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REMEDIAL INVESTIGATION REPORT FOR THE SOILS OPERABLE UNIT AT THE NAVAL INDUSTRIAL RESERVE ORDNANCE PLANT FRIDLEY, MINNESOTA

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List of Acronyms/Abbreviations

°F	Degrees Fahrenheit
A-E	Architect-Engineer
ARAR	Applicable or Relevant and Appropriate Requirements
CFR	Code of Federal Regulations
CL	Clay
CLP	Contract Laboratory Program
CRDL	Contract Required Detection Limit
CRQL	Contract Required Quantitation Limit
D.L.	Detection Limit
DQO	Data Quality Objective
DUP	Duplicate
ECCS	Environmental Chemistry Consulting Services
FID	Flame Ionization Detector
FS	Feasibility Study
FSP	Field Sampling Plan
GC/MS	Gas Chromatograph/Mass Spectrometry
GC	Gas Chromatograph
GP	Poorly Graded Gravel
GPC	Gel Permeation Column
HHEM	Risk Assessment Guidance for Superfund: Volume I: Human Health Evaluation Manual
Hr	Hour
IAS	Initial Assessment Study
ICP	Inductively Coupled Plasma
K_{oc}	Partition Coefficient of Organic Carbon
mg/kg	Milligrams Per Kilogram
mL	Milliliter
ML	Silt With Low Plasticity
MPCA	Minnesota Pollution Control Agency
MS/MSD	Matrix Spike/Matrix Spike Duplicate
NA	Not Available
NACIP	Navy Assessment and Control of Installation Pollutants
ND	Not Detected
NIROP	Naval Industrial Reserve Ordnance Plant
OL/OH	Organic Soil
PEM	Performance Evaluation Mixture
ppmv	Part Per Million per Volume
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
QCD	Quality Control Duplicate
QCR	Quality Control Rinseate
QCT	Quality Control Trip Blank
r	Correlation Coefficient
RA	Remedial Alternative
RCRA	Resource Conservation Recovery Act

List of Acronyms/Abbreviations (continued)

RI/FS	Remedial Investigation/Feasibility Study
RI	Remedial Investigation
ROD	Record of Decision
RPD	Relative Percent Difference
SC	Sandy Clay
SDG	Sample Delivery Group
SM	Sandy Silt
SOW	Statement of Work
SP	Poorly Graded Sand
SW	Well Graded Sand
TAL	Target Analyte List
TCL	Target Compound List
TIC	Tentatively Identified Compound
UCL	Upper Confidence Limit
UCL	Upper Confidence Limit
USACE	U.S. Army Corps of Engineers
USCS	Unified Soil Classification System
USEPA	U.S. Environmental Protection Agency Region V
µg/kg	Micrograms Per Kilogram
µg/L	Micrograms Per Liter
µL/L	Microliter Per Liter

Laboratory Data Qualifiers - Organics

B	Compound was detected in one or more of associated laboratory, rinseate, and/or trip blanks
D	Sample result is based on diluted analysis
E	The concentration given exceeded the working range of the calibration curve
J	Value given is estimated
N	Tentative identification of listed compound
P	Percent difference between the two columns exceeds 25 percent difference
RE	Results are based on re-analysiis of sample
U	Indicates compound was analyzed, but not detected

Laboratory Data Qualifiers - Inorganics

*	Duplicate analysis not within control limits
B	Analyte detected below the CRDL but above the IDL
H(n)	Analysis performed (n) days past holding time
J	Value estiamted based on data validation assessment
N	Spiked sample recovery not within control limits
S	The reported value was determined by the method of standard additions
U	Analyte not detected

Chemical Compound Names

1,1-DCE	1,1-Dichloroethene
BETX	Benzene, Ethylbenzene, Toluene, and Xylenes
c-1,2-DCE	cis-1,2-Dichloroethene
cis-DCE	cis-1,2-Dichloroethene
DCA	1,1-Dichloroethane
DCE	1,2-Dichloroethene (Total)
DDD	1,1-dichloro-2,2-bis-(p-chlorophenyl)ethane
DDE	1,1-dichloro-2,2-bis-(p-chlorophenyl)ethylene
DDT	1,1,1-trichloro-2,2-bis-(p-chlorophenyl)ethane
IDL	Instrument Detection Limit
MEK	Methyl Ethyl Ketone
PAHs	Polycyclic Aromatic Hydrocarbons
PCBs	Polychlorinated Biphenyls
PCE	Tetrachloroethene
PID	Photoionization Detector
SVOC	Semivolatile Organic Compound
t-1,2-DCE	trans-1,2-Dichloroethene
TCA	1,1,1-Trichloroethane
TCE	Trichloroethene
TOC	Total Organic Carbon
TPH	Total Petroleum Hydrocarbons
trans-DCE	trans-1,2-Dichloroethene
VC	Vinyl Chloride
VOA	Volatile Organic Analysis
VOC	Volatile Organic Compound

Section 1

INTRODUCTION

1.1 Purpose of Report

This report describes the activities completed during the Remedial Investigation (RI) of the soils operable unit at the Naval Industrial Reserve Ordnance Plant (NIROP). This plant is located in the northern portion of the Minneapolis/St. Paul, Minnesota metropolitan area within the city limits of Fridley, Minnesota (Figure 1-1). The RI was conducted in general accordance with the Minnesota Pollution Control Agency (MPCA) and USEPA-approved RI Workplan (RMT, 1992a) and the Quality Assurance Project Plan (QAPP) (RMT, 1992b) for this site.

RMT, Inc., of Madison, Wisconsin, has been retained by the U.S. Department of the Navy, Naval Facilities Engineering Command (Navy), to develop a report of the RI activities. This document has been prepared to fulfill the implementation and reporting requirements of Section X of the Federal Facility Agreement between the USEPA Region V, the Navy, and the MPCA (USEPA, 1991a).

The purpose of this RI is to gather information needed to develop appropriate remedial alternatives for site soils in accordance with the National Oil and Hazardous Substances Pollution Contingency Plan as described in 40 CFR §300.68. The soils operable unit included on-site soils that are outside of buildings and other structures. Soil conditions were investigated only to the water table, which occurs approximately 17 to 23 feet below ground surface. Groundwater has been previously investigated and remediation implemented as a separate operable unit. The objectives of the soils RI included the following:

- To investigate the nature and extent of releases of hazardous substances
- To gather data and information to the extent necessary and sufficient to quantify the risk to public health and the environment, and to support the development of remedial alternatives in the feasibility study
- To identify appropriate remedial objectives

Several previous investigations have been performed on the soils at the NIROP Fridley to identify source areas of groundwater contamination, and to evaluate the extent of soil contamination. These investigations included a geophysical survey of potential areas of buried drums of wastes that was conducted in 1983, a soil pore gas survey conducted in 1987, and an investigation of soils conducted in 1990. The results of these investigations and an aerial photograph review conducted in 1991 were used to focus the scope of this RI in areas of known or suspected soil contamination. Summaries of previous investigations are included in Subsection 1.2.2, and detailed discussions relating to the scope, findings, and conclusions of these investigations is included in the RI Workplan (RMT, 1992a).

1.2 Background

1.2.1 Setting

The NIROP Fridley is owned by the Navy and operated by the Northern Ordnance Division of FMC Corporation. The plant has produced naval guns since 1941 and has expanded into the production of guided missile launching systems, torpedo tubes, and hydraulic and electric power drive and control systems.

The NIROP Fridley is located on the southernmost tip of Anoka County. The plant is situated approximately one-quarter mile east of the Mississippi River and less than 1 mile south of Interstate 694. The plant is bordered on the west by East River Road and on the east by the Burlington Northern railyard. The government-owned, contractor-operated portion of the plant encompasses 83 acres. The remainder of the facility is owned and operated by FMC Corporation, and encompasses approximately 55 acres.

The NIROP Fridley and adjacent properties to the north, east, and south are zoned heavy industrial. The Anoka County Riverfront Regional Park is located between East River Road and the Mississippi River (west of the site). The park is a day-use recreation facility on the river's edge, consisting of approximately 60 acres.

Fridley's population was estimated at 28,000 residents in 1990. Anoka County's population, according to 1990 estimates, was 244,000 people. The NIROP Fridley is located near the northern boundary of the metropolitan statistical area (as defined by the U.S. Bureau of Census) for Minneapolis-St. Paul, Minnesota. The area was estimated to contain a population of 2,350,000 people in 1990 (Rand McNally, 1992).

Two significant waterways are in the vicinity of the site: the Mississippi River, approximately 1,000 feet to the west, and Rice Creek, approximately 2 miles to the north. The Mississippi River provides active recreational opportunities to boaters and anglers as well as passive recreation because of its aesthetics and historical significance. The river also serves as a source of public and private drinking water. The water intake for the City of Minneapolis Waterworks facility is located approximately 2,000 feet south (downstream) of the NIROP Fridley's southern property line.

The NIROP Fridley is situated over a sand and gravel aquifer capable of yielding significant quantities of water for residential or municipal supplies. The aquifer is generally restricted to the Mississippi River Valley.

The soils in the area of the NIROP Fridley formed in sandy glacial deposits. The glacial deposits occurring at the site consist primarily of coarse sand, fine to medium sand, and some gravelly sand. Discontinuous layers of silt and clay occur at some locations. These unconsolidated deposits are up to 150 feet thick in the vicinity of the site (Envirodyne, 1983). Generally, sand in the study areas is classified as poorly graded sand (SP) under the Unified Soil Classification System (USCS). The bedrock unit immediately underlying most of the Quaternary deposits at the site is the St. Peter Sandstone. Successive units underlying the St. Peter Sandstone are the Prairie du Chien Group and the Jordan, St. Lawrence, Franconia, and Ironton/Galesville Sandstones. Area geology and groundwater use are discussed in detail in Section 5 of the remedial investigation report for the groundwater operable unit prepared by RMT (1987a).

The climate in the area of the site is characterized by warm summers with average temperatures ranging from the upper 70s°F to the low 80s°F, with moderate rainfall averaging about 17 inches per year. Winter temperatures average between 3°F and 7°F for January and February. Precipitation during the months of October through April averages about 9 inches. Temperature extremes for the area range from - 34° to 104°F (Envirodyne, 1983). Wind directions vary throughout the year. Northwest winds prevail from November through April; southeast winds are dominant in May, June, August, and October; and southern winds dominate in July and September. Wind speeds are fairly constant throughout the year, averaging 10.5 miles per hour (Envirodyne, 1983).

1.2.2 Previous Investigations

Summary of Groundwater Contamination Investigation and Remediation

In March 1981, an anonymous telephone call to the MPCA led to the discovery of trichloroethene (TCE) in three NIROP Fridley water supply wells. At that time, grab samples obtained from NIROP Fridley storm sewer outfalls at the Mississippi River also showed contamination by TCE and other volatile organic compounds (VOCs). Subsequent sampling at the City of Minneapolis Mississippi River water intake (approximately 2,000 feet downstream of the NIROP Fridley) also revealed measurable concentrations of TCE.

Investigation into potential problems at the NIROP Fridley began shortly thereafter by FMC Corporation. Two separate areas of concern were identified as the South Study Area (FMC-owned property) and the North Study Area (government-owned property) by Hickok and Associates (Hickok, 1981). FMC has pursued investigation of the South Study Area separately from the government-owned North Study Area.

Investigation of the North Study Area began on March 31, 1982, when Naval officials implemented the Navy Assessment and Control of Installation Pollutants (NACIP) Program to identify and control environmental contamination from past use and disposal practices. An Initial Assessment Study (IAS) was completed in June 1983 by Envirodyne Engineers, Inc. The IAS determined that drummed wastes had occasionally been buried in the northern portion of the NIROP Fridley and, additionally,

that the area beneath the NIROP Fridley building may be contributing to groundwater problems. As a result of IAS recommendations, the Navy contracted the U.S. Army Corps of Engineers (USACE) to continue investigations.

The initial USACE investigations in the North Study Area consisted primarily of an electrical conductivity survey and a magnetometer survey designed to locate buried wastes identified in the IAS. The specific area within the government-owned North Study Area where the surveys took place is referred to as the North 40. The North 40 extends approximately from the northern edge of the main plant building to the north property fence, and from the eastern property fence to the western fence which defines the eastern side of the employee parking lot. A facility map is included in Section 3 (Figure 3-1). Twenty conductivity anomalies were identified in the North 40 area as a result of these studies. Subsequently, nine of the 20 conductivity anomalies were selected by the USACE for excavation.

The excavation of the nine conductivity anomalies was begun in November 1983 under the direction of Chemical Waste Management. A total of 43 drums were excavated and removed at that time. The drums were classified as follows:

Classification	Number of Drums
Empty	4
Inert liquid	4
Base solid	1
PCB waste	6
Flammable solid	2
Inert solid	26
Total	43

All empty drums were crushed and disposed, along with the excavated hazardous soils, at Evergreen Landfill, Northwood, Ohio. The remaining drums were trucked to Emelle, Alabama, and disposed at the Chemical Waste Management Facility.

Documentation of the excavation and removal was completed in the Draft Project Report of the Hazardous Waste Clean-Up at the NIROP Fridley by the USACE in 1984. The final version of this report was prepared by RMT in September 1986 (RMT, 1986). Additional information concerning the conductivity anomalies and drum removal is included later in the Subsection titled Summary of Previous Soil Investigations.

Following the removal of the 43 drums, the USACE expanded the groundwater investigation by installing and sampling numerous monitoring wells in the shallow, intermediate and deep portions of the unconsolidated glacial deposits, and also in the bedrock.

In 1986, RMT was retained by the Navy to perform a RI of the groundwater operable unit at the NIROP Fridley. RMT expanded the existing groundwater monitoring network and performed several rounds of groundwater monitoring as part of the RI. Results of the RI confirmed earlier findings that groundwater was contaminated with VOCs (primarily TCE) and that groundwater flow was primarily to the southwest (toward the Mississippi River). RI activities were summarized by RMT in the RI Report (RMT, 1987a) and an addendum (RMT, 1988a).

Following the RI report, remedial alternatives were developed from data in the RI Report and addendum and presented by RMT in a feasibility report and addendum (RMT, 1988c and 1988d).

A Record of Decision (ROD) for the groundwater operable unit was signed in September 1990. The groundwater containment and treatment alternative that was presented in the feasibility study was the alternative selected in the ROD. The installation of four groundwater recovery and containment wells, as well as additional groundwater monitoring wells, was completed in late 1991. The recovery system startup and monitoring was begun in September 1992. Since that time, additional groundwater sampling has occurred at wells selected as part of the long-term monitoring network. A 90-day Determination Document was prepared by RMT in December 1992 (RMT, 1992c), which evaluates the effectiveness of the system's operation over the first few months.

Summary of Previous Soil Investigations

Geophysical Surveys

The investigation of contaminated soils at the NIROP Fridley by the Navy began following the completion of the IAS by Envirodyne Engineers, Inc. (1983). The IAS revealed that, during the 1970s, drums of waste materials were buried in pits and trenches at depths of 8 to 10 feet below ground surface in the area known as the North 40.

No records of buried materials were maintained; therefore, the actual amount and location of wastes are unknown. Two hundred or more drums of waste materials were thought to be buried in the pits and trenches (USACE, 1984). The materials disposed in the pits and trenches were thought to include waste oil, plating sludge, paint sludge, cleaning solvents, and degreasing solvents. These waste materials may have contained hazardous substances, such as cyanide, trichloroethene (TCE), methyl ethyl ketone (MEK), and 1,1,1-trichloroethane (TCA). Wastes were assumed to be liquid, semi-liquid, or solid.

The Navy, through the USACE, began cleanup of the pits and trenches in 1983 when USACE personnel conducted magnetometer and terrain electrical conductivity surveys of the suspected disposal areas. The geophysical survey crew used equipment (methods and results of the two geophysical surveys are included in the Draft Project Report of the Hazardous Waste USACE, 1984; RMT, 1986). It was concluded that the results of the electrical conductivity study were much more definitive than those of the magnetometer. Twenty conductivity anomalies were identified as potential disposal locations. Further discussion of the conductivity anomalies is included in Section 4; Figures 4-1 and 4-7 show the locations of all conductivity anomalies.

The 20 conductivity anomalies were evaluated as to their potential to be indicators of buried wastes, and nine areas were selected for excavation. These nine areas were divided into high-, medium-, and low-probability waste disposal sites, as follows:

High-probability - sites 3, 5, 18

Medium-probability - sites 6, 7, 10

Low-probability - sites 15, 17, 19

The nine conductivity anomalies were excavated by Chemical Waste Management of Oakbrook, Illinois, in 1983. The remaining 11 conductivity anomalies were not excavated.

The criteria for delineating the conductivity anomaly areas included consideration of aerial photograph reviews and interviews with NIROP Fridley employees. Appendix C of the RI Workplan (RMT, 1992a) contains the USACE conductivity contour map and the text describing both of the geophysical surveys from the Draft Report of the Hazardous Waste Clean-up (USACE, 1984).

Original data for the trench excavation work performed by Chemical Waste Management, and the results of the additional soil sampling, are located in Volume II of the Interim Report for RI/FS (RMT, 1987b) and include the following:

- Analytical results of excavated drum contents and shipping manifests
- Soils chemical data from pit and trench excavations at the bottom, the 1-foot depth, and the 2-foot depth
- Results of MPCA-requested VOC analysis of samples from 1-foot below pit bottoms
- Chemical results of soil borings advanced at excavated Anomalies #3 and #6, June 1985

Soil Pore Gas Survey

In November 1987, RMT conducted a soil pore gas survey at the site. The purpose of the survey was to screen and identify areas of potential shallow VOC-contaminated soil that may be contributing to groundwater contamination. The following three contiguous areas had the greatest concentrations in the pore space of the near-surface soils:

- Former disposal trench (excavated conductivity Anomaly #3)
- Permanent decontamination pad (unexcavated conductivity Anomaly #13)
- New water main trench area (northern portion of the site)

A description of the field sampling and analysis methods, QA/QC procedures, and results are included in the A-E Quality Control Summary Report for the Soil Gas Survey (RMT, 1988b).

Fall 1990 Soil Investigation

55 Fifty-five soil borings were advanced in October and November 1990 during an investigation to assess the extent of soil contamination in suspected source areas.

23 28 52 4 55 The soil borings were advanced to the water table in four areas. Background consisted of one boring (NB23); the North 40 area included 22 soil borings to investigate potential soil contamination due to past disposal practices; the locations of former Hazardous Waste Storage Area C included 28 soil borings to investigate potential soil contamination associated with the storage area; and the Southeast Area included four soil borings to attempt to delineate the source(s) of VOCs reported in groundwater monitoring wells in this area.

At each boring location, soil samples were collected for chemical and geotechnical analysis. Detailed procedures for drilling and soil sampling are contained in the Draft Quality Control Plan and Sampling Plan (RMT, 1990).

Soil samples were collected for laboratory analysis by field-screening of the headspace of the soil sample jars with an Hnu photoionization detector (PID). Three soil samples from each boring were selected for laboratory analysis. The most significant conclusions from the Fall 1990 soil investigation were as follows:

- Soil samples from near the decontamination pad (unexcavated conductivity Anomaly #13) had the highest concentrations of VOCs—up to 62,000 μg/kg were reported during the investigation.
- VOCs were reported at concentrations up to 350 μg/kg in some of the soil samples near the excavated conductivity Anomaly #3.
- VOCs were reported at concentrations up to 54,000 μg/kg in soil samples collected near excavated conductivity Anomaly #10.

- VOCs were reported at concentrations up to 6,300 μg/kg in soil samples collected near the Former Hazardous Waste Storage Area C.

- A previously unknown trench containing scrap metal and various construction debris was located immediately west of the Former Hazardous Waste Storage Area C. Soil samples from this trench contained concentrations of VOCs up to 100 μg/kg.

The results of the Fall 1990 investigation are included in the Quality Control Summary Report (RMT, 1991a).

Aerial Photograph Review

During August 1991, an initial aerial photograph review was conducted by RMT staff which included photographs spanning the period from 1945 to 1977. A second review of the same aerial photographs, and additional photographs which were not available for the August review, was conducted in December 1991. The second review was performed jointly by representatives of the Navy, the USEPA, the MPCA, FMC, and RMT. As a result of the review and discussions held in December 1991, additional areas of investigation were included as part of the Soils RI. A summary of the review is provided as follows:

- An area where barrels were stored was observed on several aerial photographs. The area in question was located near the present western entrance near the guard shack.

- An area noted on the November 13, 1975, photograph revealed what was apparently a pit-type excavation located approximately 385 feet south of the northern property fence, and approximately 275 feet west of the eastern property fence.

- An area noted on the 1975 photograph also showed numerous barrels just south of the excavation described above. The area was used to stage empty drums for recycling. Neither the barrel staging area nor the apparent excavation area were included within the limits of the geophysical surveys nor the limits of the soil gas survey.

- An area near the addition to the Hazardous Materials Storage Building on the southwestern side of the plant was added to the investigation. The area appeared to be located where metal shavings and milling wastes were loaded for removal from the plant. Soil staining was noted on several photographs in this area. Additional discussion of this area is provided below.

- A previously unidentified aboveground storage tank along the southeastern portion of the site in the vicinity of several nested groundwater monitoring wells where VOCs have been reported.

Hazardous Materials Storage Building Addition

In November 1991, FMC Corporation began construction of an addition to the hazardous materials storage building on the southwestern side of the facility. Soil staining was noted at this location during the aerial photograph review. The location of the building addition corresponds to an area where metal shavings and milling wastes were loaded for removal from the plant.

Potentially contaminated soils were encountered during construction of the hazardous materials storage building addition. An excavation documentation report was prepared for FMC by Wenck Associates (1991). The Wenck report presented data for organic vapor analysis performed on excavated soils and analytical data for samples selected for analysis of VOCs and total petroleum hydrocarbons (TPH). The major constituent reported was a cutting oil, "Lubecut." Additionally, four samples were reported as containing ethylbenzene and xylenes. TCE was also reported in soil sampled from the excavation.

1.3 Scope

The purpose of the RI report is to present an evaluation of the nature and extent of soil contamination in the vadose zone (i.e., above the water table) in areas of the facility that are not covered by buildings or other surface structures. If it becomes important to investigate soil quality beneath the building(s), this will be studied as a separate operable unit. The investigation and remediation of the groundwater operable unit has been addressed separately and is not considered within this workscope.

The scope of the soil RI report is intended to evaluate the nature and extent of potential outdoor sources of VOCs in groundwater. This RI report also looks at potential soil impacts at areas of past waste disposal, handling, and storage. Soils in suspected source areas were analyzed in the field for selected VOCs with a portable gas chromatograph (GC) and in the laboratory for the complete Contract Laboratory Program (CLP) parameter lists. If the portable

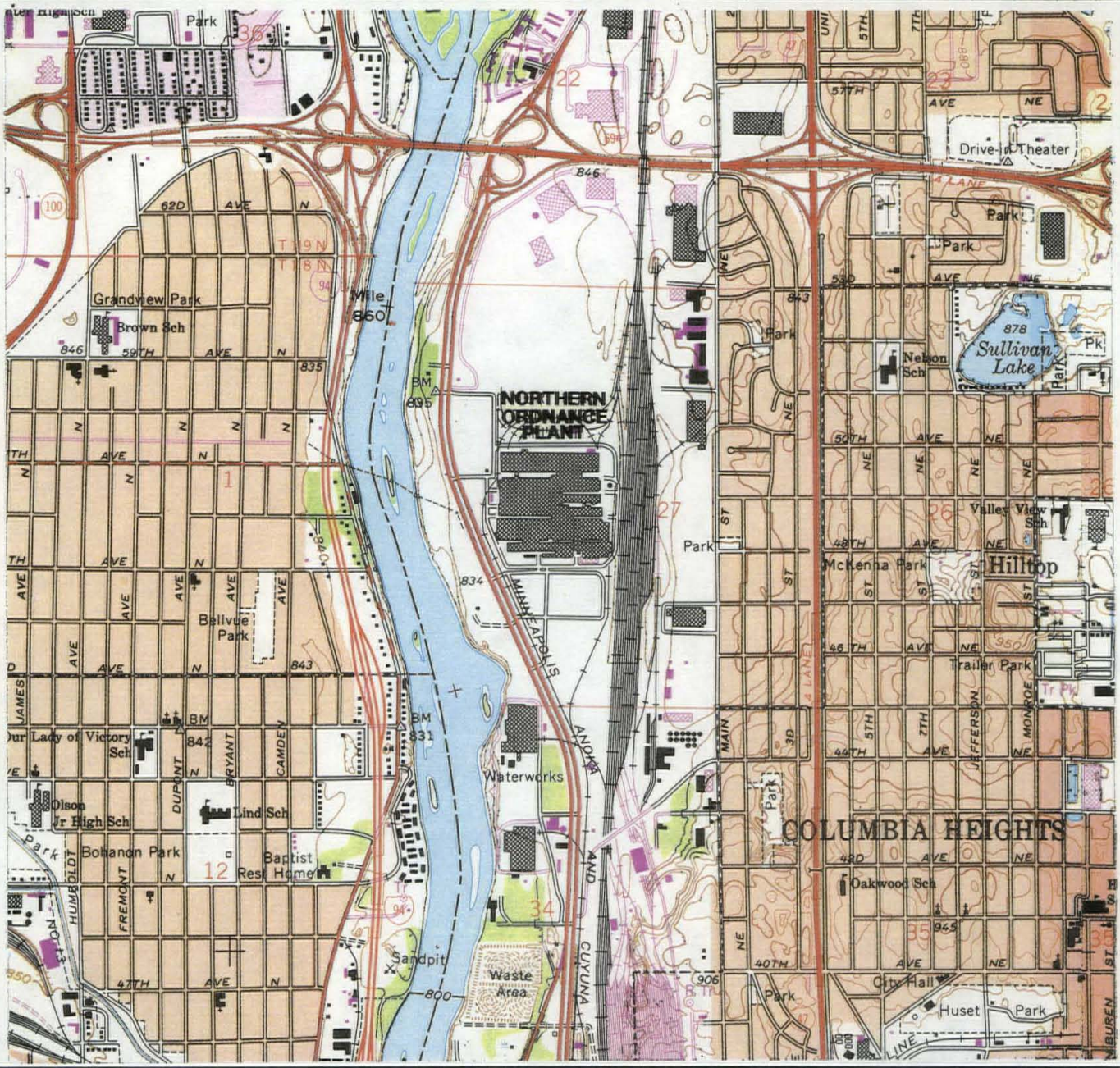
GC results confirmed that the area had been affected, additional borings were drilled and sampled to determine the extent of the affected areas.

The objectives of the RI were met by drilling soil borings and advancing test pits at selected locations to collect representative soil samples for field and laboratory analyses. The soil borings were drilled to a depth of approximately 20 feet below ground surface, with the exception of 10 background soil borings which were drilled to a depth of 10 feet. The depth of 20 feet was selected to reduce the effect of measuring VOCs vaporizing from the dissolved constituent plume where present.

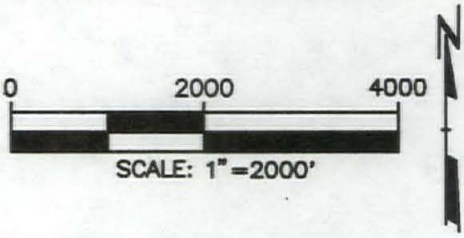
Implementation of the RI field activities took place during June and July 1992 and included the following major activities:

- Survey of proposed soil boring and test pit locations
- Drilling of 10 background soil borings
- Drilling of 105 soil borings and excavation of 12 test pits
- Performance of a drum and soil removal action in an area near the existing decontamination pad
- Performance of a final survey of all soil boring and test pit locations

The results of each of the above-listed activities is presented in this report along with an evaluation of their significance with respect to potential risk to human health and the environment.



STATE LOCATION



SITE LOCATION MAP
NIROP

SOURCE: BASE MAP FROM MINNEAPOLIS NORTH, MINNESOTA, 7.5 MINUTE USGS QUADRANGLE

RMT INC.

DWN. BY:	BLG
APPROVED BY:	J. Koch
DATE:	SEPTEMBER 1993
PROJ.#	2313.24
FILE #	23132414

FIGURE 1-1

Drawing File 2313_24\23132414
Plot File 23132414.PRF
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Section 2

VARIANCES TO THE WORKPLAN AND QAPP

The site investigation was performed in general accordance with the RI Workplan (Workplan) (RMT, 1992a) and the Quality Assurance Project Plan (QAPP) (RMT, 1992b). This section describes the necessary changes that were made in the field and the rationale for making the changes. Only modifications to planned activities are described here; refer to the planning documents for detailed descriptions of the work.

2.1 Boring Location Adjustments

Boring locations were adjusted as necessary due to the presence of underground utilities and/or physical features on the surface (e.g., railroad tracks). Nearly all of the boring location adjustments were less than 5 feet and never greater than 10 feet from the locations proposed in the Workplan (RMT, 1992a).

2.2 Removal Action

A time-critical removal action was performed in Area A near the permanent decontamination pad. The removal action was a result of having encountered a subsurface void containing free liquid (this was later identified as a buried drum) while installing a soil boring immediately east of the decontamination pad. FMC contracted Bay West, Inc., of St. Paul, Minnesota, to perform the removal action. Approximately 900 cubic yards of soil and debris (including a total of 31 drums) were excavated. The 31 drums were sampled and overpacked. Bay West submitted a documentation report to FMC, and it is included in Appendix A. Information regarding soil contamination in and below the excavation is included in this RI report.

2.3 Background Physical Soil Samples

Two of the 10 soil samples from the background soil borings were collected at the 6 to 8-foot depth interval instead of the planned 8 to 10-foot depth interval due to insufficient sample volume.

2.4 Samples Other Than Highest GC Interval

Three of the 106 borings had soil samples that were submitted for laboratory analysis that may not have been collected from intervals that had the highest portable GC results. The highest portable GC result from boring EB002 occurred at the sample depth of 6 to 8 feet; however, there was insufficient sample volume, so the 8 to 10-foot sample interval was selected for laboratory analysis.

The highest portable GC result from boring AB209 occurred at the 18- to 20-foot depth. However, since the portable GC results for soil samples from depths of 16 to 18 feet were at least a factor of two less than the GC result from the 18- to 20-foot interval, the result for the 18- to 20-foot depth was interpreted to be due to contaminated groundwater affecting the soils in the capillary fringe. A portable GC result from the 3- to 5-foot depth was nearly identical to the 18- to 20-foot sample; thus, the sample from 3- to 5-foot depth was determined to best represent contamination within the unsaturated zone, and it was selected for laboratory analysis.

Portable GC results from soil boring EB004 were all near detection limits for the portable GC. Although the highest concentration from the portable GC was from the 18- to 20-foot depth, the portable GC result from the 8- to 10-foot depth interval indicated that there were unidentified peaks with longer retention times than the retention times for which the portable GC had been calibrated. In addition to the unknown unidentified peaks, the 8- to 10-foot interval is closer to the ground surface than the highest concentration GC interval of the 18- to 20-foot interval. This is important because the objective of the soil boring EB004 was to evaluate the soils below an unidentified aboveground tank observed during aerial photograph review. Thus, the 8- to 10-foot sample interval was chosen for analysis at boring EB004.

2.5 Chemical Interferences

Following the protocol outlined in the QAPP, isopropyl alcohol was used in the decontamination process for cleaning downhole equipment prior to sampling. As a quality control measure exercise, a sample of the isopropyl alcohol was analyzed by the portable gas chromatograph and was found to coelute with 1,1-DCE. Prior to this discovery, 1,1-DCE had been reported in several soil samples analyzed by the portable GC. A subsequent review of the data concluded that the 1,1-DCE reported in the soils prior to the QC was actually

isopropyl alcohol, and values of GC were corrected. Laboratory results of soil samples later confirmed that 1,1,-DCE was not present, but that isopropyl alcohol was. Portable GC results were then corrected for the false peak of 1,1,-DCE due to isopropyl alcohol. Following this discovery, a review of the field-screening data (i.e., the portable GC results) was made in order to determine if the correct sample intervals had been selected for laboratory analysis. Except for two samples which had been selected because of apparently high 1,1-DCE concentrations, sample selection was deemed appropriate relative to the RI objectives. The two samples were re-collected from the appropriate sample intervals and submitted for laboratory analysis.

2.6 Additional Borings

Two additional borings were installed near Hazardous Waste Storage Area C in the apparent trench (RMT, 1991b) to provide additional characterization of shallow soils for the purpose of quantifying exposure in the baseline risk assessment.

Two other borings were installed in the filled excavation of the removal action near the decontamination pad. These two borings were installed to better characterize the fill soils used to backfill the excavation.

Section 3

EVALUATION OF DATA QUALITY

3.1 Sample Selection Criteria and Representativeness of Portable GC Data Quality

3.1.1 Sample Selection Criteria

A combination of borings and test pits were used to collect soil samples during the RI. The rationale for the locations selected for investigation was based on the results of previous investigations and a review of historical aerial photographs (see Subsection 1.2.2). A more detailed discussion of the rationale for selecting is included in the Field Sampling Plan, which is contained in the RI Workplan (RMT, 1992a).

Following selection of investigation locations, borings and test pits that were located in similar geographic areas of the site were grouped together and assigned to one of six major investigation areas. These major areas were designated as Background, A, B, D, E, and F. The use of the letter "C" as an area designation was already being used to describe the former Hazardous Materials Storage Area C, which is the subject of current RCRA closure activities, and was not included as part of the Soils RI. The six major areas and associated sub-areas of investigation are shown on Figure 3-1 (all figures are located in the back of the section).

The general approach to the Soils RI was to identify areas of known or suspected contaminated soils, and to advance what were designated as Type 1 borings or test pits. Thirty-eight Type 1 borings were advanced to a depth of approximately 20 feet below ground surface. Twelve test pits were advanced to a depth of approximately 12 feet below ground surface. Soil samples were collected from each boring or test pit at 2.5-foot depth intervals. Two samples from each boring or test pit were selected for laboratory analysis as explained later in this subsection. Laboratory analysis for Type 1 borings consisted of Target Compound List (TCL) volatiles, semivolatiles, and pesticide/PCB compounds, Target Analyte List (TAL) inorganics, and total organic carbon (TOC).

A portable gas chromatograph (GC) was used to screen soils in the field and to aid in determining which soils were to be submitted for laboratory analysis. Nine parameters were selected for screening based on historical information. These parameters included tetrachloroethene (PCE), trichloroethene (TCE), 1,1-dichloroethene (1,1-DCE), cis- and trans-1,2-dichloroethene (cis-DCE and trans-DCE), benzene, ethylbenzene, toluene, and xylenes (BTEX).

The shallowest sampling interval at each location was selected to provide exposure concentration data for the baseline Risk Assessment (Section 6). The second interval selected for laboratory analysis was generally the one with the highest concentrations of total volatile organic compounds (VOCs).

On completion of the Type 1 borings and test pits, the Navy and RMT reviewed the portable GC results and field observations made during drilling in order to determine locations for additional borings (Type 2 borings), which would be used to delineate the extent of contamination. Analyses performed on samples from Type 2 borings included TCL VOCs and TOC. Generally, the Type 2 borings were located approximately 40 feet from Type 1 locations where GC data indicated elevated VOCs. As Type 2 borings were advanced, sampled, and screened with the portable GC, additional Type 2 borings were added to the program either by "stepping out" further or by "stepping in" approximately 20 feet. In this manner, the extent of contaminated soil was determined to approximately plus or minus 10 feet. Figures 3-2 and 3-3 show decision diagrams which were used to determine both the locations of additional Type 2 borings and the sample intervals that would be selected for laboratory analysis. In all, 68 Type 2 borings (36 initial and 32 additional borings) were advanced.

Ten background borings were installed in off-site areas near the site that were believed to be unaffected by site activities. These borings were advanced 10 feet below ground surface. Soil samples from the 1- to 3-foot and 8- to 10-foot depth intervals were submitted for laboratory analysis, which included the TCL and TAL plus TOC. The analytical results were used to characterize local background concentrations.

3.1.2 Sample Identification

The sample identification system uniquely identifies the location, type, and depth of each sample. The first two letters in each sample identifier indicate its area location and whether it is a boring or test pit. For example, the sample labeled AB024A was collected in Area A (AB024A) and is a boring (AB024A). Test pits had a "T" in place of the "B." The three numbers following the two-letter prefix are the boring or test pit number. If the first digit is a "0," then a Type 1 boring is indicated. In instances where the first digit is a "2" (AB204), a Type 2 boring is indicated.

The single letter suffix in the designation (AB024A) was used to indicate the depth from which the sample was collected. Sample interval designations and corresponding depths were as follows:

Designation	Feet below ground surface
A	1 - 3
B	3 - 5
C	6 - 8
D	8 - 10
E	10 - 12
F	13 - 15
G	16 - 18
H	18 - 20

Since the site is nearly flat, each sample interval designation represents approximately the same relative elevation across the site.

Quality control duplicates, rinseate samples, and trip blank samples used a similar labeling system through the use of the prefixes QCD (quality control duplicate sample), QCR (quality control rinseate sample), and QCT (quality control trip blank sample), followed by sequential numbers (001, 002, etc.). Duplicate sample locations were recorded in bound field notebooks for later reference.

3.1.3 Evaluation of Portable Gas Chromatograph Data Quality

A portable GC was used as a screening instrument to aid in determining the extent of soil contamination. Soil samples were collected for field-screening by headspace analysis and subsequent selection for laboratory analysis as described in Subsection 3.1.1. A total of 882 samples were analyzed by the portable GC, and 246 samples were analyzed in the laboratory for VOCs. This subsection presents an evaluation of the portable GC results and the corresponding laboratory results (a total of 218 sample results: not all samples sent to the laboratory had portable GC results [i.e., background soil samples]). The evaluation focuses on the following areas:

- Correlation between field and laboratory results
- Appropriateness of a 10 μL/L cutoff for defining soil VOC concentrations and sensitivity of the portable GC to soil VOC contamination
- Usefulness of the portable GC results for risk assessment of soil pore gas migration into tunnels and basements

Correlation Between Field and Laboratory Results

In order to compare laboratory and portable GC results, it is helpful to review the portable GC analytical methodology. Headspace samples were collected by half-filling a 40-mL VOA vial with soil, allowing the soil and headspace to equilibrate, and then measuring the headspace concentrations with a portable GC set up in a field trailer. The portable GC itself is a laboratory grade instrument adapted for use in the field. The headspace method of analysis measures the results after VOCs distribute themselves between the soil and the soil headspace. The concentration of the VOCs in the soil headspace is influenced by a number of parameters (DeWitt, 1987), including the following:

- Soil organic content
- Soil texture
- Size and shape of pores in soil
- VOC-specific Henry's law constant
- VOC concentration in soil
- VOC-specific K_{oc} partition coefficient for organic carbon

Of these factors affecting VOC headspace concentration, it is the VOC concentration in soil that is of most interest. The other variables may also influence the VOC concentration in the headspace and complicate interpretation of the results. Due to the number of uncontrolled factors which may affect the headspace concentration, headspace analysis should be used only as a screening tool for estimating soil concentrations.

Headspace and laboratory results cannot be directly compared because the units in which portable GC and laboratory results are reported are different, although the common names for the units (i.e., parts per million or billion) are the same. The portable GC reports units in terms of a volume per volume measurement (i.e., volume of VOC per unit volume of headspace gas). One part per million (by volume) in the headspace is one microliter of VOC per liter of gas. Since the measurement is made in the gas phase, a volume-per-volume measurement is equivalent to a mole-per-mole measurement. The soil concentrations reported by the laboratory are made on a weight-per-weight basis (i.e., a weight of VOC per unit dry weight of soil). One part per million (by mass) in the soil is one milligram VOC per kilogram soil.

The headspace concentration cannot be used to directly determine the soil concentration for the reasons presented above. However, the headspace concentration can be used to determine a minimum amount of VOCs that must be originally present in the soil to give that headspace concentration, assuming that all of the VOC volatilizes, and making some simplifying assumptions about the soil characteristics. For example, in the case of trichloroethene (TCE), a portable GC headspace reading of 1 μL/L (1 ppmv) corresponds to a minimum soil concentration of 6 μg/kg (6 ppb), or a 6:1 soil-to-headspace ratio, using μL/L and μg/kg units. This conversion assumes that all the TCE in the soil volatilizes into the headspace. Since this assumption is unlikely to be true, the actual soil concentration should be higher than 6 μg/kg to give a headspace reading of 1 μL/L.

The use of the 6:1 ratio for TCE is explained as follows: In the soil headspace analysis procedure used at NIROP, a 40-mL VOA vial was half-filled with soil and capped. The soil and headspace were allowed to equilibrate, then the TCE

concentration in the headspace was measured. The calculations below assume that all the TCE in the soil volatilizes into the headspace, then calculates the soil concentration containing the amount of TCE required to give a 1-μL/L headspace concentration.

u milli
m micro

There are approximately 20 mL of headspace over the soil. Assuming a 50 percent porosity in the soil itself results in 10 mL of soil and 10 mL of air in the soil. Therefore, there are a total of 30 mL air in the vial. Assuming that the soil has a density of 2.65 g/mL, then there are [(10 mL soil)(2.65 g/mL) =] 26.5 g of soil in the vial.

A 1 μL/L (ppm v/v) TCE concentration in the 30 mL headspace contains 1.6×10^{-7} g TCE, as shown below (the key constants used in each step are given as notes):

(1 μL/L)/24 μL/μmole [at 20°C] = 4.17×10^{-8} moles/L TCE in headspace
Note: 1 mole of gas occupies 24 L at 20°C. 24 L/mole = 24 μL/μmole

4.17×10^{-8} moles/L x 131 g/mole = 5.46×10^{-6} g TCE/L
Note: The molecular weight of TCE is 131 g/mole

5.46×10^{-6} g/L x 0.030 L in headspace = 1.64×10^{-7} g TCE in headspace
Note: 30 mL headspace = 0.030 L headspace

Since there is 25.6 g (or 0.0265 kg) soil in the vial, then

1.64×10^{-7} g TCE/0.0265 kg in soil in vial = 6.19 μg TCE/kg soil

Therefore, **a 1 μL/L (ppm v/v) headspace concentration correlates to 6.2 μg/kg (ppb) TCE in the soil.** Since the assumption is made that all the TCE volatilizes, a 1 μL/L headspace concentration requires at least 6 ppm TCE in the soil. A soil-to-headspace concentration ratio significantly lower than 6 indicates that there is a problem with the analyses.

The portable GC and laboratory results are compared graphically on Figures 3-4, 3-5, and 3-6 for DCE, TCE, and total measured VOCs, respectively. The data are presented on the figures on a log-to-log basis to facilitate presenting a wide range of concentrations on a single scale. The results show a considerable amount of scatter in the data, particularly at low concentrations. However, a direct comparison of the

results shows that, in approximately two-thirds of the samples, the TCE concentration in the laboratory analysis of the soil (in μg/kg) is less than six times the headspace concentration (in μL/L).

Since the factor of six is based on a mass balance, the low laboratory readings compared to the portable GC results suggest that either the portable GC method is yielding readings that are biased high, or the laboratory readings are biased low. A high reading on the portable GC could be due to headspace contamination in the field, while low readings in the laboratory could be due to loss of TCE from the sample bottles during shipment or storage, or poor recovery during analysis, or both. Both the portable GC and laboratory analysis were performed under strict quality control procedures, and holding times were met for all samples for initial analyses. It is less likely that the analytical methods themselves were in error, suggesting that leakage of VOCs from the sample bottles may be significant.

A laboratory experiment was conducted to evaluate chlorinated ethylene loss, from the 120-mL wide-mouthed sample bottles required by the USEPA that were used for the laboratory samples. The 120-mL bottles are somewhat different from the sample bottles typically used for soil samples by RMT, in that the teflon seal at the top had no silicone backing material behind the teflon. Empty sample bottles were filled with chlorinated ethylene gas standard. The concentrations remaining in the bottles at different times were then measured to evaluate whether losses from the sample bottles could have significantly affected concentrations. Three different bottles were used for measuring the remaining concentrations at each time interval. Each bottle was only sampled once. The seals at the top of the bottles between the teflon insert in the cap and the top of the glass should represent a "best-case" seal, since there was no soil residue on the top of the glass or in the threads to disrupt the seal.

Results of the experiment are presented in Table 3-1. The results show a clear decrease with time in the chlorinated ethylene concentrations in the bottle. After 72 hours, an average of 57 percent of the original TCE had been lost from the sample bottles. The results indicate that the sample bottles lose constituents over time. The

percentage of loss was found to be quite variable in the three replicate bottles at each time period, and very likely would be even more variable for samples collected in the field.

The results of the experiment suggest that the discrepancy between the field and laboratory results was due to the loss of VOCs from the sample bottles used for laboratory analysis during shipment and sample storage.

The loss presumably occurred from the gas phase VOCs as volatiles moved past or through the teflon septa into the air or plastic cap. The loss would be especially noticeable in samples in which the bulk of the VOCs was contained in the pore gas (e.g., sandy soils with low organic carbon content). For samples where the VOCs are more strongly held by the soils, and thus a smaller percentage is in the headspace, the loss of a portion of the VOCs from the headspace would have less of an impact on the overall concentration of the VOCs in the soil. In aged samples where the VOCs in the more mobile fractions (e.g., pore gas) will have had a chance to disperse, one would expect that the samples with the majority of the VOCs in the pore gas would have lower total VOC concentrations. One would expect, therefore, that the samples which more strongly retained the VOCs would have less loss of VOCs due to the loss through the septa. The samples with higher VOC concentrations will retain the greater portion of the VOCs in the soil than those with lower VOC concentrations.

This hypothesis can be tested by plotting the ratio of the laboratory TCE concentration to the field GC headspace concentration versus the laboratory concentration. An upward sloping line indicates that at low concentrations, more of the TCE is lost from the sample bottles than is lost at high concentrations. The plot for the TCE results of the ratio between the laboratory and field GC TCE results with the laboratory results is given in Figure 3-7. Recall that a ratio of less than 6 (log 6 = 0.778) indicates some error in the results. There is a clear increase in the ratio with increasing concentration. In fact, the plot of the ratios looks very similar to the plot of laboratory versus field GC data. The majority of points for laboratory concentrations less than 100 μg/kg are below the laboratory-to-field GC concentration ratio of 6 line on the graph, while the majority of the points with laboratory concentrations of greater than 300 μg/kg (2.5 on

the log scale) are above the laboratory-to-field GC ratio of 6 line. The problem of loss from the sample bottles is most severe for samples with low VOC concentrations, and less severe for samples with higher concentrations.

The laboratory data appear to bias low due to loss from the sample vials. This loss is more pronounced in samples with low TCE concentrations. **Thus, the laboratory data are useful for delineating areas of high concentration, but are less accurate in determining areas of low concentration.**

The variable loss of VOCs from the sample bottles complicates the comparison of portable GC versus laboratory results, since there is no "true" value with which to compare the field GC results. Instead, the portable GC and the laboratory analysis are measuring different components of the soil VOCs, with the portable GC measuring the pore gas concentrations and the laboratory analysis measuring the concentration of more tightly held constituents. No other constituents (i.e., semivolatiles, metals, etc.) are expected to be affected by volatilization losses.

Soil Concentrations Represented by 10 μL/L or Less Headspace Concentrations
Keeping in mind that some VOCs may be lost from vials during transport and storage, a comparison was made of the results of the laboratory analysis for samples with a portable GC reading of 10 μL/L or less to determine how effectively the portable GC detected samples with high VOC concentrations. Of the 121 samples with a portable GC reading of less than 10 μL/L total VOCs (the sum of the concentrations of DCE, TCE, PCE, and BTEX), the distribution of laboratory concentrations is as follows:

Laboratory Concentration Range	No. of Samples	Percent of Total
100 - 500 μg/kg	3	2.5
50 - 100 μg/kg	3	2.5
10 - 50 μg/kg	20	16.5
1 - 10 μg/kg	28	23.1
< 1 or below detection	67	55.4

None of the samples with a total VOC reading of less than 10 μL/L on the portable GC had a laboratory concentration over 500 μg/kg (0.5 ppm), and only 5 percent of the samples had soil concentrations over 50 μg/kg (0.05 ppm). While no cleanup criteria have been established for the site, a proposed RCRA action level for corrective action has been recommended for the chlorinated ethenes and other volatiles (55FR:30798-30884, July 27, 1990). The proposed corrective action level was 10 mg/kg for both 1,1-DCE and PCE, and 60 mg/kg for TCE. The highest level observed for soils with less than the cutoff of total VOCs containing 10 μL/L on the portable GC—500 μg/kg—is a factor of 20 less than the lowest proposed action level for the parameters monitored. The majority of the soil concentrations measured for samples with less than the cutoff value were orders of magnitude less than the proposed corrective action levels. **Thus, use of the 10 μL/L cutoff value for the portable GC provided an ample margin of tolerance for discriminating between samples with soil concentrations in the range of the proposed RCRA corrective actions levels and those with lower concentrations.** Use of the RCRA corrective action criteria in this analysis is not meant to imply that those criteria applicable or relevant and appropriate requirements (ARARs) should be applied to the NIROP Fridley site; they simply provide a useful comparison in the absence of site-specific cleanup criteria for the NIROP Fridley site.

It is also instructive to compare the number of readings that were below detection on the portable GC, but positive in the laboratory readings, and vice versa. This comparison is given below.

Reading		
Laboratory	**Portable GC**	**Number of Samples**
Measured concentration	Below detection	4
Below detection	Measured concentration	35
Below detection	Below detection	29

The laboratory had a measured reading in four samples for which the portable GC reading was below detection, while the field GC had measurable readings in 35 samples for which the laboratory reading was below detection. **Thus, the portable GC was more sensitive in detecting the analyzed compounds than was the laboratory.**

Usefulness of Portable GC Results for Risk Assessment

The portable GC results may also be used in the risk assessment for migration of soil pore gas into air in tunnels or basements, as discussed during a telephone conference call with the USEPA held on October 5, 1992. For such an assessment, the compounds of most concern are those that have the greatest health impact at a given concentration.

The compounds which are the most highly carcinogenic of those analyzed are vinyl chloride and benzene. Vinyl chloride was not analyzed in the portable GC samples due to interference from water; however, vinyl chloride was below detection in all samples analyzed in the laboratory. An evaluation of the results shows that benzene was detected by the laboratory in two samples: AT007C at 14 μg/kg and AT008D at 1 μg/kg. Both concentrations were "J" qualified, indicating that the concentrations were below the quantification limit but above the detection limit for the samples. The TCE concentrations for the samples were 280 μg/kg and 11,000 μg/kg for AT007C and AT008D, respectively. The field GC did not detect benzene in either sample. The analyte of most interest in the field was TCE, and the dynamic range of the field GC was not sufficient to detect the lower benzene concentration in the presence of the much higher TCE concentration. The field GC is about equally sensitive to benzene and TCE, so if benzene were present at comparable levels to TCE, it would have been detected by the field GC.

Generally, the portable GC was more sensitive to VOCs in the soil pore gas than laboratory methods. The laboratory samples did not accurately measure pore gas concentrations due to the loss of a portion off the constituents from the sample bottles

during storage. **Thus, the portable GC results are more appropriate for use in the risk assessment calculations for VOCs in soil pore gas than are the laboratory results.**

Summary

1. Although there was some scatter in the correlation of portable GC versus the laboratory concentration of TCE or total analyzed VOC results, the 10 μL/L cutoff used with the portable GC results as a basis for continued sampling was effective at discriminating between samples with low VOC concentrations and those with higher VOC concentrations. Ninety-five percent of the samples that had portable GC readings at or below 10 μL/L had laboratory concentrations of VOCs of 50 μg/kg or less.

2. The laboratory VOC results were lower than expected compared to portable GC results, based on a mass balance of the volatiles in the VOA vials during headspace analysis.

3. A laboratory experiment with the 120 mL glass sample bottles used for the laboratory samples indicated that the bottles lost VOCs with time, and therefore the laboratory results may be biased low. The bias is more pronounced at low concentrations.

4. The portable GC results are suitable for use in risk assessment for migration of soil pore gas into tunnels or basements at the site. The values are more representative of pore gas concentrations than the laboratory results.

3.2 Data Validation

3.2.1 Introduction

The USEPA has provided quality assurance (QA) guidelines for collection of all environmental monitoring data. For this project, a written Quality Assurance Project Plan (QAPP) (RMT, 1992b) was prepared that defines the organization, objectives, functional activities, and specific QA and QC activities associated with the project.

Data validation is one of the functional activities used to assess data quality. Data validation is a process of systematic review to evaluate data accuracy, precision, sensitivity, and completeness. The process requires both adherence to specific data review guidelines and use of professional judgement based on personal experience.

This subsection summarizes the findings of data validation efforts for 328 investigative and associated quality control samples collected during the Soils RI.

Validation services were performed by Environmental Chemistry Consulting Services, Inc. (ECCS), of Madison, Wisconsin, during the period August 1992 through November 1992 under contract (June 2, 1992) to RMT. Validation objectives were as follows:

- To verify laboratory testing was performed in accordance with the QAPP and the Field Sampling Plan (FSP)
- To validate Level 4 data in general accordance with accepted guidance documents including:
  - National Functional Guidelines for Organic Data Review, June 1991
  - Laboratory Data Validation, Functional Guidelines for Evaluating Inorganics Analyses, July 1988
  - Laboratory Data Validation, Functional Guidelines for Evaluating Organics Analyses, February 1988
  - Guidance for Data Useability in Risk Assessment, October 1990
- To work with RMT Laboratories in resolving data documentation and/or quality issues
- To debrief RMT project staff on validation findings
- To summarize data useability and validation findings in a report

3.2.2 Data Useability Conclusions

RI Project Objectives

The general purpose of the RI was to gather information needed to develop an appropriate remedial alternatives for contaminated site soils in accordance with the National Oil and Hazardous Substances Pollution Contingency Plan.

Conclusion

Laboratory data generated are essentially 100% useable in meeting the RI project objectives. The laboratory performed at a high level of competence and care for the entire project.

QAPP Data Quality Objectives

Data quality objectives presented in Section 1.6 of the QAPP included the following:

- DQO Level 4 - Laboratory analysis of soil samples, drilling water, and associated rinseate and trip blanks for volatiles, semi-volatiles, pesticide/PCBs and inorganics
- DQO Level 3 - Laboratory analysis of soil samples, drilling water and associated rinseate blanks for total organic carbon (TOC)

Conclusion

Laboratory data generated for volatiles, semi-volatiles, pesticide/PCBs and inorganics meet the requirements for Level 4 data. All laboratory analyses were performed in accordance with Contract Laboratory Program (CLP) 3/90 Statements of Work (SOWs). Accuracy, precision, sensitivity, and completeness goals outlined in the QAPP were met. Final data packages were complete and are considered legally defensible.

Laboratory TOC data meet the requirements of Level 3 data. TOC laboratory analyses were performed in strict accordance with the method presented in the QAPP. However, all TOC data should still be considered estimated. This issue is discussed in detail in Section 3.2.3.

3.2.3 Data Validation Findings

The text below summarizes major findings only. Each section of the text follows the same general outline in which the following subjects are discussed:

- List of numbers of samples
- Method control (tuning, calibration, continuing calibration, specific system controls)
- Precision and accuracy (laboratory duplicates and/or spikes, field duplicates)
- Sensitivity/detection limits (false positives, false negatives, holding times)
- Tentatively identified compounds (if applicable)

Appendix B provides a directory of laboratory number (numerical order) cross matched with sample designation codes. Table 3-6 provides an explanation of data qualifiers for organics and inorganics.

The term "norm" has been used several times in the text to describe the relative degree of precision of field duplicate sample results. Precision for duplicate samples is quantified by the equation for relative percent difference (RPD). A high RPD indicates low precision. A low RPD indicates high precision. Review criteria for RPDS of laboratory duplicate samples have been established by various CLP SOWs and range from 20 to 35 percent. No criteria have been established for field duplicate samples. The "Functional Guidelines" indicate that variability for field duplicate samples is expected to be high, due to difficulties associated with collecting identical field samples. This is especially true for soil samples. For this project, the variability exhibited by field duplicate samples was high, but not unusual. The low precision was expected and does not affect usability of the data. This circumstance has been described as the "norm" in the test.

Volatile Organic Compounds

A total of 329 samples were collected and analyzed for volatile organic compounds, including 246 investigative soil samples, 25 field duplicate soil samples, 25 rinseate blanks, 30 trip blanks, and 3 drilling water samples.

Tuning, calibration, continuing calibration, and internal standard and surrogate method controls met 3/90 SOW acceptance criteria for nearly 100 percent of all data. All positive detection data met acceptance criteria. Acceptance criteria were exceeded for carbon tetrachloride, 1,1,2,2-tetrachloroethane, chloromethane, and vinyl chloride, which were not detected.

Although several matrix spike/matrix spike duplicate and blind field duplicate results indicate some difficulty in obtaining precise and accurate results, no data are qualified for this reason. Precision and accuracy measurements are well within the "norm" for soil samples. Blind field duplicate results summarized in Table 3-7 actually show a relatively high degree of precision for soil samples.

Sensitivity as described by limit of detection was affected for several compounds by both laboratory and field contaminants. Methylene chloride, acetone, 2-butanone, and toluene (common laboratory contaminants) were detected in laboratory, rinseate, and trip blanks (see Tables 3-8 and 3-9). Methylene chloride, acetone, and 2-butanone results less than 10 times the level found in blanks were qualified with BU flags. Toluene results less than five times the level found in blanks were also qualified with BU flags.

Trichloroethene (TCE) was detected in 2 of 25 (8%) rinseate blanks and 1 of 30 (3%) trip blanks. Because of high precision of blind field duplicate results at similar low concentrations, and the much greater percentage (70 of 246, 32%) of samples with low level detections, trichloroethene results less than 15 ug/kg (five times the 3 ug/L level found in a rinseate blank) were qualified with B flags rather than with BU flags. Two trichloroethene results less than 4 ug/kg (five times the 0.8 ug/L found in associated trip blank) were qualified with BU flags.

Carbon disulfide, isopropyl alcohol (a TIC), and tetrahydrofuran (a TIC) were detected in field blank and investigative samples. Results for these uncommon contaminants were qualified with BU flags.

Detection limits were elevated for 22 samples which were diluted as a result of a prescreening analysis. Nineteen of those samples were properly diluted in accordance with the 3/90 SOW. Three samples, EB001A, EB001E and AT009E2, were over-diluted and had elevated detection limits by factors of 5, 2.5, and 5, respectively.

Holding times were met for all samples for initial analyses. Several samples were reanalyzed 1-3 days past holding times because of dilution requirements. In all cases, results of reanalyzed samples compared favorably with initial results; therefore, results were not qualified and initial results were used.

Light petroleum hydrocarbons were detected in seventeen samples during review of tentatively identified compounds and associated chromatographs. Single peak tentative identification of substituted benzenes (compounds containing a benzene ring as part of their molecular structure) indicated that the lighter hydrocarbons may be gasoline. Because of the specificity of the method toward single-analyte target compounds, the hydrocarbons were not adequately identified or quantified. Samples which contained light petroleum hydrocarbons were as follows:

FB002A	AT004B	AT009B1	AT009E2
FB003A	EB003A	AT009B1 DUP	AB043D
DB031F	EB003F	AT009D1	AB043H
AB031A	EB004D	AT009D2	AB044D
AB031G			

Further details of validation findings for volatile organic compounds are provided in Appendix B.

Semivolatile Organic Compounds

A total of 152 samples were collected and analyzed for semivolatile organic compounds, including 124 investigative soil samples, 12 field duplicate soil samples, 13 rinseate blanks, and, 3 drilling water samples.

Tuning, calibration, continuing calibration, and internal standard method controls met 3/90 SOW acceptance criteria for greater than 99 percent of all data. All positive detection data met acceptance criteria for method controls. Surrogate recoveries were generally acceptable. Initial surrogate recoveries were low for 2-fluorophenol and phenol (2 of 8 surrogates) for eight samples associated with one extraction blank. This phenomenon was thought to be a gel permeation column (GPC) technique problem. These samples were re-extracted up to 15 days past holding time. Re-extracted results compared favorably with original results; therefore, data were not qualified. Initial results were used. The possibility of false negatives exists for target phenols or phenolic-like compounds for samples in this extraction group. Four samples (FB003A, AT007C, AT008D DUP and AT009D1) had surrogates diluted out because of high levels of heavier petroleum hydrocarbons.

Matrix spike/matrix spike duplicate and blind field duplicate results indicate precision and accuracy to be acceptable for semivolatile organic compounds. Only AB030G/AB030G DUP (1 of 12 sets of blind field duplicates) exhibited positive single analyte detections (see Table 3-10).

Sensitivity as described by limit of detection was not affected by blank contaminants for target compounds of interest. Some data for bis-(2-ethylhexyl)phthalate were qualified with BU flags. No other target analyte data were qualified. Extraction and analysis holding times were met for all samples.

The laboratory had a reoccurring column and/or septum bleed contamination problem which manifested itself in a consistent distinguishable pattern. Some of the gas chromatography columns and septa release (bleed) organic compounds during analysis. The organic compounds co-mingle with the sample during analysis and often show up as TICs. Components of this bleed problem complicated chromatograms after 25 minutes and were often listed as TICs. When readily identifiable as a bleed problem, these components were qualified with BU flags. However, some listed TICs that were not qualified may be components of the bleed problem. This is especially true of samples containing heavier petroleum hydrocarbons. The bleed problem did not appear to interfere with identification or quantitation of target compounds.

Three types of petroleum hydrocarbon mixtures were noted during review of tentatively identified compounds and associated chromatograms. Because of the specificity of the method toward single analyte target compounds, the hydrocarbon mixtures were not adequately identified or quantified.

Ten samples listed below had light petroleum hydrocarbons which were also noted in volatile samples:

DB031F	AT009D2
AB031G	AT009E2
AT009B1	AB043D
AT009B1 DUP	AB044D
AT009D1	

Four samples (AB031A, AT004A, AB043D and AB044D) contained mid-range petroleum hydrocarbons. Single peak tentative identification of C11-C20 alkanes indicates that the mid-range petroleum hydrocarbon mixture may be No. 2 fuel oil.

Twenty-three samples listed below contained heavier petroleum hydrocarbons:

AB024A	DB031A	AT004B	AT009D2
AB030A	DB031F	AT005C	AB043D
AB028A	BB002B	AT007C	AB043H
AB033B	AB031A	AT008D DUP	AB044D
FB002A	AB031G	EB004A	AB044H
FB003A	AT004A	EB004D	

The heavier petroleum hydrocarbons eluted as a hump with no distinguishing single peak features.

The concentration of the petroleum hydrocarbons described above cannot be determined from the analysis conducted. However, it is noteworthy that dilutions were made and detection limits for target compounds were elevated in 15 samples due to the presence of high concentrations of petroleum hydrocarbons. The 15 diluted samples were analyzed and reported once. These samples are listed below with the dilution factor shown in parenthesis. Dilutions were performed following an FID screening step in accordance with the 3/90 SOW for semivolatiles.

FB002A (4)	AT004B (10)	AT009D1 (20)
FB003A (10)	AT007C (10)	AT009D2 (10)
DB031F (10)	AT008DDUP (10)	AB043D (5)
AB031A (10)	AT009B1 (4)	AB043H (4)
AB031G (10)	AT009B1DUP (5)	AB044D (5)

Polynuclear aromatic hydrocarbons (PAHs) were noted in many samples as target analytes and TICs. In some cases, the PAHs represented a fourth distinctive hydrocarbon mixture. In other cases, the PAHs were apparently associated with one of the other petroleum hydrocarbon mixtures.

Further details of validation findings for semi-volatiles are provided in Appendix B.

Pesticide/PCBs

A total of 151 samples were collected and analyzed for pesticide/PCB organics, including 123 investigative soil samples, 12 field duplicate soil samples, 13 rinseate blanks, and, 3 drilling water samples.

Calibration controls as described by injection sequence, peak resolution criteria, DDT/endrin breakdown, PEM criteria, absolute retention time criteria, and linearity met 3/90 SOW acceptance criteria for nearly 100 percent of all data. Continuing calibration criteria were met for most data. Some sample results in sample delivery groups (SDGs) NRP006, NRP009 and NRP010 were qualified with J flags because of continuing calibration results which were out of control.

Although dual-column, matrix spike/matrix spike duplicate and blind field duplicate results (see Table 3-11) indicate some difficulty in obtaining precise and accurate results, no data are qualified for this reason. Precision and accuracy measurements are well within the "norm" for soil samples.

Sensitivity as described by limit of detection was not affected by blank contaminants or the need for dilution. CRQLs were met in all cases, and no data were qualified for this reason. All samples were initially extracted and analyzed within holding time requirements. Several samples were re-extracted and re-analyzed past holding times. Re-analyzed data compared favorably with initial data. Therefore, no data were qualified for this reason, and initial data were used.

Positive detections for DDT and its breakdown products, DDE and DDD, were noted in several samples. Retention time matches for DDT, DDE and DDD were good, and several detections were confirmed by GC/MS. A few other sporatic detections for target pesticides were noted; however, retention time matches (although within 3/90 SOW criteria) were not as precise for these detections, indicating these may be false positives. Sample chromatograms were complicated by petroleum hydrocarbons, making identification by retention time difficult.

Further details of validation findings for pesticide/PCBs are provided in Appendix B.

Inorganics

A total of 151 samples were collected and analyzed for inorganics, including 123 investigative soil samples, 12 field duplicate soil samples, 13 rinseate blanks, and 3 drilling water samples.

Method control as described by calibration, continuing calibration, and linearity met 3/90 SOW criteria for 100 percent of the data. No data were qualified based on method control deficiencies.

Although many sample results are qualified (in accordance with 3/90 SOW criteria) by the laboratory because of variable laboratory duplicate and matrix spike results , precision and accuracy measurements are well within the "norm" for soil samples. Blind field duplicate results summarized in Table 3-12 indicate a relatively high level of precision. Some sample results for potassium, nickel, copper, cadmium, and chromium (near the CRDL) are qualified with J flags because of poor reproducibility of duplicate ICP injections.

Sensitivity as described by limit of detection was affected for several analytes because of laboratory contamination. Several samples in SDG NRP002 had low-level copper, barium, and/or arsenic detections which were qualified by U flags because of associated laboratory blank contamination. Several rinseate blanks had low-level iron detections. However, sample data at much higher concentrations were not affected.

Detection limits were raised for potassium for several sample delivery groups because of a reoccurring ICP stability problem for potassium. All samples were analyzed within prescribed holding times.

Further details of validation findings for inorganics are provided in Appendix B.

Total Organic Carbon

A total of 299 samples were collected and analyzed for total organic carbon, including 246 investigative soil samples, 25 field duplicate soil samples, 25 rinseate blanks, and 3 drilling water samples.

Calibration and continuing calibration method controls met 100 percent of the acceptance criteria for the TOC method. All samples were analyzed within prescribed holding times.

Although laboratory precision and accuracy measurements met method acceptance criteria, blind field duplicate results (see Table 3-13) indicate that all TOC data exhibited much higher variability than other target compounds. The laboratory had also encountered precision and accuracy problems and often reanalyzed samples (although only final results were reported) to meet the laboratory duplicate and matrix spike criteria as required by the method. The project team felt that the data would be suitable and would meet the needs of the data quality objective, which is for a general site-wide knowledge of the organic carbon effects on soil-water partitioning. For this reason data are not qualified.

AREA D
(SEE FIGURE 4-9 FOR
AREA D BORING LOCATIONS)

AREA B
(SEE FIGURE 4-8 FOR
AREA B BORING LOCATIONS)

AREA E
(SEE FIGURE 4-11 FOR
AREA E BORING LOCATIONS)

AREA A
(SEE FIGURE 4-3 FOR
AREA A BORING LOCATIONS)

AREA F
(SEE FIGURE 4-12 FOR
AREA F BORING LOCATIONS)

AREA B2
AREA B1
AREA A3
AREA A4
AREA A2
AREA A1
AREA F1
AREA F2
AREA E1
AREA E2

NIROP

EAST RIVER ROAD

MISSISSIPPI RIVER

FRIDLEY MUNICIPAL WELL 13

BG-01
BG-02
BG-03
BG-04
BG-05
BG-06
BG-07
BG-08
BG-09
BG-10

23-S
21-S
2-I
15-S
5-PC
1-I
10-D
3-PC
4-S
3-D
AT-1
22-S
9-S
14-D
5-I
1-D
14-S
20-S
10-I
5-D
7-S
12-D
8-S
3-I
3-S
FMC-33
2-PC
13-S
AT-4
16-S
11-D
1-PC
2-S
2-D
AT-5
14-I
17-D
9-D
19-S
AT-3
26-S
15-D
15-I
8-D
18-S
4-I
AT-2
24-S
6-D
11-S
10-S
6-S
4-D
1-PC
5-S
12-S
16-D
27-S
16-I
17-S
7-D
13-D
25-S

LEGEND

- EXISTING PAVED ROAD
- EXISTING UNPAVED ROAD
- EXISTING BUILDING
- EXISTING FENCE
- 800 — EXISTING 5' CONTOUR
- EXISTING 1' CONTOUR
- x 865.1 — EXISTING SPOT ELEVATION
- TREES AND / OR BRUSH
- EDGE OF WATER
- WET AREA
- ● 1-S — WATER TABLE OBSERVATION WELL IN UNCONSOLIDATED SEDIMENTS
- ● 1-I — INTERMEDIATE DEPTH PIEZOMETER IN UNCONSOLIDATED SEDIMENTS
- ● 1-D — DEEP PIEZOMETER IN UNCONSOLIDATED SEDIMENTS
- ● 1-PC — BEDROCK PIEZOMETER
- ● AT-1 — PRODUCTION WELL
- MUNICIPAL WELL
- BG-2 — BACKGROUND SOIL BORING COMPLETED DURING RI INVESTIGATION
- APPROXIMATE NIROP PROPERTY LINE
- APPROXIMATE FMC PROPERTY LINE
- APPROXIMATE BNR PROPERTY LINE
- APPROXIMATE BOUNDARY OF THE RI INVESTIGATED SUBSURFACE SOILS FOR AREAS A, B, D, E, AND F

SCALE: 1" = 200'
0 200 400 600 FEET

NO.	BY	DATE	REVISION	APP'D.
3.				
2.				
1.				

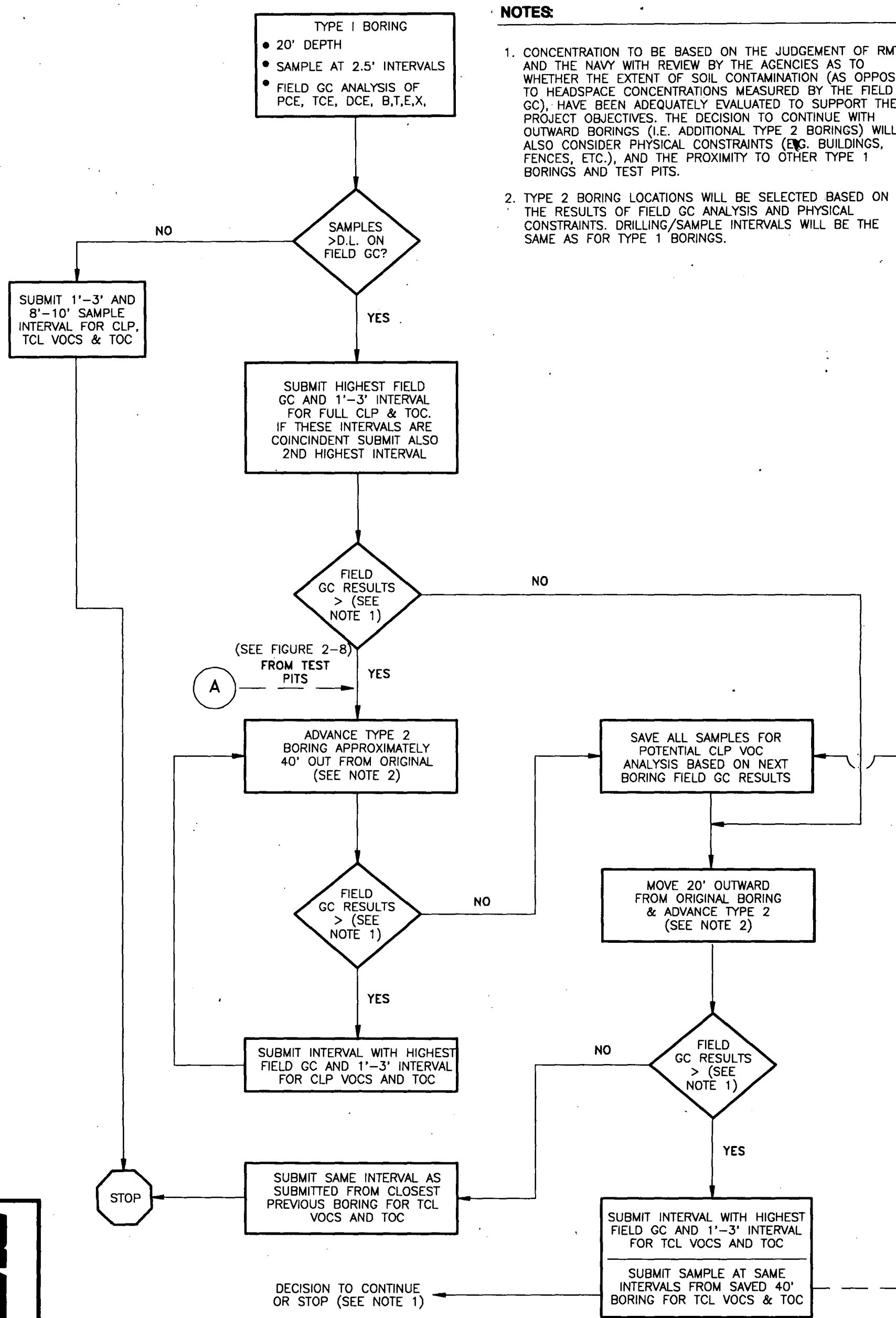
PROJECT :
REMEDIAL INVESTIGATION
NIROP - FRIDLEY, MINNESOTA

SHEET TITLE :
FACILITY MAP, AREAS OF INVESTIGATION
AND BACKGROUND SOIL BORING LOCATIONS

DRAWN BY: BLG
CHECKED BY: N. Koch
APPROVED BY: S. Kenyon
DATE : SEPTEMBER 1993
SCALE : 1"=200'
DATE PRINTED: SEP 23 1993
PROJ . NO . 2313.24
DRWG . NO .
SHEET FIGURE 3-1

RMT INC.
744 Heartland Trail
P.O. Box 8923
Madison, WI 53708
Phone: 608-831-4444

Drawing File = 313_24\23132412
Plot File = 23132412.PRF
??????cA



NOTES:

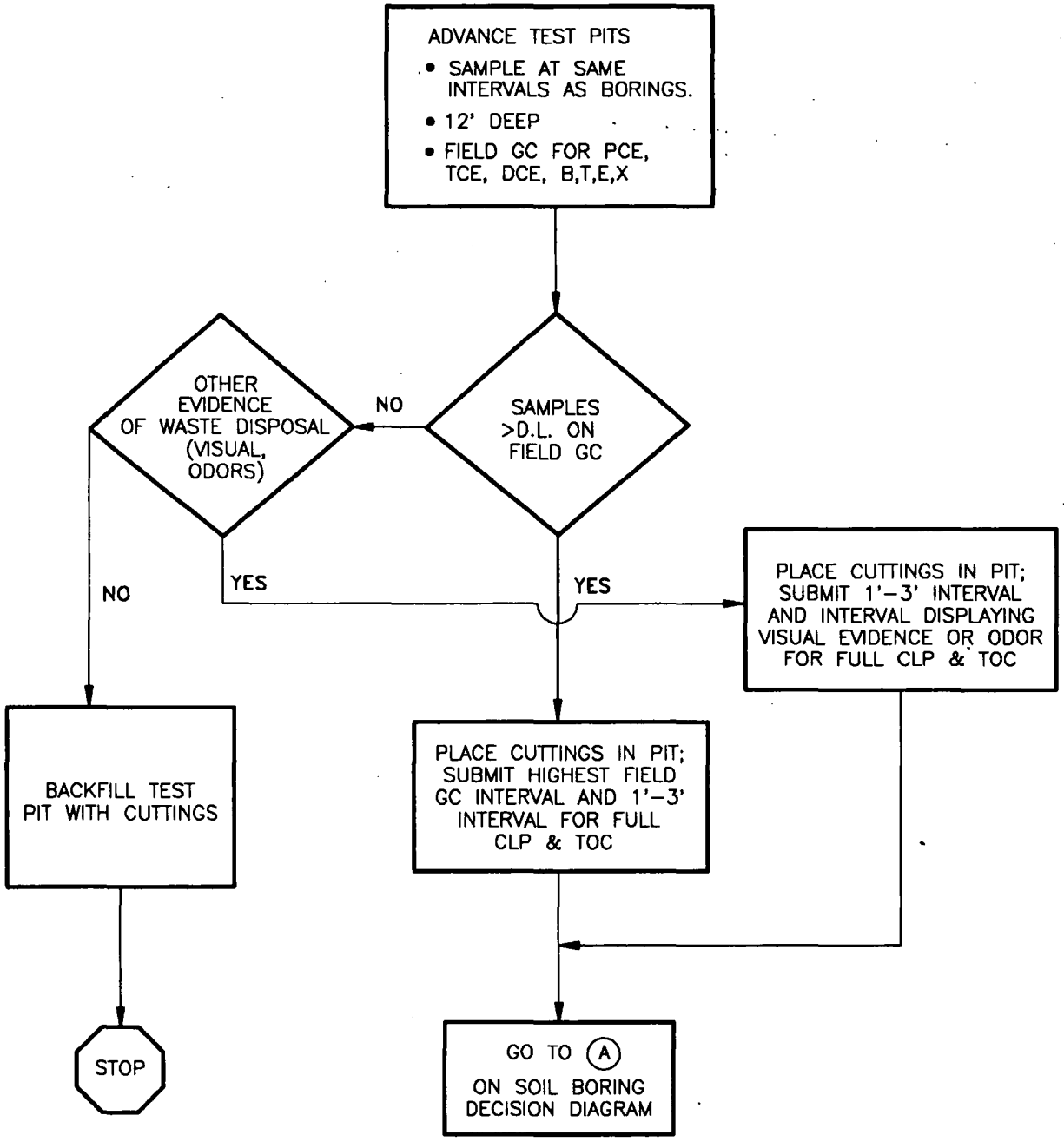
1. CONCENTRATION TO BE BASED ON THE JUDGEMENT OF RMT AND THE NAVY WITH REVIEW BY THE AGENCIES AS TO WHETHER THE EXTENT OF SOIL CONTAMINATION (AS OPPOSED TO HEADSPACE CONCENTRATIONS MEASURED BY THE FIELD GC), HAVE BEEN ADEQUATELY EVALUATED TO SUPPORT THE PROJECT OBJECTIVES. THE DECISION TO CONTINUE WITH OUTWARD BORINGS (I.E. ADDITIONAL TYPE 2 BORINGS) WILL ALSO CONSIDER PHYSICAL CONSTRAINTS (E.G. BUILDINGS, FENCES, ETC.), AND THE PROXIMITY TO OTHER TYPE 1 BORINGS AND TEST PITS.
2. TYPE 2 BORING LOCATIONS WILL BE SELECTED BASED ON THE RESULTS OF FIELD GC ANALYSIS AND PHYSICAL CONSTRAINTS. DRILLING/SAMPLE INTERVALS WILL BE THE SAME AS FOR TYPE 1 BORINGS.

DECISION DIAGRAM FOR SOIL BORING SAMPLING

RMT INC.

DWN. BY: BLG
APPROVED BY: J. Kark
DATE: SEPTEMBER 1993
PROJ.# 2313.24
FILE # 23132412

SEP 23 1993



DECISION DIAGRAM FOR TEST PIT SAMPLING

RMT INC.

DWN. BY:	BLG
APPROVED BY:	J. Koch
DATE:	SEPTEMBER 1993
PROJ.#	2313.24
FILE #	23132413

Drawing File = 13_24\23132413
Plot File = 32413.PRF
??????cA

SEP 23 1993

FIGURE 3-3

FIGURE 3-4

LABORATORY VS FIELD GC RESULTS FOR DCE

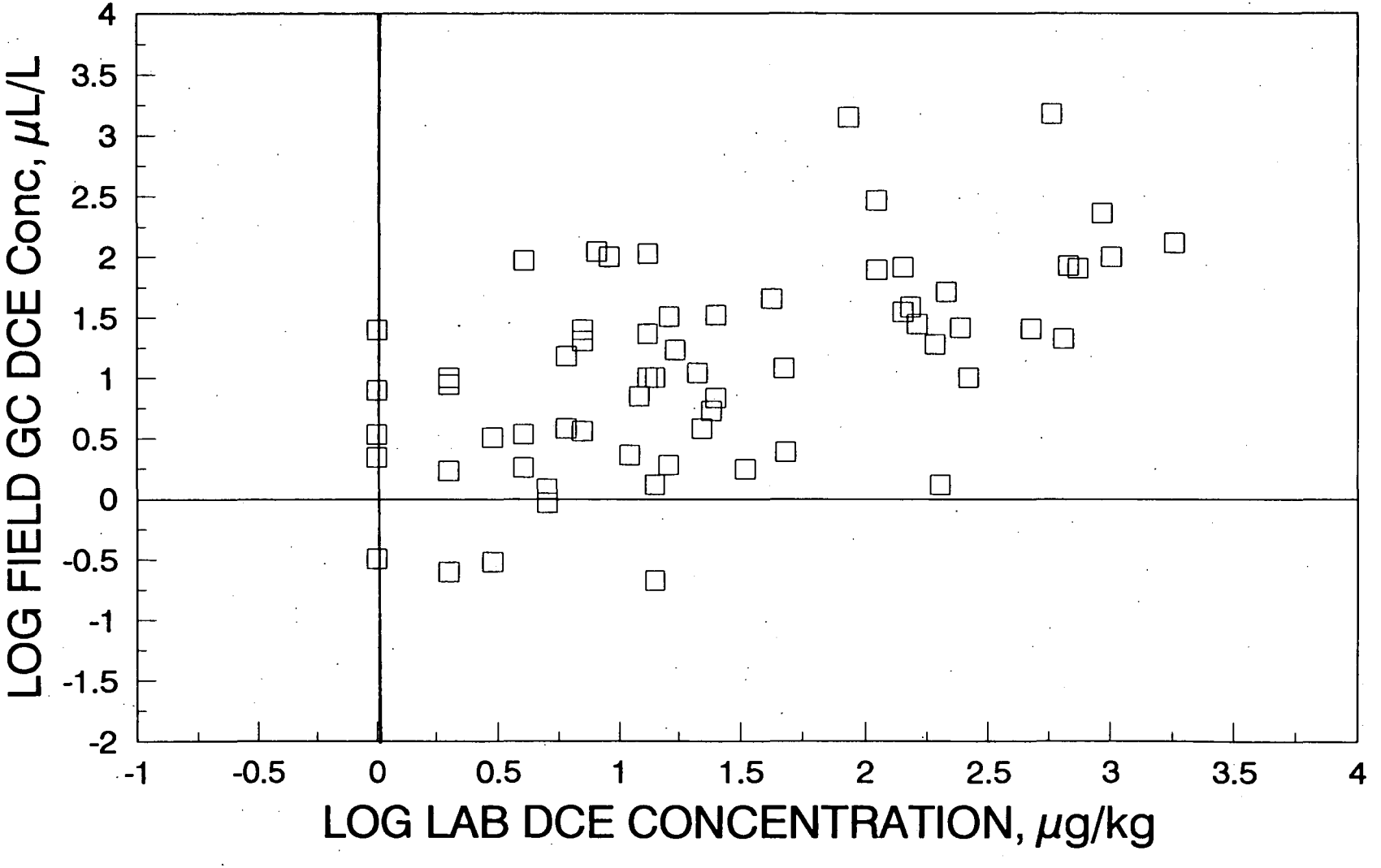


FIGURE 3-5

Laboratory VS Portable GC TCE Results

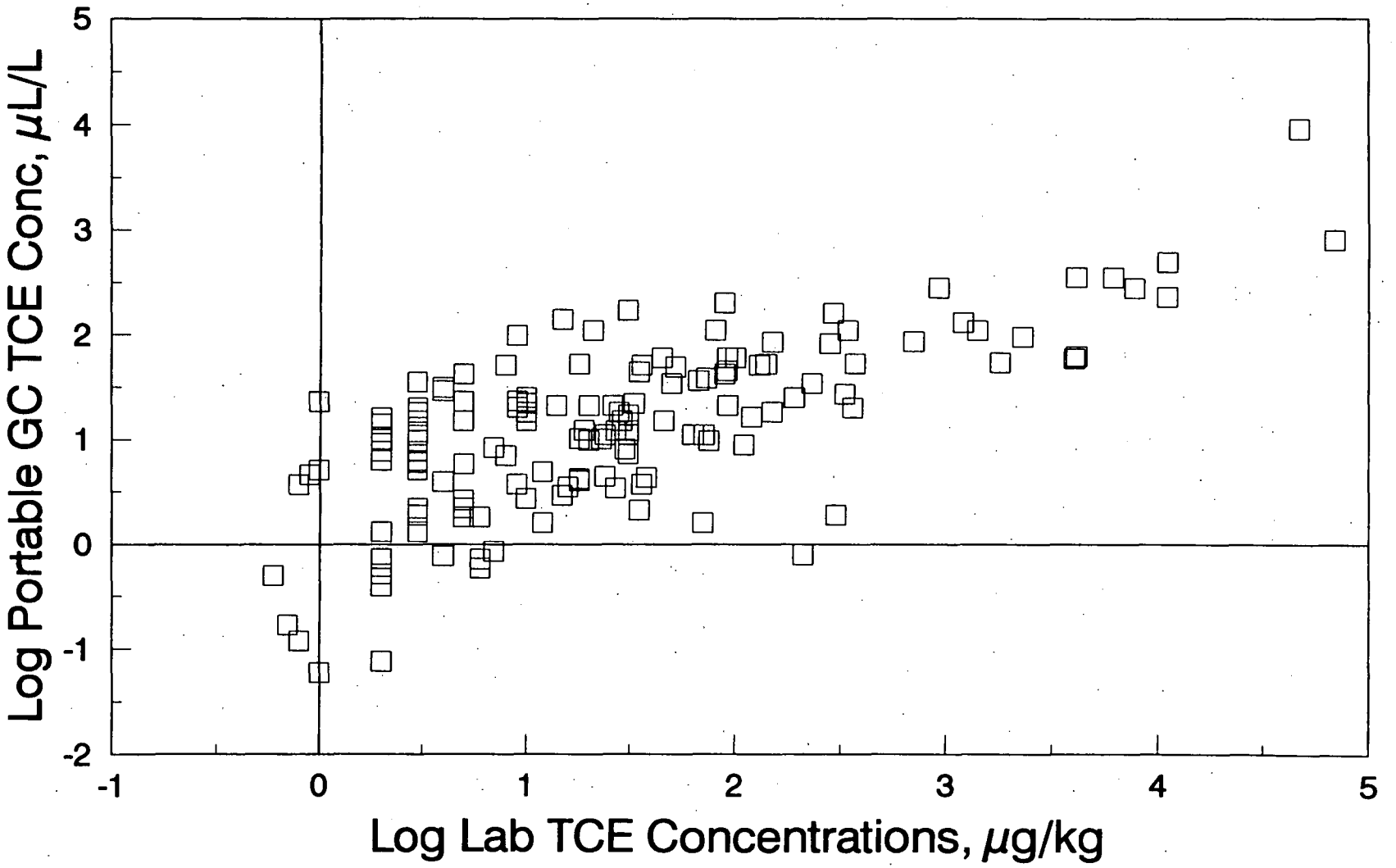


FIGURE 3-6

Laboratory VS Portable GC TOTAL VOC Conc

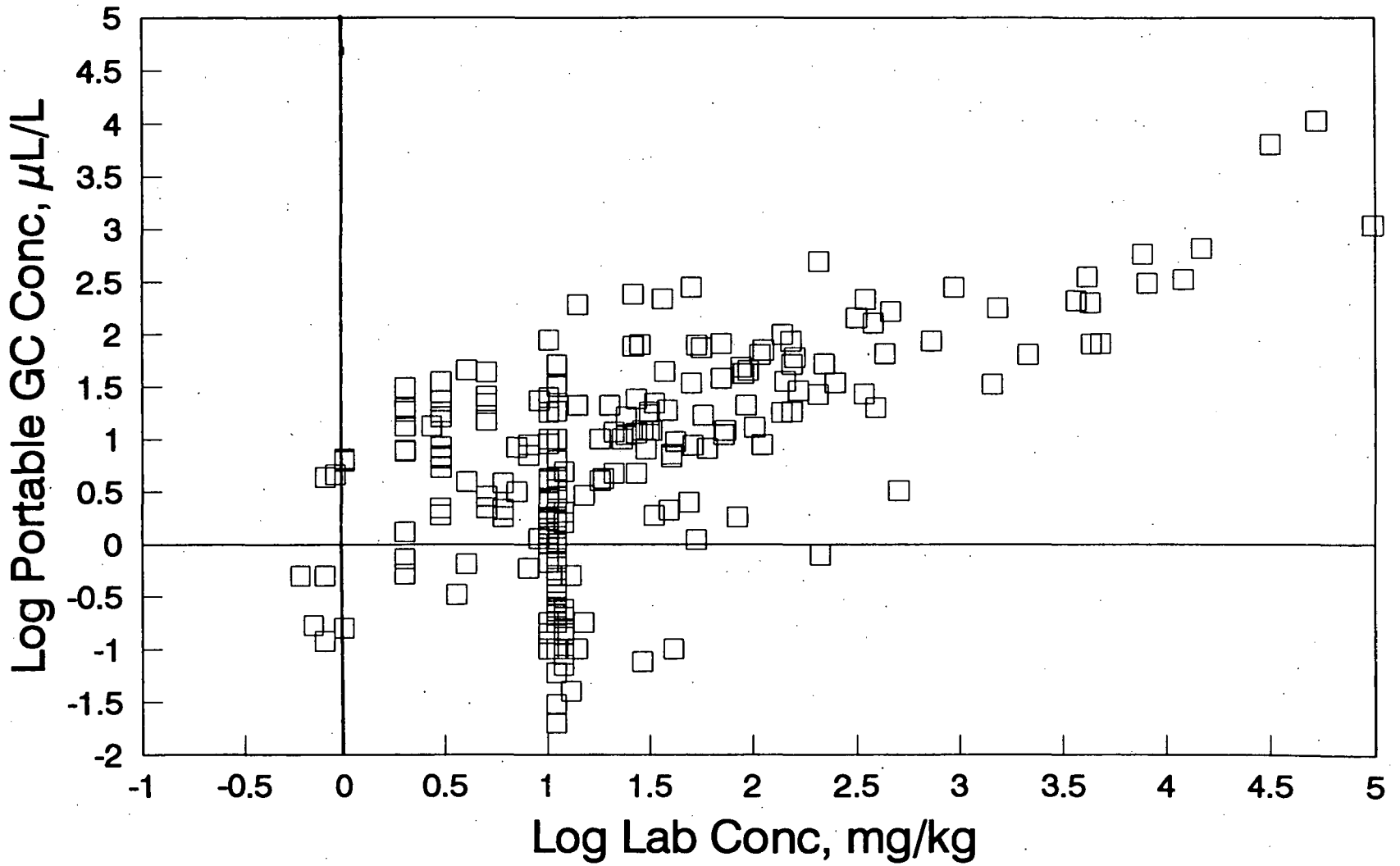


FIGURE 3-7

Laboratory TCE CONC. VS Lab/GC TCE Ratio

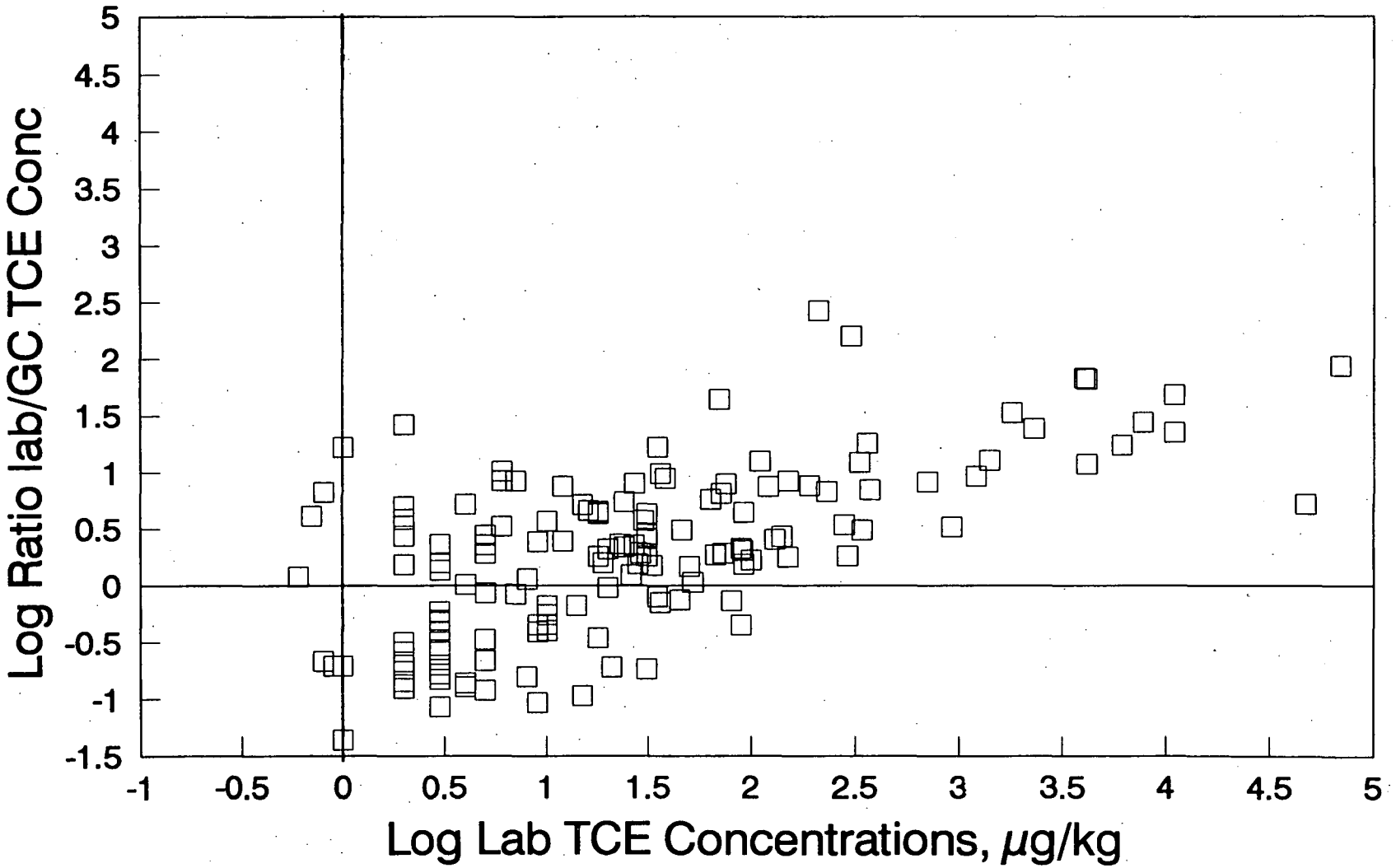


TABLE 3-1

CHLORINATED ETHYLENE LOSS FROM 120-mL BOTTLE TEST
DECEMBER 1992

Sample		Gas Concentration (µL/L)					
Bottle #	# Replicates	Vinyl Cl	1,1-DCE	t-1,2-DCE	c-1,2-DCE	TCE	PCE
Original Standard		**15.2**	**19.5**	**9.9**	**20.1**	**15.4**	**25.1**
Immediate	1	12.4	15.2	7.1	15.6	10.5	17.2
1 hr	3	8.9	12.4	5.7	10.9	8.4	12.9
24 hr	3	10.9	13.6	6.7	11.3	8.0	15.3
72 hr	3	8.7	10.6	5.0	9.1	6.6	10.2
Percent Remaining							
Original Standard		**100**	**100**	**100**	**100**	**100**	**100**
Immediate	1	82	78	72	78	68	69
1 hr	3	59	64	58	54	55	51
24 hr	3	72	70	68	56	52	61
72 hr	3	57	54	51	45	43	41

NOTES:

t-1,2-DCE trans-1,2-Dichloroethene
c-1,2-DCE cis-1,2-Dichloroethene
Vinyl Cl vinyl chloride
Samples were run with with a 10-µL injection volume at a gain of 20.

