the inside face of the slurry trench to a depth of approximately 35 ft bls or until the clay/shale unit is encountered. The construction materials, installation, and operation of the passive recovery well system under Alternative 4 would be similar to that described for Alternative 1 (Section 5.1.1). Fewer passive well points are used for Alternative 4 than were recommended for Alternative 1, since the slurry wall provides the primary means for containment of the free product.

5.4.2 Effectiveness

The effectiveness of a slurry wall depends on the quality of the initial construction, the physical and chemical characteristics of the soil/bentonite mixture and the type and concentration of the constituents present in the groundwater. Under proper conditions, it is anticipated that the installed slurry wall would have an effective permeability of 1×10^{-7} cm/sec. Current slurry wall technology generally can ensure a useful design life in excess of 30 years.

The mixing of free product with the trench soils used for the soil/bentonite slurry mix could adversely effect the permeability of the cut-off wall. The hydrocarbons could effect the hydration of the bentonite which can increase the permeability of the soil/bentonite slurry. Any soils containing product encountered during slurry trench excavation would have to be segregated to prevent their use in the soil/bentonite slurry mix. During construction, adjustment of the filter cake thickness could be required to prevent the inflow of free product into the slurry-trench. Contact of the finished slurry wall with free product may also effect the permanence of the wall. The passive recovery well system would minimize the amount of product that would come into contact with the wall.

The effectiveness of the product recovery system would be similar to that described for Alternative 1 (see Section 5.1.2). Monitoring points would have to be installed at each end of the wall to determine whether free product was escaping the product recovery system at these locations. In the event that breakthrough of product was occurring, additional recovery well points could be added to the system, as necessary.

5.4.3 Implementability

Construction of the slurry wall could be performed using conventional methods. It has been assumed that there are a minimum number of subsurface obstructions along the proposed alignment of the slurry wall. This would have to be confirmed by a soil boring program performed prior to the start of construction. The soil boring program would also provide

information on the depth to the clay/shale contact and the suitability of the native soils for use in the soil/bentonite slurry mixture.

The alignment of the eastern end of the slurry wall crosses two existing railroad tracks. Installation of the slurry wall across the railroad tracks would require construction of a temporary support system using driven piles and H-beams, or some other suitable method. Railroad traffic would be disrupted during installation of the slurry wall across the tracks.

Implementability issues associated with the passive recovery well system under Alternative 4 would be similar to those previously described for Alternative 1 (see Section 5.1.3).

5.4.4 Cost

Table 5-4 presents the estimated capital, annual O&M, and total present worth costs for Alternative 4. The present worth analysis has been performed for operating periods of 5, 10, and 30 years.

6.0 COMPARISON OF ALTERNATIVES

The *Removal Action Alternatives* section of this report presented an assessment of each removal action alternative against the evaluation criteria of effectiveness, implementability and cost. In this section, a comparative analysis is performed to assess the relative performance of each alternative with respect to the evaluation criteria. It is during the comparative analysis that the relative advantages and disadvantages of an alternative are identified.

6.1 EFFECTIVENESS

The primary objective of the removal action at the Navistar/BNR/IIR site is to prevent the discharge of free product to Sylvan Slough. A further objective is to recover the free product from the shallow water-bearing unit at the Navistar/BNR/IIR site.

Alternative 1 would provide the lowest degree of effectiveness, since it would not provide complete containment of the free product. The passive recovery wells would not alter the natural hydraulic gradient, and therefore, would not provide a hydraulic barrier to groundwater flow. The potential would exist for movement of free product between individual recovery well locations. The effectiveness of the passive recovery well system is improved under Alternative 4, with the addition of a downgradient slurry wall. The slurry wall would provide a physical barrier to groundwater flow and containment of the free product. However, groundwater flow would be diverted over time, to the ends of the slurry wall, where the potential would exist for free product to migrate around the wall. Passive recovery wells installed at the ends of the slurry wall under Alternative 4 would provide a certain degree of added control of the free product.

Based on the results of preliminary flow analysis, Alternatives 2 and 3 would provide the highest degree of overall effectiveness. Each of these alternatives would provide hydraulic containment of the affected area, and would prevent the discharge of free product to Sylvan Slough. However, further refinement of the flow analysis for each of these alternatives is necessary to confirm their effectiveness in controlling the shallow groundwater flow system at

the Navistar/BNR/IIR site. A pilot test would have to be conducted to obtain the hydrogeologic data required to refine the preliminary flow analysis. The pilot test would be designed to determine the discharge rate and influence of a test well installed in the shallow unconsolidated unit.

Of the alternatives under consideration, Alternatives 1 and 2 could be most readily modified after installation. Additional wells could be added to enhance the performance of the recovery well systems, if necessary. Modifications to Alternatives 3 and 4 would be more difficult to implement after construction.

The selected treatment processes required for Alternatives 2 and 3 are reliable for the phase separation of oil and removal of soluble PNAs. The liquid-phase GAC treatment system would be effective in achieving the necessary removal efficiencies required under an NPDES permit for discharge to Sylvan Slough.

In summary, Alternative 2 would provide the greatest degree of effectiveness in meeting the removal action objectives for the Navistar/BNR/IIR site. This is based on the predicted hydraulic performance of the recovery well system, and the ability to modify the system after installation. Alternative 3 provides a lesser degree of effectiveness, due to the greater degree of difficulty associated with making modifications to the recovery drain after installation. Alternatives 1 and 4 are considered to provide a moderate degree of effectiveness. Alternative 1 (passive recovery well system) is considered to be moderately effective because, although it would provide a relatively high degree of product recovery, it would not entirely prevent potential discharges of free product to Sylvan Slough. Alternative 4, while providing a greater level of containment, would be difficult to modify after installation.

6.2 IMPLEMENTABILITY

Each of the four removal alternatives can be readily implemented, although installation of the subsurface drain or the slurry wall would require the construction of temporary excavation

support systems to prevent cave-in of the excavations. None of the alternatives use specialized materials or require specialized construction contractors or techniques.

It is estimated that Alternative 1 (passive recovery well point system) would require the least amount of time to construct and put into operation since multiple wells per day could be installed and a groundwater treatment system would not be required. Alternative 2 would require a slightly longer timeframe due to additional facilities and allowing time to acquire an NPDES permit or permit modification. Alternatives 3 and 4 would require the most time to implement since a significant amount of subsurface work would be performed. Also, these alternatives would probably incur the longest construction delays as a result of different site conditions discovered during construction, such as subsurface obstructions.

6.3 COST

A summary of the total capital costs, annual O&M and present worth costs for Alternative 1 through 4 is presented in Table 5-5. The capital costs ranged from $307,775 for Alternative 2 to $748,025 for Alternative 4. The total present worth cost associated with each of the alternatives was also calculated for a range of implementation periods (5, 10, and 15 years) assuming a 5 percent discount rate.

7.0 RECOMMENDED ALTERNATIVE

Based on the analyses performed in previous sections of this report, the alternative recommended for implementation at the Navistar/BNR/IIR site is Alternative 2: Recovery Wells/Treatment. This alternative would consist of the installation of 8 recovery wells screened through the free product zone; a groundwater treatment system consisting of oil/water separation, filtration, activated carbon vessels, and discharge to a storm sewer outfall; and long-term operation and maintenance activities. Alternative 2 would provide hydraulic control of the free product plume by lowering the water table and collecting groundwater and product simultaneously.

If recovery rates were to decline over time, Alternative 2 could be modified relatively easily by using vacuum-enhanced recovery techniques. It would be difficult to modify a horizontal drain collection system (Alternative 3) for vacuum-enhanced recovery due to problems associated with maintaining a sufficient vacuum in such a system. Therefore, the overall effectiveness of Alternative 2 is judged to be superior to Alternative 3. Alternative 2 has the lowest capital and present worth cost with the exception of Alternative 1: Passive Recovery Well Point System (Table 5-5). However, Alternative 1 would not completely meet the objective of preventing the discharge of oil to Sylvan Slough.

Although the alternatives analysis indicates that Alternative 2 would be the most cost-effective alternative that meets the project objectives, further design testing and data collection activities are necessary to confirm the assumptions used and analyses performed in this report. Such activities would be designed to collect the following types of information:

- physical product characteristics, including viscosity and density;
- data regarding the product formation thickness, volume, and recoverability;
- pumping test data to provide estimates of long-term groundwater pumping rates, drawdown, and radius of influence;

- design test data regarding the effectiveness of vacuum-enhanced recovery using conventional wells;
- groundwater analytical data to estimate long-term influent concentrations; and
- data to support potential modeling activities to estimate the length of time required for system operation.

8.0 REFERENCES

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TABLES

Table 3-1. Subsurface Soil Data, Navistar/BNR/IIR Site, Rock Island, Illinois.

Constituent	GM7-0204	GM7-1416	GM8-0204	GM8-0608	GM9-0608	GM9-0810	GM10-0608
VOCs							
Acetone		61 J	35 J		310 J	730 J	330
Carbon disulfide							
1,1-Dichloroethene							
1,2-Dichloroethene							
Ethylbenzene							
4-Methyl-2-pentanone			180 J	24 J			
Methylene chloride		13	12	6	1,000		87
Methyl ethyl ketone							40 J
Tetrahydrofuran							150
Toluene							
Trichlorofluoromethane							
Xylenes (total)							
PNAs							
Naphthalene							
Acenaphthalene							
Acenaphthene					2,300	3,800	2,000
Fluorene	11		110		4,200	7,400	3,000
Phenanthrene	62	12	230	370	12,000	9,300	8,700
Anthracene						520	480
Fluoranthene	12		210	900		370	150
Pyrene	15	2.4	160	510	280	240	100
Benzo(a)anthracene			56	270		150 J	160 J
Chrysene	11		110	280	200 J	580	140 J
Benzo(b)fluoranthene			180	1,100	16	59	9.8
Benzo(k)fluoranthene			68	440	15	53	26
Benzo(a)pyrene			140	720	14	46	18
Dibenzo(a,h)anthracene				91			
Benzo(ghi)perylene	2		360	1,400	13		2.1
Indeno(123-cd)pyrene	2.5		210	1,600	4.7		15

* *All concentrations reported in micrograms per kilogram (ug/kg) or parts per billion (ppb).*

Table 3-1. Subsurface Soil Data, Navistar/BNR/IIR Site, Rock Island, Illinois.

Constituent	GM10-0810	GM11-0406	GM11-0608	GM12-0204	GM12-1012	GM13-0406	GM13-1013
VOCs							
Acetone	400	63 J	280	26	24	58	67
Carbon disulfide							
1,1-Dichloroethene							
1,2-Dichloroethene							
Ethylbenzene							
4-Methyl-2-pentanone							
Methylene chloride	190	27	360	70	69	70	19
Methyl ethyl ketone							
Tetrahydrofuran			300	140		130	20 J
Toluene							
Trichlorofluoromethane				3 J	3 J		
Xylenes (total)							
PNAs							
Naphthalene		38					
Acenaphthalene							
Acenaphthene	2,600	87	2,600	1,300			
Fluorene	11,000	440	4,000	1,500			
Phenanthrene	30,000	700 J	12,000	29,000	1,600		
Anthracene	830	280	940	5,900	97		
Fluoranthene	390	95	*	56,000	3,000		
Pyrene	520	140	*	42,000	2,300		
Benzo(a)anthracene	340	96	*	20,000	1,100		
Chrysene	1,000	300	*	25,000	1,200		
Benzo(b)fluoranthene		9.3	17	19,000	1,300		
Benzo(k)fluoranthene	11	6.9	20	11,000	640		
Benzo(a)pyrene	5.8	5.8	24	18,000	1,100		
Dibenzo(a,h)anthracene				810			
Benzo(ghi)perylene	4	32	22	16,000	1,100		
Indeno(123-cd)pyrene		32	15	19,000	1,300		

** All concentrations reported in micrograms per kilogram (ug/kg) or parts per billion (ppb)*

Table 3-1. Subsurface Soil Data, Navistar/BNR/IIR Site, Rock Island, Illinois.

Constituent	GM14-0204	GM14-0810	GM15-0204	GM15-0810	GM16-0204	GM16-0608	GM17-0204
VOCs							
Acetone	32	34	37	71			
Carbon disulfide							
1,1-Dichloroethene							
1,2-Dichloroethene							
Ethylbenzene							
4-Methyl-2-pentanone	810 J	1000			160	640	85
Methylene chloride	18	10	46	58		16	
Methyl ethyl ketone							
Tetrahydrofuran			63	100			
Toluene						6	
Trichlorofluoromethane							
Xylenes (total)	15					7	
PNAs							
Naphthalene							
Acenaphthalene							
Acenaphthene						18	
Fluorene						190	
Phenanthrene	890		360	67		340	9.9
Anthracene	32		8.8			15	
Fluoranthene	2,200		300	240		54	4.3
Pyrene	1,900		330	350	13	49	20
Benzo(a)anthracene	720		62			11	
Chrysene	780		91	54	5.2	5.7	5.3
Benzo(b)fluoranthene	1,100		130		5.3	3.8	
Benzo(k)fluoranthene	550		57		4.3	3.7	
Benzo(a)pyrene	990		97	59	15	14	
Dibenzo(a,h)anthracene	60						
Benzo(ghi)perylene	1,100		120		9.7		7.4
Indeno(123-cd)pyrene	1,000		120		12.6	11	2.2

** All concentrations reported in micrograms per kilogram (ug/kg) or parts per billion (ppb).*

Table 3-1. Subsurface Soil Data, Navistar/BNR/IIR Site, Rock Island, Illinois.

Constituent	GM17-0608	GM18-0204	GM18-0406	GM19-0406	GM19-1820	DUP-1	DUP-2	DUP-3
VOCs								
Acetone	100	23	230 J	46 J	75 J	200	40	350
Carbon disulfide		9						
1,1-Dichloroethene					5			
1,2-Dichloroethene					4 J			
Ethylbenzene							9	
4-Methyl-2-pentanone	140	100	520				1,200 J	220
Methylene chloride	7	6	6	12	8	220	28	
Methyl ethyl ketone	19		25					32
Tetrahydrofuran				88 J	240 J	220 J		
Toluene							12	
Trichlorofluoromethane								
Xylenes (total)							43	
PNAs								
Naphthalene								
Acenaphthalene								
Acenaphthene	500					480		230
Fluorene	570					660		700
Phenanthrene	280	100		7.5	4	1,500	270	1,900
Anthracene	120					260		59
Fluoranthene	17	94	5.2			250	900	47
Pyrene	38	100	11	2.1		260	500	33
Benzo(a)anthracene		37				170 J	260	
Chrysene		50				170 J	250	
Benzo(b)fluoranthene		50	31			32	840	
Benzo(k)fluoranthene		25				36	360	
Benzo(a)pyrene		43	7.8				660	
Dibenzo(a,h)anthracene							38	
Benzo(ghi)perylene		33	5.8			22	1,100	
Indeno(123-cd)pyrene		52	5.2			17	1,300	

** All concentrations reported in micrograms per kilogram (ug/kg) or parts per billion (ppb).*

Notes

1. Laboratory analyses consisted of volatile organic compounds (VOCs) using USEPA Method 8240A; polynuclear aromatic hydrocarbons (PNAs) using USEPA Method 8310; and polychlorinated biphenyls (PCBs) using USEPA Method 8080.

2. Only those constituents that were reported above the laboratory detection limit in at least one soil sample are included on the table.

3. No PCBs were detected in any of the soil samples collected as part of the Phase II Site Investigation.

4. All concentrations are reported in micrograms per kilogram (ug/kg) or parts per billion (ppb).

5. Sample identification number consists of the monitoring well (soil boring) location, and the sampling interval depth where the soil sample was collected.

6. "J" indicates that the reported concentration is an estimated value.

7. DUP-1 is a duplicate soil sample of GM11-0608.

8. DUP-2 is a duplicate soil sample of GM8-0608.

9. DUP-3 is a duplicate soil sample of GM16-0608.

Table 3-2. July 1994 Groundwater Elevation Data, Navistar/BNR/IIR Site, Rock Island, Illinois.

Well Number	Total Depth of Well (ft btoc)	Depth to Product (ft btoc)	Depth to Groundwater (ft btoc)	Product Thickness (feet)	Well Casing Elevation (ft msl)	Groundwater Elevation (ft msl)
GM-1	19.25	11.69	11.74	0.05	564.86	553.16
GM-2	20.02	11.74	11.78	0.04	564.60	552.85
GM-3	20.25	13.20	13.52	0.32	565.67	552.43
GM-4	19.84	NA	12.70		565.60	552.90
GM-5	17.90	13.42	13.44	0.02	566.81	553.39
GM-6	18.00	13.09	16.36	3.27	565.78	552.25
GM-7	24.89	NA	17.35		569.77	552.42
GM-8	17.41	NA	11.69		565.52	553.83
GM-9	19.86	NA	12.59		566.43	553.84
GM-10	19.81	NA	12.23		566.66	554.43
GM-11	17.30	NA	11.15		566.63	555.48
GM-12	22.59	NA	14.22		568.84	554.62
GM-13	19.29	NA	12.89		570.22	557.33
GM-14	12.61	NA	11.50		569.72	558.22
GM-15	20.53	NA	9.70		569.80	560.10
GM-16	15.55	NA	6.95		574.77	567.82
GM-17	15.49	NA	12.32		575.44	563.12
GM-18	16.65	NA	14.00		573.03	559.03
GM-19	26.86	NA	20.75		572.06	551.31
MW-5	30.30	NA	18.32		570.67	552.35
MW-6	25.40	16.99	17.01	0.02	570.13	553.14
MW-7	NA	NA	NA	NA	566.99	NA
MW-8	25.36	NA	13.93		566.28	552.35
MW-9	28.15	18.64	21.00	2.36	570.12	551.16

Notes:

1. Groundwater elevation accounted for the presence of a floating free product layer using a specific gravity factor for #2 fuel oil (0.866) multiplied by the product thickness.
2. All depth measurements were taken from the top of the north inner well casing (feet below top of casing [ft btoc]).
3. Elevation data is based on the top of casing elevation data provided by Beling Consultants of Moline, Illinois using a United States Geological Survey standard benchmark at feet above mean sea level (ft msl).

Table 3-3. September 1994 Groundwater Elevation Data, Navistar/BNR/IIR Site, Rock Island, Illinois.

Well Number	Total Depth of Well (ft btoc)	Depth to Product (ft btoc)	Depth to Groundwater (ft btoc)	Product Thickness (feet)	Well Casing Elevation (ft msl)	Groundwater Elevation (ft msl)
GM-1	19.25	12.94	13.69	0.75	564.86	551.82
GM-2	20.02	13.49	13.69	0.20	564.60	551.08
GM-3	20.25	14.58	16.58	2.00	565.67	550.82
GM-4	19.84	14.36	14.37	0.01	565.60	551.24
GM-5	17.90	14.52	14.55	0.03	566.81	552.29
GM-6	18.00	14.64	16.96	2.32	565.78	550.83
GM-7	24.89	18.175	18.18	0.005	569.77	551.59
GM-8	17.41	NA	12.55		565.52	552.97
GM-9	19.86	14.06	14.065	0.005	566.43	552.37
GM-10	19.81	13.52	13.57	0.05	566.66	553.13
GM-11	17.30	12.76	12.765	0.005	566.63	553.87
GM-12	22.59	NA	15.44		568.84	553.40
GM-13	19.29	14.82	14.83	0.01	570.22	555.40
GM-14	12.61	11.635	11.64	0.005	569.72	558.08
GM-15	20.53	10.09	10.095	0.005	569.80	559.71
GM-16	15.55	NA	7.68		574.77	567.09
GM-17	15.49	11.14	11.15	0.01	575.44	564.30
GM-18	16.65	NA	14.72		573.03	558.31
GM-19	26.86	NA	21.21		572.06	550.85
MW-5	30.30	NA	19.19		570.67	551.48
MW-6	25.40	18.10	18.105	0.005	570.13	552.03
MW-7	NA	NA	NA		566.99	NA
MW-8	25.36	NA	15.34		566.28	550.94
MW-9	28.15	18.74	25.24	6.50	570.12	550.51

Notes:

1. Groundwater elevation accounted for the presence of a floating free product layer using a specific gravity factor for #2 fuel oil (0.866) multiplied by the product thickness.
2. All depth measurements were taken from the top of the north inner well casing (feet below top of casing [ft btoc]).
3. Elevation data is based on the top of casing elevations provided by Beling Consultants of Moline, Illinois using a United States Geological Survey standard benchmark at feet above mean sea level (ft msl).

Table 3-4. Groundwater Data, Navistar/BNR/IIR Site, Rock Island, Illinois.

Constituent	GM-1	GM-2	GM-3	GM-4	GM-5	GM-6	GM-7	GM-8	GM-9	GM-10
VOCs										
Acetone									38	
Benzene										
Carbon disulfide	5,200									
Xylenes										
PNAs										
Naphthalene	8					na				110
Acenaphthalene						na				
Acenaphthene	230	33	2,800	35	110	na		20	20	100
Fluorene	460	490	7,200	99	290	na		21	50	300
Phenanthrene	1,300	1,200 J	20,000	220 J	820	na		7.5	130	810 J
Anthracene	63	40	320	8.9	39	na		1.3	5.7	49
Fluoranthene	32	25		6.8	22	na		1.1	2.7	12
Pyrene	30	39	320	6.5	17	na		1.2	2.5	
Benzo(a)anthracene	12	11		1.4	8.2	na			0.42	
Chrysene	19	25	400	4.4	24	na			2.5	14
Benzo(b)fluoranthene	1.3	3.3		0.33		na				5.6
Benzo(k)fluoranthene	1.4	2.6		0.27		na				0.25
Benzo(a)pyrene	2.6	5.3		0.73		na				
Dibenzo(a,h)anthracene						na				
Benzo(ghi)perylene	0.3	1		0.39		na	0.22			
Indeno(123-cd)pyrene	1.6	3.2		0.41		na				
PCBs										
Arochlor-1254					3.3E-06					
Arochlor-1260										

* *All concentrations reported in micrograms per liter (ug/L) or parts per billion (ppb).*

Table 3-4. Groundwater Data, Navistar/BNR/IIR Site, Rock Island, Illinois.

Constituent	GM-11	GM-12	GM-13	GM-14	GM-15	GM-16	GM-17	GM-18	GM-19	MW-5
VOCs										
Acetone	30 B						42 B			
Benzene										
Carbon disulfide										
Xylenes										
PNAs										
Naphthalene										
Acenaphthalene										
Acenaphthene	11	190								9.4
Fluorene	14	460	5.9						0.45	31
Phenanthrene	12	930 J	6.4						0.22	33
Anthracene		20								1.4
Fluoranthene		14							0.29	
Pyrene		18							0.95	1.1
Benzo(a)anthracene									0.13	
Chrysene									0.36	0.29
Benzo(b)fluoranthene										
Benzo(k)fluoranthene		0.27 J								
Benzo(a)pyrene		4.4							0.53	
Dibenzo(a,h)anthracene										
Benzo(ghi)perylene									0.89	
Indeno(123-cd)pyrene									1.1	
PCBs										
Arochlor-1254										
Arochlor-1260										

** All concentrations reported in micrograms per liter (ug/L) or parts per billion (ppb).*

Table 3-4. Groundwater Data, Navistar/BNR/IIR Site, Rock Island, Illinois.

Constituent	MW-6	MW-8	MW-9	GM-99	GM-101	MW-88	FB-1	FB-2	FB-3	GW-1
VOCs										
Acetone			31						28 B	
Benzene			6							
Carbon disulfide		6				32				
Xylenes			7							
PNAs										
Naphthalene			470							
Acenaphthalene										
Acenaphthene	23		900		230					
Fluorene	35		4,600		470					
Phenanthrene	88		12,000 J		950					
Anthracene	4.1		430		48					
Fluoranthene	2.9		420		15					
Pyrene	3.6		400		20					
Benzo(a)anthracene	1.2		11		7.6					
Chrysene	2.8		190		30					
Benzo(b)fluoranthene			67							
Benzo(k)fluoranthene			38							
Benzo(a)pyrene	0.48		71							
Dibenzo(a,h)anthracene										
Benzo(ghi)perylene	1									
Indeno(123-cd)pyrene			21							
PCBs										
Arochlor-1254			5.8E-05		na					
Arochlor-1260			1.3E-05		na					

** All concentrations reported in micrograms per liter (ug/L) or parts per billion (ppb).*

Table 3-4. Groundwater Data, Navistar/BNR/IIR Site, Rock Island, Illinois.

Constituent	GW-2	GW-3	Trip
VOCs			
Acetone	52	47	
Benzene			
Carbon disulfide			
Xylenes			
PNAs			
Naphthalene	na	na	na
Acenaphthalene	na	na	na
Acenaphthene	na	na	na
Fluorene	na	na	na
Phenanthrene	na	na	na
Anthracene	na	na	na
Fluoranthene	na	na	na
Pyrene	na	na	na
Benzo(a)anthracene	na	na	na
Chrysene	na	na	na
Benzo(b)fluoranthene	na	na	na
Benzo(k)fluoranthene	na	na	na
Benzo(a)pyrene	na	na	na
Dibenzo(a,h)anthracene	na	na	na
Benzo(ghi)perylene	na	na	na
Indeno(123-cd)pyrene	na	na	na
PCBs			
Arochlor-1254	na	na	na
Arochlor-1260	na	na	na

*. *All concentrations reported in micrograms per liter (ug/L) or parts per billion (ppb).*

Table 3-4. Groundwater Data, Navistar/BNR/IIR Site, Rock Island, Illinois.

Notes:

1. Laboratory analyses consisted of volatile organic compounds (VOCs) using USEPA Method 8240; polynuclear aromatic hydrocarbons (PNAs) using USEPA Method 8310; and polychlorinated biphenyls (PCBs) using USEPA Method 8080.

2. Only those constituents that were reported above the laboratory detection limit in at least one groundwater sample are included on the table.

3. All concentrations are reported in micrograms per liter (ug/L) or parts per billion (ppb).

4. "J" indicates that the reported concentration is an estimated value.

5. "B" indicates that the constituent was also found in the laboratory blank.

6. GM-99 is a duplicate groundwater sample of GM-15.

7. GM-101 is a duplicate groundwater sample of GM-12.

8. MW-88 is a duplicate groundwater sample of MW-8.

9. FB-1, FB-2, and FB-3 are field blanks.

10. GW-1, GW-2, and GW-3 are field equipment blanks.

11. Trip is a trip blank for quality assurance purposes.

Table 4-1. Removal Technology Screening, Navistar/BNRR/IIR Site, Rock Island, Illinois.

General Response Action	Process Option	Description	Comments
Containment	Slurry Wall	Vertical barrier constructed using trench backfilled low-permeability slurry installed at downgradient edge or around plume; keyed into lower impermeable zone.	Retained for further analysis.
	Sheet Piling	Vertical barrier constructed using driven widths of metal; keyed into lower impermeable zone.	Not retained for further analysis. Fairly high potential for leaks through sheet piling joints.
	Grout Curtain	Vertical barrier constructed using overlapping cylinders of grout; typically installed using specialized machinery.	Not retained for further analysis. Higher cost higher permeability than slurry wall.
Recovery	Pumping Wells	Recovery of product and groundwater using conventional drilled wells installed with submersible pumps.	Retained for further analysis.
	Subsurface drain	Recovery of product and groundwater using subsurface horizontal slotted drain pipe.	Retained for further analysis.
	Passive Recovery Wells	Recovery of product using wells with oleophilic oil-skimming cartridges.	Retained for further analysis.
	Flushing	Recovery of product through surfactant or temperature–enhanced flushing.	Not retained for further analysis. Existence of free phase product makes technology unpredictable.
Treatment	Activated Carbon	Commonly used adsorption process for organic constituents.	Retained for further analysis.
	Fixed-Film Bioreactor	Bioremediation process that relies on sustaining biological growth on fix media. Organisms use organic constituents in influent as a food source.	Retained for further analysis.
	In--Situ Bioremediation	Enhancement of naturally--occurring biodegradation by adjusting moisture, pH, and/or nutrients.	Not retained for further analysis. Existence of free product probably toxic to micro-organisms.

Table 5-1. Cost Estimate for Alternative 1, Passive Recovery Well Point System, Navistar/BNR/IIR Properties, Rock Island, Illinois.

CONSTRUCTION COST ELEMENT	UNIT COST	UNIT	UNITS REQ'D	SUBTOTAL
GENERAL				
Mobilization/Demobilization	$3,500	ls	1	$3,500
Field Office	$1,000	ls	1	$1,000
SITE WORK				
Site Preparation	$2,000	ls	1	$2,000
Surveying	$2,500	ls	1	$2,500
RECOVERY WELLS & FORCE MAIN				
Drilling Oversight - RW's	$10,000	ls	1	$10,000
Well Installation - RW's	$1,100	well	50	$55,000
Well Head Installation	$500	well	50	$25,000
Product Recovery Hose	$3	lf	1200	$3,600
Air Supply Hose	$2	lf	2500	$5,000
Force Main to Treatment Facility	$25	ft	1100	$27,500
Valves & Gauges	$50	well	50	$2,500
Manifold Construction	$1,500	ls	1	$1,500
Heat Trace & Insulate Regulator Enclosure	$1,500	enclosure	10	$15,000
Pea Gravel Backfill	$50	cy	350	$17,500
Product Recovery Pump	$1,500	pump	50	$75,000
TREATMENT FACILITY				
Treatment Building (15'x15')	$25	sf	225	$5,625
Air Compressor System	$18,500	ls	1	$18,500
1,000-gallon Product Recovery Tank	$4,500	ls	1	$4,500
Recovery tank insulation and heat trace	$4,000	ls	1	$4,000
Tank full shut off system	$1,500	ls	1	$1,500
Concrete Pad (15' x 15')	$4	sf	225	$900
Chain-link Fence	$20	lf	100	$2,000
Mechanical Installation	$8,000	ls	1	$8,000
Electrical Installation	$7,000	ls	1	$7,000
CONSTRUCTION COST SUBTOTAL				**$298,600**
Overall Contingency (25%)				$74,700
CONSTRUCTION COST				**$373,300**
Engineering Design (10%)				$37,300
Construction Management (10%)				$37,300
Permitting				$1,000
TOTAL CAPITAL COST				**$448,900**

Table 5-1. Cost Estimate for Alternative 1, Passive Recovery Well Point System, Navistar/BNR/IIR Properties, Rock Island, Illinois.

O&M COST ELEMENT	UNIT PRICE	UNIT	UNITS REQ'D	SUBTOTAL
Electricity	$850	month	12	$10,200
Routine Maintenance, Sampling, Gauging	$1,000	month	12	$12,000
Project Management	$1,000	month	12	$12,000
ANNUAL O&M COST				**$34,200**
Present Worth Value				
(5 years, 5%)				$148,100
(10 years, 5%)				$264,100
(30 years, 5%)				$525,700
TOTAL PRESENT NET WORTH COST (5 Years)				**$597,000**
TOTAL PRESENT NET WORTH COST (10 Years)				**$713,000**
TOTAL PRESENT NET WORTH COST (30 Years)				**$975,000**

Assumptions:

1. No concrete removal is required for system installation.
2. Treatment enclosure located on Navistar property.
3. Soil removed during excavation will be spread on-site.
4. 460 volt power available on-site within 100 feet of enclosure.
5. 110 volt power within 300 feet of each well head.
6. Disposal cost for recovered product is not included.
7. 4" Sch 40 PVC carrier pipe.
8. Well head installation includes well head modification and well vault.

Table 5-2. Cost Estimate for Alternative 2, Conventional Recovery Wells
Navistar/BNR/IIR Properties, Rock Island, Illinois

CONSTRUCTION COST ELEMENT	UNIT COST	UNIT	UNITS REQ'D	SUBTOTAL
GENERAL				
Mobilization/Demobilization	$3,500	ls	1	$3,500
Field Office	$1,000	ls	1	$1,000
SITE WORK				
Site Preparation	$2,000	ls	1	$2,000
Surveying	$1,200	ls	1	$1,200
Force Main to NPDES Outfall	$25	lf	500	$12,500
RECOVERY WELLS & FORCE MAIN				
Drilling Oversight - RW's	$7,500	ls	1	$7,500
Well Installation - RW's	$3,000	well	8	$24,000
Well Head Installation	$500	well	8	$4,000
Product Recovery Hose	$3	lf	1500	$4,500
Air Supply Hose	$2	lf	3000	$6,000
Carrier Pipe to Treatment Facility	$25	ft	1500	$37,500
Valves & Gauges	$50	well	8	$400
Manifold Construction	$250	ea	4	$1,000
Heat Trace & Insulate Regulator Enclosure	$1,500	enclosure	4	$6,000
Trench Backfill	$50	cy	350	$17,500
Product Recovery Pump	$1,950	pump	8	$15,600
Recovery Pump Control Module	$1,350	ea	4	$5,400
TREATMENT FACILITY				
Treatment Building (20'x20')	$25	sf	400	$10,000
Air Compressor System	$13,050	ls	1	$13,050
1,000-gallon product recovery tank	$4,500	ls	1	$4,500
Recovery tank insulation and heat trace	$4,000	ls	1	$4,000
Tank full shut off system	$1,500	ls	1	$1,500
Oil/Water Separator	$5,000	ls	1	$5,000
Bag Filter	$1,000	ea	1	$1,000
GAC Unit (2000 lbs)	$10,000	ea	2	$20,000
Holding Tank	$1,500	ea	1	$1,500
Transfer Pump	$500	ea	3	$1,500
Plant Piping	$20	lf	200	$4,000
Instrumentation and Controls	$5,000	ls	1	$5,000
Concrete Pad (20' x 20')	$4	sf	400	$1,600
Chain-link Fence	$20	lf	120	$2,400
Mechanical Installation	$8,000	ls	1	$8,000
Electrical Installation	$7,000	ls	1	$7,000
CONSTRUCTION COST SUBTOTAL				**$239,700**

Table 5-2. Cost Estimate for Alternative 2, Conventional Recovery Wells
Navistar/BNR/IIR Properties, Rock Island, Illinois

Overall Contingency (25%)	$59,925
CONSTRUCTION COST	**$299,600**
Engineering Design (10%)	$29,960
Construction Management (10%)	$29,960
Permitting	$5,000
TOTAL CAPITAL COST	**$364,500**

O&M COST ELEMENT	UNIT PRICE	UNIT	UNITS REQ'D	SUBTOTAL
Routine Maintenance	$1,400	month	12	$16,800
GAC Replacement	$3,200	quarter	4	$12,800
Electricity	$850	month	12	$10,200
Monitoring and Sampling	$4,000	quarter	4	$16,000
Project Management	$1,000	month	12	$12,000
ANNUAL O&M COST				**$51,000**
Present Worth Value				
(5 years, 5%)				$220,800
(10 years, 5%)				$393,800
(30 years, 5%)				$784,000
TOTAL PRESENT NET WORTH (5 Years)				**$585,000**
TOTAL PRESENT NET WORTH (10 Years)				**$758,000**
TOTAL PRESENT NET WORTH (30 Years)				**$1,149,000**

Assumptions:
1. No concrete removal is required for system installation.
2. Treatment enclosure located on Navistar property.
3. Soil removed during excavation will be spread on-site.
4. 460 volt power available on-site within 100 feet of enclosure.
5. 110 volt power within 300 feet of each well head.
6. Disposal cost for recovered product is not included.
7. 4" Sch 40 PVC carrier pipe.
8. Well head installation includes well head modification and well vault.

Table 5-3. Cost Estimate for Alternative 3, Product Recovery Trench and Treatment System
Navistar/BNR/IIR Properties, Rock Island, Illinois

CONSTRUCTION COST ELEMENT	UNIT COST	UNIT	UNITS REQ'D	SUBTOTAL
GENERAL				
Mobilization/Demobilization	$5,000	ls	1	$5,000
Field Office	$1,000	ls	1	$1,000
SITE WORK				
Site Preparation	$5,000	ls	1	$5,000
Surveying	$2,500	ls	1	$2,500
Forcemain to NPDES Outfall	$25	lf	500	$12,500
TRENCH INSTALLATION				
Excavation	$25	cy	1298	$32,400
Backfill	$5	cy	320	$1,600
Imported Pea Gravel	$15	cy	815	$12,200
Imported Pipe Bedding	$6	cy	163	$1,000
Drain Pipe Installation	$15	lf	1100	$16,500
Compaction	$5	cy	1298	$6,500
Construction Dewatering	$1,000	day	12	$12,000
Water Treatment/Disposal	$1	gal	10000	$10,000
Spoils Handling/Transportation	$20	cy	978	$19,600
Spoils Disposal	$25	cy	978	$24,400
Sump Pump	$800	ea	3	$2,400
Manhole Sump Installation	$6,000	ea	3	$18,000
Forcemain to Treatment Facility	$25	ft	1100	$27,500
TREATMENT FACILITY				
Treatment Building (20'x20')	$25	sf	400	$10,000
Air Compressor System	$10,000	ls	1	$10,000
1,000-gallon product recovery tank	$4,500	ls	1	$4,500
Recovery tank insulation and heat trace	$4,000	ls	1	$4,000
Tank full shut off system	$1,500	ls	1	$1,500
Oil/Water Separator	$5,000	ea	1	$5,000
Bag Filter	$1,000	ea	1	$1,000
GAC Unit (2000 lbs)	$10,000	ea	2	$20,000
Holding Tank	$1,500	ea	1	$1,500
Transfer Pump	$500	ea	3	$1,500
Plant Piping	$20	lf	200	$4,000
Instrumentation and Controls	$5,000	ls	1	$5,000
Concrete Pad (20'x20')	$4	sf	400	$1,600
Chain-link Fence	$20	lf	150	$3,000
Mechanical Installation	$8,000	ls	1	$8,000
Electrical Installation	$7,000	ls	1	$7,000
CONSTRUCTION COST SUBTOTAL				**$297,700**

Table 5-3. Cost Estimate for Alternative 3, Product Recovery Trench and Treatment System
Navistar/BNR/IIR Properties, Rock Island, Illinois

Overall Contingency (25%)	$74,400
CONSTRUCTION COST	**$372,100**
Engineering Design (10%)	$37,200
Construction Management (10%)	$37,200
Permitting	$3,000
TOTAL CAPITAL COST	**$449,500**

O&M COST ELEMENT	UNIT COST	UNIT	UNITS REQ'D	SUBTOTAL
Routine Maintenance	$1,000	month	12	$12,000
GAC Replacement	$3,200	quarter	4	$12,800
Electricity	$850	month	12	$10,200
Monitoring and Sampling	$4,000	quarter	4	$16,000
Project Management	$1,000	month	12	$12,000
ANNUAL O&M COST				**$63,000**
PRESENT WORTH OF ANNUAL O&M				
(5 yrs, 5% interest)				$272,800
(10 yrs, 5% interest)				$486,500
(30 yrs, 5% interest)				$968,500
TOTAL PRESENT NET WORTH (5 YEARS)				**$722,000**
TOTAL PRESENT NET WORTH (10 YEARS)				**$936,000**
TOTAL PRESENT NET WORTH (30 YEARS)				**$1,418,000**

Assumptions:

Table 5-4. Cost Estimate for Alternative 4, Slurry Wall with Product Recovery
Navistar/BNR/IIR Properties, Rock Island, Illinois

CONSTRUCTION COST ELEMENT	UNIT COST	UNIT	UNITS REQ'D	SUBTOTAL
GENERAL				
Mobilization/Demobilization	$5,000	ls	1	$5,000
Field Office	$1,000	ls	1	$1,000
SITE WORK				
Site Preparation	$5,000	ls	1	$5,000
Surveying	$2,500	ls	1	$2,500
SLURRY WALL				
Soil Boring Program	$50	lf	500	$25,000
Bench-Scale Testing	$2,500	ls	1	$2,500
Soils Testing	$4,500	ls	1	$4,500
Excavation/Installation	$5	sq ft	45000	$236,250
RECOVERY WELLS & FORCE MAIN				
Drilling Oversight - RW's	$5,000	ls	1	$5,000
Well Installation - RW's	$1,100	well	31	$34,100
Well Head Installation	$500	well	31	$15,500
Product Recovery Hose	$3	lf	1500	$4,500
Air Supply Hose	$2	lf	3000	$6,000
Force Main to Treatment Facility	$25	ft	1500	$37,500
Valves & Gauges	$50	well	31	$1,550
Manifold Construction	$1,500	ls	1	$1,500
Heat Trace & Insulate Regulator Enclosure	$1,500	enclosure	6	$9,000
Pea Gravel Backfill	$50	cy	350	$17,500
Product Recovery Pump	$1,500	pump	31	$46,500
TREATMENT FACILITY				
Treatment Building (15'x15')	$25	sf	225	$5,625
Air Compressor System	$15,000	ls	1	$15,000
1,000-gallon product recovery tank	$4,500	ls	1	$4,500
Recovery tank insulation and heat trace	$4,000	ls	1	$4,000
Tank full shut off system	$1,500	ls	1	$1,500
Concrete Pad (15' x 15')	$2,250	ls	1	$2,250
Chain-link Fence	$20	lf	100	$2,000
Mechanical Installation	$8,000	ls	1	$8,000
Electrical Installation	$7,000	ls	1	$7,000
CONSTRUCTION COST SUBTOTAL				**$510,300**

Table 5-4. Cost Estimate for Alternative 4, Slurry Wall with Product Recovery
Navistar/BNR/IIR Properties, Rock Island, Illinois

Overall Contingency (25%)	$127,600
CONSTRUCTION COST	**$637,900**
Engineering Design (10%)	$63,790
Construction Management (10%)	$63,790
Permitting	$5,000
TOTAL CAPITAL COST	**$770,500**

O&M COST ELEMENT	UNIT PRICE	UNIT	UNITS REQ'D	SUBTOTAL
Electricity	$1,500	month	12	$18,000
Routine Maintenance, Sampling, Gauging	$1,400	month	12	$16,800
Project Management	$1,000	month	12	$12,000
ANNUAL O&M COST				**$46,800**
Present Worth Value				
(5 years, 5%)				$202,600
(10 years, 5%)				$361,400
(30 years, 5%)				$719,400
TOTAL PRESENT NET WORTH (5 Years)				**$973,000**
TOTAL PRESENT NET WORTH (10 Years)				**$1,132,000**
TOTAL PRESENT NET WORTH (30 Years)				**$1,490,000**

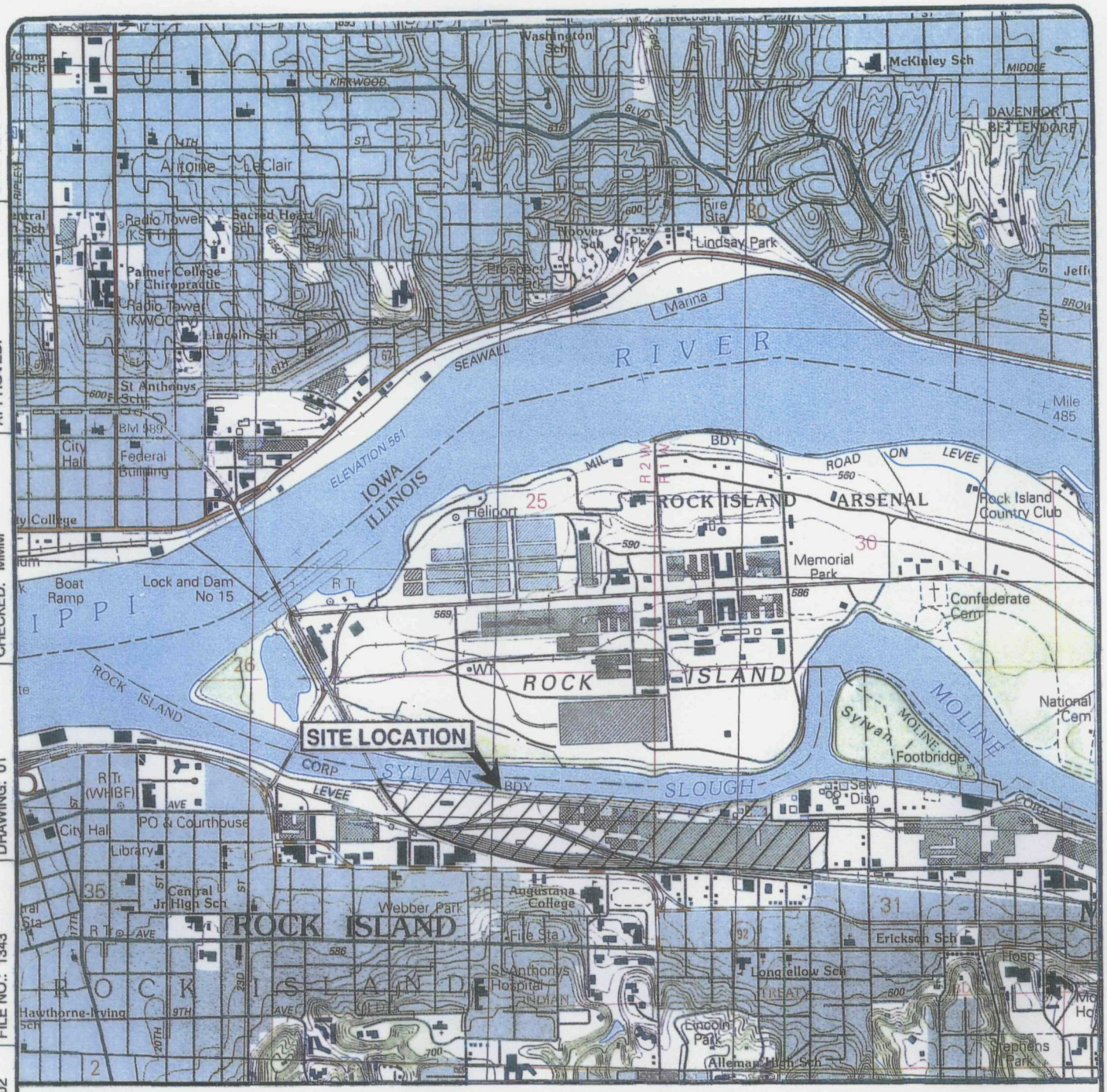
Assumptions:
1. No concrete removal is required for system installation.
2. Treatment enclosure located on Navistar property.
3. Soil removed during excavation will be spread on-site.
4. 460 volt power available on-site within 100 feet of enclosure.
5. 110 volt power within 300 feet of each well head.
6. Disposal cost for recovered product is not included.
7. 4" Sch 40 PVC carrier pipe.
8. Well head installation includes well head modification and well vault.
9. Total length of slurry wall is 1500 ft with an average depth 30 ft bls.
10. Soil boring program to consist of 15 borings advanced using HSA drilling to an average depth of 30 ft bls. Two samples per borehole collected for grain size analysis by sieve and hydrometer.
11. No underground obstructions are encountered along the slurry wall alignment.

Table 5-5. Cost Estimate Summary
Navistar/BNR/IIR Properties, Rock Island, Illinois

COST	**Alternative 1** Passive Recovery Well Point System	**Alternative 2** Conventional Recovery Wells	**Alternative 3** Recovery Trench with GW Treatment	**Alternative 4** Slurry Wall with Product Recovery
TOTAL CAPITAL COST	$448,900	$366,200	$449,500	$770,500
ANNUAL O&M COST	$34,200	$51,000	$63,000	$46,800
TOTAL PRESENT NET WORTH (5 Years)	$597,000	$587,000	$722,000	$973,000
TOTAL PRESENT NET WORTH (10 Years)	$713,000	$760,000	$936,000	$1,132,000
TOTAL PRESENT NET WORTH (30 Years)	$975,000	$1,150,000	$1,418,000	$1,490,000

Notes:
1). Discount Rate = 5%
2). Present Worth Factor @ 5 Years = 4.329
Present Worth Factor @ 10 Years = 7.722
Present Worth Factor @ 30 Years = 10.380

FIGURES



SOURCE: USGS 7.5 Minute Topographic Map, DAVENPORT EAST, IOWA-ILL. Quadrangle, 1991

N

0 1000 2000 4000

SCALE IN FEET

GERAGHTY & MILLER, INC.
Environmental Services

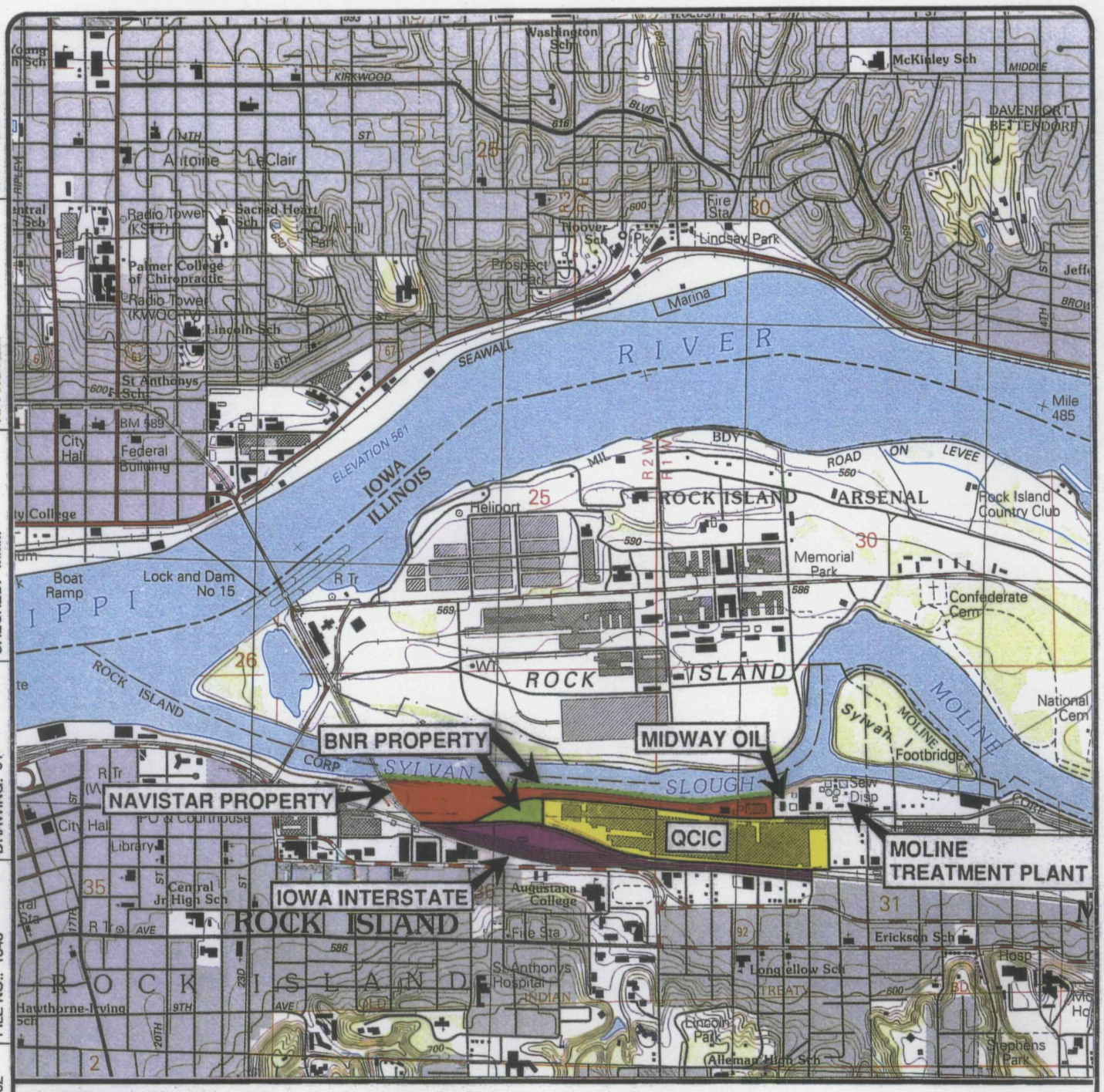
SITE LOCATION MAP

NAVISTAR/BURLINGTON NORTHERN RAILROAD
IOWA INTERSTATE RAILROAD PROPERTIES
ROCK ISLAND, ILLINOIS

FIGURE

2-1

DRAFTER: ELS | APPROVED: | CHECKED: MMM | DRAWING: 01 | FILE NO.: 1343 | PRJCT NO.: CI0299.002 | DWG DATE: 01JUN94



SOURCE: USGS 7.5 Minute Topographic Map, DAVENPORT EAST, IOWA-ILL. Quadrangle, 1991

N

0 1000 2000 4000

SCALE IN FEET

IOWA

ILLINOIS

GERAGHTY & MILLER, INC.
Environmental Services

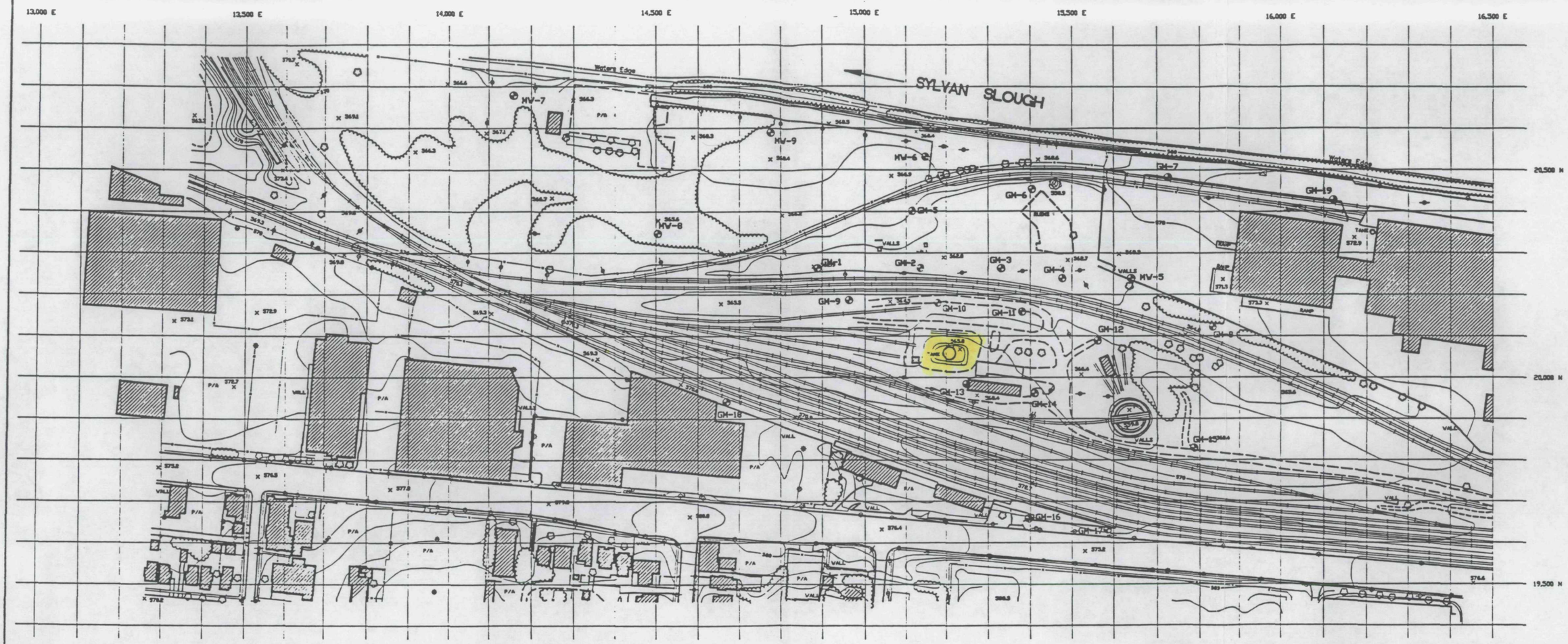
SITE LAYOUT/SURROUNDING LAND USE MAP

NAVISTAR/BURLINGTON NORTHERN RAILROAD
IOWA INTERSTATE RAILROAD PROPERTIES
ROCK ISLAND, ILLINOIS

FIGURE

2-2

DRAFTER: ELS | APPROVED: | CHECKED: MMM | DRAWING: 01 | FILE NO.: 1343 | PRJCT NO.: CI0299.002 | DWG DATE: 01JUN94



LEGEND

- MONITORING WELL/NUMBER
- FENCE
- RAILROAD TRACKS
- EXISTING STRUCTURE/BUILDING
- SPOT ELEVATION AT GRADE
- EXISTING GRADE CONTOUR
- UTILITY POLE
- PAVED AREA
- TREE
- TREE LINE
- WATERS EDGE

120 0 120 240

SCALE IN FEET

SOURCE: ABRAM AERIAL SURVEY CORPORATION, LANSING MICHIGAN, ABRAMS CONTRACT A.A.S.C. #25637. DATE OF PHOTOGRAPHY JULY 26, 1994. GRADE CONTOUR INTERVAL = 2'.

HORIZONTAL CONTROL GRID SITE SPECIFIC, SITE ELEVATIONS BASED ON U.S.G.S. ELEVATIONS.

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Environmental Services

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SCALE VERIFICATION
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USE TO VERIFY FIGURE REPRODUCTION SCALE

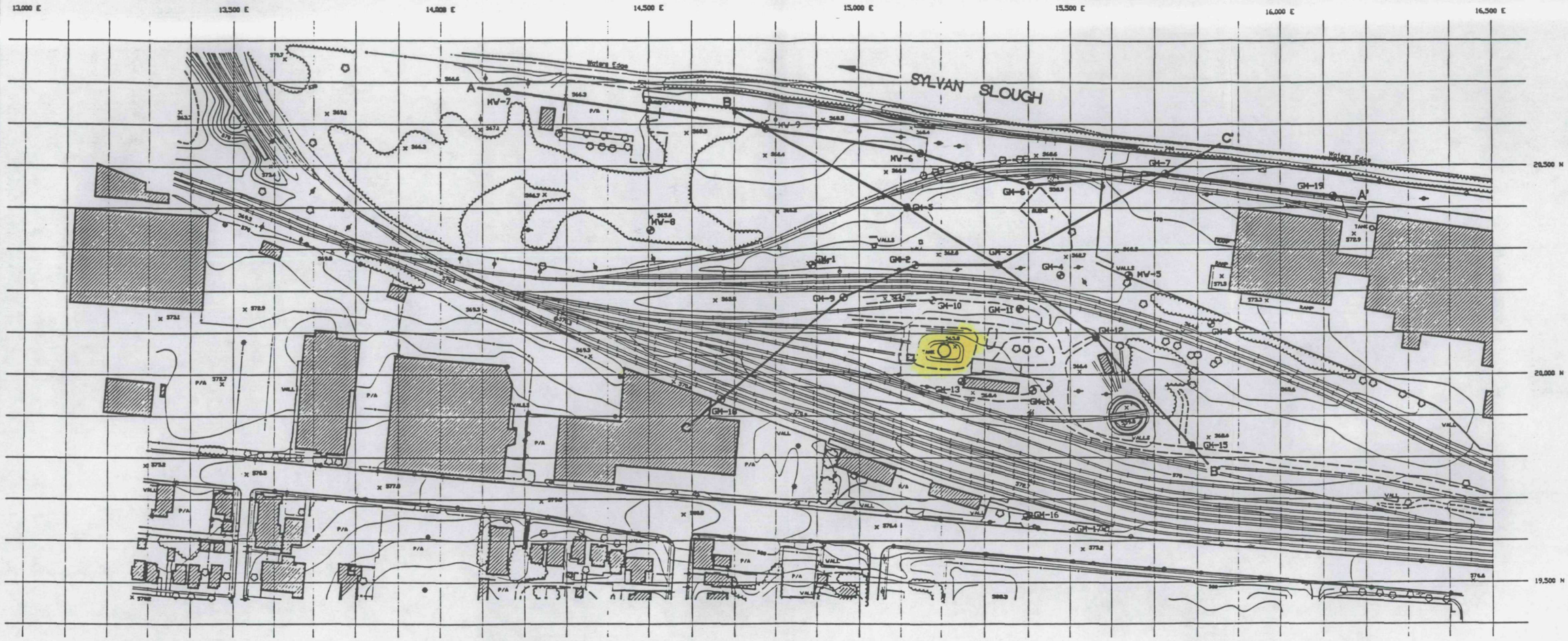
REV. NO.	DATE	DESCRIPTION	BY	APPR.

PROJECT NO.: [illegible]	FILE NO: NAVAVSLOC.DWG
DRAWING NO.: [illegible]	PLOT SCALE: 1=120
DRAFTED BY: [illegible]	DATE: SEPT. 23, 1994
CHECKED BY:	DATE:
APPROVED BY:	DATE:
LAST REVISION BY: [illegible]	DATE: SEPT. 23, 1994

MONITORING WELL LOCATION MAP

NAVISTAR/BNR/IIR SITE
ROCK ISLAND, ILLINOIS

FIGURE 3-1



LEGEND

- MONITORING WELL/NUMBER
- FENCE
- RAILROAD TRACKS
- EXISTING STRUCTURE/BUILDING
- SPOT ELEVATION AT GRADE
- EXISTING GRADE CONTOUR
- UTILITY POLE
- PAVED AREA
- TREE
- TREE LINE
- WATERS EDGE
- A —— A' CROSS-SECTION LOCATION

N

120 0 120 240

SCALE IN FEET

SOURCE: ABRAM AERIAL SURVEY CORPORATION, LANSING MICHIGAN, ABRAMS CONTRACT A.A.S.C. #256337. DATE OF PHOTOGRAPHY JULY 26, 1994. GRADE CONTOUR INTERVAL = 2'.

HORIZONTAL CONTROL GRID SITE SPECIFIC, SITE ELEVATIONS BASED ON U.S.G.S. ELEVATIONS.

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USE TO VERIFY FIGURE REPRODUCTION SCALE

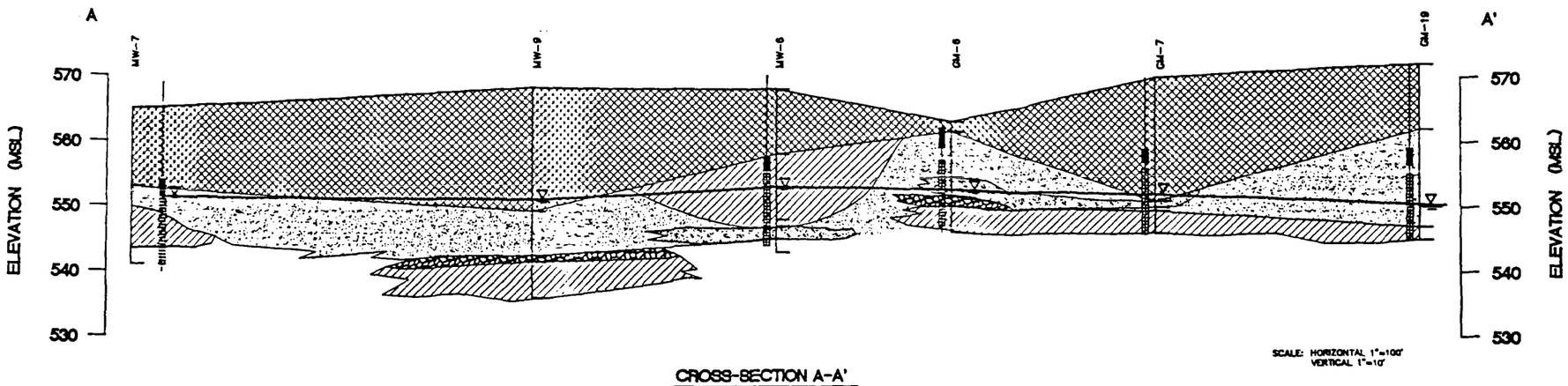
REV. NO.	DATE	DESCRIPTION	BY	APPR.

PROJECT NO.: [illegible]	FILE NO: NAVCSLOC.DWG
DRAWING NO.: [illegible]	PLOT SCALE: 1=120
DRAWN BY: [illegible]	DATE: SEPT. 15, 1994
CHECKED BY:	DATE:
APPROVED BY:	DATE:
LAST REVISION BY: [illegible]	DATE: SEPT. 23, 1994

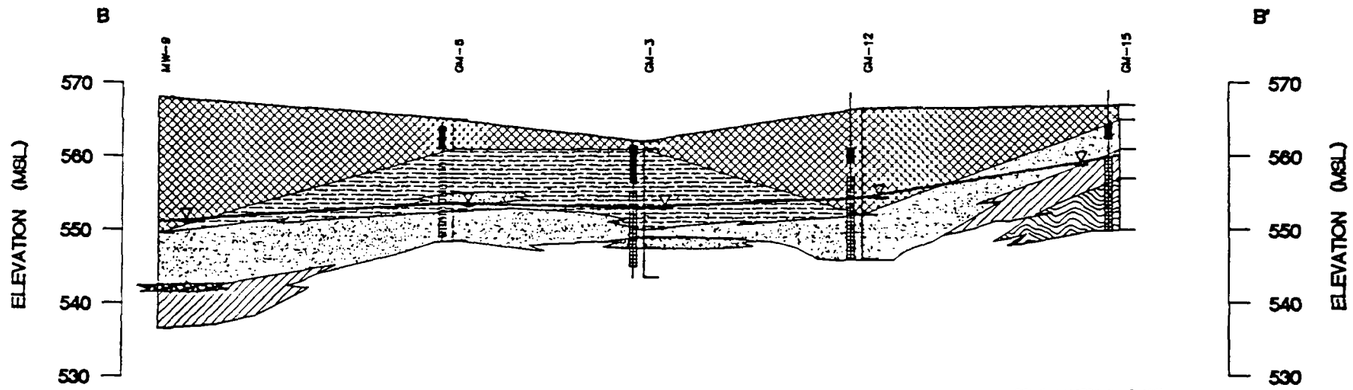
GEOLOGIC CROSS-SECTION LOCATION MAP

NAVISTAR/BNR/IIR SITE
ROCK ISLAND, ILLINOIS

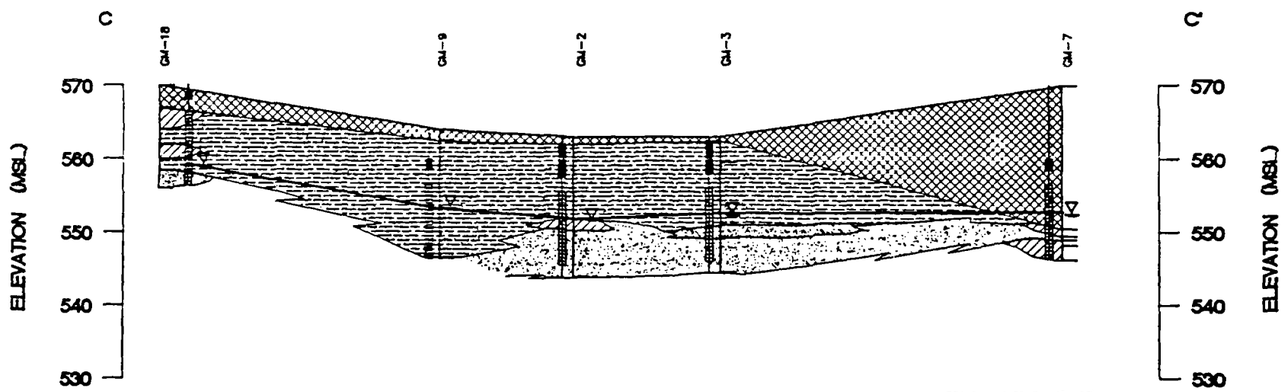
FIGURE
3-2



CROSS-SECTION A-A'



CROSS-SECTION B-B'



CROSS-SECTION C-C'

LEGEND

- FILL
- SAND
- CLAY
- SAND TO GRAVEL
- GRAVEL
- SAND AND SILT
- SHALE
- (ND) NO DATA
- WATER LEVEL (DASHED WHERE INFERRED)
- WELL/BOREHOLE
- BENTONITE SEAL
- WELL SCREEN

NOTE: NO WELL DETAIL WAS AVAILABLE FOR MW-9.

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SCALE VERIFICATION
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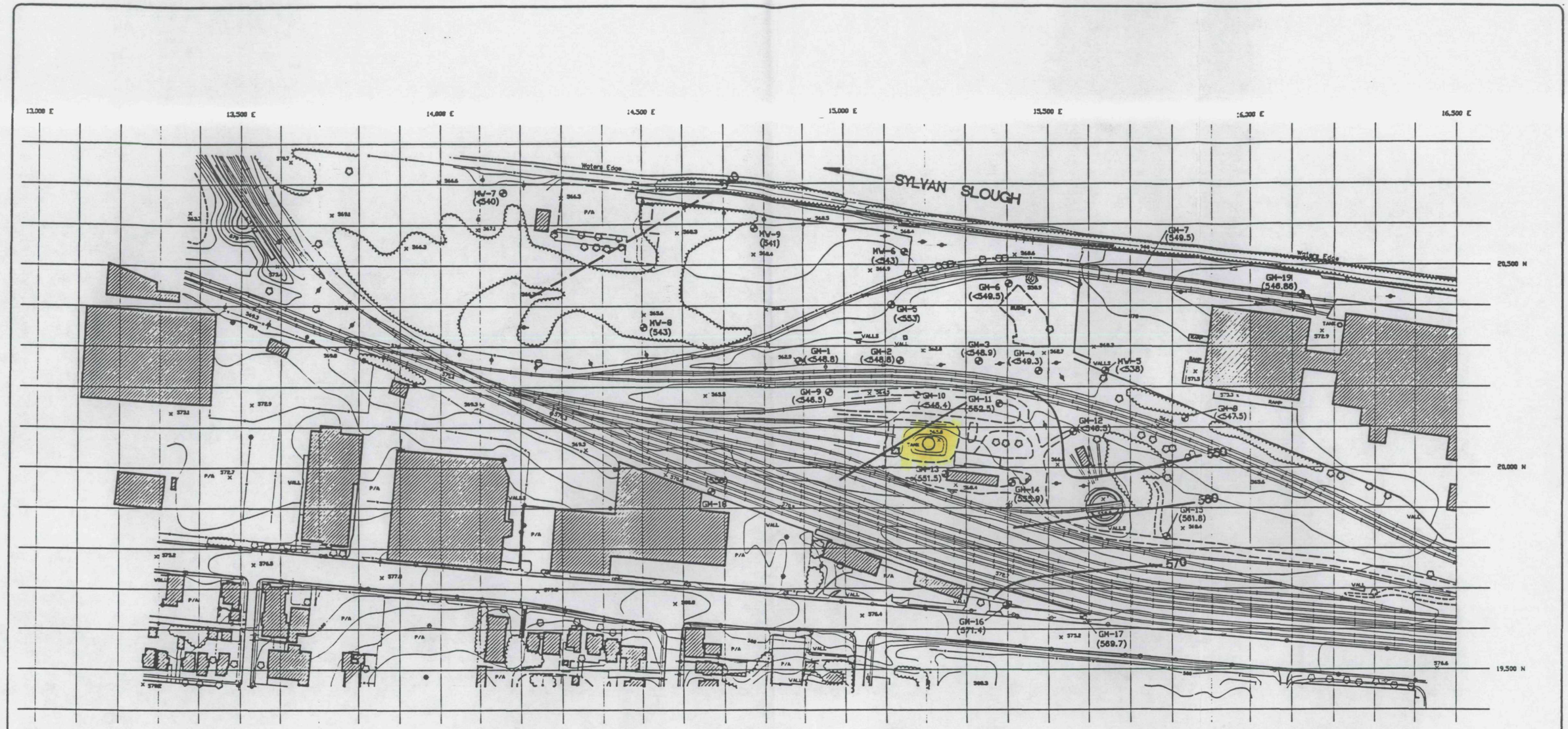
USE TO VERIFY FIGURE REPRODUCTION SCALE

REV. NO.	DATE	DESCRIPTION	BY	APPR.

GEOLOGIC CROSS-SECTIONS

NAVISTAR/BNR/IIR SITE
ROCK ISLAND, ILLINOIS

FIGURE
3-3



LEGEND

- MONITORING WELL/NUMBER
- FENCE
- RAILROAD TRACKS
- EXISTING STRUCTURE/BUILDING
- SPOT ELEVATION AT GRADE
- EXISTING GRADE CONTOUR
- UTILITY POLE
- PAVED AREA
- TREE
- TREE LINE
- WATERS EDGE
- 570 TOP OF SHALE/CLAY UNIT ELEVATION CONTOUR (DASHED WHERE INFERRED)
- (555.9) TOP OF SHALE/CLAY UNIT ELEVATION (FEET MEAN SEA LEVEL (MSL))

120 0 120 240

SCALE IN FEET

SOURCE: ABRAM AERIAL SURVEY CORPORATION, LANSING MICHIGAN, ABRAMS CONTRACT A.A.S.C. #25637. DATE OF PHOTOGRAPHY JULY 26, 1994. GRADE CONTOUR INTERVAL = 2'.

HORIZONTAL CONTROL GRID SITE SPECIFIC, SITE ELEVATIONS BASED ON U.S.G.S. ELEVATIONS.

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SCALE VERIFICATION
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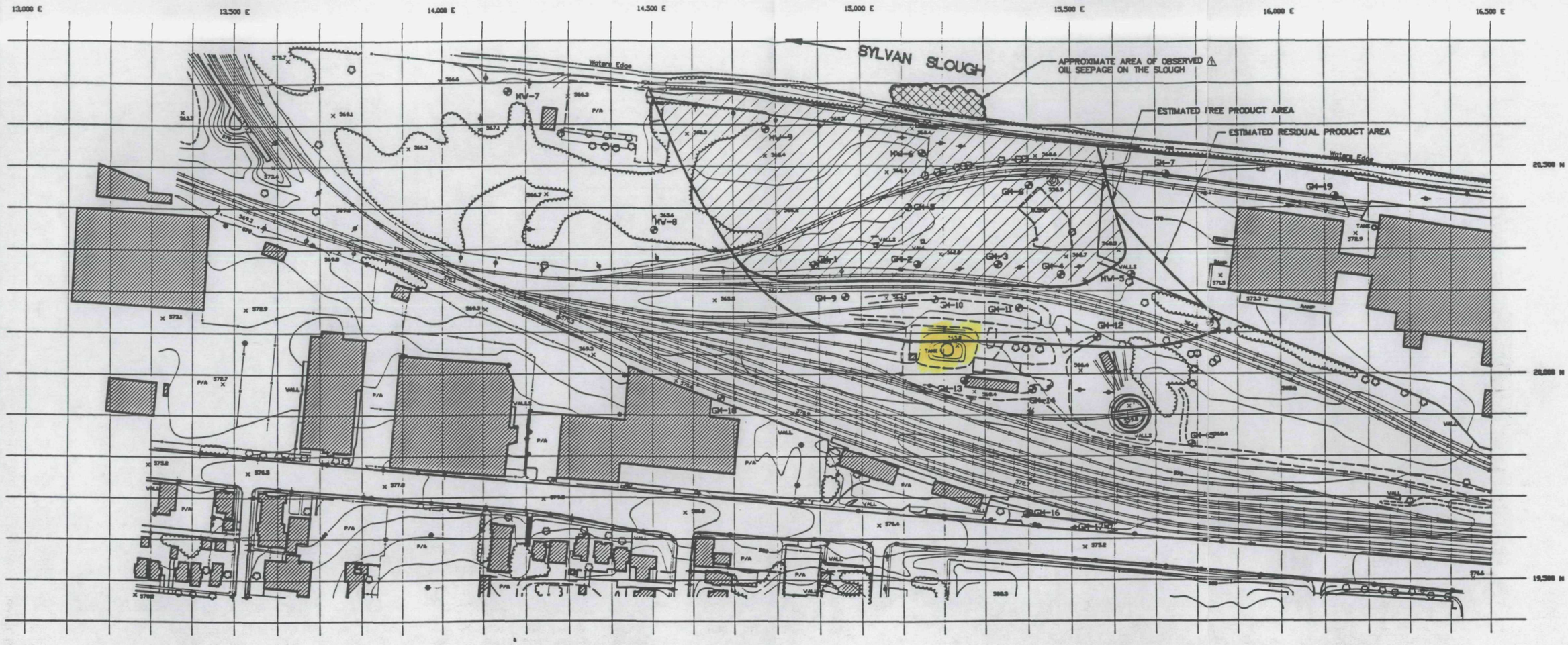
USE TO VERIFY FIGURE REPRODUCTION SCALE

REV. NO.	DATE	DESCRIPTION	BY	APPR.

PROJECT NO.: [illegible]	FILE NO: NAVSCONT.DWG
DRAWING NO.: [illegible]	PLOT SCALE: 1=120
DRAFTED BY: [illegible]	DATE: SEPT. 15, 1994
CHECKED BY:	DATE:
APPROVED BY:	DATE:
LAST REVISION BY: S GOCHER	DATE: SEPT. 16, 1994

TOP OF SHALE/CLAY UNIT ELEVATION CONTOUR MAP
NAVISTAR/BNR/IIR SITE
ROCK ISLAND, ILLINOIS

FIGURE 3-4



LEGEND

- MONITORING WELL/NUMBER
- FENCE
- RAILROAD TRACKS
- EXISTING STRUCTURE/BUILDING
- x 376.4 SPOT ELEVATION AT GRADE
- EXISTING GRADE CONTOUR
- UTILITY POLE
- P/A PAVED AREA
- TREE
- TREE LINE
- WATERS EDGE
- LIGHT

NOTE: THE ESTIMATED AREAL EXTENT OF FREE PRODUCT IS BASED ON THE FREE PRODUCTION THICKNESS MEASUREMENTS TAKEN ON JULY 20, 1994.

120 0 120 240
SCALE IN FEET

SOURCE: ABRAM AERIAL SURVEY CORPORATION, LANSING MICHIGAN, ABRAMS CONTRACT A.A.S.C. #25637. DATE OF PHOTOGRAPHY JULY 28, 1994. GRADE CONTOUR INTERVAL = 2'.

HORIZONTAL CONTROL GRID SITE SPECIFIC, SITE ELEVATIONS BASED ON U.S.G.S. ELEVATIONS.

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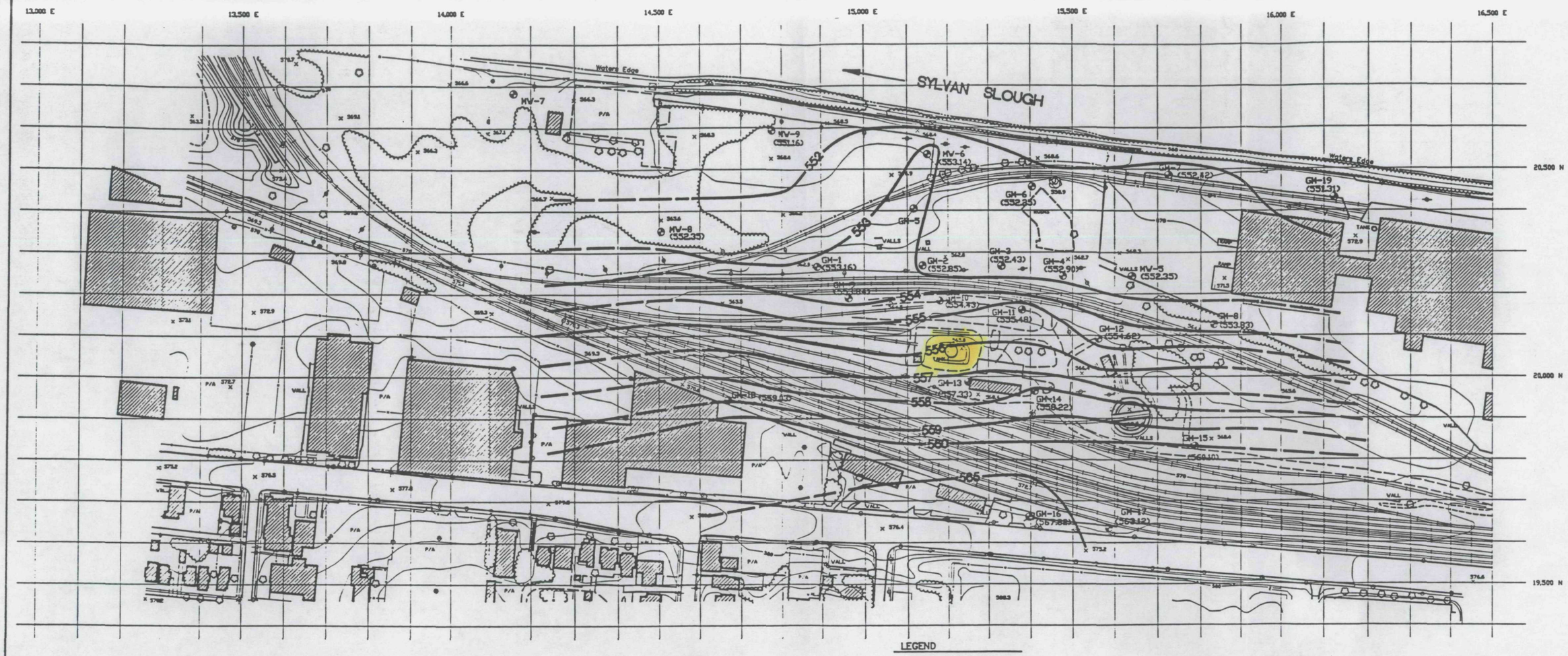
SCALE VERIFICATION
THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING
USE TO VERIFY FIGURE REPRODUCTION SCALE

REV. NO.	DATE	DESCRIPTION	BY	APPR.
1	4/20/95	ADDED APPROX. AREA OF OBSERVED OIL SEEPAGE	GOZNER	AUER

PROJECT NO.: [illegible]	FILE NO: NAVPROD.DWG
DRAWING NO.: [illegible]	PLOT SCALE:1=120
DRAFTED BY: [illegible]	DATE: SEPT. 19, 1994
CHECKED BY:	DATE:
APPROVED BY:	DATE:
LAST REVISION BY: S GOZNER	DATE: APRIL 20, 1995

ESTIMATED AREAL EXTENT OF RESIDUAL AND FREE PRODUCT
NAVISTAR/BNR/IIR SITE
ROCK ISLAND, ILLINOIS

FIGURE 3-5



LEGEND

- MONITORING WELL/NUMBER
- FENCE
- RAILROAD TRACKS
- EXISTING STRUCTURE/BUILDING
- x 576.4 SPOT ELEVATION AT GRADE
- 560 EXISTING GRADE CONTOUR
- UTILITY POLE
- P/A PAVED AREA
- TREE
- TREE LINE
- WATERS EDGE
- (553.16) WATER ELEVATIONS
- 554 WATER-TABLE CONTOUR 1 FT. CONTOUR INTERVALS (DASHED WHERE INFERRED)

N

120 0 120 240

SCALE IN FEET

SOURCE: ABRAM AERIAL SURVEY CORPORATION, LANSING MICHIGAN. ABRAMS CONTRACT A.A.S.C. #25637. DATE OF PHOTOGRAPHY JULY 26, 1994. GRADE CONTOUR INTERVAL = 2'.

HORIZONTAL CONTROL GRID SITE SPECIFIC, SITE ELEVATIONS BASED ON U.S.G.S. ELEVATIONS.

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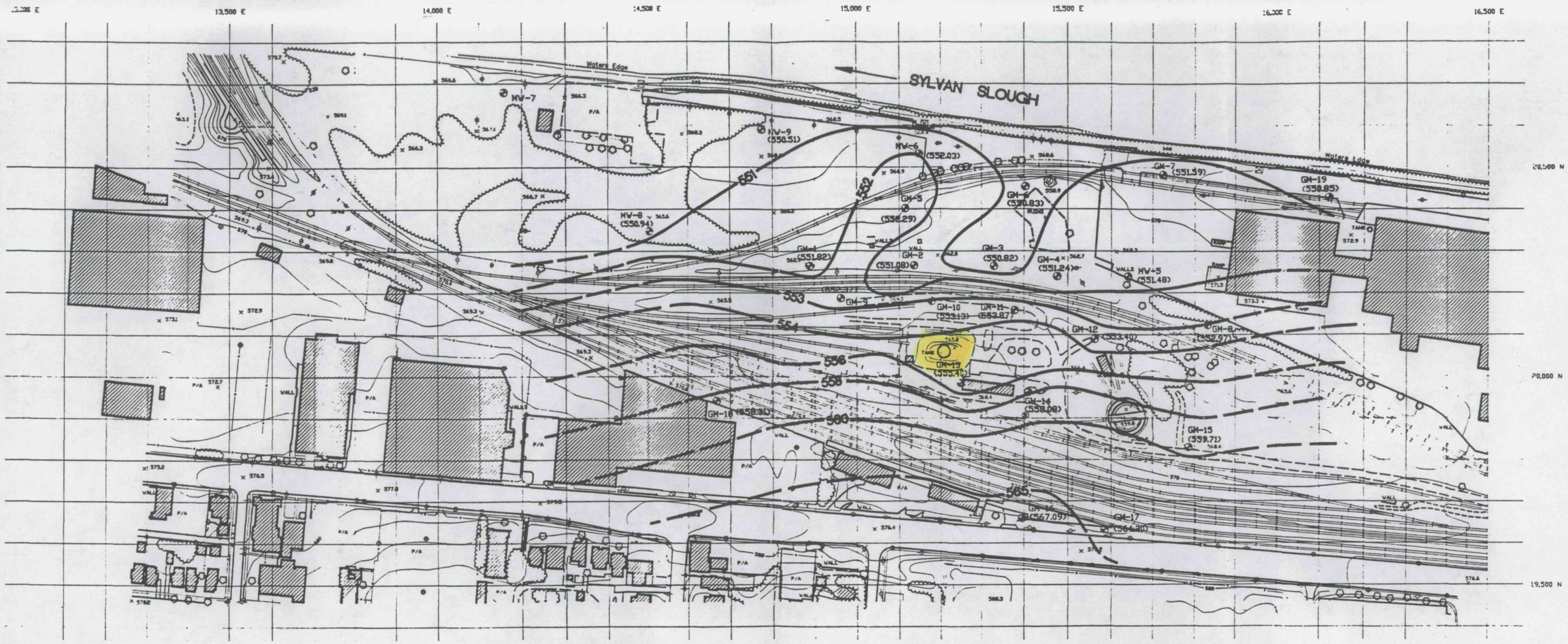
SCALE VERIFICATION
THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING
USE TO VERIFY FIGURE REPRODUCTION SCALE

REV. NO.	DATE	DESCRIPTION	BY	APPR.