TABLE 3-2
COMPARISON OF PORTABLE GC AND LABORATORY RESULTS
DICHLOROETHENE

Data Used in Figure 3-4
(Non-detect results are not included in Table or Figure)

Sample ID	Field GC	Log Field GC	Laboratory	Log Lab
AT004B	1506.8	3.18	570	2.76
AB031G	1403.8	3.15	85	1.93
AB029H	290	2.46	110	2.04
AB028G	230	2.36	920	2.96
AB043D	130	2.11	1800	3.26
AB218H	110	2.04	8	0.90
AB212B	106	2.03	13	1.11
AT008D	100	2.00	1000	3.00
AB036H	100	2.00	9	0.95
AB037D	93	1.97	4	0.60
AB044D	84	1.92	670	2.83
AT007C	82.2	1.91	140	2.15
AB044H	80	1.90	730	2.86
AB204A	78	1.89	110	2.04
AB036A	51.3	1.71	210	2.32
AB043H	45	1.65	42	1.62
AB248C	38.4	1.58	150	2.18
AT004A	35	1.54	140	2.15
AT003B	33	1.52	25	1.40
AB208H	32	1.51	16	1.20
BB002B	27.8	1.44	160	2.20
AB214C	26	1.41	240	2.38
AB031A	25.4	1.40	470	2.67
AB237C	25	1.40	7	0.85
AT005C	25	1.40	1	0.00

TABLE 3-2 (Continued)
COMPARISON OF PORTABLE GC AND LABORATORY RESULTS
DICHLOROETHENE

Data Used in Figure 3-4
(Non-detect results are not included in Table or Figure)

Sample ID	Field GC	Log Field GC	Laboratory	Log Lab
AB035A	23	1.36	13	1.11
AB251C	21	1.32	640	2.81
AB204B	20	1.30	7	0.85
AB254A	19	1.28	190	2.28
AB242B	17	1.23	17	1.23
AB026G	15	1.18	6	0.78
AB254C	12	1.08	47	1.67
AB243A	11	1.04	21	1.32
AB253H	10	1.00	260	2.41
AB241A	10	1.00	14	1.15
AB248A	10	1.00	13	1.11
AB210D	10	1.00	2	0.30
AT008A	8.8	0.94	2	0.30
AB211B	7.9	0.90	1	0.00
AB242A	7	0.85	12	1.08
AB026A	6.79	0.83	25	1.40
AT007A	5.32	0.73	24	1.38
AT003A	3.8	0.58	22	1.34
AB209B	3.8	0.58	6	0.78
AB214A	3.6	0.56	7	0.85
AB030A	3.42	0.53	4	0.60
AB240H	3.4	0.53	1	0.00
AB239G	3.2	0.51	3	0.48
AB210A	2.44	0.39	48	1.68
AT001A	2.3	0.36	11	1.04

TABLE 3-2 (Continued)
COMPARISON OF PORTABLE GC AND LABORATORY RESULTS
DICHLOROETHENE

Data Used in Figure 3-4
(Non-detect results are not included in Table or Figure)

Sample ID	Field GC	Log Field GC	Laboratory	Log Lab
AT005A	2.2	0.34	1	0.00
AB211A	1.9	0.28	16	1.20
EB004A	1.8	0.26	4	0.60
EB208F	1.76	0.25	33	1.52
AB252A	1.7	0.23	2	0.30
AB033B	1.3	0.11	200	2.30
AB029A	1.3	0.11	14	1.15
AB237A	1.2	0.08	5	0.70
AB239A	0.92	-0.04	5	0.70
AB251A	0.32	-0.49	1	0.00
AB218A	0.3	-0.52	3	0.48
AB212A	0.25	-0.60	2	0.30
AB208A	0.21	-0.68	14	1.15

TABLE 3-3
COMPARISON OF PORTABLE GC AND LABORATORY RESULTS
TRICHLOROETHENE

Data in Table Used in Figure 3-5
(Non-detect results are not included in Table or Figure)

Sample ID	Field GC	Log Field GC	Laboratory	Log Lab
AB024A	0.10	-1.00	11.00	1.04
AB024G	4.30	0.63	11.00	1.04
AB025A	280.00	2.45	920.00	2.96
AB025B	350.00	2.54	4100.00	3.61
AB026A	0.20	-0.70	15.00	1.18
AB026G	60.00	1.78	45.00	1.65
AB027A	34.00	1.53	50.00	1.70
AB027H	42.00	1.62	5.00	0.70
AB028A	10.00	1.00	18.00	1.26
AB028G	350.00	2.54	6100.00	3.79
AB029A	25.00	1.40	190.00	2.28
AB029H	200.00	2.30	89.00	1.95
AB030A	3.70	0.57	36.00	1.56
AB030G	16.00	1.20	2.00	0.30
AB031A	1.20	0.08	9.00	0.95
AB031G	4.00	0.60	2.00	0.30
AB032A	18.00	1.26	150.00	2.18
AB032D	6.30	0.80	2.00	0.30
AB033B	1.90	0.28	300.00	2.48
AB033H	14.00	1.15	2.00	0.30
AB034A	11.00	1.04	24.00	1.38
AB034D	23.00	1.36	5.00	0.70
AB035A	51.00	1.71	36.00	1.56
AB036A	0.80	-0.10	8.00	0.90
AB036H	140.00	2.15	15.00	1.18

TABLE 3-3 (Continued)
COMPARISON OF PORTABLE GC AND LABORATORY RESULTS
TRICHLOROETHENE

Data in Table Used in Figure 3-5
(Non-detect results are not included in Table or Figure)

Sample ID	Field GC	Log Field GC	Laboratory	Log Lab
AB037A	0.10	-1.00	0.80	-0.10
AB037D	97.00	1.99	9.00	0.95
AB038A	3.90	0.59	4.00	0.60
AB038G	20.00	1.30	9.00	0.95
AB039A	0.08	-1.12	2.00	0.30
AB039H	0.50	-0.30	0.60	-0.22
AB040A	0.02	-1.70	11.00	1.04
AB040D	0.02	-1.70	10.00	1.00
AB041A	0.04	-1.40	12.00	1.08
AB041C	2.00	0.30	11.00	1.04
AB042A	0.02	-1.70	11.00	1.04
AB042G	0.20	-0.70	10.00	1.00
AB043D	800.00	2.90	69000.00	4.84
AB043H	110.00	2.04	1400.00	3.15
AB044D	490.00	2.69	11000.00	4.04
AB044H	95.00	1.98	2300.00	3.36
AB201A	0.02	-1.70	11.00	1.04
AB201H	1.80	0.26	10.00	1.00
AB202A	4.60	0.66	0.90	-0.05
AB202B	20.00	1.30	360.00	2.56
AB203A	2.00	0.30	11.00	1.04
AB203B	9.60	0.98	20.00	1.30
AB204A	21.00	1.32	26.00	1.41
AB204B	31.00	1.49	4.00	0.60
AB205A	12.00	1.08	31.00	1.49

TABLE 3-3 (Continued)
COMPARISON OF PORTABLE GC AND LABORATORY RESULTS
TRICHLOROETHENE

Data in Table Used in Figure 3-5
(Non-detect results are not included in Table or Figure)

Sample ID	Field GC	Log Field GC	Laboratory	Log Lab
AB205G	34.00	1.53	230.00	2.36
AB206A	7.70	0.89	2.00	0.30
AB206B	27.00	1.43	330.00	2.52
AB207A	2.90	0.46	15.00	1.18
AB207H	6.30	0.80	3.00	0.48
AB208A	1.60	0.20	70.00	1.85
AB208H	49.00	1.69	52.00	1.72
AB209A	0.12	-0.92	0.80	-0.10
AB209B	15.00	1.18	29.00	1.46
AB210A	0.06	-1.22	1.00	0.00
AB210D	11.00	1.04	3.00	0.48
AB211A	16.00	1.20	120.00	2.08
AB211B	23.00	1.36	1.00	0.00
AB212A	0.40	-0.40	2.00	0.30
AB212B	110.00	2.04	21.00	1.32
AB213A	2.10	0.32	35.00	1.54
AB213B	51.00	1.71	130.00	2.11
AB214A	60.00	1.78	100.00	2.00
AB214C	280.00	2.45	7700.00	3.89
AB215A	1.60	0.20	12.00	1.08
AB215H	15.00	1.18	5.00	0.70
AB216A	8.00	0.90	30.00	1.48
AB216D	21.00	1.32	92.00	1.96
AB217A	45.00	1.65	91.00	1.96
AB217D	86.00	1.93	700.00	2.85

TABLE 3-3 (Continued)
COMPARISON OF PORTABLE GC AND LABORATORY RESULTS
TRICHLOROETHENE

Data in Table Used in Figure 3-5
(Non-detect results are not included in Table or Figure)

Sample ID	Field GC	Log Field GC	Laboratory	Log Lab
AB218A	4.40	0.64	24.00	1.38
AB218H	170.00	2.23	31.00	1.49
AB219A	0.65	-0.19	11.00	1.04
AB219F	1.80	0.26	11.00	1.04
AB220A	18.00	1.26	28.00	1.45
AB220G	15.00	1.18	3.00	0.48
AB221A	0.02	-1.70	12.00	1.08
AB221G	3.70	0.57	0.80	-0.10
AB222A	9.60	0.98	75.00	1.88
AB222C	5.80	0.76	5.00	0.70
AB223A	42.00	1.62	89.00	1.95
AB223C	85.00	1.93	150.00	2.18
AB224A	0.37	-0.43	11.00	1.04
AB224H	6.20	0.79	10.00	1.00
AB226B	0.73	-0.14	2.00	0.30
AB226G	3.70	0.57	10.00	1.00
AB227A	4.90	0.69	12.00	1.08
AB227A DUP	4.20	0.62	18.00	1.26
AB227G	8.30	0.92	10.00	1.00
AB228A	2.60	0.41	5.00	0.70
AB228F	35.00	1.54	3.00	0.48
AB229A	8.80	0.94	110.00	2.04
AB229H	6.00	0.78	3.00	0.48
AB230A	2.00	0.30	11.00	1.04
AB230B	1.30	0.11	2.00	0.30

TABLE 3-3 (Continued)
COMPARISON OF PORTABLE GC AND LABORATORY RESULTS
TRICHLOROETHENE

Data in Table Used in Figure 3-5
(Non-detect results are not included in Table or Figure)

Sample ID	Field GC	Log Field GC	Laboratory	Log Lab
AB231A	4.00	0.60	18.00	1.26
AB231H	8.30	0.92	7.00	0.85
AB233A	22.00	1.34	33.00	1.52
AB233H	25.00	1.40	10.00	1.00
AB234A	2.20	0.34	3.00	0.48
AB234D	1.90	0.28	3.00	0.48
AB235A	2.70	0.43	10.00	1.00
AB235H	11.00	1.04	71.00	1.85
AB236A	10.00	1.00	23.00	1.36
AB236H	21.00	1.32	14.00	1.15
AB237A	3.50	0.54	16.00	1.20
AB237C	52.00	1.72	18.00	1.26
AB238A	0.17	-0.77	11.00	1.04
AB238H	10.00	1.00	2.00	0.30
AB239A	0.72	-0.14	6.00	0.78
AB239G	12.00	1.08	19.00	1.28
AB240A	5.10	0.71	3.00	0.48
AB240H	15.00	1.18	10.00	1.00
AB241A	38.00	1.58	73.00	1.86
AB241C	64.00	1.81	10.00	1.00
AB242A	52.00	1.72	140.00	2.15
AB242B	110.00	2.04	340.00	2.53
AB243A	0.58	-0.24	11.00	1.04
AB243B	110.00	2.04	80.00	1.90
AB244A	0.21	-0.68	11.00	1.04

TABLE 3-3 (Continued)
COMPARISON OF PORTABLE GC AND LABORATORY RESULTS
TRICHLOROETHENE

Data in Table Used in Figure 3-5
(Non-detect results are not included in Table or Figure)

Sample ID	Field GC	Log Field GC	Laboratory	Log Lab
AB244H	29.00	1.46	4.00	0.60
AB245A	0.04	-1.40	13.00	1.11
AB245G	5.10	0.71	1.00	0.00
AB246A	1.80	0.26	6.00	0.78
AB246B	11.00	1.04	31.00	1.49
AB247A	0.79	-0.10	210.00	2.32
AB247C	21.00	1.32	20.00	1.30
AB248A	60.00	1.78	92.00	1.96
AB248C	130.00	2.11	1200.00	3.08
AB251A	1.80	0.26	5.00	0.70
AB251C	59.00	1.77	4000.00	3.60
AB252A	36.00	1.56	67.00	1.83
AB252H	20.00	1.30	3.00	0.48
AB253A	0.19	-0.72	11.00	1.04
AB253H	54.00	1.73	1800.00	3.26
AB254A	62.00	1.79	4100.00	3.61
AB254C	53.00	1.72	370.00	2.57
AT001A	7.20	0.86	31.00	1.49
AT001C	7.70	0.89	3.00	0.48
AT002A	18.00	1.26	10.00	1.00
AT002B	44.00	1.64	35.00	1.54
AT003A	4.30	0.63	38.00	1.58
AT003B	160.00	2.20	290.00	2.46
AT004A	0.80	-0.10	1.00	0.00
AT004B	9000.00	3.95	47000.00	4.67

TABLE 3-3 (Continued)
COMPARISON OF PORTABLE GC AND LABORATORY RESULTS
TRICHLOROETHENE

Data in Table Used in Figure 3-5
(Non-detect results are not included in Table or Figure)

Sample ID	Field GC	Log Field GC	Laboratory	Log Lab
AT005A	22.00	1.34	10.00	1.00
AT005C	51.00	1.71	8.00	0.90
AT006A	2.20	0.34	5.00	0.70
AT006B	31.00	1.49	11.00	1.04
AT007A	3.40	0.53	27.00	1.43
AT007C	82.00	1.91	280.00	2.45
AT008A	23.00	1.36	9.00	0.95
AT008D	230.00	2.36	11000.00	4.04
BB001A	0.20	-0.70	11.00	1.04
BB001B	0.67	-0.17	11.00	1.04
BB002B	0.77	-0.11	4.00	0.60
BB002G	0.13	-0.89	10.00	1.00
BB003A	0.02	-1.70	11.00	1.04
BB003D	0.02	-1.70	12.00	1.08
BB202B	0.02	-1.70	12.00	1.08
BB204A	0.02	-1.70	11.00	1.04
BB204G	0.02	-1.70	27.00	1.43
BB205A	0.07	-1.15	12.00	1.08
BB205G	0.02	-1.70	11.00	1.04
BB206A	0.02	-1.70	14.00	1.15
BB206G	0.02	-1.70	11.00	1.04
BT001A	0.07	-1.15	11.00	1.04
BT001B	0.02	-1.70	11.00	1.04
BT002A	0.02	-1.70	12.00	1.08
BT002B	0.02	-1.70	15.00	1.18

TABLE 3-3 (Continued)
COMPARISON OF PORTABLE GC AND LABORATORY RESULTS
TRICHLOROETHENE

Data in Table Used in Figure 3-5
(Non-detect results are not included in Table or Figure)

Sample ID	Field GC	Log Field GC	Laboratory	Log Lab
BT003A	0.02	-1.70	11.00	1.04
BT003D	0.02	-1.70	10.00	1.00
BT004A	0.02	-1.70	11.00	1.04
BT004D	0.11	-0.96	11.00	1.04
DB029A	3.70	0.57	9.00	0.95
DB029E	0.18	-0.74	10.00	1.00
DB030A	0.02	-1.70	11.00	1.04
DB030E	0.80	-0.10	10.00	1.00
DB031A	0.18	-0.74	11.00	1.04
DB032A	0.10	-1.00	11.00	1.04
DB032C	0.33	-0.48	11.00	1.04
DB033A	0.02	-1.70	12.00	1.08
DB033E	15.00	1.18	46.00	1.66
DB034A	0.85	-0.07	7.00	0.85
DB034C	11.00	1.04	63.00	1.80
EB001A	1.10	0.04	53.00	1.72
EB001E	18.00	1.26	3.00	0.48
EB002A	0.25	-0.60	11.00	1.04
EB002D	1.30	0.11	2.00	0.30
EB003A	0.05	-1.30	11.00	1.04
EB003F	10.00	1.00	2.00	0.30
EB004A	1.30	0.11	3.00	0.48
EB004D	0.07	-1.17	0.60	-0.22
EB203A	17.00	1.23	31.00	1.49
EB203B	12.00	1.08	27.00	1.43

TABLE 3-3 (Continued)
COMPARISON OF PORTABLE GC AND LABORATORY RESULTS
TRICHLOROETHENE

Data in Table Used in Figure 3-5
(Non-detect results are not included in Table or Figure)

Sample ID	Field GC	Log Field GC	Laboratory	Log Lab
EB206A	7.00	0.85	8.00	0.90
EB206E	1.40	0.15	10.00	1.00
EB207A	0.59	-0.23	6.00	0.78
EB207F	1.20	0.08	10.00	1.00
EB208A	0.14	-0.85	12.00	1.08
EB208F	0.11	-0.96	12.00	1.08
EB209A	0.17	-0.77	0.70	-0.15
EB209B	0.52	-0.28	2.00	0.30
EB210A	0.03	-1.52	11.00	1.04
EB210E	0.14	-0.85	10.00	1.00
FB001A	0.10	-1.00	13.00	1.11
FB001E	0.33	-0.48	10.00	1.00
FB002A	0.20	-0.70	11.00	1.04
FB002H	0.50	-0.30	10.00	1.00
FB003A	0.40	-0.40	12.00	1.08
FB003E	0.40	-0.40	11.00	1.04
FB004A	0.04	-1.40	11.00	1.04
FB004G	2.00	0.30	10.00	1.00

TABLE 3-4
COMPARISON OF PORTABLE GC AND LABORATORY RESULTS
TOTAL VOCs

Data Used in Figure 3-6
(Non-detect results are not included in Table or Figure)

Sample ID	Field GC	Log Field GC	Laboratory	Log Lab
AB024A	0.5	-0.30	11	1.04
AB024G	4.3	0.63	11	1.04
AB025A	280	2.45	920	2.96
AB025B	350	2.54	4100	3.61
AB026A	6.79	0.83	40	1.60
AB026G	78.2	1.89	53	1.72
AB027A	34	1.53	50	1.70
AB027H	43.6	1.64	5	0.70
AB028A	10	1.00	18	1.26
AB028G	580	2.76	7630	3.88
AB029A	26.3	1.42	204	2.31
AB029H	490	2.69	205	2.31
AB030A	7.12	0.85	40	1.60
AB030G	18.5	1.27	2	0.30
AB031A	33.3	1.52	1419	3.15
AB031G	6303.8	3.80	31588	4.50
AB032A	18	1.26	152	2.18
AB032D	7.8	0.89	2	0.30
AB033B	3.2	0.51	500	2.70
AB033H	19.6	1.29	2	0.30
AB034A	11	1.04	24	1.38
AB034D	25.4	1.40	5	0.70
AB035A	74	1.87	56	1.75
AB036A	51.3	1.71	218	2.34
AB036H	240	2.38	26	1.41

TABLE 3-4 (Continued)
COMPARISON OF PORTABLE GC AND LABORATORY RESULTS
TOTAL VOCs

Data Used in Figure 3-6
(Non-detect results are not included in Table or Figure)

Sample ID	Field GC	Log Field GC	Laboratory	Log Lab
AB037A	0.5	-0.30	0.8	-0.10
AB037D	190	2.28	14	1.15
AB038A	3.9	0.59	4	0.60
AB038G	23.2	1.37	9	0.95
AB039A	0.076	-1.12	29	1.46
AB039H	0.5	-0.30	0.6	-0.22
AB040A	0.1	-1.00	10	1.00
AB040D	0.1	-1.00	10	1.00
AB041A	0.2	-0.70	12	1.08
AB041C	10	1.00	11	1.04
AB042A	0.1	-1.00	11	1.04
AB042G	1	0.00	10	1.00
AB043D	1080	3.03	97200	4.99
AB043H	199	2.30	4242	3.63
AB044D	655	2.82	14723	4.17
AB044H	209	2.32	3620	3.56
AB201A	0.02	-1.70	11	1.04
AB201H	1.8	0.26	10	1.00
AB202A	4.6	0.66	0.9	-0.05
AB202B	20	1.30	387	2.59
AB203A	2.63	0.42	11	1.04
AB203B	11.4	1.06	27	1.43
AB204A	99	2.00	137	2.14
AB204B	51	1.71	11	1.04
AB205A	12	1.08	32	1.51

TABLE 3-4 (Continued)
COMPARISON OF PORTABLE GC AND LABORATORY RESULTS
TOTAL VOCs

Data Used in Figure 3-6
(Non-detect results are not included in Table or Figure)

Sample ID	Field GC	Log Field GC	Laboratory	Log Lab
AB205G	34	1.53	247	2.39
AB206A	7.7	0.89	2	0.30
AB206B	27	1.43	339	2.53
AB207A	2.9	0.46	15	1.18
AB207H	6.92	0.84	3	0.48
AB208A	1.81	0.26	84	1.92
AB208H	81	1.91	70	1.85
AB209A	0.12	-0.92	0.8	-0.10
AB209B	18.8	1.27	38	1.58
AB210A	2.5	0.40	49	1.69
AB210D	21.56	1.33	5	0.70
AB211A	17.9	1.25	136	2.13
AB211B	30.9	1.49	2	0.30
AB212A	0.65	-0.19	4	0.60
AB212B	216	2.33	36	1.56
AB213A	2.1	0.32	39	1.59
AB213B	51	1.71	152	2.18
AB214A	63.6	1.80	107	2.03
AB214C	306	2.49	8060	3.91
AB215A	1.6	0.20	12	1.08
AB215H	15	1.18	5	0.70
AB216A	8	0.90	30	1.48
AB216D	21	1.32	92	1.96
AB217A	45	1.65	94	1.97
AB217D	86	1.93	716	2.85

TABLE 3-4 (Continued)
COMPARISON OF PORTABLE GC AND LABORATORY RESULTS
TOTAL VOCs

Data Used in Figure 3-6
(Non-detect results are not included in Table or Figure)

Sample ID	Field GC	Log Field GC	Laboratory	Log Lab
AB218A	4.7	0.67	27	1.43
AB218H	280	2.45	50	1.70
AB219A	0.73	-0.14	11	1.04
AB219F	1.8	0.26	11	1.04
AB220A	18	1.26	31	1.49
AB220G	16.3	1.21	3	0.48
AB221A	0.09	-1.05	12	1.08
AB221G	4.33	0.64	0.8	-0.10
AB222A	12.9	1.11	101	2.00
AB222C	8.8	0.94	8	0.90
AB223A	42	1.62	89	1.95
AB223C	85	1.93	150.7	2.18
AB224A	0.37	-0.43	11	1.04
AB224H	6.2	0.79	11	1.04
AB226B	0.73	-0.14	2	0.30
AB226G	4.22	0.63	10	1.00
AB227A	4.9	0.69	12	1.08
AB227A DUP	4.2	0.62	18.6	1.27
AB227G	8.97	0.95	10	1.00
AB228A	2.83	0.45	5	0.70
AB228F	35	1.54	3	0.48
AB229A	8.8	0.94	110	2.04
AB229H	6.57	0.82	3	0.48
AB230A	6.5	0.81	1	0.00
AB230B	3.8	0.58	6	0.78

TABLE 3-4 (Continued)
COMPARISON OF PORTABLE GC AND LABORATORY RESULTS
TOTAL VOCs

Data Used in Figure 3-6
(Non-detect results are not included in Table or Figure)

Sample ID	Field GC	Log Field GC	Laboratory	Log Lab
AB231A	4	0.60	18	1.26
AB231H	8.3	0.92	7	0.85
AB233A	22	1.34	33	1.52
AB233H	25	1.40	10	1.00
AB234A	2.2	0.34	3	0.48
AB234D	1.9	0.28	3	0.48
AB235A	2.7	0.43	10	1.00
AB235H	11	1.04	72	1.86
AB236A	10	1.00	23	1.36
AB236H	21	1.32	14	1.15
AB237A	4.7	0.67	21	1.32
AB237C	79.3	1.90	28	1.45
AB238A	0.23	-0.64	11	1.04
AB238H	13.35	1.13	2	0.30
AB239A	1.64	0.21	11	1.04
AB239G	16.2	1.21	24	1.38
AB240A	5.37	0.73	3	0.48
AB240H	18.4	1.26	11	1.04
AB241A	48	1.68	87	1.94
AB241C	88	1.94	10	1.00
AB242A	59	1.77	157	2.20
AB242B	127	2.10	374	2.57
AB243A	11.58	1.06	21	1.32
AB243B	142	2.15	312	2.49
AB244A	0.21	-0.68	11	1.04

TABLE 3-4 (Continued)
COMPARISON OF PORTABLE GC AND LABORATORY RESULTS
TOTAL VOCs

Data Used in Figure 3-6
(Non-detect results are not included in Table or Figure)

Sample ID	Field GC	Log Field GC	Laboratory	Log Lab
AB244H	45.6	1.66	4	0.60
AB245A	0.04	-1.40	13	1.11
AB245G	6.2	0.79	1	0.00
AB246A	1.8	0.26	6	0.78
AB246B	12	1.08	31	1.49
AB247A	0.79	-0.10	210	2.32
AB247C	21	1.32	20	1.30
AB248A	70	1.85	111	2.05
AB248C	178.1	2.25	1510	3.18
AB251A	2.12	0.33	6	0.78
AB251C	82.2	1.91	4780	3.68
AB252A	37.7	1.58	69.8	1.84
AB252H	23.1	1.36	3	0.48
AB253A	0.28	-0.55	11	1.04
AB253H	64	1.81	2122	3.33
AB254A	81	1.91	4303	3.63
AB254C	65	1.81	426	2.63
AT001A	9.5	0.98	42	1.62
AT001C	8.44	0.93	3	0.48
AT002A	18	1.26	10	1.00
AT002B	44	1.64	37	1.57
AT003A	8.1	0.91	60	1.78
AT003B	213	2.33	343	2.54
AT004A	35	1.54	141	2.15
AT004B	10520.8	4.02	52362	4.72

TABLE 3-4 (Continued)
COMPARISON OF PORTABLE GC AND LABORATORY RESULTS
TOTAL VOCs

Data Used in Figure 3-6
(Non-detect results are not included in Table or Figure)

Sample ID	Field GC	Log Field GC	Laboratory	Log Lab
AT005A	24.2	1.38	27	1.43
AT005C	76	1.88	26	1.41
AT006A	2.2	0.34	5	0.70
AT006B	33.5	1.53	11	1.04
AT007A	8.72	0.94	51	1.71
AT007C	164.2	2.22	455	2.66
AT008A	31.8	1.50	11	1.04
AT008D	330	2.52	12001	4.08
BB001A	1	0.00	11	1.04
BB001B	3.3	0.52	11	1.04
BB002B	28.57	1.46	164	2.21
BB002G	0.67	-0.17	10	1.00
BB003A	0.1	-1.00	11	1.04
BB003D	0.24	-0.62	12	1.08
BB202B	0.15	-0.82	12	1.08
BB204A	0.1	-1.00	11	1.04
BB204G	0.1	-1.00	41	1.61
BB205A	0.07	-1.15	12	1.08
BB205G	0.1	-1.00	11	1.04
BB206A	0.1	-1.00	14	1.15
BB206G	0.1	-1.00	11	1.04
BT001A	0.1	-1.00	11	1.04
BT001B	0.06	-1.22	11	1.04
BT002A	0.1	-1.00	12	1.08
BT002B	0.18	-0.74	15	1.18

TABLE 3-4 (Continued)
COMPARISON OF PORTABLE GC AND LABORATORY RESULTS
TOTAL VOCs

Data Used in Figure 3-6
(Non-detect results are not included in Table or Figure)

Sample ID	Field GC	Log Field GC	Laboratory	Log Lab
BT003A	0.1	-1.00	11	1.04
BT003D	0.1	-1.00	10	1.00
BT004A	0.1	-1.00	11	1.04
BT004D	0.68	-0.17	11	1.04
DB029A	4.33	0.64	11	1.04
DB029E	0.18	-0.74	10	1.00
DB030A	0.1	-1.00	11	1.04
DB030E	4	0.60	10	1.00
DB031A	0.18	-0.74	11	1.04
DB032A	0.5	-0.30	11	1.04
DB032C	0.33	-0.48	11	1.04
DB033A	0.16	-0.80	1	0.00
DB033E	16.8	1.23	57	1.76
DB034A	1.12	0.05	9	0.95
DB034C	11.97	1.08	73	1.86
EB001A	1.1	0.04	53	1.72
EB001E	18	1.26	3	0.48
EB002A	0.25	-0.60	11	1.04
EB002D	1.3	0.11	2	0.30
EB003A	0.25	-0.60	11	1.04
EB003F	13.4	1.13	2.7	0.43
EB004A	3.1	0.49	7	0.85
EB004D	0.33	-0.48	3.6	0.56
EB203A	17	1.23	31	1.49
EB203B	12	1.08	29	1.46

TABLE 3-4 (Continued)
COMPARISON OF PORTABLE GC AND LABORATORY RESULTS
TOTAL VOCs

Data Used in Figure 3-6
(Non-detect results are not included in Table or Figure)

Sample ID	Field GC	Log Field GC	Laboratory	Log Lab
EB206A	7	0.85	8	0.90
EB206E	1.4	0.15	10	1.00
EB207A	0.59	-0.23	8	0.90
EB207F	1.26	0.10	10	1.00
EB208A	0.14	-0.85	12	1.08
EB208F	1.87	0.27	33	1.52
EB209A	0.17	-0.77	0.7	-0.15
EB209B	0.52	-0.28	2	0.30
EB210A	0.03	-1.52	11	1.04
EB210E	0.14	-0.85	10	1.00
FB001A	0.5	-0.30	13	1.11
FB001E	1.7	0.23	10	1.00
FB002A	1	0.00	11	1.04
FB002H	2.5	0.40	10	1.00
FB003A	2	0.30	12	1.08
FB003E	2	0.30	11	1.04
FB004A	0.93	-0.03	11	1.04
FB004G	10	1.00	10	1.00

TABLE 3-5
COMPARISON OF PORTABLE GC AND LABORATORY RESULTS
LABORATORY TCE VERSUS LAB/GC TCE RATIO

Data used in Figure 3-7
(non detect results are not included in Table or Figure)

Sample ID	Laboratory	Log Lab	Field GC	Lab/GC Ratio	Log Ratio
AB043D	69000	4.84	800	86.250	1.94
AT004B	47000	4.67	9000	5.222	0.72
AB044D	11000	4.04	490	22.449	1.35
AT008D	11000	4.04	230	47.826	1.68
AB214C	7700	3.89	280	27.500	1.44
AB028G	6100	3.79	350	17.429	1.24
AB025B	4100	3.61	350	11.714	1.07
AB254A	4100	3.61	62	66.129	1.82
AB251C	4000	3.60	59	67.797	1.83
AB044H	2300	3.36	95	24.211	1.38
AB253H	1800	3.26	54	33.333	1.52
AB043H	1400	3.15	110	12.727	1.10
AB248C	1200	3.08	130	9.231	0.97
AB025A	920	2.96	280	3.286	0.52
AB217D	700	2.85	86	8.140	0.91
AB254C	370	2.57	53	6.981	0.84
AB202B	360	2.56	20	18.000	1.26
AB242B	340	2.53	110	3.091	0.49
AB206B	330	2.52	27	12.222	1.09
AB033B	300	2.48	1.9	157.895	2.20
AT003B	290	2.46	160	1.813	0.26
AT007C	280	2.45	82	3.415	0.53
AB205G	230	2.36	34	6.765	0.83
AB247A	210	2.32	0.79	265.823	2.42
AB029A	190	2.28	25	7.600	0.88

TABLE 3-5 (Continued)
COMPARISON OF PORTABLE GC AND LABORATORY RESULTS
LABORATORY TCE VERSUS LAB/GC TCE RATIO

Data used in Figure 3-7
(Non-detect results are not included in Table or Figure)

Sample ID	Laboratory	Log Lab	Field GC	Lab/GC Ratio	Log Ratio
AB223C	150	2.18	85	1.765	0.25
AB032A	150	2.18	18	8.333	0.92
AB242A	140	2.15	52	2.692	0.43
AB213B	130	2.11	51	2.549	0.41
AB211A	120	2.08	16	7.500	0.88
AB229A	110	2.04	8.8	12.500	1.10
AB214A	100	2.00	60	1.667	0.22
AB248A	92	1.96	60	1.533	0.19
AB216D	92	1.96	21	4.381	0.64
AB217A	91	1.96	45	2.022	0.31
AB029H	89	1.95	200	0.445	-0.35
AB223A	89	1.95	42	2.119	0.33
AB243B	80	1.90	110	0.727	-0.14
AB222A	75	1.88	9.6	7.813	0.89
AB241A	73	1.86	38	1.921	0.28
AB235H	71	1.85	11	6.455	0.81
AB208A	70	1.85	1.6	43.750	1.64
AB252A	67	1.83	36	1.861	0.27
DB034C	63	1.80	11	5.727	0.76
AB208H	52	1.72	49	1.061	0.03
AB027A	50	1.70	34	1.471	0.17
DB033E	46	1.66	15	3.067	0.49
AB026G	45	1.65	60	0.750	-0.12
AT003A	38	1.58	4.3	8.837	0.95
AB035A	36	1.56	51	0.706	-0.15

TABLE 3-5 (Continued)
COMPARISON OF PORTABLE GC AND LABORATORY RESULTS
LABORATORY TCE VERSUS LAB/GC TCE RATIO

Data used in Figure 3-7
(Non-detect results are not included in Table or Figure)

Sample ID	Laboratory	Log Lab	Field GC	Lab/GC Ratio	Log Ratio
AB030A	36	1.56	3.7	9.730	0.99
AT002B	35	1.54	44	0.795	-0.10
AB213A	35	1.54	2.1	16.667	1.22
AB233A	33	1.52	22	1.500	0.18
AB218H	31	1.49	170	0.182	-0.74
EB203A	31	1.49	17	1.824	0.26
AB205A	31	1.49	12	2.583	0.41
AB246B	31	1.49	11	2.818	0.45
AT001A	31	1.49	7.2	4.306	0.63
AB216A	30	1.48	8	3.750	0.57
AB209B	29	1.46	15	1.933	0.29
AB220A	28	1.45	18	1.556	0.19
EB203B	27	1.43	12	2.250	0.35
AT007A	27	1.43	3.4	7.941	0.90
AB204A	26	1.41	21	1.238	0.09
AB034A	24	1.38	11	2.182	0.34
AB218A	24	1.38	4.4	5.455	0.74
AB236A	23	1.36	10	2.300	0.36
AB212B	21	1.32	110	0.191	-0.72
AB247C	20	1.30	21	0.952	-0.02
AB203B	20	1.30	9.6	2.083	0.32
AB239G	19	1.28	12	1.583	0.20
AB237C	18	1.26	52	0.346	-0.46
AB028A	18	1.26	10	1.800	0.26
AB227A DUP	18	1.26	4.2	4.286	0.63

TABLE 3-5 (Continued)
COMPARISON OF PORTABLE GC AND LABORATORY RESULTS
LABORATORY TCE VERSUS LAB/GC TCE RATIO

Data used in Figure 3-7
(Non-detect results are not included in Table or Figure)

Sample ID	Laboratory	Log Lab	Field GC	Lab/GC Ratio	Log Ratio
AB231A	18	1.26	4	4.500	0.65
AB237A	16	1.20	3.5	4.571	0.66
AB036H	15	1.18	140	0.107	-0.97
AB207A	15	1.18	2.9	5.172	0.71
AB236H	14	1.15	21	0.667	-0.18
AB227A	12	1.08	4.9	2.449	0.39
AB215A	12	1.08	1.6	7.500	0.88
AB233H	10	1.00	25	0.400	-0.40
AT005A	10	1.00	22	0.455	-0.34
AT002A	10	1.00	18	0.556	-0.26
AB240H	10	1.00	15	0.667	-0.18
AB235A	10	1.00	2.7	3.704	0.57
AB037D	9	0.95	97	0.093	-1.03
AT008A	9	0.95	23	0.391	-0.41
AB038G	9	0.95	20	0.450	-0.35
DB029A	9	0.95	3.7	2.432	0.39
AT005C	8	0.90	51	0.157	-0.80
EB206A	8	0.90	7	1.143	0.06
AB231H	7	0.85	8.3	0.843	-0.07
DB034A	7	0.85	0.85	8.235	0.92
AB246A	6	0.78	1.8	3.333	0.52
AB239A	6	0.78	0.72	8.333	0.92
EB207A	6	0.78	0.59	10.169	1.01
AB027H	5	0.70	42	0.119	-0.92
AB034D	5	0.70	23	0.217	-0.66

TABLE 3-5 (Continued)
COMPARISON OF PORTABLE GC AND LABORATORY RESULTS
LABORATORY TCE VERSUS LAB/GC TCE RATIO

Data used in Figure 3-7
(Non-detect results are not included in Table or Figure)

Sample ID	Laboratory	Log Lab	Field GC	Lab/GC Ratio	Log Ratio
AB215H	5	0.70	15	0.333	-0.48
AB222C	5	0.70	5.8	0.862	-0.06
AB228A	5	0.70	2.6	1.923	0.28
AT006A	5	0.70	2.2	2.273	0.36
AB251A	5	0.70	1.8	2.778	0.44
AB204B	4	0.60	31	0.129	-0.89
AB244H	4	0.60	29	0.138	-0.86
AB038A	4	0.60	3.9	1.026	0.01
BB002B	4	0.60	0.77	5.195	0.72
AB228F	3	0.48	35	0.086	-1.07
AB252H	3	0.48	20	0.150	-0.82
EB001E	3	0.48	18	0.167	-0.78
AB220G	3	0.48	15	0.200	-0.70
AB210D	3	0.48	11	0.273	-0.56
AT001C	3	0.48	7.7	0.390	-0.41
AB207H	3	0.48	6.3	0.476	-0.32
AB229H	3	0.48	6	0.500	-0.30
AB240A	3	0.48	5.1	0.588	-0.23
AB234A	3	0.48	2.2	1.364	0.13
AB234D	3	0.48	1.9	1.579	0.20
EB004A	3	0.48	1.3	2.308	0.36
AB030G	2	0.30	16	0.125	-0.90
AB033H	2	0.30	14	0.143	-0.85
AB238H	2	0.30	10	0.200	-0.70
EB003F	2	0.30	10	0.200	-0.70

TABLE 3-5 (Continued)
COMPARISON OF PORTABLE GC AND LABORATORY RESULTS
LABORATORY TCE VERSUS LAB/GC TCE RATIO

Data used in Figure 3-7
(Non-detect results are not included in Table or Figure)

Sample ID	Laboratory	Log Lab	Field GC	Lab/GC Ratio	Log Ratio
AB206A	2	0.30	7.7	0.260	-0.59
AB032D	2	0.30	6.3	0.317	-0.50
AB230B	2	0.30	1.3	1.538	0.19
EB002D	2	0.30	1.3	1.538	0.19
AB226B	2	0.30	0.73	2.740	0.44
EB209B	2	0.30	0.52	3.846	0.59
AB212A	2	0.30	0.4	5.000	0.70
AB039A	2	0.30	0.076	26.316	1.42
AB211B	1	0.00	23	0.043	-1.36
AB245G	1	0.00	5.1	0.196	-0.71
AB210A	1	0.00	0.06	16.667	1.22
AB202A	0.9	-0.05	4.6	0.196	-0.71
AB221G	0.8	-0.10	3.7	0.216	-0.67
AB209A	0.8	-0.10	0.12	6.667	0.82
EB209A	0.7	-0.15	0.17	4.118	0.61
AB039H	0.6	-0.22	0.5	1.200	0.08

TABLE 3-6	
DATA QUALIFIER DEFINITIONS - ORGANICS	
U	Indicates compound was analyzed, but not detected.
J	Value given is estimated.
B	Compound was detected in one or more of associated laboratory, rinseate, and/or trip blanks.
E	The concentration given exceeded the working range of the calibration curve.
RE	Results are based on reanalysis of sample.
D	Sample result is based on diluted analysis.
N	Tentative identification of listed compound.
DATA QUALIFIER DEFINITIONS - INORGANICS	
U	Analyte not detected.
B	Analyte detected below the CRDL but above the IDL.
*	Duplicate analysis not within control limits.
N	Spiked sample recovery not within control limits.
S	The reported value was determined by the method of standard additions.
H(n)	Analysis performed (n) days past holding time.
J	Value estimated based on data validation assessment.

TABLE 3-7

BLIND FIELD DUPLICATES - SOIL VOLATILES (µg/kg)

Analyte	AB248C			AB213A		
	Sample	Blind Dup.	RPD %*	Sample	Blind Dup.	RPD %*
1,1-Dichloroethane	8 J	9 J	12			
1,2-Dichloroethenes (Total)	150	120	22	2 J	6 J	100
1,1,1-Trichloroethane	73	51	35	2 J	5 J	86
Trichloroethene	1200	700 E	53	35	90	88
Tetrachloroethene	160	89	57	2 J	4 J	67

Analyte	ATI005C			AB208A		
	Sample	Blind Dup.	RPD %*	Sample	Blind Dup.	RPD %*
Toluene	17	2 BJU	--			
1,1-Dichloroethane				11 U	0.4 J	--
1,2-Dichloroethenes (Total)	1 J	2 J	67	14	14	0
Trichloroethene	8 JB	11 JB	32	70	73	4
Tetrachloroethene	12 U	0.9 J	--			

TABLE 3-7 (Continued)

BLIND FIELD DUPLICATES - SOIL VOLATILES (µg/kg)

Analyte	AT009B1			AB254A		
	Sample	Blind Dup.	RPD %*	Sample	Blind Dup.	RPD %*
1,1-Dichloroethane	73 JD	41 J	56			
1,2-Dichloroethenes (Total)	590 JD	710 JD	18	190	150	24
1,1,1-Trichloroethane	500 JD	1,200 JD	82	25 J	6 J	123
Trichloroethene	1500 D	2,700 D	57	4100 D	660	145
Tetrachloroethene	11000 D	25,000 D	78	13 J	54 U	---
Xylenes (Total)	230 JD	520 JD	77			

Analyte	AB204A			AT008D		
	Sample	Blind Dup.	RPD %*	Sample	Blind Dup.	RPD %*
1,2-Dochloroethenes (Total)	110	85	26	1,000 JD	890 JD	12
Trichloroethene	26	18	36	11,000 D	7,500 D	38
Tetrachloroethene	1 J	0.7 J	35			

Analyte	AB227A			AT002B		
	Sample	Blind Dup.	RPD %*	Sample	Blind Dup.	RPD %*
Trichloroethene	12 B	18	40	35	31	6
Tetrachloroethene	11 U	0.6 J	---	2 J	2 J	0

TABLE 3-7 (Continued)

BLIND FIELD DUPLICATES - SOIL VOLATILES (µg/kg)

Analyte	BB206A			DB029E		
	Sample	Blind Dup.	RPD %*	Sample	Blind Dup.	RPD %*
Acetone	210 B	240 B	13	130 B	160 B	21
Analyte	**AB042G**			**BG005D**		
	Sample	Blind Dup.	RPD %*	Sample	Blind Dup.	RPD %*
Acetone	600 BD	650 BD	8	190 B	350 BE	---
Analyte	**AB030G**			**AB039H**		
	Sample	Blind Dup.	RPD %*	Sample	Blind Dup.	RPD %*
Trichloroethene	2 JB	4 JB	67	0.6 JB	11 U	---
Analyte	**AB234A**			**AB238H**		
	Sample	Blind Dup.	RPD %*	Sample	Blind Dup.	RPD %*
Trichloroethene	3 JB	4 JB	29	2 JB	4 JB	67

TABLE 3-7 (Continued)

BLIND FIELD DUPLICATES - SOIL VOLATILES (μg/kg)

Analyte						
	Sample	Blind Dup.	RPD %*	Sample	Blind Dup.	RPD %*
Trichloroethene	4 JB	3 JB	29	75	85	13
Tetrachloroethene				26	35	30

NOTES:

D = Reported value is the result of a diluted run.
J = Reported value is less than the CRQL, but greater than the IDL.
U = Not detected; value show is detection limit for sample.
-- = The analyte was detected in either the sample or the duplicate; therefore the RPD is of limited significance and was not calculated.
E = The analyte was detected at a concentration above the limit of calibration.
B = Analyte was detected in associated field, trip, and/or laboratory blank.

$$* = RPD\ \% = \left(\frac{D_1 - D_2}{(D_1 + D_2)/2}\right) x\ 100,\ where\ 0 = duplicate\ analysis.$$

TABLE 3-8

STATISTICAL SUMMARY OF RINSEATE BLANKS
VOLATILES (population of 25)

Analyte	Number of Detections	Concentration (µg/kg)				Standard Deviation
		High	Low	Mean	Median	
Methylene chloride	7	3 BJU	0.5 BJU	1.5	1	0.97
Acetone	22	73 BU	3 JBU	22	10	19.6
Carbon disulfide	2	25 BU	2 BJU	14	--	11.5
2-Butanone	18	120 B	3 BJU	42	7	42.8
Trichloroethene	2	3 J	2 J	2.5	--	0.5
4-Methyl-2-pentanone	7	4 J	0.6 J	2.5	3	1.14
Toluene	1	0.6 BJU	0.6 BJU	0.6	--	--
Xylenes (total)	1	1 BJU	1 BJU	1	--	--

B = Detected in one or more associated laboratory blanks.
J = Reported value is less than the CRQL, but greater than the IDL.
U = Qualifier not detected based on results of data validation.
-- = This statistical value is not useful because of limited data points.

TABLE 3-9

STATISTICAL SUMMARY OF TRIP BLANKS
VOLATILES (population of 30)

Analyte	Number of Detections	Concentration (µg/kg)				Standard Deviation
		High	Low	Mean	Median	
Methylene chloride	14	2 BJU	0.6 BJU	1.2	1	0.50
Acetone	25	12 BU	3 JBU	6.6	6	1.88
2-Butanone	6	3 BJU	2 BJU	2.7	3	0.47
Trichloroethene	1	0.7 J	0.7 J	0.7	--	--
Toluene	3	1 BJU	0.7 BJU	0.8	0.7	0.14

TABLE 3-10

BLIND FIELD DUPLICATES - SOIL
SEMIVOLATILES
(μg/kg)

Analyte	AB030G		
	Sample	Blind Dup.	RPD %
Phenanthrene	160 J	440	93
Fluoranthene	390	1100	95
Pyrene	360	930	88
Benzo(a)anthracene	150 J	400	91
Chrysene	170 J	440	89
Benzo(b)fluoranthene	180 J	460	88
Benzo(k)fluoranthene	140 J	360	88
Benzo(a)pyrene	170 J	410	83
Indeno(1,2,3-cd)pyrene	130 J	290 J	76
Benzo(g,h,i)perylene	210 J	330 J	44

J = Reported value is less than the CRQL, but greater than the IDL.

TABLE 3-11

BLIND FIELD DUPLICATES - SOIL PESTICIDES/PCBs (μg/kg)

Analyte	DB029E		
	Sample	Blind Dup.	RPD %
4,4'-DDE	26	3.4 U	--
4,4'-DDD	7.4	3.4 U	--
4,4'-DDT	19	3.4 U	--

U = Not detected; value shown is detection limit for sample.
-- = The analyte was not detected in either the sample or the duplicate; therefore, the RPD is of limited significance and was not calculated.

TABLE 3-12
BLIND FIELD DUPLICATES - SOIL - METALS[1]
(mg/kg)

Analyte	AT002B			BG005D			BG009D		
	Sample	Blind Dup.	RPD %	Sample	Blind Dup.	RPD %	Sample	Blind Dup.	RPD %
Aluminum	4350	5050	15	1860	1310	35	1630	1590	2
Arsenic	6.5	5.9	10	2.3	1.5 B	42	0.87 B	0.87 B	0
Barium	228	165	32						
Calcium	10300	4290	82	25900	16700	43	27000	33300	21
Chromium	12.2	10.4	16	10.3 *	5.1*	68	8.0	9.3	15
Copper	9.3	10.9	16						
Iron	13000	13900	7	6730	7780	14	5080	4830	5
Lead	6.8	7.5	10	3.0	1.7	55	1.7	1.6	6
Magnesium	5530	3290	51	9340	4950	61	6790	12400	58
Manganese	2050 N	1370 N	40	255 N*	152 N*	51	230	335	37
Nickel	14.2 *	13.9 *	2	11.2 *	10.9 *J	3	15.2	12.2	22
Potassium	322 B	582 B	58	135 BJ	106 U	--	144 B	143 BJ	1
Vanadium	21.3	21.1	1	12.6	17.3	31			
Zinc	24.7	24.3	2	10.5	11.3	7	10.9	11.2	3

NOTES:
[1] No cyanide was detected in any of the blind field duplicate pairs.
J = Reported value is estimated based on results of data validation.
B = Reported value is less than the CRQL, but greater than the IDL.
N = Spiked sample analysis exceeded control limits.
U = Not detected; value shown is detection limit for sample.
* = Duplicate sample analysis exceeded control limits.

TABLE 3-12 (Continued)
BLIND FIELD DUPLICATES - SOIL - METALS[1]
(mg/kg)

Analyte	AB042G			AB030G			AB039H		
	Sample	Blind Dup.	RPD %	Sample	Blind Dup.	RPD %	Sample	Blind Dup.	RPD %
Aluminum	1410 *	1460 *	3	1340 *	1410 *	5	1050 *	1010 *	4
Arsenic	0.98 BU	1.4 B	--	1.3 B	1.0 BU	--	0.94 B	1.2 B	24
Calcium	37300 *	30400 *	20	23100 *	25800 *	11	21000	22100	5
Chromium	6.3	4.7	29	5.1	6.5	24	4.1	3.8	8
Copper				37.3 *	18.2 *	69			
Iron	5110	5670	10	3880	4390	12	3580 *	3120 *	14
Lead	2.1	1.5	33	3.2	2.1	42	2.2	2.1	5
Magnesium	10500	6830	42	6660	6360	5	4280	5870	31
Manganese	421 N*	339 N*	22	353 N*	346 N*	2	326	335	3
Nickel	12.9	14.7 J	13	11.1 J	12	8	13 J	9.5 J	31
Zinc	8.0	11.3	34	18.3	10.8	52	11.3	9.1	22

NOTES:
[1] No cyanide was detected in any of the blind field dusplicate pairs.
J = Reported value is estimated based on results of data validation.
B = Reported value is less than the CRQL, but greater than the IDL.
N = Spiked sample analysis exceeded control limits.
U = Not detected; value shown is detection limit for sample.
* = Duplicate sample analysis exceeded control limits.
-- = The analyte was not detected in either the sample or the duplicate; therefore, the RPD is of limited significance and was not calculated.

TABLE 3-12 (Continued)
BLIND FIELD DUPLICATES - SOIL - METALS[1]
(mg/kg)

Analyte	DB029E			BB002G			BT004D		
	Sample	Blind Dup.	RPD %	Sample	Blind Dup.	RPD %	Sample	Blind Dup.	RPD %
Aluminum	1850 *	1570	16	1900	1160	48	1110	1440	26
Arsenic	1.0 B	1.0B	0				1.8 B*	3.0	50
Calcium	4400	3420	25	10300 *	10700 *	4	1160	1420	20
Chromium	4.8	5.0	4	4.7	3.3	35	2.7	3.9 N	36
Copper	7.3	7.3	0	8.4	4.3 U	--			
Iron	4490 *	3890	14	3650 *	2700 *	30	3330	3940	17
Lead	1.4	1.1	24	3.5	3.3	6	2.0	2.1 *	5
Magnesium	1950	1690	14	3830	3620	6	703 B	823 B*	16
Manganese	94.8	98.8 N	4	91.8 *	55.6 *	49	29.7	49.3	50
Nickel				13.8 J	9.2 J	40			
Potassium	152 BJ	104 BJ	38						
Sodium	107 B	104 U	--						
Vanadium	12.3 *	13.2	7	12.4	9.1	31			
Zinc	9.3	10.3	10				30.5	49.9	48

NOTES:
[1] No cyanide was detected in any of the blind field duplicate pairs.
J = Reported value is estimated based on results of data validation.
B = Reported value is less than the CRQL, but greater than the IDL.
N = Spiked sample analysis exceeded control limits.
U = Not detected; value shown is detection limit for sample.
* = Duplicate sample analysis exceeded control limits.
-- = The analyte was not detected in either the sample or the duplicate; therefore, the RPD is of limited significance and was not calculated.

TABLE 3-12 (Continued)
BLIND FIELD DUPLICATES - SOIL - METALS[3]
(mg/kg)

Analyte	AT009B1			AT008D			AT005C		
	Sample	Blind Dup.	RPD %	Sample	Blind Dup.	RPD %	Sample	Blind Dup.	RPD %
Aluminum	4760	4610	3	2590	2080	22	3050	2590	16
Antimony				22.5 N	105 N	129			
Arsenic	2.9	3.1	7	5.4 *	4.0 *	30			
Barium	58.6	64.8	10	22.0 B	22.7 B	3	29.4 B	38.3 B	26
Cadmium	1.2 U	2.7	--						
Calcium	16700	10300	47	23000	41200	57	27700 *	28700 *	4
Chromium	16.5 *	16.3 *	1	49.6	114	79	9.3	9	3
Cobalt				12.2 U	12.3	--			
Copper	35.4	56.6	46	676	1290	62	5.2 BJ	6.1 J	16
Iron	12100	19200	45	20000	43500	74	11500 *	18600 *	47
Lead	27.6 *	37.0 *	29	453	58.8	154	3.4	3.1	9
Magnesium	7390	4860	41	3070	1730	56	7580	7760	2
Manganese	536	659	21	339	547	47	1870 *	5950 *	104
Mercury	0.12 U	0.19	--	0.14	0.12 U	--			
Nickel	10.9	10.6	3	70.2 *	142 *	68	9.6 U	12.5	--

TABLE 3-12 (Continued)
BLIND FIELD DUPLICATES - SOIL - METALS[3]
(mg/kg)

Analyte	AT009B1			AT008D			AT005C		
	Sample	Blind Dup.	RPD %	Sample	Blind Dup.	RPD %	Sample	Blind Dup.	RPD %
Potassium				226 B	123 U	--			
Vanadium	19.5	20.2	4	23.4	20.4	14	22.8	23.0	1
Zinc	50.5	72.7	36	152	153	1	14.9	14.5	3

NOTES:
[1] No cyanide was detected in any of the blind field duplicate pairs.
B = Reported value is less than the CRQL, but greater than the IDL.
N = Spiked sample analysis exceeded control limits.
U = Not detected; value shown is detection limit for sample.
* = Duplicate sample analysis exceeded control limits.
-- = The analyte was not detected in either the sample or the duplicate; therefore, the RPD is of limited significance and was not calculated.
J = Reported value is estimated based on results of data validation.

TABLE 3-13

BLIND FIELD DUPLICATES - SOIL
TOTAL ORGANIC CARBON
(mg/kg)

Sample I.D.	Sample	Duplicate	RPD (%)
BG005D	1,900	10,000	136
BG009D	3,600	350	165
AB042G	2,600	2,100	21
AB030G	1,700	380	127
AB039H	730	100	152
DB029E	150	150	0
AT002B	12,000	10,000	18
BB002G	660	310	72
AT005G	1,600	2,400	40
AT008D	>16,000	>16,000	---
BT004D	1,300	1,800	32
AB035B1	14,000	9,800	35
AB204A	>16,000	>16,000	---
AB222A	>16,000	3,000	137
AB208A	>16,000	7,000	78
AB227A	>16,000	>16,000	---
AB234A	8,200	12,000	38
BB206A	9,200	6,400	36
EB208A	2,500	8,900	112
EB210A	2,300	2,100	9
AB213A	4,400	14,000	104
AB238H	3,100	1,800	53
AB244A	970	4,000	122
AB254A	>16,000	>16,000	---
AB248C	14,000	14,000	0

Section 4

NATURE AND EXTENT OF CONTAMINATION

4.1 Background Area

The background area, which is located off the NIROP Fridley site, was investigated to compile background soil data for both physical and chemical parameters for comparison to on-site soils, particularly with regard to concentrations of metals to be used for background statistical calculations. The locations of background soil borings can be found on Figure 3-1.

Ten background soil borings were performed to a depth of 10 feet each. Six of the ten background soil borings were installed north of the site. Two were installed northwest of the NIROP Fridley in the Anoka County Riverfront Regional Park, and two were installed just west of the northern NIROP employee parking lot.

The soil types encountered in the background soil borings are representative of the physical nature of soil types encountered in soil borings at the site. The main soil type, using the Unified Soil Classification System (USCS), is sand, either poorly graded sand (SP) or well graded sand (SW). The grain-size distribution of the sand encountered varies significantly, representing a wide range of USCS classifications for sand.

A more detailed physical description of the background area is included in Appendix C. Logs of borings completed during the RI are included in Appendix D.

4.1.1 Scope of Investigation

Twenty background soil samples (two samples per boring) were analyzed for TCL VOCs, semivolatiles, pesticides and PCBs, and TAL inorganics. Samples were collected at the 1- to 3-foot and 8 to 10-foot depth intervals. Summaries of the laboratory results are included in Appendices E through I.

4.1.2 Summary of Observed Chemical Impacts

The background area was not affected by site activities and is considered representative of the background chemical nature of the soils in and around the NIROP Fridley. Laboratory data qualifiers used in the following text are explained in the List of Acronyms/Abbreviations which follows the Table of Contents, and are listed below for convenience.

Laboratory Data Qualifiers - Organics

B	Compound was detected in one or more of associated laboratory, rinseate, and/or trip blanks
D	Sample result is based on diluted analysis
E	The concentration given exceeded the working range of the calibration curve
J	Value given is estimated
N	Tentative identification of listed compound
P	Percent difference between the two columns exceeds 25 percent difference
RE	Results are based on re-analysiis of sample
U	Indicates compound was analyzed, but not detected

Laboratory Data Qualifiers - Inorganics

*	Duplicate analysis not within control limits
B	Analyte detected below the CRDL but above the IDL
H(n)	Analysis performed (n) days past holding time
J	Value estiamted based on data validation assessment
N	Spiked sample recovery not within control limits
S	The reported value was determined by the method of standard additions
U	Analyte not detected

VOCs

Of the 33 TCL VOCs that were analyzed in each of the 20 soil samples, only acetone was detected, in three of the samples. The acetone is most likely an impurity in the isopropyl alcohol that was used in field decontamination of split-spoon samplers. Supporting this conclusion is the fact that 22 of the 25 field rinseate samples collected throughout the RI detected acetone at concentrations ranging from 3 μg/L (B, J, U) to 73 μg/L (B, U). Twenty-five trip blanks contained acetone at reported concentrations of 3 μg/L to 12 μg/L. A more complete discussion of acetone is presented in Subsection 4.2.2.

Semivolatile Organic Compounds

Of the 64 TCL semivolatile organic compounds (SVOCs) analyzed, four were detected in background soil samples. Bis(2-ethylhexyl) phthalate was detected in three soil samples with concentrations ranging from 170 μg/kg (J, B) to 250 μg/kg (J, B). Because these concentrations are below the contract required quantitation limit (CRQL), bis-(2-ethylhexyl)phthalate is considered to be a laboratory contaminant. This compound was also found in a rinseate blank.

Fluoranthene, phenanthrene, and pyrene were detected at concentrations from 150 μg/kg (J) to 170 μg/kg (J, B), in the sample from the 1- to 3-foot depth in BG010. The presence of these three SVOCs only in the near-surface sample indicates that they are not related to any on-site releases or disposal activities, because drainage control features surrounding the NIROP Fridley do not allow for water to travel across portions of the NIROP Fridley and run off-site into the background areas. These three SVOCs are common constituents found in asphalt, and therefore could be associated with the large asphalt-covered employee parking lot which is adjacent to boring BG010.

Pesticides/PCBs

Of the 28 pesticide/PCB compounds analyzed, two pesticide compounds and no PCB compounds were detected in background samples. 4,4'-DDD and 4,4'-DDT were detected at concentrations ranging from 5 μg/kg to 110 μg/kg in the sample from the shallow (1- to 3-foot) depth, at the two borings located in the Anoka County Park

(BG006 and BG007). The presence of these pesticide compounds only in the near-surface samples indicates that these pesticides may have been applied by spraying in the park and are not related to any on-site releases or disposal activities. Surface water run-off could not have transported the pesticide components from the NIROP Fridley due to the presence of drainage control features, and because there is a divided highway that runs between the NIROP Fridley and the County Park that is elevated above the adjacent land surface.

Metals

The 20 background soil samples were analyzed for the 23 TAL metals and cyanide to estimate concentrations of these constituents in unaffected soils in the vicinity of the site. Antimony, beryllium, mercury, thallium, and cyanide were not detected in any of the background samples. The remaining 19 metals were detected at frequencies ranging from 1 in 20 (5 percent) for cadmium, selenium, and silver, to 20 in 20 (100 percent) of the samples for aluminum, calcium, chromium, iron, lead, magnesium, manganese, and zinc.

Local background concentrations of inorganic constituents were estimated by calculating a 95 percent upper confidence limit (UCL) on the mean for each of the 23 metals and cyanide, using logarithmically transformed data (Gilbert, 1987). Prior to calculation, the results reported as less than the detection limit were substituted with one-half the value of the detection limit (Gilbert, 1987). The log-transformed data were then plotted on probability paper to determine if assumptions of log-normal distribution were accurate, and to check for outliers (Gilbert, 1987). Based on the substantial discontinuity between two of the data points and the rest of the data, the following two outliers, which represented the maximum detected concentrations for barium and manganese, were excluded from the UCL calculation:

Barium in BG007D: 6,330 mg/kg
Manganese in BG007D: 35,500 mg/kg

If the 95 percent UCL for a constituent was less than the detection limit, the detection limit was assumed to be a conservative or more representative estimate of the local background concentration, rather than the maximum detected concentration; this is

conservative because any detectable off-site concentrations then would be considered to be above background. Table 4-1 (all tables are located in the back of the section) summarizes the background concentrations estimated for the NIROP Fridley locality.

A comparison between local background and regional concentrations of metals is useful for evaluating local background concentrations. Regional background concentrations of six metals have been documented for Minnesota soils (Pierce et al, 1982). Table 4-2 summarizes the arithmetic mean and range of metal concentrations measured in Minnesota soils, along with the local background concentrations calculated for the site. The local background concentrations calculated using the NIROP results were below the regional arithmetic means, for the six metals that had regional values. These data suggest that the background samples are a good measure of local ambient soil chemistry.

Metal impacts in site soil samples were assessed by comparing individual constituent concentrations to local background values, and by comparing overall trace metal chemistry in site samples to that in local background samples. Overall trace metal chemistry in background soils was assigned a numerical value of 107 mg/kg that was arrived at by summing the calculated local background concentrations (Table 4-2) of the following trace metals:

PPM

Antimony - 2.0 mg/kg
Arsenic - 8.1 mg/kg
Beryllium - 1.0 mg/kg
Cadmium - 1.0 mg/kg
Chromium - 9.3 mg/kg
Cobalt - 10.1 mg/kg
Copper - 5.7 mg/kg
Lead - 4.8 mg/kg
Mercury - 0.1 mg/kg
Nickel - 18.4 mg/kg
Selenium - 0.63 mg/kg
Silver - 2.0 mg/kg
Thallium - 0.61 mg/kg
Vanadium - 20.6 mg/kg
Zinc - 22.4 mg/kg

The concentrations of the trace metals listed above were summed for individual on-site samples, and those values were compared to the background concentration of 107 mg/kg to aid in determining whether areas had been affected by site activities.

TICs

Significant TIC concentrations were not observed in the background soil samples.

4.2 Sub-Area A1

This sub-area is located in the northern portion of the NIROP Fridley, north of the main plant, and is in the southwestern portion of Area A. Figure 4-1 (all Figures are located in the back of the section) shows the location of Sub-Area A1. This sub-area includes two small discontinuous areas.

The small area to the north contains boring AB040. This area was investigated due to stained soils which were observed by the USEPA during the November 1991 storm sewer improvement project. The second small area to the south was investigated due to the findings of the aerial photograph review, which indicated that an area near the shipping and receiving docks may have been a potential drum storage area in the past and may have contained stained soils. The area is currently covered with asphalt.

The soil types observed in Sub-Area A1 are similar in physical characteristics of the background soil types encountered. The main geologic soil type is sand, either poorly graded sand (SP) or well graded sand (SW). The grain-size distribution of the sand encountered and collected varies significantly, representing a wide range of USCS classifications for sand. A more detailed physical description of Sub-Area A1 is included in Appendix C.

4.2.1 Scope of Investigation

Three Type I soil borings were installed to a depth of 20 feet below ground surface. Six soil samples (two samples per boring) were analyzed for TCL VOCs. Four soil samples were analyzed for TCL semivolatiles, and pesticides/PCBs, and TAL inorganic parameters. Selected analytical results for Sub-Area A1 are shown in Table 4-3. Summaries of the laboratory results are included in Appendices E through I. In addition to the laboratory analyses, 24 portable GC soil sample analyses were conducted and evaluated. A summary of the portable GC results are included in Appendix J.

4.2.2 Summary of Observed Chemical Impacts

Sub-Area A1 has not been significantly impacted by past site activities. See below for further discussion.

VOCs

Portable GC results (24 soil samples - total VOCs) are as follows:

- 24 below 1 μL/L

Laboratory Results:

Acetone had the highest frequency and concentration of any VOC detected, ranging up to 2,700 μg/kg (B, D, E). However, the acetone is most likely associated with the isopropyl alcohol that was used in field decontamination of split-spoon samplers. Twenty-two of the 25 field rinseate samples detected acetone ranging from 3 μg/L (B, J, U) to 73 μg/L (B, U). Twenty-five trip blanks contained acetone at reported concentrations of 3 μg/L to 12 μg/L. Additional support for concluding that acetone is not a site problem is provided in Section 9.

Three other VOCs were detected at low concentrations in soils from this sub-area: DCE (total), ethylbenzene, and xylene (total) were detected at concentrations of 2 μg/kg (J), 3 μg/kg (J), and 5 μg/kg (J, B), respectively. The three VOCs were all detected in one near-surface soil sample (AB040A) from the boring that was performed to investigate the potentially stained soils noted during the November 1991 storm sewer improvement project. Rather than being stained, the soils encountered at soil boring AB040 were determined to be a black or very dark-brown silty soil, which is found within the shallow (0- to 4-foot) soils across much of Area A.

Semivolatiles

Laboratory results: Only one semivolatile, benzo(g,h,i)perylene, was detected, at a concentration of 350 μg/kg (J) from one soil sample (AB041C), at a depth of 6 to 8 feet. Benzo(g,h,i)perylene is a constituent of coal tar, which is found in asphalt products. Because this was the only SVOC detected, this detection is interpreted to be a result of carrying down small pieces of the overlying surface asphalt during the drilling procedure.

Pesticides/PCBs

Pesticides or PCB compounds were not detected in any of the soil samples collected in this area.

Metals

No significantly elevated concentrations of metals are evident. Two near-surface samples (AB041A and AB042A) had concentrations of seven metals which were slightly above background. However, the overall trace metal concentrations of the soil samples for Sub-Area A1 ranged from 29 mg/kg to 79 mg/kg and are lower than the background total trace metal soil concentrations of 107 mg/kg.

TICs

Significant TIC concentrations were not observed in this sub-area.

4.3 Sub-Area A2

This sub-area is located in the northernmost portion of the site along the northern property fence. It is the northwest portion of what is commonly referred to as the "North 40." Figure 4-1 shows the location of Sub-Area A2 and the borings drilled there. This sub-area was investigated due to high soil gas readings reported during the soil gas survey (RMT, 1988b) along the northern property fence. In addition, odors were reported from an excavation in this area during a water main installation project in 1990.

The main geologic soil type in this area is a poorly graded sand (SP). A more detailed physical description of the study area is included in Appendix C.

4.3.1 Scope of Investigation

Eight soil borings (two Type 1 and six Type 2) were installed as part of the investigation of Sub-Area A2. Fourteen soil samples were analyzed for TCL VOCs; four soil samples were analyzed for TCL semivolatiles, pesticides and PCBs, and TAL inorganic parameters. Selected analytical results for Sub-Area A2 are shown in Table 4-4. Summaries of the laboratory results are included in Appendices E through I. In addition to the laboratory data, 64 portable GC soil sample analyses were conducted. A summary of the portable GC results is included in Appendix J.

4.3.2 Summary of Observed Chemical Impacts

Sub-Area A2 has been impacted by past site activities; see below for further discussion. The shallow (1- to 5-foot) soils have the highest concentrations of detected chemical constituents. In terms of frequency of detection and concentration, VOCs represent the primary type of chemical impact in this sub-area.

The lateral extent of contamination that contains concentrations greater than 10 μg/kg TCE and 200 μg/kg TCE (laboratory value) for shallow soils is shown on Figure 4-2. For comparison, Figure 4-3 shows the lateral extent of total VOCs in shallow soils in excess of 10 μL/L and 100 μL/L as determined from the portable GC data. Although the headspace concentrations measured with the portable GC should not be compared quantitatively with results from the laboratory compositional analyses, the results can be compared qualitatively, to see how representative the portable GC results are of laboratory results. For example, the 200 μg/kg contours correspond closely with the 100 μL/L contours from the portable GC. It is evident that the laboratory and portable GC data result in similar estimates of areas of soil contamination. This comparison of the two types of measurement demonstrates a qualitative correlation between the laboratory and portable GC results.

The comparison is useful because, for shallow soils (1- to 5-foot), nearly every soil boring was analyzed; however, for intermediate soils (6- to 12-foot) and deep soils (13- to 20-foot), fewer laboratory analyses were performed. However, there is an abundance of portable GC data for the intermediate and deep soils, which greatly facilitate mapping of the extent of soil contamination; the relatively close correlation between the portable GC data and the laboratory data indicates that the portable GC data are useful in supplementing the laboratory data in mapping the extent of contamination. Therefore, to aid in the determination of the extent of VOC contamination at shallow, intermediate, and deep soil intervals, portable GC data were used. Where laboratory data were available, they are included on the figures along with the portable GC data. Figures 4-4 and 4-5 show the lateral extent of total VOC contamination using the portable GC data for intermediate soils and deep soils, respectively.

The above-mentioned figures show an area of elevated VOC concentrations in soils centered on soil boring AB025 in shallow, intermediate, and deep soils. To a lesser extent, chemical impacts were also observed for semivolatiles, pesticides, and metals. Below is a detailed description of the nature and extent of the chemical impacts.

VOCs

Portable GC results (64 soil samples - total VOCs) are as follows:

No. of Anomalies	Range of Concentrations
13	< 1 μL/L
49	1 μL/L to 100 μL/L
2	> 100 μL/L (350 μL/L - maximum at AB025B)

Laboratory results:

The VOCs detected in laboratory analysis of soil samples at the highest frequency and concentration were as follows:

- Trichloroethene (TCE), detected in 64 percent of the samples, ranging from 0.9 μg/kg (J, B) to 4,100 μg/kg
- Tetrachloroethene (PCE), detected in 43 percent of the samples, ranging from 0.7 μg/kg (J) to 26 μg/kg

Both of these constituents are solvents that are commonly used for metal degreasing, and have also been detected in groundwater under the site (see Subsection 1.2.2).

Both laboratory and portable GC results of soil samples indicate a primary area of chemical impact near soil boring AB025. The highest concentration of TCE (4,100 μg/kg) in this sub-area was in soil sample AB025B. The shallow soils appear to be impacted the most, with concentrations of VOCs decreasing with depth.

Semivolatiles

Eight semivolatiles (all PAHs) were detected at concentrations ranging from 87 μg/kg (J) to 290 μg/kg (J), and were found in only one soil sample (AB024A):

* Benzo(a)anthracene	140 μg/kg (J)	* cPAH
* Benzo(a)pyrene	120 μg/kg (J)	
* Benzo(b)fluoranthene	130 μg/kg (J)	
* Benzo(k)fluoranthene	87 μg/kg (J)	
* Chrysene	150 μg/kg (J)	
Fluoranthene	290 μg/kg (J)	
Phenanthrene	180 μg/kg (J)	
Pyrene	290 μg/kg (J)	

The PAHs detected in this sample are thought to be a result of the asphalt remnants which were encountered at the surface of this soil boring, as noted in the boring log.

Pesticides/PCBs

Three pesticide compounds (4,4-DDT and its breakdown products, 4,4-DDD and 4,4'-DDE) were detected at concentrations of up to 28 μg/kg in both of the near-surface soil samples (AB024A and AB025A) that were analyzed for pesticides. These pesticide compounds are most likely due to past application activities on the site for insect control.

Metals

Copper and lead were detected at concentrations of 158 mg/kg(*) and 143 mg/kg, which are 28 and 30 times greater than background concentrations, respectively, from the near surface soil sample AB024A. In soil sample AB025B, 10 metals were measured at concentrations greater than background. However, metal exceedances were not substantial within sample AB025B, as indicated by the total trace metal concentration of 92 mg/kg, which is less than the 107 mg/kg calculated background total. Only one of the four samples collected in Sub-Area A2 exceeded the total trace metal background concentration of 107 mg/kg. Sample AB024A contained a total trace metal concentration of 489 mg/kg. No evidence of metal impact was observed with increasing depth.

TICs

Significant TIC concentrations were not observed in this sub-area. At one location, AB024A, a heavy-range petroleum hydrocarbon pattern was identified during data validation. This pattern was observed in scattered locations across the site and is discussed in Subsection 4.4.2 under the TICs subheading.

4.4 Sub-Area A3

This sub-area is located in the north-central portion of the NIROP Fridley, north of the main plant and east of the main north-south concrete roadway (Broadway). It is the eastern half of what is referred to as the North 40. Figure 4-1 shows the location of Sub-Area A3. Sub-Area A3 was investigated for the following reasons:

- Four of the 20 conductivity anomalies reported by the U.S. Army Corps of Engineers (1984) (unexcavated Anomalies #12, #13, and #14 and excavated Anomaly #15) exist within this sub-area. Additional investigation at these locations was required to verify that the soils associated with these anomalies do not contain additional unexcavated wastes or hazardous substances.
- Soil samples collected during the fall 1990 soil investigation from the area near the decontamination pad (unexcavated conductivity Anomaly #13) were found to contain VOCs, and high concentrations of metals and pesticides.

The main geologic soil type in this sub-area is sand, either poorly graded sand (SP) or well graded sand (SW). The grain-size distribution of the sand encountered and collected varies significantly, representing a wide range of USCS classifications for sand. A shallow (3- to 7-foot depth) highly variable fine-grained soil (CL, SC, ML, SM) unit underlies much of Sub-Area A3 and is shown on Figure 4-6. A more detailed physical description of the study area is included in Appendix C.

4.4.1 Scope of Investigation

Thirty-eight soil borings (six Type I and 32 Type II) and two test pits were installed as part of the Sub-Area A3 investigation. Soil boring and test pit locations are shown on Figure 4-1. Eighty-one soil samples were analyzed for TCL VOCs; and 21 soil samples were analyzed for TCL semivolatiles, pesticides and PCBs, and TAL inorganic parameters. Selected analytical results for Sub-Area A3 are shown in Table 4-5. Summaries of the laboratory results are included in Appendices E through I.

In addition to the laboratory data, 297 portable GC soil sample analyses were conducted. A summary of the portable GC results is included in Appendix J.

During installation of a Type I soil boring in Sub-Area A3 (AB035), located approximately 5 feet east of the decontamination pad, a drum was encountered approximately 6 feet below the ground surface. This discovery initiated a removal action, which was performed by Bay West, Inc., of Minneapolis, Minnesota, a subcontractor to FMC Corporation. The Bay West documentation report is included as Appendix A. Thirty-one drums containing waste liquids, pastes, and sludges were removed and placed into overpack barrels. Many of the drums encountered within the excavation were observed to leak portions of their contents while being removed. Other waste debris was sieved from excavation soils, and the soils were returned to the removal action excavation. After the excavation was backfilled, soil borings were installed within the trench. Soil samples were collected from fill and native soils for full CLP analysis.

4.4.2 Summary of Observed Chemical Impacts

Sub-Area A3 has been impacted by past site activities; see below for further discussion. In terms of frequency of detection and concentration, VOCs represent the primary type of chemical impact in this sub-area. The lateral extent of contamination that contains concentrations greater than 10 μg/kg TCE (laboratory value), as shown on Figure 4-2, or 10 μL/L (total VOCs—portable GC), as shown on Figures 4-3, 4-4, and 4-5, appears to encompass the entire northwestern portion of Sub-Area A3 in shallow, intermediate, and deep soils. However, areas which contain concentrations greater than 200 μg/kg TCE (laboratory value), as shown on Figure 4-2, include three small areas, each approximately 50 feet in diameter, in the shallow soils. A broader area of contamination in excess of 100 μL/L total VOCs on the portable GC was identified, centered around the permanent decontamination pad in the shallow, intermediate, and deep soils. In summary, within Sub-Area A3 two areas of concern were identified—an area located in the northeastern portion of Area A3 and the area immediately around the permanent decontamination pad. To a lesser extent, chemical impacts were also observed for semivolatiles, pesticides, and metals.

VOCs

Portable GC results (297 soil samples - total VOCs) are as follows:

No. of Samples	Range of Concentrations
28	< 1 μL/L
234	1 μL/L to < 100 μL/L
29	100 μL/L to < 500 μL/L
5	500 μL/L to < 1,000 μL/L
1	> 1,000 μL/L to 1,080 μL/L (maximum)

Laboratory results:

The VOCs detected in the laboratory analysis of soil samples at the highest frequency and concentration were the five halogenated hydrocarbons listed below:

- Trichloroethene (TCE), detected in 94 percent of the samples, with concentrations ranging from 0.6 μg/kg (J, B) to 120,000 μg/kg.
- 1,2-Dichloroethene (total) (DCE), detected in 60 percent of the samples, with concentrations ranging from 1.0 μg/kg (J) to 1,800 μg/kg (D).
- 1,1,1-Trichloroethane (TCA), detected in 44 percent of the samples, with concentrations ranging from 0.4 μg/kg (J) to 2,600,000 μg/kg (D).
- Tetrachloroethene (PCE), detected in 38 percent of the samples, with concentrations ranging from 0.8 μg/kg (J) to 1,200,000 μg/kg.
- 1,1-Dichloroethane (DCA), detected in 22 percent of the samples, with concentrations ranging from 0.5 μg/kg (J) to 34,000 μg/kg (J).

The above constituents are solvents that are commonly used for metal degreasing, and they have also been detected in groundwater at the site (see Subsection 1.2.2).

Both laboratory and portable GC results of soil samples from the shallow (1- to 5-foot) depth interval indicate two main areas of high VOC concentrations—a broad area around the permanent decontamination pad, in and around conductivity Anomaly #13 and an area located in the northeastern portion of Sub-Area A3, corresponding to one of the previously identified conductivity anomalies, Anomaly #14. Approximately half

of Sub-Area A3 exhibits concentrations in excess of 10 μg/kg (laboratory TCE values) or 10 μL/L (total VOCs on the portable GC). Minor chemical contamination was found corresponding to two other conductivity anomalies previously identified (#12, which is unexcavated, and #15, which has been excavated). Figures 4-2, 4-3, 4-4, and 4-5 show the lateral extent of VOC contamination.

The impacted area in the northeastern portion of Sub-Area A3 is related to the previously unexcavated conductivity Anomaly #14. A test pit (AT008) excavated at conductivity Anomaly #14 (refer to Figure 4-1) encountered a buried waste trench and waste-related items (e.g., metal cuttings, scrap metal, glass). A strong oil-like odor was also reported at this location. For description of waste material, refer to Appendix C (Table C-3).

The highest concentrations of VOCs detected near the previously unexcavated conductivity Anomaly #14 were from the soil samples collected from test pit AT008. A total of nine borings were used, in addition to the test pit, to determine the nature and extent of the contamination related to the burial pit.

The highest VOC concentrations reported from the excavation at AT008 occurred at the intermediate (6- to 12-foot) depth. The concentrations decrease with distance away from the burial trench. In a vertical sense, VOC concentrations in nearby borings AB215, AB216, and AB217 vary little with depth, and portable GC concentrations in the tens of μg/L of TCE persist through most, if not all, of the depth intervals. The lateral extent of TCE concentrations greater than 10 μg/kg TCE is approximately 80 feet in all directions radially from test pit AT008.

The second main area that has been impacted by past disposal activities is the area surrounding the permanent decontamination pad which includes the previously unexcavated conductivity Anomaly #13. Soil samples collected below and within the anomaly contained the highest concentrations of VOCs analyzed for this sub-area, as well as for the entire RI field effort. This area includes the location of the removal action discussed above. Table 4-6 lists parameters and laboratory concentrations for soil samples collected from the removal action excavation, designated AT009. The

dominant constituents associated with the decontamination pad area are the halogenated VOCs (TCE, TCA, DCA, 1,2-DCE [total], and PCE), at concentrations up to 2,600,000 μg/kg. Xylenes were also detected at concentrations ranging up to 580,000 μg/kg.

Semivolatile Organic Compounds

A total of 18 semivolatile compounds were detected in the soil samples at concentrations ranging up to 20,000 μg/kg. Most of the semivolatile compounds detected were in four samples related to the removal action excavation, or immediately to the south of the excavation in surface samples from soil borings AB036 and AB037. Most of the semi-volatiles detected are polycyclic aromatic hydrocarbons (PAH). These PAHs are commonly associated with some heavy-range petroleum hydrocarbons that are discussed in the TICs subsection. They may also be associated with the type of waste materials (e.g., asphalt, roofing debris) that have been buried in pits and trenches in the past at the NIROP.

Pesticides/PCBs

A total of nine pesticide compounds were detected in the soil samples; however, three compounds (4,4'-DDT and its breakdown products, 4,4'-DDE and 4,4'-DDD) were detected the most frequently, at concentrations ranging from 6 μg/kg (P) to 450 μg/kg. The highest concentrations reported of DDD, DDE, and DDT were 220 μg/kg, 450 μg/kg, and 400 μg/kg, respectively, from one near-surface soil sample (AB037A). Most of the remaining detections of pesticide compounds were reported from soil samples collected from within the removal action excavation at depths ranging from 3 to 10 feet below the ground surface. Low concentrations of pesticides were also detected at concentrations up to 9 μg/kg in near-surface samples near the previously excavated conductivity Anomaly #15.

Metals

Antimony, copper, iron, lead, manganese, and zinc were all detected at concentrations greater than 10 times background concentrations. The highest concentrations reported were 23 mg/kg (N), (antimony at AT008D), 676 mg/kg (copper at AT008D), 275,000 mg/kg (iron at AT007C), 453 mg/kg (lead at AT008D), 20,700 mg/kg

(manganese at AT007C), and 329 mg/kg (zinc at AB043D). The concentrations appear to decrease with depth. The four samples analyzed from deep intervals showed no evidence of metal impacts, because none of the concentrations were greater than background.

The lead concentration at AT008D (8 to 10 feet) located at the previously unexcavated conductivity Anomaly #14 was 453 mg/kg (approximately 100 times greater than background concentration). Metal concentrations appear to decrease below the 12-foot depth. The total trace metal concentrations ranged from 12 mg/kg to 1,900 mg/kg. Eleven of 24 samples contained total trace metal concentrations greater than the calculated background concentration of 107 mg/kg. Two of the 11 samples exceeding the 107 mg/kg total metals concentration are from test pit AT008; two of the 11 samples are from borings associated with the Decontamination Pad removal action; and the remaining seven are near-surface related.

TICs

Significant TIC concentrations that appear to be petroleum hydrocarbons are present in Sub-Area A3. Three petroleum type peaks were differentiated by their elution range in the gas chromatographic analysis. The first type could be gasoline or similar to a gasoline. The second type could be a fuel oil or similar to a fuel oil. The third type is a heavy-range petroleum hydrocarbon (peaks which have later retention times relative to the earlier retention times of the lighter molecular weight compounds associated with gasoline and fuel oils).

All the gasoline-pattern TIC observations in Sub-Area A3 were in samples from borings AT009, AB043, and AB044, which are located around the permanent decontamination pad. All samples from these locations exhibiting this pattern, were from the D (8 to 10-foot) interval or deeper, except for sample AT009B1.

Heavy-range petroleum hydrocarbon TICs were also observed in soil samples from AT009, AB043, and AB044 at generally the same depth intervals as the gasoline-pattern TICs. The only fuel oil–like pattern TICs observed in Sub-Area A3 were identified in samples from AB043D and AB044D.

All concentrations for TICs are uncertain because TICs are not quantified against standards. However, the petroleum hydrocarbon TIC levels in AT009B1, AT009D2, AB043D, AB043H, and AB044D were high enough to cause the laboratory to dilute these samples so that analysis of SVOC target compounds was possible.

Heavy-range petroleum hydrocarbon TICs were identified at two other locations in Sub-Area A3, AT007C and AT008D, at levels which required dilution to enable analysis of the SVOC target compounds. AT007C is located at conductivity Anomaly #12, and AT008D is located at Anomaly #14.

4.5 Sub-Area A4

This sub-area is located in the north-central portion of the NIROP, north of the main plant, west of Sub-Area A3, and west of the main north-south concrete roadway (Broadway). Figure 4-1 shows the location of this sub-area. This sub-area was investigated for the following reasons:

- Eleven of the 20 conductivity anomalies reported by the U.S. Army Corps of Engineers (1984) (Anomalies #1 through #11) exist within this sub-area. Additional investigation of these locations was required to verify that the soils associated with these anomalies do not contain additional unexcavated wastes or hazardous substances. Anomalies 3, 5, 6, 7, and 10 have been previously excavated during previous investigations (see Subsection 1.2.2).
- Results of a soil gas survey performed in November 1987 indicated that potential sources of VOC contamination still exist in Sub-Area A4.
- Results of the Fall 1990 soil investigation indicated that soils have been impacted in the eastern portion of Sub-Area A4, which is related to the impact noted from the area near the decontamination pad located in the western portion of Sub-Area A3. In addition, the Fall 1990 investigation reported impacts near the previously excavated conductivity Anomaly #10.

The main geologic soil type in this sub-area is sand, ranging from poorly graded sand (SP) to well graded sand (SW). The grain-size distribution of the sand varied significantly to represent a wide range of USCS classifications for sand. A shallow (3- to 7-foot depth) highly variable fine-grained soil (CL, SC, ML, SM) unit underlies the easternmost portion of Sub-Area A4 and is shown on Figure 4-6. The presence of this unit does not appear to influence the detected

range of concentrations or extent of contaminated soils. A more detailed physical description of the study area is included in Appendix C.

4.5.1 Scope of Investigation

Twenty-five soil borings (10 Type 1 and 15 Type 2) and six test pits (Type I) were installed as part of the study area investigation. Soil boring and test pit locations are shown on Figure 4-1. Sixty-two soil samples were analyzed for TCL VOCs, and 32 soil samples were analyzed for TCL semivolatile organic compounds, TCL pesticides/PCBs, and TAL inorganic parameters. Selected analytical results for Sub-Area A4 are shown in Table 4-7. Summaries of the laboratory results are included in Appendices E through I. In addition to the laboratory data, 228 portable GC soil sample analyses were conducted. A summary of the portable GC results is included in Appendix J.

4.5.2 Summary of Observed Chemical Impacts

Sub-Area A4 has been impacted by site activities; see below for further discussion. In terms of frequency of detection and concentration, VOCs and semivolatiles represent the primary type of chemical impact in this sub-area. TCE was detected in 84 percent of the soil samples, and concentrations ranged up to 47,000 μg/kg (D).

The lateral extent of contamination that contains concentrations greater than 10 μg/kg TCE (laboratory value) in shallow (1- to 5-foot) soils is shown on Figure 4-2. The lateral extent of total VOC contamination greater than 10 μL/L (portable GC) and greater than 100 μL/L (portable GC) in shallow soils is shown on Figure 4-3. Nearly the entire northern portion of Sub-Area A4 contains concentrations greater than 10 μg/kg TCE (laboratory value) or 10 μL/L total VOC (portable GC value). The observed chemical pattern is associated with the previously unexcavated conductivity Anomalies #2 and #4 in the shallow soils. There appear to be three localized areas of concern, with TCE detected in soil samples AT004B, AB033B, and AB206B at concentrations of 47,000 μg/kg, 300 μg/kg, and 330 μg/kg, respectively.

Chemical impacts in the intermediate and deep soils appear to be associated with the previously excavated conductivity of Anomalies #3 and #6, which are adjacent to the aforementioned Anomalies #2 and #4. The highest portable GC concentrations for soil borings AB028, AB029, and AB031 were reported in the deep soils associated with Anomalies #3 and #6. Below is a detailed description of the nature and extent of the chemical impacts.

VOCs

Portable GC results (228 soil samples - total VOCs) are as follows:

No. of Samples	Range of Concentrations
19	< 1 μL/L
194	1 μL/L to < 100 μL/L
7	100 μL/L to < 500 μL/L
2	500 μL/L to < 1,000 μL/L
6	> 1,000 μL/L

Laboratory results:

Ten VOCs were detected in soil samples analyzed from Sub-Area A4. The most frequently detected compounds are listed below:

- Trichloroethene (TCE), detected in 84 percent of the samples, with concentrations ranging from 0.8 μg/kg (J, B) to 47,000 μg/kg (D).
- 1,2-Dichloroethene (total) (DCE), detected in 40 percent of the samples, with concentrations ranging from 1.0 μg/kg (J) to 920 μg/kg (D).
- Tetrachloroethene (PCE), detected in 24 percent of the samples, with concentrations ranging 1.0 μg/kg (J) to 2,700 μg/kg (D).

The remaining seven VOCs detected in the soil samples were detected in fewer than 10 percent of the samples.

Both laboratory and portable GC results for soil samples from the shallow (1- to 5-foot) depth indicate one main area of high VOC concentrations, which appears to be associated with conductivity Anomalies #2 and #4, as shown on Figures 4-2 and 4-3. Soil sample AT004B, located within the previously unexcavated conductivity Anomaly #2, contained TCE at a concentration of 47,000 μg/kg (D). The previously unexcavated conductivity Anomaly #4 contained soil sample AT003B, for which TCE was reported at a concentration of 290 μg/kg (E). The lateral extent of VOC contamination in the shallow soils in excess of 10 μg/kg (TCE) encompasses nearly the entire northern portion of Sub-Area A4, as shown on Figure 4-2; this area is approximately the same as shown on Figure 4-3 for shallow soils that contain concentrations greater than 10 μL/L (portable GC VOCs). Both figures also show other localized chemical impacts outside of the main area of impact, namely for soil samples AB033B and AB206B, where TCE was reported at concentrations of 300 μg/kg (D) and 330 μg/kg (D), respectively. Additionally, portable GC results show an area of elevated VOC concentrations in the easternmost portion of Sub-Area A4, which appears to be associated with Anomaly #13, located in the westernmost portion of Sub-Area A3.

The extent of VOCs in intermediate depth (6- to 12-foot) soils appears to be similar to that in the shallow soils, as shown on Figure 4-4.

The extent of VOCs in deep (13- to 20-foot) soils appears to be approximately the same as that in the intermediate soils, as shown on Figure 4-5. All conductivity anomalies previously excavated or unexcavated in this sub-area show chemical impact to some degree, based on both laboratory and portable GC results in shallow, intermediate, and deep soils. However, no data are available below a depth of 12 feet at the test pit locations because all test pits terminated at a depth of 12 feet.

Semivolatile Organic Compounds

A total of 20 PAH semivolatile compounds were detected in soil samples collected in this sub-area. The compounds which were detected in at least 50 percent of the samples are listed below:

- Pyrene: detected in 60 percent of the samples, with concentrations ranging from 80 μg/kg (J) to 130,000 μg/kg (D).

- Fluoranthene: detected in 53 percent of the samples, with concentrations ranging from 240 μg/kg (J) to 160,000 μg/kg (D).

cPAH *• Benzo(a)pyrene: detected in 50 percent of the samples, with concentrations ranging from 73 μg/kg (J) to 41,000 μg/kg (D).

cPAH *• Benzo(k)fluoroanthene: detected in 50 percent of the samples, with concentrations ranging from 100 μg/kg (J) to 29,000 μg/kg.

- Phenanthrene: detected in 50 percent of the samples, with concentrations ranging from 130 μg/kg (J) to 95,000 μg/kg (D).

Nearly all of the semivolatile compounds detected were in the near-surface soil samples. However, two intermediate-depth soil samples (AB032D and AB034D) had semivolatile compounds at concentrations ranging up to 420 μg/kg in the intermediate soil depth. The distance between the two soil borings (approximately 100 feet) tends to indicate that separate sources may be responsible for the semivolatiles. In addition, two deeper soil samples (AB030G and AB031G) also exhibited semivolatile compounds, with concentrations up to 570 μg/kg (J). The distance between the two soil borings (approximately 120 feet) also indicates that separate source areas (previously excavated conductivity Anomalies #7 or #10 and #3) may be responsible for the presence of the semivolatiles. Of the 16 near-surface soil samples that were analyzed for semivolatile compounds, 14 yielded detectable concentrations of semivolatile compounds.

Pesticides/PCBs

A total of 12 pesticide compounds were detected in soil samples from Sub-Area A4. The pesticide compounds detected at the highest frequency and concentration were the three compounds listed below:

- 4,4'-DDT; detected in 47 percent of the samples, with concentrations ranging from 4 μg/kg (P) to 1,400 μg/kg.

- 4,4'-DDD; detected in 41 percent of the samples, with concentrations ranging from 4 μg/kg (P) to 2,900 μg/kg.

- 4,4'-DDE; detected in 38 percent of the samples, with concentrations ranging from 22 μg/kg to 1,900 μg/kg (P).

The remaining nine pesticide compounds, with concentrations ranging from 3 μg/kg (P) to 36 μg/kg (P), were present in less than 10 percent of the samples from this sub-area. All pesticide compounds detected were from the near-surface soils, except for two soil samples (AB031G and AB034D). Boring AB031 is associated with previously excavated conductivity Anomaly #3; boring AB034 is not associated with any of the potential source areas which were the subject of this investigation.

Metals

Shallow soils have been impacted by metals over a wide area. Eleven shallow soil samples contained at least one of the following metals at concentrations greater than 10 times background: copper, lead, or zinc. The highest concentrations were reported in the center of the area, near Anomalies #2, #3, #4, and #6. Ranges in concentrations of copper, lead, and zinc were as follows:

Copper	5.2 to 1,900 mg/kg(*)
Lead	1.0 to 274 mg/kg
Zinc	7.1 to 489 mg/kg

Concentrations of metals slightly above background were reported in four samples collected from the intermediate-depth interval; however, the specific metals were not necessarily the same as those found at elevated levels in shallow soils at the same locations, and the overall trace metal chemistry of these samples was comparable to background. Eight samples collected at depths below 13 feet contained a few metals at concentrations slightly greater than background.

The total trace metal concentrations ranged from 12 mg/kg to 2,348 mg/kg. Sixteen of the 35 soil samples had total trace metal concentrations in excess of 107 mg/kg, the calculated background value. All 16 of the soil samples were collected from the near-surface soils. Sixty-nine percent of the 16 samples contained trace metals in excess

of 1.5 times the 107 mg/kg background value. The results indicate that the presence of elevated trace metal concentrations in Sub-Area A4 is a near-surface phenomenon and that vertical migration of trace metals is minimal.

TICs

Significant TIC concentrations are present in Sub-Area A4. All three types of petroleum hydrocarbon TICs (see description in Subsection 4.3) were observed in Sub-Area A4. TICs ranged in estimated concentrations from 7 μg/kg (J) to 33,000 μg/kg (JN). A total of 25 soil samples contained TICs, including 6 from the volatile scan, and 23 from the semivolatile scan. Nearly all the TICs are associated with semivolatile compounds. The surface sample interval (1 to 3 feet) accounts for 73 percent of all TICs detected for this sub-area. Caution should be used when reviewing TIC data. TICs are tentatively identified at estimated concentrations because they cannot be compared directly to standards that are used during the analysis.

In boring AB031, all three types of petroleum hydrocarbon TICs were observed. Boring AB031 is located in the eastern half of excavation trench #3. At depth intervals A and G, petroleum hydrocarbon TICs were high enough to require dilution so that SVOC target compounds could be analyzed. In the western half of excavation #3, a fuel oil–like pattern was observed in sample AB028A.

In boring AT004, all three types of petroleum hydrocarbon TICs were also observed. Boring AT004 is located in conductivity Anomaly #2, immediately northwest of excavated Anomaly #3. Petroleum hydrocarbon TIC concentrations were high enough in AT004B to require dilution in order for the laboratory to analyze the sample for SVOC target compounds.

Petroleum hydrocarbon TICs were also identified at three other locations in Sub-Area A4, at AT005C (Anomaly #9), AB033B (east of Anomaly #9), and AB030A (between excavated Anomalies #7 and #10). At all three locations, only the heavy-range petroleum hydrocarbon TICs were identified, but not at concentrations requiring dilution for SVOC target compound analysis.

PAH TICs were identified in 13 different locations. Every detection was in the A depth interval (1 to 3 feet). Estimated concentrations at AB032A were generally higher than at the other locations. AB032 is located in previously excavated Anomaly #5.

4.6 Sub-Area B1

This sub-area is located in the northeasternmost portion of the NIROP property, east of Sub-Area A3, north of Area D. Figure 3-1 shows the general location of Sub-Area B1. This sub-area was investigated due to the presence of five conductivity anomalies. Three of five anomalies (#17, #18, and #19) identified in Area B during the electrical conductivity survey, had been previously excavated. The two unexcavated anomalies (#16 and #20) had been evaluated as having either a potential to contain wastes or were not rated. Investigation of the unexcavated anomalies consisted of advancing test pits and sampling to verify that the soils associated with these anomalies do not contain buried wastes. Additional soil borings were performed at the three excavated anomalies to confirm the absence of hazardous substances.

The main near-surface geologic soil types in this sub-area are a silty sand (SM) fill material, and below the fill material, fine-grained soils. An organic soil (OL/OH) that is approximately 3 feet thick, was encountered in the eastern portion of the study area. Underlying all units mentioned above is poorly graded sand (SP). Three of the four boring/pit locations intended to investigate potential waste locations or anomalies did encounter waste materials (e.g., brick, glass, metal, and slag) to depths of 8 feet. A more detailed physical description of the study area is included in Appendix C.

4.6.1 Scope of Investigation

Eight soil borings (three Type 1 and five Type 2) and two test pits (Type I) were installed as part of the study area investigation. Soil boring and test pit locations are shown on Figure 4-7. Eighteen soil samples were analyzed for TCL VOCs; eight soil samples were analyzed for TCL semivolatiles, TCL pesticides/PCBs, and TAL inorganic parameters. Selected analytical results for Sub-Area B1 are shown in Table 4-8. Summaries of the laboratory results are included in Appendices E through I. In addition to the laboratory data, 74 portable GC soil sample analyses were conducted. A summary of the portable GC results is included in Appendix J.

4.6.2 Summary of Observed Chemical Impacts

Sub-Area B1 has been slightly impacted by past site activities; see below for further discussion. The impacts observed in this sub-area appear to be localized around the previously excavated conductivity Anomaly #18. Anomaly #18 was the only location in Sub-Area B1 which required step-out Type 2 soil borings to be installed due to the detection of VOCs, based on portable GC results. Most of the chemical impact appears to be in the shallow soils for VOCs, semivolatiles, and pesticides, at relatively low levels. In addition, PCE and TCE were detected at concentrations ranging up to 27 μg/kg in soil sample BB204G at a depth of 16 to 18 feet. Below is a detailed description of the nature and extent of the chemical impacts.

VOCs

Portable GC results (74 soil samples - total VOCs) are as follows:

No. of Samples	Range of Concentrations
74	< 1 μL/L
2	1 μL/L and 28.6 μL/L (both detects are from boring BB002)

Laboratory results:

The VOC detected at the highest frequency and concentration was acetone, ranging from 130 μg/kg to 2,600 μg/kg. The acetone is most likely associated with the isopropyl alcohol that was used in field decontamination of split-spoon samplers. Twenty-two of the 25 field rinseate samples detected acetone ranging from 3 μg/L to 73 μg/L. Twenty-five trip blanks contained acetone at reported concentrations of 3 μg/L to 12 μg/L. Additional support for concluding that acetone is not a site problem is provided in Section 9.

Excluding acetone, the four VOCs detected are listed below:

Shallow Soils

- DCA was detected at concentration of 2 μg/kg (J) at BB002B associated with Anomaly #18.

- 1,2-DCE was detected at concentrations of 120 μg/kg (J) and 160 μg/kg, at BB001C associated with Anomaly #17, and at BB002B associated with Anomaly #18, respectively.

- TCE was detected at a concentration of 4 μg/kg (J, B) at BB002B associated with Anomaly #18.

Deep Soils

- PCE was detected at a concentration of 14 μg/kg (J, D) at BB204G associated with Anomaly #18.

- TCE was detected at a concentration of 27 μg/kg (J, D) at BB204G associated with Anomaly #18.

VOCs were not detected in previously unexcavated conductivity Anomalies #16 and #20, and previously excavated conductivity Anomaly #19.

Semivolatile Organic Compounds

Thirteen semivolatile organic compounds were detected at concentrations ranging from 51 μg/kg (J) (fluorene) to 990 μg/kg (fluoranthene) from five of eleven soil samples, nearly all from the near-surface soil depths of 1 to 5 feet. The reported semivolatile compounds are polycyclic aromatic hydrocarbons. The presence of the PAHs in the near-surface soil samples tends to indicate that they are not related to the waste material which was observed to depth of 8 feet within the anomalies. The near-surface soil samples are located in proximity to a railroad spur; therefore, the detection of the PAH compounds may be due to treated railroad ties.

Pesticides/PCBs

Seven pesticide compounds were detected at concentrations ranging from 6 μg/kg (P) (endrin aldehyde) to 180 μg/kg (4,4'-DDD) from four of five near-surface soil samples. The surface soil sample from BT002 (Anomaly #20) was the only location not exhibiting pesticide compounds. 4,4'-DDT was the only compound detected in all four soil samples, at concentrations ranging from 8 μg/kg (P) to 160 μg/kg. The detection of these pesticide compounds is most likely due to insect control activities practiced in the past.

Metals

Metals impacts appear to exist only in near-surface soils. Lead and copper were detected at eight times background, at concentrations of 37 mg/kg and 43 mg/kg, respectively, in soil sample BB002B. Lead and copper were also detected at three times background, at concentrations of 14.4 mg/kg and 19.2 mg/kg, respectively, in soil sample BB003A. The total trace metal concentrations in sub-area B1 range from 9 mg/kg to 176 mg/kg, compared to 107 mg/kg for background soils. The two soil samples BB002B and BB003A had total trace metal concentrations of 176 mg/kg and 109 mg/kg, respectively, and indicate a possible shallow soil impact at soil sample BB002B (Anomaly #18) and sample BB003A (Anomaly #19).

TICs

TICs ranged in estimated concentrations from 13 μg/kg (J) to 12,000 μg/kg (J). A total of ten soil samples contained TICs; one was from the volatile scan and ten were from the semivolatile scan. The near surface sample intervals (1 to 5 feet) account for 71 percent of all TICs detected for this sub-area. At one location, BB002B, heavy-range petroleum hydrocarbon TICs were identified during data validation. This type of TIC was observed in scattered locations across the site. PAH TICs were reported at BT001A and BB002B.

Caution should be used when reviewing TIC data. TICs are tentatively identified at estimated concentrations because they cannot be compared directly to standards that are used during the analysis.

4.7 Sub-Area B2

This sub-area is located in the northeasternmost portion of the NIROP property east of Sub-Area A3, north of Area D, and immediately south of Sub-Area B1. Figure 3-1 shows the location of this sub-area.

This area was investigated due to the aerial photograph review, which revealed a potential unknown pit or trench (BT003) and also a potential drum storage area (BT004).

The main soil types in the sub-area are a silty sand (SM) fill material to a depth of 6.5 feet, overlying a 2-foot layer of black organic silt with peat. Below the organic silt is a poorly graded sand (SP) to well graded sand (SW). A detailed physical description of the study area is included in Appendix C.

4.7.1 Scope of Investigation

Two Type I test pits were installed as part of the study area investigation. Test pit locations are shown on Figure 4-7. A total of four soil samples were analyzed for TCL VOCs, TCL semivolatiles, TCL pesticides/PCBs, and TAL inorganic parameters. Selected analytical results for Sub-Area B2 are shown in Table 4.9. Summaries of the laboratory results are included in Appendices E through I. In addition to the laboratory data, a total of 10 portable GC soil sample analyses were conducted. A summary of the portable GC results is included in Appendix J.

4.7.2 Summary of Observed Chemical Impacts

Sub-Area B2 does not appear to have been impacted by waste disposal activities because no VOCs or semivolatile compounds were detected, and metals concentrations are comparable to background; see below for further discussion. However, pesticide compounds were detected at the near-surface soil sample BT004A. Construction-related debris (brick, scrap metal, and wood) was encountered to a depth of 6.5 feet at both test pit locations.

VOCs

Portable GC results (10 soil samples - total VOCs) are as follows:

No. of Samples	Range of Concentrations
10	< 1 μL/L

Laboratory results:

No VOCs were detected by laboratory analysis from the four soil samples collected from this sub-area.

Semivolatiles

No semivolatile compounds were detected from the four soil samples collected from this sub-area.

Pesticides/PCBs

Three pesticide compounds (4,4'-DDT and its breakdown products, 4,4'-DDE, and 4,4'-DDD) were detected at concentrations of 4 μg/kg (P), 18 μg/kg, and 11 μg/kg, respectively, from one near-surface soil sample (BT004A). The pesticide compounds detected are most likely the result of past insect control activities.

Metals

The metals chemistry from the four soil samples collected from this sub-area are comparable to background concentrations. Total trace metal concentrations ranged from 37 mg/kg to 93 mg/kg.

4.8 Area D

This area is located in the east-central portion of the NIROP, immediately northeast of the northeastern corner of the main plant building. This area has been formerly known as the Hazardous Waste Storage Area C. A portion of this area is currently undergoing RCRA closure by FMC and is not included in this RI.

Closure activities for Storage Area C will include installation of a soil vapor extraction (SVE) system. Construction and operation of the SVE will be in accordance with the approved Remedial Action Work Plan by FMC dated July 6, 1992, and amended August 31, 1992. The SVE system will utilize four vapor extraction wells installed to a maximum depth of 20 feet. The wells will be connected via below ground risers to a manifold and a blower. This system will induce movement of volatile contaminants through the soil, into the piping system and manifold to be exhausted to a vertical stack and the ambient air. An emission control device will be connected to the system if emissions testing indicates that MPCA significant emissions rates will be exceeded.

The systems will continue in operation for two years or until sampling results indicate the SVE system is no longer effective. After two years, the SVE system analytical results will be evaluated. If the SVE system is no longer effective, three confirmatory soil borings will be taken to a depth of 20 feet. Continuous samples will be taken and soil samples will be screened for VOCs. Storage Area C will be deemed "clean" if the results from the soil analysis show that the soil will not cause harm to human health or the environment.

Figure 3-1 shows the location of Area D. Area D was investigated based on results of the Fall 1990 soils investigation. During that investigation a previously unknown trench was discovered near former Hazardous Waste Storage Area C. Area D was added to this RI investigation to determine the northern and southern extent of the trench, and to better determine the nature of the constituents present in soils within the trench.

The main soil types encountered in Area D include silty sand (SM) as fill material in the trench and poorly graded sand (SP) outside and below the trench. Additionally, shallow (2- to 6-foot depth) clay till is present at a thickness ranging from 1 to 9 feet thick in the southern and eastern portions of the study area. This clay till is not extensive laterally. Further discussion of Area D (formerly Area C), including the trench, can be found in Technical Memorandum #1 (RMT, 1991b). A more detailed physical description of this study area investigation is included in Appendix C.

4.8.1 Scope of Investigation

Six Type I soil borings were installed as part of the study area investigation. Soil boring locations are shown on Figure 4-8. Twelve soil samples (two per soil boring) were analyzed for TCL VOCs, TCL semivolatiles, TCL pesticides/PCBs, and TAL inorganics (USEPA Level 4 data). Summaries of the laboratory results are included in Appendices E through I. Selected analytical results for Area D are shown in Table 4-10. In addition to the laboratory data, a total of 46 portable GC soil sample analyses were conducted. A summary of the portable GC results is included in Appendix J. The extent of the formerly unknown trench was estimated and is shown on Figure 4-8.

4.8.2 Summary of Observed Chemical Impacts

Area D has been impacted by past site activities associated with the buried trench and the former Hazardous Waste Storage Area C (which is not addressed in this investigation); see below for further discussion. In terms of frequency of detection and concentration, VOCs and pesticide compounds represent the primary types of chemical impact in this area. To a lesser extent, chemical impacts were also observed for semivolatiles and metals. Additionally, soil boring DB029, which is located outside of the trench, also exhibited chemical impacts in shallow- and intermediate-depth soils. Soil boring DB029 contained the most compounds that were detected in this area. Below is a detailed description of the nature and extent of the chemical impacts.

VOCs

Portable GC results (46 soil samples - total VOCs) are as follows:

No. of Samples	Range of Concentrations
31	< 1 μL/L
15	1 μL/L to 16.8 μL/L

Laboratory results:

The VOC detected at the highest concentration was acetone, at a concentration of 1,400 μg/kg (B, D, E). The acetone is most likely associated with the isopropyl alcohol that was used in field decontamination of the split-spoon samplers. Twenty-two of the 25 field rinseate samples detected acetone ranging from 3 μg/L (B, J, U) to 73 μg/L (B, U). Additional support for concluding that acetone is not a site problem is provided in Section 9.

Other than acetone, the VOCs detections are summarized below:

- PCE, detected in 6 of 12 samples, with concentrations ranging from 1.0 μg/kg (J) to 11 μg/kg (J).
- TCE, detected in 4 of 12 samples, with concentrations ranging from 7 μg/kg (J, B,) to 63 μg/kg.

The VOCs detected were from soil samples collected from the trench, except for the near-surface soil sample DB029A. Only TCE and PCE were detected for VOCs. The highest concentrations of VOCs were from TCE, from borings that were closest to the center of the trench: DB034 (63 μg/kg) and DB033 (46 μg/kg). The only other detectable concentration of TCE was from DB029A, at an estimated concentration of 9 μg/kg (J, B).

These VOC constituents are typical of the compounds detected in the past for this area. The VOCs detected occurred in the shallow and intermediate soil depths, and no detections were reported in the deep soils.

Semivolatiles

A total of 13 semivolatiles were detected, and concentrations ranged from 84 μg/kg (J) (carbazole) to 1,600 μg/kg (benzo(b)fluroanthene). All 13 semivolatiles detected are polycyclic aromatic hydrocarbons (PAHs) and were detected in one near-surface soil sample (DB029A). Pyrene and fluoranthene were also detected in another near-surface sample (DB033A), at a concentration of 140 μg/kg (J) and 170 μg/kg (J), respectively.

The PAHs detected from the near-surface soil sample (DB029A) may be due to the presence of cinders which were encountered at the surface of this soil boring location, as noted in the boring log. Cinders were not reported at soil boring DB030, which is located next to soil boring DB029, or at the locations of the other borings in the area.

Pesticides/PCBs

A total of five pesticide compounds were detected:

- 4,4'-DDT, detected in 58 percent of the samples and 83 percent of the near-surface samples, at concentrations ranging from 5 μg/kg to 200 μg/kg (P).
- 4,4'-DDE, detected in 50 percent of the samples and 67 percent of the near-surface samples, at concentrations ranging from 5 μg/kg (J) to 140 μg/kg (P).
- 4,4'-DDD, detected in 33 percent of the samples and 50 percent of the near-surface samples, at concentrations ranging from 7 μg/kg to 70 μg/kg.

- Dieldrin and Endrin were detected at concentrations of 16 μg/kg (P) and 15 μg/kg (P), respectively, from the near-surface soil sample DB029A.

DDT, DDE, and DDD were detected in most of the soil borings in this area at the near-surface depth; however, two soil borings encountered the pesticides in deeper soils. Soil sample DB029E, at a depth of 10 to 12 feet, had detectable concentrations of 4,4'-DDD, 4,4'-DDE, and 4,4'-DDT, although at lesser concentrations than from the near-surface samples. Soil sample DB034C, at a depth of 6 to 8 feet, exhibited 4,4'-DDE and 4,4'-DDT, again at lesser concentrations than the near-surface sample.

The detection of the pesticide compounds in shallow soils in the area indicate that insect control was practiced in this area in the past. However, pesticide compounds have either migrated downward or they have been disposed at depth in the vicinity of DB029 and DB034.

Metals

Copper, chromium, lead, and zinc were detected at concentrations of 937 mg/kg, 43.2 mg/kg, 373 mg/kg, and 325 mg/kg, respectively, which are more than ten times greater than background, from the near-surface soil sample DB029A. Additionally, other lesser exceedances were observed in near-surface soil samples from soil borings DB030, DB031, DB032, and DB033. Soil samples from the intermediate soil depth had a few slight exceedances above background concentrations and are considered comparable to background soil concentrations. The total trace metal concentrations ranged from 28 mg/kg to 1,757 mg/kg. Two of the five samples analyzed from Area D exceeded the total trace metal background concentration of 107 mg/kg by more than 1.5 times. Samples from DB029A had a trace metal total of 1,757 mg/kg and sample DB032A had a trace metal total of 209 mg/kg. Both samples are from the near-surface sample interval.

TICs

Significant TIC concentrations are present at one location, DB031. Gasoline-pattern hydrocarbon TICs and heavy-range petroleum hydrocarbon TICs were observed in DB031F. The concentrations were high enough to require dilution to enable analysis of SVOC target compounds. Minor amounts of PAH TICs were reported in DB029A.

4.9 Sub-Area E1

This sub-area is located on the southeastern portion of the NIROP. Figure 3-1 shows the location of Sub-Area E1. This sub-area was investigated due to the results of a soil gas survey (RMT, 1988b), which reported low levels of VOCs in soils in the vicinity of the aboveground trichloroethane (TCA) storage tank. Soil borings near the tank were needed to determine the nature of the source of the VOCs, and to determine the extent of contamination. Additionally, groundwater monitoring wells 9-S and 22-S, which are located to the south of the TCA tank, have indicated the presence of TCE, TCA, and other contaminants.

The main geologic soil type is fine-grained soil (sandy silt to lean clay) from 0 to 7 feet in depth. Below the 7 foot depth, the soil is poorly graded sand (SP). A more detailed physical description of the study's area of investigation is included in Appendix C.

4.9.1 Scope of Investigation

Two Type 1 soil borings and six Type 2 soil borings were installed in Sub-Area E1. Soil boring locations are shown on Figure 4-9. A total of 12 soil samples were analyzed for TCL VOCs, and four soil samples were analyzed for TCL semivolatiles, TCL pesticides/PCBs, and TAL inorganic parameters. Selected analytical results for Sub-Area E1 are shown in Table 4-11. Summaries of the laboratory results are included in Appendices E through I. In addition to the laboratory data, a total of 62 portable GC soil sample analyses were conducted. A summary of the portable GC results in included in Appendix J.

4.9.2 Summary of Observed Chemical Impacts

Sub-Area E1 has been impacted by site activities; see below for further discussion. The most frequently detected compound was TCE at shallow and intermediate depths. The lateral extent of this shallow- and intermediate-depth TCE contamination is shown on Figure 4-10. No high concentrations of TCA were reported despite the presence of the TCA tank. The two near-surface soil samples collected near the aboveground TCA tank (EB001A and EB002A) exhibited 15 semivolatile compounds at concentrations up to 3,700 μg/kg. To a lesser extent, chemical impacts of the shallow near-surface soil samples were also observed for pesticides and metals. Below is a detailed description of the nature and extent of the chemical impacts.

VOCs

Portable GC results (62 soils samples - total VOCs) are as follows:

No. of Samples	Range of Concentrations
39	< 1 μL/L
23	1 μL/L to 18 μL/L

Laboratory results:

The VOC detected at the highest frequency in laboratory analysis and at the highest concentration was TCE. TCE was detected in seven soil samples, ranging from 0.7 μg/kg (J, B) to 31 μg/kg. Two of the seven detectable VOCs were greater than 10 μg/kg (27 μg/kg and 31 μg/kg), and both detections are from soil samples EB203B and EB203A, respectively.

Since no TCE was detected in intermediate or deep soils in this sub-area at relatively low concentrations, the TCE detected in shallow soil samples from Sub-Area E1 do not appear to be the source of the TCE which has been detected in previous investigations at monitoring wells 9-S and 22-S.

Semivolatiles

A total of 15 semivolatiles were detected in the two near-surface soil samples (EB001A and EB002A), ranging from 50 μg/kg (J) (dibenzofuran) to 3,700 μg/kg (fluoranthene). The 15 semivolatiles detected are polycyclic aromatic hydrocarbons (PAHs). These two boring locations were installed adjacent to the aboveground TCA tank. There could be many sources for these PAHs in this sub-area (e.g., railroad spurs containing treated wood, asphalt surface coverings, and vehicle emissions). This is a heavy traffic area, and may have received particulate fallout from the former coal-powered boiler plant. The relatively high number of semivolatiles detected is most likely due to multiple sources present in this sub-area. Semivolatiles were detected in the surface soils only.

Pesticides/PCBs

Associated with the occurrence of the semivolatile compounds, three pesticide compounds (4,4'-DDD, 4,4'-DDE, and 4,4'-DDT) were measured at concentrations ranging from 110 μg/kg (P) to 930 μg/kg, from the two near-surface soil samples (EB001A and EB002A). These pesticide detections are most likely due to the past insect control activities.

Metals

Copper and lead were detected in the near surface soil sample EB001A at concentrations of 128 mg/kg(*) and 53.1 mg/kg(*), respectively, which are approximately ten times background concentrations. Copper was detected in the near-surface soil sample (EB002A) at a concentration of 6.14 mg/kg, which is approximately the background concentration. The two intermediate-depth samples exhibited metal concentrations comparable to background concentrations. The total trace metals concentrations range from 29 mg/kg to 302 mg/kg. Two of the four samples (EB001A and EB002A) exceeded the background trace metal concentration of 107 mg/kg with values of 302 mg/kg and 183 mg/kg, respectively. Samples analyzed from deeper intervals at both locations were found to contain total metal concentrations below the background total of 107 mg/kg, indicating that downward migration of trace metals is not occurring.

TICs

Significant TIC concentrations were not observed in most samples from this sub-area. TICs ranged in estimated concentrations from 170 μg/kg (JN) to 1,300 μg/kg (JN). A total of three soil samples contained TICs. All were from the semivolatile scan. The near-surface sample interval (1 to 3 feet) accounts for 97 percent of all TICs detected for this sub-area. Minor amounts of PAH TICs were reported in EB001A and EB002A.

Caution should be used when reviewing TIC data. TICs are tentatively identified at estimated concentrations because they cannot be compared directly to standards that are used during the analysis.

4.10 Sub-Area E2

This sub-area is located in the southeastern portion of the NIROP, immediately south of Sub-area E1. Figure 3-1 shows the location of Sub-Area E2. This sub-area was investigated due to analytical results from soil samples collected at soil boring SB4, advanced during the fall 1990 investigation. These samples indicated the presence of TCE in the 3- to 5-foot sample. Additionally, groundwater monitoring wells 9-S and 22-S, which are located in Sub-Area E2, have been found to contain TCE, TCA, and other contaminants. The aerial photograph review indicated the presence of a formerly unknown aboveground storage tank located in the northernmost portion of Sub-Area E2.

The soil types are the same as Sub-Area E1. A more detailed physical description of the study area is included in Appendix C.

4.10.1 Scope of Investigation

Two Type 1 soil borings and four Type 2 soil borings were installed as part of this study area investigation. Soil boring locations are shown on Figure 4-10. A total of eight soil samples were analyzed for TCL VOCs; and four soil samples were analyzed for TCL semivolatiles, TCL pesticides/PCBs, and TAL inorganic parameters. Selected analytical results for Sub-Area E2 are included in Table 4-12. Summaries of the laboratory results are included in Appendices E through I. In addition to the laboratory data, a total of 45 portable GC soil sample analyses were conducted. A summary of the portable GC results is included in Appendix J.

4.10.2 Summary of Observed Chemical Impacts

Sub-Area E2 has been impacted by past site activities. The most compounds detected and the highest concentrations are from one location, at the EB004 soil boring, where four VOC parameters were detected at concentrations up to 120 μg/kg (acetone). Elsewhere, the VOCs in the soil samples were at low concentrations and do not appear to be spatially related.

Soil samples from boring EB004 also exhibit the highest concentrations of compounds detected in this subarea for semivolatiles, pesticides, and metals. Below is a detailed description of the nature and extent of the chemical impacts.

VOCs

Portable GC results (45 soil samples - total VOCs) are as follows:

No. of Samples	Range of Concentrations
20	< 1 μL/L
25	1 μL/L to 13.4 μL/L

Laboratory Results:

The highest concentration of a VOC detected was acetone, in two soil samples (EB004A and EB004D) at concentrations of 120 μg/kg (B). The acetone is most likely associated with the isopropyl alcohol that was used in field decontamination of split-spoon samplers. Twenty-two of the 25 field rinseate samples detected acetone ranging from 3 μg/L (B, J, U) to 73 μg/L (B, U). Twenty-five trip blanks contained acetone at reported concentrations of 3 μg/L to 12 μg/L. Additional support for concluding that acetone is not a site problem is provided in Section 9.

In addition to the acetone, three halogenated hydrocarbons were detected in soil samples from this sub-area. However, the detected concentrations were low:

- DCE: two detections ranging from 4 μg/kg (J) to 33 μg/kg
- PCE: three detections ranging from 0.7 μg/kg (J) to 3 μg/kg (J)
- TCE: four detects ranging from 0.6 μg/kg (J, B) to 6 μg/kg (J, B)

The three detected halogenated hydrocarbons do not appear to be spatially related. The soil boring performed in this study area did not locate a VOC contaminant source that could be responsible for the contaminated groundwater found in monitoring wells 9-S and 22-S.

Semivolatiles

Fifteen semivolatiles were detected in the near-surface soil sample EB004A at concentrations ranging from 160 μg/kg (J) (dibenzofuran) to 7,600 μg/kg (fluoranthene). Ten of these semivolatiles were also detected in the intermediate-depth soil sample (EB004), at concentrations ranging from 83 μg/kg (J) (benzo[k]fluoranthene) to 400 μg/kg (benzo(g,h,i)perylene). The concentrations of these semivolatiles is greater in the near-surface soil sample of EB004 than in the intermediate-depth soil sample. These semivolatiles are PAHs and do not appear to be related to the aboveground storage tank which was identified in the aerial photograph review. Because the semivolatile compounds detected from soil boring EB004 are nearly the same as the semivolatiles from soil borings EB001 and EB002, the sources of the semivolatiles detected in Sub-Area E2 are most likely the same sources for Sub-Area E1, namely: creosote-treated wood (railroad ties), vehicle emissions due to heavy traffic areas, and/or particulate matter or fallout from the former coal-powered boiler plant, which was located immediately south of Sub-Area E2.

Pesticides/PCBs

A total of four pesticide compounds (4,4'-DDD, 4,4'-DDE, endrin, and gamma-chlordane) were detected in soil samples from soil boring EB004. 4,4'-DDD and 4,4'-DDE were detected at concentrations of 42 μg/kg (P) and 69 μg/kg, respectively, from near-surface soil sample EB004A. Endrin and gamma-chlordane were detected at lesser concentrations of 5 μg/kg (P) and 2 μg/kg (P), respectively, from the intermediate- depth (8 to 10-foot) soil sample EB004D. Fill was encountered to a depth of 8 feet. The location of soil boring EB004 is in an area which is covered with 10 inches of concrete. The pesticides, therefore, would have been applied prior to the construction of the concrete surface material.

Metals

Chemical impacts associated with the trace metal chemistry are localized, and are related to the near-surface soils at the EB004 soil boring location. Copper, lead, and zinc were detected at concentrations of 176 mg/kg(*), 292 mg/kg (*), and 232 mg/kg, respectively, which are more than ten times higher than background. Near-surface soils at soil boring EB003 also have elevated metal concentrations, but only slightly higher than background. No other chemical impacts were noted for soil boring EB003. The total trace metal concentrations range from 32 mg/kg to 779 mg/kg. However, only one of the five samples analyzed (EB004A) was found to exceed the total trace metals concentration of 107 mg/kg reported in background samples. Again, as found in other areas, the highest total metal concentration was reported in the near-surface sample interval, and other results do not indicate vertical migration of trace metals.

TICs

TICs ranged in estimated concentrations from 6 μg/kg (J) to 3,400 μg/kg (JN). A total of four soil samples contained TICs; three were from the volatile scan, and two were from the semivolatile scan. The near-surface sample interval (1 to 3 feet) accounts for 52 percent of all TICs detected for this sub-area. Gasoline-pattern hydrocarbon TICs and heavy-range petroleum hydrocarbon TICs were observed in EB004. Gasoline-pattern hydrocarbon TICs were observed in EB003. None of the concentrations were high enough to require dilution for SVOC target component analysis. Minor amounts of PAH TICs were reported in EB004A.

Caution should be used when reviewing TIC data. TICs are tentatively identified, at estimated concentrations because they cannot be compared directly to standards that are used during the analysis.

4.11 Sub-Area F1

This sub-area is located in the southwestern portion of the NIROP. Figure 3-1 shows the location of Sub-Area F1. Sub-Area F1 was investigated as a result of the aerial photograph review which identified a potential drum storage area.

The main geologic unit is poorly graded sand (SP). A more detailed physical description of the study area is included in Appendix C.