PROJECT NO.: 002296.004 | FILE NO: 94-097764.DWG
DRAWING NO.: 023884-5783-6 | PLOT SCALE: 1"=20'
DRAFTED BY: G GUCHNER | DATE: SEPT. 30, 1994
CHECKED BY: | DATE:
APPROVED BY: | DATE:
LAST REVISION BY: S GUZICH | DATE: SEPT. 30, 1994

WATER-TABLE ELEVATION MAP
JULY 1994
NAVISTAR/BNR/IIR SITE
ROCK ISLAND, ILLINOIS

FIGURE
3-6



LEGEND

- MONITORING WELL/NUMBER
- FENCE
- RAILROAD TRACKS
- EXISTING STRUCTURE/BUILDING
- x 576.4 SPOT ELEVATION AT GRADE
- 560 EXISTING GRADE CONTOUR
- UTILITY POLE
- P/A PAVED AREA
- TREE
- TREE LINE
- WATERS EDGE
- (552.37) WATER ELEVATION
- 554 WATER-TABLE CONTOUR CONTOUR INTERVAL AS SHOWN (DASHED WHERE INFERRED)

120 0 120 240
SCALE IN FEET

SOURCE: ABRAM AERIAL SURVEY CORPORATION, LANSING MICHIGAN, ABRAMS CONTRACT A.A.S.C. #25637. DATE OF PHOTOGRAPHY JULY 26, 1994. GRADE CONTOUR INTERVAL = 2'

HORIZONTAL CONTROL GRID SITE SPECIFIC, SITE ELEVATIONS BASED ON U.S.G.S. ELEVATIONS.

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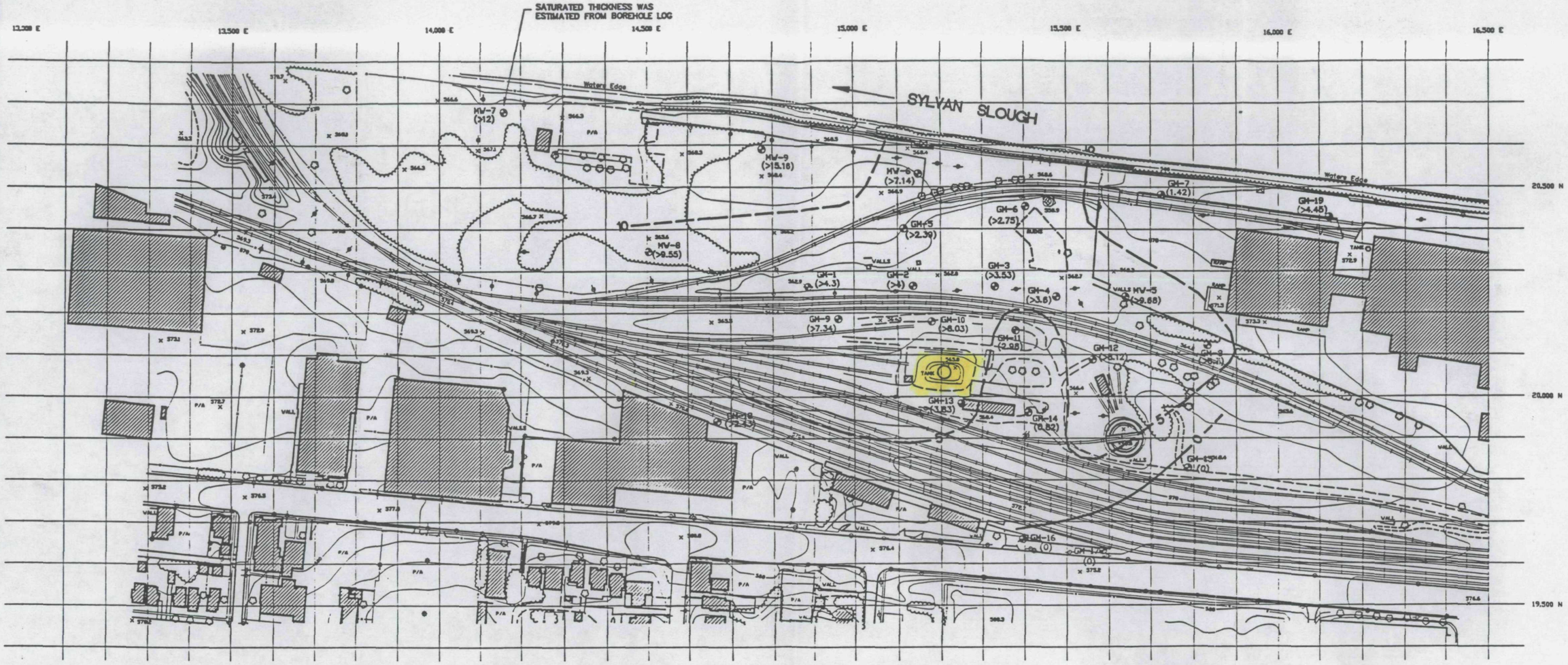
SCALE VERIFICATION
THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING
USE TO VERIFY FIGURE REPRODUCTION SCALE

REV. NO.	DATE	DESCRIPTION	BY	APPR.

PROJECT NO.: [illegible]	FILE NO: NAV97004.DWG
DRAWING NO.: [illegible]	PLOT SCALE: 1=120
DRAFTED BY: [illegible]	DATE: SEPT. 26, 1994
CHECKED BY:	DATE:
APPROVED BY:	DATE:
LAST REVISION BY: [illegible]	DATE: SEPT. 26, 1994

WATER-TABLE ELEVATION MAP
SEPTEMBER 1994
NAVISTAR/BNR/IIR SITE
ROCK ISLAND, ILLINOIS

FIGURE
3-7



LEGEND

- MONITORING WELL/NUMBER
- FENCE
- RAILROAD TRACKS
- EXISTING STRUCTURE/BUILDING
- x 376.4 SPOT ELEVATION AT GRADE
- EXISTING GRADE CONTOUR
- UTILITY POLE
- P/A PAVED AREA
- TREE
- TREE LINE
- WATERS EDGE
- (2.3) SATURATED THICKNESS IN FEET
- 5 THICKNESS CONTOUR (DASHED WHERE INFERRED)

NOTE: WATER LEVEL/PRODUCT THICKNESS MEASUREMENTS WERE TAKEN IN JULY 1994.

120 0 120 240

SCALE IN FEET

SOURCE: ABRAM AERIAL SURVEY CORPORATION, LANSING MICHIGAN, ABRAMS CONTRACT A.A.S.C. #25437. DATE OF PHOTOGRAPHY JULY 28, 1994. GRADE CONTOUR INTERVAL = 2'.

HORIZONTAL CONTROL GRID SITE SPECIFIC. SITE ELEVATIONS BASED ON U.S.G.S. ELEVATIONS.

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SCALE VERIFICATION
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USE TO VERIFY FIGURE REPRODUCTION SCALE

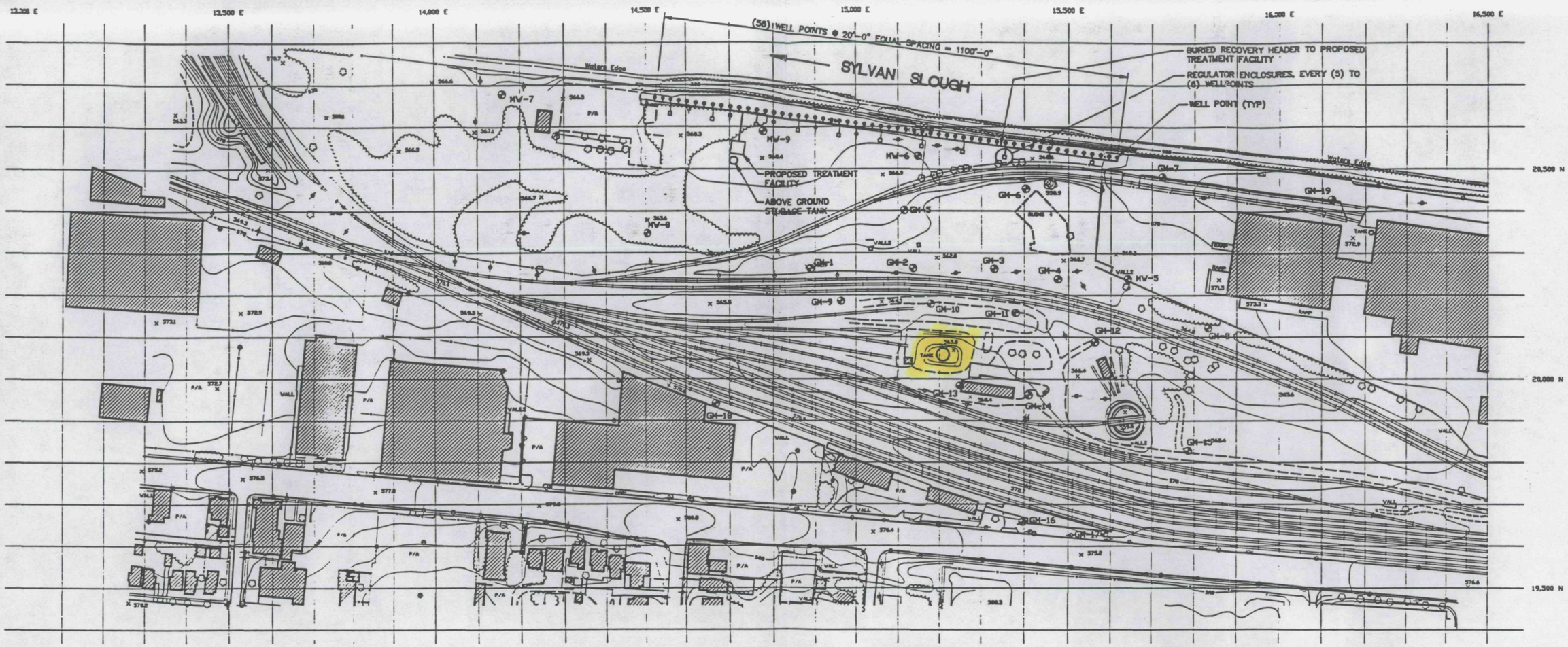
REV. NO.	DATE	DESCRIPTION	BY	APPR.

PROJECT NO.: 0020842.004 | FILE NO: NAVTRDSC.DWG
DRAWING NO.: 0020842-GF03-0 | PLOT SCALE: 1"=120'
DRAWN BY: G GOSNER | DATE: SEPT. 21, 1994
CHECKED BY: | DATE:
APPROVED BY: | DATE:
LAST REVISION BY: S GOSNER | DATE: SEPT. 26, 1994

SATURATED THICKNESS ABOVE SHALE/CLAY UNIT

NAVISTAR/BNR/IIR SITE
ROCK ISLAND, ILLINOIS

FIGURE
3-8



LEGEND

- MONITORING WELL/NUMBER
- FENCE
- RAILROAD TRACKS
- EXISTING STRUCTURE/BUILDING
- SPOT ELEVATION AT GRADE
- EXISTING GRADE CONTOUR
- UTILITY POLE
- PAVED AREA
- TREE
- TREE LINE
- WATERS EDGE
- PROPOSED WELL POINT

120 0 120 240

SCALE IN FEET

SOURCE: ABRAM AERIAL SURVEY CORPORATION, LANSING MICHIGAN, ABRAMS CONTRACT A.A.S.C. #25637. DATE OF PHOTOGRAPHY JULY 26, 1994. GRADE CONTOUR INTERVAL = 2'.

HORIZONTAL CONTROL GRID SITE SPECIFIC, SITE ELEVATIONS BASED ON U.S.G.S. ELEVATIONS.

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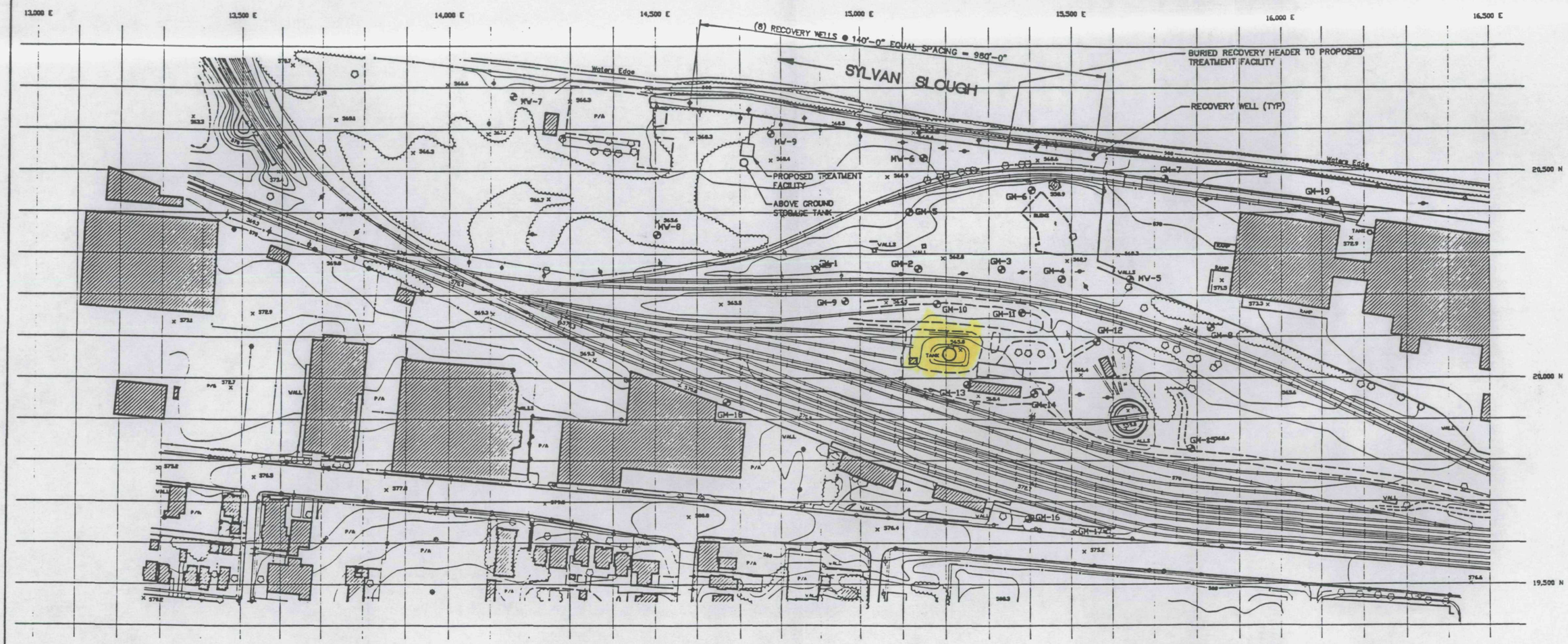
SCALE VERIFICATION
THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING
USE TO VERIFY FIGURE REPRODUCTION SCALE

REV. NO.	DATE	DESCRIPTION	BY	APPR.

PROJECT NO.: [illegible]	FILE NO: NAVWLPWT.DWG
DRAWING NO.: [illegible]	PLOT SCALE: 1=1.20
DRAFTED BY: [illegible]	DATE: SEPT. [illegible]
CHECKED BY:	DATE:
APPROVED BY:	DATE:
LAST REVISION BY: [illegible]	DATE: SEPT. 23, 1994

ALTERNATIVE 1
PASSIVE RECOVERY WELL POINT SYSTEM
NAVISTAR/BNR/IIR SITE
ROCK ISLAND, ILLINOIS

FIGURE
5-1



LEGEND

- MONITORING WELL/NUMBER
- FENCE
- RAILROAD TRACKS
- EXISTING STRUCTURE/BUILDING
- SPOT ELEVATION AT GRADE
- EXISTING GRADE CONTOUR
- UTILITY POLE
- PAVED AREA
- TREE
- TREE LINE
- WATERS EDGE
- PROPOSED RECOVERY WELL

120 0 120 240

SCALE IN FEET

SOURCE: ABRAM AERIAL SURVEY CORPORATION, LANSING MICHIGAN, ABRAMS CONTRACT A.A.S.C. #25637. DATE OF PHOTOGRAPHY JULY 26, 1994. GRADE CONTOUR INTERVAL = 2'.

HORIZONTAL CONTROL GRID SITE SPECIFIC, SITE ELEVATIONS BASED ON U.S.G.S. ELEVATIONS.

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SCALE VERIFICATION
THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING:
USE TO VERIFY FIGURE REPRODUCTION SCALE

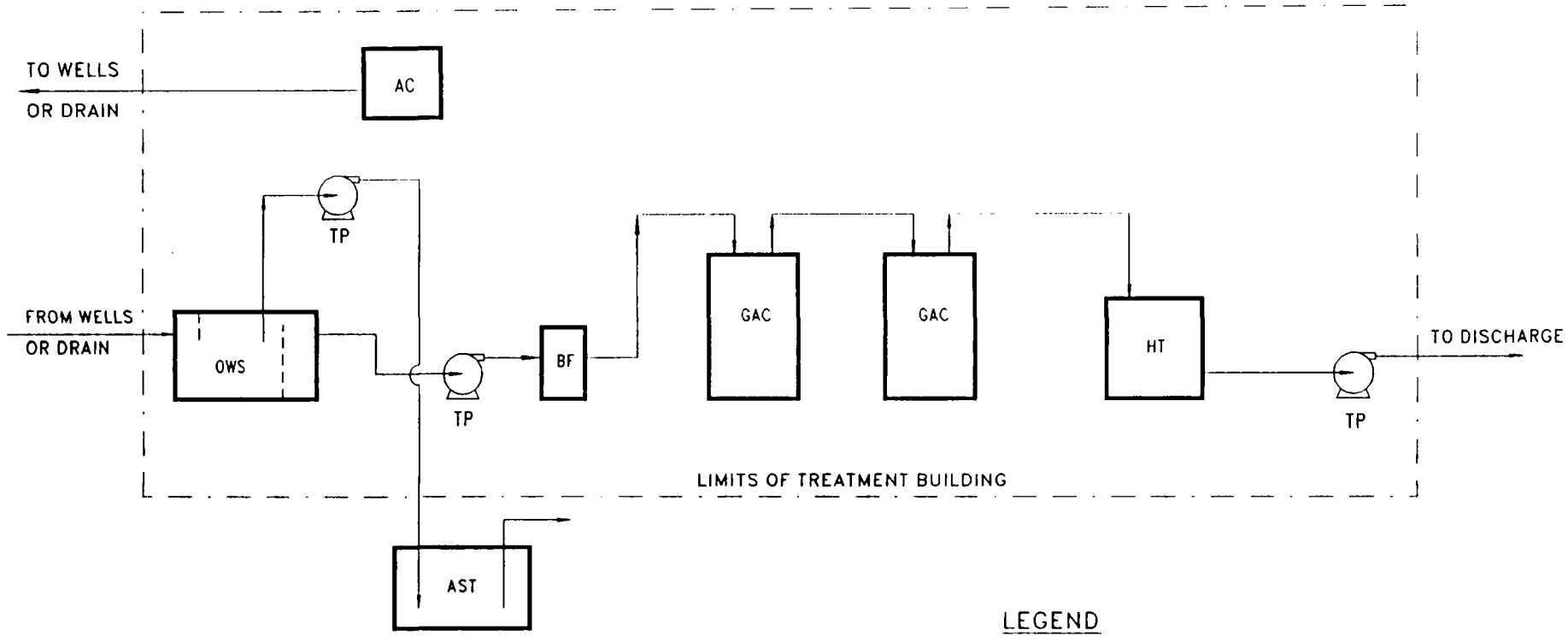
REV. NO.	DATE	DESCRIPTION	BY	APPR.

PROJECT NO.: [illegible]	FILE NO: [illegible]
DRAWING NO.: [illegible]	PLOT SCALE: 1=120
DRAFTED BY: S GOEHNER	DATE: SEPT. 21, 1994
CHECKED BY:	DATE:
APPROVED BY:	DATE:
LAST REVISION BY: S GOEHNER	DATE: SEPT. 22, 1994

ALTERNATIVE 2
RECOVERY WELLS/TREATMENT
NAVISTAR/BNR/IIR SITE
ROCK ISLAND, ILLINOIS

FIGURE
5-2

DWG DATE: 9-20-94	PRJCT NO: C10299.004	FILE NO: JT C129904	DRAWING: PROCESS.DW2	CHECKED: JCT	APPROVED:	DRAFTER.



LEGEND

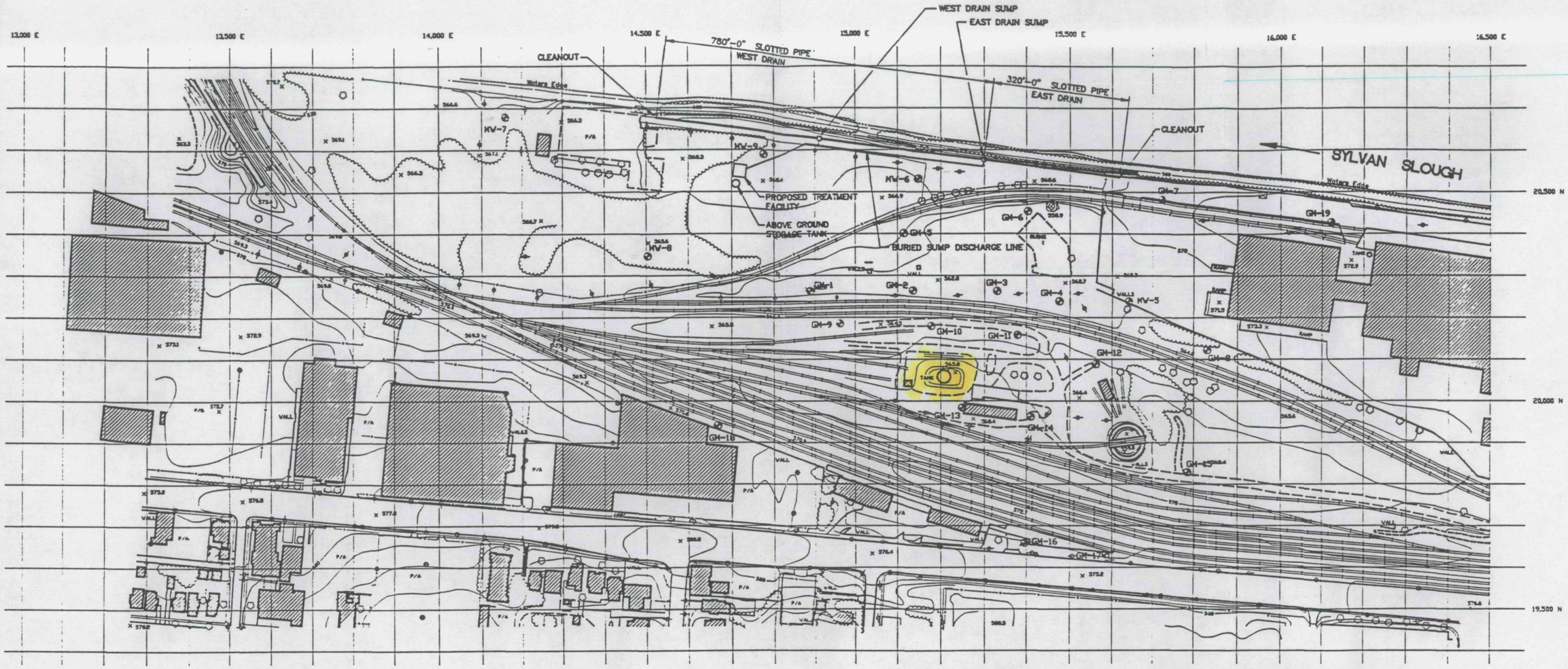
OWS	OIL/WATER SEPARATOR
BF	BAG FILTER
GAC	GRANULAR ACTIVATED CARBON
HT	HOLDING TANK
AST	ABOVE GROUND STORAGE TANK
TP	TRANSFER PUMP
AC	AIR COMPRESSOR

GERAGHTY & MILLER, INC.
Environmental Services

GROUNDWATER TREATMENT SYSTEM
PROCESS FLOW DIAGRAM

NAVISTAR/BNR/IIR SITE
ROCK ISLAND, ILLINOIS

FIGURE
5-3



LEGEND

- MONITORING WELL/NUMBER
- FENCE
- RAILROAD TRACKS
- EXISTING STRUCTURE/BUILDING
- SPOT ELEVATION AT GRADE
- EXISTING GRADE CONTOUR
- UTILITY POLE
- PAVED AREA
- TREE
- TREE LINE
- WATERS EDGE

N

120 0 120 240

SCALE IN FEET

SOURCE: ABRAM AERIAL SURVEY CORPORATION, LANSING MICHIGAN, ABRAMS CONTRACT A.A.S.C. #25437. DATE OF PHOTOGRAPHY JULY 26, 1994. GRADE CONTOUR INTERVAL = 2'.

HORIZONTAL CONTROL GRID SITE SPECIFIC. SITE ELEVATIONS BASED ON U.S.G.S. ELEVATIONS.

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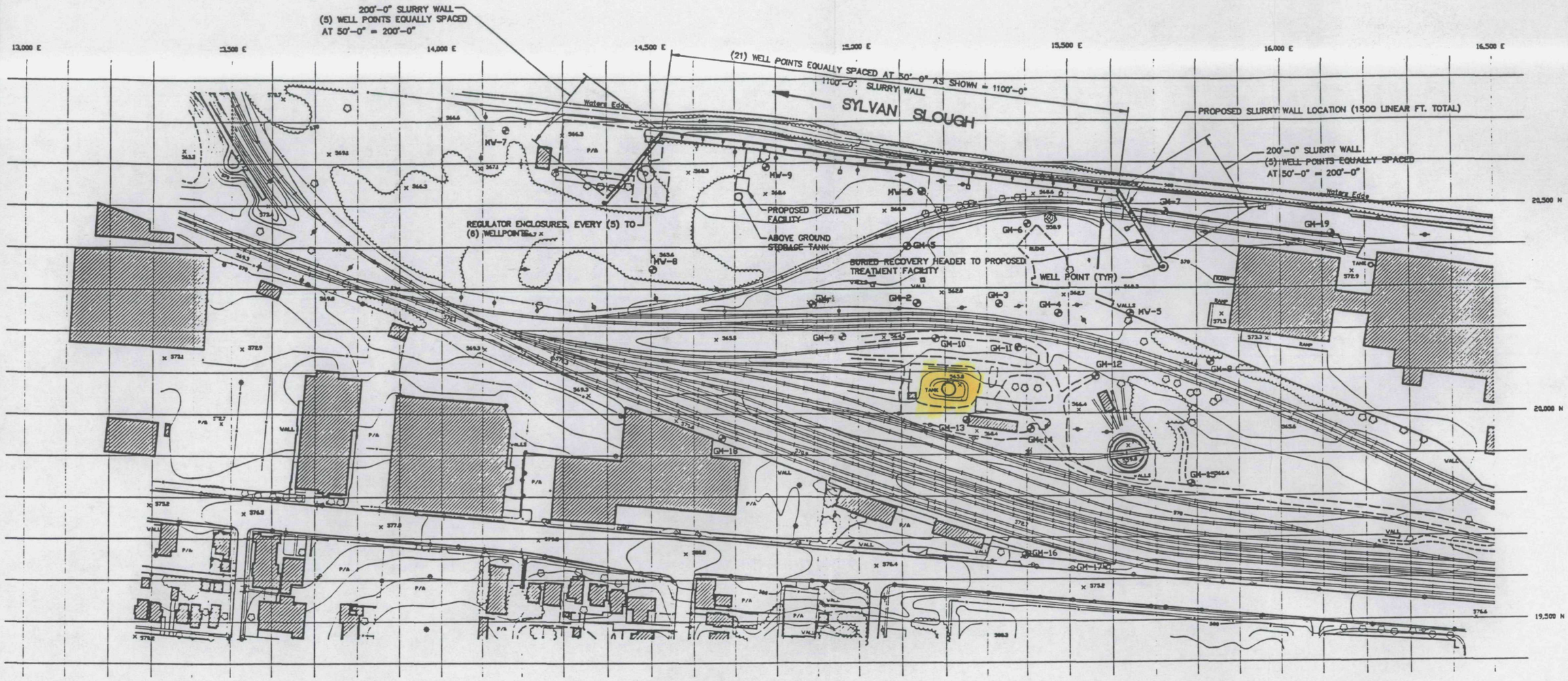
USE TO VERIFY FIGURE REPRODUCTION SCALE

REV. NO.	DATE	DESCRIPTION	BY	APPR.

PROJECT NO.: C02889.004	FILE NO: NAVSRAMI.DWG
DRAWING NO.: C02889-GF02-4	PLOT SCALE: 1"=120'
DRAWN BY: G. GOZDER	DATE: SEPT. 26, 1994
CHECKED BY:	DATE:
APPROVED BY:	DATE:
LAST REVISED BY: G. GOZDER	DATE: SEPT. 26, 1994

ALTERNATIVE 3
SUBSURFACE RECOVERY DRAIN SYSTEM
NAVISTAR/BNR/IIR SITE
ROCK ISLAND, ILLINOIS

FIGURE
5-4



LEGEND

- MONITORING WELL/NUMBER
- FENCE
- RAILROAD TRACKS
- EXISTING STRUCTURE/BUILDING
- x 376.4 SPOT ELEVATION AT GRADE
- 370 EXISTING GRADE CONTOUR
- UTILITY POLE
- P/A PAVED AREA
- TREE
- TREE LINE
- WATERS EDGE
- PROPOSED WELL POINT

120 0 120 240

SCALE IN FEET

SOURCE: ABRAM AERIAL SURVEY CORPORATION, LANSING MICHIGAN, ABRAMS CONTRACT A.A.S.C. #25637. DATE OF PHOTOGRAPHY JULY 28, 1994. GRADE CONTOUR INTERVAL = 2'.

HORIZONTAL CONTROL GRID SITE SPECIFIC. SITE ELEVATIONS BASED ON U.S.G.S. ELEVATIONS.

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SCALE VERIFICATION
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USE TO VERIFY FIGURE REPRODUCTION SCALE

REV. NO.	DATE	DESCRIPTION	BY	APPR.

PROJECT NO.: C02SB.004 | FILE NO.: NAVISBNIL.DWG
DRAWING NO.: C22SB04-SF100-6 | PLOT SCALE: 1=139
DRAWN BY: S GOSNER | DATE: SEPT. 22, 1994
CHECKED BY: | DATE:
APPROVED BY: | DATE:
LAST REVISION BY: S GOSNER | DATE: SEPT. 22, 1994

ALTERNATIVE 4
SLURRY WALL/PRODUCT RECOVERY
NAVISTAR/BNR/IIR SITE
ROCK ISLAND, ILLINOIS

FIGURE
5-5

APPENDIX A

Soil Boring Logs

SAMPLE/CORE LOG

Boring/Well GM-1 Project/No. CI0299.002 Page 1 of 2

Site Location BNR/NAVISTAR Drilling Started 11/16/93 Drilling Complete 11/16/93

Total Depth Drilled 19 feet Hole Diameter 8.25 inches Coring Device Splitspoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval Continuous feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used none Drilling Method _____

Drilling Contractor Rock & Soil Drilling Driller Mike Swanson Helper Dustin Jackson

Prepared By Stephen J. Hjort Hammer Weight 140 Hammer Drop 27 inches

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description	OVA
0	2	1.8	3,5,8,9	0-0.4 Black silt with coal or ash cinders	0
				0.4-0.5 Dark brown silty sand	
				0.5-1.5 Dark brown silty sand with cinders	
				1.5-2.0 Medium brown poorly graded sand with	
				trace silt	
2	4	1.7	5,6,8,8	0-0.3 Medium brown poorly graded sand with trace	0
				silt	
				0.3-0.4 Light brown very fine sand with some silt	
				0.4-1.7 Medium brown poorly graded sand with trace	
				silt	
4	6	1.7	5,5,5,6	0-0.5 Medium brown poorly graded sand with trace	100
				silt	
				0.5-1.7 Grayish black poorly graded sand, odor,	
				product coating on sand grains	
6	8	1.7	3,4,3,4	0-0.2 Black poorly graded sand with trace silt,	10,000
				saturated with product (diesel odor)	
				0.2-0.25 Gray silt seam	
				0.25-1.7 Grayish black well graded sand, saturated	
				with product	

SAMPLE/CORE LOG

Boring/Well GM-1

Prepared By Stephen J. Hjort

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description	OVA
8	10	1.8	3,3,2,2	0-1.0 Grayish black well graded sand, saturated with	10,000
				product	
				1.0-1.4 Black silty sand, saturated with product	
				1.4-1.45 Grayish black silty sand, saturated with	
				product	
				1.45-1.75 Grayish black poorly graded sand with	
				trace silt	
				1.75-1.8 Grayish brown silty clay, saturated with	
				product	
10	12	1.3	2,1,1,5	0-0.2 Grayish black poorly graded sand with trace	10,000
				silt, saturated with product	
				0.2-0.3 Grayish brown clayey silt, saturated with	
				product	
				0.3-0.6 Grayish black poorly graded sand with trace	
				silt, saturated with product	
				0.6-1.3 Black alternating layers of silty sand and silt	
				saturated with product	
12	14	1.0	13,5,7,10	0-1.0 Black alternating layers of silty sand and silt,	
				saturated with product, WET (water table) with	
				angular limestone pieces	
14	19			Blind drill	
				End of Boring at 19'	

SAMPLE/CORE LOG

Boring/Well GM-2 Project/No. CI0299.002 Page 1 of 2

Site Location BNR/NAVISTAR Drilling Started 11/16/93 Drilling Complete 11/16/93

Total Depth Drilled 19 feet Hole Diameter 8.25 inches Coring Device Splitspoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval Continuous feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used none Drilling Method _____

Drilling Contractor Rock & Soil Drilling Driller Mike Swanson Helper Dustin Jackson

Prepared By Stephen J. Hjort Hammer Weight 140 Hammer Drop 27 inches

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description	OVA
0	2	1.8	5,6,8,8	0-0.4 Black silt with cinder	0
				0.4-1.1 Brown cinders with some silt	
				1.1-1.8 Medium brown poorly graded sand with trace	
				silt	
2	4	1.5	7,5,5,5	0-0.9 Medium brown poorly graded sand with trace	150
				silt	
				0.9-1.2 Grayish black poorly graded sand with silt,	
				saturated with product	
				1.2-1.5 Black poorly graded sand with trace silt,	
				saturated with product	
4	6	1.6	5,5,5,4	0-0.2 Black poorly graded sand with trace silt,	450
				saturated with product	
				0.2-0.5 Grayish black poorly graded sand with trace	
				silt, saturated with product	
				0.5-1.6 Alternating layers of poorly graded sand and	
				silty sand, saturated with product	
6	8	1.5	5,3,3,4	0-1.2 Grayish black poorly graded sand with 2 cm	700
				silt seams from 1.0-1.2, saturated with product	
				1.2-1.5 Black poorly graded sand with little pebble	
				size gravel, saturated with product	

SAMPLE/CORE LOG

Boring/Well GM-2

Prepared By Stephen J. Hjort

Sample/Core Depth (feet below land surface) From	To	Core Recovery (Feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description	OVA
8	10	1.4	4,6,5,3	0-1.0 Gray well graded coarse sand, saturated with	1700
				product	
				1.0-1.4 Grayish black poorly graded sand very fine	
				to coarse, saturated with product	
10	12	1.2	2,1,2,2	0-0.3 Grayish black poorly graded sand very fine	9,000
				to coarse, saturated with product	
				0.3-0.5 Black poorly graded sand, saturated with	
				product	
				0.5-0.6 Black silty clay, saturated with product	
				0.6-1.2 Black silty sand with some gravel, saturated	
				with product	
12	14	1.0	12,8,18,11	0-0.3 Black silty sand and gravel, saturated with	
				with product, WET	
				0.3-1.0 Black silty sand with limestone chips,	
				saturated with product, WET	
14	19			Blind drill	
				End of Boring at 19'	

SAMPLE/CORE LOG

Boring/Well GM-3 Project/No. CI0299.002 Page 1 of 2

Site Location BNR/NAVISTAR Drilling Started 11/16/93 Drilling Complete 11/16/93

Total Depth Drilled 18 feet Hole Diameter 8.25 inches Coring Device Splitspoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval Continuous feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used none Drilling Method _____

Drilling Contractor Rock & Soil Drilling Driller Mike Swanson Helper Dustin Jackson

Prepared By Stephen J. Hjort Hammer Weight 140 Hammer Drop 27 inches

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description	OVA
0	2	2.0	5,4,5,6	0-0.3 Black silt with cinders	0
				0.3-0.7 Medium brown poorly graded sand with	
				trace silt	
				0.7-2.0 Alternating layers of tan silt and medium	
				brown silty sand	
2	4	1.7	5,3,2,1	0-0.8 Alternating layers of tan silt and medium	200
				brown silty sand	
				0.8-1.7 Black and grayish black alternating layers	
				of silt and silty sand, saturated with product	
4	6	1.3	4,3,1,2	0-0.1 Black and grayish black alternating layers of	250
				silt and silty sand, saturated with product	
				0.1-1.3 Grayish black poorly graded sand with trace	
				silt, saturated with product	
6	8	1.3	5,2,2,3	0-1.3 Grayish black poorly graded sand with trace	450
				silt, saturated with product	
8	10	1.4	3,2,2,2	0-1.4 Grayish black poorly graded sand with trace	250
				silt, saturated with product	
10	12	1.7	3,1,1,2	0-0.8 Grayish black poorly graded sand with trace	2,000
				silt with more coarse sand, saturated with product	
				0.8-1.7 Grayish black poorly graded sand, saturated	
				with product, WET	

SAMPLE/CORE LOG

Boring/Well GM-3

Prepared By Stephen J. Hjort

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description	OVA
12	14	1.6	1,1,10,9	0-0.6 Grayish black poorly graded sand, saturated	
				with product, WET	
				0.6-1.6 Black silty sand and gravel, WET, saturated	
				with product	
14	18			Blind drill	
				End of Boring at 18'	

SAMPLE/CORE LOG

Boring/Well GM-4 Project/No. CI0299.002 Page 1 of 1

Site Location BNR/NAVISTAR Drilling Started 11/16/93 Drilling Complete 11/16/93

Total Depth Drilled 18 feet Hole Diameter 8.25 inches Coring Device Splitspoon

Length and Diameter of Coring Device 2" x 2" Sampling Interval Continuous feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used none Drilling Method _____

Drilling Contractor Rock & Soil Drilling Driller Nike Swanson Helper Dustin Jackson

Prepared By Stephen J. Hjort Hammer Weight 140 Hammer Drop 27 inches

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description	OVA
0	2	2.0	4,5,4,3	0-0.1 Dark brown silt with cinders, glass, etc.	0
				0.1-2.0 Medium brown poorly graded sand with trace	
				silt	
2	4	1.4	5,3,4,6	0-0.7 Medium brown poorly graded sand with trace	0
				silt	
				0.7-1.4 Grayish brown poorly graded sand with trace	
				silt, odor	
4	6	1.6	5,4,3,4	0-1.2 Grayish brown poorly graded sand with trace	50
				silt, odor	
				1.2-1.3 Black silty fine sand, saturated with product	
				1.3-1.6 Grayish black poorly graded sand with trace	
				silt, saturated with product	
6	8	1.4	3,2,3,5	0-1.4 Grayish black poorly graded sand with trace	100
				silt, saturated with product	
8	10	1.5	6,5,7,7	0-1.1 Grayish black poorly graded sand with trace	350
				silt, saturated with product	
				1.1-1.4 Black poorly graded sand with trace silt,	
				saturated with product	
10	12	1.2	5,5,7,10	0-0.2 Black poorly graded sand with trace silt,	3,500
				saturated with product	
				0.2-0.8 Grayish black poorly graded sand, saturated	
				with product	

SAMPLE/CORE LOG

Boring/Well GM-4

Prepared By Stephen J. Hjort

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description	OVA
				0.8-1.2 Grayish black well graded coarse sand with	
				some small pebbles, saturated with product, WET	
12	14	1.6	4,4,4,3	0-0.3 Grayish black well graded coarse sand with	
				some small pebbles, saturated with product, WET	
				0.3-1.5 Grayish black poorly graded sand, saturated	
				with product, WET	
				1.5-1.6 Black silty fine sand, saturated with product,	
				WET	
14	18			Blind drill	
				End of Boring at 18'	

SAMPLE/CORE LOG

Boring/Well GM-5 Project/No. CI0299.002 Page 1 of 2

Site Location BNR/NAVISTAR Drilling Started 11/17/93 Drilling Complete 11/17/93

Total Depth Drilled 17 feet Hole Diameter 8.25 inches Coring Device Splitspoon

Length and Diameter of Coring Device 2" x 2" Sampling Interval Continuous feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used None Drilling Method _____

Drilling Contractor Rock & Soil Drilling Driller K. Swanson Helper Dustin Jackson

Prepared By Stephen J. Hjort Hammer Weight 140 Hammer Drop 27 inches

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description	OVA
0	2	1.0	9, 17/6"	0-0.4 Black silty sand	0
				0.4-1.0 Black silty sand with cinders and little gravel	
2	4	1.6	7,9,6,7	0-0.1 Black silty sand with cinders and little gravel	0
				0.1-0.4 Dark brown silty sand	
				0.4-0.7 Black silty sand	
				0.7-1.0 Dark brown silty sand	
				1.0-1.5 Black silty fine sand	
				1.5-1.6 Medium brown well graded very fine to	
				fine sand	
4	6	1.3	4,4,4,4	0-0.1 Medium brown well graded very fine to	70
				fine sand	
				0.1-1.1 Black silty sand, odor	
				1.1-1.3 Medium brown well graded fine sand	
6	8	1.5	6,3,3,3	0-0.3 Black silty sand, odor	40
				0.3-0.4 Light brown well graded fine sand	
				0.4-1.0 Tan well graded fine sand	
				1.0-1.5 Black poorly graded sand with little pebble	
				size gravel, odor	
8	10	1.4	3,4,8,8	0-0.8 Black poorly graded sand with 3 tan well	2,600
				graded fine sand seams at 0.5	
				0.8-1.4 Black silty sand and gravel, saturated with	
				product, moist to WET	

SAMPLE/CORE LOG

Boring/Well GM-5

Prepared By Stephen J. Hjort

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description	OVA
10	12	1.5	4,6,7,8	0-0.3 Black silty sand and gravel, saturated with	4,500
				product, WET	
				0.3-1.1 Black poorly graded sand and gravel,	
				saturated with product, WET	
				1.1-1.5 Grayish black poorly graded sand, saturated	
				with product, WET	
12	17			Blind drill	
				End of Boring at 17'	

SAMPLE/CORE LOG

Boring/Well GM-6 Project/No. CI0299.002 Page 1 of 2

Site Location BNR/NAVISTAR Drilling Started 11/17/93 Drilling Complete 11/17/93

Total Depth Drilled 17 feet Hole Diameter 8.25 inches Coring Device Splitspoon

Length and Diameter of Coring Device 2' x 2" Sampling Interval Continuous feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used none Drilling Method _____

Drilling Contractor Rock & Soil Drilling Driller K. Swanson Helper Dustin Jackson

Prepared By Stephen J. Hjort Hammer Weight 140 Hammer Drop 27 inches

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description	OVA
0	2	1.6	22,12,15,16	0-0.6 Black silty sand with cinders	600
				0.6-1.2 Dark brown silty sand and gravel, with	
				cinders	
				1.2-1.6 Black silty sand with some gravel	
2	4	1.5	8,6,3,3	0-0.2 Black silty sand with some gravel	200
				0.2-1.5 Black silty sand, with tan well graded fine	
				sand inclusions from 0.7-1.2, odor	
4	6	1.6	3,2,1,3	0-1.6 Black silty sand, odor	300
6	8	1.5	5,4,3,7	0-0.7 Black silty sand, odor	300
				0.7-1.5 Black poorly graded sand and gravel with	
				trace silt, saturated with product	
8	10	1.3	7,4,2,2	0-0.8 Black poorly graded sand and gravel with trace	350
				silt, saturated with product	
				0.8-0.9 Grayish green silty clay, saturated with	
				product	
				0.9-1.3 Dark gray poorly graded sand, saturated	
				with product	
10	12	1.3	2,2,2,2	0-0.1 Dark gray poorly graded sand, saturated	350
				with product	
				0.1-1.1 Black poorly graded sand and gravel,	
				saturated with product, WET	

SAMPLE/CORE LOG

Boring/Well GM-6

Prepared By Stephen J. Hjort

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description	OVA
10	12	1.3	2,2,2,2	1.1-1.3 Black silt with trace clay, saturated with	
				product, WET	
12	14	1.2	4,2,2,6	0-0.2 Alternating layers of black poorly graded sand	
				and grayish black silty clay, saturated with product,	
				WET	
				0.2-0.5 Black silty sand, saturated with product,	
				WET	
				0.5-0.7 Black bituminous (coal)	
				0.7-1.2 Black poorly graded sand and gravel,	
				saturated with product, WET	
14	17			Blind drill	
				End of Boring at 17'	

MONITORING WELL GM-7

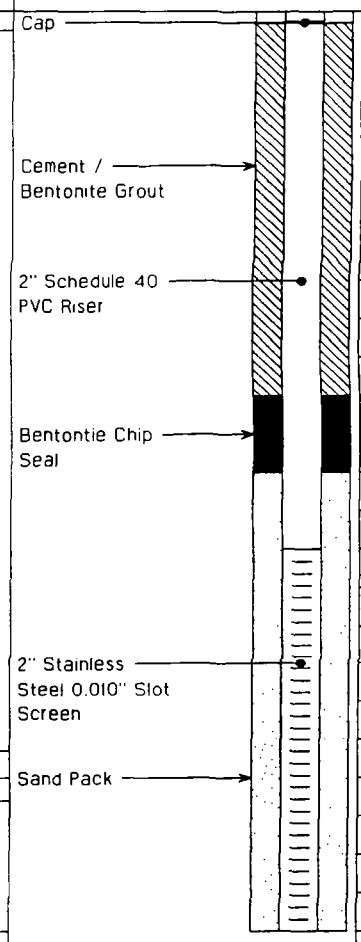
Navistar/BNR
Rock Island, Illinois

Project No.: CI0299.004
Logged by: Laura Craven
Drilling Co.: Rock & Soil
Driller: Ron House

Date Drilled: July 11, 1994
Drilling Method: 4 1/4" dia. hollow stem auger
Sampling Method: Split-Spoon
Surface Elev.: NA
Measuring Pt. Elev.: NA

Depth (feet)	PID (in ppm)	Blows/6-in.	Samples	Graphic Log	Soil Class	GENERALIZED DESCRIPTION
	0.0	NA-13-18-28			CONC / FILL	CONCRETE
	0.0	18-30-31-26-				FILL: black, damp, fine sand, trace gravel, loose Possible slag, brick at 2 to 4 feet
5	0.0	8-13-14-10				Red and black fine sand at 5.5 to 6 feet
	0.0	6-8-8-8-				Black and tan, moist, fine sand, loose, 2 pieces of 1" compacted fine sand, hard, grades to mostly black at 7 feet
	0.0	10-13-17-16				Black, with little rust sand, moist, fine loose, trace brick and fine to coarse gravel at 8 to 10 feet
10	0.0	7-11-14-17				Black, moist, fine sand, loose, trace white coarse sand to fine gravel and brickat 10 to 12 feet
	0.0	8-120				Black, damp, fine sand, little coarse gravel, possible slag, loose at 12 to 16 feet
15	0.0	10-8-8-12				Little fine to coarse gravel at 16 to 17 feet
	0.0	14-9-7-7				Water table at 17 feet
		6-6-6-5			CL	Black, saturated, fine sand, loose at 18 to 19.3 feet
20		3-3-5-5			SP / CL	CLAY: Brownish gray, moist, medium stiff, little silt
		3-3-5-8				SAND: Black, fine, may be slough material
25						CLAY: brownish gray, moist, medium stiff, little to some silt
30						*End of Boring at 24 Feet*

WELL DIAGRAM



MONITORING WELL GM-8

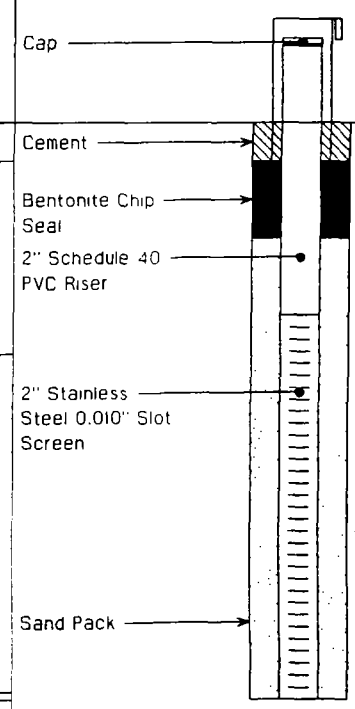
Navistar/BNR
Rock Island, Illinois

Project No.: CI0299.004
Logged by: Laura Craven
Drilling Co.: Rock & Soil
Driller: Ron House

Date Drilled: July 15, 1994
Drilling Method: 4 1/4" dia. hollow stem auger
Sampling Method: Split-Spoon
Surface Elev.: NA
Measuring Pt. Elev.: NA

Depth (feet)	PID (in ppm)	Blows/6-in.	Samples	Graphic Log	Soil Class	GENERALIZED DESCRIPTION
	0.4	5-13-12-8			TPSL	TOPSOIL: black, moist, very fine sand, trace roots
	1.0	4-6-5-7			FILL	FILL: Some gravel and cobbles, coal slag, coal ash at 1 to 1.5 feet
5	0.5	6-9-7-11				Black, dry to damp, very fine sand, little coarse to fine gravel, brick and mortar fragments, very loose to loose at 2 to 6 feet
	0.0	4-6-6-5-			SP	Apparent fused sand at 4 to 6 feet
	0.5	5-3-2-3				SAND: black, moist, fine grained, loose, little gravel, rounded to subrounded
10	2.5	2-2-2-4				Grades to tan and black, fine sand at 7.5 feet
	15.0	12-14-17-58				Black, with little rust, saturated, fine sand, loose, hydrocarbon-like odor at 8 to 10 feet
15	10.2	13-12-8-11			CL	
					SP	Water table at 8 feet
						Black, saturated, fine sand hydrocarbon-like odor, slight sheen at 10 to 12 feet
20						Black, saturated fine sand and coarse gravel, little silt, sheen, strong odor at 12 to 14.8 feet
						CLAY: black to dark gray clay, some silt, little fine sand, saturated, soft, sheen, hydrocarbon-like odor at 14.8 to 15
25						SAND: black, saturated, fine grained and little coarse gravel, little silt, sheen, strong odor
30						*End of Boring at 16 Feet*

WELL DIAGRAM



MONITORING WELL GM-9

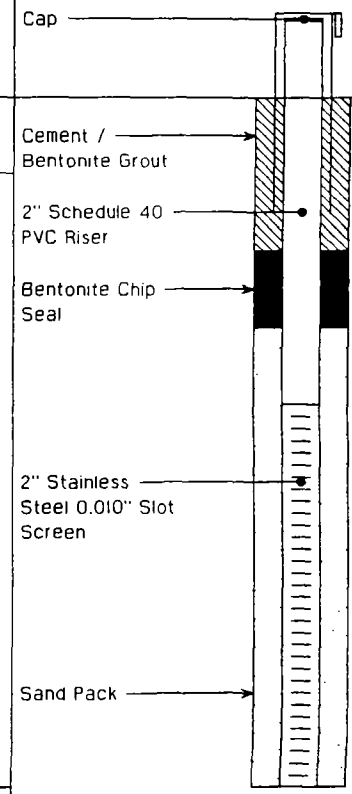
Navistar/BNR
Rock Island, Illinois

Project No.: CI0299.004
Logged by: Laura Craven
Drilling Co.: Rock & Soil
Driller: Ron House

Date Drilled: July 12, 1994
Drilling Method: 4 1/4" dia. hollow stem auger
Sampling Method: Split-Spoon
Surface Elev.: NA
Measuring Pt. Elev.: NA

Depth (feet)	PID (in ppm)	Blows/6-in.	Samples	Graphic Log	Soil Class	GENERALIZED DESCRIPTION
	0.0	12-8-6-6			FILL	FILL: black, dirty, fine to coarse sand and gravel
	0.0	6-5-6-7			SP	SAND: tan, moist, fine grained, medium dense
5	0.0	5-5-7-7				Sand and clay at 4 to 4.5 feet
	90.0	5-3-44				Fine to moist, fine to medium sand, subrounded, loose at 4.4 to 5.5 feet
	75.0	5-5-4-4				Tan, grades to grayish tan, little black staining, hydrocarbon-like odor at 6 to 11 feet
10	95.0	4-4-3-3				Dark gray to black, saturated, fine to medium sand, hydrocarbon-like odor at 11 to 18 feet
	18.0	2-2-2-4				Water table at 11 feet
15	45.0	5-5-5-4				Becomes gray at 14.5 feet
	0.0	2-1-1-2				
						End of Boring at 18 Feet
20						
25						
30						

WELL DIAGRAM



Depth (feet)

MONITORING WELL GM-10

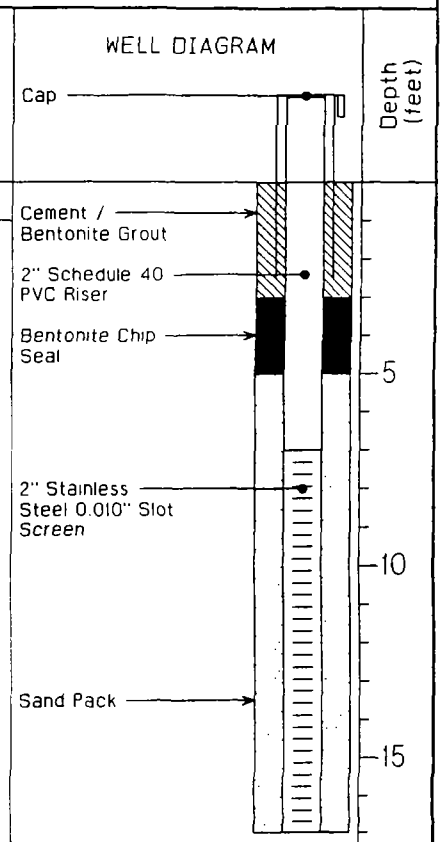
Navistar/BNR
Rock Island, Illinois

Project No.: CI0299.004
Logged by: Laura Craven
Drilling Co.: Rock & Soil
Driller: Ron House

Date Drilled: July 13, 1994
Drilling Method: 4 1/4" dia. hollow stem auger
Sampling Method: Split-Spoon
Surface Elev.: NA
Measuring Pt. Elev.: NA

Depth (feet)	PID (in ppm)	Blows/6-in.	Samples	Graphic Log	Soil Class	GENERALIZED DESCRIPTION
	5.0	12-16-14-18			FILL / SP	FILL: black, dry to damp, fine to coarse sand, gravel and silt-sized particles
	40.0	10-6-10-8				SAND: tan, moist, fine grained, loose
						Trace black staining, hydrocarbon-like odor at 1.5 to 18 feet
5	55.0	8-5-8-6				
	62.0	6-5-6-7				Trace medium sand at 4 to 6 feet
						2" Vertical sand and clay seam, tan, moist, medium stiff at 7.2 feet
	68.0	6-6-4-5				Apparent petroleum-like coating on soil, at 9 to 9.5 feet
10						Water table at 10 feet
	40.0	3-3-2-2				Sand grades to black at 11 feet
	43.0	1-1-1-1				
15	25.0	1-1-1-2				Wet, fine to medium sand, with little to some clay at 15 to 16 feet
	25.0	2-2-1-3				Slight sheen observed on soil at 16 to 18 feet
						End of Boring at 18 Feet
20						
25						
30						

WELL DIAGRAM



MONITORING WELL GM-11

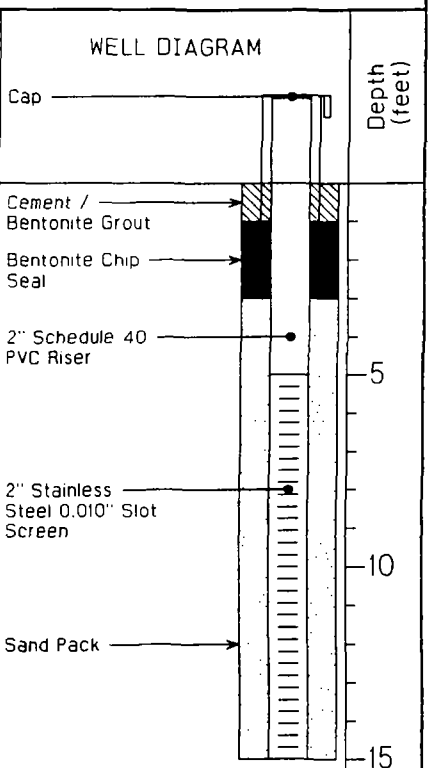
Navistar/BNR
Rock Island, Illinois

Project No.: CI0299.004
Logged by: Laura Craven
Drilling Co.: Rock & Soil
Driller: Ron House

Date Drilled: July 13, 1994
Drilling Method: 4 1/4" dia. hollow stem auger
Sampling Method: Split-Spoon
Surface Elev.: NA
Measuring Pt. Elev.: NA

Depth (feet)	PID (in ppm)	Blows/6-in.	Samples	Graphic Log	Soil Class	GENERALIZED DESCRIPTION
	0.0	8-15-15-30			FILL	FILL: black, dry to damp, mostly fines, topsoil, some coarse to fine sand, mostly coal, coal ash and possibly slag
		16-16-16-20				No recovery 2 to 4 feet
5	6.8	4-6-4-4			CL/ML	Black and rust, damp, coal, coal ash, slag, fine to coarse sand-sized particles, little fine to coarse gravel at 4 to 5.3 feet
	65.0	3-4-4-6				CLAYEY SILT/SILTY CLAY: gray, moist, medium stiff, hydrocarbon-like odor, some to little clay at 5.3 to 8 feet
	48.0	3-4-5-5			SP	SAND: gray, wet, very fine grained, some silt, hydrocarbon-like odor at 8 to 9.2 feet
10	0.0	1-1-1-1			CL/ML SP	CLAYEY SILT/SILTY CLAY: moist to wet, little very fine sand, medium stiff at 9.2 to 10 feet
						Water table at 10 feet
	0.0	2-2-2-2			CL CL/ML	SAND: olive and gray, saturated, very fine grained, some silt, little rust mottling, hydrocarbon-like odor
15	0.0	2-4-				Water table at 10 feet
						CLAY: Olive, moist, medium stiff, some silt
						CLAYEY SILT/SILTY CLAY: Olive, wet, medium stiff
20						Yellowish brown, saturated, medium stiff, less clay at 13.4 to 14.4 feet
						More clay, olive-gray, moist, stiff
						Black, less silt at 14.8 to 15 feet
						End of Boring at 15 Feet
25						
30						

WELL DIAGRAM



MONITORING WELL GM-12

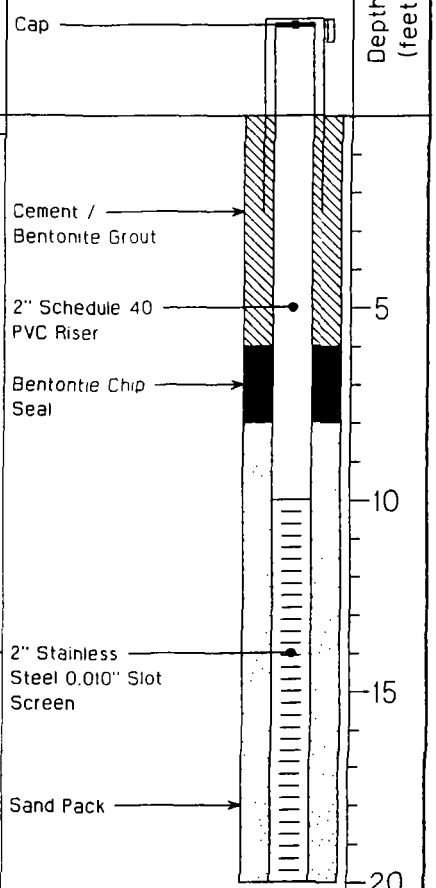
Navistar/BNR
Rock Island, Illinois

Project No.: C10299.004
Logged by: Laura Craven
Drilling Co.: Rock & Soil
Driller: Ron House

Date Drilled: July 13, 1994
Drilling Method: 4 1/4" dia. hollow stem auger
Sampling Method: Split-Spoon
Surface Elev.: NA
Measuring Pt. Elev.: NA

Depth (feet)	PID (in ppm)	Blows/6-in.	Samples	Graphic Log	Soil Class	GENERALIZED DESCRIPTION
	0.0	10-12-19-12			TPSL / FILL	TOPSOIL: black, dry, vegetation on surface
	0.0	6-4-2-2				FILL: black, damp, fine sand, some fine to coarse gravel, angular to subangular
5	0.0	2-2-1-3				Cobble-sized and sand sized brick fragments, sand sized mortar fragments
	0.0	6-.5-.5-2				Possible hardened coal tar, moist at 4 feet
	0.0	3-5-3-4				Broken glass and plastic, wet at 4.3 feet
10	0.0	4-19				Center plug fell down hole, had to be retrieved by digging out with a shovel, found part of a possible windshield, whole bricks, glass, metal shards, not enough recovery for sample
		18-10-14-11				Black, moist, fine sand, loose, some glass fragments, plastic fragments, sand to gravel-sized mortar fragments at 6 to 10 feet
15	42.0	5-3-3-4			SP	
	35.0	3-3-3-3				Spoon refusal; drilled to 11 feet and tried to collect spoon from 11 to 12 feet, hard drilling, likely bricks
	28.0	8-7-5-6				No recovery, wet spoon, likely top of water table at 12 feet
20						SAND: gray to black, saturated, fine grained, medium dense, strong hydrocarbon-like odor
						Gray, loose, hydrocarbon-like odor at 16 to 20 feet
25						Slight sheen observed on soil at 18 to 20 feet
						End of Boring at 20 Feet
30						

WELL DIAGRAM



MONITORING WELL GM-13

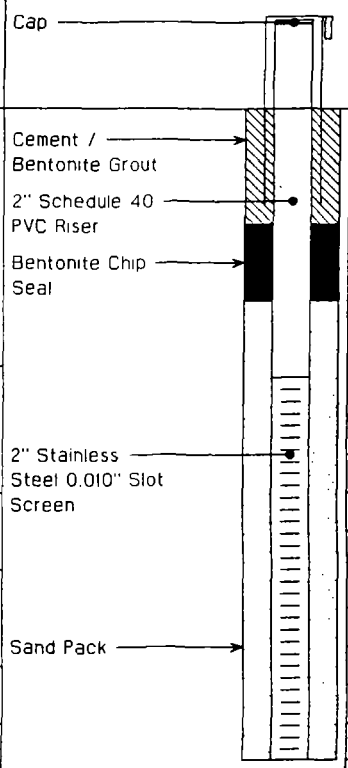
Navistar/BNR
Rock Island, Illinois

Project No.: CI0299.004
Logged by: Laura Craven
Drilling Co.: Rock & Soil
Driller: Ron House

Date Drilled: July 14, 1994
Drilling Method: 4 1/4" dia. hollow stem auger
Sampling Method: Split-Spoon
Surface Elev.: NA
Measuring Pt. Elev.: NA

Depth (feet)	PID (in ppm)	Blows/6-in.	Samples	Graphic Log	Soil Class	GENERALIZED DESCRIPTION
	2.5	12-15-19-7			FILL	FILL: grass and fine to coarse gravel at surface; black, moist, fine to coarse sand-sized particles, grades to black fine to medium sand, medium dense, rounded to subrounded; fill possibly extends to 14 feet
	0.0	8-5-5-7				
5	0.0	7-4-4-4				
						Saturated at 6 to 6.7 feet
	0.0	4-4-4-5			CL	CLAY: black, moist, stiff, some silt at 6.7 to 7.7 feet
	0.0	3-7-10-15				Brown, moist, very stiff, little silt, trace rounded gravel trace brick fragments at 8 to 10 feet
10	0.0	7-23-13-17			GC	
						Water table at 10 feet
	0.0	10-7-8-10			SW	SAND/CLAY/GRAVEL: brown, wet, fine to medium sand, fine to coarse gravel, rounded to subrounded
15	0.0	6-8-50-30			SHALE	
	0.0	27-30-47-83			SP	SAND: brown, saturated, fine to medium grained
					SHALE	Some fine to coarse gravel at 12.4 to 12.8 feet
						Brown, saturated, fine grained fine to coarse gravel at 14 to 14.5 feet
20						SHALE: gray, moist, very weathered, grades to black, very fissle
						SAND: gray, saturated, fine to medium grained at 16 to 16.7 feet
25						SHALE: Black, very fissle
						End of Boring at 17 Feet
30						

WELL DIAGRAM



PID readings from 0 to 8 feet may not be accurate: equipment failure occured; a different HNu was used for further monitoring events

MONITORING WELL GM-14

Navistar/BNR
Rock Island, Illinois

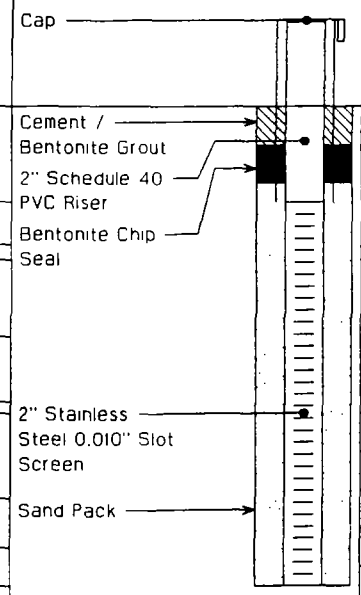
Project No.: CI0299.004
Logged by: Kyle Arney
Drilling Co.: Rock & Soil
Driller: Ron House

Date Drilled: July 15, 1994
Drilling Method: 4 1/4" dia. hollow stem auger
Sampling Method: Split-Spoon
Surface Elev.: NA
Measuring Pt. Elev.: NA

Depth (feet)	PID (in ppm)	Blows/6-in.	Samples	Graphic Log	Soil Class	GENERALIZED DESCRIPTION
	0.0	6-9-10-10			FILL	FILL: black, dry, very fine to coarse, well graded, some gravel
	3.8	6-5-3-7			SP	3" diameter rock in spoon at 2.2 feet
5	0.0	6-4-6-9			CL / ML/SP	SAND: light brown to tan, moist, very fine to medium, moderately to poorly graded, loose
	0.0	5-7-7-10			CL	CLAY: black, some coal and/or slag
	0.0	6-11-14-21			SP / ML/SP	SANDY CLAY: Black, moist, very fine to fine, moderately graded, moist
10	0.0	6-13-50			CL	Tan to brown, moist, more sandy, few orange mottles, loose at nearly 4.5 to 5 feet
	0.0	32-56			SHL	Wood chips at 5.2 feet
						CLAY: Black, moist, soft to firm
15						SAND: brown and black, moist, loose, some clay nodules, rare trace gravel
						SANDY CLAY: dark brown, to black, moist, soft to hard, may be weathered shale, hydrocarbon-like odor
20						Clinker/baked clay, gravel-sized at 9.2 feet
						CLAY: gray to tan, moist, firm, grades to very wethered shale
25						SHALE: gray, loose, platey, some iron staining, weathered
30						

End of Boring at 12.5 Feet

WELL DIAGRAM



Depth (feet): 5, 10, 15, 20, 25, 30

MONITORING WELL GM-15

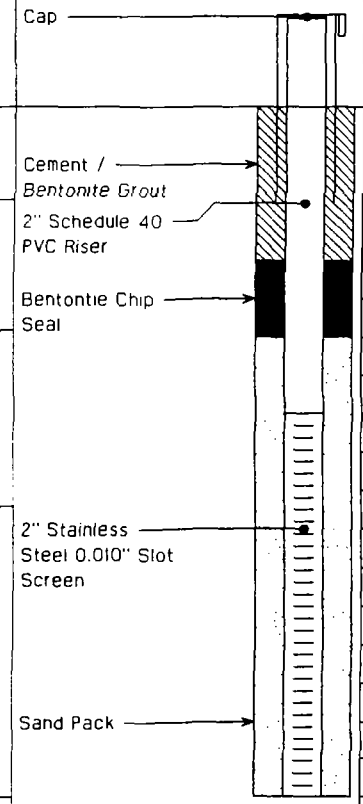
Navistar/BNR
Rock Island, Illinois

Project No.: CI0299.004
Logged by: Kyle Arney
Drilling Co.: Rock & Soil
Driller: Ron House

Date Drilled: July 14, 1994
Drilling Method: 4 1/4" dia. hollow stem auger
Sampling Method: Split-Spoon
Surface Elev.: NA
Measuring Pt. Elev.: NA

Depth (feet)	PID (in ppm)	Blows/6-in.	Samples	Graphic Log	Soil Class	GENERALIZED DESCRIPTION
	18.0	8-14-40-32			FILL	FILL: black, dry to moist, very loose, some fine to common gravel, trace broke brick
	0.0	14-17-23-27			SP	SAND: light brown to brown, very fine to medium, subangular to subrounded, trace clay nodules
5	0.0	9-13-14-8				Apparent fill that fell back into hole was collected in spoon at 4 to 4.2 feet
	0.0	5-7-12-12			CL	Brown to dark brown, some orange staining, few clay nodules
	0.0	4-10-9-14				CLAY: dark brown, moist, stiff, little silt
10	0.0	6-21-23-19			SHALE	3" sand seam, possibly sand that fell from above at 6 to 6.2 feet
	0.0	33-50				Dark gray to reddish-brown, moist, weak to firm at 6.8 to 10 feet
	0.0					Black and olive mottles, moist, soft at 8 to 10 feet
15	0.0	40-50				Thin sand seam, <1" thick, at 8.5 feet
	0.0	36-58				SHALE: light brown to tan, moist to saturated, very friable, fine to coarse subangular blocky gravel
20						Water table at 11.7 feet
						Green-gray, dry to moist, friable, weathered at 14 to 16 feet
						Gray, very weathered, very loose, moist, some silt
25						*End of Boring at 18 Feet*
30						

WELL DIAGRAM



SOIL BORING GM-15A

Navistar/BNR
Rock Island, Illinois

Project No.: CI0299.004
Logged by: Laura Craven/Kyle Arney
Drilling Co.: Rock & Soil
Driller: Ron House

Date Drilled: July 13, 1994
Drilling Method: 4 1/4" dia. hollow stem auger
Sampling Method: Split-Spoon
Surface Elev.: NA
Measuring Pt. Elev.: NA

Depth (feet)	PID (in ppm)	Blows/6 in.	Samples	Graphic Log	Soil Class	GENERALIZED DESCRIPTION
	0.0	8-6-9-5			FILL	FILL: vegetation and black dirt surface; black, moist, fine to coarse sand-sized and fine gravel-sized particles, little brick fragments, some slag and coal ash
	0.0	3-4-4-4			CL	CLAY: dark brown, moist, medium stiff, some silt, trace to little gravel, grades to more silty at 2 to 4 feet
						1/4" sand seam; tan, moist, fine-grained at 2.6 feet
5	0.0	4-5-9-12				Very dark brown, moist, stiff, some silt, trace sand, rust mottling at 4 to 6 feet
	90.0	4-8-13-18				Red-brown, moist, very stiff, some to little silt, little black to brown mottling at 6 to 8 feet
	0.0	4-8-9-13				Brown-orange, moist, stiff, some silt, trace sand, brown mottling at 8 to 10.8 feet
10						Little gray mottling at 9.5 to 10 feet; 1" gray sand seam at 9.9 feet
	0.0	9-13-36-50				2" sand seam, gray, well graded, orange mottles at 10.8 to 11 feet
					CL/SHL	
					CL	CLAYEY SHALE: gray shale, friable; tan clay, loose, trace pebbles and iron concretions
	0.0	37-130			CL/SHL	CLAY: red-brown, moist, stiff
	0.0	30-50 (2")			SHALE	CLAYEY SHALE: gray shale, friable; tan clay, loose, trace pebbles and iron concretions
15						SHALE: gray, friable, rare brown-orange staining
						No staining at 14 to 14.2 feet
						End of Boring at 14.2 Feet
20						
25						
30						

MONITORING WELL GM-16

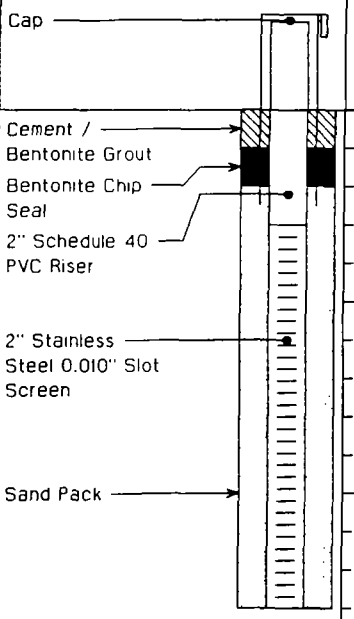
Navistar/BNR
Rock Island, Illinois

Project No.: CI0299.004
Logged by: Laura Craven
Drilling Co.: Rock & Soil
Driller: Ron House

Date Drilled: July 16, 1994
Drilling Method: 4 1/4" dia. hollow stem auger
Sampling Method: Split-Spoon
Surface Elev.: NA
Measuring Pt. Elev.: NA

Depth (feet)	PID (in ppm)	Blows/6-in.	Samples	Graphic Log	Soil Class	GENERALIZED DESCRIPTION
	20.0	3-6-5			GR/ASP, SP, CL	GRAVEL/ASPHALT:
	28.0	4-5-4-4				SAND: gray, fine-grained, some gravel Tan, moist, fine at 0.9 to 1.3 feet
5	12.0	4-4-3-4				CLAY: black and brown, moist, stiff, little fine to coarse gravel
	250	6-10-11-17				Brown with little black and rust, moist, stiff, trace fine gravel and sand at 2 to 4 feet
	3.5	14-17-19-23				Black, moist, stiff, some silt at 4 to 6 feet
10	2.5	6-7-14-22			SP, CL	Black grading to olive (at 6.5 feet), moist, stiff, black mottles, occasional wet black spots, hydrocarbon-like odor at 6 to 8 feet
		21-32 50			SHALE	Red-brown, moist, very stiff, piece of gravel in wet spoon, sample recovered not adequate to determine top of water table at 8 to 10.3
15						SAND: tan, wet, fine-grained, interbedded with gray silt, clay, weathered shale and limestone
20						CLAY: Olive, grading to black, iron staining, very hard, interbedded with very weathered shale
						SHALE: gray, damp, very weathered, little iron staining
25						*End of Boring at 13 Feet*
30						

WELL DIAGRAM



Depth (feet): 5, 10, 15, 20, 25, 30

MONITORING WELL GM-17

Navistar/BNR
Rock Island, Illinois

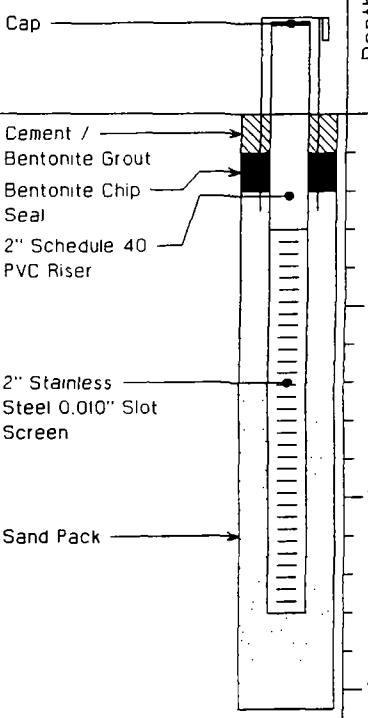
Project No.: CI0299.004
Logged by: Laura Craven
Drilling Co.: Rock & Soil
Driller: Ron House

Date Drilled: July 15, 1994
Drilling Method: 4 1/4" dia. hollow stem auger
Sampling Method: Split-Spoon
Surface Elev.: NA
Measuring Pt. Elev.: NA

Depth (feet)	PID (in ppm)	Blows/6-in.	Samples	Graphic Log	Soil Class	GENERALIZED DESCRIPTION
	50.0	5-10-20-20			TPSL	TOPSOIL: black, damp, grassy surface, little roots
					FILL	
	0.0	11-13-13-8			SP	FILL: black, dark brown and rust, dry, fine to coarse sand-sized, little fine gravel, coal slag, trace shale, little iron staining
					CL	
5	0.0	5-5-8-13				SAND: tan, wet, fine, fine to medium, trace black sand
	20.0					CLAY: very dark brown, moist, some silt
	5.0	3-9-14-15				Black, moist, medium stiff to stiff, some silt, trace mortar fragments at 4 to 6 feet
10	0.0	4-10-15-27				Black, moist to wet, little silt at 6 feet
					GW	Grades to black with olive mottles, little wet spots at 7.5 feet
	0.0	8-22-32-37			SH/CL	
					SHALE	Olive with black staining, and mottling, moist to wet, stiff, some silt, hydrocarbon-like odor at 8 feet
15	0.0	10-21-50				Grades to olive and gray, moist to wet, some silt, possible top of water table at 9 feet
						Red-brown, moist, stiff, little silt at 9.6 to 9.8 feet
20						Olive and black, moist, stiff, olive and black mottles, some silt, 0.25" horizon of black, moist, topsoil with a piece of plastic at 10 feet
25						Red-brown, moist, very hard clay, little silt at 11 to 11.7 feet
						GRAVEL/CLAY/SAND: Black, saturated, well graded
30						SHALE/CLAY: black weathered, interbedded with olive to olive-brown clay, very stiff, fissile
						SHALE: black, weathered, iron staining, very fissile

End of Boring at 16 Feet

WELL DIAGRAM



MONITORING WELL GM-18

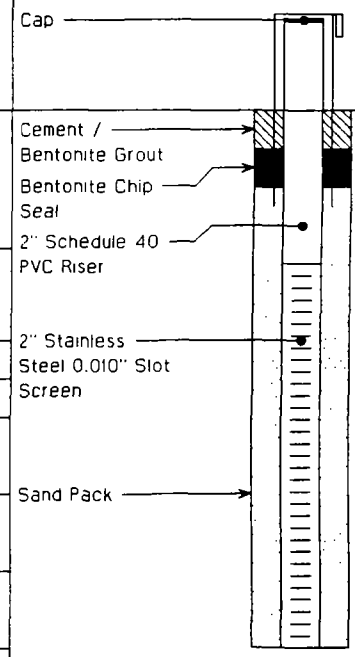
Navistar/BNR
Rock Island, Illinois

Project No.: CI0299.004
Logged by: Laura Craven
Drilling Co.: Rock & Soil
Driller: Ron House

Date Drilled: July 16, 1994
Drilling Method: 4 1/4" dia. hollow stem auger
Sampling Method: Split-Spoon
Surface Elev.: NA
Measuring Pt. Elev.: NA

Depth (feet)	PID (in ppm)	Blows/6-in.	Samples	Graphic Log	Soil Class	GENERALIZED DESCRIPTION
	12.0	15-12-12-15			FILL	FILL: brown to black, dry to damp, find sand, little fine gravel; gravel at surface
	0.8	10-9-9-6				Black, moist, fine sand, trace fine to coarse gravel at 1 to 1.8 feet
5	1.5	3-3-4-6			CL	Black, moist, fine to coarse sand, fine to coarse gravel, coal coke at 2 to 3.6 feet
	2.4	4-5-6-6			SP	CLAY: dark brown, moist, sitff, some silt, little sand
					ML	
	5.0	3-3-6-6			CL	Light brown, moist, stiff, little iron staining, trace gravel, little silt at 5.3 to 6 feet
10	0.0	3-2-2-6			SC	SAND: light brown, wet, fine sand
						Water table at 7 feet
	0.0	26-25-19-32			GM	SILT: olive, saturated, some clay, few black areas, little very fine sand
15						CLAY: olive, wet, medium stiff, some silt
						Brown, wet to saturated, medium stiff, some coarse to fine sand to clay and fine to coarse sand at 9.6 to 10 feet
20						CLAY/SAND: brown, saturated, coarse to fine-grained
						SAND/GRAVEL: tan, saturated, fine to coarse, angular to rounded; gravel is white, black and red, possibly limestone and shale fragments
25						*End of Boring at 14 Feet*
30						

WELL DIAGRAM



Depth (feet): 5, 10, 15, 20, 25, 30

MONITORING WELL GM-19

Navistar/BNR
Rock Island, Illinois

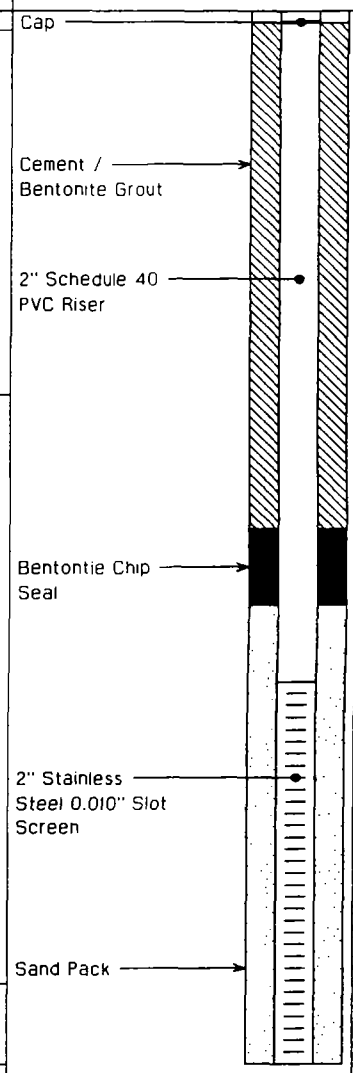
Project No.: C10299.004
Logged by: Laura Craven
Drilling Co.: Rock & Soil
Driller: Ron House

Date Drilled: July 11 & 12, 1994
Drilling Method: 4 1/4" dia. hollow stem auger
Sampling Method: Split-Spoon
Surface Elev.: NA
Measuring Pt. Elev.: NA

Depth (feet)	PID (in ppm)	Blows/6-in.	Samples	Graphic Log	Soil Class	GENERALIZED DESCRIPTION
	0.0	13-38-50			CONC	CONCRETE
	0.0	21-115			FILL	FILL: gravel, base coarse material, fine concrete powder
5	0.0	14-16-18-13				Dark brown, moist fine sand material at 1.75 to 2 feet
						Gravel, base coarse fill at 2 to 2.4 feet
	0.0	10-17-19-15				Black, moist, fine sand, loose at 2.4 to 5.5 feet
	0.2	10-20-18-18				Rust, tan and black sand at 5.5 to 6 feet
10	0.0	10-13-15-16			SP	Black, with litte rust, moist, fine sand, trace fine to coarse gravel and slat at 6 to 10 feet
	0.0	47-29-21-21				SAND: black, moist, fine, trace coarse gravel and slag, few rust spots at 10 to 12.5 feet
15	0.0	10-15-13-15				Black, fine sand to coarse gravel-sized slag and coal, dry at 12.5 to 12.7 feet
	0.0	12-24-20-27				Tan and black at 13.5 to 22 feet
						3" cobble, fused sand and slag, light gray rock at 16.8 to 17.1 feet
	0.0	8-17-19-20				
20	0.0	8-9-8-15				Water table at 20.5 feet
						Black, saturated, fine sand, medium dense, hydrocarbon-like odor at 22 to 25.4 feet
	11.0	7-7-7-8				
25	75.0	2-3-6-8			CL	CLAY: gray, wet, stiff, some silt
	15.0					Gray, moist to wet, stiff, some silt, trace roots, black staining, hydrocarbon-like odor, sheen observed; sand heaving into augers, also wire and wood caught in bit at 26 to 27.5 feet
30						Gray, saturated, fine to coarse gravel, subangular, to rounded, sheen at 27.3 to 27.5 feet

End of Boring at 27.5 Feet

WELL DIAGRAM



TEST BORING LOG

Test Hole MW-5
File No: 643
Date: 05/05/88

ELEV. (FT)	DEPTH (FT)	LOG	SAMPLE NO.	SAMPLE TYPE	BLOW COUNT	CLASSIFICATION
570.00	0					Concrete.
						Black sand fill.
	5					
					6/12"	Reddish brown fine and coarse sand, some black zones. VOA = Trace.
	10					
	15				4/12"	Black and grey sand, very fine grained, wet to moist. VOA = 100 ppm.
552.50						
	20				11/12"	
						Sand and fine gravel. VOA = 100 ppm.
	25	SAND			6/6/5	Dark grey to black coarse sand and gravel. VOA = 20 ppm.
		BOC				
	30	BOH				
	35					
	40					
						Location 4 feet above rail tracks. TOC Elevation = 571.95 H_2O = 19.45' 05/09/88

TEST BORING LOG

Test Hole MW-6
File No: 643
Date: 05/05/88

ELEV. (FT)	DEPTH (FT)	LOG	SAMPLE NO.	SAMPLE TYPE	BLOW COUNT	CLASSIFICATION
569.15	0					
						Black sand fill, foundry.
	5					
	10					
					18/18"	VOA = 600 ppm.
	15				4/12"	VOA = 2,000 ppm.
553.63			▽			
	20	SAND				Greenish grey clay.
					4/32/	VOA = 1,600 ppm.
		BOC				
	25	BOH				
						Sand and gravel, shell pieces. VOA = 500 ppm.
	30					
	35					
	40					
						TOC Elevation = 571.42
						H_2O = 17.75' 05/09/88

TEST BORING LOG

Test Hole MW-7
File No: 643
Date: 05/05/88

ELEV. (FT)	DEPTH (FT)	LOG	SAMPLE NO.	SAMPLE TYPE	BLOW COUNT	CLASSIFICATION
567.43	0					Black sand, cinders, some gravel.
	5					
	10					VOA = 4 ppm.
552.52	15					VOA = 40 ppm. Wet sand.
	20	SAND				547 VOA = 500 ppm. Greenish grey clay.
	25	BOC				Black sand and gravel, some shells. VOA = 80 ppm.
		BOH				
	30					
	35					
	40					TOC Elevation = 568.27 H_2O = 15.75' TOC 05/09/88

TEST BORING LOG

Test Hole MW-8
File No: 643
Date: 05/04/88

ELEV. (FT)	DEPTH (FT)	LOG	SAMPLE NO.	SAMPLE TYPE	BLOW COUNT	CLASSIFICATION
567.0	0					Black and dark brown sand.
	5					
	10				18/18"	VOA = Trace.
553.11			▽05/09			
	15					VOA = 1,200 ppm.
		SAND				Grey clay, shaley clay.
	20					Gravel and sand.
		BOC				
	25					
	30	BOH				
	35					
	40					
						TOC Elevation = 567.56 H_2O = 14.45' 05/09/88

Professional Service Industries, Inc.