4.11.1 Scope of Investigation

One Type I soil boring (FB001) was installed as part of the study area investigation. The soil boring location was centered on the potential drum storage area and is shown on Figure 4-11. A total of two soil samples were analyzed for TCL VOCs, TCL semivolatiles, TCL pesticides/PCBs, and TAL inorganic parameters. Selected analytical results for Sub-Area F1 are shown in Table 4-13. Summaries of the laboratory results are included in Appendices E through I. In addition to the Level 4 laboratory data, a total of eight portable GC soil sample analyses were conducted. A summary of the portable GC results is included in Appendix J.

4.11.2 Summary of Observed Chemical Impacts

Sub-Area F1 appears to have been slightly impacted by past site activities. In terms of concentrations, semivolatiles represent the primary type of chemical impact in this sub-area. The lateral extent of the semivolatile contamination in this area is unknown because there was only one soil boring installed. Additional Type 2 soil borings were not performed in this sub-area, because a review of the original eight portable GC results indicated that no VOCs were detected. The semivolatiles detected in the laboratory-analyzed soil samples would not have been measured by the portable GC. To a lesser extent, chemical impacts were also observed for pesticides and metals. Below is a detailed description of the nature of the chemical impacts.

VOCs

No VOCs were detected in the soil samples collected in this sub-area. This confirms the portable GC results.

Semivolatiles

All of the semivolatiles detected were from the near-surface sample (FB001A) at a depth of 1 to 3 feet. The semivolatiles and their associated concentrations are listed below:

* Benzo(a)anthracene	200 µg/kg (J)
* Benzo(a)pyrene	170 µg/kg (J)
* Benzo(b)fluoranthene	240 µg/kg (J)
* Benzo(k)fluoranthene	160 µg/kg (J)
* Chrysene	230 µg/kg (J)
Fluoranthene	390 µg/kg (J)
Phenanthrene	220 µg/kg (J)
Pyrene	410 µg/kg (J)

* cPAH

These semivolatiles are all polycyclic aromatic hydrocarbons. A 1972 plan set of the existing conditions showed that a railroad spur existed at this location. The semivolatiles detected in this sub-area may be due to the past railroad spur's creosote-treated wood railroad ties. Plan sets dated 1974 show that the railroad spur was no longer present at that time.

Pesticides/PCBs

Two pesticide compounds (4,4'-DDT and its breakdown product, 4,4'-DDE) were detected at concentrations of 21 µg/kg and 18 µg/kg, respectively, from the near-surface soil sample (FB001). These pesticide compounds may be the result of insect control and may have been surface-applied on railroad grades in the past.

Metals

Copper, lead, and zinc concentrations were 26.2 mg/kg, 22.4 mg/kg, and 66.7 mg/kg, respectively, and are greater than two times the background concentrations in the near-surface soil sample (FB001A). However, the total trace metal concentrations were 161 mg/kg in FB001A and 16 mg/kg in FB001E, which is not indicative of metals contamination.

TICs

TICs ranged in estimated concentrations from 350 µg/kg (J) to 6,400 µg/kg (J). A total of one soil sample contained TICs. All TICs were from the semivolatile scan. The near-surface sample interval (1 to 3 feet) accounted for all TICs detected for this sub-area.

Caution should be used when reviewing TIC data. TICs are tentatively identified at estimated concentrations because they cannot be compared directly to standards that are used during the analysis.

4.12 Sub-Area F2

This sub-area is located in the southwestern portion of the NIROP, south of Sub-Area F1. Figure 3-1 shows the location of Sub-Area F2. This area was investigated as a result of the aerial photograph review, which indicated an area of stained soils from a metal shavings railroad car staging area. The railroad cars would apparently remain at this location until filled. This sub-area also includes the location of a recent (1991) plant addition to the Hazardous Materials Storage Area. During the construction of this plant addition, a soil removal action was initiated due to the detection of heavy hydrocarbons. Additional soil borings at this location were required to evaluate whether the soils at this location contain additional unexcavated contaminated soils.

The soil type from a depth of 0 to 9 feet is fill, and consists of a sandy silt. Underlying the fill, the main soil type is a poorly graded sand (SP). A more detailed physical description of the study area is included in Appendix C.

4.12.1 Scope of Investigation

Three Type I soil borings were installed as part of the Sub-Area F2 investigation. Soil boring locations are shown on Figure 4-11. Seven soil samples were analyzed for TCL VOCs, TCL semivolatiles, TCL pesticides/PCBs, and TAL inorganic parameters. Selected analytical results for Sub-Area F2 are shown in Table 4-14. Summaries of the laboratory results are included in Appendices E through I. In addition to laboratory data, a total of 24 portable GC soil sample analyses were conducted. A summary of the portable GC results is included in Appendix J.

4.12.2 Summary of Observed Chemical Impacts

Sub-Area F2 is not significantly impacted by site activities; see below for further discussion. Pesticides and semivolatiles represent the only site-related chemical impacts detected in this study area. Below is a detailed description of the nature and extent of the chemical impacts.

VOCs

Portable GC results (24 soil samples - total VOCs) are as follows:

- 24 below 1 μL/L

Laboratory Results:

The only VOC reported in soils samples laboratory-analyzed samples from Sub-Area F2 is acetone, which was reported at concentration ranging from 180 μg/kg (B) to 1,600 μg/kg (BDE). The presence of acetone is most likely associated with the isopropyl alcohol that was used in field decontamination of split-spoon samplers. Twenty-two of the 25 field rinseate samples detected acetone ranging from 3 μg/L (B, J, U) to 73 μg/L (B, U). No other VOCs were detected in the soil samples from this location. Twenty-five trip blanks contained acetone at reported concentrations of 3 μg/L to 12 μg/L. Additional support for concluding that acetone is not a site problem is provided in Section 9.

Semivolatiles

Two semivolatile compounds were detected, fluoranthene and pyrene, at concentrations of 96 μg/kg (J) and 79 μg/kg (J), respectively, from one near-surface soil sample (FB004A). Similar to the semivolatiles detected in Sub-Area F1, these two semivolatiles are polycyclic aromatic hydrocarbons. The semivolatile detections may be a result of the presence of the railroad spur which used to be located at the site. Semivolatile compounds associated with cutting oils and/or solvents that may have dripped from scrap metal shavings which were loaded onto railroad cars do not appear to have impacted the soils at this location to any measurable extent.

Pesticides/PCBs

Three pesticide compounds (4,4'-DDT and its breakdown products, 4,4'-DDE, and 4,4'-DDD) were detected at concentrations ranging from 7 μg/kg to 30 μg/kg (P) from two near-surface soil samples (FB003A and FB004A). Similar to Sub-Area F1, these three pesticide compounds may be associated with past insect control activities at the site.

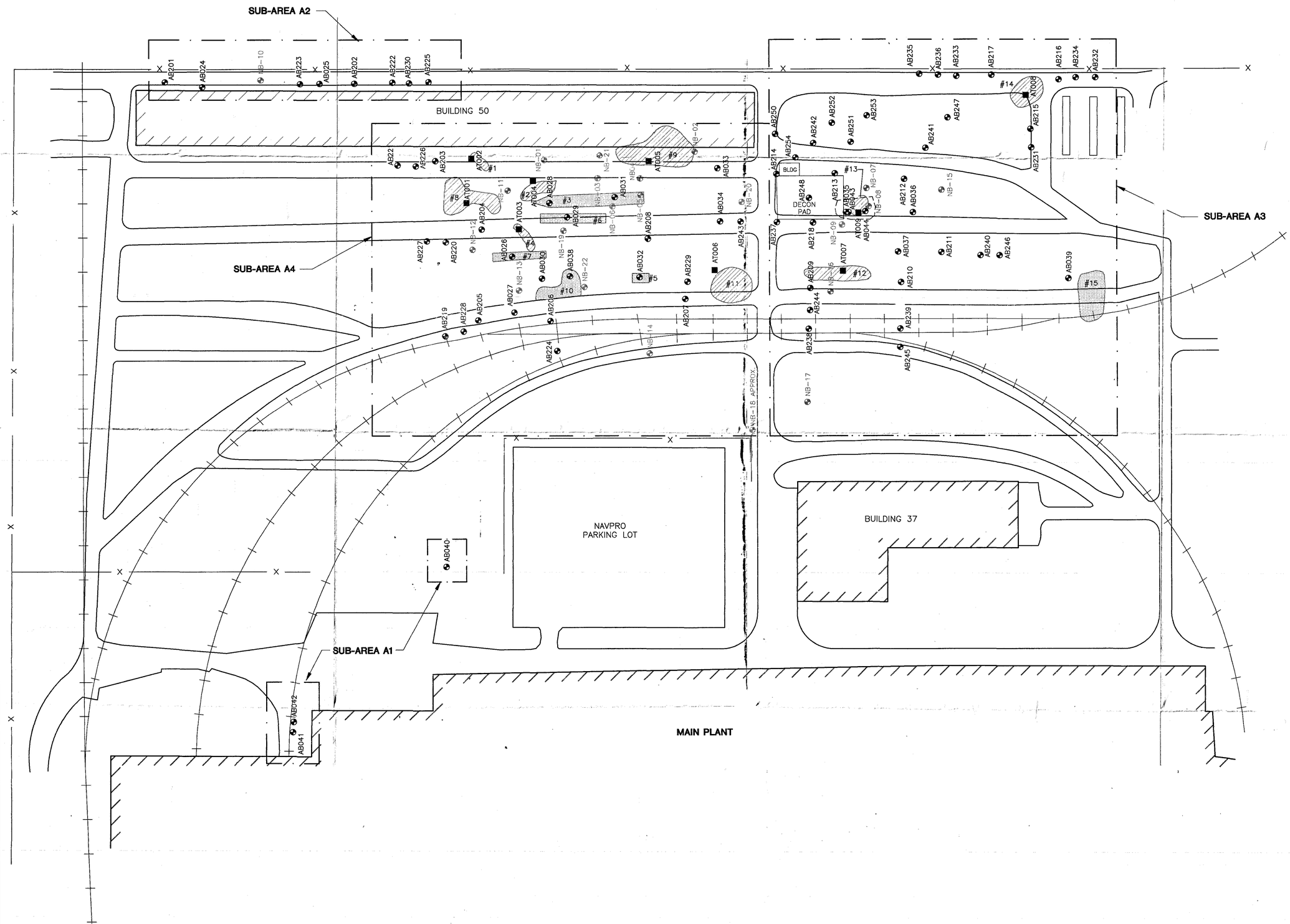
Metals

Any metal exceedances detected were too close to background to represent a significant chemical impact for soils sampled at this sub-area location. The total trace metal concentrations ranged from 36 mg/kg and 113 mg/kg compared to a value of 107 μg/kg for background.

TICs

Significant TIC concentrations are present in this sub-area. TICs ranged in estimated concentrations from 6 μg/kg (J) to 3,500 μg/kg (JN). A total of four soil samples contained TICs; three were from the volatile scan and three were from the semivolatile scan. The near-surface sample interval (1 to 3 feet) account for 97 percent of all TICs detected for this sub-area. Gasoline-pattern hydrocarbon TICs and heavy-range petroleum hydrocarbon TICs were observed in FB002A and FB003A at concentrations requiring dilution to enable analysis of SVOC target compounds.

Caution should be used when reviewing TIC data. TICs are tentatively identified at estimated concentrations because they cannot be compared directly to standards that are used during the analysis.



LEGEND

- BUILDING
- PAVED ROAD
- RAILROAD
- FENCELINE
- ● 2-PC — MONITORING WELL LOCATION & NUMBER
- ■ AT25 — TEST PIT COMPLETED DURING THE RI INVESTIGATION–1992.
- ⊗ AB03 — BORING COMPLETED DURING THE RI INVESTIGATION–1992
- #2 — EXCAVATED CONDUCTIVITY ANOMALIES (SEE NOTE 3 BELOW)
- #5 — UNEXCAVATED CONDUCTIVITY ANOMALIES
- (1.4) — TOTAL VOC'S – PORTABLE GC (uL/L)
- [36] — TCE CONCENTRATION – LABORATORY (ug/KG)
- 10 —— TOTAL VOC CONTOUR – FIELD GC (DASHED WHERE INFERRED)

NOTES

1. BASE MAP SOURCE: U.S. ARMY CORPS OF ENGINEERS, DRAWING CODE XF 215–30–01, PREPARED BY DYNAMIC INTERNATIONAL INC., ROCKVILLE, MD, AUGUST 1983.
2. SEE FIGURE 3–1 FOR AREA A LOCATION.
3. LOCATIONS OF ALL 20 ANOMALIES ARE INCLUDED IN APPENDIX C.
4. DASHED LINE AROUND AT009 REPRESENTS APPROXIMATE TOTAL EXTENT OF THE REMOVAL AREA.

N

50 100

SCALE: 1"=50

NO.	BY	DATE	REVISION	APP'D.
3.				
2.				
1.				

PROJECT: **NIROP**

SHEET TITLE: **AREA A BORING AND TEXT PIT LOCATION MAP**

DRAWN BY: BLG	SCALE: 1"=50'	PROJ. NO. 2313.24
CHECKED BY: J. Koch		FILE NO. 23132401
APPROVED BY: J. Kemp	DATE PRINTED: SEP 23 1993	**FIGURE 4-1**
DATE: SEPTEMBER 1993		

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Madison, WI 53708–8923
Phone: 608–831–4444

Drawing File = H:\2313\2313_24\23132401
Plot File = P:23132401.PRF
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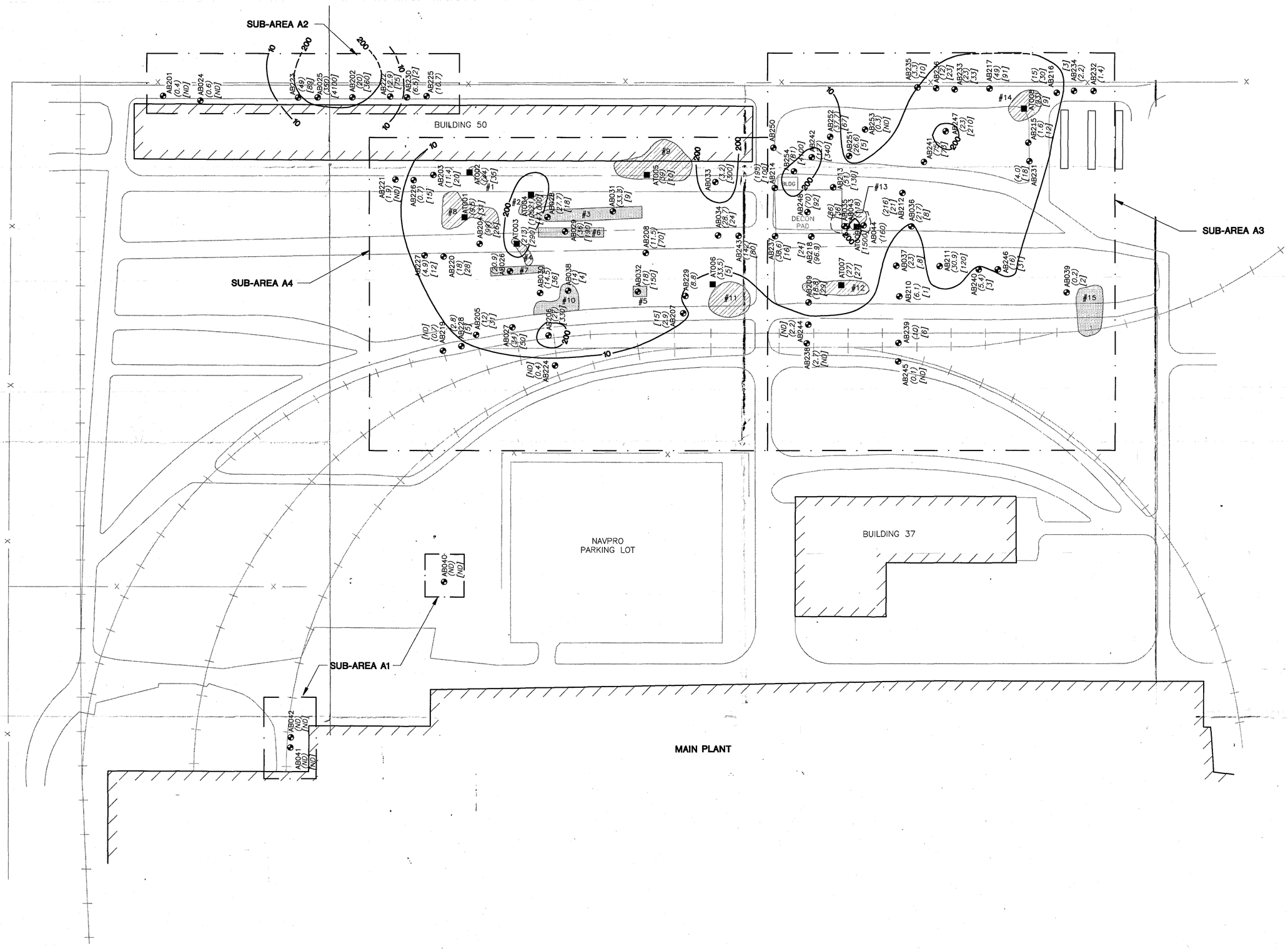

LEGEND

- BUILDING
- PAVED ROAD
- RAILROAD
- FENCELINE
- 2-PC — MONITORING WELL LOCATION & NUMBER
- AT25 — TEST PIT COMPLETED DURING THE RI INVESTIGATION–1992
- AB03 — BORING COMPLETED DURING THE RI INVESTIGATION–1992
- #2 — EXCAVATED CONDUCTIVITY ANOMALIES (SEE NOTE 3 BELOW)
- #5 — UNEXCAVATED CONDUCTIVITY ANOMALIES
- (1.4) — TOTAL VOC'S – PORTABLE GC (uL/L)
- [36] — TCE CONCENTRATION – LABORATORY (ug/KG)
- [ND] — NOT DETECTED
- 10 — TCE CONTOUR (ug/KG) (DASHED WHERE INFERRED)

NOTES

1. BASE MAP SOURCE: U.S. ARMY CORPS OF ENGINEERS, DRAWING CODE XF 215–30–01, PREPARED BY DYNAMIC INTERNATIONAL INC., ROCKVILLE, MD, AUGUST 1983.
2. SEE FIGURE 3–1 FOR AREA A LOCATION.
3. LOCATIONS OF ALL 20 ANOMALIES ARE INCLUDED IN APPENDIX C.
4. DASHED LINE AROUND AT009 REPRESENTS APPROXIMATE TOTAL EXTENT OF THE REMOVAL ACTION AREA.

N

0 50 100
SCALE: 1"=50

NO.	BY	DATE	REVISION	APP'D.
3.				
2.				
1.				

PROJECT: **NIROP**

SHEET TITLE: **AREA A - EXTENT OF TCE CONTAMINATION IN SHALLOW (1'-5') SOILS - LABORATORY RESULTS**

DRAWN BY: BLG	SCALE: 1"=50'	PROJ. NO. 2313.24	
CHECKED BY: G. Koch		FILE NO. 23132407	
APPROVED BY: S. Kemper	DATE PRINTED: SEP 23 1993	**FIGURE 4-2**	
DATE: SEPTEMBER 1993			

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Drawing File = G:\2313_24\23132407
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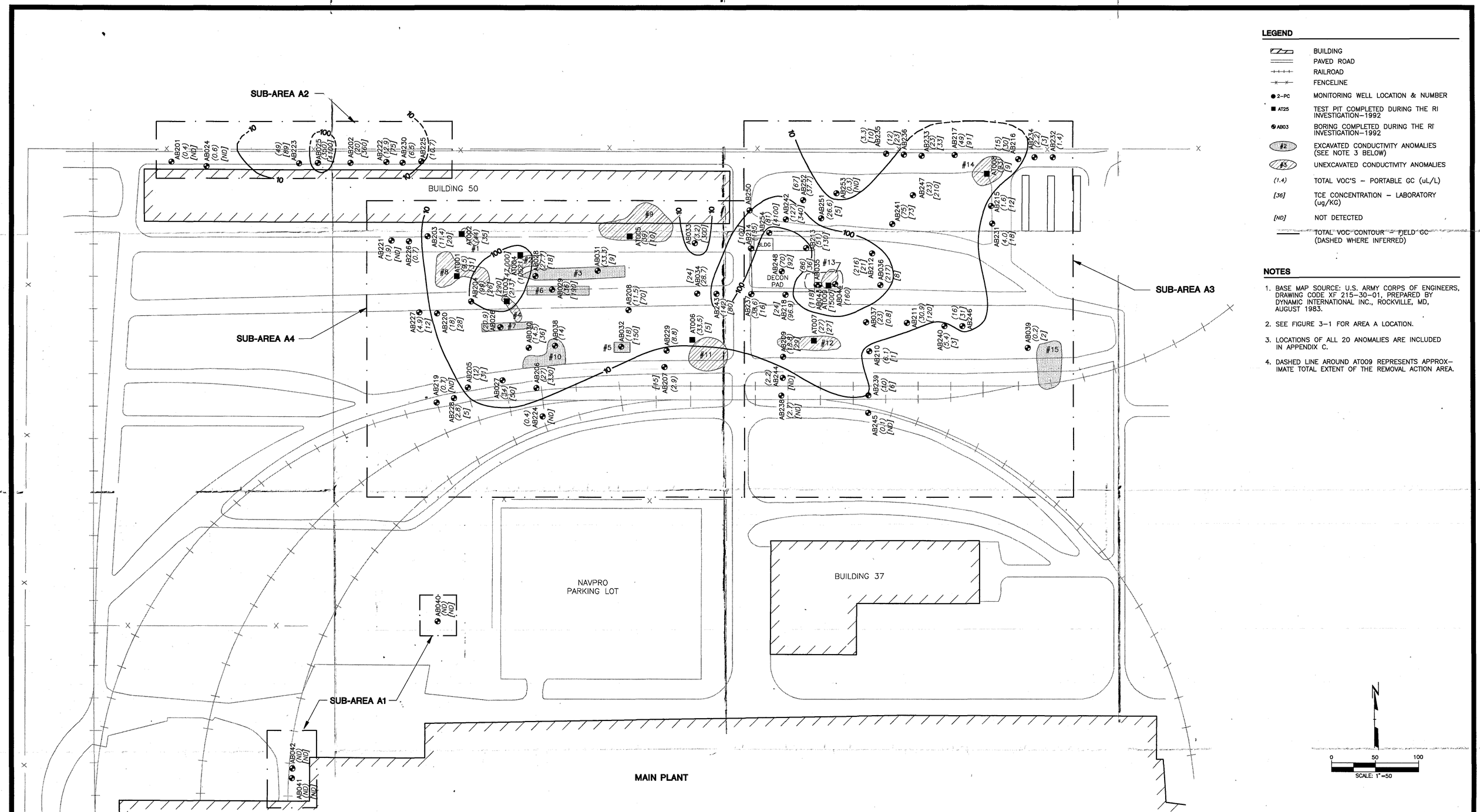

LEGEND

	BUILDING
	PAVED ROAD
	RAILROAD
	FENCELINE
● 2-PC	MONITORING WELL LOCATION & NUMBER
■ AT25	TEST PIT COMPLETED DURING THE RI INVESTIGATION–1992
⊗ AB03	BORING COMPLETED DURING THE RI INVESTIGATION–1992
#2	EXCAVATED CONDUCTIVITY ANOMALIES (SEE NOTE 3 BELOW)
#5	UNEXCAVATED CONDUCTIVITY ANOMALIES
(1.4)	TOTAL VOC'S – PORTABLE GC (uL/L)
[36]	TCE CONCENTRATION – LABORATORY (ug/KG)
[ND]	NOT DETECTED
	TOTAL VOC CONTOUR – FIELD GC (DASHED WHERE INFERRED)

NOTES

1. BASE MAP SOURCE: U.S. ARMY CORPS OF ENGINEERS, DRAWING CODE XF 215–30–01, PREPARED BY DYNAMIC INTERNATIONAL INC., ROCKVILLE, MD, AUGUST 1983.
2. SEE FIGURE 3–1 FOR AREA A LOCATION.
3. LOCATIONS OF ALL 20 ANOMALIES ARE INCLUDED IN APPENDIX C.
4. DASHED LINE AROUND AT009 REPRESENTS APPROXIMATE TOTAL EXTENT OF THE REMOVAL ACTION AREA.

NO.	BY	DATE	REVISION	APP'D.
3.				
2.				
1.				

PROJECT: **NIROP**

SHEET TITLE: **AREA A - EXTENT OF TOTAL VOCs CONTAMINATION IN SHALLOW (1'-5') SOILS - PORTABLE GC RESULTS**

DRAWN BY: BLG	SCALE: 1"=50'	PROJ. NO. 2313.24
CHECKED BY: J. Koch		FILE NO. 23132406
APPROVED BY: S. Kenny	DATE PRINTED: SEP 23 1993	**FIGURE 4-3**
DATE: SEPTEMBER 1993		

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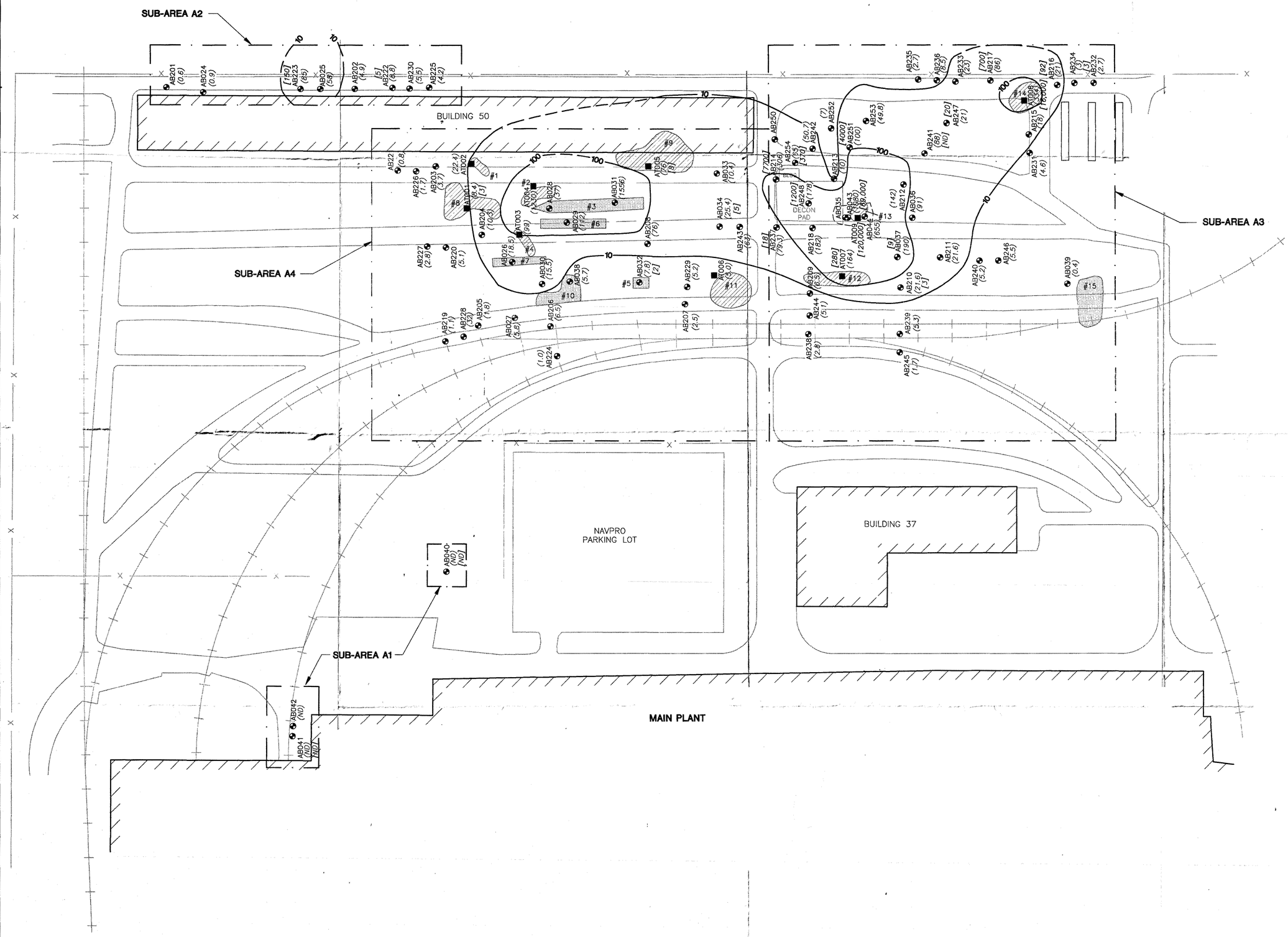

LEGEND

	BUILDING
	PAVED ROAD
	RAILROAD
	FENCELINE
● 2-PC	MONITORING WELL LOCATION & NUMBER
■ AT25	TEST PIT COMPLETED DURING THE RI INVESTIGATION–1992
⊗ AB03	BORING COMPLETED DURING THE RI INVESTIGATION–1992
#2	EXCAVATED CONDUCTIVITY ANOMALIES (SEE NOTE 3 BELOW)
#3	UNEXCAVATED CONDUCTIVITY ANOMALIES
(1.4)	TOTAL VOC'S – PORTABLE GC (uL/L)
[36]	TCE CONCENTRATION – LABORATORY (ug/KG)
[ND]	NOT DETECTED
10	TOTAL VOC CONTOUR – FIELD GC (DASHED WHERE INFERRED)

NOTES

1. BASE MAP SOURCE: U.S. ARMY CORPS OF ENGINEERS, DRAWING CODE XF 215–30–01, PREPARED BY DYNAMIC INTERNATIONAL INC., ROCKVILLE, MD, AUGUST 1983.
2. SEE FIGURE 3–1 FOR AREA A LOCATION.
3. LOCATIONS OF ALL 20 ANOMALIES ARE INCLUDED IN APPENDIX C.
4. DASHED LINE AROUND AT009 REPRESENTS APPROXIMATE TOTAL EXTENT OF THE REMOVAL ACTION AREA.

N

0 50 100
SCALE: 1"=50

NO.	BY	DATE	REVISION	APP'D.
3.				
2.				
1.				

PROJECT: **NIROP**

SHEET TITLE: **AREA A - EXTENT OF TOTAL VOCs CONTAMINATION IN INTERMEDIATE (6'-12') SOILS - PORTABLE GC RESULTS**

DRAWN BY: BLG	SCALE: 1"=50'	PROJ. NO. 2313.24
CHECKED BY: J. Koch		FILE NO. 23132408
APPROVED BY: J. Kenney	DATE PRINTED: SEP 23 1993	FIGURE 4-4
DATE: SEPTEMBER 1993		

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Madison, WI 53708–8923
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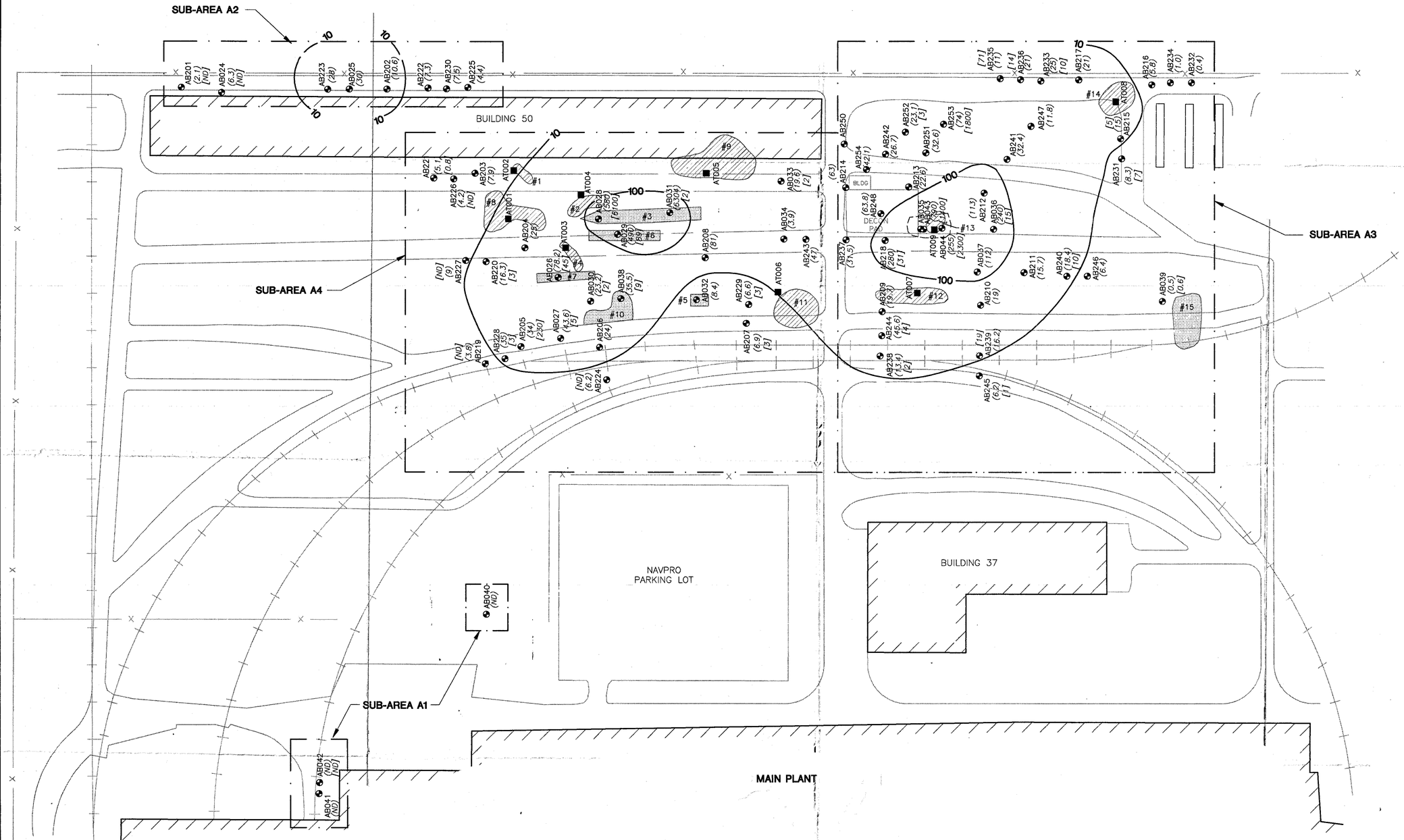

LEGEND

	BUILDING
	PAVED ROAD
	RAILROAD
	FENCELINE
2-PC	MONITORING WELL LOCATION & NUMBER
AT25	TEST PIT COMPLETED DURING THE RI INVESTIGATION–1992
AB03	BORING COMPLETED DURING THE RI INVESTIGATION–1992
#2	EXCAVATED CONDUCTIVITY ANOMALIES (SEE NOTE 3 BELOW)
#3	UNEXCAVATED CONDUCTIVITY ANOMALIES
(1.4)	TOTAL VOC'S – PORTABLE GC (uL/L)
[36]	TCE CONCENTRATION – LABORATORY (ug/KG)
[ND]	NOT DETECTED
10	TOTAL VOC CONTOUR – FIELD GC (DASHED WHERE INFERRED)

NOTES

1. BASE MAP SOURCE: U.S. ARMY CORPS OF ENGINEERS, DRAWING CODE XF 215–30–01, PREPARED BY DYNAMIC INTERNATIONAL INC., ROCKVILLE, MD, AUGUST 1983.
2. SEE FIGURE 3–1 FOR AREA A LOCATION.
3. LOCATIONS OF ALL 20 ANOMALIES ARE INCLUDED IN APPENDIX C.
4. DASHED LINE AROUND AT009 REPRESENTS APPROXIMATE TOTAL EXTENT OF THE REMOVAL ACTION AREA.

N

0 50 100
SCALE: 1"=50

NO.	BY	DATE	REVISION	APP'D.
3.				
2.				
1.				

PROJECT: **NIROP**

SHEET TITLE: **AREA A - EXTENT OF TOTAL VOCs CONTAMINATION IN DEEP (13'-20') SOILS - PORTABLE GC RESULTS**

DRAWN BY: BLG	SCALE: 1"=50'	PROJ. NO. 2313.24
CHECKED BY: J. Roe R		FILE NO. 23132409
APPROVED BY: G. Kenyon	DATE PRINTED: SEP 23 1993	**FIGURE 4-5**
DATE: SEPTEMBER 1993		

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Phone: 608–831–4444

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Plot File = P:23132409.PRF
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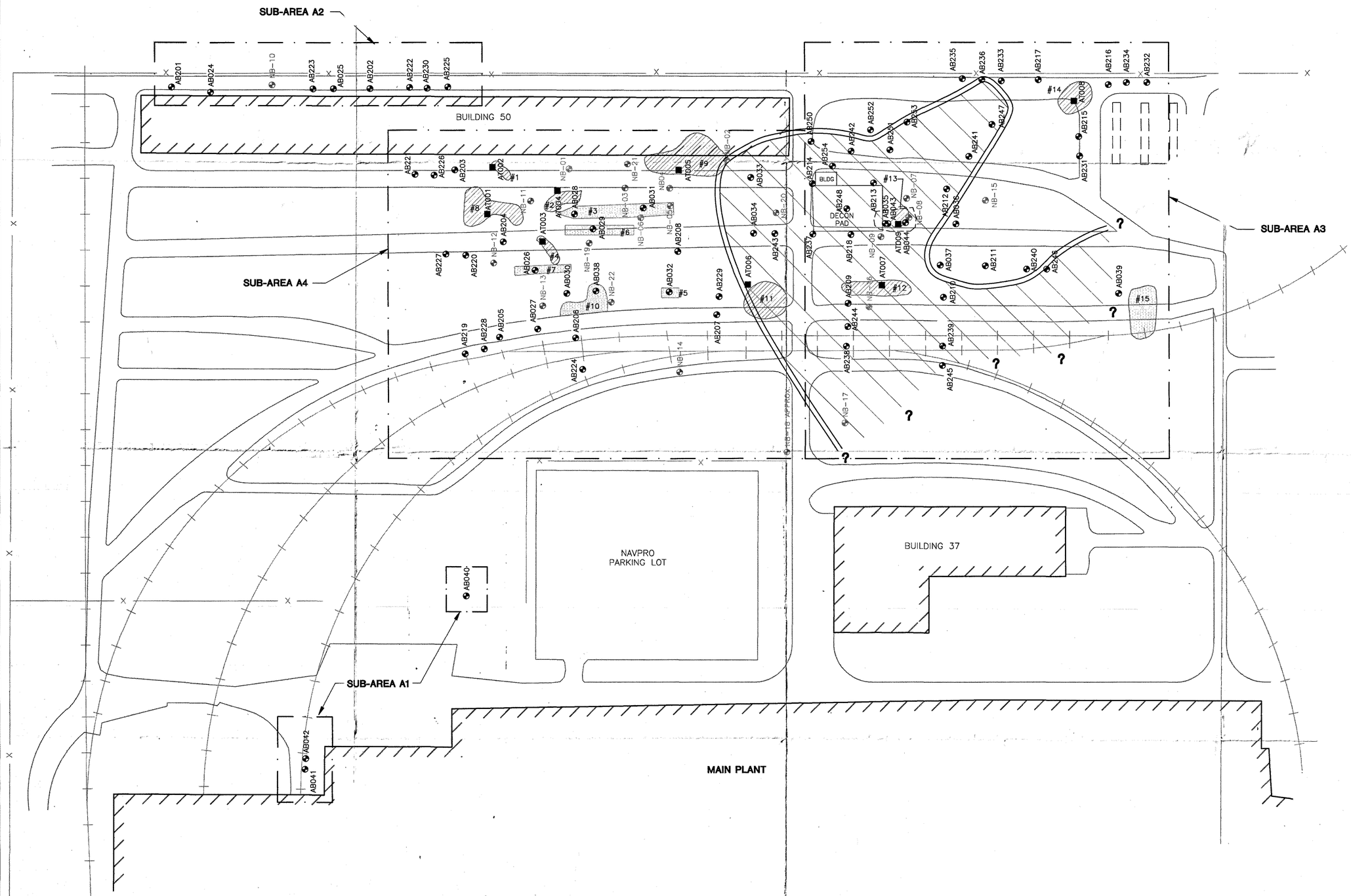

LEGEND

	BUILDING
	PAVED ROAD
	RAILROAD
	FENCELINE
● 2-PC	MONITORING WELL LOCATION & NUMBER
■ AT25	TEST PIT COMPLETED DURING THE RI INVESTIGATION–1992
⊗ AB03	BORING COMPLETED DURING THE RI INVESTIGATION–1992
#2	EXCAVATED CONDUCTIVITY ANOMALIES (SEE NOTE 3 BELOW)
#3	UNEXCAVATED CONDUCTIVITY ANOMALIES
	SHALLOW (3'–7') FINE GRAINED SOIL UNIT (ML, CL, SC, SM) (NOT FILL)

NOTES

1. BASE MAP SOURCE: U.S. ARMY CORPS OF ENGINEERS, DRAWING CODE XF 215–30–01, PREPARED BY DYNAMIC INTERNATIONAL INC., ROCKVILLE, MD, AUGUST 1983.
2. SEE FIGURE 3–1 FOR AREA A LOCATION.
3. LOCATIONS OF ALL 20 ANOMALIES ARE INCLUDED IN APPENDIX C.
4. DASHED LINE AROUND AT009 REPRESENTS APPROXIMATE TOTAL EXTENT OF THE REMOVAL AREA.

N

0 50 100

SCALE: 1" =50

NO.	BY	DATE	REVISION	APP'D.
3.				
2.				
1.				

PROJECT: **NIROP**

SHEET TITLE: **AREA A - SHALLOW FINE-GRAINED SOIL UNIT LOCATION MAP**

DRAWN BY: BLG
CHECKED BY: J. Koch
APPROVED BY: S. Kenyon
DATE: SEPTEMBER 1993
SCALE: 1" =50'
DATE PRINTED: SEP 23 1993
PROJ. NO. 2313.24
FILE NO. 23132411

FIGURE 4-6

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Phone: 608–831–4444

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Plot File = P:\23132411.PRF
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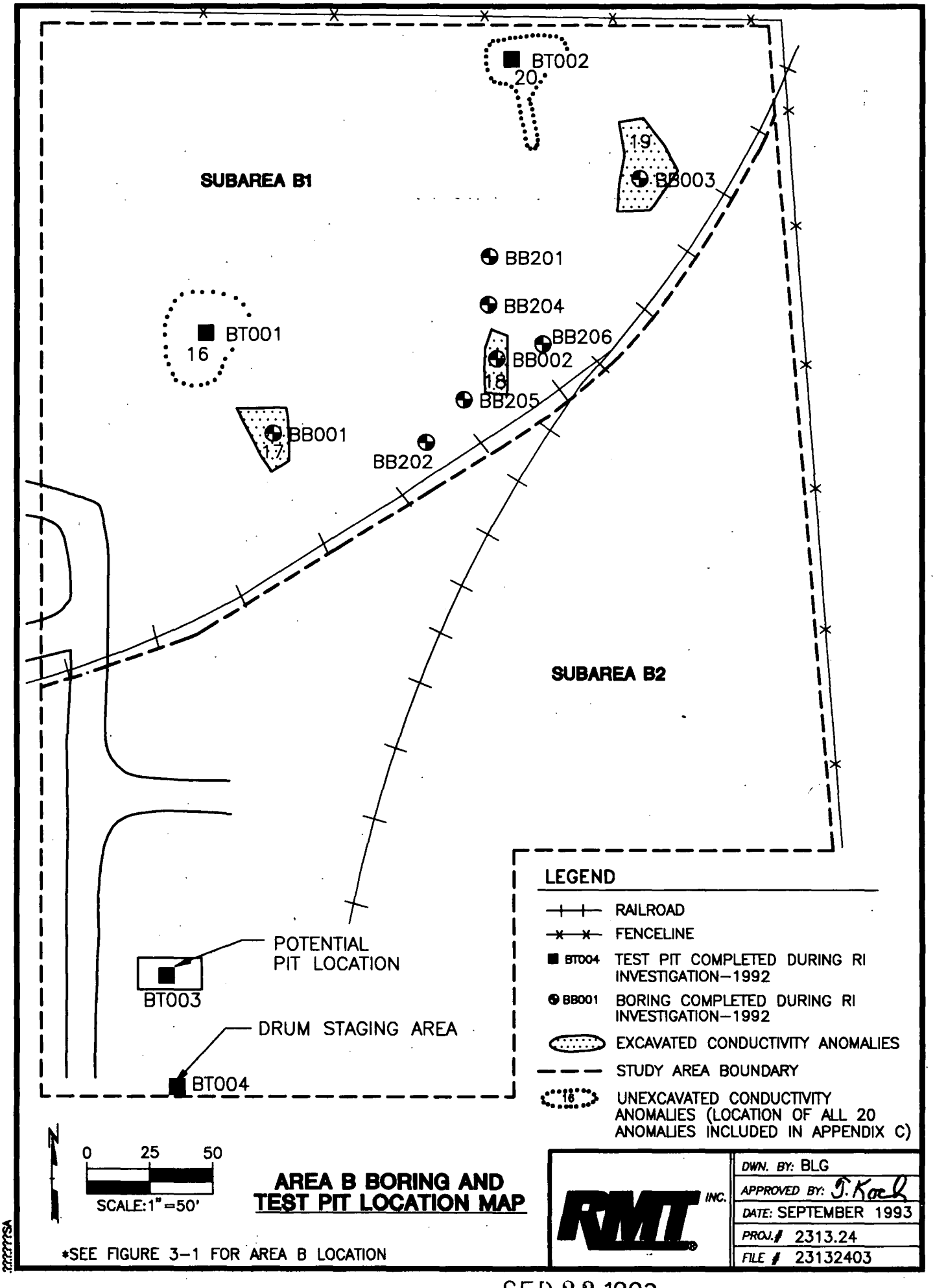

AREA B BORING AND TEST PIT LOCATION MAP

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Pen Table = DPRF
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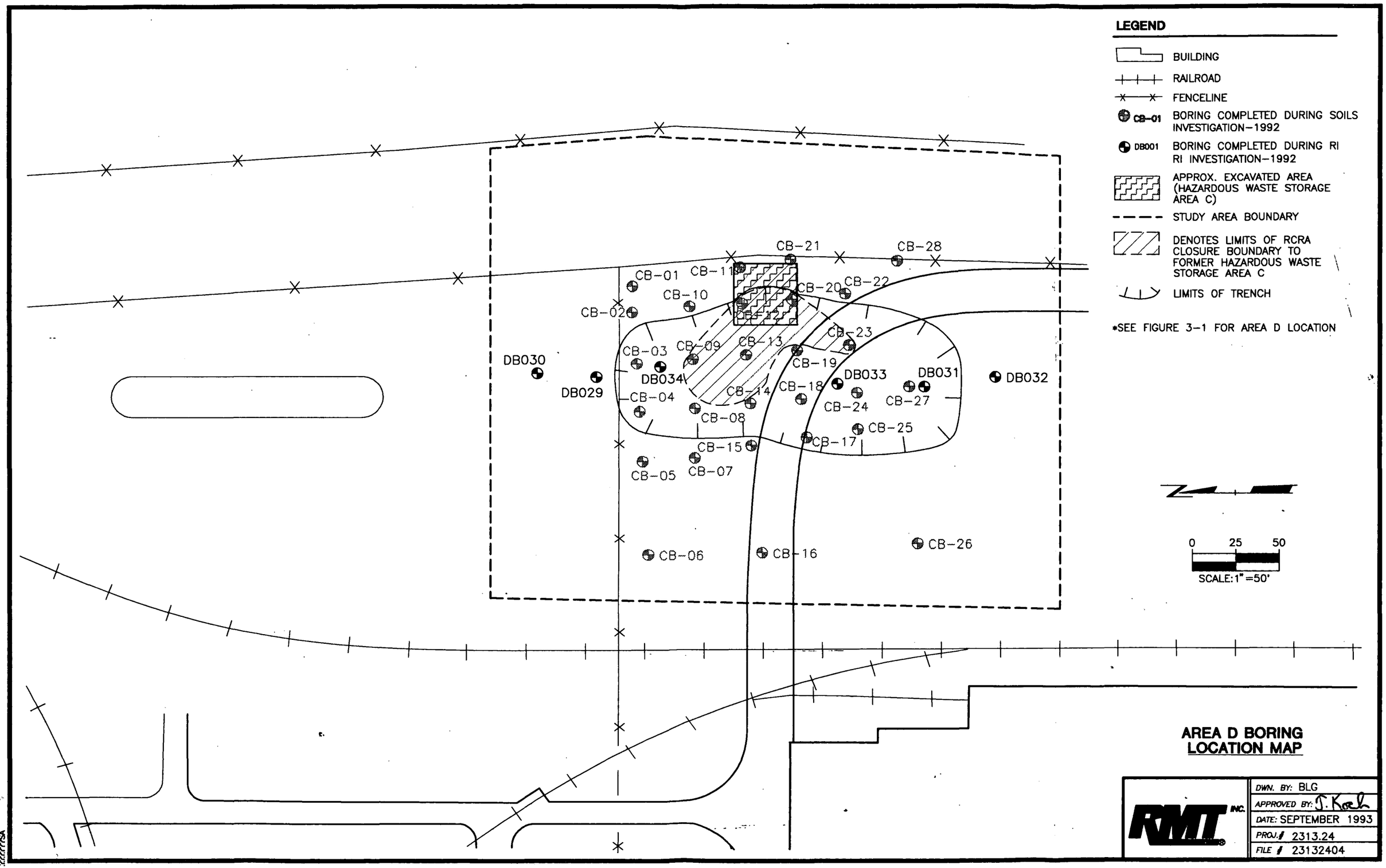
Plot Date ???????SA

SEP 23 1993

FIGURE 4–7



SEP 23 1993

FIGURE 4-8

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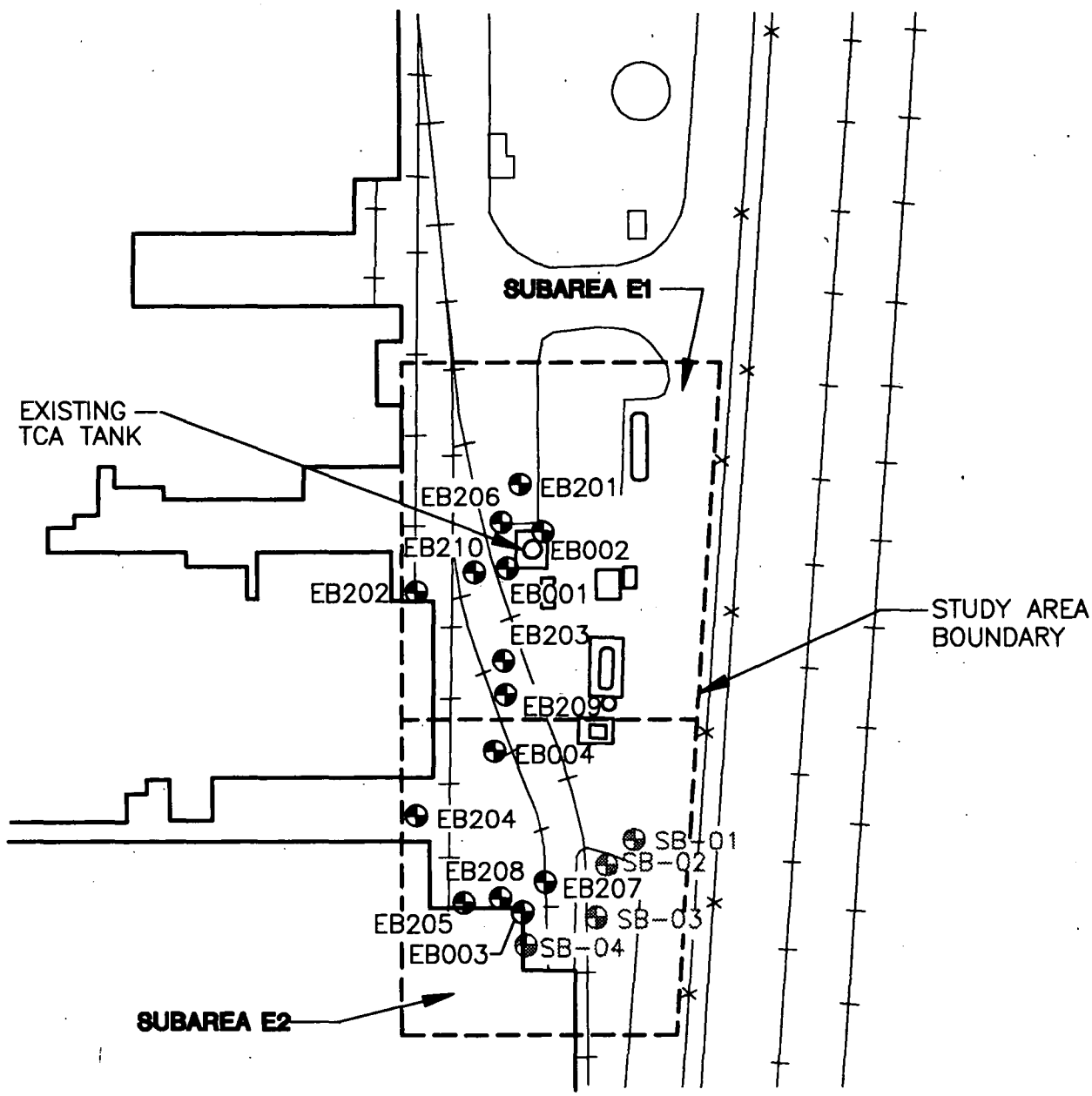
Pen Table =
Plotter DPRF
Plot Date Sep 16 10:31:23 1993



LEGEND

- BUILDING
- RAILROAD
- FENCELINE
- EB001 BORING COMPLETED DURING RI INVESTIGATION–1992
- SB01 BORING COMPLETED IN SOUTHEAST AREA DURING THE SOIL INVESTIGATION–1990
- STUDY AREA BOUNDARY

*SEE FIGURE 3–1 FOR AREA E LOCATION

0 100 200

SCALE: 1" = 100'

N

AREA E BORING LOCATION MAP

RMT INC.

DWN. BY: BLG
APPROVED BY: T. Koch
DATE: SEPTEMBER 1993
PROJ.# 2313.24
FILE # 23132405

Drawing File = G:\2313_24\23132405
Plot File = P:23132405.PRF
Pen Table
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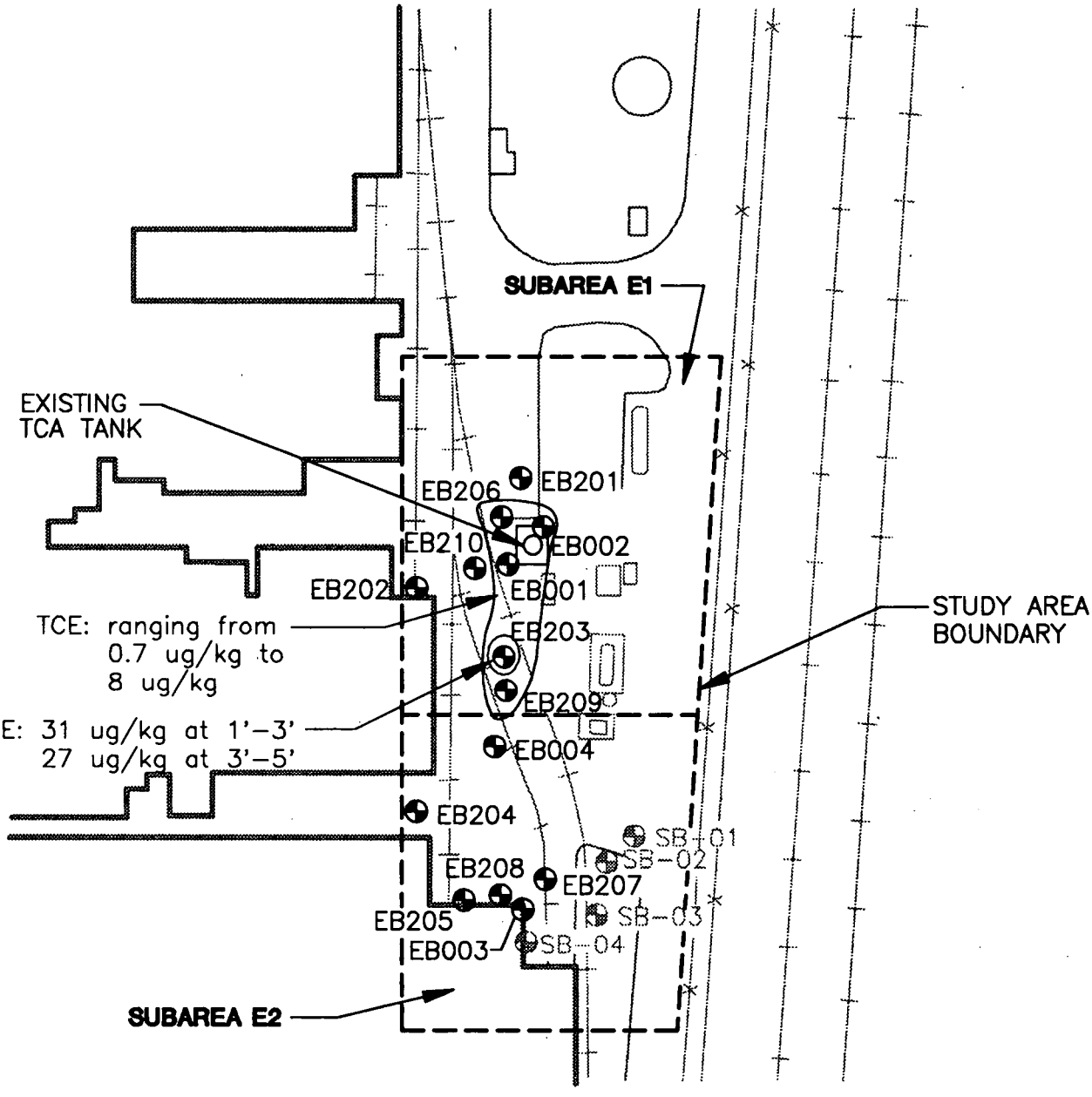
SEP 23 1993

FIGURE 4–9



LEGEND

- BUILDING
- RAILROAD
- FENCELINE
- EB001 BORING COMPLETED DURING RI INVESTIGATION–1992
- SB01 BORING COMPLETED IN SOUTHEAST AREA DURING THE SOIL INVESTIGATION–1990
- STUDY AREA BOUNDARY
- EXTENT OF TCE

*SEE FIGURE 3–1 FOR AREA E LOCATION

N

0 100 200

SCALE: 1"=100'

AREA E EXTENT OF TCE CONTAMINATION IN SHALLOW (1'-3') SOILS

RMT INC.

DWN. BY:	BLG
APPROVED BY:	T. Koch
DATE:	SEPTEMBER 1993
PROJ.#	2313.24
FILE #	23132410

Drawing File 13_24\23132410
Plot File 32410.PRF
22222ccA

SEP 23 1993

FIGURE 4-10

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Plotter = PRF
Plot Date = Thu Sep 16 10:25:58 1993
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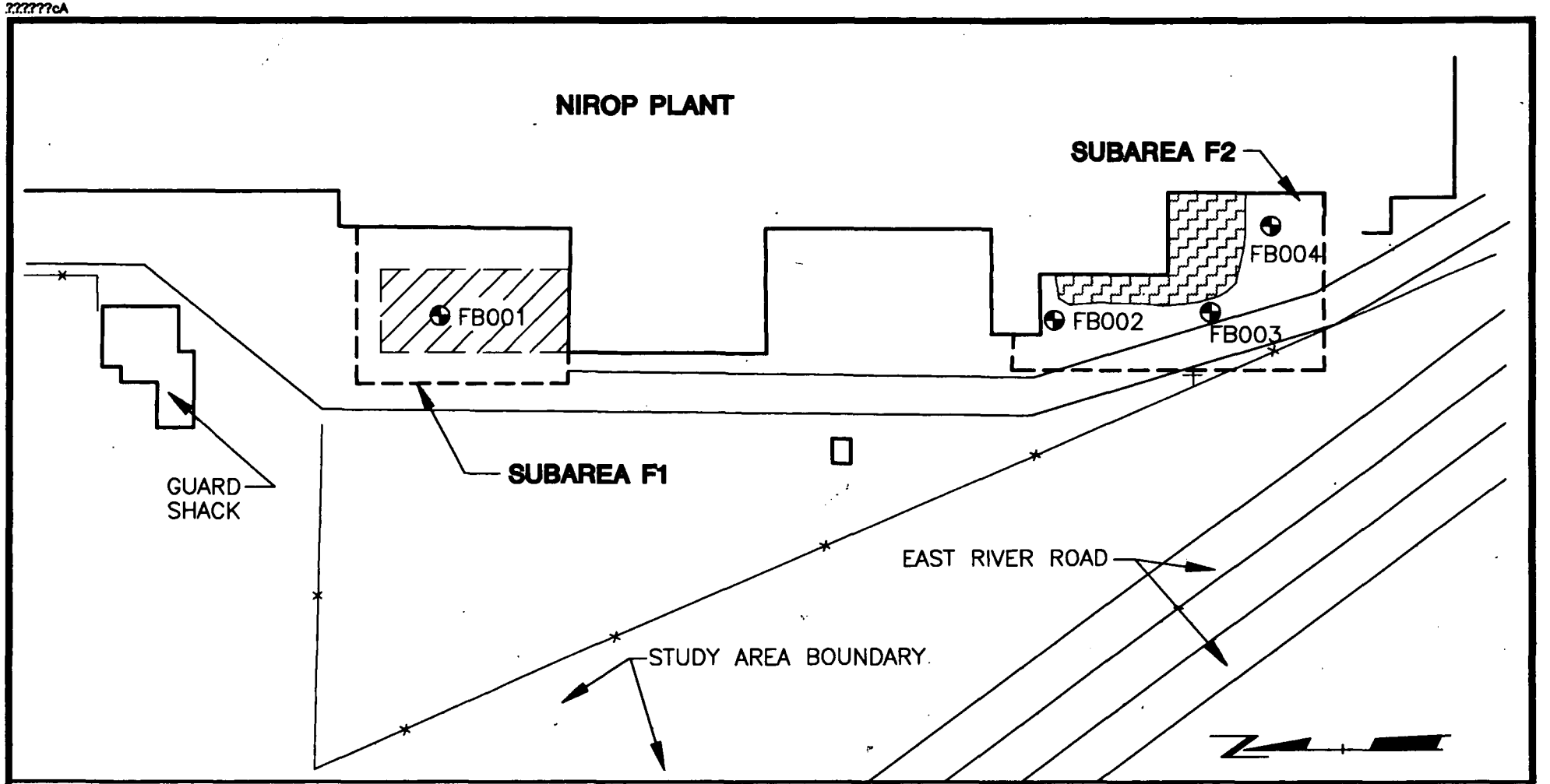

LEGEND

- FB001 TYPE 1 BORING LOCATION
- POTENTIAL BARREL STORAGE AREA IDENTIFIED IN AREA 1 PHOTOGRAPHS
- EXCAVATED AREA FOR HAZARDOUS MATERIALS BUILDING ADDITION.
- STUDY AREA BOUNDARY

SEE FIGURE 3-1 FOR AREA F LOCATION

NOTE

1. BASE MAP SOURCE: DEPARTMENT OF THE NAVY. DRAWING #2000522, PREPARED BY FMC CORPORATION, MINNEAPOLIS, MN, SEPTEMBER 1972.
2. HAZARDOUS MATERIALS BUILDING. ADDITION EXCAVATION SOURCE: EXCAVATION DOCUMENTATION REPORT, DECEMBER 1991, BY WENCK ASSOC. INC., MAPLE PLAIN, MN.

0 100 200
SCALE: 1"=100'

AREA F
BORING LOCATION MAP

RMT INC.

DWN. BY:	BLG
APPROVED BY:	J. Koch
DATE:	SEPTEMBER 1993
PROJ.#	2313.24
FILE #	23132402

SEP 23 1993

FIGURE 4-11

TABLE 4-1
LOCAL BACKGROUND CONCENTRATIONS OF INORGANIC CONSTITUENTS

CHEMICAL PARAMETER	UNITS	NUMBER OF DETECTS	NUMBER OF OBSERVATIONS	MINIMUM DETECTED CONCENTRATION	MAXIMUM DETECTED CONCENTRATION	GEOMETRIC MEAN	95% UPPER CONFIDENCE LIMIT	CALCULATED BACKGROUND VALUE
ALUMINUM	MG/KG	20	20	1200	5860	2490	3420	3420
ANTIMONY	MG/KG	0	20	ND (2.0)	ND (2.0)	1.1	1.1	2.0 *
ARSENIC	MG/KG	17	20	0.78	26.3	1.8	8.1	8.1
BARIUM (1)	MG/KG	13	19	10.4	241	22.8	128	128
BERYLLIUM	MG/KG	0	20	ND (1.0)	ND (1.0)	0.53	0.55	1.0 *
CADMIUM	MG/KG	1	20	3.4	3.4	0.57	0.75	1.0 *
CALCIUM	MG/KG	20	20	675	37300	7370	56400	56400
CHROMIUM	MG/KG	20	20	3.6	15.2	7.3	9.3	9.3
COBALT	MG/KG	2	20	13.8	22.3	6.0	7.5	10.1 *
COPPER	MG/KG	8	20	4.7	16.6	3.3	5.7	5.7
CYANIDE, TOTAL	MG/KG	0	20	ND (2.5)	ND (2.5)	1.3	1.4	2.5 *
IRON	MG/KG	20	20	3750	23100	7560	11000	11000
LEAD	MG/KG	20	20	1.1	9.9	3.0	4.8	4.8
MAGNESIUM	MG/KG	20	20	895	14100	3570	8580	8580
MANGANESE (1)	MG/KG	19	19	44.7	2870	304	833	833
MERCURY	MG/KG	0	20	ND (0.10)	ND (0.10)	0.053	0.055	0.10 *
NICKEL	MG/KG	13	20	9.7	51.8	9.6	18.4	18.4
POTASSIUM	MG/KG	13	20	113	1130	139	342	342
SELENIUM	MG/KG	1	20	6.1	6.1	0.37	0.63	0.63
SILVER	MG/KG	1	20	4.4	4.4	1.2	1.4	2.0 *
SODIUM	MG/KG	3	20	119	142	60.6	73.2	101 *
THALLIUM	MG/KG	0	20	ND (0.61)	ND (0.61)	0.32	0.33	0.61 *
VANADIUM	MG/KG	15	20	10.9	42.0	12.5	20.6	20.6
ZINC	MG/KG	20	20	8.2	49.3	15.7	22.4	22.4

* BACKGROUND VALUE IS THE DETECTION LIMIT.
ND (X) = NOT DETECTED. VALUE IN PARENTHESES IS THE DETECTION LIMIT.
(1) MAXIMUM DETECTED VALUE WAS DETERMINED TO BE AN OUTLIER, AND WAS NOT INCLUDED IN THE BACKGROUND STATISTICS.

TABLE 4-2
COMPARISON OF REGIONAL AND LOCAL BACKGROUND CONCENTRATIONS OF METALS AND CYANIDE

Constituents	Minnesota Soils[1]			NIROP Samples Calculated Background
	Minimum	Maximum	Mean	
Aluminum	NA	NA	NA	3420
Antimony	NA	NA	NA	ND (2.0)
Arsenic	NA	NA	NA	8.1
Barium	NA	NA	NA	128
Beryllium	NA	NA	NA	ND (1.0)
Cadmium	0.06	0.74	0.31	ND (1.0)
Calcium	NA	NA	NA	56400
Chromium	14	111	43	9.3
Cobalt	NA	NA	NA	ND (10.1)
Copper	16	50	26	5.7
Cyanide	NA	NA	NA	ND (2.5)
Iron	NA	NA	NA	11000
Lead	< 25	< 25	ND (25)	4.8
Magnesium	NA	NA	NA	8580
Manganese	NA	NA	NA	833
Mercury	NA	NA	NA	ND (0.1)
Nickel	7	66	21	18.4
Potassium	NA	NA	NA	342
Selenium	NA	NA	NA	0.63
Silver	NA	NA	NA	ND (2.0)
Sodium	NA	NA	NA	ND (101)
Thallium	NA	NA	NA	ND (0.61)
Vanadium	NA	NA	NA	20.6
Zinc	28	97	54	22.4

NOTES:
(1) Regional values from "Concentrations of Six Trace Metals in Some Major Minnesota Soil Series," Pierce, F.J., R.H. Dowdy, and D.F. Grigal, Journal of Environmental Quality, Volume 11, No. 3, 1982.
All values shown in mg/kg.
NA Not available.
ND Not detected.
(23) Value in parentheses is the detection limit.

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A1

TABLE 4-3
SELECTED ANALYTICAL RESULTS - SUB-AREA A1
VOLATILES

Sample Id	Sample Date	12DCE UG/KG		EBENZ UG/KG		TCE UG/KG		XYLEN UG/KG	
AB040A	15-JUN-92	2	J	3	J	11	U	5	JB
AB040D	15-JUN-92	10	U	10	U	10	U	10	U
AB041A	08-JUN-92	12	U	12	U	12	U	12	U
AB041C	08-JUN-92	11	U	11	U	11	U	11	U
AB042A	09-JUN-92	11	U	11	U	11	U	11	U
AB042G	09-JUN-92	10	U	10	U	10	U	10	U
AB042G DUP	09-JUN-92	10	U	10	U	10	U	10	U

12DCE = 1,2-DICHLOROETHENE (TOTAL)
EBENZ = ETHYLBENZENE
TCE = TRICHLOROETHENE
XYLEN = XYLENE, TOTAL

PROJECT NUMBE 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A1

TABLE 4-3
SELECTED ANALYTICAL RESULTS - SUB-AREA A1
SEMIVOLATILES

Sample Id	Sample Date	BaA UG/KG		BbF UG/KG		BghiP UG/KG		BaP UG/KG		FLUOR UG/KG		PHEN UG/KG		PYREN UG/KG	
AB041A	08-JUN-92	390	U	390	U	390	U	390	U	390	U	390	U	390	U
AB041C	08-JUN-92	350	U	350	U	350	J	350	U	350	U	350	U	350	U
AB042A	09-JUN-92	350	U	350	U	350	U	350	U	350	U	350	U	350	U
AB042G	09-JUN-92	340	U	340	U	340	U	340	U	340	U	340	U	340	U
AB042G DUP	09-JUN-92	350	U	350	U	350	U	350	U	350	U	350	U	350	U

BaA = BENZO(A)ANTHRACENE
BbF = BENZO(B)FLUORANTHENE
BghiP = BENZO(G,H,I)PERYLENE
BaP = BENZO(A)PYRENE
FLUOR = FLUORANTHENE
PHEN = PHENANTHRENE
PYREN = PYRENE

PROJECT NUMBE 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A1

ABLE 4-3
SELECTED ANALYTICAL RESULTS - SUB-AREA A1
PESTICIDES

Sample Id	Sample Date	44DDD UG/KG		44DDE UG/KG		44DDT UG/KG	
AB041A	08-JUN-92	3.9	U	3.9	U	3.9	U
AB041C	08-JUN-92	3.5	U	3.5	U	3.5	U
AB042A	09-JUN-92	3.5	U	3.5	U	3.5	U
AB042G	09-JUN-92	3.4	U	3.4	U	3.4	U
AB042G DUP	09-JUN-92	3.5	U	3.5	U	3.5	U

44DDD = 4,4'-DDD
44DDE = 4,4'-DDE
44DDT = 4,4'-DDT

PROJECT NUMBE[illegible]2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A1

[illegible]ABLE 4-3
SELECTED ANALYTICAL RESULTS - SUB-AREA A1
METALS

Sample Id	Sample Date	CR MG/KG	CU MG/KG		PB MG/KG	ZN MG/KG
AB041A	08-JUN-92	10.5	6.7		5.6	24.4
AB041C	08-JUN-92	13.6	4.3	U	1.9	10.2
AB042A	09-JUN-92	8.9	10.3	*	4.2	26.0
AB042G	09-JUN-92	6.3	4.6	B*U	2.1	8.0
AB042G DUP	09-JUN-92	4.7	5.1	B*U	1.5	11.3

CR = CHROMIUM
CU = COPPER
PB = LEAD
ZN = ZINC

SEE TABLE OF CONTENTS FOR DEFINITION OF DATA QUALIFIERS.

PROJECT NUMBE[illegible]2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A2

TABLE 4-4
SELECTED ANALYTICAL RESULTS - SUB-AREA A2
VOLATILES

Sample Id	Sample Date	11DCA UG/KG		12DCA UG/KG		12DCE UG/KG		PCE UG/KG		111TA UG/KG		112TA UG/KG		TCE UG/KG	
AB024A	09-JUN-92	11	U	11	U	11	U	11	U	11	U	11	U	11	U
AB024G	09-JUN-92	11	U	11	U	11	U	11	U	11	U	11	U	11	U
AB025A	09-JUN-92	54	U	54	U	54	U	54	U	54	U	54	U	920	
AB025B	09-JUN-92	1500	U	1500	U	1500	U	1500	U	1500	U	1500	U	4100	
AB201A	08-JUL-92	11	U	11	U	11	U	11	U	11	U	11	U	11	U
AB201H	08-JUL-92	10	U	10	U	10	U	10	U	10	U	10	U	10	U
AB202A	08-JUL-92	10	U	10	U	10	U	10	U	10	U	10	U	0.9	JB
AB202B	08-JUL-92	12	U	12	U	2	J	25		12	U	12	U	360	D
AB222A	09-JUL-92	11	U	11	U	11	U	26		11	U	11	U	75	
AB222A DUP	09-JUL-92	11	U	11	U	11	U	35		11	U	11	U	85	
AB222C	09-JUL-92	10	U	10	U	10	U	3	J	10	U	10	U	5	JB
AB223A	09-JUL-92	11	U	11	U	11	U	11	U	11	U	11	U	89	
AB223C	09-JUL-92	12	U	12	U	12	U	0.7	J	12	U	12	U	150	
AB230A	10-JUL-92	11	U	11	U	11	U	1	J	11	U	11	U	11	U
AB230B	10-JUL-92	11	U	11	U	11	U	4	J	11	U	11	U	2	JB

11DCA = 1,1-DICHLOROETHANE
12DCA = 1,2-DICHLOROETHANE
12DCE = 1,2-DICHLOROETHENE (TOTAL)
PCE = TETRACHLOROETHENE
111TA = 1,1,1-TRICHLOROETHANE
112TA = 1,1,2-TRICHLOROETHANE
TCE = TRICHLOROETHENE

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A2

TABLE 4-4
SELECTED ANALYTICAL RESULTS - SUB-AREA A2
SEMIVOLATILES

Sample Id	Sample Date	BaA UG/KG		BbF UG/KG		BghiP UG/KG		BaP UG/KG		FLUOR UG/KG		PHEN UG/KG		PYREN UG/KG	
AB024A	09-JUN-92	140	J	130	J	360	U	120	J	290	J	180	J	290	J
AB024G	09-JUN-92	350	U	350	U	350	U	350	U	350	U	350	U	350	U
AB025A	09-JUN-92	350	U	350	U	350	U	350	U	350	U	350	U	350	U
AB025B	09-JUN-92	400	U	400	U	400	U	400	U	400	U	400	U	400	U

BaA = BENZO(A)ANTHRACENE
BbF = BENZO(B)FLUORANTHENE
BghiP = BENZO(g,h,i)PERYLENE
BaP = BENZO(A)PYRENE
FLUOR = FLUORANTHENE
PHEN = PHENANTHRENE
PYREN = PYRENE

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A2

TABLE 4-4
SELECTED ANALYTICAL RESULTS - SUB-AREA A2
PESTICIDES

Sample Id	Sample Date	44DDD UG/KG		44DDE UG/KG		44DDT UG/KG	
AB024A	09-JUN-92	3.6	U	3.6	U	4.5	
AB024G	09-JUN-92	3.5	U	3.5	U	3.5	U
AB025A	09-JUN-92	4.8	P	9.6		28	
AB025B	09-JUN-92	4.4	P	5.3		14	

44DDD = 4,4'-DDD
44DDE = 4,4'-DDE
44DDT = 4,4'-DDT

PROJECT NUMBE 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A2

ABLE 4-4
SELECTED ANALYTICAL RESULTS - SUB-AREA A2
METALS

Sample Id	Sample Date	CR MG/KG	CU MG/KG		PB MG/KG	ZN MG/KG
AB024A	09-JUN-92	11.3	158	*	143	141
AB024G	09-JUN-92	4.2	4.5	B*U	1.8	12.0
AB025A	09-JUN-92	7.5	11.1	*	5.1	17.6
AB025B	09-JUN-92	8.8	12.8	*	5.8	24.3

CR = CHROMIUM
CU = COPPER
PB = LEAD
ZN = ZINC

SEE TABLE OF CONTENTS FOR DEFINITION OF DATA QUALIFIERS.

PROJECT NUMBE[illegible]313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A3

[illegible]ABLE 4-5
SELECTED ANALYTICAL RESULTS - SUB-AREA A3
VOLATILES

Sample Id	Sample Date	11DCA UG/KG		12DCA UG/KG		12DCE UG/KG		PCE UG/KG		111TA UG/KG		112TA UG/KG		TCE UG/KG	
AB035A	10-JUN-92	11	U	11	U	13		7	J	2	J	11	U	36	
AB036A	15-JUN-92	8	J	11	U	210		11	U	1	J	11	U	8	JB
AB036H	15-JUN-92	0.5	J	11	U	9	J	2	J	0.4	J	11	U	15	B
AB037A	10-JUN-92	11	U	11	U	11	U	11	U	11	U	11	U	0.8	JB
AB037D	10-JUN-92	10	U	10	U	4	J	1	J	10	U	10	U	9	JB
AB039A	10-JUN-92	11	U	11	U	11	U	11	U	11	U	11	U	2	JB
AB039H	10-JUN-92	11	U	11	U	11	U	11	U	11	U	11	U	0.6	JB
AB039H DUP	10-JUN-92	11	U	11	U	11	U	11	U	11	U	11	U	11	U
AB043D	20-JUL-92	84		4	J	1800	D	17000	D	7200	D	57	U	69000	D
AB043H	20-JUL-92	110	U	110	U	42	J	2800	E	88	J	110	U	1400	
AB044D	20-JUL-92	37	J	56	U	670		2800	D	1500	E	56	U	11000	D
AB044H	20-JUL-92	22	J	54	U	730		590		63		54	U	2300	D
AB209A	23-JUL-92	11	U	11	U	11	U	11	U	11	U	11	U	0.8	JB
AB209B	23-JUL-92	12	U	12	U	6	J	3	J	3	J	12	U	29	
AB210A	23-JUL-92	2	J	11	U	48		11	U	11	U	11	U	1	JB
AB210D	23-JUL-92	10	U	10	U	2	J	10	U	10	U	10	U	3	JB
AB211A	23-JUL-92	2	J	11	U	16		11	U	8	J	11	U	120	
AB211B	23-JUL-92	11	U	11	U	1	J	11	U	11	U	11	U	1	JB
AB212A	24-JUL-92	11	U	11	U	2	J	11	U	11	U	11	U	2	JB
AB212B	24-JUL-92	11	U	11	U	13		2	J	11	U	11	U	21	
AB213A	23-JUL-92	15	U	15	U	2	J	2	J	2	J	15	U	35	
AB213A DUP	23-JUL-92	12	U	12	U	6	J	4	J	5	J	12	U	90	
AB213B	23-JUL-92	11	U	11	U	9	J	13		4	J	11	U	130	
AB214A	28-JUL-92	11	U	11	U	7	J	11	U	0.8	J	11	U	100	

11DCA = 1,1-DICHLOROETHANE
12DCA = 1,2-DICHLOROETHANE
12DCE = 1,2-DICHLOROETHENE (TOTAL)
PCE = TETRACHLOROETHENE
111TA = 1,1,1-TRICHLOROETHANE
112TA = 1,1,2-TRICHLOROETHANE
TCE = TRICHLOROETHENE

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A3

TABLE 4-5
SELECTED ANALYTICAL RESULTS - SUB-AREA A3
VOLATILES

Sample Id	Sample Date	11DCA UG/KG		12DCA UG/KG		12DCE UG/KG		PCE UG/KG		111TA UG/KG		112TA UG/KG		TCE UG/KG	
AB214C	28-JUL-92	8	J	16	U	240		120		87		3	J	7700	D
AB215A	09-JUL-92	11	U	11	U	11	U	11	U	11	U	11	U	12	B
AB215H	09-JUL-92	11	U	11	U	11	U	11	U	11	U	11	U	5	JB
AB216A	13-JUL-92	11	U	11	U	11	U	11	U	11	U	11	U	30	
AB216D	13-JUL-92	11	U	11	U	11	U	11	U	11	U	11	U	92	
AB217A	13-JUL-92	11	U	11	U	3	J	11	U	11	U	11	U	91	
AB217D	13-JUL-92	56	U	56	U	16	J	56	U	56	U	56	U	700	
AB218A	24-JUL-92	11	U	11	U	3	J	11	U	3	J	11	U	24	
AB218H	24-JUL-92	11	U	11	U	8	J	11		0.9	J	11	U	31	
AB231A	14-JUL-92	11	U	11	U	11	U	11	U	11	U	11	U	18	
AB231H	14-JUL-92	11	U	11	U	11	U	11	U	11	U	11	U	7	JB
AB233A	14-JUL-92	11	U	11	U	11	U	11	U	11	U	11	U	33	
AB233H	14-JUL-92	11	U	11	U	11	U	11	U	11	U	11	U	10	JB
AB234A	15-JUL-92	11	U	11	U	11	U	11	U	11	U	11	U	3	JB
AB234A DUP	15-JUL-92	11	U	11	U	11	U	11	U	11	U	11	U	4	JB
AB234D	15-JUL-92	11	U	11	U	11	U	11	U	11	U	11	U	3	JB
AB235A	15-JUL-92	12	U	12	U	12	U	12	U	12	U	12	U	10	JB
AB235H	15-JUL-92	11	U	11	U	1	J	11	U	2	J	11	U	71	
AB236A	15-JUL-92	11	U	11	U	11	U	11	U	11	U	11	U	23	
AB236H	15-JUL-92	11	U	11	U	11	U	11	U	11	U	11	U	14	B
AB237A	27-JUL-92	11	U	11	U	5	J	11	U	11	U	11	U	16	
AB237C	27-JUL-92	11	U	11	U	7	J	3	J	11	U	11	U	18	
AB238A	27-JUL-92	11	U	11	U	11	U	11	U	11	U	11	U	11	U
AB238H	27-JUL-92	11	U	11	U	11	U	11	U	11	U	11	U	2	JB

11DCA = 1,1-DICHLOROETHANE
12DCA = 1,2-DICHLOROETHANE
12DCE = 1,2-DICHLOROETHENE (TOTAL)
PCE = TETRACHLOROETHENE
111TA = 1,1,1-TRICHLOROETHANE
112TA = 1,1,2-TRICHLOROETHANE
TCE = TRICHLOROETHENE

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A3

TABLE 4-5
SELECTED ANALYTICAL RESULTS - SUB-AREA A3
VOLATILES

Sample Id	Sample Date	11DCA UG/KG		12DCA UG/KG		12DCE UG/KG		PCE UG/KG		111TA UG/KG		112TA UG/KG		TCE UG/KG	
AB238H DUP	27-JUL-92	12	U	12	U	12	U	12	U	12	U	12	U	4	JB
AB239A	27-JUL-92	11	U	11	U	5	J	11	U	11	U	11	U	6	JB
AB239G	27-JUL-92	11	U	11	U	3	J	2	J	1	J	11	U	19	
AB240A	27-JUL-92	11	U	11	U	11	U	11	U	11	U	11	U	3	JB
AB240H	27-JUL-92	11	U	11	U	1	J	11	U	11	U	11	U	10	JB
AB241A	27-JUL-92	1	J	11	U	14		11	U	4	J	11	U	73	
AB241C	27-JUL-92	10	U	10	U	10	U	10	U	10	U	10	U	10	U
AB242A	28-JUL-92	11	U	11	U	12		5	J	3	J	11	U	140	
AB242B	28-JUL-92	1	J	11	U	17		17		15		11	U	340	E
AB244A	28-JUL-92	11	U	11	U	11	U	11	U	11	U	11	U	11	U
AB244H	28-JUL-92	12	U	12	U	12	U	12	U	12	U	12	U	4	JB
AB244H DUP	28-JUL-92	12	U	12	U	12	U	12	U	12	U	12	U	3	JB
AB245A	29-JUL-92	13	U	13	U	13	U	13	U	13	U	13	U	13	U
AB245G	29-JUL-92	11	U	11	U	11	U	11	U	11	U	11	U	1	JB
AB246A	29-JUL-92	11	U	11	U	11	U	11	U	11	U	11	U	6	JB
AB246B	29-JUL-92	14	U	14	U	14	U	14	U	1	J	14	U	31	
AB247A	29-JUL-92	11	U	11	U	11	U	11	U	5	J	11	U	210	
AB247C	29-JUL-92	11	U	11	U	11	U	11	U	11	U	11	U	20	
AB248A	30-JUL-92	11	U	11	U	13		6	J	2	J	11	U	92	
AB248C	30-JUL-92	8	J	65	U	150		160		73		65	U	1200	
AB248C DUP	30-JUL-92	9	J	35	U	120		89		51		35	U	700	E
AB251A	29-JUL-92	11	U	11	U	1	J	11	U	11	U	11	U	5	JB
AB251C	29-JUL-92	52	J	62	U	640		140		79		62	U	4000	D
AB252A	30-JUL-92	11	U	11	U	2	J	0.8	J	1	J	11	U	67	

11DCA = 1,1-DICHLOROETHANE
12DCA = 1,2-DICHLOROETHANE
12DCE = 1,2-DICHLOROETHENE (TOTAL)
PCE = TETRACHLOROETHENE
111TA = 1,1,1-TRICHLOROETHANE
112TA = 1,1,2-TRICHLOROETHANE
TCE = TRICHLOROETHENE

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A3

TABLE 4-5
SELECTED ANALYTICAL RESULTS - SUB-AREA A3
VOLATILES

Sample Id	Sample Date	11DCA UG/KG		12DCA UG/KG		12DCE UG/KG		PCE UG/KG		111TA UG/KG		112TA UG/KG		TCE UG/KG	
AB252H	30-JUL-92	11	U	11	U	11	U	11	U	11	U	11	U	3	JB
AB253A	29-JUL-92	11	U	11	U	11	U	11	U	11	U	11	U	11	U
AB253H	29-JUL-92	56	J	71	U	260		62	J	71	U	71	U	1800	E
AB254A	30-JUL-92	54	U	54	U	190		13	J	25	J	54	U	4100	D
AB254A DUP	30-JUL-92	54	U	54	U	150		54	U	6	J	54	U	660	
AB254C	30-JUL-92	2	J	26	U	47		9	J	10	J	26	U	370	
AT007A	17-JUN-92	3	J	11	U	24		11	U	1	J	11	U	27	
AT007C	17-JUN-92	15	J	22	U	140		21	J	4	J	22	U	280	
AT008A	17-JUN-92	12	U	12	U	2	J	12	U	12	U	12	U	9	JB
AT008D	17-JUN-92	13	U	13	U	1000	JD	13	U	13	U	13	U	11000	D
AT008D DUP	17-JUN-92	12	U	12	U	890	JD	12	U	12	U	12	U	7500	D
AT009B1	23-JUN-92	73	JD	57	U	590	JD	11000	D	500	JD	57	U	1500	D
AT009B1 DUP	23-JUN-92	41	J	57	U	710	JD	25000	D	1200	JD	57	U	2700	D
AT009D1	24-JUN-92	34000	J	67000	U	67000	U	1200000		2600000	D	67000	U	120000	
AT009D2	24-JUN-92	1300	U	1300	U	230	J	28000	D	400	J	1300	U	8800	
AT009D3	24-JUN-92	11	U	11	U	9	J	2	J	0.8	J	11	U	5	JB
AT009E1	25-JUN-92	10	U	10	U	6	J	3	J	0.8	J	10	U	7	JB
AT009E2	26-JUN-92	52	U	52	U	31	J	2	J	3	J	52	U	3	JB

11DCA = 1,1-DICHLOROETHANE
12DCA = 1,2-DICHLOROETHANE
12DCE = 1,2-DICHLOROETHENE (TOTAL)
PCE = TETRACHLOROETHENE
111TA = 1,1,1-TRICHLOROETHANE
112TA = 1,1,2-TRICHLOROETHANE
TCE = TRICHLOROETHENE

PROJECT NUMBE 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A3

ABLE 4-5
SELECTED ANALYTICAL RESULTS - SUB-AREA A3
SEMIVOLATILES

Sample Id	Sample Date	BaA UG/KG		BbF UG/KG		BghiP UG/KG		BaP UG/KG		FLUOR UG/KG		PHEN UG/KG		PYREN UG/KG	
AB035A	10-JUN-92	360	U	360	U	360	U	360	U	110	J	360	U	120	J
AB036A	15-JUN-92	860		690	J	340	J	720		2000		1900		1600	
AB036H	15-JUN-92	360	U	360	U	360	U	360	U	360	U	360	U	360	U
AB037A	10-JUN-92	1300		1200		870		1200		3000		1800		3000	
AB037D	10-JUN-92	340	U	340	U	340	U	340	U	340	U	340	U	340	U
AB039A	10-JUN-92	380	U	380	U	380	U	380	U	380	U	380	U	380	U
AB039H	10-JUN-92	350	U	350	U	350	U	350	U	350	U	350	U	350	U
AB039H DUP	10-JUN-92	350	U	350	U	350	U	350	U	350	U	350	U	350	U
AB043D	20-JUL-92	2100		1800	J	1100	J	1700	J	4400		2700		5100	
AB043H	20-JUL-92	1400	U	1400	U	1400	U	1400	U	1400	U	1400	U	1400	U
AB044D	20-JUL-92	1900	U	1900	U	1900	U	1900	U	970	J	660	J	1300	J
AB044H	20-JUL-92	350	U	350	U	350	U	350	U	350	U	350	U	350	U
AT007A	17-JUN-92	350	U	350	U	350	U	350	U	350	U	350	U	350	U
AT007C	17-JUN-92	13000	U	13000	U	13000	U	13000	U	13000	U	13000	U	13000	U
AT008A	17-JUN-92	340	U	340	U	340	U	340	U	340	U	340	U	340	U
AT008D	17-JUN-92	450	U	450	U	450	U	450	U	450	U	450	U	450	U
AT008D DUP	17-JUN-92	8600	U	8600	U	8600	U	8600	U	8600	U	8600	U	8600	U
AT009B1	23-JUN-92	1500	U	1500	U	1500	U	1500	U	380	J	180	J	320	J
AT009B1 DUP	23-JUN-92	2100	U	2100	U	2100	U	2100	U	2100	U	2100	U	2100	U
AT009D1	24-JUN-92	7200	U	7200	U	7200	U	7200	U	7200	U	7200	U	7200	U
AT009D2	24-JUN-92	3500	U	3500	U	3500	U	3500	U	3500	U	3500	U	3500	U
AT009D3	24-JUN-92	360	U	360	U	360	U	360	U	360	U	360	U	360	U
AT009E1	25-JUN-92	350	U	350	U	350	U	350	U	350	U	350	U	350	U
AT009E2	26-JUN-92	350	U	350	U	350	U	350	U	350	U	350	U	350	U

BaA = BENZO(A)ANTHRACENE
BbF = BENZO(B)FLUORANTHENE
BghiP = BENZO(G,H,I)PERYLENE
BaP = BENZO(A)PYRENE
FLUOR = FLUORANTHENE
PHEN = PHENANTHRENE
PYREN = PYRENE

PROJECT NUMBE 2313.13
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TABLE 4-5
SELECTED ANALYTICAL RESULTS - SUB-AREA A3
PESTICIDES

Sample Id	Sample Date	44DDD UG/KG		44DDE UG/KG		44DDT UG/KG	
AB035A	10-JUN-92	3.6	U	21		32	
AB036A	15-JUN-92	130	P	120	J	130	P
AB036H	15-JUN-92	3.6	U	3.6	U	3.6	U
AB037A	10-JUN-92	220	P	450		400	
AB037D	10-JUN-92	3.4	U	3.4	U	3.4	U
AB039A	10-JUN-92	3.8	U	8.5		6.3	P
AB039H	10-JUN-92	3.5	U	3.5	U	3.5	U
AB039H DUP	10-JUN-92	3.5	U	3.5	U	3.5	U
AB043D	20-JUL-92	190	P	180	PJ	270	
AB043H	20-JUL-92	3.5	U	3.5	U	3.5	U
AB044D	20-JUL-92	170	P	140	PJ	200	
AB044H	20-JUL-92	3.5	U	3.5	U	3.5	U
AT007A	17-JUN-92	3.5	U	3.5	U	3.5	U
AT007C	17-JUN-92	6.5	U	6.5	U	6.5	U
AT008A	17-JUN-92	3.4	U	31		3.4	U
AT008D	17-JUN-92	89	U	89	U	89	U
AT008D DUP	17-JUN-92	86	U	86	U	86	U
AT009B1	23-JUN-92	86	P	110	J	230	
AT009B1 DUP	23-JUN-92	220	P	300	J	430	
AT009D1	24-JUN-92	120	P	36	U	36	U
AT009D2	24-JUN-92	21	P	11	J	7.2	
AT009D3	24-JUN-92	3.6	U	3.6	U	3.6	U
AT009E1	25-JUN-92	3.5	U	3.5	U	3.5	U
AT009E2	26-JUN-92	3.5	U	3.5	U	3.5	U

44DDD = 4,4'-DDD
44DDE = 4,4'-DDE
44DDT = 4,4'-DDT

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TABLE 4-5
SELECTED ANALYTICAL RESULTS - SUB-AREA A3
METALS

Sample Id	Sample Date	CR MG/KG		CU MG/KG		PB MG/KG		ZN MG/KG	
AB035A	10-JUN-92	16.4		20.7		12.4		35.5	
AB036A	15-JUN-92	16.8		155		54.9		56.0	
AB036H	15-JUN-92	3.4		4.2	U	2.0		9.5	
AB037A	10-JUN-92	11.7		43.9		50.7		80.8	
AB037D	10-JUN-92	5.8		4.1	B	1.4		9.2	
AB039A	10-JUN-92	11.3		204		15.6		58.2	
AB039H	10-JUN-92	4.1		4.3	U	2.2		11.3	
AB039H DUP	10-JUN-92	3.8		4.4	U	2.1		9.1	
AB043D	20-JUL-92	17.0		239	*	59.5	*	329	*
AB043H	20-JUL-92	2.8		4.2	U*	1.8	*	6.6	*
AB044D	20-JUL-92	20.7		314	*	73.8	*	314	*
AB044H	20-JUL-92	3.6		4.2	U*	2.2	*	10.5	*
AT007A	17-JUN-92	7.7		8.8		10.5		27.2	
AT007C	17-JUN-92	11.9		21.3		4.2		105	
AT008A	17-JUN-92	7.1		7.1		3.6		14.1	
AT008D	17-JUN-92	49.6		676		453		152	
AT008D DUP	17-JUN-92	114		1290		58.8		153	
AT009B1	23-JUN-92	16.5	*	35.4		27.6	*	50.5	
AT009B1 DUP	23-JUN-92	16.3	*	56.6		37.0	*	72.7	
AT009D1	24-JUN-92	4.6	*	8.7	J	2.0	*	23.1	
AT009D2	24-JUN-92	4.1	*J	4.1	U	1.5	*	9.8	
AT009D3	24-JUN-92	5.5	*	4.2	U	1.4	*	7.5	
AT009E1	25-JUN-92	4.0	*	4.1	U	1.5	*	6.2	
AT009E2	26-JUN-92	3.9	*J	4.1	U	1.7	*	7.9	

CR = CHROMIUM
CU = COPPER
PB = LEAD
ZN = ZINC

SEE TABLE OF CONTENTS FOR DEFINITION OF DATA QUALIFIERS.

TABLE 4-6

SUMMARY OF VOCS IN SOILS FROM THE REMOVAL ACTION EXCAVATION

Sample ID	Parameters Detected at the Removal Action Excavation (µg/kg)								
	TCA	DCA	1,2-DCE (total)	PCE	Toluene	TCE	Xylene	2-Butanone	Ethylbenzene
AB043D	7200	84	1800	17000	1300	69000	6500	ND	1600
AB043H	88	ND	42	2800	ND	1400	ND	ND	ND
AB044D	1500	37	670	2800	58	11000	170	ND	25
AB044H	63	22	730	590	ND	2300	ND	ND	ND
AT009B1	600	73	590	11000	ND	1500	230	ND	ND
AT009D1	2,600,000	34,000	6	1,200,000	190,000	120,000	580,000	3,500,000	140,000
AT009D2	400	ND	230	28,000	ND	8800	440	ND	ND
AT009D3	0.8	ND	9	2	ND	5	ND	ND	ND
AT009E1	0.8	ND	ND	3	ND	7	ND	ND	ND
AT009E2	3	ND	31	2	ND	3	17	ND	ND

ND Not detected.

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TABLE 4-7
SELECTED ANALYTICAL RESULTS - SUB-AREA A4
VOLATILES

Sample Id	Sample Date	11DCA UG/KG		12DCA UG/KG		12DCE UG/KG		PCE UG/KG		111TA UG/KG		112TA UG/KG		TCE UG/KG	
AB026A	10-JUN-92	11	U	11	U	25		11	U	11	U	11	U	15	B
AB026G	10-JUN-92	10	U	10	U	6	J	2	J	10	U	10	U	45	
AB027A	09-JUN-92	10	U	10	U	10	U	10	U	10	U	10	U	50	
AB027H	09-JUN-92	12	U	12	U	12	U	12	U	12	U	12	U	5	JB
AB028A	08-JUN-92	11	U	11	U	11	U	11	U	11	U	11	U	18	
AB028G	08-JUN-92	62	U	62	U	920	D	610		8	J	62	U	6100	D
AB029A	10-JUN-92	11	U	11	U	14		11	U	11	U	11	U	190	
AB029H	10-JUN-92	11	U	11	U	110		6	J	11	U	11	U	89	
AB030A	09-JUN-92	11	U	11	U	4	J	11	U	11	U	11	U	36	
AB030G	09-JUN-92	10	U	10	U	10	U	10	U	10	U	10	U	2	JB
AB030G DUP	09-JUN-92	10	U	10	U	10	U	10	U	10	U	10	U	4	JB
AB031A	15-JUN-92	11	U	11	U	470	D	11	U	11	U	3	J	9	JB
AB031G	15-JUN-92	11	U	11	U	85		56		11	U	11	U	2	JB
AB032A	09-JUN-92	11	U	11	U	2	J	11	U	11	U	11	U	150	
AB032D	09-JUN-92	10	U	10	U	10	U	10	U	10	U	10	U	2	JB
AB033B	08-JUN-92	11	U	11	U	200	D	11	U	11	U	11	U	300	D
AB033H	08-JUN-92	12	U	12	U	12	U	12	U	12	U	12	U	2	JB
AB034A	08-JUN-92	11	U	11	U	11	U	11	U	11	U	11	U	24	
AB034D	08-JUN-92	11	U	11	U	11	U	11	U	11	U	11	U	5	JB
AB038A	10-JUN-92	10	U	10	U	10	U	10	U	10	U	10	U	4	JB
AB038G	10-JUN-92	11	U	11	U	11	U	11	U	11	U	11	U	9	JB
AB203A	08-JUL-92	11	U	11	U	11	U	11	U	11	U	11	U	11	U
AB203B	08-JUL-92	14	U	14	U	14	U	7	J	14	U	14	U	20	
AB204A	08-JUL-92	11	U	11	U	110		1	J	11	U	11	U	26	

11DCA = 1,1-DICHLOROETHANE
12DCA = 1,2-DICHLOROETHANE
12DCE = 1,2-DICHLOROETHENE (TOTAL)
PCE = TETRACHLOROETHENE
111TA = 1,1,1-TRICHLOROETHANE
112TA = 1,1,2-TRICHLOROETHANE
TCE = TRICHLOROETHENE

PROJECT NUMBE[illegible]2313.13
BEGINNING DATE: 01-JUN-92
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SITE AREA: A4

[illegible]ABLE 4-7
SELECTED ANALYTICAL RESULTS - SUB-AREA A4
VOLATILES

Sample Id	Sample Date	11DCA UG/KG		12DCA UG/KG		12DCE UG/KG		PCE UG/KG		111TA UG/KG		112TA UG/KG		TCE UG/KG	
AB204A DUP	08-JUL-92	11	U	11	U	85		0.7	J	11	U	11	U	18	
AB204B	08-JUL-92	12	U	12	U	7	J	12	U	12	U	12	U	4	JB
AB205A	08-JUL-92	11	U	11	U	11	U	1	J	11	U	11	U	31	
AB205G	08-JUL-92	11	U	11	U	9	J	8	J	1	J	11	U	230	
AB206A	08-JUL-92	12	U	12	U	12	U	12	U	12	U	12	U	2	JB
AB206B	08-JUL-92	13	U	13	U	13	U	9	J	2	J	13	U	330	D
AB207A	09-JUL-92	11	U	11	U	11	U	11	U	11	U	11	U	15	B
AB207H	09-JUL-92	11	U	11	U	11	U	11	U	11	U	11	U	3	JB
AB208A	13-JUL-92	11	U	11	U	14		11	U	11	U	11	U	70	
AB208A DUP	13-JUL-92	0.4	J	11	U	14		11	U	11	U	11	U	73	
AB208H	13-JUL-92	10	U	10	U	16		2	J	10	U	10	U	52	
AB219A	09-JUL-92	11	U	11	U	11	U	11	U	11	U	11	U	11	U
AB219F	09-JUL-92	11	U	11	U	11	U	11	U	11	U	11	U	11	U
AB220A	09-JUL-92	11	U	11	U	2	J	1	J	11	U	11	U	28	
AB220G	09-JUL-92	10	U	10	U	10	U	10	U	10	U	10	U	3	JB
AB221A	09-JUL-92	12	U	12	U	12	U	12	U	12	U	12	U	12	U
AB221G	09-JUL-92	10	U	10	U	10	U	10	U	10	U	10	U	0.8	JB
AB224A	13-JUL-92	11	U	11	U	11	U	11	U	11	U	11	U	11	U
AB224H	13-JUL-92	11	U	11	U	11	U	11	U	11	U	11	U	0.9	JBU
AB226B	10-JUL-92	13	U	13	U	13	U	13	U	13	U	13	U	2	JB
AB226G	10-JUL-92	10	U	10	U	10	U	10	U	10	U	10	U	10	U
AB227A	13-JUL-92	11	U	11	U	11	U	11	U	11	U	11	U	12	B
AB227A DUP	13-JUL-92	11	U	11	U	11	U	0.6	J	11	U	11	U	18	
AB227G	13-JUL-92	10	U	10	U	10	U	10	U	10	U	10	U	0.9	JBU

11DCA = 1,1-DICHLOROETHANE
12DCA = 1,2-DICHLOROETHANE
12DCE = 1,2-DICHLOROETHENE (TOTAL)
PCE = TETRACHLOROETHENE
111TA = 1,1,1-TRICHLOROETHANE
112TA = 1,1,2-TRICHLOROETHANE
TCE = TRICHLOROETHENE

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A4

TABLE 4-7
SELECTED ANALYTICAL RESULTS - SUB-AREA A4
VOLATILES

Sample Id	Sample Date	11DCA UG/KG		12DCA UG/KG		12DCE UG/KG		PCE UG/KG		111TA UG/KG		112TA UG/KG		TCE UG/KG	
AB228A	10-JUL-92	11	U	11	U	11	U	11	U	11	U	11	U	5	JB
AB228F	10-JUL-92	10	U	10	U	10	U	10	U	10	U	10	U	3	JB
AB229A	10-JUL-92	13	U	13	U	13	U	13	U	13	U	13	U	110	
AB229H	10-JUL-92	12	U	12	U	12	U	12	U	12	U	12	U	3	JB
AB243A	28-JUL-92	11	U	11	U	21		11	U	11	U	11	U	11	U
AB243B	28-JUL-92	2	J	12	U	230		2	J	2	J	12	U	80	
AT001A	12-JUN-92	11	U	11	U	11		11	U	11	U	11	U	31	
AT001C	12-JUN-92	10	U	10	U	10	U	10	U	10	U	10	U	3	JB
AT002A	12-JUN-92	11	U	11	U	11	U	11	U	11	U	11	U	10	JB
AT002B	12-JUN-92	11	U	11	U	11	U	2	J	11	U	11	U	35	
AT002B DUP	12-JUN-92	11	U	11	U	11	U	2	J	11	U	11	U	31	
AT003A	16-JUN-92	11	U	11	U	22		11	U	11	U	11	U	38	
AT003B	16-JUN-92	14	U	14	U	25		28		0.8	J	14	U	290	E
AT004A	16-JUN-92	11	U	11	U	140		11	U	11	U	11	U	1	JB
AT004B	16-JUN-92	13	U	13	U	570	JD	2700	D	2	J	7	J	47000	D
AT005A	16-JUN-92	11	U	11	U	1	J	11	U	11	U	11	U	10	JB
AT005C	16-JUN-92	12	U	12	U	1	J	12	U	12	U	12	U	8	JB
AT005C DUP	16-JUN-92	12	U	12	U	2	J	0.9	J	12	U	12	U	11	JB
AT006A	17-JUN-92	11	U	11	U	11	U	11	U	11	U	11	U	5	JB
AT006B	17-JUN-92	11	U	11	U	11	U	11	U	11	U	11	U	11	U

11DCA = 1,1-DICHLOROETHANE
12DCA = 1,2-DICHLOROETHANE
12DCE = 1,2-DICHLOROETHENE (TOTAL)
PCE = TETRACHLOROETHENE
111TA = 1,1,1-TRICHLOROETHANE
112TA = 1,1,2-TRICHLOROETHANE
TCE = TRICHLOROETHENE

PROJECT NUMB[illegible]2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A4

[illegible]ABLE 4-7
SELECTED ANALYTICAL RESULTS - SUB-AREA A4
SEMIVOLATILES

Sample Id	Sample Date	BaA UG/KG		BbF UG/KG		BghiP UG/KG		BaP UG/KG		FLUOR UG/KG		PHEN UG/KG		PYREN UG/KG	
AB026A	10-JUN-92	2300		2200		1400		2100		5900		4400		5200	
AB026G	10-JUN-92	340	U	340	U	340	U	340	U	340	U	340	U	340	U
AB027A	09-JUN-92	2200		2600		1900		2300		5600		2300		5900	
AB027H	09-JUN-92	390	U	390	U	390	U	390	U	390	U	390	U	390	U
AB028A	08-JUN-92	590		620		430		560		1500		1400		1600	
AB028G	08-JUN-92	370	U	370	U	370	U	370	U	370	U	370	U	370	U
AB029A	10-JUN-92	2400		2600		2000		2400		6600		4800		8100	
AB029H	10-JUN-92	350	U	350	U	700		350	U	350	U	350	U	110	J
AB030A	09-JUN-92	6900		7200		5800		7400		15000		7400		18000	
AB030G	09-JUN-92	150	J	180	J	210	J	170	J	390		160	J	360	
AB030G DUP	09-JUN-92	400		460		330	J	410		1100		440		930	
AB031A	15-JUN-92	3700	U	3700	U	3700	U	3700	U	960	J	1700	J	1000	J
AB031G	15-JUN-92	1700	U	1700	U	1700	U	1700	U	1700	U	1700	U	1700	U
AB032A	09-JUN-92	43000		46000		34000		41000		160000	D	95000	D	130000	D
AB032D	09-JUN-92	340	U	340	U	420		120	J	240	J	140	J	260	J
AB033B	08-JUN-92	380	U	380	U	380	U	380	U	380	U	380	U	380	U
AB033H	08-JUN-92	340	U	340	U	340	U	340	U	340	U	340	U	340	U
AB034A	08-JUN-92	950		1200		980		1100		2400		810		2300	
AB034D	08-JUN-92	350	U	350	U	320	J	73	J	350	U	350	U	80	J
AB038A	10-JUN-92	150	J	340		240	J	190	J	500		180	J	440	
AB038G	10-JUN-92	340	U	340	U	340	U	340	U	340	U	340	U	340	U
AT001A	12-JUN-92	5700		8200		5100		6600		20000		8600		14000	
AT001C	12-JUN-92	340	U	340	U	340	U	340	U	340	U	340	U	340	U
AT002A	12-JUN-92	210	J	210	J	350	U	170	J	420		350	U	350	J

BaA = BENZO(A)ANTHRACENE
BbF = BENZO(B)FLUORANTHENE
BghiP = BENZO(G,H,I)PERYLENE
BaP = BENZO(A)PYRENE
FLUOR = FLUORANTHENE
PHEN = PHENANTHRENE
PYREN = PYRENE

PROJECT NUMB 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A4

TABLE 4-7
SELECTED ANALYTICAL RESULTS - SUB-AREA A4
SEMIVOLATILES

Sample Id	Sample Date	BaA UG/KG		BbF UG/KG		BghiP UG/KG		BaP UG/KG		FLUOR UG/KG		PHEN UG/KG		PYREN UG/KG	
AT002B	12-JUN-92	350	U	350	U	350	U	350	U	350	U	350	U	350	U
AT002B DUP	12-JUN-92	400	U	400	U	400	U	400	U	400	U	400	U	400	U
AT003A	16-JUN-92	890		1000		360	J	810		2100		1200		2000	
AT003B	16-JUN-92	460	U	460	U	460	U	460	U	460	U	460	U	460	U
AT004A	16-JUN-92	530		600		270	J	480		1300		850		1100	
AT004B	16-JUN-92	4100	U	4100	U	4100	U	4100	U	4100	U	4100	U	4100	U
AT005A	16-JUN-92	130	J	150	J	370	U	370	U	250	J	130	J	220	J
AT005C	16-JUN-92	390	U	390	U	390	U	390	U	390	U	390	U	390	U
AT005C DUP	16-JUN-92	400	U	400	U	400	U	400	U	400	U	400	U	400	U
AT006A	17-JUN-92	1100		1200		730	J	1100		2800		1500		2400	
AT006B	17-JUN-92	400	U	400	U	400	U	400	U	400	U	400	U	400	U

BaA = BENZO(A)ANTHRACENE
BbF = BENZO(B)FLUORANTHENE
BghiP = BENZO(G,H,I)PERYLENE
BaP = BENZO(A)PYRENE
FLUOR = FLUORANTHENE
PHEN = PHENANTHRENE
PYREN = PYRENE

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A4

TABLE 4-7
SELECTED ANALYTICAL RESULTS - SUB-AREA A4
PESTICIDES

Sample Id	Sample Date	44DDD UG/KG		44DDE UG/KG		44DDT UG/KG	
AB026A	10-JUN-92	230	P	200	P	190	P
AB026G	10-JUN-92	3.4	U	3.4	U	3.4	U
AB027A	09-JUN-92	37	U	37	U	160	
AB027H	09-JUN-92	3.9	U	3.9	U	3.9	U
AB028A	08-JUN-92	3.7	U	3.7	U	3.7	U
AB028G	08-JUN-92	3.7	U	3.7	U	3.7	U
AB029A	10-JUN-92	220	P	390		280	
AB029H	10-JUN-92	3.5	U	3.5	U	3.5	U
AB030A	09-JUN-92	150		92		220	
AB030G	09-JUN-92	3.5	U	3.5	U	3.5	U
AB030G DUP	09-JUN-92	4.3		3.5	U	9.2	
AB031A	15-JUN-92	130		120	J	67	P
AB031G	15-JUN-92	3.7	P	3.4	U	6.1	
AB032A	09-JUN-92	120	P	310		460	
AB032D	09-JUN-92	3.4	U	3.4	U	3.4	U
AB033B	08-JUN-92	3.8	U	3.8	U	3.8	U
AB033H	08-JUN-92	3.4	U	3.4	U	3.4	U
AB034A	08-JUN-92	160	P	3.6	U	400	P
AB034D	08-JUN-92	3.5	U	3.5	U	4.2	P
AB038A	10-JUN-92	11	P	22		45	
AB038G	10-JUN-92	3.4	U	3.4	U	3.4	U
AT001A	12-JUN-92	2900		1900	P	36	U
AT001C	12-JUN-92	3.4	U	3.4	U	3.4	U
AT002A	12-JUN-92	3.5	U	3.5	U	3.5	U
AT006B	17-JUN-92	4.0	U	4.0	U	4.0	U
AT002B	12-JUN-92	3.5	U	3.5	U	3.5	U
AT002B DUP	12-JUN-92	4.0	U	4.0	U	4.0	U
AT003A	16-JUN-92	24	PJ	52	J	18	J

44DDD = 4,4'-DDD
44DDE = 4,4'-DDE
44DDT = 4,4'-DDT

PROJECT NUMBE 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A4

TABLE 4-7
SELECTED ANALYTICAL RESULTS - SUB-AREA A4
PESTICIDES

Sample Id	Sample Date	44DDD UG/KG		44DDE UG/KG		44DDT UG/KG	
AT003B	16-JUN-92	4.6	U	4.6	U	4.6	U
AT004A	16-JUN-92	240		310	J	67	P
AT004B	16-JUN-92	41	U	74	J	93	P
AT005A	16-JUN-92	17		31	J	63	
AT005C	16-JUN-92	3.9	U	3.9	U	3.9	U
AT005C DUP	16-JUN-92	4.0	U	4.0	U	4.0	U
AT006A	17-JUN-92	300	P	660		1400	

44DDD = 4,4'-DDD
44DDE = 4,4'-DDE
44DDT = 4,4'-DDT

PROJECT NUMBE 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A4

TABLE 4-7
SELECTED ANALYTICAL RESULTS - SUB-AREA A4
METALS

Sample Id	Sample Date	CR MG/KG		CU MG/KG		PB MG/KG	ZN MG/KG
AB026A	10-JUN-92	19.8		1900	*	149	215
AB026G	10-JUN-92	3.1	J	4.3	B*U	1.0	7.1
AB027A	09-JUN-92	7.4		15.5	*	10.4	21.7
AB027H	09-JUN-92	4.7		4.8	U	2.3	9.3
AB028A	08-JUN-92	13.4		279		274	130
AB028G	08-JUN-92	12.2		5.2	U	4.1	21.3
AB029A	10-JUN-92	19.2		138	*	63.6	124
AB029H	10-JUN-92	11.5		5.3	B*U	1.6	11.4
AB030A	09-JUN-92	19.6		642	*	59.5	163
AB030G	09-JUN-92	5.1		37.3	*	3.2	18.3
AB030G DUP	09-JUN-92	6.5		18.2	*	2.1	10.8
AB031A	15-JUN-92	22.6		53.7		78.5	62.6
AB031G	15-JUN-92	4.4		4.1	U	1.7	9.3
AB032A	09-JUN-92	8.1		49.8	*	70.0	69.6
AB032D	09-JUN-92	9.4		4.4	B*U	1.5	10.8
AB033B	08-JUN-92	11.7		369		80.1	73.1
AB033H	08-JUN-92	5.4		4.2	U	2.0	9.0
AB034A	08-JUN-92	13.0		32.5		32.7	62.2
AB034D	08-JUN-92	13.8		10.6	J	2.7	16.6
AB038A	10-JUN-92	8.7		36.6		10.6	32.3
AB038G	10-JUN-92	5.2		4.2	U	1.8	13.7
AT001A	12-JUN-92	15.9		103		231	489
AT001C	12-JUN-92	5.7		4.1	U	1.6	8.5
AT002A	12-JUN-92	13.7		23.2		9.4	33.0
AT002B	12-JUN-92	12.2		9.3		6.8	24.7
AT002B DUP	12-JUN-92	10.4		10.9		7.5	24.3
AT003A	16-JUN-92	10.8		31.5		123	62.3
AT003B	16-JUN-92	13.3		13.6		9.7	30.6

CR = CHROMIUM
CU = COPPER
PB = LEAD
ZN = ZINC

PROJECT NUMB[illegible]2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A4

[illegible]ABLE 4-7
SELECTED ANALYTICAL RESULTS - SUB-AREA A4
METALS

Sample Id	Sample Date	CR MG/KG		CU MG/KG		PB MG/KG	ZN MG/KG
AT004A	16-JUN-92	18.9		90.4		54.7	87.4
AT004B	16-JUN-92	14.1		25.5		36.2	49.3
AT005A	16-JUN-92	13.4		24.2		33.4	39.6
AT005C	16-JUN-92	9.3		5.2	BJ	3.4	14.9
AT005C DUP	16-JUN-92	9.0		6.1	J	3.1	14.5
AT006A	17-JUN-92	12.6		153		54.9	298
AT006B	17-JUN-92	8.2		4.5	U	3.6	15.3

CR = CHROMIUM
CU = COPPER
PB = LEAD
ZN = ZINC

SEE TABLE OF CONTENTS FOR DEFINITION OF DATA QUALIFIERS.