RECORD OF SUBSURFACE EXPLORATION

Boring MW-9

Project Name: Subsurface Investigation & Monitoring Well Installation Date of Boring: May 16, 1989

Site: Old Farmall Facility, Rock Island, Illinois Project No.: 001-95016

DESCRIPTION	DEPTH	SAMPLE	N	Q_u	Q_p	M_c	REMARKS
SURFACE							
Black Foundry SAND		1-AU					
	5						
		2-SS					
	10						
		3-SS					
	15						
		4-SS					
SAND	20						
		5-SS					
	25						
GRAVEL		6-SS					
Gray CLAY							
	30						
		7-SS					
End of Boring							

APPENDIX B

Phase II Site Investigation Subsurface Soil Data

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	15-JUL-94	2979	C158705
	Complete	PO Number	
	04-AUG-94	CI0299.004	
	Printed	Sampled	
	05-AUG-94	14-JUL-94 09:25	

Report To

JAMES AUER
GERAGHTY AND MILLER
35 EAST WACKER DRIVE
SUITE 1000
CHICAGO, IL 60601

Bill To

JAMES AUER
GERAGHTY & MILLER, INC.
35 EAST WACKER, SUITE 1000
CHICAGO, IL 60601

Sample Description

PROJECT NO.: CI0299.004
PROJECT LOCATION: NAVISTAR - ROCK ISLAND, IL
SAMPLE ID.: GM13-1013

TOTAL SOLIDS EPA 160.3

Analyst: J. MICHALEK Analysis Date: 19-JUL-94 Test: G401.7.0

Parameter	Result	Det. Limit	Units
SOLIDS	* 89	0.05	Percent

sample was hygroscopic first weight taken

VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A

Analyst: G. SWANEY Analysis Date: 26-JUL-94 23:18 Instrument: GC/MS VOA Test: 0510.9.0

Parameter	Result	Det. Limit	Units
ACETONE	67	20	ug/kg
ACROLEIN	BDL	50	ug/kg
ACRYLONITRILE	BDL	70	ug/kg
BENZENE	BDL	5	ug/kg
BROMODICHLOROMETHANE	BDL	5	ug/kg
BROMOFORM	BDL	5	ug/kg
BROMOMETHANE	BDL	10	ug/kg
CARBON DISULFIDE	BDL	5	ug/kg
CARBON TETRACHLORIDE	BDL	5	ug/kg
CHLOROBENZENE	BDL	5	ug/kg
CHLOROETHANE	BDL	10	ug/kg
CHLOROFORM	BDL	5	ug/kg
CHLOROMETHANE	BDL	10	ug/kg
DIBROMOCHLOROMETHANE	BDL	5	ug/kg
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/kg
DICHLORODIFLUOROMETHANE	BDL	5	ug/kg
1,1-DICHLOROETHANE	BDL	5	ug/kg
1,2-DICHLOROETHANE	BDL	5	ug/kg
1,1-DICHLOROETHENE	BDL	5	ug/kg
1,2-DICHLOROPROPANE	BDL	5	ug/kg
ETHYL BENZENE	BDL	5	ug/kg
TRICHLOROFLUOROMETHANE	BDL	5	ug/kg
2-HEXANONE	BDL	10	ug/kg
DICHLOROMETHANE (METHYLENE CHLORIDE)	19	5	ug/kg
METHYL ETHYL KETONE	BDL	10	ug/kg
4-METHYL-2-PENTANONE	BDL	10	ug/kg

 (continued on next page)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C158705

Parameter	Result	Det. Limit	Units
STYRENE	BDL	5	ug/kg
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/kg
TETRACHLOROETHENE	BDL	5	ug/kg
TETRAHYDROFURAN	EST 20	25	ug/kg
TOLUENE	BDL	5	ug/kg
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	5	ug/kg
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/kg
1,1,1-TRICHLOROETHANE	BDL	5	ug/kg
1,1,2-TRICHLOROETHANE	BDL	5	ug/kg
TRICHLOROETHENE	BDL	5	ug/kg
VINYL ACETATE	BDL	10	ug/kg
VINYL CHLORIDE	BDL	10	ug/kg
XYLENES (O/M/P-XYLENE)	BDL	5	ug/kg
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	85		% Rec
TOLUENE-D8	83		% Rec
4-BROMOFLUOROBENZENE	92		% Rec
DILUTION	1		

PCB SONICATION EXTRACTION SW846-3550

Analyst: M. JAEGER Analysis Date: 21-JUL-94 Test: P231.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	2.50		Grams
FINAL VOLUME	50		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080

Analyst: M. JAEGER Analysis Date: 22-JUL-94 Instrument: GC/ECD Test: 0301.2.0

Prep: PCB SONICATION EXTRACTION SW846-3550 P231.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	1.0	mg/kg
PCB AROCHLOR 1221	BDL	1.0	mg/kg
PCB AROCHLOR 1232	BDL	1.0	mg/kg
PCB AROCHLOR 1242	BDL	1.0	mg/kg
PCB AROCHLOR 1248	BDL	1.0	mg/kg
PCB AROCHLOR 1254	BDL	1.0	mg/kg
PCB AROCHLOR 1260	BDL	1.0	mg/kg
PCB AROCHLOR 1262	BDL	1.0	mg/kg

GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: B. SWEENEY Analysis Date: 19-JUL-94 14:00 Test: P236.2.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	30.07		Grams
FINAL VOLUME	5		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 21-JUL-94 08:22 Instrument: HPLC Test: 0630.0.0 INDI

Prep: GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	2.0	ug/kg
ACENAPHTHYLENE	BDL	3.0	ug/kg
ACENAPHTHENE	BDL	4.0	ug/kg
FLUORENE	BDL	8.0	ug/kg
PHENANTHRENE	BDL	4.0	ug/kg
ANTHRACENE	BDL	4.0	ug/kg
FLUORANTHENE	BDL	3.0	ug/kg

 (continued on next page)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C158705

Parameter	Result	Det. Limit	Units
PYRENE	BDL	2.0	ug/kg
BENZ(A)ANTHRACENE	BDL	4.0	ug/kg
CHRYSENE	BDL	5.0	ug/kg
BENZO(B)FLUORANTHENE	BDL	3.0	ug/kg
BENZO(K)FLUORANTHENE	BDL	3.0	ug/kg
BENZO(A)PYRENE	BDL	3.0	ug/kg
DIBENZ(A,H)ANTHRACENE	BDL	3.0	ug/kg
BENZO(G,H,I)PERYLENE	BDL	2.0	ug/kg
INDENO(1,2,3-CD)PYRENE	BDL	2.0	ug/kg

Sample Comments

** See Note for Parameter*
BDL Below Detection Limit
EST Estimated Value

Sample chain of custody number NONE.

This Certificate shall not be reproduced, except in full, without the written approval of the lab.

Quality Assurance Officer: _____

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	18-JUL-94	2979	C158811
	Complete	PO Number	
	09-AUG-94	CI0299.004	
	Printed	Sampled	
	15-AUG-94	15-JUN-94 08:15	

Report To

JAMES AUER
GERAGHTY AND MILLER
35 EAST WACKER DRIVE
SUITE 1000
CHICAGO, IL 60601

Bill To

JAMES AUER
GERAGHTY & MILLER, INC.
35 EAST WACKER, SUITE 1000
CHICAGO, IL 60601

Sample Description

PROJECT: NAVISTAR-ROCK ISLAND, IL
PROJECT NO.: CI0299.004
SAMPLE ID.: GM14-0204

TOTAL SOLIDS EPA 160.3

Analyst: J. MICHALEK Analysis Date: 19-JUL-94 Test: G401.7.0

Parameter	Result	Det. Limit	Units
SOLIDS	* 87	0.05	Percent

sample was hygroscopic first weight taken

VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A

Analyst: R. SHAMP Analysis Date: 28-JUL-94 12:20 Instrument: GC/MS VOA Test: 0510.9.0 INDI

Parameter	Result	Det. Limit	Units
ACETONE	32	20	ug/kg
ACROLEIN	BDL	50	ug/kg
ACRYLONITRILE	BDL	70	ug/kg
BENZENE	BDL	5	ug/kg
BROMODICHLOROMETHANE	BDL	5	ug/kg
BROMOFORM	BDL	5	ug/kg
BROMOMETHANE	BDL	10	ug/kg
CARBON DISULFIDE	BDL	5	ug/kg
CARBON TETRACHLORIDE	BDL	5	ug/kg
CHLOROBENZENE	BDL	5	ug/kg
CHLOROETHANE	BDL	10	ug/kg
CHLOROFORM	BDL	5	ug/kg
CHLOROMETHANE	BDL	10	ug/kg
DIBROMOCHLOROMETHANE	BDL	5	ug/kg
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/kg
DICHLORODIFLUOROMETHANE	BDL	5	ug/kg
1,1-DICHLOROETHANE	BDL	5	ug/kg
1,2-DICHLOROETHANE	BDL	5	ug/kg
1,1-DICHLOROETHENE	BDL	5	ug/kg
1,2-DICHLOROPROPANE	BDL	5	ug/kg
ETHYL BENZENE	BDL	5	ug/kg
TRICHLOROFLUOROMETHANE	BDL	5	ug/kg
2-HEXANONE	BDL	10	ug/kg
DICHLOROMETHANE (METHYLENE CHLORIDE)	18	5	ug/kg
METHYL ETHYL KETONE	BDL	10	ug/kg
4-METHYL-2-PENTANONE	EST 810	10	ug/kg

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HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C158811

Parameter	Result	Det. Limit	Units
STYRENE	BDL	5	ug/kg
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/kg
TETRACHLOROETHENE	BDL	5	ug/kg
TETRAHYDROFURAN	BDL	25	ug/kg
TOLUENE	BDL	5	ug/kg
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	5	ug/kg
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/kg
1,1,1-TRICHLOROETHANE	BDL	5	ug/kg
1,1,2-TRICHLOROETHANE	BDL	5	ug/kg
TRICHLOROETHENE	BDL	5	ug/kg
VINYL ACETATE	BDL	10	ug/kg
VINYL CHLORIDE	BDL	10	ug/kg
XYLENES (O/M/P-XYLENE)	15	5	ug/kg
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	97		% Rec
TOLUENE-D8	79		% Rec
4-BROMOFLUOROBENZENE	83		% Rec

On this instrument, packed column has been replaced by capillary column with 8240 criteria.
Dilution necessary due to high concentration of target compounds.
Internal standard areas do not pass QC requirements.

MEDIUM LEVEL SOIL PREP HLI

Analyst: R. SHAMP Analysis Date: 28-JUL-94 Instrument: GC/MS VOA Test: P510.3.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL SAMPLE WEIGHT	2.01		Grams
FINAL VOLUME	5		mL

VOLATILE ORGANICS SW846-8240A

Analyst: H. WILLIAMS Analysis Date: 29-JUL-94 07:58 Instrument: GC/MS VOA Test: O510.3.0 INDI

Prep: MEDIUM LEVEL SOIL PREP HLI P510.3.0

Parameter	Result	Det. Limit	Units
ACETONE	BDL	1.2	mg/kg
ACROLEIN	BDL	3.1	mg/kg
ACRYLONITRILE	BDL	4.4	mg/kg
BENZENE	BDL	.31	mg/kg
BROMODICHLOROMETHANE	BDL	.31	mg/kg
BROMOFORM	BDL	.31	mg/kg
BROMOMETHANE	BDL	.63	mg/kg
CARBON DISULFIDE	BDL	.31	mg/kg
CARBON TETRACHLORIDE	BDL	.31	mg/kg
CHLOROBENZENE	BDL	.31	mg/kg
CHLOROETHANE	BDL	.63	mg/kg
CHLOROFORM	BDL	.31	mg/kg
CHLOROMETHANE	BDL	.63	mg/kg
DIBROMOCHLOROMETHANE	BDL	.31	mg/kg
CIS-1,3-DICHLOROPROPENE	BDL	.31	mg/kg
DICHLORODIFLUOROMETHANE	BDL	.31	mg/kg
1,1-DICHLOROETHANE	BDL	.31	mg/kg
1,2-DICHLOROETHANE	BDL	.31	mg/kg
1,1-DICHLOROETHENE	BDL	.31	mg/kg
1,2-DICHLOROPROPANE	BDL	.31	mg/kg
ETHYL BENZENE	BDL	.31	mg/kg
TRICHLOROFLUOROMETHANE	BDL	.31	mg/kg

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C158811

Parameter	Result	Det. Limit	Units
2-HEXANONE	BDL	.63	mg/kg
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	.31	mg/kg
METHYL ETHYL KETONE	BDL	.63	mg/kg
4-METHYL-2-PENTANONE	0.83	.63	mg/kg
STYRENE	BDL	.31	mg/kg
1,1,2,2-TETRACHLOROETHANE	BDL	.31	mg/kg
TETRACHLOROETHENE	BDL	.31	mg/kg
TETRAHYDROFURAN	BDL	1.5	mg/kg
TOLUENE	BDL	.31	mg/kg
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	.31	mg/kg
TRANS-1,3-DICHLOROPROPENE	BDL	.31	mg/kg
1,1,1-TRICHLOROETHANE	BDL	.31	mg/kg
1,1,2-TRICHLOROETHANE	BDL	.31	mg/kg
TRICHLOROETHENE	BDL	.31	mg/kg
VINYL ACETATE	BDL	.63	mg/kg
VINYL CHLORIDE	BDL	.63	mg/kg
XYLENES (O/M/P-XYLENE)	BDL	.31	mg/kg
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	88		% Rec
TOLUENE-D8	101		% Rec
4-BROMOFLUOROBENZENE	99		% Rec

1:63 DILUTION.

PCB SONICATION EXTRACTION SW846-3550

Analyst: M. JAEGER Analysis Date: 21-JUL-94 Test: P231.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	2.51		Grams
FINAL VOLUME	50		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080

Analyst: M. JAEGER Analysis Date: 22-JUL-94 Instrument: GC/ECD Test: 0301.2.0

Prep: PCB SONICATION EXTRACTION SW846-3550 P231.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	1.0	mg/kg
PCB AROCHLOR 1221	BDL	1.0	mg/kg
PCB AROCHLOR 1232	BDL	1.0	mg/kg
PCB AROCHLOR 1242	BDL	1.0	mg/kg
PCB AROCHLOR 1248	BDL	1.0	mg/kg
PCB AROCHLOR 1254	BDL	1.0	mg/kg
PCB AROCHLOR 1260	BDL	1.0	mg/kg
PCB AROCHLOR 1262	BDL	1.0	mg/kg

GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: J. SCHERBAUER Analysis Date: 19-JUL-94 15:00 Test: P236.2.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	5.69		Grams
FINAL VOLUME	5		mL

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	13-JUL-94	2979	C158552
	Complete	PO Number	
	04-AUG-94	CI0299.004	
	Printed	Sampled	
	05-AUG-94	11-JUL-94 14:25	

Report To

JAMES AUER
GERAGHTY AND MILLER
35 EAST WACKER DRIVE
SUITE 1000
CHICAGO, IL 60601

Bill To

JAMES AUER
GERAGHTY & MILLER, INC.
35 EAST WACKER, SUITE 1000
CHICAGO, IL 60601

Sample Description

PROJECT NO.: CI0299.004
PROJECT LOCATION: NTIC/BNR/IIR ROCK ISLAND
SAMPLE ID.: GM7-0204

TOTAL SOLIDS EPA 160.3

Analyst: J. MICHALEK Analysis Date: 19-JUL-94 Test: G401.7.0

Parameter	Result	Det. Limit	Units
SOLIDS	* 93	0.05	Percent

sample was hygroscopic first weight taken

VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A

Analyst: S. SHARP Analysis Date: 25-JUL-94 06:38 Instrument: GC/MS VOA Test: 0510.9.0

Parameter	Result	Det. Limit	Units
ACETONE	BDL	20	ug/kg
ACROLEIN	BDL	50	ug/kg
ACRYLONITRILE	BDL	70	ug/kg
BENZENE	BDL	5	ug/kg
BROMODICHLOROMETHANE	BDL	5	ug/kg
BROMOFORM	BDL	5	ug/kg
BROMOMETHANE	BDL	10	ug/kg
CARBON DISULFIDE	BDL	5	ug/kg
CARBON TETRACHLORIDE	BDL	5	ug/kg
CHLOROBENZENE	BDL	5	ug/kg
CHLOROETHANE	BDL	10	ug/kg
CHLOROFORM	BDL	5	ug/kg
CHLOROMETHANE	BDL	10	ug/kg
DIBROMOCHLOROMETHANE	BDL	5	ug/kg
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/kg
DICHLORODIFLUOROMETHANE	BDL	5	ug/kg
1,1-DICHLOROETHANE	BDL	5	ug/kg
1,2-DICHLOROETHANE	BDL	5	ug/kg
1,1-DICHLOROETHENE	BDL	5	ug/kg
1,2-DICHLOROPROPANE	BDL	5	ug/kg
ETHYL BENZENE	BDL	5	ug/kg
TRICHLOROFLUOROMETHANE	BDL	5	ug/kg
2-HEXANONE	BDL	10	ug/kg
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	5	ug/kg
METHYL ETHYL KETONE	BDL	10	ug/kg
4-METHYL-2-PENTANONE	BDL	10	ug/kg

 (continued on next page)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C158552

Parameter	Result	Det. Limit	Units
STYRENE	BDL	5	ug/kg
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/kg
TETRACHLOROETHENE	BDL	5	ug/kg
TETRAHYDROFURAN	BDL	25	ug/kg
TOLUENE	BDL	5	ug/kg
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	5	ug/kg
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/kg
1,1,1-TRICHLOROETHANE	BDL	5	ug/kg
1,1,2-TRICHLOROETHANE	BDL	5	ug/kg
TRICHLOROETHENE	BDL	5	ug/kg
VINYL ACETATE	BDL	10	ug/kg
VINYL CHLORIDE	BDL	10	ug/kg
XYLENES (O/M/P-XYLENE)	BDL	5	ug/kg
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	94		% Rec
TOLUENE-D8	115		% Rec
4-BROMOFLUOROBENZENE	77		% Rec
DILUTION	1		

PCB SONICATION EXTRACTION SW846-3550

Analyst: M. JAEGER Analysis Date: 14-JUL-94 Test: P231.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	2.50		Grams
FINAL VOLUME	50		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080

Analyst: M. JAEGER Analysis Date: 13-JUL-94 Instrument: GC/ECD Test: 0301.2.0

Prep: PCB SONICATION EXTRACTION SW846-3550 P231.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	1.0	mg/kg
PCB AROCHLOR 1221	BDL	1.0	mg/kg
PCB AROCHLOR 1232	BDL	1.0	mg/kg
PCB AROCHLOR 1242	BDL	1.0	mg/kg
PCB AROCHLOR 1248	BDL	1.0	mg/kg
PCB AROCHLOR 1254	BDL	1.0	mg/kg
PCB AROCHLOR 1260	BDL	1.0	mg/kg
PCB AROCHLOR 1262	BDL	1.0	mg/kg

GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: J. SCHERBAUER Analysis Date: 14-JUL-94 17:32 Test: P236.2.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	30.13		Grams
FINAL VOLUME	5		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 16-JUL-94 05:59 Instrument: HPLC Test: 0630.0.0 INDI

Prep: GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	2.0	ug/kg
ACENAPHTHYLENE	BDL	3.0	ug/kg
ACENAPHTHENE	BDL	4.0	ug/kg
FLUORENE	11	8.0	ug/kg
PHENANTHRENE	62	4.0	ug/kg
ANTHRACENE	BDL	4.0	ug/kg
FLUORANTHENE	12	3.0	ug/kg

 (continued on next page)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C158552

Parameter	Result	Det. Limit	Units
PYRENE	15	2.0	ug/kg
BENZ(A)ANTHRACENE	BDL	4.0	ug/kg
CHRYSENE	11	5.0	ug/kg
BENZO(B)FLUORANTHENE	BDL	3.0	ug/kg
BENZO(K)FLUORANTHENE	BDL	3.0	ug/kg
BENZO(A)PYRENE	BDL	3.0	ug/kg
DIBENZ(A,H)ANTHRACENE	BDL	3.0	ug/kg
BENZO(G,H,I)PERYLENE	2.0	2.0	ug/kg
INDENO(1,2,3-CD)PYRENE	2.5	2.0	ug/kg

Sample Comments

* *See Note for Parameter*
BDL Below Detection Limit

Sample chain of custody number NONE.

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Quality Assurance Officer: _____

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	13-JUL-94	2979	C158553
	Complete	PO Number	
	04-AUG-94	CI0299.004	
	Printed	Sampled	
	05-AUG-94	11-JUL-94 15:10	

Report To

JAMES AUER
GERAGHTY AND MILLER
35 EAST WACKER DRIVE
SUITE 1000
CHICAGO, IL 60601

Bill To

JAMES AUER
GERAGHTY & MILLER, INC.
35 EAST WACKER, SUITE 1000
CHICAGO, IL 60601

Sample Description

PROJECT NO.: CI0299.004
PROJECT LOCATION: NTIC/BNR/IIR ROCK ISLAND
SAMPLE ID.: GM7-1416

TOTAL SOLIDS EPA 160.3

Analyst: J. MICHALEK Analysis Date: 19-JUL-94 Test: G401.7.0

Parameter	Result	Det. Limit	Units
SOLIDS	* 96	0.05	Percent

sample was hygroscopic first weight taken

VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A

Analyst: S. SHARP Analysis Date: 25-JUL-94 07:25 Instrument: GC/MS VOA Test: 0510.9.0

Parameter	Result	Det. Limit	Units
ACETONE	61	20	ug/kg
ACROLEIN	BDL	50	ug/kg
ACRYLONITRILE	BDL	70	ug/kg
BENZENE	BDL	5	ug/kg
BROMODICHLOROMETHANE	BDL	5	ug/kg
BROMOFORM	BDL	5	ug/kg
BROMOMETHANE	BDL	10	ug/kg
CARBON DISULFIDE	BDL	5	ug/kg
CARBON TETRACHLORIDE	BDL	5	ug/kg
CHLOROBENZENE	BDL	5	ug/kg
CHLOROETHANE	BDL	10	ug/kg
CHLOROFORM	BDL	5	ug/kg
CHLOROMETHANE	BDL	10	ug/kg
DIBROMOCHLOROMETHANE	BDL	5	ug/kg
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/kg
DICHLORODIFLUOROMETHANE	BDL	5	ug/kg
1,1-DICHLOROETHANE	BDL	5	ug/kg
1,2-DICHLOROETHANE	BDL	5	ug/kg
1,1-DICHLOROETHENE	BDL	5	ug/kg
1,2-DICHLOROPROPANE	BDL	5	ug/kg
ETHYL BENZENE	BDL	5	ug/kg
TRICHLOROFLUOROMETHANE	BDL	5	ug/kg
2-HEXANONE	BDL	10	ug/kg
DICHLOROMETHANE (METHYLENE CHLORIDE)	13	5	ug/kg
METHYL ETHYL KETONE	BDL	10	ug/kg
4-METHYL-2-PENTANONE	BDL	10	ug/kg

 (continued on next page)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C158553

Parameter	Result	Det. Limit	Units
STYRENE	BDL	5	ug/kg
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/kg
TETRACHLOROETHENE	BDL	5	ug/kg
TETRAHYDROFURAN	BDL	25	ug/kg
TOLUENE	BDL	5	ug/kg
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	5	ug/kg
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/kg
1,1,1-TRICHLOROETHANE	BDL	5	ug/kg
1,1,2-TRICHLOROETHANE	BDL	5	ug/kg
TRICHLOROETHENE	BDL	5	ug/kg
VINYL ACETATE	BDL	10	ug/kg
VINYL CHLORIDE	BDL	10	ug/kg
XYLENES (O/M/P-XYLENE)	BDL	5	ug/kg
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	94		% Rec
TOLUENE-D8	112		% Rec
4-BROMOFLUOROBENZENE	75		% Rec
DILUTION	1		

PCB SONICATION EXTRACTION SW846-3550

Analyst: M. JAEGER Analysis Date: 14-JUL-94 Test: P231.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	2.51		Grams
FINAL VOLUME	50		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080

Analyst: M. JAEGER Analysis Date: 13-JUL-94 Instrument: GC/ECD Test: 0301.2.0

Prep: PCB SONICATION EXTRACTION SW846-3550 P231.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	1.0	mg/kg
PCB AROCHLOR 1221	BDL	1.0	mg/kg
PCB AROCHLOR 1232	BDL	1.0	mg/kg
PCB AROCHLOR 1242	BDL	1.0	mg/kg
PCB AROCHLOR 1248	BDL	1.0	mg/kg
PCB AROCHLOR 1254	BDL	1.0	mg/kg
PCB AROCHLOR 1260	BDL	1.0	mg/kg
PCB AROCHLOR 1262	BDL	1.0	mg/kg

GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: J. SCHERBAUER Analysis Date: 14-JUL-94 17:32 Test: P236.2.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	30.07		Grams
FINAL VOLUME	5		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 16-JUL-94 06:45 Instrument: HPLC Test: 0630.0.0 INDI

Prep: GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	2.0	ug/kg
ACENAPHTHYLENE	BDL	3.0	ug/kg
ACENAPHTHENE	BDL	4.0	ug/kg
FLUORENE	BDL	8.0	ug/kg
PHENANTHRENE	12	4.0	ug/kg
ANTHRACENE	BDL	4.0	ug/kg
FLUORANTHENE	BDL	3.0	ug/kg

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HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C158553

Parameter	Result	Det. Limit	Units
PYRENE	2.4	2.0	ug/kg
BENZ(A)ANTHRACENE	BDL	4.0	ug/kg
CHRYSENE	BDL	5.0	ug/kg
BENZO(B)FLUORANTHENE	BDL	3.0	ug/kg
BENZO(K)FLUORANTHENE	BDL	3.0	ug/kg
BENZO(A)PYRENE	BDL	3.0	ug/kg
DIBENZ(A,H)ANTHRACENE	BDL	3.0	ug/kg
BENZO(G,H,I)PERYLENE	BDL	2.0	ug/kg
INDENO(1,2,3-CD)PYRENE	BDL	2.0	ug/kg

Sample Comments

** See Note for Parameter*
BDL Below Detection Limit

Sample chain of custody number NONE.

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Quality Assurance Officer: _____

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	18-JUL-94	2979	C158808
	Complete	PO Number	
	09-AUG-94	CI0299.004	
	Printed	Sampled	
	10-AUG-94	15-JUN-94 16:45	

Report To	Bill To
JAMES AUER GERAGHTY AND MILLER 35 EAST WACKER DRIVE SUITE 1000 CHICAGO, IL 60601	JAMES AUER GERAGHTY & MILLER, INC. 35 EAST WACKER, SUITE 1000 CHICAGO, IL 60601

Sample Description

PROJECT: NAVISTAR-ROCK ISLAND, IL
PROJECT NO.: CI0299.004
SAMPLE ID.: GM8-0204

TOTAL SOLIDS EPA 160.3

Analyst: J. MICHALEK Analysis Date: 19-JUL-94 Test: G401.7.0

Parameter	Result	Det. Limit	Units
SOLIDS	* 95	0.05	Percent

sample was hygroscopic first weight taken

VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A

Analyst: R. SHAMP Analysis Date: 26-JUL-94 12:52 Instrument: GC/MS VOA Test: 0510.9.0 INDI

Parameter	Result	Det. Limit	Units
ACETONE	35	20	ug/kg
ACROLEIN	BDL	50	ug/kg
ACRYLONITRILE	BDL	70	ug/kg
BENZENE	BDL	5	ug/kg
BROMODICHLOROMETHANE	BDL	5	ug/kg
BROMOFORM	BDL	5	ug/kg
BROMOMETHANE	BDL	10	ug/kg
CARBON DISULFIDE	BDL	5	ug/kg
CARBON TETRACHLORIDE	BDL	5	ug/kg
CHLOROBENZENE	BDL	5	ug/kg
CHLOROETHANE	BDL	10	ug/kg
CHLOROFORM	BDL	5	ug/kg
CHLOROMETHANE	BDL	10	ug/kg
DIBROMOCHLOROMETHANE	BDL	5	ug/kg
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/kg
DICHLORODIFLUOROMETHANE	BDL	5	ug/kg
1,1-DICHLOROETHANE	BDL	5	ug/kg
1,2-DICHLOROETHANE	BDL	5	ug/kg
1,1-DICHLOROETHENE	BDL	5	ug/kg
1,2-DICHLOROPROPANE	BDL	5	ug/kg
ETHYL BENZENE	BDL	5	ug/kg
TRICHLOROFLUOROMETHANE	BDL	5	ug/kg
2-HEXANONE	BDL	10	ug/kg
DICHLOROMETHANE (METHYLENE CHLORIDE)	12	5	ug/kg
METHYL ETHYL KETONE	BDL	10	ug/kg
4-METHYL-2-PENTANONE	180	10	ug/kg

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HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C158808

Parameter	Result	Det. Limit	Units
STYRENE	BDL	5	ug/kg
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/kg
TETRACHLOROETHENE	BDL	5	ug/kg
TETRAHYDROFURAN	BDL	25	ug/kg
TOLUENE	BDL	5	ug/kg
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	5	ug/kg
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/kg
1,1,1-TRICHLOROETHANE	BDL	5	ug/kg
1,1,2-TRICHLOROETHANE	BDL	5	ug/kg
TRICHLOROETHENE	BDL	5	ug/kg
VINYL ACETATE	BDL	10	ug/kg
VINYL CHLORIDE	BDL	10	ug/kg
XYLENES (O/M/P-XYLENE)	BDL	5	ug/kg
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	75		% Rec
TOLUENE-D8	127		% Rec
4-BROMOFLUOROBENZENE	144		% Rec

Sample reanalyzed with no improvement in surrogate recovery.
Sample reanalyzed with no improvement in internal standard areas.
RESULTS OF THE ORIGINAL AND REPLICATE DO NOT MATCH DUE TO NON-HOMOGENOUS SAMPLE.

VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A

Analyst: B. MAZUR Analysis Date: 27-JUL-94 14:16 Instrument: GC/MS VOA Test: 0510.9.1 INDI

Parameter	Result	Det. Limit	Units
ACETONE	32	20	ug/kg
ACROLEIN	BDL	50	ug/kg
ACRYLONITRILE	BDL	70	ug/kg
BENZENE	BDL	5	ug/kg
BROMODICHLOROMETHANE	BDL	5	ug/kg
BROMOFORM	BDL	5	ug/kg
BROMOMETHANE	BDL	10	ug/kg
CARBON DISULFIDE	BDL	5	ug/kg
CARBON TETRACHLORIDE	BDL	5	ug/kg
CHLOROBENZENE	BDL	5	ug/kg
CHLOROETHANE	BDL	10	ug/kg
CHLOROFORM	BDL	5	ug/kg
CHLOROMETHANE	BDL	10	ug/kg
DIBROMOCHLOROMETHANE	BDL	5	ug/kg
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/kg
DICHLORODIFLUOROMETHANE	BDL	5	ug/kg
1,1-DICHLOROETHANE	BDL	5	ug/kg
1,2-DICHLOROETHANE	BDL	5	ug/kg
1,1-DICHLOROETHENE	BDL	5	ug/kg
1,2-DICHLOROPROPANE	BDL	5	ug/kg
ETHYL BENZENE	BDL	5	ug/kg
TRICHLOROFLUOROMETHANE	BDL	5	ug/kg
2-HEXANONE	BDL	10	ug/kg
DICHLOROMETHANE (METHYLENE CHLORIDE)	18	5	ug/kg
METHYL ETHYL KETONE	BDL	10	ug/kg
4-METHYL-2-PENTANONE	EST 660	10	ug/kg
STYRENE	BDL	5	ug/kg
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/kg
TETRACHLOROETHENE	BDL	5	ug/kg
TETRAHYDROFURAN	BDL	25	ug/kg

 (continued on next page)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C158808

Parameter	Result	Det. Limit	Units
TOLUENE	9	5	ug/kg
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	5	ug/kg
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/kg
1,1,1-TRICHLOROETHANE	BDL	5	ug/kg
1,1,2-TRICHLOROETHANE	BDL	5	ug/kg
TRICHLOROETHENE	BDL	5	ug/kg
VINYL ACETATE	BDL	10	ug/kg
VINYL CHLORIDE	BDL	10	ug/kg
XYLENES (O/M/P-XYLENE)	BDL	5	ug/kg
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	82		% Rec
TOLUENE-D8	124		% Rec
4-BROMOFLUOROBENZENE	106		% Rec

PCB SONICATION EXTRACTION SW846-3550

Analyst: M. JAEGER Analysis Date: 21-JUL-94 Test: P231.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	2.50		Grams
FINAL VOLUME	50		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080

Analyst: M. JAEGER Analysis Date: 22-JUL-94 Instrument: GC/ECD Test: 0301.2.0

Prep: PCB SONICATION EXTRACTION SW846-3550 P231.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	1.0	mg/kg
PCB AROCHLOR 1221	BDL	1.0	mg/kg
PCB AROCHLOR 1232	BDL	1.0	mg/kg
PCB AROCHLOR 1242	BDL	1.0	mg/kg
PCB AROCHLOR 1248	BDL	1.0	mg/kg
PCB AROCHLOR 1254	BDL	1.0	mg/kg
PCB AROCHLOR 1260	BDL	1.0	mg/kg
PCB AROCHLOR 1262	BDL	1.0	mg/kg

GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: J. SCHERBAUER Analysis Date: 19-JUL-94 15:00 Test: P236.2.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	5.12		Grams
FINAL VOLUME	5		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 21-JUL-94 10:38 Instrument: HPLC Test: 0630.0.0 INDI

Prep: GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	2.0	ug/kg
ACENAPHTHYLENE	BDL	3.0	ug/kg
ACENAPHTHENE	BDL	4.0	ug/kg
FLUORENE	110	8.0	ug/kg
PHENANTHRENE	230	4.0	ug/kg
ANTHRACENE	BDL	4.0	ug/kg
FLUORANTHENE	210	3.0	ug/kg
PYRENE	160	2.0	ug/kg
BENZ(A)ANTHRACENE	56	4.0	ug/kg
CHRYSENE	110	5.0	ug/kg
BENZO(B)FLUORANTHENE	180	3.0	ug/kg
BENZO(K)FLUORANTHENE	68	3.0	ug/kg

 (continued on next page)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C158808

Parameter	Result	Det. Limit	Units
BENZO(A)PYRENE	140	3.0	ug/kg
DIBENZ(A,H)ANTHRACENE	BDL	3.0	ug/kg
BENZO(G,H,I)PERYLENE	360	2.0	ug/kg
INDENO(1,2,3-CD)PYRENE	210	2.0	ug/kg

Sample Comments

* *See Note for Parameter*
BDL *Below Detection Limit*
EST *Estimated Value*

Sample chain of custody number NONE.

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Quality Assurance Officer: _____

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	18-JUL-94	2979	C158809
	Complete	PO Number	
	09-AUG-94	CI0299.004	
	Printed	Sampled	
	10-AUG-94	15-JUN-94 16:55	

Report To

JAMES AUER
GERAGHTY AND MILLER
35 EAST WACKER DRIVE
SUITE 1000
CHICAGO, IL 60601

Bill To

JAMES AUER
GERAGHTY & MILLER, INC.
35 EAST WACKER, SUITE 1000
CHICAGO, IL 60601

Sample Description

PROJECT: NAVISTAR-ROCK ISLAND, IL
PROJECT NO.: CI0299.004
SAMPLE ID.: GM8-0608 & GM8-608MSD

TOTAL SOLIDS EPA 160.3

Analyst: J. MICHALEK Analysis Date: 19-JUL-94 Test: G401.7.0

Parameter	Result	Det. Limit	Units
SOLIDS	* 87	0.05	Percent

sample was hygroscopic first weight taken

VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A

Analyst: R. SHAMP Analysis Date: 26-JUL-94 09:47 Instrument: GC/MS VOA Test: 0510.9.0 INDI

Parameter	Result	Det. Limit	Units
ACETONE	BDL	20	ug/kg
ACROLEIN	BDL	50	ug/kg
ACRYLONITRILE	BDL	70	ug/kg
BENZENE	BDL	5	ug/kg
BROMODICHLOROMETHANE	BDL	5	ug/kg
BROMOFORM	BDL	5	ug/kg
BROMOMETHANE	BDL	10	ug/kg
CARBON DISULFIDE	BDL	5	ug/kg
CARBON TETRACHLORIDE	BDL	5	ug/kg
CHLOROBENZENE	BDL	5	ug/kg
CHLOROETHANE	BDL	10	ug/kg
CHLOROFORM	BDL	5	ug/kg
CHLOROMETHANE	BDL	10	ug/kg
DIBROMOCHLOROMETHANE	BDL	5	ug/kg
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/kg
DICHLORODIFLUOROMETHANE	BDL	5	ug/kg
1,1-DICHLOROETHANE	BDL	5	ug/kg
1,2-DICHLOROETHANE	BDL	5	ug/kg
1,1-DICHLOROETHENE	BDL	5	ug/kg
1,2-DICHLOROPROPANE	BDL	5	ug/kg
ETHYL BENZENE	BDL	5	ug/kg
TRICHLOROFLUOROMETHANE	BDL	5	ug/kg
2-HEXANONE	BDL	10	ug/kg
DICHLOROMETHANE (METHYLENE CHLORIDE)	6	5	ug/kg
METHYL ETHYL KETONE	BDL	10	ug/kg
4-METHYL-2-PENTANONE	24	10	ug/kg

 (continued on next page)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C158809

Parameter	Result	Det. Limit	Units
STYRENE	BDL	5	ug/kg
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/kg
TETRACHLOROETHENE	BDL	5	ug/kg
TETRAHYDROFURAN	BDL	25	ug/kg
TOLUENE	BDL	5	ug/kg
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	5	ug/kg
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/kg
1,1,1-TRICHLOROETHANE	BDL	5	ug/kg
1,1,2-TRICHLOROETHANE	BDL	5	ug/kg
TRICHLOROETHENE	BDL	5	ug/kg
VINYL ACETATE	BDL	10	ug/kg
VINYL CHLORIDE	BDL	10	ug/kg
XYLENES (O/M/P-XYLENE)	BDL	5	ug/kg
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	83		% Rec
TOLUENE-D8	115		% Rec
4-BROMOFLUOROBENZENE	89		% Rec

Sample reanalyzed with no improvement in internal standard areas.

PCB SONICATION EXTRACTION SW846-3550

Analyst: M. JAEGER Analysis Date: 21-JUL-94 Test: P231.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	2.51		Grams
FINAL VOLUME	50		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080

Analyst: M. JAEGER Analysis Date: 22-JUL-94 Instrument: GC/ECD Test: 0301.2.0

Prep: PCB SONICATION EXTRACTION SW846-3550 P231.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	1.0	mg/kg
PCB AROCHLOR 1221	BDL	1.0	mg/kg
PCB AROCHLOR 1232	BDL	1.0	mg/kg
PCB AROCHLOR 1242	BDL	1.0	mg/kg
PCB AROCHLOR 1248	BDL	1.0	mg/kg
PCB AROCHLOR 1254	BDL	1.0	mg/kg
PCB AROCHLOR 1260	BDL	1.0	mg/kg
PCB AROCHLOR 1262	BDL	1.0	mg/kg

GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: B. SWEENEY Analysis Date: 19-JUL-94 14:00 Test: P236.2.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	5.00		Grams
FINAL VOLUME	5		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 21-JUL-94 23:23 Instrument: HPLC Test: 0630.0.0 INDI

Prep: GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	2.0	ug/kg
ACENAPHTHYLENE	BDL	3.0	ug/kg
ACENAPHTHENE	BDL	4.0	ug/kg
FLUORENE	BDL	8.0	ug/kg
PHENANTHRENE	370	4.0	ug/kg
ANTHRACENE	BDL	4.0	ug/kg

 (continued on next page)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C158809

Parameter	Result	Det. Limit	Units
FLUORANTHENE	900	3.0	ug/kg
PYRENE	510	2.0	ug/kg
BENZ(A)ANTHRACENE	270	4.0	ug/kg
CHRYSENE	280	5.0	ug/kg
BENZO(B)FLUORANTHENE	1100	3.0	ug/kg
BENZO(K)FLUORANTHENE	440	3.0	ug/kg
BENZO(A)PYRENE	720	3.0	ug/kg
DIBENZ(A,H)ANTHRACENE	91	3.0	ug/kg
BENZO(G,H,I)PERYLENE	1400	2.0	ug/kg
INDENO(1,2,3-CD)PYRENE	1600	2.0	ug/kg

Sample Comments

** See Note for Parameter*
BDL Below Detection Limit

Sample chain of custody number NONE.

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Quality Assurance Officer: _____

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	13-JUL-94	2979	C158556
	Complete	PO Number	
	04-AUG-94	CI0299.004	
	Printed	Sampled	
	18-AUG-94	12-JUL-94 14:59	

Report To	Bill To
JAMES AUER GERAGHTY AND MILLER 35 EAST WACKER DRIVE SUITE 1000 CHICAGO, IL 60601	JAMES AUER GERAGHTY & MILLER, INC. 35 EAST WACKER, SUITE 1000 CHICAGO, IL 60601

Sample Description

PROJECT NO.: CI0299.004
PROJECT LOCATION: NTIC/BNR/IIR ROCK ISLAND
SAMPLE ID.: GM9-0608

TOTAL SOLIDS EPA 160.3

Analyst: J. MICHALEK Analysis Date: 19-JUL-94 Test: G401.7.0

Parameter	Result	Det. Limit	Units
SOLIDS	* 91	0.05	Percent

sample was hygroscopic first weight taken

VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A

Analyst: S. SHARP Analysis Date: 25-JUL-94 12:51 Instrument: GC/MS VOA Test: O510.9.0

Parameter	Result	Det. Limit	Units
ACETONE	310	200	ug/kg
ACROLEIN	BDL	500	ug/kg
ACRYLONITRILE	BDL	700	ug/kg
BENZENE	BDL	50	ug/kg
BROMODICHLOROMETHANE	BDL	50	ug/kg
BROMOFORM	BDL	50	ug/kg
BROMOMETHANE	BDL	100	ug/kg
CARBON DISULFIDE	BDL	50	ug/kg
CARBON TETRACHLORIDE	BDL	50	ug/kg
CHLOROBENZENE	BDL	50	ug/kg
CHLOROETHANE	BDL	100	ug/kg
CHLOROFORM	BDL	50	ug/kg
CHLOROMETHANE	BDL	100	ug/kg
DIBROMOCHLOROMETHANE	BDL	50	ug/kg
CIS-1,3-DICHLOROPROPENE	BDL	50	ug/kg
DICHLORODIFLUOROMETHANE	BDL	50	ug/kg
1,1-DICHLOROETHANE	BDL	50	ug/kg
1,2-DICHLOROETHANE	BDL	50	ug/kg
1,1-DICHLOROETHENE	BDL	50	ug/kg
1,2-DICHLOROPROPANE	BDL	50	ug/kg
ETHYL BENZENE	BDL	50	ug/kg
TRICHLOROFLUOROMETHANE	BDL	50	ug/kg
2-HEXANONE	BDL	100	ug/kg
DICHLOROMETHANE (METHYLENE CHLORIDE)	1000	50	ug/kg
METHYL ETHYL KETONE	BDL	100	ug/kg
4-METHYL-2-PENTANONE	BDL	100	ug/kg

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HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C158556

Parameter	Result	Det. Limit	Units
STYRENE	BDL	50	ug/kg
1,1,2,2-TETRACHLOROETHANE	BDL	50	ug/kg
TETRACHLOROETHENE	BDL	50	ug/kg
TETRAHYDROFURAN	BDL	250	ug/kg
TOLUENE	BDL	50	ug/kg
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	50	ug/kg
TRANS-1,3-DICHLOROPROPENE	BDL	50	ug/kg
1,1,1-TRICHLOROETHANE	BDL	50	ug/kg
1,1,2-TRICHLOROETHANE	BDL	50	ug/kg
TRICHLOROETHENE	BDL	50	ug/kg
VINYL ACETATE	BDL	100	ug/kg
VINYL CHLORIDE	BDL	100	ug/kg
XYLENES (O/M/P-XYLENE)	BDL	50	ug/kg
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	77		% Rec
TOLUENE-D8	111		% Rec
4-BROMOFLUOROBENZENE	103		% Rec
DILUTION	10		

Unable to analyze sample at lower dilution due to high concentration of non-target compounds.

PCB SONICATION EXTRACTION SW846-3550

Analyst: M. JAEGER Analysis Date: 14-JUL-94 Test: P231.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	2.51		Grams
FINAL VOLUME	50		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080

Analyst: M. JAEGER Analysis Date: 13-JUL-94 Instrument: GC/ECD Test: 0301.2.0

Prep: PCB SONICATION EXTRACTION SW846-3550 P231.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	1.0	mg/kg
PCB AROCHLOR 1221	BDL	1.0	mg/kg
PCB AROCHLOR 1232	BDL	1.0	mg/kg
PCB AROCHLOR 1242	BDL	1.0	mg/kg
PCB AROCHLOR 1248	BDL	1.0	mg/kg
PCB AROCHLOR 1254	BDL	1.0	mg/kg
PCB AROCHLOR 1260	BDL	1.0	mg/kg
PCB AROCHLOR 1262	BDL	1.0	mg/kg

GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: J. SCHERBAUER Analysis Date: 14-JUL-94 18:20 Test: P236.2.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	30.01		Grams
FINAL VOLUME	5		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 16-JUL-94 14:13 Instrument: HPLC Test: 0630.0.0 INDI

Prep: GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	2.0	ug/kg
ACENAPHTHYLENE	BDL	3.0	ug/kg
ACENAPHTHENE	*	4.0	ug/kg
FLUORENE	*	8.0	ug/kg

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HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C158556

Parameter	Result	Det. Limit	Units
PHENANTHRENE	*	4.0	ug/kg
ANTHRACENE	BDL	4.0	ug/kg
FLUORANTHENE	BDL	3.0	ug/kg
PYRENE	*	2.0	ug/kg
BENZ(A)ANTHRACENE	BDL	4.0	ug/kg
CHRYSENE	*	5.0	ug/kg
BENZO(B)FLUORANTHENE	16	3.0	ug/kg
BENZO(K)FLUORANTHENE	15	3.0	ug/kg
BENZO(A)PYRENE	14	3.0	ug/kg
DIBENZ(A,H)ANTHRACENE	BDL	3.0	ug/kg
BENZO(G,H,I)PERYLENE	13	2.0	ug/kg
INDENO(1,2,3-CD)PYRENE	4.7	2.0	ug/kg

**SEE REP 1 FOR RESULTS.*

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 17-JUL-94 03:33 Instrument: HPLC Test: 0630.0.1 INDI

Prep: GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	100	ug/kg
ACENAPHTHYLENE	BDL	150	ug/kg
ACENAPHTHENE	2300	200	ug/kg
FLUORENE	4200	400	ug/kg
PHENANTHRENE	12000	200	ug/kg
ANTHRACENE	BDL	200	ug/kg
FLUORANTHENE	BDL	150	ug/kg
PYRENE	280	100	ug/kg
BENZ(A)ANTHRACENE	BDL	200	ug/kg
CHRYSENE	EST 200	250	ug/kg
BENZO(B)FLUORANTHENE	BDL	150	ug/kg
BENZO(K)FLUORANTHENE	BDL	150	ug/kg
BENZO(A)PYRENE	BDL	150	ug/kg
DIBENZ(A,H)ANTHRACENE	BDL	150	ug/kg
BENZO(G,H,I)PERYLENE	BDL	100	ug/kg
INDENO(1,2,3-CD)PYRENE	BDL	100	ug/kg

1:50 DILUTION

Sample Comments

** See Note for Parameter*
BDL Below Detection Limit
EST Estimated Value

Sample chain of custody number NONE.

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Quality Assurance Officer: Christine Jackson (Alves)

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	13-JUL-94	2979	C158557
	Complete	PO Number	
	04-AUG-94	CI0299.004	
	Printed	Sampled	
	18-AUG-94	12-JUL-94 15:04	

Report To	Bill To
JAMES AUER GERAGHTY AND MILLER 35 EAST WACKER DRIVE SUITE 1000 CHICAGO, IL 60601	JAMES AUER GERAGHTY & MILLER, INC. 35 EAST WACKER, SUITE 1000 CHICAGO, IL 60601

Sample Description

PROJECT NO.: CI0299.004
PROJECT LOCATION: NTIC/BNR/IIR ROCK ISLAND
SAMPLE ID.: GM9-0810

TOTAL SOLIDS EPA 160.3

Analyst: J. MICHALEK Analysis Date: 19-JUL-94 Test: G401.7.0

Parameter	Result	Det. Limit	Units
SOLIDS	* 91	0.05	Percent

sample was hygroscopic first weight taken

VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A

Analyst: S. SHARP Analysis Date: 25-JUL-94 11:10 Instrument: GC/MS VOA Test: 0510.9.0

Parameter	Result	Det. Limit	Units
ACETONE	730	200	ug/kg
ACROLEIN	BDL	500	ug/kg
ACRYLONITRILE	BDL	700	ug/kg
BENZENE	BDL	50	ug/kg
BROMODICHLOROMETHANE	BDL	50	ug/kg
BROMOFORM	BDL	50	ug/kg
BROMOMETHANE	BDL	100	ug/kg
CARBON DISULFIDE	BDL	50	ug/kg
CARBON TETRACHLORIDE	BDL	50	ug/kg
CHLOROBENZENE	BDL	50	ug/kg
CHLOROETHANE	BDL	100	ug/kg
CHLOROFORM	BDL	50	ug/kg
CHLOROMETHANE	BDL	100	ug/kg
DIBROMOCHLOROMETHANE	BDL	50	ug/kg
CIS-1,3-DICHLOROPROPENE	BDL	50	ug/kg
DICHLORODIFLUOROMETHANE	BDL	50	ug/kg
1,1-DICHLOROETHANE	BDL	50	ug/kg
1,2-DICHLOROETHANE	BDL	50	ug/kg
1,1-DICHLOROETHENE	BDL	50	ug/kg
1,2-DICHLOROPROPANE	BDL	50	ug/kg
ETHYL BENZENE	BDL	50	ug/kg
TRICHLOROFLUOROMETHANE	BDL	50	ug/kg
2-HEXANONE	BDL	100	ug/kg
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	50	ug/kg
METHYL ETHYL KETONE	BDL	100	ug/kg
4-METHYL-2-PENTANONE	BDL	100	ug/kg

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HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C158557

Parameter	Result	Det. Limit	Units
STYRENE	BDL	50	ug/kg
1,1,2,2-TETRACHLOROETHANE	BDL	50	ug/kg
TETRACHLOROETHENE	BDL	50	ug/kg
TETRAHYDROFURAN	BDL	250	ug/kg
TOLUENE	BDL	50	ug/kg
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	50	ug/kg
TRANS-1,3-DICHLOROPROPENE	BDL	50	ug/kg
1,1,1-TRICHLOROETHANE	BDL	50	ug/kg
1,1,2-TRICHLOROETHANE	BDL	50	ug/kg
TRICHLOROETHENE	BDL	50	ug/kg
VINYL ACETATE	BDL	100	ug/kg
VINYL CHLORIDE	BDL	100	ug/kg
XYLENES (O/M/P-XYLENE)	BDL	50	ug/kg
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	103		% Rec
TOLUENE-D8	111		% Rec
4-BROMOFLUOROBENZENE	96		% Rec
DILUTION	10		

Unable to analyze sample at lower dilution due to high concentration of non-target compounds.

PCB SONICATION EXTRACTION SW846-3550

Analyst: M. JAEGER Analysis Date: 14-JUL-94 Test: P231.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	2.51		Grams
FINAL VOLUME	50		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080

Analyst: M. JAEGER Analysis Date: 13-JUL-94 Instrument: GC/ECD Test: 0301.2.0

Prep: PCB SONICATION EXTRACTION SW846-3550 P231.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	1.0	mg/kg
PCB AROCHLOR 1221	BDL	1.0	mg/kg
PCB AROCHLOR 1232	BDL	1.0	mg/kg
PCB AROCHLOR 1242	BDL	1.0	mg/kg
PCB AROCHLOR 1248	BDL	1.0	mg/kg
PCB AROCHLOR 1254	BDL	1.0	mg/kg
PCB AROCHLOR 1260	BDL	1.0	mg/kg
PCB AROCHLOR 1262	BDL	1.0	mg/kg

GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: J. SCHERBAUER Analysis Date: 14-JUL-94 18:22 Test: P236.2.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	30.17		Grams
FINAL VOLUME	5		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 16-JUL-94 14:59 Instrument: HPLC Test: 0630.0.0 INDI

Prep: GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	2.0	ug/kg
ACENAPHTHYLENE	BDL	3.0	ug/kg
ACENAPHTHENE	*	4.0	ug/kg
FLUORENE	*	8.0	ug/kg

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HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C158557

Parameter	Result	Det. Limit	Units
PHENANTHRENE	*	4.0	ug/kg
ANTHRACENE	*	4.0	ug/kg
FLUORANTHENE	*	3.0	ug/kg
PYRENE	*	2.0	ug/kg
BENZ(A)ANTHRACENE	*	4.0	ug/kg
CHRYSENE	*	5.0	ug/kg
BENZO(B)FLUORANTHENE	59	3.0	ug/kg
BENZO(K)FLUORANTHENE	53	3.0	ug/kg
BENZO(A)PYRENE	46	3.0	ug/kg
DIBENZ(A,H)ANTHRACENE	BDL	3.0	ug/kg
BENZO(G,H,I)PERYLENE	BDL	2.0	ug/kg
INDENO(1,2,3-CD)PYRENE	BDL	2.0	ug/kg

**SEE REP 1 FOR RESULTS.*

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 17-JUL-94 05:49 Instrument: HPLC Test: 0630.0.1 INDI

Prep: GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	100	ug/kg
ACENAPHTHYLENE	BDL	150	ug/kg
ACENAPHTHENE	3800	200	ug/kg
FLUORENE	7400	400	ug/kg
PHENANTHRENE	9300	200	ug/kg
ANTHRACENE	520	200	ug/kg
FLUORANTHENE	370	150	ug/kg
PYRENE	240	100	ug/kg
BENZ(A)ANTHRACENE	EST 150	200	ug/kg
CHRYSENE	580	250	ug/kg
BENZO(B)FLUORANTHENE	BDL	150	ug/kg
BENZO(K)FLUORANTHENE	BDL	150	ug/kg
BENZO(A)PYRENE	BDL	150	ug/kg
DIBENZ(A,H)ANTHRACENE	BDL	150	ug/kg
BENZO(G,H,I)PERYLENE	BDL	100	ug/kg
INDENO(1,2,3-CD)PYRENE	BDL	100	ug/kg

1:50 DILUTION

Sample Comments

** See Note for Parameter*
BDL Below Detection Limit
EST Estimated Value

Sample chain of custody number NONE.

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Quality Assurance Officer: Christine Jackson (CMS)

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	14-JUL-94	2979	C158644
	Complete	PO Number	
	04-AUG-94	CI0299.004	
	Printed	Sampled	
	05-AUG-94	13-JUL-94 07:20	

Report To	Bill To
JAMES AUER GERAGHTY AND MILLER 35 EAST WACKER DRIVE SUITE 1000 CHICAGO, IL 60601	JAMES AUER GERAGHTY & MILLER, INC. 35 EAST WACKER, SUITE 1000 CHICAGO, IL 60601

Sample Description

PROJECT NO.: CI0299.004
PROJECT LOCATION: NAVISTAR - ROCK ISLAND, IL.
SAMPLE ID.: GM10-0608

TOTAL SOLIDS EPA 160.3

Analyst: J. MICHALEK Analysis Date: 19-JUL-94 Test: G401.7.0

Parameter	Result	Det. Limit	Units
SOLIDS	* 90	0.05	Percent

sample was hygroscopic first weight taken

VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A

Analyst: G. SWANEY Analysis Date: 26-JUL-94 16:25 Instrument: GC/MS VOA Test: 0510.9.0

Parameter	Result	Det. Limit	Units
ACETONE	330	100	ug/kg
ACROLEIN	BDL	250	ug/kg
ACRYLONITRILE	BDL	350	ug/kg
BENZENE	BDL	25	ug/kg
BROMODICHLOROMETHANE	BDL	25	ug/kg
BROMOFORM	BDL	25	ug/kg
BROMOMETHANE	BDL	50	ug/kg
CARBON DISULFIDE	BDL	25	ug/kg
CARBON TETRACHLORIDE	BDL	25	ug/kg
CHLOROBENZENE	BDL	25	ug/kg
CHLOROETHANE	BDL	50	ug/kg
CHLOROFORM	BDL	25	ug/kg
CHLOROMETHANE	BDL	50	ug/kg
DIBROMOCHLOROMETHANE	BDL	25	ug/kg
CIS-1,3-DICHLOROPROPENE	BDL	25	ug/kg
DICHLORODIFLUOROMETHANE	BDL	25	ug/kg
1,1-DICHLOROETHANE	BDL	25	ug/kg
1,2-DICHLOROETHANE	BDL	25	ug/kg
1,1-DICHLOROETHENE	BDL	25	ug/kg
1,2-DICHLOROPROPANE	BDL	25	ug/kg
ETHYL BENZENE	BDL	25	ug/kg
TRICHLOROFLUOROMETHANE	BDL	25	ug/kg
2-HEXANONE	BDL	50	ug/kg
DICHLOROMETHANE (METHYLENE CHLORIDE)	87	25	ug/kg
METHYL ETHYL KETONE	EST 40	50	ug/kg
4-METHYL-2-PENTANONE	BDL	50	ug/kg

 (continued on next page)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C158644

Parameter	Result	Det. Limit	Units
STYRENE	BDL	25	ug/kg
1,1,2,2-TETRACHLOROETHANE	BDL	25	ug/kg
TETRACHLOROETHENE	BDL	25	ug/kg
TETRAHYDROFURAN	150	120	ug/kg
TOLUENE	BDL	25	ug/kg
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	25	ug/kg
TRANS-1,3-DICHLOROPROPENE	BDL	25	ug/kg
1,1,1-TRICHLOROETHANE	BDL	25	ug/kg
1,1,2-TRICHLOROETHANE	BDL	25	ug/kg
TRICHLOROETHENE	BDL	25	ug/kg
VINYL ACETATE	BDL	50	ug/kg
VINYL CHLORIDE	BDL	50	ug/kg
XYLENES (O/M/P-XYLENE)	BDL	25	ug/kg
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	91		% Rec
TOLUENE-D8	84		% Rec
4-BROMOFLUOROBENZENE	* 106		% Rec
DILUTION	5		

PCB SONICATION EXTRACTION SW846-3550

Analyst: M. JAEGER Analysis Date: 21-JUL-94 Test: P231.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	2.52		Grams
FINAL VOLUME	50		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080

Analyst: M. JAEGER Analysis Date: 22-JUL-94 Instrument: GC/ECD Test: 0301.2.0

Prep: PCB SONICATION EXTRACTION SW846-3550 P231.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	1.0	mg/kg
PCB AROCHLOR 1221	BDL	1.0	mg/kg
PCB AROCHLOR 1232	BDL	1.0	mg/kg
PCB AROCHLOR 1242	BDL	1.0	mg/kg
PCB AROCHLOR 1248	BDL	1.0	mg/kg
PCB AROCHLOR 1254	BDL	1.0	mg/kg
PCB AROCHLOR 1260	BDL	1.0	mg/kg
PCB AROCHLOR 1262	BDL	1.0	mg/kg

GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: J. SCHERBAUER Analysis Date: 15-JUL-94 11:30 Test: P236.2.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	29.94		Grams
FINAL VOLUME	5		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 16-JUL-94 09:41 Instrument: HPLC Test: 0630.0.0 INDI

Prep: GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	2.0	ug/kg
ACENAPHTHYLENE	BDL	3.0	ug/kg
ACENAPHTHENE	*	4.0	ug/kg
FLUORENE	*	8.0	ug/kg
PHENANTHRENE	*	4.0	ug/kg
ANTHRACENE	*	4.0	ug/kg
FLUORANTHENE	*	3.0	ug/kg

 (continued on next page)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C158644

Parameter	Result	Det. Limit	Units
PYRENE	*	2.0	ug/kg
BENZ(A)ANTHRACENE	*	4.0	ug/kg
CHRYSENE	*	5.0	ug/kg
BENZO(B)FLUORANTHENE	9.8	3.0	ug/kg
BENZO(K)FLUORANTHENE	26	3.0	ug/kg
BENZO(A)PYRENE	18	3.0	ug/kg
DIBENZ(A,H)ANTHRACENE	BDL	3.0	ug/kg
BENZO(G,H,I)PERYLENE	2.1	2.0	ug/kg
INDENO(1,2,3-CD)PYRENE	15	2.0	ug/kg

**SEE REP 1 FOR RESULTS.*

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 17-JUL-94 23:46 Instrument: HPLC Test: 0630.0.1 INDI

Prep: GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	100	ug/kg
ACENAPHTHYLENE	BDL	150	ug/kg
ACENAPHTHENE	2000	200	ug/kg
FLUORENE	3000	400	ug/kg
PHENANTHRENE	8700	200	ug/kg
ANTHRACENE	480	200	ug/kg
FLUORANTHENE	150	150	ug/kg
PYRENE	100	100	ug/kg
BENZ(A)ANTHRACENE	EST 160	200	ug/kg
CHRYSENE	EST 140	250	ug/kg
BENZO(B)FLUORANTHENE	BDL	150	ug/kg
BENZO(K)FLUORANTHENE	BDL	150	ug/kg
BENZO(A)PYRENE	BDL	150	ug/kg
DIBENZ(A,H)ANTHRACENE	BDL	150	ug/kg
BENZO(G,H,I)PERYLENE	BDL	100	ug/kg
INDENO(1,2,3-CD)PYRENE	BDL	100	ug/kg

1:50 DILUTION

Sample Comments

* *See Note for Parameter*
BDL Below Detection Limit
EST Estimated Value

Sample chain of custody number NONE.

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Quality Assurance Officer: _____

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	14-JUL-94	2979	C158645
	Complete	PO Number	
	04-AUG-94	CI0299.004	
	Printed	Sampled	
	05-AUG-94	13-JUL-94 07:25	

Report To	Bill To
JAMES AUER GERAGHTY AND MILLER 35 EAST WACKER DRIVE SUITE 1000 CHICAGO, IL 60601	JAMES AUER GERAGHTY & MILLER, INC. 35 EAST WACKER, SUITE 1000 CHICAGO, IL 60601

Sample Description

PROJECT NO.: CI0299.004
PROJECT LOCATION: NAVISTAR - ROCK ISLAND, IL.
SAMPLE ID.: GM10-0810

TOTAL SOLIDS EPA 160.3

Analyst: J. MICHALEK Analysis Date: 19-JUL-94 Test: G401.7.0

Parameter	Result	Det. Limit	Units
SOLIDS	* 88	0.05	Percent

sample was hygroscopic first weight taken

VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A

Analyst: G. SWANEY Analysis Date: 26-JUL-94 17:06 Instrument: GC/MS VOA Test: 0510.9.0

Parameter	Result	Det. Limit	Units
ACETONE	400	200	ug/kg
ACROLEIN	BDL	500	ug/kg
ACRYLONITRILE	BDL	700	ug/kg
BENZENE	BDL	50	ug/kg
BROMODICHLOROMETHANE	BDL	50	ug/kg
BROMOFORM	BDL	50	ug/kg
BROMOMETHANE	BDL	100	ug/kg
CARBON DISULFIDE	BDL	50	ug/kg
CARBON TETRACHLORIDE	BDL	50	ug/kg
CHLOROBENZENE	BDL	50	ug/kg
CHLOROETHANE	BDL	100	ug/kg
CHLOROFORM	BDL	50	ug/kg
CHLOROMETHANE	BDL	100	ug/kg
DIBROMOCHLOROMETHANE	BDL	50	ug/kg
CIS-1,3-DICHLOROPROPENE	BDL	50	ug/kg
DICHLORODIFLUOROMETHANE	BDL	50	ug/kg
1,1-DICHLOROETHANE	BDL	50	ug/kg
1,2-DICHLOROETHANE	BDL	50	ug/kg
1,1-DICHLOROETHENE	BDL	50	ug/kg
1,2-DICHLOROPROPANE	BDL	50	ug/kg
ETHYL BENZENE	BDL	50	ug/kg
TRICHLOROFLUOROMETHANE	BDL	50	ug/kg
2-HEXANONE	BDL	100	ug/kg
DICHLOROMETHANE (METHYLENE CHLORIDE)	190	50	ug/kg
METHYL ETHYL KETONE	BDL	100	ug/kg
4-METHYL-2-PENTANONE	BDL	100	ug/kg

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HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C158645

Parameter	Result	Det. Limit	Units
STYRENE	BDL	50	ug/kg
1,1,2,2-TETRACHLOROETHANE	BDL	50	ug/kg
TETRACHLOROETHENE	BDL	50	ug/kg
TETRAHYDROFURAN	BDL	250	ug/kg
TOLUENE	BDL	50	ug/kg
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	50	ug/kg
TRANS-1,3-DICHLOROPROPENE	BDL	50	ug/kg
1,1,1-TRICHLOROETHANE	BDL	50	ug/kg
1,1,2-TRICHLOROETHANE	BDL	50	ug/kg
TRICHLOROETHENE	BDL	50	ug/kg
VINYL ACETATE	BDL	100	ug/kg
VINYL CHLORIDE	BDL	100	ug/kg
XYLENES (O/M/P-XYLENE)	BDL	50	ug/kg
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	96		% Rec
TOLUENE-D8	96		% Rec
4-BROMOFLUOROBENZENE	94		% Rec
DILUTION	10		

PCB SONICATION EXTRACTION SW846-3550

Analyst: M. JAEGER Analysis Date: 21-JUL-94 Test: P231.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	2.51		Grams
FINAL VOLUME	50		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080

Analyst: M. JAEGER Analysis Date: 22-JUL-94 Instrument: GC/ECD Test: 0301.2.0

Prep: PCB SONICATION EXTRACTION SW846-3550 P231.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	1.0	mg/kg
PCB AROCHLOR 1221	BDL	1.0	mg/kg
PCB AROCHLOR 1232	BDL	1.0	mg/kg
PCB AROCHLOR 1242	BDL	1.0	mg/kg
PCB AROCHLOR 1248	BDL	1.0	mg/kg
PCB AROCHLOR 1254	BDL	1.0	mg/kg
PCB AROCHLOR 1260	BDL	1.0	mg/kg
PCB AROCHLOR 1262	BDL	1.0	mg/kg

GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: J. SCHERBAUER Analysis Date: 15-JUL-94 11:30 Test: P236.2.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	30.16		Grams
FINAL VOLUME	5		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 16-JUL-94 10:26 Instrument: HPLC Test: 0630.0.0 INDI

Prep: GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	2.0	ug/kg
ACENAPHTHYLENE	BDL	3.0	ug/kg
ACENAPHTHENE	*	4.0	ug/kg
FLUORENE	*	8.0	ug/kg
PHENANTHRENE	*	4.0	ug/kg
ANTHRACENE	*	4.0	ug/kg
FLUORANTHENE	*	3.0	ug/kg

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HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C158645

Parameter	Result	Det. Limit	Units
PYRENE	*	2.0	ug/kg
BENZ(A)ANTHRACENE	*	4.0	ug/kg
CHRYSENE	*	5.0	ug/kg
BENZO(B)FLUORANTHENE	BDL	3.0	ug/kg
BENZO(K)FLUORANTHENE	11	3.0	ug/kg
BENZO(A)PYRENE	5.8	3.0	ug/kg
DIBENZ(A,H)ANTHRACENE	BDL	3.0	ug/kg
BENZO(G,H,I)PERYLENE	4.0	2.0	ug/kg
INDENO(1,2,3-CD)PYRENE	BDL	2.0	ug/kg

** SEE REP 1 FOR RESULTS.*

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 17-JUL-94 00:31 Instrument: HPLC Test: 0630.0.1 INDI

Prep: GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	100	ug/kg
ACENAPHTHYLENE	BDL	150	ug/kg
ACENAPHTHENE	2600	200	ug/kg
FLUORENE	11000	400	ug/kg
PHENANTHRENE	30000	200	ug/kg
ANTHRACENE	830	200	ug/kg
FLUORANTHENE	390	150	ug/kg
PYRENE	520	100	ug/kg
BENZ(A)ANTHRACENE	340	200	ug/kg
CHRYSENE	1000	250	ug/kg
BENZO(B)FLUORANTHENE	BDL	150	ug/kg
BENZO(K)FLUORANTHENE	BDL	150	ug/kg
BENZO(A)PYRENE	BDL	150	ug/kg
DIBENZ(A,H)ANTHRACENE	BDL	150	ug/kg
BENZO(G,H,I)PERYLENE	BDL	100	ug/kg
INDENO(1,2,3-CD)PYRENE	BDL	100	ug/kg

1:50 DILUTION

Sample Comments

** See Note for Parameter*
BDL Below Detection Limit

Sample chain of custody number NONE.

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Quality Assurance Officer: _____

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	14-JUL-94	2979	C158646
	Complete	PO Number	
	04-AUG-94	CI0299.004	
	Printed	Sampled	
	05-AUG-94	13-JUL-94 10:55	

Report To	Bill To
JAMES AUER GERAGHTY AND MILLER 35 EAST WACKER DRIVE SUITE 1000 CHICAGO, IL 60601	JAMES AUER GERAGHTY & MILLER, INC. 35 EAST WACKER, SUITE 1000 CHICAGO, IL 60601

Sample Description

PROJECT NO.: CI0299.004
PROJECT LOCATION: NAVISTAR - ROCK ISLAND, IL.
SAMPLE ID.: GM11-0406

TOTAL SOLIDS EPA 160.3

Analyst: J. MICHALEK Analysis Date: 19-JUL-94 Test: G401.7.0

Parameter	Result	Det. Limit	Units
SOLIDS	* 83	0.05	Percent

sample was hygroscopic first weight taken

VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A

Analyst: G. SWANEY Analysis Date: 25-JUL-94 19:10 Instrument: GC/MS VOA Test: 0510.9.0

Parameter	Result	Det. Limit	Units
ACETONE	63	50	ug/kg
ACROLEIN	BDL	120	ug/kg
ACRYLONITRILE	BDL	180	ug/kg
BENZENE	BDL	12	ug/kg
BROMODICHLOROMETHANE	BDL	12	ug/kg
BROMOFORM	BDL	12	ug/kg
BROMOMETHANE	BDL	25	ug/kg
CARBON DISULFIDE	BDL	12	ug/kg
CARBON TETRACHLORIDE	BDL	12	ug/kg
CHLOROBENZENE	BDL	12	ug/kg
CHLOROETHANE	BDL	25	ug/kg
CHLOROFORM	BDL	12	ug/kg
CHLOROMETHANE	BDL	25	ug/kg
DIBROMOCHLOROMETHANE	BDL	12	ug/kg
CIS-1,3-DICHLOROPROPENE	BDL	12	ug/kg
DICHLORODIFLUOROMETHANE	BDL	12	ug/kg
1,1-DICHLOROETHANE	BDL	12	ug/kg
1,2-DICHLOROETHANE	BDL	12	ug/kg
1,1-DICHLOROETHENE	BDL	12	ug/kg
1,2-DICHLOROPROPANE	BDL	12	ug/kg
ETHYL BENZENE	BDL	12	ug/kg
TRICHLOROFLUOROMETHANE	BDL	12	ug/kg
2-HEXANONE	BDL	25	ug/kg
DICHLOROMETHANE (METHYLENE CHLORIDE)	27	12	ug/kg
METHYL ETHYL KETONE	BDL	25	ug/kg
4-METHYL-2-PENTANONE	BDL	25	ug/kg

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HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C158646

Parameter	Result	Det. Limit	Units
STYRENE	BDL	12	ug/kg
1,1,2,2-TETRACHLOROETHANE	BDL	12	ug/kg
TETRACHLOROETHENE	BDL	12	ug/kg
TETRAHYDROFURAN	BDL	62	ug/kg
TOLUENE	BDL	12	ug/kg
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	12	ug/kg
TRANS-1,3-DICHLOROPROPENE	BDL	12	ug/kg
1,1,1-TRICHLOROETHANE	BDL	12	ug/kg
1,1,2-TRICHLOROETHANE	BDL	12	ug/kg
TRICHLOROETHENE	BDL	12	ug/kg
VINYL ACETATE	BDL	25	ug/kg
VINYL CHLORIDE	BDL	25	ug/kg
XYLENES (O/M/P-XYLENE)	BDL	12	ug/kg
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	93		% Rec
TOLUENE-D8	88		% Rec
4-BROMOFLUOROBENZENE	76		% Rec
DILUTION	2.5		

PCB SONICATION EXTRACTION SW846-3550

Analyst: M. JAEGER Analysis Date: 21-JUL-94 Test: P231.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	2.50		Grams
FINAL VOLUME	50		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080

Analyst: M. JAEGER Analysis Date: 22-JUL-94 Instrument: GC/ECD Test: 0301.2.0

Prep: PCB SONICATION EXTRACTION SW846-3550 P231.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	1.0	mg/kg
PCB AROCHLOR 1221	BDL	1.0	mg/kg
PCB AROCHLOR 1232	BDL	1.0	mg/kg
PCB AROCHLOR 1242	BDL	1.0	mg/kg
PCB AROCHLOR 1248	BDL	1.0	mg/kg
PCB AROCHLOR 1254	BDL	1.0	mg/kg
PCB AROCHLOR 1260	BDL	1.0	mg/kg
PCB AROCHLOR 1262	BDL	1.0	mg/kg

GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: J. SCHERBAUER Analysis Date: 15-JUL-94 11:30 Test: P236.2.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	30.06		Grams
FINAL VOLUME	5		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 16-JUL-94 11:12 Instrument: HPLC Test: 0630.0.0 INDI

Prep: GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	38	2.0	ug/kg
ACENAPHTHYLENE	BDL	3.0	ug/kg
ACENAPHTHENE	87	4.0	ug/kg
FLUORENE	440	8.0	ug/kg
PHENANTHRENE	EST 700	4.0	ug/kg
ANTHRACENE	280	4.0	ug/kg
FLUORANTHENE	95	3.0	ug/kg

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HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C158646

Parameter	Result	Det. Limit	Units
PYRENE	140	2.0	ug/kg
BENZ(A)ANTHRACENE	96	4.0	ug/kg
CHRYSENE	300	5.0	ug/kg
BENZO(B)FLUORANTHENE	9.3	3.0	ug/kg
BENZO(K)FLUORANTHENE	6.9	3.0	ug/kg
BENZO(A)PYRENE	5.8	3.0	ug/kg
DIBENZ(A,H)ANTHRACENE	BDL	3.0	ug/kg
BENZO(G,H,I)PERYLENE	32	2.0	ug/kg
INDENO(1,2,3-CD)PYRENE	32	2.0	ug/kg

Sample Comments

** See Note for Parameter*
BDL Below Detection Limit
EST Estimated Value

Sample chain of custody number NONE.

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Quality Assurance Officer: _____

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	14-JUL-94	2979	C158647
	Complete	PO Number	
	04-AUG-94	CI0299.004	
	Printed	Sampled	
	10-AUG-94	13-JUL-94 11:05	

Report To	Bill To
JAMES AUER GERAGHTY AND MILLER 35 EAST WACKER DRIVE SUITE 1000 CHICAGO, IL 60601	JAMES AUER GERAGHTY & MILLER, INC. 35 EAST WACKER, SUITE 1000 CHICAGO, IL 60601

Sample Description

PROJECT NO.: CI0299.004
PROJECT LOCATION: NAVISTAR - ROCK ISLAND, IL.
SAMPLE ID.: GM11-0608

TOTAL SOLIDS EPA 160.3

Analyst: J. MICHALEK Analysis Date: 19-JUL-94 Test: G401.7.0

Parameter	Result	Det. Limit	Units
SOLIDS	* 83	0.05	Percent

sample was hygroscopic first weight taken

VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A

Analyst: G. SWANEY Analysis Date: 26-JUL-94 19:51 Instrument: GC/MS VOA Test: O510.9.0

Parameter	Result	Det. Limit	Units
ACETONE	280	200	ug/kg
ACROLEIN	BDL	500	ug/kg
ACRYLONITRILE	BDL	700	ug/kg
BENZENE	BDL	50	ug/kg
BROMODICHLOROMETHANE	BDL	50	ug/kg
BROMOFORM	BDL	50	ug/kg
BROMOMETHANE	BDL	100	ug/kg
CARBON DISULFIDE	BDL	50	ug/kg
CARBON TETRACHLORIDE	BDL	50	ug/kg
CHLOROBENZENE	BDL	50	ug/kg
CHLOROETHANE	BDL	100	ug/kg
CHLOROFORM	BDL	50	ug/kg
CHLOROMETHANE	BDL	100	ug/kg
DIBROMOCHLOROMETHANE	BDL	50	ug/kg
CIS-1,3-DICHLOROPROPENE	BDL	50	ug/kg
DICHLORODIFLUOROMETHANE	BDL	50	ug/kg
1,1-DICHLOROETHANE	BDL	50	ug/kg
1,2-DICHLOROETHANE	BDL	50	ug/kg
1,1-DICHLOROETHENE	BDL	50	ug/kg
1,2-DICHLOROPROPANE	BDL	50	ug/kg
ETHYL BENZENE	BDL	50	ug/kg
TRICHLOROFLUOROMETHANE	BDL	50	ug/kg
2-HEXANONE	BDL	100	ug/kg
DICHLOROMETHANE (METHYLENE CHLORIDE)	360	50	ug/kg
METHYL ETHYL KETONE	BDL	100	ug/kg
4-METHYL-2-PENTANONE	BDL	100	ug/kg

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Parameter	Result	Det. Limit	Units
STYRENE	BDL	50	ug/kg
1,1,2,2-TETRACHLOROETHANE	BDL	50	ug/kg
TETRACHLOROETHENE	BDL	50	ug/kg
TETRAHYDROFURAN	300	250	ug/kg
TOLUENE	BDL	50	ug/kg
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	50	ug/kg
TRANS-1,3-DICHLOROPROPENE	BDL	50	ug/kg
1,1,1-TRICHLOROETHANE	BDL	50	ug/kg
1,1,2-TRICHLOROETHANE	BDL	50	ug/kg
TRICHLOROETHENE	BDL	50	ug/kg
VINYL ACETATE	BDL	100	ug/kg
VINYL CHLORIDE	BDL	100	ug/kg
XYLENES (O/M/P-XYLENE)	BDL	50	ug/kg
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	91		% Rec
TOLUENE-D8	83		% Rec
4-BROMOFLUOROBENZENE	112		% Rec
DILUTION	10		

PCB SONICATION EXTRACTION SW846-3550

Analyst: M. JAEGER Analysis Date: 21-JUL-94 Test: P231.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	2.52		Grams
FINAL VOLUME	50		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080

Analyst: M. JAEGER Analysis Date: 22-JUL-94 Instrument: GC/ECD Test: 0301.2.0

Prep: PCB SONICATION EXTRACTION SW846-3550 P231.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	1.0	mg/kg
PCB AROCHLOR 1221	BDL	1.0	mg/kg
PCB AROCHLOR 1232	BDL	1.0	mg/kg
PCB AROCHLOR 1242	BDL	1.0	mg/kg
PCB AROCHLOR 1248	BDL	1.0	mg/kg
PCB AROCHLOR 1254	BDL	1.0	mg/kg
PCB AROCHLOR 1260	BDL	1.0	mg/kg
PCB AROCHLOR 1262	BDL	1.0	mg/kg

GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: J. SCHERBAUER Analysis Date: 15-JUL-94 11:30 Test: P236.2.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	29.92		Grams
FINAL VOLUME	5		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 16-JUL-94 11:57 Instrument: HPLC Test: 0630.0.0 INDI

Prep: GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	2.0	ug/kg
ACENAPHTHYLENE	BDL	3.0	ug/kg
ACENAPHTHENE	*	4.0	ug/kg
FLUORENE	*	8.0	ug/kg
PHENANTHRENE	*	4.0	ug/kg
ANTHRACENE	*	4.0	ug/kg
FLUORANTHENE	**	3.0	ug/kg

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HERITAGE ENVIRONMENTAL SERVICES, INC. **Lab Sample ID: C158647**

Parameter	Result	Det. Limit	Units
PYRENE	**	2.0	ug/kg
BENZ(A)ANTHRACENE	**	4.0	ug/kg
CHRYSENE	**	5.0	ug/kg
BENZO(B)FLUORANTHENE	17	3.0	ug/kg
BENZO(K)FLUORANTHENE	20	3.0	ug/kg
BENZO(A)PYRENE	24	3.0	ug/kg
DIBENZ(A,H)ANTHRACENE	BDL	3.0	ug/kg
BENZO(G,H,I)PERYLENE	22	2.0	ug/kg
INDENO(1,2,3-CD)PYRENE	15	2.0	ug/kg

SEE REP 1 FOR RESULTS . = MATRIX INTERFERENCE CAUSED THESE PARAMETERS TO BE OFF SCALE AND RESULTS WERE BDL ON REP 01.*

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 27-JUL-94 10:11 Instrument: HPLC Test: 0630.0.1 INDI

Prep: GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	100	ug/kg
ACENAPHTHYLENE	BDL	150	ug/kg
ACENAPHTHENE	2600	200	ug/kg
FLUORENE	4000	400	ug/kg
PHENANTHRENE	12000	200	ug/kg
ANTHRACENE	940	200	ug/kg
FLUORANTHENE	*	150	ug/kg
PYRENE	*	100	ug/kg
BENZ(A)ANTHRACENE	*	200	ug/kg
CHRYSENE	*	250	ug/kg
BENZO(B)FLUORANTHENE	BDL	150	ug/kg
BENZO(K)FLUORANTHENE	BDL	150	ug/kg
BENZO(A)PYRENE	BDL	150	ug/kg
DIBENZ(A,H)ANTHRACENE	BDL	150	ug/kg
BENZO(G,H,I)PERYLENE	BDL	100	ug/kg
INDENO(1,2,3-CD)PYRENE	BDL	100	ug/kg

*1:50 DILUTION. * = RESULTS OFF SCALE ON REP 01 AND BDL AT THIS DILUTION.*

Sample Comments

** See Note for Parameter*
*** See Note for Parameter*
BDL Below Detection Limit

Sample chain of custody number NONE.