PROJECT NUMB[illegible] 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: B1

TABLE 4-8
SELECTED ANALYTICAL RESULTS - SUB-AREA B1
VOLATILES

Sample Id	Sample Date	11DCA UG/KG		12DCA UG/KG		12DCE UG/KG		PCE UG/KG		111TA UG/KG		112TA UG/KG		TCE UG/KG	
BB001A	15-JUN-92	11	U	11	U	11	U	11	U	11	U	11	U	11	U
BB001B	15-JUN-92	11	U	11	U	11	U	11	U	11	U	11	U	11	U
BB001C	07-JUL-92	170	U	170	U	120	J	170	U	170	U	170	U	170	U
BB002B	15-JUN-92	2	J	12	U	160		12	U	12	U	12	U	4	JB
BB002G	15-JUN-92	10	U	10	U	10	U	10	U	10	U	10	U	10	U
BB002G DUP	15-JUN-92	10	U	10	U	10	U	10	U	10	U	10	U	10	U
BB003A	16-JUN-92	11	U	11	U	11	U	11	U	11	U	11	U	11	U
BB003D	16-JUN-92	12	U	12	U	12	U	12	U	12	U	12	U	12	U
BB202B	16-JUL-92	12	U	12	U	12	U	12	U	12	U	12	U	12	U
BB204A	16-JUL-92	11	U	11	U	11	U	11	U	11	U	11	U	11	U
BB204G	16-JUL-92	10	U	10	U	10	U	14	JD	10	U	10	U	27	JD
BB205A	16-JUL-92	12	U	12	U	12	U	12	U	12	U	12	U	12	U
BB205G	16-JUL-92	11	U	11	U	11	U	11	U	11	U	11	U	11	U
BB206A	17-JUL-92	14	U	14	U	14	U	14	U	14	U	14	U	14	U
BB206A DUP	17-JUL-92	11	U	11	U	11	U	11	U	11	U	11	U	11	U
BB206G	17-JUL-92	11	U	11	U	11	U	11	U	11	U	11	U	11	U
BT001A	18-JUN-92	11	U	11	U	11	U	11	U	11	U	11	U	11	U
BT001B	18-JUN-92	11	U	11	U	11	U	11	U	11	U	11	U	11	U
BT002A	17-JUN-92	12	U	12	U	12	U	12	U	12	U	12	U	12	U
BT002B	17-JUN-92	15	U	15	U	15	U	15	U	15	U	15	U	15	U

11DCA = 1,1-DICHLOROETHANE
12DCA = 1,2-DICHLOROETHANE
12DCE = 1,2-DICHLOROETHENE (TOTAL)
PCE = TETRACHLOROETHENE
111TA = 1,1,1-TRICHLOROETHANE
112TA = 1,1,2-TRICHLOROETHANE
TCE = TRICHLOROETHENE

PROJECT NUMBE 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: B1

ABLE 4-8
SELECTED ANALYTICAL RESULTS - SUB-AREA B1
SEMIVOLATILES

Sample Id	Sample Date	BaA UG/KG		BbF UG/KG		BghiP UG/KG		BaP UG/KG		FLUOR UG/KG		PHEN UG/KG		PYREN UG/KG	
BB001A	15-JUN-92	140	J	140	J	340	U	120	J	340	J	170	J	310	J
BB001B	15-JUN-92	370	U	370	U	370	U	370	U	370	U	370	U	370	U
BB001C	07-JUL-92	970	U	970	U	970	U	970	U	200	J	970	U	190	J
BB002B	15-JUN-92	300	J	340	J	380	U	270	J	770		440		640	
BB002G	15-JUN-92	350	U	350	U	350	U	350	U	350	U	350	U	350	U
BB002G DUP	15-JUN-92	370	U	370	U	370	U	370	U	370	U	370	U	370	U
BB003A	16-JUN-92	380	U	380	U	380	U	380	U	110	J	380	U	110	J
BB003D	16-JUN-92	450	U	450	U	450	U	450	U	450	U	450	U	450	U
BT001A	18-JUN-92	450		490		290	J	450		990		580		810	
BT001B	18-JUN-92	360	U	360	U	360	U	360	U	360	U	360	U	360	U
BT002A	17-JUN-92	390	U	390	U	390	U	390	U	390	U	390	U	390	U
BT002B	17-JUN-92	480	U	480	U	480	U	480	U	480	U	480	U	480	U

BaA = BENZO(A)ANTHRACENE
BbF = BENZO(B)FLUORANTHENE
BghiP = BENZO(G,H,I)PERYLENE
BaP = BENZO(A)PYRENE
FLUOR = FLUORANTHENE
PHEN = PHENANTHRENE
PYREN = PYRENE

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: B1

TABLE 4-8
SELECTED ANALYTICAL RESULTS - SUB-AREA B1
PESTICIDES

Sample Id	Sample Date	44DDD UG/KG		44DDE UG/KG		44DDT UG/KG	
BB001A	15-JUN-92	26		37		11	
BB001B	15-JUN-92	3.7	U	3.7	U	3.7	U
BB001C	07-JUL-92	9.7	U	9.7	U	9.7	U
BB002B	15-JUN-92	180		160	P	160	
BB002G	15-JUN-92	3.5	U	3.5	U	3.5	U
BB002G DUP	15-JUN-92	3.7	U	3.7	U	3.7	U
BB003A	16-JUN-92	3.8	U	3.8	U	8.2	P
BB003D	16-JUN-92	4.5	U	4.5	U	4.5	U
BT001A	18-JUN-92	63		52	P	78	
BT001B	18-JUN-92	3.6	U	3.6	U	3.6	U
BT002A	17-JUN-92	3.9	U	3.9	U	3.9	U
BT002B	17-JUN-92	4.8	U	4.8	U	4.8	U

44DDD = 4,4'-DDD
44DDE = 4,4'-DDE
44DDT = 4,4'-DDT

PROJECT NUMBE[illegible]313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: B1

[illegible]ABLE 4-8
SELECTED ANALYTICAL RESULTS - SUB-AREA B1
METALS

Sample Id	Sample Date	CR MG/KG		CU MG/KG		PB MG/KG		ZN MG/KG	
BB001A	15-JUN-92	6.0		16.6		14.8		25.1	
BB001B	15-JUN-92	4.0		5.1	U	2.6		6.6	
BB001C	07-JUL-92	7.0	U	14.0	U*	2.1	U*	14.0	U*
BB002B	15-JUN-92	12.8		43.1		37.0		49.6	
BB002G	15-JUN-92	4.7		8.4		3.5		12.4	
BB002G DUP	15-JUN-92	3.3		4.3	U	3.3		9.1	
BB003A	16-JUN-92	8.8		19.2		14.4		32.9	
BB003D	16-JUN-92	11.0		7.6		4.3		14.4	J
BT001A	18-JUN-92	6.6		19.1		19.4		42.7	
BT001B	18-JUN-92	6.2		8.5		6.8		22.8	
BT002A	17-JUN-92	6.5		11.6		5.3		21.7	
BT002B	17-JUN-92	8.5		9.0		8.6		25.1	

CR = CHROMIUM
CU = COPPER
PB = LEAD
ZN = ZINC

SEE TABLE OF CONTENTS FOR DEFINITION OF DATA QUALIFIERS.

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: B2

TABLE 4-9
SELECTED ANALYTICAL RESULTS - SUB-AREA B2
VOLATILES

Sample Id	Sample Date	11DCA UG/KG		12DCA UG/KG		12DCE UG/KG		PCE UG/KG		111TA UG/KG		112TA UG/KG		TCE UG/KG	
BT003A	18-JUN-92	11	U	11	U	11	U	11	U	11	U	11	U	11	U
BT003D	18-JUN-92	10	U	10	U	10	U	10	U	10	U	10	U	10	U
BT004A	18-JUN-92	11	U	11	U	11	U	11	U	11	U	11	U	11	U
BT004D	18-JUN-92	11	U	11	U	11	U	11	U	11	U	11	U	11	U
BT004D DUP	18-JUN-92	13	U	13	U	13	U	13	U	13	U	13	U	13	U

11DCA = 1,1-DICHLOROETHANE
12DCA = 1,2-DICHLOROETHANE
12DCE = 1,2-DICHLOROETHENE (TOTAL)
PCE = TETRACHLOROETHENE
111TA = 1,1,1-TRICHLOROETHANE
112TA = 1,1,2-TRICHLOROETHANE
TCE = TRICHLOROETHENE

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: B2

TABLE 4-9
SELECTED ANALYTICAL RESULTS - SUB-AREA B2
SEMIVOLATILES

Sample Id	Sample Date	BaA UG/KG		BbF UG/KG		BghiP UG/KG		BaP UG/KG		FLUOR UG/KG		PHEN UG/KG		PYREN UG/KG	
BT004A	18-JUN-92	64	J	130	J	360	U	360	U	86	J	360	U	96	J
BT004D	18-JUN-92	360	U	360	U	360	U	360	U	360	U	360	U	360	U
BT004D DUP	18-JUN-92	390	U	390	U	390	U	390	U	390	U	390	U	390	U

BaA = BENZO(A)ANTHRACENE
BbF = BENZO(B)FLUORANTHENE
BghiP = BENZO(G,H,I)PERYLENE
BaP = BENZO(A)PYRENE
FLUOR = FLUORANTHENE
PHEN = PHENANTHRENE
PYREN = PYRENE

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: B2

TABLE 4-9
SELECTED ANALYTICAL RESULTS - SUB-AREA B2
PESTICIDES

Sample Id	Sample Date	44DDD UG/KG		44DDE UG/KG		44DDT UG/KG	
BT004A	18-JUN-92	11		18		3.7	P
BT004D	18-JUN-92	3.6	U	3.6	U	3.6	U
BT004D DUP	18-JUN-92	3.9	U	3.9	U	3.9	U

44DDD = 4,4'-DDD
44DDE = 4,4'-DDE
44DDT = 4,4'-DDT

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: B2

TABLE 4-9
SELECTED ANALYTICAL RESULTS - SUB-AREA B2
METALS

Sample Id	Sample Date	CR MG/KG		CU MG/KG		PB MG/KG		ZN MG/KG
BT004A	18-JUN-92	7.8		11.5		12.0		31.8
BT004D	18-JUN-92	2.7		4.4	U	2.0		30.5
BT004D DUP	18-JUN-92	3.9	N	4.6	U*	2.1	*	49.9

CR = CHROMIUM
CU = COPPER
PB = LEAD
ZN = ZINC

SEE TABLE OF CONTENTS FOR DEFINITION OF DATA QUALIFIERS.

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: D

TABLE 4-10
SELECTED ANALYTICAL RESULTS - SUB-AREA D
VOLATILES

Sample Id	Sample Date	11DCA UG/KG		12DCA UG/KG		12DCE UG/KG		PCE UG/KG		111TA UG/KG		112TA UG/KG		TCE UG/KG	
DB029A	11-JUN-92	11	U	11	U	11	U	2	J	0.8	J	11	U	9	JB
DB029E	11-JUN-92	10	U	10	U	10	U	10	U	10	U	10	U	10	U
DB029E DUP	11-JUN-92	10	U	10	U	10	U	10	U	10	U	10	U	10	U
DB030A	12-JUN-92	11	U	11	U	11	U	11	U	11	U	11	U	11	U
DB030E	12-JUN-92	10	U	10	U	10	U	10	U	10	U	10	U	10	U
DB031A	11-JUN-92	11	U	11	U	11	U	11	U	11	U	11	U	11	U
DB031F	11-JUN-92	53	U	53	U	53	U	9	J	53	U	53	U	53	U
DB032A	11-JUN-92	11	U	11	U	11	U	11	U	11	U	11	U	11	U
DB032C	11-JUN-92	11	U	11	U	11	U	11	U	11	U	11	U	11	U
DB033A	07-JUL-92	12	U	12	U	12	U	1	J	12	U	12	U	12	U
DB033E	07-JUL-92	13	U	13	U	13	U	11	J	13	U	13	U	46	
DB034A	07-JUL-92	11	U	11	U	11	U	2	J	11	U	11	U	7	JB
DB034C	07-JUL-92	12	U	12	U	12	U	10	J	2	J	12	U	63	

11DCA = 1,1-DICHLOROETHANE
12DCA = 1,2-DICHLOROETHANE
12DCE = 1,2-DICHLOROETHENE (TOTAL)
PCE = TETRACHLOROETHENE
111TA = 1,1,1-TRICHLOROETHANE
112TA = 1,1,2-TRICHLOROETHANE
TCE = TRICHLOROETHENE

PROJECT NUMBE 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: D

TABLE 4-10
SELECTED ANALYTICAL RESULTS - SUB-AREA D
SEMIVOLATILES

Sample Id	Sample Date	BaA UG/KG		BbF UG/KG		BghiP UG/KG		BaP UG/KG		FLUOR UG/KG		PHEN UG/KG		PYREN UG/KG	
DB029A	11-JUN-92	520		1600		990		980		680		220	J	960	
DB029E	11-JUN-92	340	U	340	U	340	U	340	U	340	U	340	U	340	U
DB029E DUP	11-JUN-92	340	U	340	U	340	U	340	U	340	U	340	U	340	U
DB030A	12-JUN-92	370	U	370	U	370	U	370	U	370	U	370	U	370	U
DB030E	12-JUN-92	340	U	340	U	340	U	340	U	340	U	340	U	340	U
DB031A	11-JUN-92	370	U	370	U	370	U	370	U	370	U	370	U	370	U
DB031F	11-JUN-92	3600	U	3600	U	3600	U	3600	U	3600	U	3600	U	3600	U
DB032A	11-JUN-92	370	U	370	U	370	U	370	U	370	U	370	U	370	U
DB032C	11-JUN-92	350	U	350	U	350	U	350	U	350	U	350	U	350	U
DB033A	07-JUL-92	380	U	380	U	380	U	380	U	170	J	380	U	140	J
DB033E	07-JUL-92	370	U	370	U	370	U	370	U	370	U	370	U	370	U
DB034A	07-JUL-92	370	U	370	U	370	U	370	U	370	U	370	U	370	U
DB034C	07-JUL-92	380	U	380	U	380	U	380	U	380	U	380	U	380	U

BaA = BENZO(A)ANTHRACENE
BbF = BENZO(B)FLUORANTHENE
BghiP = BENZO(G,H,I)PERYLENE
BaP = BENZO(A)PYRENE
FLUOR = FLUORANTHENE
PHEN = PHENANTHRENE
PYREN = PYRENE

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: D

TABLE 4-10
SELECTED ANALYTICAL RESULTS - SUB-AREA D
PESTICIDES

Sample Id	Sample Date	44DDD UG/KG		44DDE UG/KG		44DDT UG/KG	
DB029A	11-JUN-92	29		17		84	
DB029E	11-JUN-92	7.4		26		19	
DB029E DUP	11-JUN-92	3.4	U	3.4	U	3.4	U
DB030A	12-JUN-92	3.7	U	3.7	U	6.3	P
DB030E	12-JUN-92	3.4	U	3.4	U	3.4	U
DB031A	11-JUN-92	70		140	P	81	
DB031F	11-JUN-92	3.6	U	3.6	U	3.6	U
DB032A	11-JUN-92	3.7	U	3.7	U	3.7	U
DB032C	11-JUN-92	3.5	U	3.5	U	3.5	U
DB033A	07-JUL-92	21	P	130	PJ	200	P
DB033E	07-JUL-92	3.7	U	3.7	U	3.7	U
DB034A	07-JUL-92	3.7	U	26	J	20	
DB034C	07-JUL-92	3.8	U	4.8	J	5.4	

44DDD = 4,4'-DDD
44DDE = 4,4'-DDE
44DDT = 4,4'-DDT

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: D

TABLE 4-10
SELECTED ANALYTICAL RESULTS - SUB-AREA D
METALS

Sample Id	Sample Date	CR MG/KG		CU MG/KG		PB MG/KG		ZN MG/KG	
DB029A	11-JUN-92	43.2		937		373		325	
DB029E	11-JUN-92	4.8		7.3		1.4		9.3	
DB029E DUP	11-JUN-92	5.0		7.3		1.1		10.3	
DB030A	12-JUN-92	10.6		19.2		11.0		40.2	
DB030E	12-JUN-92	3.0		5.6		1.0		7.3	
DB031A	11-JUN-92	11.8		59.4		17.5		28.5	
DB031F	11-JUN-92	7.0		22.7		4.1		12.9	
DB032A	11-JUN-92	13.9		46.4		19.5		86.3	
DB032C	11-JUN-92	6.6		9.9		2.2		17.0	
DB033A	07-JUL-92	8.8		33.9	*	10.2	*	30.0	*
DB033E	07-JUL-92	7.7		14.5	*	4.2	*	21.1	*
DB034A	07-JUL-92	7.1		8.0	*	6.4	*	17.8	*
DB034C	07-JUL-92	9.2		13.3	*	10.3	*	26.3	*

CR = CHROMIUM
CU = COPPER
PB = LEAD
ZN = ZINC

SEE TABLE OF CONTENTS FOR DEFINITION OF DATA QUALIFIERS.

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: E1

TABLE 4-11
SELECTED ANALYTICAL RESULTS - SUB-AREA E1
VOLATILES

Sample Id	Sample Date	11DCA UG/KG		12DCA UG/KG		12DCE UG/KG		PCE UG/KG		111TA UG/KG		112TA UG/KG		TCE UG/KG	
EB001A	16-JUN-92	53	U	53	U	53	U	53	U	53	U	53	U	53	U
EB001E	16-JUN-92	28	U	28	U	28	U	28	U	28	U	28	U	3	JB
EB002A	16-JUN-92	11	U	11	U	11	U	11	U	11	U	11	U	11	U
EB002D	16-JUN-92	10	U	10	U	10	U	10	U	10	U	10	U	2	JB
EB203A	21-JUL-92	11	U	11	U	11	U	11	U	11	U	11	U	31	
EB203B	21-JUL-92	11	U	11	U	11	U	2	J	11	U	11	U	27	
EB206A	17-JUL-92	11	U	11	U	11	U	11	U	11	U	11	U	8	JB
EB206E	17-JUL-92	10	U	10	U	10	U	10	U	10	U	10	U	10	U
EB209A	22-JUL-92	11	U	11	U	11	U	11	U	11	U	11	U	0.7	JB
EB209B	22-JUL-92	11	U	11	U	11	U	11	U	11	U	11	U	2	JB
EB210A	22-JUL-92	11	U	11	U	11	U	11	U	11	U	11	U	11	U
EB210A DUP	22-JUL-92	11	U	11	U	11	U	11	U	11	U	11	U	11	U
EB210E	22-JUL-92	10	U	10	U	10	U	10	U	10	U	10	U	10	U

11DCA = 1,1-DICHLOROETHANE
12DCA = 1,2-DICHLOROETHANE
12DCE = 1,2-DICHLOROETHENE (TOTAL)
PCE = TETRACHLOROETHENE
111TA = 1,1,1-TRICHLOROETHANE
112TA = 1,1,2-TRICHLOROETHANE
TCE = TRICHLOROETHENE

PROJECT NUMBE 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: E1

TABLE 4-11
SELECTED ANALYTICAL RESULTS - SUB-AREA E1
SEMIVOLATILES

Sample Id	Sample Date	BaA UG/KG		BbF UG/KG		BghiP UG/KG		BaP UG/KG		FLUOR UG/KG		PHEN UG/KG		PYREN UG/KG	
EB001A	16-JUN-92	1300		1500		870		1200		3700		1800		3200	
EB001E	16-JUN-92	380	U	380	U	380	U	380	U	380	U	380	U	380	U
EB002A	16-JUN-92	460		510		300	J	460		1200		610		1000	
EB002D	16-JUN-92	340	U	340	U	340	U	340	U	340	U	340	U	340	U

BaA = BENZO(A)ANTHRACENE
BbF = BENZO(B)FLUORANTHENE
BghiP = BENZO(G,H,I)PERYLENE
BaP = BENZO(A)PYRENE
FLUOR = FLUORANTHENE
PHEN = PHENANTHRENE
PYREN = PYRENE

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: E1

TABLE 4-11
SELECTED ANALYTICAL RESULTS - SUB-AREA E1
PESTICIDES

Sample Id	Sample Date	44DDD UG/KG		44DDE UG/KG		44DDT UG/KG	
EB001A	16-JUN-92	35	U	700		930	
EB001E	16-JUN-92	3.8	U	3.8	U	3.8	U
EB002A	16-JUN-92	.110	P	420		500	
EB002D	16-JUN-92	3.4	U	3.4	U	3.4	U

44DDD = 4,4'-DDD
44DDE = 4,4'-DDE
44DDT = 4,4'-DDT

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: E1

TABLE 4-11
SELECTED ANALYTICAL RESULTS - SUB-AREA E1
METALS

Sample Id	Sample Date	CR MG/KG		CU MG/KG		PB MG/KG		ZN MG/KG
EB001A	16-JUN-92	11.4	N	128	*	53.1	*	79.3
EB001E	16-JUN-92	6.7	N	10.2	*	3.0	*	13.5
EB002A	16-JUN-92	11.4	N	61.4	*	15.5	*	58.2
EB002D	16-JUN-92	2.3	N	6.0	*	1.2	*	8.6

CR = CHROMIUM
CU = COPPER
PB = LEAD
ZN = ZINC

SEE TABLE OF CONTENTS FOR DEFINITION OF DATA QUALIFIERS.

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: E2

TABLE 4-12
SELECTED ANALYTICAL RESULTS - SUB-AREA E2
VOLATILES

Sample Id	Sample Date	11DCA UG/KG		12DCA UG/KG		12DCE UG/KG		PCE UG/KG		111TA UG/KG		112TA UG/KG		TCE UG/KG	
EB003A	18-JUN-92	11	U	11	U	11	U	11	U	11	U	11	U	11	U
EB003F	18-JUN-92	11	U	11	U	11	U	0.7	J	11	U	11	U	2	JB
EB004A	18-JUN-92	11	U	11	U	4	J	11	U	11	U	11	U	3	JB
EB004D	18-JUN-92	11	U	11	U	11	U	3	J	11	U	11	U	0.6	JB
EB207A	21-JUL-92	12	U	12	U	12	U	2	J	12	U	12	U	6	JB
EB207F	21-JUL-92	10	U	10	U	10	U	10	U	10	U	10	U	10	U
EB208A	21-JUL-92	12	U	12	U	12	U	12	U	12	U	12	U	12	U
EB208A DUP	21-JUL-92	11	U	11	U	11	U	11	U	11	U	11	U	11	U
EB208F	21-JUL-92	12	U	12	U	33		12	U	12	U	12	U	12	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: E2

TABLE 4-12
SELECTED ANALYTICAL RESULTS - SUB-AREA E2
SEMIVOLATILES

Sample Id	Sample Date	BaA UG/KG		BbF UG/KG		BghiP UG/KG		BaP UG/KG		FLUOR UG/KG		PHEN UG/KG		PYREN UG/KG	
EB003A	18-JUN-92	390	U	390	U	390	U	390	U	390	U	390	U	390	U
EB003F	18-JUN-92	340	U	340	U	340	U	340	U	340	U	340	U	340	U
EB004A	18-JUN-92	3300		3400		2000		2900		7600		3100		6600	
EB004D	18-JUN-92	100	J	170	J	400		140	J	260	J	150	J	300	J

PROJECT NUMBE 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: E2

TABLE 4-12
SELECTED ANALYTICAL RESULTS - SUB-AREA E2
PESTICIDES

Sample Id	Sample Date	44DDD UG/KG		44DDE UG/KG		44DDT UG/KG	
EB003A	18-JUN-92	3.9	U	3.9	U	3.9	U
EB003F	18-JUN-92	3.4	U	3.4	U	3.4	U
EB004A	18-JUN-92	42	P	69		37	U
EB004D	18-JUN-92	3.5	U	3.5	U	3.5	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: E2

TABLE 4-12
SELECTED ANALYTICAL RESULTS - SUB-AREA E2
METALS

Sample Id	Sample Date	CR MG/KG		CU MG/KG		PB MG/KG		ZN MG/KG
EB003A	18-JUN-92	8.9		13.6		5.4		37.9
EB003F	18-JUN-92	10.2		14.8		1.8		20.7
EB004A	18-JUN-92	28.3	N	176	*	292	*	232
EB004D	18-JUN-92	6.2	N	6.4	*	7.4	*	11.0

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: F1

TABLE 4-13
SELECTED ANALYTICAL RESULTS - SUB-AREA F1
VOLATILES

Sample Id	Sample Date	11DCA UG/KG		12DCA UG/KG		12DCE UG/KG		PCE UG/KG		111TA UG/KG		112TA UG/KG		TCE UG/KG	
FB001A	12-JUN-92	13	U	13	U	13	U	13	U	13	U	13	U	13	U
FB001E	12-JUN-92	10	U	10	U	10	U	10	U	10	U	10	U	10	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: F1

TABLE 4-13
SELECTED ANALYTICAL RESULTS - SUB-AREA F1
SEMIVOLATILES

Sample Id	Sample Date	BaA UG/KG		BbF UG/KG		BghiP UG/KG		BaP UG/KG		FLUOR UG/KG		PHEN UG/KG		PYREN UG/KG	
FB001A	12-JUN-92	200	J	240	J	500	U	170	J	390	J	220	J	410	J
FB001E	12-JUN-92	340	U	340	U	340	U	340	U	340	U	340	U	340	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: F1

TABLE 4-13
SELECTED ANALYTICAL RESULTS - SUB-AREA F1
PESTICIDES

Sample Id	Sample Date	44DDD UG/KG		44DDE UG/KG		44DDT UG/KG	
FB001A	12-JUN-92	5.0	U	18		21	
FB001E	12-JUN-92	3.4	U	3.4	U	3.4	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: F1

TABLE 4-13
SELECTED ANALYTICAL RESULTS - SUB-AREA F1
METALS

Sample Id	Sample Date	CR MG/KG	CU MG/KG		PB MG/KG	ZN MG/KG
FB001A	12-JUN-92	9.9	26.2		22.4	66.7
FB001E	12-JUN-92	4.5	4.3	U	1.3	8.0

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: F2

TABLE 4-14
SELECTED ANALYTICAL RESULTS - SUB-AREA F2
VOLATILES

Sample Id	Sample Date	11DCA UG/KG		12DCA UG/KG		12DCE UG/KG		PCE UG/KG		111TA UG/KG		112TA UG/KG		TCE UG/KG	
FB002A	11-JUN-92	11	U	11	U	11	U	11	U	11	U	11	U	11	U
FB002C	07-JUL-92	11	U	11	U	11	U	11	U	11	U	11	U	11	U
FB002H	11-JUN-92	10	U	10	U	10	U	10	U	10	U	10	U	10	U
FB003A	11-JUN-92	12	U	12	U	12	U	12	U	12	U	12	U	12	U
FB003E	11-JUN-92	11	U	11	U	11	U	11	U	11	U	11	U	11	U
FB004A	11-JUN-92	11	U	11	U	11	U	11	U	11	U	11	U	11	U
FB004G	11-JUN-92	10	U	10	U	10	U	10	U	10	U	10	U	10	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: F2

TABLE 4-14
SELECTED ANALYTICAL RESULTS - SUB-AREA F2
SEMIVOLATILES

Sample Id	Sample Date	BaA UG/KG		BbF UG/KG		BghiP UG/KG		BaP UG/KG		FLUOR UG/KG		PHEN UG/KG		PYREN UG/KG	
FB002A	11-JUN-92	1500	U	1500	U	1500	U	1500	U	1500	U	1500	U	1500	U
FB002C	07-JUL-92	380	U	380	U	380	U	380	U	380	U	380	U	380	U
FB002H	11-JUN-92	340	U	340	U	340	U	340	U	340	U	340	U	340	U
FB003A	11-JUN-92	3700	U	3700	U	3700	U	3700	U	3700	U	3700	U	3700	U
FB003E	11-JUN-92	330	U	330	U	330	U	330	U	330	U	330	U	330	U
FB004A	11-JUN-92	360	U	360	U	360	U	360	U	96	J	360	U	79	J
FB004G	11-JUN-92	340	U	340	U	340	U	340	U	340	U	340	U	340	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: F2

TABLE 4-14
SELECTED ANALYTICAL RESULTS - SUB-AREA F2
PESTICIDES

Sample Id	Sample Date	44DDD UG/KG		44DDE UG/KG		44DDT UG/KG	
FB002A	11-JUN-92	3.6	U	3.6	U	3.6	U
FB002C	07-JUL-92	3.8	U	3.8	U	3.8	U
FB002H	11-JUN-92	3.4	U	3.4	U	3.4	U
FB003A	11-JUN-92	30	P	15		3.7	U
FB003E	11-JUN-92	3.3	U	3.3	U	3.3	U
FB004A	11-JUN-92	3.6	U	6.5		9.9	
FB004G	11-JUN-92	3.4	U	3.4	U	3.4	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: F2

TABLE 4-14
SELECTED ANALYTICAL RESULTS - SUB-AREA F2
METALS

Sample Id	Sample Date	CR MG/KG		CU MG/KG		PB MG/KG		ZN MG/KG	
FB002A	11-JUN-92	8.4		6.9		4.1		12.4	
FB002C	07-JUL-92	14.3		4.5	B*	5.8	*	20.1	*
FB002H	11-JUN-92	6.4		6.2		2.5		15.6	
FB003A	11-JUN-92	18.2		20.4		6.5		27.0	
FB003E	11-JUN-92	4.5		6.8	*	2.1		10.8	
FB004A	11-JUN-92	11.8		11.2		6.2		24.9	
FB004G	11-JUN-92	7.5		7.7		2.3		15.3	

Section 5

CONTAMINANT FATE AND TRANSPORT

Environmental risks associated with potential constituent migration from the NIROP Fridley were assessed by evaluating the environmental fate of the released constituents. This evaluation included consideration of the transport or degradation processes which might describe the behavior of constituents released in the environment. Knowledge of constituent behavior in various environmental media (e.g., soil, surface water or groundwater, sediments, and the atmosphere) is useful in assessing the extent to which human receptor populations may be affected by the constituents (USEPA, 1986). The following paragraphs present a brief overview of fate and transport processes in the environment.

5.1 Potential Routes of Migration

There are five potential routes of migration for constituents in the soil at the NIROP Fridley:

1) Near-surface soil contamination (leading to direct contact)
2) Migration via surface water
3) Migration of VOCs to the atmosphere
4) Gas phase migration of VOCs within the vadose zone
5) Migration via leaching to groundwater

In an October 19, 1992 letter from RMT to the MPCA and the USEPA Region V, the scope of the baseline risk assessment for the soils operable unit was specified. Although it was noted in that letter that leaching from soils to groundwater is being addressed as part of the groundwater operable unit, for completeness, the important physical/chemical characteristics controlling leaching of constituents of concern are covered in this section. This issue was also discussed with Region V in a subsequent conference call and agreed to by the Agency.

5.1.1 Near-Surface Soil Contamination

Constituents of Concern

It is important to discuss the distribution of contaminants in the near surface soils for a direct contact scenario in a risk assessment. Laboratory results from the A sampling interval, which extended from 1 to 3 feet, are considered representative of near-surface soil conditions. In the A interval of Areas A, B, D, and E, there was widespread occurrence of TCE, 1,2-DCE (total), PCE, and 1,1,1-TCA at concentrations ranging from 1 to hundreds of μg/kg. Area F does not exhibit these constituents. Higher concentrations (in the thousands of μg/kg) for these VOCs occur exclusively in the deeper soil intervals except at one location, AB254A, in Sub-Area A3.

Other VOCs of potential concern were reported in the A interval. These include ethylbenzene at up to 380 μg/kg (Sub-Area A4), and xylene at up to 550 μg/kg (Sub-Area A4).

The primary semi-volatile organics of potential concern in the A interval are PAHs. No PAHs were reported in interval A in Sub-Area A1. In Sub-Areas A2 and A3, a variety of PAHs were observed in a concentration range between 100 μg/kg and 3,000 μg/kg. In Sub-Area A4, 20 different PAHs were identified in interval A, ranging up to a concentration of 160,000 μg/kg. A variety of PAHs were identified in Area B, ranging up to a concentration of 1,600 μg/kg. In Area E, the PAH concentrations in interval A ranged up to 7,600 μg/kg. PAHs in Area F ranged up to 410 μg/kg.

Pesticides were identified in interval A in several Sub-Areas, including DDT and its breakdown product, DDE, in two background locations northwest of the site. DDT and its breakdown products were the most commonly observed pesticides throughout the site. These constituents were present in the A interval of every Sub-Area except A1, where no pesticides were observed at any depth in the soil. Pesticides were reported in soils in the 6- to 8-foot depth interval in Sub-Area A3 and in Area D. All reported concentrations were below 500 μg/kg except at AT001A and AT006A of Sub-Area A4 and EB001A and EB002A of Sub-Area E1.

Other pesticides reported in the A interval at the NIROP Fridley included aldrin, dieldrin, gamma-chlordane, and heptachlor epoxide in one sample (AB036A) of Sub-Area A3, chlordane isomers, dieldrin, endosulfan sulfate, endrin, endrin aldehyde, and heptachlor epoxide in Sub-Area A4, alpha-chlordane, endrin, and endrin aldehyde in Sub-Area B1, and dieldrin and endrin at one location (DB029A) in Sub-Area D. All concentrations for these constituents were below 100 μg/kg.

The distribution of pesticides in shallow soils appears to be indicative of historical on-site use with the exception of Sub-Area A3 and Area D, where pesticides were detected at depth.

Metals which most commonly exceeded background concentrations (see Table 4-2) in the A interval were copper, lead, and zinc. In particular, concentrations of copper were elevated in near-surface soils in all areas, compared to local background. The site-wide arithmetic mean concentration of copper in the A interval was 138 mg/kg (n=42) compared to a regional mean of 26 mg/kg (see Table 4-2). One sample in Sub-Area A3 (AB039A at 204 mg/kg), 3 samples in Sub-Area A4 (AB026A at 1,900 mg/kg, AB030A at 642 mg/kg, and AB033B at 369 mg/kg), and one sample in Sub-Area D (DB029A at 937 mg/kg) significantly exceeded the regional maximum concentration.

Concentrations of lead exceeding local background were common in the A interval on the site. Lead concentrations ranged up to 373 mg/kg (Sub-Area D) in the A interval. The site-wide arithmetic average lead concentration in the A interval is 61.9 mg/kg (n=39).

Concentrations of zinc exceeding local background were also common in the A interval. Zinc concentrations ranged up to 489 mg/kg (AT001A in Sub-Area A4). The site-wide arithmetic mean zinc concentration in the A interval was 88 mg/kg (n=38), compared to the regional mean of 54 mg/kg.

Chromium concentrations in the A interval exceeded local background in four locations in Sub-Area A3, ranging up to 17 mg/kg, in 12 locations in Sub-Area A4, ranging up to 22.6 mg/kg, and in four locations in Sub-Area D, ranging up to 43 mg/kg. Chromium was also found at 28 mg/kg in Sub-Area E2 (EB004A) and at 18 mg/kg in Sub-Area F2 (FB003A). Other metal concentration exceedances of local background were rare or insignificant in the A interval.

Relevant Site Characteristics

Site operations include tasks which are performed outdoors. Currently, the North 40 (Areas A and B) is the location of much activity. Much of the North 40 is either paved or covered by gravel, which reduces the potential for direct contact.

5.1.2 Migration via Surface Water

Constituents of Concern

The constituents of concern for migration via surface water are those identified at elevated levels in the near-surface (A) sampling interval (see Subsection 5.1.1 above). Of the classes of constituents found in the A interval, VOCs would not be expected to migrate significantly in surface water without being lost by volatilization, unless the surface soils were grossly contaminated, which is not the case at the NIROP Fridley.

Relevant Site Characteristics

The constituents found in the A interval (i.e., PAHs, pesticides, and metals) are not expected to migrate via surface water because the site does not exhibit a significant slope in any direction that would transport suspended sediment or dissolved constituents off-site. Therefore, this potential contaminant migration route is not important.

5.1.3 Migration of VOCs to the Atmosphere

Constituents of Concern

Migration of VOCs to the atmosphere occurs as a result of volatilization from the vadose zone. Subsection 5.1.4 identifies those constituents at the site that may be of concern due to their occurrence in the site soils and their tendency to volatilize.

Relevant Site Characteristics

Subsection 5.1.4 describes the coarse nature of the soils and fill materials at the site which are amenable to releases of VOCs from the vadose zone soils to the atmosphere. The significance of the volatilization of VOCs is discussed in the Baseline Risk Assessment (Section 6).

5.1.4 Gas Phase Migration of VOCs Within the Vadose Zone

Constituents of Concern

Gas phase migration of VOCs in the vadose zone is controlled by the physical characteristics of the soils (discussed below) as well as the nature of the VOCs themselves. Compounds which are more volatile (higher vapor pressures) are more likely to migrate in the gas phase than compounds of lower volatility. In considering soil pore gas migration, volatile constituents of concern are defined as organic chemicals with vapor pressures exceeding 0.1 mm Hg, which covers all compounds analytically classified as VOCs and the lighter semi-volatiles as well.

The tendency of constituents to volatilize (and therefore to be available for gas phase migration in the vadose zone) is not only a function of vapor pressure, but also of Henry's Law Constant. The Henry's Law Constant quantifies a compound's characteristic partitioning ratio between water and air (soil pore gas). This property is essentially the relative affinity that a compound has for air (vapor pressure) compared to water (solubility). The higher the Henry's Law Constant, the greater the tendency to volatilize from water.

Compounds that readily partition from water to air exhibit Henry's Law Constants greater that 1×10^{-4} atm-m^3/mol. Since the vadose zone soils do contain some water, especially in and near the capillary fringe of the groundwater table, Henry's Law partitioning is an important chemical property to consider for potential gas phase transport in the vadose zone. It should be noted that compounds with high vapor pressures do not necessarily exhibit high Henry's Law Constants (e.g., acetone at 3.97×10^{-5} atm-m^3/mol).

Some organic compounds can exhibit higher Henry's Law Constants than would be expected based on their vapor pressures. Again, this is due to the relationship between vapor pressure and water solubility. In some cases where water solubility is extremely low (e.g., anthracene, DDT, phenanthrene), volatilization from water can be relatively high. However, these cases are not important for gas phase migration in the vadose zone, because low water solubility also translates into high adsorption potential onto soils. Therefore, those organic compounds whose Henry's Law Constants are high primarily because of low water solubility do not represent a significant potential for gas phase migration because of a mitigating strong tendency to adsorb to soil particles.

The predominant VOC at the NIROP Fridley is TCE. TCE has both a high vapor pressure and a high Henry's Law Constant. In addition, several other VOCs were reported in the vadose zone soils which exhibit both high vapor pressures and high Henry's Law Constants, warranting consideration in terms of potential gas phase migration. Those VOCs that occur at significant concentrations at the site and could be of concern due to gas phase migration are listed in Table 5-1, along with their relevant physical/chemical constants. (Two VOCs, 1,1,2,2-tetrachloroethane and benzene, were not included for consideration because their occurrence was neither significant nor widespread).

Relevant Site Characteristics

The main soil type found across the site is sand, either poorly graded (SP) or well graded (SW). The grain size distribution varies significantly, representing a wide range of USCS classifications for sand. Appendix J describes in more detail the specific geologic features of the various sub-areas. Due to a lack of continuous fine-grained soil layers at the site with the possible exception of Sub-Area A3, gas phase migration of VOCs in both the vertical and lateral directions is likely.

The occurrence of gas phase migration of VOCs can be deduced from evidence collected during the investigation. In some borings, the soil headspace concentrations measured by the portable GC vary little over several depth intervals. This type of broad vertical distribution would be consistent with spreading due to general soil pore

gas contamination in permeable soils rather than localized soil contamination confined only to the immediate area around direct spills or releases. Most borings exhibit this phenomenon, indicating that much of the observed TCE and cis-1,2-DCE detections by the portable GC may be due to soil pore gas contamination and movement, rather than localized contamination due to direct spills or releases of liquid waste to the soils.

In addition, evidence for volatilization and redistribution of VOCs from the surface of the groundwater into the vadose zone can be found in some borings which exhibit relatively higher soil headspace concentrations measured by the portable GC in the deepest vadose zone intervals (G and H). Clear examples of this can be seen in borings AB223 of Sub-Area A2, AB036, AB218, AB238 of Sub-Area A3, and AB029 of Sub-Area A4. Many borings in Sub-Area A3 exhibit a less dramatic but still significant trend toward higher concentrations at depth, including the boring groupings AB233, AB235, AB236 and AB251, AB252, AB253. The predominant VOCs reported in the samples from these locations are TCE and cis-1,2-DCE. Portable GC data is presented in Appendix D.

It should be noted that the portable GC measurements of headspace over soil were not intended to be a comprehensive chemical characterization. VOCs other than those identified by the portable GC were observed in the laboratory analysis of soil samples. Table 5-1 is a listing of the constituents of concern for potential gas phase migration.

5.1.5 Migration via Leaching to Groundwater

Constituents of Concern

Constituents of concern that can readily enter the groundwater via leaching from contaminated soil are those constituents with the following characteristics:

- Significant occurrence in site soils, especially in the deep intervals
- Relatively high water solubility and low adsorption affinity to soils

Significant concentrations can be defined as concentrations above a typical margin of error associated with the upper limit of background values. For example, a concentration of 500 μg/kg in a sample compared to a background value of 50 μg/kg would be considered a significant exceedance, whereas a value of 55 μg/kg would not. Presumably, levels close to background would exhibit similar leaching characteristics as in background soils, and therefore impacts to groundwater would be similar to background. Constituents exhibiting significant on-site concentrations have been discussed in various previous sections of this report, including Section 4 and parts of Section 5. For convenience, those constituents are reiterated below, starting with the VOCs and covering the other analytical groups (i.e., metals, PAHs, and pesticides). Constituents with low water solubility and/or a high affinity for soil particles exhibit low mobility in the subsurface element. Constituents of this type would therefore exhibit relatively low concentrations in groundwater.

The major constituents considered for potential leaching to groundwater are VOCs. In some sub-areas, VOCs were found in significant concentrations at the deepest intervals sampled. Table 5-2 shows the maximum concentrations of VOCs measured in the deepest intervals of the sub-areas (note that in some sub-areas the deepest interval is H, and in others the deepest interval is as shallow as D). VOCs, notably the chlorinated halogens such as TCE and DCE, are found in the groundwater at the site at relatively high concentrations, whereas semivolatiles, metals, pesticides, and PCBs are not.

The detections of acetone are considered insignificant due to blank detections that suggest the values are false positives (refer to Subsections 3.2.3, 4.1.2, and Section 9 for a more detailed discussion).

Except for copper, there were no significant exceedances over background concentrations of trace metals in the deepest intervals analyzed for each sub-area. The highest copper level at depth was measured in Sub-Area A3 at 37.3 mg/kg (AB030G). Other copper values of note were 22.7 mg/kg in Sub-Area D (DB031F),

14.8 mg/kg in Sub-Area E2 (EB003F), 10.2 mg/kg in Sub-Area E1 (EB001E), 8.4 mg/kg in Sub-Area B1 (BB002G), and 7.7 mg/kg and 6.2 mg/kg in Sub-Area F2 (FB004G and FB002H, respectively).

Other metals exhibited concentrations of less concern. For instance, for chromium, the background level of 9.3 mg/kg was exceeded slightly in Sub-Area A4 at AB028G (12.2 mg/kg), and AB029H (11.5 mg/kg). In Sub-Area E2 chromium was reported at 10.2 mg/kg in EB003F. The background nickel concentration was 18.4 mg/kg. In Sub-Area A2 nickel was reported at 24.2 mg/kg in AB024G. In Sub-Area F2, nickel was reported at 26.8 mg/kg in FB002H. The background concentration for zinc was 22.4 mg/kg. In Sub-Area B2, zinc was reported at 30.5 mg/kg (49.9 mg/kg in the blind field duplicate) in BT004D. The only other reported exceedances of background were for vanadium in Sub-Area E2 at 23.4 mg/kg in EB003F, cobalt in Sub-Area F2 at 11.0 mg/kg in FB002H, selenium in Sub-Area E2 at 0.7 mg/kg in EB003F, and arsenic in Sub-Area A4 at 11.4 mg/kg in AB031G. Overall, the only trace metal which exhibited significant and widespread exceedances of background concentrations was copper.

Significant concentrations of PAHs were generally found in the near-surface depth intervals. This kind of distribution was expected, as PAHs are highly immobile in most natural environments due to their high adsorption potential (as is noted later in this section). However, in Sub-Area A4, several PAHs were measured in the deepest intervals sampled (G and H). AB030G contained nine PAHs at a total concentration of 2,060 μg/kg. AB031G contained two PAHs at a total concentration of 1,670 μg/kg. AB029H contained two PAHs at a total concentration of 810 μg/kg. In all other sub-areas, PAHs were confined to near-surface depths and no PAHs were found in the deepest intervals sampled.

Pesticide concentration distribution was similar to PAHs. Except for Sub-Area A4, pesticides were confined to the near-surface depths and no pesticides were found in the deepest intervals sampled. In Sub-Area A4, AB031G contained 4,4'-DDT at 6 μg/kg, 4,4'-DDD at 4 μg/kg, endrin aldehyde at 6μg/kg, and methoxychlor at 19 μg/kg.

Relevant Site and Chemical Characteristics

The tendency of chemical constituents to move through soils in the presence of infiltrating water is a function of the character of the soils, the character of the constituent, the amount of infiltrating water, and the character of the infiltrating water. At the NIROP Fridley, the character of the soils, and the character of the infiltrating water are generally consistent with local background conditions. The amount of infiltrating water is reduced compared to background in on-site areas that are covered by asphalt. The most important characteristic which is different than background is the presence and concentration of certain constituents not present in background or elevated in comparison to background.

The relative leaching potential (and therefore potential to impact groundwater) for these constituents is described by their tendency to bind (adsorb) to soils, versus their tendency to solubilize in water. In general, the tendency to adsorb is the inverse of the tendency to solubilize. For copper, the tendency to adsorb to soils is very strong (U.S.DHSS, 1990), thereby inhibiting migration.

The leaching potential of the organic constituents of concern can be described quantitatively, at least on a relative scale. The tendency of organic compounds to adsorb to soils is described by the organic carbon-normalized partition coefficient (K_{oc}):

$$K_{oc} = K_d/f_{oc}$$

where K_d (mL/g) is the ratio of the concentration of a constituent adsorbed on the soil (mg/kg) to the concentration in leachate (mg/L) at equilibrium and
f_{oc} is the fraction of organic carbon in the soil

Those constituents with higher K_{oc} (or K_d)values are strongly bound by soil and migrate very slowly. Measured TOC (total organic carbon) values in the deepest intervals of each sub-area generally averaged 1,000 to 2,000 mg/kg, or 0.001 to 0.002 as f_{oc} (see Appendix H for TOC results). PAHs are generally considered to be strongly bound to soils (U.S. Department of Health and Human Services). These compounds exhibit K_{oc} values > 1 x 10^3 mL/g (see

Table 5-3), which translates into a site-specific K_d in the range of > 1 mL/g to 2 mL/g. DDT, DDD, and methoxychlor exhibit much higher K_d values than VOCs, and therefore would not be expected to leach to groundwater in most cases at the NIROP Fridley.

TABLE 5-1

VOCs OF POTENTIAL CONCERN FOR GAS PHASE MIGRATION

VOC	Vapor Pressure (mm Hg)	Henry's Law Constant ($atm \cdot m^3/mol$)
TCE	58	9.18×10^{-3}
1,2-DCE (total)	210	7.6×10^{-3}
DCE	18	2.6×10^{-2}
1,1,1-TCA	120	1.4×10^{-2}
1,1-DCA	180	4.3×10^{-3}
Ethylbenzene	7	6.4×10^{-3}
Toluene	28	6.4×10^{-3}
Xylenes	1	7.4×10^{-3}

- SEE PAGE 5.5

TABLE 5-2

MAXIMUM VOC CONCENTRATIONS OBSERVED IN DEEPEST INTERVALS SAMPLED

VOC	Maximum Concentration of Observation (μg/kg)	Sub-Area and Interval	
Trichloroethene	6100	A4	G
Tetrachloroethene	2800	A3	H
1,2-Dichloroethene (Total)	920	A4	G
1,1,1-Trichloroethane	88	A3	H
1,1-Dichloroethane	56	A3	H
Xylenes	28000	A4	G

TABLE 5-3

ORGANIC CARBON-NORMALIZED SOIL PARTITION COEFFICIENTS (MERCER ET.AL., 1990)

Constituent of Concern	K_{oc} (mL/g)
Trichloroethene	1.3×10^2
Tetrachloroethene	3.6×10^2
1,2-Dichloroethene	5×10^1
1,1,1-Trichloroethane	1.5×10^2
1,1-Dichloroethane	3.0×10^1
Xylenes	9×10^2
4,4'-DDT	2.4×10^5
4,4'-DDD	7.7×10^5
Endrin aldehyde	no data
Methoxychlor	8.0×10^4
PAHs	$> 1 \times 10^3$

Section 6

BASELINE RISK ASSESSMENT

6.1 Introduction

A Baseline Risk Assessment was performed to characterize the nature, and to estimate the magnitude, of potential adverse public health effects caused by constituents identified in the soils operable unit at the NIROP Fridley. It should be noted that groundwater has been investigated and remediation implemented as a separate operable unit; therefore, the groundwater pathway was not evaluated in this risk assessment.

This risk assessment considers health effects which may result under current site conditions and also considers potential future adverse health effects by evaluating assumptions of future land use which may increase exposure to chemicals. Section 6.8 contains a glossary of terms used in this assessment. Section 7 contains the ecological assessment.

For the purpose of this assessment, it is assumed that no further remedial actions (beyond the removal action) will be implemented with regard to the soils operable unit under both current and future land use scenarios; thus, the risk assessment serves as a "baseline" risk assessment for the soils operable unit. The facility is still active. However, on-site waste disposal practices have ceased. Therefore, the site is assumed, with no remedial action, to be at a steady-state, worst-case condition.

The risk assessment was performed in general accordance with USEPA guidelines in the Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (HHEM), Part A (USEPA, 1989) and Supplemental Guidance (USEPA, 1991b). In general, the risk assessment was performed by evaluating the data collected during the Remedial Investigation (RI) to identify constituents of potential concern in affected on-site soils that are likely to be related to site activities, rather than related to background conditions or to sampling or laboratory procedures. Routes of migration and populations potentially exposed to the constituents of potential concern were then evaluated in the exposure assessment. In

the toxicity assessment, the information from the exposure assessment was then integrated with toxicological information to estimate intake for a given population, and subsequently arrive at an estimate of a health hazard quotient (due to noncarcinogens) or risk (due to carcinogens).

At this time, USEPA believes that, for noncarcinogens, there is a threshold level below which no adverse health effect will occur (USEPA, 1989). Doses greater than the threshold level may cause harmful health effects. Risk assessment for noncarcinogens involves estimating the exposure dose from a site chemical and comparing it to the chemical's threshold level. This threshold level is described as a reference dose (RfD), if the chemical is ingested, or a reference concentration (RfC), if the chemical is inhaled. The ratio of exposure dose to reference dose (or reference concentration) is the chemical's hazard quotient, which is a quantitative measure of the risk of adverse health effects from noncarcinogens. If there are multiple chemicals or multiple exposure pathways (air, water, soil) at a site, appropriate hazard quotients are added together into a site hazard index. The hazard index is a measure of the overall potential for noncarcinogenic effects posed by more than one chemical or pathway. When the site hazard index exceeds one, there may be concern about adverse health effects. Throughout Section 6, health risks associated with noncarcinogens are described as hazards or hazard estimates.

At this time, EPA believes that a carcinogen does not have a threshold (USEPA, 1989). That is, there is no dose below which there is no adverse health effect. Any exposure to a carcinogen results in an increased probability of acquiring cancer. Risk assessment for carcinogens involves estimating the exposure dose and multiplying it by the chemical's cancer slope factor (CSF). The product of exposure dose and cancer slope factor is the chemical's estimated excess upper bound lifetime cancer risk. Risks from multiple chemicals or pathways are assumed by EPA (USEPA, 1989) to be additive for carcinogens. The overall cancer risk is compared to an acceptable risk of 10^{-5} or 1 in 100,000 established by the Minnesota Department of Health (MDH, 1991). USEPA guidance calls for comparison to an acceptable risk range of 10^{-6} to 10^{-4} or 1 in 1,000,000 to 1 in 10,000 (USEPA, 1989).

Interpretation of the risk assessment values must be made with an understanding of the uncertainties and assumptions incorporated in the risk and hazard calculations. These uncertainties were generally dealt with by making reasonable conservative assumptions. The results are estimates of risk and hazard quotients that are the maximum that could reasonably be expected to occur. Therefore, actual risks and hazards are likely to be lower than those calculated under the reasonable maximum exposure scenarios. Uncertainties in the assessment, and their likely effect on the estimates of risk and hazard, are discussed in Subsection 6.6.

6.2 Data Evaluation and Collection Considerations

The HHEM provides guidance on a data evaluation process that results in the identification of the following: chemicals that are likely related to site activities and not background conditions or sampling and laboratory procedures; and data that are of acceptable quality for use in the quantitative risk assessment.

During the RI, on-site soils were sampled from the unsaturated zone to depths approximately 20 feet below ground surface. The samples were analyzed for selected volatile organic compounds using a portable gas chromatograph (GC), and two soil samples from each boring were laboratory-analyzed by CLP protocol. The sampling and analytical program, rationale, and data quality objectives of the investigation are detailed in the RI Work Plan (RMT, 1992a). The tasks were performed in accordance with the Quality Assurance Project Plan (RMT, 1992b), and Section 3 presents a full evaluation of data quality.

6.2.1 Data Assembly

Analytical results from soil samples collected during the RI at the site were used to develop lists of constituents of potential concern. Exposure pathways are summarized in Figure 6-1 and are discussed in detail in Subsections 6.3.3 and 6.3.4.

The portable GC VOC data were utilized in the quantification of risk for the soil pore gas pathway, even though the data are DQO Level 2 (rather than Level 4), because the portable GC provides a direct measurement of soil pore gas concentrations, and is sensitive to the primary constituents of concern (trichloroethene and tetrachloroethene). Portable GC measurements were recorded at all sampling depths,

while only two samples from each boring were submitted for compositional analysis. If pore gas concentrations were estimated by modeling based on compositional results, extrapolation from other depths to the depths of exposure would be necessary. It is our best technical judgment that the Level 2 portable GC data were the best representation of actual exposure concentrations to soil pore gas at the site.

6.2.2 Screening Constituents Using Background

The HHEM provides guidance on comparing sample concentrations with background concentrations to identify "non-site-related chemicals that are found at or near the site" (USEPA, 1989, p. 5-18). If a constituent was detected at concentrations greater than background levels at locations potentially affected by site constituents, the constituent was included in the risk assessment. Those constituents detected at concentrations at or below background concentrations, and thought to be naturally occurring, were not included in the risk assessment. Background data collected during the RI were used to evaluate the relationship of potentially site-related concentrations to background levels. Chemicals excluded from the risk assessment on this basis are discussed in Subsection 6.3.5.

6.2.3 Constituent Elimination Using Blank Data

Results of analyses of blank samples may be used to assess which detected constituents are site-related (USEPA, 1989). Blanks are samples of deionized water that are subject to the same handling and analysis as field-collected samples. Blanks include field or sample blanks, laboratory method blanks, and trip blanks. According to the HHEM (USEPA, 1989), constituents detected in blanks provide a measure of contamination that may have been introduced into a sample set either in the field while samples are collected or shipped or in the laboratory during sample preparation or analysis.

Independent data validation was performed to evaluate the usability of analytical results generated during the RI. Validation flags were added to organic analytical results based on analyses of blank samples, according to criteria outlined in the National Functional Guidelines for Organic Data Review (June, 1991). Section 3 discusses the data quality in detail and summarizes constituents that were detected in

field, trip, and method blanks. Concentrations of constituents that were found to be related to blank contamination were flagged with the "B" and/or the "U" qualifier (see Section 3). Values considered to be false positives ("U" qualified) were treated as non-detects for purposes of the risk assessment. Acetone was eliminated from the quantitative risk assessment because based on its occurrence in blanks, it was concluded that it is not a site-related constituent (see Section 4).

6.2.4 Data Qualifiers and Tentatively Identified Compounds

Various qualifiers were attached to laboratory results by either the laboratory conducting the analysis or by the person performing the independent data validation. Many of these qualifiers pertain to laboratory quality assurance/quality control (QA/QC) evaluations and generally indicate uncertainty with regard to the chemical's concentration, but not the presence or identity of the constituent. Therefore, all qualified data were used in the quantitative risk assessment in the same manner as unqualified data, in accordance with the guidance in Subsection 5.4 of the HHEM (USEPA, 1989).

Tentatively identified compounds (TICs) are compounds identified in samples that are not part of the standard list of constituents being analyzed under the CLP analytical protocols. TICs are tentatively identified at estimated concentrations because they cannot be compared directly to standards that are used during the analysis. TICs were analyzed for both volatile and semivolatile compounds. The TICs identified in NIROP soil samples were indicative of light and heavy petroleum volatile organic compounds (VOCs) and polycyclic aromatic hydrocarbons (PAHs). These classes of compounds were measured frequently in the Target Compound List (TCL) analyses. Because the petroleum-related PAH and VOC compounds posing the greatest human health risk (particularly, benzo(a)pyrene and benzene) are included in the TCL, the laboratory results are considered representative of the risk and hazard associated with TICs at the NIROP Fridley. Further discussion of TICs is included in Subsection 6.6 and in Table 6-19.

Following the assessment of detected constituents by the steps described above, the validated constituents identified in soil samples were considered to be constituents of potential concern. Validated constituents of concern with completed exposure pathways were evaluated in the risk assessment.

6.3 Exposure Assessment

6.3.1 Introduction

The objective of an exposure assessment is to estimate the type and magnitude of exposures to constituents of potential concern that are present at or migrating from a site. The exposure assessment for the NIROP followed the guidance in the HHEM and proceeded in the following steps:

1. Characterization of the exposure setting
2. Identification of exposure pathways
3. Quantification of exposure

Exposure scenarios for current and future land use were evaluated based on an estimate of reasonable maximum exposure (RME), which is defined (USEPA, 1989) as the highest exposure that is reasonably expected to occur. Qualitative assessment of unquantifiable exposure of human receptors is also included.

6.3.2 Characterization of Exposure Setting

Two significant waterways are in the vicinity of the site: Rice Creek, approximately 2 miles to the north, and the Mississippi River located one-quarter mile to the west. The water intake to the City of Minneapolis Waterworks facility is located on the Mississippi River approximately 2,000 feet south (downstream) of the NIROP Fridley's southern property line.

The NIROP Fridley is situated over a sand and gravel aquifer capable of yielding significant quantities of water for residential or municipal supplies. The soils in the area of the NIROP formed in sandy glacial deposits. Generally, the soils in the study

areas were classified as poorly graded sand (SP) or well-graded sand (SW) under the Unified Soil Classification System. The water table is approximately 20 feet below ground surface.

6.3.3 Identification of Exposure Pathways

An exposure pathway is the means by which a contaminant moves from a source to a receptor. A complete exposure pathway has the following five elements:

- A contaminant source
- A mechanism for contaminant release
- An environmental transport medium
- An exposure point (receptor)
- A feasible route of exposure

The sources of soil contamination at the site are the releases of waste oil, plating sludge, cleaning solvents, and degreasing solvents which occurred during the operation of the facility. Sections 4 and 5 of this report describe the nature of the contaminants at the NIROP, which include VOCs, PAHs, pesticides, and metals.

The potential contaminant release mechanisms and environmental transport media associated with the site (Figure 6-1) are as follows:

1. Exposure to site contaminants by direct contact with affected soil.

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2. Contaminant migration via leaching; that is, infiltration of precipitation through the contaminated soil, with subsequent percolation of leachate into the groundwater. Groundwater transport could then result in discharge of constituents of potential concern to the Mississippi River.

3. Contaminant transport by run-off of surface water or sediment from the site. The dissolved and suspended contaminants could be conveyed to the Mississippi River.

4. Volatilization from soils and contaminant migration into tunnels and basements via soil pore gas in the subsurface.

5. Contaminant movement via wind or mechanical erosion of soil that contains waste constituents.

Potential exposure pathways, exposure points (receptors), and routes of exposure for human health effects are discussed below and are summarized in Figure 6-1 and in Table 6-1. Non-human receptors are the focus of the Environmental Assessment (Section 7).

Summary of Completed Pathways

Contaminants have been released to the groundwater at the NIROP Fridley; however, groundwater is currently undergoing remediation and is being treated as a separate operable unit. The Feasibility Study for the soils operable unit will address the potential contribution of soil contaminants to the groundwater through evaluation of the Minnesota Pollution Control Agency soil cleanup model (MPCA, 1992). The 5-year review of the groundwater remediation system will include a risk assessment that will evaluate potential human health effects from the site as a whole, including both soil and groundwater. While groundwater is a potentially completed pathway at the NIROP Fridley, it is not addressed in this baseline risk assessment for the soils operable unit.

Current Land Use

Under current land use, two exposure pathways are potentially completed for the soils operable unit (see Figure 6-1). The two reasonable maximum exposure (RME) scenarios under current land use include two types of plant employees who could be exposed to constituents of concern, via the following:

- The outdoor maintenance worker could be exposed to constituents via incidental ingestion, dermal absorption, and inhalation of soil particulates while working at the site (direct contact).
- The indoor plant employee could be exposed to constituents via inhalation of soil pore gas while working in subsurface tunnels (volatilization).

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The majority of the workers at the NIROP Fridley spend their entire day within the buildings at the facility (Hildre, 1993). However, maintenance workers periodically perform duties such as weeding, grass cutting, fence repair, and snow removal outside the buildings (Hildre, personal communication, 1993). The maintenance activities are conducted throughout the property (Hildre, personal communication,

1993); therefore it is assumed that the worker spends an equal amount of time in each sub-area at the site. FMC (the facility operator for the Navy) typically hires contractors to carry out activities other than the routine maintenance activities listed above, such as trenching and other construction activities. The duration of exposure for a subcontracted construction worker would be very short, and potential health effects would be minimal. Therefore, RME for the outdoor worker under current land use was evaluated for the site worker who is exposed to shallow soils across the entire site.

There are also employees who work indoors performing inspections and repairs in subsurface tunnels in Area E. These employees would not be exposed to constituents by direct contact with soils, but could be exposed to volatile organic compounds via migration from subsurface soil pore gas. The tunnels are located in area E (Figure 3-1) and are approximately 8 to 10 feet below ground surface. Soils at the 10 to 12 foot depth would be in contact with the bottom of the tunnel. Therefore, the RME for the indoor worker (tunnel inspector) was evaluated in relation to the employees exposure to soil pore gas in soils ranging from 1 to 12 feet, in area E.

Trespassers are not included under the current land use scenario because access to the site is strictly limited by armed guards, surveillance cameras, and barbed-wire-topped fencing.

Future Land Use

Under future land use, two reasonable maximum exposure (RME) scenarios were evaluated: The site could be developed for residential land use in the future, and homes could be constructed across the entire site. Results of the RI indicate that Sub-Areas A2, A3, and A4 are the only areas that have been significantly impacted by volatile organic constituents, and to a lesser degree, by polycyclic aromatic hydrocarbons (PAHs), pesticides, and metals (see Section 4). A hypothetical future home would possibly be located within those areas; however, Sub-Areas A2, A3, and A4 represent only a small fraction of the total NIROP property that could potentially be developed. Therefore, the risk associated with residential land use was quantified both for the area that includes a large portion of the North 40 (Sub-Areas A2, A3, and

A4) and for the remainder of the site. Although the maximum exposure concentrations were measured in Sub-Areas A2, A3, and A4, it is more probable, based on overall site acreage, that exposure would be to those soils in the remainder of the property.

The soil excavated from residential basements could be spread on the surface of residential lots during construction, causing subsurface soils to be mixed with those at the surface. Therefore, the RME for the resident under future land use was evaluated using analytical results for soil samples collected from the 1- to 12-foot depths, the typical depth of a residential basement.

Volatile constituents in soil pores can permeate basement foundations and can result in exposure by inhalation of gas. Therefore, in addition to exposure by direct contact with soils, potential risk and hazard indices resulting from soil pore gas exposure (volatilization) were also quantified for the resident under future land use.

During development, construction workers could be exposed to on-site soils because significant earthwork would occur. However, health effects would be significantly lower than for the hypothetical future resident, due to the short exposure duration. Future risk to the development construction worker was not quantified because it is not considered to represent reasonable maximum exposure (RME).

Trespassers were not evaluated under future land use because residential exposure is likely to be much greater than exposure while trespassing. The trespasser scenario would not represent RME.

6.3.4 Pathways Not Completed

The RME for both current and future land use does not include inhalation exposure to vapors because these exposures are expected to be negligible. The rate of desorption of VOCs from soils would be much slower than the instantaneous dilution that occurs at the ground surface. Soil vapor concentrations at the air/land interface are expected to be below detection levels or levels of potential concern.

Surface runoff, both for sediment and surface water, is limited at the site. Much of the site is paved with curbs and gutters. No surface water bodies cross the site. Where not covered by pavement, soils are permeable and there is almost no slope; therefore, precipitation infiltrates rather than runs off. The municipal storm sewer system generally contains and routes stormwater collected from the paved areas to locations off-site. For these reasons, the runoff of surface water or sediment has not been quantified, but it is not expected to produce a significant contribution of contaminants to potential receptors.

Exposure to off-site receptors via wind and mechanical erosion is not a significant pathway because downwind receptors would be infrequent (in the park or on the divided highway), and erosion at the site is minimized due to gravel, blacktop, and pavement at the surface over much of the site.

6.3.5 Quantification of Exposure

Constituents of potential concern and exposure concentrations for the completed exposure pathways were evaluated using the following statistics generated from the RI analytical results:

- If the constituent was detected in at least 50 percent of the samples, the 95 percent upper confidence limit (UCL) on the mean was calculated for the exposure concentration using one-half the detection limit for the censored data, and using logarithmically transformed data (Gilbert, 1987). If the calculated UCL exceeded the maximum detected concentration, the maximum detected concentration was utilized as the exposure concentration (USEPA, 1989 p. 6-22).

- If the constituent was detected in less than 50 percent of the samples, the maximum detected concentration was assumed to be the exposure concentration. This overestimates exposure but reduces the inherent error in the exposure estimate that is introduced by substituting the censored data with one-half the detection limit.

The exposure concentration for direct contact with soils under future land use was calculated using analytical results from soils collected from depths of 1 to 12 feet; however, sampling frequencies varied substantially with depth. Therefore, three separate exposure concentrations were calculated for the following soil layers:

- Layer 1 - soil samples from 1 to 3 feet
- Layer 2 - soil samples from 3 to 8 feet
- Layer 3 - soil samples from 8 to 12 feet

If a constituent was not detected in one of the depth intervals listed above, an exposure concentration of zero was assigned to that interval. This assumption was based on the fact that for many constituents, a large number of samples were analyzed and no detections were reported (see Appendix K). This approach is consistent with the HHEM (USEPA, 1989), which encourages the use of site-specific information when quantitatively addressing non-detect values. The data from these layers suggest that the constituent is not present at those depths, and therefore use of zero as the exposure concentration is appropriate. The three interval concentrations were averaged to determine the final future land use exposure concentration in soils.

The concentrations of nine VOCs were measured in soil pore gas at each sampling interval. Since the sampling frequency was consistent with depth, soil pore gas concentrations were calculated by pooling the data from all depth intervals less than or equal to 12 feet.

Current Land Use

Table 6-2 contains the constituents of potential concern and exposure concentrations in shallow (1- to 3-foot depth) soils at the NIROP. Under current land use, the maintenance worker at the NIROP could be exposed to the constituents listed in Table 6-2 by dermal absorption, incidental ingestion, and inhalation of soil particulates. Calcium was excluded from the list of constituents because, although it was detected, the detected concentrations did not exceed background levels.

Table 6-3 contains the constituents of potential concern in soil pore gas for the 1- to 12-foot soils in area E where the maintenance tunnels are located. The indoor worker performing tunnel inspections and repairs could be exposed to volatile organic constituents migrating through the tunnel walls and floor. It is estimated that approximately 1 percent of the concentration in the pore gas could permeate a

basement foundation (Atlantic Environmental Services, 1988). Therefore, 1 percent of the calculated pore gas concentration was utilized as the exposure concentration within the tunnels.

The assumption that pore gas is diluted to a concentration of 1 percent as it enters the tunnels has considerable uncertainty associated with it. The model of pore gas being diluted to 1 percent as it enters tunnels considers entry through cracks, joints, and other openings (Atlantic Environmental Services, 1988). Other sources (Nazaroff, 1992) suggest that the estimate of pore gas concentration in a basement may be one-tenth of 1 percent. Little and Others (1992) concluded a reasonable range to obtain estimates of indoor air concentrations is from 0.04 percent to 4 percent. However, if the tunnels are constructed with permeable walls and if the tunnels remained closed, as much as 100 percent of the concentration of soil pore gas could enter them. The effect of this uncertainty on the risk estimate is discussed further in the Sensitivity Analysis (Subsection 6.6.1).

- *Future Land Use*

Under future land use, a hypothetical future residence could be located anywhere on the NIROP property. The maximum exposure to constituents would be expected to occur in Sub-Areas A2, A3, and A4. Table 6-4 is a summary of the constituents of potential concern and exposure concentrations calculated from 1- to 12-foot samples collected in Sub-Areas A2, A3, and A4. The exposure concentrations in Table 6-4 represent the average of exposure concentrations calculated for the three soil layers as discussed above. Individual layer exposure concentrations are included in Appendix K.

Table 6-5 contains the constituents of potential concern in soil pore gas for the 1- to 12-foot soils in Sub-Areas A2, A3, and A4. The future resident could be exposed to volatile organic constituents migrating through the basement walls and floor. One percent of the calculated pore gas concentration was again assumed to be the exposure concentration in the basement.

Table 6-6 lists the constituents of potential concern and exposure concentrations in subsurface soils in the area outside of Sub-Areas A2, A3, and A4. The 1- to 12-foot samples from the remaining on-site sub-areas were utilized in the calculation of exposure concentrations. Individual layer exposure concentrations are included in Appendix K. The hypothetical future residents are more likely to be exposed to the concentrations shown in Table 6-6 than those in Table 6-4 due to the large area outside of the North 40 that could potentially be developed. Calcium was excluded from the list of constituents of potential concern outside of Sub-Areas A2, A3, and A4 because on-site concentrations did not exceed background levels.

Table 6-7 contains the constituents of potential concern in soil pore gas for the 1- to 12-foot soils outside of Sub-Areas A2, A3, and A4.

Chronic Daily Intake

Chronic daily intake (CDI) is expressed as the mass of a substance contacted per unit body weight per unit of time, averaged over a period of time. The CDIs of constituents of potential concern were calculated using the exposure equations and assumptions presented in detail in Subsection 6.9. Site-specific and default RME values were used to calculate the CDIs. These intakes were calculated for both current and future land use and for each exposure pathway and route. Exposure factors are summarized in Table 6-8. References and/or rationale for the exposure factors are included in Subsection 6.9.

Dermal absorption factors were provided by the USEPA (ECAO, 1993a) or obtained from risk assessment guidelines published by the California Air Pollution Control Officers Association (CAPCOA, 1992). If dermal absorption factors were not available for a constituent, an absorption factor for a similar compound from its chemical class (metals, VOCs, etc.) was assigned. This assumption was made so that risk and hazard associated with these chemicals could be quantified, rather than eliminated from the risk assessment. Dermal exposure for the carcinogenic PAHs was not quantified because oral-to-dermal extrapolation of toxicity values is not appropriate for these compounds (ECAO, 1993a). Because there is evidence that dermal exposure to

these constituents causes skin cancer (ECAO, 1993a), the site risk due to dermal exposure may be underestimated. Dermal absorption factors and their sources are listed at the end of Subsection 6.9.

6.3.6 Uncertainty in the Exposure Assessment

The procedures and inputs used to assess potential exposure are subject to uncertainties. However, for Federal Superfund exposure assessments, inputs to the exposure equation are chosen so that their combination results in reasonable maximum exposure (i.e., the maximum exposure likely to occur).

Uncertainty associated with sampling and analysis includes the inherent variabilities in the analysis, representativeness of the samples, sampling errors, and the heterogeneity of the sample matrix. The quality assurance/quality control programs used in the RI and the collection of large numbers of samples reduce this uncertainty. The sampling plan for the RI focused on areas expected to be affected by site activities, which results in an overestimate of potential exposure.

It is assumed that constituent concentrations observed in soils represent a steady-state condition. Future concentrations of VOCs are expected to be lower, by an unknown amount, due to degradation and losses to the atmosphere. Therefore, the future land use risk and hazard estimates related to VOCs are probably overestimated. Semivolatile constituent concentrations may also degrade, but at a much slower rate than the VOCs. Metal concentrations are likely to be at steady-state.

In addition, samples collected at depths of 1 to 3 feet were considered representative of surface soil concentrations for current land use at the site. Since VOC losses to the atmosphere would be much greater in the upper 6 inches of soil, use of VOC concentrations from the 1- to 3-foot samples likely overestimates the exposure concentrations for current land use.

This assessment used simplifying assumptions about the environmental fate and transport of constituents. The assumption that organic constituent concentrations remain constant throughout the exposure period overestimates exposure because the

organic constituents degrade, reducing their concentrations, and the source (i.e., the on-site soil) contains a finite mass of these constituents. The use of maximum on-site soil concentrations for many of the exposure concentrations is a simplification that likely overestimates exposure. The estimate of 1 percent of pore gas entering a basement is a source of uncertainty that may overestimate or underestimate actual exposure for future land use. The exposure concentration from pore gas is highly dependent upon the location of the house, the type of basement/foundation construction, and the air exchange rate within the structure, all unknown factors for the hypothetical future residence. The effect of these variables on the risk estimate is discussed in Subsection 6.6.

Predicting future land use is inherently uncertain. Reasonable maximum exposure under the future land use scenario was assumed to include a residence located in the most highly impacted areas of the NIROP property. It is equally likely that a road, a parking lot, or other non-residential structure would be constructed in these areas.

Exposure estimates for this assessment were quantified using the standard default exposure factors in current USEPA guidance (USEPA, 1991b and USEPA, 1992a), with few variations from standard assumptions based on site-specific information and professional judgment. The standard default exposure factors which were used in this assessment are generally cautious point estimates of intake values that have a range of possible values. The effects of these upper confidence level estimates in comparison to central tendency values is discussed in Subsection 6.6.

The use of standard default values provides consistency among risk assessments but is likely to overestimate exposure since most are based on upper confidence level estimates of the values.

In summary, the estimation of exposure requires numerous assumptions to describe potential exposure situations. There are a number of uncertainties regarding the constituent concentrations at exposure points, the likelihood of exposure, the duration of exposure, and the rate of intake. These assumptions tend to simplify actual site conditions. Hypothetical reasonable maximum exposure assumptions were used so

that the estimates are conservative. The combination of many conservative assumptions results in a reasonable maximum exposure scenario that is an overestimate of actual exposure. The effects of various exposure assumptions are evaluated in the sensitivity analysis presented in Subsection 6.6.

6.4 Toxicity Assessment

6.4.1 Introduction

The purpose of a toxicity assessment is to weigh available evidence on the potential for the constituents of concern to cause adverse effects in exposed individuals and, where possible, to quantify the relationship between exposure to constituents of concern and the likelihood and severity of adverse effects. Adverse health effects include those from carcinogens (quantified as risk) and noncarcinogens (quantified as hazard).

The toxicity assessments for this site are based on a hierarchy of toxicity information found primarily in the Integrated Risk Information System (IRIS) (USEPA, 1993) and secondarily in the Health Effects Assessment Summary Tables (HEAST) (USEPA, 1992b and 1992c). Additional data for critical constituents of concern (those measured at high concentrations or known to be toxic) were obtained from the USEPA Environmental Criteria and Assessment Office (ECAO, 1993b). Environmental fate and transport of the primary constituents of concern is discussed in Section 5. Definitions of terms are provided in the glossary in Section 6.8.

6.4.2 Toxicity Information for Carcinogenic Effects

Table 6-9 summarizes the cancer slope factors (CSFs) for the constituents of concern with carcinogenic effects for the oral route; Table 6-10 summarizes the CSFs for the inhalation route. The CSF is an upper 95th percent confidence limit on the probability of the incidence of cancer per unit intake of a chemical over a lifetime. With the exception of benzo(a)pyrene, no published CSFs were available for the PAHs which have shown evidence of carcinogenicity (OSWER, 1987). Therefore, the CSFs published for benzo(a)pyrene were utilized for the carcinogenic PAHs.

For several constituents, the inhalation slope factors were calculated from the published unit risk values so that the constituents could be included in the quantitative risk assessment. The inhalation CSFs were calculated from unit risk values as follows:

$$CSF_i = \frac{[\text{Unit risk} \times 70\text{kg}]}{[20\ m^3/\text{day} \times 10^{-3}\ \text{mg}/\mu\text{g}]}$$

The USEPA is currently evaluating the appropriateness of the conversion of unit risk values to CSFs for Federal Superfund risk assessments; the alternative at this time is to assess them qualitatively, rather than quantitatively, resulting in a potential underestimate of risk.

6.4.3 Toxicity Information for Noncarcinogenic Effects

The toxicity values for potential noncarcinogenic effects (i.e., the chronic reference doses [RfDs] for the oral route, and the chronic reference concentrations [RfCs] for the inhalation route) for the constituents of concern at the NIROP are listed in Tables 6-11 and 6-12, respectively. The chronic RfD or RfC is an estimate of a daily exposure level for the human population, including sensitive subpopulations, that is likely to be without an appreciable risk of deleterious effects during a lifetime.

6.4.4 Uncertainty in the Toxicity Assessment

Table 6-13 shows a summary of the toxicity values (RfCs, RfDs, or CSFs) that were not available in the IRIS or HEAST. Nineteen of the constituents listed in Table 6-13 cannot be included in the Baseline Human Health Assessment for the site because no toxicity values are available.

Table 6-14 is a summary of the available toxicity information for 15 of the 19 constituents. The four PAH compounds are discussed later in this section. Three of the 15 constituents are considered essential nutrients (calcium, iron, and magnesium), and are not expected to be toxic except, perhaps, at very high concentrations. There was no information available with respect to chronic effects for five of the constituents (see Table 6-14). The potential health effects from exposure to 2-hexanone, 2-methylnaphthalene, and dibenzofuran could not be quantified; however, the risk and

hazard due to volatiles in general would probably not be affected significantly by these omissions because the high concentrations of trichloroethene at the NIROP Fridley, which was quantitatively assessed, so significantly affects the risk estimates. The risk and hazard estimates related to pesticide exposure may be underestimated due to the omission of the four constituents shown in Table 6-14.

Lead has been documented to cause impaired neurodevelopment in children (ECAO, 1993a). Lead concentrations ranged from less than 2.1 mg/kg to 453 mg/kg in on-site soils. The lack of RfDs for lead could cause an underestimation of potential health effects at the site.

At least one of the toxicity values was available for the remaining chemicals in Table 6-13; therefore their critical health effects were quantitatively assessed. One exception to this is the lack of available toxicity values for a number of the PAHs. In particular, oral to dermal extrapolation of toxicity values is considered inappropriate (ECAO, 1993a) because PAHs can cause portal of entry cancers, and the oral slope factor would not be protective against the potential localized carcinogenic effects. Therefore, the risks associated with the PAHs are underestimated. The lack of RfDs for the PAHs causes the hazard to be underestimated as well. In contrast, use of the benzo(a)pyrene CSF for all of the carcinogenic PAHs likely overestimates the site risk. Many of the carcinogenic PAHs have been shown to have lower potencies than benzo(a)pyrene (OSWER, 1987).

Although 1,1-dichloroethane is classified as a Class C carcinogen by the USEPA (1993), no CSF is published for 1,1-dichloroethane, causing an underestimation of the site risk. None of the other constituents in Table 6-13 lacking CSFs were classified as potential carcinogens; therefore, the lack of these values probably has no effect on the site risk.

There were eight essential nutrients identified as constituents of potential concern at the NIROP Fridley. Subsection 5.9.4 of the HHEM states that essential nutrients present at low concentrations need not be considered in the quantitative risk assessment.

Chronic daily intakes (CDIs) were calculated using on-site exposure concentrations for the eight nutrients using the RME exposure factors listed in Table 6-8. None of the estimated intakes exceeded their recommended dietary allowances (NRC, 1989), for current or future land use. Therefore, the nutrients were excluded from the quantification of noncarcinogenic hazards for the soil ingestion exposure route. The maximum CDIs calculated (for both current and future land use) are shown below with their respective recommended dietary allowances (RDAs).

Nutrient	Maximum CDI	Recommended Dietary Allowance (RDA) (mg/kg-day assuming 72 kg body weight)
Calcium	0.07	20
Chromium	4×10^{-5}	3
Copper	0.001	0.04
Iron	0.1	0.1
Magnesium	0.02	5
Manganese	0.02	0.07
Selenium	2×10^{-6}	0.001
Zinc	4×10^{-4}	0.2

The exclusion of essential nutrients is based on the assumption that the site is the only source of exposure. Although in reality this is not the case, six of the eight intakes shown above are at least one order of magnitude lower than the RDA, and overall intake would probably not exceed the RDA.

Including CSFs calculated from unit risk values for inhalation of carcinogens is a source of uncertainty in the toxicity database. This conversion introduces assumptions about inhalation rate and body weight that may be inappropriate for the individual unit risk estimates. However, the inclusion of these calculated values is the conservative alternative to estimating risk without these toxicity values.

The toxicity values and other toxicologic (health effects) information used in this risk assessment process are associated with multiple safety factors that are applied because of uncertainty about the data. Most health effects information has been developed using laboratory animals exposed to high doses. Although species

differences in absorption, distribution, metabolism, excretion, and target organ sensitivity are documented in the literature, accounting for these difference is beyond the scope of a baseline risk assessment.

Uncertainty is associated with the toxicity of mixtures. For the most part, data about the toxicity of chemical mixtures are unavailable. Rather, toxicity studies are generally performed using a single chemical. This risk assessment assumes, per USEPA guidance (1989a), that toxicity is additive; the excess lifetime cancer risks and hazard quotients (HQs) were each summed across chemicals. This assumes that the mixture of chemicals present at the site has neither synergistic (i.e., multiplied) nor antagonistic (i.e., canceled) interactions, which is a standard, but not necessarily conservative, assumption for a baseline risk assessment.

Toxicity values are constantly changing to reflect new research that is being conducted. Therefore, the quantification of risk and hazard in baseline risk assessments is typically in danger of being outdated, which adds to the uncertainty.

In summary, although the toxicity data are a source of uncertainty in the risk assessment process, the methods of deriving the USEPA data are based on very conservative approaches. Toxicity values were obtained for the critical constituents at the site. The values used are often upperbound extrapolations. The data used in this assessment have been taken from the USEPA-approved data bases and are, therefore, likely to provide overestimates of actual risk and hazard.

6.5 Risk Characterization

6.5.1 Introduction

In the risk characterization, the results of the toxicity and exposure assessments are summarized and integrated to arrive at quantitative and qualitative expressions of risk (for carcinogens) and hazard index (for noncarcinogens).

Risk is estimated by multiplying the chronic daily intake (CDI) (see Subsection 6.3) by the cancer slope factor (CSF) from the USEPA databases. This estimated risk can then be compared to the Minnesota Department of Health (MDH) acceptable cancer risk level of 10^{-5} (one in one hundred thousand additional cancer occurrences in a 70-year lifetime).

The hazard quotient is a quantitative value from which a conclusion is drawn related to the potential noncarcinogenic effects from site chemicals. The hazard quotient is the ratio of the chronic daily intake (CDI) for each constituent of concern to the reference dose (RfD), for the oral route, and reference concentration (RfC) for the inhalation route. Hazard quotients for individual constituents of concern are added together to calculate the hazard index (HI) for a pathway. Appropriate pathway hazard indices are added together to calculate a site hazard index. A total site hazard index of less than 1.0 indicates that the potential site hazard is lower than the level of concern; a hazard index of greater than 1.0 indicates that there may be a potential for non-cancer health effects at the site.

6.5.2 Current Land Use Conditions

The estimated excess upperbound lifetime cancer risks and the hazard indices for the RME under current land use are summarized below:

CURRENT LAND USE	ESTIMATED RISK	ESTIMATED HAZARD
Indoor Worker:		
Inhalation of pore gas	6×10^{-6}	--
Outdoor Worker:		
Dermal absorption of soil	8×10^{-8}	0.008
Ingestion of soil	4×10^{-6}	0.008
Inhalation of soil	3×10^{-7}	0.07
Total - Outdoor Worker	4×10^{-6}	0.09

The estimated excess upperbound cancer risks for individual chemicals for the two worker scenarios under current land use are presented in Table 6-15. The total estimated site risks for the workers under both RME scenarios are lower

than the 10^{-5} acceptable risk level (MDH, 1991). The estimated risk to the indoor worker is associated with inhalation of trichloroethene in the soil pore gas. The USEPA has not adopted a current position on the weight-of-evidence classification of trichloroethene, but B2/C has been recommended by the Science Advisory Board (ECAO, 1993b). The indoor worker RME scenario is defined as the NIROP employee who spends 1 hour each work day inspecting and maintaining subsurface tunnels in Area E.

The site risk to the outdoor maintenance worker is primarily attributed to ingestion of PAHs in shallow soils. Some of the PAHs such as benzo (a) pyrene are classified as B2 carcinogens (Table 6-9) and others are not classified. The outdoor worker RME scenario is defined as the NIROP maintenance worker who spends approximately 1 day per week performing duties such as grass cutting, snow removal, and fence repair (Hildre, personal communication, 1993).

The hazard quotients and hazard indices for current land use are presented in Table 6-16. The hazard index for the indoor worker at the NIROP cannot be quantified because no inhalation reference concentrations (RfCs) were available for the three constituents of concern in the pore gas. The estimated site hazard index for the outdoor worker under RME assumptions is 0.09 and is primarily related to inhalation of manganese in the soil. The estimated hazard is far below 1.0, which is considered to be the level of concern.

6.5.3 Future Land Use Conditions

The estimated excess upperbound lifetime cancer risks and hazard indices for RME under future land use are summarized below:

FUTURE LAND USE	ESTIMATED RISK	ESTIMATED HAZARD
Residential - North 40:		
Dermal Absorption of soil	2×10^{-5}	0.2
Ingestion of soil	1×10^{-4}	0.3
Inhalation of soil	1×10^{-5}	2
Inhalation of pore gas	4×10^{-3}	4
Total - North 40	4×10^{-3}	6

Residential - Remaining Areas:		
Dermal Absorption of soil	8×10^{-7}	0.01
Ingestion of soil	5×10^{-5}	0.05
Inhalation of soil	7×10^{-6}	0.3
Inhalation of pore gas	6×10^{-4}	0.09
Total - Remaining Areas	6×10^{-4}	0.4

The estimated excess upperbound lifetime cancer risks for individual chemicals under future land use are presented in Table 6-17. The total estimated site risk for the hypothetical future resident in the North 40 (Sub-Areas A2, A3, and A4) using RME assumptions is 4×10^{-3}, which is above the 10^{-5} acceptable risk level (MDH, 1991). The site risk is primarily associated with the inhalation of soil pore gas, specifically of tetrachloroethene and trichloroethene, that could infiltrate through soil into the basement of a home in this area of the site. It is the opinion of the Science Advisory Board that these 2 constituents be classified as B2/C carcinogens (ECAO, 1993b). The RME scenario under future land use is defined as a hypothetical resident who constructs a home in the North 40 and remains there for a period of 30 years.

The total estimated site risk outside of Sub-Areas A2, A3, and A4 using RME assumptions is 6×10^{-4}, which is also above the 10^{-5} acceptable risk level (MDH, 1991). The site risk is primarily associated with the same two constituents, tetrachloroethene and trichloroethene, in the soil pore gas. Once again, it is assumed that the hypothetical future resident would live in these areas for a period of 30 years.

The estimated site hazard quotients and hazard indices for future land use are presented in Table 6-18. The total site hazard index for the resident located in the North 40 area is 6. The primary contributors to the hazard are ethylbenzene and toluene in the soil pore gas. Manganese concentrations in the soils also contribute to the hazard through inhalation of soil particulates. The hazard for a residential scenario in the North 40 area is greater than the 1.0 level of concern.

The total site hazard index for the resident located outside of the North 40 area is 0.4. The hazard is primarily due to inhalation of manganese, and secondarily to ingestion of metals in the on-site soils, and inhalation of toluene in the soil pore gas. The hazard in the remaining areas is below the 1.0 level of concern for health effects.

6.6 Sensitivity Analysis

As discussed previously (Subsections 6.3.6 and 6.4.4), there is uncertainty in the quantitative risk assessment. The goal of the risk assessment is not to eliminate uncertainty but to provide "information necessary to justify action at a site and to select the best remedy for the site" (USEPA, 1989). The goal of the sensitivity analysis is to determine the effect of the various assumptions that cause uncertainty and to minimize the effect of these issues on the confidence in the risk estimate. The sensitivity analysis for the site was performed by varying the assumptions of the risk assessment, particularly the exposure assumptions, and evaluating, both quantitatively and qualitatively, the risk and hazard estimates under different assumptions. This process was performed following the same guidance that was used in the baseline risk assessment.

Risk estimates are compared to an acceptable risk level of 10^{-5} (MDH, 1991) and are expressed as one significant figure only (USEPA, 1989). For these reasons, changes in assumptions that result in changes in the estimate on the order of one-half to one order of magnitude (i.e., increases or decreases of 5 to 10 times) are considered in this sensitivity analysis to be significant changes. Hazard quotients are compared to a 1.0 level of concern and are also expressed as one significant figure (USEPA, 1989). In this assessment, if the revised assumptions result in a hazard estimate over the 1.0 level of concern, the change in assumptions is significant.

Exposure concentrations were estimated using criteria discussed in Subsection 6.3.5 and were a combination of 95% upper confidence limits, and the maximum detected concentrations, depending on the frequency of detection at the site. In general, these assumptions overestimate exposure and result in overestimates of risk and hazard for VOCs (the principle source of the site risk) because, due to source degradation, VOC concentrations in soils are likely to decrease over the exposure period.

In general, the quantification of risk and hazard associated with the PAHs has considerable uncertainty associated with it. Reference doses were not available for a number of the PAH compounds (see Table 6-13), which would result in an underestimation of the hazard. The benzo(a)pyrene cancer slope factor was used to quantify the risk associated with other PAHs thought to be carcinogenic (Oswer, 1987); however, many of these PAH compounds have been shown to have lower potencies than benzo(a)pyrene (Oswer, 1987), causing an overestimation of the PAH-related risk.

The risk associated with dermal exposure to PAHs could not be quantified for a number of the compounds because extrapolation of the oral slope factor to dermal exposure is not appropriate (ECAO, 1993a). PAHs have been documented to produce portal of entry cancers such as skin tumors when applied dermally (ECAO, 1993a). Therefore, use of the oral slope factor is not considered protective against potential local carcinogenic effects. As a result, the risk associated with dermal exposure to PAHs is underestimated, and may actually be greater than the risk quantified for oral exposure to PAHs.

Although these uncertainties exist, the concentrations of many of the PAHs measured in NIROP soils are comparable to or lower than those measured in urban soils, as documented by the U.S. Department of Health and Human Services (1990b). PAHs were retained in the quantitative risk assessment because the limited site-specific background data do not support excluding them. Therefore, the site-related risk associated with PAHs is likely overestimated, particularly compared to the risk associated with background concentrations.

Tentatively identified compounds (TICs) were detected at this site, but were not included in the quantitative risk assessment because of uncertainties regarding their concentration, and because necessary toxicological information is seldom available for these compounds. Appendices E and F contain full summaries of the TICs detected at the site. Table 6-19 is a summary of the TICs detected at a frequency of at least 5 percent.

As shown in Table 6-19, many of the TICs were probably derived from weathered petroleum hydrocarbons at the site, and have maximum concentrations comparable to the estimated exposure concentrations for similar target compound list analytes. Since the chemicals of

primary toxicological concern in petroleum products (benzene, toluene, xylenes, and PAHs) were analyzed and included in this assessment, additional examination of TICs does not appear warranted.

6.6.1 Current Land Use

Under current land use, the indoor worker (tunnel inspector) is exposed to constituents of concern only by inhalation of soil pore gas that permeates the tunnel walls and floor. The calculation of the risk associated with pore gas is based on the assumption that pore gas is diluted to a concentration of 1 percent as it enters the tunnels. This assumption results in an acceptable risk level (6×10^{-6}) that has considerable uncertainty associated with it. The model of pore gas being diluted to 1 percent as it enters tunnels considers entry through cracks, joints, and other openings (Atlantic Environmental Services, 1988). Other sources (Nazaroff, 1992) suggest that the estimate of pore gas concentration in a basement may be one-tenth of 1 percent, lowering the risk level to 6×10^{-7}. However, soil pore gas can also move through permeable basement walls, and if the tunnels are constructed with permeable walls and if the tunnels remained closed, as much as 100 percent of the concentration of soil pore gas could enter them. In that case, the risk would be 100 times higher than 6×10^{-6} (6×10^{-4}), which would be an unacceptable risk level. Therefore, the risk due to inhalation of soil pore gas is sensitive to the 1 percent pore gas concentration assumption.

The risk (4×10^{-6}) and hazard (0.09) calculated for the outdoor maintenance worker is based on an estimated exposure frequency of 48 days/year. Maintenance activities include snow removal, lawn mowing, and fence and roofing repair. If the outdoor worker were to spend one-third of his days outdoors (120 days/year), the associated risk would increase to 1×10^{-5}, which is equal to the acceptable risk level. The hazard would increase to 0.2, which is still below the 1.0 level of concern. Maintenance activities would not likely require outdoor work one-third of the year. This analysis demonstrates that the risk and hazard estimates are not very sensitive to the exposure frequency assumption of 48 days/year.

Exposure concentrations in soils for the current land use, outdoor worker RME scenario were estimated using samples collected from depths of 1 to 3 feet. Volatilization of constituents would be expected to be much greater at the ground surface. Therefore, using VOC concentrations measured at depths of 1 to 3 feet likely overestimates exposure for the outdoor worker, who typically is not disturbing the subsurface soils. Additionally, many portions of the site are covered with gravel or pavement, minimizing exposure to soil or dust that would be suspended in the air.

6.6.2 Future Land Use

Risk and hazard for the hypothetical future resident were calculated based on the use of standard RME default exposure factors (Subsection 6.9). In order to compare reasonable maximum exposure to average exposure and estimate a broader risk range, the risks and hazard quotients for the future resident were calculated using central tendency (CT) or average exposure factors. The calculations were performed for the chemicals that contributed significantly to the risk and hazard, using the CT exposure factors listed in Table 6-20. The following exposure factors affected the CT calculations:

- The exposure frequency was decreased from 350 days/year to 275 days/year.
- The exposure duration was decreased from 30 years to 9 years.
- The body weight of an adult (70 kg) was assumed, rather than a weighted average of child and adult (59 kg).
- The ingestion rate was decreased from 120 mg/day to 100 mg/day.
- The indoor inhalation rate was decreased from 15 m^3/day to 10 m^3/day.

Table 6-21 compares the RME and CT risk values and hazard quotients. In general, the total risk to a future resident, either in the North 40 or in the remaining areas would decrease by slightly less than an order of magnitude using the CT (average) exposure factors. However, the CT risks for both areas of the site are still greater than the 10^{-5} acceptable risk level (MDH, 1991). The hazard indexes under average exposure assumptions decreased slightly, but the hazard still remains above the 1.0 level of

concern in the North 40 area. These results suggest that remediation of VOCs may be needed in some areas of the site to reduce the potential for health effects under future land use.

The risk and hazard estimates for RME future residential land use were calculated based on age-adjusted exposure that included both child and adult exposure. Both the risk and hazard in the North 40 area were greater than the levels of concern, therefore higher exposure for children would not change the conclusions of the risk assessment in that area. However, the hazard estimated for the remaining areas was below the 1.0 level of concern, therefore an evaluation of risk and hazard to the child as a sensitive receptor (SR) was performed. The following exposure factors affected the SR calculations:

- The skin surface area was decreased from 4,200 cm^2 to 897 cm^2.
- The exposure duration was decreased from 30 years to 6 years.
- The body weight was decreased from 59 kg to 15 kg.
- The ingestion rate was increased from 120 mg/day to 200 mg/day.
- The averaging times for carcinogens and noncarcinogens were decreased to 2,190 days and 2,100 days, respectively.

Table 6-22 compares the RME and SR risk values and hazard quotients for the remaining areas. The risk to the child is greater by nearly one order of magnitude and remains above the 10^{-5} acceptable risk level. The hazard to the child as a sensitive receptor is two times greater than the 1.0 level of concern in the remaining areas. The hazard is primarily due to the inhalation of manganese in the soil. Toluene in the soil pore gas also contributes to the increased hazard. In summary, for the future land use residential scenario, although the hazard in the remaining areas of the NIROP Fridley are acceptable for adult or age-adjusted exposure, they are unacceptable for the child or sensitive receptor.

6.7 Summary

The estimated excess upperbound lifetime cancer risks and hazard indices for current and future land use are summarized as follows:

CURRENT LAND USE	ESTIMATED RISK	ESTIMATED HAZARD
Indoor Worker:		
Inhalation of pore gas	6×10^{-6}	--
Outdoor Worker:		
Dermal absorption of soil	8×10^{-8}	0.008
Ingestion of soil	4×10^{-6}	0.008
Inhalation of soil	3×10^{-7}	0.07
Total - Outdoor Worker	4×10^{-6}	0.09

FUTURE LAND USE	ESTIMATED RISK	ESTIMATED HAZARD
Residential - North 40:		
Dermal Absorption	2×10^{-5}	0.2
Ingestion	1×10^{-4}	0.3
Inhalation	1×10^{-5}	2
Inhalation of pore gas	4×10^{-3}	4
Total - North 40	4×10^{-3}	6
Residential - Remaining Areas:		
Dermal Absorption	8×10^{-7}	0.01
Ingestion	5×10^{-5}	0.05
Inhalation	7×10^{-6}	0.3
Inhalation of pore gas	6×10^{-4}	0.09
Total - Remaining Areas	6×10^{-4}	0.4

The risks to the indoor and outdoor workers under current land use are lower than the 10^{-5} acceptable risk level (MDH, 1991). The hazard index for the indoor worker cannot be quantified, and the estimated hazard to the outdoor maintenance worker is far below the 1.0 level of concern (USEPA, 1989).

The risks to hypothetical future residents at the site is greater than the 10^{-5} acceptable risk level. The risk is primarily due to concentrations of tetrachloroethene and trichloroethene in soil pore gas at the site. The estimated hazard within the North 40 area is 6 times the 1.0

level of concern. Soil pore gas concentrations of ethylbenzene and toluene, and manganese concentrations in soil largely contribute to the hazard. The hazard outside of the North 40 area is approximately half the level of concern.

The risk and hazard estimates summarized above are likely overestimates of actual exposure due to the conservative assumptions required for RME in Federal Superfund baseline risk assessments. Using these conservative assumptions, it is concluded that, under current land use, estimated risks are lower than the acceptable level (10^{-5}), and under a future land use residential scenario, estimated risks are higher than the acceptable level.

6.8 Glossary of Terms

Ambient - The conditions surrounding a person, sampling location, etc.

Analytical Limits of Quantitation - The lowest level at which a chemical can be accurately and reproducibly quantified. Usually equal to the instrument detection limit multiplied by a factor of three to five, but varies for different chemicals and different samples.

Analyte - Chemical for which a sample is analyzed.

Background - Concentration present under ambient conditions that has not been increased by anthropogenic (man-made) sources.

Baseline Risk Assessment - Study to characterize the nature and estimate the magnitude of potential adverse effects to public health caused by toxic chemicals. This study is intended to focus on providing the information necessary to select an appropriate remedial action.

Blank - See Field Blank, Laboratory Method Blank, and Trip Blank.

Cancer Slope Factor - The upper-bound estimate of the probability of a response per unit intake of a chemical over time; a toxicity value that defines quantitatively the relationship between dose and response for a cancer-causing agent.

Carcinogen - A cancer-causing substance.

CDI - Chronic daily intake.

Censored Data - Data for which measured values are not available, because they are below or above a truncation point, such as a detection limit.

Chronic Daily Intake - The mass of a substance contacted per unit of body weight per unit of time, averaged over a period of time. Exposure normalized for time and body weight; expressed in units of mg chemicals/kg body weight-day. Exposure dose.

Completed Pathway - Exposure pathway that is uninterrupted from source to receptor.

Confidence Rating - Degree of confidence ascribed to a toxicity value. This is a function of the individual study from which the toxicity data were derived and the completeness of the supporting data.

Constituents of Potential Concern - Chemicals that are potentially site-related and the data of which are of sufficient quality to use in the quantitative risk assessment.

CRDL - Contract Required Detection Limit - Chemical-specific levels that a Contract Laboratory Program (CLP) laboratory must be able to routinely and reliably detect and quantify in specified sample matrices. May or may not be equal to the reported quantitation limit of a given chemical in a given sample.

CSF - Cancer slope factor.

Data Qualifiers - Codes attached to certain data either by the laboratory or the data validator that indicate questions concerning chemical identity, concentration, or both.

Dermal Absorption - To be absorbed by the skin.

Dilution Factor - Factor by which concentrations are reduced when an affected medium mixes with an unaffected system.

Discharge Point - Point from which a substance emanates.

Environmental Media - Groundwater, springs, surface water, air, soil, soil gas, and stream sediment.

Erosion - Natural process that involves the transport of weathered material at the earth's surface.

Estimated Excess Upperbound Lifetime Cancer Risk (excess risk) - Probability, over a lifetime, of an individual developing cancer as a result of exposure to a particular level of a potential carcinogen.

Exposure - The contact of an organism with a chemical.

Exposure Assessment - Study conducted to estimate the type and magnitude of exposures to constituents of potential concern that are present at or migrating from a particular site.

Exposure Dose - The mass of a substance contacted per unit of body weight per unit of time, averaged over a period of time. Chronic daily intake.

Exposure Pathway - The physical course that a chemical takes from a contaminant source to an exposed organism.

Exposure Route - The way a chemical enters an organism after contact (e.g., by ingestion, inhalation, dermal absorption).

Fauna - Animals of a particular region or period.

Field Blank or Sample Blank - Sample of deionized water that is subject to the same handling and/or analysis as field-collected samples.

Flora - Plants of a particular region or time.

Geologic Unit - A deposit of finite thickness and single origin.

Hazard Index - The sum of the hazard quotients for each exposure pathway. When the hazard index exceeds 1.0, there may be concern for potential health effects from noncarcinogens.

Hazard Quotient - Ratio of a single substance's exposure level over a specified time period to a reference dose for that substance derived from a similar exposure period. A quantitative measure of the risk of adverse health from noncarcinogens.

Human Receptors - Individual or population exposed to a chemical or physical agent at or originating from a site.

Impoundment - An accumulation area.

Incidental Ingestion - To swallow accidentally (i.e., while swimming).

Ingestion - To take in by swallowing.

Inorganic Constituent - A compound that does not contain organic carbon.

Laboratory Method Blank - This blank results from the treatment of distilled, deionized water with all of the reagents and manipulations (e.g., digestion or extractions) to which site samples will be subjected.

Leachate - Material that is dissolved and washed out of waste by a percolating liquid.

Method Blank - See Laboratory Method Blank.

Naturally Occurring Inorganic Constituent - A chemical that is present under ambient conditions and that has not been increased by anthropogenic sources.

Noncarcinogen - A substance that causes adverse health effects other than cancer. Chemicals can cause carcinogenic effects, noncarcinogenic effects, or both.

Organic Constituent - A compound that contains carbon and, generally, hydrogen.

Probable Human Carcinogen - An EPA weight-of-evidence classification of the likelihood that a substance causes cancer. There are two divisions in this class: B1 indicates that limited human data are available; B2 indicates sufficient evidence in animals and inadequate or no evidence in humans.

Quantitative Risk - Proportional risk determined by the amount of a contaminant in an environmental medium and reasonable maximum exposure.

Receptor - An individual or population exposed to a chemical or physical agent.

RfC/RfD - Reference concentration/Reference dose. An estimate of a daily exposure level for the human population, including sensitive subpopulations, that is likely to be without an appreciable risk of deleterious effects during a lifetime (chronic) or a portion of a lifetime (subchronic). RfCs are for inhalation route exposures; RfDs are for ingestion.

Risk - A unitless probability of an individual developing cancer (Risk = CDI x CSF).

Risk Assessment - See Baseline Risk Assessment.

Risk Characterization - A summary of the results of the toxicity and exposure assessments that provides a qualitative and quantitative expression of risk (for carcinogens) and hazard (for noncarcinogens).

RME - Reasonable maximum exposure. The highest exposure that is reasonably expected to occur at the site.

Sample Blanks or Field Blanks - Samples of deionized water that are subject to the same handling and/or analysis as field-collected samples.

Sediment - Material that settles to the bottom of a liquid.

Synthetic Organic Compounds - A manufactured organic compound that is not naturally occurring in the environment.

Tentatively Identified Compounds - Compounds not on the EPA's target analyte list but identified on a sample's chromatogram. Assigned identities and quantitation are often uncertain.

Toxicity - The quality or condition of being toxic–harmful, destructive, poisonous.

Toxicity Assessment - Study to weigh available evidence on the potential for the constituents of potential concern to cause adverse effects in exposed individuals and, where possible, to quantify the relationship between exposure to constituents of potential concern and the likelihood and severity of adverse effects.

Trip Blank - A trip blank consists of laboratory, distilled, deionized water in a 40-ml glass vial sealed with a Teflon septum. The blank accompanies the empty sample bottles to the field as well as the samples returning to the laboratory for analysis. It is not opened until it is analyzed in the laboratory with the actual site samples. This type of blank is used to indicate potential contamination due to migration of volatile organic compounds from the air on the site or in sample shipping containers, through the septum or around the lid of sampling vials, and into samples.

6.9 Chronic Daily Intake Equations

Details of the chronic daily intake equations are included on the following pages (one equation per page).

DERMAL CONTACT WITH CHEMICALS IN SOIL **PROJECT # 2313.21**
OUTDOOR MAINTENANCE WORKER
CURRENT LAND USE

CHEMICAL: EFFECTS

EQUATION:

$$\text{INTAKE(MG/KG-DAY)} = \frac{CS*CF*SA*AF*ABS*FD*EF*ED}{BW*AT} = 0.00E+00$$

INPUT VARIABLES:

	CS	=	Chemical Concentration in Soil (mg/kg)
0.000001	CF	=	Conversion Factor = (10E-6 kg/mg)
4300	SA	=	Skin Surface Area Available for Contact (cm^2/day)
1.0	AF	=	Soil to Skin Adherence Factor (mg/cm^2)
	ABS	=	Absorption Factor (unitless)
0.33	FD	=	Fraction of Day at the Source (hours/hours)
48	EF	=	Exposure Frequency (days/year)
25	ED	=	Exposure Duration (years)
70	BW	=	Body Weight (kg)
25550	AT	=	Averaging Time (period over which exposure is averaged -days) carcinogens
1200	AT	=	Averaging Time (period over which exposure is averaged -days) noncarcinogens

COMMENTS:

CS: See text for exposure concentration.

CF: 10E-6 kg/mg

SA: Mean Surface Area for male head, arms, and hands (USEPA, 1992a)

AF: 1.0 mg/cm^2 (USEPA, 1992a)

ABS: Chemical-specific value

FD: 8 hours/24 hours = 0.33

EF: 48 days/year (4 days/month to mow lawns, plow snow, etc.)

ED: 25 years (commercial/industrial setting, USEPA, 1991b)

BW: 70 kg (adult, average; USEPA, 1991b)

AT: Noncarcinogenic effects - ED*48 days/year = 1200
Carcinogenic effects - 70 years*365 days/year = 25550

INHALATION OF AIRBORNE CHEMICALS
OUTDOOR MAINTENANCE WORKER
CURRENT LAND USE

CHEMICAL: EFFECTS

EQUATION:

$$\text{INTAKE(MG/KG-DAY)} = \frac{CS*TSP*CF*IR*FD*EF*ED}{BW*AT} = 0.00E+00$$

INPUT VARIABLES:

	CS	=	Chemical Concentration in Soil (mg/kg)
0.075	TSP	=	Total Suspended Particulate Inhaled
0.000001	CF	=	Conversion Factor = (10E-6 kg/mg)
20	IR	=	Inhalation Rate (m^3/day)
0.33	FD	=	Fraction of Day at the Source (hours/hours)
48	EF	=	Exposure Frequency (days/year)
25	ED	=	Exposure Duration (years)
70	BW	=	Body Weight (kg)
25550	AT	=	Averaging Time (period over which exposure is averaged -days) carcinogens
1200	AT	=	Averaging Time (period over which exposure is averaged -days) noncarcinogens

COMMENTS:

CS: See text for exposure concentration.

TSP: 0.075 mg/m^3 (24-hour National Ambient Air Quality Standard)

CF: 10E-6 kg/mg

IR: 20 m^3/day (adult, suggested upper bound value; USEPA, 1991b)

FD: 8 hours/24 hours = 0.33

EF: 48 days/year (4 days/month to mow lawn, plow snow, etc.)

ED: 25 years (commercial/industrial setting, USEPA, 1991b)

BW: 70 kg (adult, average; USEPA, 1991b)

AT: Noncarcinogenic effects - ED*48 days/year = 1200
Carcinogenic effects - 70 years*365 days/year = 25550

INGESTION OF CHEMICALS IN SOIL
OUTDOOR MAINTENANCE WORKER
CURRENT LAND USE

CHEMICAL: EFFECTS

EQUATION:

$$\text{INTAKE(MG/KG-DAY)} = \frac{CS*CF*IR*FD*EF*ED}{BW*AT} = 0.00E+00$$

INPUT VARIABLES:

	CS	=	Chemical Concentration in Soil (mg/kg)
0.000001	CF	=	Conversion Factor = (10E-6 kg/mg)
50	IR	=	Ingestion Rate (mg soil/day)
0.33	FD	=	Fraction of Day at the Source (hours/hours)
48	EF	=	Exposure Frequency (days/year)
25	ED	=	Exposure Duration (years)
70	BW	=	Body Weight (kg)
25550	AT	=	Averaging Time (period over which exposure is averaged -days) carcinogens
1200	AT	=	Averaging Time (period over which exposure is averaged -days) noncarcinogens

COMMENTS:

CS: See text for exposure concentration.

CF: 10E-6 kg/mg

IR: 50 mg/day (commercial/industrial setting; USEPA, 1991b)

FD: 8 hours/24 hours = 0.33

EF: 48 days/year (4 days/month to mow lawn, plow snow, etc.)

ED: 25 years (commercial/industrial setting, USEPA, 1991b)

BW: 70 kg (adult, average; USEPA, 1991b)

AT: Noncarcinogenic effects - ED*48 days/year = 1200
Carcinogenic effects - 70 years*365 days/year = 25550

INHALATION OF CHEMICALS IN PORE GAS
INDOOR TUNNEL INSPECTOR
CURRENT LAND USE

CHEMICAL: EFFECTS

EQUATION:

$$\text{INTAKE(MG/KG-DAY)} = \frac{CA*IR*FD*EF*ED}{BW*AT} = 0.00E+00$$

INPUT VARIABLES:

	CA	=	Chemical Concentration in Air (mg/m^3)
20	IR	=	Inhalation Rate (m^3/day)
0.042	FD	=	Fraction of Day at the Source (hours/hours)
250	EF	=	Exposure Frequency (days/year)
25	ED	=	Exposure Duration (years)
70	BW	=	Body Weight (kg)
25550	AT	=	Averaging Time (period over which exposure is averaged -days) carcinogens
6250	AT	=	Averaging Time (period over which exposure is averaged -days) noncarcinogens

COMMENTS:

CA: See text for exposure concentration.

IR: 20 m^3/day (commercial/industrial setting; USEPA, 1991b)

FD: 1 hour/24 hours = 0.042

EF: 250 days/year (commercial/industrial setting; USEPA, 1991b)

ED: 25 years (commercial/industrial setting, USEPA, 1991b)

BW: 70 kg (adult, average; USEPA, 1991b)

AT: Noncarcinogenic effects - ED*250 days/year = 6250
Carcinogenic effects - 70 years*365 days/year = 25550

INHALATION OF AIRBORNE CHEMICALS
RESIDENTIAL
FUTURE LAND USE

CHEMICAL: EFFECTS

EQUATION:

$$\text{INTAKE(MG/KG-DAY)} = \frac{CS*TSP*CF*IR*FD*EF*ED}{BW*AT} = 0.00E+00$$

INPUT VARIABLES:

	CS	=	Chemical Concentration in Soil (mg/kg)
0.075	TSP	=	Total Suspended Particulate Inhaled
0.000001	CF	=	Conversion Factor = (10E-6 kg/mg)
20	IR	=	Ingestion Rate (m^3/day)
1	FD	=	Fraction of Day at the Source (hours/hours)
350	EF	=	Exposure Frequency (days/year)
30	ED	=	Exposure Duration (years)
59	BW	=	Body Weight (kg)
25550	AT	=	Averaging Time (period over which exposure is averaged -days) carcinogens
10500	AT	=	Averaging Time (period over which exposure is averaged -days) noncarcinogens

COMMENTS:

CS: See text for exposure concentration.

TSP: 0.075 mg/m^3 (24-hour National Ambient Air Quality Standard)

CF: 10E-6 kg/mg

IR: 20 m^3/day (adult, suggested upper bound value; USEPA, 1991b)

FD: 24 hours/24 hours = 1

EF: 350 days/year (residential setting; USEPA, 1991b)

ED: 30 years (residential setting, USEPA, 1991b)

BW: 59 kg (weighted average assuming 6 years at 15 kg and 24 years at 70 kg; USEPA, 1991b)

AT: Noncarcinogenic effects - ED*350 days/year = 10500
Carcinogenic effects - 70 years*365 days/year = 25550

INGESTION OF CHEMICALS IN SOIL
RESIDENTIAL
FUTURE LAND USE

CHEMICAL: EFFECTS

EQUATION:

$$\text{INTAKE(MG/KG-DAY)} = \frac{CS*CF*IR*FD*EF*ED}{BW*AT} = 0.00E+00$$

INPUT VARIABLES:

	CS	=	Chemical Concentration in Soil (mg/kg)
0.000001	CF	=	Conversion Factor = (10E-6 kg/mg)
120	IR	=	Ingestion Rate (mg soil/day)
1	FD	=	Fraction of Day at the Source (hours/hours)
350	EF	=	Exposure Frequency (days/year)
30	ED	=	Exposure Duration (years)
59	BW	=	Body Weight (kg)
25550	AT	=	Averaging Time (period over which exposure is averaged -days) carcinogens
10500	AT	=	Averaging Time (period over which exposure is averaged -days) noncarcinogens

COMMENTS:

CS: See text for exposure concentration.

CF: 10E-6 kg/mg

IR: 120 mg/day (weighted average assuming 6 years at 200 mg/day and 24 at 100 mg/day; USEPA, 1991b)

FD: 24 hours/24 hours = 1

EF: 350 days/year (residential setting; USEPA, 1991b)

ED: 30 years (residential setting, USEPA, 1991b)

BW: 59 kg (weighted average assuming 6 years at 15 kg and 24 years at 70 kg; USEPA, 1991b)

AT: Noncarcinogenic effects - ED*350 days/year = 10500
Carcinogenic effects - 70 years*365 days/year = 25550

DERMAL CONTACT WITH CHEMICALS IN SOIL **PROJECT # 2313.21**
RESIDENTIAL
FUTURE LAND USE

CHEMICAL: EFFECTS

EQUATION:

$$\text{INTAKE(MG/KG-DAY)} = \frac{CS*CF*SA*AF*ABS*FD*EF*ED}{BW*AT} = 0.00E+00$$

INPUT VARIABLES:

	CS	=	Chemical Concentration in Soil (mg/kg)
0.000001	CF	=	Conversion Factor = (10E-6 kg/mg)
4200	SA	=	Skin Surface Area Available for Contact (cm^2/day)
1.0	AF	=	Soil to Skin Adherence Factor (mg/cm^2)
	ABS	=	Absorption Factor (unitless)
1	FD	=	Fraction of Day at the Source (hours/hours)
350	EF	=	Exposure Frequency (days/year)
30	ED	=	Exposure Duration (years)
59	BW	=	Body Weight (kg)
25550	AT	=	Averaging Time (period over which exposure is averaged -days) carcinogens
10500	AT	=	Averaging Time (period over which exposure is averaged -days) noncarcinogens

COMMENTS:

CS: See text for exposure concentration.

CF: 10E-6 kg/mg

SA: 4200 (weighted average for child (10 years at 989 cm^2) and adult (20 years at 5800 cm^2)) USEPA, 1992a)

AF: 1.0 mg/cm^2 (USEPA, 1992a)

ABS: Chemical-specific value

FD: 24 hours/24 hours = 1

EF: 350 days/year (residential setting; USEPA, 1991b)

ED: 30 years (residential setting, USEPA, 1991b)

BW: 59 kg (weighted average assuming 6 years at 15 kg and 24 years at 70 kg; USEPA, 1991b)

AT: Noncarcinogenic effects - ED*350 days/year = 10500
Carcinogenic effects - 70 years*365 days/year = 25550

INHALATION OF CHEMICALS IN PORE GAS
RESIDENTIAL
FUTURE LAND USE

CHEMICAL:	EFFECTS

EQUATION:

$$\text{INTAKE(MG/KG-DAY)} = \frac{CA*IR*FD*EF*ED}{BW*AT} = 0.00E+00$$

INPUT VARIABLES:

	CA	=	Chemical Concentration in Air (mg/m^3)
15	IR	=	Inhalation Rate (m^3/day)
1	FD	=	Fraction of Day at the Source (hours/hours)
350	EF	=	Exposure Frequency (days/year)
30	ED	=	Exposure Duration (years)
59	BW	=	Body Weight (kg)
25550	AT	=	Averaging Time (period over which exposure is averaged -days) carcinogens
10500	AT	=	Averaging Time (period over which exposure is averaged -days) noncarcinogens

COMMENTS:

CA: See text for exposure concentration.

IR: 15 m^3/day (residential setting; USEPA, 1991b)

FD: 24 hours/24 hours = 1

EF: 350 days/year (residential setting; USEPA, 1991b)

ED: 30 years (residential setting, USEPA, 1991b)

BW: 59 kg (weighted average assuming 6 years at 15 kg and 24 years at 70 kg; USEPA, 1991b)

AT: Noncarcinogenic effects - ED*350 days/year = 10500
Carcinogenic effects - 70 years*365 days/year = 25550

DERMAL ABSORPTION FACTORS USED IN
CHRONIC DAILY INTAKE EQUATIONS

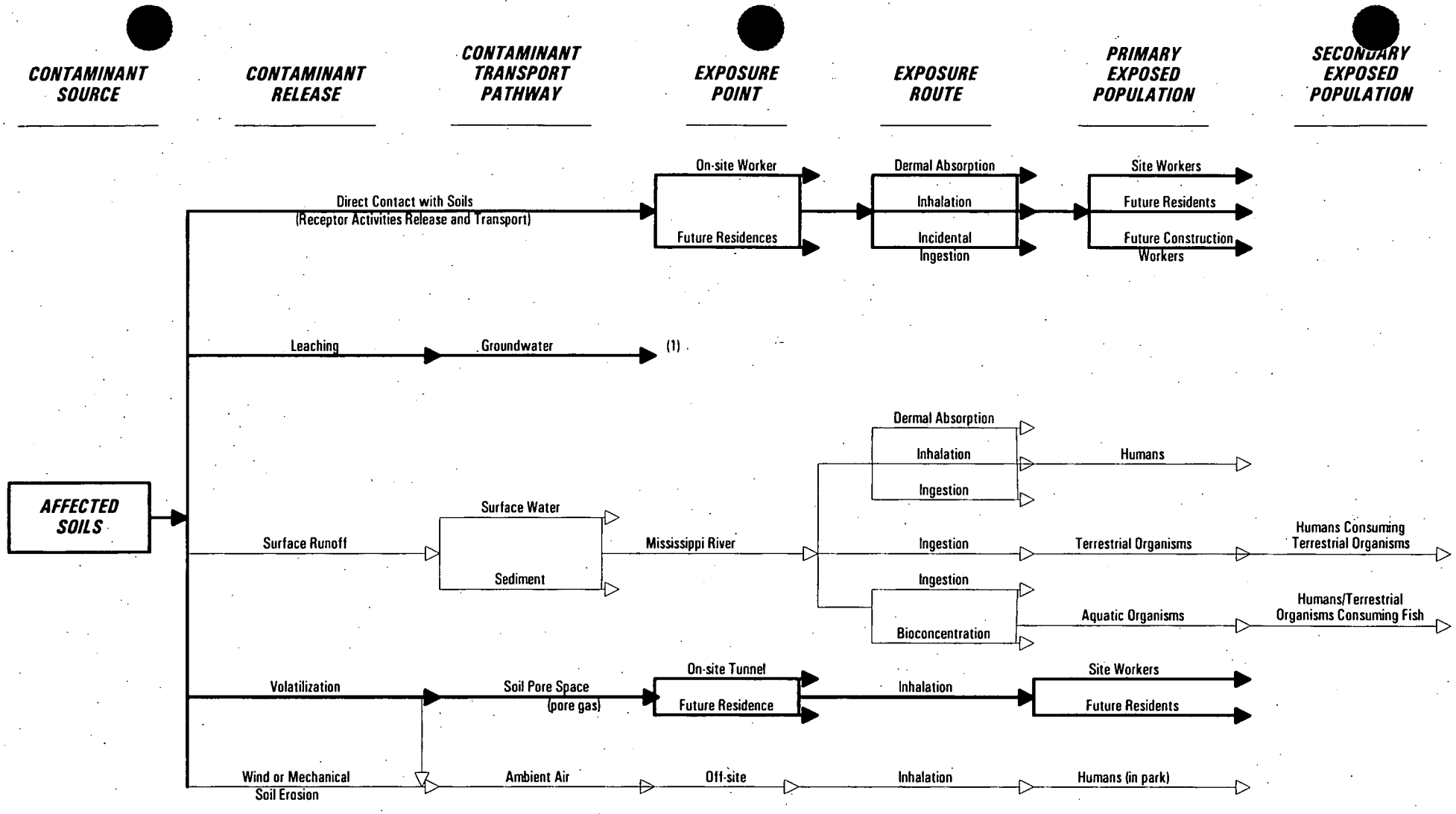
CHEMICAL TYPE	CHEMICAL PARAMETER	DERMAL ABSORPTION FACTOR	SOURCE OF FACTOR (1)
Metals/Inorganics	ALUMINUM	.01	SEE BARIUM
	ANTIMONY	.01	SEE BARIUM
	ARSENIC	.001	ECAO
	BARIUM	.01	ECAO
	CADMIUM	.001	ECAO
	CALCIUM	.01	SEE BARIUM
	CHROMIUM	.01	ECAO
	COBALT	.01	ECAO
	COPPER	.001	ECAO
	CYANIDE, TOTAL	NA	ECAO
	IRON	.01	SEE BARIUM
	LEAD	NA	ECAO
	MAGNESIUM	.01	SEE BARIUM
	MANGANESE	.01	ECAO
	MERCURY	.05	ECAO
	NICKEL	.0005	ECAO
	POTASSIUM	.01	SEE BARIUM
	SELENIUM	.01	SEE BARIUM
	SILVER	NA	ECAO
	SODIUM	.01	SEE BARIUM
	VANADIUM	.001	ECAO
	ZINC	.01	ECAO
Pesticides	4,4'-DDD	.077	SEE DIELDRIN
	4,4'-DDE	.077	SEE DIELDRIN
	4,4'-DDT	.077	SEE DIELDRIN
	ALDRIN	.077	SEE DIELDRIN
	ALPHA-CHLORDANE	.077	SEE DIELDRIN
	DELTA-BHC	.077	SEE DIELDRIN
	DIELDRIN	.077	ECAO
	ENDOSULFAN II	.077	SEE DIELDRIN
	ENDOSULFAN SULFATE	.077	SEE DIELDRIN
	ENDRIN	.077	SEE DIELDRIN
	ENDRIN ALDEHYDE	.077	SEE DIELDRIN
	GAMMA-CHLORDANE	.077	SEE DIELDRIN
	HEPTACHLOR EPOXIDE	.077	SEE DIELDRIN
Semivolatiles	2-METHYLNAPHTHALENE	NA	ECAO (Naphth.)
	ACENAPHTHENE	.03	BaP - CAPCOA
	ACENAPHTHYLENE	.03	BaP - CAPCOA
	ANTHRACENE	.5	ECAO

(1) See Subsection 6.3.5 for specific source references.
NA = Not appropriate to extrapolate oral toxicity values to dermal exposure (ECAO, 1993a).

DERMAL ABSORPTION FACTORS USED IN
CHRONIC DAILY INTAKE EQUATIONS

CHEMICAL TYPE	CHEMICAL PARAMETER	DERMAL ABSORPTION FACTOR	SOURCE OF FACTOR (1)
Semivolatiles	BENZO(A)ANTHRACENE	NA	ECAO
	BENZO(A)PYRENE	NA	ECAO
	BENZO(B)FLUORANTHENE	NA	ECAO
	BENZO(G,H,I)PERYLENE	.03	BaP - CAPCOA
	BENZO(K)FLUORANTHENE	NA	ECAO
	BIS(2-ETHYLHEXYL)PHTHALATE	.004	ECAO
	CARBAZOLE	.03	BaP - CAPCOA
	CHRYSENE	NA	ECAO
	DIBENZ(A,H)ANTHRACENE	NA	ECAO
	DIBENZOFURAN	.02	FURANS - CAPCOA
	FLUORANTHENE	.03	BaP - CAPCOA
	FLUORENE	.03	BaP - CAPCOA
	INDENO(1,2,3-CD)PYRENE	NA	ECAO
	NAPHTHALENE	NA	ECAO
	PHENANTHRENE	.03	BaP - CAPCOA
	PHENOL	1	ECAO
	PYRENE	.03	BaP - CAPCOA
Volatiles	1,1,1-TRICHLOROETHANE	.0005	ECAO
	1,1,2,2-TETRACHLOROETHANE	.0005	SEE TCE
	1,1,2-TRICHLOROETHANE	.0005	SEE TCE
	1,1-DICHLOROETHANE	.0005	ECAO
	1,2-DICHLOROETHANE	.0005	SEE TCE
	1,2-DICHLOROETHENE (TOTAL)	.0005	ECAO
	2-BUTANONE	.0005	ECAO
	2-HEXANONE	.0005	SEE TCE
	4-METHYL-2-PENTANONE	.0005	SEE TCE
	BENZENE	.0005	ECAO
	CIS-1,2-DICHLOROETHENE	.0005	ECAO
	ETHYLBENZENE	.03	ECAO
	TETRACHLOROETHENE	.03	ECAO
	TOLUENE	.03	ECAO
	TRANS-1,2-DICHLOROETHENE	.0005	ECAO
	TRICHLOROETHENE	.0005	ECAO
	XYLENE, TOTAL	.03	ECAO

(1) See Subsection 6.3.5 for specific source references.
NA = Not appropriate to extrapolate oral toxicity values to dermal exposure (ECAO, 1993a).



NOTE: Highlighting and solid arrows indicate the primary potential exposure pathways.

(1) Groundwater affected by leaching from soils is addressed as part of the groundwater unit.

FIGURE 6-1
POTENTIAL EXPOSURE PATHWAYS
(CURRENT AND FUTURE LAND USE SCENARIOS)
NIROP SOILS OPERABLE UNIT

2313.21 0000:ABC:niropra

TABLE 6-1

POTENTIAL EXPOSURE PATHWAYS

Migration Pathway	Exposure Point	Exposure Routes	Potential Receptors	Pathway Complete?		Pathway Quantified?	Rationale/Comment
				Current	Future		
Surface Soil	On-site	Ingestion Inhalation Dermal Absorption	Outdoor Worker, Future Resident	Yes	Yes	Yes	Future land use residential exposure includes subsurface and surface soils; residential exposure is reasonable maximum
Subsurface Soil	On-site	Ingestion Inhalation Dermal Absorption	Future Resident	No	Yes	Yes (future)	Future land use residential exposure includes subsurface and surface soils; residential exposure is reasonable maximum
Surface Water Runoff	Mississippi River	Incidental Ingestion Inhalation Dermal Absorption Fish Ingestion	Residents (swimming, fishing)	No	No	No	Surface water runoff from soils is insignificant
Soil Pore Gas	On-site	Inhalation	Underground Worker, Future Resident	Yes	Yes	Yes	Current exposure in subsurface tunnels; future exposure in residential basement
Ambient Air	Off-site	Inhalation	Humans (in park)	Yes	Yes	No	Downwind receptors infrequent
Groundwater	Off-site in Mississippi River or at future potable well	Ingestion Inhalation Dermal Absorption Incidental Ingestion	Residents (swimming, fishing in Mississippi River, or consuming potable water)	Yes	Yes	No	Groundwater is undergoing remediation as a separate operable unit; soil contaminant contribution to groundwater will be evaluated as part of the Feasibility Study

TABLE 6-2
SUMMARY OF EXPOSURE CONCENTRATIONS IN SHALLOW SOILS
CURRENT LAND USE

Chemical Parameter	Units	Minimum Detected Concentration	Maximum Detected Concentration	Number of Detects	Number of Values	Detection Frequency (%)	Exposure Concentration	Exposure Concentration Comment
1,1,1-TRICHLOROETHANE	MG/KG	.000800	.0250000	14	104	13	.025000	MAX DETECTED
1,1,2,2-TETRACHLOROETHANE	MG/KG	.002000	.0020000	1	104	1	.002000	MAX DETECTED
1,1,2-TRICHLOROETHANE	MG/KG	.003000	.0030000	1	104	1	.003000	MAX DETECTED
1,1-DICHLOROETHANE	MG/KG	.001000	.0080000	5	104	5	.008000	MAX DETECTED
1,2-DICHLOROETHENE (TOTAL)	MG/KG	.001000	.4700000	34	104	33	.470000	MAX DETECTED
ETHYLBENZENE	MG/KG	.003000	.3800000	2	104	2	.380000	MAX DETECTED
TETRACHLOROETHENE	MG/KG	.000800	.0260000	15	104	14	.026000	MAX DETECTED
TOLUENE	MG/KG	.010000	.0270000	3	104	3	.027000	MAX DETECTED
TRICHLOROETHENE	MG/KG	.000700	4.1000000	67	104	64	.050000	95% UCL
XYLENE, TOTAL	MG/KG	.005000	.5500000	2	104	2	.550000	MAX DETECTED
ALUMINUM	MG/KG	2270.000000	6260.0000000	44	44	100	4200.000000	95% UCL
ANTIMONY	MG/KG	2.300000	2.3000000	2	44	5	2.300000	MAX DETECTED
ARSENIC	MG/KG	.970000	10.1000000	44	44	100	4.200000	95% UCL
BARIUM	MG/KG	20.100000	306.0000000	44	44	100	100.000000	95% UCL
CADMIUM	MG/KG	2.300000	4.3000000	2	44	5	4.300000	MAX DETECTED
CHROMIUM	MG/KG	6.000000	43.2000000	44	44	100	14.000000	95% UCL
COBALT	MG/KG	11.000000	11.0000000	1	44	2	11.000000	MAX DETECTED
COPPER	MG/KG	6.700000	1900.0000000	44	44	100	190.000000	95% UCL
CYANIDE, TOTAL	MG/KG	4.300000	4.6000000	2	44	5	4.600000	MAX DETECTED
IRON	MG/KG	5870.000000	30100.0000000	44	44	100	13000.000000	95% UCL
LEAD	MG/KG	3.600000	373.0000000	44	44	100	94.000000	95% UCL
MAGNESIUM	MG/KG	1150.000000	15000.0000000	44	44	100	6500.000000	95% UCL
MANGANESE	MG/KG	168.000000	2060.0000000	44	44	100	930.000000	95% UCL
MERCURY	MG/KG	.120000	.1200000	1	44	2	.120000	MAX DETECTED
NICKEL	MG/KG	8.600000	40.7000000	38	44	86	16.000000	95% UCL
POTASSIUM	MG/KG	138.000000	1090.0000000	31	44	70	410.000000	95% UCL
SELENIUM	MG/KG	.820000	1.3000000	2	44	5	1.300000	MAX DETECTED
SODIUM	MG/KG	112.000000	921.0000000	9	44	20	920.000000	MAX DETECTED
VANADIUM	MG/KG	10.800000	26.1000000	40	44	91	18.000000	95% UCL
ZINC	MG/KG	12.400000	489.0000000	44	44	100	100.000000	95% UCL
4,4'-DDD	MG/KG	.004800	2.9000000	24	44	55	.380000	95% UCL
4,4'-DDE	MG/KG	.006500	1.9000000	30	44	68	.680000	95% UCL
4,4'-DDT	MG/KG	.003700	1.4000000	31	44	70	.640000	95% UCL
ALDRIN	MG/KG	.003100	.0031000	1	44	2	.003100	MAX DETECTED
ALPHA-CHLORDANE	MG/KG	.002800	.0360000	3	44	7	.036000	MAX DETECTED
DIELDRIN	MG/KG	.004000	.0160000	3	44	7	.016000	MAX DETECTED
ENDOSULFAN SULFATE	MG/KG	.004800	.0150000	3	44	7	.015000	MAX DETECTED
ENDRIN	MG/KG	.005100	.0150000	4	44	9	.015000	MAX DETECTED
ENDRIN ALDEHYDE	MG/KG	.005800	.0071000	2	44	5	.007100	MAX DETECTED
GAMMA-CHLORDANE	MG/KG	.003000	.0034000	2	44	5	.003400	MAX DETECTED
HEPTACHLOR EPOXIDE	MG/KG	.002600	.0300000	2	44	5	.030000	MAX DETECTED
2-METHYLNAPHTHALENE	MG/KG	.170000	3.4000000	3	44	7	3.400000	MAX DETECTED
ACENAPHTHENE	MG/KG	.055000	3.4000000	10	44	23	3.400000	MAX DETECTED

TABLE 6-2
SUMMARY OF EXPOSURE CONCENTRATIONS IN SHALLOW SOILS
CURRENT LAND USE

Chemical Parameter	Units	Minimum Detected Concentration	Maximum Detected Concentration	Number of Detects	Number of Values	Detection Frequency (%)	Exposure Concentration	Exposure Concentration Comment
ACENAPHTHYLENE	MG/KG	.380000	2.6000000	2	44	5	2.600000	MAX DETECTED
ANTHRACENE	MG/KG	.085000	15.0000000	17	44	39	15.000000	MAX DETECTED
BENZO(A)ANTHRACENE	MG/KG	.064000	43.0000000	25	44	57	2.200000	95% UCL
BENZO(A)PYRENE	MG/KG	.120000	41.0000000	23	44	52	2.100000	95% UCL
BENZO(B)FLUORANTHENE	MG/KG	.130000	46.0000000	25	44	57	2.400000	95% UCL
BENZO(G,H,I)PERYLENE	MG/KG	.240000	34.0000000	19	44	43	34.000000	MAX DETECTED
BENZO(K)FLUORANTHENE	MG/KG	.087000	29.0000000	24	44	55	1.700000	95% UCL
CARBAZOLE	MG/KG	.077000	4.9000000	16	44	36	4.900000	MAX DETECTED
CHRYSENE	MG/KG	.068000	43.0000000	25	44	57	2.500000	95% UCL
DIBENZ(A,H)ANTHRACENE	MG/KG	.310000	7.7000000	5	44	11	7.700000	MAX DETECTED
DIBENZOFURAN	MG/KG	.050000	5.5000000	7	44	16	5.500000	MAX DETECTED
FLUORANTHENE	MG/KG	.086000	160.0000000	30	44	68	7.300000	95% UCL
FLUORENE	MG/KG	.051000	8.4000000	12	44	27	8.400000	MAX DETECTED
INDENO(1,2,3-CD)PYRENE	MG/KG	.200000	28.0000000	19	44	43	28.000000	MAX DETECTED
NAPHTHALENE	MG/KG	.950000	.9500000	1	44	2	.950000	MAX DETECTED
PHENANTHRENE	MG/KG	.130000	95.0000000	24	44	55	3.300000	95% UCL
PHENOL	MG/KG	1.300000	1.3000000	1	44	2	1.300000	MAX DETECTED
PYRENE	MG/KG	.079000	130.0000000	30	44	68	6.500000	95% UCL

TABLE 6-3
SUMMARY OF EXPOSURE CONCENTRATIONS IN SOIL PORE GAS
CURRENT LAND USE (1)

Chemical Parameter	Minimum Detected Concentration (ppm v/v)	Maximum Detected Concentration (ppm v/v)	Number of Detects	Number of Values	Detection Frequency (%)	Geometric Mean (ppm v/v)	Pore Gas Concentration (ppm v/v)	Exposure Concentration (mg/m3) (2)	Exposure Concentration Comment
CIS-1,2-DICHLOROETHENE	.1200	1.8000	7	66	11	.1448	1.8000	.0710	MAX DETECTED
TRANS-1,2-DICHLOROETHENE	.0900	.0900	1	66	2	.1289	.0900	.0036	MAX DETECTED
TRICHLOROETHENE	.0300	18.0000	62	66	94	.6802	6.9000	.3700	95% UCL

(1) Exposure concentrations based on 1 to 12 foot soil samples in area E.
(2) Exposure concentration assumes that 1 percent of the pore gas can permeate the tunnel walls and floor. Exposure concentrations were converted from parts per million (volume/volume) to mg/m3 assuming standard temperature and pressure conditions.

TABLE 6-4
SUMMARY OF EXPOSURE CONCENTRATIONS IN SOILS
FUTURE LAND USE - SUB-AREAS A2, A3, AND A4

Chemical Parameter	Units	Minimum Detected Concentration	Maximum Detected Concentration	Number of Detects	Number of Values	Detection Frequency (%)	Exposure Concentration (1)
1,1,1-TRICHLOROETHANE	MG/KG	.000800	2600.0000000	34	119	29	870.000000
1,1,2,2-TETRACHLOROETHANE	MG/KG	.002000	.0020000	2	119	2	.001300
1,1,2-TRICHLOROETHANE	MG/KG	.003000	.0070000	3	119	3	.003300
1,1-DICHLOROETHANE	MG/KG	.001000	34.0000000	16	119	13	11.000000
1,2-DICHLOROETHANE	MG/KG	.004000	.0040000	1	119	1	.001300
1,2-DICHLOROETHENE (TOTAL)	MG/KG	.001000	1.8000000	61	119	51	.920000
2-BUTANONE	MG/KG	3500.000000	3500.0000000	1	119	1	1200.000000
2-HEXANONE	MG/KG	.002000	.0020000	1	119	1	.000670
4-METHYL-2-PENTANONE	MG/KG	.001000	.0010000	1	119	1	.000330
BENZENE	MG/KG	.001000	.0140000	2	119	2	.005000
ETHYLBENZENE	MG/KG	.025000	140.0000000	5	119	4	47.000000
TETRACHLOROETHENE	MG/KG	.000700	1200.0000000	40	119	34	400.000000
TOLUENE	MG/KG	.010000	190.0000000	8	119	7	63.000000
TRICHLOROETHENE	MG/KG	.000800	120.0000000	105	119	88	50.000000
XYLENE, TOTAL	MG/KG	.017000	580.0000000	8	119	7	190.000000
ALUMINUM	MG/KG	1060.000000	6830.0000000	44	44	100	4400.000000
ANTIMONY	MG/KG	2.300000	22.5000000	2	44	5	8.100000
ARSENIC	MG/KG	.910000	10.1000000	40	44	91	6.100000
BARIUM	MG/KG	17.500000	327.0000000	36	44	82	180.000000
CADMIUM	MG/KG	2.700000	5.3000000	2	44	5	1.800000
CALCIUM	MG/KG	3710.000000	67400.0000000	44	44	100	34000.000000
CHROMIUM	MG/KG	3.900000	49.6000000	44	44	100	18.000000
COBALT	MG/KG	34.500000	34.5000000	1	44	2	11.000000
COPPER	MG/KG	4.100000	1900.0000000	37	44	84	480.000000
CYANIDE, TOTAL	MG/KG	4.300000	5.4000000	4	44	9	5.100000
IRON	MG/KG	3330.000000	275000.0000000	44	44	100	52000.000000
LEAD	MG/KG	1.400000	453.0000000	44	44	100	230.000000
MAGNESIUM	MG/KG	1750.000000	20600.0000000	44	44	100	8200.000000
MANGANESE	MG/KG	155.000000	20700.0000000	44	44	100	7500.000000
MERCURY	MG/KG	.120000	.1400000	2	44	5	.087000
NICKEL	MG/KG	8.600000	70.2000000	33	44	75	36.000000
POTASSIUM	MG/KG	138.000000	497.0000000	23	44	52	360.000000
SELENIUM	MG/KG	.820000	2.0000000	3	44	7	1.100000
SILVER	MG/KG	4.400000	11.8000000	3	44	7	5.500000
SODIUM	MG/KG	112.000000	195.0000000	6	44	14	130.000000
VANADIUM	MG/KG	12.100000	32.9000000	35	44	80	24.000000
ZINC	MG/KG	6.200000	489.0000000	44	44	100	190.000000
4,4'-DDD	MG/KG	.004400	2.9000000	21	44	48	1.000000
4,4'-DDE	MG/KG	.005300	1.9000000	23	44	52	.730000
4,4'-DDT	MG/KG	.004200	1.4000000	25	44	57	.630000
ALDRIN	MG/KG	.003100	.0031000	1	44	2	.001000
ALPHA-CHLORDANE	MG/KG	.002800	.0360000	2	44	5	.012000

(1) Exposure concentration represents the average of 3 soil layer exposure concentrations using data from 1 to 12 foot soil samples (see Appendix K).

TABLE 6-4
SUMMARY OF EXPOSURE CONCENTRATIONS IN SOILS
FUTURE LAND USE - SUB-AREAS A2, A3, AND A4

Chemical Parameter	Units	Minimum Detected Concentration	Maximum Detected Concentration	Number of Detects	Number of Values	Detection Frequency (%)	Exposure Concentration (1)
DELTA-BHC	MG/KG	.002600	.0250000	2	44	5	.009200
DIELDRIN	MG/KG	.004000	.0430000	3	44	7	.016000
ENDOSULFAN II	MG/KG	.037000	.0530000	2	44	5	.030000
ENDOSULFAN SULFATE	MG/KG	.004800	.0150000	3	44	7	.005000
ENDRIN	MG/KG	.008700	.0140000	2	44	5	.004700
ENDRIN ALDEHYDE	MG/KG	.007100	.0071000	1	44	2	.002400
GAMMA-CHLORDANE	MG/KG	.003000	.0034000	2	44	5	.001100
HEPTACHLOR EPOXIDE	MG/KG	.002600	.0300000	2	44	5	.010000
2-METHYLNAPHTHALENE	MG/KG	.170000	3.4000000	3	44	7	1.100000
ACENAPHTHENE	MG/KG	.079000	3.4000000	7	44	16	1.100000
ACENAPHTHYLENE	MG/KG	.380000	2.6000000	2	44	5	.870000
ANTHRACENE	MG/KG	.130000	15.0000000	13	44	30	.650000
BENZO(A)ANTHRACENE	MG/KG	.130000	43.0000000	18	44	41	3.000000
BENZO(A)PYRENE	MG/KG	.073000	41.0000000	19	44	43	2.900000
BENZO(B)FLUORANTHENE	MG/KG	.130000	46.0000000	18	44	41	3.200000
BENZO(G,H,I)PERYLENE	MG/KG	.240000	34.0000000	17	44	39	1.900000
BENZO(K)FLUORANTHENE	MG/KG	.087000	29.0000000	18	44	41	2.300000
BIS(2-ETHYLHEXYL)PHTHALATE	MG/KG	1.300000	20.0000000	4	44	9	9.100000
CARBAZOLE	MG/KG	.087000	4.9000000	11	44	25	1.600000
CHRYSENE	MG/KG	.130000	43.0000000	18	44	41	3.300000
DIBENZ(A,H)ANTHRACENE	MG/KG	.520000	7.7000000	4	44	9	2.600000
DIBENZOFURAN	MG/KG	.055000	5.5000000	5	44	11	1.800000
FLUORANTHENE	MG/KG	.110000	160.0000000	23	44	52	12.000000
FLUORENE	MG/KG	.110000	8.4000000	9	44	20	2.800000
INDENO(1,2,3-CD)PYRENE	MG/KG	.200000	28.0000000	15	44	34	1.700000
NAPHTHALENE	MG/KG	.950000	2.7000000	2	44	5	1.200000
PHENANTHRENE	MG/KG	.130000	95.0000000	21	44	48	6.000000
PHENOL	MG/KG	1.000000	1.3000000	3	44	7	.800000
PYRENE	MG/KG	.080000	130.0000000	24	44	55	12.000000

(1) Exposure concentration represents the average of 3 soil layer exposure concentrations using data from 1 to 12 foot soil samples (see Appendix K).

TABLE 6-5
SUMMARY OF EXPOSURE CONCENTRATIONS IN SOIL PORE GAS
FUTURE LAND USE - SUB-AREAS A2, A3, AND A4 (1)

Chemical Parameter	Minimum Detected Concentration (ppm v/v)	Maximum Detected Concentration (ppm v/v)	Number of Detects	Number of Values	Detection Frequency (%)	Geometric Mean (ppm v/v)	Pore Gas Concentration (ppm v/v)	Exposure Concentration (mg/m3) (2)	Exposure Concentration Comment
CIS-1,2-DICHLOROETHENE	.0100	1500.0000	203	382	53	1.4640	22.0000	.8700	95% UCL
ETHYLBENZENE	7.9000	37.0000	3	382	1	.1579	37.0000	1.6000	MAX DETECTED
TETRACHLOROETHENE	.0200	150.0000	70	382	18	.2319	150.0000	10.0000	MAX DETECTED
TOLUENE	.1700	27.0000	4	380	1	.1595	27.0000	1.0000	MAX DETECTED
TRANS-1,2-DICHLOROETHENE	.0600	6.8000	17	382	4	.7494	6.8000	.2700	MAX DETECTED
TRICHLOROETHENE	.0200	9000.0000	370	382	97	5.8732	51.0000	2.7000	95% UCL
XYLENE, TOTAL	170.0000	1100.0000	3	382	1	.3212	1100.0000	48.0000	MAX DETECTED

(1) Exposure concentrations based on 1 to 12 foot soil samples.
(2) Exposure concentration assumes that 1 percent of the pore gas can permeate a basement foundation. Exposure concentrations were converted from parts per million (volume/volume) to mg/m3 assuming standard temperature and pressure conditions.

TABLE 6-6
SUMMARY OF EXPOSURE CONCENTRATIONS IN SOILS
FUTURE LAND USE - AREA OUTSIDE OF A2, A3, AND A4

Chemical Parameter	Units	Minimum Detected Concentration	Maximum Detected Concentration	Number of Detects	Number of Values	Detection Frequency (%)	Exposure Concentration (1)
1,1,1-TRICHLOROETHANE	MG/KG	.000800	.0020000	2	58	3	.000930
1,1-DICHLOROETHANE	MG/KG	.002000	.0020000	1	58	2	.000670
1,2-DICHLOROETHENE (TOTAL)	MG/KG	.002000	.1600000	4	58	7	.055000
ETHYLBENZENE	MG/KG	.003000	.0030000	1	58	2	.001000
TETRACHLOROETHENE	MG/KG	.001000	.0110000	8	58	14	.007700
TRICHLOROETHENE	MG/KG	.000600	.0630000	15	58	26	.047000
XYLENE, TOTAL	MG/KG	.005000	.0050000	1	58	2	.001700
ALUMINUM	MG/KG	1110.000000	5920.0000000	40	40	100	3800.000000
ANTIMONY	MG/KG	2.300000	2.3000000	1	40	3	.770000
ARSENIC	MG/KG	.700000	9.4000000	37	40	93	5.400000
BARIUM	MG/KG	19.000000	197.0000000	33	40	83	95.000000
CADMIUM	MG/KG	2.300000	4.3000000	2	40	5	1.400000
CHROMIUM	MG/KG	2.300000	43.2000000	39	40	98	12.000000
COBALT	MG/KG	11.000000	11.0000000	1	40	3	3.700000
COPPER	MG/KG	4.500000	937.0000000	35	40	88	54.000000
IRON	MG/KG	3330.000000	30100.0000000	40	40	100	11000.000000
LEAD	MG/KG	1.000000	373.0000000	39	40	98	35.000000
MAGNESIUM	MG/KG	703.000000	15000.0000000	40	40	100	6500.000000
MANGANESE	MG/KG	29.700000	1960.0000000	40	40	100	1000.000000
NICKEL	MG/KG	9.100000	40.7000000	22	40	55	16.000000
POTASSIUM	MG/KG	152.000000	1090.0000000	20	40	50	420.000000
SELENIUM	MG/KG	1.300000	1.3000000	1	40	3	.430000
SODIUM	MG/KG	107.000000	921.0000000	9	40	23	520.000000
VANADIUM	MG/KG	10.700000	24.6000000	31	40	78	18.000000
ZINC	MG/KG	6.600000	325.0000000	39	40	98	46.000000
4,4'-DDD	MG/KG	.007400	.1800000	11	40	28	.099000
4,4'-DDE	MG/KG	.004800	.7000000	16	40	40	.250000
4,4'-DDT	MG/KG	.003700	.9300000	16	40	40	.260000
ALPHA-CHLORDANE	MG/KG	.004800	.0048000	1	40	3	.001600
DIELDRIN	MG/KG	.016000	.0160000	1	40	3	.005300
ENDOSULFAN SULFATE	MG/KG	.007700	.0077000	1	40	3	.002600
ENDRIN	MG/KG	.004700	.0150000	4	40	10	.008300
ENDRIN ALDEHYDE	MG/KG	.005800	.0059000	2	40	5	.003900
GAMMA-CHLORDANE	MG/KG	.001800	.0018000	1	40	3	.000600
ACENAPHTHENE	MG/KG	.055000	.3800000	3	40	8	.130000
ANTHRACENE	MG/KG	.085000	.8600000	7	40	18	.360000
BENZO(A)ANTHRACENE	MG/KG	.064000	3.3000000	10	40	25	1.200000
BENZO(A)PYRENE	MG/KG	.120000	2.9000000	9	40	23	1.100000
BENZO(B)FLUORANTHENE	MG/KG	.130000	3.4000000	10	40	25	1.300000
BENZO(G,H,I)PERYLENE	MG/KG	.290000	2.0000000	7	40	18	.920000
BENZO(K)FLUORANTHENE	MG/KG	.083000	2.0000000	9	40	23	.770000
CARBAZOLE	MG/KG	.077000	.2500000	5	40	13	.083000

(1) Exposure concentration represents the average of 3 soil layer exposure concentrations using data from 1 to 12 foot soil samples (see Appendix K).

TABLE 6-6
SUMMARY OF EXPOSURE CONCENTRATIONS IN SOILS
FUTURE LAND USE - AREA OUTSIDE OF A2, A3, AND A4

Chemical Parameter	Units	Minimum Detected Concentration	Maximum Detected Concentration	Number of Detects	Number of Values	Detection Frequency (%)	Exposure Concentration (1)
CHRYSENE	MG/KG	.068000	3.4000000	10	40	25	1.300000
DIBENZ(A,H)ANTHRACENE	MG/KG	.310000	.3100000	1	40	3	.100000
DIBENZOFURAN	MG/KG	.050000	.1600000	2	40	5	.053000
FLUORANTHENE	MG/KG	.086000	7.6000000	14	40	35	.910000
FLUORENE	MG/KG	.051000	.3900000	3	40	8	.130000
INDENO(1,2,3-CD)PYRENE	MG/KG	.300000	1.8000000	5	40	13	.600000
PHENANTHRENE	MG/KG	.150000	3.1000000	9	40	23	1.200000
PYRENE	MG/KG	.079000	6.6000000	14	40	35	.850000

(1) Exposure concentration represents the average of 3 soil layer exposure concentrations using data from 1 to 12 foot soil samples (see Appendix K).

TABLE 6-7
SUMMARY OF EXPOSURE CONCENTRATIONS IN SOIL PORE GAS
FUTURE LAND USE - AREA OUTSIDE OF A2, A3, AND A4 (1)

Chemical Parameter	Minimum Detected Concentration (ppm v/v)	Maximum Detected Concentration (ppm v/v)	Number of Detects	Number of Values	Detection Frequency (%)	Geometric Mean (ppm v/v)	Pore Gas Concentration (ppm v/v)	Exposure Concentration (mg/m3) (2)	Exposure Concentration Comment
CIS-1,2-DICHLOROETHENE	.0300	25.0000	20	190	11	.1383	25.0000	.9900	MAX DETECTED
TETRACHLOROETHENE	.1000	1.8000	10	190	5	.0265	1.8000	.1200	MAX DETECTED
TOLUENE	.9300	.9300	1	190	1	.0246	.9300	.0350	MAX DETECTED
TRANS-1,2-DICHLOROETHENE	.0900	2.8000	2	190	1	.1227	2.8000	.1100	MAX DETECTED
TRICHLOROETHENE	.0300	18.0000	90	190	47	.1154	18.0000	.9700	MAX DETECTED

(1) Exposure concentrations based on 1 to 12 foot soil samples.
(2) Exposure concentration assumes that 1 percent of the pore gas can permeate a basement foundation. Exposure concentrations were converted from parts per million (volume/volume) to mg/m3 assuming standard temperature and pressure conditions.

TABLE 6-8

SUMMARY OF REASONABLE MAXIMUM EXPOSURE FACTORS

Exposure Factor	Units	Outdoor Maintenance Worker	Indoor Tunnel Inspector	Future Resident
Skin surface area	cm^2/day	4,300	4,300	4,200[1]
Soil adherence factor	mg/cm^2	1.0	NA	1.0
Absorption factor	unitless	Chemical specific - see Subsection 6.9		
Exposure frequency	days/year	48[2]	250	350
Exposure duration	years	25	25	30
Body weight	kg	70	70	59
Ingestion rate	mg/day	50	NA	120
Fraction of day at source	hours/hours	8/24 = 0.33	1/24 - 0.042[3]	1.0
Inhalation rate (total)	m^3/day	20	20	20
Indoor inhalation rate	m^3/day	NA	20	15
TSP inhaled	mg/m^3	0.075	NA	0.075
Averaging time for noncarcinogens	days	1,200	6,250	10,500
Averaging time for carcinogens	days	25,550	25,550	25,550

NOTES:

(1) Average of 95th percentile for child 2 to 10 years = 989; adult 95th percentile = 5,800. [(989 * 10 years) + (5,800 * 20 years)] ÷ 30 years = 4,200 cm^2.

(2) Site-specific value based on lawn mowing, snow removal, etc.

(3) Site-specific value based on inspection schedule.

TABLE 6-9
TOXICITY VALUES: POTENTIAL CARCINOGENIC EFFECTS
ORAL ROUTE

CHEMICAL TYPE	CHEMICAL PARAMETER	CANCER SLOPE FACTOR (CSF) (per mg/kg/day)	WOE CLASS (a)	TYPE OF CANCER	CSF SOURCE
Metals/Inorganics	ARSENIC	2	A	LUNG	IRIS
Pesticides	4,4'-DDD	0.24	B2	LUNG, LIVER	IRIS
	4,4'-DDE	0.34	B2	LIVER	IRIS
	4,4'-DDT	0.34	B2	LIVER	IRIS
	ALDRIN	17	B2	LIVER	IRIS
	ALPHA-CHLORDANE	1.3	B2	LIVER	(Chl)
	GAMMA-CHLORDANE	1.3	B2	LIVER	(Chl)
	HEPTACHLOR EPOXIDE	9.1	B2	LIVER	IRIS
Semivolatiles	BENZO(A)ANTHRACENE	7.3			(Bap)
	BENZO(A)PYRENE	7.3	B2	FORESTOMACH	IRIS
	BENZO(B)FLUORANTHENE	7.3			(BaP)
	BENZO(K)FLUORANTHENE	7.3			(BaP)
	BIS(2-ETHYLHEXYL)PHTHALATE	0.014	B2	LIVER	IRIS
	CARBAZOLE	0.02	B2	LIVER	HEAST
	CHRYSENE	7.3			(BaP)
	DIBENZ(A,H)ANTHRACENE	7.3			(BaP)
	INDENO(1,2,3-CD)PYRENE	7.3			(BaP)
Volatiles	1,1,2,2-TETRACHLOROETHANE	0.2	C	HEPATOCELLULAR	IRIS
	1,1,2-TRICHLOROETHANE	0.057	C	HEPATOCELLULAR	IRIS
	1,1-DICHLOROETHANE		C		
	1,2-DICHLOROETHANE	0.091	B2	HEMANGIOSARCOMAS	IRIS
	BENZENE	0.029	A	LEUKEMIA	IRIS
	TETRACHLOROETHENE	0.052	B2/C	NA	ECAO
	TRICHLOROETHENE	0.011	B2/C	NA	ECAO

(a) WOE Class = Weight of evidence class:
Group A - Human carcinogen (sufficient evidence of carcinogenicity in humans).
Group B - Probable human carcinogen (B1 - limited evidence of carcinogenicity in humans; B2 - sufficient evidence of carcinogenicity in animals with inadequate, or lack of, evidence in humans).
Group C - Possible human carcinogen (limited evidence of carcinogenicity in animals and inadequate or lack of data on humans).
Group D - Not classifiable as to human carcinogenicity (inadequate or no evidence).
Group E - Evidence of noncarcinogenicity for humans (no evidence of carcinogenicity in adequate studies).

(Chl) = Chlordane toxicity values were used for alpha- and gamma- chlordane.
(BaP) = Benzo(a)pyrene toxicity values were used for the carcinogenic PAHs.

TABLE 6-10
TOXICITY VALUES: POTENTIAL CARCINOGENIC EFFECTS
INHALATION ROUTE

CHEMICAL TYPE	CHEMICAL PARAMETER	CANCER SLOPE FACTOR (CSF) (per mg/kg/day)	WOE CLASS (a)	TYPE OF CANCER	CSF SOURCE
Metals/Inorganics	ARSENIC	15	A	LUNG	IRIS
	CADMIUM	6.3	B1	LUNG	IRIS
	CHROMIUM	42	A	LUNG	IRIS
Pesticides	4,4'-DDT	0.34	B2	LIVER	IRIS
	ALDRIN	17	B2	LIVER	IRIS
	ALPHA-CHLORDANE	1.3	B2	LIVER	(Chl)
	DIELDRIN	16		LIVER	HEAST
	GAMMA-CHLORDANE	1.3	B2	LIVER	(Chl)
	HEPTACHLOR EPOXIDE	9.1	B2	LIVER	IRIS
Semivolatiles	BENZO(A)ANTHRACENE	6.1			(BaP)
	BENZO(A)PYRENE	6.1		RESPIRATORY	HEAST
	BENZO(B)FLUORANTHENE	6.1			(BaP)
	BENZO(K)FLUORANTHENE	6.1			(BaP)
	CHRYSENE	6.1			(BaP)
	DIBENZ(A,H)ANTHRACENE	6.1			(BaP)
	INDENO(1,2,3-CD)PYRENE	6.1			(BaP)
Volatiles	1,1,2,2-TETRACHLOROETHANE	0.2	C	HEPATOCELLULAR	IRIS
	1,1,2-TRICHLOROETHANE	0.056	C	HEPATOCELLULAR	IRIS
	1,2-DICHLOROETHANE	0.091	B2	HEMANGIOSARCOMAS	IRIS
	BENZENE	0.029	A	LEUKEMIA	IRIS
	TETRACHLOROETHENE	0.002	B2/C	NA	ECAO
	TRICHLOROETHENE	0.006	B2/C	NA	ECAO

(a) WOE Class = Weight of evidence class:
Group A - Human carcinogen (sufficient evidence of carcinogenicity in humans).
Group B - Probable human carcinogen (B1 - limited evidence of carcinogenicity in humans; B2 - sufficient evidence of carcinogenicity in animals with inadequate, or lack of, evidence in humans).
Group C - Possible human carcinogen (limited evidence of carcinogenicity in animals and inadequate or lack of data on humans).
Group D - Not classifiable as to human carcinogenicity (inadequate or no evidence).
Group E - Evidence of noncarcinogenicity for humans (no evidence of carcinogenicity in adequate studies).

(Chl) = Chlordane toxicity values were used for alpha- and gamma- chlordane.
(BaP) = Benzo(a)pyrene toxicity values were used for the carcinogenic PAHs.

TABLE 6-11
TOXICITY VALUES: POTENTIAL NONCARCINOGENIC EFFECTS
ORAL ROUTE

CHEMICAL TYPE	CHEMICAL PARAMETER	CHRONIC RfD (mg/kg-day)	CONFIDENCE LEVEL	CRITICAL EFFECT	UNCERTAINTY FACTOR	RfD SOURCE
Metals/Inorganics	ANTIMONY	0.0004	LOW	DECREASED LONGEVITY	1000	IRIS
	ARSENIC	0.0003	MEDIUM	HYPERPIGMENTATION; KERATOSIS	3	IRIS
	BARIUM	0.07	MEDIUM	INCREASED BLOOD PRESSURE	3	IRIS
	CADMIUM	0.001	HIGH	SIGNIFICANT PROTEINURIA	10	IRIS
	CHROMIUM	0.005	LOW	NO EFFECTS REPORTED	500	IRIS
	COPPER	0.037		IRRITATION	NA	HEAST
	CYANIDE, TOTAL	0.02	MEDIUM	WEIGHT LOSS; THYROID EFFECTS	100	IRIS
	MANGANESE	0.14	MEDIUM	CENTRAL NERVOUS SYSTEM EFFECTS	1	IRIS
	NICKEL	0.02	MEDIUM	DECREASED BODY & ORGAN WEIGHTS	300	IRIS
	SELENIUM	0.005	HIGH	CLINICAL SELENOSIS	3	IRIS
	SILVER	0.005	LOW	ARGYRIA	3	IRIS
	VANADIUM	0.007		NONE OBSERVED	100	HEAST
	ZINC	0.3	MEDIUM	ESOD DECREASE	3	IRIS
Pesticides	4,4'-DDT	0.0005	MEDIUM	LIVER LESIONS	100	IRIS
	ALDRIN	0.00003	MEDIUM	LIVER TOXICITY	1000	IRIS
	ALPHA-CHLORDANE	0.00006	LOW	LIVER HYPERTROPHY	1000	(Chl)
	ENDRIN	0.0003	MEDIUM	LIVER LESIONS, CONVULSIONS	100	IRIS
	GAMMA-CHLORDANE	0.00006	LOW	LIVER HYPERTROPHY	1000	(Chl)
	HEPTACHLOR EPOXIDE	0.000013	LOW	INCREASED LIVER WEIGHT	1000	IRIS
Semivolatiles	ACENAPHTHENE	0.06	LOW	HEPATOXICITY	3000	IRIS
	ANTHRACENE	0.3	LOW	NO OBSERVED EFFECTS	3000	IRIS
	BIS(2-ETHYLHEXYL)PHTHALATE	0.02	MEDIUM	INCREASED LIVER WEIGHT	1000	IRIS
	FLUORANTHENE	0.04	LOW	NEPHROPATHY, INC LIVER WEIGHT	3000	IRIS
	FLUORENE	0.04	LOW	DECREASED RED BLOOD CELLS	3000	IRIS
	PHENOL	0.6	LOW	REDUCED FETAL BODY WEIGHT	100	IRIS
	PYRENE	0.03	LOW	KIDNEY EFFECTS	3000	IRIS
Volatiles	1,1,1-TRICHLOROETHANE	0.09		HEPATOXICITY	1000	HEAST
	1,1,2-TRICHLOROETHANE	0.004	MEDIUM	CLINICAL SERUM CHEMISTRY	1000	IRIS
	1,1-DICHLOROETHANE	0.1		NONE OBSERVED	1000	HEAST
	1,2-DICHLOROETHENE (TOTAL)	0.009		LIVER LESIONS	1000	HEAST
	2-BUTANONE	0.05		NONE OBSERVED	1000	HEAST
	4-METHYL-2-PENTANONE	0.05		LIVER EFFECTS	1000	HEAST
	ACETONE	0.1	LOW	INCREASED LIVER, KIDNEY WEIGHT	1000	IRIS
	CIS-1,2-DICHLOROETHENE	0.01		DECREASED HEMATOCRIT	3000	HEAST
	ETHYLBENZENE	0.1	LOW	LIVER AND KIDNEY TOXICITY	1000	IRIS
	TETRACHLOROETHENE	0.01	MEDIUM	HEPATOXICITY	1000	IRIS
	TOLUENE	0.2	MEDIUM	LIVER AND KIDNEY WEIGHT	1000	IRIS
	TRANS-1,2-DICHLOROETHENE	0.02	LOW	SERUM ALKALINE PHOSPHATASE	1000	IRIS
	TRICHLOROETHENE	0.006		KIDNEY, LIVER EFFECTS		ECAO
	XYLENE, TOTAL	2	MEDIUM	HYPERACTIVITY; INC. MORTALITY	100	IRIS

(Chl) = Chlordane toxicity values were used for alpha- and gamma- chlordane.

TABLE 6-12
TOXICITY VALUES: POTENTIAL NONCARCINOGENIC EFFECTS
INHALATION ROUTE

CHEMICAL TYPE	CHEMICAL PARAMETER	CHRONIC RfC (mg/kg-day)	CONFIDENCE LEVEL	CRITICAL EFFECT	UNCERTAINTY FACTOR	RfC SOURCE
Metals/Inorganics	BARIUM	0.0001		FETOTOXICITY	1000	HEAST
	MANGANESE	0.0001	MEDIUM	RESPIRATORY SYMPTOMS	300	IRIS
	MERCURY	0.00008		NEUROTOXICITY	30	HEAST
Volatiles	1,1,1-TRICHLOROETHANE	0.3		HEPATOXICITY	1000	HEAST
	1,1-DICHLOROETHANE	0.1		KIDNEY DAMAGE	1000	HEAST
	2-BUTANONE	0.3	LOW	DECREASED FETAL BIRTH WEIGHT	1000	IRIS
	4-METHYL-2-PENTANONE	0.02		INCREASED LIVER WEIGHT	1000	HEAST
	ETHYLBENZENE	0.3	LOW	DEVELOPMENTAL TOXICITY	300	IRIS
	TOLUENE	0.1	MEDIUM	NEUROLOGICAL EFFECTS	300	IRIS

TABLE 6-13
TOXICITY VALUES THAT WERE NOT AVAILABLE

CHEMICAL TYPE	CHEMICAL PARAMETER	MISSING TOXICITY INFORMATION			
Metals/Inorganics	ALUMINUM	CSFo	CSFi	RfD	RfC
	ANTIMONY	CSFo	CSFi		RfC
	ARSENIC				RfC
	BARIUM	CSFo	CSFi		
	CADMIUM	CSFo			RfC
	CALCIUM	CSFo	CSFi	RfD	RfC
	CHROMIUM	CSFo			RfC
	COBALT	CSFo	CSFi	RfD	RfC
	COPPER	CSFo	CSFi		RfC
	CYANIDE, TOTAL	CSFo	CSFi		RfC
	IRON	CSFo	CSFi	RfD	RfC
	LEAD	CSFo	CSFi	RfD	RfC
	MAGNESIUM	CSFo	CSFi	RfD	RfC
	MANGANESE	CSFo	CSFi		
	MERCURY	CSFo	CSFi	RfD	
	NICKEL	CSFo	CSFi		RfC
	POTASSIUM	CSFo	CSFi	RfD	RfC
	SELENIUM	CSFo	CSFi		RfC
	SILVER	CSFo	CSFi		RfC
	SODIUM	CSFo	CSFi	RfD	RfC
	VANADIUM	CSFo	CSFi		RfC
	ZINC	CSFo	CSFi		RfC
Pesticides	4,4'-DDD		CSFi	RfD	RfC
	4,4'-DDE		CSFi	RfD	RfC
	4,4'-DDT				RfC
	ALDRIN				RfC
	ALPHA-CHLORDANE				RfC
	DELTA-BHC	CSFo	CSFi	RfD	RfC
	DIELDRIN	CSFo		RfD	RfC
	ENDOSULFAN II	CSFo	CSFi	RfD	RfC
	ENDOSULFAN SULFATE	CSFo	CSFi	RfD	RfC
	ENDRIN	CSFo	CSFi		RfC
	ENDRIN ALDEHYDE	CSFo	CSFi	RfD	RfC
	GAMMA-CHLORDANE				RfC
	HEPTACHLOR EPOXIDE				RfC
Semivolatiles	2-METHYLNAPHTHALENE	CSFo	CSFi	RfD	RfC
	ACENAPHTHENE	CSFo	CSFi		RfC
	ACENAPHTHYLENE	CSFo	CSFi	RfD	RfC
	ANTHRACENE	CSFo	CSFi		RfC
	BENZO(A)ANTHRACENE			RfD	RfC

TABLE 6-13
TOXICITY VALUES THAT WERE NOT AVAILABLE

CHEMICAL TYPE	CHEMICAL PARAMETER	MISSING TOXICITY INFORMATION			
Semivolatiles	BENZO(A)PYRENE			RfD	RfC
	BENZO(B)FLUORANTHENE			RfD	RfC
	BENZO(G,H,I)PERYLENE	CSFo	CSFi	RfD	RfC
	BENZO(K)FLUORANTHENE			RfD	RfC
	BIS(2-ETHYLHEXYL)PHTHALATE		CSFi		RfC
	CARBAZOLE		CSFi	RfD	RfC
	CHRYSENE			RfD	RfC
	DIBENZ(A,H)ANTHRACENE			RfD	RfC
	DIBENZOFURAN	CSFo	CSFi	RfD	RfC
	FLUORANTHENE	CSFo	CSFi		RfC
	FLUORENE	CSFo	CSFi		RfC
	INDENO(1,2,3-CD)PYRENE			RfD	RfC
	NAPHTHALENE	CSFo	CSFi	RfD	RfC
	PHENANTHRENE	CSFo	CSFi	RfD	RfC
	PHENOL	CSFo	CSFi		RfC
	PYRENE	CSFo	CSFi		RfC
Volatiles	1,1,2,2-TETRACHLOROETHANE			RfD	RfC
	1,1,2-TRICHLOROETHANE				RfC
	1,1-DICHLOROETHANE	CSFo	CSFi		
	1,2-DICHLOROETHANE			RfD	RfC
	1,2-DICHLOROETHENE (TOTAL)	CSFo	CSFi		RfC
	2-BUTANONE	CSFo	CSFi		
	2-HEXANONE	CSFo	CSFi	RfD	RfC
	4-METHYL-2-PENTANONE	CSFo	CSFi		
	BENZENE			RfD	RfC
	CIS-1,2-DICHLOROETHENE	CSFo	CSFi		RfC
	ETHYLBENZENE	CSFo	CSFi		
	TETRACHLOROETHENE				RfC
	TOLUENE	CSFo	CSFi		
	TRANS-1,2-DICHLOROETHENE	CSFo	CSFi		RfC
	TRICHLOROETHENE				RfC
	XYLENE, TOTAL	CSFo	CSFi		RfC

TABLE 6-14

SUMMARY OF QUALITATIVE TOXICITY INFORMATION FOR CHEMICALS WITHOUT CSFs, RfDs, or RfCs

Chemical Type	Chemical Parameter	Critical Effect	Source
Metal	Aluminum	Generally non-toxic; neurotoxicity; osteomalacia; Carcinogenicity: Group D	ECAOc
Metal	Calcium	None - essential nutrient	NRC
Metal	Cobalt	Increased hemoglobin; Dermatitis Carcinogenicity: Group D	ECAOc
Metal	Iron	None - essential nutrient	NRC
Metal	Lead	Impaired neurodevelopment in children	ECAOa
Metal	Magnesium	None - essential nutrient	NRC
Metal	Potassium	Generally non-toxic	HSDB
Metal	Sodium	No data available on chronic effects	—
Pesticide	Delta-BHC	No data available on chronic effects	—
Pesticide	Endosulfan II	No data available on chronic effects	—
Pesticide	Endosulfan Sulfate	No data available on chronic effects	—
Pesticide	Endrin Aldehyde	No data available on chronic effects	—
Semivolatile	2-Methylnaphthalene	Skin irritation; skin photosensitization	HSDB
Semivolatile	Dibenzofuran	Possible kidney effects based on limited data	ECAOc
Volatile	2-Hexanone	Central nervous system effects; Carcinogenicity: Group D	ECAOc
Polycyclic Aromatic Hydrocarbons	See text for further discussion.		

NOTES:

ECOAa Memorandum from Joan S. Dollarhide to Tom Bloom, USEPA Region V, on Dermal absorption information for multiple chemicals (NIROP), dated March 18, 1993.
ECAOc Memorandum from Joan S. Dollarhide to Tom Bloom, USEPA Region V, on Systemic and carcinogenic toxicity information for multiple chemicals, dated May 14, 1993.
HSDB Hazardous Substances Data Bank; maintained by the National Library of Medicine, September 14, 1993.
NRC Recommended dietary allowances. 10th Edition. National Research Council. National Academy Press. Washington, D.C. 1989.

TABLE 6-15
ESTIMATED EXCESS UPPER BOUND LIFETIME CANCER RISK
CURRENT LAND USE

SITE USE	ENVIRONMENTAL MEDIA	ROUTE OF EXPOSURE	CHEMICAL PARAMETER	CDI (mg/kg-day)	SLOPE FACTOR (1/mg/kg-day)	CHEMICAL RISK
INDOOR WORKER	SOIL PORE GAS	INHALATION	TRICHLOROETHENE	1.09E-03	.006	6.52E-06
			RISK SUBTOTAL FOR INHALATION			6.52E-06
	RISK SUBTOTAL FOR SOIL PORE GAS					6.52E-06
	TOTAL RISK FOR INDOOR WORKER					6.52E-06
OUTDOOR WORKER	SOIL	DERMAL	1,1,2,2-TETRACHLOROETHANE	9.52E-13	.2	1.90E-13
			1,1,2-TRICHLOROETHANE	1.43E-12	.057	8.14E-14
			4,4'-DDD	2.79E-08	.24	6.69E-09
			4,4'-DDE	4.99E-08	.34	1.69E-08
			4,4'-DDT	4.69E-08	.34	1.60E-08
			ALDRIN	2.27E-10	17	3.86E-09
			ALPHA-CHLORDANE	2.64E-09	1.3	3.43E-09
			ARSENIC	4.00E-09	2	8.00E-09
			CARBAZOLE	1.40E-07	.02	2.80E-09
			GAMMA-CHLORDANE	2.49E-10	1.3	3.24E-10
			HEPTACHLOR EPOXIDE	2.20E-09	9.1	2.00E-08
			TETRACHLOROETHENE	7.43E-10	.052	3.86E-11
			TRICHLOROETHENE	2.38E-11	.011	2.62E-13

TABLE 6-15
ESTIMATED EXCESS UPPER BOUND LIFETIME CANCER RISK
CURRENT LAND USE

SITE USE	ENVIRONMENTAL MEDIA	ROUTE OF EXPOSURE	CHEMICAL PARAMETER	CDI (mg/kg-day)	SLOPE FACTOR (1/mg/kg-day)	CHEMICAL RISK
OUTDOOR WORKER	SOIL	DERMAL				
			RISK SUBTOTAL FOR DERMAL			7.81E-08
	SOIL	INGESTION	1,1,2,2-TETRACHLOROETHANE	2.21E-11	.2	4.43E-12
			1,1,2-TRICHLOROETHANE	3.32E-11	.057	1.89E-12
			4,4'-DDD	4.21E-09	.24	1.01E-09
			4,4'-DDE	7.53E-09	.34	2.56E-09
			4,4'-DDT	7.09E-09	.34	2.41E-09
			ALDRIN	3.43E-11	17	5.83E-10
			ALPHA-CHLORDANE	3.99E-10	1.3	5.18E-10
			ARSENIC	4.65E-08	2	9.30E-08
			BENZO(A)ANTHRACENE	2.44E-08	7.3	1.78E-07
			BENZO(A)PYRENE	2.32E-08	7.3	1.70E-07
			BENZO(B)FLUORANTHENE	2.66E-08	7.3	1.94E-07
			BENZO(K)FLUORANTHENE	1.88E-08	7.3	1.37E-07
			CARBAZOLE	5.42E-08	.02	1.08E-09
			CHRYSENE	2.77E-08	7.3	2.02E-07
			DIBENZ(A,H)ANTHRACENE	8.52E-08	7.3	6.22E-07
			GAMMA-CHLORDANE	3.76E-11	1.3	4.89E-11
			HEPTACHLOR EPOXIDE	3.32E-10	9.1	3.02E-09
			INDENO(1,2,3-CD)PYRENE	3.10E-07	7.3	2.26E-06
			TETRACHLOROETHENE	2.88E-10	.052	1.50E-11
			TRICHLOROETHENE	5.54E-10	.011	6.09E-12
			RISK SUBTOTAL FOR INGESTION			3.87E-06
	SOIL	INHALATION	1,1,2,2-TETRACHLOROETHANE	6.64E-13	.2	1.33E-13

TABLE 6-15
ESTIMATED EXCESS UPPER BOUND LIFETIME CANCER RISK
CURRENT LAND USE

SITE USE	ENVIRONMENTAL MEDIA	ROUTE OF EXPOSURE	CHEMICAL PARAMETER	CDI (mg/kg-day)	SLOPE FACTOR (1/mg/kg-day)	CHEMICAL RISK
OUTDOOR WORKER	SOIL	INHALATION	1,1,2-TRICHLOROETHANE	9.96E-13	.056	5.58E-14
			4,4'-DDT	2.13E-10	.34	7.23E-11
			ALDRIN	1.03E-12	17	1.75E-11
			ALPHA-CHLORDANE	1.20E-11	1.3	1.55E-11
			ARSENIC	1.39E-09	15	2.09E-08
			BENZO(A)ANTHRACENE	7.31E-10	6.1	4.46E-09
			BENZO(A)PYRENE	6.97E-10	6.1	4.25E-09
			BENZO(B)FLUORANTHENE	7.97E-10	6.1	4.86E-09
			BENZO(K)FLUORANTHENE	5.65E-10	6.1	3.44E-09
			CADMIUM	1.43E-09	6.3	9.00E-09
			CHROMIUM	4.65E-09	42	1.95E-07
			CHRYSENE	8.30E-10	6.1	5.06E-09
			DIBENZ(A,H)ANTHRACENE	2.56E-09	6.1	1.56E-08
			DIELDRIN	5.31E-12	16	8.50E-11
			GAMMA-CHLORDANE	1.13E-12	1.3	1.47E-12
			HEPTACHLOR EPOXIDE	9.96E-12	9.1	9.07E-11
			INDENO(1,2,3-CD)PYRENE	9.30E-09	6.1	5.67E-08
			TETRACHLOROETHENE	8.64E-12	.002	1.73E-14
			TRICHLOROETHENE	1.66E-11	.006	9.96E-14
			RISK SUBTOTAL FOR INHALATION			3.20E-07
	RISK SUBTOTAL FOR SOIL					4.27E-06

TABLE 6-15
ESTIMATED EXCESS UPPER BOUND LIFETIME CANCER RISK
CURRENT LAND USE

SITE USE	ENVIRONMENTAL MEDIA	ROUTE OF EXPOSURE	CHEMICAL PARAMETER	CDI (mg/kg-day)	SLOPE FACTOR (1/mg/kg-day)	CHEMICAL RISK
OUTDOOR WORKER						
	TOTAL RISK FOR OUTDOOR WORKER					4.27E-06

TABLE 6-16
NONCARCINOGENIC HAZARD INDEX ESTIMATES
CURRENT LAND USE

SITE USE	ENVIRONMENTAL MEDIA	ROUTE OF EXPOSURE	CHEMICAL PARAMETER	CDI (mg/kg-day)	RFD(mg/kg-day)	HAZARD QUOTIENT
OUTDOOR WORKER	SOIL	DERMAL	1,1,1-TRICHLOROETHANE	2.53E-10	.09	2.82E-09
			1,1,2-TRICHLOROETHANE	3.04E-11	.004	7.60E-09
			1,1-DICHLOROETHANE	8.11E-11	.1	8.11E-10
			1,2-DICHLOROETHENE (TOTAL)	4.76E-09	.009	5.29E-07
			4,4'-DDT	9.99E-07	.0005	2.00E-03
			ACENAPHTHENE	2.07E-06	.06	3.45E-05
			ALPHA-CHLORDANE	5.62E-08	.0001	5.62E-04
			ANTHRACENE	1.52E-04	.3	5.07E-04
			ANTIMONY	4.66E-07	.0004	1.17E-03
			ARSENIC	8.51E-08	.0003	2.84E-04
			BARIUM	2.03E-05	.07	2.90E-04
			BENZO(G,H,I)PERYLENE	2.07E-05	.04	5.17E-04
			CADMIUM	8.72E-08	.001	8.72E-05
			CHROMIUM	2.84E-06	.005	5.68E-04
			COPPER	3.85E-06	.037	1.04E-04
			ENDRIN	2.34E-08	.0003	7.80E-05
			ETHYLBENZENE	2.31E-07	.1	2.31E-06
			FLUORANTHENE	4.44E-06	.04	1.11E-04
			FLUORENE	5.11E-06	.04	1.28E-04
			GAMMA-CHLORDANE	5.31E-09	.0001	5.31E-05
			MANGANESE	1.89E-04	.14	1.35E-03
			NICKEL	1.62E-07	.02	8.11E-06
			PHENOL	2.64E-05	.6	4.39E-05
			PYRENE	3.95E-06	.03	1.32E-04
			SELENIUM	2.64E-07	.005	5.27E-05
			TETRACHLOROETHENE	1.58E-08	.01	1.58E-06
			TOLUENE	1.64E-08	.2	8.21E-08
			TRICHLOROETHENE	5.07E-10	.006	8.45E-08
			VANADIUM	3.65E-07	.007	5.21E-05
			XYLENE, TOTAL	3.34E-07	2	1.67E-07
			ZINC	2.03E-05	.3	6.76E-05

TABLE 6-16
NONCARCINOGENIC HAZARD INDEX ESTIMATES
CURRENT LAND USE

SITE USE	ENVIRONMENTAL MEDIA	ROUTE OF EXPOSURE	CHEMICAL PARAMETER	CDI (mg/kg-day)	RFD(mg/kg-day)	HAZARD QUOTIENT
OUTDOOR WORKER	SOIL	DERMAL				
			HAZARD INDEX SUBTOTAL FOR DERMAL			8.19E-03
	SOIL	INGESTION	1,1,1-TRICHLOROETHANE	5.89E-09	.09	6.55E-08
			1,1,2-TRICHLOROETHANE	7.07E-10	.004	1.77E-07
			1,1-DICHLOROETHANE	1.89E-09	.1	1.89E-08
			1,2-DICHLOROETHENE (TOTAL)	1.11E-07	.009	1.23E-05
			4,4'-DDT	1.51E-07	.0005	3.02E-04
			ACENAPHTHENE	8.01E-07	.06	1.34E-05
			ALPHA-CHLORDANE	8.49E-09	.0001	8.49E-05
			ANTHRACENE	3.54E-06	.3	1.18E-05
			ANTIMONY	5.42E-07	.0004	1.36E-03
			ARSENIC	9.90E-07	.0003	3.30E-03
			BARIUM	2.36E-05	.07	3.37E-04
			BENZO(G,H,I)PERYLENE	8.01E-06	.04	2.00E-04
			CADMIUM	1.01E-06	.001	1.01E-03
			CYANIDE, TOTAL	1.08E-06	.02	5.42E-05
			ENDRIN	3.54E-09	.0003	1.18E-05
			ETHYLBENZENE	8.96E-08	.1	8.96E-07
			FLUORANTHENE	1.72E-06	.04	4.30E-05
			FLUORENE	1.98E-06	.04	4.95E-05
			GAMMA-CHLORDANE	8.01E-10	.0001	8.01E-06
			NICKEL	3.77E-06	.02	1.89E-04
			PHENOL	3.06E-07	.6	5.11E-07
			PYRENE	1.53E-06	.03	5.11E-05
			TETRACHLOROETHENE	6.13E-09	.01	6.13E-07
			TOLUENE	6.36E-09	.2	3.18E-08
			TRICHLOROETHENE	1.18E-08	.006	1.96E-06
			VANADIUM	4.24E-06	.007	6.06E-04
			XYLENE, TOTAL	1.30E-07	2	6.48E-08

TABLE 6-16
NONCARCINOGENIC HAZARD INDEX ESTIMATES
CURRENT LAND USE

SITE USE	ENVIRONMENTAL MEDIA	ROUTE OF EXPOSURE	CHEMICAL PARAMETER	CDI (mg/kg-day)	RFD(mg/kg-day)	HAZARD QUOTIENT
OUTDOOR WORKER	SOIL	INGESTION				
			HAZARD INDEX SUBTOTAL FOR INGESTION			7.65E-03
	SOIL	INHALATION	1,1,1-TRICHLOROETHANE	1.77E-10	0.3	5.89E-10
			1,1-DICHLOROETHANE	5.66E-11	.1	5.66E-10
			BARIUM	7.07E-07	.0001	7.07E-03
			ETHYLBENZENE	2.69E-09	.3	8.96E-09
			MANGANESE	6.58E-06	.0001	6.58E-02
			MERCURY	8.49E-10	.0001	8.49E-06
			TOLUENE	1.91E-10	.1	1.91E-09
			HAZARD INDEX SUBTOTAL FOR INHALATION			7.28E-02
	HAZARD INDEX SUBTOTAL FOR SOIL					8.87E-02
	TOTAL HAZARD INDEX FOR OUTDOOR WORKER					8.87E-02

TABLE 6-17
ESTIMATED EXCESS UPPER BOUND LIFETIME CANCER RISK
FUTURE LAND USE

SITE USE	ENVIRONMENTAL MEDIA	ROUTE OF EXPOSURE	CHEMICAL PARAMETER	CDI (mg/kg-day)	SLOPE FACTOR (1/mg/kg-day)	CHEMICAL RISK
RESIDENTIAL - NORTH 40	SOIL	DERMAL	1,1,2,2-TETRACHLOROETHANE	1.90E-11	.2	3.80E-12
			1,1,2-TRICHLOROETHANE	4.83E-11	.057	2.75E-12
			1,2-DICHLOROETHANE	1.90E-11	.091	1.73E-12
			4,4'-DDD	2.25E-06	.24	5.41E-07
			4,4'-DDE	1.64E-06	.34	5.59E-07
			4,4'-DDT	1.42E-06	.34	4.83E-07
			ALDRIN	2.25E-09	17	3.83E-08
			ALPHA-CHLORDANE	2.70E-08	1.3	3.51E-08
			ARSENIC	1.78E-07	2	3.57E-07
			BENZENE	7.31E-11	.029	2.12E-12
			BIS(2-ETHYLHEXYL)PHTHALATE	1.06E-06	.014	1.49E-08
			CARBAZOLE	1.40E-06	.02	2.81E-08
			GAMMA-CHLORDANE	2.48E-09	1.3	3.22E-09
			HEPTACHLOR EPOXIDE	2.25E-08	9.1	2.05E-07
			TETRACHLOROETHENE	3.51E-04	.052	1.83E-05
			TRICHLOROETHENE	7.31E-07	.011	8.05E-09
			RISK SUBTOTAL FOR DERMAL			2.05E-05
	SOIL	INGESTION	1,1,2,2-TETRACHLOROETHANE	1.09E-09	.2	2.17E-10
			1,1,2-TRICHLOROETHANE	2.76E-09	.057	1.57E-10
			1,2-DICHLOROETHANE	1.09E-09	.091	9.89E-11
			4,4'-DDD	8.36E-07	.24	2.01E-07
			4,4'-DDE	6.10E-07	.34	2.07E-07
			4,4'-DDT	5.27E-07	.34	1.79E-07
			ALDRIN	8.36E-10	17	1.42E-08
			ALPHA-CHLORDANE	1.00E-08	1.3	1.30E-08
			ARSENIC	5.10E-06	2	1.02E-05
			BENZENE	4.18E-09	.029	1.21E-10
			BENZO(A)ANTHRACENE	2.51E-06	7.3	1.83E-05

TABLE 6-17
ESTIMATED EXCESS UPPER BOUND LIFETIME CANCER RISK
FUTURE LAND USE

SITE USE	ENVIRONMENTAL MEDIA	ROUTE OF EXPOSURE	CHEMICAL PARAMETER	CDI (mg/kg-day)	SLOPE FACTOR (1/mg/kg-day)	CHEMICAL RISK
RESIDENTIAL - NORTH 40	SOIL	INGESTION	BENZO(A)PYRENE	2.42E-06	7.3	1.77E-05
			BENZO(B)FLUORANTHENE	2.67E-06	7.3	1.95E-05
			BENZO(K)FLUORANTHENE	1.92E-06	7.3	1.40E-05
			BIS(2-ETHYLHEXYL)PHTHALATE	7.61E-06	.014	1.06E-07
			CARBAZOLE	1.34E-06	.02	2.67E-08
			CHRYSENE	2.76E-06	7.3	2.01E-05
			DIBENZ(A,H)ANTHRACENE	2.17E-06	7.3	1.59E-05
			GAMMA-CHLORDANE	9.19E-10	1.3	1.20E-09
			HEPTACHLOR EPOXIDE	8.36E-09	9.1	7.61E-08
			INDENO(1,2,3-CD)PYRENE	1.42E-06	7.3	1.04E-05
			TETRACHLOROETHENE	3.34E-04	.052	1.74E-05
			TRICHLOROETHENE	4.18E-05	.011	4.60E-07
			RISK SUBTOTAL FOR INGESTION			1.45E-04
	SOIL	INHALATION	1,1,2,2-TETRACHLOROETHANE	1.36E-11	.2	2.72E-12
			1,1,2-TRICHLOROETHANE	3.45E-11	.056	1.93E-12
			1,2-DICHLOROETHANE	1.36E-11	.091	1.24E-12
			4,4'-DDT	6.58E-09	.34	2.24E-09
			ALDRIN	1.04E-11	17	1.78E-10
			ALPHA-CHLORDANE	1.25E-10	1.3	1.63E-10
			ARSENIC	6.37E-08	15	9.56E-07
			BENZENE	5.22E-11	.029	1.51E-12
			BENZO(A)ANTHRACENE	3.13E-08	6.1	1.91E-07
			BENZO(A)PYRENE	3.03E-08	6.1	1.85E-07
			BENZO(B)FLUORANTHENE	3.34E-08	6.1	2.04E-07
			BENZO(K)FLUORANTHENE	2.40E-08	6.1	1.47E-07
			CADMIUM	1.88E-08	6.3	1.18E-07
			CHROMIUM	1.88E-07	42	7.90E-06
			CHRYSENE	3.45E-08	6.1	2.10E-07

TABLE 6-17
ESTIMATED EXCESS UPPER BOUND LIFETIME CANCER RISK
FUTURE LAND USE

SITE USE	ENVIRONMENTAL MEDIA	ROUTE OF EXPOSURE	CHEMICAL PARAMETER	CDI (mg/kg-day)	SLOPE FACTOR (1/mg/kg-day)	CHEMICAL RISK
RESIDENTIAL - NORTH 40	SOIL	INHALATION	DIBENZ(A,H)ANTHRACENE	2.72E-08	6.1	1.66E-07
			DIELDRIN	1.67E-10	16	2.67E-09
			GAMMA-CHLORDANE	1.15E-11	1.3	1.49E-11
			HEPTACHLOR EPOXIDE	1.04E-10	9.1	9.51E-10
			INDENO(1,2,3-CD)PYRENE	1.78E-08	6.1	1.08E-07
			TETRACHLOROETHENE	4.18E-06	.002	8.36E-09
			TRICHLOROETHENE	5.22E-07	.006	3.13E-09
			RISK SUBTOTAL FOR INHALATION			1.02E-05
	RISK SUBTOTAL FOR SOIL					1.76E-04
	SOIL PORE GAS	INHALATION	TETRACHLOROETHENE	1.04E+00	.002	2.09E-03
			TRICHLOROETHENE	2.82E-01	.006	1.69E-03
			RISK SUBTOTAL FOR INHALATION			3.78E-03
	RISK SUBTOTAL FOR SOIL PORE GAS					3.78E-03

TABLE 6-17
ESTIMATED EXCESS UPPER BOUND LIFETIME CANCER RISK
FUTURE LAND USE

SITE USE	ENVIRONMENTAL MEDIA	ROUTE OF EXPOSURE	CHEMICAL PARAMETER	CDI (mg/kg-day)	SLOPE FACTOR (1/mg/kg-day)	CHEMICAL RISK
RESIDENTIAL - NORTH 40						
	TOTAL RISK FOR RESIDENTIAL - NORTH 40					3.96E-03
RESIDENTIAL - REMAINING AREAS	SOIL	DERMAL	4,4'-DDD	2.23E-07	.24	5.35E-08
			4,4'-DDE	5.63E-07	.34	1.91E-07
			4,4'-DDT	5.86E-07	.34	1.99E-07
			ALPHA-CHLORDANE	3.60E-09	1.3	4.69E-09
			ARSENIC	1.58E-07	2	3.16E-07
			CARBAZOLE	7.28E-08	.02	1.46E-09
			GAMMA-CHLORDANE	1.35E-09	1.3	1.76E-09
			TETRACHLOROETHENE	6.76E-09	.052	3.51E-10
			TRICHLOROETHENE	6.87E-10	.011	7.56E-12
			RISK SUBTOTAL FOR DERMAL			7.68E-07
	SOIL	INGESTION	4,4'-DDD	8.27E-08	.24	1.99E-08
			4,4'-DDE	2.09E-07	.34	7.10E-08
			4,4'-DDT	2.17E-07	.34	7.39E-08
			ALPHA-CHLORDANE	1.34E-09	1.3	1.74E-09
			ARSENIC	4.51E-06	2	9.03E-06
			BENZO(A)ANTHRACENE	1.00E-06	7.3	7.32E-06
			BENZO(A)PYRENE	9.19E-07	7.3	6.71E-06
			BENZO(B)FLUORANTHENE	1.09E-06	7.3	7.93E-06
			BENZO(K)FLUORANTHENE	6.44E-07	7.3	4.70E-06
			CARBAZOLE	6.94E-08	.02	1.39E-09
			CHRYSENE	1.09E-06	7.3	7.93E-06
			DIBENZ(A,H)ANTHRACENE	8.36E-08	7.3	6.10E-07

TABLE 6-17
ESTIMATED EXCESS UPPER BOUND LIFETIME CANCER RISK
FUTURE LAND USE

SITE USE	ENVIRONMENTAL MEDIA	ROUTE OF EXPOSURE	CHEMICAL PARAMETER	CDI (mg/kg-day)	SLOPE FACTOR (1/mg/kg-day)	CHEMICAL RISK
RESIDENTIAL - REMAINING AREAS	SOIL	INGESTION	GAMMA-CHLORDANE	5.02E-10	1.3	6.52E-10
			INDENO(1,2,3-CD)PYRENE	5.02E-07	7.3	3.66E-06
			TETRACHLOROETHENE	6.44E-09	.052	3.35E-10
			TRICHLOROETHENE	3.93E-08	.011	4.32E-10
			RISK SUBTOTAL FOR INGESTION			4.81E-05
	SOIL	INHALATION	4,4'-DDT	2.72E-09	.34	9.24E-10
			ALPHA-CHLORDANE	1.67E-11	1.3	2.17E-11
			ARSENIC	5.64E-08	15	8.46E-07
			BENZO(A)ANTHRACENE	1.25E-08	6.1	7.65E-08
			BENZO(A)PYRENE	1.15E-08	6.1	7.01E-08
			BENZO(B)FLUORANTHENE	1.36E-08	6.1	8.29E-08
			BENZO(K)FLUORANTHENE	8.05E-09	6.1	4.91E-08
			CADMIUM	1.46E-08	6.3	9.22E-08
			CHROMIUM	1.25E-07	42	5.27E-06
			CHRYSENE	1.36E-08	6.1	8.29E-08
			DIBENZ(A,H)ANTHRACENE	1.04E-09	6.1	6.37E-09
			DIELDRIN	5.54E-11	16	8.86E-10
			GAMMA-CHLORDANE	6.27E-12	1.3	8.15E-12
			INDENO(1,2,3-CD)PYRENE	6.27E-09	6.1	3.82E-08
			TETRACHLOROETHENE	8.05E-11	.002	1.61E-13
			TRICHLOROETHENE	4.91E-10	.006	2.95E-12
			RISK SUBTOTAL FOR INHALATION			6.61E-06

TABLE 6-17
ESTIMATED EXCESS UPPER BOUND LIFETIME CANCER RISK
FUTURE LAND USE

SITE USE	ENVIRONMENTAL MEDIA	ROUTE OF EXPOSURE	CHEMICAL PARAMETER	CDI (mg/kg-day)	SLOPE FACTOR (1/mg/kg-day)	CHEMICAL RISK
RESIDENTIAL - REMAINING AREAS						
	RISK SUBTOTAL FOR SOIL					5.54E-05
	SOIL PORE GAS	INHALATION	TETRACHLOROETHENE	1.25E-02	.002	2.51E-05
			TRICHLOROETHENE	1.01E-01	.006	6.08E-04
			RISK SUBTOTAL FOR INHALATION			6.33E-04
	RISK SUBTOTAL FOR SOIL PORE GAS					6.33E-04
	TOTAL RISK FOR RESIDENTIAL - REMAINING AREAS					6.89E-04

TABLE 6-18
NONCARCINOGENIC HAZARD INDEX ESTIMATES
FUTURE LAND USE

SITE USE	ENVIRONMENTAL MEDIA	ROUTE OF EXPOSURE	CHEMICAL PARAMETER	CDI (mg/kg-day)	RFD(mg/kg-day)	HAZARD QUOTIENT
RESIDENTIAL - NORTH 40	SOIL	DERMAL	1,1,1-TRICHLOROETHANE	3.10E-05	.09	3.44E-04
			1,1,2-TRICHLOROETHANE	1.17E-10	.004	2.94E-08
			1,1-DICHLOROETHANE	3.92E-07	.1	3.92E-06
			1,2-DICHLOROETHENE (TOTAL)	3.27E-08	.009	3.64E-06
			2-BUTANONE	4.27E-05	.05	8.54E-04
			4,4'-DDT	3.45E-06	.0005	6.91E-03
			4-METHYL-2-PENTANONE	1.07E-11	.05	2.14E-10
			ACENAPHTHENE	2.35E-06	.06	3.92E-05
			ALPHA-CHLORDANE	6.58E-08	.0001	6.58E-04
			ANTHRACENE	2.31E-05	.3	7.71E-05
			ANTIMONY	5.77E-06	.0004	1.44E-02
			ARSENIC	4.34E-07	.0003	1.45E-03
			BARIUM	1.28E-04	.07	1.83E-03
			BENZO(G,H,I)PERYLENE	4.06E-06	.04	1.01E-04
			BIS(2-ETHYLHEXYL)PHTHALATE	2.59E-06	.02	1.30E-04
			CADMIUM	1.28E-07	.001	1.28E-04
			CHROMIUM	1.28E-05	.005	2.56E-03
			COPPER	3.42E-05	.037	9.23E-04
			ENDRIN	2.58E-08	.0003	8.59E-05
			ETHYLBENZENE	1.00E-04	.1	1.00E-03
			FLUORANTHENE	2.56E-05	.04	6.41E-04
			FLUORENE	5.98E-06	.04	1.49E-04
			GAMMA-CHLORDANE	6.03E-09	.0001	6.03E-05
			MANGANESE	5.34E-03	.14	3.81E-02
			NICKEL	1.28E-06	.02	6.41E-05
			PHENOL	5.69E-05	.6	9.49E-05
			PYRENE	2.56E-05	.03	8.54E-04
			SELENIUM	7.83E-07	.005	1.57E-04
			TETRACHLOROETHENE	8.54E-04	.01	8.54E-02
			TOLUENE	1.35E-04	.2	6.73E-04
			TRICHLOROETHENE	1.78E-06	.006	2.97E-04
			VANADIUM	1.71E-06	.007	2.44E-04
			XYLENE, TOTAL	4.06E-04	2	2.03E-04

TABLE 6-18
NONCARCINOGENIC HAZARD INDEX ESTIMATES
FUTURE LAND USE

SITE USE	ENVIRONMENTAL MEDIA	ROUTE OF EXPOSURE	CHEMICAL PARAMETER	CDI (mg/kg-day)	RFD(mg/kg-day)	HAZARD QUOTIENT
RESIDENTIAL - NORTH 40	SOIL	DERMAL	ZINC	1.35E-04	.3	4.51E-04
			HAZARD INDEX SUBTOTAL FOR DERMAL			1.59E-01
	SOIL	INGESTION	1,1,1-TRICHLOROETHANE	1.77E-03	.09	1.97E-02
			1,1,2-TRICHLOROETHANE	6.71E-09	.004	1.68E-06
			1,1-DICHLOROETHANE	2.24E-05	.1	2.24E-04
			1,2-DICHLOROETHENE (TOTAL)	1.87E-06	.009	2.08E-04
			2-BUTANONE	2.44E-03	.05	4.88E-02
			4,4'-DDT	1.28E-06	.0005	2.56E-03
			4-METHYL-2-PENTANONE	6.10E-10	.05	1.22E-08
			ACENAPHTHENE	2.24E-06	.06	3.73E-05
			ALPHA-CHLORDANE	2.44E-08	.0001	2.44E-04
			ANTHRACENE	1.32E-06	.3	4.41E-06
			ANTIMONY	1.65E-05	.0004	4.12E-02
			ARSENIC	1.24E-05	.0003	4.14E-02
			BARIUM	3.66E-04	.07	5.23E-03
			BENZO(G,H,I)PERYLENE	3.86E-06	.04	9.66E-05
			BIS(2-ETHYLHEXYL)PHTHALATE	1.85E-05	.02	9.25E-04
			CADMIUM	3.66E-06	.001	3.66E-03
			CYANIDE, TOTAL	1.04E-05	.02	5.19E-04
			ENDRIN	9.56E-09	.0003	3.19E-05
			ETHYLBENZENE	9.56E-05	.1	9.56E-04
			FLUORANTHENE	2.44E-05	.04	6.10E-04
			FLUORENE	5.69E-06	.04	1.42E-04
			GAMMA-CHLORDANE	2.24E-09	.0001	2.24E-05
			NICKEL	7.32E-05	.02	3.66E-03
			PHENOL	1.63E-06	.6	2.71E-06
			PYRENE	2.44E-05	.03	8.14E-04
			SILVER	1.12E-05	.005	2.24E-03
			TETRACHLOROETHENE	8.14E-04	.01	8.14E-02

TABLE 6-18
NONCARCINOGENIC HAZARD INDEX ESTIMATES
FUTURE LAND USE

SITE USE	ENVIRONMENTAL MEDIA	ROUTE OF EXPOSURE	CHEMICAL PARAMETER	CDI (mg/kg-day)	RFD(mg/kg-day)	HAZARD QUOTIENT
RESIDENTIAL - NORTH 40	SOIL	INGESTION	TOLUENE	1.28E-04	.2	6.41E-04
			TRICHLOROETHENE	1.02E-04	.006	1.69E-02
			VANADIUM	4.88E-05	.007	6.97E-03
			XYLENE, TOTAL	3.86E-04	2	1.93E-04
			HAZARD INDEX SUBTOTAL FOR INGESTION			2.79E-01
	SOIL	INHALATION	1,1,1-TRICHLOROETHANE	2.21E-05	0.3	7.37E-05
			1,1-DICHLOROETHANE	2.80E-07	.1	2.80E-06
			2-BUTANONE	3.05E-05	.3	1.02E-04
			4-METHYL-2-PENTANONE	7.63E-12	.02	3.81E-10
			BARIUM	4.58E-06	.0001	4.58E-02
			ETHYLBENZENE	1.19E-06	.3	3.98E-06
			MANGANESE	1.91E-04	.0001	1.91E+00
			MERCURY	2.21E-09	.0001	2.21E-05
			TOLUENE	1.60E-06	.1	1.60E-05
			HAZARD INDEX SUBTOTAL FOR INHALATION			1.95E+00
	HAZARD INDEX SUBTOTAL FOR SOIL					2.39E+00
	SOIL PORE GAS	INHALATION	ETHYLBENZENE	4.07E-01	.3	1.36E+00
			TOLUENE	2.54E-01	.1	2.54E+00

TABLE 6-18
NONCARCINOGENIC HAZARD INDEX ESTIMATES
FUTURE LAND USE

SITE USE	ENVIRONMENTAL MEDIA	ROUTE OF EXPOSURE	CHEMICAL PARAMETER	CDI (mg/kg-day)	RFD(mg/kg-day)	HAZARD QUOTIENT
RESIDENTIAL - NORTH 40	SOIL PORE GAS	INHALATION				
			HAZARD INDEX SUBTOTAL FOR INHALATION			3.90E+00
	HAZARD INDEX SUBTOTAL FOR SOIL PORE GAS					3.90E+00
	TOTAL HAZARD INDEX FOR RESIDENTIAL - NORTH 40					6.29E+00
RESIDENTIAL - REMAINING AREAS	SOIL	DERMAL	1,1,1-TRICHLOROETHANE	3.20E-11	.09	3.56E-10
			1,1-DICHLOROETHANE	2.49E-11	.1	2.49E-10
			1,2-DICHLOROETHENE (TOTAL)	1.96E-09	.009	2.18E-07
			4,4'-DDT	1.43E-06	.0005	2.85E-03
			ACENAPHTHENE	2.78E-07	.06	4.63E-06
			ALPHA-CHLORDANE	8.77E-09	.0001	8.77E-05
			ANTHRACENE	1.28E-05	.3	4.27E-05
			ANTIMONY	5.48E-07	.0004	1.37E-03
			ARSENIC	3.84E-07	.0003	1.28E-03
			BARIUM	6.76E-05	.07	9.66E-04
			BENZO(G,H,I)PERYLENE	1.96E-06	.04	4.91E-05
			CADMIUM	9.97E-08	.001	9.97E-05
			CHROMIUM	8.54E-06	.005	1.71E-03
			COPPER	3.84E-06	.037	1.04E-04
			ENDRIN	4.55E-08	.0003	1.52E-04
			ETHYLBENZENE	2.14E-09	.1	2.14E-08
			FLUORANTHENE	1.94E-06	.04	4.86E-05

TABLE 6-18
NONCARCINOGENIC HAZARD INDEX ESTIMATES
FUTURE LAND USE

SITE USE	ENVIRONMENTAL MEDIA	ROUTE OF EXPOSURE	CHEMICAL PARAMETER	CDI (mg/kg-day)	RFD(mg/kg-day)	HAZARD QUOTIENT
RESIDENTIAL - REMAINING AREAS	SOIL	DERMAL	FLUORENE	2.78E-07	.04	6.94E-06
			GAMMA-CHLORDANE	3.29E-09	.0001	3.29E-05
			MANGANESE	7.12E-04	.14	5.08E-03
			NICKEL	5.69E-07	.02	2.85E-05
			PYRENE	1.82E-06	.03	6.05E-05
			SELENIUM	3.06E-07	.005	6.12E-05
			TETRACHLOROETHENE	1.64E-08	.01	1.64E-06
			TRICHLOROETHENE	1.67E-09	.006	2.79E-07
			VANADIUM	1.28E-06	.007	1.83E-04
			XYLENE, TOTAL	3.63E-09	2	1.82E-09
			ZINC	3.27E-05	.3	1.09E-04
			HAZARD INDEX SUBTOTAL FOR DERMAL			1.43E-02
	SOIL	INGESTION	1,1,1-TRICHLOROETHANE	1.83E-09	.09	2.03E-08
			1,1-DICHLOROETHANE	1.42E-09	.1	1.42E-08
			1,2-DICHLOROETHENE (TOTAL)	1.12E-07	.009	1.24E-05
			4,4'-DDT	5.29E-07	.0005	1.06E-03
			ACENAPHTHENE	2.64E-07	.06	4.41E-06
			ALPHA-CHLORDANE	3.25E-09	.0001	3.25E-05
			ANTHRACENE	7.32E-07	.3	2.44E-06
			ANTIMONY	1.57E-06	.0004	3.92E-03
			ARSENIC	1.10E-05	.0003	3.66E-02
			BARIUM	1.93E-04	.07	2.76E-03
			BENZO(G,H,I)PERYLENE	1.87E-06	.04	4.68E-05
			CADMIUM	2.85E-06	.001	2.85E-03
			ENDRIN	1.69E-08	.0003	5.63E-05
			ETHYLBENZENE	2.03E-09	.1	2.03E-08
			FLUORANTHENE	1.85E-06	.04	4.63E-05
			FLUORENE	2.64E-07	.04	6.61E-06
			GAMMA-CHLORDANE	1.22E-09	.0001	1.22E-05

TABLE 6-18
NONCARCINOGENIC HAZARD INDEX ESTIMATES
FUTURE LAND USE

SITE USE	ENVIRONMENTAL MEDIA	ROUTE OF EXPOSURE	CHEMICAL PARAMETER	CDI (mg/kg-day)	RFD(mg/kg-day)	HAZARD QUOTIENT
RESIDENTIAL - REMAINING AREAS	SOIL	INGESTION	NICKEL	3.25E-05	.02	1.63E-03
			PYRENE	1.73E-06	.03	5.76E-05
			TETRACHLOROETHENE	1.57E-08	.01	1.57E-06
			TRICHLOROETHENE	9.56E-08	.006	1.59E-05
			VANADIUM	3.66E-05	.007	5.23E-03
			XYLENE, TOTAL	3.46E-09	2	1.73E-09
			HAZARD INDEX SUBTOTAL FOR INGESTION			5.43E-02
	SOIL	INHALATION	1,1,1-TRICHLOROETHANE	2.29E-11	0.3	7.63E-11
			1,1-DICHLOROETHANE	1.78E-11	.1	1.78E-10
			BARIUM	2.42E-06	.0001	2.42E-02
			ETHYLBENZENE	2.54E-11	.3	8.47E-11
			MANGANESE	2.54E-05	.0001	2.54E-01
			HAZARD INDEX SUBTOTAL FOR INHALATION			2.78E-01
	HAZARD INDEX SUBTOTAL FOR SOIL					3.47E-01
	SOIL PORE GAS	INHALATION	TOLUENE	8.90E-03	.1	8.90E-02
			HAZARD INDEX SUBTOTAL FOR INHALATION			8.90E-02

TABLE 6-18
NONCARCINOGENIC HAZARD INDEX ESTIMATES
FUTURE LAND USE

SITE USE	ENVIRONMENTAL MEDIA	ROUTE OF EXPOSURE	CHEMICAL PARAMETER	CDI (mg/kg-day)	RFD(mg/kg-day)	HAZARD QUOTIENT
RESIDENTIAL - REMAINING AREAS						
	HAZARD INDEX SUBTOTAL FOR SOIL PORE GAS					8.90E-02
	TOTAL HAZARD INDEX FOR RESIDENTIAL - REMAINING AREAS					4.36E-01

TABLE 6-19

TENTATIVELY IDENTIFIED COMPOUNDS DETECTED IN AT LEAST FIVE PERCENT OF SOIL SAMPLES

Chemical Parameter	Maximum Estimated Concentration (mg/kg)
11H-Benzo[A] Fluorene	4
11H-Benzo[B] Fluorene	18
4H-Cyclopenta[DEF] Phenanthrene	33
Benzo[B] Naphtho[2,1-D] Thiop	13
Benzo[E] Pyrene	6.6
Benzo[GHI] Fluoranthene	0.5
Cyclopenta[CD] Pyrene	17
Docosane	19
Eicosane	5.9
Hexadecane	230
Hexadecane, 2,6,10,14-Tetra	6.6
Nonane, 2,6-Dimethyl	50
Pentadecane	27
Perylene	30
1-Methyl Pyrene	11
Tricosane	19

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TABLE 6-20

SUMMARY OF CENTRAL TENDENCY EXPOSURE FACTORS[1]

Exposure Factor	Units	Future Resident
Skin surface area	cm^2/day	4,200[2]
Soil adherence factor	mg/cm^2	1.0
Absorption factor	unitless	Chemical-specific - see Subsection 6.9
Exposure frequency	days/year	275
Exposure duration	years	9
Body weight	kg	70
Ingestion rate	mg/day	100
Fraction of day at source	hours/hours	1.0
Inhalation rate (total)	m^3/day	20
Indoor inhalation rate	m^3/day	10
TSP inhaled	mg/m^3	0.075
Averaging time for noncarcinogens	days	2,475
Averaging time for carcinogens	days	25,550

NOTES:

(1) Central tendency exposure factors were obtained from the USEPA via memorandum from Tom Bloom, USEPA Region V to Linda Hicken, RMT (December 1992).

(2) Average of 95th percentile from child 2 to 10 years = 989; adult 95th percentile = 5,800. [(989 * 10 years) + (5,800 * 20 years)] ÷ 30 = 4,200 cm^2.

TABLE 6-21

COMPARISON OF REASONABLE MAXIMUM AND CENTRAL TENDENCY RISK AND HAZARD ESTIMATES

Chemical Parameter	Route	RME	CT
Future Land Use - Residential - North 40			
Risk Estimates:			
Tetrachloroethene	Inhalation - Pore Gas	2×10^{-3}	3×10^{-4}
Trichloroethene	Inhalation - Pore Gas	2×10^{-3}	2×10^{-4}
TOTAL		4×10^{-3}	5×10^{-4}
Hazard Estimates:			
Manganese	Inhalation - Soil Particulates	2	2
Ethylbenzene	Inhalation - Pore Gas	1	0.8
Toluene	Inhalation - Pore Gas	3	1
TOTAL		6	4
Future Land Use - Residential - Remaining Areas			
Risk Estimates:			
Trichloroethene	Inhalation - Pore Gas	6×10^{-4}	8×10^{-5}
TOTAL		6×10^{-4}	8×10^{-5}
Hazard Estimates:			
Barium	Inhalation - Soil Particulates	0.02	0.02
Manganese	Inhalation - Soil Particulates	0.3	0.2
Toluene	Inhalation - Pore Gas	0.09	0.05
Arsenic	Ingestion of Soil	0.04	0.03
Barium	Ingestion of Soil	0.003	0.002
Cadmium	Ingestion of Soil	0.003	0.002
Nickel	Ingestion of Soil	0.002	0.001
Vanadium	Ingestion of Soil	0.005	0.004
TOTAL		0.4	0.3

TABLE 6-22

COMPARISON OF REASONABLE MAXIMUM AND SENSITIVE RECEPTOR RISK AND HAZARD ESTIMATES

Chemical Parameter	Route	RME	SR
Future Land Use - Residential - Remaining Areas			
Risk Estimates:			
Trichloroethene	Inhalation - Pore Gas	6×10^{-4}	7×10^{-3}
TOTAL		6×10^{-4}	8×10^{-3}
Hazard Estimates:			
Barium	Inhalation - Soil Particulates	0.02	0.1
Manganese	Inhalation - Soil Particulates	0.3	1.0
Toluene	Inhalation - Pore Gas	0.09	0.5
Arsenic	Ingestion of Soil	0.04	0.2
TOTAL		0.4	2

Section 7

ECOLOGICAL ASSESSMENT

7.1 Introduction

The purpose of this ecological assessment is to evaluate the potential for adverse ecological impacts from the soils operable unit at the NIROP Fridley. The 5-year review of the Record of Decision (ROD) will re-evaluate the human health and environmental impacts from the groundwater operable unit.

7.2 Site Characterization

7.2.1 Site Setting

The setting of the NIROP Fridley site is described in detail in Subsection 1.2.1 and is summarized here. The site is located in southern Anoka County, Minnesota, approximately one-quarter mile east of the Mississippi River. Adjacent land uses to the north, east, and south are heavy industrial. To the west is the Anoka County Islands of Peace Park, a 60-acre day-use recreational facility along the river's edge. The County Park is separated from the NIROP Fridley facility by East River Road, a four-lane highway. Access to the site is strictly limited by an 8-foot-high fence and security patrols.

The Moore Lake Natural Area is approximately 1 mile northeast of the facility. Significant waterways in the vicinity include Rice Creek, 2 miles to the north, and the Mississippi River, 1,500 feet to the west.

The site is open, flat, and dry. No surface water bodies or wetlands exist on or cross the site. Subsurface materials include a thin to absent fill overlying sandy glacial materials that are up to 150 feet thick. Discontinuous lenses of fine-grained soils occur in some areas, at or beneath the surface. The depth to the water table is approximately 20 feet. Groundwater discharges to the Mississippi River, approximately 1,500 feet to the west.

7.2.2 Potential Receptors

Aquatic Biota

No aquatic environments exist within or immediately adjacent to the site.