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Quality Assurance Officer: _____

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	14-JUL-94	2979	C158648
	Complete	PO Number	
	04-AUG-94	CI0299.004	
	Printed	Sampled	
	05-AUG-94	13-JUL-94 14:10	

Report To	Bill To
JAMES AUER GERAGHTY AND MILLER 35 EAST WACKER DRIVE SUITE 1000 CHICAGO, IL 60601	JAMES AUER GERAGHTY & MILLER, INC. 35 EAST WACKER, SUITE 1000 CHICAGO, IL 60601

Sample Description

PROJECT NO.: CI0299.004
PROJECT LOCATION: NAVISTAR - ROCK ISLAND, IL.
SAMPLE ID.: GM12-0204

TOTAL SOLIDS EPA 160.3

Analyst: J. MICHALEK Analysis Date: 19-JUL-94 Test: G401.7.0

Parameter	Result	Det. Limit	Units
SOLIDS	* 89	0.05	Percent

sample was hygroscopic first weight taken

VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A

Analyst: G. SWANEY Analysis Date: 26-JUL-94 20:33 Instrument: GC/MS VOA Test: 0510.9.0

Parameter	Result	Det. Limit	Units
ACETONE	26	20	ug/kg
ACROLEIN	BDL	50	ug/kg
ACRYLONITRILE	BDL	70	ug/kg
BENZENE	BDL	5	ug/kg
BROMODICHLOROMETHANE	BDL	5	ug/kg
BROMOFORM	BDL	5	ug/kg
BROMOMETHANE	BDL	10	ug/kg
CARBON DISULFIDE	BDL	5	ug/kg
CARBON TETRACHLORIDE	BDL	5	ug/kg
CHLOROBENZENE	BDL	5	ug/kg
CHLOROETHANE	BDL	10	ug/kg
CHLOROFORM	BDL	5	ug/kg
CHLOROMETHANE	BDL	10	ug/kg
DIBROMOCHLOROMETHANE	BDL	5	ug/kg
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/kg
DICHLORODIFLUOROMETHANE	BDL	5	ug/kg
1,1-DICHLOROETHANE	BDL	5	ug/kg
1,2-DICHLOROETHANE	BDL	5	ug/kg
1,1-DICHLOROETHENE	BDL	5	ug/kg
1,2-DICHLOROPROPANE	BDL	5	ug/kg
ETHYL BENZENE	BDL	5	ug/kg
TRICHLOROFLUOROMETHANE	EST 3	5	ug/kg
2-HEXANONE	BDL	10	ug/kg
DICHLOROMETHANE (METHYLENE CHLORIDE)	70	5	ug/kg
METHYL ETHYL KETONE	BDL	10	ug/kg
4-METHYL-2-PENTANONE	BDL	10	ug/kg

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HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C158648

Parameter	Result	Det. Limit	Units
STYRENE	BDL	5	ug/kg
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/kg
TETRACHLOROETHENE	BDL	5	ug/kg
TETRAHYDROFURAN	140	25	ug/kg
TOLUENE	BDL	5	ug/kg
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	5	ug/kg
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/kg
1,1,1-TRICHLOROETHANE	BDL	5	ug/kg
1,1,2-TRICHLOROETHANE	BDL	5	ug/kg
TRICHLOROETHENE	BDL	5	ug/kg
VINYL ACETATE	BDL	10	ug/kg
VINYL CHLORIDE	BDL	10	ug/kg
XYLENES (O/M/P-XYLENE)	BDL	5	ug/kg
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	89		% Rec
TOLUENE-D8	99		% Rec
4-BROMOFLUOROBENZENE	94		% Rec
DILUTION	1		

PCB SONICATION EXTRACTION SW846-3550

Analyst: M. JAEGER Analysis Date: 21-JUL-94 Test: P231.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	2.51		Grams
FINAL VOLUME	50		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080

Analyst: M. JAEGER Analysis Date: 22-JUL-94 Instrument: GC/ECD Test: 0301.2.0

Prep: PCB SONICATION EXTRACTION SW846-3550 P231.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	1.0	mg/kg
PCB AROCHLOR 1221	BDL	1.0	mg/kg
PCB AROCHLOR 1232	BDL	1.0	mg/kg
PCB AROCHLOR 1242	BDL	1.0	mg/kg
PCB AROCHLOR 1248	BDL	1.0	mg/kg
PCB AROCHLOR 1254	BDL	1.0	mg/kg
PCB AROCHLOR 1260	BDL	1.0	mg/kg
PCB AROCHLOR 1262	BDL	1.0	mg/kg

GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: J. SCHERBAUER Analysis Date: 15-JUL-94 11:30 Test: P236.2.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	5.47		Grams
FINAL VOLUME	5		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 16-JUL-94 15:44 Instrument: HPLC Test: 0630.0.0 INDI

Prep: GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	2.0	ug/kg
ACENAPHTHYLENE	BDL	3.0	ug/kg
ACENAPHTHENE	1200	4.0	ug/kg
FLUORENE	3400	8.0	ug/kg
PHENANTHRENE	EST 26000	4.0	ug/kg
ANTHRACENE	EST 5300	4.0	ug/kg
FLUORANTHENE	EST 56000	3.0	ug/kg

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HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C158648

Parameter	Result	Det. Limit	Units
PYRENE	EST 47000	2.0	ug/kg
BENZ(A)ANTHRACENE	EST 20000	4.0	ug/kg
CHRYSENE	EST 24000	5.0	ug/kg
BENZO(B)FLUORANTHENE	EST 20000	3.0	ug/kg
BENZO(K)FLUORANTHENE	EST 11000	3.0	ug/kg
BENZO(A)PYRENE	EST 13000	3.0	ug/kg
DIBENZ(A,H)ANTHRACENE	2200	3.0	ug/kg
BENZO(G,H,I)PERYLENE	EST 18000	2.0	ug/kg
INDENO(1,2,3-CD)PYRENE	EST 20000	2.0	ug/kg

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 17-JUL-94 04:19 Instrument: HPLC Test: 0630.0.1 INDI

Prep: GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	40	ug/kg
ACENAPHTHYLENE	BDL	60	ug/kg
ACENAPHTHENE	1300	80	ug/kg
FLUORENE	1500	160	ug/kg
PHENANTHRENE	29000	80	ug/kg
ANTHRACENE	5900	80	ug/kg
FLUORANTHENE	56000	60	ug/kg
PYRENE	42000	40	ug/kg
BENZ(A)ANTHRACENE	20000	80	ug/kg
CHRYSENE	25000	100	ug/kg
BENZO(B)FLUORANTHENE	19000	60	ug/kg
BENZO(K)FLUORANTHENE	11000	60	ug/kg
BENZO(A)PYRENE	18000	60	ug/kg
DIBENZ(A,H)ANTHRACENE	810	60	ug/kg
BENZO(G,H,I)PERYLENE	16000	40	ug/kg
INDENO(1,2,3-CD)PYRENE	19000	40	ug/kg

1:20 DILUTION

Sample Comments

* *See Note for Parameter*
BDL Below Detection Limit
EST Estimated Value

Sample chain of custody number NONE.

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Quality Assurance Officer: _____

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	14-JUL-94	2979	CI58649
	Complete	PO Number	
	04-AUG-94	CI0299.004	
	Printed	Sampled	
	05-AUG-94	13-JUL-94 15:15	

Report To	Bill To
JAMES AUER GERAGHTY AND MILLER 35 EAST WACKER DRIVE SUITE 1000 CHICAGO, IL 60601	JAMES AUER GERAGHTY & MILLER, INC. 35 EAST WACKER, SUITE 1000 CHICAGO, IL 60601

Sample Description

PROJECT NO.: CI0299.004
PROJECT LOCATION: NAVISTAR - ROCK ISLAND, IL.
SAMPLE ID.: GM12-1012

TOTAL SOLIDS EPA 160.3

Analyst: J. MICHALEK Analysis Date: 19-JUL-94 Test: G401.7.0

Parameter	Result	Det. Limit	Units
SOLIDS	* 84	0.05	Percent

sample was hygroscopic first weight taken

VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A

Analyst: G. SWANEY Analysis Date: 26-JUL-94 21:14 Instrument: GC/MS VOA Test: O510.9.0

Parameter	Result	Det. Limit	Units
ACETONE	24	20	ug/kg
ACROLEIN	BDL	50	ug/kg
ACRYLONITRILE	BDL	70	ug/kg
BENZENE	BDL	5	ug/kg
BROMODICHLOROMETHANE	BDL	5	ug/kg
BROMOFORM	BDL	5	ug/kg
BROMOMETHANE	BDL	10	ug/kg
CARBON DISULFIDE	BDL	5	ug/kg
CARBON TETRACHLORIDE	BDL	5	ug/kg
CHLOROBENZENE	BDL	5	ug/kg
CHLOROETHANE	BDL	10	ug/kg
CHLOROFORM	BDL	5	ug/kg
CHLOROMETHANE	BDL	10	ug/kg
DIBROMOCHLOROMETHANE	BDL	5	ug/kg
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/kg
DICHLORODIFLUOROMETHANE	BDL	5	ug/kg
1,1-DICHLOROETHANE	BDL	5	ug/kg
1,2-DICHLOROETHANE	BDL	5	ug/kg
1,1-DICHLOROETHENE	BDL	5	ug/kg
1,2-DICHLOROPROPANE	BDL	5	ug/kg
ETHYL BENZENE	BDL	5	ug/kg
TRICHLOROFLUOROMETHANE	EST 3	5	ug/kg
2-HEXANONE	BDL	10	ug/kg
DICHLOROMETHANE (METHYLENE CHLORIDE)	69	5	ug/kg
METHYL ETHYL KETONE	BDL	10	ug/kg
4-METHYL-2-PENTANONE	BDL	10	ug/kg

 (continued on next page)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C158649

Parameter	Result	Det. Limit	Units
STYRENE	BDL	5	ug/kg
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/kg
TETRACHLOROETHENE	BDL	5	ug/kg
TETRAHYDROFURAN	BDL	25	ug/kg
TOLUENE	BDL	5	ug/kg
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	5	ug/kg
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/kg
1,1,1-TRICHLOROETHANE	BDL	5	ug/kg
1,1,2-TRICHLOROETHANE	BDL	5	ug/kg
TRICHLOROETHENE	BDL	5	ug/kg
VINYL ACETATE	BDL	10	ug/kg
VINYL CHLORIDE	BDL	10	ug/kg
XYLENES (O/M/P-XYLENE)	BDL	5	ug/kg
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	89		% Rec
TOLUENE-D8	97		% Rec
4-BROMOFLUOROBENZENE	109		% Rec
DILUTION	1		

PCB SONICATION EXTRACTION SW846-3550

Analyst: M. JAEGER Analysis Date: 21-JUL-94 Test: P231.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	2.51		Grams
FINAL VOLUME	50		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080

Analyst: M. JAEGER Analysis Date: 22-JUL-94 Instrument: GC/ECD Test: 0301.2.0

Prep: PCB SONICATION EXTRACTION SW846-3550 P231.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	1.0	mg/kg
PCB AROCHLOR 1221	BDL	1.0	mg/kg
PCB AROCHLOR 1232	BDL	1.0	mg/kg
PCB AROCHLOR 1242	BDL	1.0	mg/kg
PCB AROCHLOR 1248	BDL	1.0	mg/kg
PCB AROCHLOR 1254	BDL	1.0	mg/kg
PCB AROCHLOR 1260	BDL	1.0	mg/kg
PCB AROCHLOR 1262	BDL	1.0	mg/kg

GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: J. SCHERBAUER Analysis Date: 15-JUL-94 11:30 Test: P236.2.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	5.19		Grams
FINAL VOLUME	5		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 16-JUL-94 16:59 Instrument: HPLC Test: 0630.0.0 INDI

Prep: GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	2.0	ug/kg
ACENAPHTHYLENE	BDL	3.0	ug/kg
ACENAPHTHENE	BDL	4.0	ug/kg
FLUORENE	BDL	8.0	ug/kg
PHENANTHRENE	1700	4.0	ug/kg
ANTHRACENE	320	4.0	ug/kg
FLUORANTHENE	3500	3.0	ug/kg

 (continued on next page)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C158649

Parameter	Result	Det. Limit	Units
PYRENE	EST 2800	2.0	ug/kg
BENZ(A)ANTHRACENE	1200	4.0	ug/kg
CHRYSENE	1300	5.0	ug/kg
BENZO(B)FLUORANTHENE	1600	3.0	ug/kg
BENZO(K)FLUORANTHENE	800	3.0	ug/kg
BENZO(A)PYRENE	1300	3.0	ug/kg
DIBENZ(A,H)ANTHRACENE	79	3.0	ug/kg
BENZO(G,H,I)PERYLENE	1200	2.0	ug/kg
INDENO(1,2,3-CD)PYRENE	1500	2.0	ug/kg

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 17-JUL-94 05:04 Instrument: HPLC Test: 0630.0.1 INDI

Prep: GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	10	ug/kg
ACENAPHTHYLENE	BDL	15	ug/kg
ACENAPHTHENE	BDL	20	ug/kg
FLUORENE	BDL	40	ug/kg
PHENANTHRENE	1600	20	ug/kg
ANTHRACENE	97	20	ug/kg
FLUORANTHENE	3000	15	ug/kg
PYRENE	2300	10	ug/kg
BENZ(A)ANTHRACENE	1100	20	ug/kg
CHRYSENE	1200	25	ug/kg
BENZO(B)FLUORANTHENE	1300	15	ug/kg
BENZO(K)FLUORANTHENE	640	15	ug/kg
BENZO(A)PYRENE	1100	15	ug/kg
DIBENZ(A,H)ANTHRACENE	BDL	15	ug/kg
BENZO(G,H,I)PERYLENE	1100	10	ug/kg
INDENO(1,2,3-CD)PYRENE	1300	10	ug/kg

1:5 DILUTION

Sample Comments

* *See Note for Parameter*
BDL Below Detection Limit
EST Estimated Value

Sample chain of custody number NONE.

This Certificate shall not be reproduced, except in full, without the written approval of the lab.

Quality Assurance Officer: _____

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	15-JUL-94	2979	C158706
	Complete	PO Number	
	04-AUG-94	CI0299.004	
	Printed	Sampled	
	18-AUG-94	14-JUL-94 09:25	

Report To

JAMES AUER
GERAGHTY AND MILLER
35 EAST WACKER DRIVE
SUITE 1000
CHICAGO, IL 60601

Bill To

JAMES AUER
GERAGHTY & MILLER, INC.
35 EAST WACKER, SUITE 1000
CHICAGO, IL 60601

Sample Description

PROJECT NO.: CI0299.004
PROJECT LOCATION: NAVISTAR - ROCK ISLAND, IL
SAMPLE ID.: GM13-0406

TOTAL SOLIDS EPA 160.3

Analyst: J. MICHALEK Analysis Date: 19-JUL-94 Test: G401.7.0

Parameter	Result	Det. Limit	Units
SOLIDS	* 90	0.05	Percent

sample was hygroscopic first weight taken

VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A

Analyst: G. SWANEY Analysis Date: 27-JUL-94 16:25 Instrument: GC/MS VOA Test: 0510.9.0

Parameter	Result	Det. Limit	Units
ACETONE	58	20	ug/kg
ACROLEIN	BDL	50	ug/kg
ACRYLONITRILE	BDL	70	ug/kg
BENZENE	BDL	5	ug/kg
BROMODICHLOROMETHANE	BDL	5	ug/kg
BROMOFORM	BDL	5	ug/kg
BROMOMETHANE	BDL	10	ug/kg
CARBON DISULFIDE	BDL	5	ug/kg
CARBON TETRACHLORIDE	BDL	5	ug/kg
CHLOROBENZENE	BDL	5	ug/kg
CHLOROETHANE	BDL	10	ug/kg
CHLOROFORM	BDL	5	ug/kg
CHLOROMETHANE	BDL	10	ug/kg
DIBROMOCHLOROMETHANE	BDL	5	ug/kg
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/kg
DICHLORODIFLUOROMETHANE	BDL	5	ug/kg
1,1-DICHLOROETHANE	BDL	5	ug/kg
1,2-DICHLOROETHANE	BDL	5	ug/kg
1,1-DICHLOROETHENE	BDL	5	ug/kg
1,2-DICHLOROPROPANE	BDL	5	ug/kg
ETHYL BENZENE	BDL	5	ug/kg
TRICHLOROFLUOROMETHANE	BDL	5	ug/kg
2-HEXANONE	BDL	10	ug/kg
DICHLOROMETHANE (METHYLENE CHLORIDE)	70	5	ug/kg
METHYL ETHYL KETONE	BDL	10	ug/kg
4-METHYL-2-PENTANONE	BDL	10	ug/kg

 (continued on next page)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C158706

Parameter	Result	Det. Limit	Units
STYRENE	BDL	5	ug/kg
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/kg
TETRACHLOROETHENE	BDL	5	ug/kg
TETRAHYDROFURAN	130	25	ug/kg
TOLUENE	BDL	5	ug/kg
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	5	ug/kg
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/kg
1,1,1-TRICHLOROETHANE	BDL	5	ug/kg
1,1,2-TRICHLOROETHANE	BDL	5	ug/kg
TRICHLOROETHENE	BDL	5	ug/kg
VINYL ACETATE	BDL	10	ug/kg
VINYL CHLORIDE	BDL	10	ug/kg
XYLENES (O/M/P-XYLENE)	BDL	5	ug/kg
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	90		% Rec
TOLUENE-D8	110		% Rec
4-BROMOFLUOROBENZENE	96		% Rec

1:1 DILUTION.
Sample reanalyzed with no improvement in internal standard areas.

PCB SONICATION EXTRACTION SW846-3550
Analyst: M. JAEGER Analysis Date: 21-JUL-94 Test: P231.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	2.50		Grams
FINAL VOLUME	50		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080
Analyst: M. JAEGER Analysis Date: 22-JUL-94 Instrument: GC/ECD Test: 0301.2.0
Prep: PCB SONICATION EXTRACTION SW846-3550 P231.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	1.0	mg/kg
PCB AROCHLOR 1221	BDL	1.0	mg/kg
PCB AROCHLOR 1232	BDL	1.0	mg/kg
PCB AROCHLOR 1242	BDL	1.0	mg/kg
PCB AROCHLOR 1248	BDL	1.0	mg/kg
PCB AROCHLOR 1254	BDL	1.0	mg/kg
PCB AROCHLOR 1260	BDL	1.0	mg/kg
PCB AROCHLOR 1262	BDL	1.0	mg/kg

GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550
Analyst: B. SWEENEY Analysis Date: 19-JUL-94 14:00 Test: P236.2.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	30.05		Grams
FINAL VOLUME	5		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310
Analyst: T. COFFELT Analysis Date: 21-JUL-94 09:07 Instrument: HPLC Test: 0630.0.0 INDI
Prep: GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	2.0	ug/kg
ACENAPHTHYLENE	BDL	3.0	ug/kg
ACENAPHTHENE	BDL	4.0	ug/kg
FLUORENE	BDL	8.0	ug/kg
PHENANTHRENE	BDL	4.0	ug/kg

 (continued on next page)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C158706

Parameter	Result	Det. Limit	Units
ANTHRACENE	BDL	4.0	ug/kg
FLUORANTHENE	BDL	3.0	ug/kg
PYRENE	BDL	2.0	ug/kg
BENZ(A)ANTHRACENE	BDL	4.0	ug/kg
CHRYSENE	BDL	5.0	ug/kg
BENZO(B)FLUORANTHENE	BDL	3.0	ug/kg
BENZO(K)FLUORANTHENE	BDL	3.0	ug/kg
BENZO(A)PYRENE	BDL	3.0	ug/kg
DIBENZ(A,H)ANTHRACENE	BDL	3.0	ug/kg
BENZO(G,H,I)PERYLENE	BDL	2.0	ug/kg
INDENO(1,2,3-CD)PYRENE	BDL	2.0	ug/kg

Sample Comments

** See Note for Parameter*
BDL Below Detection Limit

Sample chain of custody number NONE.

This Certificate shall not be reproduced, except in full, without the written approval of the lab.

Quality Assurance Officer: Christine Sachon (Dennis)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C158811

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 22-JUL-94 00:08 Instrument: HPLC Test: 0630.0.0 INDI

Prep: GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	2.0	ug/kg
ACENAPHTHYLENE	BDL	3.0	ug/kg
ACENAPHTHENE	BDL	4.0	ug/kg
FLUORENE	BDL	8.0	ug/kg
PHENANTHRENE	890	4.0	ug/kg
ANTHRACENE	32	4.0	ug/kg
FLUORANTHENE	2200	3.0	ug/kg
PYRENE	1900	2.0	ug/kg
BENZ(A)ANTHRACENE	720	4.0	ug/kg
CHRYSENE	780	5.0	ug/kg
BENZO(B)FLUORANTHENE	1100	3.0	ug/kg
BENZO(K)FLUORANTHENE	550	3.0	ug/kg
BENZO(A)PYRENE	990	3.0	ug/kg
DIBENZ(A,H)ANTHRACENE	60	3.0	ug/kg
BENZO(G,H,I)PERYLENE	1100	2.0	ug/kg
INDENO(1,2,3-CD)PYRENE	1000	2.0	ug/kg

Sample Comments

** See Note for Parameter*
BDL Below Detection Limit
EST Estimated Value

Sample chain of custody number NONE.

This Certificate shall not be reproduced, except in full, without the written approval of the lab.

Quality Assurance Officer: Christine Jackson (CMS)

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	18-JUL-94	2979	C158812
	Complete	PO Number	
	09-AUG-94	CI0299.004	
	Printed	Sampled	
	10-AUG-94	15-JUN-94 08:45	

Report To

JAMES AUER
GERAGHTY AND MILLER
35 EAST WACKER DRIVE
SUITE 1000
CHICAGO, IL 60601

Bill To

JAMES AUER
GERAGHTY & MILLER, INC.
35 EAST WACKER, SUITE 1000
CHICAGO, IL 60601

Sample Description

PROJECT: NAVISTAR-ROCK ISLAND, IL
PROJECT NO.: CI0299.004
SAMPLE ID.: GM14-0810

TOTAL SOLIDS EPA 160.3

Analyst: J. MICHALEK Analysis Date: 19-JUL-94 Test: G401.7.0

Parameter	Result	Det. Limit	Units
SOLIDS	* 84	0.05	Percent

sample was hygroscopic first weight taken

VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A

Analyst: R. SHAMP Analysis Date: 26-JUL-94 14:25 Instrument: GC/MS VOA Test: 0510.9.0 INDI

Parameter	Result	Det. Limit	Units
ACETONE	34	20	ug/kg
ACROLEIN	BDL	50	ug/kg
ACRYLONITRILE	BDL	70	ug/kg
BENZENE	BDL	5	ug/kg
BROMODICHLOROMETHANE	BDL	5	ug/kg
BROMOFORM	BDL	5	ug/kg
BROMOMETHANE	BDL	10	ug/kg
CARBON DISULFIDE	BDL	5	ug/kg
CARBON TETRACHLORIDE	BDL	5	ug/kg
CHLOROBENZENE	BDL	5	ug/kg
CHLOROETHANE	BDL	10	ug/kg
CHLOROFORM	BDL	5	ug/kg
CHLOROMETHANE	BDL	10	ug/kg
DIBROMOCHLOROMETHANE	BDL	5	ug/kg
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/kg
DICHLORODIFLUOROMETHANE	BDL	5	ug/kg
1,1-DICHLOROETHANE	BDL	5	ug/kg
1,2-DICHLOROETHANE	BDL	5	ug/kg
1,1-DICHLOROETHENE	BDL	5	ug/kg
1,2-DICHLOROPROPANE	BDL	5	ug/kg
ETHYL BENZENE	BDL	5	ug/kg
TRICHLOROFLUOROMETHANE	BDL	5	ug/kg
2-HEXANONE	BDL	10	ug/kg
DICHLOROMETHANE (METHYLENE CHLORIDE)	10	5	ug/kg
METHYL ETHYL KETONE	BDL	10	ug/kg
4-METHYL-2-PENTANONE	EST 500	10	ug/kg

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HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C158812

Parameter	Result	Det. Limit	Units
STYRENE	BDL	5	ug/kg
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/kg
TETRACHLOROETHENE	BDL	5	ug/kg
TETRAHYDROFURAN	BDL	25	ug/kg
TOLUENE	BDL	5	ug/kg
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	5	ug/kg
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/kg
1,1,1-TRICHLOROETHANE	BDL	5	ug/kg
1,1,2-TRICHLOROETHANE	BDL	5	ug/kg
TRICHLOROETHENE	BDL	5	ug/kg
VINYL ACETATE	BDL	10	ug/kg
VINYL CHLORIDE	BDL	10	ug/kg
XYLENES (O/M/P-XYLENE)	BDL	5	ug/kg
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	74		% Rec
TOLUENE-D8	98		% Rec
4-BROMOFLUOROBENZENE	103		% Rec

Dilution necessary due to high concentration of target compounds.
INTERNAL STANDARD AREAS FAILED BUT SAMPLE REQUIRES DILUTION.

VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A

Analyst: R. SHAMP Analysis Date: 29-JUL-94 12:59 Instrument: GC/MS VOA Test: 0510.9.1 INDI

Parameter	Result	Det. Limit	Units
ACETONE	BDL	100	ug/kg
ACROLEIN	BDL	250	ug/kg
ACRYLONITRILE	BDL	350	ug/kg
BENZENE	BDL	25	ug/kg
BROMODICHLOROMETHANE	BDL	25	ug/kg
BROMOFORM	BDL	25	ug/kg
BROMOMETHANE	BDL	50	ug/kg
CARBON DISULFIDE	BDL	25	ug/kg
CARBON TETRACHLORIDE	BDL	25	ug/kg
CHLOROBENZENE	BDL	25	ug/kg
CHLOROETHANE	BDL	50	ug/kg
CHLOROFORM	BDL	25	ug/kg
CHLOROMETHANE	BDL	50	ug/kg
DIBROMOCHLOROMETHANE	BDL	25	ug/kg
CIS-1,3-DICHLOROPROPENE	BDL	25	ug/kg
DICHLORODIFLUOROMETHANE	BDL	25	ug/kg
1,1-DICHLOROETHANE	BDL	25	ug/kg
1,2-DICHLOROETHANE	BDL	25	ug/kg
1,1-DICHLOROETHENE	BDL	25	ug/kg
1,2-DICHLOROPROPANE	BDL	25	ug/kg
ETHYL BENZENE	BDL	25	ug/kg
TRICHLOROFLUOROMETHANE	BDL	25	ug/kg
2-HEXANONE	BDL	50	ug/kg
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	25	ug/kg
METHYL ETHYL KETONE	BDL	50	ug/kg
4-METHYL-2-PENTANONE	1000	50	ug/kg
STYRENE	BDL	25	ug/kg
1,1,2,2-TETRACHLOROETHANE	BDL	25	ug/kg
TETRACHLOROETHENE	BDL	25	ug/kg
TETRAHYDROFURAN	BDL	120	ug/kg
TOLUENE	BDL	25	ug/kg

 (continued on next page)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C158812

Parameter	Result	Det. Limit	Units
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	25	ug/kg
TRANS-1,3-DICHLOROPROPENE	BDL	25	ug/kg
1,1,1-TRICHLOROETHANE	BDL	25	ug/kg
1,1,2-TRICHLOROETHANE	BDL	25	ug/kg
TRICHLOROETHENE	BDL	25	ug/kg
VINYL ACETATE	BDL	50	ug/kg
VINYL CHLORIDE	BDL	50	ug/kg
XYLENES (O/M/P-XYLENE)	BDL	25	ug/kg
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	103		% Rec
TOLUENE-D8	100		% Rec
4-BROMOFLUOROBENZENE	94		% Rec

1:5 DILUTION
On this instrument, packed column has been replaced by capillary column with 8240 criteria.

PCB SONICATION EXTRACTION SW846-3550

Analyst: M. JAEGER Analysis Date: 21-JUL-94 Test: P231.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	2.50		Grams
FINAL VOLUME	50		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080

Analyst: M. JAEGER Analysis Date: 22-JUL-94 Instrument: GC/ECD Test: 0301.2.0
Prep: PCB SONICATION EXTRACTION SW846-3550 P231.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	1.0	mg/kg
PCB AROCHLOR 1221	BDL	1.0	mg/kg
PCB AROCHLOR 1232	BDL	1.0	mg/kg
PCB AROCHLOR 1242	BDL	1.0	mg/kg
PCB AROCHLOR 1248	BDL	1.0	mg/kg
PCB AROCHLOR 1254	BDL	1.0	mg/kg
PCB AROCHLOR 1260	BDL	1.0	mg/kg
PCB AROCHLOR 1262	BDL	1.0	mg/kg

GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: J. SCHERBAUER Analysis Date: 19-JUL-94 15:00 Test: P236.2.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	30.23		Grams
FINAL VOLUME	5		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 21-JUL-94 12:03 Instrument: HPLC Test: 0630.0.0 INDI
Prep: GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	2.0	ug/kg
ACENAPHTHYLENE	BDL	3.0	ug/kg
ACENAPHTHENE	BDL	4.0	ug/kg
FLUORENE	BDL	8.0	ug/kg
PHENANTHRENE	BDL	4.0	ug/kg
ANTHRACENE	BDL	4.0	ug/kg
FLUORANTHENE	BDL	3.0	ug/kg
PYRENE	BDL	2.0	ug/kg
BENZ(A)ANTHRACENE	BDL	4.0	ug/kg

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HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C158812

Parameter	Result	Det. Limit	Units
CHRYSENE	BDL	5.0	ug/kg
BENZO(B)FLUORANTHENE	BDL	3.0	ug/kg
BENZO(K)FLUORANTHENE	BDL	3.0	ug/kg
BENZO(A)PYRENE	BDL	3.0	ug/kg
DIBENZ(A,H)ANTHRACENE	BDL	3.0	ug/kg
BENZO(G,H,I)PERYLENE	BDL	2.0	ug/kg
INDENO(1,2,3-CD)PYRENE	BDL	2.0	ug/kg

Sample Comments

** See Note for Parameter*
BDL Below Detection Limit
EST Estimated Value

Sample chain of custody number NONE.

This Certificate shall not be reproduced, except in full, without the written approval of the lab.

Quality Assurance Officer: _____

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	15-JUL-94	2979	C158707
	Complete	PO Number	
	04-AUG-94	CI0299.004	
	Printed	Sampled	
	05-AUG-94	14-JUL-94 15:30	

Report To	Bill To
JAMES AUER GERAGHTY AND MILLER 35 EAST WACKER DRIVE SUITE 1000 CHICAGO, IL 60601	JAMES AUER GERAGHTY & MILLER, INC. 35 EAST WACKER, SUITE 1000 CHICAGO, IL 60601

Sample Description

PROJECT NO.: CI0299.004
PROJECT LOCATION: NAVISTAR - ROCK ISLAND, IL
SAMPLE ID.: GM15-0204

TOTAL SOLIDS EPA 160.3

Analyst: J. MICHALEK Analysis Date: 19-JUL-94 Test: G401.7.0

Parameter	Result	Det. Limit	Units
SOLIDS	* 95	0.05	Percent

sample was hygroscopic first weight taken

VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A

Analyst: G. SWANEY Analysis Date: 28-JUL-94 17:06 Instrument: GC/MS VOA Test: 0510.9.0

Parameter	Result	Det. Limit	Units
ACETONE	37	20	ug/kg
ACROLEIN	BDL	50	ug/kg
ACRYLONITRILE	BDL	70	ug/kg
BENZENE	BDL	5	ug/kg
BROMODICHLOROMETHANE	BDL	5	ug/kg
BROMOFORM	BDL	5	ug/kg
BROMOMETHANE	BDL	10	ug/kg
CARBON DISULFIDE	BDL	5	ug/kg
CARBON TETRACHLORIDE	BDL	5	ug/kg
CHLOROBENZENE	BDL	5	ug/kg
CHLOROETHANE	BDL	10	ug/kg
CHLOROFORM	BDL	5	ug/kg
CHLOROMETHANE	BDL	10	ug/kg
DIBROMOCHLOROMETHANE	BDL	5	ug/kg
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/kg
DICHLORODIFLUOROMETHANE	BDL	5	ug/kg
1,1-DICHLOROETHANE	BDL	5	ug/kg
1,2-DICHLOROETHANE	BDL	5	ug/kg
1,1-DICHLOROETHENE	BDL	5	ug/kg
1,2-DICHLOROPROPANE	BDL	5	ug/kg
ETHYL BENZENE	BDL	5	ug/kg
TRICHLOROFLUOROMETHANE	BDL	5	ug/kg
2-HEXANONE	BDL	10	ug/kg
DICHLOROMETHANE (METHYLENE CHLORIDE)	46	5	ug/kg
METHYL ETHYL KETONE	BDL	10	ug/kg
4-METHYL-2-PENTANONE	BDL	10	ug/kg

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HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C158707

Parameter	Result	Det. Limit	Units
STYRENE	BDL	5	ug/kg
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/kg
TETRACHLOROETHENE	BDL	5	ug/kg
TETRAHYDROFURAN	63	25	ug/kg
TOLUENE	BDL	5	ug/kg
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	5	ug/kg
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/kg
1,1,1-TRICHLOROETHANE	BDL	5	ug/kg
1,1,2-TRICHLOROETHANE	BDL	5	ug/kg
TRICHLOROETHENE	BDL	5	ug/kg
VINYL ACETATE	BDL	10	ug/kg
VINYL CHLORIDE	BDL	10	ug/kg
XYLENES (O/M/P-XYLENE)	BDL	5	ug/kg
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	92		% Rec
TOLUENE-D8	98		% Rec
4-BROMOFLUOROBENZENE	111		% Rec

1:1 DILUTION.

PCB SONICATION EXTRACTION SW846-3550

Analyst: M. JAEGER Analysis Date: 21-JUL-94 Test: P231.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	2.50		Grams
FINAL VOLUME	50		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080

Analyst: M. JAEGER Analysis Date: 22-JUL-94 Instrument: GC/ECD Test: 0301.2.0

Prep: PCB SONICATION EXTRACTION SW846-3550 P231.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	1.0	mg/kg
PCB AROCHLOR 1221	BDL	1.0	mg/kg
PCB AROCHLOR 1232	BDL	1.0	mg/kg
PCB AROCHLOR 1242	BDL	1.0	mg/kg
PCB AROCHLOR 1248	BDL	1.0	mg/kg
PCB AROCHLOR 1254	BDL	1.0	mg/kg
PCB AROCHLOR 1260	BDL	1.0	mg/kg
PCB AROCHLOR 1262	BDL	1.0	mg/kg

GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: B. SWEENEY Analysis Date: 19-JUL-94 14:00 Test: P236.2.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	30.17		Grams
FINAL VOLUME	5		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 22-JUL-94 03:02 Instrument: HPLC Test: 0630.0.0 INDI

Prep: GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	2.0	ug/kg
ACENAPHTHYLENE	BDL	3.0	ug/kg
ACENAPHTHENE	BDL	4.0	ug/kg
FLUORENE	BDL	8.0	ug/kg
PHENANTHRENE	EST 420	4.0	ug/kg
ANTHRACENE	22	4.0	ug/kg

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HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C158707

Parameter	Result	Det. Limit	Units
FLUORANTHENE	260	3.0	ug/kg
PYRENE	150	2.0	ug/kg
BENZ(A)ANTHRACENE	69	4.0	ug/kg
CHRYSENE	110	5.0	ug/kg
BENZO(B)FLUORANTHENE	160	3.0	ug/kg
BENZO(K)FLUORANTHENE	74	3.0	ug/kg
BENZO(A)PYRENE	99	3.0	ug/kg
DIBENZ(A,H)ANTHRACENE	BDL	3.0	ug/kg
BENZO(G,H,I)PERYLENE	100	2.0	ug/kg
INDENO(1,2,3-CD)PYRENE	130	2.0	ug/kg

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 27-JUL-94 20:24 Instrument: HPLC Test: 0630.0.1 INDI

Prep: GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	4	ug/kg
ACENAPHTHYLENE	BDL	6	ug/kg
ACENAPHTHENE	BDL	8	ug/kg
FLUORENE	BDL	16	ug/kg
PHENANTHRENE	360	8	ug/kg
ANTHRACENE	8.8	8	ug/kg
FLUORANTHENE	300	6	ug/kg
PYRENE	330	4	ug/kg
BENZ(A)ANTHRACENE	62	8	ug/kg
CHRYSENE	91	10	ug/kg
BENZO(B)FLUORANTHENE	130	6	ug/kg
BENZO(K)FLUORANTHENE	57	6	ug/kg
BENZO(A)PYRENE	97	6	ug/kg
DIBENZ(A,H)ANTHRACENE	BDL	6	ug/kg
BENZO(G,H,I)PERYLENE	120	4	ug/kg
INDENO(1,2,3-CD)PYRENE	120	4	ug/kg

1:2 DILUTION

Sample Comments

* *See Note for Parameter*
BDL Below Detection Limit
EST Estimated Value

Sample chain of custody number NONE.

This Certificate shall not be reproduced, except in full, without the written approval of the lab.

Quality Assurance Officer: _____

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	15-JUL-94	2979	C158708
	Complete	PO Number	
	04-AUG-94	CI0299.004	
	Printed	Sampled	
	05-AUG-94	14-JUL-94 15:30	

Report To	Bill To
JAMES AUER GERAGHTY AND MILLER 35 EAST WACKER DRIVE SUITE 1000 CHICAGO, IL 60601	JAMES AUER GERAGHTY & MILLER, INC. 35 EAST WACKER, SUITE 1000 CHICAGO, IL 60601

Sample Description

PROJECT NO.: CI0299.004
PROJECT LOCATION: NAVISTAR - ROCK ISLAND, IL
SAMPLE ID.: GM15-0810

TOTAL SOLIDS EPA 160.3

Analyst: J. MICHALEK Analysis Date: 19-JUL-94 Test: G401.7.0

Parameter	Result	Det. Limit	Units
SOLIDS	* 80	0.05	Percent

sample was hygroscopic first weight taken

VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A

Analyst: G. SWANEY Analysis Date: 27-JUL-94 17:47 Instrument: GC/MS VOA Test: O510.9.0

Parameter	Result	Det. Limit	Units
ACETONE	71	20	ug/kg
ACROLEIN	BDL	50	ug/kg
ACRYLONITRILE	BDL	70	ug/kg
BENZENE	BDL	5	ug/kg
BROMODICHLOROMETHANE	BDL	5	ug/kg
BROMOFORM	BDL	5	ug/kg
BROMOMETHANE	BDL	10	ug/kg
CARBON DISULFIDE	BDL	5	ug/kg
CARBON TETRACHLORIDE	BDL	5	ug/kg
CHLOROBENZENE	BDL	5	ug/kg
CHLOROETHANE	BDL	10	ug/kg
CHLOROFORM	BDL	5	ug/kg
CHLOROMETHANE	BDL	10	ug/kg
DIBROMOCHLOROMETHANE	BDL	5	ug/kg
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/kg
DICHLORODIFLUOROMETHANE	BDL	5	ug/kg
1,1-DICHLOROETHANE	BDL	5	ug/kg
1,2-DICHLOROETHANE	BDL	5	ug/kg
1,1-DICHLOROETHENE	BDL	5	ug/kg
1,2-DICHLOROPROPANE	BDL	5	ug/kg
ETHYL BENZENE	BDL	5	ug/kg
TRICHLOROFLUOROMETHANE	BDL	5	ug/kg
2-HEXANONE	BDL	10	ug/kg
DICHLOROMETHANE (METHYLENE CHLORIDE)	58	5	ug/kg
METHYL ETHYL KETONE	BDL	10	ug/kg
4-METHYL-2-PENTANONE	BDL	10	ug/kg

 (continued on next page)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C158708

Parameter	Result	Det. Limit	Units
STYRENE	BDL	5	ug/kg
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/kg
TETRACHLOROETHENE	BDL	5	ug/kg
TETRAHYDROFURAN	100	25	ug/kg
TOLUENE	BDL	5	ug/kg
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	5	ug/kg
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/kg
1,1,1-TRICHLOROETHANE	BDL	5	ug/kg
1,1,2-TRICHLOROETHANE	BDL	5	ug/kg
TRICHLOROETHENE	BDL	5	ug/kg
VINYL ACETATE	BDL	10	ug/kg
VINYL CHLORIDE	BDL	10	ug/kg
XYLENES (O/M/P-XYLENE)	BDL	5	ug/kg
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	87		% Rec
TOLUENE-D8	105		% Rec
4-BROMOFLUOROBENZENE	104		% Rec

1:1 DILUTION.

PCB SONICATION EXTRACTION SW846-3550

Analyst: M. JAEGER Analysis Date: 21-JUL-94 Test: P231.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	2.53		Grams
FINAL VOLUME	50		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080

Analyst: M. JAEGER Analysis Date: 22-JUL-94 Instrument: GC/ECD Test: 0301.2.0

Prep: PCB SONICATION EXTRACTION SW846-3550 P231.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	1.0	mg/kg
PCB AROCHLOR 1221	BDL	1.0	mg/kg
PCB AROCHLOR 1232	BDL	1.0	mg/kg
PCB AROCHLOR 1242	BDL	1.0	mg/kg
PCB AROCHLOR 1248	BDL	1.0	mg/kg
PCB AROCHLOR 1254	BDL	1.0	mg/kg
PCB AROCHLOR 1260	BDL	1.0	mg/kg
PCB AROCHLOR 1262	BDL	1.0	mg/kg

GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: B. SWEENEY Analysis Date: 19-JUL-94 14:00 Test: P236.2.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	30.13		Grams
FINAL VOLUME	5		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 21-JUL-94 21:52 Instrument: HPLC Test: 0630.0.0 INDI

Prep: GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	2.0	ug/kg
ACENAPHTHYLENE	BDL	3.0	ug/kg
ACENAPHTHENE	BDL	4.0	ug/kg
FLUORENE	BDL	8.0	ug/kg
PHENANTHRENE	85	4.0	ug/kg
ANTHRACENE	26	4.0	ug/kg

 (continued on next page)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C158708

Parameter	Result	Det. Limit	Units
FLUORANTHENE	380	3.0	ug/kg
PYRENE	EST 420	2.0	ug/kg
BENZ(A)ANTHRACENE	22	4.0	ug/kg
CHRYSENE	110	5.0	ug/kg
BENZO(B)FLUORANTHENE	78	3.0	ug/kg
BENZO(K)FLUORANTHENE	45	3.0	ug/kg
BENZO(A)PYRENE	70	3.0	ug/kg
DIBENZ(A,H)ANTHRACENE	BDL	3.0	ug/kg
BENZO(G,H,I)PERYLENE	BDL	2.0	ug/kg
INDENO(1,2,3-CD)PYRENE	BDL	2.0	ug/kg

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 27-JUL-94 21:09 Instrument: HPLC Test: 0630.0.1 INDI

Prep: GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	20	ug/kg
ACENAPHTHYLENE	BDL	30	ug/kg
ACENAPHTHENE	BDL	40	ug/kg
FLUORENE	BDL	80	ug/kg
PHENANTHRENE	67	40	ug/kg
ANTHRACENE	BDL	40	ug/kg
FLUORANTHENE	240	30	ug/kg
PYRENE	350	20	ug/kg
BENZ(A)ANTHRACENE	BDL	40	ug/kg
CHRYSENE	54	50	ug/kg
BENZO(B)FLUORANTHENE	BDL	30	ug/kg
BENZO(K)FLUORANTHENE	BDL	30	ug/kg
BENZO(A)PYRENE	59	30	ug/kg
DIBENZ(A,H)ANTHRACENE	BDL	30	ug/kg
BENZO(G,H,I)PERYLENE	BDL	20	ug/kg
INDENO(1,2,3-CD)PYRENE	BDL	20	ug/kg

1:10 DILUTION

Sample Comments

* *See Note for Parameter*
BDL Below Detection Limit
EST Estimated Value

Sample chain of custody number NONE.

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Quality Assurance Officer: _____

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	18-JUL-94	2979	C158814
	Complete	PO Number	
	09-AUG-94	CI0299.004	
	Printed	Sampled	
	10-AUG-94	16-JUN-94 07:30	

Report To

JAMES AUER
GERAGHTY AND MILLER
35 EAST WACKER DRIVE
SUITE 1000
CHICAGO, IL 60601

Bill To

JAMES AUER
GERAGHTY & MILLER, INC.
35 EAST WACKER, SUITE 1000
CHICAGO, IL 60601

Sample Description

PROJECT: NAVISTAR-ROCK ISLAND, IL
PROJECT NO.: CI0299.004
SAMPLE ID.: GM16-0204

TOTAL SOLIDS EPA 160.3

Analyst: J. MICHALEK Analysis Date: 19-JUL-94 Test: G401.7.0

Parameter	Result	Det. Limit	Units
SOLIDS	* 82	0.05	Percent

sample was hygroscopic first weight taken

VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A

Analyst: R. SHAMP Analysis Date: 28-JUL-94 09:48 Instrument: GC/MS VOA Test: 0510.9.0 INDI

Parameter	Result	Det. Limit	Units
ACETONE	BDL	20	ug/kg
ACROLEIN	BDL	50	ug/kg
ACRYLONITRILE	BDL	70	ug/kg
BENZENE	BDL	5	ug/kg
BROMODICHLOROMETHANE	BDL	5	ug/kg
BROMOFORM	BDL	5	ug/kg
BROMOMETHANE	BDL	10	ug/kg
CARBON DISULFIDE	BDL	5	ug/kg
CARBON TETRACHLORIDE	BDL	5	ug/kg
CHLOROBENZENE	BDL	5	ug/kg
CHLOROETHANE	BDL	10	ug/kg
CHLOROFORM	BDL	5	ug/kg
CHLOROMETHANE	BDL	10	ug/kg
DIBROMOCHLOROMETHANE	BDL	5	ug/kg
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/kg
DICHLORODIFLUOROMETHANE	BDL	5	ug/kg
1,1-DICHLOROETHANE	BDL	5	ug/kg
1,2-DICHLOROETHANE	BDL	5	ug/kg
1,1-DICHLOROETHENE	BDL	5	ug/kg
1,2-DICHLOROPROPANE	BDL	5	ug/kg
ETHYL BENZENE	BDL	5	ug/kg
TRICHLOROFLUOROMETHANE	BDL	5	ug/kg
2-HEXANONE	BDL	10	ug/kg
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	5	ug/kg
METHYL ETHYL KETONE	BDL	10	ug/kg
4-METHYL-2-PENTANONE	160	10	ug/kg

 (continued on next page)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C158814

Parameter	Result	Det. Limit	Units
STYRENE	BDL	5	ug/kg
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/kg
TETRACHLOROETHENE	BDL	5	ug/kg
TETRAHYDROFURAN	BDL	25	ug/kg
TOLUENE	BDL	5	ug/kg
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	5	ug/kg
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/kg
1,1,1-TRICHLOROETHANE	BDL	5	ug/kg
1,1,2-TRICHLOROETHANE	BDL	5	ug/kg
TRICHLOROETHENE	BDL	5	ug/kg
VINYL ACETATE	BDL	10	ug/kg
VINYL CHLORIDE	BDL	10	ug/kg
XYLENES (O/M/P-XYLENE)	BDL	5	ug/kg
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	97		% Rec
TOLUENE-D8	101		% Rec
4-BROMOFLUOROBENZENE	94		% Rec

On this instrument, packed column has been replaced by capillary column with 8240 criteria.

PCB SONICATION EXTRACTION SW846-3550

Analyst: M. JAEGER Analysis Date: 21-JUL-94 Test: P231.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	2.52		Grams
FINAL VOLUME	50		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080

Analyst: M. JAEGER Analysis Date: 22-JUL-94 Instrument: GC/ECD Test: 0301.2.0

Prep: PCB SONICATION EXTRACTION SW846-3550 P231.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	1.0	mg/kg
PCB AROCHLOR 1221	BDL	1.0	mg/kg
PCB AROCHLOR 1232	BDL	1.0	mg/kg
PCB AROCHLOR 1242	BDL	1.0	mg/kg
PCB AROCHLOR 1248	BDL	1.0	mg/kg
PCB AROCHLOR 1254	BDL	1.0	mg/kg
PCB AROCHLOR 1260	BDL	1.0	mg/kg
PCB AROCHLOR 1262	BDL	1.0	mg/kg

GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: J. SCHERBAUER Analysis Date: 19-JUL-94 15:00 Test: P236.2.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	31.05		Grams
FINAL VOLUME	5		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 21-JUL-94 12:48 Instrument: HPLC Test: 0630.0.0 INDI

Prep: GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	2.0	ug/kg
ACENAPHTHYLENE	BDL	3.0	ug/kg
ACENAPHTHENE	BDL	4.0	ug/kg
FLUORENE	BDL	8.0	ug/kg
PHENANTHRENE	BDL	4.0	ug/kg

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HERITAGE ENVIRONMENTAL SERVICES, INC. **Lab Sample ID: C158814**

Parameter	Result	Det. Limit	Units
ANTHRACENE	BDL	4.0	ug/kg
FLUORANTHENE	BDL	3.0	ug/kg
PYRENE	13	2.0	ug/kg
BENZ(A)ANTHRACENE	BDL	4.0	ug/kg
CHRYSENE	5.2	5.0	ug/kg
BENZO(B)FLUORANTHENE	5.3	3.0	ug/kg
BENZO(K)FLUORANTHENE	4.3	3.0	ug/kg
BENZO(A)PYRENE	15	3.0	ug/kg
DIBENZ(A,H)ANTHRACENE	BDL	3.0	ug/kg
BENZO(G,H,I)PERYLENE	9.7	2.0	ug/kg
INDENO(1,2,3-CD)PYRENE	12.6	2.0	ug/kg

Sample Comments

** See Note for Parameter*
BDL Below Detection Limit

Sample chain of custody number NONE.

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Quality Assurance Officer: _____

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	18-JUL-94	2979	C158815
	Complete	PO Number	
	09-AUG-94	CI0299.004	
	Printed	Sampled	
	10-AUG-94	16-JUN-94 07:40	

Report To

JAMES AUER
GERAGHTY AND MILLER
35 EAST WACKER DRIVE
SUITE 1000
CHICAGO, IL 60601

Bill To

JAMES AUER
GERAGHTY & MILLER, INC.
35 EAST WACKER, SUITE 1000
CHICAGO, IL 60601

Sample Description

PROJECT: NAVISTAR-ROCK ISLAND, IL
PROJECT NO.: CI0299.004
SAMPLE ID.: GM16-0608 & GM16-0608MSD

TOTAL SOLIDS EPA 160.3

Analyst: J. MICHALEK Analysis Date: 19-JUL-94 Test: G401.7.0

Parameter	Result	Det. Limit	Units
SOLIDS	* 83	0.05	Percent

sample was hygroscopic first weight taken

VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A

Analyst: R. SHAMP Analysis Date: 28-JUL-94 10:26 Instrument: GC/MS VOA Test: O510.9.0 INDI

Parameter	Result	Det. Limit	Units
ACETONE	BDL	20	ug/kg
ACROLEIN	BDL	50	ug/kg
ACRYLONITRILE	BDL	70	ug/kg
BENZENE	BDL	5	ug/kg
BROMODICHLOROMETHANE	BDL	5	ug/kg
BROMOFORM	BDL	5	ug/kg
BROMOMETHANE	BDL	10	ug/kg
CARBON DISULFIDE	BDL	5	ug/kg
CARBON TETRACHLORIDE	BDL	5	ug/kg
CHLOROBENZENE	BDL	5	ug/kg
CHLOROETHANE	BDL	10	ug/kg
CHLOROFORM	BDL	5	ug/kg
CHLOROMETHANE	BDL	10	ug/kg
DIBROMOCHLOROMETHANE	BDL	5	ug/kg
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/kg
DICHLORODIFLUOROMETHANE	BDL	5	ug/kg
1,1-DICHLOROETHANE	BDL	5	ug/kg
1,2-DICHLOROETHANE	BDL	5	ug/kg
1,1-DICHLOROETHENE	BDL	5	ug/kg
1,2-DICHLOROPROPANE	BDL	5	ug/kg
ETHYL BENZENE	BDL	5	ug/kg
TRICHLOROFLUOROMETHANE	BDL	5	ug/kg
2-HEXANONE	BDL	10	ug/kg
DICHLOROMETHANE (METHYLENE CHLORIDE)	16	5	ug/kg
METHYL ETHYL KETONE	BDL	10	ug/kg
4-METHYL-2-PENTANONE	EST 280	10	ug/kg

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HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C158815

Parameter	Result	Det. Limit	Units
STYRENE	BDL	5	ug/kg
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/kg
TETRACHLOROETHENE	BDL	5	ug/kg
TETRAHYDROFURAN	BDL	25	ug/kg
TOLUENE	6	5	ug/kg
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	5	ug/kg
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/kg
1,1,1-TRICHLOROETHANE	BDL	5	ug/kg
1,1,2-TRICHLOROETHANE	BDL	5	ug/kg
TRICHLOROETHENE	BDL	5	ug/kg
VINYL ACETATE	BDL	10	ug/kg
VINYL CHLORIDE	BDL	10	ug/kg
XYLENES (O/M/P-XYLENE)	7	5	ug/kg
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	98		% Rec
TOLUENE-D8	95		% Rec
4-BROMOFLUOROBENZENE	71		% Rec

On this instrument, packed column has been replaced by capillary column with 8240 criteria.
Dilution necessary due to high concentration of target compounds.
Sample reanalyzed with no improvement in internal standard areas.
SAMPLE ANALYZED AS MS/MSD WITH NO IMPROVEMENT IN SURROGATE RECOVERY

VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A

Analyst: R. SHAMP Analysis Date: 29-JUL-94 12:21 Instrument: GC/MS VOA Test: 0510.9.1 INDI

Parameter	Result	Det. Limit	Units
ACETONE	BDL	100	ug/kg
ACROLEIN	BDL	250	ug/kg
ACRYLONITRILE	BDL	350	ug/kg
BENZENE	BDL	25	ug/kg
BROMODICHLOROMETHANE	BDL	25	ug/kg
BROMOFORM	BDL	25	ug/kg
BROMOMETHANE	BDL	50	ug/kg
CARBON DISULFIDE	BDL	25	ug/kg
CARBON TETRACHLORIDE	BDL	25	ug/kg
CHLOROBENZENE	BDL	25	ug/kg
CHLOROETHANE	BDL	50	ug/kg
CHLOROFORM	BDL	25	ug/kg
CHLOROMETHANE	BDL	50	ug/kg
DIBROMOCHLOROMETHANE	BDL	25	ug/kg
CIS-1,3-DICHLOROPROPENE	BDL	25	ug/kg
DICHLORODIFLUOROMETHANE	BDL	25	ug/kg
1,1-DICHLOROETHANE	BDL	25	ug/kg
1,2-DICHLOROETHANE	BDL	25	ug/kg
1,1-DICHLOROETHENE	BDL	25	ug/kg
1,2-DICHLOROPROPANE	BDL	25	ug/kg
ETHYL BENZENE	BDL	25	ug/kg
TRICHLOROFLUOROMETHANE	BDL	25	ug/kg
2-HEXANONE	BDL	50	ug/kg
DICHLOROMETHANE (METHYLENE CHLORIDE)	45	25	ug/kg
METHYL ETHYL KETONE	BDL	50	ug/kg
4-METHYL-2-PENTANONE	640	50	ug/kg
STYRENE	BDL	25	ug/kg
1,1,2,2-TETRACHLOROETHANE	BDL	25	ug/kg

Parameter	Result	Det. Limit	Units
TETRACHLOROETHENE	BDL	25	ug/kg
TETRAHYDROFURAN	BDL	120	ug/kg
TOLUENE	BDL	25	ug/kg
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	25	ug/kg
TRANS-1,3-DICHLOROPROPENE	BDL	25	ug/kg
1,1,1-TRICHLOROETHANE	BDL	25	ug/kg
1,1,2-TRICHLOROETHANE	BDL	25	ug/kg
TRICHLOROETHENE	BDL	25	ug/kg
VINYL ACETATE	BDL	50	ug/kg
VINYL CHLORIDE	BDL	50	ug/kg
XYLENES (O/M/P-XYLENE)	BDL	25	ug/kg
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	101		% Rec
TOLUENE-D8	97		% Rec
4-BROMOFLUOROBENZENE	79		% Rec

On this instrument, packed column has been replaced by capillary column with 8240 criteria.
1:5 DILUTION

PCB SONICATION EXTRACTION SW846-3550

Analyst: M. JAEGER Analysis Date: 21-JUL-94 Test: P231.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	2.50		Grams
FINAL VOLUME	50		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080

Analyst: M. JAEGER Analysis Date: 22-JUL-94 Instrument: GC/ECD Test: 0301.2.0
Prep: PCB SONICATION EXTRACTION SW846-3550 P231.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	1.0	mg/kg
PCB AROCHLOR 1221	BDL	1.0	mg/kg
PCB AROCHLOR 1232	BDL	1.0	mg/kg
PCB AROCHLOR 1242	BDL	1.0	mg/kg
PCB AROCHLOR 1248	BDL	1.0	mg/kg
PCB AROCHLOR 1254	BDL	1.0	mg/kg
PCB AROCHLOR 1260	BDL	1.0	mg/kg
PCB AROCHLOR 1262	BDL	1.0	mg/kg

GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: J. SCHERBAUER Analysis Date: 19-JUL-94 15:00 Test: P236.2.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	31.04		Grams
FINAL VOLUME	5		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 21-JUL-94 13:34 Instrument: HPLC Test: 0630.0.0 INDI
Prep: GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	2.0	ug/kg
ACENAPHTHYLENE	BDL	3.0	ug/kg
ACENAPHTHENE	18	4.0	ug/kg
FLUORENE	190	8.0	ug/kg
PHENANTHRENE	340	4.0	ug/kg
ANTHRACENE	15	4.0	ug/kg

 (continued on next page)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C158815

Parameter	Result	Det. Limit	Units
FLUORANTHENE	54	3.0	ug/kg
PYRENE	49	2.0	ug/kg
BENZ(A)ANTHRACENE	11	4.0	ug/kg
CHRYSENE	5.7	5.0	ug/kg
BENZO(B)FLUORANTHENE	3.8	3.0	ug/kg
BENZO(K)FLUORANTHENE	3.7	3.0	ug/kg
BENZO(A)PYRENE	14	3.0	ug/kg
DIBENZ(A,H)ANTHRACENE	BDL	3.0	ug/kg
BENZO(G,H,I)PERYLENE	BDL	2.0	ug/kg
INDENO(1,2,3-CD)PYRENE	11	2.0	ug/kg

Sample Comments

** See Note for Parameter*
BDL Below Detection Limit
EST Estimated Value

Sample chain of custody number NONE.

This Certificate shall not be reproduced, except in full, without the written approval of the lab.

Quality Assurance Officer: _____

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	18-JUL-94	2979	C158806
	Complete	PO Number	
	09-AUG-94	CI0299.004	
	Printed	Sampled	
	10-AUG-94	15-JUL-94 10:55	

Report To

JAMES AUER
GERAGHTY AND MILLER
35 EAST WACKER DRIVE
SUITE 1000
CHICAGO, IL 60601

Bill To

JAMES AUER
GERAGHTY & MILLER, INC.
35 EAST WACKER, SUITE 1000
CHICAGO, IL 60601

Sample Description

PROJECT: NAVISTAR-ROCK ISLAND, IL
PROJECT NO.: CI0299.004
SAMPLE ID.: GM17-0204

TOTAL SOLIDS EPA 160.3

Analyst: J. MICHALEK Analysis Date: 19-JUL-94 Test: G401.7.0

Parameter	Result	Det. Limit	Units
SOLIDS	* 77	0.05	Percent

sample was hygroscopic first weight taken

VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A

Analyst: R. SHAMP Analysis Date: 26-JUL-94 16:43 Instrument: GC/MS VOA Test: 0510.9.0 INDI

Parameter	Result	Det. Limit	Units
ACETONE	BDL	20	ug/kg
ACROLEIN	BDL	50	ug/kg
ACRYLONITRILE	BDL	70	ug/kg
BENZENE	BDL	5	ug/kg
BROMODICHLOROMETHANE	BDL	5	ug/kg
BROMOFORM	BDL	5	ug/kg
BROMOMETHANE	BDL	10	ug/kg
CARBON DISULFIDE	BDL	5	ug/kg
CARBON TETRACHLORIDE	BDL	5	ug/kg
CHLOROBENZENE	BDL	5	ug/kg
CHLOROETHANE	BDL	10	ug/kg
CHLOROFORM	BDL	5	ug/kg
CHLOROMETHANE	BDL	10	ug/kg
DIBROMOCHLOROMETHANE	BDL	5	ug/kg
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/kg
DICHLORODIFLUOROMETHANE	BDL	5	ug/kg
1,1-DICHLOROETHANE	BDL	5	ug/kg
1,2-DICHLOROETHANE	BDL	5	ug/kg
1,1-DICHLOROETHENE	BDL	5	ug/kg
1,2-DICHLOROPROPANE	BDL	5	ug/kg
ETHYL BENZENE	BDL	5	ug/kg
TRICHLOROFLUOROMETHANE	BDL	5	ug/kg
2-HEXANONE	BDL	10	ug/kg
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	5	ug/kg
METHYL ETHYL KETONE	BDL	10	ug/kg
4-METHYL-2-PENTANONE	85	10	ug/kg

 (continued on next page)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C158806

Parameter	Result	Det. Limit	Units
STYRENE	BDL	5	ug/kg
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/kg
TETRACHLOROETHENE	BDL	5	ug/kg
TETRAHYDROFURAN	BDL	25	ug/kg
TOLUENE	BDL	5	ug/kg
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	5	ug/kg
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/kg
1,1,1-TRICHLOROETHANE	BDL	5	ug/kg
1,1,2-TRICHLOROETHANE	BDL	5	ug/kg
TRICHLOROETHENE	BDL	5	ug/kg
VINYL ACETATE	BDL	10	ug/kg
VINYL CHLORIDE	BDL	10	ug/kg
XYLENES (O/M/P-XYLENE)	BDL	5	ug/kg
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	89		% Rec
TOLUENE-D8	117		% Rec
4-BROMOFLUOROBENZENE	81		% Rec

Sample reanalyzed with no improvement in internal standard areas.

PCB SONICATION EXTRACTION SW846-3550

Analyst: M. JAEGER Analysis Date: 21-JUL-94 Test: P231.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	2.50		Grams
FINAL VOLUME	50		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080

Analyst: M. JAEGER Analysis Date: 22-JUL-94 Instrument: GC/ECD Test: 0301.2.0

Prep: PCB SONICATION EXTRACTION SW846-3550 P231.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	1.0	mg/kg
PCB AROCHLOR 1221	BDL	1.0	mg/kg
PCB AROCHLOR 1232	BDL	1.0	mg/kg
PCB AROCHLOR 1242	BDL	1.0	mg/kg
PCB AROCHLOR 1248	BDL	1.0	mg/kg
PCB AROCHLOR 1254	BDL	1.0	mg/kg
PCB AROCHLOR 1260	BDL	1.0	mg/kg
PCB AROCHLOR 1262	BDL	1.0	mg/kg

GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: J. SCHERBAUER Analysis Date: 19-JUL-94 15:00 Test: P236.2.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	30.92		Grams
FINAL VOLUME	5		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 21-JUL-94 22:38 Instrument: HPLC Test: 0630.0.0 INDI

Prep: GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	2.0	ug/kg
ACENAPHTHYLENE	BDL	3.0	ug/kg
ACENAPHTHENE	BDL	4.0	ug/kg
FLUORENE	BDL	8.0	ug/kg
PHENANTHRENE	9.9	4.0	ug/kg
ANTHRACENE	BDL	4.0	ug/kg

 (continued on next page)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C158806

Parameter	Result	Det. Limit	Units
FLUORANTHENE	4.3	3.0	ug/kg
PYRENE	20	2.0	ug/kg
BENZ(A)ANTHRACENE	BDL	4.0	ug/kg
CHRYSENE	5.3	5.0	ug/kg
BENZO(B)FLUORANTHENE	BDL	3.0	ug/kg
BENZO(K)FLUORANTHENE	BDL	3.0	ug/kg
BENZO(A)PYRENE	BDL	3.0	ug/kg
DIBENZ(A,H)ANTHRACENE	BDL	3.0	ug/kg
BENZO(G,H,I)PERYLENE	7.4	2.0	ug/kg
INDENO(1,2,3-CD)PYRENE	2.2	2.0	ug/kg

Sample Comments

** See Note for Parameter*
BDL Below Detection Limit

Sample chain of custody number NONE.

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Quality Assurance Officer: _____

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	18-JUL-94	2979	C158807
	Complete	PO Number	
	09-AUG-94	CI0299.004	
	Printed	Sampled	
	10-AUG-94	15-JUN-94 11:05	

Report To	Bill To
JAMES AUER GERAGHTY AND MILLER 35 EAST WACKER DRIVE SUITE 1000 CHICAGO, IL 60601	JAMES AUER GERAGHTY & MILLER, INC. 35 EAST WACKER, SUITE 1000 CHICAGO, IL 60601

Sample Description

PROJECT: NAVISTAR-ROCK ISLAND, IL
PROJECT NO.: CI0299.004
SAMPLE ID.: GM17-0608

TOTAL SOLIDS EPA 160.3

Analyst: J. MICHALEK Analysis Date: 19-JUL-94 Test: G401.7.0

Parameter	Result	Det. Limit	Units
SOLIDS	* 79	0.05	Percent

sample was hygroscopic first weight taken

VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A

Analyst: B. MAZUR Analysis Date: 27-JUL-94 13:30 Instrument: GC/MS VOA Test: O510.9.0 INDI

Parameter	Result	Det. Limit	Units
ACETONE	100	20	ug/kg
ACROLEIN	BDL	50	ug/kg
ACRYLONITRILE	BDL	70	ug/kg
BENZENE	BDL	5	ug/kg
BROMODICHLOROMETHANE	BDL	5	ug/kg
BROMOFORM	BDL	5	ug/kg
BROMOMETHANE	BDL	10	ug/kg
CARBON DISULFIDE	BDL	5	ug/kg
CARBON TETRACHLORIDE	BDL	5	ug/kg
CHLOROBENZENE	BDL	5	ug/kg
CHLOROETHANE	BDL	10	ug/kg
CHLOROFORM	BDL	5	ug/kg
CHLOROMETHANE	BDL	10	ug/kg
DIBROMOCHLOROMETHANE	BDL	5	ug/kg
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/kg
DICHLORODIFLUOROMETHANE	BDL	5	ug/kg
1,1-DICHLOROETHANE	BDL	5	ug/kg
1,2-DICHLOROETHANE	BDL	5	ug/kg
1,1-DICHLOROETHENE	BDL	5	ug/kg
1,2-DICHLOROPROPANE	BDL	5	ug/kg
ETHYL BENZENE	BDL	5	ug/kg
TRICHLOROFLUOROMETHANE	BDL	5	ug/kg
2-HEXANONE	BDL	10	ug/kg
DICHLOROMETHANE (METHYLENE CHLORIDE)	7	5	ug/kg
METHYL ETHYL KETONE	19	10	ug/kg
4-METHYL-2-PENTANONE	140	10	ug/kg

 (continued on next page)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C158807

Parameter	Result	Det. Limit	Units
STYRENE	BDL	5	ug/kg
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/kg
TETRACHLOROETHENE	BDL	5	ug/kg
TETRAHYDROFURAN	BDL	25	ug/kg
TOLUENE	BDL	5	ug/kg
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	5	ug/kg
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/kg
1,1,1-TRICHLOROETHANE	BDL	5	ug/kg
1,1,2-TRICHLOROETHANE	BDL	5	ug/kg
TRICHLOROETHENE	BDL	5	ug/kg
VINYL ACETATE	BDL	10	ug/kg
VINYL CHLORIDE	BDL	10	ug/kg
XYLENES (O/M/P-XYLENE)	BDL	5	ug/kg
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	103		% Rec
TOLUENE-D8	104		% Rec
4-BROMOFLUOROBENZENE	108		% Rec

PCB SONICATION EXTRACTION SW846-3550

Analyst: M. JAEGER Analysis Date: 21-JUL-94 Test: P231.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	2.53		Grams
FINAL VOLUME	50		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080

Analyst: M. JAEGER Analysis Date: 22-JUL-94 Instrument: GC/ECD Test: O301.2.0

Prep: PCB SONICATION EXTRACTION SW846-3550 P231.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	1.0	mg/kg
PCB AROCHLOR 1221	BDL	1.0	mg/kg
PCB AROCHLOR 1232	BDL	1.0	mg/kg
PCB AROCHLOR 1242	BDL	1.0	mg/kg
PCB AROCHLOR 1248	BDL	1.0	mg/kg
PCB AROCHLOR 1254	BDL	1.0	mg/kg
PCB AROCHLOR 1260	BDL	1.0	mg/kg
PCB AROCHLOR 1262	BDL	1.0	mg/kg

GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: J. SCHERBAUER Analysis Date: 19-JUL-94 15:00 Test: P236.2.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	30.26		Grams
FINAL VOLUME	5		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 21-JUL-94 09:52 Instrument: HPLC Test: O630.0.0 INDI

Prep: GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	2.0	ug/kg
ACENAPHTHYLENE	BDL	3.0	ug/kg
ACENAPHTHENE	500	4.0	ug/kg
FLUORENE	570	8.0	ug/kg
PHENANTHRENE	280	4.0	ug/kg
ANTHRACENE	120	4.0	ug/kg
FLUORANTHENE	17	3.0	ug/kg
PYRENE	38	2.0	ug/kg

 (continued on next page)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C158807

Parameter	Result	Det. Limit	Units
BENZ(A)ANTHRACENE	BDL	4.0	ug/kg
CHRYSENE	BDL	5.0	ug/kg
BENZO(B)FLUORANTHENE	BDL	3.0	ug/kg
BENZO(K)FLUORANTHENE	BDL	3.0	ug/kg
BENZO(A)PYRENE	BDL	3.0	ug/kg
DIBENZ(A,H)ANTHRACENE	BDL	3.0	ug/kg
BENZO(G,H,I)PERYLENE	BDL	2.0	ug/kg
INDENO(1,2,3-CD)PYRENE	BDL	2.0	ug/kg

Sample Comments

* *See Note for Parameter*
BDL Below Detection Limit

Sample chain of custody number NONE.

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Quality Assurance Officer: _____

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	18-JUL-94	2979	C158817
	Complete	PO Number	
	09-AUG-94	CI0299.004	
	Printed	Sampled	
	10-AUG-94	16-JUN-94 10:05	

Report To	Bill To
JAMES AUER GERAGHTY AND MILLER 35 EAST WACKER DRIVE SUITE 1000 CHICAGO, IL 60601	JAMES AUER GERAGHTY & MILLER, INC. 35 EAST WACKER, SUITE 1000 CHICAGO, IL 60601

Sample Description

PROJECT: NAVISTAR-ROCK ISLAND, IL
PROJECT NO.: CI0299.004
SAMPLE ID.: GM18-0204

TOTAL SOLIDS EPA 160.3

Analyst: J. MICHALEK Analysis Date: 19-JUL-94 Test: G401.7.0

Parameter	Result	Det. Limit	Units
SOLIDS	* 75	0.05	Percent

sample was hygroscopic first weight taken

VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A

Analyst: R. SHAMP Analysis Date: 28-JUL-94 14:53 Instrument: GC/MS VOA Test: 0510.9.0 INDI

Parameter	Result	Det. Limit	Units
ACETONE	23	20	ug/kg
ACROLEIN	BDL	50	ug/kg
ACRYLONITRILE	BDL	70	ug/kg
BENZENE	BDL	5	ug/kg
BROMODICHLOROMETHANE	BDL	5	ug/kg
BROMOFORM	BDL	5	ug/kg
BROMOMETHANE	BDL	10	ug/kg
CARBON DISULFIDE	9	5	ug/kg
CARBON TETRACHLORIDE	BDL	5	ug/kg
CHLOROBENZENE	BDL	5	ug/kg
CHLOROETHANE	BDL	10	ug/kg
CHLOROFORM	BDL	5	ug/kg
CHLOROMETHANE	BDL	10	ug/kg
DIBROMOCHLOROMETHANE	BDL	5	ug/kg
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/kg
DICHLORODIFLUOROMETHANE	BDL	5	ug/kg
1,1-DICHLOROETHANE	BDL	5	ug/kg
1,2-DICHLOROETHANE	BDL	5	ug/kg
1,1-DICHLOROETHENE	BDL	5	ug/kg
1,2-DICHLOROPROPANE	BDL	5	ug/kg
ETHYL BENZENE	BDL	5	ug/kg
TRICHLOROFLUOROMETHANE	BDL	5	ug/kg
2-HEXANONE	BDL	10	ug/kg
DICHLOROMETHANE (METHYLENE CHLORIDE)	6	5	ug/kg
METHYL ETHYL KETONE	BDL	10	ug/kg
4-METHYL-2-PENTANONE	100	10	ug/kg

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Parameter	Result	Det. Limit	Units
STYRENE	BDL	5	ug/kg
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/kg
TETRACHLOROETHENE	BDL	5	ug/kg
TETRAHYDROFURAN	BDL	25	ug/kg
TOLUENE	BDL	5	ug/kg
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	5	ug/kg
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/kg
1,1,1-TRICHLOROETHANE	BDL	5	ug/kg
1,1,2-TRICHLOROETHANE	BDL	5	ug/kg
TRICHLOROETHENE	BDL	5	ug/kg
VINYL ACETATE	BDL	10	ug/kg
VINYL CHLORIDE	BDL	10	ug/kg
XYLENES (O/M/P-XYLENE)	BDL	5	ug/kg
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	97		% Rec
TOLUENE-D8	98		% Rec
4-BROMOFLUOROBENZENE	71		% Rec

On this instrument, packed column has been replaced by capillary column with 8240 criteria.
Sample reanalyzed with no improvement in surrogate recovery.
Sample reanalyzed with no improvement in internal standard areas.

PCB SONICATION EXTRACTION SW846-3550

Analyst: M. JAEGER Analysis Date: 21-JUL-94 Test: P231.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	2.51		Grams
FINAL VOLUME	50		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080

Analyst: M. JAEGER Analysis Date: 22-JUL-94 Instrument: GC/ECD Test: 0301.2.0
Prep: PCB SONICATION EXTRACTION SW846-3550 P231.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	1.0	mg/kg
PCB AROCHLOR 1221	BDL	1.0	mg/kg
PCB AROCHLOR 1232	BDL	1.0	mg/kg
PCB AROCHLOR 1242	BDL	1.0	mg/kg
PCB AROCHLOR 1248	BDL	1.0	mg/kg
PCB AROCHLOR 1254	BDL	1.0	mg/kg
PCB AROCHLOR 1260	BDL	1.0	mg/kg
PCB AROCHLOR 1262	BDL	1.0	mg/kg

GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: J. SCHERBAUER Analysis Date: 19-JUL-94 15:00 Test: P236.2.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	30.08		Grams
FINAL VOLUME	5		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 22-JUL-94 01:39 Instrument: HPLC Test: 0630.0.0 INDI
Prep: GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	2.0	ug/kg
ACENAPHTHYLENE	BDL	3.0	ug/kg
ACENAPHTHENE	BDL	4.0	ug/kg

 (continued on next page)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C158817

Parameter	Result	Det. Limit	Units
FLUORENE	BDL	8.0	ug/kg
PHENANTHRENE	100	4.0	ug/kg
ANTHRACENE	BDL	4.0	ug/kg
FLUORANTHENE	94	3.0	ug/kg
PYRENE	100	2.0	ug/kg
BENZ(A)ANTHRACENE	37	4.0	ug/kg
CHRYSENE	50	5.0	ug/kg
BENZO(B)FLUORANTHENE	50	3.0	ug/kg
BENZO(K)FLUORANTHENE	25	3.0	ug/kg
BENZO(A)PYRENE	43	3.0	ug/kg
DIBENZ(A,H)ANTHRACENE	BDL	3.0	ug/kg
BENZO(G,H,I)PERYLENE	33	2.0	ug/kg
INDENO(1,2,3-CD)PYRENE	52	2.0	ug/kg

Sample Comments

** See Note for Parameter*
BDL Below Detection Limit

Sample chain of custody number NONE.

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Quality Assurance Officer: _____

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	18-JUL-94	2979	C158818
	Complete	PO Number	
	09-AUG-94	CI0299.004	
	Printed	Sampled	
	10-AUG-94	16-JUN-94 10:10	

Report To

JAMES AUER
GERAGHTY AND MILLER
35 EAST WACKER DRIVE
SUITE 1000
CHICAGO, IL 60601

Bill To

JAMES AUER
GERAGHTY & MILLER, INC.
35 EAST WACKER, SUITE 1000
CHICAGO, IL 60601

Sample Description

PROJECT: NAVISTAR-ROCK ISLAND, IL
PROJECT NO.: CI0299.004
SAMPLE ID.: GM18-0406

TOTAL SOLIDS EPA 160.3

Analyst: J. MICHALEK Analysis Date: 19-JUL-94 Test: G401.7.0

Parameter	Result	Det. Limit	Units
SOLIDS	* 81	0.05	Percent

sample was hygroscopic first weight taken

VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A

Analyst: R. SHAMP Analysis Date: 28-JUL-94 15:31 Instrument: GC/MS VOA Test: 0510.9.0 INDI

Parameter	Result	Det. Limit	Units
ACETONE	180	20	ug/kg
ACROLEIN	BDL	50	ug/kg
ACRYLONITRILE	BDL	70	ug/kg
BENZENE	BDL	5	ug/kg
BROMODICHLOROMETHANE	BDL	5	ug/kg
BROMOFORM	BDL	5	ug/kg
BROMOMETHANE	BDL	10	ug/kg
CARBON DISULFIDE	BDL	5	ug/kg
CARBON TETRACHLORIDE	BDL	5	ug/kg
CHLOROBENZENE	BDL	5	ug/kg
CHLOROETHANE	BDL	10	ug/kg
CHLOROFORM	BDL	5	ug/kg
CHLOROMETHANE	BDL	10	ug/kg
DIBROMOCHLOROMETHANE	BDL	5	ug/kg
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/kg
DICHLORODIFLUOROMETHANE	BDL	5	ug/kg
1,1-DICHLOROETHANE	BDL	5	ug/kg
1,2-DICHLOROETHANE	BDL	5	ug/kg
1,1-DICHLOROETHENE	BDL	5	ug/kg
1,2-DICHLOROPROPANE	BDL	5	ug/kg
ETHYL BENZENE	BDL	5	ug/kg
TRICHLOROFLUOROMETHANE	BDL	5	ug/kg
2-HEXANONE	BDL	10	ug/kg
DICHLOROMETHANE (METHYLENE CHLORIDE)	6	5	ug/kg
METHYL ETHYL KETONE	25	10	ug/kg
4-METHYL-2-PENTANONE	EST 450	10	ug/kg

 (continued on next page)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C158818

Parameter	Result	Det. Limit	Units
STYRENE	BDL	5	ug/kg
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/kg
TETRACHLOROETHENE	BDL	5	ug/kg
TETRAHYDROFURAN	BDL	25	ug/kg
TOLUENE	BDL	5	ug/kg
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	5	ug/kg
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/kg
1,1,1-TRICHLOROETHANE	BDL	5	ug/kg
1,1,2-TRICHLOROETHANE	BDL	5	ug/kg
TRICHLOROETHENE	BDL	5	ug/kg
VINYL ACETATE	BDL	10	ug/kg
VINYL CHLORIDE	BDL	10	ug/kg
XYLENES (O/M/P-XYLENE)	BDL	5	ug/kg
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	100		% Rec
TOLUENE-D8	98		% Rec
4-BROMOFLUOROBENZENE	84		% Rec

On this instrument, packed column has been replaced by capillary column with 8240 criteria.
Dilution necessary due to high concentration of target compounds.

VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A

Analyst: R. SHAMP Analysis Date: 29-JUL-94 15:31 Instrument: GC/MS VOA Test: 0510.9.1 INDI

Parameter	Result	Det. Limit	Units
ACETONE	230	100	ug/kg
ACROLEIN	BDL	250	ug/kg
ACRYLONITRILE	BDL	350	ug/kg
BENZENE	BDL	25	ug/kg
BROMODICHLOROMETHANE	BDL	25	ug/kg
BROMOFORM	BDL	25	ug/kg
BROMOMETHANE	BDL	50	ug/kg
CARBON DISULFIDE	BDL	25	ug/kg
CARBON TETRACHLORIDE	BDL	25	ug/kg
CHLOROBENZENE	BDL	25	ug/kg
CHLOROETHANE	BDL	50	ug/kg
CHLOROFORM	BDL	25	ug/kg
CHLOROMETHANE	BDL	50	ug/kg
DIBROMOCHLOROMETHANE	BDL	25	ug/kg
CIS-1,3-DICHLOROPROPENE	BDL	25	ug/kg
DICHLORODIFLUOROMETHANE	BDL	25	ug/kg
1,1-DICHLOROETHANE	BDL	25	ug/kg
1,2-DICHLOROETHANE	BDL	25	ug/kg
1,1-DICHLOROETHENE	BDL	25	ug/kg
1,2-DICHLOROPROPANE	BDL	25	ug/kg
ETHYL BENZENE	BDL	25	ug/kg
TRICHLOROFLUOROMETHANE	BDL	25	ug/kg
2-HEXANONE	BDL	50	ug/kg
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	25	ug/kg
METHYL ETHYL KETONE	BDL	50	ug/kg
4-METHYL-2-PENTANONE	520	50	ug/kg
STYRENE	BDL	25	ug/kg
1,1,2,2-TETRACHLOROETHANE	BDL	25	ug/kg
TETRACHLOROETHENE	BDL	25	ug/kg
TETRAHYDROFURAN	BDL	120	ug/kg

Parameter	Result	Det. Limit	Units
TOLUENE	BDL	25	ug/kg
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	25	ug/kg
TRANS-1,3-DICHLOROPROPENE	BDL	25	ug/kg
1,1,1-TRICHLOROETHANE	BDL	25	ug/kg
1,1,2-TRICHLOROETHANE	BDL	25	ug/kg
TRICHLOROETHENE	BDL	25	ug/kg
VINYL ACETATE	BDL	50	ug/kg
VINYL CHLORIDE	BDL	50	ug/kg
XYLENES (O/M/P-XYLENE)	BDL	25	ug/kg
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	101		% Rec
TOLUENE-D8	100		% Rec
4-BROMOFLUOROBENZENE	96		% Rec

On this instrument, packed column has been replaced by capillary column with 8240 criteria.
1:5 DILUTION

PCB SONICATION EXTRACTION SW846-3550

Analyst: M. JAEGER Analysis Date: 21-JUL-94 Test: P231.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	2.50		Grams
FINAL VOLUME	50		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080

Analyst: M. JAEGER Analysis Date: 22-JUL-94 Instrument: GC/ECD Test: 0301.2.0
Prep: PCB SONICATION EXTRACTION SW846-3550 P231.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	1.0	mg/kg
PCB AROCHLOR 1221	BDL	1.0	mg/kg
PCB AROCHLOR 1232	BDL	1.0	mg/kg
PCB AROCHLOR 1242	BDL	1.0	mg/kg
PCB AROCHLOR 1248	BDL	1.0	mg/kg
PCB AROCHLOR 1254	BDL	1.0	mg/kg
PCB AROCHLOR 1260	BDL	1.0	mg/kg
PCB AROCHLOR 1262	BDL	1.0	mg/kg

GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: J. SCHERBAUER Analysis Date: 19-JUL-94 15:00 Test: P236.2.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	30.11		Grams
FINAL VOLUME	5		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 21-JUL-94 14:18 Instrument: HPLC Test: 0630.0.0 INDI
Prep: GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	2.0	ug/kg
ACENAPHTHYLENE	BDL	3.0	ug/kg
ACENAPHTHENE	BDL	4.0	ug/kg
FLUORENE	BDL	8.0	ug/kg
PHENANTHRENE	BDL	4.0	ug/kg
ANTHRACENE	BDL	4.0	ug/kg
FLUORANTHENE	5.2	3.0	ug/kg
PYRENE	11	2.0	ug/kg

 (continued on next page)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C158818

Parameter	Result	Det. Limit	Units
BENZ(A)ANTHRACENE	BDL	4.0	ug/kg
CHRYSENE	BDL	5.0	ug/kg
BENZO(B)FLUORANTHENE	31	3.0	ug/kg
BENZO(K)FLUORANTHENE	BDL	3.0	ug/kg
BENZO(A)PYRENE	7.8	3.0	ug/kg
DIBENZ(A,H)ANTHRACENE	BDL	3.0	ug/kg
BENZO(G,H,I)PERYLENE	5.8	2.0	ug/kg
INDENO(1,2,3-CD)PYRENE	5.2	2.0	ug/kg

Sample Comments

** See Note for Parameter*
BDL Below Detection Limit
EST Estimated Value

Sample chain of custody number NONE.