Terrestrial Biota

The NIROP Fridley is an industrial facility, surrounded on three sides by other industrial facilities in Anoka County, Minnesota. An 8-foot-high chain-link fence topped by 3 feet of barbed wire separates the NIROP Fridley from the area outside of the facility. There are few trees or shrubs on the site, and the grasses on the site are controlled by frequent mowing and herbicide spraying. The site presents little favorable habitat for terrestrial biota.

Wildlife in the vicinity of the NIROP Fridley would potentially include those species indigenous to southeastern Minnesota that have adapted to the industrial presence of humans. Small mammals and birds would be the most likely wildlife occupants of or visitors to the site because of the barrier posed by the fence surrounding the facility, the railroad yards to the east, East River Road to the west, and the NIROP Fridley to the south. These could include, but would not be limited to, ground squirrels, mice, and gophers. Table 7-1 lists the mammals of Minnesota that have been reported in Anoka County. Birds would have access to the site, although the lack of shelter, nesting sites, food sources, and surface water would make it less attractive than other areas for most bird species. Killdeer nest on the site; and carnivorous birds, such as eagles or hawks, could hunt rodents or small mammals there.

Endangered or Threatened Species

A review of the Minnesota Heritage Database has produced the following listing of rare plants, animals, or natural features within a 1-mile radius of the site:

Dry Sand Prairie - Threatened Status
Heteredon Nasicus (Western Hognose Snake) - Special Concern Status
Aristida Tuberculosa (Sea-Beach Needlegrass) - Special Concern Status

These significant species and the natural feature (the dry sand prairie) are all associated with the Moore Lake Natural Area, northwest of the NIROP Fridley site. It is unlikely that the soils at the Fridley NIROP would have an effect on this natural area because it is nearly 1 mile from the site.

Additionally, there is a Bald Eagle nesting area not listed in the Natural Heritage database review because it is just north of the 1-mile search radius for project review. The eagles could feed downstream of their nesting site, near the Fridley NIROP.

7.3 Exposure Assessment

The primary constituents of concern at the NIROP Fridley are volatile organic compounds (VOCs), which generally have significantly lower concentrations at the surface than in subsurface soils at the site, due to volatilization. The surface soils are the soils likely to be contacted by terrestrial organisms, except for the burrowing species. Therefore, most terrestrial organisms that might cross the site would come in contact with lower concentrations than those concentrations reported in the subsurface soils. The site is used for materials storage and is crossed frequently by heavy equipment. It is likely that such activity (combined with the lack of food and water) would greatly restrict the use of the site by burrowing mammals. Additionally, the scarcity of vegetation on the facility limits the potential for bioaccumulation in plants and subsequent bioconcentration in the food chain.

In general, pesticide, PCB, and metal concentrations decrease with depth at this site. Pesticide concentrations at the site decrease from the surface because their likely source is surface spraying. Terrestrial organisms could come into contact with these constituents. However, considering the lack of habitat at the site and the reduced access due to the fence, large populations are probably not exposed to the soils at the NIROP Fridley.

7.4 Toxicity Assessment

Although the State of Minnesota is currently developing a soil leaching model, no state or federal soil quality criteria have been established to provide a benchmark for comparison of on-site concentrations. However, given the current on-site and adjacent land uses which limit potential exposures to terrestrial organisms, this lack of information is insignificant.

7.5 Summary and Conclusions

The soils operable unit at the NIROP Fridley has constituents that are potentially toxic to terrestrial biota (VOCs, PAHs, PCBs, pesticides, and metals). Aquatic biota are absent at the site. The lack of habitat suitable for most terrestrial organisms at the site makes it unlikely that the constituents of concern in these soils will affect a large number of organisms. A preliminary screening, based on this exposure assessment, indicates a low potential for ecological effects from the soils operable unit at the NIROP Fridley. Further ecological investigation of the medium is not necessary.

TABLE 7-1

THE MAMMALS OF MINNESOTA[1]

Specimens Seen or Authentic Records of Species in Anoka County
COMMON MOLE, Scalopus aquaticus
CINEREOUS SHREW, Sorex cinereus
SADDLE-BACKED SHREW, Sorex arcticus
WATER SHREW, Sorex palustris
PIGMEY SHREW, Microsorex hoyi
SHORT-TAILED SHREW, Blarina brevicauda
SILVER-HAIRED BAT, Lasionycteris noctivagans
WHITE-TAILED JACK RABBIT, Lepus townsendii
SNOWSHOE RABBIT, Lepus americanus
COTTONTAIL RABBIT, Sylvilagus floridanus
WOODCHUCK, Marmota monax
STRIPED GROUND SQUIRREL, Citellus tridecemlineatus
FRANKLIN'S GROUND SQUIRREL, Citellus franklinii
EASTERN CHIPMUNK, Tamias striatus
RED SQUIRREL, Tamiasciurus hudsonicus
GRAY SQUIRREL, Sciurus carolinensis
FOX SQUIRREL, Sciurus niger
LITTLE FLYING SQUIRREL, Glaucomys volans
NORTHERN FLYING SQUIRREL, Glaucomys sabrinas
MISSISSIPPI VALLEY POCKET GOPHER, Geomys bursarius
POCKET MOUSE, Perognathus flavescens
BEAVER, Castor canadensis
WHITE-FOOTED MOUSE, Peromyscus maniculatus
NORTHERN WHITE-FOOTED MOUSE, Peromyscus leucopus noveboracensis
RED-BACKED MOUSE, Clethrionomys gapperi
PENNSYLVANIA MEADOW MOUSE, Microtus pennsylvanicus
MUSKRAT, Ondata zibethica
MEADOW JUMPING MOUSE, Zapus hudsonius
RACCOON, Procyn lotor
SHORT-TAILED WEASEL, Mustela erminea
LONG-TAILED WEASEL, Mustela frenata
MINK, Mustela vision
SPOTTED SKUNK, Spilogale interrupta
STRIPED SKUNK, Mephitis mephitis
BADGER, Taxidea taxus
RED FOX, Vulpes fulva
GRAY FOX, Urocyon cinereoargenteus
WHITE-TAILED DEER, Odocoileus virginianus

NOTES:

[1] From The Mammals of Minnesota by Harvey L. Gunderson and James R. Beer. The University of Minnesota Press, Minneapolis, Minnesota, 1953.

Section 8

COMPLETENESS AND ADEQUACY OF DATA FOR EVALUATING REMEDIAL ALTERNATIVES

The data gathered during the RI have been evaluated and judged to be of sufficient quantity and quality to be used for the following purposes:

- Determining the nature and extent of contamination of soils outside the NIROP building footprint
- Estimating potential risks to human health and the environment
- Identifying remedial options and developing and screening remedial alternatives

However, the RI data may be insufficient to support determination of target soil cleanup levels using the MPCA's new soil leaching model. Because the MPCA presented their soil leaching model as a "To Be Considered" criteria after the RI workplan and QAPP were approved, it was decided not to delay the project to revise these documents so that model parameters such as organic matter content, cation exchange capacity, and vadose zone vertical hydraulic conductivity could be included in the sampling and analysis plan. The Feasibility Study can proceed by estimating the parameters for which direct measurements are not available for the soil leaching model. A sensitivity analysis will be performed to determine which, if any, of the estimated criteria are critical in determining target cleanup levels. The need for additional field data will be addressed at that time.

Section 9

SUMMARY AND RECOMMENDATIONS

9.1 Summary of Findings and Conclusions

The findings and conclusions of the RI Report are summarized as follows:

Section 1 - Introduction

The Soils RI was performed to meet the following objectives:

- To investigate the nature and extent of releases of hazardous substances
- To gather data and information to the extent necessary and sufficient to quantify the risk to public health and the environment, and to support the development of remedial alternatives in the feasibility study
- To identify appropriate remedial objectives

Five on-site sub-areas of concern were identified based on the results of previous investigations. Specific objectives were established based on each sub-area based on its potential to be a source of soil contamination. A sixth area (background) was used for comparison in order to determine the significance of constituents reported in soils.

The scope of the Soils RI was limited to the government-owned area of the facility that is not covered by buildings.

The scope of the Soils RI did not include investigation and remediation of the groundwater operable unit which has been addressed as part of a separate investigation.

Section 2 - Variances to the Workplan and QAPP

Variances to the Workplan and QAPP identified in Section 2 did not impact the RI in a negative manner.

Section 3 - Evaluation of Data Quality

Subsection 3.1 - Sample Selection Criteria and Representativeness of Field GC Data Quality

Sample selection criteria were based on field-screening with a portable GC for selected VOCs. The selection of this method as a screening tool was based on historical soil and groundwater data.

Initial soil boring locations were based on the results of previous investigations. However, as the RI field investigation progressed, the results of portable GC screening were used to select locations to advance additional soil borings in order to delineate the extent of soil contamination.

A 10 μL/L cutoff value for the portable GC results was used to determine if additional soil borings were needed to delineate the extent of soil contamination. The 10 μL/L value was found to provide an ample margin of safety for discriminating between samples.

Comparison of portable GC data with laboratory analytical results and results of a subsequent laboratory experiment, indicated that VOCs were lost from the 120-ml vials that were used for laboratory samples during shipment and sample storage. Results of a subsequent laboratory experiment confirmed the VOC loss.

Results of the laboratory experiment on VOC loss indicated that laboratory data are sufficient for delineating areas of high contamination but are less accurate in determining low concentrations of VOCs in the soil.

The portable GC results were found to be suitable for use in the risk assessment for the migration of soil pore gas into tunnels or basements at the site.

Subsection 3.2 - Data Validation

Laboratory data generated for volatiles, semi-volatiles, pesticide/PCBs, and inorganics meet the requirements for Level 4 data. Final data packages were found to be complete and legally defensible.

Laboratory data for TOC were found to meet the Level 3 data requirements, however, the data reviewer recommended that the TOC data be considered as estimates due to the unusually high variability in the results.

Methylene chloride, 2-butanone, and toluene (common laboratory contaminants) were detected in laboratory, rinseate, and trip blanks.

Acetone (also a common laboratory contaminant) was reported in laboratory blanks, rinseate blanks (22 of 25 blanks), and trip blanks (25 of 25 blanks). However, acetone was also reported in background samples and at several on-site sample locations where no other VOCs were reported. Acetone was detected in site soils in Sub-Areas A1, A4, B1 and F2. In each of these instances, the detection of acetone was not supported by the detection of other VOCs such as TCE. It has been concluded that the presence of acetone is due to an impurity in the isopropyl alcohol used during decontamination of the split-spoon sampler used to collect soil samples. Thus, acetone has not been considered as a contaminant of concern.

Section 4 - Nature and Extent of Contamination

Subsection 4.1 - Background

Objective

The objective of investigating this sub-area was to compile background physical and chemical results for comparison to on-site soils, particularly with regard to metals concentrations.

Findings

The soil types encountered in the background soil borings are representative of the physical nature of the soils encountered on-site.

With the exception of acetone (explained above), no VOCs were reported in background soils. No significant SVOC concentrations were reported, and no PCB compounds were reported.

Two pesticide compounds (4,4'-DDD and 4,4'-DDT) were reported in shallow soils in the Anoka County Riverfront Regional Park. The presence of these compounds may be related to the application of pesticides within the park and do not appear to be related to activities at the NIROP Fridley. This is supported by the fact that pesticide compounds were not detected in other background borings which are nearer to the facility than the park.

Background concentrations for 23 metals plus cyanide were calculated based on background data and regional values (for compounds not detected during the investigation).

In addition to individual background metal concentrations, an overall background total trace metal concentration value of 107 mg/kg was calculated using 15 metals. The background total trace metal concentration was used to compare with on-site soils as an indicator of the significance of individual constituent exceedances.

Conclusion

The background data collected for the Soils RI are suitable for comparison to on-site soils and therefore, meet the stated objective.

Subsection 4.2 - Sub-Area A1

Objectives

To investigate an area of stained soils that was observed during the installation of a storm sewer in 1991.

To investigate the findings of an aerial photograph review which suggested that an area near the shipping and receiving docks may have been a drum storage area in the past.

Findings

Results of observations made during drilling indicate that the stained soils observed during storm sewer installation are actually a silt-rich layer which was found across much of Area A.

Results of soil samples analyzed to meet the above objectives found only very limited VOC impacts (three VOCs at estimated values less than quantitation limits, and one SVOC which is assumed to be asphalt related).

Conclusion

Soils within Sub-Area A1 have not been impacted by site activities.

Subsection 4.3 - Sub-Area A2

Objective

To investigate an area of high soil pore gas readings reported during a previous investigation. The findings of the previous investigation are also supported by observations of VOC odors made during the installation of a water main across Sub-Area A2 in 1990.

Findings

Results of VOC laboratory analyses indicate that TCE and PCE are present in shallow, intermediate, and deep soils in Sub-Area A2. TCE was reported in 64 percent of the samples analyzed, and PCE was reported in 43 percent. The highest concentrations of TCE and PCE were found in shallow soils centered on boring AB025. Concentrations generally decreased with depth.

Three pesticide compounds (4,4'-DDT and its breakdown products 4,4'-DDD and 4,4'-DDE) were reported in Sub-Area A2 at concentrations up to 28 μg/kg in two near-surface samples.

Only one sample (AB024A) was found to contain a total trace metal concentration which exceeded the background total trace metal concentration of 107 mg/kg (489 mg/kg). No evidence of metal contamination was found at depth in Sub-Area A2.

Conclusion

Sub-Area A2 has been impacted by site activities. Analytical results indicate that elevated VOC concentrations in shallow soils are present. Results indicate that the problem may be related to a surface spill rather than to buried wastes, since concentrations were highest in near-surface (1' to 3') samples and decreased with depth.

Subsection 4.4 - Sub-Area A3

Objective

To investigate soils at four of the 20 conductivity anomalies reported by the U.S. Army Corps of Engineers in 1984. The four anomalies included unexcavated Anomalies #12, #13, and #14, and excavated Anomaly #15. Results of a 1990 soil investigation by RMT also indicate that unexcavated Anomaly #13 may contain buried wastes.

Findings

During drilling in the vicinity of unexcavated Anomaly #13, free liquids were encountered which resulted in a removal action. A total of 31 drums were sampled and overpacked in addition to several other empty and crushed drums which were removed with other debris.

Analytical results for samples collected near Anomaly #13 indicate the presence of VOCs (primarily TCE, DCE, TCA, PCE, and DCA) at concentrations as high as 2,600,000 μg/kg. Elevated VOC concentrations were reported at depth.

SVOCs, pesticide compounds, and elevated trace metal concentrations were also reported in samples associated with Anomaly #13.

Three distinctly different TIC patterns were also reported in samples associated with Anomaly #13. These three patterns indicate the presence of light hydrocarbons such as gasoline, medium hydrocarbons such as fuel oil, and heavy-range hydrocarbons. The heavy-range hydrocarbons were also reported in samples collected near Anomalies #12 and #14.

Unexcavated Anomaly #14 also exhibited elevated VOC concentrations with the highest concentrations being reported between 6 to 12 feet.

Minor VOC contamination was reported in samples associated with Anomalies #12 and #15.

Conclusions

Investigation results indicate two major areas of concern in Sub-Area A3 which includes the area around unexcavated Anomalies #13 and #14. Elevated concentrations of contaminants, particularly VOCs, remain in soils in these areas as a result of wastes buried prior to 1983. The area delineated as containing VOCs at concentrations greater than 10 μg/kg included more than one-half of Sub-Area A3.

Unexcavated Anomalies #12 and #15 do not appear to have significantly impacted soils in Sub-Area A3.

Subsection 4.5 - Sub-Area A4

Objective

To investigate soils associated with 11 of the 20 (#1 through #11) conductivity anomalies reported by the U.S. Army Corps of Engineers. Previously excavated anomalies include #3, #5, #6, #7, and #10. Results of the a soil pore gas survey and the 1990 soil investigation also indicate potential VOC contamination in Sub-Area A4.

Findings

VOC impacted soils were reported across a large portion of Sub-Area A4. The most frequently reported compounds were TCE, DCE, and PCE.

The highest VOC concentrations were reported in an area centered around excavated Anomalies #3 and #6, and unexcavated Anomalies #2 and #4.

Several SVOCs were reported in near-surface samples; however, SVOCs were also reported in soils from intermediate depths (6-to 12-feet).

Several pesticide compounds were reported in near-surface soils in Sub-Area A4. In deeper soils, pesticides were reported in a sample from the 16- to 18-foot depth at Anomaly #3 and at the 6- to 8-foot depth in boring AB034.

Elevated trace metal concentrations were reported at several locations in near-surface soils in Sub-Area A4; however, samples collected from deeper intervals did not indicate downward migration by the trace metals.

The same three TIC patterns observed in Sub-Area A3 (light, medium, and heavy hydrocarbons) were also observed in Sub-Area A4. The three hydrocarbon patterns were associated with Anomalies #2, #3, #7, #9, and #10. The highest TIC hydrocarbon concentrations were observed from samples associated with Anomalies #2 and #3. Samples from these two locations required dilution before analysis could be conducted.

Conclusion

Much of Sub-Area A4 has been impacted by site activities with the greatest impacts being located at previously excavated Anomaly #3.

Previously excavated Anomalies #3 and #6 and unexcavated Anomalies #2 and #4 appear to be the major sources of these impacts.

Subsection 4.6 - Sub-Area B1

Objective

To investigate the five remaining conductivity anomalies reported by the U.S. Army Corps of Engineers, including unexcavated Anomalies #16 and #20, and excavated Anomalies #17, #18, and #19.

Findings

VOCs were reported in two samples associated with Anomaly #18. However, reported concentrations were estimated values that were below quantitation limits.

SVOCs were reported in several samples. All SVOCs were reported in near-surface samples and were located near a railroad spur. The reported SVOCs were all PAH compounds that may be related to the treated railroad ties.

Seven pesticide compounds were reported in near-surface samples collected in Sub-Area B1. The highest concentration reported was for endrin aldehyde at 180 μg/kg.

The background total trace metal concentration of 107 mg/kg was exceeded in shallow soils in Sub-Area B1; however, the highest total concentration reported was at only 176 mg/kg, which is approximately 1.5 times the background total.

Conclusion

Sub-Area B1 has been slightly impacted by site activities.

Subsection 4.7 - Sub-Area B2

Objective

To investigate a potential unknown pit and a potential drum storage area identified during the aerial photograph review.

Findings

Neither VOCs nor SVOCs were reported above detection limits in samples from Sub-Area B2.

Three pesticide compounds were reported in one near-surface sample. The highest reported concentration was for 4,4'-DDE at 18 μg/kg.

Metals concentrations in Sub-Area B2 are comparable to background concentrations.

Conclusion

Sub-Area B2 has not been significantly impacted by site activities.

Subsection 4.8 - Area D

Objective

To investigate the extent of a trench reported during the 1990 soil investigation.

Findings

The northern and southern limits of the trench were found during the RI investigation and are shown on Figure 4-8.

VOCs were reported at low levels in samples from Area D, with PCE and TCE being the contaminants of concern. Both constituents were reported in shallow and intermediate depth soils.

Thirteen SVOCs were reported in one near-surface sample at concentrations up to 1,600 μg/kg. The SVOCs reported were PAH compounds and may be related to nearby cinders and asphalt.

Five pesticide compounds were reported in soils from Area D at concentrations up to 200 μg/kg. Although most were reported in near-surface soils, two samples were found to contain pesticides at the 6-to 8-foot interval and the 10-to 12-foot interval, respectively.

Two samples from Area D reported total trace metal concentrations more than 1.5 times the background total concentration of 107 mg/kg. Both samples were from the near-surface interval.

Significant TIC concentrations were reported in samples from Area D. Both gasoline-pattern TICs and heavy-range hydrocarbon TICs similar to those reported in Sub-Area A3 were reported. Concentrations were high enough to require dilution of samples prior to analysis.

Conclusion

Area D is the site of a previously unidentified disposal trench. The reported impacts are considerably less than those observed in Sub-Areas A2, A3, and A4.

Subsection 4.9 - Sub-Area E1

Objective

To investigate the location of elevated soil pore gas readings reported near a TCA storage tank during a previous investigation. Additionally, this sub-area was investigated due to its location near two water table wells (9-S and 22-S) where VOC contamination has been reported.

Findings

TCE was reported in soils collected in Sub-Area E1 at relatively low concentrations which range up to 31 μg/kg. The highest TCE concentrations were reported in samples collected from the near-surface interval.

SVOCs (all PAH compounds) were reported in soil from two near-surface samples at concentrations up to 3,700 μg/kg.

Three pesticide compounds were reported in soil at concentrations up to 930 μg/kg from the near-surface sample interval.

Conclusion

Although Sub-Area E1 has been slightly impacted by site activities, this area does not appear to be the source of contamination reported in nearby monitoring wells.

Subsection 4.10 - Sub-Area E2

Objective

To investigate the results of the 1990 soil investigation which indicated the presence of VOCs in soils. This sub-area is also located near monitoring wells 9-S and 22-S.

Findings

DCE, TCE, and PCE were reported in samples from Sub-Area E2. Only one VOC (DCE) was reported at a concentration above the detection limit (33 μg/kg DCE). The remaining values were estimated concentrations at values less than the quantitation limit.

Several SVOCs (all PAHs) were reported at concentrations up to 7,600 μg/kg at one location. Although the highest concentrations of the PAH compounds were reported in the near-surface samples, PAHs were also reported in a sample from an intermediate depth.

Four pesticide compounds were reported in a near-surface sample, and two compounds were reported in a sample from the same boring (EB004) at the 8- to 10-foot depth. Both sample intervals were collected from soils which are buried below 10 inches of concrete, indicating that their emplacement is not recent.

One near-surface sample was found to contain total trace metal concentrations which exceeded the background total of 107 μg/kg.

Although gasoline-pattern and heavy-range hydrocarbon TICs were reported in soils from one boring in Sub-Area E2, concentrations were relatively low and did not require dilution prior to analysis.

Conclusions

Sub-Area E2 has been slightly impacted by site activities. However, this sub-area is not the source of VOCs identified in nearby monitoring wells.

Subsection 4.11 - Sub-Area F1

Objective

To investigate a potential drum storage area identified during the aerial photograph review.

Findings

No VOCs were reported in samples collected from Sub-Area F1.

Eight SVOCs (all PAHs) were reported in one near-surface sample at concentrations up to 410 μg/kg. All eight values were reported at estimated concentrations. The PAH compounds may be due to treated railroad ties used as part of a former railroad spur that was also identified near this location.

Two pesticide compounds at concentrations of approximately 20 μg/kg were reported in one near-surface sample.

The total trace metal concentration for one sample from this sub-area exceeded the background total trace metal concentration of 107 mg/kg with a value of 161 mg/kg. A deeper sample at the same location did not indicate that metals had migrated downward to the water table since the total concentration for that sample was 16 mg/kg.

Conclusions

Results of this investigation show that there have been slight or no impacts to soils in this sub-area.

Subsection 4-12 - Sub-Area F2

Objective

To investigate an area of stained soils identified during the aerial photograph review. This sub-area was the site of a former railroad spur where train cars were loaded with metal shaving wastes. Recently, an addition to the NIROP plant uncovered hydrocarbon contamination which resulted in removal of a large volume of soils. The current RI investigation objective was to determine if contaminated soils remained in Sub-Area F2.

Findings

No VOC contaminants were reported.

Two SVOCs (PAHs) were reported in one near-surface sample at estimated concentrations less than the quantitation limit.

Three pesticide compounds were reported in one near-surface sample at concentrations up to 30 μg/kg.

One total trace metal value of 113 mg/kg was reported. This value slightly exceeds the calculated background total of 107 mg/kg.

Both gasoline and heavy-range hydrocarbons at concentrations requiring dilution prior to analysis were identified as TICs in this sub-area.

Conclusion

Residual hydrocarbon-impacted soils remain in this sub-area.

Section 5 - Contaminant Fate and Transport

Subsection 5.1 - Potential Routes of Migration

Objective

To identify potential pathways by which contaminants can reach potential receptors. Pathways identified in Section 5 are then used in the baseline Risk Assessment (Section 6).

Findings

Direct contact with near-surface soils was identified as one of the primary routes by which contaminant pathways might be completed.

Migration of contaminants via surface water was not found to be an important pathway.

Migration of gas phase VOCs within the vadose (unsaturated) zone was identified as one of the primary routes by which receptors might be exposed at the site.

Although the potential for migration of contaminants via leaching to groundwater exists, this pathway was not considered in the Risk Assessment due to the ongoing remedial action of the groundwater operable unit at the site.

Conclusion

Two major pathways (direct contact and volatilization to soil pore gas) have been identified by which contaminants can be transported to receptors. These two pathways are recommended for consideration in the baseline risk assessment.

Section 6 - Baseline Risk Assessment

Objective

To characterize the nature, and to estimate the magnitude of potential public health effects caused by the constituents of potential concern.

Findings

Data used to perform the baseline risk assessment were taken from USEPA-approved data bases and are, therefore, likely to provide overestimates of actual risk and hazard.

Because of the inclusion of PAH and VOC compounds that posed the greatest known human health risk in the TCL, the TCL results have been considered representative of the indicators of risk and hazard associated with TICs at the NIROP.

Under current land use, the two exposure pathways identified include direct contact with soils by outdoor maintenance workers via incidental ingestion, dermal absorption, and inhalation of soil particulates; and inhalation of VOCs by workers in subsurface tunnels through soil pore gas migration. Incidental exposure to the general public was ruled out because of the site security measures already in place at the NIROP.

Under the future land use scenario, similar exposure pathways were considered as listed above; however, the potential for residential dwellings being constructed on-site was considered. Therefore, exposure time was increased.

Under current land use, the total estimated site risk (associated with carcinogens) for workers was found to be less than the 10^{-5} acceptable risk level established by the Minnesota Department of Health. The site risk to the indoor worker (6×10^{-6}) is primarily associated with inhalation of TCE in the soil pore gas (while in tunnels). The site risk to the outdoor maintenance worker (4×10^{-6}) is primarily attributed to ingestion of PAHs in shallow soils.

Under current land use, there was no quantifiable hazard (associated with non-carcinogens) to indoor workers due to inhalation of soil pore gas. The estimated site hazard to outdoor workers was found to be 0.09 which is far below the value of 1.0 which is considered to be the level of concern.

For the future land use scenario, the site was divided into two areas on which a home could potentially be built. These two areas included a residence in Sub-Areas A2, A3, and A4 (area of highest impacts), and the areas outside of Sub-Areas A2, A3, and A4.

Under the future land use scenario, the estimated site risk (associated with carcinogens) for a hypothetical resident in Sub-Areas A2, A3, and A4 was found to be 4×10^{-3}, which is above the 10^{-5} acceptable risk level. The site risk is primarily associated with inhalation of soil pore gas, specifically of PCE and TCE, that could infiltrate through soil into the basement of a home constructed on the site. The risk associated with a home built outside of Sub-Areas A2, A3, and A4 was calculated at 6×10^{-4}, which is also greater than the acceptable level. TCE and PCE were the two factors which drove this risk value.

Under the future land use scenario, the hazard (associated with non-carcinogens) to a hypothetical future resident in Sub-Areas A2, A3, and A4 was found to be 6, which is greater than the 1.0 level of concern. The primary contributors to hazard in these sub-areas were ethylbenzene and toluene measured in the soil pore gas. The estimated hazard for a resident located outside of Sub-Areas A2, A3, and A4 was 0.4, which is below the 1.0 level of concern.

Section 7 - Ecological Assessment

Objective

To evaluate the potential for adverse ecological impacts from the soils operable unit at the NIROP Fridley.

Findings

No aquatic environments exist within or immediately adjacent to the facility.

The site presents little favorable habitat for terrestrial biota because there are few trees and shrubs on the site and grasses on the site are controlled by frequent mowing and herbicide spraying, and because access is restricted by an 8-foot chain-link fence.

Small mammals, insects, and birds do have access to the site, although the lack of shelter, nesting sites, food sources, and surface water make it less attractive than other nearby areas for most species.

Conclusion

Although constituents are present at the site that are potentially toxic to terrestrial biota, the lack of suitable habitat and access restrictions makes it unlikely that large numbers of organisms will be affected.

Section 8 - Completeness and Adequacy of Data for Evaluating Remedial Alternatives

Objective

To identify data issues which might necessitate additional work prior to proceeding to evaluation of remedial alternatives.

Findings

Data are sufficient in quantity and quality for the development of remedial alternatives.

Additional TOC data may be necessary to evaluate some remedial alternatives.

Conclusion

Proceed with conducting the feasibility study.

9.2 Preliminary Remedial Alternative Objectives

The nature and extent of soil contamination associated with the NIROP Fridley have been sufficiently evaluated to develop remedial objectives for the site. The remedial objectives for which remedial alternatives will be developed during the Feasibility Study (FS) are as follows:

- To minimize/control risks and hazards associated with the migration of volatilized gases through soil pores.

- To minimize/control risks and hazards associated with direct contact, ingestion, and inhalation of near-surface soils.

The baseline risk assessment determined that under current land use, risks were below the 10^{-5} acceptable risk level. The risk-related constituent of concern identified for current land use in the baseline risk assessment was TCE. Volatilized TCE has the potential to migrate through soil pore gas and affect workers in the on-site tunnels. Site risks associated with direct contact were mainly driven by PAH compounds in shallow soils.

Under future land use, the site was divided into two areas: 1) a large portion of the North 40 consisting of Sub-Areas A2, A3, and A4; and 2) the remainder of the investigation area. The future land use scenario found unacceptable levels of risk (due to carcinogens) that are associated with inhalation of soil pore gas in both of these areas, with PCE and TCE driving the risk in both areas. Under the future land use scenario, hazards (due to noncarcinogens) which exceeded levels of concern were identified only in the North 40 (Sub-Areas A2, A3, and A4). Ethylbenzene and toluene in soil pore gas were the major contributors to the hazard exceedance.

Response actions that include ways to reduce or remove VOCs and SVOCs should be evaluated.

The effectiveness of institutional controls should also be evaluated. Particular attention should be paid to those controls which affect future land use since risks and hazards associated with current land use are at acceptable levels.

9.3 Recommendations for Future Work

On-site soils at the NIROP Fridley have been impacted by site activities. The baseline risk assessment shows that under current land use, risks and hazards to on-site workers are within acceptable levels. However, under the future land use scenario, individuals may be exposed to excessive risks and hazards. Those risks and hazards are primarily associated with volatilization of soil gases into basements. Sub-Areas A2, A3, and A4 (all in the North 40)

exhibit the highest levels of risk and hazard under the future land use scenario, although some problem areas were also identified outside the North 40. Data collected during the Remedial Investigation of the Soils Operable Unit at the NIROP Fridley are sufficient to proceed to the feasibility study (FS) stage, although additional TOC data may be necessary to evaluate some technologies such as natural attenuation or soil vapor extraction. The Navy should take steps to undertake the FS phase for the soils operable unit.

Section 10

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REMEDIAL INVESTIGATION REPORT
FOR THE
SOILS OPERABLE UNIT
AT THE
NAVAL INDUSTRIAL RESERVE ORDNANCE PLANT
FRIDLEY, MINNESOTA

SEPTEMBER 1993

APPENDICES

2313.22 0000:RTE:nlro0911

RMT, INC. — MADISON
744 HEARTLAND TRAIL ▫ MADISON, WI ▫ 53717-1934
P.O. BOX 8923 ▫ MADISON, WI ▫ 53708-8923
608/831-4444 ▫ 608/831-3334 FAX

APPENDIX A
MRD REPORT

DEPARTMENT OF THE NAVY
NORTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
PHILADELPHIA, PENNSYLVANIA 19112

RECEIVED
JUL 13 1983
MINN. POLLUTION CONTROL AGENCY

(215) 755-4972

114/646/DRS

12 JUL 1983

Mr. Micheal Ayers
Regulatory Compliance Section
Solid and Hazardous Waste Division
Minnesota Pollution Control Agency
1935 West County Road B2
Roseville, MN 55113 - 2785

Re: Naval Industrial Reserve Ordnance Plant (NIROP) Fridley, MN

Dear Mr. Ayers:

As agreed during your 20 May 1983 meeting with the Corps of Engineers and the Navy, the [redacted] for NIROP Fridley, MN is enclosed for your review and information. Dynamac Corporation has been directed to prepare plans and specifications for NIROP Site Cleanup, Fridley, MN based on the conclusion (Part III) of the enclosed Geophysical Survey Report. The plans and specification will be sent to your office, upon completion, for review and comment.

If there are any questions concerning the subject matter please contact Mr. David Smith, Environmental Engineer, Code 1142, Northern Division, Naval Facilities Engineering Command (NORTHNAVFACENGCOM) telephone (215) 755-4972/4712.

Sincerely

A. RHOADS
By direction

Copy to:
NAVSEASYSCOM (NAVSEA+56Y4 and NAVSEA-0705)
NAVPRO Fridley, MN
NAVFACENGCOM (1121B/PAP)

GEOPHYSICAL SURVEY REPORT
FOR
NAVAL INDUSTRIAL RESERVE ORDNANCE PLANT (NIROP)
FRIDLEY, MINNESOTA
5 JULY 1983

1. The initial Conductivity and Magnetometer Surveys were performed on 9 through 18 May 1983 in the area of the suspected waste dumping at the Naval Industrial Reserve Ordnance Plant in Fridley, Minnesota. These surveys were conducted by personnel of the Missouri River Division Laboratory, U.S. Army Corps of Engineers, Omaha, Nebraska. The results of the Conductivity Survey, dated 27 May 1983, and the Magnetometer Survey, dated 6 June 1983, were discussed in detail with representatives of the U.S. Navy and a specialist employed by the Hazardous Materials Technical Center of Rockville, Maryland. As a result of the detailed discussion, representatives of the Hazardous Materials Technical Center, using the Geophysical Reports, aerial photographs, and the initial NEESA Assessment Study, recommended areas for excavation and removal of known hazardous wastes and debris. The Hazardous Materials Technical Center Report is included as Part III of this Geophysical Survey Report. The sites to be excavated and materials removed are identified on the Conductivity Map, Figure 2, page 19, as the following:

High Priority Sites	Intermediate Priority Sites	Low Priority Sites
3, 5 and 18	7, 6 and 10	15, 17 and 19

2. In the Hazardous Waste Technical Center's analysis, an area was identified from aerial photograph pairs AA-12-26 and AA-12-27, dated 4-26-62, as being a possible location of buried waste beneath the railroad tracks near Site 15. This area is shown on Part III, page 39. Our analysis indicates this feature appears to be equipment or materials stored on the ground. HMTC included this in their report for information purposes. If the low priority sites, Nos. 15, 17 and 19 are found to contain hazardous wastes, then it will be necessary to re-evaluate other sites that are not scheduled to be excavated, particularly Site Nos. 8 and 9, which registered low conductivity during the initial survey.

Index to Geophysical Report

PART I Conductivity Survey.....pages 1 thru 19
PART II Magnetometer Survey.....pages 20 thru 33
PART III Hazardous Material Technical Center Analysis....pages 34 thru 39

PART I

CONDUCTIVITY SURVEY

27 MAY 1983

DEPARTMENT OF THE ARMY
MISSOURI RIVER DIVISION, CORPS OF ENGINEERS
DIVISION LABORATORY
OMAHA, NEBRASKA 68102

MRD Lab. No. 83/163

Sheet 1 of 7

27 MAY 1983

Subject: NIROP, Fridley, MN, Geophysical Survey to Locate Buried Waste Sites - Report Series No. 1

Project: NIROP, Fridley, MN

Intended Use:

Source of Material:

Submitted by: Chief, Engineering Division, Omaha District

Date Sampled: May 4 - May 18, 1983, Date Received:

Method of Test or Specification: Geophysical Survey by Conductivity Meter and Magnetometer

References: Letter Request dated 1 April 1983.

INTRODUCTION

1. Missouri River Division Laboratory representatives, Messrs. Mitchell and Baxter, traveled on May 3, 1983 to NIROP, Fridley, MN to comply with the letter request referenced above. The purpose of the trip was to conduct Electrical Conductivity and Proton Magnetometer surveys of a storage yard at the NIROP facility to locate and determine the extent of possible burial sites of waste materials.

EQUIPMENT

2. Two geophysical instruments were used with the intent of producing redundant information as verification of the site locations. The instruments consisted of a Conductivity Meter and a Proton Magnetometer.

3. The Conductivity Meter is an instrument transported approximately 3 feet above the ground surface by the operator. An electrical field is induced in the earth's surface beneath one end of the sensor boom by a coil. At 3.66 meters from the transmitting coil a sensing coil is located to measure the induced electrical field. A change in the constituency of the intervening earth is reflected by a change in the measurement of the induced electrical field. Thus sites of conductivity greater than or less than normal in the area investigated can be delineated.

4. The Proton Magnetometer is an instrument carried by the operator above the ground surface and is used to measure the earth's magnetic flux. Magnetic materials cause a distortion in the earth's magnetic flux pattern. By determining the locations of such anomalies, magnetic materials can be located.

SURVEY AREA DESCRIPTION

5. The NIROP storage yard consists of 3 distinct areas. 1) A pie-shaped east area bordered on its north by a steel mesh fence, its west by a propane gas storage facility and access road, and on its south and east by curving railroad tracks. 2) A center area bordered on its east by the propane gas storage facility, its north by the steel mesh fence, its west by the main access road to the manufacturing area, and to its south by the railroad tracks. 3) A west area bordered on its east by the main access road, its north by the steel mesh fence, its west by the continuation of the uncleared storage yard designated by NIROP as sector 4, and its south by the railroad tracks.

6. In the center and west areas the north edge of the investigation was limited by the presence of steel tables, used to store steel armour plate, and footings of old buildings. These impediments are depicted in the base map of Figure 1.

7. In the east area an asphalt landing strip and a propane gas line are present and depicted in the base map of Figure 1.

8. An electrical system for the yard lights is present in all three areas and is depicted on the base map of Figure 1.

SURVEY PROCEDURE

9. Each area was investigated in the same manner. The data was collected systematically for each area by establishing a grid system of primary data points on 50 foot centers and then at secondary points on 25 foot centers. The primary points were physically determined by driving red flagged stakes for each point. The secondary points were taken at the mid-points between the primary points and at the intersection of the primary diagonals. The base lines for the east section were taken at the east edge of the asphalt of the propane storage facility and the fence on the north. The zero measuring point of the base line is the intersection of these two lines. For the center and west areas the baselines consisted of the west edge of the concrete of the propane storage area and the fence. The intersection of those two lines is the zero measuring point. The two baseline zero points are depicted on all the map figures and are to be used as the point of departure for all measurements. The red flagged grid system was left intact upon completion of the survey, May 18, 1983.

10. Upon completing the grid system for an area the electrical conductivity survey was performed. This consisted of establishing a reference point for checking the zero drift of the instrument. Point K-13 was used for the east and center areas, and point M-14 was used for the west area.

The equipment indicated no drift during the duration of the survey. Following the check of the instrument's zero, each primary and then each secondary data point was surveyed by taking four readings of the conductivity meter in mutually perpendicular directions to ascertain the high and low conductivity of the earth beneath the data point. An average earth conductivity was calculated for each data point. The readings and the calculated average earth conductivity are recorded in Tables 1, 2 and 3 for the east, center, and west areas. The data point conductivity values were then plotted on the conductivity contour map, Figure 2. Contours of equal conductivity value were drawn. The contours indicate areas of high and low conductivity which constitute possible waste burial sites. With the location of these interest areas the operators returned with the conductivity meter and attempted to define the limits of the interest areas. This was done by determining where the instrument readings indicate a significant and abrupt change. At this point a stake was driven and flagged with a contrasting pink or blue flag. Pink flagging was used in the center and east areas as the possible burial sites were separated widely enough to eliminate confusion as to what area was being defined. In the west area the possible burial sites are somewhat congested with nearly mutual borders leading to the use of blue flags for low conductivity and pink flags for high conductivity areas. Following the delineation of the possible burial sites with stakes in the field, the stake position grid coordinates were measured and their locations plotted on the grid contour map of Figure 1. The flagged stakes denoting the possible burial site perimeters were left in place upon completion of the survey. Each of the possible burial sites will be discussed further on in this report.

11. After gathering conductivity meter data in an area the proton magnetometer was taken, in the same manner as the conductivity meter, to each data gathering point. The proton magnetometer readings are subject to a diurnal shift which is time dependant. Thus a reading at the reference points was made before initiating and at the time of completing the survey. At each data point 4 magnetometer readings and a time reading were made. The readings were then averaged and corrected for the diurnal shift effect. The magnetometer data are included in Tables 4, 5 and 6. As with the conductivity meter data the magnetometer data was plotted and contoured on a contour map, Figure 3.

SURVEY LIMITATIONS

12. In discussing the interpretation of the conductivity meter and magnetometer data the presence of interference and limiting factors must be noted. These factors consist of conductive or magnetic materials that occur in, on and around the storage yard. All such factors and their location are noted on the base map, Figure 1. One factor not noted is the

western termination of the storage yard survey area. The western edge of the west area terminates in the active storage yard. At this juncture there are large pieces of equipment having considerable areal extent and great mass. Both the conductivity and magnetometer data are affected and thus there are no data for the western most survey points plotted on the 2 maps. Along the northern edge of the west area are steel tables for armour plate storage. The effect of these tables is to raise the conductivity values within 25 feet of the tables and to drastically distort the magnetometer data to a distance of 100 feet. Also along this border is a fence and footings for a building that affected the readings between the fence and the tables. Along the south edge of the west area is a buried electrical system that increases the conductivity data values to a distance of 75 feet on either side of it. The location of the electrical system is noted on the base map. In the center area there are steel tables in the northwest corner; a fence along the northern edge; propane tanks, an asphalt road and concrete pad along the east edge; the buried electrical system along the south edge; and an electrical switching box, a propane filling station, and propane pipes in the southeast corner. Thus there are no data for the northwest corner survey points and conductivity values are increased in the vicinity of the electrical system and pipelines. In the east area, interference is propagated by the fence on the north, the propane tanks on the west, the electrical system in the southwest corner, the intersection of the fence and railroad tracks in the northeast corner, and the propane pipeline through the center of the area. An asphalt airstrip also exists in the east area but exerts no detectable influence on the data readings. This would indicate that the asphalt is thin and of poor quality and exhibits electrical and magnetic properties nearly identical to the earth on which it was placed. Along all of the southern edges of the 3 areas are railroad tracks which considerably modify both the conductivity and magnetometer data. The magnetometer data appears to be so highly deranged by these factors that its credence is suspect. Thus the following discussion is based on conductivity data.

BURIAL SITE DISCUSSION

13. As stated previously, contouring of the conductivity data on the contour map of Figure 2 lead to the indication of areas having lower and higher conductivity than the surrounding area. Twenty such areas are delineated on the contour map. Each area is discussed in the next paragraphs.

A.1. This area centers around a data point that indicates an anomalous no value reading. The value of conductivity is lower than that recordable by the conductivity meter. The indication is of a perfect insulator. In delineating this area with blue flagged stakes it was found that a footing exists at the north end and an asphalt path extends from there to the southeast. The asphalt and footing are probably the only materials in this site.

for N.R. pts.

A.2. Site 2 centers around an anomalous no value reading and is supported by a low reading immediately to the west. No materials were discovered to explain the low readings in this site. The probable cause of these readings is due to buried rubble and concrete which may also contain waste materials.

A.3. Site 3 was predicated on the distortion of the 20 millimho contour line and the high conductivity values around the distortion. In tracing the perimeter of the site it was found that an abrupt although small change in conductivity occurs. The area extends to the east and encompasses a known waste barrel find. The site also corresponds to a trench area described in the NEESA Report 13-029.

A.4. Site 4 centers around another anomalous no value reading. Within the perimeter of the site there is no reading on the conductivity meter. There are no surface or near surface indications of what is buried here. The supposition is that concrete or asphalt may be buried. The site is narrow with fairly straight sides possible indicating a covered asphalt path.

A.5. Site 5 was evidenced by high conductivity values nearly surrounded by lower values. Upon definition of the site a geometrically shaped area with very abrupt edges was delineated. The high conductivity values indicate metallic materials are probably buried and is a prime waste burial site.

A.6. Site 6 is evidenced by relatively high conductivity readings. In attempting to determine a perimeter for the site no edges could be located except at the west side. In the other 3 directions there is a gradual change in the readings and no definitive change can be ascertained. The buried electrical conduit is within 40 feet of these data points and is probably responsible for masking the edge effects. Since the area corresponds to a purported burial site it is delineated as a possible waste burial site.

A.7. Site 7 exhibits similarities to Site 6 having high conductivity values with indefinite edges. Again the site edge effects are probably masked by the buried electrical system as its proximity is closer than in the case of Site 6.

A.8. Site 8 is an area of relatively low conductivity and corresponds to a burial area near the west end described by an FMC employee as a rubble burial site. Because of the non-conductive nature of rubble some conductive materials may be present and their expression masked. This site perimeter was not determined.

A.9. Site 9 is similar to Site 8 and may correspond to an area located by MPCA personnel in air photos. It is quite non-conductive and probably contains only rubble. This site perimeter was not determined.

A.10. Site 10 is a high conductivity area whose perimeter was unsuccessfully delineated due to indistinct edge effects. The high conductivity values indicate a possible waste dump site.

A.11. Site 11 is a high conductivity area that is related to surface effects. It is in a topographic low area with high moisture content and foundry sand disposal. Both factors would tend to give high conductivity values. Also the nearness of the buried electrical system affects the measurements. This area is probably not a waste material burial site. The site perimeter was not determined.

A.12. Site 12 is related to the effect of the electrical system and the disposal of foundry sand. The area is of a high conductivity nature. Considerable foundry sand has been disposed of here and is not considered to be a waste burial area. The perimeter was not determined.

A.13. Site 13 is a high conductivity area. There is a large quantity of foundry sand, slag and furnace clinkers on the surface. The site conductivity is considered to be due to the surface disposal of these materials and is probably not a burial site. The perimeter of the site was not determined.

A.14. Site 14 is an area of very low conductivity with an anomalous no value reading near its center. This is probably a burial site of excess concrete and/or asphalt from the construction of the propane tank storage facility. The perimeter of the area is very abruptly defined by the instrument readings.

A.15. Site 15 was a very difficult area to delineate due to the proximity of the electrical system, the railroad tracks and the propane filling station. The site corresponds to a possible burial site indicated by MPCA studies of air photos. There are abrupt edges to the perimeter with the east edge probably due to the propane pipe and buried electrical conduit. Foundry sands are also present on this site.

A.16. Site 16 is within the area denoted by the 30 millimho contour lines. It conforms to the location of the propane pipeline that traverses the center of the east area. The trace of the pipeline was defined in the field by yellow flagged stakes located by using the conductivity meter. This delineation corresponds with the breather pipes at the railroad tracks and the emergence of the pipes in the propane storage facility.

A.17. Site 17 corresponds to an area of low conductivity. The perimeters of the site exhibit abrupt conductivity meter reading changes. Although the site exhibits low readings, according to testimony gathered by USN personnel from FMC employees barrels may be buried with the rubble, particularly in the east area.

A.18. Site 18 also corresponds to an area recorded in testimony as a burial site. This site exhibits 3 very straight edges and a fourth edge that is indistinct, which seems to correspond to a pit dug by a back hoe. It is also narrow, being slightly wider than a barrel's dimension when laid on its side. This is most probably a waste material burial site.

A.19. Site 19 corresponds to testimony describing a burial site near the railroad track fence gate. This site exhibits low conductivity values when compared to the surrounding area. Upon establishing the perimeter of the site the edges were easily distinguished by abrupt changes of the conductivity meter readings. Considering the low values, rubble is most probably buried at this site, however barrels of waste material may be included in the rubble.

A.20. Site 20 lies directly beneath the airstrip asphalt. The site exhibits high conductivity and a geometric shape that is similar to that of a creek or stream outfall. Prior to the construction of the airstrip a small ditch or stream existed in this area. This then may be a drainage related structure built with reinforced concrete and steel conduit. This most probably is not a waste material burial site.

CONCLUSION

14. The electrical conductivity meter has produced the most creditable results of the two methods used. Thus at this writing the conductivity meter data and interpretation is presented. The conductivity meter survey indicates that considerable burial activity has occurred in the east and west areas of the NIROP storage yard. The center area shows very little evidence of such activity, however there is an indication of considerable dumping of foundry sands and wastes on the earth's surface. In the west area Sites 3, 5, 6, and 7 seem to be the most likely waste material burial areas and Sites 8, 9. and 10 are possible burial areas. In the center area Site 15 occurs as the most likely burial area. In the east area Sites 17, 18 and 19 appear to be the most likely burial areas.

Submitted by:

R. K. SCHLENKER, P.E.
Director, MRD Laboratory

TABLE 1

NIROP · EAST AREA · CONDUCTIVITY

DATA NO.	SCALE	READING				AVE READING	MILLIMHOS
K-1	30	0.62	0.62	0.60	0.60	0.610	18.30
K-2	30	0.65	0.64	0.65	0.65	0.643	19.30
K-3	30	0.61	0.62	0.62	0.62	0.620	18.60
K-4	30	0.72	0.74	0.71	0.71	0.720	21.60
K-5	30	0.67	0.70	0.69	0.65	0.672	20.33
K-6	300	0.48	0.54	0.53	0.49	0.508	152.25
K-7	30	0.54	0.53	0.53	0.51	0.525	15.75
K-8	30	0.52	0.53	0.52	0.51	0.517	15.53
K-9	30	0.66	0.67	0.65	0.66	0.660	19.80
K-10	30	0.55	0.56	0.55	0.56	0.555	16.65
K-11	30	0.64	0.66	0.69	0.67	0.663	19.89
K-12	30	0.61	0.61	0.61	0.62	0.612	18.38
K-13	30	0.66	0.66	0.66	0.66	0.660	19.80
K-14	30	0.82	0.82	0.84	0.86	0.830	24.90
K-15	100	0.31	0.30	0.23	30X0.89		27.35
K-16	100	0.30	0.32	0.16	0.22	0.225	22.50
K-17	100	0.21	0.21	0.20	0.20	0.205	20.50
K-18	100	0.20	0.24	0.37	0.39	0.300	30.00
K-19	100	0.23	0.23	0.22	0.22	0.220	22.00
K-20	100	0.30	0.31	0.29	0.31	0.305	30.50
K-21	100	0.24	0.25	0.26	0.26	0.252	25.25
K-22	100	0.27	0.29	0.31	0.33	0.300	30.00
K-23	100	0.21	0.21	0.21	0.22	0.212	21.25
K-24	100	0.17	0.17	0.17	0.17	0.170	17.00
K-25	100	0.16	0.28	0.11	0.28	0.208	20.75
K-26	30	0.81	0.11	0.69	10X0.37		12.95
K-27	30	0.67	0.70	0.68	0.71	0.677	20.33
K-28	30	0.13	0.14	0.30	0.36	0.232	6.98
K-29	100	0.36	0.39	0.42	0.44	0.402	40.25
J-1	30	0.76	0.79	0.75	0.74	0.760	22.80
J-2	30	0.48	0.65	0.72	0.69	0.635	19.05
J-3	30	0.69	0.76	0.75	0.75	0.737	22.12
J-4	30	0.76	0.58	0.48	0.60	0.605	18.15
J-5	30	0.74	0.69	0.63	0.72	0.695	20.85
J-6	30	0.71	0.74	0.74	0.73	0.727	21.82
J-7	100	0.30	0.31	0.30	0.30	0.302	30.25
J-8	30	0.72	0.76	0.74	0.73	0.738	22.13
J-9	30	0.57	0.63	0.61	0.60	0.603	18.07
J-10	30	0.51	0.51	0.49	0.50	0.500	15.00
J-11	30	0.88	0.89	0.85	0.83	0.865	25.95
J-12	30	0.64	0.63	0.65	0.64	0.640	19.20
J-13	30	0.64	0.63	0.66	0.65	0.645	19.35
J-14	30	0.58	0.58	0.58	0.58	0.580	17.40
J-15	30	0.58	0.58	0.58	0.60	0.585	17.55
J-16	30	0.60	0.60	0.60	0.60	0.600	18.00
J-17	30	0.56	0.56	0.60	0.60	0.580	17.40
J-18	30	0.65	0.67	0.67	0.67	0.665	19.95

TABLE 1 (cont'd)

NIROP · EAST AREA · CONDUCTIVITY

DATA NO.	SCALE	READING				AVE READING	MILLIMHOS
J-19	30	0.56	0.56	0.56	0.58	0.565	16.95
J-20	30	0.57	0.58	0.58	0.56	0.572	17.18
J-21	30	0.78	0.76	0.73	0.72	0.747	22.42
J-22	30	0.70	0.72	0.67	0.68	0.713	21.52
J-23	30	0.82	0.81	0.85	0.84	0.830	24.90
J-24	30	0.72	0.70	0.79	0.76	0.743	22.30
J-25	30	0.63	0.62	0.64	0.64	0.633	18.98
J-26	30	0.72	0.70	0.73	0.72	0.717	21.52
J-27	30	0.63	0.62	0.63	0.62	0.625	18.75
J-28	30	0.70	0.70	0.69	0.69	0.695	20.85
J-29	100	0.34	0.36	0.34	0.35	0.342	34.75
J-30	100	0.37	0.44	0.44	30x0.61		29.92
J-31	100	0.39	0.40	0.41	0.40	0.400	40.00
J-32	100	0.45	0.30	0.13	0.12	0.252	25.25
J-33	100	0.36	0.35	0.37	0.35	0.358	35.75
J-34	30	0.33	0.36	0.32	0.33	0.335	10.05
J-35	30	0.91	0.80	0.83	100x0.35		30.20
J-36	30	0.61	0.64	0.63	0.64	0.630	18.90
J-37	30	0.64	0.67	0.66	0.65	0.660	19.80
J-38	30	0.66	0.51	0.91	100x0.32		26.40
J-39	30	0.85	0.83	0.83	0.83	0.835	25.05
J-40	30	0.83	0.83	0.80	0.79	0.813	24.38
J-41	30	0.64	0.62	0.64	0.62	0.630	18.90
J-42	30	0.89	0.86	0.38	0.14	0.568	17.02
J-43	30	0.70	0.72	0.90	100x0.29		26.10

TABLE 2

NIROP · CENTER AREA · CONDUCTIVITY

DATA NO.	SCALE	READING				AVE READING	MILLIMHOS
M-1	30	0.62	0.67	0.62	0.62	0.633	18.98
M-2	30	0.57	0.57	0.55	0.56	0.563	16.88
M-3	30	0.58	0.58	0.60	0.60	0.590	17.70
M-4	30	0.69	0.70	0.63	0.64	0.665	19.95
M-7	30	0.55	0.52	0.57	0.55	0.548	16.43
M-8	30	0.61	0.61	0.59	0.61	0.605	18.15
M-9	30	0.72	0.72	0.72	0.72	0.720	21.60
M-10	30	0.66	0.66	0.67	0.64	0.658	19.72
M-11	30	0.64	0.64	0.66	0.66	0.650	19.50
M-12	30	0.59	0.56	0.61	0.62	0.592	17.78
M-13	30	0.58	0.58	0.59	0.59	0.585	17.55
M-14	30	0.66	0.67	0.65	0.65	0.658	19.72
M-15	30	0.59	0.60	0.67	0.67	0.635	19.05
M-16	30	0.91	0.88	0.88	0.88	0.390	26.70
M-17	30	0.72	0.73	0.74	0.76	0.737	22.12
M-18	30	0.76	0.75	0.75	0.76	0.755	22.65
M-19	100	0.36	0.33	0.34	0.33	0.340	34.00
M-20	100	0.31	0.31	0.34	0.32	0.330	32.00
M-21	100	0.34	0.36	0.33	0.34	0.342	34.25
M-22	100	0.34	0.33	0.35	0.35	0.342	34.20
M-23	100	0.39	0.35	0.37	0.39	0.372	37.25
M-24	100	0.30	0.31	0.29	0.30	0.298	29.75
M-25	100	0.40	0.38	0.37	0.34	0.372	37.25
M-26	100	0.75	0.77	0.74	0.74	0.750	75.00
M-27	100	0.36	0.35	0.37	0.35	0.358	35.75
M-28	100	0.29	0.33	0.28	0.32	0.305	30.50
M-29	100	0.34	0.33	0.36	0.35	0.345	34.50
M-30	100	0.33	0.32	0.40	0.39	0.388	38.75
M-31	100	0.33	0.31	0.34	0.33	0.328	32.75
M-32	100	0.35	0.34	0.36	0.35	0.350	35.00
M-33	100	0.35	0.34	0.34	0.36	0.349	34.75
N-1	30	0.46	0.34	0.36	0.41	0.392	11.77
N-2	30	0.50	0.50	0.50	0.51	0.502	15.07
N-3	30	0.62	0.60	0.64	0.64	0.625	18.75
N-4	30	0.60	0.60	0.60	0.60	0.600	18.00
N-5	30	0.62	0.61	0.61	0.59	0.608	8.22
N-6	30	0.70	0.68	0.72	0.71	0.702	21.08
N-7	30	0.78	0.77	0.82	0.83	0.800	24.00
N-12	100	0.40	0.24	0.19	0.17	0.252	25.25
N-13	100	0.20	0.20	0.34	0.43	0.285	28.50
N-14	30	0.67	0.66	0.69	0.70	0.680	20.40
N-15	30	0.55	0.56	0.58	0.58	0.567	17.02
N-16	30	0.61	0.61	0.66	0.66	0.635	19.05
N-17	30	0.53	0.53	0.54	0.54	0.535	16.05
N-18	30	0.59	0.59	0.59	0.60	0.592	17.78
N-19	30	0.61	0.61	0.60	0.59	0.602	18.07
N-20	30	0.66	0.64	0.64	0.63	0.642	19.27

TABLE 2 (Cont'd.)

NIROP · CENTER AREA · CONDUCTIVITY

DATA NO.	SCALE	READING				AVE READING	MILLIMHOS
N-21	30	0.67	0.66	0.67	0.66	0.665	19.95
N-22	30	0.72	0.72	0.73	0.74	0.727	21.82
N-23	30	0.75	0.75	0.72	0.72	0.735	22.05
N-24	30	0.66	0.61			0.635	19.05
N-25	30	0.62	0.64	0.87	0.73	0.715	21.45
N-26	30	0.54	0.57	0.50	0.48	0.522	15.68
N-27	30	0.60	0.68	0.53	0.56	0.592	17.77
N-28	30	0.55	0.56	0.53	0.54	0.545	16.35
N-29	30	0.70	0.70	0.72	0.72	0.710	21.30
N-30	30	0.68	0.69	0.64	0.63	0.662	19.88
N-31	30	0.70	0.70	0.70	0.71	0.702	21.08
N-32	30	0.65	0.64	0.67	0.68	0.660	19.80
N-33	30	0.57	0.55	0.55	0.55	0.560	16.80
N-34	30	0.66	0.65	0.66	0.64	0.652	19.58
N-35	30	0.69	0.68	0.69	0.67	0.677	20.32
N-36	30	0.71	0.69	0.67	0.68	0.687	20.62
N-37	30	0.69	0.65	0.72	0.63	0.672	20.18
N-38	30	0.63	0.66	0.65	0.69	0.662	19.88
N-39	30	0.78	0.80	0.73	0.70	0.752	22.57
N-40	30	0.67	0.64	0.65	0.69	0.662	19.88
N-41	30	0.65	0.67	0.64	0.68	0.667	20.02
N-42	30	0.58	0.57	0.63	0.64	0.602	18.08
N-43	30	0.62	0.69	0.68	0.68	0.668	20.03
N-44	30	0.63	0.65	0.65	0.65	0.645	19.35
N-45	100	0.31	0.33	0.32	30x0.98		31.35
N-46	30	0.66	0.66	0.59	0.62	0.632	18.98
N-47	30	0.71	0.73	0.74	0.74	0.730	21.90
N-48	30	0.68	0.66	0.66	0.65	0.662	19.82
N-49	30	0.67	0.64	0.58	0.59	0.610	18.35
N-50	30	0.63	0.63	0.64	0.66	0.645	19.35
N-51	30	0.66	0.67	0.70	0.69	0.680	20.40
N-52	30	0.75	0.77	0.81	0.80	0.782	23.48
N-53	30	0.75	0.70	0.80	0.79	0.760	22.80
N-54	30	0.75	0.76	0.78	0.78	0.768	23.02
N-55	30	0.86	0.86	0.92	0.92	0.890	26.70
[illegible]	30	0.89	0.92	0.93	0.93	0.918	27.52
N-57	30	0.76	0.74	0.77	0.77	0.760	22.80
N-58	30	0.67	0.68	0.69	0.69	0.682	20.48
N-59	30	0.71	0.70	0.72	0.69	0.705	21.15
N-60	100	0.33	0.32	0.34	0.31	0.325	32.50
N-61	100	0.32	0.32	0.32	0.34	0.325	32.50
N-62	100	0.35	0.36	0.33	0.33	0.342	34.25
N-63	100	0.30	0.32	0.31	0.32	0.312	31.25
N-64	100	0.24	0.23	0.32	0.32	0.278	27.75
N-65A	100	0.24	0.23	0.23	0.23	0.232	23.25
N-67	100	0.44	0.40	0.44	0.41	0.422	42.25
N-68	30	0.88	0.93	0.84	0.86	0.878	26.32

NIROP • TABLE 2 (cont'd) CENTER AREA • CONTUCTIVITY

DATA NO.	SCALE	READINGS				AVE. READING	MILLIMHOS
N-69	30	0.79	0.79	0.79	0.79	0.788	23.65
N-70	30	0.84	0.86	0.85	0.84	0.845	25.42
N-71	30	0.98	0.99	0.98	100x0.32		30.75
N-72	30	0.94	0.99	0.91	0.91	0.938	28.12
N-73	100	0.31	0.33	0.32	0.32	0.320	32.00
N-74	100	0.32	0.35	0.33	0.33	0.332	33.25
N-75	100	0.41	0.44	0.39	0.39	0.409	40.75
N-76	100	0.48	0.52	0.49	0.50	0.495	49.50
N-77	100	0.48	0.52	0.53	0.53	0.515	51.50
N-78	100	0.47	0.50	0.53	0.50	0.500	50.00
N-79	100	0.47	0.50	0.55	0.59	0.523	52.75
N-80	100	0.38	0.42	0.40	0.41	0.402	40.25
N-81	100	0.30	0.32	0.32	0.33	0.318	31.75
N-82	100	0.33	0.35	0.36	0.37	0.352	35.25
N-83	100	0.36	0.37	0.36	0.37	0.365	36.50
N-84	100	0.41	0.40	0.35	0.36	0.380	38.00
N-85	100	0.30	0.31	0.31	0.33	0.312	31.25
N-86	100	0.32	0.32	0.34	0.35	0.332	33.25
N-87	100	0.42	0.42	0.43	0.42	0.420	42.00
N-88	100	0.34	0.37	0.35	0.32	0.345	34.50
N-89	30	0.56	0.53	0.61	0.60	0.575	17.25
N-90	30	0.65	0.64	0.67	0.66	0.655	19.65
N-91	30	0.62	0.61	0.63	0.62	0.617	18.52
N-92	30	0.59	0.57	0.61	0.62	0.607	18.22

TABLE 3

NIROP · WEST AREA · CONDUCTIVITY

DATA NO.	SCALE	READING				AVE READING	MILLIMHOS
P-1	30	0.56	0.60	0.55	0.52	0.550	16.50
P-2	30	0.61	0.64	0.33	0.33	0.487	14.62
P-3	30	0.68	0.80	0.48	0.52	0.620	18.60
P-4	30	0.56	0.53	0.51	0.50	0.525	15.75
P-5	30	0.72	0.85	0.53	0.52	0.662	19.88
P-6	100	0.34	0.47	0.20	0.30	0.330	33.00
P-7	30	0.88	0.69	0.79	100x 0.48		35.80
P-8	100	0.59	0.41	0.20	0.22	0.355	35.50
P-11	30	0.57	0.58	0.53	0.55	0.557	16.72
P-12	3	0.00	0.38	0.10	10x0.62		3.82
P-13	30	0.53	0.51	0.50	0.51	0.513	15.37
P-14	30	0.57	0.56	0.59	0.58	0.575	17.25
P-15	30	0.49	0.49	0.51	0.51	0.500	15.00
P-16	30	0.49	0.47	0.47	0.48	0.477	14.32
P-17	30	0.59	0.58	0.59	0.57	0.583	17.48
P-18	30	0.53	0.53	0.52	0.52	0.525	15.75
P-19	30	0.73	0.73	0.72	0.73	0.730	21.90
P-20	30	0.63	0.64	0.64	0.64	0.640	19.20
P-21	30	0.67	0.65	0.63	0.63	0.645	19.35
P-22	30	0.57	0.58	0.58	0.59	0.580	17.40
P-23	30	0.69	0.69	0.69	0.68	0.685	20.55
P-24	30	0.62	0.61	0.58	0.57	0.595	17.85
P-25	30	0.50	0.49	0.51	0.51	0.503	15.08
P-26	30	0.56	0.57	0.57	0.57	0.567	17.02
P-29	100	0.34	0.32	0.31	0.31	0.320	32.00
P-30	100	0.37	0.40	0.35	0.36	0.370	37.00
P-31	100	0.65	0.65	0.64	0.65	0.650	65.00
P-32	100	0.37	0.37	0.35	0.36	0.360	36.00
P-33	100	0.34	0.36	0.39	0.41	0.375	37.50
P-34	100	0.40	0.43	0.39	0.41	0.408	40.75
P-35	100	0.40	0.43	0.38	0.40	0.402	40.25
P-36	100	0.37	0.40	0.36	0.38	0.378	37.75
P-37	100	0.36	0.34	0.34	0.34	0.345	34.50
P-38	100	0.35	0.33	0.34	0.34	0.340	34.00
P-39	100	0.34	0.34	0.34	0.34	0.340	34.00
P-40	100	0.40	0.40	0.40	0.39	0.398	39.75
P-41	100	0.48	0.45	0.37	0.41	0.430	43.00
P-42	100	0.27	0.26	0.36	0.36	0.312	31.25
P-43	100	0.27	0.25	0.24	0.23	0.248	24.75
P-44	100	0.27	0.25	0.24	0.25	0.252	25.25
S-1	30	0.70	0.72	0.70	0.70	0.705	21.15
S-2	30	0.77	0.76	0.75	0.75	0.757	22.72
S-3	30	0.78	0.80	0.77	0.78	0.777	23.32
S-4	30	0.71	0.68	0.78	0.78	0.737	22.12
S-5	30	0.83	0.82	0.84	0.84	0.833	24.98
S-6	30	0.82	0.81	0.80	0.80	0.807	24.22
S-7	30	0.79	0.79	0.80	0.81	0.797	23.92

TABLE 3 (cont'd)

NIROP • WEST AREA • CONDUCTIVITY

DATA NO.	SCALE	READING				AVE READING	MILLIMHOS
S-8A	30	0.83	0.83	0.81	0.82	0.823	24.68
S-8B	30	0.81	0.79	0.83	0.83	0.815	24.45
S-9	30	0.75	0.74	0.78	0.79	0.765	22.95
S-10	30	0.68	0.68	0.70	0.70	0.690	20.70
S-11	30	0.66	0.66	0.67	0.67	0.665	19.95
S-12	30	0.69	0.69	0.70	0.70	0.695	20.85
S-13	30	0.82	0.82	0.81	0.81	0.817	24.52
S-14	10	0.32	0.40	0.00	3X0.80		3.00
S-15	30	0.65	0.64	0.68	0.68	0.663	19.90
S-16	30	0.56	0.56	0.59	0.59	0.575	17.25
S-17	30	0.66	0.69	0.52	0.48	0.587	17.62
S-18	30	0.92	0.94	0.63	0.63	0.780	23.40
S-19	30	0.93	0.64	0.64	100X0.34		29.05
S-20	30	0.85	0.62	0.63	100X0.33		27.00
S-21	100	0.38	0.37	30X0.69	30X0.72		29.32
S-22	30	0.75	0.68	0.53	0.53	0.623	18.68
S-23	30	0.86	0.75	0.61	0.58	0.700	21.00
S-24	30	0.40	0.40	0.36	0.43	0.397	11.92
S-25	30	0.63	0.62	0.63	0.61	0.623	18.68
S-26	30	0.56	0.56	0.54	0.54	0.550	16.50
S-27	30	0.62	0.63	0.52	0.59	0.603	18.09
S-28	30	0.50	0.52	0.53	0.53	0.520	15.60
S-29	30	0.44	0.48	0.41	0.42	0.437	13.12
S-30	30	0.53	0.56	0.51	0.52	0.530	15.90
S-31	30	0.60	0.60	0.60	0.61	0.603	18.09
S-32	30	0.58	0.57	0.56	0.55	0.565	16.95
S-33	30	0.62	0.62	0.60	0.60	0.610	18.30
S-34	30	0.55	0.55	0.56	0.56	0.555	16.65
S-35	30	0.51	0.51	0.51	0.51	0.510	15.30
S-36	30	0.49	0.50	0.50	0.51	0.500	15.00
S-37	30	0.69	0.69	0.67	0.67	0.680	20.40
S-38	30	0.64	0.66	0.68	0.68	0.667	20.02
S-39	30	0.55	0.55	0.56	0.57	0.557	16.72
S-40	30	0.50	0.50	0.50	0.50	0.500	15.00
S-42	30	0.50	0.51	0.50	0.50	0.503	15.08
S-43	30	0.61	0.59	0.60	0.60	0.600	18.00
S-44	30	0.55	0.55	0.52	0.52	0.535	16.05
S-45	30	0.60	0.59	0.64	0.64	0.617	8.52
S-46	30	0.52	0.52	0.52	0.53	0.523	15.68
S-47	30	0.43	0.48	0.43	0.49	0.455	13.65
S-48	30	0.53	0.52	0.45	0.44	0.485	14.55
S-49	30	0.50	0.48	0.56	0.54	0.520	15.60
S-50	30	0.60	0.60	0.55	0.55	0.575	17.25
S-51	30	0.56	0.58	0.60	0.59	0.582	17.48
S-52	30	0.61	0.60	0.62	0.62	0.613	18.38
S-53	30	0.60	0.63	0.59	0.58	0.600	18.00
S-54	30	0.53	0.54	0.51	0.53	0.527	15.82

TABLE 3 (cont'd)

NIROP · WEST AREA · CONDUCTIVITY

DATA NO.	SCALE	READING				AVE READING	MILLIMHOS
S-55	30	0.62	0.62	0.60	0.60	0.610	18.30
S-56	30	0.52	0.52	0.55	0.55	0.535	16.05
S-57	30	0.64	0.63	0.65	0.65	0.643	19.28
S-58	30	0.62	0.64	0.68	0.69	0.657	19.72
S-59	10	0.47	0.00	0.00	3x0.21		5.33
S-60	30	0.45	0.33	0.64	0.63	0.513	15.38
S-61	30	0.67	0.65	0.70	0.65	0.668	20.03
S-62	30	0.60	0.61	0.61	0.62	0.610	18.30
S-63	30	0.50	0.51	0.50	0.48	0.498	14.93
S-64	30	0.57	0.58	0.57	0.56	0.570	17.10
S-65	30	0.56	0.55	0.53	0.55	0.548	16.42
S-67	30	0.55	0.55	0.55	0.55	0.550	16.50
S-68	30	0.46	0.46	0.48	0.48	0.470	14.10
S-69	30	0.50	0.49	0.50	0.51	0.500	15.00
S-70	30	0.64	0.66	0.68	0.69	0.688	20.03
S-71	30	0.64	0.64	0.65	0.65	0.645	11.35
S-72	30	0.60	0.60	0.58	0.60	0.595	17.85
S-73	30	0.63	0.63	0.64	0.64	0.635	19.05
S-74	30	0.47	0.48	0.48	0.47	0.425	14.25
S-75	30	0.73	0.73	0.72	0.73	0.728	21.82
S-76	30	0.71	0.71	0.71	0.71	0.710	21.30
S-77	30	0.71	0.71	0.72	0.72	0.715	21.45
S-78	30	0.70	0.70	0.70	0.70	0.700	21.00
S-79	30	0.70	0.70	0.71	0.71	0.705	21.15
S-80	30	0.67	0.69	0.69	0.69	0.690	20.70
S-81	30	0.68	0.67	0.68	0.67	0.675	20.25
S-82	30	0.74	0.74	0.74	0.74	0.740	22.20
S-83	30	0.74	0.72	0.74	0.75	0.738	22.13
S-84	30	0.81	0.80	0.85	0.83	0.833	24.68
S-85		0.00	0.00	0.35x3	0.26x10	0.913	0.91
S-86	30	0.60	0.60	0.65	0.65	0.625	18.75
S-87	30	0.55	0.55	0.55	0.55	0.550	16.50
S-88	30	0.55	0.55	0.55	0.55	0.550	16.50
S-89	30	0.60	0.60	0.60	0.60	0.600	18.00
S-90	30	0.56	0.58	0.61	0.60	0.588	17.63
S-91	30	0.70	0.67	0.69	0.68	0.690	20.70
S-92	30	0.98	1.00	0.93	0.94	0.963	28.88
S-93	100	0.33	0.35	0.32	0.32	0.330	33.00
S-94	100	0.42	0.41	0.46	0.42	0.428	42.75
S-95	100	0.46	0.51	0.48	0.49	0.485	48.50
S-96	30	0.64	0.64	0.68	0.71	0.668	20.03
S-97	100	0.39	0.40	0.43	0.41	0.408	40.75
S-98	100	0.38	0.41	0.38	0.38	0.388	38.75
S-99	100	0.36	0.39	0.36	0.36	0.368	36.75
S-100	100	0.38	0.35	0.36	0.36	0.363	36.25
S-101	100	0.44	0.48	0.47	0.42	0.453	45.25
S-102	100	0.51	0.54	0.62	0.58	0.563	56.25

TABLE 3 (Cont'd)

NIROP • WEST AREA • CONDUCTIVITY

DATA NO.	SCALE	READING				AVE READING	MILLIMHOS
S-103	100	0.46	0.49	0.49	0.46	0.475	47.50
S-104	100	0.37	0.40	0.36	0.35	0.370	37.00
S-105	100	0.46	0.49	0.50	0.49	0.455	48.50
S-106	100	0.35	0.37	0.36	0.35	0.379	35.75
S-107	100	0.21	0.22	0.20	0.19	0.255	25.50
S-108	100	0.43	0.42	0.45	0.41	0.425	42.75
S-109	100	0.36	0.28	0.27	0.24	0.288	28.75
S-110	100	0.40	0.42	0.39	0.38	0.375	39.75
S-111	100	0.39	0.42	0.38	0.36	0.388	38.75
S-112	100	0.27	0.25	0.25	0.25	0.255	25.50
S-113	100	0.28	0.31	0.28	0.29	0.290	29.00
S-114	100	0.31	0.34	0.32	0.33	0.325	32.50
S-116	100	0.32	0.31	0.37	0.37	0.343	34.25
S-117	100	0.28	0.29	0.27	0.27	0.278	27.75
S-118	100	0.26	0.28	0.26	0.26	0.265	26.50
S-119	100	0.33	0.31	0.30	0.30	0.310	31.00
S-120	100	0.44	0.44	0.47	0.45	0.450	45.00
S-121	100	0.36	0.37	0.34	0.33	0.350	35.00
S-122	100	0.40	0.42	0.40	0.41	0.405	40.75
S-123	100	0.33	0.37	0.35	0.34	0.348	34.75
S-124	100	0.34	0.37	0.34	0.34	0.348	34.75

PART II

MAGNETOMETER SURVEY

6 JUNE 1983

DEPARTMENT OF THE ARMY
MISSOURI RIVER DIVISION, CORPS OF ENGINEERS
DIVISION LABORATORY
OMAHA, NEBRASKA 68102

MRD Lab. No. 83/163

6 JUN 1983

Subject: NIROP, Fridley, MN Geophysical Survey to Locate Buried Waste Sites Report Series No. 2 (FINAL)

Project: NIROP Fridley, MN
Intended Use:
Source of Material:

Submitted by: Chief, Engineering Division, Omaha District
Date Sampled: May 4 - 18, 1983, Date Received:
Method of Test or Specification: Geophysical Survey by Conductivity Meter and Magnetometer
References: (A) Letter Request dated 1 April 1983
(B) MRD Lab No. 83/163, Report Series No. 1

INTRODUCTION

1. This report series concludes the discussion begun in Report Series No. 1, of the geophysical survey methods used in attempting to define buried waste sites at NIROP, Fridley, MN. The use of the proton magnetometer is discussed in this report. Report Series No. 1 must be referred to for a discussion of the equipment and survey methods used in the magnetometer survey.

BURIAL SITE DISCUSSION

2. Magnetometer data is presented in Tables 4, 5, and 6 and on the contour map of Figure 3. It is noted in the Tables that the readings are displayed as five digit numbers and the corrected readings and contour map data points as three digit numbers. It was expedient to establish 58,000 gammas as a zero level to eliminate the clutter of numbers at the data points and along the contour lines. Magnetic force values less than 58,000 gamma are designated with a negative value and are equal to the subtraction of the average reading from 58,000, after correction for the diurnal shift effect. Magnetic force values greater than 58,000 gamma are positive values equal to the average reading minus 58,000 after correction for the diurnal shift effect. The contour levels range from 0 to 1000 in value. Thus all values less than 0 fall within a 0 contour and all values greater than 1000 fall within a 1000 contour. This allows the contour map to use a contour interval that is most applicable to the greatest portion of the data and to eliminate contour intervals that are too gross to allow the development of significant areas.

3. The contour map of Figure 3 indicates that considerable derangement of the magnetic force lines has taken place. Note particularly the North-South trend of the contours at the west edge of the survey area, the

general east-west trend of the contours along the railroad tracks of all three areas, the east-west trend near the fence of the east area, and the east-west trend along the metal tables of the center and west areas. In the west area are numerous small zero value contours at regular intervals. These correspond to steel sign posts used to delineate the FMC storage sectors. Apart from all the interference factors there are areas delineated by the magnetometer survey that roughly correspond to interest areas delineated by the conductivity survey. Eleven such areas are indicated on the contour map and each is discussed in the succeeding paragraphs.

A.1. This area roughly corresponds to Area 3 of the Conductivity survey. Unfortunately there is a steel post exerting influence on the shape of the area, but it seems to be roughly parallel to the east-west trend of a puported burial site.

A.2. This area roughly corresponds to Area 10 of the conductivity survey. Again, though, there is a strong influence by the electrical system pole and a steel sign post.

A.3. Area 3 of the magnetic survey encompasses a portion of the eastern end of the barrel trench delineated by Area 3 of the conductivity survey. However, it extends much further to the north than does the area of the conductivity survey. This lends support to the lack of confidence in the magnetometer survey.

A.4. The occurence of this area is probably due to the steel sign post located near the negative data point. However, the area also occurs near the well defined Area 5 of the conductivity survey.

A.5. This area also agrees roughly with the conductivity Area 5 and probably is more indicative of the buried material already delineated.

A.6. This area has a rough counterpart in the conductivity survey Area 9. However, the conductivity survey indicates this to be an area of low not high conductivity that would be expected of a magnetic area.

A.7. This area corresponds directly to a foundry sand area delineated by the conductivity survey (Area 13).

A.8. This area corresponds to Area 12 of the conductivity survey and is an area of foundry sand disposal.

A.9. This area corresponds to conductivity survey Area 17 which is a low conductivity area. Most likely the pipeline that traverses this area is most responsible for the magnetic survey results.

A.10. This area tends to indicate the presence of the pipeline that traverses the east area and also the effect of the railroad tracks.

A.11. This area is not delineated by the contour interval, however an 800 contour would envelope it and thus delineate an area corresponding to Area 20 of the conductivity survey.

4. At the west edge of the center area is an area without data. At the time of making the magnetic survey of the center area, there was considerable activity at the east edge of the west area and along the main road separating the two areas. It was not possible to obtain repeatable readings. The next opportunity to take readings at these data points was two days later. It was felt that over such a long interval the effect of the diurnal shift would be too great to compensate for and would tend to distort the readings, hence no data was collected.

CONCLUSION

5. Although it is quiet easy to gather magnetometer data it is not easily and reliably interpreted in these circumstances. This area is too small and crowded with interference that distorts the data readings. In literature describing the operation of the magnetometer it is recommended that readings within 200 feet of known interference not be used. Thus the entire area is not a good subject for a magnetometer survey. Despite this the survey was performed with the result that in a gross manner there is some agreement with the findings of the conductivity survey. These findings can not be used alone as definitive. If the circumstances could be altered where there is no interference present the magnetometer may provide definitive results.

6. The electrical conductivity meter provides definitive results in this confined area. Some interference is experienced with the conductivity meter, but to a considerably less degree than the magnetometer. Location of possible and likely waste burial sites are best delineated by the conductivity meter.

Submitted by:

R. K. SCHLENKER, P.E.
Director, MRD Laboratory

TABLE 4

NIROP · WEST AREA · MAGNETOMETER

DATA No	READING				AVE. READING	TIME	CORRECTED READING
ZERO	58 696	58 698	58 698	58 698	58 698	1217	
P-1	55 721	55 772	55 719	55 729	55 735	1219	- 2265
P-2	58 673	58 673	58 672	58 666	58 671	1220	671
P-3	63 015	63 102	63 123	63 170	63 102	1221	+ 5102
P-4	58 973	59 001	59 006	59 004	58 996	1222	996
P-5	58 269	58 267	58 270	58 271	58 269	1223	268
P-6	62 428	62 424	62 080	62 485	62 405	1224	+ 4404
P-7	60 643	60 067	60 217	60 114	60 260	1333	+ 2259
P-8	62 096	62 015	62 585	61 758	62 114	1334	+ 2111
P-11	58 454	58 446	58 439	58 435	58 444	1335	440
P-12	58 551	58 560	58 561	58 560	58 558	1336	553
P-13	58 837	58 837	58 837	58 839	58 838	1225	837
P-14	58 818	58 824	58 820	58 821	58 821	1226	820
P-15	58 896	58 897	58 898	58 897	58 897	1227	896
P-16	57 591	57 593	57 597	57 587	57 592	1228	- 409
P-17	56 601	57 027	56 801	56 608	56 759	1229	- 1242
P-18	59 371	59 366	59 355	59 346	59 360	1231	+ 1359
P-19	57 379	57 386	57 374	57 404	57 386	1232	- 616
P-20	58 699	58 699	58 699	58 698	58 699	1233	697
P-21	57 159	57 151	57 145	57 165	57 155	1234	- 847
P-22	59 028	59 019	59 005	59 018	59 018	1235	+ 1016
P-23	56 686	56 677	57 161	57 081	56 901	1236	- 1101
P-24	59 264	59 266	59 261	59 263	59 264	1239	+ 1262
P-25	57 197	57 212	57 252	57 246	57 227	1337	221
P-26.	58 751	58 753	58 754	58 755	58 753	1338	746
P-29	58 728	58 727	58 729	58 729	58 728	1339	720
P-30	58 676	58 679	58 680	58 680	58 679	1340	670
P-31	58 687	58 688	58 687	58 687	58 687	1242	684
P-32	58 022	58 025	58 021	58 012	58 020	1243	017
P-33	58 584	58 581	58 582	58 580	58 582	1244	579
P-34	58 573	58 567	58 569	58 570	58 570	1248	567
P-35	58 642	58 641	58 642	58 643	58 642	1249	639
P-36	58 485	58 488	58 489	58 488	58 488	1250	484
P-37	58 233	58 231	58 230	58 233	58 232	1302	227
P-38	58 233	58 236	58 239	58 236	58 236	1303	231
P-39	58 166	58 166	58 167	58 167	58 166	1305	161
P-40	58 950	58 946	58 944	58 941	58 945	1306	940
P-41	58 522	58 521	58 522	58 522	58 522	1307	517
P-42	58 595	58 594	58 596	58 596	58 595	1308	589
P-43	58 527	58 928	58 929	58 930	58 928	1341	918
P-44	58 454	58 455	58 455	58 456	58 455	1342	444
SECONDARY	CENTERS						
S-1	58 423	58 426	58 426	58 425	58 425	1318	418
S-2	58 931	58 929	58 937	58 937	58 934	1319	927
S-3	58 889	58 888	58 888	58 887	58 888	1320	881
S-4	58 776	58 772	58 778	58 782	58 777	1321	770
S-5	58 920	58 920	58 919	58 919	58 920	1322	913

TABLE 4 (Cont'd)

NIROP • WEST AREA • MAGNETO

DATA No	READING				AVE. READING	TIME	CORR REA
S-6	58 929	58 926	58 921	58 924	58 925	1323	
S-7	58 825	58826	58 825	58826	58 826	1324	
S-8A	58 641	58 640	58 640	58 638	58 640	1325	
S-8B	58 596	58598	58597	58597	58 597	1325	
S-9	58 518	58518	58519	58518	58 518	1326	
S-10	58 574	58 571	58 570	58 570	58 571	1327	
S-11	58 749	58749	58 747	58 748	58 748	1328	
S-12	58 612	58 612	58 611	58 611	58 612	1329	
S-13	58 551	58 558	58 556	58 561	58 557	1346	
S-14	58 613	58 615	58 619	58 621	58 617	1347	
S-15	58 749	58759	58 761	58 758	58 758	1348	
S-16	58 320	58 323	58 325	58 326	58 324	1348	
S-17	59 840	59880	59 910	59 865	59 874	1351	+
S-18	57 835	57 652	57 786	57 785	57 764	1352	-
S-19	55 930	55763	55905	56 060	55 914	1333	-
S-20	64 056	63 939	63 865	63 838	63 924	1334	+
S-21	63 330	63276	63352	63 231	63 297	1335	+
S-22	59 380	59 361	59 363	59 382	59 372	1336	+
S-23	63 908	63473	63276	63 637	63 574	1337	+
S-24	63 035	63 024	63 044	62 996	63 025	1338	+
S-25	58 026	58 026	58 023	58 024	58 025	1339	
S-26	58 991	58 982	58 986	58 982	58 985	1340	
S-27	59 345	59 346	59 340	59 331	59 340	1341	+
S-28	58 593	58 580	58 574	58 569	58 579	1342	
S-29	59 398	59 105	58 998	59281	59 196	1343	+
S-30	59 121	59126	59 113	59 110	59 118	1344	+
S-31	59 140	59140	59 142	59 141	59 141	1344	+
S-32	58 531	58 531	58 533	58 531	58 532	1345	+
S-33	57 225	57214	57227	57234	57225	1346	-
S-34	58 545	58540	58 539	58 544	58 542	1347	
S-35	58 611	58 605	58 606	58 605	58 607	1348	
S-36	57 657	57656	57675	57677	57 666	1349	-
S-37	57 891	57 864	57 870	57 884	57 877	1354	-
S-38	59 325	59322	59 321	59 320	59 322	1354	+
S-39	58 942	58953	58 952	58 950	58 949	1355	
S-40	58 466	58 470	58 467	58 464	58 467	1356	
S-42	57 923	57926	57928	57 929	57 926	1357	-
S-43	59 038	59040	59 040	59 037	59 039	1358	+
S-44	58 363	58362	58 363	58 363	58 363	1350	
S-45	59 357	59368	59 352	59 363	59 360	1351	+
S-46	59 480	59 469	59 466	59 475	59 472	1352	+
S-47	57 726	57741	57 734	57 736	57 731	1353	-
S-48	57 737	57729	57 735	57 726	57 732	1354	-
S-49	57 431	57438	57435	57 436	57 435	1355	-
S-50	58 216	58 208	58.210	58 206	58 210	1356	
S-51	58 534	58 532	58 533	58 536	58 534	1357	
S-[illegible]	58 706	58 706	58 706	58 704	58 706	1358	

TABLE 4 (cont'd)

NIROP · WEST AREA · MAGNETOMETER

Log No	Reading				Ave. Reading	Time	Corrected Reading
S-53	58 749	58 746	58 747	58 750	58 748	1359	737
S-54	58 579	58 569	58 568	58 568	58 571	1400	560
S-55	58 919	58 919	58 919	58 917	58 918	1401	906
S-56	59 771	59 766	59 768	59 764	59 767	1402	+1755
S-57	59 174	59 174	59 174	59 175	59 174	1403	+1162
S-58	58 296	58 296	58 298	58 301	58 298	1404	286
S-59	58 763	58 763	58 762	58 758	58 762	1405	750
S-60	58 492	58 503	58 499	58 496	58 498	1405	486
S-61	58 088	58 086	58 086	58 087	58 087	1406	075
S-62	58 410	58 406	58 404	58 398	58 404	1407	368
S-63	58 562	58 562	58 560	58 561	58 561	1408	524
S-64	59 141	59 140	59 139	59 144	59 141	1409	+1103
S-65	57 368	57 383	57 388	57 387	57 382	1410	- 657
S-67	57 985	57 980	57 977	57 981	57 981	1411	- 059
S-68	58 545	58 533	58 526	58 528	58 533	1411	493
S-69	58 795	58 798	58 799	58 800	58 798	1407	786
S-70	58 412	58 413	58 410	58 412	58 412	1408	400
S-71	58 685	58 691	58 691	58 685	58 688	1409	675
S-72	58 925	58 923	58 930	58 928	58 926	1410	914
S-73	58 674	58 673	58 675	58 675	58 674	1412	661
S-74	58 716	58 716	58 715	58 715	58 716	1413	703
S-75	58 705	58 704	58 705	58 705	58 705	1414	682
S-76	58 776	58 775	58 776	58 776	58 776	1415	763
S-77	58 762	58 762	58 763	58 762	58 762	1416	749
S-78	58 738	58 738	58 737	58 738	58 738	1417	725
S-79	58 724	58 725	58 726	58 726	58 725	1417	712
S-80	58 746	58 746	58 746	58 746	58 746	1418	733
S-81	58 753	58 753	58 753	58 752	58 753	1419	740
S-82	58 693	58 689	58 688	58 689	58 690	1420	676
S-83	58 636	58 640	58 642	58 638	58 639	1421	625
S-84	58 636	58 636	58 635	58 636	58 636	1421	622
S-85	58 804	58 804	58 805	58 805	58 804	1422	790
S-86	58 574	58 571	58 569	58 571	58 571	1423	557
S-87	58 790	58 790	58 790	58 789	58 790	1412	749
S-88	58 806	58 807	58 806	58 805	58 806	1413	764
S-89	58 733	58 730	58 730	58 731	58 731	1414	688
S-90	58 390	58 402	58 403	58 402	58 399	1415	355
S-92	58 573	58 570	58 570	58 571	58 571	1415	527
S-93	58 784	58 784	58 786	58 787	58 785	1416	740
S-94	58 595	58 596	58 598	58 596	58 596	1425	582
S-95	58 645	58 644	58 642	58 643	58 644	1426	630
S-96	57 964	57 960	57 961	57 959	57 961	1427	947
S-97	58 691	58 692	58 692	58 692	58 692	1428	678
S-98	58 650	58 649	58 650	58 651	58 650	1429	636
S-99	58 607	58 609	58 609	58 608	58 608	1430	784
S-100	57 069	56 916	56 837	56 851	56 918	1432	-1197
S-101	58 608	58 606	58 607	58 605	58 607	1432	582

TABLE 4 (Cont'd)

NIROP · WEST AREA · MAGNETOMETER

Loc. No	Reading				Ave. Reading	Time	Corrected Reading
S-102	58 721	58 716	58 719	58 717	58 718	1433	703
S-103	58 669	58 674	58 672	58 670	58 671	1434	656
S-104	57 165	57 316	57 329	57 335	57 286	1435	- 729
S-105	58 661	58 659	58 661	58 662	58 661	1436	646
S-106	58 508	58 506	58 509	58 507	58 508	1437	492
S-107	57 525	57 550	57 543	57 547	57 541	1438	- 475
S-108	56 864	56 820	56 834	56 817	56 834	1439	- 1182
S-109	58 534	58 541	58 540	58 540	58 539	1439	523
S-110	58 737	58 737	58 738	58 736	58 737	1440	721
S-111	58 414	58 418	58 418	58 416	58 416	1441	400
S-112	57 854	57 851	58 852	58 871	57 857	1417	- 189
S-113	58 721	58 720	58 720	58 720	58 720	1418	673
S-114	58 510	58 571	58 571	58 512	58 511	1419	463
S-115	58 346	58 346	58 343	58 345	58 345	1419	297
S-117	58 315	58 318	58 317	58 322	58 318	1420	269
S-118	58 676	58 675	58 675	58 675	58 675	1421	625
S-119	58 378	58 375	58 376	58 372	58 375	1443	359
S-120	58 625	58 625	58 625	58 624	58 625	1443	609
S-121	58 542	58 543	58 544	58 542	58 543	1444	527
S-122	58 775	58 776	58 773	58 772	58 774	1445	757
S-123	58 292	58 291	58 292	58 293	58 292	1446	275
S-124	58 203	58 195	58 201	58 203	58 200	1448	183
ZERO	58 755	58 756	58 758	58 759	58 757	1423	

TABLE 5

NITROF • CENTER AREA • MAGNETOMETER

Data No	Reading				Ave. Reading	Time	Corrected Reading
[illegible]80	58 750	58 754	58 750	58 750	58 751	0725	
M-1	58 317	58 320	58 322	58 317	58 319	0730	319
M-2	58 983	58 982	58 984	58 981	58 982	0731	982
M-3	58 893	58 893	58 891	58 889	58 892	0732	892
M-4	58 433	58 430	58 429	58 429	58 430	0734	429
M-8	57 817	57 792	57 822	57 814	57 811	0735	- 190
M-9	58 705	58 705	58 703	58 704	58 704	0736	703
M-10	58 665	58 663	58 664	58 664	58 664	0737	662
M-11	58 864	58 865	58 866	58 866	58 865	0738	863
M-12	58 608	58 607	58 608	58 608	58 608	0740	606
M-13	58 777	58 776	58 774	58 776	58 776	0741	773
M-14	58 713	58 713	58 712	58 712	58 712	0742	709
M-15	58 597	58 595	58 597	58 601	58 598	0743	595
M-16	58 559	58 563	58 562	58 563	58 562	0744	559
M-17	58 434	58 427	58 435	58 429	58 431	0745	427
M-20	58 869	58 869	58 869	58 868	58 869	0747	865
M-21	58 488	58 489	58 488	58 488	58 488	0748	484
M-22	57 921	57 936	57 931	57 927	57 929	0749	- 76
M-23	58 632	58 624	58 621	58 623	58 625	0750	620
M-24	58 706	58 705	58 705	58 706	58 706	0751	701
[illegible]-25	58 685	58 685	58 685	58 685	58 685	0752	680
[illegible]-26	57 432	57 438	57 438	57 443	57 438	0753	-568
M-27	58 494	58 497	58 495	58 494	58 495	0754	489
M-28	57 612	57 600	57 601	57 605	57 604	0755	-402
M-29	58 147	58 148	58 147	58 149	58 148	0756	142
M-30	58 602	58 603	58 602	58 603	58 602	0757	596
M-31	58 958	58 958	58 955	58 953	58 956	0758	949
M-32	57 771	57 778	57 780	57 777	57 776	0759	-231
Secondary	Centers						
N-1	57 627	57 622	57 629	57 630	57 627	0803	-381
N-2	58 432	58 447	58 493	58 465	58 459	0804	451
N-3	58 967	58 969	58 970	58 968	58 968	0805	960
N-4	58 500	58 499	58 503	58 504	58 502	0806	493
N-5	59 153	59 152	59 153	59 154	59 153	0807	1144
N-6	59 118	59 121	59 121	59 121	59 120	0808	1111
N-7	59 283	59 276	59 276	59 279	59 278	0809	1269
N-14	58 790	58 788	58 791	58 790	58 790	0812	780
N-15	58 635	58 639	58 641	58 637	58 638	0813	628
N-16	64 665	64 567	64 678	64 830	64 685	0815	6674
N-17	58 532	58 531	58 532	58 532	58 532	0816	521
N-18	58 931	58 929	58 928	58 928	58 929	0817	918
[illegible]-19	58 841	58 839	58 841	58 840	58 840	0818	828
N-20	58 782	58 780	58 780	58 779	58 780	0819	768
N-21	58 694	58 695	58 697	58 696	58 696	0820	684
N-22	59 077	59 077	59 077	59 077	59 077	0821	1065
N-23	59 160	59 160	59 160	59 162	59 160	0821	1148
N-24	64 418	64 372	64 389	64 415	64 398	0823	6385

TABLE 5 (CONT'D)

NIROP · CENTER AREA · MAGNETOMETER

C. No	READING				AVE. READING	TIME	CORRECTED READING
N-25	56 680	56 728	56 785	56 710	56 726	0824	-1287
N-26	62 156	62 511	62 366	62 697	62 432	0825	4419
N-27	58 858	58 859	58 860	58 863	58 860	0826	846
N-28	57 853	57 821	57 855	57 864	57 848	0827	-166
N-29	59 199	59 202	59 202	59 201	59 201	0828	1187
N-30	58 436	58 436	58 436	58 436	58 436	0830	422
N-31	58 785	58 786	58 785	58 786	58 786	0831	771
N-32	58 747	58 747	58 747	58 747	58 747	0832	732
N-33	58 763	58 765	58 764	58 764	58 764	0833	749
N-34	58 803	58 803	58 802	58 804	58 803	0834	788
N-35	58 475	58 476	58 476	58 475	58 476	0835	460
N-36	58 819	58 818	58 816	58 815	58 817	0835	801
N-37	58 836	58 836	58 834	58 835	58 835	0836	819
N-38	58 732	58 735	58 733	58 731	58 733	0838	717
N-39	58 535	58 537	58 539	58 539	58 538	0839	521
N-40	58 469	58 465	58 470	58 468	58 468	0857	447
N-41	58 435	58 436	58 439	58 443	58 438	0858	416
N-45	59 187	59 180	59 186	59 189	59 186	0901	1163
N-46	58 735	58 735	58 737	58 736	58 736	0902	713
N-47	58 904	58 909	58 908	58 907	58 907	0903	884
N-48	58 757	58 757	58 758	58 759	58 758	0904	734
N-49	58 822	58 823	58 822	58 820	58 822	0905	798
N-50	58 591	58 590	58 590	58 589	58 590	0906	566
N-51	58 554	58 552	58 553	58 553	58 553	0906	529
N-52	58 404	58 404	58 402	58 403	58 403	0907	379
N-53	58 902	58 900	58 902	58 900	58 901	0908	876
N-54	58 715	58 714	58 711	58 711	58 713	0909	688
N-55	59 439	59 440	59 431	59 432	59 436	0910	1411
N-56	59 786	59 791	59 795	59 798	59 792	0911	1767
N-57	58 616	58 618	58 619	58 618	58 618	0912	583
N-61	58 468	58 476	58 475	58 474	58 473	0912	447
N-62	58 375	58 376	58 376	58 379	58 376	0913	350
N-63	58 306	58 299	58 296	58 296	58 299	0918	272
N-64	59 287	59 275	59 278	59 270	59 278	0919	1251
N-65 A	58 707	58 708	58 707	58 706	58 707	0920	680
N-66	58 700	58 711	58 706	58 713	58 708	0922	681
N-67	58 595	58 594	58 594	58 594	58 594	0924	566
N-65 B	58 413	58 411	58 412	58 412	58 412	0921	385
N-68	58 715	58 716	58 715	58 715	58 715	0924	687
N-69	58 953	58 952	58 951	58 949	58 951	0925	923
N-70	59 030	59 029	59 032	59 021	59 028	0927	999
N-71	58 723	58 725	58 724	58 714	58 722	0930	693
N-72	58 914	58 912	58 914	58 915	58 914	0931	884
N-73	58 165	58 160	58 164	58 159	58 162	0932	132
N-74	58 036	58 028	58 036	58 039	58 035	0932	5
N-75	58 947	58 952	58 950	58 949	58 949	0933	919
N-76	58 834	58 833	58 832	58 832	58 833	0934	802

NIROP • TABLE 5 (CONT'D.) CENTER AREA • MAGNETOMETER

DATA No	READING				AVE. READING	TIME	CORRECTED READING
N-77	58 779	58 760	58 782	58 781	58 780	0936	749
N-78	58 637	58 638	58 636	58 635	58 636	0938	605
N-82	58 570	58 565	58 561	58 561	58 564	0940	532
N-83	58 859	58 856	58 855	58 853	58 856	0941	824
N-84	58 373	58 366	58 367	58 365	58 368	0942	336
N-85	57 862	57 871	57 850	57 862	57 869	0944	-164
N-86	58 409	58 416	58 411	58 406	58 410	0945	377
N-87	58 055	58 061	58 059	58 059	58 058	0946	25
N-88	57 628	57 634	57 644	57 636	57 636	0948	-398
ZERO	58 788	58 787	58 786	58 787	58 787	0950	

TABLE 6

NIROP · EAST AREA · MAGNETOMETER

Co No	Reading				Ave. Reading	Time	Corrected Reading
[illegible]	58 778	58 780	58 781	58 780	58 780	0731	780
K-1	58 795	58 794	58 794	58 793	58 794	0732	794
K-2	59 208	59 207	59 206	59 203	59 206	0733	1206
K-3	58 812	58 812	58 813	58 812	58 812	0735	812
K-4	58 823	58 823	58 822	58 823	58 823	0736	823
K-5	58 367	58 365	58 368	58 367	58 367	0737	367
K-6	58 743	58 855	58 039	57 565	58 300	0738	300
K-7	58 482	58 477	58 477	58 479	58 479	0739	479
K-8	58 596	58 594	58 594	58 593	58 594	0740	594
K-9	56 617	56 592	56 579	56 618	56 602	0741	-1399
K-10	58 313	58 314	58 313	58 311	58 313	0742	312
K-11	58 840	58 840	58 840	58 840	58 840	0743	839
K-12	58 828	58 825	58 827	58 827	58 827	0744	826
K-13	58 779	58 778	58 777	58 777	58 778	0745	777
K-14	58 625	58 624	58 622	58 623	58 624	0746	623
K-15	58 630	58 628	58 628	58 628	58 628	0747	627
K-16	59 166	59 169	59 167	59 172	59 168	0748	1167
K-17	58 729	58 729	58 729	58 728	58 729	0749	728
K-18	58 763	58 762	58 763	58 763	58 763	0751	762
K-19	58 835	58 834	58 836	58 836	58 835	0752	834
[illegible]20	58 642	58 641	58 641	58 641	58 641	0752	640
[illegible]21	57 997	58 012	58 008	58 005	58 006	0756	005
K-22	57 918	57 923	57 923	57 918	57 920	0757	-081
K-23	57 387	57 381	57 385	57 393	57 386	0758	-615
K-24	58 524	58 524	58 523	58 524	58 524	0759	523
K-25	58 373	58 373	58 372	58 373	58 373	0801	371
K-26	57 927	57 933	57 930	57 909	57 925	0802	-077
K-27	58 440	58 441	58 441	58 441	58 441	0803	439
K-28	56 844	56 853	56 862	56 892	56 858	0804	-1144
SECONDARY CENTERS							
J-1	58 703	58 702	58 702	58 702	58 702	0808	700
J-2	58 884	58 883	58 882	58 882	58 883	0809	881
J-3	58 788	58 788	58 787	58 787	58 788	0810	786
J-4	58 272	58 276	58 278	58 290	58 279	0811	277
J-5	58 718	58 595	58 493	58 666	58 670	0813	668
J-6	58 627	58 627	58 626	58 626	58 626	0814	624
J-7	58 648	58 647	58 650	58 649	58 648	0828	645
J-8	58 894	58 894	58 894	58 895	58 894	0830	891
J-9	58 525	58 526	58 526	58 529	58 526	0831	523
J-10	58 700	58 701	58 701	58 700	58 700	0832	697
J-11	58 770	58 771	58 772	58 772	58 771	0833	768
[illegible]12	60 245	60 238	60 256	60 231	60 242	0834	2239
J-13	58 933	58 935	58 935	58 935	58 934	0835	931
J-14	58 742	58 743	58 743	58 744	58 743	0836	740
J-15	58 603	58 605	58 604	58 604	58 604	0837	601
J-16	58 767	58 768	58 768	58 766	58 767	0838	764
J-17	58 918	58 916	58 918	58 918	58 918	0839	915

NIROP · EAST AREA · MAGNETOMETER

C. No	Reading				Ave. Reading	Time	Corrected Reading
[illegible]18	58 899	58 898	58 897	58 897	58 898	0840	895
J-19	58 951	58 951	58 950	58 951	58 951	0841	947
J-20	58 847	58 847	58 847	58 847	58 847	0842	843
J-21	58 791	58 791	58 791	58 792	58 791	0843	787
J-22	58 795	58 794	58 793	58 794	58 794	0844	790
J-23	58 584	58 587	58 587	58 587	58 586	0846	582
J-24	58 611	58 609	58 611	58 611	58 610	0847	606
J-25	58 918	58 918	58 917	58 917	58 918	0847	914
J-26	58 827	58 826	58 825	58 825	58 826	0849	822
J-27	58 820	58 819	58 820	58 819	58 820	0850	816
J-28	58 781	58 780	58 780	58 780	58 780	0851	776
J-29	58 627	58 626	58 626	58 624	58 626	0852	622
J-30	58 159	58 158	58 159	58 161	58 159	0853	155
J-31	58 351	58 353	58 353	58 356	58 353	0854	349
J-32	58 171	58 170	58 170	58 171	58 170	0855	166
J-33	58 514	58 513	58 513	58 512	58 513	0856	509
J-34	58 993	58 995	58 995	58 997	58 995	0856	991
J-35	58 573	58 573	58 574	58 573	58 573	0858	569
J-36	58 648	58 647	58 649	58 648	58 648	0859	642
J-37	58 668	58 667	58 667	58 669	58 668	0900	664
[illegible]8	58 448	58 457	58 454	58 446	58 451	0901	446
[illegible]39	58 445	58 444	58 445	58 445	58 445	0902	440
J-40	58 260	58 257	58 256	58 258	58 258	0903	253
J-41	58 687	58 687	58 686	58 686	58 686	0904	681
J-42	58 200	58 177	58 176	58 174	58 182	0905	177
J-43	57 370	57 807	57 438	57 820	57 609	0906	-396
ZERO	58 786	58 785	58 784	58 783	58 784	0908	779

PART III

HAZARDOUS MATERIAL TECHNICAL CENTER ANALYSIS

13 JUNE 1983

Hazardous Materials Technical Center

P.O. Box 8168
Rockville, MD 20856-8168

(800) 638-8958
In Maryland call collect
(301) 468-8858
FTS No. (202) 468-8858

Date: June 13, 1983

Subject: NIROP, Fridley, MN, Buried Waste Sites Recommended for Excavation

Project: NIROP, Fridley, MN

Reference Material:
1. NEESA report 13-029
2. MRD, Corps of Engineers Geophysical Survey Report dated 5/27/83
3. Air-photo analyses performed by the Dynamac Corporation hydrogeological staff and the Minnesota Pollution Control Agency (MPCA)

1.0 INTRODUCTION

1.1 This report identifies nine (9) potential waste disposal sites at NIROP which, herein, are being recommended for further investigation by excavation. These nine sites have been selected by thoroughly reviewing and cross-referencing several sources of information regarding potential waste disposal sites at NIROP. These information sources include:

1.1.1 Verbal communications with NIROP plant personnel as summarized in NEESA report 13-029.

1.1.2 Geophysical Survey Report dated 5/27/83 which was provided by Missouri River Division Laboratory, Corps of Engineers.

1.1.3 Air-photo analyses performed by the Hazardous Materials Technical Center (HMTC) hydrogeological staff and MPCA.

Because this report considers several information sources pertinent to site selection, its conclusions may be more reliable than previous reports which do not consider all of the above information sources.

2.0 SUMMARY OF EXISTING INFORMATION

2.1 Figure 1 is from the NEESA report. This figure identifies the approximate locations of two waste disposal pits (site 2 in Figure 1) and two waste disposal trenches (site 1 in Figure 1), as determined by verbal communications with NIROP personnel. In Figure 2 these correspond to sites 3, 6, 18, and 19. In order to better-delineate these potential waste disposal areas, two geophysical surveys were conducted.

2.2 The results of the magnitometer survey were inconclusive due to interference from numerous large metallic objects near the sites. However, the results of the conductivity survey were useful in further defining the locations of the potential waste sites. Figure 2 summarizes the major conductivity anomalies. As indicated in the original conductivity report produced by the Corps, areas with anomalously low or zero conductivity values are more likely due to buried low conductivity materials such as rubble and concrete rather than metallic waste drums. The conductivity survey indicates that such sites include 1, 2, 4, 8, 9, 14, and 17. High conductivity areas suggest buried high-conductivity materials such as scrap metal or waste drums. These higher priority areas (3, 5, 6, 7, 10, 15) are identified with vertical lines in Figure 2. Several sites were identified as high-conductivity anomalies but are not presented here as waste disposal sites to be excavated because it was [redacted] conductivity report) that the anomalously high conductivity readings were probably due to non-hazardous waste materials. These sites are: 11, 12, 13, 16, and 20. The waste-site locations indicated in the NEESA report (Figure 1) have been transferred to their approximate locations in Figure 2 (slanted shading). Overlap of the areas denoting potential waste sites identified by the NEESA report and the conductivity survey indicates those areas which have a greater probability of being hazardous waste disposal sites.

2.3 The final sources of information regarding potential hazardous waste sites on the NIROP property are the air-photo analyses performed by HMTC and MPCA. Information from the air-photos is considered least reliable because in no case were actual waste drums observed in the photographs. Also, some of the land-surface blemishes visable on the photographs can be produced by any number of non-waste disposal activities related to the operation of NIROP, such as dumping of foundry sand, movement of stored yard materials, grading, etc. Nevertheless, all potential waste disposal sites identified on aerial photographs of the NIROP plant are also incorporated into Figure 2 (stippling).

3.0 CONCLUSION

3.1 On the basis of the degree of overlap of the potential waste disposal sites identified by the aforementioned information sources and the reliability of the original information source, the following potential waste disposal sites are recommended for excavation in the order of the indicated priority:

HIGH PRIORITY SITES	INTERMEDIATE PRIORITY SITES	LOW PRIORITY SITES
3,5,18	7,6,10	15,17,19

3.2 Four of these sites warrant special consideration:

Site 15: This site was identified as a potential waste disposal site by MPCA. Also, it is a high conductivity anomaly. However, it is approximately coincident with subsurface electrical and propane gas lines, therefore, extreme caution should be exercised during excavation.

Site 10: The northern portion of site 10 is also coincident with subsurface electrical utilities; therefore, appropriate caution should be exercised when excavating this site.

Sites 18 and 19: These sites are separated by a portion of the NN-W trending asphalt runway. During excavation, special consideration should be given to the possibility that any waste materials discovered at these sites may extend under the asphalt runway. If this occurs, it will be necessary to remove the asphalt and excavate the additional waste material.

3.3 If the low priority sites identified above (15, 17, 19) are found to contain hazardous wastes, it will be necessary to re-evaluate some of the sites not included in section 3.1.

APPENDIX B
SITE SAFETY AND HEALTH PLAN

PROVIDED UNDER SEPARATE COVER

APPENDIX A

BAY WEST, INC.,
REPORT OF ACTIVITIES CONDUCTED DURING REMOVAL ACTION

Bay West

EMERGENCY REMOVAL OPERATION
NAVAL INDUSTRIAL RESERVE
ORDNANCE PLANT
for
FMC Corporation
4800 East River Road
Minneapolis, Minnesota

Confidential and Privileged. Do Not Copy or Disseminate Without Written Permission from FMC Corporation

Submitted to:

FMC CORPORATION

Submitted by:

BAY WEST, INC.