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Quality Assurance Officer: _____

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	13-JUL-94	2979	C158554
	Complete	PO Number	
	04-AUG-94	CI0299.004	
	Printed	Sampled	
	05-AUG-94	12-JUL-94 07:25	

Report To

JAMES AUER
GERAGHTY AND MILLER
35 EAST WACKER DRIVE
SUITE 1000
CHICAGO, IL 60601

Bill To

JAMES AUER
GERAGHTY & MILLER, INC.
35 EAST WACKER, SUITE 1000
CHICAGO, IL 60601

Sample Description

PROJECT NO.: CI0299.004
PROJECT LOCATION: NTIC/BNR/IIR ROCK ISLAND
SAMPLE ID.: GM19-0406

TOTAL SOLIDS EPA 160.3

Analyst: J. MICHALEK Analysis Date: 19-JUL-94 Test: G401.7.0

Parameter	Result	Det. Limit	Units
SOLIDS	* 95	0.05	Percent

sample are hygroscopic first weight taken

VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A

Analyst: S. SHARP Analysis Date: 25-JUL-94 08:11 Instrument: GC/MS VOA Test: O510.9.0

Parameter	Result	Det. Limit	Units
ACETONE	46	20	ug/kg
ACROLEIN	BDL	50	ug/kg
ACRYLONITRILE	BDL	70	ug/kg
BENZENE	BDL	5	ug/kg
BROMODICHLOROMETHANE	BDL	5	ug/kg
BROMOFORM	BDL	5	ug/kg
BROMOMETHANE	BDL	10	ug/kg
CARBON DISULFIDE	BDL	5	ug/kg
CARBON TETRACHLORIDE	BDL	5	ug/kg
CHLOROBENZENE	BDL	5	ug/kg
CHLOROETHANE	BDL	10	ug/kg
CHLOROFORM	BDL	5	ug/kg
CHLOROMETHANE	BDL	10	ug/kg
DIBROMOCHLOROMETHANE	BDL	5	ug/kg
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/kg
DICHLORODIFLUOROMETHANE	BDL	5	ug/kg
1,1-DICHLOROETHANE	BDL	5	ug/kg
1,2-DICHLOROETHANE	BDL	5	ug/kg
1,1-DICHLOROETHENE	BDL	5	ug/kg
1,2-DICHLOROPROPANE	BDL	5	ug/kg
ETHYL BENZENE	BDL	5	ug/kg
TRICHLOROFLUOROMETHANE	BDL	5	ug/kg
2-HEXANONE	BDL	10	ug/kg
DICHLOROMETHANE (METHYLENE CHLORIDE)	12	5	ug/kg
METHYL ETHYL KETONE	BDL	10	ug/kg
4-METHYL-2-PENTANONE	BDL	10	ug/kg

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HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C158554

Parameter	Result	Det. Limit	Units
STYRENE	BDL	5	ug/kg
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/kg
TETRACHLOROETHENE	BDL	5	ug/kg
TETRAHYDROFURAN	88	25	ug/kg
TOLUENE	BDL	5	ug/kg
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	5	ug/kg
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/kg
1,1,1-TRICHLOROETHANE	BDL	5	ug/kg
1,1,2-TRICHLOROETHANE	BDL	5	ug/kg
TRICHLOROETHENE	BDL	5	ug/kg
VINYL ACETATE	BDL	10	ug/kg
VINYL CHLORIDE	BDL	10	ug/kg
XYLENES (O/M/P-XYLENE)	BDL	5	ug/kg
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	90		% Rec
TOLUENE-D8	109		% Rec
4-BROMOFLUOROBENZENE	88		% Rec
DILUTION	1		

PCB SONICATION EXTRACTION SW846-3550

Analyst: M. JAEGER Analysis Date: 14-JUL-94 Test: P231.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	2.53		Grams
FINAL VOLUME	50		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080

Analyst: M. JAEGER Analysis Date: 13-JUL-94 Instrument: GC/ECD Test: 0301.2.0

Prep: PCB SONICATION EXTRACTION SW846-3550 P231.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	1.0	mg/kg
PCB AROCHLOR 1221	BDL	1.0	mg/kg
PCB AROCHLOR 1232	BDL	1.0	mg/kg
PCB AROCHLOR 1242	BDL	1.0	mg/kg
PCB AROCHLOR 1248	BDL	1.0	mg/kg
PCB AROCHLOR 1254	BDL	1.0	mg/kg
PCB AROCHLOR 1260	BDL	1.0	mg/kg
PCB AROCHLOR 1262	BDL	1.0	mg/kg

GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: J. SCHERBAUER Analysis Date: 14-JUL-94 18:00 Test: P236.2.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	30.0		Grams
FINAL VOLUME	5		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 16-JUL-94 07:30 Instrument: HPLC Test: 0630.0.0 INDI

Prep: GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	2.0	ug/kg
ACENAPHTHYLENE	BDL	3.0	ug/kg
ACENAPHTHENE	BDL	4.0	ug/kg
FLUORENE	BDL	8.0	ug/kg
PHENANTHRENE	7.5	4.0	ug/kg
ANTHRACENE	BDL	4.0	ug/kg
FLUORANTHENE	BDL	3.0	ug/kg

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HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C158554

Parameter	Result	Det. Limit	Units
PYRENE	2.1	2.0	ug/kg
BENZ(A)ANTHRACENE	BDL	4.0	ug/kg
CHRYSENE	BDL	5.0	ug/kg
BENZO(B)FLUORANTHENE	BDL	3.0	ug/kg
BENZO(K)FLUORANTHENE	BDL	3.0	ug/kg
BENZO(A)PYRENE	BDL	3.0	ug/kg
DIBENZ(A,H)ANTHRACENE	BDL	3.0	ug/kg
BENZO(G,H,I)PERYLENE	BDL	2.0	ug/kg
INDENO(1,2,3-CD)PYRENE	BDL	2.0	ug/kg

Sample Comments

* *See Note for Parameter*
BDL Below Detection Limit

Sample chain of custody number NONE.

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Quality Assurance Officer: _____

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	13-JUL-94	2979	C158555
	Complete	PO Number	
	04-AUG-94	CI0299.004	
	Printed	Sampled	
	05-AUG-94	12-JUL-94 08:10	

Report To	Bill To
JAMES AUER GERAGHTY AND MILLER 35 EAST WACKER DRIVE SUITE 1000 CHICAGO, IL 60601	JAMES AUER GERAGHTY & MILLER, INC. 35 EAST WACKER, SUITE 1000 CHICAGO, IL 60601

Sample Description

PROJECT NO.: CI0299.004
PROJECT LOCATION: NTIC/BNR/IIR ROCK ISLAND
SAMPLE ID.: GM19-1820

TOTAL SOLIDS EPA 160.3

Analyst: J. MICHALEK Analysis Date: 19-JUL-94 Test: G401.7.0

Parameter	Result	Det. Limit	Units
SOLIDS	* 81	0.05	Percent

sample was hygroscopic first weight taken

VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A

Analyst: S. SHARP Analysis Date: 25-JUL-94 09:48 Instrument: GC/MS VOA Test: 0510.9.0

Parameter	Result	Det. Limit	Units
ACETONE	75	20	ug/kg
ACROLEIN	BDL	50	ug/kg
ACRYLONITRILE	BDL	70	ug/kg
BENZENE	BDL	5	ug/kg
BROMODICHLOROMETHANE	BDL	5	ug/kg
BROMOFORM	BDL	5	ug/kg
BROMOMETHANE	BDL	10	ug/kg
CARBON DISULFIDE	BDL	5	ug/kg
CARBON TETRACHLORIDE	BDL	5	ug/kg
CHLOROBENZENE	BDL	5	ug/kg
CHLOROETHANE	BDL	10	ug/kg
CHLOROFORM	BDL	5	ug/kg
CHLOROMETHANE	BDL	10	ug/kg
DIBROMOCHLOROMETHANE	BDL	5	ug/kg
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/kg
DICHLORODIFLUOROMETHANE	BDL	5	ug/kg
1,1-DICHLOROETHANE	BDL	5	ug/kg
1,2-DICHLOROETHANE	BDL	5	ug/kg
1,1-DICHLOROETHENE	5	5	ug/kg
1,2-DICHLOROPROPANE	BDL	5	ug/kg
ETHYL BENZENE	BDL	5	ug/kg
TRICHLOROFLUOROMETHANE	BDL	5	ug/kg
2-HEXANONE	BDL	10	ug/kg
DICHLOROMETHANE (METHYLENE CHLORIDE)	8	5	ug/kg
METHYL ETHYL KETONE	BDL	10	ug/kg
4-METHYL-2-PENTANONE	BDL	10	ug/kg

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HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C158555

Parameter	Result	Det. Limit	Units
STYRENE	BDL	5	ug/kg
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/kg
TETRACHLOROETHENE	BDL	5	ug/kg
TETRAHYDROFURAN	240	25	ug/kg
TOLUENE	BDL	5	ug/kg
1,2-DICHLOROETHENE (CIS AND TRANS)	EST 4	5	ug/kg
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/kg
1,1,1-TRICHLOROETHANE	BDL	5	ug/kg
1,1,2-TRICHLOROETHANE	BDL	5	ug/kg
TRICHLOROETHENE	BDL	5	ug/kg
VINYL ACETATE	BDL	10	ug/kg
VINYL CHLORIDE	BDL	10	ug/kg
XYLENES (O/M/P-XYLENE)	BDL	5	ug/kg
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	104		% Rec
TOLUENE-D8	107		% Rec
4-BROMOFLUOROBENZENE	83		% Rec
DILUTION	1		

PCB SONICATION EXTRACTION SW846-3550

Analyst: M. JAEGER Analysis Date: 14-JUL-94 Test: P231.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	2.51		Grams
FINAL VOLUME	50		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080

Analyst: M. JAEGER Analysis Date: 13-JUL-94 Instrument: GC/ECD Test: 0301.2.0

Prep: PCB SONICATION EXTRACTION SW846-3550 P231.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	1.0	mg/kg
PCB AROCHLOR 1221	BDL	1.0	mg/kg
PCB AROCHLOR 1232	BDL	1.0	mg/kg
PCB AROCHLOR 1242	BDL	1.0	mg/kg
PCB AROCHLOR 1248	BDL	1.0	mg/kg
PCB AROCHLOR 1254	BDL	1.0	mg/kg
PCB AROCHLOR 1260	BDL	1.0	mg/kg
PCB AROCHLOR 1262	BDL	1.0	mg/kg

GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: J. SCHERBAUER Analysis Date: 14-JUL-94 18:02 Test: P236.2.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	30.08		Grams
FINAL VOLUME	5		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 16-JUL-94 08:15 Instrument: HPLC Test: 0630.0.0 INDI

Prep: GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	2.0	ug/kg
ACENAPHTHYLENE	BDL	3.0	ug/kg
ACENAPHTHENE	BDL	4.0	ug/kg
FLUORENE	BDL	8.0	ug/kg
PHENANTHRENE	4.0	4.0	ug/kg
ANTHRACENE	BDL	4.0	ug/kg
FLUORANTHENE	BDL	3.0	ug/kg

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HERITAGE ENVIRONMENTAL SERVICES, INC. **Lab Sample ID: C158555**

Parameter	Result	Det. Limit	Units
PYRENE	BDL	2.0	ug/kg
BENZ(A)ANTHRACENE	BDL	4.0	ug/kg
CHRYSENE	BDL	5.0	ug/kg
BENZO(B)FLUORANTHENE	BDL	3.0	ug/kg
BENZO(K)FLUORANTHENE	BDL	3.0	ug/kg
BENZO(A)PYRENE	BDL	3.0	ug/kg
DIBENZ(A,H)ANTHRACENE	BDL	3.0	ug/kg
BENZO(G,H,I)PERYLENE	BDL	2.0	ug/kg
INDENO(1,2,3-CD)PYRENE	BDL	2.0	ug/kg

Sample Comments

** See Note for Parameter*
BDL Below Detection Limit
EST Estimated Value

Sample chain of custody number NONE.

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Quality Assurance Officer: _____

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	14-JUL-94	2979	C158650
	Complete	PO Number	
	04-AUG-94	CI0299.004	
	Printed	Sampled	
	05-AUG-94	13-JUL-94	

Report To	Bill To
JAMES AUER GERAGHTY AND MILLER 35 EAST WACKER DRIVE SUITE 1000 CHICAGO, IL 60601	JAMES AUER GERAGHTY & MILLER, INC. 35 EAST WACKER, SUITE 1000 CHICAGO, IL 60601

Sample Description

PROJECT NO.: CI0299.004
PROJECT LOCATION: NAVISTAR - ROCK ISLAND, IL.
SAMPLE ID.: DUP-1

TOTAL SOLIDS EPA 160.3

Analyst: J. MICHALEK Analysis Date: 19-JUL-94 Test: G401.7.0

Parameter	Result	Det. Limit	Units
SOLIDS	* 84	0.05	Percent

sample was hygroscopic first weight taken

VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A

Analyst: G. SWANEY Analysis Date: 26-JUL-94 21:55 Instrument: GC/MS VOA Test: 0510.9.0

Parameter	Result	Det. Limit	Units
ACETONE	200	200	ug/kg
ACROLEIN	BDL	500	ug/kg
ACRYLONITRILE	BDL	700	ug/kg
BENZENE	BDL	50	ug/kg
BROMODICHLOROMETHANE	BDL	50	ug/kg
BROMOFORM	BDL	50	ug/kg
BROMOMETHANE	BDL	100	ug/kg
CARBON DISULFIDE	BDL	50	ug/kg
CARBON TETRACHLORIDE	BDL	50	ug/kg
CHLOROBENZENE	BDL	50	ug/kg
CHLOROETHANE	BDL	100	ug/kg
CHLOROFORM	BDL	50	ug/kg
CHLOROMETHANE	BDL	100	ug/kg
DIBROMOCHLOROMETHANE	BDL	50	ug/kg
CIS-1,3-DICHLOROPROPENE	BDL	50	ug/kg
DICHLORODIFLUOROMETHANE	BDL	50	ug/kg
1,1-DICHLOROETHANE	BDL	50	ug/kg
1,2-DICHLOROETHANE	BDL	50	ug/kg
1,1-DICHLOROETHENE	BDL	50	ug/kg
1,2-DICHLOROPROPANE	BDL	50	ug/kg
ETHYL BENZENE	BDL	50	ug/kg
TRICHLOROFLUOROMETHANE	BDL	50	ug/kg
2-HEXANONE	BDL	100	ug/kg
DICHLOROMETHANE (METHYLENE CHLORIDE)	220	50	ug/kg
METHYL ETHYL KETONE	BDL	100	ug/kg
4-METHYL-2-PENTANONE	BDL	100	ug/kg

 (continued on next page)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C158650

Parameter	Result	Det. Limit	Units
STYRENE	BDL	50	ug/kg
1,1,2,2-TETRACHLOROETHANE	BDL	50	ug/kg
TETRACHLOROETHENE	BDL	50	ug/kg
TETRAHYDROFURAN	EST 220	250	ug/kg
TOLUENE	BDL	50	ug/kg
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	50	ug/kg
TRANS-1,3-DICHLOROPROPENE	BDL	50	ug/kg
1,1,1-TRICHLOROETHANE	BDL	50	ug/kg
1,1,2-TRICHLOROETHANE	BDL	50	ug/kg
TRICHLOROETHENE	BDL	50	ug/kg
VINYL ACETATE	BDL	100	ug/kg
VINYL CHLORIDE	BDL	100	ug/kg
XYLENES (O/M/P-XYLENE)	BDL	50	ug/kg
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	88		% Rec
TOLUENE-D8	95		% Rec
4-BROMOFLUOROBENZENE	119		% Rec
DILUTION	10		

PCB SONICATION EXTRACTION SW846-3550

Analyst: M. JAEGER Analysis Date: 21-JUL-94 Test: P231.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	2.50		Grams
FINAL VOLUME	50		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080

Analyst: M. JAEGER Analysis Date: 22-JUL-94 Instrument: GC/ECD Test: 0301.2.0

Prep: PCB SONICATION EXTRACTION SW846-3550 P231.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	1.0	mg/kg
PCB AROCHLOR 1221	BDL	1.0	mg/kg
PCB AROCHLOR 1232	BDL	1.0	mg/kg
PCB AROCHLOR 1242	BDL	1.0	mg/kg
PCB AROCHLOR 1248	BDL	1.0	mg/kg
PCB AROCHLOR 1254	BDL	1.0	mg/kg
PCB AROCHLOR 1260	BDL	1.0	mg/kg
PCB AROCHLOR 1262	BDL	1.0	mg/kg

GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: J. SCHERBAUER Analysis Date: 15-JUL-94 11:30 Test: P236.2.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	30.10		Grams
FINAL VOLUME	5		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 16-JUL-94 12:43 Instrument: HPLC Test: 0630.0.0 INDI

Prep: GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	2.0	ug/kg
ACENAPHTHYLENE	BDL	3.0	ug/kg
ACENAPHTHENE	*	4.0	ug/kg
FLUORENE	*	8.0	ug/kg
PHENANTHRENE	*	4.0	ug/kg
ANTHRACENE	*	4.0	ug/kg
FLUORANTHENE	*	3.0	ug/kg

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HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C158650

Parameter	Result	Det. Limit	Units
PYRENE	*	2.0	ug/kg
BENZ(A)ANTHRACENE	*	4.0	ug/kg
CHRYSENE	*	5.0	ug/kg
BENZO(B)FLUORANTHENE	32	3.0	ug/kg
BENZO(K)FLUORANTHENE	36	3.0	ug/kg
BENZO(A)PYRENE	BDL	3.0	ug/kg
DIBENZ(A,H)ANTHRACENE	BDL	3.0	ug/kg
BENZO(G,H,I)PERYLENE	22	2.0	ug/kg
INDENO(1,2,3-CD)PYRENE	17	2.0	ug/kg

**SEE REP 1 FOR RESULTS.*

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 17-JUL-94 02:48 Instrument: HPLC Test: 0630.0.1 INDI

Prep: GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	100	ug/kg
ACENAPHTHYLENE	BDL	150	ug/kg
ACENAPHTHENE	480	200	ug/kg
FLUORENE	660	400	ug/kg
PHENANTHRENE	1500	200	ug/kg
ANTHRACENE	260	200	ug/kg
FLUORANTHENE	250	150	ug/kg
PYRENE	260	100	ug/kg
BENZ(A)ANTHRACENE	EST 170	200	ug/kg
CHRYSENE	EST 170	250	ug/kg
BENZO(B)FLUORANTHENE	BDL	150	ug/kg
BENZO(K)FLUORANTHENE	BDL	150	ug/kg
BENZO(A)PYRENE	BDL	150	ug/kg
DIBENZ(A,H)ANTHRACENE	BDL	150	ug/kg
BENZO(G,H,I)PERYLENE	BDL	100	ug/kg
INDENO(1,2,3-CD)PYRENE	BDL	100	ug/kg

1:50 DILUTION

Sample Comments

* *See Note for Parameter*
BDL Below Detection Limit
EST Estimated Value

Sample chain of custody number NONE.

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Quality Assurance Officer: _____

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	18-JUL-94	2979	C158813
	Complete	PO Number	
	09-AUG-94	CI0299.004	
	Printed	Sampled	
	10-AUG-94	15-JUN-94	

Report To	Bill To
JAMES AUER GERAGHTY AND MILLER 35 EAST WACKER DRIVE SUITE 1000 CHICAGO, IL 60601	JAMES AUER GERAGHTY & MILLER, INC. 35 EAST WACKER, SUITE 1000 CHICAGO, IL 60601

Sample Description

PROJECT: NAVISTAR-ROCK ISLAND, IL
PROJECT NO.: CI0299.004
SAMPLE ID.: DUP 2

TOTAL SOLIDS EPA 160.3

Analyst: J. MICHALEK Analysis Date: 19-JUL-94 Test: G401.7.0

Parameter	Result	Det. Limit	Units
SOLIDS	* 91	0.05	Percent

sample was hygroscopic first weight taken

VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A

Analyst: R. SHAMP Analysis Date: 28-JUL-94 13:36 Instrument: GC/MS VOA Test: 0510.9.0 INDI

Parameter	Result	Det. Limit	Units
ACETONE	40	20	ug/kg
ACROLEIN	BDL	50	ug/kg
ACRYLONITRILE	BDL	70	ug/kg
BENZENE	BDL	5	ug/kg
BROMODICHLOROMETHANE	BDL	5	ug/kg
BROMOFORM	BDL	5	ug/kg
BROMOMETHANE	BDL	10	ug/kg
CARBON DISULFIDE	BDL	5	ug/kg
CARBON TETRACHLORIDE	BDL	5	ug/kg
CHLOROBENZENE	BDL	5	ug/kg
CHLOROETHANE	BDL	10	ug/kg
CHLOROFORM	BDL	5	ug/kg
CHLOROMETHANE	BDL	10	ug/kg
DIBROMOCHLOROMETHANE	BDL	5	ug/kg
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/kg
DICHLORODIFLUOROMETHANE	BDL	5	ug/kg
1,1-DICHLOROETHANE	BDL	5	ug/kg
1,2-DICHLOROETHANE	BDL	5	ug/kg
1,1-DICHLOROETHENE	BDL	5	ug/kg
1,2-DICHLOROPROPANE	BDL	5	ug/kg
ETHYL BENZENE	9	5	ug/kg
TRICHLOROFLUOROMETHANE	BDL	5	ug/kg
2-HEXANONE	BDL	10	ug/kg
DICHLOROMETHANE (METHYLENE CHLORIDE)	28	5	ug/kg
METHYL ETHYL KETONE	BDL	10	ug/kg
4-METHYL-2-PENTANONE	EST 1200	10	ug/kg

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C158813

Parameter	Result	Det. Limit	Units
STYRENE	BDL	5	ug/kg
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/kg
TETRACHLOROETHENE	BDL	5	ug/kg
TETRAHYDROFURAN	BDL	25	ug/kg
TOLUENE	12	5	ug/kg
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	5	ug/kg
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/kg
1,1,1-TRICHLOROETHANE	BDL	5	ug/kg
1,1,2-TRICHLOROETHANE	BDL	5	ug/kg
TRICHLOROETHENE	BDL	5	ug/kg
VINYL ACETATE	BDL	10	ug/kg
VINYL CHLORIDE	BDL	10	ug/kg
XYLENES (O/M/P-XYLENE)	43	5	ug/kg
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	101		% Rec
TOLUENE-D8	87		% Rec
4-BROMOFLUOROBENZENE	63		% Rec

On this instrument, packed column has been replaced by capillary column with 8240 criteria.
Internal standard areas and surrogates do not pass QC requirements.

MEDIUM LEVEL SOIL PREP HLI
Analyst: R. SHAMP Analysis Date: 28-JUL-94 Instrument: GC/MS VOA Test: P510.3.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL SAMPLE WEIGHT	1.99		Grams
FINAL VOLUME	5		mL

VOLATILE ORGANICS SW846-8240A
Analyst: H. WILLIAMS Analysis Date: 29-JUL-94 08:46 Instrument: GC/MS VOA Test: 0510.3.0 INDI
Prep: MEDIUM LEVEL SOIL PREP HLI P510.3.0

Parameter	Result	Det. Limit	Units
ACETONE	BDL	1.2	mg/kg
ACROLEIN	BDL	3.1	mg/kg
ACRYLONITRILE	BDL	4.4	mg/kg
BENZENE	BDL	.31	mg/kg
BROMODICHLOROMETHANE	BDL	.31	mg/kg
BROMOFORM	BDL	.31	mg/kg
BROMOMETHANE	BDL	.63	mg/kg
CARBON DISULFIDE	BDL	.31	mg/kg
CARBON TETRACHLORIDE	BDL	.31	mg/kg
CHLOROBENZENE	BDL	.31	mg/kg
CHLOROETHANE	BDL	.63	mg/kg
CHLOROFORM	BDL	.31	mg/kg
CHLOROMETHANE	BDL	.63	mg/kg
DIBROMOCHLOROMETHANE	BDL	.31	mg/kg
CIS-1,3-DICHLOROPROPENE	BDL	.31	mg/kg
DICHLORODIFLUOROMETHANE	BDL	.31	mg/kg
1,1-DICHLOROETHANE	BDL	.31	mg/kg
1,2-DICHLOROETHANE	BDL	.31	mg/kg
1,1-DICHLOROETHENE	BDL	.31	mg/kg
1,2-DICHLOROPROPANE	BDL	.31	mg/kg
ETHYL BENZENE	BDL	.31	mg/kg
TRICHLOROFLUOROMETHANE	BDL	.31	mg/kg
2-HEXANONE	BDL	.63	mg/kg

 (continued on next page)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C158813

Parameter	Result	Det. Limit	Units
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	.31	mg/kg
METHYL ETHYL KETONE	BDL	.63	mg/kg
4-METHYL-2-PENTANONE	1.2	.63	mg/kg
STYRENE	BDL	.31	mg/kg
1,1,2,2-TETRACHLOROETHANE	BDL	.31	mg/kg
TETRACHLOROETHENE	BDL	.31	mg/kg
TETRAHYDROFURAN	BDL	1.5	mg/kg
TOLUENE	BDL	.31	mg/kg
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	.31	mg/kg
TRANS-1,3-DICHLOROPROPENE	BDL	.31	mg/kg
1,1,1-TRICHLOROETHANE	BDL	.31	mg/kg
1,1,2-TRICHLOROETHANE	BDL	.31	mg/kg
TRICHLOROETHENE	BDL	.31	mg/kg
VINYL ACETATE	BDL	.63	mg/kg
VINYL CHLORIDE	BDL	.63	mg/kg
XYLENES (O/M/P-XYLENE)	BDL	.31	mg/kg
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	95		% Rec
TOLUENE-D8	112		% Rec
4-BROMOFLUOROBENZENE	104		% Rec

1:63 DILUTION.

PCB SONICATION EXTRACTION SW846-3550

Analyst: M. JAEGER Analysis Date: 21-JUL-94 Test: P231.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	2.53		Grams
FINAL VOLUME	50		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080

Analyst: M. JAEGER Analysis Date: 22-JUL-94 Instrument: GC/ECD Test: 0301.2.0

Prep: PCB SONICATION EXTRACTION SW846-3550 P231.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	1.0	mg/kg
PCB AROCHLOR 1221	BDL	1.0	mg/kg
PCB AROCHLOR 1232	BDL	1.0	mg/kg
PCB AROCHLOR 1242	BDL	1.0	mg/kg
PCB AROCHLOR 1248	BDL	1.0	mg/kg
PCB AROCHLOR 1254	BDL	1.0	mg/kg
PCB AROCHLOR 1260	BDL	1.0	mg/kg
PCB AROCHLOR 1262	BDL	1.0	mg/kg

GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: J. SCHERBAUER Analysis Date: 19-JUL-94 15:00 Test: P236.2.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	5.38		Grams
FINAL VOLUME	5		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 22-JUL-94 00:54 Instrument: HPLC Test: 0630.0.0 INDI

Prep: GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	2.0	ug/kg
ACENAPHTHYLENE	BDL	3.0	ug/kg
ACENAPHTHENE	BDL	4.0	ug/kg

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C158813

Parameter	Result	Det. Limit	Units
FLUORENE	BDL	8.0	ug/kg
PHENANTHRENE	270	4.0	ug/kg
ANTHRACENE	BDL	4.0	ug/kg
FLUORANTHENE	900	3.0	ug/kg
PYRENE	500	2.0	ug/kg
BENZ(A)ANTHRACENE	260	4.0	ug/kg
CHRYSENE	250	5.0	ug/kg
BENZO(B)FLUORANTHENE	840	3.0	ug/kg
BENZO(K)FLUORANTHENE	360	3.0	ug/kg
BENZO(A)PYRENE	660	3.0	ug/kg
DIBENZ(A,H)ANTHRACENE	38	3.0	ug/kg
BENZO(G,H,I)PERYLENE	1100	2.0	ug/kg
INDENO(1,2,3-CD)PYRENE	1300	2.0	ug/kg

Sample Comments

** See Note for Parameter*
BDL Below Detection Limit
EST Estimated Value

Sample chain of custody number NONE.

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Quality Assurance Officer: _____

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	18-JUL-94	2979	C158819
	Complete	PO Number	
	09-AUG-94	CI0299.004	
	Printed	Sampled	
	10-AUG-94	16-JUN-94	

Report To	Bill To
JAMES AUER GERAGHTY AND MILLER 35 EAST WACKER DRIVE SUITE 1000 CHICAGO, IL 60601	JAMES AUER GERAGHTY & MILLER, INC. 35 EAST WACKER, SUITE 1000 CHICAGO, IL 60601

Sample Description

PROJECT: NAVISTAR-ROCK ISLAND, IL
PROJECT NO.: CI0299.004
SAMPLE ID.: DUP-3

TOTAL SOLIDS EPA 160.3

Analyst: J. MICHALEK Analysis Date: 19-JUL-94 Test: G401.7.0

Parameter	Result	Det. Limit	Units
SOLIDS	* 81	0.05	Percent

sample was hygroscopic first weight taken

VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A

Analyst: R. SHAMP Analysis Date: 28-JUL-94 16:09 Instrument: GC/MS VOA Test: O510.9.0 INDI

Parameter	Result	Det. Limit	Units
ACETONE	EST 220	20	ug/kg
ACROLEIN	BDL	50	ug/kg
ACRYLONITRILE	BDL	70	ug/kg
BENZENE	BDL	5	ug/kg
BROMODICHLOROMETHANE	BDL	5	ug/kg
BROMOFORM	BDL	5	ug/kg
BROMOMETHANE	BDL	10	ug/kg
CARBON DISULFIDE	BDL	5	ug/kg
CARBON TETRACHLORIDE	BDL	5	ug/kg
CHLOROBENZENE	BDL	5	ug/kg
CHLOROETHANE	BDL	10	ug/kg
CHLOROFORM	BDL	5	ug/kg
CHLOROMETHANE	BDL	10	ug/kg
DIBROMOCHLOROMETHANE	BDL	5	ug/kg
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/kg
DICHLORODIFLUOROMETHANE	BDL	5	ug/kg
1,1-DICHLOROETHANE	BDL	5	ug/kg
1,2-DICHLOROETHANE	BDL	5	ug/kg
1,1-DICHLOROETHENE	BDL	5	ug/kg
1,2-DICHLOROPROPANE	BDL	5	ug/kg
ETHYL BENZENE	BDL	5	ug/kg
TRICHLOROFLUOROMETHANE	BDL	5	ug/kg
2-HEXANONE	BDL	10	ug/kg
DICHLOROMETHANE (METHYLENE CHLORIDE)	6	5	ug/kg
METHYL ETHYL KETONE	20	10	ug/kg
4-METHYL-2-PENTANONE	69	10	ug/kg

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HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C158819

Parameter	Result	Det. Limit	Units
STYRENE	BDL	5	ug/kg
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/kg
TETRACHLOROETHENE	BDL	5	ug/kg
TETRAHYDROFURAN	BDL	25	ug/kg
TOLUENE	BDL	5	ug/kg
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	5	ug/kg
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/kg
1,1,1-TRICHLOROETHANE	BDL	5	ug/kg
1,1,2-TRICHLOROETHANE	BDL	5	ug/kg
TRICHLOROETHENE	BDL	5	ug/kg
VINYL ACETATE	BDL	10	ug/kg
VINYL CHLORIDE	BDL	10	ug/kg
XYLENES (O/M/P-XYLENE)	BDL	5	ug/kg
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	97		% Rec
TOLUENE-D8	94		% Rec
4-BROMOFLUOROBENZENE	98		% Rec

On this instrument, packed column has been replaced by capillary column with 8240 criteria.
Dilution necessary due to high concentration of target compounds.

VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A

Analyst: R. SHAMP Analysis Date: 29-JUL-94 16:09 Instrument: GC/MS VOA Test: 0510.9.1 INDI

Parameter	Result	Det. Limit	Units
ACETONE	350	50	ug/kg
ACROLEIN	BDL	120	ug/kg
ACRYLONITRILE	BDL	170	ug/kg
BENZENE	BDL	12	ug/kg
BROMODICHLOROMETHANE	BDL	12	ug/kg
BROMOFORM	BDL	12	ug/kg
BROMOMETHANE	BDL	25	ug/kg
CARBON DISULFIDE	BDL	12	ug/kg
CARBON TETRACHLORIDE	BDL	12	ug/kg
CHLOROBENZENE	BDL	12	ug/kg
CHLOROETHANE	BDL	25	ug/kg
CHLOROFORM	BDL	12	ug/kg
CHLOROMETHANE	BDL	25	ug/kg
DIBROMOCHLOROMETHANE	BDL	12	ug/kg
CIS-1,3-DICHLOROPROPENE	BDL	12	ug/kg
DICHLORODIFLUOROMETHANE	BDL	12	ug/kg
1,1-DICHLOROETHANE	BDL	12	ug/kg
1,2-DICHLOROETHANE	BDL	12	ug/kg
1,1-DICHLOROETHENE	BDL	12	ug/kg
1,2-DICHLOROPROPANE	BDL	12	ug/kg
ETHYL BENZENE	BDL	12	ug/kg
TRICHLOROFLUOROMETHANE	BDL	12	ug/kg
2-HEXANONE	BDL	25	ug/kg
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	12	ug/kg
METHYL ETHYL KETONE	32	25	ug/kg
4-METHYL-2-PENTANONE	220	25	ug/kg
STYRENE	BDL	12	ug/kg
1,1,2,2-TETRACHLOROETHANE	BDL	12	ug/kg
TETRACHLOROETHENE	BDL	12	ug/kg
TETRAHYDROFURAN	BDL	62	ug/kg

 (continued on next page)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C158819

Parameter	Result	Det. Limit	Units
TOLUENE	BDL	12	ug/kg
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	12	ug/kg
TRANS-1,3-DICHLOROPROPENE	BDL	12	ug/kg
1,1,1-TRICHLOROETHANE	BDL	12	ug/kg
1,1,2-TRICHLOROETHANE	BDL	12	ug/kg
TRICHLOROETHENE	BDL	12	ug/kg
VINYL ACETATE	BDL	25	ug/kg
VINYL CHLORIDE	BDL	25	ug/kg
XYLENES (O/M/P-XYLENE)	BDL	12	ug/kg
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	101		% Rec
TOLUENE-D8	98		% Rec
4-BROMOFLUOROBENZENE	102		% Rec

On this instrument, packed column has been replaced by capillary column with 8240 criteria.
1:2.5 DILUTION

PCB SONICATION EXTRACTION SW846-3550
Analyst: M. JAEGER Analysis Date: 21-JUL-94 Test: P231.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	2.51		Grams
FINAL VOLUME	50		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080
Analyst: M. JAEGER Analysis Date: 22-JUL-94 Instrument: GC/ECD Test: 0301.2.0
Prep: PCB SONICATION EXTRACTION SW846-3550 P231.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	1.0	mg/kg
PCB AROCHLOR 1221	BDL	1.0	mg/kg
PCB AROCHLOR 1232	BDL	1.0	mg/kg
PCB AROCHLOR 1242	BDL	1.0	mg/kg
PCB AROCHLOR 1248	BDL	1.0	mg/kg
PCB AROCHLOR 1254	BDL	1.0	mg/kg
PCB AROCHLOR 1260	BDL	1.0	mg/kg
PCB AROCHLOR 1262	BDL	1.0	mg/kg

GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550
Analyst: J. SCHERBAUER Analysis Date: 19-JUL-94 15:00 Test: P236.2.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	29.23		Grams
FINAL VOLUME	5		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310
Analyst: T. COFFELT Analysis Date: 21-JUL-94 15:04 Instrument: HPLC Test: 0630.0.0 INDI
Prep: GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	2.0	ug/kg
ACENAPHTHYLENE	BDL	3.0	ug/kg
ACENAPHTHENE	230	4.0	ug/kg
FLUORENE	750	8.0	ug/kg
PHENANTHRENE	EST 1800	4.0	ug/kg
ANTHRACENE	59	4.0	ug/kg
FLUORANTHENE	47	3.0	ug/kg
PYRENE	33	2.0	ug/kg

 (continued on next page)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C158819

Parameter	Result	Det. Limit	Units
BENZ(A)ANTHRACENE	BDL	4.0	ug/kg
CHRYSENE	BDL	5.0	ug/kg
BENZO(B)FLUORANTHENE	BDL	3.0	ug/kg
BENZO(K)FLUORANTHENE	BDL	3.0	ug/kg
BENZO(A)PYRENE	BDL	3.0	ug/kg
DIBENZ(A,H)ANTHRACENE	BDL	3.0	ug/kg
BENZO(G,H,I)PERYLENE	BDL	2.0	ug/kg
INDENO(1,2,3-CD)PYRENE	BDL	2.0	ug/kg

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 27-JUL-94 10:11 Instrument: HPLC Test: 0630.0.1 INDI

Prep: GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	20	ug/kg
ACENAPHTHYLENE	BDL	30	ug/kg
ACENAPHTHENE	230	40	ug/kg
FLUORENE	700	80	ug/kg
PHENANTHRENE	1900	40	ug/kg
ANTHRACENE	BDL	40	ug/kg
FLUORANTHENE	BDL	30	ug/kg
PYRENE	BDL	20	ug/kg
BENZ(A)ANTHRACENE	BDL	40	ug/kg
CHRYSENE	BDL	50	ug/kg
BENZO(B)FLUORANTHENE	BDL	30	ug/kg
BENZO(K)FLUORANTHENE	BDL	30	ug/kg
BENZO(A)PYRENE	BDL	30	ug/kg
DIBENZ(A,H)ANTHRACENE	BDL	30	ug/kg
BENZO(G,H,I)PERYLENE	BDL	20	ug/kg
INDENO(1,2,3-CD)PYRENE	BDL	20	ug/kg

1:10 DILUTION

Sample Comments

* *See Note for Parameter*
BDL Below Detection Limit
EST Estimated Value

Sample chain of custody number NONE.

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Quality Assurance Officer: _____

APPENDIX C

Well Development Logs

WELL DEVELOPMENT DATA SHEET

Project NAVISTAR / BNR Date 7/19/94 Page 1 of 1
Project Number CFO 099.004 Well Number GM-7

Well Inside Diameter 2" Air Temperature 75°
Depth of Well 24.89' Weather OVERCAST & HUMID
Initial Water Level 17.31* Time 1230
Final Water Level 17.70 Time 1330
Water Column in Well 7.58' Gallons in Well 1.24
Development Personnel K ARNEY

2489
17.31
7.58
x .164
1.24
x 10
12.4

WITHDRAWAL OF WELL VOLUMES

	Volume No.	Volume No.	Volume No.	Volume No.	Volume No.
	INITIAL	5	8	10	
Time End Flushing	1248	1310	1315	1325	
Temperature	71.8	77.3	69.8	67.3	
pH	8.08	7.90	7.88	7.79	
Conductivity	790	690	690	710	
Odor	WEAK HYDROCARBON LIKE	SAME	SAME	SAME	
Color	~~[illegible]~~ BROWN	BROWN	WEAK BROWN	BROWN	
Other	SHEEN ON WATER	SAME	SAME	SAME	

	Volume No.	Volume No.	Volume No.	Volume No.	Volume No.
Time end Flushing					
Temperature					
pH					
Conductivity					
Odor					
Color					
Other					

Remarks: * FREE PRODUCT WAS DETECTED AT 17.31 FT ~~[illegible]~~ BELOW TOP OF CASING. APPROXIMATE THICKNESS IS LESS THAN 0.01 FEET. WATER & PRODUCT ALARM SOUNDED AT THIS DEPTH.

WELL CASING VOLUMES

GAL./FT				
	1-1/4"	= 0.077	3"	= 0.37
	1-1/2"	= 0.10	3-1/2"	= 0.50
	2"	= 0.164	4"	= 0.65
	2-1/2"	= 0.24	6"	= 1.46

+ APPROXIMATELY 13 GALLONS REMOVED

WELL DEVELOPMENT DATA SHEET

Project NAVISTAR/BNR Date 7/19/94 Page 1 of 1
Project Number CE0299.004 Well Number GM-8

Well Inside Diameter 2" Air Temperature 75°
Depth of Well 17.10' Weather OVERCAST HUMID
Initial Water Level 11.68' Time 1355
Final Water Level — Time 1530
Water Column in Well 5.42' Gallons in Well 0.89
Development Personnel K. AIRNEY

17.10
-11.68
5.42
X.164
.89
X10
8.9 GAL

WITHDRAWAL OF WELL VOLUMES

	Volume No.	Volume No.	Volume No.	Volume No.	Volume No.
	INITIAL	4	6	10.5	
Time End	1410	1428	1446	15:30	
Flushing					
Temperature	72.0	70.0	72.0	70.8	
pH	6.60	7.01	6.38	7.08	
Conductivity	1150	990	1010	980	
Odor	HYDROCARBON WATER	SAME	SAME	SAME	
Color	BLACK	SAME	SAME	SAME	
Other	SHEEN ON WATER	SAME	SAME	SAME	

	Volume No.	Volume No.	Volume No.	Volume No.	Volume No.
Time end Flushing					
Temperature					
pH					
Conductivity					
Odor					
Color					
Other					

Remarks: BAILED DRY AFTER 4.5 VOLUMES REMOVED. 1432
* WATER WAS EXTREMELY DARK BLACK
RETURNED AT 1442

WELL CASING VOLUMES

GAL./FT		
	1-1/4" = 0.077	3" = 0.37
	1-1/2" = 0.10	3-1/2" = 0.50
	2" = 0.164	4" = 0.65
	2-1/2" = 0.24	6" = 1.46

BAILED DRY AGAIN AT 1450; ABOUT 6.5 VOLUMES REMOVED TOTAL

1525 BAILED DRY A THIRD TIME ~~[illegible]~~ ABOUT 11 VOLUMES REMOVED

WELL DEVELOPMENT DATA SHEET

Project CI0299.004 Date 7/18/94 Page 1 of 1
Project Number [illegible] Well Number GM-9

Well Inside Diameter 2" Air Temperature 250°F
Depth of Well 19.86 Weather SUNNY
Initial Water Level 12.61 Time 12:30
Final Water Level 12.60 Time 1300
Water Column in Well 7.25 Gallons in Well 1.19
Development Personnel R. SAWYER

19.86
12.61
7.25
.164
1.19
x 10
11.9 gal

WITHDRAWAL OF WELL VOLUMES

	Volume No.	Volume No.	Volume No.	Volume No.	Volume No.
	INITIAL	2	4	6	8
Time End	1234	1240	1245	1250	1254
Flushing	—	—	—	—	—
Temperature	—	—	—	—	—
pH	—	—	—	—	—
Conductivity	—	—	—	—	—
Odor	HYDROCARBON LIKE	SAME	SAME	SAME	SAME
Color	BROWN/BLACK	SAME	SAME	SAME	SAME
Other	THIN SHEEN ON WATER	SAME	SAME	SAME	SAME

	Volume No.	Volume No.	Volume No.	Volume No.	Volume No.
	10				
Time end	1258				
Flushing	SAME	—	—	—	—
Temperature	—	—	—	—	—
pH	—	—	—	—	—
Conductivity	—	—	—	—	—
Odor	SAME	—	—	—	—
Color	SAME	—	—	—	—
Other	SAME	—	—	—	—

Remarks: NO pH/COND/Temp READINGS TAKEN, METER NOT AVAILABLE.

PID 5.2 ppm in WELL AFTER CAP WAS REMOVED

WELL CASING VOLUMES

GAL./FT				
	1-1/4"	= 0.077	3"	= 0.37
	1-1/2"	= 0.10	3-1/2"	= 0.50
	2"	= 0.164	4"	= 0.65
	2-1/2"	= 0.24	6"	= 1.46

*APPROXIMATELY 12.5-13 gallons REMOVED

WELL DEVELOPMENT DATA SHEET

Project Number CIOD99.004 Date 7/5/94 Page 1 of 1
Project Number NAVSTAR Well Number GM 10

Well Inside Diameter 2" Air Temperature 70
Depth of Well 19.81 Weather PT CLOUDY
Initial Water Level 12.29 Time 6:00 PM
Final Water Level 15.57 Time 6:30 PM
Water Column in Well 7.51 Gallons in Well 1.2
Development Personnel K ADNEY

1981
1229
7.51
.16
1.2
x10
12 gal

WITHDRAWAL OF WELL VOLUMES

	Volume No.	Volume No.	Volume No.	Volume No.	Volume No.
	MATERIAL	2	4	.6	8
Time End Flushing	6:05	610	614	620	624
Temperature	—	—	—	—	—
pH	—	—	—	—	—
Conductivity	—	—	—	—	—
Odor	HYDROCARBON	SAME	STRONG SMELL	SAME	SAME
Color	CLEAR BLACK	BLACK	SAME	SAME	SAME
Other	SHEEN ON TOP OF WATER		SAME	SAME	SAME

	Volume No.	Volume No.	Volume No.	Volume No.	Volume No.
	10				
Time end Flushing	629				
Temperature	—	—	—	—	—
pH	—	—	—	—	—
Conductivity	—	—	—	—	—
Odor	SAME	—	—	—	—
Color	SAME	—	—	—	—
Other	SAME	—	—	—	—

15 GALLONS REMOVED

Remarks: - NO PH, COND OR TEMP RECORDED;
- METER IS NOT WORKING
PID READING NOT RECORDED

WELL CASING VOLUMES

GAL./FT		
	1-1/4" = 0.077	3" = 0.37
	1-1/2" = 0.10	3-1/2" = 0.50
	2" = 0.164	4" = 0.65
	2-1/2" = 0.24	6" = 1.46

WELL DEVELOPMENT DATA SHEET

Project MAUSTAL/BAIR Date 7-15-94 Page 1 of 1
Project Number CT0299.004 Well Number EMW 11

Well Inside Diameter 2" Air Temperature 75°
Depth of Well 17.30' Weather PARTLY CLDY
Initial Water Level 14.25' Time ~~[illegible]~~ 4:25PM
Final Water Level 17.14 Time 5:30 PM
Water Column in Well 3.05' Gallons in Well 0.49
Development Personnel K ARNEY

17.30
14.25
3.05FT
.16
4.88
X10
4.88 ~5gal

WITHDRAWAL OF WELL VOLUMES

	Volume No.	Volume No.	Volume No.	Volume No.	Volume No.
	Initial	2	4	6	8
Time End	430	436	443	449	456
Flushing	—	—	—	—	—
Temperature	—	—	—	—	—
pH	—	—	—	—	—
Conductivity	—	—	—	—	—
Odor	—	—	—	—	—
Color	CLEAR	BROWN	SAME	SAME	SAME
Other	—	—	—	—	—

	Volume No.	Volume No.	Volume No.	Volume No.	Volume No.
	10				
Time end	525				
Flushing	—	—	—	—	—
Temperature	—	—	—	—	—
pH	—	—	—	—	—
Conductivity	—	—	—	—	—
Odor	—	—	—	—	—
Color	SAME	—	—	—	—
Other	—	—	—	—	—

Remarks: RED 25ppm (AFTER CAP REMOVED) IN WELL
NO PARAMETERS TAKEN.
* METER BROKE (RETURNED 5:20)
→ BAILED DRY AT 5:05

WELL CASING VOLUMES

GAL./FT				
	1-1/4"	= 0.077	3"	= 0.37
	1-1/2"	= 0.10	3-1/2"	= 0.50
	2"	= 0.164	4"	= 0.65
	2-1/2"	= 0.24	6"	= 1.46

WELL DEVELOPMENT DATA SHEET

Project NAVISTAR/BNR Date 7/15/94 Page 1 of 1
Project Number CI0299.004 Well Number GM12

Well Inside Diameter 2" Air Temperature 80°F
Depth of Well 22.59 Weather SUNNY CLEAR
Initial Water Level 14.15 Time 1200PM
Final Water Level 14.35 Time 1454
Water Column in Well 8.44 Gallons in Well 1.38
Development Personnel R ARNEY

TD 22.59
- 14.15
8.44 FT
x .164
1.38
x 10
13.8 GAL

WITHDRAWAL OF WELL VOLUMES

	Volume No. 1	Volume No. 2	Volume No. 3	Volume No. 4	Volume No. 5
Time End Flushing	1402	14:15	14:21	1426	1401
Temperature	79.0	71.0	67.6	66.8	63.0
pH	7.20	7.30	7.05	7.01	7.00
Conductivity	1020	980	1050	980	980
Odor	HYDROCARBON	HYDRO	SAME	SAME	SAME
Color	BLACK	BLK	SAME	SAME	SAME
Other	SHEEN ON WATER	SHEEN	SAME	SAME	SAME
	1.6 gal	4 GAL	5.5	7.0 gal	8.5

INITIAL
1230
82.3
7.50
1050
HYDRO
BLACK

	Volume No. 6	Volume No. 7	Volume No. 10	Volume No. 11	Volume No.
Time end Flushing	1436	1441	1446	14:52	
Temperature	64.7	62.0	61.5	61.9	
pH	7.05	6.99	7.00	7.03	
Conductivity	980	950	980	980	
Odor	SAME	SAME	SAME	SAME	
Color	SAME	SAME	SAME	SAME	
Other	SAME	SAME	SAME	SAME	
	10g	11.5g	13.2g	15g	

Remarks:
- STOPPED AT 1240 PM STRONG HYDROCARBON-LIKE ODOR
1355 RETURNED TO WELL ; 30ppm AN WELL
AFTER REMOVING CAP

WELL CASING VOLUMES

GAL./FT		
	1-1/4" = 0.077	3" = 0.37
	1-1/2" = 0.10	3-1/2" = 0.50
	2" = 0.164	4" = 0.65
	2-1/2" = 0.24	6" = 1.46

- APPROXIMATELY 15 GALLONS REMOVED FROM WELL

WELL DEVELOPMENT DATA SHEET

Project: ST0299.004 Date: 7/18/91 Page 1 of 1
Project Number: NAVSTAR/BNL Well Number: GM-13

Well Inside Diameter: 2" Air Temperature: 85°F
Depth of Well: 19.29 Weather: SUNNY
Initial Water Level: 12.77' Time: 1330
Final Water Level: 15.40' Time: 14:10
Water Column in Well: 6.52' Gallons in Well: 1.07
Development Personnel: K. ARNEY

19.29
12.77
6.52
X .164
1.07
X 10
10.7

WITHDRAWAL OF WELL VOLUMES

	Volume No.	Volume No.	Volume No.	Volume No.	Volume No.
	INITIAL	2	4	6	8
Time End	1330	1353	1356	1359	1403
Flushing	—	—	—	—	—
Temperature	—	—	—	—	—
pH	—	—	—	—	—
Conductivity	—	—	—	—	—
Odor	WEAK HYDROCARBON	SAME	SAME	SAME	SAME
Color	BROWN	SAME	SAME	SAME	SAME
Other	—	SILTY	SAME	SAME	SAME

*PID: 4.8 ppm IN WELL AFTER CAP REMOVED

	Volume No.	Volume No.	Volume No.	Volume No.	Volume No.
	10				
Time end	1405				
Flushing	—	—	—	—	—
Temperature	—	—	—	—	—
pH	—	—	—	—	—
Conductivity	—	—	—	—	—
Odor	SAME	—	—	—	—
Color	SAME	—	—	—	—
Other	SAME	—	—	—	—

Remarks: *NO PARAMETERS TAKEN; METER NOT AVAILABLE

+ 12 GALLONS REMOVED

WELL CASING VOLUMES

GAL./FT				
	1-1/4"	= 0.077	3"	= 0.37
	1-1/2"	= 0.10	3-1/2"	= 0.50
	2"	= 0.164	4"	= 0.65
	2-1/2"	= 0.24	6"	= 1.46

WELL DEVELOPMENT DATA SHEET

Project CIO 8-294 004 Date 7/19/94 Page 1 of 1
Project Number [illegible] / BNR Well Number GM-14

Well Inside Diameter 2" Air Temperature 85°
Depth of Well [illegible] Weather SUNNY
Initial Water Level [illegible] Time 1430
Final Water Level — Time 1615
Water Column in Well 6.12' Gallons in Well 1.00
Development Personnel K. ARNEY

17.61
11.49
6.12
X.164
X 1.00 gal
10
10.0 gal

WITHDRAWAL OF WELL VOLUMES

	Volume No.	Volume No.	Volume No.	Volume No.	Volume No.
	INITIAL	2	4	6	8
Time End Flushing	1436	1440	1443	1615	
Temperature	—	—	—	—	—
pH	—	—	—	—	—
Conductivity	—	—	—	—	—
Odor	—	—	—	—	—
Color	CLOUDY	BROWN	BROWN	BROWN	—
Other	—	SILTY	SILTY	N	—

PID 0.0 ppm AFTER WELL CAP REMOVAL

	Volume No.	Volume No.	Volume No.	Volume No.	Volume No.
	10				
Time end Flushing	—	—	—	—	—
Temperature	—	—	—	—	—
pH	—	—	—	—	—
Conductivity	—	—	—	—	—
Odor	—	—	—	—	—
Color	—	—	—	—	—
Other	—	—	—	—	—

Remarks: * NO PARAMETERS RECORDED; METER NOT AVAILABLE

* DRY AT 1455, 5 GALLONS REMOVED

WELL CASING VOLUMES

GAL./FT		
	1-1/4" = 0.077	3" = 0.37
	1-1/2" = 0.10	3-1/2" = 0.50
	2" = 0.164	4" = 0.65
	2-1/2" = 0.24	6" = 1.46

— RETURNED AT 16:05

* BAILED DRY AT 16.15, A TOTAL OF 6 GALLONS REMOVED

WELL DEVELOPMENT DATA SHEET

Project NAVISTAR/BNR Date 7/18/94 Page 1 of 1
Project Number [illegible]299.004 Well Number GM-15

Well Inside Diameter 2" Air Temperature 85°F
Depth of Well 20.53' Weather SUNNY
Initial Water Level 9.54' Time 15:20
Final Water Level 14.95' Time 16:30
Water Column in Well 10.99' Gallons in Well 1.8
Development Personnel K ADNEY

20.53
− 9.54
10.99

X .164
1.8

X 10
18.0 gal

WITHDRAWAL OF WELL VOLUMES

	Volume No.	Volume No.	Volume No.	Volume No.	Volume No.
Time End	INITIAL 15:26	2 1529	4 1532	.6 1625	8 1628
Flushing	—	—	—	—	—
Temperature	—	—	—	—	—
pH	—	—	—	—	—
Conductivity	—	—	—	—	—
Odor	—	—	—	—	—
Color	CLEAR	BROWN	BROWN	BROWN	BROWN
Other	—	SILTY	SILTY	SILTY	SILTY

PID 0.1 ppm AFTER WELL CAP REMOVAL

	Volume No.	Volume No.	Volume No.	Volume No.	Volume No.
Time end	10 1630				
Flushing	—	—	—	—	—
Temperature	—	—	—	—	—
pH	—	—	—	—	—
Conductivity	—	—	—	—	—
Odor	—	—	—	—	—
Color	BROWN	—	—	—	—
Other	SILTY	—	—	—	—

— NO PARAMETERS TAKEN.

Remarks: 14 GALLONS REMOVED; STOPPED HERE BECAUSE WELL WENT DRY.

WELL CASING VOLUMES

GAL./FT			
	1-1/4" = 0.077	3"	= 0.37
	1-1/2" = 0.10	3-1/2"	= 0.50
	2" = 0.164	4"	= 0.65
	2-1/2" = 0.24	6"	= 1.46

— RETURNED AT 14:25
COMPLETED DEVELOPMENT AT 16:30; 10 VOLUMES REMOVED

WELL DEVELOPMENT DATA SHEET

Project NAVSTAD/BNC Date 7/19/94 Page 1 of 1
Project Number 120259.004 Well Number GM-16

Well Inside Diameter 2" Air Temperature 75°
Depth of Well 15.55' Weather HUMID/OVERCAST
Initial Water Level 6.90 Time 0850
Final Water Level 11.20 Time 0945
Water Column in Well 8.65 Gallons in Well 1.42
Development Personnel K ARNEY

1555
690
8.65
X .164
1.42
X 10
14.2 gal

WITHDRAWAL OF WELL VOLUMES

	Volume No.	Volume No.	Volume No.	Volume No.	Volume No.
	INITIAL	4	7	8.65	10
Time End Flushing	0903	0910	0920	0930	0935
Temperature	55.8	55.8	51.8	51.8	51.8
pH	5.98	7.08	7.06	7.00	5.98
Conductivity	1900	1980	1910	1980	1980
Odor	—	—	—	—	—
Color	CLEAR TO SILTY	DK BRN	DK BROWN	DK BRN	DK BRN
Other	—	SILTY W/ CRST	SILTY W/CLAY FINES	SILTY W/CLAY	SILTY W/CLAY

	Volume No.	Volume No.	Volume No.	Volume No.	Volume No.
	12				
Time end Flushing	0940				
Temperature	52.8				
pH	5.88				
Conductivity	1980				
Odor	—				
Color	DK BRN				
Other	SILTY W/CLAY				

Remarks:

12 VOLUMES EVACUATED (2 ADDITIONAL VOLUMES)

WELL CASING VOLUMES

GAL./FT		
	1-1/4" = 0.077	3" = 0.37
	1-1/2" = 0.10	3-1/2" = 0.50
	2" = 0.164	4" = 0.65
	2-1/2" = 0.24	6" = 1.46

WELL DEVELOPMENT DATA SHEET

Project NAVISTAR/BNR Date 7/19/94 Page 1 of 1
Project Number SI0299.004 Well Number GM-17

Well Inside Diameter 2" Air Temperature 70°F
Depth of Well 15.49' Weather OVERCAST & HUMID
Initial Water Level 11.31' Time 0800
Final Water Level — Time 1000
Water Column in Well 4.18 Gallons in Well 0.686
Development Personnel K. ARNEY

15.49
-11.31
4.18
x.164
.686
x10
6.86 gal

WITHDRAWAL OF WELL VOLUMES

	Volume No.	Volume No.	Volume No.	Volume No.	Volume No.
	INITIAL	4			
Time End	8825	828			
Flushing					
Temperature	57.8	54.4			
pH	5.88	5.68			
Conductivity	2480	2280			
Odor	—	—			
Color	CLEAR	LIBROWN			
Other	—	SILTY			

	Volume No.	Volume No.	Volume No.	Volume No.	Volume No.
Time end					
Flushing					
Temperature					
pH					
Conductivity					
Odor					
Color					
Other					

Remarks: * 08:31 WELL DRY; NEARLY 6 VOLUMES EVACUATED.

* RETURNED AT 10:00; APPROXIMATELY 1 BAILER FULL OF WATER REMOVED BEFORE WELL WENT DRY AGAIN

WELL CASING VOLUMES

GAL./FT			
	1-1/4" = 0.077	3"	= 0.37
	1-1/2" = 0.10	3-1/2"	= 0.50
	2" = 0.164	4"	= 0.65
	2-1/2" = 0.24	6"	= 1.46

WELL DEVELOPMENT DATA SHEET

Project NAVISTAR/BNR Date 7/18/94 Page 1 of 1
Project Number CI0299.004 Well Number GMF-18

Well Inside Diameter 2" Air Temperature 75°
Depth of Well 16.65' Weather SUNNY
Initial Water Level 13.99' Time 17:45
Final Water Level _____ Time 1820
Water Column in Well 2.66' Gallons in Well 0.43
Development Personnel KARNEY

5/15
16.65
13.99
2.66
X .164
0.43
X 10
4.3 PID
0.8 ppm IN WELL AFTER CAP REMOVAL

WITHDRAWAL OF WELL VOLUMES

	Volume No.	Volume No.	Volume No.	Volume No.	Volume No.
	INITIAL	2	4	6	8
Time End	1750	1755	1758	1807	1812
Flushing	—	—	—	—	—
Temperature	—	—	—	—	—
pH	—	—	—	—	—
Conductivity	—	—	—	—	—
Odor	—	—	—	—	—
Color	LT BROWN	LT BROWN	LT BROWN	LT BROWN	LT BROWN
Other	—	SANDY	SANDY/SILTY	SANDY/SILTY	SANDY/SILTY

	Volume No.	Volume No.	Volume No.	Volume No.	Volume No.
	10				
Time end	1820				
Flushing	—	—	—	—	—
Temperature	—	—	—	—	—
pH	—	—	—	—	—
Conductivity	—	—	—	—	—
Odor	—	—	—	—	—
Color	SANDY SILTY	—	—	—	—
Other	—	—	—	—	—

Remarks: NO PARAMETERS RECORDED.
- BAILED DRY 2 TIMES.
* APPROXIMATELY 5½ GALLONS REMOVED FROM WELL.

WELL CASING VOLUMES

GAL./FT				
	1-1/4"	= 0.077	3"	= 0.37
	1-1/2"	= 0.10	3-1/2"	= 0.50
	2"	= 0.164	4"	= 0.65
	2-1/2"	= 0.24	6"	= 1.46

WELL DEVELOPMENT DATA SHEET

Project NAVISTAR / BNR Date 7/19/94 Page 1 of 1
Project Number CF0299.004 Well Number GM-19

Well Inside Diameter 2" Air Temperature 75°
Depth of Well 26.86' Weather OVERCAST + HUMID
Initial Water Level 20.10' Time 1115
Final Water Level 20.30' Time 1210
Water Column in Well 6.76' Gallons in Well 1.11
Development Personnel K. ANEY

26.86
− 20.10
6.76
× .164
1.11
× 10
11.1 gal

WITHDRAWAL OF WELL VOLUMES

	Volume No.	Volume No.	Volume No.	Volume No.	Volume No.
	INITIAL	5	7.5	10	
Time End	1130	1140	1150	1200	
Flushing					
Temperature	75.7	68.2	65.1	68.0	
pH	7.08	6.60	6.90	7.15	
Conductivity	870	880	800	880	
Odor	HYDROCARBON LIKE	SAME	SAME	SAME	
Color	BLACK	SAME	SAME	SAME	
Other	SHEEN ON WATER	SAME	SAME SAND + SHEEN	SAME	

	Volume No.	Volume No.	Volume No.	Volume No.	Volume No.
Time end Flushing					
Temperature					
pH					
Conductivity					
Odor					
Color					
Other					

Remarks:

APPROXIMATELY 11 GALLONS REMOVED

WELL CASING VOLUMES

GAL./FT		
	1-1/4" = 0.077	3" = 0.37
	1-1/2" = 0.10	3-1/2" = 0.50
	2" = 0.164	4" = 0.65
	2-1/2" = 0.24	6" = 1.46

APPENDIX D

Groundwater Sampling Logs

GERAGHTY & MILLER, INC.
Environmental Services

WATER SAMPLING LOG

Project/No. NAVISTAR/BNR CI0299.004 Page 1 of 1

Site Location ROCK ISLAND, IL

Site/Well No. GM-1 Coded/ Replicate No. - Date 7/21/94

Weather CLEAR & HUMID Time Sampling Began 17:17 Time Sampling Completed 17:43

EVACUATION DATA

Description of Measuring Point (MP) NORTH SIDE OF TOP OF CASING

Height of MP (Above)/Below Land Surface _____ MP Elevation -

Total Sounded Depth of Well Below MP 19.25 Water-Level Elevation 11.74 (11.69' PRODUCT)

Held _____ Depth to Water Below MP 11.69 Diameter of Casing 2"

Wet _____ Water Column in Well 7.56 Gallons Pumped/(Bailed) Prior to Sampling 3.6

Gallons per Foot 0.16

Gallons in Well 1.21 Sampling Pump Intake Setting (feet below land surface) -

Evacuation Method DISPOSABLE BAILER & POLYPROPYLENE CORD

SAMPLING DATA/FIELD PARAMETERS

Color BROWN Odor HYDROCARBON LIKE Appearance _____ Temperature _____ °F/°C

Other (specific ion; OVA; HNU; etc.) OILY FILM

Specific Conductance, umhos/cm _____ pH _____

Sampling Method and Material DISPOSABLE BAILER & POLYPROPYLENE CORD

Constituents Sampled	Container Description From Lab X or G&M ____	Preservative
VOCS (8240)	2- 40ML VIALS	HCL
PNAS (8310)	2- 1L AMBER GLASS BOTTLES	-
PCBS (8080)	1- 1L AMBER GLASS BOTTLE	-

Remarks 0.05 OF FREE PHASE PRODUCT IN WELL

Sampling Personnel K. ARNEY/K. LALA

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.06	(2") = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

GERAGHTY & MILLER, INC.
Environmental Services

WATER SAMPLING LOG

Project/No. NAVISTAR/BNR

Page 1 of 1

Site Location ROCK ISLAND, IL

Site/Well No. GM-2

Coded/ Replicate No. -

Date 7/21/94

Weather CLEAR & CLOUDY

Time Sampling Began 16:43

Time Sampling Completed 17:00

EVACUATION DATA

Description of Measuring Point (MP) NORTH SIDE OF TOP OF CASING

Height of MP Above/Below Land Surface _____

MP Elevation _____

Total Sounded Depth of Well Below MP 20.02

Water-Level Elevation 11.78' (11.74' FREE PHASE PRODU

Held _____ Depth to Water Below MP 11.74

Diameter of Casing 2"

Wet _____ Water Column in Well 8.28

Gallons Pumped/Bailed Prior to Sampling 4.0

Gallons per Foot 0.16

Gallons in Well 1.32

Sampling Pump Intake Setting (feet below land surface) _____

Evacuation Method DISPOSABLE BAILER & POLYPROPYLENE CORD

SAMPLING DATA/FIELD PARAMETERS

Color BROWNISH Odor HYDROCARBON LIKE Appearance _____ Temperature _____ °F/°C

Other (specific ion; OVA; HNU; etc.) OILY FILM;BROWN

Specific Conductance, umhos/cm _____ pH _____

Sampling Method and Material DISPOSABLE BAILER & POLYPROPYLENE CORD

Constituents Sampled	Container Description From Lab X or G&M ____	Preservative
VOCS (8240)	2- 40ML VIALS	HCL
PNAS (8310)	2- 1L AMBER GLASS	-
PCBS (8080)	1- 1L AMBER GLASS	-

Remarks 0.04' OF PRODUCT IN WELL

Sampling Personnel K. ARNEY/K. LALA

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

GERAGHTY & MILLER, INC.
Environmental Services

WATER SAMPLING LOG

Project/No. NAVISTAR/BNR CI0299.004 Page 1 of 1

Site Location ROCKISLAND, IL

Site/Well No. GM-3 Coded/ Replicate No. - Date 7/21/94

Weather CLOUDY & HUMID Time Sampling Began 16:12 Time Sampling Completed 16:25

EVACUATION DATA

Description of Measuring Point (MP) NORTH SIDE TOC

Height of MP Above/Below Land Surface _____ MP Elevation _____

Total Sounded Depth of Well Below MP 20.25 Water-Level Elevation 13.52' (13.20'FREE PHASE PRODU

Held _____ Depth to Water Below MP 13.20 Diameter of Casing 2"

Wet _____ Water Column in Well 7.05 Gallons Pumped/Bailed Prior to Sampling 3.3

Gallons per Foot 0.16

Gallons in Well 1.3 Sampling Pump Intake Setting (feet below land surface) -

Evacuation Method DISPOSABLE BAILER & POLYPROPYLENE CORD

SAMPLING DATA/FIELD PARAMETERS

Color GRAY Odor HYDROCARBON LIKE-STRONG Appearance _____ Temperature _____ °F/°C

Other (specific ion; OVA; HNU; etc.) FILM

Specific Conductance, umhos/cm _____ pH _____

Sampling Method and Material DISPOSABLE BAILER & POLYPROPYLENE CORD

Constituents Sampled	Container Description From Lab X or G&M ____	Preservative
VOCS (8240)	2- 40ML VIALS	HCL
PNAS (8310)	2- 1L AMBER BOTTLES	-
PCBS (8280)	1- 1L AMBER BOTTLES	-

Remarks _____

Sampling Personnel K. ARNEY/K. LALA

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

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Environmental Services

WATER SAMPLING LOG

Project/No. NAVISTAR/BNR CI0299.004 Page 1 of 1

Site Location ROCKISLAND, IL

Site/Well No. GM-4 Coded/ Replicate No. - Date 7/21/94

Weather OVERCAST & HUMID Time Sampling Began 15:30 Time Sampling Completed 15:45

EVACUATION DATA

Description of Measuring Point (MP) NORTHSIDE OF TOP OF CASING

Height of MP Above/Below Land Surface _____ MP Elevation _____

Total Sounded Depth of Well Below MP 19.84 Water-Level Elevation 12.70

Held _____ Depth to Water Below MP 12.70 Diameter of Casing 2"

Wet _____ Water Column in Well 7.14 Gallons Pumped/Bailed Prior to Sampling 3.5

Gallons per Foot 0.16

Gallons in Well 1.14 Sampling Pump Intake Setting (feet below land surface) -

Evacuation Method DISPOSABLE BAILER & POLYPROPYLENE CORD

SAMPLING DATA/FIELD PARAMETERS

Color CLEAR Odor HYDROCARBON LIKE Appearance _____ Temperature _____ °F/°C

Other (specific ion; OVA; HNU; etc.) SHEEN

Specific Conductance, umhos/cm _____ pH _____

Sampling Method and Material DISPOSABLE BAILER & POLYPROPYLENE CORD

Constituents Sampled	Container Description From Lab X or G&M ____	Preservative
VOCS (8240)	2- 40ML VIAL	HCL
PNAS (8310)	2- 1L AMBER GLASS	-
PCBS (8080)	1- 1L AMBER GLASS	-

Remarks _____

Sampling Personnel K. ARNEY/K. LALA

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

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WATER SAMPLING LOG

Project/No. NAVISTAR/BNR CI0299.004 Page 1 of 1

Site Location ROCKISLAND, IL

Site/Well No. GM-5 Coded/ Replicate No. - Date 7/22/94

Weather SUNNY, HUMID 83°F Time Sampling Began 8:07 Time Sampling Completed 8:25

EVACUATION DATA

Description of Measuring Point (MP) NORTH SIDE OF TOP OF CASING

Height of MP Above/Below Land Surface _____ MP Elevation _____

Total Sounded Depth of Well Below MP 17.90 Water-Level Elevation 13.44(13.42 PRODUCT)

Held _____ Depth to Water Below MP 13.42 Diameter of Casing 2"

Wet _____ Water Column in Well 4.48 Gallons Pumped/Bailed Prior to Sampling 2.25

Gallons per Foot 0.16

Gallons in Well 0.72 Sampling Pump Intake Setting (feet below land surface) -

Evacuation Method DISPOSABLE BAILER & POLYPROPYLENE CORD

SAMPLING DATA/FIELD PARAMETERS

Color GRAY Odor HYDROCARBON LIKE Appearance _____ Temperature _____ °F/°C

Other (specific ion; OVA; HNU; etc.) _____

Specific Conductance, umhos/cm _____ pH _____

Sampling Method and Material DISPOSABLE BAILER & POLYPROPYLENE CORD

Constituents Sampled	Container Description From Lab X or G&M ____	Preservative
VOCS (8240)	2- 40ML VIALS	HCL
PNAS (8310)	2- 1L AMBER GLASS	-
PCBS (8080)	1- 1L AMBER GLASS	-

Remarks _____

Sampling Personnel K. ARNEY/K. LALA

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

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Environmental Services

WATER SAMPLING LOG

Project/No. NAVISTAR/BNR CI0299.004 Page 1 of 1

Site Location ROCKISLAND, IL

Site/Well No. GM-6 Coded/ Replicate No. - Date 7/22/94

Weather SUNNY,HUMID 83F Time Sampling Began 8:46 Time Sampling Completed 9:10

EVACUATION DATA

Description of Measuring Point (MP) NORTH SIDE OF TOP OF CASING

Height of MP Above/Below Land Surface _____ MP Elevation _____

Total Sounded Depth of Well Below MP 18.00 Water-Level Elevation 16.36(13.09 PRODUCT)

Held _____ Depth to Water Below MP 13.09 Diameter of Casing 2"

Wet _____ Water Column in Well 4.91 Gallons Pumped/Bailed Prior to Sampling 2.4

Gallons per Foot 0.16

Gallons in Well 0.79 Sampling Pump Intake Setting (feet below land surface) _____

Evacuation Method DISPOSABLE BAILER & POLYPROPYLENE CORD

SAMPLING DATA/FIELD PARAMETERS

Color WATER-CLEAR Odor HYDROCARBON LIKE Appearance _____ Temperature _____ °F/°C

Other (specific ion; OVA; HNU; etc.) FILM

Specific Conductance, umhos/cm _____ pH _____

Sampling Method and Material DISPOSABLE BAILER & POLYPROPYLENE CORD

Constituents Sampled	Container Description From Lab X or G&M ____	Preservative
(8015A) QUALITATIVE FINGERPRINT	1- 40ML VIAL	-
VOCS (8240)	2- 40ML VIALS	HCL
PNAS (8310)	2- 1L AMBER GLASS	-
PCBS (8080)	1- 1L AMBER GLASS	-

Remarks _____

Sampling Personnel K. ARNEY/K. LALA

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

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WATER SAMPLING LOG

Project/No. NAVISTAR/BNR CI0299.004 Page 1 of 1

Site Location ROCK ISLAND, IL

Site/Well No. GM-7 Coded/ Replicate No. MS/MSD-1 Date 7/21/94

Weather SUNNY, HUMID 80F Time Sampling Began 8:56 Time Sampling Completed 9:25

EVACUATION DATA

Description of Measuring Point (MP) NORTH SIDE OF TOP OF CASING

Height of MP Above/Below Land Surface _____ MP Elevation _____

Total Sounded Depth of Well Below MP 24.89 Water-Level Elevation _____

Held _____ Depth to Water Below MP 17.35 Diameter of Casing 2"

Wet _____ Water Column in Well 7.54 Gallons Pumped/Bailed Prior to Sampling 3.6

Gallons per Foot 0.16

Gallons in Well 1.21 Sampling Pump Intake Setting (feet below land surface) -

Evacuation Method DISPOSABLE BAILER & POLYPROPYLENE CORD

SAMPLING DATA/FIELD PARAMETERS

Color CLOUDY Odor HYDROCARBON LIKE Appearance _____ Temperature _____ °F/°C

Other (specific ion; OVA; HNU; etc.) FILM/SHEEN

Specific Conductance, umhos/cm _____ pH _____

Sampling Method and Material DISPOSABLE BAILER & POLYPROPYLENE CORD

Constituents Sampled	Container Description From Lab X or G&M ____	Preservative
VOCS (8240)	2- 40ML VIALS	HCL
PNAS (8310)	2- 1L AMBER GLASS BOTTLES	-
PCBS (8080)	1- 1L AMBER GLASS BOTTLE	-

Remarks DTW=17.38; INCORRECT METER READING FOR TEMP. DUE TO INSTRUMENT MALFUNCTION

Sampling Personnel K. ARNEY/K. LALA

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

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WATER SAMPLING LOG

Project/No. NAVISTAR/BNR CI0299.004 Page 1 of 1

Site Location ROCK ISLAND, IL

Site/Well No. GM-8 Coded/ Replicate No. _____ Date 7/21/94

Weather SUNNY,HUMID 85F Time Sampling Began 11:45 Time Sampling Completed 12:06

EVACUATION DATA

Description of Measuring Point (MP) NORTH SIDE OF TOP OF CASING

Height of MP Above/Below Land Surface _____ MP Elevation _____

Total Sounded Depth of Well Below MP 17.41 Water-Level Elevation _____

Held _____ Depth to Water Below MP 11.69 Diameter of Casing 2"

Wet _____ Water Column in Well 5.72 Gallons Pumped/Bailed Prior to Sampling 2.7

Gallons per Foot 0.16

Gallons in Well 0.92 Sampling Pump Intake Setting (feet below land surface) -

Evacuation Method DISPOSABLE BAILER & POLYPROPYLENE CORD

SAMPLING DATA/FIELD PARAMETERS

Color BLACK Odor HYDROCARBON LIKE Appearance _____ Temperature _____ °F/°C

Other (specific ion; OVA; HNU; etc.) SHEEN & SAND GRAINS

Specific Conductance, umhos/cm _____ pH _____

Sampling Method and Material DISPOSABLE BAILER & POLYPROPYLENE CORD

Constituents Sampled	Container Description From Lab X or G&M ____	Preservative
VOCS (8240)	2- 40ML VIALS	HCL
PNAS (8310)	2- 1L AMBER GLASS BOTTLES	-
PCBS (8080)	1- 1L AMBER GLASS BOTTLE	-

Remarks TD=17.41; DTW-11.69

Sampling Personnel K.ARNEY/K.LALA

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

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WATER SAMPLING LOG

Project/No. NAVISTAR/BNR

Page 1 of 1

Site Location ROCK ISLAND, IL

Site/Well No. GM-9

Coded/ Replicate No. -

Date 7/23/94

Weather SUNNY, 80F

Time Sampling Began 0905

Time Sampling Completed 0908

EVACUATION DATA

Description of Measuring Point (MP) NORTH SIDE OF TOP OF CASING

Height of MP Above/Below Land Surface _____

MP Elevation _____

Total Sounded Depth of Well Below MP 19.86

Water-Level Elevation _____

Held _____ Depth to Water Below MP 12.59

Diameter of Casing 2"

Wet _____ Water Column in Well 7.27

Gallons Pumped/Bailed Prior to Sampling 6.0

Gallons per Foot 0.16

Gallons in Well 1.16

Sampling Pump Intake Setting (feet below land surface) _____

Evacuation Method DISPOSABLE BAILERS & POLYPROPYLENE CORD

SAMPLING DATA/FIELD PARAMETERS

Color GRAY Odor HYDROCARBON STRONG Appearance _____ Temperature _____ °F/°C

Other (specific ion; OVA; HNU; etc.) LITTLE SILT & SHEEN

Specific Conductance, umhos/cm _____ pH _____

Sampling Method and Material DISPOSABLE BAILERS & POLYPROPYLENE CORD

Constituents Sampled	Container Description From Lab X or G&M ____	Preservative
VOCS (8240)	2- 40ML GLASS VIALS	HCL
PNAS (8310)	2- 1L AMBER GLASS	-
PCBS (8080)	1- 1L AMBER GLASS	-

Remarks _____

Sampling Personnel K. ARNEY/K. LALA

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

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WATER SAMPLING LOG

Project/No. NAVISTAR/BNR

Page 1 of 1

Site Location ROCK ISLAND, IL

Site/Well No. GM-10

Coded/ Replicate No. -

Date 7/23/94

Weather SUNNY, 80°F

Time Sampling Began 9:25

Time Sampling Completed 9:52

EVACUATION DATA

Description of Measuring Point (MP) NORTH SIDE TOP OF CASING

Height of MP Above/Below Land Surface _____

MP Elevation _____

Total Sounded Depth of Well Below MP 19.81

Water-Level Elevation _____

Held _____ Depth to Water Below MP 12.23

Diameter of Casing 2"

Wet _____ Water Column in Well 7.58

Gallons Pumped/~~Bailed~~ Prior to Sampling 6.0

Gallons per Foot 0.16

Gallons in Well 1.21

Sampling Pump Intake Setting (feet below land surface) -

Evacuation Method DISPOSABLE BAILER & POLYPROPYLENE CORD

SAMPLING DATA/FIELD PARAMETERS

Color GRAY/BLACK Odor HYDROCARBON Appearance _____ Temperature _____ °F/°C

Other (specific ion; OVA; HNU; etc.) FILM ON TOP OF WATER

Specific Conductance, umhos/cm _____ pH _____

Sampling Method and Material DISPOSABLE BAILER & POLYPROPYLENE CORD

Constituents Sampled	Container Description From Lab X or G&M ____	Preservative
VOCS (8240)	2- 40ML VIALS	HCL
PNAS (8310)	4- 500ML AMBER GLASS BOTTLES	-
PCBS (8080)	2- 500ML AMBER GLASS BOTTLES	-

Remarks _____

Sampling Personnel K. ARNEY/K. LALA

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

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WATER SAMPLING LOG

Project/No. NAVISTAR/BNR CI0299.004 Page 1 of 1

Site Location ROCK ISLAND, IL

Site/Well No. GM-11 Coded/ Replicate No. _____ Date 7/22/94

Weather PARTLY CLOUDY 75F Time Sampling Began 1703 Time Sampling Completed 1710

EVACUATION DATA

Description of Measuring Point (MP) NORTH SIDE OF TOP OF CASING

Height of MP Above/Below Land Surface _____ MP Elevation _____

Total Sounded Depth of Well Below MP 17.30 Water-Level Elevation _____

Held _____ Depth to Water Below MP 11.15 Diameter of Casing 2"

Wet _____ Water Column in Well 6.15 Gallons Pumped/Bailed Prior to Sampling _____

Gallons per Foot 0.16

Gallons in Well 0.98 Sampling Pump Intake Setting (feet below land surface) -

Evacuation Method DISPOSABLE BAILER & POLYPROPYLENE CORD

SAMPLING DATA/FIELD PARAMETERS

Color CLOUDY LT.BROWN Odor HYDROCARBON STRONG Appearance _____ Temperature _____ °F/°C

Other (specific ion; OVA; HNU; etc.) _____

Specific Conductance, umhos/cm _____ pH _____

Sampling Method and Material DISPOSABLE BAILER & POLYPROPYLENE CORD

Constituents Sampled	Container Description From Lab X or G&M ____	Preservative
VOCS (8240)	2- 40ML VIALS	HCL
PCBS (8080)	1- 1L AMBER GLASS	-
PNAS (8310)	2- 1L AMBER GLASS	-

Remarks _____

Sampling Personnel K. ARNEY/K. LALA

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

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Environmental Services

WATER SAMPLING LOG

Project/No. NAVISTAR/BNR CI0299.004 Page 1 of 1

Site Location ROCK ISLAND, IL

Site/Well No. GM-12 Coded/ Replicate No. GM-101 Date 7/22/94

Weather PARTLY CLOUDY 75F Time Sampling Began 1630 Time Sampling Completed 1645

EVACUATION DATA

Description of Measuring Point (MP) NORTH SIDE OF TOP OF CASING

Height of MP Above/Below Land Surface _____ MP Elevation _____

Total Sounded Depth of Well Below MP 22.59 Water-Level Elevation _____

Held _____ Depth to Water Below MP 14.22 Diameter of Casing 2"

Wet _____ Water Column in Well 8.37 Gallons Pumped/Bailed Prior to Sampling 4.05

Gallons per Foot 0.16

Gallons in Well 1.34 Sampling Pump Intake Setting (feet below land surface) -

Evacuation Method DISPOSABLE BAILER & POLYPROPYLENE CORD

SAMPLING DATA/FIELD PARAMETERS

Color GRAY Odor HYDROCARBON LIKE Appearance _____ Temperature _____ °F/°C

Other (specific ion; OVA; HNU; etc.) SILTY

Specific Conductance, umhos/cm _____ pH _____

Sampling Method and Material DISPOSABLE BAILER & POLYPROPYLENE CORD

Constituents Sampled	Container Description From Lab X or G&M ____	Preservative
VOCS (8240)	2- 40ML VIALS	HCL
PNAS (8310)	2- 1L AMBER GLASS	-
PCBS (8080)	1- 1L AMBER GLASS	-

Remarks _____

Sampling Personnel K.ARNEY/K.LALA

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

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Environmental Services

WATER SAMPLING LOG

Project/No. NAVISTAR/BNR CI0299.004 Page 1 of 1

Site Location ROCK ISLAND, IL

Site/Well No. GM-14 Coded/ Replicate No. - Date 7/22/94

Weather PARTLY CLOUDY 75°F Time Sampling Began 1540 Time Sampling Completed 1545

EVACUATION DATA

Description of Measuring Point (MP) NORTH SIDE TOP OF CASING

Height of MP Above/Below Land Surface _____ MP Elevation _____

Total Sounded Depth of Well Below MP 19.29 Water-Level Elevation _____

Held _____ Depth to Water Below MP 12.89 Diameter of Casing 2"

Wet _____ Water Column in Well 6.40 Gallons Pumped/Bailed Prior to Sampling 3.0

Gallons per Foot 0.16

Gallons in Well 1.02 Sampling Pump Intake Setting (feet below land surface) -

Evacuation Method DISPOSABLE BAILER & POLYPROPYLENE CORD

SAMPLING DATA/FIELD PARAMETERS

Color GRAY/BROWN Odor _____ Appearance _____ Temperature _____ °F/°C

Other (specific ion; OVA; HNU; etc.) SILTY

Specific Conductance, umhos/cm _____ pH _____

Sampling Method and Material DISPOSABLE BAILER & POLYPROPYLENE CORD

Constituents Sampled	Container Description From Lab X or G&M ____	Preservative
VOCS (8240)	2- 40ML VIALS	HCL
PNAS (8310)	2- 1L AMBER GLASS	-
PCBS (8080)	1- 1L AMBER GLASS	-

Remarks _____

Sampling Personnel K.ARNEY/K.LALA

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

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WATER SAMPLING LOG

Project/No. NAVISTAR/BNR CI0299.004 Page 1 of 1

Site Location ROCK ISLAND, IL

Site/Well No. GM-14 Coded/ Replicate No. _____ Date 7/22/94

Weather SUNNY, HUMID 80°F Time Sampling Began 1503 Time Sampling Completed 1515

EVACUATION DATA

Description of Measuring Point (MP) NORTH SIDE OF TOP OF CASING

Height of MP Above/Below Land Surface _____ MP Elevation _____

Total Sounded Depth of Well Below MP 12.61 Water-Level Elevation _____

Held _____ Depth to Water Below MP 11.50 Diameter of Casing 2"

Wet _____ Water Column in Well 6.11 Gallons Pumped/Bailed Prior to Sampling 3.0

Gallons per Foot 0.16

Gallons in Well 0.98 Sampling Pump Intake Setting (feet below land surface) -

Evacuation Method DISPOSABLE BAILER & POLYPROPYLENE CORD

SAMPLING DATA/FIELD PARAMETERS

Color GRAY Odor HYDROCARBON Appearance _____ Temperature _____ °F/°C

Other (specific ion; OVA; HNU; etc.) SLIGHT SILTY

Specific Conductance, umhos/cm _____ pH _____

Sampling Method and Material DISPOSABLE BAILER & POLYPROPYLENE CORD

Constituents Sampled	Container Description From Lab X or G&M ____	Preservative
VOCS (8240)	2- 40ML VIALS	HCL
PNAS (8310)	2- 1L AMBER GLASS	-
PCBS (8080)	1- 1L AMBER GLASS	-

Remarks _____

Sampling Personnel K.ARNEY/K.LALA

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

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WATER SAMPLING LOG

Project/No. NAVISTAR/BNR CI0299.004 Page 1 of 1

Site Location ROCK ISLAND, IL

Site/Well No. GM-15 Coded/ Replicate No. GM-99 Date 7/22/94

Weather PARTLY CLOUDY, 83°F Time Sampling Began 1427 Time Sampling Completed 1436

EVACUATION DATA

Description of Measuring Point (MP) NORTH SIDE OF TOP OF CASING

Height of MP Above/Below Land Surface _____ MP Elevation _____

Total Sounded Depth of Well Below MP 20.53 Water-Level Elevation _____

Held _____ Depth to Water Below MP 9.70 Diameter of Casing 2"

Wet _____ Water Column in Well 10.83 Gallons Pumped/Bailed Prior to Sampling 5.25

Gallons per Foot 0.16

Gallons in Well 1.73 Sampling Pump Intake Setting (feet below land surface) -

Evacuation Method DISPOSABLE BAILER & POLYPROPYLENE CORD

SAMPLING DATA/FIELD PARAMETERS

Color GRAY Odor _____ Appearance _____ Temperature _____ °F/°C

Other (specific ion; OVA; HNU; etc.) SILTY

Specific Conductance, umhos/cm _____ pH _____

Sampling Method and Material DISPOSABLE BAILER & POLYPROPYLENE CORD

Constituents Sampled	Container Description From Lab X or G&M ____	Preservative
VOCS (8240)	2- 40ML VIALS	HCL
PCBS (8310)	2- 1L AMBER GLASS	-
PNAS (8080)	1- 1L AMBER GLASS	-

Remarks BAILER WOULD PERIODICALLY GET CAUGHT IN WELL;POSSIBLY WHERE THE PVC CASING IS IS ATTACHED TO THE STAINLESS STEEL SCREEN.

Sampling Personnel K.ARNEY/K.LALA

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

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WATER SAMPLING LOG

Project/No. NAVISTAR/BNR CI0299.004 Page 1 of 1

Site Location ROCK ISLAND, IL

Site/Well No. GM-16 Coded/ Replicate No. MS/MSD-2 Date 7/22/94

Weather SUNNY, 80°F Time Sampling Began 10:32 Time Sampling Completed 10:55

EVACUATION DATA

Description of Measuring Point (MP) NORTH SIDE OF TOP OF CASING

Height of MP Above/Below Land Surface _____ MP Elevation _____

Total Sounded Depth of Well Below MP 15.55 Water-Level Elevation _____

Held _____ Depth to Water Below MP 6.95 Diameter of Casing 2"

Wet _____ Water Column in Well 8.60 Gallons Pumped/Bailed Prior to Sampling 4.2

Gallons per Foot 0.16

Gallons in Well 1.38 Sampling Pump Intake Setting (feet below land surface) -

Evacuation Method DISPOSABLE BAILER & POLYPROPYLENE CORD

SAMPLING DATA/FIELD PARAMETERS

Color GRAY Odor - Appearance _____ Temperature _____ °F/°C

Other (specific ion; OVA; HNU; etc.) FILM ON TOP OF WATER, SILTY

Specific Conductance, umhos/cm _____ pH _____

Sampling Method and Material DISPOSABLE BAILER & POLYPROPYLENE CORD

Constituents Sampled	Container Description From Lab X or G&M ____	Preservative
VOCS (8240)	2- 40ML VIALS	HCL
PCBS (8080)	1- 1L AMBER GLASS	-
PNAS (8310)	2- 1L AMBER GLASS	-

Remarks MS/MSD-2 COLLECTED; CONDUCTIVITY METER DISPLAY IS NOT CLEAR

Sampling Personnel K.ARNEY/K.LALA

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

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WATER SAMPLING LOG

Project/No. NAVISTAR/BNR CI0299.004 Page 1 of 1

Site Location ROCK ISLAND, IL

Site/Well No. GM-17 Coded/ Replicate No. _____ Date 7/22/94

Weather PARTLY CLOUDY 80°F Time Sampling Began 1114 Time Sampling Completed 1140

EVACUATION DATA

Description of Measuring Point (MP) NORTH SIDE OF TOP OF CASING

Height of MP Above/Below Land Surface _____ MP Elevation _____

Total Sounded Depth of Well Below MP 15.49 Water-Level Elevation _____

Held _____ Depth to Water Below MP 12.32 Diameter of Casing 2"

Wet _____ Water Column in Well 3.17 Gallons Pumped/Bailed Prior to Sampling 1.5

Gallons per Foot 0.16

Gallons in Well 0.51 Sampling Pump Intake Setting (feet below land surface) -

Evacuation Method DISPOSABLE BAILER & POLYPROPYLENE CORD

SAMPLING DATA/FIELD PARAMETERS

Color GRAY Odor HYDROCARBON SLIGHT Appearance _____ Temperature _____ °F/°C

Other (specific ion; OVA; HNU; etc.) SILTY

Specific Conductance, umhos/cm _____ pH _____

Sampling Method and Material DISPOSABLE BAILER & POLYPROPYLENE CORD

Constituents Sampled	Container Description From Lab X or G&M ____	Preservative
VOCS (8240)	2- 40ML VIALS	HCL
PNAS (8310)	2- 1L AMBER GLASS	-
PCBS (8080)	1- 1L AMBER GLASS	-

Remarks _____

Sampling Personnel K.ARNEY/K.LALA

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

GERAGHTY & MILLER, INC.
Environmental Services

WATER SAMPLING LOG

Project/No. NAVISTAR/BNR CI0299.004 Page 1 of 1

Site Location ROCK ISLAND, IL

Site/Well No. GM-18 Coded/ Replicate No. - Date 7/22/94

Weather PARTLY CLOUDY, 80°F Time Sampling Began 9:38 Time Sampling Completed 10:07

EVACUATION DATA

Description of Measuring Point (MP) NORTH SIDE OF TOP OF CASING

Height of MP Above/Below Land Surface _____ MP Elevation _____

Total Sounded Depth of Well Below MP 16.65 Water-Level Elevation _____

Held _____ Depth to Water Below MP 14.00 Diameter of Casing 2"

Wet _____ Water Column in Well 2.65 Gallons Pumped/Bailed Prior to Sampling 1.35

Gallons per Foot 0.16

Gallons in Well 0.42 Sampling Pump Intake Setting (feet below land surface) _____

Evacuation Method DISPOSABLE BAILER & POLYPROPYLENE CORD

SAMPLING DATA/FIELD PARAMETERS

Color LIGHT BROWN Odor _____ Appearance _____ Temperature _____ °F/°C

Other (specific ion; OVA; HNU; etc.) SILTY

Specific Conductance, umhos/cm _____ pH _____

Sampling Method and Material DISPOSABLE BAILER & POLYPROPYLENE CORD

Constituents Sampled	Container Description From Lab X or G&M ____	Preservative
VOCS (8240)	2- 40ML VIALS	HCL
PNAS (8310)	2- 1L AMBER GLASS	-
PCBS (8080)	1- 1L AMBER GLASS	-

Remarks _____

Sampling Personnel K.ARNEY/K.LALA

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

GERAGHTY & MILLER, INC.
Environmental Services

WATER SAMPLING LOG

Project/No. NAVISTAR/BNR CI0299.004 Page 1 of 1

Site Location ROCK ISLAND, IL

Site/Well No. GM-19 Coded/ Replicate No. _____ Date 7/21/94

Weather SUNNY, HUMID 80°F Time Sampling Began 10:06 Time Sampling Completed 10:22

EVACUATION DATA

Description of Measuring Point (MP) NORTH SIDE OF TOP OF CASING

Height of MP Above/Below Land Surface _____ MP Elevation _____

Total Sounded Depth of Well Below MP 26.86 Water-Level Elevation _____

Held _____ Depth to Water Below MP 20.75 Diameter of Casing 2"

Wet _____ Water Column in Well 6.11 Gallons Pumped/Bailed Prior to Sampling 3.0

Gallons per Foot 0.16

Gallons in Well 0.98 Sampling Pump Intake Setting (feet below land surface) _____

Evacuation Method DISPOSABLE BAILER & POLYPROPYLENE CORD

SAMPLING DATA/FIELD PARAMETERS

Color SLIGHTLY CLOUDY Odor HYDROCARBON LIKE Appearance _____ Temperature _____ °F/°C

Other (specific ion; OVA; HNU; etc.) FILM / SHEEN

Specific Conductance, umhos/cm _____ pH _____

Sampling Method and Material DISPOSABLE BAILER & POLYPROPYLENE CORD

Constituents Sampled	Container Description From Lab X or G&M ____	Preservative
VOCS (8240)	2- 40ML VIALS	HCL
PNAS (8310)	2- 1L AMBER GLASS	-
PCBS (8080)	1- 1L AMBER GLASS	-

Remarks DTW=20.75

Sampling Personnel K.ARNEY/K.LALA

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

GERAGHTY & MILLER, INC.
Environmental Services

WATER SAMPLING LOG

Project/No. NAVISTAR/BNR CI0299.004 Page 1 of 1

Site Location ROCK ISLAND, IL

Site/Well No. MW-5 Coded/ Replicate No. - Date 7/20/94

Weather PARTLY CLOUDY, HUMID Time Sampling Began 16:25 Time Sampling Completed 16:55

EVACUATION DATA

Description of Measuring Point (MP) NORTH SIDE OF TOP OF CASING

Height of MP Above/Below Land Surface _____ MP Elevation _____

Total Sounded Depth of Well Below MP 30.30 Water-Level Elevation _____

Held _____ Depth to Water Below MP 18.32 Diameter of Casing 2"

Wet _____ Water Column in Well 11.98 Gallons Pumped/Bailed Prior to Sampling 8.0

Gallons per Foot 0.16

Gallons in Well 1.92 Sampling Pump Intake Setting (feet below land surface) _____

Evacuation Method DISPOSABLE BAILER & POLYPROPYLENE CORD

SAMPLING DATA/FIELD PARAMETERS

Color BLACK Odor HYDROCARBON LIKE Appearance _____ Temperature _____ °F/°C

Other (specific ion; OVA; HNU; etc.) FILM/SHEEN

Specific Conductance, umhos/cm _____ pH _____

Sampling Method and Material DISPOSABLE BAILER & POLYPROPYLENE CORD

Constituents Sampled	Container Description From Lab X or G&M ____	Preservative
VOCS (8240)	2- 40ML VIALS	HCL
PNAS (8310)	2- 1L AMBER GLASS	-
PCBS (8080)	1- 1L AMBER GLASS	-

Remarks _____

Sampling Personnel K.ARNEY/K.LALA

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

GERAGHTY & MILLER, INC.
Environmental Services

WATER SAMPLING LOG

Project/No. NAVISTAR/BNR CI0299.004 Page 1 of 1

Site Location ROCK ISLAND, IL

Site/Well No. MW-6 Coded/ Replicate No. _____ Date 7/21/94

Weather PARTLY CLOUDY Time Sampling Began 10:40 Time Sampling Completed 10:50

EVACUATION DATA

Description of Measuring Point (MP) NORTH SIDE OF TOP OF CASING

Height of MP Above/Below Land Surface _____ MP Elevation _____

Total Sounded Depth of Well Below MP 25.40 Water-Level Elevation 17.01 (16.99 PRODUCT)

Held _____ Depth to Water Below MP 16.99 Diameter of Casing 2"

Wet _____ Water Column in Well 8.41 Gallons Pumped/Bailed Prior to Sampling 3.9

Gallons per Foot 0.16

Gallons in Well 1.34 Sampling Pump Intake Setting (feet below land surface) _____

Evacuation Method DISPOSABLE BAILER & POLYPROPYLENE CORD

SAMPLING DATA/FIELD PARAMETERS

Color GRAY Odor HYDROCARBON LIGHT-LIKE Appearance _____ Temperature _____ °F/°C

Other (specific ion; OVA; HNU; etc.) _____

Specific Conductance, umhos/cm _____ pH _____

Sampling Method and Material DISPOSABLE BAILER & POLYPROPYLENE CORD

Constituents Sampled	Container Description From Lab X or G&M ____	Preservative
VOCS (8240)	2- 40ML VIALS	HCL
PNAS (8310)	2- 1L AMBER GLASS	-
PCBS (8080)	1- 1L AMBER GLASS	-

Remarks DID NOT SAMPLE 7/20/94

Sampling Personnel K.ARNEY/K.LALA

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

GERAGHTY & MILLER, INC.
Environmental Services

WATER SAMPLING LOG

Project/No. NAVISTAR/BNR CI0299.004 Page 1 of 1

Site Location ROCK ISLAND, IL

Site/Well No. MW-8 Coded/ Replicate No. MW-88 Date 7/20/94

Weather PARTLY CLOUDY,HUMID 80°F Time Sampling Began 13:29 Time Sampling Completed 14:15

EVACUATION DATA

Description of Measuring Point (MP) NORTH SIDE OF TOP OF CASING

Height of MP Above/Below Land Surface _____ MP Elevation _____

Total Sounded Depth of Well Below MP 25.36 Water-Level Elevation _____

Held _____ Depth to Water Below MP 13.93 Diameter of Casing 2"

Wet _____ Water Column in Well 11.43 Gallons Pumped/Bailed Prior to Sampling _____

Gallons per Foot 0.16

Gallons in Well 1.83 Sampling Pump Intake Setting (feet below land surface) _____

Evacuation Method DISPOSABLE BAILER & POLYPROPYLENE CORD

SAMPLING DATA/FIELD PARAMETERS

Color DARK,CLOUDY Odor HYDROCARBON LIKE Appearance _____ Temperature _____ °F/°C

Other (specific ion; OVA; HNU; etc.) _____

Specific Conductance, umhos/cm _____ pH _____

Sampling Method and Material DISPOSABLE BAILERS & POLYPROPYLENE CORD

Constituents Sampled	Container Description From Lab X or G&M ____	Preservative
VOCS (8240)	2- 40ML VIALS	HCL
PNAS (8310)	2- 1L GLASS AMBER	-
PCBS (8080)	1- 1L GLASS AMBER	-

Remarks _____

Sampling Personnel K.ARNEY/K.LALA

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

GERAGHTY & MILLER, INC.
Environmental Services

WATER SAMPLING LOG

Project/No. NAVISTAR/BNR CI0299.004 Page 1 of 1

Site Location ROCK ISLAND, IL

Site/Well No. MW-9 Coded/ Replicate No. _____ Date 7/20/94

Weather PARTLY CLOUDY,HUMID Time Sampling Began 17:23 Time Sampling Completed 17:43

EVACUATION DATA

Description of Measuring Point (MP) NORTH SIDE OF TOP OF CASING

Height of MP Above/Below Land Surface _____ MP Elevation _____

Total Sounded Depth of Well Below MP 28.15 Water-Level Elevation 21.00 (18.64 PRODUCT)

Held _____ Depth to Water Below MP 21.00 Diameter of Casing 2"

Wet _____ Water Column in Well 7.15 Gallons Pumped/Bailed Prior to Sampling 4.4

Gallons per Foot 0.16

Gallons in Well 1.14 Sampling Pump Intake Setting (feet below land surface) _____

Evacuation Method DISPOSABLE BAILER & POLYPROPYLENE CORD

SAMPLING DATA/FIELD PARAMETERS

Color BLACK Odor DIESEL/MOTOR OIL Appearance _____ Temperature _____ °F/°C

Other (specific ion; OVA; HNU; etc.) _____

Specific Conductance, umhos/cm _____ pH _____

Sampling Method and Material DISPOSABLE BAILER & POLYPROPYLENE CORD

Constituents Sampled	Container Description From Lab X or G&M ____	Preservative
VOCS (8240)	2- 40ML VIALS	HCL
PNAS (8310)	2- 1L AMBER GLASS	-
PCBS (8080)	1- 1L AMBER GLASS	-

Remarks _____

Sampling Personnel K.ARNEY/K.LALA

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

APPENDIX E

Phase II Site Investigation Groundwater Data

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	22-JUL-94	2979	C159130
	Complete	PO Number	
	10-AUG-94	CI0299.004	
	Printed	Sampled	
	25-AUG-94	21-JUL-94 17:17	

Report To

JAMES AUER
GERAGHTY AND MILLER
35 EAST WACKER DRIVE
SUITE 1000
CHICAGO, IL 60601

Bill To

JAMES AUER
GERAGHTY & MILLER, INC.
35 EAST WACKER, SUITE 1000
CHICAGO, IL 60601

Sample Description

PROJECT NO.: CI0299.004
PROJECT NAME: NAVISTAR-ROCK ISLAND, IL.
SAMPLE ID.: GM-1

VOLATILE ORGANICS SW846-8240A

Analyst: R. SHAMP Analysis Date: 01-AUG-94 14:32 Instrument: GC/MS VOA Test: 0510.3.0 INDI

Parameter	Result	Det. Limit	Units
ACETONE	BDL	1000	ug/L
ACROLEIN	BDL	2500	ug/L
ACRYLONITRILE	BDL	3500	ug/L
BENZENE	BDL	250	ug/L
BROMODICHLOROMETHANE	BDL	250	ug/L
BROMOFORM	BDL	250	ug/L
BROMOMETHANE	BDL	500	ug/L
CARBON DISULFIDE	5200	250	ug/L
CARBON TETRACHLORIDE	BDL	250	ug/L
CHLOROBENZENE	BDL	250	ug/L
CHLOROETHANE	BDL	500	ug/L
CHLOROFORM	BDL	250	ug/L
CHLOROMETHANE	BDL	500	ug/L
DIBROMOCHLOROMETHANE	BDL	250	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	250	ug/L
DICHLORODIFLUOROMETHANE	BDL	250	ug/L
1,1-DICHLOROETHANE	BDL	250	ug/L
1,2-DICHLOROETHANE	BDL	250	ug/L
1,1-DICHLOROETHENE	BDL	250	ug/L
1,2-DICHLOROPROPANE	BDL	250	ug/L
ETHYL BENZENE	BDL	250	ug/L
TRICHLOROFLUOROMETHANE	BDL	250	ug/L
2-HEXANONE	BDL	500	ug/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	250	ug/L
METHYL ETHYL KETONE	BDL	500	ug/L
4-METHYL-2-PENTANONE	BDL	500	ug/L
STYRENE	BDL	250	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	250	ug/L
TETRACHLOROETHENE	BDL	250	ug/L
TETRAHYDROFURAN	BDL	1200	ug/L
TOLUENE	BDL	250	ug/L
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	250	ug/L
TRANS-1,3-DICHLOROPROPENE	BDL	250	ug/L

 (continued on next page)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C159130

Parameter	Result	Det. Limit	Units
1,1,1-TRICHLOROETHANE	BDL	250	ug/L
1,1,2-TRICHLOROETHANE	BDL	250	ug/L
TRICHLOROETHENE	BDL	250	ug/L
VINYL ACETATE	BDL	500	ug/L
VINYL CHLORIDE	BDL	500	ug/L
XYLENES (O/M/P-XYLENE)	BDL	250	ug/L
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	99		% Rec
TOLUENE-D8	102		% Rec
4-BROMOFLUOROBENZENE	97		% Rec

1:50 DILUTION
On this instrument, packed column has been replaced by capillary column with 8240 criteria.

PCB SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A
Analyst: K. NARINE Analysis Date: 25-JUL-94 Test: P230.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	1000		mL
FINAL VOLUME	10		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080
Analyst: M. JAEGER Analysis Date: 27-JUL-94 Instrument: GC/ECD Test: 0301.2.0
Prep: PCB SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P230.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	0.0005	mg/L
PCB AROCHLOR 1221	BDL	0.0005	mg/L
PCB AROCHLOR 1232	BDL	0.0005	mg/L
PCB AROCHLOR 1242	BDL	0.0005	mg/L
PCB AROCHLOR 1248	BDL	0.0005	mg/L
PCB AROCHLOR 1254	BDL	0.0005	mg/L
PCB AROCHLOR 1260	BDL	0.0005	mg/L
PCB AROCHLOR 1262	BDL	0.0005	mg/L

GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A
Analyst: P. SIMS Analysis Date: 26-JUL-94 19:30 Test: P233.2.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	940		mL
FINAL VOLUME	5		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310
Analyst: T. COFFELT Analysis Date: 28-JUL-94 10:38 Instrument: HPLC Test: 0630.0.0 INDI

Parameter	Result	Det. Limit	Units
NAPHTHALENE	8.2	0.16	ug/L
ACENAPHTHYLENE	BDL	0.25	ug/L
ACENAPHTHENE	*	0.16	ug/L
FLUORENE	EST 450	0.019	ug/L
PHENANTHRENE	*	0.16	ug/L
ANTHRACENE	*	0.021	ug/L
FLUORANTHENE	*	0.021	ug/L
PYRENE	*	0.075	ug/L
BENZ(A)ANTHRACENE	*	0.13	ug/L
CHRYSENE	*	0.041	ug/L
BENZO(B)FLUORANTHENE	1.3	0.029	ug/L
BENZO(K)FLUORANTHENE	1.4	0.013	ug/L

 (continued on next page)

Parameter	Result	Det. Limit	Units
BENZO(A)PYRENE	2.6	0.23	ug/L
DIBENZ(A,H)ANTHRACENE	BDL	0.085	ug/L
BENZO(G,H,I)PERYLENE	0.3	0.14	ug/L
INDENO(1,2,3-CD)PYRENE	1.6	0.028	ug/L

**No Result -- See Replicate 1.*

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 28-JUL-94 19:01 Instrument: HPLC Test: 0630.0.1 INDI

Prep: GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P233.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	*	3.6	ug/L
ACENAPHTHYLENE	BDL	2.9	ug/L
ACENAPHTHENE	190	3.2	ug/L
FLUORENE	530	2.3	ug/L
PHENANTHRENE	1300	1.8	ug/L
ANTHRACENE	60	2.7	ug/L
FLUORANTHENE	31	2	ug/L
PYRENE	30	3.2	ug/L
BENZ(A)ANTHRACENE	12	1.3	ug/L
CHRYSENE	19	1.7	ug/L
BENZO(B)FLUORANTHENE	BDL	1.8	ug/L
BENZO(K)FLUORANTHENE	BDL	1.7	ug/L
BENZO(A)PYRENE	BDL	2.3	ug/L
DIBENZ(A,H)ANTHRACENE	BDL	.9	ug/L
BENZO(G,H,I)PERYLENE	BDL	1.9	ug/L
INDENO(1,2,3-CD)PYRENE	BDL	2	ug/L

1:10 DILUTION

**No result -- See replicate 0.*

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 02-AUG-94 18:20 Instrument: HPLC Test: 0630.0.2 INDI

Prep: GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P233.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	36	ug/L
ACENAPHTHYLENE	BDL	29	ug/L
ACENAPHTHENE	230	32	ug/L
FLUORENE	460	23	ug/L
PHENANTHRENE	1300	18	ug/L
ANTHRACENE	63	27	ug/L
FLUORANTHENE	32	20	ug/L
PYRENE	BDL	32	ug/L
BENZ(A)ANTHRACENE	BDL	13	ug/L
CHRYSENE	BDL	17	ug/L
BENZO(B)FLUORANTHENE	BDL	18	ug/L
BENZO(K)FLUORANTHENE	BDL	17	ug/L
BENZO(A)PYRENE	BDL	23	ug/L
DIBENZ(A,H)ANTHRACENE	BDL	9	ug/L
BENZO(G,H,I)PERYLENE	BDL	19	ug/L
INDENO(1,2,3-CD)PYRENE	BDL	20	ug/L

1:100 DILUTION

Sample Comments

*	*See Note for Parameter*
BDL	*Below Detection Limit*
EST	*Estimated Value*

Sample chain of custody number NONE.

This Certificate shall not be reproduced, except in full, without the written approval of the lab.

Quality Assurance Officer: Christine Jackson (DMS)

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	22-JUL-94	2979	C159131
	Complete	PO Number	
	10-AUG-94	CI0299.004	
	Printed	Sampled	
	18-AUG-94	21-JUL-94 16:43	

Report To	Bill To
JAMES AUER GERAGHTY AND MILLER 35 EAST WACKER DRIVE SUITE 1000 CHICAGO, IL 60601	JAMES AUER GERAGHTY & MILLER, INC. 35 EAST WACKER, SUITE 1000 CHICAGO, IL 60601

Sample Description

PROJECT NO.: CI0299.004
PROJECT NAME: NAVISTAR-ROCK ISLAND, IL.
SAMPLE ID.: GM-2

VOLATILE ORGANICS SW846-8240A

Analyst: R. SHAMP Analysis Date: 01-AUG-94 15:12 Instrument: GC/MS VOA Test: 0510.3.0 INDI

Parameter	Result	Det. Limit	Units
ACETONE	BDL	1000	ug/L
ACROLEIN	BDL	2500	ug/L
ACRYLONITRILE	BDL	3500	ug/L
BENZENE	BDL	250	ug/L
BROMODICHLOROMETHANE	BDL	250	ug/L
BROMOFORM	BDL	250	ug/L
BROMOMETHANE	BDL	500	ug/L
CARBON DISULFIDE	BDL	250	ug/L
CARBON TETRACHLORIDE	BDL	250	ug/L
CHLOROBENZENE	BDL	250	ug/L
CHLOROETHANE	BDL	500	ug/L
CHLOROFORM	BDL	250	ug/L
CHLOROMETHANE	BDL	500	ug/L
DIBROMOCHLOROMETHANE	BDL	250	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	250	ug/L
DICHLORODIFLUOROMETHANE	BDL	250	ug/L
1,1-DICHLOROETHANE	BDL	250	ug/L
1,2-DICHLOROETHANE	BDL	250	ug/L
1,1-DICHLOROETHENE	BDL	250	ug/L
1,2-DICHLOROPROPANE	BDL	250	ug/L
ETHYL BENZENE	BDL	250	ug/L
TRICHLOROFLUOROMETHANE	BDL	250	ug/L
2-HEXANONE	BDL	500	ug/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	250	ug/L
METHYL ETHYL KETONE	BDL	500	ug/L
4-METHYL-2-PENTANONE	BDL	500	ug/L
STYRENE	BDL	250	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	250	ug/L
TETRACHLOROETHENE	BDL	250	ug/L
TETRAHYDROFURAN	BDL	1200	ug/L
TOLUENE	BDL	250	ug/L
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	250	ug/L
TRANS-1,3-DICHLOROPROPENE	BDL	250	ug/L

 (continued on next page)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C159131

Parameter	Result	Det. Limit	Units
1,1,1-TRICHLOROETHANE	BDL	250	ug/L
1,1,2-TRICHLOROETHANE	BDL	250	ug/L
TRICHLOROETHENE	BDL	250	ug/L
VINYL ACETATE	BDL	500	ug/L
VINYL CHLORIDE	BDL	500	ug/L
XYLENES (O/M/P-XYLENE)	BDL	250	ug/L
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	99		% Rec
TOLUENE-D8	101		% Rec
4-BROMOFLUOROBENZENE	104		% Rec

1:50 DILUTION
On this instrument, packed column has been replaced by capillary column with 8240 criteria.
Unable to analyze sample at lower dilution due to high concentration of non-target compounds.

PCB SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A

Analyst: K. NARINE Analysis Date: 25-JUL-94 Test: P230.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	1000		mL
FINAL VOLUME	10		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080

Analyst: M. JAEGER Analysis Date: 27-JUL-94 Instrument: GC/ECD Test: 0301.2.0
Prep: PCB SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P230.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	0.0005	mg/L
PCB AROCHLOR 1221	BDL	0.0005	mg/L
PCB AROCHLOR 1232	BDL	0.0005	mg/L
PCB AROCHLOR 1242	BDL	0.0005	mg/L
PCB AROCHLOR 1248	BDL	0.0005	mg/L
PCB AROCHLOR 1254	BDL	0.0005	mg/L
PCB AROCHLOR 1260	BDL	0.0005	mg/L
PCB AROCHLOR 1262	BDL	0.0005	mg/L

GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A

Analyst: P. SIMS Analysis Date: 26-JUL-94 19:30 Test: P233.2.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	960		mL
FINAL VOLUME	5		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 28-JUL-94 11:23 Instrument: HPLC Test: 0630.0.0 INDI
Prep: GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P233.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	0.36	ug/L
ACENAPHTHYLENE	BDL	0.29	ug/L
ACENAPHTHENE	*	0.32	ug/L
FLUORENE	EST 460	0.23	ug/L
PHENANTHRENE	EST 320	0.18	ug/L
ANTHRACENE	*	0.27	ug/L
FLUORANTHENE	*	0.20	ug/L
PYRENE	*	0.32	ug/L
BENZ(A)ANTHRACENE	*	0.13	ug/L

 (continued on next page)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C159131

Parameter	Result	Det. Limit	Units
CHRYSENE	*	0.17	ug/L
BENZO(B)FLUORANTHENE	3.3	0.18	ug/L
BENZO(K)FLUORANTHENE	2.6	0.17	ug/L
BENZO(A)PYRENE	5.3	0.23	ug/L
DIBENZ(A,H)ANTHRACENE	BDL	0.09	ug/L
BENZO(G,H,I)PERYLENE	1.0	0.19	ug/L
INDENO(1,2,3-CD)PYRENE	3.2	0.20	ug/L

**No Result -- See Replicate 1.*

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 02-AUG-94 23:00 Instrument: HPLC Test: 0630.0.1 INDI

Prep: GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P233.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	14	ug/L
ACENAPHTHYLENE	BDL	11	ug/L
ACENAPHTHENE	33	12	ug/L
FLUORENE	490	9.2	ug/L
PHENANTHRENE	EST 1200	7.2	ug/L
ANTHRACENE	40	10	ug/L
FLUORANTHENE	25	8	ug/L
PYRENE	39	12	ug/L
BENZ(A)ANTHRACENE	11	5.2	ug/L
CHRYSENE	25	6.8	ug/L
BENZO(B)FLUORANTHENE	BDL	7.2	ug/L
BENZO(K)FLUORANTHENE	BDL	6.8	ug/L
BENZO(A)PYRENE	BDL	9.2	ug/L
DIBENZ(A,H)ANTHRACENE	BDL	3.6	ug/L
BENZO(G,H,I)PERYLENE	BDL	7.6	ug/L
INDENO(1,2,3-CD)PYRENE	BDL	8	ug/L

1:40 dilution.

Sample Comments

* *See Note for Parameter*
BDL Below Detection Limit
EST Estimated Value

Sample chain of custody number NONE.

This Certificate shall not be reproduced, except in full, without the written approval of the lab.

Quality Assurance Officer: _____

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	22-JUL-94	2979	C159132
	Complete	PO Number	
	10-AUG-94	CI0299.004	
	Printed	Sampled	
	18-AUG-94	21-JUL-94 16:12	

Report To	Bill To
JAMES AUER GERAGHTY AND MILLER 35 EAST WACKER DRIVE SUITE 1000 CHICAGO, IL 60601	JAMES AUER GERAGHTY & MILLER, INC. 35 EAST WACKER, SUITE 1000 CHICAGO, IL 60601

Sample Description

PROJECT NO.: CI0299.004
PROJECT NAME: NAVISTAR-ROCK ISLAND, IL.
SAMPLE ID.: GM-3

VOLATILE ORGANICS SW846-8240A

Analyst: R. SHAMP Analysis Date: 01-AUG-94 15:51 Instrument: GC/MS VOA Test: 0510.3.0 INDI

Parameter	Result	Det. Limit	Units
ACETONE	BDL	1000	ug/L
ACROLEIN	BDL	2500	ug/L
ACRYLONITRILE	BDL	3500	ug/L
BENZENE	BDL	250	ug/L
BROMODICHLOROMETHANE	BDL	250	ug/L
BROMOFORM	BDL	250	ug/L
BROMOMETHANE	BDL	500	ug/L
CARBON DISULFIDE	BDL	250	ug/L
CARBON TETRACHLORIDE	BDL	250	ug/L
CHLOROBENZENE	BDL	250	ug/L
CHLOROETHANE	BDL	500	ug/L
CHLOROFORM	BDL	250	ug/L
CHLOROMETHANE	BDL	500	ug/L
DIBROMOCHLOROMETHANE	BDL	250	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	250	ug/L
DICHLORODIFLUOROMETHANE	BDL	250	ug/L
1,1-DICHLOROETHANE	BDL	250	ug/L
1,2-DICHLOROETHANE	BDL	250	ug/L
1,1-DICHLOROETHENE	BDL	250	ug/L
1,2-DICHLOROPROPANE	BDL	250	ug/L
ETHYL BENZENE	BDL	250	ug/L
TRICHLOROFLUOROMETHANE	BDL	250	ug/L
2-HEXANONE	BDL	500	ug/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	250	ug/L
METHYL ETHYL KETONE	BDL	500	ug/L
4-METHYL-2-PENTANONE	BDL	500	ug/L
STYRENE	BDL	250	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	250	ug/L
TETRACHLOROETHENE	BDL	250	ug/L
TETRAHYDROFURAN	BDL	1200	ug/L
TOLUENE	BDL	250	ug/L
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	250	ug/L
TRANS-1,3-DICHLOROPROPENE	BDL	250	ug/L

 (continued on next page)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C159132

Parameter	Result	Det. Limit	Units
1,1,1-TRICHLOROETHANE	BDL	250	ug/L
1,1,2-TRICHLOROETHANE	BDL	250	ug/L
TRICHLOROETHENE	BDL	250	ug/L
VINYL ACETATE	BDL	500	ug/L
VINYL CHLORIDE	BDL	500	ug/L
XYLENES (O/M/P-XYLENE)	BDL	250	ug/L
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	97		% Rec
TOLUENE-D8	100		% Rec
4-BROMOFLUOROBENZENE	113		% Rec

On this instrument, packed column has been replaced by capillary column with 8240 criteria.
Unable to analyze sample at lower dilution due to high concentration of non-target compounds.
1:50 DILUTION

PCB SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A

Analyst: K. NARINE Analysis Date: 25-JUL-94 Test: P230.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	1000		mL
FINAL VOLUME	10		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080

Analyst: M. JAEGER Analysis Date: 27-JUL-94 Instrument: GC/ECD Test: 0301.2.0
Prep: PCB SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P230.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	0.013	mg/L
PCB AROCHLOR 1221	BDL	0.013	mg/L
PCB AROCHLOR 1232	BDL	0.013	mg/L
PCB AROCHLOR 1242	BDL	0.013	mg/L
PCB AROCHLOR 1248	BDL	0.013	mg/L
PCB AROCHLOR 1254	BDL	0.013	mg/L
PCB AROCHLOR 1260	BDL	0.013	mg/L
PCB AROCHLOR 1262	BDL	0.013	mg/L

1:25 DILUTION.
Diluted due to matrix interference.

GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A

Analyst: P. SIMS Analysis Date: 26-JUL-94 20:00 Test: P233.2.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	910		mL
FINAL VOLUME	10		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 02-AUG-94 23:46 Instrument: HPLC Test: 0630.0.0 INDI
Prep: GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P233.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	18	ug/L
ACENAPHTHYLENE	BDL	14	ug/L
ACENAPHTHENE	2800	16	ug/L
FLUORENE	7200	11	ug/L
PHENANTHRENE	20000	9	ug/L
ANTHRACENE	320	13	ug/L

 (continued on next page)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C159132

Parameter	Result	Det. Limit	Units
FLUORANTHENE	BDL	10	ug/L
PYRENE	320	16	ug/L
BENZ(A)ANTHRACENE	BDL	6.5	ug/L
CHRYSENE	400	8.5	ug/L
BENZO(B)FLUORANTHENE	BDL	9	ug/L
BENZO(K)FLUORANTHENE	BDL	8.5	ug/L
BENZO(A)PYRENE	BDL	11	ug/L
DIBENZ(A,H)ANTHRACENE	BDL	4.5	ug/L
BENZO(G,H,I)PERYLENE	BDL	9.5	ug/L
INDENO(1,2,3-CD)PYRENE	BDL	10	ug/L

1:50 dilution.

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 03-AUG-94 18:09 Instrument: HPLC Test: 0630.0.1 INDI

Prep: GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P233.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	1440	ug/L
ACENAPHTHYLENE	BDL	1160	ug/L
ACENAPHTHENE	3000	1280	ug/L
FLUORENE	5400	920	ug/L
PHENANTHRENE	19000	720	ug/L
ANTHRACENE	BDL	1080	ug/L
FLUORANTHENE	BDL	800	ug/L
PYRENE	BDL	1280	ug/L
BENZ(A)ANTHRACENE	BDL	520	ug/L
CHRYSENE	BDL	680	ug/L
BENZO(B)FLUORANTHENE	BDL	720	ug/L
BENZO(K)FLUORANTHENE	BDL	680	ug/L
BENZO(A)PYRENE	BDL	920	ug/L
DIBENZ(A,H)ANTHRACENE	BDL	360	ug/L
BENZO(G,H,I)PERYLENE	BDL	760	ug/L
INDENO(1,2,3-CD)PYRENE	BDL	800	ug/L

1:4000 Dilution.

HYDROCARBON SCAN BY GC:FID SW846-8015A(MOD

Analyst: B. BELL Analysis Date: 25-JUL-94 23:39 Instrument: GC/FID Test: 0409.1.0 INDI

Parameter	Result	Det. Limit	Units
GASOLINE	*		mg/L
DIESEL FUEL	*		mg/L
OTHER HYDROCARBONS	*		mg/L

** THE SAMPLE CONTAINS A HYDROCARBON FRACTION IN THE C-8 TO C-20 RANGE.*
SIMILAR TO A DIESEL FUEL.
1:10000 DILUTION

Sample Comments

* *See Note for Parameter*
BDL Below Detection Limit

Sample chain of custody number NONE.

This Certificate shall not be reproduced, except in full,

Sample Comments

without the written approval of the lab.

Quality Assurance Officer: _____

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	22-JUL-94	2979	C159133
	Complete	PO Number	
	09-AUG-94	CI0299.004	
	Printed	Sampled	
	17-AUG-94	21-JUL-94 15:30	

Report To

JAMES AUER
GERAGHTY AND MILLER
35 EAST WACKER DRIVE
SUITE 1000
CHICAGO, IL 60601

Bill To

JAMES AUER
GERAGHTY & MILLER, INC.
35 EAST WACKER, SUITE 1000
CHICAGO, IL 60601

Sample Description

PROJECT NO.: CI0299.004
PROJECT NAME: NAVISTAR-ROCK ISLAND, IL.
SAMPLE ID.: GM-4

VOLATILE ORGANICS SW846-8240A

Analyst: B. MAZUR Analysis Date: 02-AUG-94 15:22 Instrument: GC/MS VOA Test: 0510.3.0 INDI

Parameter	Result	Det. Limit	Units
ACETONE	BDL	20	ug/L
ACROLEIN	BDL	50	ug/L
ACRYLONITRILE	BDL	70	ug/L
BENZENE	BDL	5	ug/L
BROMODICHLOROMETHANE	BDL	5	ug/L
BROMOFORM	BDL	5	ug/L
BROMOMETHANE	BDL	10	ug/L
CARBON DISULFIDE	BDL	5	ug/L
CARBON TETRACHLORIDE	BDL	5	ug/L
CHLOROBENZENE	BDL	5	ug/L
CHLOROETHANE	BDL	10	ug/L
CHLOROFORM	BDL	5	ug/L
CHLOROMETHANE	BDL	10	ug/L
DIBROMOCHLOROMETHANE	BDL	5	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/L
DICHLORODIFLUOROMETHANE	BDL	5	ug/L
1,1-DICHLOROETHANE	BDL	5	ug/L
1,2-DICHLOROETHANE	BDL	5	ug/L
1,1-DICHLOROETHENE	BDL	5	ug/L
1,2-DICHLOROPROPANE	BDL	5	ug/L
ETHYL BENZENE	BDL	5	ug/L
TRICHLOROFLUOROMETHANE	BDL	5	ug/L
2-HEXANONE	BDL	10	ug/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	5	ug/L
METHYL ETHYL KETONE	BDL	10	ug/L
4-METHYL-2-PENTANONE	BDL	10	ug/L
STYRENE	BDL	5	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/L
TETRACHLOROETHENE	BDL	5	ug/L
TETRAHYDROFURAN	BDL	25	ug/L
TOLUENE	BDL	5	ug/L
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	5	ug/L
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/L

 (continued on next page)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C159133

Parameter	Result	Det. Limit	Units
1,1,1-TRICHLOROETHANE	BDL	5	ug/L
1,1,2-TRICHLOROETHANE	BDL	5	ug/L
TRICHLOROETHENE	BDL	5	ug/L
VINYL ACETATE	BDL	10	ug/L
VINYL CHLORIDE	BDL	10	ug/L
XYLENES (O/M/P-XYLENE)	BDL	5	ug/L
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	102		% Rec
TOLUENE-D8	103		% Rec
4-BROMOFLUOROBENZENE	104		% Rec

PCB SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A

Analyst: K. NARINE Analysis Date: 25-JUL-94 Test: P230.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	1000		mL
FINAL VOLUME	10		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080

Analyst: M. JAEGER Analysis Date: 27-JUL-94 Instrument: GC/ECD Test: 0301.2.0

Prep: PCB SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P230.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	0.0005	mg/L
PCB AROCHLOR 1221	BDL	0.0005	mg/L
PCB AROCHLOR 1232	BDL	0.0005	mg/L
PCB AROCHLOR 1242	BDL	0.0005	mg/L
PCB AROCHLOR 1248	BDL	0.0005	mg/L
PCB AROCHLOR 1254	BDL	0.0005	mg/L
PCB AROCHLOR 1260	BDL	0.0005	mg/L
PCB AROCHLOR 1262	BDL	0.0005	mg/L

GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A

Analyst: P. SIMS Analysis Date: 26-JUL-94 20:00 Test: P233.2.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	960		mL
FINAL VOLUME	5		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 28-JUL-94 13:03 Instrument: HPLC Test: 0630.0.0 INDI

Prep: GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P233.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	0.36	ug/L
ACENAPHTHYLENE	BDL	0.29	ug/L
ACENAPHTHENE	35	0.32	ug/L
FLUORENE	EST 92	0.23	ug/L
PHENANTHRENE	EST 190	0.18	ug/L
ANTHRACENE	8.9	0.27	ug/L
FLUORANTHENE	6.8	0.20	ug/L
PYRENE	6.5	0.32	ug/L
BENZ(A)ANTHRACENE	BDL	0.13	ug/L
CHRYSENE	BDL	0.17	ug/L
BENZO(B)FLUORANTHENE	0.33	0.18	ug/L
BENZO(K)FLUORANTHENE	0.27	0.17	ug/L
BENZO(A)PYRENE	0.73	0.23	ug/L
DIBENZ(A,H)ANTHRACENE	BDL	0.09	ug/L
BENZO(G,H,I)PERYLENE	0.39	0.19	ug/L

 (continued on next page)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C159133

Parameter	Result	Det. Limit	Units
INDENO(1,2,3-CD)PYRENE	0.41	0.20	ug/L

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 28-JUL-94 18:15 Instrument: HPLC Test: 0630.0.1 INDI

Prep: GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P233.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	1.8	ug/L
ACENAPHTHYLENE	BDL	1.4	ug/L
ACENAPHTHENE	31	1.6	ug/L
FLUORENE	99	1.1	ug/L
PHENANTHRENE	EST 220	.9	ug/L
ANTHRACENE	8.4	1.3	ug/L
FLUORANTHENE	6.0	1	ug/L
PYRENE	6.6	1.6	ug/L
BENZ(A)ANTHRACENE	1.4	.65	ug/L
CHRYSENE	4.4	.85	ug/L
BENZO(B)FLUORANTHENE	BDL	.9	ug/L
BENZO(K)FLUORANTHENE	BDL	.85	ug/L
BENZO(A)PYRENE	BDL	1.1	ug/L
DIBENZ(A,H)ANTHRACENE	BDL	.45	ug/L
BENZO(G,H,I)PERYLENE	BDL	.95	ug/L
INDENO(1,2,3-CD)PYRENE	BDL	1	ug/L

1:5 DILUTION

Sample Comments

BDL Below Detection Limit
EST Estimated Value

Sample chain of custody number NONE.

This Certificate shall not be reproduced, except in full, without the written approval of the lab.

Quality Assurance Officer: _____

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	23-JUL-94	2979	C159245
	Complete	PO Number	
	12-AUG-94	CI0299.004	
	Printed	Sampled	
	18-AUG-94	22-JUL-94 08:07	

Report To

JAMES AUER
GERAGHTY AND MILLER
35 EAST WACKER DRIVE
SUITE 1000
CHICAGO, IL 60601

Bill To

JAMES AUER
GERAGHTY & MILLER, INC.
35 EAST WACKER, SUITE 1000
CHICAGO, IL 60601

Sample Description

PROJECT: NAVISTAR-ROCK ISLAND, IL.
PROJECT NO.: CI0299.004
SAMPLE ID.: GM-5

VOLATILE ORGANICS SW846-8240A

Analyst: R. SHAMP Analysis Date: 04-AUG-94 13:18 Instrument: GC/MS VOA Test: 0510.3.0 INDI

Parameter	Result	Det. Limit	Units
ACETONE	BDL	1000	ug/L
ACROLEIN	BDL	2500	ug/L
ACRYLONITRILE	BDL	3500	ug/L
BENZENE	BDL	250	ug/L
BROMODICHLOROMETHANE	BDL	250	ug/L
BROMOFORM	BDL	250	ug/L
BROMOMETHANE	BDL	500	ug/L
CARBON DISULFIDE	BDL	250	ug/L
CARBON TETRACHLORIDE	BDL	250	ug/L
CHLOROBENZENE	BDL	250	ug/L
CHLOROETHANE	BDL	500	ug/L
CHLOROFORM	BDL	250	ug/L
CHLOROMETHANE	BDL	500	ug/L
DIBROMOCHLOROMETHANE	BDL	250	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	250	ug/L
DICHLORODIFLUOROMETHANE	BDL	250	ug/L
1,1-DICHLOROETHANE	BDL	250	ug/L
1,2-DICHLOROETHANE	BDL	250	ug/L
1,1-DICHLOROETHENE	BDL	250	ug/L
1,2-DICHLOROPROPANE	BDL	250	ug/L
ETHYL BENZENE	BDL	250	ug/L
TRICHLOROFLUOROMETHANE	BDL	250	ug/L
2-HEXANONE	BDL	500	ug/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	250	ug/L
METHYL ETHYL KETONE	BDL	500	ug/L
4-METHYL-2-PENTANONE	BDL	500	ug/L
STYRENE	BDL	250	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	250	ug/L
TETRACHLOROETHENE	BDL	250	ug/L
TETRAHYDROFURAN	BDL	1200	ug/L
TOLUENE	BDL	250	ug/L
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	250	ug/L
TRANS-1,3-DICHLOROPROPENE	BDL	250	ug/L

 (continued on next page)

Parameter	Result	Det. Limit	Units
1,1,1-TRICHLOROETHANE	BDL	250	ug/L
1,1,2-TRICHLOROETHANE	BDL	250	ug/L
TRICHLOROETHENE	BDL	250	ug/L
VINYL ACETATE	BDL	500	ug/L
VINYL CHLORIDE	BDL	500	ug/L
XYLENES (O/M/P-XYLENE)	BDL	250	ug/L
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	93		% Rec
TOLUENE-D8	101		% Rec
4-BROMOFLUOROBENZENE	96		% Rec

1:50 DILUTION
On this instrument, packed column has been replaced by capillary column with 8240 criteria.
Unable to analyze sample at lower dilution due to high concentration of non-target compounds.

PCB SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A

Analyst: K. NARINE Analysis Date: 27-JUL-94 Test: P230.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	1000		mL
FINAL VOLUME	10		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080

Analyst: M. JAEGER Analysis Date: 27-JUL-94 Instrument: GC/ECD Test: 0301.2.0
Prep: PCB SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P230.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	0.0005	mg/L
PCB AROCHLOR 1221	BDL	0.0005	mg/L
PCB AROCHLOR 1232	BDL	0.0005	mg/L
PCB AROCHLOR 1242	BDL	0.0005	mg/L
PCB AROCHLOR 1248	BDL	0.0005	mg/L
PCB AROCHLOR 1254	0.0033	0.0005	mg/L
PCB AROCHLOR 1260	BDL	0.0005	mg/L
PCB AROCHLOR 1262	BDL	0.0005	mg/L

GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A

Analyst: P. SIMS Analysis Date: 27-JUL-94 18:15 Test: P233.2.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	930		mL
FINAL VOLUME	5		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 29-JUL-94 11:04 Instrument: HPLC Test: 0630.0.0 INDI
Prep: GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P233.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	3.6	ug/L
ACENAPHTHYLENE	BDL	2.9	ug/L
ACENAPHTHENE	110	3.2	ug/L
FLUORENE	EST 380	2.3	ug/L
PHENANTHRENE	EST 1000	1.8	ug/L
ANTHRACENE	39	2.7	ug/L
FLUORANTHENE	22	2	ug/L
PYRENE	17	3.2	ug/L
BENZ(A)ANTHRACENE	8.2	1.3	ug/L

 (continued on next page)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C159245

Parameter	Result	Det. Limit	Units
CHRYSENE	24	1.7	ug/L
BENZO(B)FLUORANTHENE	BDL	1.8	ug/L
BENZO(K)FLUORANTHENE	BDL	1.7	ug/L
BENZO(A)PYRENE	BDL	2.3	ug/L
DIBENZ(A,H)ANTHRACENE	BDL	.9	ug/L
BENZO(G,H,I)PERYLENE	BDL	1.9	ug/L
INDENO(1,2,3-CD)PYRENE	BDL	2	ug/L

1:10 DILUTION

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 03-AUG-94 01:16 Instrument: HPLC Test: 0630.0.1 INDI

Prep: GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P233.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	36	ug/L
ACENAPHTHYLENE	BDL	29	ug/L
ACENAPHTHENE	120	32	ug/L
FLUORENE	290	23	ug/L
PHENANTHRENE	820	18	ug/L
ANTHRACENE	40	27	ug/L
FLUORANTHENE	BDL	20	ug/L
PYRENE	BDL	32	ug/L
BENZ(A)ANTHRACENE	BDL	13	ug/L
CHRYSENE	BDL	17	ug/L
BENZO(B)FLUORANTHENE	BDL	18	ug/L
BENZO(K)FLUORANTHENE	BDL	17	ug/L
BENZO(A)PYRENE	BDL	23	ug/L
DIBENZ(A,H)ANTHRACENE	BDL	9	ug/L
BENZO(G,H,I)PERYLENE	BDL	19	ug/L
INDENO(1,2,3-CD)PYRENE	BDL	20	ug/L

1:100 dilution.

Sample Comments

BDL Below Detection Limit
EST Estimated Value

Sample chain of custody number NONE.

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Quality Assurance Officer: Christine Sarkin (DWS)

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	23-JUL-94	2979	C159246
	Complete	PO Number	
	13-AUG-94	CI0299.004	
	Printed	Sampled	
	17-AUG-94	22-JUL-94 08:46	

Report To	Bill To
JAMES AUER GERAGHTY AND MILLER 35 EAST WACKER DRIVE SUITE 1000 CHICAGO, IL 60601	JAMES AUER GERAGHTY & MILLER, INC. 35 EAST WACKER, SUITE 1000 CHICAGO, IL 60601

Sample Description

PROJECT: NAVISTAR-ROCK ISLAND, IL.
PROJECT NO.: CI0299.004
SAMPLE ID.: GM-6

VOLATILE ORGANICS SW846-8240A

Analyst: R. SHAMP Analysis Date: 04-AUG-94 13:56 Instrument: GC/MS VOA Test: 0510.3.0 INDI

Parameter	Result	Det. Limit	Units
ACETONE	BDL	1000	ug/L
ACROLEIN	BDL	2500	ug/L
ACRYLONITRILE	BDL	3500	ug/L
BENZENE	BDL	250	ug/L
BROMODICHLOROMETHANE	BDL	250	ug/L
BROMOFORM	BDL	250	ug/L
BROMOMETHANE	BDL	500	ug/L
CARBON DISULFIDE	BDL	250	ug/L
CARBON TETRACHLORIDE	BDL	250	ug/L
CHLOROBENZENE	BDL	250	ug/L
CHLOROETHANE	BDL	500	ug/L
CHLOROFORM	BDL	250	ug/L
CHLOROMETHANE	BDL	500	ug/L
DIBROMOCHLOROMETHANE	BDL	250	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	250	ug/L
DICHLORODIFLUOROMETHANE	BDL	250	ug/L
1,1-DICHLOROETHANE	BDL	250	ug/L
1,2-DICHLOROETHANE	BDL	250	ug/L
1,1-DICHLOROETHENE	BDL	250	ug/L
1,2-DICHLOROPROPANE	BDL	250	ug/L
ETHYL BENZENE	BDL	250	ug/L
TRICHLOROFLUOROMETHANE	BDL	250	ug/L
2-HEXANONE	BDL	500	ug/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	250	ug/L
METHYL ETHYL KETONE	BDL	500	ug/L
4-METHYL-2-PENTANONE	BDL	500	ug/L
STYRENE	BDL	250	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	250	ug/L
TETRACHLOROETHENE	BDL	250	ug/L
TETRAHYDROFURAN	BDL	1200	ug/L
TOLUENE	BDL	250	ug/L
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	250	ug/L
TRANS-1,3-DICHLOROPROPENE	BDL	250	ug/L

 (continued on next page)

Parameter	Result	Det. Limit	Units
1,1,1-TRICHLOROETHANE	BDL	250	ug/L
1,1,2-TRICHLOROETHANE	BDL	250	ug/L
TRICHLOROETHENE	BDL	250	ug/L
VINYL ACETATE	BDL	500	ug/L
VINYL CHLORIDE	BDL	500	ug/L
XYLENES (O/M/P-XYLENE)	BDL	250	ug/L
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	92		% Rec
TOLUENE-D8	100		% Rec
4-BROMOFLUOROBENZENE	107		% Rec

1:50 DILUTION
On this instrument, packed column has been replaced by capillary column with 8240 criteria.
Unable to analyze sample at lower dilution due to high concentration of non-target compounds.

PCB SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A

Analyst: K. NARINE Analysis Date: 27-JUL-94 Test: P230.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	1000		mL
FINAL VOLUME	10		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080

Analyst: M. JAEGER Analysis Date: 27-JUL-94 Instrument: GC/ECD Test: 0301.2.0
Prep: PCB SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P230.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	0.003	mg/L
PCB AROCHLOR 1221	BDL	0.003	mg/L
PCB AROCHLOR 1232	BDL	0.003	mg/L
PCB AROCHLOR 1242	BDL	0.003	mg/L
PCB AROCHLOR 1248	BDL	0.003	mg/L
PCB AROCHLOR 1254	BDL	0.003	mg/L
PCB AROCHLOR 1260	BDL	0.003	mg/L
PCB AROCHLOR 1262	BDL	0.003	mg/L

Detection limit higher due to matrix interference.

HYDROCARBON SCAN BY GC:FID SW846-8015A(MOD

Analyst: B. BELL Analysis Date: 26-JUL-94 10:45 Instrument: GC/FID Test: 0409.1.0 INDI

Parameter	Result	Det. Limit	Units
GASOLINE	*		mg/L
DIESEL FUEL	*		mg/L
OTHER HYDROCARBONS	*		mg/L

** THE SAMPLE CONTAINS A HYDROCARBON FRACTION IN THE C-8 TP C-20 RANGE. SIMILAR TO A DIESEL FUEL.*
1:10000 DILUTION

Sample Comments

* *See Note for Parameter*
BDL Below Detection Limit

Sample Comments

Sample chain of custody number NONE.

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Quality Assurance Officer: _____

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	22-JUL-94	2979	C159136
	Complete	PO Number	
	10-AUG-94	CI0299.004	
	Printed	Sampled	
	11-AUG-94	21-JUL-94 08:56	

Report To	Bill To
JAMES AUER GERAGHTY AND MILLER 35 EAST WACKER DRIVE SUITE 1000 CHICAGO, IL 60601	JAMES AUER GERAGHTY & MILLER, INC. 35 EAST WACKER, SUITE 1000 CHICAGO, IL 60601

Sample Description

PROJECT NO.: CI0299.004
PROJECT NAME: NAVISTAR-ROCK ISLAND, IL.
SAMPLE ID.: GM-7

VOLATILE ORGANICS SW846-8240A

Analyst: B. MAZUR Analysis Date: 01-AUG-94 17:14 Instrument: GC/MS VOA Test: 0510.3.0 INDI

Parameter	Result	Det. Limit	Units
ACETONE	BDL	20	ug/L
ACROLEIN	BDL	50	ug/L
ACRYLONITRILE	BDL	70	ug/L
BENZENE	BDL	5	ug/L
BROMODICHLOROMETHANE	BDL	5	ug/L
BROMOFORM	BDL	5	ug/L
BROMOMETHANE	BDL	10	ug/L
CARBON DISULFIDE	BDL	5	ug/L
CARBON TETRACHLORIDE	BDL	5	ug/L
CHLOROBENZENE	BDL	5	ug/L
CHLOROETHANE	BDL	10	ug/L
CHLOROFORM	BDL	5	ug/L
CHLOROMETHANE	BDL	10	ug/L
DIBROMOCHLOROMETHANE	BDL	5	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/L
DICHLORODIFLUOROMETHANE	BDL	5	ug/L
1,1-DICHLOROETHANE	BDL	5	ug/L
1,2-DICHLOROETHANE	BDL	5	ug/L
1,1-DICHLOROETHENE	BDL	5	ug/L
1,2-DICHLOROPROPANE	BDL	5	ug/L
ETHYL BENZENE	BDL	5	ug/L
TRICHLOROFLUOROMETHANE	BDL	5	ug/L
2-HEXANONE	BDL	10	ug/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	5	ug/L
METHYL ETHYL KETONE	BDL	10	ug/L
4-METHYL-2-PENTANONE	BDL	10	ug/L
STYRENE	BDL	5	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/L
TETRACHLOROETHENE	BDL	5	ug/L
TETRAHYDROFURAN	BDL	25	ug/L
TOLUENE	BDL	5	ug/L
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	5	ug/L
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/L

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HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C159136

Parameter	Result	Det. Limit	Units
1,1,1-TRICHLOROETHANE	BDL	5	ug/L
1,1,2-TRICHLOROETHANE	BDL	5	ug/L
TRICHLOROETHENE	BDL	5	ug/L
VINYL ACETATE	BDL	10	ug/L
VINYL CHLORIDE	BDL	10	ug/L
XYLENES (O/M/P-XYLENE)	BDL	5	ug/L
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	101		% Rec
TOLUENE-D8	99		% Rec
4-BROMOFLUOROBENZENE	103		% Rec

PCB SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A

Analyst: K. NARINE Analysis Date: 25-JUL-94 Test: P230.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	1000		mL
FINAL VOLUME	10		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080

Analyst: M. JAEGER Analysis Date: 27-JUL-94 Instrument: GC/ECD Test: 0301.2.0

Prep: PCB SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P230.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	0.0005	mg/L
PCB AROCHLOR 1221	BDL	0.0005	mg/L
PCB AROCHLOR 1232	BDL	0.0005	mg/L
PCB AROCHLOR 1242	BDL	0.0005	mg/L
PCB AROCHLOR 1248	BDL	0.0005	mg/L
PCB AROCHLOR 1254	BDL	0.0005	mg/L
PCB AROCHLOR 1260	BDL	0.0005	mg/L
PCB AROCHLOR 1262	BDL	0.0005	mg/L

GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A

Analyst: P. SIMS Analysis Date: 26-JUL-94 21:30 Test: P233.2.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	970		mL
FINAL VOLUME	5		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 28-JUL-94 14:36 Instrument: HPLC Test: 0630.0.0 INDI

Prep: GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P233.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	0.36	ug/L
ACENAPHTHYLENE	BDL	0.29	ug/L
ACENAPHTHENE	BDL	0.32	ug/L
FLUORENE	BDL	0.23	ug/L
PHENANTHRENE	BDL	0.18	ug/L
ANTHRACENE	BDL	0.27	ug/L
FLUORANTHENE	BDL	0.20	ug/L
PYRENE	BDL	0.32	ug/L
BENZ(A)ANTHRACENE	BDL	0.13	ug/L
CHRYSENE	BDL	0.17	ug/L
BENZO(B)FLUORANTHENE	BDL	0.18	ug/L
BENZO(K)FLUORANTHENE	BDL	0.17	ug/L
BENZO(A)PYRENE	BDL	0.23	ug/L
DIBENZ(A,H)ANTHRACENE	BDL	0.09	ug/L
BENZO(G,H,I)PERYLENE	0.22	0.19	ug/L

 (continued on next page)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C159136

Parameter	Result	Det. Limit	Units
INDENO(1,2,3-CD)PYRENE	BDL	0.20	ug/L

Sample Comments

BDL Below Detection Limit

Sample chain of custody number NONE.

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Quality Assurance Officer: _____

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	22-JUL-94	2979	C159137
	Complete	PO Number	
	10-AUG-94	CI0299.004	
	Printed	Sampled	
	11-AUG-94	21-JUL-94 11:45	

Report To

JAMES AUER
GERAGHTY AND MILLER
35 EAST WACKER DRIVE
SUITE 1000
CHICAGO, IL 60601

Bill To

JAMES AUER
GERAGHTY & MILLER, INC.
35 EAST WACKER, SUITE 1000
CHICAGO, IL 60601

Sample Description

PROJECT NO.: CI0299.004
PROJECT NAME: NAVISTAR-ROCK ISLAND, IL.
SAMPLE ID.: GM-8

VOLATILE ORGANICS SW846-8240A

Analyst: B. MAZUR Analysis Date: 01-AUG-94 19:29 Instrument: GC/MS VOA Test: 0510.3.0 INDI

Parameter	Result	Det. Limit	Units
ACETONE	BDL	20	ug/L
ACROLEIN	BDL	50	ug/L
ACRYLONITRILE	BDL	70	ug/L
BENZENE	BDL	5	ug/L
BROMODICHLOROMETHANE	BDL	5	ug/L
BROMOFORM	BDL	5	ug/L
BROMOMETHANE	BDL	10	ug/L
CARBON DISULFIDE	BDL	5	ug/L
CARBON TETRACHLORIDE	BDL	5	ug/L
CHLOROBENZENE	BDL	5	ug/L
CHLOROETHANE	BDL	10	ug/L
CHLOROFORM	BDL	5	ug/L
CHLOROMETHANE	BDL	10	ug/L
DIBROMOCHLOROMETHANE	BDL	5	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/L
DICHLORODIFLUOROMETHANE	BDL	5	ug/L
1,1-DICHLOROETHANE	BDL	5	ug/L
1,2-DICHLOROETHANE	BDL	5	ug/L
1,1-DICHLOROETHENE	BDL	5	ug/L
1,2-DICHLOROPROPANE	BDL	5	ug/L
ETHYL BENZENE	BDL	5	ug/L
TRICHLOROFLUOROMETHANE	BDL	5	ug/L
2-HEXANONE	BDL	10	ug/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	5	ug/L
METHYL ETHYL KETONE	BDL	10	ug/L
4-METHYL-2-PENTANONE	BDL	10	ug/L
STYRENE	BDL	5	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/L
TETRACHLOROETHENE	BDL	5	ug/L
TETRAHYDROFURAN	BDL	25	ug/L
TOLUENE	BDL	5	ug/L
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	5	ug/L
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/L

 (continued on next page)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C159137

Parameter	Result	Det. Limit	Units
1,1,1-TRICHLOROETHANE	BDL	5	ug/L
1,1,2-TRICHLOROETHANE	BDL	5	ug/L
TRICHLOROETHENE	BDL	5	ug/L
VINYL ACETATE	BDL	10	ug/L
VINYL CHLORIDE	BDL	10	ug/L
XYLENES (O/M/P-XYLENE)	BDL	5	ug/L
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	102		% Rec
TOLUENE-D8	101		% Rec
4-BROMOFLUOROBENZENE	105		% Rec

PCB SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A

Analyst: K. NARINE Analysis Date: 25-JUL-94 Test: P230.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	980		mL
FINAL VOLUME	10		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080

Analyst: M. JAEGER Analysis Date: 27-JUL-94 Instrument: GC/ECD Test: 0301.2.0

Prep: PCB SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P230.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	0.0005	mg/L
PCB AROCHLOR 1221	BDL	0.0005	mg/L
PCB AROCHLOR 1232	BDL	0.0005	mg/L
PCB AROCHLOR 1242	BDL	0.0005	mg/L
PCB AROCHLOR 1248	BDL	0.0005	mg/L
PCB AROCHLOR 1254	BDL	0.0005	mg/L
PCB AROCHLOR 1260	BDL	0.0005	mg/L
PCB AROCHLOR 1262	BDL	0.0005	mg/L

GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A

Analyst: S. STRUEWING Analysis Date: 27-JUL-94 23:35 Test: P233.2.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	960		mL
FINAL VOLUME	5		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 28-JUL-94 11:53 Instrument: HPLC Test: 0630.0.0 INDI

Prep: GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P233.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	0.36	ug/L
ACENAPHTHYLENE	BDL	0.29	ug/L
ACENAPHTHENE	20	0.32	ug/L
FLUORENE	21	0.23	ug/L
PHENANTHRENE	7.5	0.18	ug/L
ANTHRACENE	1.3	0.27	ug/L
FLUORANTHENE	1.1	0.20	ug/L
PYRENE	1.2	0.32	ug/L
BENZ(A)ANTHRACENE	BDL	0.13	ug/L
CHRYSENE	BDL	0.17	ug/L
BENZO(B)FLUORANTHENE	BDL	0.18	ug/L
BENZO(K)FLUORANTHENE	BDL	0.17	ug/L
BENZO(A)PYRENE	BDL	0.23	ug/L
DIBENZ(A,H)ANTHRACENE	BDL	0.09	ug/L
BENZO(G,H,I)PERYLENE	BDL	0.19	ug/L

 (continued on next page)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C159137

Parameter	Result	Det. Limit	Units
INDENO(1,2,3-CD)PYRENE	BDL	0.20	ug/L

Sample Comments

BDL Below Detection Limit

Sample chain of custody number NONE.

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Quality Assurance Officer: _____

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	25-JUL-94	2979	C159271
	Complete	PO Number	
	12-AUG-94	CI0299.004	
	Printed	Sampled	
	18-AUG-94	23-JUL-94 08:40	

Report To	Bill To
JAMES AUER GERAGHTY AND MILLER 35 EAST WACKER DRIVE SUITE 1000 CHICAGO, IL 60601	JAMES AUER GERAGHTY & MILLER, INC. 35 EAST WACKER, SUITE 1000 CHICAGO, IL 60601

Sample Description

PROJECT: NAVISTAR-ROCK ISLAND, IL.
PROJECT NO.: CI0299.004
SAMPLE ID.: GM-9

VOLATILE ORGANICS SW846-8240A

Analyst: R. SHAMP Analysis Date: 05-AUG-94 14:17 Instrument: GC/MS VOA Test: 0510.3.0 INDI

Parameter	Result	Det. Limit	Units
ACETONE	38	20	ug/L
ACROLEIN	BDL	50	ug/L
ACRYLONITRILE	BDL	70	ug/L
BENZENE	BDL	5	ug/L
BROMODICHLOROMETHANE	BDL	5	ug/L
BROMOFORM	BDL	5	ug/L
BROMOMETHANE	BDL	10	ug/L
CARBON DISULFIDE	BDL	5	ug/L
CARBON TETRACHLORIDE	BDL	5	ug/L
CHLOROBENZENE	BDL	5	ug/L
CHLOROETHANE	BDL	10	ug/L
CHLOROFORM	BDL	5	ug/L
CHLOROMETHANE	BDL	10	ug/L
DIBROMOCHLOROMETHANE	BDL	5	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/L
DICHLORODIFLUOROMETHANE	BDL	5	ug/L
1,1-DICHLOROETHANE	BDL	5	ug/L
1,2-DICHLOROETHANE	BDL	5	ug/L
1,1-DICHLOROETHENE	BDL	5	ug/L
1,2-DICHLOROPROPANE	BDL	5	ug/L
ETHYL BENZENE	BDL	5	ug/L
TRICHLOROFLUOROMETHANE	BDL	5	ug/L
2-HEXANONE	BDL	10	ug/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	5	ug/L
METHYL ETHYL KETONE	BDL	10	ug/L
4-METHYL-2-PENTANONE	BDL	10	ug/L
STYRENE	BDL	5	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/L
TETRACHLOROETHENE	BDL	5	ug/L
TETRAHYDROFURAN	BDL	25	ug/L
TOLUENE	BDL	5	ug/L
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	5	ug/L
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/L

 (continued on next page)

Parameter	Result	Det. Limit	Units
1,1,1-TRICHLOROETHANE	BDL	5	ug/L
1,1,2-TRICHLOROETHANE	BDL	5	ug/L
TRICHLOROETHENE	BDL	5	ug/L
VINYL ACETATE	BDL	10	ug/L
VINYL CHLORIDE	BDL	10	ug/L
XYLENES (O/M/P-XYLENE)	BDL	5	ug/L
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	98		% Rec
TOLUENE-D8	101		% Rec
4-BROMOFLUOROBENZENE	114		% Rec

On this instrument, packed column has been replaced by capillary column with 8240 criteria.

PCB SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A

Analyst: K. NARINE Analysis Date: 27-JUL-94 Test: P230.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	1000		mL
FINAL VOLUME	10		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080

Analyst: M. JAEGER Analysis Date: 27-JUL-94 Instrument: GC/ECD Test: 0301.2.0

Prep: PCB SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P230.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	0.0005	mg/L
PCB AROCHLOR 1221	BDL	0.0005	mg/L
PCB AROCHLOR 1232	BDL	0.0005	mg/L
PCB AROCHLOR 1242	BDL	0.0005	mg/L
PCB AROCHLOR 1248	BDL	0.0005	mg/L
PCB AROCHLOR 1254	BDL	0.0005	mg/L
PCB AROCHLOR 1260	BDL	0.0005	mg/L
PCB AROCHLOR 1262	BDL	0.0005	mg/L

GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A

Analyst: S. STRUEWING Analysis Date: 28-JUL-94 16:30 Test: P233.2.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	930		mL
FINAL VOLUME	5		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 28-JUL-94 20:47 Instrument: HPLC Test: 0630.0.0 INDI

Prep: GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P233.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	0.36	ug/L
ACENAPHTHYLENE	BDL	0.29	ug/L
ACENAPHTHENE	20	0.32	ug/L
FLUORENE	EST 60	0.23	ug/L
PHENANTHRENE	EST 130	0.18	ug/L
ANTHRACENE	5.7	0.27	ug/L
FLUORANTHENE	2.7	0.20	ug/L
PYRENE	2.5	0.32	ug/L
BENZ(A)ANTHRACENE	0.42	0.13	ug/L
CHRYSENE	2.5	0.17	ug/L
BENZO(B)FLUORANTHENE	BDL	0.18	ug/L
BENZO(K)FLUORANTHENE	BDL	0.17	ug/L

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C159271

Parameter	Result	Det. Limit	Units
BENZO(A)PYRENE	BDL	0.23	ug/L
DIBENZ(A,H)ANTHRACENE	BDL	0.09	ug/L
BENZO(G,H,I)PERYLENE	BDL	0.19	ug/L
INDENO(1,2,3-CD)PYRENE	BDL	0.20	ug/L

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 03-AUG-94 04:18 Instrument: HPLC Test: 0630.0.1 INDI

Prep: GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P233.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	7.2	ug/L
ACENAPHTHYLENE	BDL	5.8	ug/L
ACENAPHTHENE	20	6.4	ug/L
FLUORENE	50	4.6	ug/L
PHENANTHRENE	130	3.6	ug/L
ANTHRACENE	5.7	5.4	ug/L
FLUORANTHENE	BDL	4	ug/L
PYRENE	BDL	6.4	ug/L
BENZ(A)ANTHRACENE	BDL	2.6	ug/L
CHRYSENE	BDL	3.4	ug/L
BENZO(B)FLUORANTHENE	BDL	3.6	ug/L
BENZO(K)FLUORANTHENE	BDL	3.4	ug/L
BENZO(A)PYRENE	BDL	4.6	ug/L
DIBENZ(A,H)ANTHRACENE	BDL	1.8	ug/L
BENZO(G,H,I)PERYLENE	BDL	3.8	ug/L
INDENO(1,2,3-CD)PYRENE	BDL	4	ug/L

1:20 dilution.

Sample Comments

BDL Below Detection Limit
EST Estimated Value

Sample chain of custody number NONE.

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Quality Assurance Officer: Christine Jarden (Dunee)

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	25-JUL-94	2979	C159272
	Complete	PO Number	
	09-AUG-94	CI0299.004	
	Printed	Sampled	
	17-AUG-94	23-JUL-94 09:25	

Report To	Bill To
JAMES AUER GERAGHTY AND MILLER 35 EAST WACKER DRIVE SUITE 1000 CHICAGO, IL 60601	JAMES AUER GERAGHTY & MILLER, INC. 35 EAST WACKER, SUITE 1000 CHICAGO, IL 60601

Sample Description

PROJECT: NAVISTAR-ROCK ISLAND, IL.
PROJECT NO.: CI0299.004
SAMPLE ID.: GM-10

VOLATILE ORGANICS SW846-8240A

Analyst: R. SHAMP Analysis Date: 05-AUG-94 14:55 Instrument: GC/MS VOA Test: 0510.3.0 INDI

Parameter	Result	Det. Limit	Units
ACETONE	BDL	1000	ug/L
ACROLEIN	BDL	2500	ug/L
ACRYLONITRILE	BDL	3500	ug/L
BENZENE	BDL	250	ug/L
BROMODICHLOROMETHANE	BDL	250	ug/L
BROMOFORM	BDL	250	ug/L
BROMOMETHANE	BDL	500	ug/L
CARBON DISULFIDE	BDL	250	ug/L
CARBON TETRACHLORIDE	BDL	250	ug/L
CHLOROBENZENE	BDL	250	ug/L
CHLOROETHANE	BDL	500	ug/L
CHLOROFORM	BDL	250	ug/L
CHLOROMETHANE	BDL	500	ug/L
DIBROMOCHLOROMETHANE	BDL	250	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	250	ug/L
DICHLORODIFLUOROMETHANE	BDL	250	ug/L
1,1-DICHLOROETHANE	BDL	250	ug/L
1,2-DICHLOROETHANE	BDL	250	ug/L
1,1-DICHLOROETHENE	BDL	250	ug/L
1,2-DICHLOROPROPANE	BDL	250	ug/L
ETHYL BENZENE	BDL	250	ug/L
TRICHLOROFLUOROMETHANE	BDL	250	ug/L
2-HEXANONE	BDL	500	ug/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	250	ug/L
METHYL ETHYL KETONE	BDL	500	ug/L
4-METHYL-2-PENTANONE	BDL	500	ug/L
STYRENE	BDL	250	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	250	ug/L
TETRACHLOROETHENE	BDL	250	ug/L
TETRAHYDROFURAN	BDL	1200	ug/L
TOLUENE	BDL	250	ug/L
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	250	ug/L
TRANS-1,3-DICHLOROPROPENE	BDL	250	ug/L

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HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C159272

Parameter	Result	Det. Limit	Units
1,1,1-TRICHLOROETHANE	BDL	250	ug/L
1,1,2-TRICHLOROETHANE	BDL	250	ug/L
TRICHLOROETHENE	BDL	250	ug/L
VINYL ACETATE	BDL	500	ug/L
VINYL CHLORIDE	BDL	500	ug/L
XYLENES (O/M/P-XYLENE)	BDL	250	ug/L
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	95		% Rec
TOLUENE-D8	102		% Rec
4-BROMOFLUOROBENZENE	101		% Rec

On this instrument, packed column has been replaced by capillary column with 8240 criteria.
Unable to analyze sample at lower dilution due to high concentration of non-target compounds.
1:50 DILUTION

PCB SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A
Analyst: K. NARINE Analysis Date: 27-JUL-94 Test: P230.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	1000		mL
FINAL VOLUME	10		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080
Analyst: M. JAEGER Analysis Date: 27-JUL-94 Instrument: GC/ECD Test: 0301.2.0
Prep: PCB SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P230.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	0.0005	mg/L
PCB AROCHLOR 1221	BDL	0.0005	mg/L
PCB AROCHLOR 1232	BDL	0.0005	mg/L
PCB AROCHLOR 1242	BDL	0.0005	mg/L
PCB AROCHLOR 1248	BDL	0.0005	mg/L
PCB AROCHLOR 1254	BDL	0.0005	mg/L
PCB AROCHLOR 1260	BDL	0.0005	mg/L
PCB AROCHLOR 1262	BDL	0.0005	mg/L

GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A
Analyst: S. STRUEWING Analysis Date: 28-JUL-94 17:30 Test: P233.2.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	960		mL
FINAL VOLUME	5		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310
Analyst: T. COFFELT Analysis Date: 28-JUL-94 21:32 Instrument: HPLC Test: 0630.0.0 INDI
Prep: GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P233.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	98	0.36	ug/L
ACENAPHTHYLENE	BDL	0.29	ug/L
ACENAPHTHENE	55	0.32	ug/L
FLUORENE	EST 330	0.23	ug/L
PHENANTHRENE	EST 350	0.18	ug/L
ANTHRACENE	*	0.27	ug/L
FLUORANTHENE	*	0.20	ug/L
PYRENE	BDL	0.32	ug/L
BENZ(A)ANTHRACENE	BDL	0.13	ug/L

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HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C159272

Parameter	Result	Det. Limit	Units
CHRYSENE	*	0.17	ug/L
BENZO(B)FLUORANTHENE	5.6	0.18	ug/L
BENZO(K)FLUORANTHENE	0.25	0.17	ug/L
BENZO(A)PYRENE	BDL	0.23	ug/L
DIBENZ(A,H)ANTHRACENE	BDL	0.09	ug/L
BENZO(G,H,I)PERYLENE	BDL	0.19	ug/L
INDENO(1,2,3-CD)PYRENE	BDL	0.20	ug/L

** SEE REPLICATE 1*

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 03-AUG-94 05:03 Instrument: HPLC Test: 0630.0.1 INDI

Prep: GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P233.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	110	18	ug/L
ACENAPHTHYLENE	BDL	14	ug/L
ACENAPHTHENE	100	16	ug/L
FLUORENE	300	11	ug/L
PHENANTHRENE	EST 810	9	ug/L
ANTHRACENE	49	13	ug/L
FLUORANTHENE	12	10	ug/L
PYRENE	BDL	16	ug/L
BENZ(A)ANTHRACENE	BDL	6.5	ug/L
CHRYSENE	14	8.5	ug/L
BENZO(B)FLUORANTHENE	BDL	9	ug/L
BENZO(K)FLUORANTHENE	BDL	8.5	ug/L
BENZO(A)PYRENE	BDL	11	ug/L
DIBENZ(A,H)ANTHRACENE	BDL	4.5	ug/L
BENZO(G,H,I)PERYLENE	BDL	9.5	ug/L
INDENO(1,2,3-CD)PYRENE	BDL	10	ug/L

1:50 dilution.

Sample Comments

** See Note for Parameter*
BDL Below Detection Limit
EST Estimated Value

Sample chain of custody number NONE.

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Quality Assurance Officer: _____

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	23-JUL-94	2979	C159247
	Complete	PO Number	
	13-AUG-94	CI0299.004	
	Printed	Sampled	
	18-AUG-94	22-JUL-94 16:55	

Report To	Bill To
JAMES AUER GERAGHTY AND MILLER 35 EAST WACKER DRIVE SUITE 1000 CHICAGO, IL 60601	JAMES AUER GERAGHTY & MILLER, INC. 35 EAST WACKER, SUITE 1000 CHICAGO, IL 60601

Sample Description

PROJECT: NAVISTAR-ROCK ISLAND, IL.
PROJECT NO.: CI0299.004
SAMPLE ID.: GM-11

VOLATILE ORGANICS SW846-8240A

Analyst: B. MAZUR Analysis Date: 05-AUG-94 12:35 Instrument: GC/MS VOA Test: 0510.3.0 INDI

Parameter	Result	Det. Limit	Units
ACETONE	30	20	ug/L
ACROLEIN	BDL	50	ug/L
ACRYLONITRILE	BDL	70	ug/L
BENZENE	BDL	5	ug/L
BROMODICHLOROMETHANE	BDL	5	ug/L
BROMOFORM	BDL	5	ug/L
BROMOMETHANE	BDL	10	ug/L
CARBON DISULFIDE	BDL	5	ug/L
CARBON TETRACHLORIDE	BDL	5	ug/L
CHLOROBENZENE	BDL	5	ug/L
CHLOROETHANE	BDL	10	ug/L
CHLOROFORM	BDL	5	ug/L
CHLOROMETHANE	BDL	10	ug/L
DIBROMOCHLOROMETHANE	BDL	5	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/L
DICHLORODIFLUOROMETHANE	BDL	5	ug/L
1,1-DICHLOROETHANE	BDL	5	ug/L
1,2-DICHLOROETHANE	BDL	5	ug/L
1,1-DICHLOROETHENE	BDL	5	ug/L
1,2-DICHLOROPROPANE	BDL	5	ug/L
ETHYL BENZENE	BDL	5	ug/L
TRICHLOROFLUOROMETHANE	BDL	5	ug/L
2-HEXANONE	BDL	10	ug/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	5	ug/L
METHYL ETHYL KETONE	BDL	10	ug/L
4-METHYL-2-PENTANONE	BDL	10	ug/L
STYRENE	BDL	5	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/L
TETRACHLOROETHENE	BDL	5	ug/L
TETRAHYDROFURAN	BDL	25	ug/L
TOLUENE	BDL	5	ug/L
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	5	ug/L
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/L

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HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C159247

Parameter	Result	Det. Limit	Units
1,1,1-TRICHLOROETHANE	BDL	5	ug/L
1,1,2-TRICHLOROETHANE	BDL	5	ug/L
TRICHLOROETHENE	BDL	5	ug/L
VINYL ACETATE	BDL	10	ug/L
VINYL CHLORIDE	BDL	10	ug/L
XYLENES (O/M/P-XYLENE)	BDL	5	ug/L
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	108		% Rec
TOLUENE-D8	99		% Rec
4-BROMOFLUOROBENZENE	102		% Rec

PCB SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A

Analyst: K. NARINE Analysis Date: 27-JUL-94 Test: P230.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	1000		mL
FINAL VOLUME	10		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080

Analyst: M. JAEGER Analysis Date: 27-JUL-94 Instrument: GC/ECD Test: 0301.2.0

Prep: PCB SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P230.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	0.0005	mg/L
PCB AROCHLOR 1221	BDL	0.0005	mg/L
PCB AROCHLOR 1232	BDL	0.0005	mg/L
PCB AROCHLOR 1242	BDL	0.0005	mg/L
PCB AROCHLOR 1248	BDL	0.0005	mg/L
PCB AROCHLOR 1254	BDL	0.0005	mg/L
PCB AROCHLOR 1260	BDL	0.0005	mg/L
PCB AROCHLOR 1262	BDL	0.0005	mg/L

GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A

Analyst: P. SIMS Analysis Date: 27-JUL-94 18:15 Test: P233.2.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	920		mL
FINAL VOLUME	5		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 02-AUG-94 16:37 Instrument: HPLC Test: 0630.0.2 INDI

Prep: GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P233.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	0.36	ug/L
ACENAPHTHYLENE	BDL	0.29	ug/L
ACENAPHTHENE	11	0.32	ug/L
FLUORENE	14	0.23	ug/L
PHENANTHRENE	12	0.18	ug/L
ANTHRACENE	BDL	0.27	ug/L
FLUORANTHENE	BDL	0.20	ug/L
PYRENE	BDL	0.32	ug/L
BENZ(A)ANTHRACENE	BDL	0.13	ug/L
CHRYSENE	BDL	0.17	ug/L
BENZO(B)FLUORANTHENE	BDL	0.18	ug/L
BENZO(K)FLUORANTHENE	BDL	0.17	ug/L
BENZO(A)PYRENE	BDL	0.23	ug/L
DIBENZ(A,H)ANTHRACENE	BDL	0.09	ug/L
BENZO(G,H,I)PERYLENE	BDL	0.19	ug/L

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HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C159247

Parameter	Result	Det. Limit	Units
INDENO(1,2,3-CD)PYRENE	*BDL*	*0.20*	*ug/L*
1:20 dilution.			

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 03-AUG-94 02:02 Instrument: HPLC Test: 0630.0.1 INDI

Prep: GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P233.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	7.2	ug/L
ACENAPHTHYLENE	BDL	5.8	ug/L
ACENAPHTHENE	10	6.4	ug/L
FLUORENE	13	4.6	ug/L
PHENANTHRENE	12	3.6	ug/L
ANTHRACENE	BDL	5.4	ug/L
FLUORANTHENE	BDL	4	ug/L
PYRENE	BDL	6.4	ug/L
BENZ(A)ANTHRACENE	BDL	2.6	ug/L
CHRYSENE	BDL	3.4	ug/L
BENZO(B)FLUORANTHENE	BDL	3.6	ug/L
BENZO(K)FLUORANTHENE	BDL	3.4	ug/L
BENZO(A)PYRENE	BDL	4.6	ug/L
DIBENZ(A,H)ANTHRACENE	BDL	1.8	ug/L
BENZO(G,H,I)PERYLENE	BDL	3.8	ug/L
INDENO(1,2,3-CD)PYRENE	BDL	4	ug/L
1:20 dilution.			

Sample Comments

BDL Below Detection Limit

Sample chain of custody number NONE.