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Environmental Compliance Specialist

August 21, 1992

Bay West

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2.0 SITE DESCRIPTION/HISTORY 2

3.0 METHODOLOGY 3

4.0 FINDINGS 4

5.0 CONCLUSIONS/RECOMMENDATIONS 5

6.0 DISCLAIMER 5

APPENDICES

Appendix 1 - Site-Specific Health and Safety Plan

Appendix 2 - Drum Log

Appendix 3 - Photodocumentation

Appendix 4 - Analytical Results

EXECUTIVE SUMMARY

Bay West, Inc. was contracted by FMC Corporation on behalf of the U.S. Navy to conduct an emergency removal operation at the Naval Industrial Reserve Ordnance Plant (NIROP) located at 4800 East River Road, Fridley, Minnesota.

The purpose of this project was to investigate an area identified as a suspected drum disposal site. The site is located north of building #37, adjacent to a concrete pad, in an area referred to as the North 40 Area.

A total of 31 drums were excavated, sampled, and overpacked. Initial field screening (i.e., OVA, HNU) indicated volatile organic compounds were present in 21 of the drums.

Approximately 900 cubic yards of soil and debris were removed from the excavation along with the drums. This material was segregated and stockpiled. The debris consisted of a mixture of trash, rubble, and demolition. Dated waste newspapers found at the site suggest that at least some disposal took place in the early 1970s.

The soil that was separated from the debris (via mechanical screening) was returned to the excavation as backfill (700 - 750 cubic yards). The remaining debris was stockpiled on and covered with polyethylene sheeting on site (150 - 200 cubic yards).

The vertical and horizontal extent of buried material has been defined and the material removed.

Excavated drums will be disposed of via incineration at an EPA Superfund RCRA-licensed facility. Associated debris (screened material) will disposed of at a sanitary landfill or a RCRA-secure landfill pending analytical results.

1.0 INTRODUCTION

Bay West, Inc. was contracted by FMC Corporation on behalf of the U.S. Navy to conduct an emergency removal operation at the Naval Industrial Reserve Ordnance Plant (NIROP) located at 4800 East River Road, Fridley, Minnesota (Figure 1).

The purpose of this project was to investigate an area identified as a suspected drum disposal site. The site is located north of Building #37, adjacent to a concrete pad, in an area referred to as the North 40 Area (Figure 2).

The site was identified in 1983 during an Initial Assessment Study (IAS) conducted as part of the Navy Assessment and Control of Installation Pollutants (NACIP) program. The IAS revealed that drummed wastes were disposed of in the northern portion of the NIROP in 8- to 10-foot deep trenches.

Following the completion of the IAS, a geophysical survey was conducted by the U.S. Army Corps of Engineers (USACE) in the suspected disposal areas. Numerous magnetic anomalies were identified and evaluated as to their potential indicators of buried waste. Nine areas were selected for excavation (test pits), and a total of 43 drums and 1,200 cubic yards of contaminated soil were recovered and disposed of in 1984.

The presence of high concentrations of volatile organic compounds (VOCs) found in soil samples collected from beneath the test pits indicated that an unknown quantity of material was released into the environment. As a result, a soil pore gas survey was implemented to screen and identify areas of VOC-contaminated soil.

In the fall of 1990, further subsurface soil investigations were conducted to verify the results of the soil gas survey and determine any other areas of contamination sources. A series of soil borings were completed in the North 40 Area.

The North 40 Area was divided into subareas; one of these was the area around the concrete pad. Results from soil samples in this area indicated the highest concentrations of VOCs encountered during the investigation. In addition, the subsurface was found to be a mixture of clay and sand, metal slag, cloth, and other debris.

The results of the geophysical, soil gas, and soil boring investigations led to the conclusion that a possible drum disposal site may be located adjacent to the concrete pad.

2.0 SITE DESCRIPTION/HISTORY

The NIROP is operated by the Naval Systems Division of FMC Corporation. The plant has produced naval guns since 1941 and has expanded into the production of guided missile launching systems, torpedo tubes, and hydraulic and electric power drive and control systems.

The NIROP is located in the City of Fridley, on the southernmost tip of Anoka County, Minnesota. The plant is situated approximately ¼-mile east of the Mississippi River and less than one mile south of Interstate 694. The plant is bordered on the west by East River Road and on the east by the Burlington Northern railyard (see site illustration in Figure 1).

The government-owned, contractor-operated portion of the plant encompasses 83 acres. The North 40 Area of the facility is a secured storage area, which is owned by the Navy.

The NIROP site and adjacent properties to the north, east, and south are zoned heavy industrial.

The NIROP site is situated over a sand and gravel aquifer. The aquifer is generally restricted to the Mississippi River Valley and flows westward into the Mississippi River.

3.0 METHODOLOGY

To reduce the accidental spread of hazardous substances by workers from the contaminated area, site work zones were established (Figure 3). The concrete pad was utilized in this effort. All work was conducted according to the site-specific Health and Safety Plan (Appendix 1).

The investigation was initiated by excavating soil at the location of soil boring NBO8 (Figure 3). The excavating activities were conducted using a track-mounted excavator. Excavation continued until the vertical and horizontal extent of buried material was determined.

Excavated soil and debris were stockpiled to the southeast of the excavation. As drums were uncovered, they were bought up to the concrete pad (exclusion zone) with the track excavator's bucket. While in the bucket, the drum and contents were evaluated visually and by field instrumentation (i.e., OVA and HNU). This information was then transcribed to a drum log (Appendix 2). Samples of the drum contents were collected and the drums were overpacked. Drums were assigned and marked with a unique number.

Those drums that did not contain material (i.e., hazardous material) and those containing scrap metal were not overpacked, but were segregated and placed on polyethylene sheeting north of the excavation.

Once the vertical and horizontal extent of buried material was defined and removed, soil samples were collected from the bottom of the excavation and submitted to RMT, Inc., consultant to the Navy, for processing and analysis.

The stockpiled soil/debris was separated by means of a mechanical screening process. The screened soil was then placed back into the excavation cavity (Figure 4). The excavation was brought to grade using soil that was stockpiled at another

location in the North 40 area. A double layer of 6-mil polyethylene sheeting was used to cover the excavation approximately two feet below grade.

Samples that were collected from the drums were taken back to Bay West for evaluation. The samples were divided into waste streams based on field observations and Beilstein's test for halogenated organic compounds. Those samples that tested positive for halogens were composited into one waste stream and those that tested negative were composited into a second waste stream. Solid wastes represented a third waste stream. A sample of each composite was submitted to the Bay West Analytical Laboratory for analysis. The samples were analyzed for incineration disposal parameters.

A photodocumentation record of on-site activities associated with this project is included as Appendix 3.

4.0 FINDINGS

A total of 31 drums were excavated, sampled, and overpacked. Initial field screening (i.e., OVA, HNu) indicated VOCs were present in 21 of the drums (see Appendix 2, Drum Logs).

Final excavation dimensions measured approximately 56 feet by 29 feet with an average depth of 11.2 feet (Figure 5).

Based on field observations and testing for halogenated compounds (i.e., Beilstein), recovered materials were divided into three waste streams (halogenated liquid, non-halogenated liquid, and an unknown solid) and composited.

Analytical results of the three waste streams indicate that the waste is amenable to disposal via incineration (Appendix 4).

Numerous scrap metal drums, empty drums, and drum carcasses were also recovered. Once inspected and determined to be free of material, the drums were segregated and placed on polyethylene sheeting.

Approximately 900 cubic yards of soil and debris were removed from the excavation along with the drums. This material was segregated and stockpiled. The debris consisted of a mixture of trash, rubble, and demolition. Once the soil was separated from the debris (via mechanical screening), approximately 700 to 750 cubic yards were returned to the excavation as backfill. The debris was stockpiled on and covered with polyethylene sheeting on site.

Representative composite samples were obtained from the debris pile. These samples were analyzed for TCLP metals, volatiles, and semi-volatiles as well as EPA's Hazardous Substance List (Priority Pollutants) to determine if the debris can be landfilled at BFI's Pine Bend facility or Chem Waste Management's Emelle, Alabama RCRA-secure landfill.

5.0 CONCLUSIONS/RECOMMENDATIONS

The vertical and horizontal extent of buried material has been defined and the materials removed.

Excavated drums will be disposed of via incineration at an EPA Superfund RCRA-licensed facility. Associated debris (screened material) will be disposed of at a sanitary landfill or a RCRA-secure landfill pending analytical results. The screened soil was returned to the excavation as backfill.

Soil from the bottom of the excavation was collected and made available for sampling to RMT, Inc. Soil contamination in and below the excavation is being addressed by the U.S. Navy in a separate Soils Operational Unit Remedial Program for Federal Facilities under an agreement with the EPA and the Minnesota Pollution Control Agency (MPCA).

6.0 DISCLAIMER

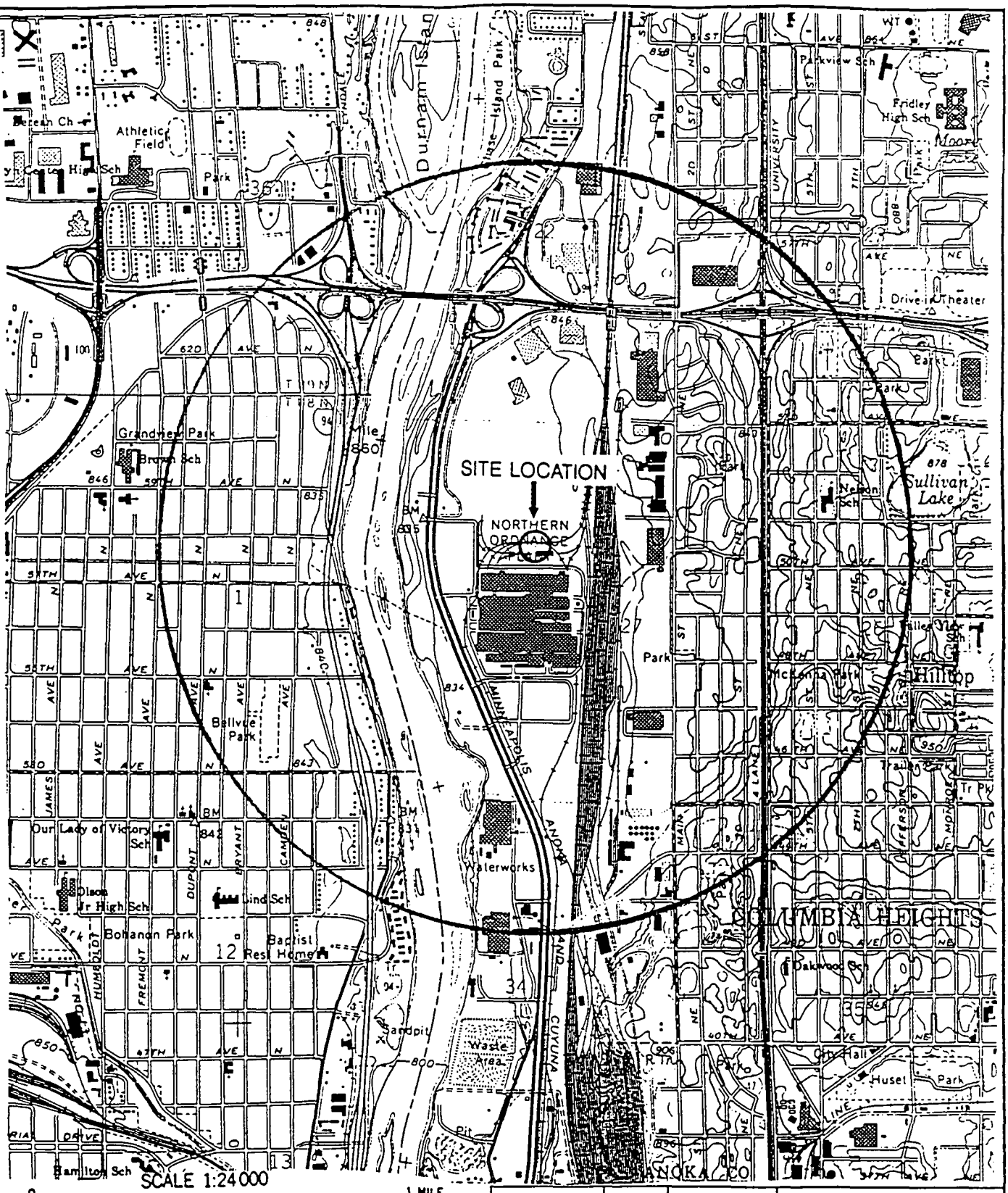
This evaluation has been conducted in a manner consistent with the level of skill and care typically exercised by members of the environmental consulting profession currently providing environmental evaluation services.

The evaluation has been limited to the areas and items specifically proposed in the original scope of work (SOW) and included in this report. It is possible that the property has pollution problems or other buried materials that were not discussed due to the limitations of the SOW. It is also possible that the property may have future environmental liability in areas not yet recognized by today's standards. Bay West, Inc. expressly does not warrant that this property is free of pollutants, containers, etc., nor that all pollutants have been identified.

Bay West

FIGURES

Site Maps

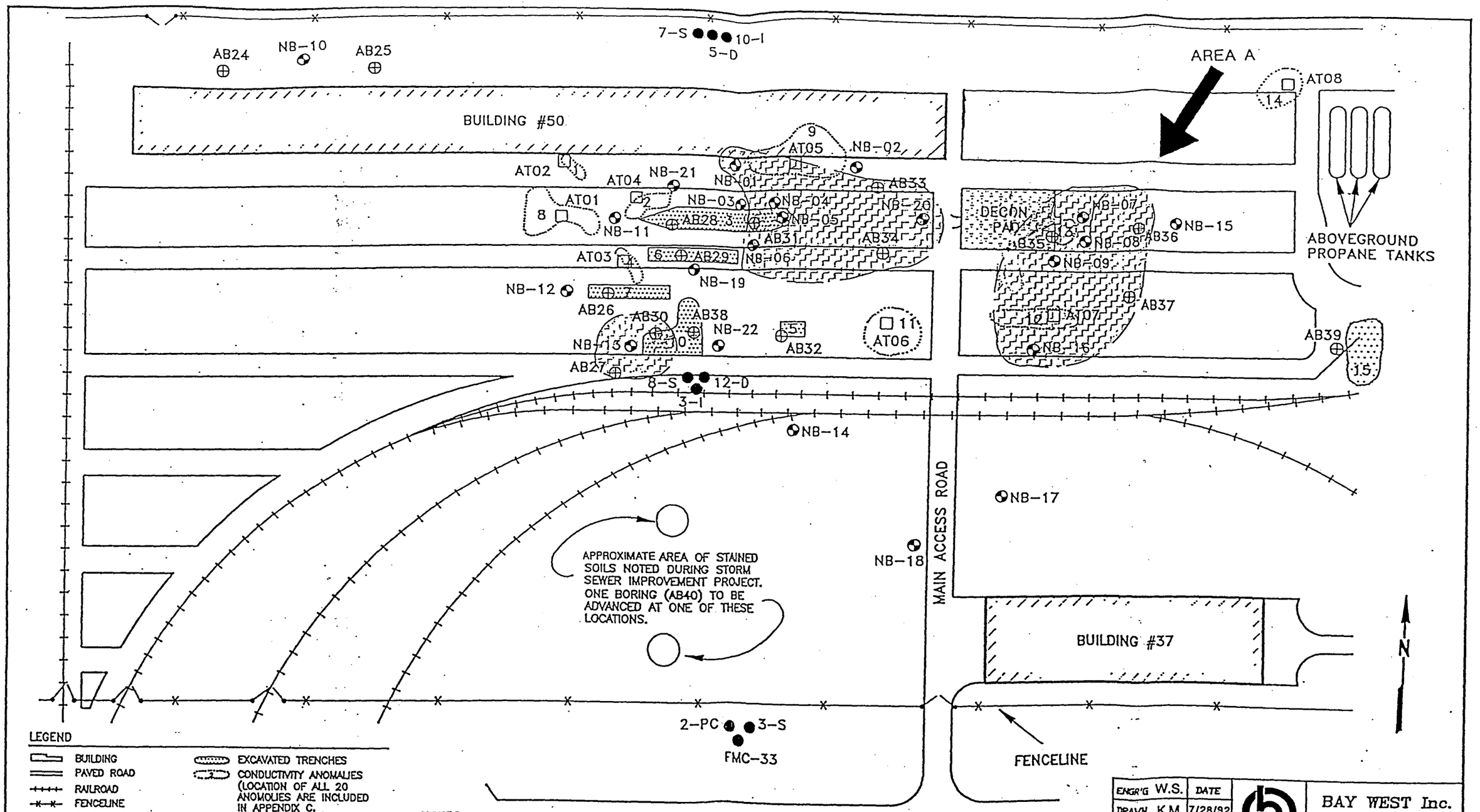


SOURCE:
USGS 7.5 MINUTE
TOPOGRAPHIC
MINNEAPOLIS NORTH, MN
QUADRANGLE

N

QUADRANGLE LOCATION

ENGR'G T.M.	DATE	BAY WEST Inc. ENVIRONMENTAL SERVICES St PAUL MN
DRAWN T.M.	7-22-92	
REV.		
PROJECT NAME FMC BARREL EXCAVATION		
TITLE SITE LOCATION MAP		
DWG. NO. 920276A1	SCALE	FIGURE # 1



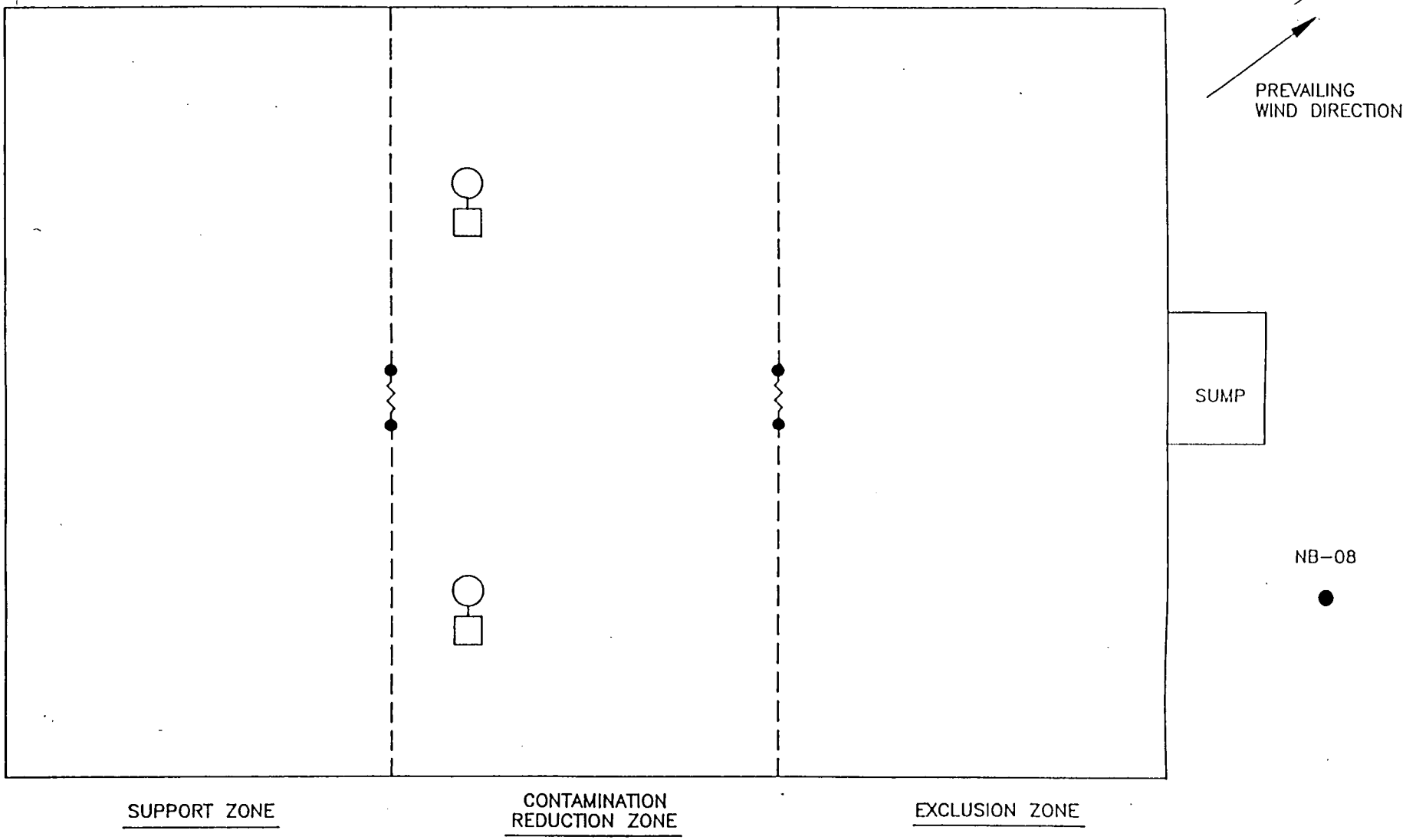
LEGEND

- BUILDING
- PAVED ROAD
- RAILROAD
- FENCELINE
- NB-1 EXISTING BORING LOCATION & NUMBER
- 2-PC MONITORING WELL LOCATION & NUMBER
- AT25 PROPOSED TEST PIT LOCATION
- AB03 PROPOSED TYPE I BORING LOCATION
- EXCAVATED TRENCHES
- CONDUCTIVITY ANOMALIES (LOCATION OF ALL 20 ANOMOLIES ARE INCLUDED IN APPENDIX C.
- GROUND WATER FLOW DIRECTION IN UNCONSOLIDATED SEDIMENTS
- OCCURENCE OF VOCs

NOTES

1. SOURCE: RMT, INC. 1991. TECHNICAL MEMORANDUM NO. 1 SOIL INVESTIGATION AND MONITORING WELL SAMPLING ROUND AT THE NAVAL INDUSTRIAL RESERVE ORDNANCE PLANT, FRIDLEY, MN. APRIL 1991.
2. BASE MAP SOURCE: U.S. ARMY CORPS OF ENGINEERS, DRAWING CODE XF 215-30-01, PREPARED BY DYNAMIC INTERNATIONAL INC., ROCKVILLE, MD, AUGUST 1983.
3. SEE FIGURE 3 FOR AREA A LOCATION.

ENGR'G W.S.	DATE	BAY WEST Inc. ENVIRONMENTAL SERVICES St. PAUL, MN	
DRAWN K.M.	7/28/92		
REV.			
PROJECT NAME FMC			
TITLE GEOPHYSICS			
DWG NO. 920276B5	SCALE 1"=80'	FIGURE # 2	



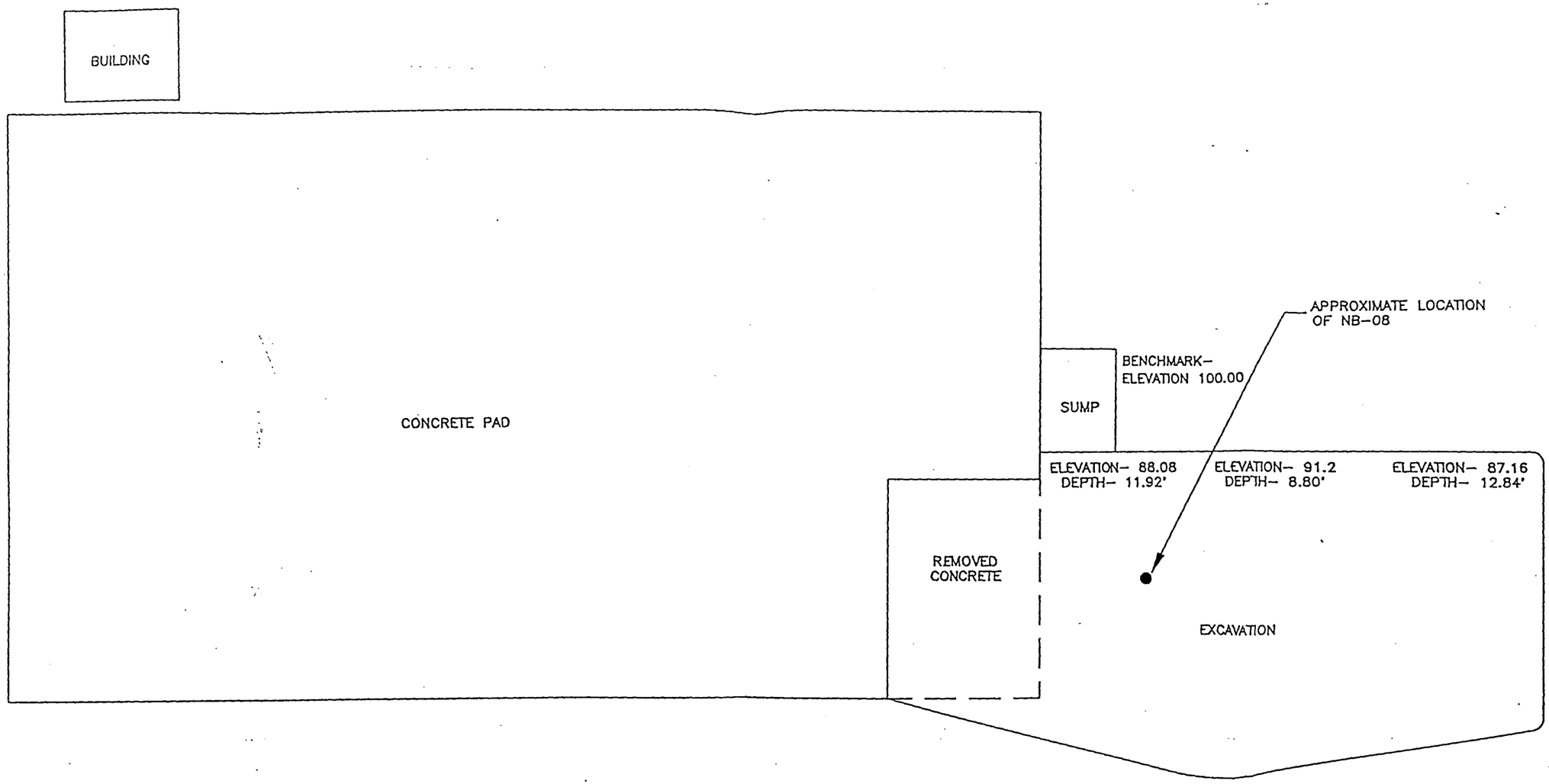
LEGEND:

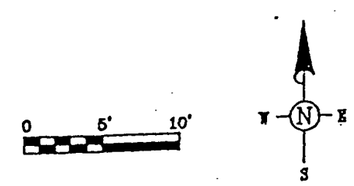
- SOIL BORING LOCATION
- DECONTAMINATION CENTER
- ACCESS CONTROL POINTS

0 5' 10'

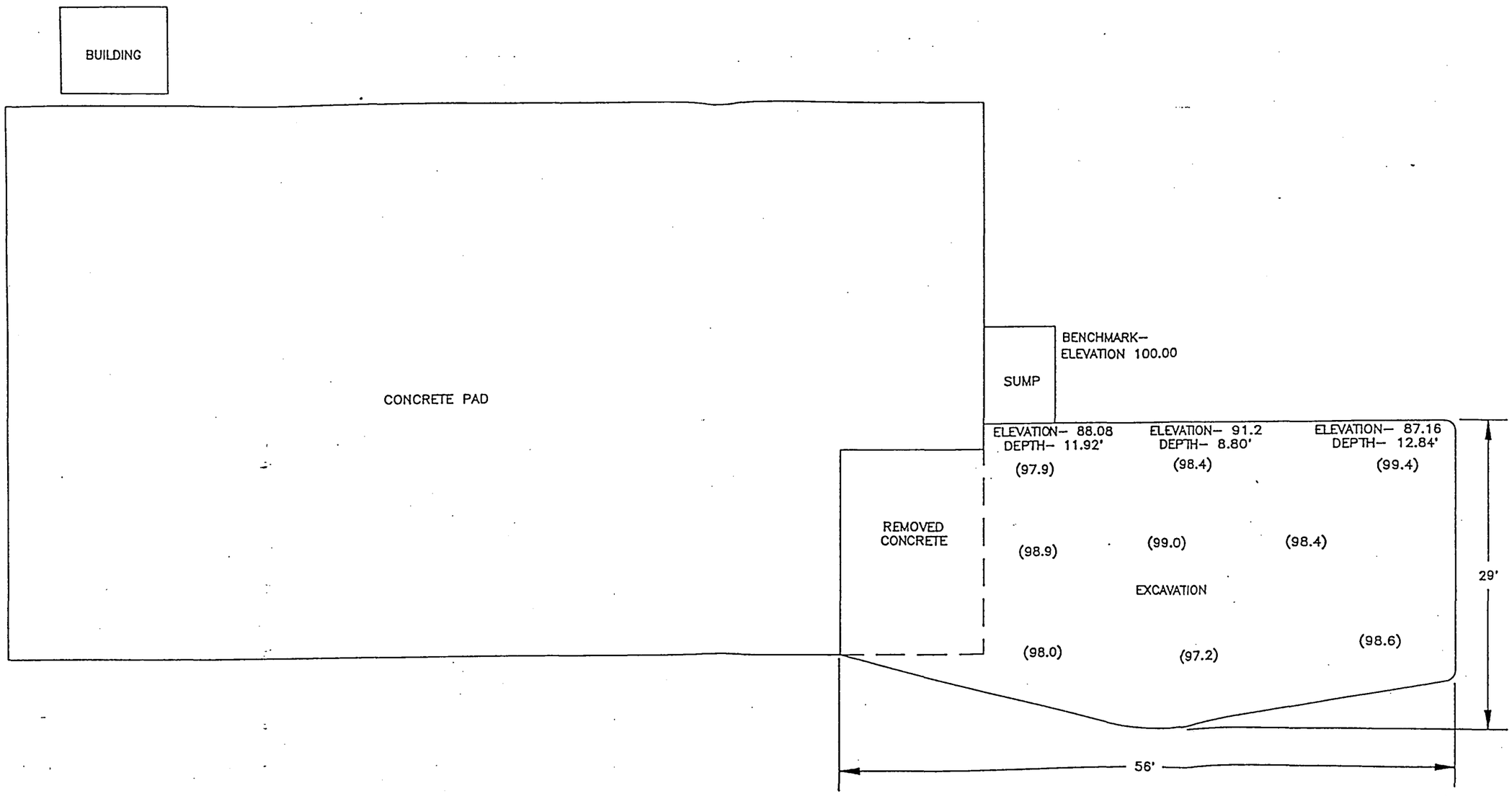
W N E S

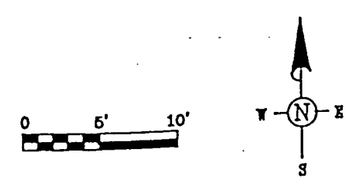
ENGR'G W.S.	DATE		BAY WEST Inc. ENVIRONMENTAL SERVICES ST. PAUL, MN.
DRAWN K.M.	7/22/92		
REV.			
PROJECT NAME FMC- EMERGENCY BARREL EXCAVATION			
TITLE SITE MAP			
DWG. NO. 920276B1	SCALE 1"=10'	FIGURE # 3	





ENGR'G W.S.	DATE	BAY WEST Inc. ENVIRONMENTAL SERVICES ST. PAUL, MN.	
DRAWN K.M.	7/7/92		
REV.	7/27/92		
PROJECT NAME FMC			
TITLE SITE MAP			
DWG. NO. 920276B1	SCALE 1"=10'	FIGURE # 4	





ENGR'G W.S.	DATE	BAY WEST Inc. ENVIRONMENTAL SERVICES ST. PAUL, MN.	
DRAWN K.M.	7/7/92		
REV.	7/27/92		
PROJECT NAME FMC			
TITLE SITE MAP			
DWG NO. 920276B1	SCALE 1"=10'	FIGURE # 5	

APPENDIX 1

Site-Specific Health and Safety Plan

Bay West

Bay West Inc.
Five Empire Drive
St Paul, Minnesota
55103-1867

612-291-0456
FAX 291-0099

Health and Safety Plan
FMC Exploratory Excavation
Fridley, Minnesota

Bay West, Incorporated

June 1992

Date:

Prepared by:

Shawn Kruse, M.S.
Industrial Hygienist

Bay West

SITE HEALTH AND SAFETY PLAN

FMC Exploratory Excavation June 1992

Introduction

This health and safety plan (HASP) is intended for Bay West employees involved in an exploratory excavation on U.S. Navy property directly to the north of the FMC Corporation in Fridley, Minnesota.

An area of soil contamination (containing miscellaneous hydrocarbons) has been located by the U.S. Navy's consultant on the property (refer to attached AREA A PROPOSED BORING LOCATION MAP). Bay West will conduct an exploratory excavation in Area 13 (bounded by a dotted line) to determine the source of the contamination. It is anticipated that drums and other containers may be discovered during the excavation. Containers will be removed and placed on an adjacent concrete decontamination pad pending disposition. Containers will be evaluated, opened, sampled, inventoried, repackaged and/or overpacked, secured, and stored on the concrete decontamination pad. Bay West has been requested to backfill the excavation with the excavated soils, however, disposition of soils is subject to change.

Responsibility

The Bay West site supervisor and the onsite health and safety officer have joint responsibility for implementing the HASP. Any changes in the specified procedures or level of personal protective equipment (PPE) must first be authorized by the on site health and safety officer or site supervisor. The following trained personnel are authorized to be on the work site.

PERSONNEL	AFFILIATION	ROLE
Stephen Gross	Bay West	Department Manager, Environmental Compliance
Jan Williams	Bay West	Department Manager, Remedial Services
Bill Storm	Bay West	Site Supervisor
Shawn Kruse	Bay West	Health and Safety Officer
Terry Muller	Bay West	Sampling/Material Handling
Greg Weisjahn	Bay West	Sampling/Material Handling
James Ortman	Bay West	Equipment Operator
Larry Veches	Bay West	Equipment Operator
Doug Hildre	FMC Corporation	FMC Representative
_____	RMT, Inc.	U.S. Navy Representative

Hazard Analysis

Soil sample results, from the area where the dig will take place, were supplied to Bay West by FMC (refer to RMT Laboratories NIROP SOILS INVESTIGATION results). These results indicate the presence of two chlorinated aliphatic hydrocarbon solvent species (cis-1,2-Dichloroethene at 40 ppm and Trichloroethene at 310 ppm) and two species of aromatic hydrocarbon solvent (1,2,4-Trimethylbenzene at 22 ppm and n-Butylbenzene at 18 ppm), however, this information is not sufficient to predict all the chemical substances nor the levels of exposure employees may experience during the work. Therefore, level B PPE will be required, at least initially, to protect persons from exposure (dermal and inhalation) to unknown concentrations and types of chemicals.

Because of the time of year and use of personal protective gear (suits and respirators), the development of heat stress is a potential hazard.

Material handling (drums, soil, etc.) and the use of heavy machinery present a physical injury hazard.

Working near an open excavation presents the potential for falling into the excavation.

Hazard Reduction

Personal Protective Equipment (PPE)

The following PPE is required for all persons in the exclusion zone, such as equipment operators, observers, and those persons handling or sampling drums and containers:

- Pressure-demand, supplied air respirator (or SCBA)
- Saranex-coated tyvek coveralls (if handling or sampling containers)
- Nitrile rubber gloves (with Silvershield liners) duct taped to the coveralls at the wrist
- Chemical-resistant, steel-toed rubber boots
- Chemical-resistant boot covers (latex)
- Hardhat (when an overhead hazard exists)

The level of personal protection may be upgraded or downgraded depending on information gathered during the course of the work. However, before changing the level of protection, approval of the on-site health and safety officer or site supervisor is required. A written change will be made, appended to the Health and Safety Plan, and all site employees will be provided written information and verbally informed of any changes.

reduce the risk of heat stress, drink plenty of fluids (water or electrolyte replacing fluid) before, during, and after the work day. Take frequent breaks (as needed), preferably in a shaded area. Pay attention to any developing symptoms that may indicate a heat stress disorder (refer to Emergency and First Aid section).

If heat stress symptoms develop, refer to the Emergency and First Aid section of this HASP for proper first aid procedures.

Persons near the excavation should stand outside the operating area of the equipment and remain visible to the operator at all times.

Persons shall stand a safe distance (no closer than two feet) from the edge of the excavation in case of cave-in. Persons are not allowed to enter the excavation, unless the excavation walls are properly sloped (1 vertical:1.5 horizontal) and access is available into and out of the excavation via a ladder.

Personal Exposure Monitoring

The site health and safety officer will be in charge of evaluating worker exposure (both inhalation and dermal). Daily monitoring for airborne levels of organic vapors in the breathing zone of employees will be done using an organic vapor analyzer (OVA) equipped with a flame-ionization detector (FID) or a photoionization detector (PID, 10.2 eV) equipped instrument. If level B PPE is in use, monitoring shall be performed at 60 minute intervals. If level C PPE is in use, monitoring shall be performed at 30 minute intervals.

Action Levels: >500 ppm .... evacuate the exclusion zone
5 - 500 ppm .... level B
<5 ppm .... level C

Further exposure evaluation may be done, at the discretion of the health and safety officer, using chemical specific detection tubes (Draeger) and personal sampling badges (3M brand Organic Vapor Monitor #3520).

All monitoring results will be recorded by the Site Safety Officer in a bound notebook to be kept at the site.

Combustible Gas Monitoring

At the beginning of each work day and after lunch a survey of the exclusion zone shall be conducted using a combustible gas indicator (CGI). At other times when work is being performed, the CGI will be situated for continuous monitoring in a representative location determined by the site safety officer.

Action Levels: >25% of the LEL .... evacuate the exclusion zone

All monitoring results will be recorded by the Site Safety Officer in a bound notebook to be kept at the site.

S[illegible] Control

Exclusion and Contamination Reduction Zones

The exclusion zone includes those areas where an exposure hazard exists, such as, but not limited to: The excavation area and concrete decontamination pad where repackaging/overpacking will be occurring.

A contamination reduction zone (CRZ), or buffer zone, shall be established and set up around the exclusion zone. Barrier tape may be set up along the perimeter of each zone to identify zone boundaries.

Unauthorized and/or unprotected persons shall not be allowed to enter the above zones once work has begun.

Decontamination

A decontamination area shall be set up upwind in the CRZ through which all persons and contaminated equipment must pass through on their way out of the exclusion zone.

Persons leaving the exclusion zone via the decontamination zone shall place all used gloves, suits, boot covers, etc., into plastic bags for proper disposal. Hands and face should then be washed with soap and water before leaving the decontamination zone. Respirator facepieces and APRs shall be cleaned with soap and water at the end of each work day. Supplied air respirator facepieces shall be disinfected at the end of each work day.

Contaminated equipment shall be washed and scrubbed with soap and water. Consult the site supervisor for the proper disposition of the wash liquids.

Equipment required to be in (or near) the decontamination zone:

- -Soap, water, brushes, and tubs for washing smaller tools, and equipment;
- -Separate soap , water, and paper towels for washing hands and face;
- -Plastic garbage bags;
- -First aid kit;
- -Portable eyewash;
- -Benches or chairs for changing and breaks;
- -A structure to provide shade;
- -Restroom facilities; and
- -Drinking water.
- -ABC Fire extinguisher

Emergency and First Aid Procedures

Chemical Exposure

SKIN...wash off material from skin with plenty of soap and water. Especially before eating, drinking, using the toilet, or leaving the work zone.

EYE...promptly flush eyes with water to remove contaminant, continue flushing for 15 minutes.

INHALATION...remove victim to fresh air, summon emergency medical services; provide first aid as necessary.

Consult a physician, as necessary, for further treatment or evaluation.

Heat Stress

Heat Stroke:

The symptoms are red, hot, dry skin, and the person has ceased to perspire. Nausea, dizziness, confusion, high body temperature, rapid respiratory and pulse rates, unconscious or coma are also indicators of heat stroke. To treat someone with heat stroke, cool the victim quickly by soaking in the person in cool water, or run cool water over the person (especially the head) in order to reduce the body temperature. If body temperature is not reduced, the person runs the risk of permanent brain damage or death. If the person is conscious, give small amounts of water. Someone should stay and observe the victim while another persons obtains medical help (911).

Heat Exhaustion:

The symptoms are pale, clammy, moist skin with profuse perspiration and weakness. A headache and nausea may also be present. To treat a person with heat exhaustion, move them to a cool, air-conditioned place. Have the person sit or lie down and immediately drink 1-2 glasses of water. Consult with a physician.

Heat Cramps:

The symptoms are similar to heat exhaustion with the addition of abdominal spasms/cramps of voluntary muscles such as the abdomen and extremities. To treat a person with heat cramps, move them to a cool, air-conditioned place. Have the person sit or lie down and immediately drink 1-2 glasses of water. Consult with a physician.

Personal Injury

Report any injuries or unusual health problems to the on-site health and safety officer and site supervisor. For example: skin or eye irritation, headache, dizziness, or nausea.

The site supervisor and/or health and safety officer will evaluate and initiate first aid as necessary. Decontaminate (if necessary) to the extent possible. Contact emergency medical services (911). At the discretion of the site health and safety officer and site supervisor, work may be halted until the cause of an injury or illness has been evaluated and if necessary, rectified.

Site Security

Unauthorized persons shall be kept away from the work zone activities. Access to the site will be restricted to those who have completed a Compliance Agreement and are trained in accordance with 29 CFR 1910.120.

Communications

Locate the nearest accessible telephone, before work begins, for emergency communication from the site. If one is not readily available, a portable telephone shall be maintained on site.

Chemical Spill

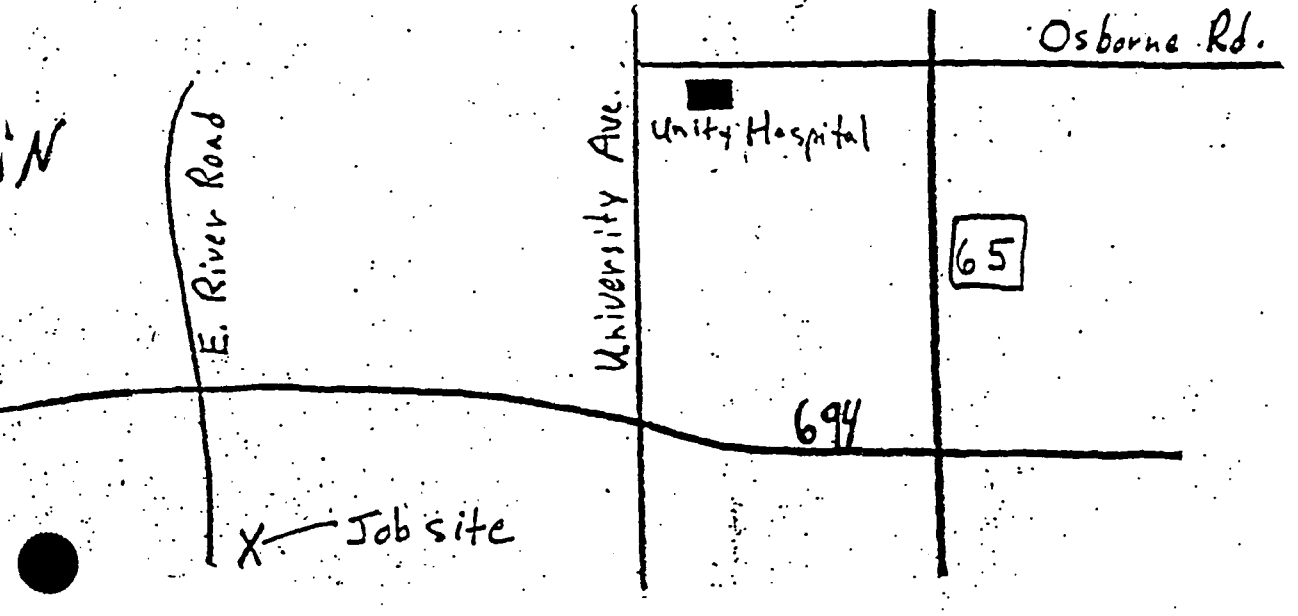
Spills shall be cleaned up PROMPTLY. Use appropriate PPE (consult site supervisor or health and safety officer). Absorb the material with a suitable sorbent material and containerize (in a labelled container) for eventual disposal. Report the spill immediately to the Site Supervisor.

Emergency Telephone Numbers

Medical, Fire, Police Emergency: 911

Hospital

The nearest hospital is Unity Hospital located at 550 Osborne Road in Fridley. See map below for location.



Bay West

Compliance Agreement

I, _____, have read this health and safety plan and hereby agree to abide by its provisions and to aid the site supervisor and site health and safety officer in its implementation. I also agree to be aware of site health and safety conditions at all times and to perform site operations in a safe manner.

_____

Signature Date

RMT INC
LABORATORIES

CLIENT: NIROP SOILS INVESTIGATION
SAMPLE #: 93786
PROJECT #: 02313.13
WORK ORDER #: 920611A0231313

REPORT DATE: 06/19/92
COLLECTION DATE: 06/10/92
STATION ID: AB035C
SAMPLE COLLECTOR: RHV

VOLATILE ORGANIC ANALYSIS REPORT

PARAMETER	RESULT	UNITS
Dichlorodifluoromethane	<24000	ug/kg dry wt.
Chloromethane	<12000	ug/kg dry wt.
Vinyl chloride	<12000	ug/kg dry wt.
Bromomethane	<24000	ug/kg dry wt.
Chloroethane	<12000	ug/kg dry wt.
Fluorotrichloromethane	<12000	ug/kg dry wt.
1,1-Dichloroethene	<12000	ug/kg dry wt.
Methylene chloride	<12000	ug/kg dry wt.
trans-1,2-Dichloroethene	<12000	ug/kg dry wt.
1,1-Dichloroethane	<12000	ug/kg dry wt.
2,2-Dichloropropane	<47000 C	ug/kg dry wt.
cis-1,2-Dichloroethene	40000	ug/kg dry wt.
Chloroform	<12000	ug/kg dry wt.
Bromochloromethane	<12000	ug/kg dry wt.
1,1,1-Trichloroethane	<12000	ug/kg dry wt.
1,1-Dichloropropene	<12000	ug/kg dry wt.
Carbon tetrachloride	<12000	ug/kg dry wt.
1,2-Dichloroethane	<12000	ug/kg dry wt.
Benzene	<12000	ug/kg dry wt.
Trichloroethene	310000	ug/kg dry wt.
1,2-Dichloropropane	<12000	ug/kg dry wt.
Bromodichloromethane	<12000	ug/kg dry wt.
Dibromomethane	<12000	ug/kg dry wt.
cis-1,3-Dichloropropene	<12000	ug/kg dry wt.
Toluene	<12000	ug/kg dry wt.
trans-1,3-Dichloropropene	<12000	ug/kg dry wt.
1,1,2-Trichloroethane	<12000	ug/kg dry wt.
Tetrachloroethene	<12000	ug/kg dry wt.
1,3-Dichloropropane	<12000	ug/kg dry wt.
Chlorodibromomethane	<24000	ug/kg dry wt.
1,2-Dibromoethane	<12000	ug/kg dry wt.

RMT INC.
LABORATORIES

CLIENT: NIROP SOILS INVESTIGATION
SAMPLE #: 93786
PROJECT #: 02313.13
WORK ORDER #: 920611A0231313

REPORT DATE: 06/19/92
COLLECTION DATE: 06/10/92
STATION ID: AR035C
SAMPLE COLLECTOR: RHV

VOLATILE ORGANIC ANALYSIS REPORT

PARAMETER	RESULT	UNITS
Chlorobenzene	<12000	ug/kg dry wt.
1,1,1,2-Tetrachloroethane	<12000	ug/kg dry wt.
Ethylbenzene	<12000	ug/kg dry wt.
Xylene, total	<35000	ug/kg dry wt.
Styrene	<12000	ug/kg dry wt.
Isopropylbenzene	<12000	ug/kg dry wt.
Bromoform	<24000	ug/kg dry wt.
1,1,2,2-Tetrachloroethane	<24000	ug/kg dry wt.
1,2,3-Trichloropropane	<12000	ug/kg dry wt.
n-Propylbenzene	<12000	ug/kg dry wt.
Bromobenzene	<12000	ug/kg dry wt.
1,3,5-Trimethylbenzene	<12000	ug/kg dry wt.
2-Chlorotoluene	<12000	ug/kg dry wt.
4-Chlorotoluene	<12000	ug/kg dry wt.
tert-Butylbenzene	<12000	ug/kg dry wt.
1,2,4-Trimethylbenzene	22000	ug/kg dry wt.
sec-Butylbenzene	<12000	ug/kg dry wt.
p-Isopropyltoluene	<12000	ug/kg dry wt.
1,3-Dichlorobenzene	<12000	ug/kg dry wt.
1,4-Dichlorobenzene	<12000	ug/kg dry wt.
1,2-Dichlorobenzene	<12000	ug/kg dry wt.
n-Butylbenzene	18000	ug/kg dry wt.
1,2-Dibromo-3-chloropropane	<12000	ug/kg dry wt.
1,2,4-Trichlorobenzene	<12000	ug/kg dry wt.
Hexachlorobutadiene	<12000	ug/kg dry wt.
Naphthalene	<120000	ug/kg dry wt.
1,2,3-Trichlorobenzene	<12000	ug/kg dry wt.

Mark A. Mieritz
Mark Mieritz, Organic Supervisor

744 Heartland Trail, P.O. Box 8923, Madison, WI 53708-8923, Ph:(608)831-4444

RMT INC
LABORATORIES

CASE NARRATIVE
VOLATILE ORGANIC GC ANALYSIS

PROJECT NAME: NIROP
PROJECT NUMBER: 2313.13
SAMPLE NUMBER(S): 93786
DATE: 06/19/92

2,2-dichloropropane and cis-1,2-dichloroethylene coelute on the HALL detector. The cis-1,2-dichloroethylene is detected by the PID detector also, and it is from this detector that concentrations were determined for cis-1,2-dichloroethylene. The detection limit for 2,2-dichloropropane was raised by a factor of 4.

RMT, Inc., 744 Heartland Trail, P. O. Box 8923, Madison, WI 53708-8923, Phone: 608-831-4444, Fax: 608-831-7530

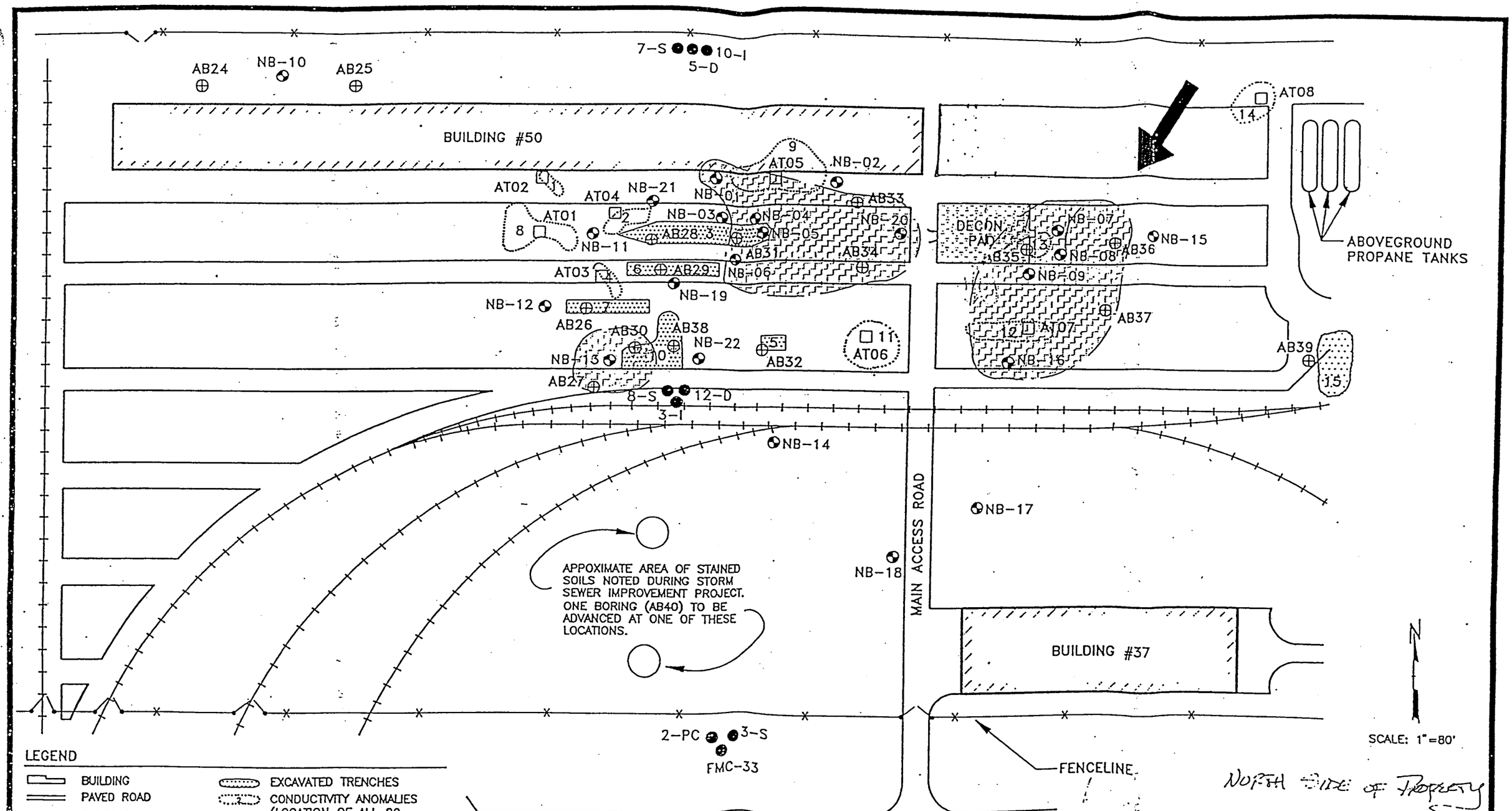
RMT INC.
LABORATORIES

Organic GC Data Qualifier Sheet

B(n)	Analyte present in the method blank. If the processes that were applied to the sample were applied to the method blank, the value of the analyte in the method blank would likely be "n."
C	Elevated detection limit (see Case Narrative).
E	Analyte concentration exceeds calibration range (see Case Narrative).
F	Repeated surrogate failure (see Case Narrative).
H(n)	Analysis performed "n" days past holding time.
NR	Not required.
R	Relative percent difference high (see Case Narrative).
	Retention time variance; analyte identification not confirmed.
W	Sample received with headspace.

Effective 3/2/92

Trail P. O. Box 8923, Madison, WI 53708-8923, Phone: 608-831-4444, Fax: 608-831-7530



LEGEND

- BUILDING
- PAVED ROAD
- RAILROAD
- FENCELINE
- NB-1 EXISTING BORING LOCATION & NUMBER
- 2-PC MONITORING WELL LOCATION & NUMBER
- AT25 PROPOSED TEST PIT LOCATION
- AB03 PROPOSED TYPE I BORING LOCATION
- EXCAVATED TRENCHES
- CONDUCTIVITY ANOMALIES (LOCATION OF ALL 20 ANOMOLIES ARE INCLUDED IN APPENDIX C.
- GROUND WATER FLOW DIRECTION IN UNCONSOLIDATED SEDIMENTS
- OCCURENCE OF VOCs

NOTES

1. SOURCE: RMT, INC. 1991. TECHNICAL MEMORANDUM NO. 1 SOIL INVESTIGATION AND MONITORING WELL SAMPLING ROUND AT THE NAVAL INDUSTRIAL RESERVE ORDNANCE PLANT, FRIDLEY, MN. APRIL 1991.
2. BASE MAP SOURCE: U.S. ARMY CORPS OF ENGINEERS, DRAWING CODE XF 215-30-01, PREPARED BY DYNAMIC INTERNATIONAL INC., ROCKVILLE, MD, AUGUST 1983.
3. SEE FIGURE 2-1 FOR AREA A LOCATION.

AREA A PROPOSED BORING LOCATION MAP

RMT INC.

DWN. BY:	DPR
DATE:	JANUARY 1992
PROJ.#	2313.01FSP

APPENDIX 2

Drum Log

Drum Sample Log

JOB # 920276

SAMPLE ID NUMBER: 920276-1

DATE AND TIME OF COLLECTION: 6-23-92 10:00 SAMPLER: TM SAMPLE METHOD: NA

SAMPLE CONTAINER - TYPE (CIRCLE): GLASS PLASTIC METAL OTHER None Collected
- SIZE (SPECIFY UNIT): NA
- PERCENT FILLED: NA

ORIGINAL CONTAINER SIZE: 55 gal CIRCLE TYPE: BUNG OTOP / PLASTIC FIBER METAL
(SPECIFY UNIT) OTHER

ORIGINAL QUANTITY (CIRCLE UNIT: GAL., LBS., GM, L, %, OTHER ____): Unknown

____SOLID ____FROZEN X LIQUID ____POWDER ____SLUDGE ____WATER
____OTHER (SPECIFY) ____

____TOTAL ____PUMPABLE ____REPACKED Drum crushed.

ILLUSTRATION AND DESCRIPTION OF PHASES

Drum was crushed when excavated-slight odor from drum after it was over packed. Liquid was dripping as drum was pulled out. Approximately 4ppm on ova from soil under drum (5 feet deep). Placed in 85 OP.

ADDITIONAL DRUM/CONTAINER INFORMATION: NA

SAMPLE NUMBER: NA COLOR: NA

SAMPLE PRESERVATION: YES, NO - TYPE: NA ODOR: Not Performed

COMPOSITED INTO: NA pH: Not Performed

CHAIN OF CUSTODY NUMBER: NA FLAMMABLE: YES, NO, NA, NOT PERFORMED

WATER MISCIBLE: YES, NO, NA, NOT PERFORMED BEILSTEIN: YES, NO, NA, NOT PERFORMED

ADDITIONAL TESTS AND/OR COMMENTS:

l sampling was performed with the personnel on supplied air.

Drum Sample Log

JOB # 920276

SAMPLE ID NUMBER: 920276-2

DATE AND TIME OF COLLECTION: 6-23-92 10:20 SAMPLER: TM SAMPLE METHOD: Grab

SAMPLE CONTAINER - TYPE (CIRCLE): GLASS PLASTIC METAL OTHER _____
- SIZE (SPECIFY UNIT): 1 liter
- PERCENT FILLED: 100%

ORIGINAL CONTAINER SIZE: 55 gal CIRCLE TYPE: BUNG OTOP / PLASTIC FIBER METAL
(SPECIFY UNIT) OTHER _____

ORIGINAL QUANTITY (CIRCLE UNIT: GAL., LBS., GM, L, %, OTHER _____): Unknown

____ SOLID ____ FROZEN ____ LIQUID ____ POWDER X SLUDGE ____ WATER
____ OTHER (SPECIFY) _____

____ TOTAL ____ PUMPABLE X REPACKed

ILLUSTRATION AND DESCRIPTION OF PHASES

Drum was damaged. A thick material came out of drum as it came out of excavation 8-1/2 feet deep.

OVA 8 ppm

Neg Cl - test

ADDITIONAL DRUM/CONTAINER INFORMATION:

Placed in 85 O.P.

Placed in 85 OP

SAMPLE NUMBER: 920276-2

COLOR: Black

SAMPLE PRESERVATION: YES, NO - TYPE: _____

ODOR: Not Performed

COMPOSITED INTO: 920276-Composite 2

pH: Not Performed

CHAIN OF CUSTODY NUMBER: EC-2614

FLAMMABLE: YES, NO, NA, NOT PERFORMED

WATER MISCIBLE: YES, NO, NA, NOT PERFORMED

BEILSTEIN: YES, NO, NA, NOT PERFORMED

ADDITIONAL TESTS AND/OR COMMENTS:

Drum Sample Log

JOB # 920276

PLE ID NUMBER: 420276-3

E AND TIME OF COLLECTION: 6/23 10:45 SAMPLER: TM SAMPLE METHOD: N/A

PLE CONTAINER - TYPE (CIRCLE): GLASS PLASTIC METAL OTHER None Collected
- SIZE (SPECIFY UNIT): _____
- PERCENT FILLED: _____

IGINAL CONTAINER SIZE: 55 gal CIRCLE TYPE: (BUNG) OTOP / PLASTIC FIBER (METAL)
(SPECIFY UNIT) OTHER _____

IGINAL QUANTITY (CIRCLE UNIT: GAL., LBS., GM, L, %, OTHER _____): Unknown

____SOLID ____FROZEN ____LIQUID ____POWDER ____SLUDGE ____WATER
____OTHER (SPECIFY) _____

____TOTAL ____PUMPABLE ____REPACKED- No product

ILLUSTRATION AND DESCRIPTION OF PHASES

Red 55-gallon, damaged, no product

DDITIONAL DRUM/CONTAINER INFORMATION: Placed in 85-gallon O.P.

AMPLE NUMBER: NA COLOR: NA

AMPLE PRESERVATION: YES, NO - TYPE: NA ODOR: NA

OMPOSITED INTO: NA pH: NA

HAIN OF CUSTODY NUMBER: NA FLAMMABLE: YES, NO, NA, (NOT PERFORMED)

ATER MISCIBLE: YES, NO, NA, (NOT PERFORMED) BEILSTEIN: YES, NO, NA, (NOT PERFORMED)

IONAL TESTS AND/OR COMMENTS:

Drum Sample Log

JOB # 920276

SAMPLE ID NUMBER: 920276-4

DATE AND TIME OF COLLECTION: 6-23/10:55 SAMPLER: TM SAMPLE METHOD: Grab

SAMPLE CONTAINER - TYPE (CIRCLE): (GLASS) PLASTIC METAL OTHER _____
- SIZE (SPECIFY UNIT): 1 liter
- PERCENT FILLED: 100%

ORIGINAL CONTAINER SIZE: 55 gal (SPECIFY UNIT) CIRCLE TYPE: BUNG OTOP / PLASTIC FIBER (METAL) OTHER _____

ORIGINAL QUANTITY (CIRCLE UNIT: GAL., LBS., GM, L, %, OTHER _____): Unknown

____ SOLID ____ FROZEN X LIQUID ____ POWDER ____ SLUDGE ____ WATER
____ OTHER (SPECIFY) _____

____ TOTAL ____ PUMPABLE X REPACKED

ILLUSTRATION AND DESCRIPTION OF PHASES

55 Gal. red drum (original)
Liquid, leaking
Neg. Cl-test

20 ppm TLV

ADDITIONAL DRUM/CONTAINER INFORMATION:

Placed in 85 gal. overpack

SAMPLE NUMBER: 920276-4 COLOR: Light

SAMPLE PRESERVATION: YES, (NO) - TYPE: _____ ODOR: Not performed

COMPOSITED INTO: 920276-Composite 2 pH: Not performed

CHAIN OF CUSTODY NUMBER: EC-2614 FLAMMABLE: YES, NO, NA, (NOT PERFORMED)

WATER MISCIBLE: YES, NO, NA, (NOT PERFORMED) BEILSTEIN: YES, (NO) NA, NOT PERFORMED

ADDITIONAL TESTS AND/OR COMMENTS:

Drum Sample Log

JOB # 920276

SAMPLE ID NUMBER: 920276-5

DATE AND TIME OF COLLECTION: 11:10 6/23 SAMPLER: TM SAMPLE METHOD: Coliwasa

SAMPLE CONTAINER - TYPE (CIRCLE): (GLASS) PLASTIC METAL OTHER _____
- SIZE (SPECIFY UNIT): Liter
- PERCENT FILLED: 100%

ORIGINAL CONTAINER SIZE: 55 gal. CIRCLE TYPE: BUNG OTOP / PLASTIC FIBER (METAL)
(SPECIFY UNIT) OTHER _____

ORIGINAL QUANTITY (CIRCLE UNIT: GAL., LBS., GM, L, %, OTHER _____): Unkown

____ SOLID ____ FROZEN X LIQUID ____ POWDER ____ SLUDGE ____ WATER
____ OTHER (SPECIFY) _____

____ TOTAL ____ PUMPABLE X REPACKED

ILLUSTRATION AND DESCRIPTION OF PHASES

55 Gal. green
Two phase liquid (oil/brown) & (Grey/Clear)
Neg. Cl - test

55 ppm TLV

ADDITIONAL DRUM/CONTAINER INFORMATION:

Placed in 80 gal. Overpack
Placed Liquid 55-17E

SAMPLE NUMBER: 920276-5 COLOR: See above

AMPLE PRESERVATION: YES, (NO) - TYPE: _____ ODOR: Not performed

COMPOSITED INTO: 920276-Composite 2 pH: Not performed

CHAIN OF CUSTODY NUMBER: EC-2614 FLAMMABLE: YES, NO, NA, (NOT PERFORMED)

ATER MISCIBLE: YES, NO, NA, (NOT PERFORMED) BEILSTEIN: YES, (NO), NA, NOT PERFORMED

TIONAL TESTS AND/OR COMMENTS:

Drum Sample Log

JOB # 920276

SAMPLE ID NUMBER: 920276-6

DATE AND TIME OF COLLECTION: 11:40 6/23 SAMPLER: TM SAMPLE METHOD: Coliwasa

SAMPLE CONTAINER - TYPE (CIRCLE): GLASS PLASTIC METAL OTHER _____
- SIZE (SPECIFY UNIT): 1 liter
- PERCENT FILLED: 100%

ORIGINAL CONTAINER SIZE: 55 gal. CIRCLE TYPE: BUNG OTOP / PLASTIC FIBER METAL
(SPECIFY UNIT) OTHER _____

ORIGINAL QUANTITY (CIRCLE UNIT: GAL., LBS., GM, L, %, OTHER _____): Unknown

____SOLID ____FROZEN X LIQUID ____POWDER ____SLUDGE ____WATER
____OTHER (SPECIFY) _____

____TOTAL ____PUMPABLE X REPACKED

ILLUSTRATION AND DESCRIPTION OF PHASES

55 gal., Fair Condition
1/4 full, brown/clear liquid
Neg Cl-test

ADDITIONAL DRUM/CONTAINER INFORMATION:

Placed in 85 gal. overpack

SAMPLE NUMBER: 920276-6 COLOR: See above

SAMPLE PRESERVATION: YES, NO - TYPE: _____ ODOR: Not performed

COMPOSITED INTO: 920276-Composite 2 PH: Not performed

CHAIN OF CUSTODY NUMBER: EC-2614 FLAMMABLE: YES, NO, NA, NOT PERFORMED

WATER MISCIBLE: YES, NO, NA, NOT PERFORMED BEILSTEIN: YES, NO, NA, NOT PERFORMED

ADDITIONAL TESTS AND/OR COMMENTS:

Drum Sample Log

JOB # 920276

SAMPLE ID NUMBER: 920276-7

DATE AND TIME OF COLLECTION: 6-23 / 1:48 SAMPLER: TM SAMPLE METHOD: Grab

SAMPLE CONTAINER - TYPE (CIRCLE): (GLASS) PLASTIC METAL OTHER _____
- SIZE (SPECIFY UNIT): 1 Liter
- PERCENT FILLED: 100%

ORIGINAL CONTAINER SIZE: 55 gal. CIRCLE TYPE: (BUNG) OTOP / PLASTIC FIBER (METAL)
(SPECIFY UNIT) OTHER _____

ORIGINAL QUANTITY (CIRCLE UNIT: GAL., LBS., GM, L, %, OTHER _____): Unknown

____SOLID ____FROZEN ____LIQUID ____POWDER X SLUDGE ____WATER
____OTHER (SPECIFY) _____

____TOTAL ____PUMPABLE X REPACK

ILLUSTRATION AND DESCRIPTION OF PHASES

55 gallon
Partial full
Negative Cl-test

Black Sludge

ADDITIONAL DRUM/CONTAINER INFORMATION:

Placed in 85 gallon overpack

SAMPLE NUMBER: 920276-7 COLOR: Black

SAMPLE PRESERVATION: YES, (NO) - TYPE: _____ ODOR: Not performed

COMPOSITED INTO: 920276-Composite 1 pH: Not performed

CHAIN OF CUSTODY NUMBER: EC-2614 FLAMMABLE: YES, NO, NA, (NOT PERFORMED)

WATER MISCIBLE: YES, NO, NA, (NOT PERFORMED) BEILSTEIN: YES, (NO), NA, NOT PERFORMED

ADDITIONAL TESTS AND/OR COMMENTS:

Drum Sample Log

JOB # 920276

SAMPLE ID NUMBER: 920276-8

DATE AND TIME OF COLLECTION: 6-23 / 2:04 SAMPLER: TM SAMPLE METHOD: Grab

SAMPLE CONTAINER - TYPE (CIRCLE): (GLASS) PLASTIC METAL OTHER _____
- SIZE (SPECIFY UNIT): 1 Liter
- PERCENT FILLED: 100%

ORIGINAL CONTAINER SIZE: 55 gal. CIRCLE TYPE: (BUNG) OTOP / PLASTIC FIBER (METAL)
(SPECIFY UNIT) OTHER _____

ORIGINAL QUANTITY (CIRCLE UNIT: GAL., LBS., GM, L, %, OTHER _____): Unknown

____SOLID ____FROZEN ____LIQUID ____POWDER X SLUDGE ____WATER
____OTHER (SPECIFY) _____

____TOTAL ____PUMPABLE X REPACKED

ILLUSTRATION AND DESCRIPTION OF PHASES

Damaged drum; black sludge like materials
Positive Cl-test

ADDITIONAL DRUM/CONTAINER INFORMATION:

Placed in 110 gallon overpack

SAMPLE NUMBER: 920276-8 COLOR: Black

SAMPLE PRESERVATION: YES, (NO) - TYPE: _____ ODOR: Not performed

COMPOSITED INTO: 920276-Composite 1 pH: Not performed

CHAIN OF CUSTODY NUMBER: EC-2614 FLAMMABLE: YES, NO, NA, (NOT PERFORMED)

WATER MISCIBLE: YES, NO, NA, (NOT PERFORMED) BEILSTEIN: (YES), NO, NA, NOT PERFORMED

ADDITIONAL TESTS AND/OR COMMENTS:

Drum Sample Log

JOB # 920276

SAMPLE ID NUMBER: 920276-9

DATE AND TIME OF COLLECTION: 6-23 / 2:19 SAMPLER: TM SAMPLE METHOD: Grab

SAMPLE CONTAINER - TYPE (CIRCLE): GLASS PLASTIC METAL OTHER _____
- SIZE (SPECIFY UNIT): 1 Liter
- PERCENT FILLED: _____

ORIGINAL CONTAINER SIZE: 55 gal (SPECIFY UNIT) CIRCLE TYPE: BUNG OTOP / PLASTIC FIBER METAL
OTHER _____

ORIGINAL QUANTITY (CIRCLE UNIT: GAL., LBS., GM, L, %, OTHER _____): Unknown

____ SOLID ____ FROZEN ____ LIQUID X POWDER ____ SLUDGE ____ WATER
____ OTHER (SPECIFY) _____

____ TOTAL ____ PUMPABLE X REPACKED

ILLUSTRATION AND DESCRIPTION OF PHASES

55-gal.
Powder White-Grey
Neg. Cl-test

ADDITIONAL DRUM/CONTAINER INFORMATION:

Placed in 110 gal. overpack

SAMPLE NUMBER: 920276-9 COLOR: White - Grey

SAMPLE PRESERVATION: YES, NO - TYPE: _____ ODOR: Not performed

COMPOSITED INTO: NA pH: Not performed

CHAIN OF CUSTODY NUMBER: EC-2614 FLAMMABLE: YES, NO, NA, NOT PERFORMED

WATER MISCIBLE: YES, NO, NA, NOT PERFORMED BEILSTEIN: YES, NO, NA, NOT PERFORMED

ADDITIONAL TESTS AND/OR COMMENTS:

Drum Sample Log

JOB # 920276

AMPLE ID NUMBER: 920276-10

ATE AND TIME OF COLLECTION: 6-23 / 2:30 SAMPLER: TM SAMPLE METHOD: Grab

AMPLE CONTAINER - TYPE (CIRCLE): (GLASS) PLASTIC METAL OTHER _____
- SIZE (SPECIFY UNIT): 1 Liter
- PERCENT FILLED: 100%

ORIGINAL CONTAINER SIZE: 55 gal. CIRCLE TYPE: (BUNG) OTOP / PLASTIC FIBER (METAL)
(SPECIFY UNIT) OTHER _____

ORIGINAL QUANTITY (CIRCLE UNIT: GAL., LBS., GM, L, %, OTHER _____): Unknown

____SOLID ____FROZEN X LIQUID ____POWDER ____SLUDGE ____WATER
____OTHER (SPECIFY) _____

____TOTAL ____PUMPABLE X REPACKED

ILLUSTRATION AND DESCRIPTION OF PHASES

Damaged
Drum w/clear-brown - Liquid
Neg. Cl-test

No OVA

ADDITIONAL DRUM/CONTAINER INFORMATION:

Placed in 110 gal. overpack
Placed liquid in 55-gallon 17E

SAMPLE NUMBER: 920276-10 COLOR: See above

AMPLE PRESERVATION: YES, (NO) - TYPE: _____ ODOR: Not performed

COMPOSITED INTO: 920276-Composite 2 pH: Not performed

CHAIN OF CUSTODY NUMBER: EC-2614 FLAMMABLE: YES, NO, NA, (NOT PERFORMED)

ATER MISCIBLE: YES, NO, NA, (NOT PERFORMED) BEILSTEIN: YES, (NO), NA, NOT PERFORMED

IONAL TESTS AND/OR COMMENTS:

Drum Sample Log

JOB # 920276

SAMPLE ID NUMBER: 920276-11

DATE AND TIME OF COLLECTION: 6-23 / 3:03 SAMPLER: TM SAMPLE METHOD: Grab

AMPLE CONTAINER - TYPE (CIRCLE): GLASS PLASTIC METAL OTHER _____
- SIZE (SPECIFY UNIT): 1 Liter
- PERCENT FILLED: 100%

ORIGINAL CONTAINER SIZE: 55 gal CIRCLE TYPE: BUNG OTOP / PLASTIC FIBER METAL
(SPECIFY UNIT) OTHER _____

ORIGINAL QUANTITY (CIRCLE UNIT: GAL., LBS., GM, L, %, OTHER _____): Unknown

____ SOLID ____ FROZEN ____ LIQUID ____ POWDER ____ SLUDGE ____ WATER
X OTHER (SPECIFY) Soil and Liquid

____ TOTAL ____ PUMPABLE X REPACKED

ILLUSTRATION AND DESCRIPTION OF PHASES

Soil with brown liquid
Positive Cl-test

ADDITIONAL DRUM/CONTAINER INFORMATION:

Placed in 110 gallon overpack

SAMPLE NUMBER: 920276-11 COLOR: Brown

MPLE PRESERVATION: YES, NO - TYPE: _____ ODOR: Not performed

COMPOSITED INTO: 920276-Composite 2 pH: Not performed

CHAIN OF CUSTODY NUMBER: EC-2614 FLAMMABLE: YES, NO, NA, NOT PERFORMED

TER MISCIBLE: YES, NO, NA, NOT PERFORMED BEILSTEIN: YES, NO, NA, NOT PERFORMED

ADDITIONAL TESTS AND/OR COMMENTS:

Drum Sample Log

JOB # 920276

SAMPLE ID NUMBER: 920276-12

DATE AND TIME OF COLLECTION: 6-23 / 3:18 SAMPLER: TM SAMPLE METHOD: coliwasa

SAMPLE CONTAINER - TYPE (CIRCLE): GLASS PLASTIC METAL OTHER _____
- SIZE (SPECIFY ~~UNIT~~): 1 Liter
- PERCENT FILLED: 100%

ORIGINAL CONTAINER SIZE: 55 gal. CIRCLE TYPE: BUNG OTOP / PLASTIC FIBER METAL
(SPECIFY UNIT) OTHER _____

ORIGINAL QUANTITY (CIRCLE UNIT: GAL., LBS., GM, L, ~~%~~, OTHER _____): Unknown

____SOLID ____FROZEN ____LIQUID ____POWDER X SLUDGE ____WATER
____OTHER (SPECIFY) _____

____TOTAL ____PUMPABLE X REPACKed

ILLUSTRATION AND DESCRIPTION OF PHASES

Black thick sludge "Grease"?

Positive Cl-test

OVA pegged

ADDITIONAL DRUM/CONTAINER INFORMATION:

Placed in 110 gal. overpack

SAMPLE NUMBER: 920276-12 COLOR: Black

SAMPLE PRESERVATION: YES, NO - TYPE: _____ ODOR: Not Performed

COMPOSITED INTO: 920276-Composite 1 pH: Not Performed

CHAIN OF CUSTODY NUMBER: EC-2614 FLAMMABLE: YES, NO, NA, NOT PERFORMED

WATER MISCIBLE: YES, NO, NA, NOT PERFORMED BEILSTEIN: YES, NO, NA, NOT PERFORMED

ADDITIONAL TESTS AND/OR COMMENTS:

Drum Sample Log

JOB # 920276

SAMPLE ID NUMBER: 920276-13

DATE AND TIME OF COLLECTION: 3:45 6/23 SAMPLER: TM SAMPLE METHOD: Coliwasa

AMPLE CONTAINER - TYPE (CIRCLE): GLASS PLASTIC METAL OTHER _____
- SIZE (SPECIFY UNIT): 1 Liter
- PERCENT FILLED: 100%

ORIGINAL CONTAINER SIZE: 55 gal. CIRCLE TYPE: BUNG OTOP / PLASTIC FIBER METAL
(SPECIFY UNIT) OTHER _____

ORIGINAL QUANTITY (CIRCLE UNIT: GAL., LBS., GM, L, %, OTHER _____): Unknown

____SOLID ____FROZEN X LIQUID ____POWDER ____SLUDGE ____WATER
____OTHER (SPECIFY) _____

____TOTAL ____PUMPABLE X REPACK

ILLUSTRATION AND DESCRIPTION OF PHASES

55-gal blue drum
Printed on drum "Sinclair" "Quen Ohnel" #521
Black material
Approximate 15 gal. product. Pegged OVA. Positive Cl-test

ADDITIONAL DRUM/CONTAINER INFORMATION:

Placed in 85 overpack

SAMPLE NUMBER: 920276-13 COLOR: Black

MPLE PRESERVATION: YES, NO - TYPE: _____ ODOR: Not Performed

COMPOSITED INTO: 920276-Composite 1 pH: Not Performed

CHAIN OF CUSTODY NUMBER: EC-2614 FLAMMABLE: YES, NO, NA, NOT PERFORMED

TER MISCIBLE: YES, NO, NA, NOT PERFORMED BEILSTEIN: YES, NO, NA, NOT PERFORMED

DITIONAL TESTS AND/OR COMMENTS:

Drum Sample Log

JOB # 920276

R: 920276-14

F COLLECTION: 3:49 6/23 SAMPLER: LV SAMPLE METHOD: Grab

R - TYPE (CIRCLE): (GLASS) PLASTIC METAL OTHER _____
- SIZE (SPECIFY UNIT): 1 Liter
- PERCENT FILLED: 100%

INER SIZE: 55 gal. CIRCLE TYPE: BUNG OTOP / PLASTIC FIBER (METAL)
UNIT) OTHER _____

ITY (CIRCLE UNIT: GAL., LBS., GM, L, %, OTHER _____): Unknown

ID _____FROZEN X LIQUID _____POWDER _____SLUDGE _____WATER
ER(SPECIFY) _____

AL _____PUMPABLE X REPACKed

ILLUSTRATION AND DESCRIPTION OF PHASES

Red drum, partially full
Thin black/brown liquid
Positive Cl-test

OVA pegged

UM/CONTAINER INFORMATION:

Placed in 85 overpack

920276-14 COLOR: Black/Brown

ATION: YES, (NO) - TYPE: _____ ODOR: Not Performed

O: 920276-Composite 1 pH: Not Performed

DY NUMBER: EC-2614 FLAMMABLE: YES, NO, NA, (NOT PERFORMED)

: YES, NO, NA, (NOT PERFORMED) BEILSTEIN: (YES) NO, NA, NOT PERFORMED

AND/OR COMMENTS:

Drum Sample Log

JOB # 920276

SAMPLE ID NUMBER: 920276-15

DATE AND TIME OF COLLECTION: 4:03 6/23 SAMPLER: TM SAMPLE METHOD: Coliwasa

SAMPLE CONTAINER - TYPE (CIRCLE): (GLASS) PLASTIC METAL OTHER _____
- SIZE (SPECIFY UNIT): 1 Liter
- PERCENT FILLED: 100%

ORIGINAL CONTAINER SIZE: 55 gal. CIRCLE TYPE: BUNG OTOP / PLASTIC FIBER (METAL)
(SPECIFY UNIT) OTHER _____

ORIGINAL QUANTITY (CIRCLE UNIT: GAL., LBS., GM, L, %, OTHER ____): Unknown

____SOLID ____FROZEN X LIQUID ____POWDER ____SLUDGE ____WATER
____OTHER(SPECIFY) _____

____TOTAL ____PUMPABLE X REPACKed

ILLUSTRATION AND DESCRIPTION OF PHASES

1/4 full, poor condition
Thin black/brown liquid
Positive Cl-test

OVA pegged

ADDITIONAL DRUM/CONTAINER INFORMATION:

Placed in 110 overpack

SAMPLE NUMBER: 920276-15 COLOR: Black/Brown

SAMPLE PRESERVATION: YES, (NO) - TYPE: _____ ODOR: Not Performed

COMPOSITED INTO: 920276-Composite 1 pH: Not Performed

CHAIN OF CUSTODY NUMBER: EC-2614 FLAMMABLE: YES, NO, NA, (NOT PERFORMED)

WATER MISCIBLE: YES, NO, NA, (NOT PERFORMED) BEILSTEIN: (YES,) NO, NA, NOT PERFORMED

ADDITIONAL TESTS AND/OR COMMENTS:

Drum Sample Log

JOB # 920276

SAMPLE ID NUMBER: 920276-16

DATE AND TIME OF COLLECTION: 9:30 6/24 SAMPLER: GW SAMPLE METHOD: NA

SAMPLE CONTAINER - TYPE (CIRCLE): GLASS PLASTIC METAL OTHER NA No sample taken
- SIZE (SPECIFY UNIT): NA
- PERCENT FILLED: NA

ORIGINAL CONTAINER SIZE: 55 gal. CIRCLE TYPE: (BUNG) OTOP / PLASTIC FIBER (METAL)
(SPECIFY UNIT) OTHER _____

ORIGINAL QUANTITY (CIRCLE UNIT: GAL., LBS., GM, L, %, OTHER _____): Unknown

____SOLID ____FROZEN ____LIQUID ____POWDER X SLUDGE ____WATER
____OTHER (SPECIFY) _____

____TOTAL ____PUMPABLE X REPACKed

ILLUSTRATION AND DESCRIPTION OF PHASES

Brown Sludge

Less than 1" in drum

ADDITIONAL DRUM/CONTAINER INFORMATION:

Placed in 85 O.P.

TLV 500 OVA 600

SAMPLE NUMBER: NA COLOR: Brown

SAMPLE PRESERVATION: YES, NO - TYPE: NA ODOR: NA

COMPOSITED INTO: NA pH: NA

CHAIN OF CUSTODY NUMBER: NA FLAMMABLE: YES, NO, NA, (NOT PERFORMED)

WATER MISCIBLE: YES, NO, NA, (NOT PERFORMED) BEILSTEIN: YES, NO, NA, (NOT PERFORMED)

ADDITIONAL TESTS AND/OR COMMENTS:

Drum Sample Log

JOB # 920276

SAMPLE ID NUMBER: 920276-17

DATE AND TIME OF COLLECTION: 6-24 / 9:30 SAMPLER: GW SAMPLE METHOD: Coliwasa

SAMPLE CONTAINER - TYPE (CIRCLE): GLASS PLASTIC METAL OTHER _____
- SIZE (SPECIFY UNIT): 1 Liter
- PERCENT FILLED: 100%

ORIGINAL CONTAINER SIZE: 55 gal. CIRCLE TYPE: BUNG OTOP / PLASTIC FIBER METAL
(SPECIFY UNIT) OTHER _____

ORIGINAL QUANTITY (CIRCLE UNIT: GAL., LBS., GM, L, %, OTHER _____): Unknown

____SOLID ____FROZEN ____LIQUID ____POWDER ____SLUDGE ____WATER
____OTHER(SPECIFY) _____

____TOTAL ____PUMPABLE X REPACK

ILLUSTRATION AND DESCRIPTION OF PHASES

Drum crusted and empty
6" liquid in overpack
Brown Liquid
Negative Cl-test

ADDITIONAL DRUM/CONTAINER INFORMATION:
FLV100
OVA 45

Placed in 110 gal. overpack

SAMPLE NUMBER: 920276-17 COLOR: Brown

SAMPLE PRESERVATION: YES, NO - TYPE: _____ ODOR: Not Performed

COMPOSITED INTO: 920276-Composite 2 pH: Not Performed

CHAIN OF CUSTODY NUMBER: EC-2614 FLAMMABLE: YES, NO, NA, NOT PERFORMED

WATER MISCIBLE: YES, NO, NA, NOT PERFORMED BEILSTEIN: YES, NO, NA, NOT PERFORMED

ADDITIONAL TESTS AND/OR COMMENTS:

Drum Sample Log

JOB # 920276

MPLE ID NUMBER: 920276-18

DATE AND TIME OF COLLECTION: 9:55 6/24 SAMPLER: GW SAMPLE METHOD: Coliwasa

AMPLE CONTAINER - TYPE (CIRCLE): GLASS PLASTIC METAL OTHER _____
- SIZE (SPECIFY UNIT): 1 Liter
- PERCENT FILLED: 100%

ORIGINAL CONTAINER SIZE: 55 gal. CIRCLE TYPE: BUNG OTOP / PLASTIC FIBER METAL
(SPECIFY UNIT) OTHER _____

RIGINAL QUANTITY (CIRCLE UNIT: GAL., LBS., GM, L, %, OTHER _____): Unkown

____SOLID ____FROZEN X LIQUID ____POWDER ____SLUDGE ____WATER
____OTHER (SPECIFY) _____

____TOTAL ____PUMPABLE X REPACKed

ILLUSTRATION AND DESCRIPTION OF PHASES

Drum inverted in overpack
18" of liquid in overpack
Brown/green liquid
Positive Cl-test

DITIONAL DRUM/CONTAINER INFORMATION:

Placed in 110 overpack
HNU 1000+
OVA 1000

AMPLE NUMBER: 920276 COLOR: Brown/Green

MPLE PRESERVATION: YES, NO TYPE: _____ ODOR: Not Performed

MPOSITED INTO: 920276-Composite 1 pH: Not Performed

HAIN OF CUSTODY NUMBER: EC-2614 FLAMMABLE: YES, NO, NA, NOT PERFORMED

TER MISCIBLE: YES, NO, NA, NOT PERFORMED BEILSTEIN: YES, NO, NA, NOT PERFORMED

TIONAL TESTS AND/OR COMMENTS:

Drum Sample Log

JOB # 920276

MPLE ID NUMBER: 920276-19

DATE AND TIME OF COLLECTION: 10:15 6/24 SAMPLER: GW SAMPLE METHOD: Coliwasa

MPLE CONTAINER - TYPE (CIRCLE): (GLASS) PLASTIC METAL OTHER _____
- SIZE (SPECIFY UNIT): 1 Liter
- PERCENT FILLED: 100%

RIGINAL CONTAINER SIZE: 55 gal. CIRCLE TYPE: (BUNG) OTOP / PLASTIC FIBER (METAL)
(SPECIFY UNIT) OTHER _____

RIGINAL QUANTITY (CIRCLE UNIT: GAL., LBS., GM, L, %, OTHER _____): Unknown

____ SOLID ____ FROZEN X LIQUID ____ POWDER ____ SLUDGE ____ WATER
____ OTHER (SPECIFY) _____

____ TOTAL ____ PUMPABLE X REPACKed

ILLUSTRATION AND DESCRIPTION OF PHASES

Brown liquid, 1/3 full drum
Drum damaged
Positive Cl-test

DDITIONAL DRUM/CONTAINER INFORMATION:

Placed in 85 overpack
TLV 4500
OVA 1000+

AMPLE NUMBER: 920276-19 COLOR: Brown

MPLE PRESERVATION: YES, (NO) - TYPE: _____ ODOR: Not Performed

OMPOSITED INTO: 920276-Composite 1 pH: Not Performed

HAIN OF CUSTODY NUMBER: EC-2614 FLAMMABLE: YES, NO, NA, (NOT PERFORMED)

TER MISCIBLE: YES, NO, NA, (NOT PERFORMED) BEILSTEIN: (YES,) NO, NA, NOT PERFORMED

DITIONAL TESTS AND/OR COMMENTS:

Drum Sample Log

JOB # 920276

MPLE ID NUMBER: 920276-20

DATE AND TIME OF COLLECTION: 10:40 6/24 SAMPLER: GW SAMPLE METHOD: Coliwasa

.MPLE CONTAINER - TYPE (CIRCLE): (GLASS) PLASTIC METAL OTHER _____
- SIZE (SPECIFY UNIT): 1 Liter
- PERCENT FILLED: 100%

RIGINAL CONTAINER SIZE: 55 gal. CIRCLE TYPE: (BUNG) OTOP / PLASTIC FIBER (METAL)
(SPECIFY UNIT) OTHER _____

RIGINAL QUANTITY (CIRCLE UNIT: GAL., LBS., GM, L, %, OTHER ____): Unknown

____SOLID ____FROZEN X LIQUID ____POWDER ____SLUDGE ____WATER
____OTHER (SPECIFY) _____

____TOTAL ____PUMPABLE X REPACKed

ILLUSTRATION AND DESCRIPTION OF PHASES

Very light brown liquid
Drum in fair shape
Positive Cl-test

DITIONAL DRUM/CONTAINER INFORMATION:

TLV 600
OVA 1000+

Placed in 85 overpack

MPLE NUMBER: 920276-20 COLOR: Light Brown

MPLE PRESERVATION: YES, (NO) - TYPE: _____ ODOR: Not Performed

MPOSITED INTO: 920276-Composite 1 pH: Not Performed

HAIN OF CUSTODY NUMBER: EC-2614 FLAMMABLE: YES, NO, NA, (NOT PERFORMED)

ATER MISCIBLE: YES, NO, NA, (NOT PERFORMED) BEILSTEIN: (YES), NO, NA, NOT PERFORMED

DITIONAL TESTS AND/OR COMMENTS:

Drum Sample Log

JOB # 920276

PLE ID NUMBER: 920276-21

DATE AND TIME OF COLLECTION: 6/24 10:45 SAMPLER: GW SAMPLE METHOD: Coliwasa

AMPLE CONTAINER - TYPE (CIRCLE): (GLASS) PLASTIC METAL OTHER _____
- SIZE (SPECIFY UNIT): 1 Liter
- PERCENT FILLED: 100%

ORIGINAL CONTAINER SIZE: 55 gal. CIRCLE TYPE: (BUNG) OTOP / PLASTIC FIBER (METAL)
(SPECIFY UNIT) OTHER _____

ORIGINAL QUANTITY (CIRCLE UNIT: GAL., LBS., GM, L, %, OTHER _____): Unknown

____SOLID ____FROZEN X LIQUID ____POWDER ____SLUDGE ____WATER
____OTHER (SPECIFY) _____

____TOTAL ____PUMPABLE X REPACKed

ILLUSTRATION AND DESCRIPTION OF PHASES

Drum half full
Brown Liquid
Positive Cl-test

ADDITIONAL DRUM/CONTAINER INFORMATION:

TLV 1000
OVA 800

Placed in 85 overpack

AMPLE NUMBER: 920276-21 COLOR: Brown

AMPLE PRESERVATION: YES, (NO) TYPE: _____ ODOR: Not Performed

COMPOSITED INTO: 920276-Composite 1 pH: Not Performed

HAIN OF CUSTODY NUMBER: EC-2614 FLAMMABLE: YES, NO, NA, (NOT PERFORMED)

ATER MISCIBLE: YES, NO, NA, (NOT PERFORMED) BEILSTEIN: (YES) NO, NA, NOT PERFORMED

ADDITIONAL TESTS AND/OR COMMENTS:

Drum Sample Log

JOB # 920276

SAMPLE ID NUMBER: 920276-22

DATE AND TIME OF COLLECTION: 6-24 / 10:55 SAMPLER: GW SAMPLE METHOD: Grab

SAMPLE CONTAINER - TYPE (CIRCLE): (GLASS) PLASTIC METAL OTHER _____
- SIZE (SPECIFY UNIT): 1 Liter
- PERCENT FILLED: 100%

ORIGINAL CONTAINER SIZE: 20 gal. CIRCLE TYPE: (BUNG) OTOP / (PLASTIC) FIBER METAL
(SPECIFY UNIT) OTHER Drum liner only

ORIGINAL QUANTITY (CIRCLE UNIT: GAL., LBS., GM, L, %, OTHER _____):

____ SOLID ____ FROZEN X LIQUID ____ POWDER ____ SLUDGE X WATER
____ OTHER (SPECIFY) _____

____ TOTAL ____ PUMPABLE X REPACKed

ILLUSTRATION AND DESCRIPTION OF PHASES

Very little in poly liner
2/5 gallons
Appears to be water?
Neg. Cl-test

ADDITIONAL DRUM/CONTAINER INFORMATION:

TLV 90
OVA 200

Placed in 55 gal. 17H

SAMPLE NUMBER: 920276-22 COLOR: Light

SAMPLE PRESERVATION: YES, (NO) - TYPE: _____ ODOR: Not Performed

COMPOSITED INTO: 920276-Composite 2 pH: Not Performed

CHAIN OF CUSTODY NUMBER: EC-2614 FLAMMABLE: YES, NO, NA, (NOT PERFORMED)

WATER MISCIBLE: YES, NO, NA, (NOT PERFORMED) BEILSTEIN: YES, (NO), NA, NOT PERFORMED

ADDITIONAL TESTS AND/OR COMMENTS:

Drum Sample Log

JOB # 920276

AMPLE ID NUMBER: 920276-23

DATE AND TIME OF COLLECTION: 6-24 / 11:00 SAMPLER: GW SAMPLE METHOD: Coliwasa

SAMPLE CONTAINER - TYPE (CIRCLE): GLASS PLASTIC METAL OTHER _____
- SIZE (SPECIFY UNIT): 1 Liter
- PERCENT FILLED: 100%

ORIGINAL CONTAINER SIZE: 55 gal. CIRCLE TYPE: BUNG OTOP / PLASTIC FIBER METAL
(SPECIFY UNIT) OTHER _____

ORIGINAL QUANTITY (CIRCLE UNIT: GAL., LBS., GM, L, %, OTHER _____): Unknown

____ SOLID ____ FROZEN X LIQUID ____ POWDER ____ SLUDGE ____ WATER
____ OTHER (SPECIFY) _____

____ TOTAL ____ PUMPABLE X REPACKed

ILLUSTRATION AND DESCRIPTION OF PHASES

Drum 1/2 full
Brown liquid
Negative Cl-test

DDITIONAL DRUM/CONTAINER INFORMATION:

TLV 35
OVA 6

Placed in 110 gal. overpack

SAMPLE NUMBER: 920276-23 COLOR: Brown

SAMPLE PRESERVATION: YES, NO - TYPE: _____ ODOR: Not Performed

OMPOSITED INTO: 920276-Composite 2 pH: Not Performed

CHAIN OF CUSTODY NUMBER: EC-2614 FLAMMABLE: YES, NO, NA, NOT PERFORMED

WATER MISCIBLE: YES, NO, NA, NOT PERFORMED BEILSTEIN: YES, NO, NA, NOT PERFORMED

DDITIONAL TESTS AND/OR COMMENTS:

Drum Sample Log

JOB # 920276

SAMPLE ID NUMBER: 920276-24

DATE AND TIME OF COLLECTION: 6-24 / 11:05 SAMPLER: GW SAMPLE METHOD: Coliwasa

SAMPLE CONTAINER - TYPE (CIRCLE): GLASS PLASTIC METAL OTHER _____
- SIZE (SPECIFY UNIT): 1 Liter
- PERCENT FILLED: 100%

ORIGINAL CONTAINER SIZE: 55 gal. CIRCLE TYPE: BUNG OTOP / PLASTIC FIBER METAL
(SPECIFY UNIT) OTHER _____

ORIGINAL QUANTITY (CIRCLE UNIT: GAL., LBS., GM, L, %, OTHER _____):

____ SOLID ____ FROZEN X LIQUID ____ POWDER X SLUDGE ____ WATER
____ OTHER (SPECIFY) _____

____ TOTAL ____ PUMPABLE X REPACKed

ILLUSTRATION AND DESCRIPTION OF PHASES

Drum badly crushed
Brown oily sludgey liquid
6-12" liquid in drum & O.P.
Negative Cl-test

ADDITIONAL DRUM/CONTAINER INFORMATION:

TLV 200
OVA 100

Placed in 110 gal. overpack

SAMPLE NUMBER: 920276-24 COLOR: Brown

SAMPLE PRESERVATION: YES, NO - TYPE: _____ ODOR: Not Performed

COMPOSITED INTO: 920276-Composite 2 pH: Not Performed

CHAIN OF CUSTODY NUMBER: EC-2614 FLAMMABLE: YES, NO, NA, NOT PERFORMED

WATER MISCIBLE: YES, NO, NA, NOT PERFORMED BEILSTEIN: YES, NO, NA, NOT PERFORMED

ADDITIONAL TESTS AND/OR COMMENTS:

Drum Sample Log

JOB # 920276

SAMPLE ID NUMBER: 920276-25

DATE AND TIME OF COLLECTION: 1:10 6/24 SAMPLER: GW SAMPLE METHOD: Empty

SAMPLE CONTAINER - TYPE (CIRCLE): GLASS PLASTIC METAL OTHER NA
- SIZE (SPECIFY UNIT): NA
- PERCENT FILLED: NA

ORIGINAL CONTAINER SIZE: 55 gal. CIRCLE TYPE: (BUNG) OTOP / PLASTIC FIBER (METAL)
(SPECIFY UNIT) OTHER

ORIGINAL QUANTITY (CIRCLE UNIT: GAL., LBS., GM, L, %, OTHER ____): Unknown

____SOLID ____FROZEN ____LIQUID ____POWDER ____SLUDGE ____WATER
____OTHER (SPECIFY) ____

____TOTAL ____PUMPABLE ____REPACKed N/A

ILLUSTRATION AND DESCRIPTION OF PHASES

Empty drum

No Sample

ADDITIONAL DRUM/CONTAINER INFORMATION:

Placed in 110 O.P.

SAMPLE NUMBER: NA COLOR: NA

SAMPLE PRESERVATION: YES, NO - TYPE: NA ODOR: NA

COMPOSITED INTO: NA pH: NA

CHAIN OF CUSTODY NUMBER: NA FLAMMABLE: YES, NO, NA, (NOT PERFORMED)

WATER MISCIBLE: YES, NO, NA, (NOT PERFORMED) BEILSTEIN: YES, NO, NA, (NOT PERFORMED)

ADDITIONAL TESTS AND/OR COMMENTS:

Drum Sample Log

JOB # 920276

SAMPLE ID NUMBER: 920276-26

DATE AND TIME OF COLLECTION: 6/24 / 1:40 SAMPLER: GW SAMPLE METHOD: Grab

SAMPLE CONTAINER - TYPE (CIRCLE): GLASS PLASTIC METAL OTHER _____
- SIZE (SPECIFY UNIT): 1 Liter
- PERCENT FILLED: 100%

ORIGINAL CONTAINER SIZE: 55 gal. CIRCLE TYPE: BUNG OTOP / PLASTIC FIBER METAL
(SPECIFY UNIT) OTHER _____

ORIGINAL QUANTITY (CIRCLE UNIT: GAL., LBS., GM, L, %, OTHER _____): Unknown

____SOLID ____FROZEN X LIQUID ____POWDER ____SLUDGE ____WATER
____OTHER (SPECIFY) _____

____TOTAL ____PUMPABLE X REPACKed

ILLUSTRATION AND DESCRIPTION OF PHASES

1/3 ful
Green, Brown Liquid
Negative Cl-test

ADDITIONAL DRUM/CONTAINER INFORMATION:

TLV 550

Placed in 110 gal. overpack

SAMPLE NUMBER: 920276 COLOR: Green-Brown

SAMPLE PRESERVATION: YES, NO - TYPE: _____ ODOR: Not Performed

COMPOSITED INTO: 920276-Composite 2 pH: Not Performed

CHAIN OF CUSTODY NUMBER: EC-2614 FLAMMABLE: YES, NO, NA, NOT PERFORMED

WATER MISCIBLE: YES, NO, NA, NOT PERFORMED BEILSTEIN: YES, NO, NA, NOT PERFORMED

ADDITIONAL TESTS AND/OR COMMENTS:

Drum Sample Log

JOB # 920276

SAMPLE ID NUMBER: 920276-27

DATE AND TIME OF COLLECTION: 6-24-92 2:15 SAMPLER: GW SAMPLE METHOD: NA

SAMPLE CONTAINER - TYPE (CIRCLE): GLASS PLASTIC METAL OTHER None Collected
- SIZE (SPECIFY UNIT): NA
- PERCENT FILLED: NA

ORIGINAL CONTAINER SIZE: 55 gal. CIRCLE TYPE: (BUNG) OTOP / PLASTIC FIBER (METAL)
(SPECIFY UNIT) OTHER

ORIGINAL QUANTITY (CIRCLE UNIT: GAL., LBS., GM, L, %, OTHER ____): Unknown

____SOLID ____FROZEN ____LIQUID ____POWDER ____SLUDGE ____WATER
____OTHER (SPECIFY) ____

____TOTAL ____PUMPABLE ____REPACKed N/A

ILLUSTRATION AND DESCRIPTION OF PHASES

Drum empty
Less than ½" in bottom of O.P.

No Sample

ADDITIONAL DRUM/CONTAINER INFORMATION: Placed in 110 O.P.

TLV 150

SAMPLE NUMBER: NA COLOR: NA

SAMPLE PRESERVATION: YES, NO - TYPE: NA ODOR: NA

COMPOSITED INTO: NA pH: NA

CHAIN OF CUSTODY NUMBER: NA FLAMMABLE: YES, NO, NA, (NOT PERFORMED)

WATER MISCIBLE: YES, NO, NA, (NOT PERFORMED) BEILSTEIN: YES, NO, NA, (NOT PERFORMED)

ADDITIONAL TESTS AND/OR COMMENTS:

Drum Sample Log

JOB # 920276

SAMPLE ID NUMBER: 920276-28

DATE AND TIME OF COLLECTION: 6-24-92 3:00 SAMPLER: GW SAMPLE METHOD: None

SAMPLE CONTAINER - TYPE (CIRCLE): GLASS PLASTIC METAL OTHER None Collected
- SIZE (SPECIFY UNIT): NA
- PERCENT FILLED: NA

ORIGINAL CONTAINER SIZE: 55 gal. CIRCLE TYPE: (BUNG) OTOP / PLASTIC FIBER (METAL)
(SPECIFY UNIT) OTHER

ORIGINAL QUANTITY (CIRCLE UNIT: GAL., LBS., GM, L, %, OTHER ____): Unknown

____SOLID ____FROZEN ____LIQUID ____POWDER ____SLUDGE ____WATER
____OTHER (SPECIFY) ____

____TOTAL ____PUMPABLE ____REPACKed N/A

ILLUSTRATION AND DESCRIPTION OF PHASES

Drum contains very little dry solid

No sample taken

ADDITIONAL DRUM/CONTAINER INFORMATION:

Placed in 110 O.P.

SAMPLE NUMBER: NA COLOR: NA

SAMPLE PRESERVATION: YES, NO - TYPE: NA ODOR: NA

COMPOSITED INTO: NA pH: NA

CHAIN OF CUSTODY NUMBER: NA FLAMMABLE: YES, NO, NA, (NOT PERFORMED)

WATER MISCIBLE: YES, NO, NA, (NOT PERFORMED) BEILSTEIN: YES, NO, NA, (NOT PERFORMED)

ADDITIONAL TESTS AND/OR COMMENTS:

Drum Sample Log

JOB # 920276

SAMPLE ID NUMBER: 920276-29

DATE AND TIME OF COLLECTION: 6/25/92 8:45 SAMPLER: GW SAMPLE METHOD: Composite

SAMPLE CONTAINER - TYPE (CIRCLE): GLASS PLASTIC METAL OTHER _____
- SIZE (SPECIFY UNIT): 1 Liter
- PERCENT FILLED: 100%

ORIGINAL CONTAINER SIZE: 4 - 5 gal CIRCLE TYPE: BUNG OTOP / PLASTIC FIBER METAL
(SPECIFY UNIT) pails OTHER _____

ORIGINAL QUANTITY (CIRCLE UNIT: GAL., LBS., GM, L, %, OTHER _____):

X SOLID ____ FROZEN ____ LIQUID ____ POWDER ____ SLUDGE ____ WATER
____ OTHER (SPECIFY) _____

____ TOTAL ____ PUMPABLE ____ REPACKed

ILLUSTRATION AND DESCRIPTION OF PHASES

4-5 gal pails of solid material composited into one sample
Overpacked in 17H 55-gal.
Positive Cl-test

-organic paint soli
-one pail, very little oil
-other two drums solid material

ADDITIONAL DRUM/CONTAINER INFORMATION:

TLV 150

Overpacked in 55 gal. drum

SAMPLE NUMBER: 920276-29 COLOR: unknown

SAMPLE PRESERVATION: YES, NO - TYPE: _____ ODOR: Not Performed

COMPOSITED INTO: 920276-Composite 1 pH: Not Performed

CHAIN OF CUSTODY NUMBER: EC-2614 FLAMMABLE: YES, NO, NA, NOT PERFORMED

WATER MISCIBLE: YES, NO, NA, NOT PERFORMED BEILSTEIN: YES, NO, NA, NOT PERFORMED

ADDITIONAL TESTS AND/OR COMMENTS:

Drum Sample Log

JOB # 920276

SAMPLE ID NUMBER: 920276-30

DATE AND TIME OF COLLECTION: 6-25 / 11:05 SAMPLER: GW SAMPLE METHOD: Coliwasa

SAMPLE CONTAINER - TYPE (CIRCLE): (GLASS) PLASTIC METAL OTHER _____
- SIZE (SPECIFY UNIT): 1 Liter
- PERCENT FILLED: 100%

ORIGINAL CONTAINER SIZE: 55 gal. CIRCLE TYPE: (BUNG) OTOP / PLASTIC FIBER (METAL)
(SPECIFY UNIT) OTHER _____

ORIGINAL QUANTITY (CIRCLE UNIT: GAL., LBS., GM, L, %, OTHER _____): Unknown

____SOLID ____FROZEN ____LIQUID ____POWDER X SLUDGE ____WATER
____OTHER (SPECIFY) _____

____TOTAL ____PUMPABLE X REPACKed

ILLUSTRATION AND DESCRIPTION OF PHASES

Drum full
Black, very thick sludge
Negative Cl-test

ADDITIONAL DRUM/CONTAINER INFORMATION:

TLV 65

Placed in 85 gal. overpack

SAMPLE NUMBER: 920276-30 COLOR: Black

SAMPLE PRESERVATION: YES, (NO) - TYPE: _____ ODOR: Not Performed

COMPOSITED INTO: 920276-Composite 2 pH: Not Performed

CHAIN OF CUSTODY NUMBER: EC-2614 FLAMMABLE: YES, NO, NA, (NOT PERFORMED)

WATER MISCIBLE: YES, NO, NA, (NOT PERFORMED) BEILSTEIN: YES, (NO), NA, NOT PERFORMED

ADDITIONAL TESTS AND/OR COMMENTS:

Drum Sample Log

JOB # 920276

SAMPLE ID NUMBER: 920276-31

DATE AND TIME OF COLLECTION: 6-26 / 9:55 SAMPLER: GW SAMPLE METHOD: Coliwasa

SAMPLE CONTAINER - TYPE (CIRCLE): (GLASS) PLASTIC METAL OTHER _____
- SIZE (SPECIFY UNIT): 1 Liter
- PERCENT FILLED: 100%

ORIGINAL CONTAINER SIZE: 55 gal. CIRCLE TYPE: (BUNG) OTOP / PLASTIC FIBER (METAL)
(SPECIFY UNIT) OTHER _____

ORIGINAL QUANTITY (CIRCLE UNIT: GAL., LBS., GM, L, %, OTHER _____): Unknown

____SOLID ____FROZEN X LIQUID ____POWDER ____SLUDGE ____WATER
____OTHER (SPECIFY) _____

____TOTAL ____PUMPABLE X REPACKed

ILLUSTRATION AND DESCRIPTION OF PHASES

Drum 1/4 full
Dark brown sample
Oily possible TCE
Negative Cl-test

ADDITIONAL DRUM/CONTAINER INFORMATION:

OVA 1000+ Placed in 110 gal. overpack

SAMPLE NUMBER: 920276-31 COLOR: Brown

SAMPLE PRESERVATION: YES, (NO) - TYPE: _____ ODOR: Not Performed

COMPOSITED INTO: 920276-Composite 2 pH: Not Performed

CHAIN OF CUSTODY NUMBER: EC-2614 FLAMMABLE: YES, NO, NA, (NOT PERFORMED)

WATER MISCIBLE: YES, NO, NA, (NOT PERFORMED) BEILSTEIN: YES, (NO), NA, NOT PERFORMED

ADDITIONAL TESTS AND/OR COMMENTS:

APPENDIX 3

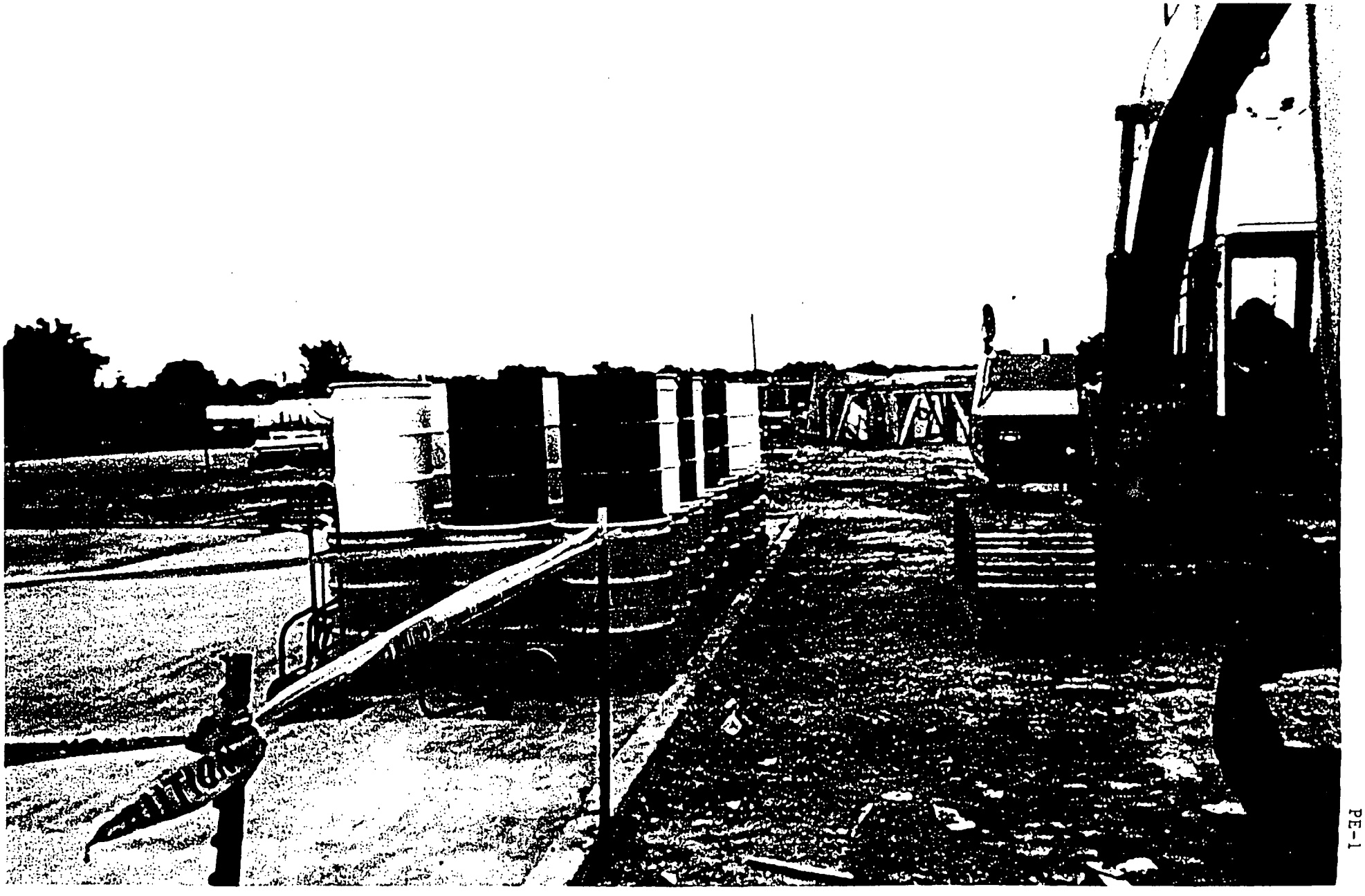
Photodocumentation

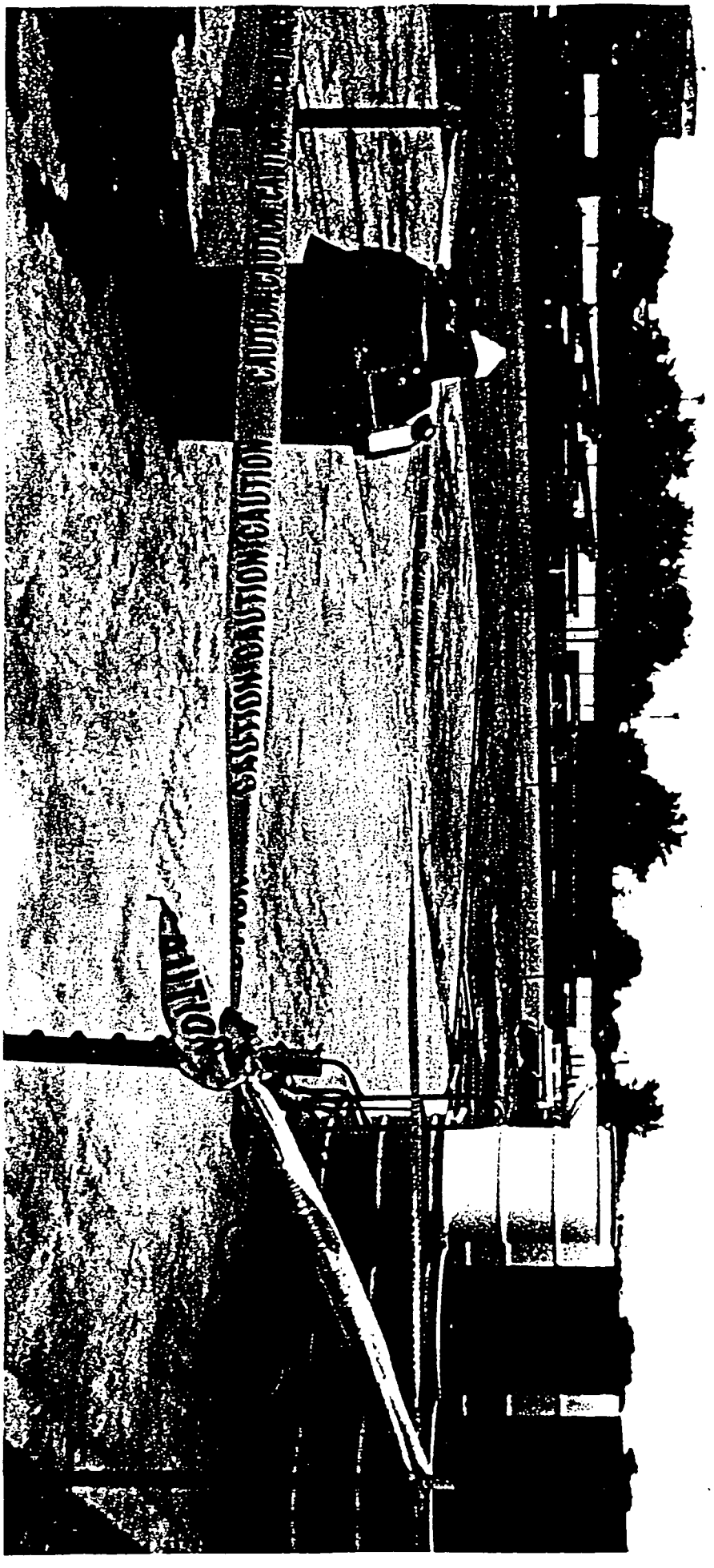
Bay West

PHOTOGRAPH EXHIBIT NUMBER	DESCRIPTION
PE-1	Empty drum staging area, exclusion zone, and decontamination area.
PE-2	Decontamination area.
PE-3	Decontamination area and exclusion zone in background.
PE-4	Removal of soils.
PE-5	Drum carcass in excavation prior to overpacking.
PE-6	Drum in excavation hole.
PE-7	Removing drum carcass from excavation.
PE-8	Removing drum carcass from excavation; exclusion zone in background.
PE-9	Drum carcass removal.
PE-10	5-gallon container and liquid in bottom of excavation.
PE-11	Excavation.
PE-12	Drum overpacking.
PE-13	Obtaining a Draeger tube reading near excavation hole.
PE-14	Concrete pad used for drum staging.
PE-15	Examining contents of excavated drum.
PE-16	Preparing excavated drum for overpacking.
PE-17	Overpacking an excavated drum.
PE-18	Overpacking an excavated drum.
PE-19	Sampling of an overpacked drum.
PE-20	Sample from drum 15.
PE-21	Completed overpack; air monitoring in background.