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Quality Assurance Officer: Christine Sanchez (Denis)

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	23-JUL-94	2979	C159248
	Complete	PO Number	
	13-AUG-94	CI0299.004	
	Printed	Sampled	
	18-AUG-94	22-JUL-94 16:10	

Report To	Bill To
JAMES AUER GERAGHTY AND MILLER 35 EAST WACKER DRIVE SUITE 1000 CHICAGO, IL 60601	JAMES AUER GERAGHTY & MILLER, INC. 35 EAST WACKER. SUITE 1000 CHICAGO, IL 60601

Sample Description

PROJECT: NAVISTAR-ROCK ISLAND, IL.
PROJECT NO.: CI0299.004
SAMPLE ID.: GM-12

VOLATILE ORGANICS SW846-8240A

Analyst: B. MAZUR Analysis Date: 05-AUG-94 13:20 Instrument: GC/MS VOA Test: 0510.3.0 INDI

Parameter	Result	Det. Limit	Units
ACETONE	BDL	20	ug/L
ACROLEIN	BDL	50	ug/L
ACRYLONITRILE	BDL	70	ug/L
BENZENE	BDL	5	ug/L
BROMODICHLOROMETHANE	BDL	5	ug/L
BROMOFORM	BDL	5	ug/L
BROMOMETHANE	BDL	10	ug/L
CARBON DISULFIDE	BDL	5	ug/L
CARBON TETRACHLORIDE	BDL	5	ug/L
CHLOROBENZENE	BDL	5	ug/L
CHLOROETHANE	BDL	10	ug/L
CHLOROFORM	BDL	5	ug/L
CHLOROMETHANE	BDL	10	ug/L
DIBROMOCHLOROMETHANE	BDL	5	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/L
DICHLORODIFLUOROMETHANE	BDL	5	ug/L
1,1-DICHLOROETHANE	BDL	5	ug/L
1,2-DICHLOROETHANE	BDL	5	ug/L
1,1-DICHLOROETHENE	BDL	5	ug/L
1,2-DICHLOROPROPANE	BDL	5	ug/L
ETHYL BENZENE	BDL	5	ug/L
TRICHLOROFLUOROMETHANE	BDL	5	ug/L
2-HEXANONE	BDL	10	ug/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	5	ug/L
METHYL ETHYL KETONE	BDL	10	ug/L
4-METHYL-2-PENTANONE	BDL	10	ug/L
STYRENE	BDL	5	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/L
TETRACHLOROETHENE	BDL	5	ug/L
TETRAHYDROFURAN	BDL	25	ug/L
TOLUENE	BDL	5	ug/L
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	5	ug/L
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/L

 (continued on next page)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C159248

Parameter	Result	Det. Limit	Units
1,1,1-TRICHLOROETHANE	BDL	5	ug/L
1,1,2-TRICHLOROETHANE	BDL	5	ug/L
TRICHLOROETHENE	BDL	5	ug/L
VINYL ACETATE	BDL	10	ug/L
VINYL CHLORIDE	BDL	10	ug/L
XYLENES (O/M/P-XYLENE)	BDL	5	ug/L
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	109		% Rec
TOLUENE-D8	102		% Rec
4-BROMOFLUOROBENZENE	114		% Rec

water ph = 7

PCB SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A

Analyst: K. NARINE Analysis Date: 27-JUL-94 Test: P230.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	1000		mL
FINAL VOLUME	10		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080

Analyst: M. JAEGER Analysis Date: 27-JUL-94 Instrument: GC/ECD Test: 0301.2.0

Prep: PCB SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P230.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	0.0005	mg/L
PCB AROCHLOR 1221	BDL	0.0005	mg/L
PCB AROCHLOR 1232	BDL	0.0005	mg/L
PCB AROCHLOR 1242	BDL	0.0005	mg/L
PCB AROCHLOR 1248	BDL	0.0005	mg/L
PCB AROCHLOR 1254	BDL	0.0005	mg/L
PCB AROCHLOR 1260	BDL	0.0005	mg/L
PCB AROCHLOR 1262	BDL	0.0005	mg/L

GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A

Analyst: P. SIMS Analysis Date: 27-JUL-94 18:15 Test: P233.2.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	940		mL
FINAL VOLUME	5		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 03-AUG-94 02:47 Instrument: HPLC Test: 0630.0.1 INDI

Prep: GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P233.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	.72	ug/L
ACENAPHTHYLENE	BDL	.58	ug/L
ACENAPHTHENE	160	.64	ug/L
FLUORENE	EST 460	.46	ug/L
PHENANTHRENE	EST 670	.36	ug/L
ANTHRACENE	20	.54	ug/L
FLUORANTHENE	14	.4	ug/L
PYRENE	18	.64	ug/L
BENZ(A)ANTHRACENE	BDL	.26	ug/L
CHRYSENE	BDL	.34	ug/L
BENZO(B)FLUORANTHENE	BDL	.36	ug/L
BENZO(K)FLUORANTHENE	EST 0.27	.34	ug/L
BENZO(A)PYRENE	4.4	.46	ug/L

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HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C159248

Parameter	Result	Det. Limit	Units
DIBENZ(A,H)ANTHRACENE	BDL	.18	ug/L
BENZO(G,H,I)PERYLENE	BDL	.38	ug/L
INDENO(1,2,3-CD)PYRENE	BDL	.4	ug/L

1:2 dilution.

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 02-AUG-94 17:24 Instrument: HPLC Test: 0630.0.2 INDI

Prep: GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P233.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	18	ug/L
ACENAPHTHYLENE	BDL	14	ug/L
ACENAPHTHENE	190	16	ug/L
FLUORENE	460	11	ug/L
PHENANTHRENE	EST 930	9	ug/L
ANTHRACENE	BDL	13	ug/L
FLUORANTHENE	BDL	10	ug/L
PYRENE	BDL	16	ug/L
BENZ(A)ANTHRACENE	BDL	6.5	ug/L
CHRYSENE	BDL	8.5	ug/L
BENZO(B)FLUORANTHENE	BDL	9	ug/L
BENZO(K)FLUORANTHENE	BDL	8.5	ug/L
BENZO(A)PYRENE	BDL	11	ug/L
DIBENZ(A,H)ANTHRACENE	BDL	4.5	ug/L
BENZO(G,H,I)PERYLENE	BDL	9.5	ug/L
INDENO(1,2,3-CD)PYRENE	BDL	10	ug/L

1:50 dilution

Sample Comments

BDL Below Detection Limit
EST Estimated Value

Sample chain of custody number NONE.

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Quality Assurance Officer: Christine Taylor (Jones)

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	23-JUL-94	2979	C159249
	Complete	PO Number	
	13-AUG-94	CI0299.004	
	Printed	Sampled	
	18-AUG-94	22-JUL-94 15:32	

Report To	Bill To
JAMES AUER GERAGHTY AND MILLER 35 EAST WACKER DRIVE SUITE 1000 CHICAGO, IL 60601	JAMES AUER GERAGHTY & MILLER, INC. 35 EAST WACKER, SUITE 1000 CHICAGO, IL 60601

Sample Description

PROJECT: NAVISTAR-ROCK ISLAND, IL.
PROJECT NO.: CI0299.004
SAMPLE ID.: GM-13

VOLATILE ORGANICS SW846-8240A

Analyst: B. MAZUR Analysis Date: 04-AUG-94 15:27 Instrument: GC/MS VOA Test: 0510.3.0 INDI

Parameter	Result	Det. Limit	Units
ACETONE	BDL	20	ug/L
ACROLEIN	BDL	50	ug/L
ACRYLONITRILE	BDL	70	ug/L
BENZENE	BDL	5	ug/L
BROMODICHLOROMETHANE	BDL	5	ug/L
BROMOFORM	BDL	5	ug/L
BROMOMETHANE	BDL	10	ug/L
CARBON DISULFIDE	BDL	5	ug/L
CARBON TETRACHLORIDE	BDL	5	ug/L
CHLOROBENZENE	BDL	5	ug/L
CHLOROETHANE	BDL	10	ug/L
CHLOROFORM	BDL	5	ug/L
CHLOROMETHANE	BDL	10	ug/L
DIBROMOCHLOROMETHANE	BDL	5	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/L
DICHLORODIFLUOROMETHANE	BDL	5	ug/L
1,1-DICHLOROETHANE	BDL	5	ug/L
1,2-DICHLOROETHANE	BDL	5	ug/L
1,1-DICHLOROETHENE	BDL	5	ug/L
1,2-DICHLOROPROPANE	BDL	5	ug/L
ETHYL BENZENE	BDL	5	ug/L
TRICHLOROFLUOROMETHANE	BDL	5	ug/L
2-HEXANONE	BDL	10	ug/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	5	ug/L
METHYL ETHYL KETONE	BDL	10	ug/L
4-METHYL-2-PENTANONE	BDL	10	ug/L
STYRENE	BDL	5	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/L
TETRACHLOROETHENE	BDL	5	ug/L
TETRAHYDROFURAN	BDL	25	ug/L
TOLUENE	BDL	5	ug/L
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	5	ug/L
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/L

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HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C159249

Parameter	Result	Det. Limit	Units
1,1,1-TRICHLOROETHANE	BDL	5	ug/L
1,1,2-TRICHLOROETHANE	BDL	5	ug/L
TRICHLOROETHENE	BDL	5	ug/L
VINYL ACETATE	BDL	10	ug/L
VINYL CHLORIDE	BDL	10	ug/L
XYLENES (O/M/P-XYLENE)	BDL	5	ug/L
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	104		% Rec
TOLUENE-D8	104		% Rec
4-BROMOFLUOROBENZENE	102		% Rec

PCB SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A

Analyst: K. NARINE Analysis Date: 27-JUL-94 Test: P230.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	1000		mL
FINAL VOLUME	10		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080

Analyst: M. JAEGER Analysis Date: 27-JUL-94 Instrument: GC/ECD Test: 0301.2.0

Prep: PCB SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P230.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	0.0005	mg/L
PCB AROCHLOR 1221	BDL	0.0005	mg/L
PCB AROCHLOR 1232	BDL	0.0005	mg/L
PCB AROCHLOR 1242	BDL	0.0005	mg/L
PCB AROCHLOR 1248	BDL	0.0005	mg/L
PCB AROCHLOR 1254	BDL	0.0005	mg/L
PCB AROCHLOR 1260	BDL	0.0005	mg/L
PCB AROCHLOR 1262	BDL	0.0005	mg/L

GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A

Analyst: P. SIMS Analysis Date: 27-JUL-94 18:15 Test: P233.2.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	920		mL
FINAL VOLUME	5		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 28-JUL-94 14:04 Instrument: HPLC Test: 0630.0.0 INDI

Prep: GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P233.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	0.36	ug/L
ACENAPHTHYLENE	BDL	0.29	ug/L
ACENAPHTHENE	BDL	0.32	ug/L
FLUORENE	5.9	0.23	ug/L
PHENANTHRENE	6.4	0.18	ug/L
ANTHRACENE	BDL	0.27	ug/L
FLUORANTHENE	BDL	0.20	ug/L
PYRENE	BDL	0.32	ug/L
BENZ(A)ANTHRACENE	BDL	0.13	ug/L
CHRYSENE	BDL	0.17	ug/L
BENZO(B)FLUORANTHENE	BDL	0.18	ug/L
BENZO(K)FLUORANTHENE	BDL	0.17	ug/L
BENZO(A)PYRENE	BDL	0.23	ug/L
DIBENZ(A,H)ANTHRACENE	BDL	0.09	ug/L
BENZO(G,H,I)PERYLENE	BDL	0.19	ug/L

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HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C159249

Parameter	Result	Det. Limit	Units
INDENO(1,2,3-CD)PYRENE	BDL	0.20	ug/L

Sample Comments

BDL Below Detection Limit

Sample chain of custody number NONE.

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Quality Assurance Officer: Christine Sarlon (Sams)

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	23-JUL-94	2979	C159250
	Complete	PO Number	
	12-AUG-94	CI0299.004	
	Printed	Sampled	
	18-AUG-94	22-JUL-94 14:53	

Report To	Bill To
JAMES AUER GERAGHTY AND MILLER 35 EAST WACKER DRIVE SUITE 1000 CHICAGO, IL 60601	JAMES AUER GERAGHTY & MILLER, INC. 35 EAST WACKER, SUITE 1000 CHICAGO, IL 60601

Sample Description

PROJECT: NAVISTAR-ROCK ISLAND, IL.
PROJECT NO.: CI0299.004
SAMPLE ID.: GM-14

VOLATILE ORGANICS SW846-8240A

Analyst: B. MAZUR Analysis Date: 04-AUG-94 16:11 Instrument: GC/MS VOA Test: 0510.3.0 INDI

Parameter	Result	Det. Limit	Units
ACETONE	BDL	20	ug/L
ACROLEIN	BDL	50	ug/L
ACRYLONITRILE	BDL	70	ug/L
BENZENE	BDL	5	ug/L
BROMODICHLOROMETHANE	BDL	5	ug/L
BROMOFORM	BDL	5	ug/L
BROMOMETHANE	BDL	10	ug/L
CARBON DISULFIDE	BDL	5	ug/L
CARBON TETRACHLORIDE	BDL	5	ug/L
CHLOROBENZENE	BDL	5	ug/L
CHLOROETHANE	BDL	10	ug/L
CHLOROFORM	BDL	5	ug/L
CHLOROMETHANE	BDL	10	ug/L
DIBROMOCHLOROMETHANE	BDL	5	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/L
DICHLORODIFLUOROMETHANE	BDL	5	ug/L
1,1-DICHLOROETHANE	BDL	5	ug/L
1,2-DICHLOROETHANE	BDL	5	ug/L
1,1-DICHLOROETHENE	BDL	5	ug/L
1,2-DICHLOROPROPANE	BDL	5	ug/L
ETHYL BENZENE	BDL	5	ug/L
TRICHLOROFLUOROMETHANE	BDL	5	ug/L
2-HEXANONE	BDL	10	ug/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	5	ug/L
METHYL ETHYL KETONE	BDL	10	ug/L
4-METHYL-2-PENTANONE	BDL	10	ug/L
STYRENE	BDL	5	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/L
TETRACHLOROETHENE	BDL	5	ug/L
TETRAHYDROFURAN	BDL	25	ug/L
TOLUENE	BDL	5	ug/L
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	5	ug/L
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/L

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HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C159250

Parameter	Result	Det. Limit	Units
1,1,1-TRICHLOROETHANE	BDL	5	ug/L
1,1,2-TRICHLOROETHANE	BDL	5	ug/L
TRICHLOROETHENE	BDL	5	ug/L
VINYL ACETATE	BDL	10	ug/L
VINYL CHLORIDE	BDL	10	ug/L
XYLENES (O/M/P-XYLENE)	BDL	5	ug/L
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	103		% Rec
TOLUENE-D8	102		% Rec
4-BROMOFLUOROBENZENE	104		% Rec

PCB SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A

Analyst: K. NARINE Analysis Date: 27-JUL-94 Test: P230.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	1000		mL
FINAL VOLUME	10		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080

Analyst: M. JAEGER Analysis Date: 27-JUL-94 Instrument: GC/ECD Test: 0301.2.0

Prep: PCB SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P230.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	0.0005	mg/L
PCB AROCHLOR 1221	BDL	0.0005	mg/L
PCB AROCHLOR 1232	BDL	0.0005	mg/L
PCB AROCHLOR 1242	BDL	0.0005	mg/L
PCB AROCHLOR 1248	BDL	0.0005	mg/L
PCB AROCHLOR 1254	BDL	0.0005	mg/L
PCB AROCHLOR 1260	BDL	0.0005	mg/L
PCB AROCHLOR 1262	BDL	0.0005	mg/L

GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A

Analyst: P. SIMS Analysis Date: 27-JUL-94 19:40 Test: P233.2.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	910		mL
FINAL VOLUME	5		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 28-JUL-94 14:50 Instrument: HPLC Test: 0630.0.0 INDI

Prep: GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P233.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	0.36	ug/L
ACENAPHTHYLENE	BDL	0.29	ug/L
ACENAPHTHENE	BDL	0.32	ug/L
FLUORENE	BDL	0.23	ug/L
PHENANTHRENE	BDL	0.18	ug/L
ANTHRACENE	BDL	0.27	ug/L
FLUORANTHENE	BDL	0.20	ug/L
PYRENE	BDL	0.32	ug/L
BENZ(A)ANTHRACENE	BDL	0.13	ug/L
CHRYSENE	BDL	0.17	ug/L
BENZO(B)FLUORANTHENE	BDL	0.18	ug/L
BENZO(K)FLUORANTHENE	BDL	0.17	ug/L
BENZO(A)PYRENE	BDL	0.23	ug/L
DIBENZ(A,H)ANTHRACENE	BDL	0.09	ug/L
BENZO(G,H,I)PERYLENE	BDL	0.19	ug/L

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HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C159250

Parameter	Result	Det. Limit	Units
INDENO(1,2,3-CD)PYRENE	BDL	0.20	ug/L

Sample Comments

BDL Below Detection Limit

Sample chain of custody number NONE.

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Quality Assurance Officer: Christine Larson (Lewis)

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	23-JUL-94	2979	C159251
	Complete	PO Number	
	12-AUG-94	CI0299.004	
	Printed	Sampled	
	18-AUG-94	22-JUL-94 14:15	

Report To	Bill To
JAMES AUER GERAGHTY AND MILLER 35 EAST WACKER DRIVE SUITE 1000 CHICAGO, IL 60601	JAMES AUER GERAGHTY & MILLER, INC. 35 EAST WACKER, SUITE 1000 CHICAGO, IL 60601

Sample Description

PROJECT: NAVISTAR-ROCK ISLAND, IL.
PROJECT NO.: CI0299.004
SAMPLE ID.: GM-15

VOLATILE ORGANICS SW846-8240A

Analyst: B. MAZUR Analysis Date: 04-AUG-94 16:57 Instrument: GC/MS VOA Test: 0510.3.0 INDI

Parameter	Result	Det. Limit	Units
ACETONE	BDL	20	ug/L
ACROLEIN	BDL	50	ug/L
ACRYLONITRILE	BDL	70	ug/L
BENZENE	BDL	5	ug/L
BROMODICHLOROMETHANE	BDL	5	ug/L
BROMOFORM	BDL	5	ug/L
BROMOMETHANE	BDL	10	ug/L
CARBON DISULFIDE	BDL	5	ug/L
CARBON TETRACHLORIDE	BDL	5	ug/L
CHLOROBENZENE	BDL	5	ug/L
CHLOROETHANE	BDL	10	ug/L
CHLOROFORM	BDL	5	ug/L
CHLOROMETHANE	BDL	10	ug/L
DIBROMOCHLOROMETHANE	BDL	5	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/L
DICHLORODIFLUOROMETHANE	BDL	5	ug/L
1,1-DICHLOROETHANE	BDL	5	ug/L
1,2-DICHLOROETHANE	BDL	5	ug/L
1,1-DICHLOROETHENE	BDL	5	ug/L
1,2-DICHLOROPROPANE	BDL	5	ug/L
ETHYL BENZENE	BDL	5	ug/L
TRICHLOROFLUOROMETHANE	BDL	5	ug/L
2-HEXANONE	BDL	10	ug/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	5	ug/L
METHYL ETHYL KETONE	BDL	10	ug/L
4-METHYL-2-PENTANONE	BDL	10	ug/L
STYRENE	BDL	5	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/L
TETRACHLOROETHENE	BDL	5	ug/L
TETRAHYDROFURAN	BDL	25	ug/L
TOLUENE	BDL	5	ug/L
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	5	ug/L
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/L

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HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C159251

Parameter	Result	Det. Limit	Units
1,1,1-TRICHLOROETHANE	BDL	5	ug/L
1,1,2-TRICHLOROETHANE	BDL	5	ug/L
TRICHLOROETHENE	BDL	5	ug/L
VINYL ACETATE	BDL	10	ug/L
VINYL CHLORIDE	BDL	10	ug/L
XYLENES (O/M/P-XYLENE)	BDL	5	ug/L
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	105		% Rec
TOLUENE-D8	100		% Rec
4-BROMOFLUOROBENZENE	103		% Rec

PCB SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A

Analyst: K. NARINE Analysis Date: 27-JUL-94 Test: P230.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	1000		mL
FINAL VOLUME	10		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080

Analyst: M. JAEGER Analysis Date: 27-JUL-94 Instrument: GC/ECD Test: 0301.2.0

Prep: PCB SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P230.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	0.0005	mg/L
PCB AROCHLOR 1221	BDL	0.0005	mg/L
PCB AROCHLOR 1232	BDL	0.0005	mg/L
PCB AROCHLOR 1242	BDL	0.0005	mg/L
PCB AROCHLOR 1248	BDL	0.0005	mg/L
PCB AROCHLOR 1254	BDL	0.0005	mg/L
PCB AROCHLOR 1260	BDL	0.0005	mg/L
PCB AROCHLOR 1262	BDL	0.0005	mg/L

GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A

Analyst: S. STRUEWING Analysis Date: 27-JUL-94 21:45 Test: P233.2.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	960		mL
FINAL VOLUME	5		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 28-JUL-94 15:35 Instrument: HPLC Test: 0630.0.0 INDI

Prep: GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P233.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	0.36	ug/L
ACENAPHTHYLENE	BDL	0.29	ug/L
ACENAPHTHENE	BDL	0.32	ug/L
FLUORENE	BDL	0.23	ug/L
PHENANTHRENE	BDL	0.18	ug/L
ANTHRACENE	BDL	0.27	ug/L
FLUORANTHENE	BDL	0.20	ug/L
PYRENE	BDL	0.32	ug/L
BENZ(A)ANTHRACENE	BDL	0.13	ug/L
CHRYSENE	BDL	0.17	ug/L
BENZO(B)FLUORANTHENE	BDL	0.18	ug/L
BENZO(K)FLUORANTHENE	BDL	0.17	ug/L
BENZO(A)PYRENE	BDL	0.23	ug/L
DIBENZ(A,H)ANTHRACENE	BDL	0.09	ug/L
BENZO(G,H,I)PERYLENE	BDL	0.19	ug/L

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HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C159251

Parameter	Result	Det. Limit	Units
INDENO(1,2,3-CD)PYRENE	BDL	0.20	ug/L

Sample Comments

BDL Below Detection Limit

Sample chain of custody number NONE.

This Certificate shall not be reproduced, except in full, without the written approval of the lab.

Quality Assurance Officer: Christine Sardon (DMS)

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	23-JUL-94	2979	C159252
	Complete	PO Number	
	12-AUG-94	CI0299.004	
	Printed	Sampled	
	18-AUG-94	22-JUL-94 10:32	

Report To

JAMES AUER
GERAGHTY AND MILLER
35 EAST WACKER DRIVE
SUITE 1000
CHICAGO, IL 60601

Bill To

JAMES AUER
GERAGHTY & MILLER, INC.
35 EAST WACKER, SUITE 1000
CHICAGO, IL 60601

Sample Description

PROJECT: NAVISTAR-ROCK ISLAND, IL.
PROJECT NO.: CI0299.004
SAMPLE ID.: GM-16

VOLATILE ORGANICS SW846-8240A

Analyst: B. MAZUR Analysis Date: 04-AUG-94 17:42 Instrument: GC/MS VOA Test: 0510.3.0 INDI

Parameter	Result	Det. Limit	Units
ACETONE	BDL	20	ug/L
ACROLEIN	BDL	50	ug/L
ACRYLONITRILE	BDL	70	ug/L
BENZENE	BDL	5	ug/L
BROMODICHLOROMETHANE	BDL	5	ug/L
BROMOFORM	BDL	5	ug/L
BROMOMETHANE	BDL	10	ug/L
CARBON DISULFIDE	BDL	5	ug/L
CARBON TETRACHLORIDE	BDL	5	ug/L
CHLOROBENZENE	BDL	5	ug/L
CHLOROETHANE	BDL	10	ug/L
CHLOROFORM	BDL	5	ug/L
CHLOROMETHANE	BDL	10	ug/L
DIBROMOCHLOROMETHANE	BDL	5	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/L
DICHLORODIFLUOROMETHANE	BDL	5	ug/L
1,1-DICHLOROETHANE	BDL	5	ug/L
1,2-DICHLOROETHANE	BDL	5	ug/L
1,1-DICHLOROETHENE	BDL	5	ug/L
1,2-DICHLOROPROPANE	BDL	5	ug/L
ETHYL BENZENE	BDL	5	ug/L
TRICHLOROFLUOROMETHANE	BDL	5	ug/L
2-HEXANONE	BDL	10	ug/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	5	ug/L
METHYL ETHYL KETONE	BDL	10	ug/L
4-METHYL-2-PENTANONE	BDL	10	ug/L
STYRENE	BDL	5	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/L
TETRACHLOROETHENE	BDL	5	ug/L
TETRAHYDROFURAN	BDL	25	ug/L
TOLUENE	BDL	5	ug/L
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	5	ug/L
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/L

 (continued on next page)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C159252

Parameter	Result	Det. Limit	Units
1,1,1-TRICHLOROETHANE	BDL	5	ug/L
1,1,2-TRICHLOROETHANE	BDL	5	ug/L
TRICHLOROETHENE	BDL	5	ug/L
VINYL ACETATE	BDL	10	ug/L
VINYL CHLORIDE	BDL	10	ug/L
XYLENES (O/M/P-XYLENE)	BDL	5	ug/L
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	106		% Rec
TOLUENE-D8	102		% Rec
4-BROMOFLUOROBENZENE	103		% Rec

PCB SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A

Analyst: K. NARINE Analysis Date: 27-JUL-94 Test: P230.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	1000		mL
FINAL VOLUME	10		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080

Analyst: M. JAEGER Analysis Date: 27-JUL-94 Instrument: GC/ECD Test: 0301.2.0

Prep: *PCB SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P230.1.0*

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	0.0005	mg/L
PCB AROCHLOR 1221	BDL	0.0005	mg/L
PCB AROCHLOR 1232	BDL	0.0005	mg/L
PCB AROCHLOR 1242	BDL	0.0005	mg/L
PCB AROCHLOR 1248	BDL	0.0005	mg/L
PCB AROCHLOR 1254	BDL	0.0005	mg/L
PCB AROCHLOR 1260	BDL	0.0005	mg/L
PCB AROCHLOR 1262	BDL	0.0005	mg/L

GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A

Analyst: S. STRUEWING Analysis Date: 27-JUL-94 21:45 Test: P233.2.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	910		mL
FINAL VOLUME	5		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 28-JUL-94 16:21 Instrument: HPLC Test: 0630.0.0 INDI

Prep: GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P233.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	0.36	ug/L
ACENAPHTHYLENE	BDL	0.29	ug/L
ACENAPHTHENE	BDL	0.32	ug/L
FLUORENE	BDL	0.23	ug/L
PHENANTHRENE	BDL	0.18	ug/L
ANTHRACENE	BDL	0.27	ug/L
FLUORANTHENE	BDL	0.20	ug/L
PYRENE	BDL	0.32	ug/L
BENZ(A)ANTHRACENE	BDL	0.13	ug/L
CHRYSENE	BDL	0.17	ug/L
BENZO(B)FLUORANTHENE	BDL	0.18	ug/L
BENZO(K)FLUORANTHENE	BDL	0.17	ug/L
BENZO(A)PYRENE	BDL	0.23	ug/L
DIBENZ(A,H)ANTHRACENE	BDL	0.09	ug/L
BENZO(G,H,I)PERYLENE	BDL	0.19	ug/L

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HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C159252

Parameter	Result	Det. Limit	Units
INDENO(1,2,3-CD)PYRENE	BDL	0.20	ug/L

Sample Comments

BDL Below Detection Limit

Sample chain of custody number NONE.

This Certificate shall not be reproduced, except in full, without the written approval of the lab.

Quality Assurance Officer: Christine Parker (Dues)

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	23-JUL-94	2979	C159253
	Complete	PO Number	
	12-AUG-94	CI0299.004	
	Printed	Sampled	
	18-AUG-94	22-JUL-94 11:15	

Report To	Bill To
JAMES AUER GERAGHTY AND MILLER 35 EAST WACKER DRIVE SUITE 1000 CHICAGO, IL 60601	JAMES AUER GERAGHTY & MILLER, INC. 35 EAST WACKER, SUITE 1000 CHICAGO, IL 60601

Sample Description

PROJECT: NAVISTAR-ROCK ISLAND, IL.
PROJECT NO.: CI0299.004
SAMPLE ID.: GM-17

VOLATILE ORGANICS SW846-8240A

Analyst: R. SHAMP Analysis Date: 04-AUG-94 15:51 Instrument: GC/MS VOA Test: 0510.3.0 INDI

Parameter	Result	Det. Limit	Units
ACETONE	42	20	ug/L
ACROLEIN	BDL	50	ug/L
ACRYLONITRILE	BDL	70	ug/L
BENZENE	BDL	5	ug/L
BROMODICHLOROMETHANE	BDL	5	ug/L
BROMOFORM	BDL	5	ug/L
BROMOMETHANE	BDL	10	ug/L
CARBON DISULFIDE	BDL	5	ug/L
CARBON TETRACHLORIDE	BDL	5	ug/L
CHLOROBENZENE	BDL	5	ug/L
CHLOROETHANE	BDL	10	ug/L
CHLOROFORM	BDL	5	ug/L
CHLOROMETHANE	BDL	10	ug/L
DIBROMOCHLOROMETHANE	BDL	5	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/L
DICHLORODIFLUOROMETHANE	BDL	5	ug/L
1,1-DICHLOROETHANE	BDL	5	ug/L
1,2-DICHLOROETHANE	BDL	5	ug/L
1,1-DICHLOROETHENE	BDL	5	ug/L
1,2-DICHLOROPROPANE	BDL	5	ug/L
ETHYL BENZENE	BDL	5	ug/L
TRICHLOROFLUOROMETHANE	BDL	5	ug/L
2-HEXANONE	BDL	10	ug/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	5	ug/L
METHYL ETHYL KETONE	BDL	10	ug/L
4-METHYL-2-PENTANONE	BDL	10	ug/L
STYRENE	BDL	5	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/L
TETRACHLOROETHENE	BDL	5	ug/L
TETRAHYDROFURAN	BDL	25	ug/L
TOLUENE	BDL	5	ug/L
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	5	ug/L
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/L

 (continued on next page)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C159253

Parameter	Result	Det. Limit	Units
1,1,1-TRICHLOROETHANE	BDL	5	ug/L
1,1,2-TRICHLOROETHANE	BDL	5	ug/L
TRICHLOROETHENE	BDL	5	ug/L
VINYL ACETATE	BDL	10	ug/L
VINYL CHLORIDE	BDL	10	ug/L
XYLENES (O/M/P-XYLENE)	BDL	5	ug/L
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	86		% Rec
TOLUENE-D8	99		% Rec
4-BROMOFLUOROBENZENE	95		% Rec

On this instrument, packed column has been replaced by capillary column with 8240 criteria.

PCB SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A

Analyst: K. NARINE Analysis Date: 27-JUL-94 Test: P230.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	1000		mL
FINAL VOLUME	10		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080

Analyst: M. JAEGER Analysis Date: 27-JUL-94 Instrument: GC/ECD Test: 0301.2.0

Prep: PCB SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P230.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	0.0005	mg/L
PCB AROCHLOR 1221	BDL	0.0005	mg/L
PCB AROCHLOR 1232	BDL	0.0005	mg/L
PCB AROCHLOR 1242	BDL	0.0005	mg/L
PCB AROCHLOR 1248	BDL	0.0005	mg/L
PCB AROCHLOR 1254	BDL	0.0005	mg/L
PCB AROCHLOR 1260	BDL	0.0005	mg/L
PCB AROCHLOR 1262	BDL	0.0005	mg/L

GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A

Analyst: S. STRUEWING Analysis Date: 27-JUL-94 21:45 Test: P233.2.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	970		mL
FINAL VOLUME	5		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 28-JUL-94 17:06 Instrument: HPLC Test: 0630.0.0 INDI

Prep: GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P233.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	0.36	ug/L
ACENAPHTHYLENE	BDL	0.29	ug/L
ACENAPHTHENE	BDL	0.32	ug/L
FLUORENE	BDL	0.23	ug/L
PHENANTHRENE	BDL	0.18	ug/L
ANTHRACENE	BDL	0.27	ug/L
FLUORANTHENE	BDL	0.20	ug/L
PYRENE	BDL	0.32	ug/L
BENZ(A)ANTHRACENE	BDL	0.13	ug/L
CHRYSENE	BDL	0.17	ug/L
BENZO(B)FLUORANTHENE	BDL	0.18	ug/L
BENZO(K)FLUORANTHENE	BDL	0.17	ug/L

 (continued on next page)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C159253

Parameter	Result	Det. Limit	Units
BENZO(A)PYRENE	BDL	0.23	ug/L
DIBENZ(A,H)ANTHRACENE	BDL	0.09	ug/L
BENZO(G,H,I)PERYLENE	BDL	0.19	ug/L
INDENO(1,2,3-CD)PYRENE	BDL	0.20	ug/L

Sample Comments

BDL Below Detection Limit

Sample chain of custody number NONE.

This Certificate shall not be reproduced, except in full, without the written approval of the lab.

Quality Assurance Officer: Christine Yardin Dues

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	23-JUL-94	2979	C159254
	Complete	PO Number	
	12-AUG-94	CI0299.004	
	Printed	Sampled	
	18-AUG-94	22-JUL-94 09:38	

Report To	Bill To
JAMES AUER GERAGHTY AND MILLER 35 EAST WACKER DRIVE SUITE 1000 CHICAGO, IL 60601	JAMES AUER GERAGHTY & MILLER, INC. 35 EAST WACKER, SUITE 1000 CHICAGO, IL 60601

Sample Description

PROJECT: NAVISTAR-ROCK ISLAND, IL.
PROJECT NO.: CI0299.004
SAMPLE ID.: GM-18

VOLATILE ORGANICS SW846-8240A

Analyst: R. SHAMP Analysis Date: 05-AUG-94 09:49 Instrument: GC/MS VOA Test: 0510.3.0 INDI

Parameter	Result	Det. Limit	Units
ACETONE	BDL	20	ug/L
ACROLEIN	BDL	50	ug/L
ACRYLONITRILE	BDL	70	ug/L
BENZENE	BDL	5	ug/L
BROMODICHLOROMETHANE	BDL	5	ug/L
BROMOFORM	BDL	5	ug/L
BROMOMETHANE	BDL	10	ug/L
CARBON DISULFIDE	BDL	5	ug/L
CARBON TETRACHLORIDE	BDL	5	ug/L
CHLOROBENZENE	BDL	5	ug/L
CHLOROETHANE	BDL	10	ug/L
CHLOROFORM	BDL	5	ug/L
CHLOROMETHANE	BDL	10	ug/L
DIBROMOCHLOROMETHANE	BDL	5	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/L
DICHLORODIFLUOROMETHANE	BDL	5	ug/L
1,1-DICHLOROETHANE	BDL	5	ug/L
1,2-DICHLOROETHANE	BDL	5	ug/L
1,1-DICHLOROETHENE	BDL	5	ug/L
1,2-DICHLOROPROPANE	BDL	5	ug/L
ETHYL BENZENE	BDL	5	ug/L
TRICHLOROFLUOROMETHANE	BDL	5	ug/L
2-HEXANONE	BDL	10	ug/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	5	ug/L
METHYL ETHYL KETONE	BDL	10	ug/L
4-METHYL-2-PENTANONE	BDL	10	ug/L
STYRENE	BDL	5	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/L
TETRACHLOROETHENE	BDL	5	ug/L
TETRAHYDROFURAN	BDL	25	ug/L
TOLUENE	BDL	5	ug/L
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	5	ug/L
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/L

 (continued on next page)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C159254

Parameter	Result	Det. Limit	Units
1,1,1-TRICHLOROETHANE	BDL	5	ug/L
1,1,2-TRICHLOROETHANE	BDL	5	ug/L
TRICHLOROETHENE	BDL	5	ug/L
VINYL ACETATE	BDL	10	ug/L
VINYL CHLORIDE	BDL	10	ug/L
XYLENES (O/M/P-XYLENE)	BDL	5	ug/L
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	97		% Rec
TOLUENE-D8	101		% Rec
4-BROMOFLUOROBENZENE	100		% Rec

On this instrument, packed column has been replaced by capillary column with 8240 criteria.

PCB SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A

Analyst: K. NARINE Analysis Date: 27-JUL-94 Test: P230.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	1000		mL
FINAL VOLUME	10		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080

Analyst: M. JAEGER Analysis Date: 27-JUL-94 Instrument: GC/ECD Test: 0301.2.0

Prep: PCB SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P230.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	0.0005	mg/L
PCB AROCHLOR 1221	BDL	0.0005	mg/L
PCB AROCHLOR 1232	BDL	0.0005	mg/L
PCB AROCHLOR 1242	BDL	0.0005	mg/L
PCB AROCHLOR 1248	BDL	0.0005	mg/L
PCB AROCHLOR 1254	BDL	0.0005	mg/L
PCB AROCHLOR 1260	BDL	0.0005	mg/L
PCB AROCHLOR 1262	BDL	0.0005	mg/L

GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A

Analyst: S. STRUEWING Analysis Date: 27-JUL-94 23:40 Test: P233.2.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	930		mL
FINAL VOLUME	5		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 28-JUL-94 17:51 Instrument: HPLC Test: 0630.0.0 INDI

Prep: GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P233.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	0.36	ug/L
ACENAPHTHYLENE	BDL	0.29	ug/L
ACENAPHTHENE	BDL	0.32	ug/L
FLUORENE	BDL	0.23	ug/L
PHENANTHRENE	BDL	0.18	ug/L
ANTHRACENE	BDL	0.27	ug/L
FLUORANTHENE	BDL	0.20	ug/L
PYRENE	BDL	0.32	ug/L
BENZ(A)ANTHRACENE	BDL	0.13	ug/L
CHRYSENE	BDL	0.17	ug/L
BENZO(B)FLUORANTHENE	BDL	0.18	ug/L
BENZO(K)FLUORANTHENE	BDL	0.17	ug/L

 (continued on next page)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C159254

Parameter	Result	Det. Limit	Units
BENZO(A)PYRENE	BDL	0.23	ug/L
DIBENZ(A,H)ANTHRACENE	BDL	0.09	ug/L
BENZO(G,H,I)PERYLENE	BDL	0.19	ug/L
INDENO(1,2,3-CD)PYRENE	BDL	0.20	ug/L

Sample Comments

BDL Below Detection Limit

Sample chain of custody number NONE.

This Certificate shall not be reproduced, except in full, without the written approval of the lab.

Quality Assurance Officer: Christine Jackson (illegible)

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	22-JUL-94	2979	C159134
	Complete	PO Number	
	10-AUG-94	CI0299.004	
	Printed	Sampled	
	17-AUG-94	21-JUL-94 10:06	

Report To

JAMES AUER
GERAGHTY AND MILLER
35 EAST WACKER DRIVE
SUITE 1000
CHICAGO, IL 60601

Bill To

JAMES AUER
GERAGHTY & MILLER, INC.
35 EAST WACKER, SUITE 1000
CHICAGO, IL 60601

Sample Description

PROJECT NO.: CI0299.004
PROJECT NAME: NAVISTAR-ROCK ISLAND, IL.
SAMPLE ID.: GM-19

VOLATILE ORGANICS SW846-8240A

Analyst: B. MAZUR Analysis Date: 01-AUG-94 16:30 Instrument: GC/MS VOA Test: 0510.3.0 INDI

Parameter	Result	Det. Limit	Units
ACETONE	BDL	20	ug/L
ACROLEIN	BDL	50	ug/L
ACRYLONITRILE	BDL	70	ug/L
BENZENE	BDL	5	ug/L
BROMODICHLOROMETHANE	BDL	5	ug/L
BROMOFORM	BDL	5	ug/L
BROMOMETHANE	BDL	10	ug/L
CARBON DISULFIDE	BDL	5	ug/L
CARBON TETRACHLORIDE	BDL	5	ug/L
CHLOROBENZENE	BDL	5	ug/L
CHLOROETHANE	BDL	10	ug/L
CHLOROFORM	BDL	5	ug/L
CHLOROMETHANE	BDL	10	ug/L
DIBROMOCHLOROMETHANE	BDL	5	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/L
DICHLORODIFLUOROMETHANE	BDL	5	ug/L
1,1-DICHLOROETHANE	BDL	5	ug/L
1,2-DICHLOROETHANE	BDL	5	ug/L
1,1-DICHLOROETHENE	BDL	5	ug/L
1,2-DICHLOROPROPANE	BDL	5	ug/L
ETHYL BENZENE	BDL	5	ug/L
TRICHLOROFLUOROMETHANE	BDL	5	ug/L
2-HEXANONE	BDL	10	ug/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	5	ug/L
METHYL ETHYL KETONE	BDL	10	ug/L
4-METHYL-2-PENTANONE	BDL	10	ug/L
STYRENE	BDL	5	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/L
TETRACHLOROETHENE	BDL	5	ug/L
TETRAHYDROFURAN	BDL	25	ug/L
TOLUENE	BDL	5	ug/L
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	5	ug/L
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/L

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HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C159134

Parameter	Result	Det. Limit	Units
1,1,1-TRICHLOROETHANE	BDL	5	ug/L
1,1,2-TRICHLOROETHANE	BDL	5	ug/L
TRICHLOROETHENE	BDL	5	ug/L
VINYL ACETATE	BDL	10	ug/L
VINYL CHLORIDE	BDL	10	ug/L
XYLENES (O/M/P-XYLENE)	BDL	5	ug/L
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	99		% Rec
TOLUENE-D8	103		% Rec
4-BROMOFLUOROBENZENE	114		% Rec

PCB SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A

Analyst: K. NARINE Analysis Date: 25-JUL-94 Test: P230.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	980		mL
FINAL VOLUME	10		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080

Analyst: M. JAEGER Analysis Date: 27-JUL-94 Instrument: GC/ECD Test: 0301.2.0

Prep: PCB SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P230.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	0.0005	mg/L
PCB AROCHLOR 1221	BDL	0.0005	mg/L
PCB AROCHLOR 1232	BDL	0.0005	mg/L
PCB AROCHLOR 1242	BDL	0.0005	mg/L
PCB AROCHLOR 1248	BDL	0.0005	mg/L
PCB AROCHLOR 1254	BDL	0.0005	mg/L
PCB AROCHLOR 1260	BDL	0.0005	mg/L
PCB AROCHLOR 1262	BDL	0.0005	mg/L

GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A

Analyst: P. SIMS Analysis Date: 27-JUL-94 21:30 Test: P233.2.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	930		mL
FINAL VOLUME	5		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 28-JUL-94 13:48 Instrument: HPLC Test: 0630.0.0 INDI

Prep: GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P233.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	0.36	ug/L
ACENAPHTHYLENE	BDL	0.29	ug/L
ACENAPHTHENE	BDL	0.32	ug/L
FLUORENE	0.45	0.23	ug/L
PHENANTHRENE	0.22	0.18	ug/L
ANTHRACENE	BDL	0.27	ug/L
FLUORANTHENE	0.29	0.20	ug/L
PYRENE	0.95	0.32	ug/L
BENZ(A)ANTHRACENE	0.13	0.13	ug/L
CHRYSENE	0.36	0.17	ug/L
BENZO(B)FLUORANTHENE	BDL	0.18	ug/L
BENZO(K)FLUORANTHENE	BDL	0.17	ug/L
BENZO(A)PYRENE	0.53	0.23	ug/L
DIBENZ(A,H)ANTHRACENE	BDL	0.09	ug/L
BENZO(G,H,I)PERYLENE	0.89	0.19	ug/L

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HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C159134

Parameter	Result	Det. Limit	Units
INDENO(1,2,3-CD)PYRENE	1.1	0.20	ug/L

Sample Comments

BDL Below Detection Limit

Sample chain of custody number NONE.

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Quality Assurance Officer: _____

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	21-JUL-94	2979	C159083
	Complete	PO Number	
	09-AUG-94	CI0299.004	
	Printed	Sampled	
	10-AUG-94	20-JUL-94 16:25	

Report To

JAMES AUER
GERAGHTY AND MILLER
35 EAST WACKER DRIVE
SUITE 1000
CHICAGO, IL 60601

Bill To

JAMES AUER
GERAGHTY & MILLER, INC.
35 EAST WACKER, SUITE 1000
CHICAGO, IL 60601

Sample Description

PROJECT: NAVISTAR-ROCK ISLAND, IL
PROJECT NO.: CI0299.004
SAMPLE ID.: MW-5

VOLATILE ORGANICS SW846-8240A

Analyst: B. MAZUR Analysis Date: 01-AUG-94 14:15 Instrument: GC/MS VOA Test: 0510.3.0 INDI

Parameter	Result	Det. Limit	Units
ACETONE	BDL	20	ug/L
ACROLEIN	BDL	50	ug/L
ACRYLONITRILE	BDL	70	ug/L
BENZENE	BDL	5	ug/L
BROMODICHLOROMETHANE	BDL	5	ug/L
BROMOFORM	BDL	5	ug/L
BROMOMETHANE	BDL	10	ug/L
CARBON DISULFIDE	BDL	5	ug/L
CARBON TETRACHLORIDE	BDL	5	ug/L
CHLOROBENZENE	BDL	5	ug/L
CHLOROETHANE	BDL	10	ug/L
CHLOROFORM	BDL	5	ug/L
CHLOROMETHANE	BDL	10	ug/L
DIBROMOCHLOROMETHANE	BDL	5	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/L
DICHLORODIFLUOROMETHANE	BDL	5	ug/L
1,1-DICHLOROETHANE	BDL	5	ug/L
1,2-DICHLOROETHANE	BDL	5	ug/L
1,1-DICHLOROETHENE	BDL	5	ug/L
1,2-DICHLOROPROPANE	BDL	5	ug/L
ETHYL BENZENE	BDL	5	ug/L
TRICHLOROFLUOROMETHANE	BDL	5	ug/L
2-HEXANONE	BDL	10	ug/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	5	ug/L
METHYL ETHYL KETONE	BDL	10	ug/L
4-METHYL-2-PENTANONE	BDL	10	ug/L
STYRENE	BDL	5	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/L
TETRACHLOROETHENE	BDL	5	ug/L
TETRAHYDROFURAN	BDL	25	ug/L
TOLUENE	BDL	5	ug/L
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	5	ug/L
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/L

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HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C159083

Parameter	Result	Det. Limit	Units
1,1,1-TRICHLOROETHANE	BDL	5	ug/L
1,1,2-TRICHLOROETHANE	BDL	5	ug/L
TRICHLOROETHENE	BDL	5	ug/L
VINYL ACETATE	BDL	10	ug/L
VINYL CHLORIDE	BDL	10	ug/L
XYLENES (O/M/P-XYLENE)	BDL	5	ug/L
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	100		% Rec
TOLUENE-D8	101		% Rec
4-BROMOFLUOROBENZENE	102		% Rec

PCB SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A

Analyst: K. RUBLE Analysis Date: 22-JUL-94 Test: P230.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	1000		mL
FINAL VOLUME	10		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080

Analyst: M. JAEGER Analysis Date: 27-JUL-94 Instrument: GC/ECD Test: 0301.2.0

Prep: PCB SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P230.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	0.0005	mg/L
PCB AROCHLOR 1221	BDL	0.0005	mg/L
PCB AROCHLOR 1232	BDL	0.0005	mg/L
PCB AROCHLOR 1242	BDL	0.0005	mg/L
PCB AROCHLOR 1248	BDL	0.0005	mg/L
PCB AROCHLOR 1254	BDL	0.0005	mg/L
PCB AROCHLOR 1260	BDL	0.0005	mg/L
PCB AROCHLOR 1262	BDL	0.0005	mg/L

GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A

Analyst: P. SIMS Analysis Date: 22-JUL-94 17:40 Test: P233.2.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	1000		mL
FINAL VOLUME	5		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 27-JUL-94 13:11 Instrument: HPLC Test: 0630.0.0 INDI

Prep: GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P233.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	0.36	ug/L
ACENAPHTHYLENE	BDL	0.29	ug/L
ACENAPHTHENE	19	0.32	ug/L
FLUORENE	EST 31	0.23	ug/L
PHENANTHRENE	EST 32	0.18	ug/L
ANTHRACENE	1.4	0.27	ug/L
FLUORANTHENE	BDL	0.20	ug/L
PYRENE	1.1	0.32	ug/L
BENZ(A)ANTHRACENE	BDL	0.13	ug/L
CHRYSENE	0.29	0.17	ug/L
BENZO(B)FLUORANTHENE	BDL	0.18	ug/L
BENZO(K)FLUORANTHENE	BDL	0.17	ug/L
BENZO(A)PYRENE	BDL	0.23	ug/L
DIBENZ(A,H)ANTHRACENE	BDL	0.09	ug/L
BENZO(G,H,I)PERYLENE	BDL	0.19	ug/L

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HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C159083

Parameter	Result	Det. Limit	Units
INDENO(1,2,3-CD)PYRENE	BDL	0.20	ug/L

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 27-JUL-94 20:31 Instrument: HPLC Test: 0630.0.1 INDI

Prep: GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P233.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	1.8	ug/L
ACENAPHTHYLENE	BDL	1.4	ug/L
ACENAPHTHENE	9.4	1.6	ug/L
FLUORENE	31	1.1	ug/L
PHENANTHRENE	33	.9	ug/L
ANTHRACENE	BDL	1.3	ug/L
FLUORANTHENE	BDL	1	ug/L
PYRENE	BDL	1.6	ug/L
BENZ(A)ANTHRACENE	BDL	.65	ug/L
CHRYSENE	BDL	.85	ug/L
BENZO(B)FLUORANTHENE	BDL	.9	ug/L
BENZO(K)FLUORANTHENE	BDL	.85	ug/L
BENZO(A)PYRENE	BDL	1.1	ug/L
DIBENZ(A,H)ANTHRACENE	BDL	.45	ug/L
BENZO(G,H,I)PERYLENE	BDL	.95	ug/L
INDENO(1,2,3-CD)PYRENE	BDL	1	ug/L

1:5 DILUTION

Sample Comments

BDL Below Detection Limit
EST Estimated Value

Sample chain of custody number NONE.

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Quality Assurance Officer: _____

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	22-JUL-94	2979	C159138
	Complete	PO Number	
	10-AUG-94	CI0299.004	
	Printed	Sampled	
	11-AUG-94	21-JUL-94 10:40	

Report To

JAMES AUER
GERAGHTY AND MILLER
35 EAST WACKER DRIVE
SUITE 1000
CHICAGO, IL 60601

Bill To

JAMES AUER
GERAGHTY & MILLER, INC.
35 EAST WACKER, SUITE 1000
CHICAGO, IL 60601

Sample Description

PROJECT NO.: CI0299.004
PROJECT NAME: NAVISTAR-ROCK ISLAND, IL.
SAMPLE ID.: MW-6

VOLATILE ORGANICS SW846-8240A

Analyst: B. MAZUR Analysis Date: 01-AUG-94 20:14 Instrument: GC/MS VOA Test: 0510.3.0 INDI

Parameter	Result	Det. Limit	Units
ACETONE	BDL	20	ug/L
ACROLEIN	BDL	50	ug/L
ACRYLONITRILE	BDL	70	ug/L
BENZENE	BDL	5	ug/L
BROMODICHLOROMETHANE	BDL	5	ug/L
BROMOFORM	BDL	5	ug/L
BROMOMETHANE	BDL	10	ug/L
CARBON DISULFIDE	BDL	5	ug/L
CARBON TETRACHLORIDE	BDL	5	ug/L
CHLOROBENZENE	BDL	5	ug/L
CHLOROETHANE	BDL	10	ug/L
CHLOROFORM	BDL	5	ug/L
CHLOROMETHANE	BDL	10	ug/L
DIBROMOCHLOROMETHANE	BDL	5	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/L
DICHLORODIFLUOROMETHANE	BDL	5	ug/L
1,1-DICHLOROETHANE	BDL	5	ug/L
1,2-DICHLOROETHANE	BDL	5	ug/L
1,1-DICHLOROETHENE	BDL	5	ug/L
1,2-DICHLOROPROPANE	BDL	5	ug/L
ETHYL BENZENE	BDL	5	ug/L
TRICHLOROFLUOROMETHANE	BDL	5	ug/L
2-HEXANONE	BDL	10	ug/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	5	ug/L
METHYL ETHYL KETONE	BDL	10	ug/L
4-METHYL-2-PENTANONE	BDL	10	ug/L
STYRENE	BDL	5	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/L
TETRACHLOROETHENE	BDL	5	ug/L
TETRAHYDROFURAN	BDL	25	ug/L
TOLUENE	BDL	5	ug/L
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	5	ug/L
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/L

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HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C159138

Parameter	Result	Det. Limit	Units
1,1,1-TRICHLOROETHANE	BDL	5	ug/L
1,1,2-TRICHLOROETHANE	BDL	5	ug/L
TRICHLOROETHENE	BDL	5	ug/L
VINYL ACETATE	BDL	10	ug/L
VINYL CHLORIDE	BDL	10	ug/L
XYLENES (O/M/P-XYLENE)	BDL	5	ug/L
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	104		% Rec
TOLUENE-D8	105		% Rec
4-BROMOFLUOROBENZENE	102		% Rec

PCB SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A

Analyst: K. NARINE Analysis Date: 25-JUL-94 Test: P230.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	1000		mL
FINAL VOLUME	10		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080

Analyst: M. JAEGER Analysis Date: 27-JUL-94 Instrument: GC/ECD Test: 0301.2.0

Prep: PCB SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P230.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	0.0005	mg/L
PCB AROCHLOR 1221	BDL	0.0005	mg/L
PCB AROCHLOR 1232	BDL	0.0005	mg/L
PCB AROCHLOR 1242	BDL	0.0005	mg/L
PCB AROCHLOR 1248	BDL	0.0005	mg/L
PCB AROCHLOR 1254	BDL	0.0005	mg/L
PCB AROCHLOR 1260	BDL	0.0005	mg/L
PCB AROCHLOR 1262	BDL	0.0005	mg/L

GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A

Analyst: S. STRUEWING Analysis Date: 27-JUL-94 23:35 Test: P233.2.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	950		mL
FINAL VOLUME	5		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 28-JUL-94 12:39 Instrument: HPLC Test: 0630.0.0 INDI

Prep: GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P233.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	0.36	ug/L
ACENAPHTHYLENE	BDL	0.29	ug/L
ACENAPHTHENE	23	0.32	ug/L
FLUORENE	EST 48	0.23	ug/L
PHENANTHRENE	EST 92	0.18	ug/L
ANTHRACENE	4.1	0.27	ug/L
FLUORANTHENE	2.9	0.20	ug/L
PYRENE	3.6	0.32	ug/L
BENZ(A)ANTHRACENE	1.2	0.13	ug/L
CHRYSENE	2.8	0.17	ug/L
BENZO(B)FLUORANTHENE	BDL	0.18	ug/L
BENZO(K)FLUORANTHENE	BDL	0.17	ug/L
BENZO(A)PYRENE	0.48	0.23	ug/L
DIBENZ(A,H)ANTHRACENE	BDL	0.09	ug/L
BENZO(G,H,I)PERYLENE	1.0	0.19	ug/L

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HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C159138

Parameter	Result	Det. Limit	Units
INDENO(1,2,3-CD)PYRENE	BDL	0.20	ug/L

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 03-AUG-94 00:31 Instrument: HPLC Test: 0630.0.1 INDI

Prep: GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P233.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	7.2	ug/L
ACENAPHTHYLENE	BDL	5.8	ug/L
ACENAPHTHENE	23	6.4	ug/L
FLUORENE	35	4.6	ug/L
PHENANTHRENE	88	3.6	ug/L
ANTHRACENE	BDL	5.4	ug/L
FLUORANTHENE	BDL	4	ug/L
PYRENE	BDL	6.4	ug/L
BENZ(A)ANTHRACENE	BDL	2.6	ug/L
CHRYSENE	BDL	3.4	ug/L
BENZO(B)FLUORANTHENE	BDL	3.6	ug/L
BENZO(K)FLUORANTHENE	BDL	3.4	ug/L
BENZO(A)PYRENE	BDL	4.6	ug/L
DIBENZ(A,H)ANTHRACENE	BDL	1.8	ug/L
BENZO(G,H,I)PERYLENE	BDL	3.8	ug/L
INDENO(1,2,3-CD)PYRENE	BDL	4	ug/L

1:20 dilution.

Sample Comments

BDL Below Detection Limit
EST Estimated Value

Sample chain of custody number NONE.

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Quality Assurance Officer: _____

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	21-JUL-94	2979	C159084
	Complete	PO Number	
	09-AUG-94	CI0299.004	
	Printed	Sampled	
	10-AUG-94	20-JUL-94 13:29	

Report To	Bill To
JAMES AUER GERAGHTY AND MILLER 35 EAST WACKER DRIVE SUITE 1000 CHICAGO, IL 60601	JAMES AUER GERAGHTY & MILLER, INC. 35 EAST WACKER, SUITE 1000 CHICAGO, IL 60601

Sample Description

PROJECT: NAVISTAR-ROCK ISLAND, IL
PROJECT NO.: CI0299.004
SAMPLE ID.: MW-8

VOLATILE ORGANICS SW846-8240A

Analyst: B. MAZUR Analysis Date: 30-JUL-94 20:49 Instrument: GC/MS VOA Test: 0510.3.0 INDI

Parameter	Result	Det. Limit	Units
ACETONE	BDL	20	ug/L
ACROLEIN	BDL	50	ug/L
ACRYLONITRILE	BDL	70	ug/L
BENZENE	BDL	5	ug/L
BROMODICHLOROMETHANE	BDL	5	ug/L
BROMOFORM	BDL	5	ug/L
BROMOMETHANE	BDL	10	ug/L
CARBON DISULFIDE	6	5	ug/L
CARBON TETRACHLORIDE	BDL	5	ug/L
CHLOROBENZENE	BDL	5	ug/L
CHLOROETHANE	BDL	10	ug/L
CHLOROFORM	BDL	5	ug/L
CHLOROMETHANE	BDL	10	ug/L
DIBROMOCHLOROMETHANE	BDL	5	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/L
DICHLORODIFLUOROMETHANE	BDL	5	ug/L
1,1-DICHLOROETHANE	BDL	5	ug/L
1,2-DICHLOROETHANE	BDL	5	ug/L
1,1-DICHLOROETHENE	BDL	5	ug/L
1,2-DICHLOROPROPANE	BDL	5	ug/L
ETHYL BENZENE	BDL	5	ug/L
TRICHLOROFLUOROMETHANE	BDL	5	ug/L
2-HEXANONE	BDL	10	ug/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	5	ug/L
METHYL ETHYL KETONE	BDL	10	ug/L
4-METHYL-2-PENTANONE	BDL	10	ug/L
STYRENE	BDL	5	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/L
TETRACHLOROETHENE	BDL	5	ug/L
TETRAHYDROFURAN	BDL	25	ug/L
TOLUENE	BDL	5	ug/L
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	5	ug/L
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/L

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HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C159084

Parameter	Result	Det. Limit	Units
1,1,1-TRICHLOROETHANE	BDL	5	ug/L
1,1,2-TRICHLOROETHANE	BDL	5	ug/L
TRICHLOROETHENE	BDL	5	ug/L
VINYL ACETATE	BDL	10	ug/L
VINYL CHLORIDE	BDL	10	ug/L
XYLENES (O/M/P-XYLENE)	BDL	5	ug/L
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	94		% Rec
TOLUENE-D8	97		% Rec
4-BROMOFLUOROBENZENE	96		% Rec

PCB SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A

Analyst: K. RUBLE Analysis Date: 22-JUL-94 Test: P230.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	1000		mL
FINAL VOLUME	10		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080

Analyst: M. JAEGER Analysis Date: 27-JUL-94 Instrument: GC/ECD Test: 0301.2.0

Prep: PCB SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P230.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	0.0005	mg/L
PCB AROCHLOR 1221	BDL	0.0005	mg/L
PCB AROCHLOR 1232	BDL	0.0005	mg/L
PCB AROCHLOR 1242	BDL	0.0005	mg/L
PCB AROCHLOR 1248	BDL	0.0005	mg/L
PCB AROCHLOR 1254	BDL	0.0005	mg/L
PCB AROCHLOR 1260	BDL	0.0005	mg/L
PCB AROCHLOR 1262	BDL	0.0005	mg/L

GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A

Analyst: P. SIMS Analysis Date: 22-JUL-94 17:45 Test: P233.2.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	900		mL
FINAL VOLUME	5		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 27-JUL-94 13:56 Instrument: HPLC Test: 0630.0.0 INDI

Prep: GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P233.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	0.36	ug/L
ACENAPHTHYLENE	BDL	0.29	ug/L
ACENAPHTHENE	BDL	0.32	ug/L
FLUORENE	BDL	0.23	ug/L
PHENANTHRENE	BDL	0.18	ug/L
ANTHRACENE	BDL	0.27	ug/L
FLUORANTHENE	BDL	0.20	ug/L
PYRENE	BDL	0.32	ug/L
BENZ(A)ANTHRACENE	BDL	0.13	ug/L
CHRYSENE	BDL	0.17	ug/L
BENZO(B)FLUORANTHENE	BDL	0.18	ug/L
BENZO(K)FLUORANTHENE	BDL	0.17	ug/L
BENZO(A)PYRENE	BDL	0.23	ug/L
DIBENZ(A,H)ANTHRACENE	BDL	0.09	ug/L
BENZO(G,H,I)PERYLENE	BDL	0.19	ug/L

 (continued on next page)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C159084

Parameter	Result	Det. Limit	Units
INDENO(1,2,3-CD)PYRENE	BDL	0.20	ug/L

Sample Comments

BDL Below Detection Limit

Sample chain of custody number NONE.

This Certificate shall not be reproduced, except in full, without the written approval of the lab.

Quality Assurance Officer: _____

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	21-JUL-94	2979	C159086
	Complete	PO Number	
	09-AUG-94	CI0299.004	
	Printed	Sampled	
	17-AUG-94	20-JUL-94 17:23	

Report To

JAMES AUER
GERAGHTY AND MILLER
35 EAST WACKER DRIVE
SUITE 1000
CHICAGO, IL 60601

Bill To

JAMES AUER
GERAGHTY & MILLER, INC.
35 EAST WACKER, SUITE 1000
CHICAGO, IL 60601

Sample Description

PROJECT: NAVISTAR-ROCK ISLAND, IL
PROJECT NO.: CI0299.004
SAMPLE ID.: MW-9

VOLATILE ORGANICS SW846-8240A

Analyst: B. MAZUR Analysis Date: 01-AUG-94 15:00 Instrument: GC/MS VOA Test: 0510.3.0 INDI

Parameter	Result	Det. Limit	Units
ACETONE	31	20	ug/L
ACROLEIN	BDL	50	ug/L
ACRYLONITRILE	BDL	70	ug/L
BENZENE	6	5	ug/L
BROMODICHLOROMETHANE	BDL	5	ug/L
BROMOFORM	BDL	5	ug/L
BROMOMETHANE	BDL	10	ug/L
CARBON DISULFIDE	BDL	5	ug/L
CARBON TETRACHLORIDE	BDL	5	ug/L
CHLOROBENZENE	BDL	5	ug/L
CHLOROETHANE	BDL	10	ug/L
CHLOROFORM	BDL	5	ug/L
CHLOROMETHANE	BDL	10	ug/L
DIBROMOCHLOROMETHANE	BDL	5	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/L
DICHLORODIFLUOROMETHANE	BDL	5	ug/L
1,1-DICHLOROETHANE	BDL	5	ug/L
1,2-DICHLOROETHANE	BDL	5	ug/L
1,1-DICHLOROETHENE	BDL	5	ug/L
1,2-DICHLOROPROPANE	BDL	5	ug/L
ETHYL BENZENE	BDL	5	ug/L
TRICHLOROFLUOROMETHANE	BDL	5	ug/L
2-HEXANONE	BDL	10	ug/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	5	ug/L
METHYL ETHYL KETONE	BDL	10	ug/L
4-METHYL-2-PENTANONE	BDL	10	ug/L
STYRENE	BDL	5	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/L
TETRACHLOROETHENE	BDL	5	ug/L
TETRAHYDROFURAN	BDL	25	ug/L
TOLUENE	BDL	5	ug/L
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	5	ug/L
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/L

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HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C159086

Parameter	Result	Det. Limit	Units
1,1,1-TRICHLOROETHANE	BDL	5	ug/L
1,1,2-TRICHLOROETHANE	BDL	5	ug/L
TRICHLOROETHENE	BDL	5	ug/L
VINYL ACETATE	BDL	10	ug/L
VINYL CHLORIDE	BDL	10	ug/L
XYLENES (O/M/P-XYLENE)	7	5	ug/L
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	104		% Rec
TOLUENE-D8	99		% Rec
4-BROMOFLUOROBENZENE	113		% Rec

PCB SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A

Analyst: K. RUBLE Analysis Date: 22-JUL-94 Test: P230.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	1000		mL
FINAL VOLUME	10		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080

Analyst: M. JAEGER Analysis Date: 27-JUL-94 Instrument: GC/ECD Test: 0301.2.0

Prep: PCB SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P230.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	0.013	mg/L
PCB AROCHLOR 1221	BDL	0.013	mg/L
PCB AROCHLOR 1232	BDL	0.013	mg/L
PCB AROCHLOR 1242	BDL	0.013	mg/L
PCB AROCHLOR 1248	BDL	0.013	mg/L
PCB AROCHLOR 1254	0.058	0.013	mg/L
PCB AROCHLOR 1260	0.013	0.013	mg/L
PCB AROCHLOR 1262	BDL	0.013	mg/L

1:25 DILUTION.

GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A

Analyst: P. SIMS Analysis Date: 22-JUL-94 18:25 Test: P233.2.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	950		mL
FINAL VOLUME	50		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 28-JUL-94 02:51 Instrument: HPLC Test: 0630.0.0 INDI

Prep: GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P233.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	460	0.36	ug/L
ACENAPHTHYLENE	BDL	0.29	ug/L
ACENAPHTHENE	1300	0.32	ug/L
FLUORENE	EST 4800	0.23	ug/L
PHENANTHRENE	EST 11000	0.18	ug/L
ANTHRACENE	470	0.27	ug/L
FLUORANTHENE	500	0.20	ug/L
PYRENE	430	0.32	ug/L
BENZ(A)ANTHRACENE	BDL	0.13	ug/L
CHRYSENE	*	0.17	ug/L
BENZO(B)FLUORANTHENE	70	0.18	ug/L
BENZO(K)FLUORANTHENE	42	0.17	ug/L
BENZO(A)PYRENE	89	0.23	ug/L

 (continued on next page)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C159086

Parameter	Result	Det. Limit	Units
DIBENZ(A,H)ANTHRACENE	BDL	0.09	ug/L
BENZO(G,H,I)PERYLENE	7.2	0.19	ug/L
INDENO(1,2,3-CD)PYRENE	59	0.20	ug/L

**No Result -- See Replicate 1.*

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 28-JUL-94 19:46 Instrument: HPLC Test: 0630.0.1 INDI

Prep: GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P233.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	470	1.8	ug/L
ACENAPHTHYLENE	BDL	1.4	ug/L
ACENAPHTHENE	900	1.6	ug/L
FLUORENE	4600	1.1	ug/L
PHENANTHRENE	EST 12000	.9	ug/L
ANTHRACENE	430	1.3	ug/L
FLUORANTHENE	420	1	ug/L
PYRENE	400	1.6	ug/L
BENZ(A)ANTHRACENE	11	.65	ug/L
CHRYSENE	190	.85	ug/L
BENZO(B)FLUORANTHENE	67	.9	ug/L
BENZO(K)FLUORANTHENE	38	.85	ug/L
BENZO(A)PYRENE	71	1.1	ug/L
DIBENZ(A,H)ANTHRACENE	BDL	.45	ug/L
BENZO(G,H,I)PERYLENE	BDL	.95	ug/L
INDENO(1,2,3-CD)PYRENE	21	1	ug/L

1:5 DILUTION

HYDROCARBON SCAN BY GC:FID SW846-8015A(MOD

Analyst: B. BELL Analysis Date: 25-JUL-94 23:00 Instrument: GC/FID Test: 0409.1.0 INDI

Parameter	Result	Det. Limit	Units
GASOLINE	*		mg/L
DIESEL FUEL	*		mg/L
OTHER HYDROCARBONS	*		mg/L

** THE SAMPLE CONTAINS A HYDROCARBON FRACTION IN THE C-8 TO C-20 RANGE. SIMILAR TO DIESEL RANGE.*
1:10000 DILUTION

Sample Comments

* *See Note for Parameter*
BDL Below Detection Limit
EST Estimated Value

Sample chain of custody number NONE.

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Quality Assurance Officer: _____

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	23-JUL-94	2979	C159255
	Complete	PO Number	
	12-AUG-94	CI0299.004	
	Printed	Sampled	
	18-AUG-94	22-JUL-94 14:15	

Report To	Bill To
JAMES AUER GERAGHTY AND MILLER 35 EAST WACKER DRIVE SUITE 1000 CHICAGO, IL 60601	JAMES AUER GERAGHTY & MILLER, INC. 35 EAST WACKER, SUITE 1000 CHICAGO, IL 60601

Sample Description

PROJECT: NAVISTAR-ROCK ISLAND, IL.
PROJECT NO.: CI0299.004
SAMPLE ID.: GM-99

VOLATILE ORGANICS SW846-8240A

Analyst: H. WILLIAMS Analysis Date: 06-AUG-94 09:12 Instrument: GC/MS VOA Test: 0510.3.0 INDI

Parameter	Result	Det. Limit	Units
ACETONE	BDL	20	ug/L
ACROLEIN	BDL	50	ug/L
ACRYLONITRILE	BDL	70	ug/L
BENZENE	BDL	5	ug/L
BROMODICHLOROMETHANE	BDL	5	ug/L
BROMOFORM	BDL	5	ug/L
BROMOMETHANE	BDL	10	ug/L
CARBON DISULFIDE	BDL	5	ug/L
CARBON TETRACHLORIDE	BDL	5	ug/L
CHLOROBENZENE	BDL	5	ug/L
CHLOROETHANE	BDL	10	ug/L
CHLOROFORM	BDL	5	ug/L
CHLOROMETHANE	BDL	10	ug/L
DIBROMOCHLOROMETHANE	BDL	5	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/L
DICHLORODIFLUOROMETHANE	BDL	5	ug/L
1,1-DICHLOROETHANE	BDL	5	ug/L
1,2-DICHLOROETHANE	BDL	5	ug/L
1,1-DICHLOROETHENE	BDL	5	ug/L
1,2-DICHLOROPROPANE	BDL	5	ug/L
ETHYL BENZENE	BDL	5	ug/L
TRICHLOROFLUOROMETHANE	BDL	5	ug/L
2-HEXANONE	BDL	10	ug/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	5	ug/L
METHYL ETHYL KETONE	BDL	10	ug/L
4-METHYL-2-PENTANONE	BDL	10	ug/L
STYRENE	BDL	5	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/L
TETRACHLOROETHENE	BDL	5	ug/L
TETRAHYDROFURAN	BDL	25	ug/L
TOLUENE	BDL	5	ug/L
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	5	ug/L
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/L

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HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C159255

Parameter	Result	Det. Limit	Units
1,1,1-TRICHLOROETHANE	BDL	5	ug/L
1,1,2-TRICHLOROETHANE	BDL	5	ug/L
TRICHLOROETHENE	BDL	5	ug/L
VINYL ACETATE	BDL	10	ug/L
VINYL CHLORIDE	BDL	10	ug/L
XYLENES (O/M/P-XYLENE)	BDL	5	ug/L
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	101		% Rec
TOLUENE-D8	96		% Rec
4-BROMOFLUOROBENZENE	99		% Rec

PCB SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A

Analyst: K. NARINE Analysis Date: 27-JUL-94 Test: P230.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	1000		mL
FINAL VOLUME	10		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080

Analyst: M. JAEGER Analysis Date: 27-JUL-94 Instrument: GC/ECD Test: 0301.2.0

Prep: PCB SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P230.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	0.0005	mg/L
PCB AROCHLOR 1221	BDL	0.0005	mg/L
PCB AROCHLOR 1232	BDL	0.0005	mg/L
PCB AROCHLOR 1242	BDL	0.0005	mg/L
PCB AROCHLOR 1248	BDL	0.0005	mg/L
PCB AROCHLOR 1254	BDL	0.0005	mg/L
PCB AROCHLOR 1260	BDL	0.0005	mg/L
PCB AROCHLOR 1262	BDL	0.0005	mg/L

GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A

Analyst: S. STRUEWING Analysis Date: 28-JUL-94 16:00 Test: P233.2.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	1000		mL
FINAL VOLUME	5		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 28-JUL-94 18:37 Instrument: HPLC Test: 0630.0.0 INDI

Prep: GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P233.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	0.36	ug/L
ACENAPHTHYLENE	BDL	0.29	ug/L
ACENAPHTHENE	BDL	0.32	ug/L
FLUORENE	BDL	0.23	ug/L
PHENANTHRENE	BDL	0.18	ug/L
ANTHRACENE	BDL	0.27	ug/L
FLUORANTHENE	BDL	0.20	ug/L
PYRENE	BDL	0.32	ug/L
BENZ(A)ANTHRACENE	BDL	0.13	ug/L
CHRYSENE	BDL	0.17	ug/L
BENZO(B)FLUORANTHENE	BDL	0.18	ug/L
BENZO(K)FLUORANTHENE	BDL	0.17	ug/L
BENZO(A)PYRENE	BDL	0.23	ug/L
DIBENZ(A,H)ANTHRACENE	BDL	0.09	ug/L
BENZO(G,H,I)PERYLENE	BDL	0.19	ug/L

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HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C159255

Parameter	Result	Det. Limit	Units
INDENO(1,2,3-CD)PYRENE	BDL	0.20	ug/L

Sample Comments

BDL Below Detection Limit

Sample chain of custody number NONE.

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Quality Assurance Officer: Christine Sarkar (Jones)

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	23-JUL-94	2979	C159256
	Complete	PO Number	
	12-AUG-94	CI0299.004	
	Printed	Sampled	
	18-AUG-94	22-JUL-94 16:10	

Report To

JAMES AUER
GERAGHTY AND MILLER
35 EAST WACKER DRIVE
SUITE 1000
CHICAGO, IL 60601

Bill To

JAMES AUER
GERAGHTY & MILLER, INC.
35 EAST WACKER, SUITE 1000
CHICAGO, IL 60601

Sample Description

PROJECT: NAVISTAR-ROCK ISLAND, IL.
PROJECT NO.: CI0299.004
SAMPLE ID.: GM-101

VOLATILE ORGANICS SW846-8240A

Analyst: R. SHAMP Analysis Date: 05-AUG-94 11:05 Instrument: GC/MS VOA Test: 0510.3.0 INDI

Parameter	Result	Det. Limit	Units
ACETONE	BDL	1000	ug/L
ACROLEIN	BDL	2500	ug/L
ACRYLONITRILE	BDL	3500	ug/L
BENZENE	BDL	250	ug/L
BROMODICHLOROMETHANE	BDL	250	ug/L
BROMOFORM	BDL	250	ug/L
BROMOMETHANE	BDL	500	ug/L
CARBON DISULFIDE	BDL	250	ug/L
CARBON TETRACHLORIDE	BDL	250	ug/L
CHLOROBENZENE	BDL	250	ug/L
CHLOROETHANE	BDL	500	ug/L
CHLOROFORM	BDL	250	ug/L
CHLOROMETHANE	BDL	500	ug/L
DIBROMOCHLOROMETHANE	BDL	250	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	250	ug/L
DICHLORODIFLUOROMETHANE	BDL	250	ug/L
1,1-DICHLOROETHANE	BDL	250	ug/L
1,2-DICHLOROETHANE	BDL	250	ug/L
1,1-DICHLOROETHENE	BDL	250	ug/L
1,2-DICHLOROPROPANE	BDL	250	ug/L
ETHYL BENZENE	BDL	250	ug/L
TRICHLOROFLUOROMETHANE	BDL	250	ug/L
2-HEXANONE	BDL	500	ug/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	250	ug/L
METHYL ETHYL KETONE	BDL	500	ug/L
4-METHYL-2-PENTANONE	BDL	500	ug/L
STYRENE	BDL	250	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	250	ug/L
TETRACHLOROETHENE	BDL	250	ug/L
TETRAHYDROFURAN	BDL	1200	ug/L
TOLUENE	BDL	250	ug/L
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	250	ug/L
TRANS-1,3-DICHLOROPROPENE	BDL	250	ug/L

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HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C159256

Parameter	Result	Det. Limit	Units
1,1,1-TRICHLOROETHANE	BDL	250	ug/L
1,1,2-TRICHLOROETHANE	BDL	250	ug/L
TRICHLOROETHENE	BDL	250	ug/L
VINYL ACETATE	BDL	500	ug/L
VINYL CHLORIDE	BDL	500	ug/L
XYLENES (O/M/P-XYLENE)	BDL	250	ug/L
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	99		% Rec
TOLUENE-D8	102		% Rec
4-BROMOFLUOROBENZENE	105		% Rec

On this instrument, packed column has been replaced by capillary column with 8240 criteria.
Unable to analyze sample at lower dilution due to high concentration of non-target compounds.
1:50 DILUTION

GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A

Analyst: S. STRUEWING Analysis Date: 27-JUL-94 17:40 Test: P233.2.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	950		mL
FINAL VOLUME	5		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 29-JUL-94 13:20 Instrument: HPLC Test: 0630.0.0 INDI
Prep: GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P233.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	3.6	ug/L
ACENAPHTHYLENE	BDL	2.9	ug/L
ACENAPHTHENE	220	3.2	ug/L
FLUORENE	EST 600	2.3	ug/L
PHENANTHRENE	EST 1100	1.8	ug/L
ANTHRACENE	48	2.7	ug/L
FLUORANTHENE	15	2	ug/L
PYRENE	20	3.2	ug/L
BENZ(A)ANTHRACENE	7.6	1.3	ug/L
CHRYSENE	30	1.7	ug/L
BENZO(B)FLUORANTHENE	BDL	1.8	ug/L
BENZO(K)FLUORANTHENE	BDL	1.7	ug/L
BENZO(A)PYRENE	BDL	2.3	ug/L
DIBENZ(A,H)ANTHRACENE	BDL	.9	ug/L
BENZO(G,H,I)PERYLENE	BDL	1.9	ug/L
INDENO(1,2,3-CD)PYRENE	BDL	2	ug/L

1:10 DILUTION

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 03-AUG-94 03:32 Instrument: HPLC Test: 0630.0.1 INDI
Prep: GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P233.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	36	ug/L
ACENAPHTHYLENE	BDL	29	ug/L
ACENAPHTHENE	230	32	ug/L
FLUORENE	470	23	ug/L
PHENANTHRENE	950	18	ug/L

 (continued on next page)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C159256

Parameter	Result	Det. Limit	Units
ANTHRACENE	48	27	ug/L
FLUORANTHENE	BDL	20	ug/L
PYRENE	BDL	32	ug/L
BENZ(A)ANTHRACENE	BDL	13	ug/L
CHRYSENE	BDL	17	ug/L
BENZO(B)FLUORANTHENE	BDL	18	ug/L
BENZO(K)FLUORANTHENE	BDL	17	ug/L
BENZO(A)PYRENE	BDL	23	ug/L
DIBENZ(A,H)ANTHRACENE	BDL	9	ug/L
BENZO(G,H,I)PERYLENE	BDL	19	ug/L
INDENO(1,2,3-CD)PYRENE	BDL	20	ug/L

1:100 dilution.

Sample Comments

BDL Below Detection Limit
EST Estimated Value

Sample chain of custody number NONE.

This Certificate shall not be reproduced, except in full, without the written approval of the lab.

Quality Assurance Officer: Christine Jackson (CMC)

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	21-JUL-94	2979	C159085
	Complete	PO Number	
	09-AUG-94	CI0299.004	
	Printed	Sampled	
	10-AUG-94	20-JUL-94 13:29	

Report To

JAMES AUER
GERAGHTY AND MILLER
35 EAST WACKER DRIVE
SUITE 1000
CHICAGO, IL 60601

Bill To

JAMES AUER
GERAGHTY & MILLER, INC.
35 EAST WACKER, SUITE 1000
CHICAGO, IL 60601

Sample Description

PROJECT: NAVISTAR-ROCK ISLAND, IL
PROJECT NO.: CI0299.004
SAMPLE ID.: MW-88

VOLATILE ORGANICS SW846-8240A

Analyst: B. MAZUR Analysis Date: 29-JUL-94 16:06 Instrument: GC/MS VOA Test: 0510.3.0 INDI

Parameter	Result	Det. Limit	Units
ACETONE	BDL	20	ug/L
ACROLEIN	BDL	50	ug/L
ACRYLONITRILE	BDL	70	ug/L
BENZENE	BDL	5	ug/L
BROMODICHLOROMETHANE	BDL	5	ug/L
BROMOFORM	BDL	5	ug/L
BROMOMETHANE	BDL	10	ug/L
CARBON DISULFIDE	32	5	ug/L
CARBON TETRACHLORIDE	BDL	5	ug/L
CHLOROBENZENE	BDL	5	ug/L
CHLOROETHANE	BDL	10	ug/L
CHLOROFORM	BDL	5	ug/L
CHLOROMETHANE	BDL	10	ug/L
DIBROMOCHLOROMETHANE	BDL	5	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/L
DICHLORODIFLUOROMETHANE	BDL	5	ug/L
1,1-DICHLOROETHANE	BDL	5	ug/L
1,2-DICHLOROETHANE	BDL	5	ug/L
1,1-DICHLOROETHENE	BDL	5	ug/L
1,2-DICHLOROPROPANE	BDL	5	ug/L
ETHYL BENZENE	BDL	5	ug/L
TRICHLOROFLUOROMETHANE	BDL	5	ug/L
2-HEXANONE	BDL	10	ug/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	5	ug/L
METHYL ETHYL KETONE	BDL	10	ug/L
4-METHYL-2-PENTANONE	BDL	10	ug/L
STYRENE	BDL	5	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/L
TETRACHLOROETHENE	BDL	5	ug/L
TETRAHYDROFURAN	BDL	25	ug/L
TOLUENE	BDL	5	ug/L
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	5	ug/L
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/L

 (continued on next page)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C159085

Parameter	Result	Det. Limit	Units
1,1,1-TRICHLOROETHANE	BDL	5	ug/L
1,1,2-TRICHLOROETHANE	BDL	5	ug/L
TRICHLOROETHENE	BDL	5	ug/L
VINYL ACETATE	BDL	10	ug/L
VINYL CHLORIDE	BDL	10	ug/L
XYLENES (O/M/P-XYLENE)	BDL	5	ug/L
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	104		% Rec
TOLUENE-D8	104		% Rec
4-BROMOFLUOROBENZENE	104		% Rec

PCB SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A

Analyst: K. RUBLE Analysis Date: 22-JUL-94 Test: P230.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	1000		mL
FINAL VOLUME	10		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080

Analyst: M. JAEGER Analysis Date: 27-JUL-94 Instrument: GC/ECD Test: 0301.2.0

Prep: PCB SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P230.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	0.0005	mg/L
PCB AROCHLOR 1221	BDL	0.0005	mg/L
PCB AROCHLOR 1232	BDL	0.0005	mg/L
PCB AROCHLOR 1242	BDL	0.0005	mg/L
PCB AROCHLOR 1248	BDL	0.0005	mg/L
PCB AROCHLOR 1254	BDL	0.0005	mg/L
PCB AROCHLOR 1260	BDL	0.0005	mg/L
PCB AROCHLOR 1262	BDL	0.0005	mg/L

GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A

Analyst: P. SIMS Analysis Date: 22-JUL-94 18:20 Test: P233.2.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	1000		mL
FINAL VOLUME	5		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 27-JUL-94 14:41 Instrument: HPLC Test: 0630.0.0 INDI

Prep: GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P233.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	0.36	ug/L
ACENAPHTHYLENE	BDL	0.29	ug/L
ACENAPHTHENE	BDL	0.32	ug/L
FLUORENE	BDL	0.23	ug/L
PHENANTHRENE	BDL	0.18	ug/L
ANTHRACENE	BDL	0.27	ug/L
FLUORANTHENE	BDL	0.20	ug/L
PYRENE	BDL	0.32	ug/L
BENZ(A)ANTHRACENE	BDL	0.13	ug/L
CHRYSENE	BDL	0.17	ug/L
BENZO(B)FLUORANTHENE	BDL	0.18	ug/L
BENZO(K)FLUORANTHENE	BDL	0.17	ug/L
BENZO(A)PYRENE	BDL	0.23	ug/L
DIBENZ(A,H)ANTHRACENE	BDL	0.09	ug/L
BENZO(G,H,I)PERYLENE	BDL	0.19	ug/L

 (continued on next page)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C159085

Parameter	Result	Det. Limit	Units
INDENO(1,2,3-CD)PYRENE	BDL	0.20	ug/L

Sample Comments

BDL Below Detection Limit

Sample chain of custody number NONE.

This Certificate shall not be reproduced, except in full, without the written approval of the lab.

Quality Assurance Officer: _____

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	21-JUL-94	2979	C159087
	Complete	PO Number	
	09-AUG-94	CI0299.004	
	Printed	Sampled	
	10-AUG-94	20-JUL-94 18:30	

Report To	Bill To
JAMES AUER GERAGHTY AND MILLER 35 EAST WACKER DRIVE SUITE 1000 CHICAGO, IL 60601	JAMES AUER GERAGHTY & MILLER, INC. 35 EAST WACKER, SUITE 1000 CHICAGO, IL 60601

Sample Description

PROJECT: NAVISTAR-ROCK ISLAND, IL
PROJECT NO.: CI0299.004
SAMPLE ID.: FB-1

VOLATILE ORGANICS SW846-8240A

Analyst: B. MAZUR Analysis Date: 29-JUL-94 16:51 Instrument: GC/MS VOA Test: 0510.3.0 INDI

Parameter	Result	Det. Limit	Units
ACETONE	BDL	20	ug/L
ACROLEIN	BDL	50	ug/L
ACRYLONITRILE	BDL	70	ug/L
BENZENE	BDL	5	ug/L
BROMODICHLOROMETHANE	BDL	5	ug/L
BROMOFORM	BDL	5	ug/L
BROMOMETHANE	BDL	10	ug/L
CARBON DISULFIDE	BDL	5	ug/L
CARBON TETRACHLORIDE	BDL	5	ug/L
CHLOROBENZENE	BDL	5	ug/L
CHLOROETHANE	BDL	10	ug/L
CHLOROFORM	BDL	5	ug/L
CHLOROMETHANE	BDL	10	ug/L
DIBROMOCHLOROMETHANE	BDL	5	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/L
DICHLORODIFLUOROMETHANE	BDL	5	ug/L
1,1-DICHLOROETHANE	BDL	5	ug/L
1,2-DICHLOROETHANE	BDL	5	ug/L
1,1-DICHLOROETHENE	BDL	5	ug/L
1,2-DICHLOROPROPANE	BDL	5	ug/L
ETHYL BENZENE	BDL	5	ug/L
TRICHLOROFLUOROMETHANE	BDL	5	ug/L
2-HEXANONE	BDL	10	ug/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	5	ug/L
METHYL ETHYL KETONE	BDL	10	ug/L
4-METHYL-2-PENTANONE	BDL	10	ug/L
STYRENE	BDL	5	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/L
TETRACHLOROETHENE	BDL	5	ug/L
TETRAHYDROFURAN	BDL	25	ug/L
TOLUENE	BDL	5	ug/L
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	5	ug/L
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/L

 (continued on next page)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C159087

Parameter	Result	Det. Limit	Units
1,1,1-TRICHLOROETHANE	BDL	5	ug/L
1,1,2-TRICHLOROETHANE	BDL	5	ug/L
TRICHLOROETHENE	BDL	5	ug/L
VINYL ACETATE	BDL	10	ug/L
VINYL CHLORIDE	BDL	10	ug/L
XYLENES (O/M/P-XYLENE)	BDL	5	ug/L
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	108		% Rec
TOLUENE-D8	103		% Rec
4-BROMOFLUOROBENZENE	105		% Rec

PCB SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A

Analyst: K. RUBLE Analysis Date: 22-JUL-94 Test: P230.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	1000		mL
FINAL VOLUME	10		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080

Analyst: M. JAEGER Analysis Date: 22-JUL-94 Instrument: GC/ECD Test: 0301.2.0

Prep: PCB SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P230.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	0.0005	mg/L
PCB AROCHLOR 1221	BDL	0.0005	mg/L
PCB AROCHLOR 1232	BDL	0.0005	mg/L
PCB AROCHLOR 1242	BDL	0.0005	mg/L
PCB AROCHLOR 1248	BDL	0.0005	mg/L
PCB AROCHLOR 1254	BDL	0.0005	mg/L
PCB AROCHLOR 1260	BDL	0.0005	mg/L
PCB AROCHLOR 1262	BDL	0.0005	mg/L

GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A

Analyst: P. SIMS Analysis Date: 22-JUL-94 20:00 Test: P233.2.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	1000		mL
FINAL VOLUME	5		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 27-JUL-94 15:27 Instrument: HPLC Test: 0630.0.0 INDI

Prep: GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P233.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	0.36	ug/L
ACENAPHTHYLENE	BDL	0.29	ug/L
ACENAPHTHENE	BDL	0.32	ug/L
FLUORENE	BDL	0.23	ug/L
PHENANTHRENE	BDL	0.18	ug/L
ANTHRACENE	BDL	0.27	ug/L
FLUORANTHENE	BDL	0.20	ug/L
PYRENE	BDL	0.32	ug/L
BENZ(A)ANTHRACENE	BDL	0.13	ug/L
CHRYSENE	BDL	0.17	ug/L
BENZO(B)FLUORANTHENE	BDL	0.18	ug/L
BENZO(K)FLUORANTHENE	BDL	0.17	ug/L
BENZO(A)PYRENE	BDL	0.23	ug/L
DIBENZ(A,H)ANTHRACENE	BDL	0.09	ug/L
BENZO(G,H,I)PERYLENE	BDL	0.19	ug/L

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HERITAGE ENVIRONMENTAL SERVICES, INC.

Lab Sample ID: C159087

Parameter	Result	Det. Limit	Units
INDENO(1,2,3-CD)PYRENE	BDL	0.20	ug/L

Sample Comments

BDL Below Detection Limit

Sample chain of custody number NONE.

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Quality Assurance Officer: _____

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	22-JUL-94	2979	C159139
	Complete	PO Number	
	10-AUG-94	CI0299.004	
	Printed	Sampled	
	11-AUG-94	21-JUL-94 11:00	

Report To	Bill To
JAMES AUER GERAGHTY AND MILLER 35 EAST WACKER DRIVE SUITE 1000 CHICAGO, IL 60601	JAMES AUER GERAGHTY & MILLER, INC. 35 EAST WACKER, SUITE 1000 CHICAGO, IL 60601

Sample Description

PROJECT NO.: CI0299.004
PROJECT NAME: NAVISTAR-ROCK ISLAND, IL.
SAMPLE ID.: FB-2

VOLATILE ORGANICS SW846-8240A

Analyst: B. MAZUR Analysis Date: 01-AUG-94 20:59 Instrument: GC/MS VOA Test: 0510.3.0 INDI

Parameter	Result	Det. Limit	Units
ACETONE	BDL	20	ug/L
ACROLEIN	BDL	50	ug/L
ACRYLONITRILE	BDL	70	ug/L
BENZENE	BDL	5	ug/L
BROMODICHLOROMETHANE	BDL	5	ug/L
BROMOFORM	BDL	5	ug/L
BROMOMETHANE	BDL	10	ug/L
CARBON DISULFIDE	BDL	5	ug/L
CARBON TETRACHLORIDE	BDL	5	ug/L
CHLOROBENZENE	BDL	5	ug/L
CHLOROETHANE	BDL	10	ug/L
CHLOROFORM	BDL	5	ug/L
CHLOROMETHANE	BDL	10	ug/L
DIBROMOCHLOROMETHANE	BDL	5	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/L
DICHLORODIFLUOROMETHANE	BDL	5	ug/L
1,1-DICHLOROETHANE	BDL	5	ug/L
1,2-DICHLOROETHANE	BDL	5	ug/L
1,1-DICHLOROETHENE	BDL	5	ug/L
1,2-DICHLOROPROPANE	BDL	5	ug/L
ETHYL BENZENE	BDL	5	ug/L
TRICHLOROFLUOROMETHANE	BDL	5	ug/L
2-HEXANONE	BDL	10	ug/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	5	ug/L
METHYL ETHYL KETONE	BDL	10	ug/L
4-METHYL-2-PENTANONE	BDL	10	ug/L
STYRENE	BDL	5	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/L
TETRACHLOROETHENE	BDL	5	ug/L
TETRAHYDROFURAN	BDL	25	ug/L
TOLUENE	BDL	5	ug/L
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	5	ug/L
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/L

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HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C159139

Parameter	Result	Det. Limit	Units
1,1,1-TRICHLOROETHANE	BDL	5	ug/L
1,1,2-TRICHLOROETHANE	BDL	5	ug/L
TRICHLOROETHENE	BDL	5	ug/L
VINYL ACETATE	BDL	10	ug/L
VINYL CHLORIDE	BDL	10	ug/L
XYLENES (O/M/P-XYLENE)	BDL	5	ug/L
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	105		% Rec
TOLUENE-D8	104		% Rec
4-BROMOFLUOROBENZENE	102		% Rec

PCB SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A

Analyst: K. NARINE Analysis Date: 27-JUL-94 Test: P230.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	1000		mL
FINAL VOLUME	10		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080

Analyst: M. JAEGER Analysis Date: 27-JUL-94 Instrument: GC/ECD Test: 0301.2.0

Prep: PCB SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P230.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	0.0005	mg/L
PCB AROCHLOR 1221	BDL	0.0005	mg/L
PCB AROCHLOR 1232	BDL	0.0005	mg/L
PCB AROCHLOR 1242	BDL	0.0005	mg/L
PCB AROCHLOR 1248	BDL	0.0005	mg/L
PCB AROCHLOR 1254	BDL	0.0005	mg/L
PCB AROCHLOR 1260	BDL	0.0005	mg/L
PCB AROCHLOR 1262	BDL	0.0005	mg/L

GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A

Analyst: P. SIMS Analysis Date: 26-JUL-94 22:30 Test: P233.2.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	1000		mL
FINAL VOLUME	5		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 28-JUL-94 15:21 Instrument: HPLC Test: 0630.0.0 INDI

Prep: GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P233.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	0.36	ug/L
ACENAPHTHYLENE	BDL	0.29	ug/L
ACENAPHTHENE	BDL	0.32	ug/L
FLUORENE	BDL	0.23	ug/L
PHENANTHRENE	BDL	0.18	ug/L
ANTHRACENE	BDL	0.27	ug/L
FLUORANTHENE	BDL	0.20	ug/L
PYRENE	BDL	0.32	ug/L
BENZ(A)ANTHRACENE	BDL	0.13	ug/L
CHRYSENE	BDL	0.17	ug/L
BENZO(B)FLUORANTHENE	BDL	0.18	ug/L
BENZO(K)FLUORANTHENE	BDL	0.17	ug/L
BENZO(A)PYRENE	BDL	0.23	ug/L
DIBENZ(A,H)ANTHRACENE	BDL	0.09	ug/L
BENZO(G,H,I)PERYLENE	BDL	0.19	ug/L

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HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C159139

Parameter	Result	Det. Limit	Units
INDENO(1,2,3-CD)PYRENE	BDL	0.20	ug/L

Sample Comments

BDL Below Detection Limit

Sample chain of custody number NONE.

This Certificate shall not be reproduced, except in full, without the written approval of the lab.

Quality Assurance Officer: _____

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	23-JUL-94	2979	C159258
	Complete	PO Number	
	12-AUG-94	CI0299.004	
	Printed	Sampled	
	18-AUG-94	22-JUL-94 13:20	

Report To	Bill To
JAMES AUER GERAGHTY AND MILLER 35 EAST WACKER DRIVE SUITE 1000 CHICAGO, IL 60601	JAMES AUER GERAGHTY & MILLER, INC. 35 EAST WACKER, SUITE 1000 CHICAGO, IL 60601

Sample Description

PROJECT: NAVISTAR-ROCK ISLAND, IL.
PROJECT NO.: CI0299.004
SAMPLE ID.: FB-3

VOLATILE ORGANICS SW846-8240A

Analyst: R. SHAMP Analysis Date: 05-AUG-94 13:00 Instrument: GC/MS VOA Test: 0510.3.0 INDI

Parameter	Result	Det. Limit	Units
ACETONE	28	20	ug/L
ACROLEIN	BDL	50	ug/L
ACRYLONITRILE	BDL	70	ug/L
BENZENE	BDL	5	ug/L
BROMODICHLOROMETHANE	BDL	5	ug/L
BROMOFORM	BDL	5	ug/L
BROMOMETHANE	BDL	10	ug/L
CARBON DISULFIDE	BDL	5	ug/L
CARBON TETRACHLORIDE	BDL	5	ug/L
CHLOROBENZENE	BDL	5	ug/L
CHLOROETHANE	BDL	10	ug/L
CHLOROFORM	BDL	5	ug/L
CHLOROMETHANE	BDL	10	ug/L
DIBROMOCHLOROMETHANE	BDL	5	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/L
DICHLORODIFLUOROMETHANE	BDL	5	ug/L
1,1-DICHLOROETHANE	BDL	5	ug/L
1,2-DICHLOROETHANE	BDL	5	ug/L
1,1-DICHLOROETHENE	BDL	5	ug/L
1,2-DICHLOROPROPANE	BDL	5	ug/L
ETHYL BENZENE	BDL	5	ug/L
TRICHLOROFLUOROMETHANE	BDL	5	ug/L
2-HEXANONE	BDL	10	ug/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	5	ug/L
METHYL ETHYL KETONE	BDL	10	ug/L
4-METHYL-2-PENTANONE	BDL	10	ug/L
STYRENE	BDL	5	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/L
TETRACHLOROETHENE	BDL	5	ug/L
TETRAHYDROFURAN	BDL	25	ug/L
TOLUENE	BDL	5	ug/L
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	5	ug/L
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/L

 (continued on next page)

Parameter	Result	Det. Limit	Units
1,1,1-TRICHLOROETHANE	BDL	5	ug/L
1,1,2-TRICHLOROETHANE	BDL	5	ug/L
TRICHLOROETHENE	BDL	5	ug/L
VINYL ACETATE	BDL	10	ug/L
VINYL CHLORIDE	BDL	10	ug/L
XYLENES (O/M/P-XYLENE)	BDL	5	ug/L
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	97		% Rec
TOLUENE-D8	102		% Rec
4-BROMOFLUOROBENZENE	98		% Rec

On this instrument, packed column has been replaced by capillary column with 8240 criteria.

PCB SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A

Analyst: K. NARINE Analysis Date: 27-JUL-94 Test: P230.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	1000		mL
FINAL VOLUME	10		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080

Analyst: M. JAEGER Analysis Date: 27-JUL-94 Instrument: GC/ECD Test: 0301.2.0

Prep: PCB SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P230.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	0.0005	mg/L
PCB AROCHLOR 1221	BDL	0.0005	mg/L
PCB AROCHLOR 1232	BDL	0.0005	mg/L
PCB AROCHLOR 1242	BDL	0.0005	mg/L
PCB AROCHLOR 1248	BDL	0.0005	mg/L
PCB AROCHLOR 1254	BDL	0.0005	mg/L
PCB AROCHLOR 1260	BDL	0.0005	mg/L
PCB AROCHLOR 1262	BDL	0.0005	mg/L

GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A

Analyst: S. STRUEWING Analysis Date: 28-JUL-94 16:10 Test: P233.2.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	940		mL
FINAL VOLUME	5		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 28-JUL-94 19:22 Instrument: HPLC Test: 0630.0.0 INDI

Prep: GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P233.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	0.36	ug/L
ACENAPHTHYLENE	BDL	0.29	ug/L
ACENAPHTHENE	BDL	0.32	ug/L
FLUORENE	BDL	0.23	ug/L
PHENANTHRENE	BDL	0.18	ug/L
ANTHRACENE	BDL	0.27	ug/L
FLUORANTHENE	BDL	0.20	ug/L
PYRENE	BDL	0.32	ug/L
BENZ(A)ANTHRACENE	BDL	0.13	ug/L
CHRYSENE	BDL	0.17	ug/L
BENZO(B)FLUORANTHENE	BDL	0.18	ug/L
BENZO(K)FLUORANTHENE	BDL	0.17	ug/L

 (continued on next page)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C159258

Parameter	Result	Det. Limit	Units
BENZO(A)PYRENE	BDL	0.23	ug/L
DIBENZ(A,H)ANTHRACENE	BDL	0.09	ug/L
BENZO(G,H,I)PERYLENE	BDL	0.19	ug/L
INDENO(1,2,3-CD)PYRENE	BDL	0.20	ug/L

Sample Comments

BDL Below Detection Limit

Sample chain of custody number NONE.

This Certificate shall not be reproduced, except in full, without the written approval of the lab.

Quality Assurance Officer: Christine Jackson (Chris)

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	22-JUL-94	2979	C159140
	Complete	PO Number	
	10-AUG-94	CI0299.004	
	Printed	Sampled	
	15-AUG-94	21-JUL-94 11:10	

Report To	Bill To
JAMES AUER GERAGHTY AND MILLER 35 EAST WACKER DRIVE SUITE 1000 CHICAGO, IL 60601	JAMES AUER GERAGHTY & MILLER, INC. 35 EAST WACKER, SUITE 1000 CHICAGO, IL 60601

Sample Description

PROJECT NO.: CI0299.004
PROJECT NAME: NAVISTAR-ROCK ISLAND, IL.
SAMPLE ID.: GW-1

VOLATILE ORGANICS SW846-8240A

Analyst: B. MAZUR Analysis Date: 02-AUG-94 14:37 Instrument: GC/MS VOA Test: 0510.3.0 INDI

Parameter	Result	Det. Limit	Units
ACETONE	BDL	20	ug/L
ACROLEIN	BDL	50	ug/L
ACRYLONITRILE	BDL	70	ug/L
BENZENE	BDL	5	ug/L
BROMODICHLOROMETHANE	BDL	5	ug/L
BROMOFORM	BDL	5	ug/L
BROMOMETHANE	BDL	10	ug/L
CARBON DISULFIDE	BDL	5	ug/L
CARBON TETRACHLORIDE	BDL	5	ug/L
CHLOROBENZENE	BDL	5	ug/L
CHLOROETHANE	BDL	10	ug/L
CHLOROFORM	BDL	5	ug/L
CHLOROMETHANE	BDL	10	ug/L
DIBROMOCHLOROMETHANE	BDL	5	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/L
DICHLORODIFLUOROMETHANE	BDL	5	ug/L
1,1-DICHLOROETHANE	BDL	5	ug/L
1,2-DICHLOROETHANE	BDL	5	ug/L
1,1-DICHLOROETHENE	BDL	5	ug/L
1,2-DICHLOROPROPANE	BDL	5	ug/L
ETHYL BENZENE	BDL	5	ug/L
TRICHLOROFLUOROMETHANE	BDL	5	ug/L
2-HEXANONE	BDL	10	ug/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	5	ug/L
METHYL ETHYL KETONE	BDL	10	ug/L
4-METHYL-2-PENTANONE	BDL	10	ug/L
STYRENE	BDL	5	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/L
TETRACHLOROETHENE	BDL	5	ug/L
TETRAHYDROFURAN	BDL	25	ug/L
TOLUENE	BDL	5	ug/L
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	5	ug/L
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/L

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HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C159140

Parameter	Result	Det. Limit	Units
1,1,1-TRICHLOROETHANE	BDL	5	ug/L
1,1,2-TRICHLOROETHANE	BDL	5	ug/L
TRICHLOROETHENE	BDL	5	ug/L
VINYL ACETATE	BDL	10	ug/L
VINYL CHLORIDE	BDL	10	ug/L
XYLENES (O/M/P-XYLENE)	BDL	5	ug/L
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	104		% Rec
TOLUENE-D8	100		% Rec
4-BROMOFLUOROBENZENE	99		% Rec

PCB SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A

Analyst: K. NARINE Analysis Date: 27-JUL-94 Test: P230.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	1000		mL
FINAL VOLUME	10		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080

Analyst: M. JAEGER Analysis Date: 27-JUL-94 Instrument: GC/ECD Test: 0301.2.0

Prep: PCB SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P230.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	0.0005	mg/L
PCB AROCHLOR 1221	BDL	0.0005	mg/L
PCB AROCHLOR 1232	BDL	0.0005	mg/L
PCB AROCHLOR 1242	BDL	0.0005	mg/L
PCB AROCHLOR 1248	BDL	0.0005	mg/L
PCB AROCHLOR 1254	BDL	0.0005	mg/L
PCB AROCHLOR 1260	BDL	0.0005	mg/L
PCB AROCHLOR 1262	BDL	0.0005	mg/L

GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A

Analyst: P. SIMS Analysis Date: 26-JUL-94 22:30 Test: P233.2.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	950		mL
FINAL VOLUME	5		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. COFFELT Analysis Date: 28-JUL-94 16:06 Instrument: HPLC Test: 0630.0.0 INDI

Prep: GOG SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P233.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	0.36	ug/L
ACENAPHTHYLENE	BDL	0.29	ug/L
ACENAPHTHENE	BDL	0.32	ug/L
FLUORENE	BDL	0.23	ug/L
PHENANTHRENE	BDL	0.18	ug/L
ANTHRACENE	BDL	0.27	ug/L
FLUORANTHENE	BDL	0.20	ug/L
PYRENE	BDL	0.32	ug/L
BENZ(A)ANTHRACENE	BDL	0.13	ug/L
CHRYSENE	BDL	0.17	ug/L
BENZO(B)FLUORANTHENE	BDL	0.18	ug/L
BENZO(K)FLUORANTHENE	BDL	0.17	ug/L
BENZO(A)PYRENE	BDL	0.23	ug/L
DIBENZ(A,H)ANTHRACENE	BDL	0.09	ug/L
BENZO(G,H,I)PERYLENE	BDL	0.19	ug/L

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HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C159140

Parameter	Result	Det. Limit	Units
INDENO(1,2,3-CD)PYRENE	BDL	0.20	ug/L

Sample Comments

BDL Below Detection Limit

Sample chain of custody number NONE.

This Certificate shall not be reproduced, except in full, without the written approval of the lab.

Quality Assurance Officer: Christer Jackson Cohn

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	25-JUL-94	2979	C159273
	Complete	PO Number	
	12-AUG-94	CI0299.004	
	Printed	Sampled	
	18-AUG-94	23-JUL-94 12:40	

Report To	Bill To
JAMES AUER GERAGHTY AND MILLER 35 EAST WACKER DRIVE SUITE 1000 CHICAGO, IL 60601	JAMES AUER GERAGHTY & MILLER, INC. 35 EAST WACKER, SUITE 1000 CHICAGO, IL 60601

Sample Description

PROJECT: NAVISTAR-ROCK ISLAND, IL.
PROJECT NO.: CI0299.004
SAMPLE ID.: GW-2

VOLATILE ORGANICS SW846-8240A

Analyst: R. SHAMP Analysis Date: 05-AUG-94 15:34 Instrument: GC/MS VOA Test: 0510.3.0 INDI

Parameter	Result	Det. Limit	Units
ACETONE	52	20	ug/L
ACROLEIN	BDL	50	ug/L
ACRYLONITRILE	BDL	70	ug/L
BENZENE	BDL	5	ug/L
BROMODICHLOROMETHANE	BDL	5	ug/L
BROMOFORM	BDL	5	ug/L
BROMOMETHANE	BDL	10	ug/L
CARBON DISULFIDE	BDL	5	ug/L
CARBON TETRACHLORIDE	BDL	5	ug/L
CHLOROBENZENE	BDL	5	ug/L
CHLOROETHANE	BDL	10	ug/L
CHLOROFORM	BDL	5	ug/L
CHLOROMETHANE	BDL	10	ug/L
DIBROMOCHLOROMETHANE	BDL	5	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/L
DICHLORODIFLUOROMETHANE	BDL	5	ug/L
1,1-DICHLOROETHANE	BDL	5	ug/L
1,2-DICHLOROETHANE	BDL	5	ug/L
1,1-DICHLOROETHENE	BDL	5	ug/L
1,2-DICHLOROPROPANE	BDL	5	ug/L
ETHYL BENZENE	BDL	5	ug/L
TRICHLOROFLUOROMETHANE	BDL	5	ug/L
2-HEXANONE	BDL	10	ug/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	5	ug/L
METHYL ETHYL KETONE	BDL	10	ug/L
4-METHYL-2-PENTANONE	BDL	10	ug/L
STYRENE	BDL	5	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/L
TETRACHLOROETHENE	BDL	5	ug/L
TETRAHYDROFURAN	BDL	25	ug/L
TOLUENE	BDL	5	ug/L
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	5	ug/L
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/L

 (continued on next page)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C159273

Parameter	Result	Det. Limit	Units
1,1,1-TRICHLOROETHANE	BDL	5	ug/L
1,1,2-TRICHLOROETHANE	BDL	5	ug/L
TRICHLOROETHENE	BDL	5	ug/L
VINYL ACETATE	BDL	10	ug/L
VINYL CHLORIDE	BDL	10	ug/L
XYLENES (O/M/P-XYLENE)	BDL	5	ug/L
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	97		% Rec
TOLUENE-D8	101		% Rec
4-BROMOFLUOROBENZENE	99		% Rec

On this instrument, packed column has been replaced by capillary column with 8240 criteria.

Sample Comments

BDL Below Detection Limit

Sample chain of custody number NONE.

This Certificate shall not be reproduced, except in full, without the written approval of the lab.

Quality Assurance Officer: Christine Jackson (CMCS)

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	25-JUL-94	2979	C159274
	Complete	PO Number	
	12-AUG-94	CI0299.004	
	Printed	Sampled	
	18-AUG-94	23-JUL-94 12:40	

Report To	Bill To
JAMES AUER GERAGHTY AND MILLER 35 EAST WACKER DRIVE SUITE 1000 CHICAGO, IL 60601	JAMES AUER GERAGHTY & MILLER, INC. 35 EAST WACKER, SUITE 1000 CHICAGO, IL 60601

Sample Description

PROJECT: NAVISTAR-ROCK ISLAND, IL.
PROJECT NO.: CI0299.004
SAMPLE ID.: GW-3

VOLATILE ORGANICS SW846-8240A

Analyst: R. SHAMP Analysis Date: 05-AUG-94 16:12 Instrument: GC/MS VOA Test: 0510.3.0 INDI

Parameter	Result	Det. Limit	Units
ACETONE	47	20	ug/L
ACROLEIN	BDL	50	ug/L
ACRYLONITRILE	BDL	70	ug/L
BENZENE	BDL	5	ug/L
BROMODICHLOROMETHANE	BDL	5	ug/L
BROMOFORM	BDL	5	ug/L
BROMOMETHANE	BDL	10	ug/L
CARBON DISULFIDE	BDL	5	ug/L
CARBON TETRACHLORIDE	BDL	5	ug/L
CHLOROBENZENE	BDL	5	ug/L
CHLOROETHANE	BDL	10	ug/L
CHLOROFORM	BDL	5	ug/L
CHLOROMETHANE	BDL	10	ug/L
DIBROMOCHLOROMETHANE	BDL	5	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/L
DICHLORODIFLUOROMETHANE	BDL	5	ug/L
1,1-DICHLOROETHANE	BDL	5	ug/L
1,2-DICHLOROETHANE	BDL	5	ug/L
1,1-DICHLOROETHENE	BDL	5	ug/L
1,2-DICHLOROPROPANE	BDL	5	ug/L
ETHYL BENZENE	BDL	5	ug/L
TRICHLOROFLUOROMETHANE	BDL	5	ug/L
2-HEXANONE	BDL	10	ug/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	5	ug/L
METHYL ETHYL KETONE	BDL	10	ug/L
4-METHYL-2-PENTANONE	BDL	10	ug/L
STYRENE	BDL	5	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/L
TETRACHLOROETHENE	BDL	5	ug/L
TETRAHYDROFURAN	BDL	25	ug/L
TOLUENE	BDL	5	ug/L
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	5	ug/L
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/L

 (continued on next page)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C159274

Parameter	Result	Det. Limit	Units
1,1,1-TRICHLOROETHANE	BDL	5	ug/L
1,1,2-TRICHLOROETHANE	BDL	5	ug/L
TRICHLOROETHENE	BDL	5	ug/L
VINYL ACETATE	BDL	10	ug/L
VINYL CHLORIDE	BDL	10	ug/L
XYLENES (O/M/P-XYLENE)	BDL	5	ug/L
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	99		% Rec
TOLUENE-D8	101		% Rec
4-BROMOFLUOROBENZENE	100		% Rec

On this instrument, packed column has been replaced by capillary column with 8240 criteria.

Sample Comments

BDL Below Detection Limit

Sample chain of custody number NONE.

This Certificate shall not be reproduced, except in full, without the written approval of the lab.

Quality Assurance Officer: Christine Jackson (CMJ)

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	23-JUL-94	2979	C159259
	Complete	PO Number	
	12-AUG-94	CI0299.004	
	Printed	Sampled	
	13-AUG-94		

Report To

JAMES AUER
GERAGHTY AND MILLER
35 EAST WACKER DRIVE
SUITE 1000
CHICAGO, IL 60601

Bill To

JAMES AUER
GERAGHTY & MILLER, INC.
35 EAST WACKER, SUITE 1000
CHICAGO, IL 60601

Sample Description

PROJECT: NAVISTAR-ROCK ISLAND, IL.
PROJECT NO.: CI0299.004
SAMPLE ID.: TRIP BLANK

VOLATILE ORGANICS SW846-8240A

Analyst: R. SHAMP Analysis Date: 05-AUG-94 13:39 Instrument: GC/MS VOA Test: 0510.3.0 INDI

Parameter	Result	Det. Limit	Units
ACETONE	BDL	20	ug/L
ACROLEIN	BDL	50	ug/L
ACRYLONITRILE	BDL	70	ug/L
BENZENE	BDL	5	ug/L
BROMODICHLOROMETHANE	BDL	5	ug/L
BROMOFORM	BDL	5	ug/L
BROMOMETHANE	BDL	10	ug/L
CARBON DISULFIDE	BDL	5	ug/L
CARBON TETRACHLORIDE	BDL	5	ug/L
CHLOROBENZENE	BDL	5	ug/L
CHLOROETHANE	BDL	10	ug/L
CHLOROFORM	BDL	5	ug/L
CHLOROMETHANE	BDL	10	ug/L
DIBROMOCHLOROMETHANE	BDL	5	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/L
DICHLORODIFLUOROMETHANE	BDL	5	ug/L
1,1-DICHLOROETHANE	BDL	5	ug/L
1,2-DICHLOROETHANE	BDL	5	ug/L
1,1-DICHLOROETHENE	BDL	5	ug/L
1,2-DICHLOROPROPANE	BDL	5	ug/L
ETHYL BENZENE	BDL	5	ug/L
TRICHLOROFLUOROMETHANE	BDL	5	ug/L
2-HEXANONE	BDL	10	ug/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	5	ug/L
METHYL ETHYL KETONE	BDL	10	ug/L
4-METHYL-2-PENTANONE	BDL	10	ug/L
STYRENE	BDL	5	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/L
TETRACHLOROETHENE	BDL	5	ug/L
TETRAHYDROFURAN	BDL	25	ug/L
TOLUENE	BDL	5	ug/L
1,2-DICHLOROETHENE (CIS AND TRANS)	BDL	5	ug/L
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/L

 (continued on next page)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C159259

Parameter	Result	Det. Limit	Units
1,1,1-TRICHLOROETHANE	BDL	5	ug/L
1,1,2-TRICHLOROETHANE	BDL	5	ug/L
TRICHLOROETHENE	BDL	5	ug/L
VINYL ACETATE	BDL	10	ug/L
VINYL CHLORIDE	BDL	10	ug/L
XYLENES (O/M/P-XYLENE)	BDL	5	ug/L
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	99		% Rec
TOLUENE-D8	101		% Rec
4-BROMOFLUOROBENZENE	100		% Rec

On this instrument, packed column has been replaced by capillary column with 8240 criteria.

Sample Comments

BDL Below Detection Limit

Sample chain of custody number NONE.

This Certificate shall not be reproduced, except in full, without the written approval of the lab.

Quality Assurance Officer: _____

GERAGHTY & MILLER, INC.
Environmental Services

Laboratory Task Order No. _____

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number CI0299.004
Project Location ROCK ISLAND, IL
Laboratory HERITAGE LABS
Sampler(s)/Affiliation GERAGHTY & MILLER

2/21/97

SAMPLE BOTTLE / CONTAINER DESCRIPTION

SAMPLE IDENTITY	Code	Date/Time Sampled	Lab ID	VOCs (8240)	PNAs (8310)	PCBs (8080)	HYDROCARBON SCAN BY GC/FID (8015A)						TOTAL
MW-5	L	7/20/94 16:35		2	2	1						C159083 1	5
MW-8	L	7/20/94 13:29		2	2	1						C159084 1	5
MW-88	L	7/20/94 13:29		2	2	1						C159085 1	5
MW-9	L	7/20/94 17:23		2	2	1	1					C159086	6
FB-1	L	7/20/94 18:30		2	2	1						C159087 1	5

Sample Code: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers: 26

Relinquished by: KRISTINA LALA	Organization: GERAGHTY & MILLER	Date 7/20/94	Time 15:00	Seal Intact?
Received by: Kathy Young	Organization: Heritage	Date 7/21/94	Time 14:00	Yes No N/A
Relinquished by:	Organization:	Date / /	Time	Seal Intact?
Received by:	Organization:	Date / /	Time	Yes No N/A

Special Instructions/Remarks: * Sample I.D. (FB-1) was written on shipment to the lab on 7/21/94. Still have one other container of sample for PNA analysis. Client was notified by Project Manager 7/21/94.

Delivery Method: ☐ In Person ☒ Common Carrier FED EX ☐ Lab Courier ☐ Other _____ SPECIFY

GERAGHTY & MILLER, INC.
Environmental Services

Laboratory Task Order No. _____

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number CI0299.004

Project Location ROCK ISLAND, IL

Laboratory HERITAGE LABS

Sampler(s)/Affiliation KYLE ARNEY / G&M
KRISTINA LALA / G&M

SAMPLE BOTTLE / CONTAINER DESCRIPTION

SAMPLE IDENTITY	Code	Date/Time Sampled	Lab ID	VOCs (8240)	PNAs (8310) 1-LITER	PNAs (8010) 500-mL	PCBs (8080) 1-LITER	PCBs (8080) 500-mL					TOTAL
GM-9	L	7/23/94		2	2		1			Pentg		C159271	5
GM-10	L	7/23/94		2		4		2		Completed 8/9/94		C159272	8
GW-2	L	7/23/94 12:40		2						Pentg		C159273	2
GW-3	L	7/23/94 12:40		2						Pentg		C159274	2

Sample Code: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers: 17

Relinquished by: Kristina Lala	Organization: Geraghty & Miller	Date 07/23/94 Time 1:00	Seal Intact? (Yes) No N/A
Received by: Kathy Young	Organization: Heritage	Date 7/25/94 Time	
Relinquished by:	Organization:	Date / / Time	Seal Intact? Yes No N/A
Received by:	Organization:	Date / / Time	

Special Instructions/Remarks:

Delivery Method: ☐ In Person ☒ Common Carrier FED EX (SPECIFY) ☐ Lab Courier ☐ Other _____ (SPECIFY)

G&M Form 09 9 91

GERAGHTY & MILLER, INC.
Environmental Services

Laboratory Task Order No. _____

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number CI0299.004
Project Location ROCK ISLAND, IL
Laboratory HERITAGE LABS
Sampler(s)/Affiliation KYLE ARNEY / G&M
KRISTINA LALA / G&M

SAMPLE BOTTLE / CONTAINER DESCRIPTION

SAMPLE IDENTITY	Code	Date/Time Sampled	Lab ID	VOCs (8240)	HYDROCARBON SCAN GC FID (8015M)				4192				TOTAL
GM-5	L	7/22/94 8:07		2							2	C157245	2
GM-6 *	L	7/22/94 8:46		2	1							C157246	3
GM-11	L	7/22/94 13:55		2								C157247	2
GM-12	L	7/22/94 16:10		2								C157248	2
GM-13	L	7/22/94 15:32		2								C157249	2
GM-14	L	7/22/94 14:53		2								C157250	2
GM-15	L	7/22/94 14:15		2								C157251	2
GM-16	L	7/22/94 10:32		2								C157252	2
GM-17	L	7/22/94 11:15		2								C157253	2
GM-18	L	7/22/94 9:38		2								C157254	2
GM-99	L	7/22/94 14:15		2								C157255	2
GM-101 *	L	7/22/94 16:10		2								C157256	2
MS/MSD-2	L	7/22/94 10:32		6								C157257	6
FB-3 *	L	7/22/94 13:20		2								C157258	2
TRIP BLANK	L	[illegible]		1								C157259	1
TRIP BLANK												Total No. of Bottles/ Containers	34

Sample Code: L = Liquid; S = Solid; A = Air

Relinquished by: Kristina Lala	Organization: Geraghty & Miller	Date 07/22/94 Time 6:45	Seal Intact? (Yes) No N/A
Received by: Kathy Young	Organization: Heritage	Date 7/22/94 Time 8:00	
Relinquished by:	Organization:	Date / / Time	Seal Intact? Yes No N/A
Received by:	Organization:	Date / / Time	

Special Instructions/Remarks:

Delivery Method: ☐ In Person ☒ Common Carrier FEDERAL EXPRESS (SPECIFY) ☐ Lab Courier ☐ Other _____ (SPECIFY)

GERAGHTY & MILLER, INC.
Environmental Services

Laboratory Task Order No. 1

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number CI0299.004

Project Location ROCK ISLAND, IL

Laboratory HERITAGE LABS

Sampler(s)/Affiliation GERAGHTY & MILLER

SAMPLE BOTTLE / CONTAINER DESCRIPTION

SAMPLE IDENTITY	Code	Date/Time Sampled	Lab ID	VOCs (8240)	HYDROCARBON SCAN GC FID (8015A)								TOTAL
GM-1	L	7/21/94 17:17		2						Labs		C159130	2
GM-2	L	7/21/94 16:43		2								C159131	2
GM-3	L	7/21/94 16:12		2	1							C159132	3
GM-4	L	7/21/94 15:30		2						Completed 8/9/94		C159133	2
GM-7	L	7/21/94 8:56		2						Results		C159136	2
GM-8	L	7/21/94 14:45		2								C159137	2
GM-19	L	7/21/94 10:06		2								C159134	2
MW-6	L	7/21/94 10:40		2								C159138	2
FB-2	L	7/21/94 11:00		2								C159139	2
GW-1	L	7/21/94 11:10		2								C159140	2
MS/MSD	L	7/21/94 8:56		6								C159135	6

Sample Code: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers 27

Relinquished by: Kristina Hale	Organization: GERAGHTY & MILLER	Date 07/21/94	Time 7:00	Seal Intact? (Yes) No N/A
Received by:	Organization:	Date / /	Time	
Relinquished by:	Organization:	Date / /	Time	Seal Intact? Yes No N/A
Received by:	Organization:	Date / /	Time	

Special Instructions/Remarks:

Delivery Method: ☐ In Person ☑ Common Carrier FED EX (SPECIFY) ☐ Lab Courier ☐ Other (SPECIFY)

G&M Form 09.9.91

Southprint 91-17

GERAGHTY & MILLER, INC.
Environmental Services

Laboratory Task Order No. _____

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number CI0299.004
Project Location ROCK ISLAND, IL
Laboratory HERITAGE LABS
Sampler(s)/Affiliation GERAGHTY & MILLER

SAMPLE BOTTLE / CONTAINER DESCRIPTION

SAMPLE IDENTITY	Code	Date/Time Sampled	Lab ID	PNAs (8310)	PCBs (8080)								TOTAL
GM-1	L	7/21/94 17:17		2	1					Poly		C159130	3
GM-2	L	7/21/94 16:43		2	1					Poly		C159131	3
GM-3	L	7/21/94 16:12		2	1					Poly		C159132	3
GM-4	L	7/21/94 15:30		2	1					Complete	8/9/94	C159133	3
GM-19	L	7/21/94 10:06		2	1					Poly		C159134	3
MS/MSD	L	7/21/94 8:56		2	1					Poly		C159135	3

MS/MSD from C159136

Sample Code: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers 18

Relinquished by: Kristina Hala	Organization: GERAGHTY & MILLER	Date 07/21/94	Time 7:00	Seal Intact? (Yes) No N/A
Received by:	Organization:	Date / /	Time	
Relinquished by:	Organization:	Date / /	Time	Seal Intact? Yes No N/A
Received by:	Organization:	Date / /	Time	

Special Instructions/Remarks: Sample containers for MS/MSD (1 liter amber) broken in shipment 7/22/94.

Delivery Method: ☐ In Person ☒ Common Carrier FED EX ☐ Lab Courier ☐ Other

GERAGHTY & MILLER, INC.
Environmental Services

Laboratory Task Order No. /

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number CI0299.004

Project Location ROCK ISLAND, IL

Laboratory HERITAGE LABS

Sampler(s)/Affiliation GERAGHTY & MILLER

SAMPLE BOTTLE / CONTAINER DESCRIPTION

SAMPLE IDENTITY	Code	Date/Time Sampled	Lab ID	PNAs (8310)	PCBs (8080)								TOTAL
GM-7	L	7/21/94 8:56		2	1				P	[illegible]		C159136	3
GM-8	L	7/21/94 11:45		2	1							C159137	3
MW-6	L	7/21/94 10:40		2	1							C159138	3
FB-2	L	7/21/94 11:00		2	1							C159139	3
GN-1	L	7/21/94 11:10		2	1						8/19	C159140	3

Sample Code: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers 15

Relinquished by: Kristina Lala	Organization: GERAGHTY & MILLER	Date 7/21/94 Time 7:00	Seal Intact? Yes No N/A
Received by: Kathy Young	Organization: Heritage	Date 7/22/94 Time 11:15	
Relinquished by:	Organization:	Date / / Time	Seal Intact? Yes No N/A
Received by:	Organization:	Date / / Time	

Special Instructions/Remarks: Sample I.D. (MW-6) was broken in shipment (1x1 liter amber glass [illegible])

Delivery Method: ☐ In Person ☒ Common Carrier FEDERAL EXPRESS (SPECIFY) ☐ Lab Courier ☐ Other _____ (SPECIFY)

G&M Form 09-9-91

Southprint 91-1768

APPENDIX F

Engineering Analysis

Well Drawdown Analysis

WELL DRAWDOWN ANALYSIS

The well drawdown analysis presented in this section is based upon several assumptions consisting of the following:

- a homogeneous aquifer;
- isotropic conditions (equal horizontal and vertical hydraulic conductivities);
- a fully penetrating recovery well;
- capture zone width at the well is small compared to the distance from the well to the slough (< 2 times);
- infiltration effects not considered; and
- available drawdown is 50% of the calculated drawdown.

Because the shallow water-bearing unit at the Navistar/BNR/IIR site is not homogeneous, the hydraulic conductivity and saturated thickness along the line of proposed recovery wells will vary. The hydraulic conductivity, hydraulic gradient, and saturated thickness along the proposed line of recovery wells will be determined during the pre-design slug tests and aquifer pumping tests outlined in the April 1995 Pilot Study Work Plan prepared by Geraghty & Miller. The results of the pilot study will be used for the determination of the optimum spacing and pumping rates for the proposed line of recovery wells.

PROJECT NAME: NAVISTAR/BURLINGTON NORTHERN
PROJECT NO: CI0299.004

This spreadsheet calculates the expected drawdown in a recovery well installed in the surficial alluvial deposits adjacent to the Sylvan Slough. The analysis is based on the following assumptions:

a. The aquifer is homogeneous.
b. Isotropic conditions; horizontal and vertical hydraulic conductivities are the same.
c. The recovery well is fully penetrating.
d. The capture width at the well is small compared to the distance from the well to the Sylvan Slough (less than 2xs).
e. Infiltration effects are not considered.
f. Available drawdown is 50 percent of the calculated drawdown as a result of dewatering effects.

1. Calculate Transmissivity (T,gpd/ft) of surficial aquifer deposits:

Hydraulic Conductivity(k):	1E-03	cm/sec	
	2.83E+00	ft/day	
Saturated Thickness(b):	West Zone	10	ft
	Middle Zone	6	ft
	East Zone	5	ft
Conversion:	7.48 gal/ft^3		
Transmissivity Formula:	T=k*b		

k, cm/sec	k, ft/day	Transmissivity, gpd/ft West Zone	Middle Zone	East Zone
5E-03	1.42E+01	1.06E+03	6.36E+02	5.30E+02
1E-03	2.83E+00	2.12E+02	1.27E+02	1.06E+02
5E-04	1.42E+00	1.06E+02	6.36E+01	5.30E+01
1E-04	2.84E-01	2.12E+01	1.27E+01	1.06E+01
5E-05	1.42E-01	1.06E+01	6.36E+00	5.30E+00
1E-05	2.84E-02	2.12E+00	1.27E+00	1.06E+00

2. Calculate specific capacity, (Q/s) for recovery well:

Specific Capacity Formula: Q/s=T/114.6*W(u), where u=1.87r^2S/Tt

Q = Pumping Rate,gpm		
T = Transmissivity,gpd/ft		
S = Storage Coefficient 0.20	0.2	coarse-grained(Groundwater,pg 737)
r = Radius of Well	0.25	ft
t = Time of Pumping	1	day

PROJECT NAME: NAVISTAR/BURLINGTON NORTHERN
PROJECT NO: CI0299.004

Calculate u as f(T):

West Zone	Middle Zone	East Zone
2.20E-05	3.67E-05	4.41E-05
1.10E-04	1.84E-04	2.20E-04
2.20E-04	3.67E-04	4.41E-04
1.10E-03	1.84E-03	2.20E-03
2.20E-03	3.67E-03	4.41E-03
1.10E-02	1.84E-02	2.20E-02

Values of W(u) Corresponding to Values of u (Groundwater, Appendix 9.E.):

West Zone	Middle Zone	East Zone
10.147	9.627	9.454
8.538	8.046	7.845
7.845	7.325	7.152
6.236	5.745	5.544
5.544	5.026	4.853
3.943	3.458	3.261

Calculate specific capacity (Q/s, gpm/ft):

West Zone	Middle Zone	East Zone
0.91	0.58	0.49
0.22	0.14	0.12
0.12	0.08	0.06
0.03	0.02	0.02
0.02	0.01	0.01
0.00	0.00	0.00

Calculate drawdown (s) as f(Q): s=114.6*Q*W(u)/T
Pumping Rate 0.5 gpm

West Zone

T, gpd/ft	W(u)	Drawdown,ft
1.06E+03	10.147	0.55
2.12E+02	8.538	2.31
1.06E+02	7.845	4.24
2.12E+01	6.236	16.85
1.06E+01	5.544	29.96
2.12E+00	3.943	106.54

Middle Zone

T, gpd/ft	W(u)	Drawdown,ft
6.36E+02	9.627	0.87
1.27E+02	8.046	3.62
6.36E+01	7.325	6.60
1.27E+01	5.745	25.87
6.36E+00	5.026	45.27
1.27E+00	3.458	155.73

PROJECT NAME: NAVISTAR/BURLINGTON NORTHERN
PROJECT NO: CI0299.004

East Zone

T, gpd/ft	W(u)	Drawdown,ft
5.30E+02	9.454	1.02
1.06E+02	7.845	4.24
5.30E+01	7.152	7.73
1.06E+01	5.544	29.96
5.30E+00	4.853	52.45
1.06E+00	3.261	176.23

3. Calculate the Capture Zone Corresponding to Q,gpm:

Width of capture zone adjacent to well, w(o)=Q/2Ti
i = hydraulic gradient, 0.005 553.39ft msl(GM-5)-551.16ft msl(MW-9)/380ft
conversion = 1440min/day

West Zone	Middle Zone	East Zone
68	113	136
340	566	679
679	1132	1358
3395	5659	6791
6791	11318	13581
33953	56588	67906

Maximum width of capture zone, w=Q/Ti

West Zone	Middle Zone	East Zone
136	226	272
679	1132	1358
1358	2264	2716
6791	11318	13581
13581	22635	27162
67906	113177	135812

4. Calculate Corrected Capture Zone w(r) to Account for River Effects:

Capture zones at well, w(o) calculated in Item (3) above are greater than
2xs the distance (50 ft) from the well to Sylvan Slough.
w(r)=2((Q*d/3.14Ti)-d^2)^0.5
Q = Pumping rate, gpm
T = Transmissivity, gpd/ft
i = Hydraulic gradient, 0.005
d = Distance from recovery well to river, 50 ft
conversion = 1440 min/day

West Zone	Middle Zone	East Zone
ERR	66	85
182	249	277
277	366	404
650	843	925
925	1197	1312

PROJECT NAME: NAVISTAR/BURLINGTON NORTHERN
PROJECT NO: CI0299.004

	2077	2683	2939

5. Calculate Optimum Well Spacing for Following Design Conditions:

k = Hydraulic conductivity,	2.84E+00	ft/day
T = Transmissivity,	2.12E+02	gpd/ft
i = Hydraulic gradient,	0.005	
Q = Pumping rate,	0.5	gpm
x = Optimum span(distance between wells)		

The width of the required capture zone adjacent to the Sylvan Slough is approximately 1100 ft. For the assumed design conditions, the capture zone for a single well adjacent to the river, w(r) is 180 ft. Assume on a preliminary basis that six recovery wells(i.e., 1100/180=6.1, use 6) would be required to control the discharge of product to the river.

Number of Wells =	6	
x = 0.693*w(r), (Groundwater Mechanics, 1989)		
x =	126 ft	
Total Span = 6*126 =	758	ft
Second Iteration		
Number of Wells =	8	
x = 0.757*w(r)		
x =	138 ft	
Total Span = 8*138 =	1104	ft

Use eight (8) recovery wells at 0.5 gpm each

Drain Drawdown Analysis

GERAGHTY & MILLER, INC.
Environmental Services

SUBJECT: EST. OF DRAIN RADIUS OF INFLUENCE		BY: JCT	DATE: 9/16/94
PROJECT: NAVISTAR/BNRR		CHKD:	DATE:
CLIENT/PROJECT: NO: CI0299.00		REV:	DATE:

PAGE

SHEET 1

$$R = \sqrt{\frac{0.3\,Tt}{S}}$$ (GW & WELLS, P. 221)

WHERE R = RADIUS OF INFLUENCE, FT

T = TRANSMISSIVITY, GAL/DAY-FT

t = PUMPING TIME, DAYS

S = STORAGE COEFFICIENT = 0.2 (REF.: GW & WELLS, P. 737)

$$R = \sqrt{\frac{0.3\,(127)(90)}{0.2}}$$

$$= 131 \text{ FT}$$

FOR T = 212 GPD/FT (WEST DRAIN),

$$R = 169 \text{ FT}$$

ON DOWNGRADIENT SIDE, THIS RADIUS OF INFLUENCE INTERCEPTS SYLVAN SLOUGH.

GERAGHTY & MILLER, INC.
Environmental Services

SUBJECT: DRAIN Q CALCULATIONS
PROJECT: NAVISTAR / BNRR
CLIENT/PROJECT NO: CI0299.004

BY: JCT DATE: 9/6/94
CHKD: DATE:
REV: DATE:

PAGE
SHEET 2/

USING DARCY'S EQN:

$Q = KIA$

Q = FLOW RATE
K = HYDRAULIC CONDUCTIVITY
A = CROSS-SECTIONAL AREA
I = HYDRAULIC GRADIENT

K = 2.84 FT/DAY
I = 0.01 FT/FT

LENGTH OF PROPOSED WEST DRAIN = 775 FT
SATURATED THICKNESS ALONG WEST DRAIN = 10 FT

$Q = (2.84\ FT/DAY)(0.01)(10\ FT)(775)(2)$

FLOW FROM BOTH SIDES OF DRAIN

$= 440\ FT^3/DAY$

CONVERTING TO GPM:

$$\frac{440\ FT^3}{DAY}\ \frac{DAY}{1440\ MIN}\ \frac{7.48\ GAL}{FT^3} = 2.3\ GPM$$

(THIS ANALYSIS NEGLECTS RECHARGE FROM SYLVAN SLOUGH SLOUGH, WHICH WILL OCCUR WHEN DRAWDOWN CURVE INTERCEPTS THE SLOUGH. THEREFORE, LONG-TERM PUMPING RATES ARE LIKELY TO BE HIGHER).

FOR EAST DRAIN,

$Q = (2.84\ FT/DAY)(0.01)(6\ FT)(340\ FT)(2)$
$= 116\ FT^3/DAY$
$= 0.6\ GPM$

SITE: NAVISTAR/BNRR/IIR
PROJ. NO: CI0299.004

DRAWDOWN @ X,Y,Z	DISTANCE FROM DRAIN TO FARTHEST IMAGE
3.02 FT	89 FT

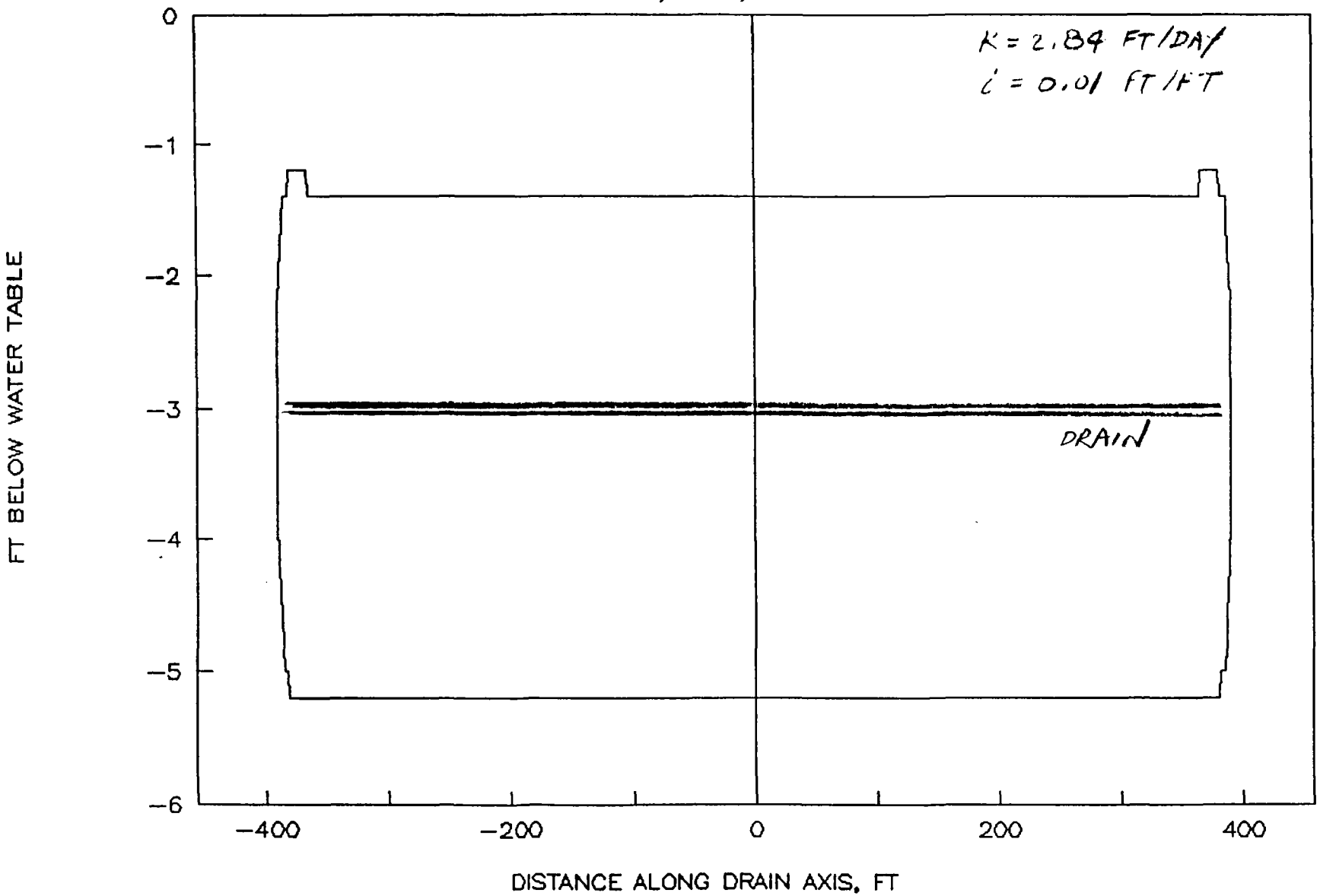
DRAIN LENGTH L =	775	FT		
FLOW RATE Q =	2.9	GPM OR	558.28	CFD
CONDUCTIVITY K =	21.2	GPD/SQFT	2.83	FT/DAY
AQ THICKNESS b =	10	FT		
ANISOTROPY Kz/K =	0.2			
X-COORDINATE X =	0	ACTUAL X	1	
Y-COORDINATE Y =	0			
Z-COORDINATE Z =	0			
# OF IMAGE PAIRS N =	2			

COEFFICIENT 0.090

DRAWDOWN IN FT	N	DISTANCE FROM REAL DRAIN TO TO IMAGE IN FT	IF	L1n	L2n	U1n	U2n	lnL	lnU	IND SUM	CUMM SUM
1.20	0		0.00	387.50	387.50	0.00	0.00	13.31	0.00	13.31	13.31
2.24	1	45	0.00	390.07	390.07	390.07	390.07	5.71	5.71	11.42	24.73
3.02	2	89	3.02	397.69	397.69	397.69	397.69	4.34	4.34	8.69	33.42

CAPTURE ZONE FOR DRAIN PUMPING 1 GPM

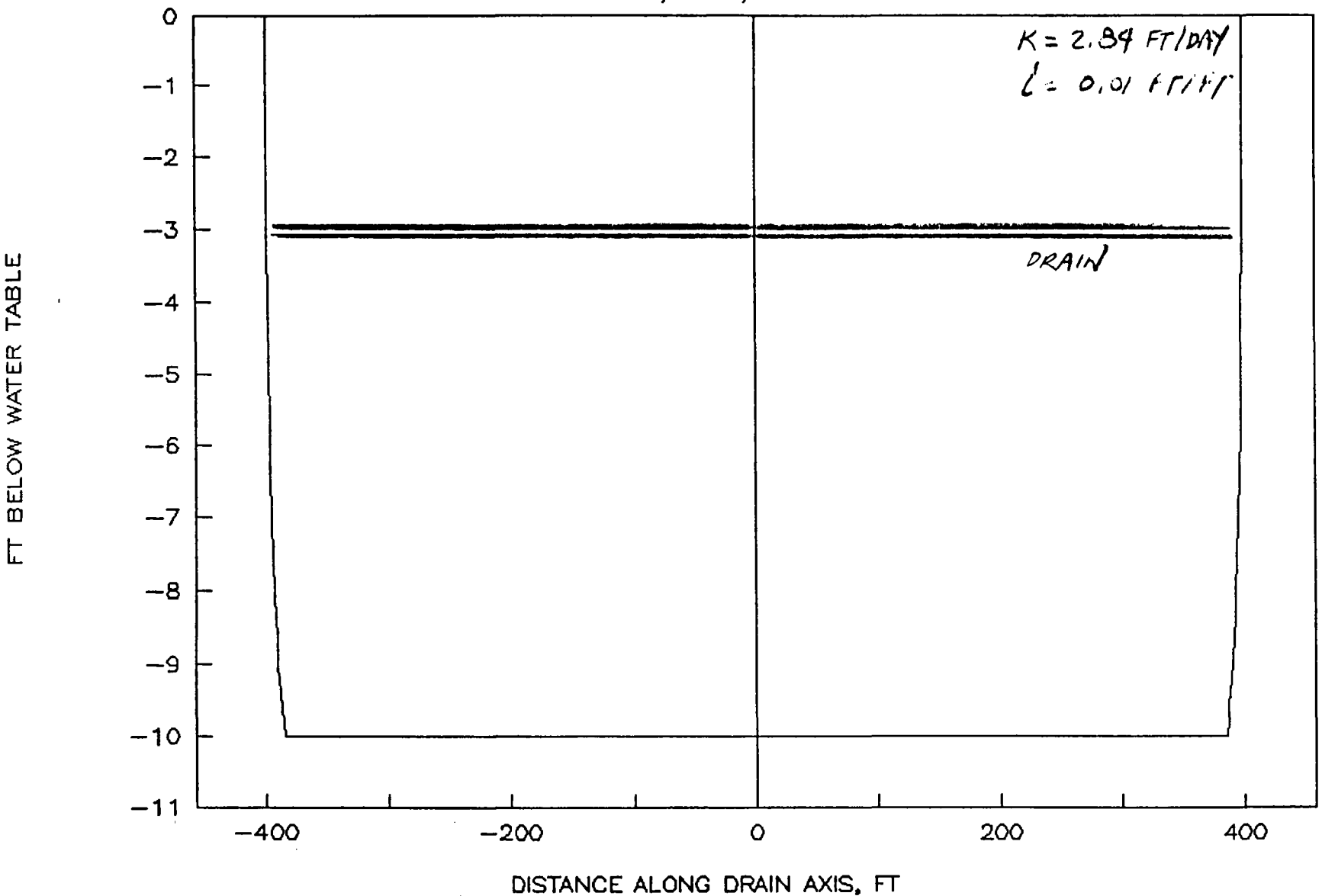
NAVISTAR/BNRR/IIR SITE



\29902\NAVSTAR3.PIC

CAPTURE ZONE OF DRAIN PUMPING 3 GPM

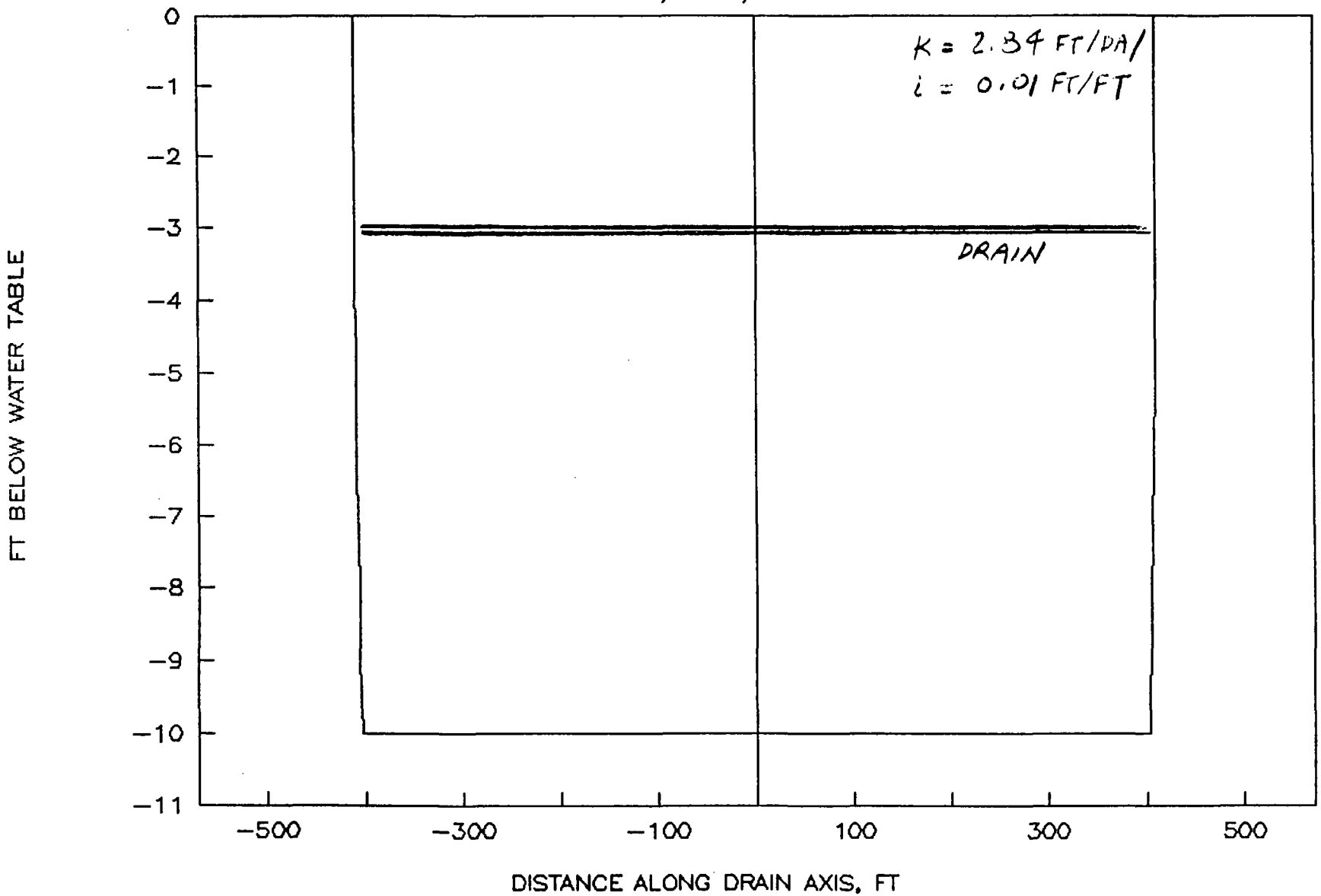
NAVISTAR/BNRR/IIR SITE



\29902\ NAVSTAR2.PIC

CAPTURE ZONE FOR DRAIN PUMPING 5 GPM

NAVISTAR/BNRR/IIR SITE



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Evaluation of Groundwater Treatment Options

APPENDIX F

GROUNDWATER TREATMENT ALTERNATIVE SELECTION
NAVISTAR/BNR/IIR PROPERTIES
ROCK ISLAND, ILLINOIS

CARBON ADSORPTION

Description

Liquid-phase granular activated carbon (GAC) is proven technology for the removal dissolved organics from groundwater. Organic molecules in solution are drawn to the porous surface of the carbon granule by inter-molecular attraction forces. The water is contacted with the carbon by passing it through a vessel filled either with carbon granules or with a carbon slurry. Organics are removed from the water by adsorption when sufficient contact time is provided for the process (typically 10-15 minutes). After a period of use, the carbon adsorptive capacity is exhausted. The carbon must then be taken out-of-service and regenerated thermally by combustion of the organic adsorbate. Fresh carbon is then replaced in the system. A pretreatment device would be used on the influent to the GAC system to remove suspended solids prior to the waste stream entering the GAC treatment units.

The layout of the GAC treatment system is shown in Figure F-1. Two carbon units would be connected in series to treat the recovered groundwater. Differential pressure gauges would be used to monitor the pressure in each carbon unit to ensure the system is operating within the manufacturer's recommended ranges. Sampling ports would be installed on the influent and the effluent of each unit to allow water samples to be collected to track the efficiency of the units. The effluent of the carbon units would be discharged to an outfall under an approved NPDES permit.

Effectiveness

For the assumed influent water quality (solubility limits for PNAs) the carbon units required to treat the groundwater recovered at the site would measure 57 inches in diameter and 94 inches high. The units would consist of a steel tank with an internal polyethylene liner and contain 2,000 pounds of activated carbon. The units are designed to accommodate a 10 gallon per minute (gpm) flow rate and would reduce the PNA concentration of the influent from 40 parts per million (ppm) total PNAs to approximately 100 parts per billion (ppb) total PNAs. The estimated carbon usage rate is approximately 20 pounds per day assuming a loading rate of approximately 25%.

Monitoring the effectiveness of the carbon treatment units would be accomplished by collecting water samples from the influent and effluent of each carbon unit during monthly operation and maintenance of the system. The samples would be submitted to a laboratory and analyzed to determine the concentration of the dissolved organics. The results of the analysis would be used to determine the efficiency of the treatment units in removing the dissolved organics. Once results of the monthly treated water laboratory analysis indicate the carbon treatment units were approaching breakthrough, the unit would be replaced by the spare unit and the spent unit would be returned to the manufacturer for regeneration of the carbon. For this system, the carbon units were sized to require replacement with fresh carbon approximately once every three months. If the units experienced a differential pressure change of more than 2 or 3 psi, it would indicate the carbon units are filling with suspended solids and would need to be backwashed to remove the solids from the carbon bed.

Implementability

The carbon units are shipped from the manufacturer on supports that can also be used to move the units with a forklift. The units would be placed in the treatment enclosure on a flat level surface that would support the weight of the units filled with water. The enclosure would be heated to protect the units when temperatures fall below freezing. The spent carbon from the

treatment units would be treated as Special Waste during changeout and transportation to the regeneration facility.

Cost

Table F-1 presents the estimated capital cost, annual operation and maintenance, and total present worth costs for this alternative. The present worth analysis has been performed for the operating periods of 5, 10, and 30 years.

FIXED FILM BIOREACTOR

Description

A fixed film bioreactor is a treatment system in which the biodegradable contaminants existing in the recovered groundwater are degraded by microorganisms. The reactor consists of a tank containing inert plastic media on which bacteria form and degrade organic compounds present in the groundwater passing through the system. The biodegradable contaminants are degraded to carbon dioxide and water and thus there are no residuals produced by the treatment process. The system destroys the contaminants rather than transferring them from one phase to another. Nutrients may be added to the influent groundwater to optimize the bacterial growth in the reactor.

The layout of the fixed film bioreactor treatment system is shown in Figure F-2. A tank containing the plastic media is used to retain the groundwater for treatment. A blower is used to deliver oxygen to the bacteria as the water passes through the system. Nutrients are added to the influent groundwater stream inside a tank prior to entering the reactor. Pressure gauges monitor the influent air provided by the blower and flow indicators monitor the flow rate of groundwater into the reactor. Sampling ports are installed on the influent and the effluent of the unit to allow water samples to be collected to track the efficiency of the system. The effluent of the reactor would be discharged to an outfall under an approved NPDES permit.

Effectiveness

The fixed film bioreactor used to treat the groundwater recovered at the site would measure 6 feet in diameter and is 9 feet high The unit consists of a steel tank with approximately 6 feet of packing material. The unit is designed to accommodate a 10 gallon per minute (gpm) flow rate and would reduce the PNA concentration of the influent from 40 parts per million (ppm) total PNAs to approximately 100 parts per billion (ppb) total PNAs. The discharge effluent concentration was determined based on standard criteria for treated water discharged under guidelines of an NPDES permit.

Monitoring the effectiveness of the bioreactor would be accomplished by collecting water samples from the influent and effluent of the reactor during monthly operation and maintenance of the system. The samples would be submitted to a laboratory and analyzed to determine the concentration of the dissolved organics. The results of the analysis would be used to determine the efficiency of the treatment unit in removing the dissolved organics. The concentration of the effluent stream will be used to determine if the microorganisms are reducing the concentration of the contaminants to an acceptable level. Nutrient addition and oxygen supply can be altered based on the results of the monthly sampling.

Implementability

The fixed film bioreactor and nutrient tank is shipped from the manufacturer and would be placed in the treatment enclosure on a flat level surface that would support the water-filled weight of the unit. The enclosure would be heated to maintain a bioreactor temperature of between 55° to 65° F for optimal conditions for bacterial growth. The water lines leading from the recovery wells would be piped directly to the nutrient tank and the bioreactor and would include valves that could be used to adjust flow rates of both air and water into the treatment system. The biomass accumulating in the bottom of the treatment unit can be disposed of as a normal waste.

Cost

Table F-2 presents the estimated capital cost, annual operation and maintenance, and total present worth costs for this alternative. The present worth analysis has been performed for operating periods of 5, 10, and 30 years.

GROUNDWATER TREATMENT RECOMMENDED ALTERNATIVE

Based on the information provided in Tables F-1 and F-2, granular activated carbon adsorption was selected as the groundwater treatment alternative. The efficiency of removing the contaminants present in the influent stream was similar for both treatment alternatives. Carbon adsorption was selected based on the lower upfront capital cost as well as the lower long term operating and maintenance costs. Carbon adsorption has been used extensively for the removal of various organic compounds and is especially well-suited for PNA removal since the adsorption process has an affinity for high molecular weight, non-polar compounds such as the PNA compounds that have been detected in groundwater at the site. Carbon treatment is a commonly used conventional technique and carbon units are readily available from a variety of vendors.

Table F-1. GAC Adsorption Groundwater Treatment Feasibility Cost Summary, Navistar/BNR/IIR Site, Rock Island, Illinois.

2,000 POUND CARBON TREATMENT COST ELEMENT	UNIT COST	UNIT	UNIT REQ'D	SUBTOTAL
CAPITAL COST				
2,000 lb GAC Unit	$ 10,000	ls	2	$ 20,000
TOTAL CAPITAL COST				$ 20,000

O&M COST ELEMENT	UNIT COST	UNIT	UNIT REQ'D	SUBTOTAL
GAC Replacement	$ 3,200	quarter	4	$ 12,800
Operation and Maintenance	$ 1,000	quarter	4	$ 4,000
ANNUAL O&M COST				$ 16,800
Present Worth Value				
(5 years, 5%)				$ 72,700
(10 years, 5%)				$ 129,700
(30 years, 5%)				$ 258,300
PRESENT NET WORTH COST (5 YEARS)				**$ 92,700**
PRESENT NET WORTH COST (10 YEARS)				**$ 149,700**
PRESENT NET WORTH COST (30 YEARS)				**$ 278,300**

660 POUND CARBON TREATMENT COST ELEMENT	UNIT COST	UNIT	UNIT REQ'D	SUBTOTAL
CAPITAL COST				
660 lb GAC Unit	$ 5,000	ls	2	$ 10,000
TOTAL CAPITAL COST				$ 10,000

O&M COST ELEMENT	UNIT COST	UNIT	UNIT REQ'D	SUBTOTAL
GAC Replacement	$ 1,122	month	12	$ 13,464
Operation and Maintenance	$ 1,000	month	12	12,000
ANNUAL O&M COST				$ 25,464
Present Worth Value				
(5 years, 5%)				$ 110,200
(10 years, 5%)				$ 196,600
(30 years, 5%)				$ 391,400
PRESENT NET WORTH COST (5 YEARS)				**$ 120,200**
PRESENT NET WORTH COST (10 YEARS)				**$ 206,600**
PRESENT NET WORTH COST (30 YEARS)				**$ 401,400**

Table F-1. GAC Adsorption Groundwater Treatment Feasibility Cost Summary, Navistar/BNR/IIR Site, Rock Island, Illinois.

330 POUND CARBON TREATMENT COST ELEMENT	UNIT COST	UNIT	UNIT REQ'D	SUBTOTAL
CAPITAL COST				
330 lb GAC Unit	$ 3,260	Is	2	$ 6,520
TOTAL CAPITAL COST				$ 6,520

O&M COST ELEMENT	UNIT COST	UNIT	UNIT REQ'D	SUBTOTAL
GAC Replacement	$ 560	bimonthly	24	$ 13,440
Operation and Maintenance	$ 1,000	bimonthly	24	$ 24,000
ANNUAL O&M COST				$ 37,440
Present Worth Value				
(5 years, 5%)				$ 162,100
(10 years, 5%)				$ 289,100
(30 years, 5%)				$ 575,500
PRESENT NET WORTH COST (5 YEARS)				**$ 168,620**
PRESENT NET WORTH COST (10 YEARS)				**$ 295,620**
PRESENT NET WORTH COST (30 YEARS)				**$ 582,020**

FIXED FILM BIOREACTOR COST ELEMENT	UNIT COST	UNIT	UNIT REQ'D	SUBTOTAL
CAPITAL COST				
Reactor Vessel	$ 17,000	Is	1	$ 17,000
Nutrient Pump/Reservoir tank	$ 1,500	Is	1	$ 1,500
Blower	$ 3,000	Is	1	$ 3,000
Carbon Treatment Vessel	$ 3,000	Is	1	$ 3,000
TOTAL CAPITAL COST				$ 24,500

O&M COST ELEMENT	UNIT COST	UNIT	UNIT REQ'D	SUBTOTAL
Nutrient Addition/Power	$ 500	month	12	$ 6,000
Operation and Maintenance	$ 1,000	month	12	$ 12,000
Carbon Replacement	$ 3,000	year	1	$ 3,000
ANNUAL O&M COST				$ 21,000
Present Worth Value				
(5 years, 5%)				$ 90,900
(10 years, 5%)				$ 162,200
(30 years, 5%)				$ 322,800
PRESENT NET WORTH COST (5 YEARS)				**$ 115,400**
PRESENT NET WORTH COST (10 YEARS)				**$ 186,700**
PRESENT NET WORTH COST (30 YEARS)				**$ 347,300**

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Environmental Services

SUBJECT: GAC USAGE CALCULATION		BY: RJS	DATE: 9/26/94
PROJECT: NANISTAR		CHKD:	DATE:
CLIENT/PROJECT: NO: CIO 299.004		REV:	DATE:

PAGE

SHEET 1

THE CONSUMPTION OF CARBON CAN BE ESTIMATED USING THE FOLLOWING

ASSUMING: 10 GPM FLOW RATE

CONCENTRATION OF INFLUENT = 40 PPM (SOLUBILITY OF COMPOUNDS)

$$\left(\frac{10\ GPM}{1}\right)\left(\frac{1440\ MIN}{DAY}\right)\left(\frac{8.33\ lbs}{GAL}\right)\left(\frac{40\ lbs\ PNAs}{1\times10^6\ lbs\ H_2O}\right) = 4.798\ lbs \simeq 5\ lbs/DAY\ PNAs$$

ASSUMING EVERYTHING ADSORBS AS WELL AS NAPTHALENE @ 31 PPM (SOLUBILITY)
THEN THE LOADING IS APPROXIMATELY 25 % WT.

$$\left(\frac{5\ lbs\ PNAs}{DAY}\right)\left(\frac{100\ lbs\ CARBON}{25\ lbs\ PNAs}\right) = 20\ lbs\ CARBON\ PER\ DAY$$

IN ONE QUARTER, THE AMOUNT OF CARBON USED WOULD BE:

$$\left(\frac{20\ lbs}{DAY}\right)\left(\frac{90\ DAYS}{1\ QTR}\right) = 1800\ lbs/QUARTER$$

ONE 2,000 lbs CARBON UNIT COULD BE USED AND REPLACED ONCE A QUARTER.

GERAGHTY & MILLER, INC.
Environmental Services

Date ..... of .....
By ..... Chkd. .....
Job .....

BIORREACTOR SIZING — BOB SMITH - CHICAGO
FIXED FILM RCTR.

$\bar{Q}$ = 10 GPM

$CONC_{IN}$ = 40 MG/L (PNA'S)

OTHER ORGANICS - UNKNOWN (PROBABLY SOME H'CARBONS)

ASSUME BOD = 75 MG/L

MASS LOADING ≈ 9#/D

@ 60#/1000 FT³ = 150 FT³ MEDIA

MEDIA DEPTH = 6' DEEP
S.A. = 25 FT² ≈ 6" Ø → REACTOR TANK = 6' Ø X 9' HIGH

COST @ 40% = $16,800 =

ESTIMATED $ = 12,000
TANK
NUTRIENT PUMP/RESVR TANK 1,000
BLOWER 2,000 =

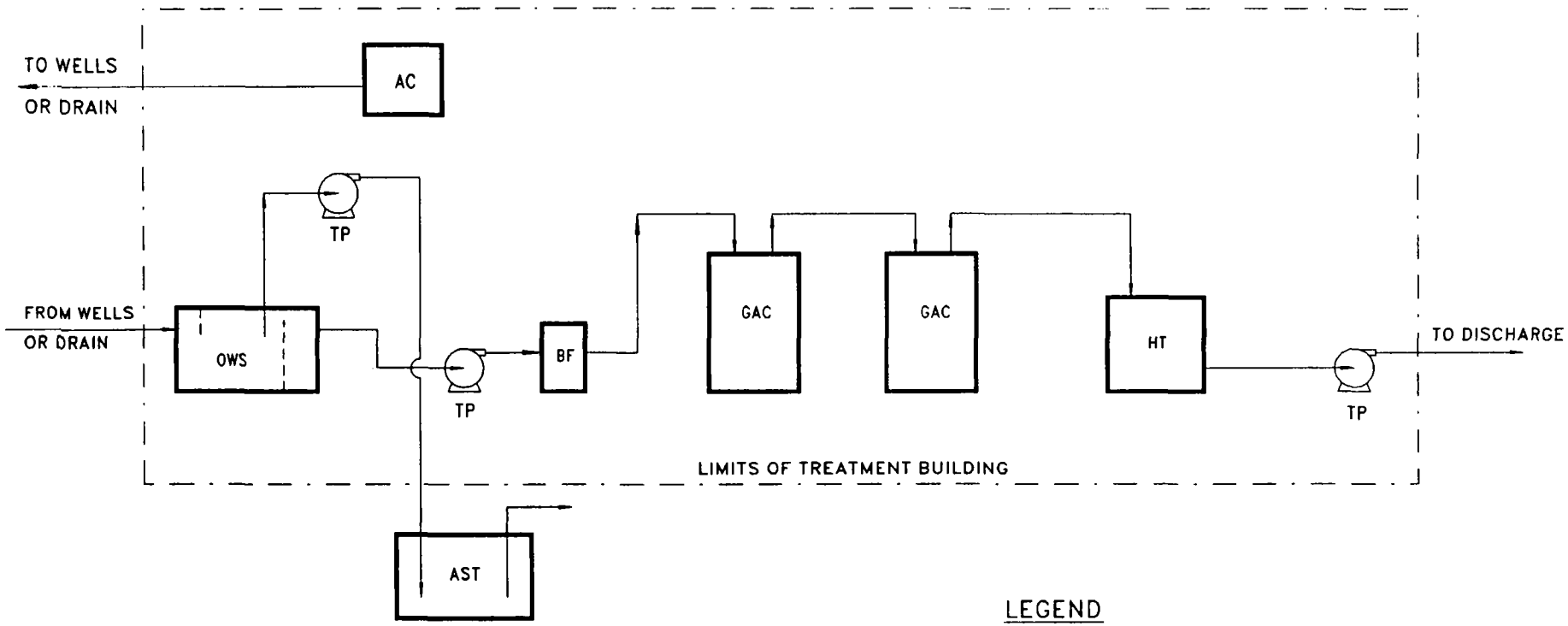
20,800 ≈ $21,000

O & M

NUTRIENTS/POWER = $10/DAY

330# CARBON VESSEL ON BACK END = 3,000/YEAR

DWG DATE: 9-20-94	PRJCT NO: C10299.004	FILE NO: JT\C129904	DRAWING: PROCESS.DW2	CHECKED: JCT	APPROVED:	DRAFTER:



LEGEND

OWS	OIL/WATER SEPARATOR
BF	BAG FILTER
GAC	GRANULAR ACTIVATED CARBON
HT	HOLDING TANK
AST	ABOVE GROUND STORAGE TANK
TP	TRANSFER PUMP
AC	AIR COMPRESSOR

GERAGHTY & MILLER, INC.
Environmental Services

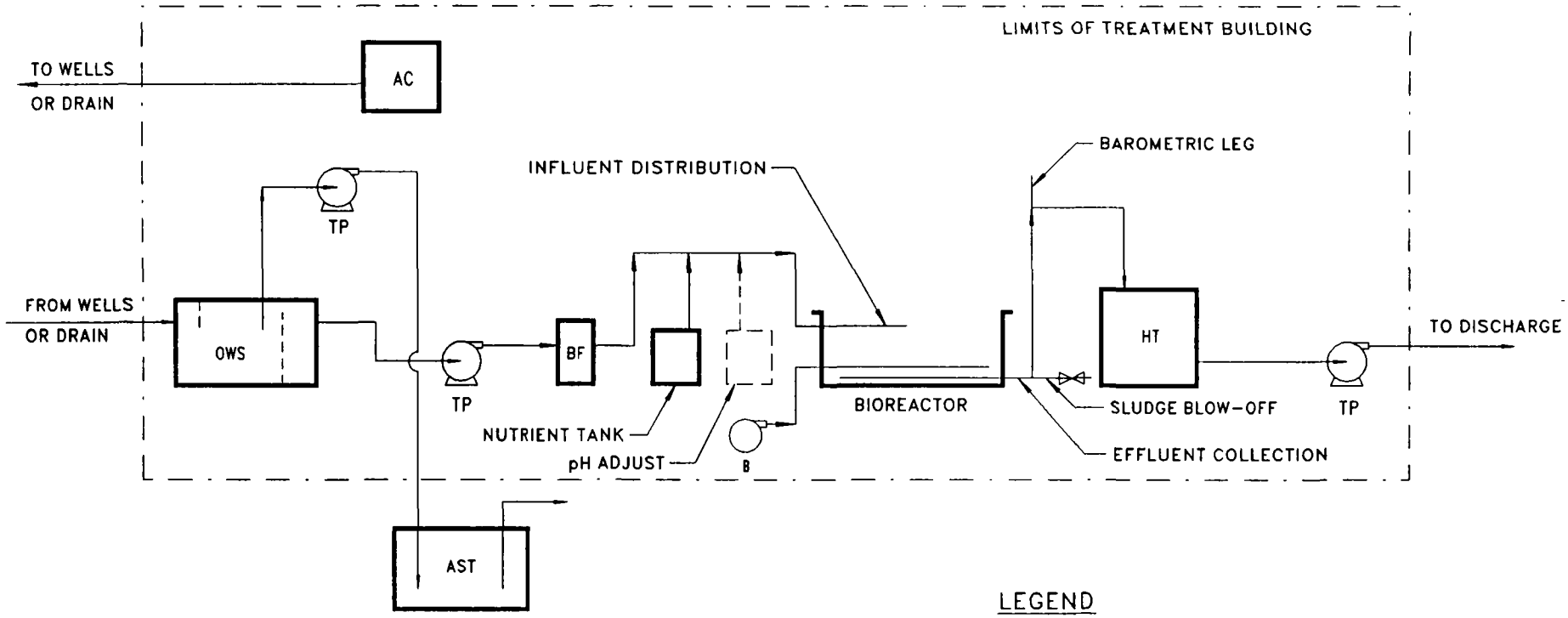
GROUNDWATER TREATMENT SYSTEM
PROCESS FLOW DIAGRAM

NAVISTAR/BNR/IIR SITE
ROCK ISLAND, ILLINOIS

FIGURE

F-1

DWG DATE: 9-20-94	PRJCT NO: C10299.004	FILE NO: JT\C129904	DRAWING: BIOREACT.DW2	CHECKED: JCT	APPROVED:	DRAFTER:



LEGEND

OWS	OIL/WATER SEPARATOR
BF	BAG FILTER
B	BLOWER
HT	HOLDING TANK
AST	ABOVE GROUND STORAGE TANK
TP	TRANSFER PUMP
AC	AIR COMPRESSOR

GERAGHTY & MILLER, INC.
Environmental Services

GROUNDWATER TREATMENT SYSTEM
PROCESS FLOW DIAGRAM - FIXED-FILM BIOREACTOR

NAVISTAR/BNR/IIR SITE
ROCK ISLAND, ILLINOIS

FIGURE
F-2