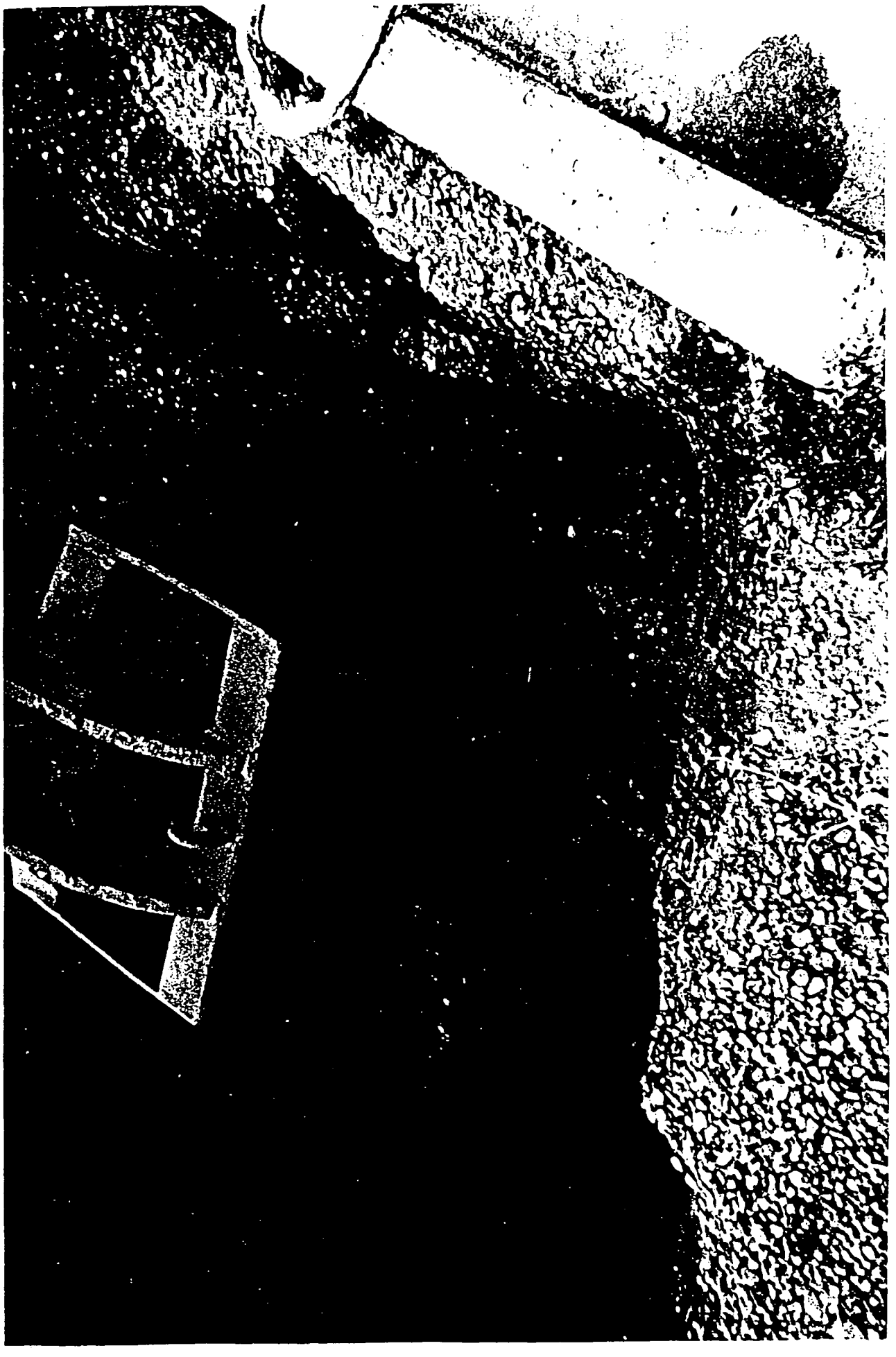
Bay West

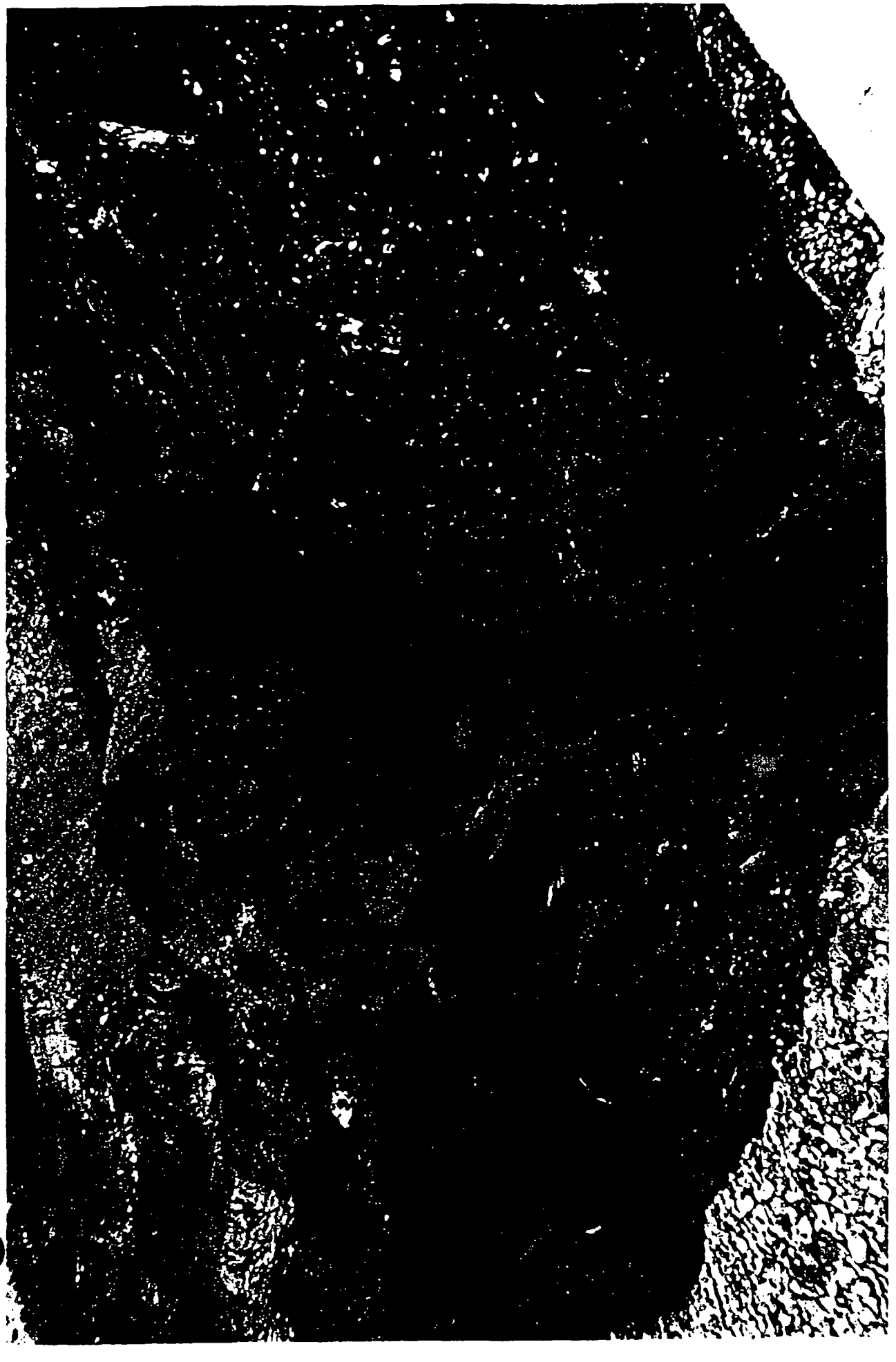
PHOTOGRAPH EXHIBIT NUMBER	DESCRIPTION
PE-22	Drum storage area and exclusion zone; cascade air supply system in background.
PE-23	Soil sampling from drum carcass for RMT.
PE-24	Drum sampling with coliwasa assembly.
PE-25	Drum and black sludge from excavation.
PE-26	Sampling black sludge out of excavator bucket using a trowel.
PE-27	Bermed exclusion zone and drum staging area; excavation being covered for the night.
PE-28	Empty drum carcasses that were exhumed from excavation.
PE-29	Removal of soils from beneath the pad.
PE-30	Removal of soils from beneath the pad.
PE-31	Excavation hole adjacent to the concrete pad.
PE-32	Breaking of concrete pad.
PE-33	Removal of a portion of the concrete pad.
PE-34	Excavation site and decontamination zone.
PE-35	Mechanical screening of soil and debris.
PE-36	Backfilling excavation with screened soil.

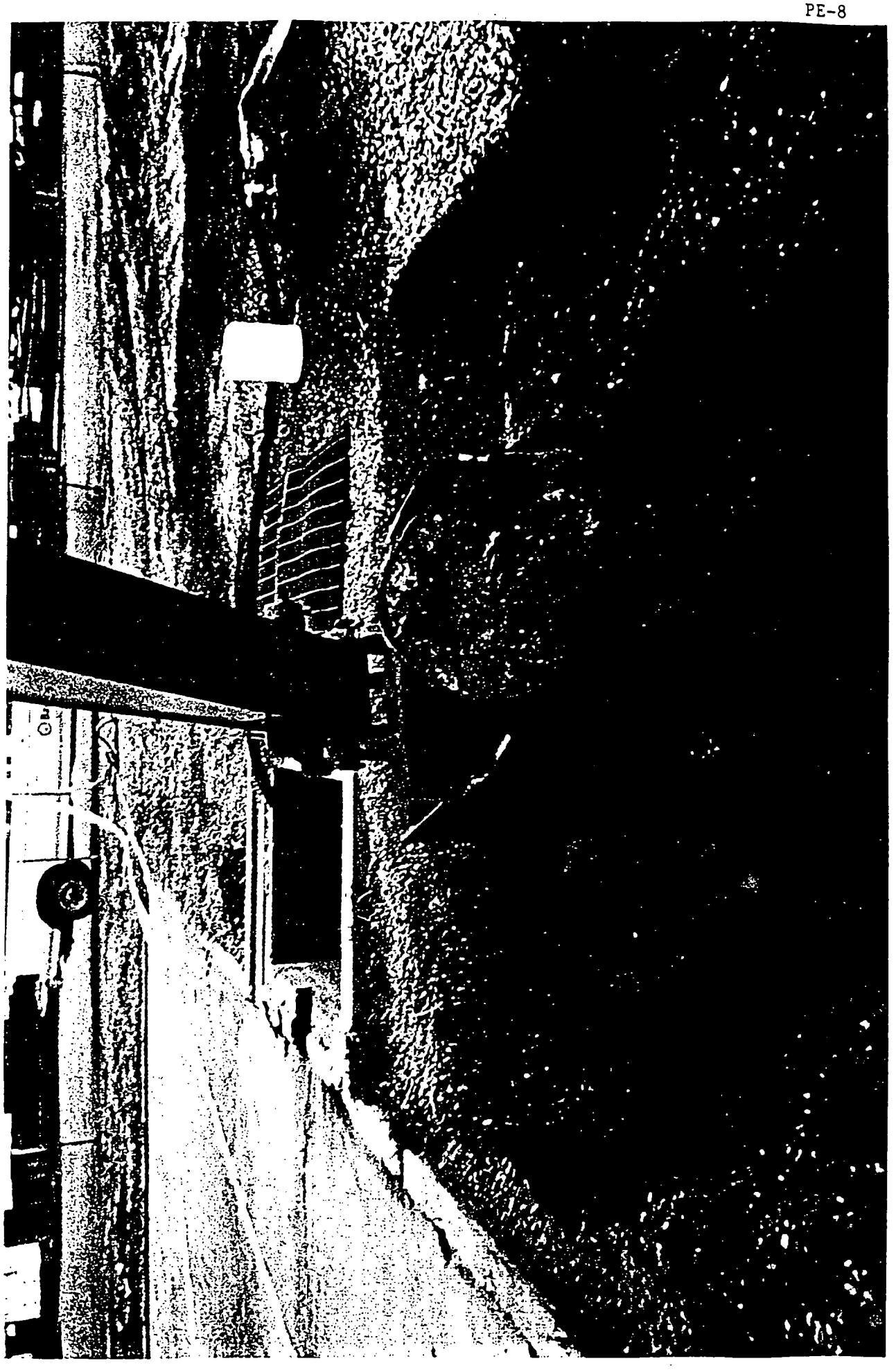


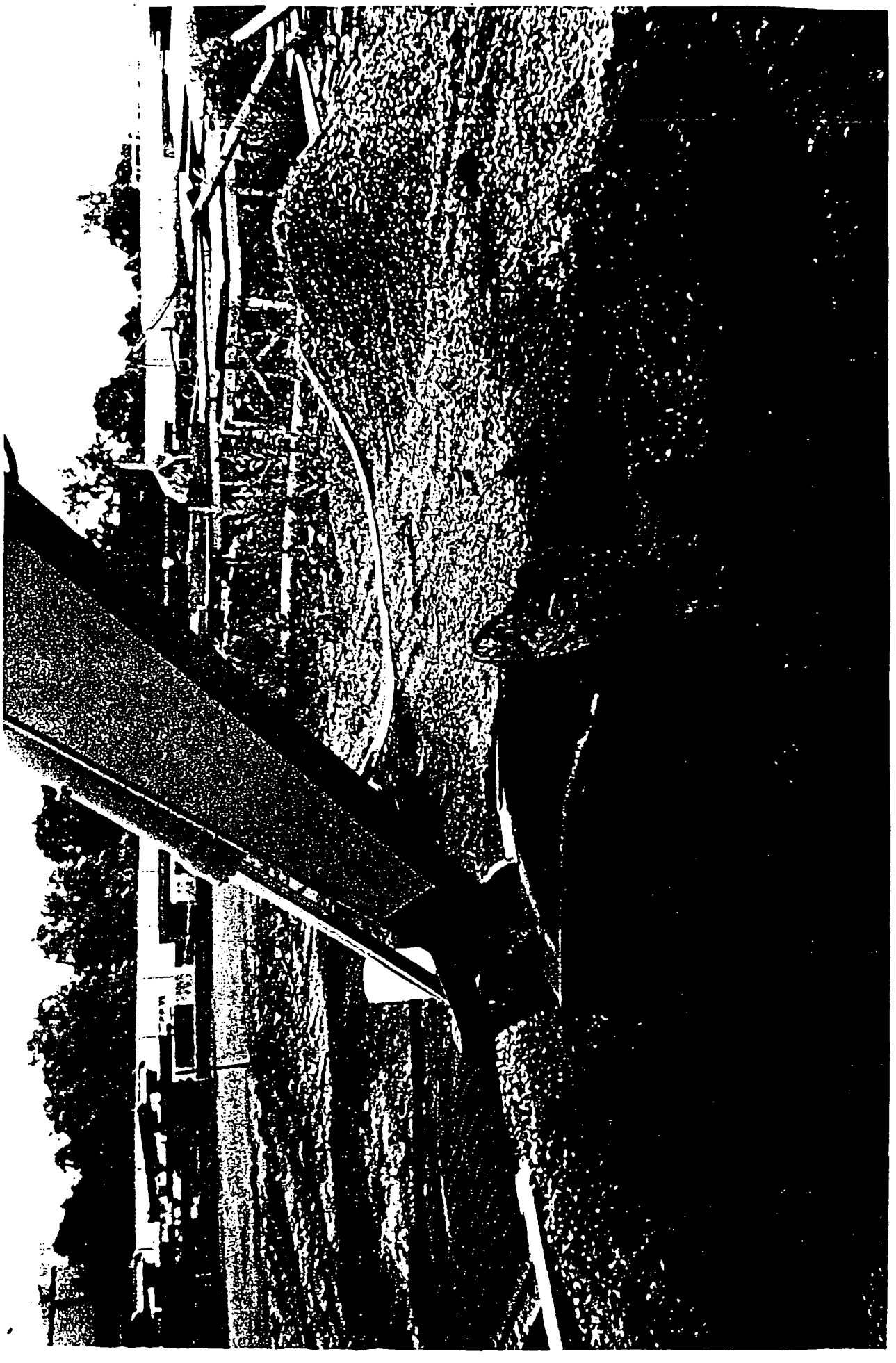

CAUTION CAUTION CAUTION CAUTION

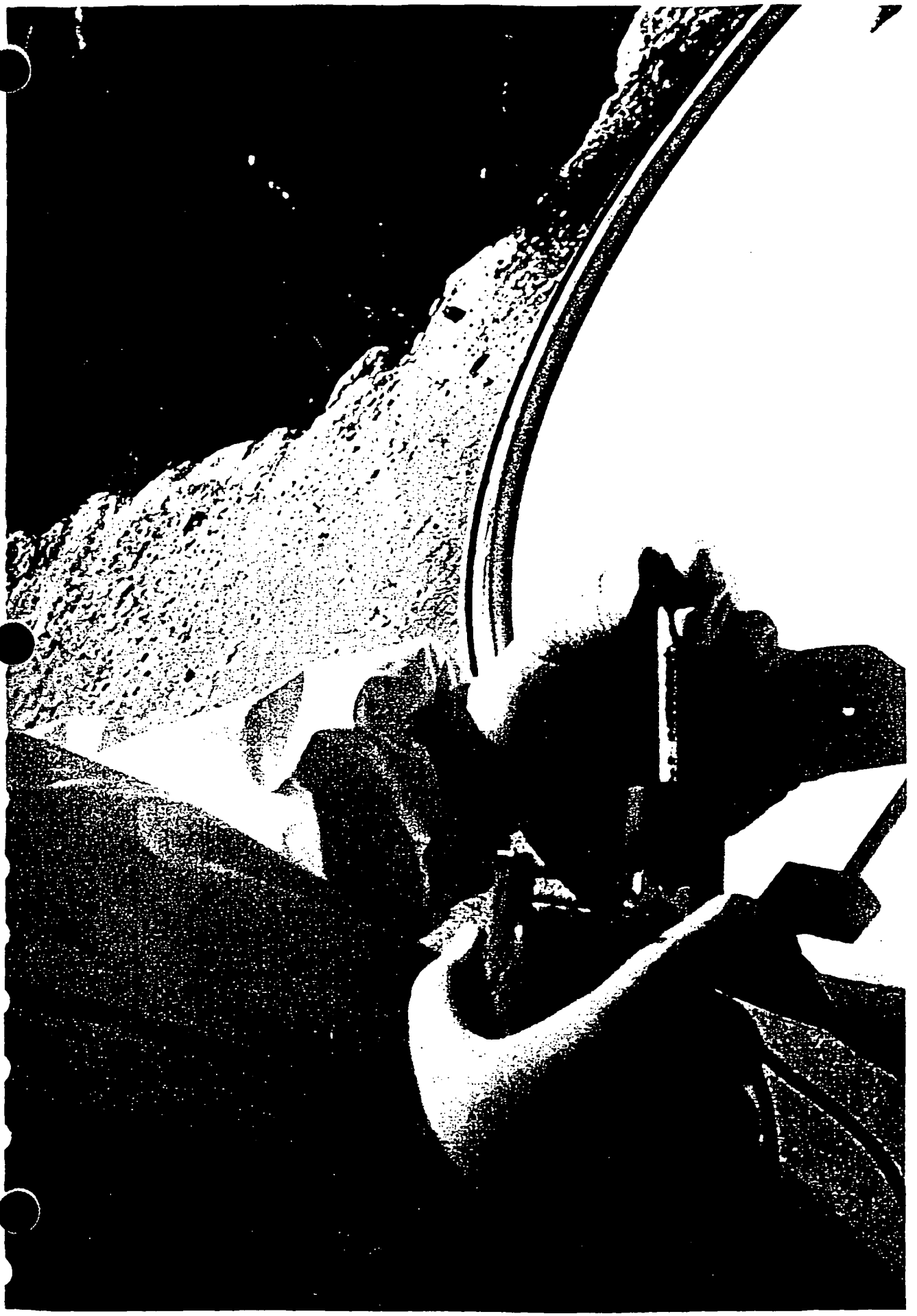
CAUTION CAUTION CAUTION CAUTION

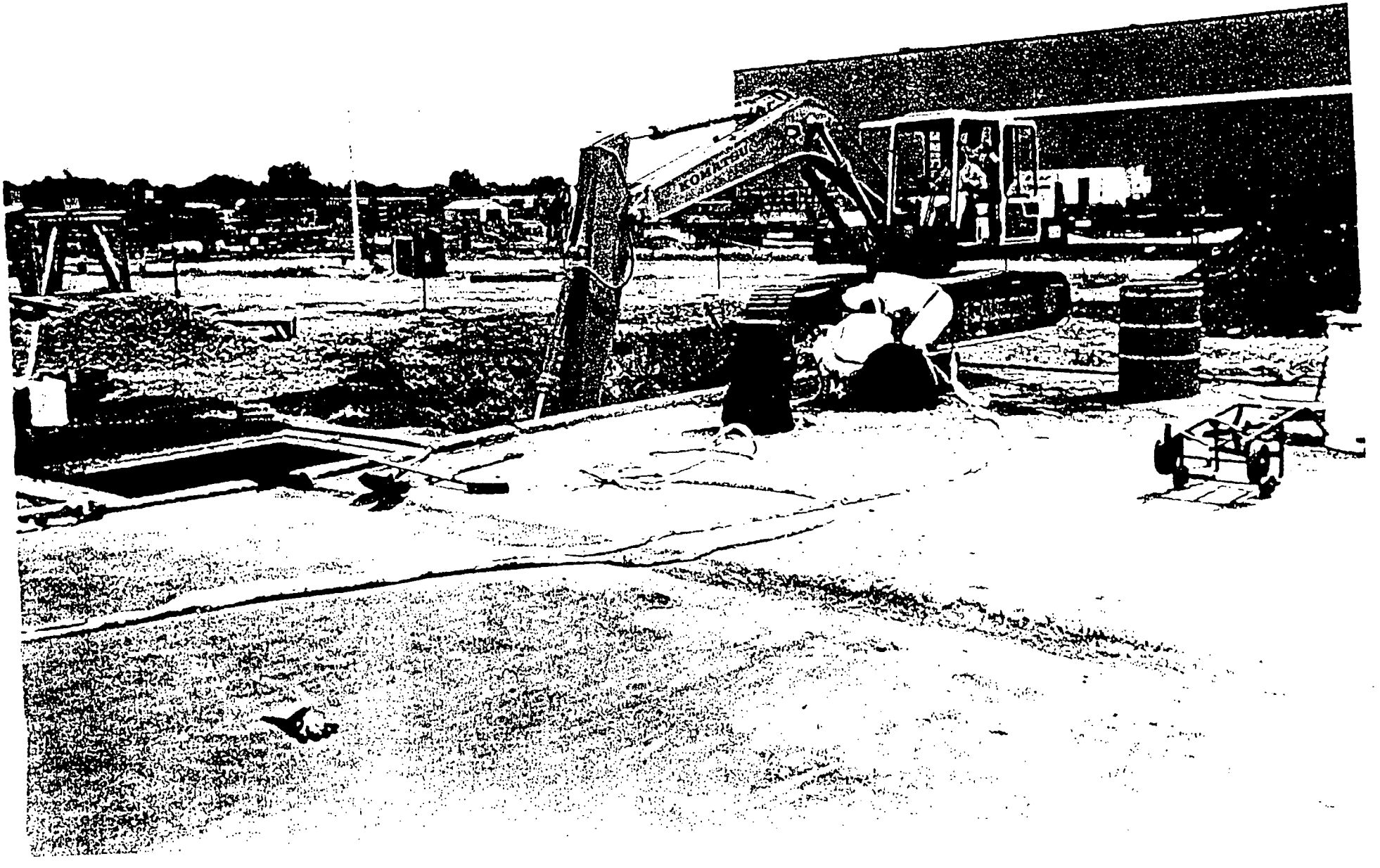




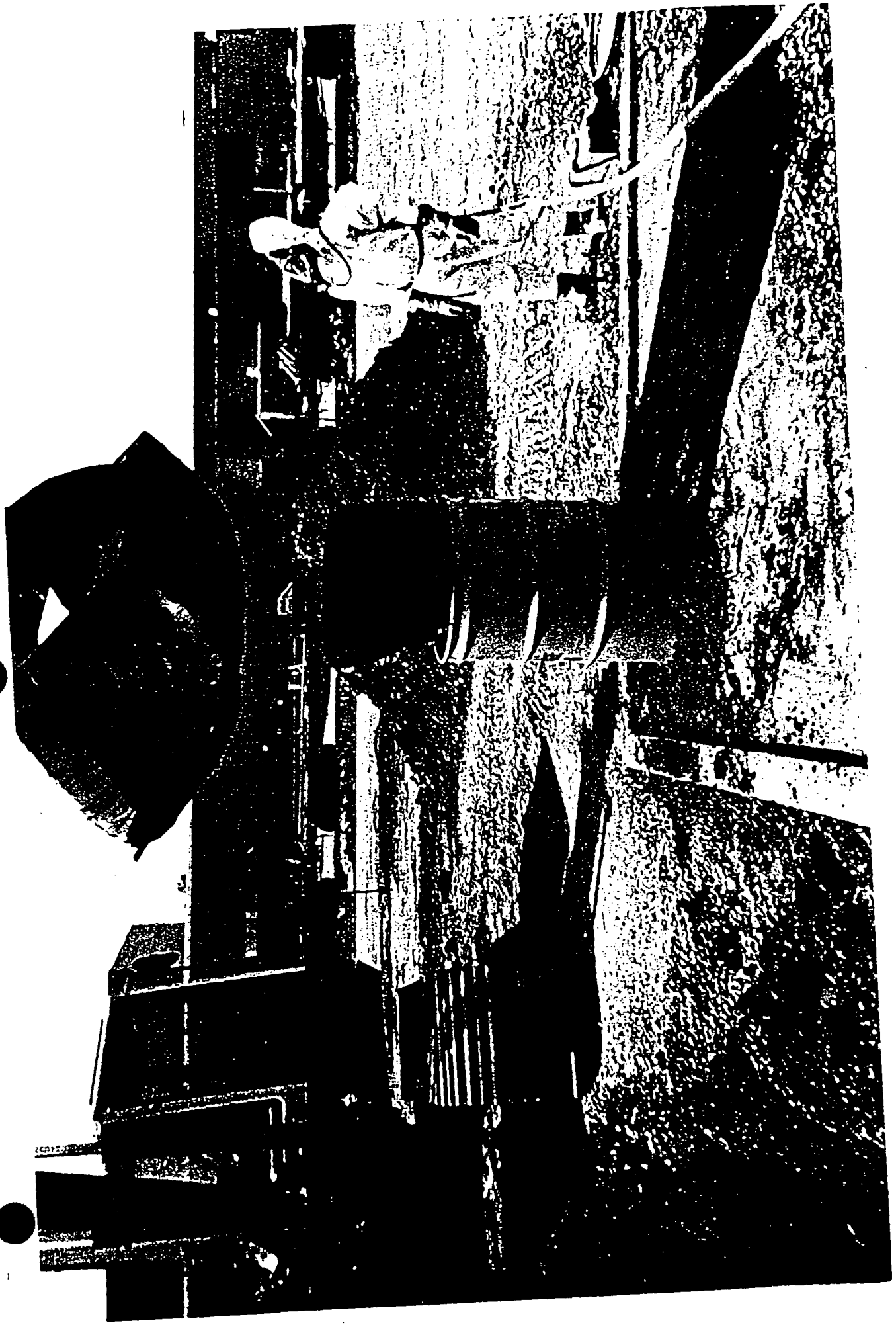


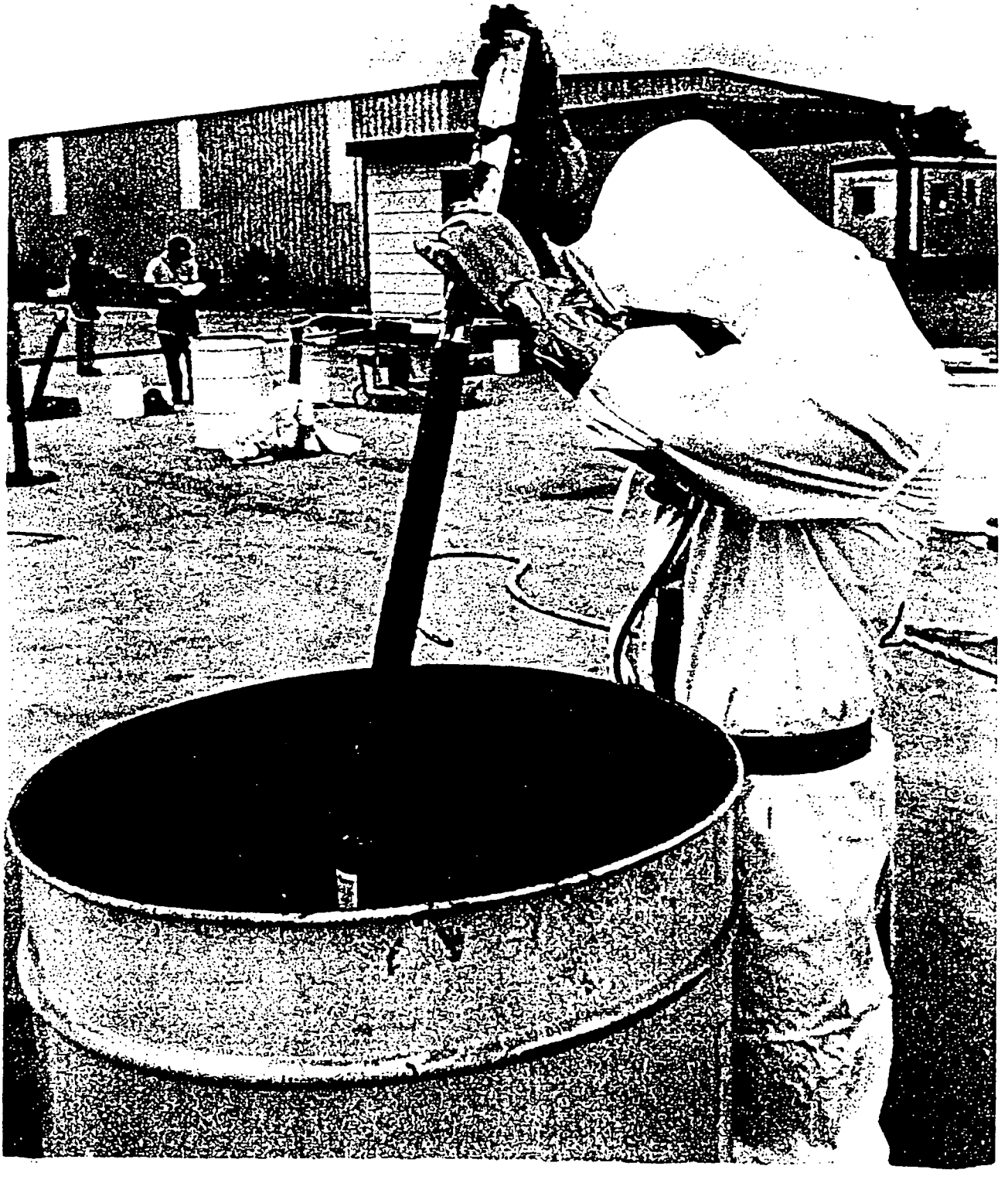


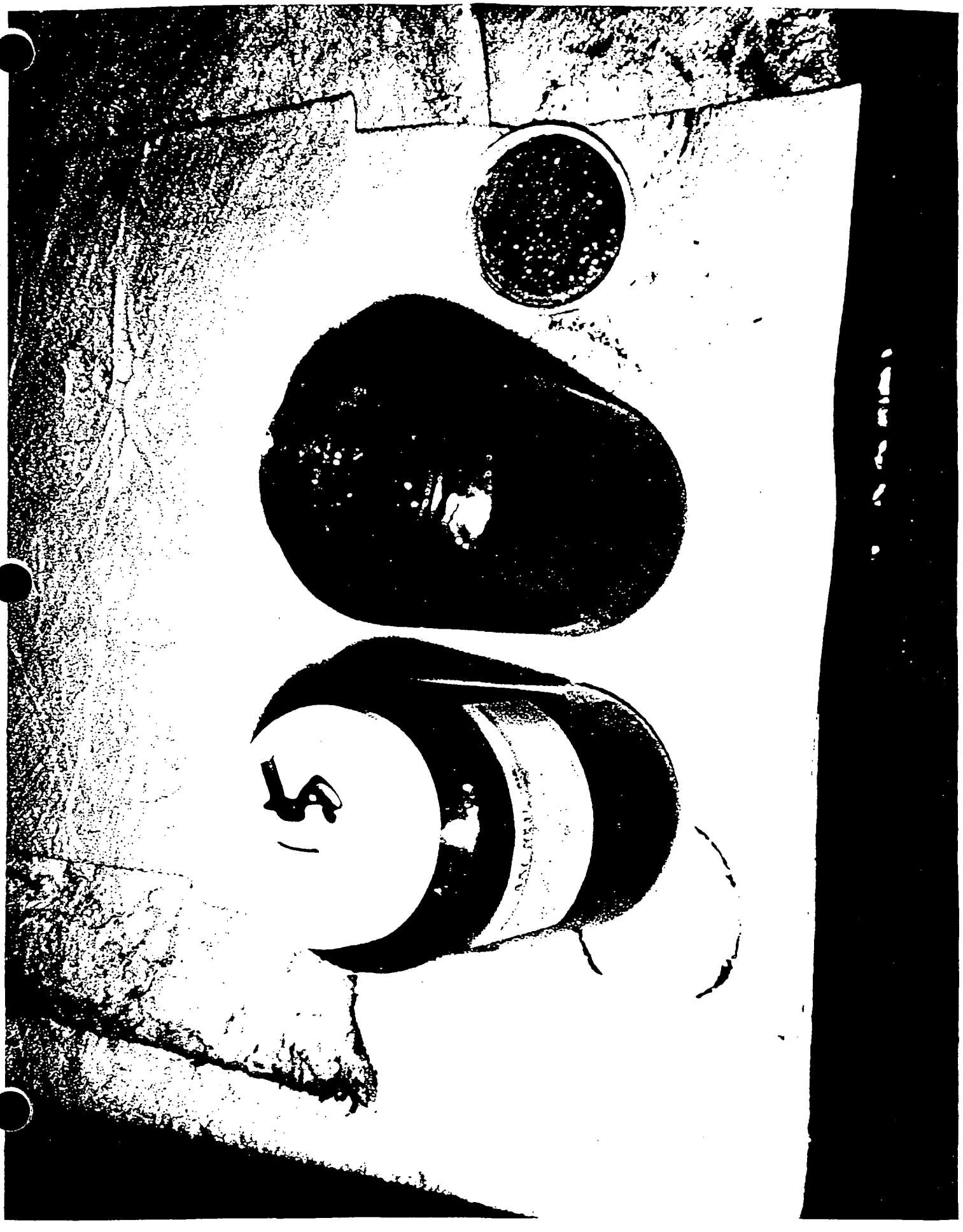


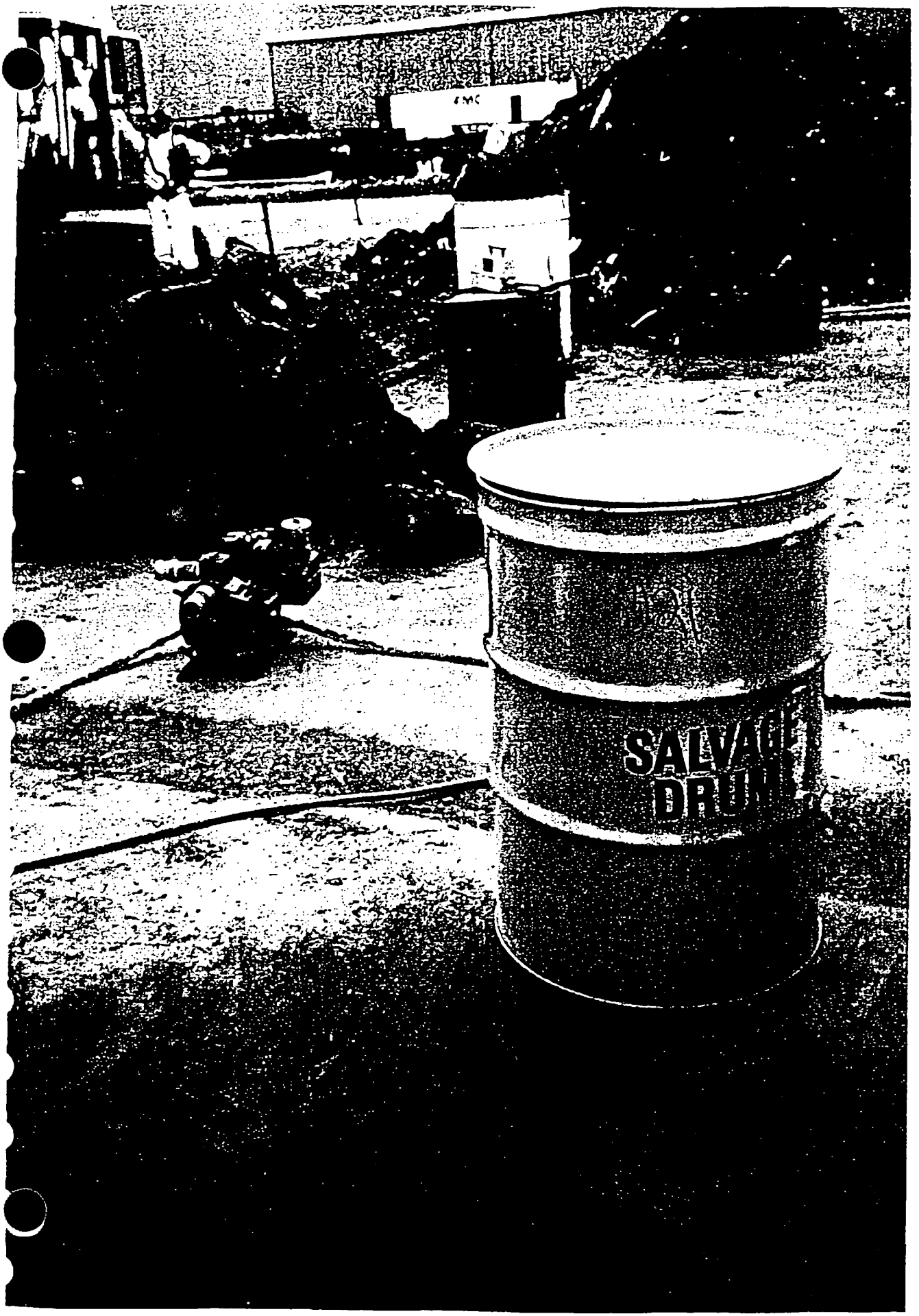

KOMATSU

FMC

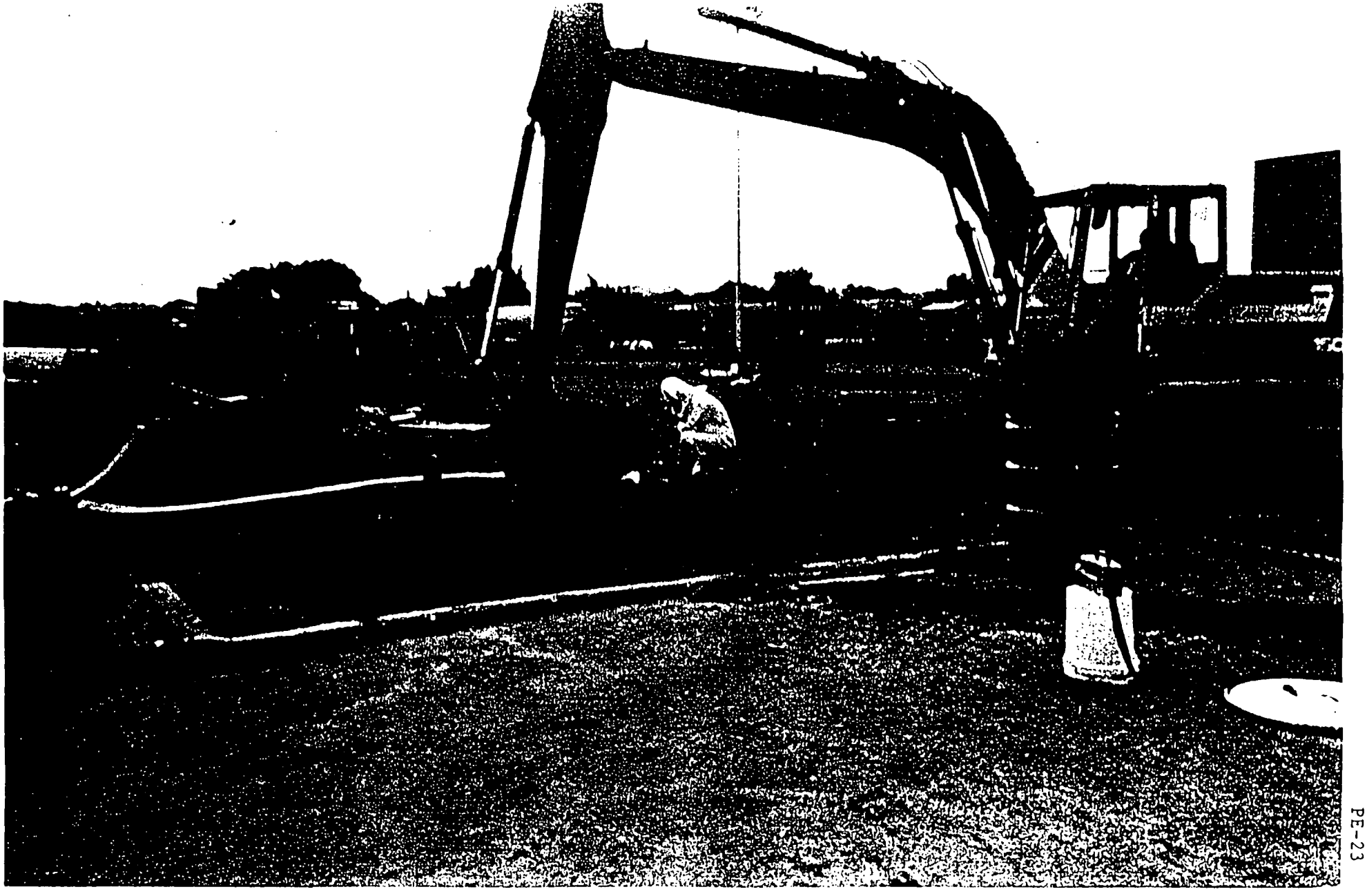


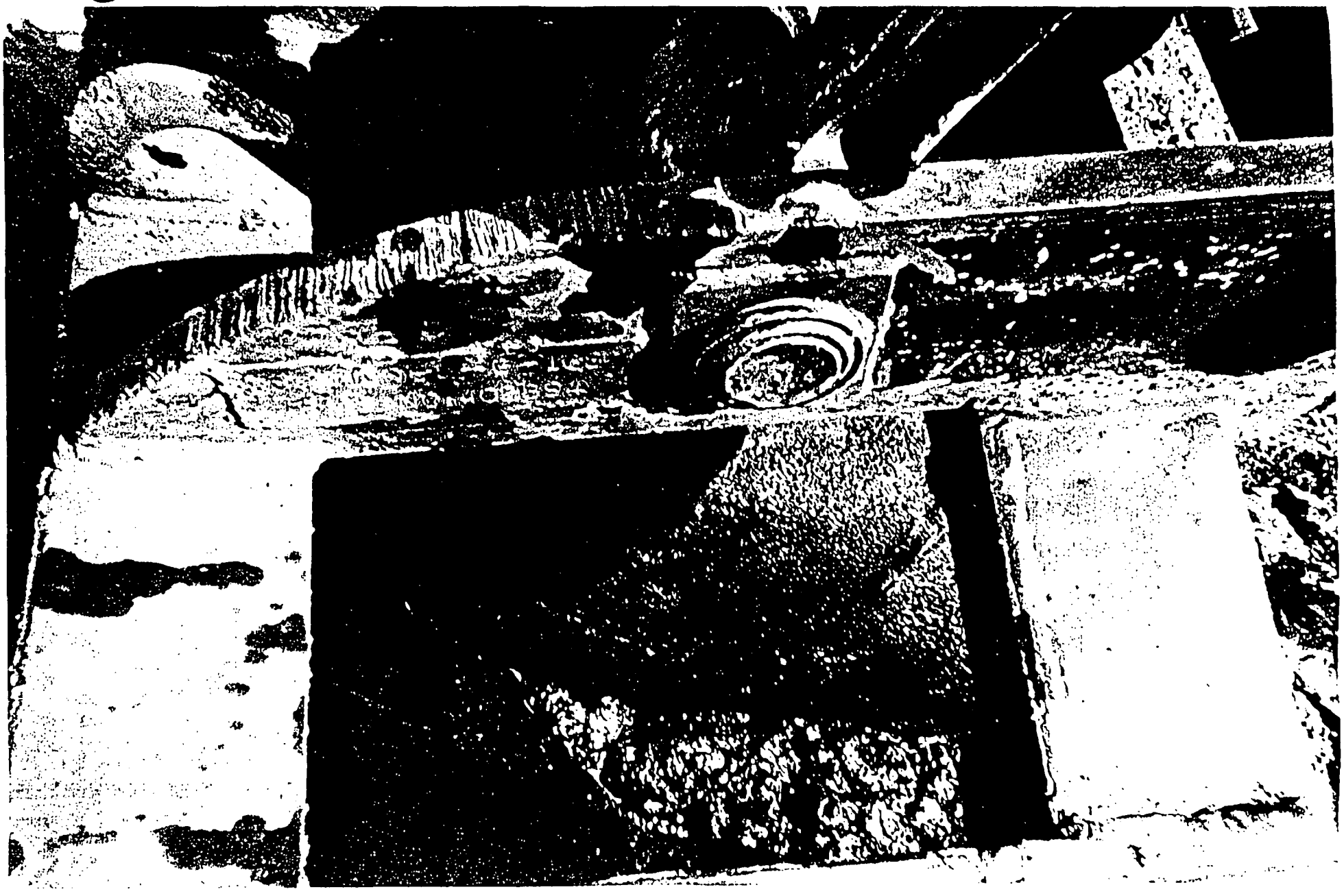


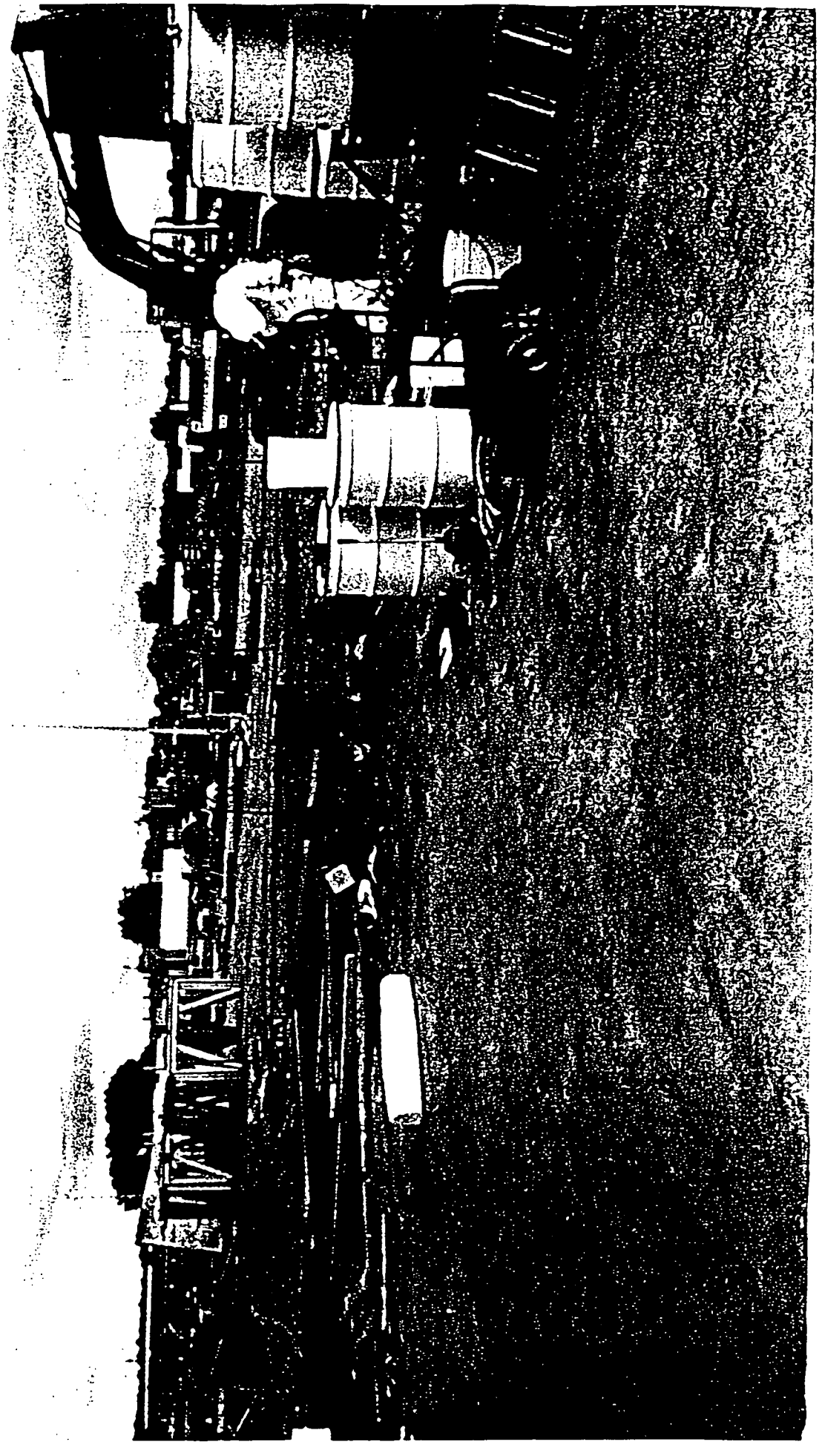


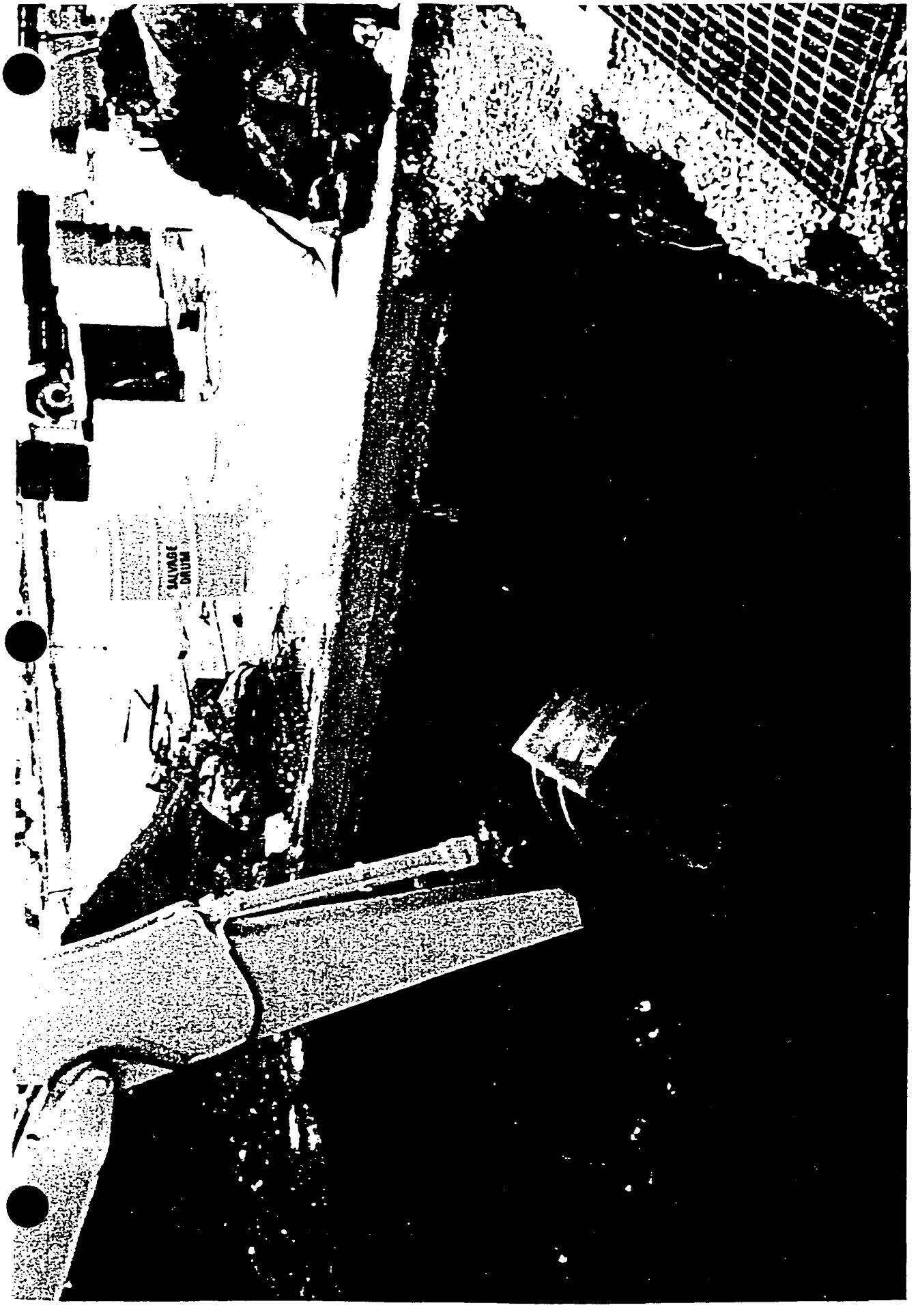

SALVAGE
DRUM

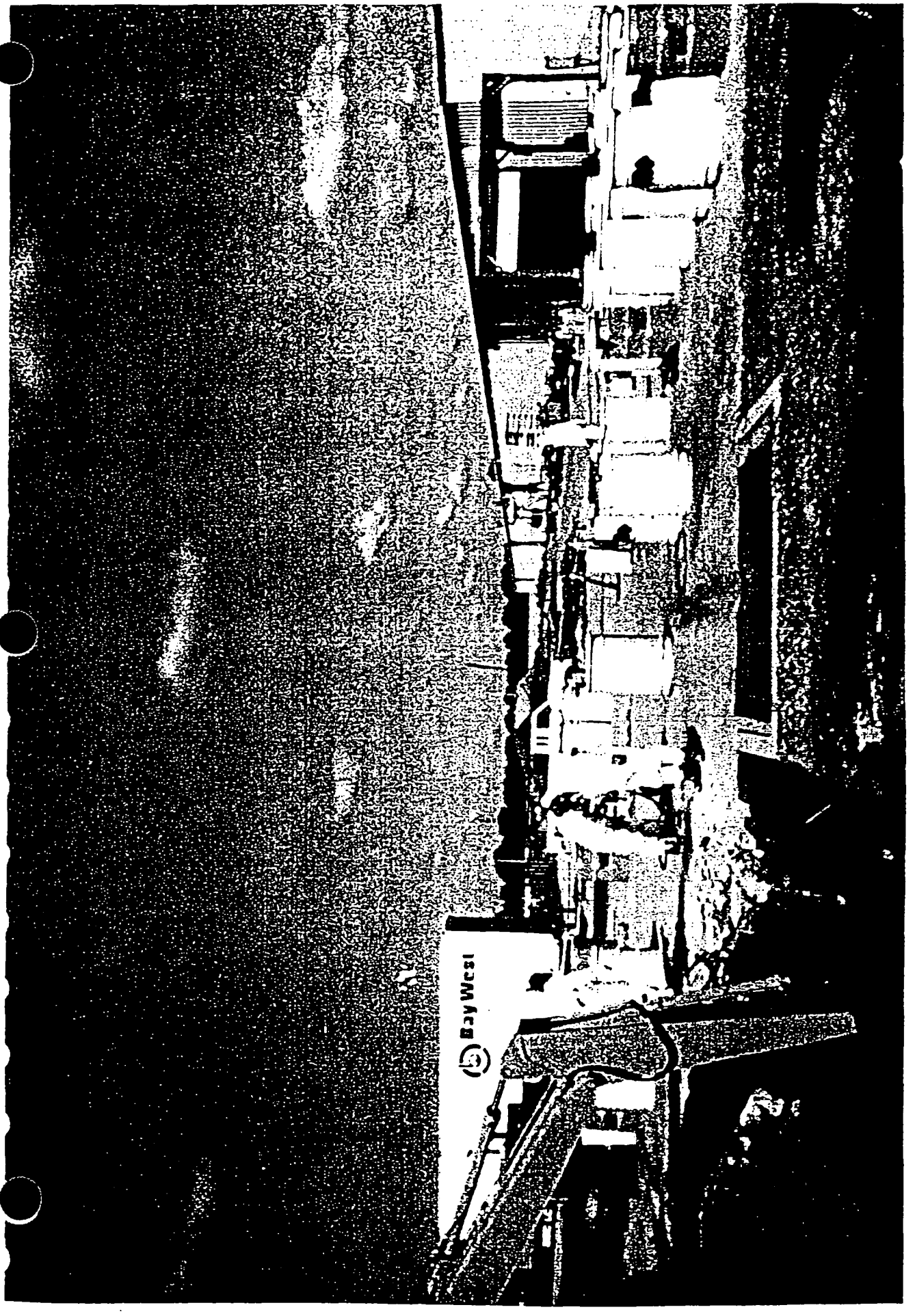
BayWest
#10
#25
SALVA
DRU

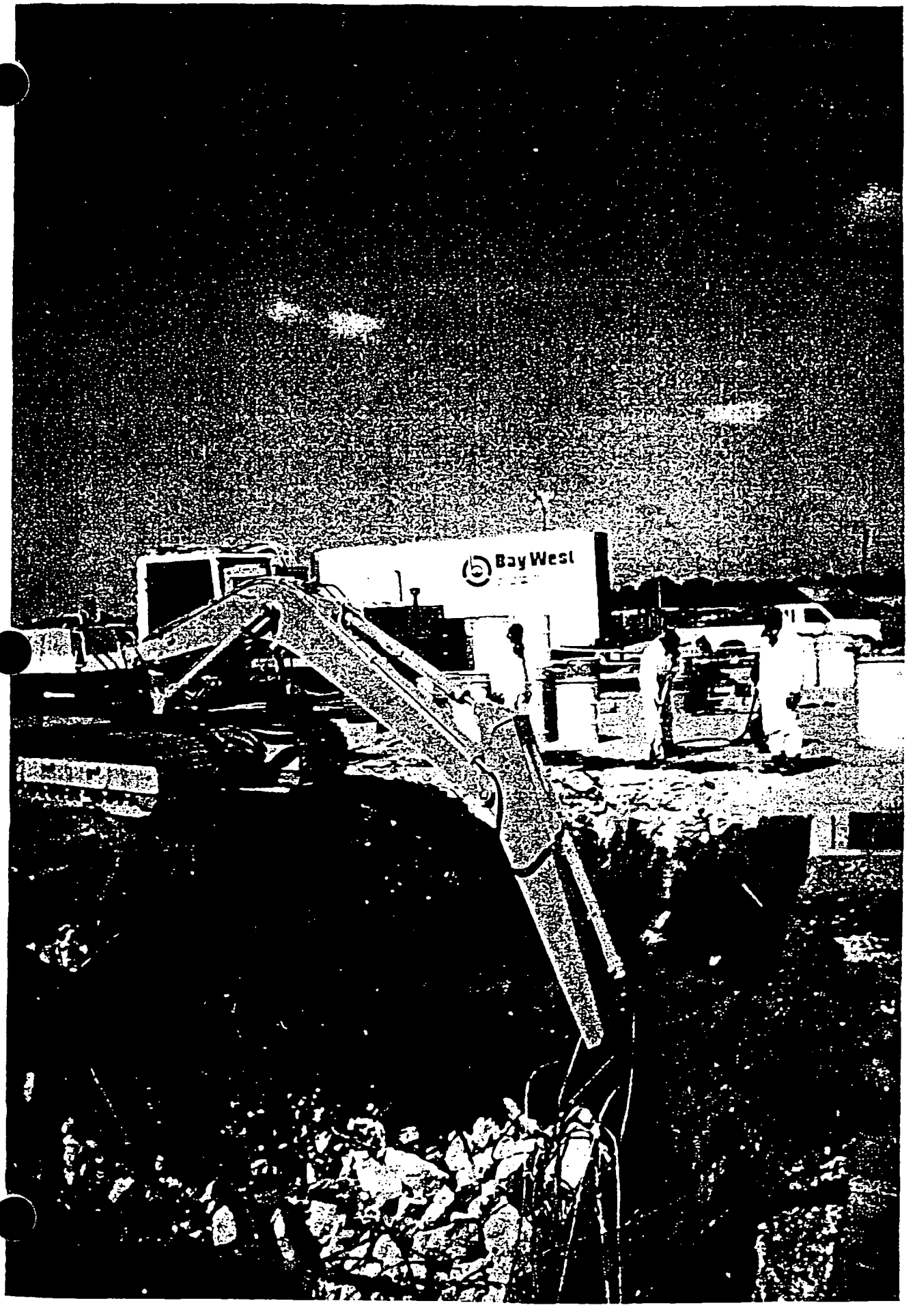


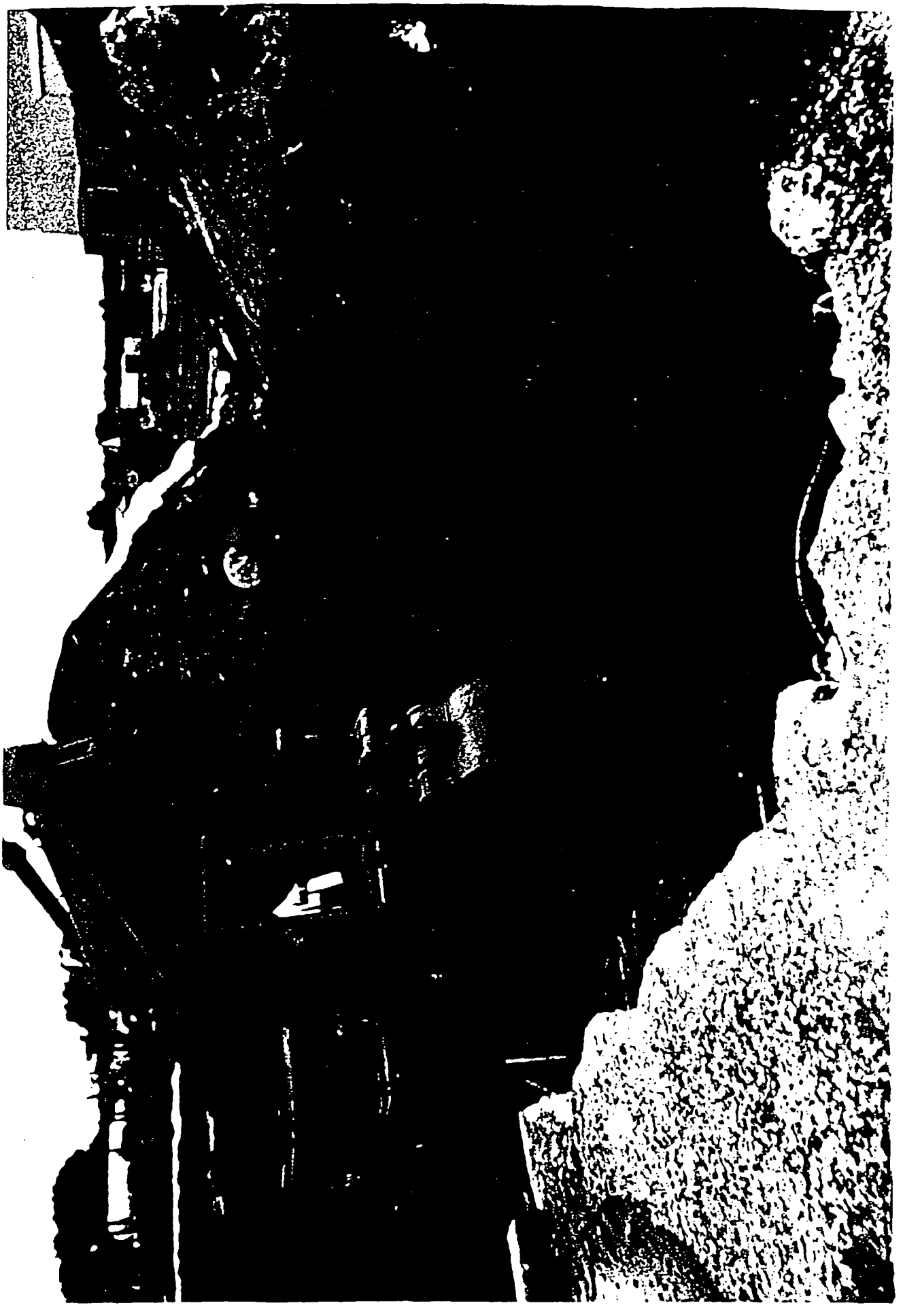





SALVAGE
DRUM


Bay West


Bay West



Bay West

APPENDIX 4

Analytical Results

Bay West Analytical Laboratory

Bay West Inc.
Five Empire Drive
St. Paul, Minnesota
55103-1867

612-291-0456
FAX 291-0099
1-800-279-0456

August 3, 1992

Bay West Environmental Services
5 Empire Drive
St. Paul, MN 55103

Attn: Mr. Bill Storm

Bay West Environmental Services Project No.: 920276 (COC: EC-2614)
Bay West Laboratory Project ID: 5-2573
Samples Collected: June 23, 1992

The following are results from the samples you submitted for analysis on July 8, 1992.

The data is reported in Tables 1, 2, and 3.

Please contact me if you have any questions or comments.

Sincerely,

Richard Sinn

Richard Sinn
Project Manager/Inorganic Chemist

RS/ps

encl.

Bay West Analytical Laboratory

Bay West Inc.
Five Empire Drive
St. Paul, Minnesota
55103-1867

612-291-0456
FAX 291-0099
1-800-279-0456

Table 1

Bay West Environmental Services Project No.: 920276
Bay West Laboratory Project ID: 5-2573

Parameter	Units	Quantitation Limit	Flammable Chlorinated Solvents 1 (24430-24432)	Non-Flammable Chlorinated Solvents 2 (24435-24437)
Total Metals:				
Antimony	mg/L	1.5	6.6	<1.5
Arsenic	mg/L	1.5	<1.5	<1.5
Barium	mg/L	0.050	36.0	11.2
Cadmium	mg/L	0.050	4.26	25.6
Chromium	mg/L	0.050	69.5	8.30
Copper	mg/L	0.10	110	13.8
Lead	mg/L	0.50	1630	8.90
Mercury	mg/L	0.010	0.054	0.058
Nickel	mg/L	0.20	27.6	14.8
Selenium	mg/L	1.5	<1.5	<1.5
Silver	mg/L	0.50	2.85	<0.50
Thallium	mg/L	2.5	<2.5	<2.5
Zinc	mg/L	0.15	610	25.6
Cyanide	mg/Kg	0.020	0.735	240
Flashpoint	°F		<20	>190
Moisture	%	1	12	56.7
Phenolics	mg/L	0.020	55900	7130
Specific Gravity			1.17	1.04
Sulphur	% w/w	0.1	0.16	<0.1
TX	% w/w	0.0006	67.5	21.7
Gross heating value	BTU/LB	5	8257	4338
Ash	%	0.05	2.36	2.94

Method		Analysis Date
Sb, As, Ba, Cd, Cr, Cu, Pb, Ni, Se, Ag, Tl, Zn	EPA 3010/6010	July 31, 1992
Hg	EPA 7470	July 20, 1992
Cyanide (Total)	EPA 9011	July 21, 1992
Flashpoint	ASTM D93	July 16 & 20, 1992
Moisture (Toluene)	ASTM D95	July 15 & 21, 1992
Phenolics	EPA 9065	July 29, 1992
Specific Gravity	ASTM D1429	July 20, 1992
Sulphur	ASTM D1522	
Total Halogens (TX)	EPA 9076	July 30, 1992
Gross heating value	ASTM D2015	
Ash	ASTM D3174	

Bay West Analytical Laboratory

Bay West Inc.
Five Empire Drive
St. Paul, Minnesota
55103-1667

612-291-0456
FAX 291-0099
1-800-279-0456

Table 2

Bay West Environmental Services Project No.: 920276
Bay West Laboratory Project ID: 5-2573

Parameter	Units	Quantitation Limit	Tan Powder Residue 9 (24433-24434)
Total Metals:			
Antimony	mg/Kg	10	<10
Arsenic	mg/Kg	10	<10
Barium	mg/Kg	0.40	86.7
Cadmium	mg/Kg	0.40	1.85
Chromium	mg/Kg	0.40	5.18
Copper	mg/Kg	1.0	25.7
Lead	mg/Kg	4.0	81.2
Mercury	mg/Kg	0.05	0.12
Nickel	mg/Kg	1.6	8.1
Selenium	mg/Kg	10	<10
Silver	mg/Kg	0.40	<0.40
Thallium	mg/Kg	13	<13
Zinc	mg/Kg	0.80	66.1
Cyanide	mg/Kg	0.020	<0.020
Flashpoint	°F		124
Moisture	%	0.1	20.8
Phenolics	mg/Kg	0.80	<0.80
Bulk Density	g/cm^3		0.908
Sulphur	% w/w	0.1	0.21
TX	% w/w	0.0006	0.0572
Gross heating value	BTU/LB	5	459
Ash	%	0.05	73.9

Method		Analysis Date
Sb, As, Ba, Cd, Cr, Cu, Pb, Ni, Se, Ag, Tl, Zn	EPA 3050/6010	July 28, 1992
Hg	EPA 7471	July 16, 1992
Cyanide (Total)	EPA 9011	July 21, 1992
Flashpoint	ASTM D93	July 16, 1992
Moisture (Toluene)	ASTM D95	July 15 & 21, 1992
Phenolics	EPA 9065	July 29, 1992
Bulk Density	ASTM E1109	July 20, 1992
Sulphur	ASTM D1522	
Total Halogens (TX)	EPA 9076	July 30, 1992
Gross heating value	ASTM D2015	
Ash	ASTM D3174	

Bay West Analytical Laboratory

Bay West Inc.
Five Empire Drive
St. Paul, Minnesota
55103-1867

612-291-0456
FAX 291-0099
1-800-279-0456

Table 3

Bay West Environmental Services Project No.: 920276
Bay West Laboratory Project ID: 5-2573

Parameter	Quantitation Limit mg/Kg	Flammable Chlorinated Solvents 1 (24430) mg/Kg
Arochlor 1016	5.0	<5.0
Arochlor 1221	5.0	<5.0
Arochlor 1232	5.0	<5.0
Arochlor 1242	5.0	<5.0
Arochlor 1248	5.0	<5.0
Arochlor 1254	5.0	<5.0
Arochlor 1260	5.0	<5.0

Analyzed: July 15, 1992

Method : EPA 608 Modified

ENVIRONMENTAL COMPLIANCE CHAIN-OF-CUSTODY RECORD

LCD: 8/91

Bay West

LAB:	SEND RESULTS TO: BS	CHAIN-OF-CUSTODY NO:
PROJECT NUMBER: 920276	PROJECT MANAGER: BS	TURNAROUND REQUEST: N
SAMPLE RETENTION: RETURN TO JOB SITE		EC - 2614

ITEM NO.	SAMPLE NUMBER (PROJECT NO. - SAMPLE ID)	SAMPLE DATE / TIME	MATRIX	NUMBER & TYPE OF CONTAINER	ANALYSIS CODE(S)	SAMPLE DESCRIPTION / COMMENTS
1	920276 - 1	6/23	S/L	2 1-liter 1 250ml glass	02, 03	Composite drums # 7, 8, 11, 12, 13, 14, 15, 18, 19, 20, 21, 29 *
2	920276 - 9	6/23	S	2 1-liter glass	03	
3	920276 - 2	6/23	S/L	2 1-liter 1 250ml glass	03,	Composite drums # 2, 4, 5, 6, 10, 17, 22, 23, 24, 26, 30, 31
4	-					
5	-					
6	-					
7	-					
8	-					

SAMPLER	AFFILIATION	DATE
TM/WCS	Bay West	7/8/92

TRANS NO.	ITEM NO.	RELINQUISHED BY	ACCEPTED BY	DATE	TIME
1	1-3	Willis Sl	Richard Sim	7/8/92	4:35
2					
3					
4					
5					

Preservative:

All samples must be preserved on ice (4°C), unless specified otherwise.

Matrix:

W = Water
L = Liquid Sample
S = Soil Sample
SD = Solids Sample
SL = Sludge Sample
O = Other (Specify _____)

ANALYSIS CODES

- Cross out any unwanted parameter.
- List any additional parameters in the "Description / Comments" column.

01 pH

02 PCB

03 Incineration Parameters: Total Metals (Ag, As, Ba, Cd, Cr, Cu, Hg, Ni, Pb, Sb, Se, Tl, Zn); Flashpoint; % Cyanide; % Sulphur; % Ash; % Moisture; % Phenols; ~~Viscosity~~; BTU / LB; ~~COR~~; TX; Specific Gravity / ~~Bulk Density~~

04 Reactives: Sulfides/Cyanides

05 TOX/EOX

06 BETX (benzene, ethyl benzene, toluene, total xylenes), TPH (total petroleum hydrocarbons), lead

07 TCLP Leach: Metals (Ag, As, Ba, Cd, Cr, Hg, Pb, Se); Volatiles; Semi-Volatiles; Pesticides; Herbicides

08 Waste Water Characteristics: Metals (Cd, Cr, Cu, Hg, Ni, Pb, Zn); Cyanide; pH; COD; BOD; TSS; Oil & Grease

09 EPA Waste Oil: Metals (As, Cd, Cr, Pb); Flashpoint; TX; PCB

10 _____

11 _____

12 _____

13 _____

14 _____

15 _____

16 _____

APPENDIX B

SAMPLE DIRECTORY AND SAMPLE DELIVERY GROUP CHECKLISTS

APPENDIX B

SAMPLE DIRECTORY AND SAMPLE DELIVERY GROUP CHECKLISTS

LAB NUM	SAMPLE ID	SAMPLE DATE	SDG NUMBER
93370	BG001A	06/03/92	NRP001
93371	BG001D	06/03/92	NRP001
93372	BG002A	06/03/92	NRP001
93373	BG002D	06/03/92	NRP001
93374	BG003A	06/03/92	NRP001
93375	BG003D	06/03/92	NRP001
93376	BG004A	06/03/92	NRP001
93377	BG004D	06/03/92	NRP001
93378	BG005A	06/03/92	NRP001
93379	BG005D	06/03/92	NRP001
93380	BG006A	06/03/92	NRP001
93381	BG006D	06/03/92	NRP001
93382	BG005D DUP	06/03/92	NRP001
93383	QCR001	06/03/92	NRP001
93384	QCT001	06/03/92	NRP001
93521	BG007A	06/04/92	NRP001
93522	BG007D	06/04/92	NRP001
93523	BG008A	06/04/92	NRP001
93524	BG008D	06/04/92	NRP001
93525	BG009A	06/04/92	NRP002
93526	BG009D	06/04/92	NRP002
93527	BG010A	06/04/92	NRP002
93528	BG010D	06/04/92	NRP002
9352RE	BG010D	06/04/92	NRP002
93529	BG009D DUP	06/04/92	NRP002
93530	QCT002	06/04/92	NRP002
93531	QCR002	06/04/92	NRP002
93532	SRC001	06/04/92	NRP002
93657	AB028A	06/08/92	NRP002
93658	AB028G	06/08/92	NRP002
93659	AB033B	06/08/92	NRP002
93660	AB033H	06/08/92	NRP002
93661	AB034A	06/08/92	NRP002
93662	AB034D	06/08/92	NRP002
93663	AB041A	06/08/92	NRP002
93664	AB041C	06/08/92	NRP002
93665	QCR003	06/08/92	NRP002
93666	QCT003	06/08/92	NRP002
93718	AB024A	06/09/92	NRP003
93719	AB024G	06/09/92	NRP003
93720	AB027A	06/09/92	NRP003
93721	AB027H	06/09/92	NRP002

LAB NUM	SAMPLE ID	SAMPLE DATE	SDG NUMBER
93722	AB030A	06/09/92	NRP003
93723	AB030G	06/09/92	NRP003
93724	AB032A	06/09/92	NRP003
93725	AB032D	06/09/92	NRP003
93726	AB025A	06/09/92	NRP003
93727	AB025B	06/09/92	NRP003
93728	AB042A	06/09/92	NRP003
93729	AB042G	06/09/92	NRP003
93730	QCR004	06/09/92	NRP003
93731	AB042G DUP	06/09/92	NRP003
93732	AB030G DUP	06/09/92	NRP003
93733	QCT004	06/09/92	NRP003
93773	AB026A	06/10/92	NRP003
93774	AB026G	06/10/92	NRP003
93775	AB029A	06/10/92	NRP003
93776	AB029H	06/10/92	NRP003
93777	AB037A	06/10/92	NRP004
93778	AB037D	06/10/92	NRP004
93779	AB038A	06/10/92	NRP004
93780	AB038G	06/10/92	NRP004
93781	AB039A	06/10/92	NRP004
93782	AB039H	06/10/92	NRP004
93783	AB039H DUP	06/10/92	NRP004
93784	QCT005	06/10/92	NRP004
93785	AB035A	06/10/92	NRP004
93787	QCR005	06/10/92	NRP004
93966	FB002A	06/11/92	NRP004
93967	FB002H	06/11/92	NRP004
93968	FB003A	06/11/92	NRP004
93969	FB003E	06/11/92	NRP003
93970	FB004A	06/11/92	NRP004
93971	FB004G	06/11/92	NRP004
93972	DB029A	06/11/92	NRP004
93973	DB029E	06/11/92	NRP004
93974	DB032A	06/11/92	NRP004
93975	DB032C	06/11/92	NRP005
93976	DB031A	06/11/92	NRP005
93977	DB031F	06/11/92	NRP005
93978	DB029E DUP	06/11/92	NRP005
93979	QCR006	06/11/92	NRP005
93980	QCT006	06/11/92	NRP005
94006	DB030A	06/12/92	NRP005
94007	DB030E	06/12/92	NRP004

LAB NUM	SAMPLE ID	SAMPLE DATE	SDG NUMBER
94008	FB001A	06/12/92	NRP005
94009	FB001E	06/12/92	NRP005
94010	AT001A	06/12/92	NRP005
94011	AT001C	06/12/92	NRP005
94012	AT002A	06/12/92	NRP005
94013	AT002B	06/12/92	NRP005
94014	AT002B DUP	06/12/92	NRP005
94015	QCR007	06/12/92	NRP005
94016	QCT007	06/12/92	NRP005
94173	BB001A	06/15/92	NRP005
94174	BB001B	06/15/92	NRP005
94175	BB002B	06/15/92	NRP005
94176	BB002G	06/15/92	NRP006
94177	AB031A	06/15/92	NRP006
94178	AB036H	06/15/92	NRP005
94179	AB040A	06/15/92	NRP006
94180	AB040D	06/15/92	NRP006
94181	BB002G DUP	06/15/92	NRP006
94182	QCR008	06/15/92	NRP006
94183	SRC002	06/15/92	NRP006
94184	QCT008	06/15/92	NRP006
94185	AB031G	06/15/92	NRP006
94186	AB036A	06/15/92	NRP006
94269	EB001A	06/16/92	NRP008
94273	EB001E	06/16/92	NRP008
94277	EB002A	06/16/92	NRP008
94280	EB002D	06/16/92	NRP008
94293	BB003A	06/16/92	NRP006
94294	BB003D	06/16/92	NRP006
94295	AT003A	06/16/92	NRP006
94296	AT003B	06/16/92	NRP006
94297	AT004A	06/16/92	NRP006
94298	AT004B	06/16/92	NRP006
94299	AT005A	06/16/92	NRP006
94300	AT005C	06/16/92	NRP006
94301	AT005C DUP	06/16/92	NRP006
94302	QCT010	06/16/92	NRP006
94427	AT006A	06/17/92	NRP007
94428	AT006B	06/17/92	NRP007
94429	AT007A	06/17/92	NRP007
94430	AT007C	06/17/92	NRP007
94431	AT008A	06/17/92	NRP007
94432	AT008D	06/17/92	NRP007

LAB NUM	SAMPLE ID	SAMPLE DATE	SDG NUMBER
94433	BT002A	06/17/92	NRP007
94434	BT002B	06/17/92	NRP007
94435	AT008D DUP	06/17/92	NRP007
94436	QCR009	06/17/92	NRP007
94437	QCR010	06/17/92	NRP007
94438	QCT011	06/17/92	NRP007
94548	BT001A	06/18/92	NRP007
94549	BT001B	06/18/92	NRP007
94550	BT003A	06/18/92	NRP007
94551	BT003D	06/18/92	NRP007
94552	BT004A	06/18/92	NRP007
94553	BT004D	06/18/92	NRP007
94554	EB003A	06/18/92	NRP007
94555	EB003F	06/18/92	NRP007
94556	EB004A	06/18/92	NRP008
94557	EB004D	06/18/92	NRP008
94558	BT004D DUP	06/18/92	NRP008
94559	QCR011	06/18/92	NRP008
94560	QCT012	06/18/92	NRP008
94788	AT009B1	06/23/92	NRP009
94789	AT009B1 DUP	06/23/92	NRP009
94790	QCT013	06/23/92	NRP009
94791	AT009B1	06/23/92	NRP009
94792	AT009B1 DUP	06/23/92	NRP009
94843	AT009D1	06/24/92	NRP009
94844	AT009D2	06/24/92	NRP009
94845	AT009D3	06/24/92	NRP009
94846	QCT014	06/24/92	NRP009
94847	AT009D1	06/24/92	NRP009
94848	AT009D2	06/24/92	NRP009
94849	AT009D3	06/24/92	NRP009
94929	AT009E1	06/25/92	NRP009
94930	QCT015	06/25/92	NRP009
94931	AT009E1	06/25/92	NRP009
94963	AT009E2	06/26/92	NRP009
94964	QCT016	06/26/92	NRP009
94965	AT009E2	06/26/92	NRP009
95576	FB002C	07/07/92	NRP010
95577	BB001C	07/07/92	NRP010
95578	DB033A	07/07/92	NRP010
95579	DB033E	07/07/92	NRP010
95580	DB034A	07/07/92	NRP010
95581	DB034C	07/07/92	NRP010
95582	QCR012	07/07/92	NRP010
95583	QCT017	07/07/92	NRP010
95658	AB204A	07/08/92	NRP011

LAB NUM	SAMPLE ID	SAMPLE DATE	SDG NUMBER
95659	AB204B	07/08/92	NRP011
95660	AB202A	07/08/92	NRP011
95661	AB202B	07/08/92	NRP011
95662	AB205A	07/08/92	NRP011
95663	AB205G	07/08/92	NRP011
95664	AB206A	07/08/92	NRP011
95665	AB206B	07/08/92	NRP011
95666	QCR013	07/08/92	NRP011
95667	QCT018	07/08/92	NRP011
95668	AB204A DUP	07/08/92	NRP011
95760	AB201A	07/08/92	NRP011
95761	AB201H	07/08/92	NRP011
95762	AB203A	07/08/92	NRP011
95763	AB203B	07/08/92	NRP011
95764	AB215A	07/09/92	NRP011
95765	AB215H	07/09/92	NRP011
95766	AB222A	07/09/92	NRP011
95767	AB222C	07/09/92	NRP011
95768	AB220A	07/09/92	NRP011
95769	AB220G	07/09/92	NRP012
95770	AB223A	07/09/92	NRP012
95771	AB223C	07/09/92	NRP012
95772	AB222A DUP	07/09/92	NRP012
95773	QCR014	07/09/92	NRP012
95774	QCT019	07/09/92	NRP012
95813	AB207A	07/09/92	NRP012
95814	AB207H	07/09/92	NRP012
95815	AB219A	07/09/92	NRP012
95816	AB219F	07/09/92	NRP012
95817	AB221A	07/09/92	NRP012
95818	AB221G	07/09/92	NRP012
95819	AB226B	07/10/92	NRP012
95820	AB226G	07/10/92	NRP012
95821	AB228A	07/10/92	NRP012
95822	AB228F	07/10/92	NRP012
95823	AB229A	07/10/92	NRP012
95824	AB229H	07/10/92	NRP012
95825	AB230A	07/10/92	NRP012
95826	AB230B	07/10/92	NRP013
95827	QCR015	07/10/92	NRP013
95828	QCT020	07/10/92	NRP013
95868	AB224A	07/13/92	NRP013
95869	AB224H	07/13/92	NRP013
95870	AB208A	07/13/92	NRP013
95871	AB208H	07/13/92	NRP013
95872	AB216A	07/13/92	NRP012

LAB NUM	SAMPLE ID	SAMPLE DATE	SDG NUMBER
95873	AB216D	07/13/92	NRP013
95874	AB217A	07/13/92	NRP013
95875	AB217D	07/13/92	NRP013
95876	AB227A	07/13/92	NRP013
95877	AB227G	07/13/92	NRP013
95878	AB208A DUP	07/13/92	NRP013
95879	AB227A DUP	07/13/92	NRP013
95880	QCR016	07/13/92	NRP013
95881	QCT021	07/13/92	NRP013
95907	AB231A	07/14/92	NRP013
95908	AB231H	07/14/92	NRP013
95909	AB233A	07/14/92	NRP013
95910	AB233H	07/14/92	NRP013
95911	QCR017	07/14/92	NRP014
95912	QCT022	07/14/92	NRP014
96151	AB235A	07/15/92	NRP014
96152	AB235H	07/15/92	NRP014
96153	AB234A	07/15/92	NRP014
96154	AB234D	07/15/92	NRP014
96155	AB236A	07/15/92	NRP014
96156	AB236H	07/15/92	NRP014
96157	AB234A DUP	07/15/92	NRP014
96158	BB204A	07/16/92	NRP014
96159	BB204G	07/16/92	NRP014
96160	BB205A	07/16/92	NRP014
96161	BB205G	07/16/92	NRP014
96162	BB202B	07/16/92	NRP014
96163	SRC003	07/16/92	NRP010
96164	QCR018	07/16/92	NRP014
96165	QCT023	07/16/92	NRP014
96166	BB206A	07/17/92	NRP014
96167	BB206G	07/17/92	NRP014
96168	EB206A	07/17/92	NRP014
96169	EB206E	07/17/92	NRP014
96170	BB206A DUP	07/17/92	NRP015
96171	QCR019	07/17/92	NRP015
96172	QCT024	07/17/92	NRP015
96266	AB043D	07/20/92	NRP010
96267	AB043H	07/20/92	NRP010
96268	AB044D	07/20/92	NRP010
96269	AB044H	07/20/92	NRP010
96270	QCR020	07/20/92	NRP010
96271	QCT025	07/20/92	NRP010
96406	EB203A	07/21/92	NRP015
96407	EB203B	07/21/92	NRP015
96408	EB207A	07/21/92	NRP015

LAB NUM	SAMPLE ID	SAMPLE DATE	SDG NUMBER
96409	EB207F	07/21/92	NRP015
96410	EB208A	07/21/92	NRP015
96411	EB208F	07/21/92	NRP015
96412	EB208A DUP	07/21/92	NRP015
96413	EB209A	07/22/92	NRP015
96414	EB209B	07/22/92	NRP015
96415	EB210A	07/22/92	NRP015
96416	EB210E	07/22/92	NRP015
96417	EB210A DUP	07/22/92	NRP015
96418	QCR021	07/22/92	NRP015
96419	QCT026	07/22/92	NRP015
96439	AB209A	07/23/92	NRP015
96440	AB209B	07/23/92	NRP015
96441	AB210A	07/23/92	NRP015
96442	AB210D	07/23/92	NRP016
96443	AB211A	07/23/92	NRP016
96444	AB211B	07/23/92	NRP016
96445	AB213A	07/23/92	NRP016
96446	AB213B	07/23/92	NRP016
96447	AB213A DUP	07/23/92	NRP016
96448	QCR022	07/23/92	NRP016
96449	QCT027	07/23/92	NRP016
96480	AB212A	07/24/92	NRP016
96481	AB212B	07/24/92	NRP016
96482	AB218A	07/24/92	NRP016
96483	AB218H	07/24/92	NRP016
96484	QCR023	07/24/92	NRP016
96485	QCT028	07/24/92	NRP016
96572	AB237A	07/27/92	NRP016
96573	AB237C	07/27/92	NRP016
96574	AB239A	07/27/92	NRP016
96575	AB239G	07/27/92	NRP016
96576	AB240A	07/27/92	NRP016
96577	AB240H	07/27/92	NRP016
96578	AB241A	07/27/92	NRP017
96579	AB241C	07/27/92	NRP017
96580	AB238A	07/27/92	NRP017
96581	AB238H	07/27/92	NRP017
96582	AB238H DUP	07/27/92	NRP017
96583	AB214A	07/28/92	NRP017
96584	AB214C	07/28/92	NRP017
96585	AB242A	07/28/92	NRP017
96586	AB242B	07/28/92	NRP017
96587	AB243A	07/28/92	NRP017
96588	AB243B	07/28/92	NRP017
96589	AB244A	07/28/92	NRP017

LAB NUM	SAMPLE ID	SAMPLE DATE	SDG NUMBER
96590	AB244H	07/28/92	NRP017
96591	AB244H DUP	07/28/92	NRP017
96592	QCR024	07/28/92	NRP017
96593	QCT029	07/29/92	NRP017
96846	AB248A	07/30/92	NRP018
96847	AB248C	07/30/92	NRP018
96848	AB252A	07/30/92	NRP018
96849	AB252H	07/30/92	NRP018
96850	AB254A	07/30/92	NRP018
96851	AB254C	07/30/92	NRP018
96852	AB254A DUP	07/30/92	NRP018
96853	AB248C DUP	07/30/92	NRP018
96854	QCR025	07/30/92	NRP018
96855	QCT030	07/30/92	NRP018
96856	AB245A	07/29/92	NRP017
96857	AB245G	07/29/92	NRP017
96858	AB246A	07/29/92	NRP017
96859	AB246B	07/29/92	NRP017
96860	AB247A	07/29/92	NRP018
96861	AB247C	07/29/92	NRP018
96862	AB251A	07/29/92	NRP018
96863	AB251C	07/29/92	NRP018
96864	AB253A	07/29/92	NRP018
96865	AB253H	07/29/92	NRP018

SAMPLE DELIVERY GROUP CHECKLIST - GC/MS ORGANICS

FORM DV1b

SDG ID NRP001 VOCs ✓ Semi-Vol ___ Data Package Complete Yes ✓ No ___ Review Date 7/16/92

REVIEW CRITERIA		COMMENTS
INITIAL CALIBRATION		
RRFs (%RSD ≤ 30%)	OK ✓ No ___	
Minimum RFs	OK ✓ No ___	
CONTINUING CALIBRATION		
RRFs (%RSD ≤ 25%)	OK ✓ No ___	
Minimum RFs	OK ✓ No ___	
RRTs	OK ✓ No ___	
TUNING CRITERIA	OK ✓ No ___	
INTERNAL STANDARDS	OK ✓ No ___	
SURROGATES	OK ✓ No ___	
MS/MSD RESULTS	OK ✓ No ___	
SAMPLE RESULTS		
RT Windows (RRT ±.06 min.)	OK ✓ No ___	
Quantitation	OK ✓ No ___	
Matching Spectra	OK ✓ No ___	
TIC REVIEW COMMENTS		
LABORATORY BLANKS	Yes ✓ No ___	JS20 acetone, 2-butanone; JS21 acetone, 2-butanone; JS23 $MeCl_2$, 2-butanone
How Many? 3		
FIELD BLANKS	Yes ✓ No ___	
Number	FB 1 TB 1	R – 93383 ①; T – 93384 ② (L $MeCl_2$-2, acetone-5); ① $MeCl_2$-3, Acetone-42, CS_2-25, 2-butanone-94, 4methyl-2-pentanone-3, TICs 2-propanol, Tetradecane
FIELD DUPLICATES	Yes ✓ No ___	93382/93379 OK
HOLDING TIMES	OK ✓ No ___	
OTHER COMMENTS		Carbon disulfide has been found in low concentrations. RT is close to 2-propanol contamination

SAMPLE DELIVERY GROUP CHECKLIST - GC/MS ORGANICS

FORM DV1b

SDG ID NRP002 VOCs ✓ Semi-Vol ___ Data Package Complete Yes ✓ No ___ Review Date 8/13/92

REVIEW CRITERIA		COMMENTS
INITIAL CALIBRATION		
RRFs (%RSD ≤ 30%)	OK ✓ No ___	
Minimum RFs	OK ✓ No ___	
CONTINUING CALIBRATION		
RRFs (%RSD ≤ 25%)	OK ✓ No ___	CCU analyzed 6/22 on P276 and 279 has incorrect
Minimum RFs	OK ✓ No ___	initial calibration dates - data needs to be recalculated and
RRTs	OK ✓ No ___	reprocessed
TUNING CRITERIA	OK ✓ No ___	
INTERNAL STANDARDS	OK ✓ No ___	
SURROGATES	OK ✓ No ___	
MS/MSD RESULTS	OK ✓ No ___	
SAMPLE RESULTS		
RT Windows (RRT ±.06 min.)	OK ✓ No ___	
Quantitation	OK ✓ No ___	
Matching Spectra	OK ✓ No ___	
TIC REVIEW COMMENTS		
LABORATORY BLANKS	Yes ✓ No ___	found $MeCl_2$, 2-butanone, toluene, acetone
How Many? 6		
FIELD BLANKS	Yes ✓ No ___	T - 93530, 93666 - found MeCl, acetone, 2-butanone
Number	FB 2 TB 2	F - 93531, 93665 - found MeCl, acetone, 2-butanone, 4-methyl-2-pentanone TICs (2-propanol, tetrahydrofuran
FIELD DUPLICATES	Yes ✓ No ___	93529/93526 OK
HOLDING TIMES	OK ✓ No ___	
OTHER COMMENTS		Many samples with positive hits for 2-propanol (field cleaning solvent) may be a source of low level CS_2 hits, may interfere with others like acetone

SAMPLE DELIVERY GROUP CHECKLIST - GC/MS ORGANICS

FORM DV1b

SDG ID NRP003 VOCs ✓ Semi-Vol ___ Data Package Complete Yes ✓ No ___ Review Date 8/7/92

REVIEW CRITERIA		COMMENTS
INITIAL CALIBRATION		
RRFs (%RSD ≤ 30%)	OK ✓ No ___	
Minimum RFs	OK ✓ No ___	
CONTINUING CALIBRATION		
RRFs (%RSD ≤ 25%)	OK ✓ No ___	
Minimum RFs	OK ✓ No ___	
RRTs	OK ✓ No ___	
TUNING CRITERIA	OK ✓ No ___	
INTERNAL STANDARDS	OK ✓ No ___	
SURROGATES	OK ✓ No ___	
MS/MSD RESULTS	OK ✓ No ___	
SAMPLE RESULTS		
RT Windows (RRT ±.06 min.)	OK ✓ No ___	
Quantitation	OK ✓ No ___	
Matching Spectra	OK ✓ No ___	
TIC REVIEW COMMENTS		
LABORATORY BLANKS	Yes ✓ No ___	Found $MeCl_2$, acetone, chloroform, 2-butanone
How Many? 9		
FIELD BLANKS	Yes ✓ No ___	T – 93733
Number	FB 1 TB 1	E – 93730 acetone-44, 2-butanone-79, 4-methyl-2-pentanone-3
		TIC tetrahydrofuran-24
FIELD DUPLICATES	Yes ✓ No ___	93731, 93732 / 93729 93723 DK
HOLDING TIMES	OK ✓ No ___	
OTHER COMMENTS		Samples with positive hits for 2-propanol (field cleaning solvent) may be a source of CS_2 contamination, may interfere with others like acetone

SAMPLE DELIVERY GROUP CHECKLIST - GC/MS ORGANICS

FORM DV1b

SDG ID NRP004 VOCs ✓ Semi-Vol___ Data Package Complete Yes ✓ No___ Review Date 8/28/92

REVIEW CRITERIA		COMMENTS
INITIAL CALIBRATION		
RRFs (%RSD ≤ 30%)	OK ✓ No___	
Minimum RFs	OK ✓ No___	
CONTINUING CALIBRATION		
RRFs (%RSD ≤ 25%)	OK ✓ No___	
Minimum RFs	OK ✓ No___	
RRTs	OK ✓ No___	
TUNING CRITERIA	OK ✓ No___	
INTERNAL STANDARDS	OK ✓ No___	
SURROGATES	OK ✓ No___	
MS/MSD RESULTS	OK ✓ No___	
SAMPLE RESULTS		
RT Windows (RRT ±.06 min.)	OK ✓ No___	
Quantitation	OK ✓ No___	
Matching Spectra	OK ✓ No___	
TIC REVIEW COMMENTS		93967, 93968 may have fuel oil
LABORATORY BLANKS	Yes ✓ No___	acetone, 2-butanone, $MeCl_2$, chloroform, 2-hexanone, toluene
How Many? 7		
FIELD BLANKS	Yes ✓ No___	T - 93784 $MeCl_2$, acetone, 2-butanone
Number	FB 1 TB 1	F - 93787 $MeCl_2$, acetone, 2-butanone -180 TIC - tetrahydrofuran
FIELD DUPLICATES	Yes ✓ No___	93783/93782 OK
HOLDING TIMES	OK ✓ No___	
OTHER COMMENTS		Samples with positive hits for 2-propanol (field cleaning solvent) may be a source of CS_2 contamination, may interfere with higher, like acetone

SAMPLE DELIVERY GROUP CHECKLIST - GC/MS ORGANICS

FORM DV1b

SDG ID NRP005 VOCs ✓ Semi-Vol___ Data Package Complete Yes ✓ No___ Review Date_____

REVIEW CRITERIA		COMMENTS
INITIAL CALIBRATION		
RRFs (%RSD ≤ 30%)	OK ✓ No___	
Minimum RFs	OK ✓ No___	
CONTINUING CALIBRATION		
RRFs (%RSD ≤ 25%)	OK ✓ No___	
Minimum RFs	OK ✓ No___	
RRTs	OK ✓ No___	
TUNING CRITERIA	OK ✓ No___	
INTERNAL STANDARDS	OK ✓ No___	
SURROGATES	OK ✓ No___	
MS/MSD RESULTS	OK ✓ No ✓	% RSD - OK TCE high on MS
SAMPLE RESULTS		
RT Windows (RRT ±.06 min.)	OK ✓ No___	
Quantitation	OK ✓ No___	
Matching Spectra	OK ✓ No___	
TIC REVIEW COMMENTS		93977 - fueloil ?
LABORATORY BLANKS	Yes ✓ No___	acetone, MeCl2, chloroform, toluene
How Many? 6		
FIELD BLANKS	Yes ✓ No___	R-93979, 94015 acetone, 2-Butanone, 4 methyl-2 pentanone
Number	FB 2 TB 2	T-93980, 94016
FIELD DUPLICATES	Yes ✓ No___	93978/93977 94014/94013 OK
HOLDING TIMES	OK ✓ No___	
OTHER COMMENTS		

SAMPLE DELIVERY GROUP CHECKLIST - GC/MS ORGANICS

FORM DV1b

SDG ID NRP006 VOCs ✓ Semi-Vol ___ Data Package Complete Yes ✓ No ___ Review Date 9/28/92

REVIEW CRITERIA		COMMENTS
INITIAL CALIBRATION		
RRFs (%RSD ≤ 30%)	OK ✓ No ___	
Minimum RFs	OK ✓ No ___	
CONTINUING CALIBRATION		
RRFs (%RSD ≤ 25%)	OK ___ No ✓	carbon tetrachloride and 1,1,2,2-TeCA high RPD - data not effected
Minimum RFs	OK ✓ No ___	
RRTs	OK ✓ No ___	
TUNING CRITERIA	OK ___ No ___	
INTERNAL STANDARDS	OK ___ No ✓	94185 - .27 min (BCM) - .21 (OFB), 94299-300 > .06 min
		94183 - .22 min (BCM) - .22 (OFB) - data not effected
SURROGATES	OK ✓ No ___	
MS/MSD RESULTS	OK ✓ No ___	
SAMPLE RESULTS		
RT Windows (RRT ±.06 min.)	OK ___ No ✓	some RTs > ±.06 - matching spectra OK
Quantitation	OK ✓ No ___	
Matching Spectra	OK ✓ No ___	
TIC REVIEW COMMENTS		
LABORATORY BLANKS	Yes ___ No ✓	$MeCl_2$, Toluene, Acetone, 2-butanone
How Many? 6		
FIELD BLANKS	Yes ✓ No ___	FB-94182 - $MeCl_2$, Acetone, 2-butanone, toluene, xylenes, TIC-tetrahydrofuran
Number	FB 1 TB 2	TB-94184, 94302 - $MeCl_2$, toluene, 2-butanone
FIELD DUPLICATES	Yes ✓ No ___	94181/94186, 94301/94300 OK
HOLDING TIMES	OK ___ No ✓	94183 - 49 days past holding time
		94185 Re - 2 days past, 94298 OK, MS, MSD - 1 day past
OTHER COMMENTS		
		94185 - high gasoline dilutes TCL results

SAMPLE DELIVERY GROUP CHECKLIST - GC/MS ORGANICS

FORM DV1b

SDG ID NRP 007 VOCs___ Semi-Vol ✓ Data Package Complete Yes ✓ No___ Review Date 9/17/92

REVIEW CRITERIA		COMMENTS
INITIAL CALIBRATION		
RRFs (%RSD ≤ 30%)	OK ✓ No___	
Minimum RFs	OK ✓ No___	
CONTINUING CALIBRATION		
RRFs (%RSD ≤ 25%)	OK ✓ No___	
Minimum RFs	OK ✓ No___	
RRTs	OK ✓ No___	
TUNING CRITERIA	OK ✓ No___	
INTERNAL STANDARDS	OK ✓ No___	
SURROGATES	OK ✓ No___	
MS/MSD RESULTS	OK ✓ No___	
SAMPLE RESULTS		
RT Windows (RRT ±.06 min.)	OK ✓ No___	
Quantitation	OK ✓ No___	
Matching Spectra	OK ✓ No___	
TIC REVIEW COMMENTS		artifacts and column bleed qualified B4 PP'-DDE IO in 94427
LABORATORY BLANKS	Yes ✓ No___	SBLK94 SBLK95
How Many? 3		8.23, 8.80, 9.63 8.23, 8.80, 25.42, 27.25, column bleed
FIELD BLANKS	Yes ✓ No___	94436
Number	FB 2 TB NA	94437
FIELD DUPLICATES	Yes ✓ No___	94435/94432 94435 diluted 1:10 high hydrocarbon 94432 clean
HOLDING TIMES	OK ✓ No___	all extracted 10th day after collection
OTHER COMMENTS		hydrocarbon hump 94430, 94435

SAMPLE DELIVERY GROUP CHECKLIST - GC/MS ORGANICS

FORM DV1b

SDG ID NRP007 VOCs ✓ Semi-Vol ___ Data Package Complete Yes ✓ No ___ Review Date 10/5/92

REVIEW CRITERIA		COMMENTS
INITIAL CALIBRATION		
RRFs (%RSD ≤ 30%)	OK ✓ No ___	Acetone high RPD
Minimum RFs	OK ✓ No ___	
CONTINUING CALIBRATION		
RRFs (%RSD ≤ 25%)	OK ✓ No ___	Acetone high RPD
Minimum RFs	OK ✓ No ___	
RRTs	OK ✓ No ___	
TUNING CRITERIA	OK ✓ No ___	
INTERNAL STANDARDS	OK ✓ No ✓	94434+ 94434 RE had low CBZ area - 94434 used
SURROGATES	OK ✓ No ___	
MS/MSD RESULTS	OK ✓ No ✓	94430 had high spike recoveries on MS/MSD - sample results probably biased low
SAMPLE RESULTS		
RT Windows (RRT ±.06 min.)	OK ✓ No ✓	relatively high RT shifts up to .17
Quantitation	OK ✓ No ___	
Matching Spectra	OK ✓ No ___	
TIC REVIEW COMMENTS		
LABORATORY BLANKS	Yes ✓ No ___	acetone, 2-butanone, chloroform
How Many? 5		
FIELD BLANKS	Yes ✓ No ___	F-94436 acetone; F-94437 - acetone, 2-butanone, trichloroethene
Number	FB 2 TB 1	T-94438 acetone; samples 94427-35 with TB
FIELD DUPLICATES	Yes ✓ No ___	94435 (D) / 94432 (S)
HOLDING TIMES	OK ✓ No ✓	Several analyses or reanalyses on 15th day
OTHER COMMENTS		hydrocarbon pattern - 94554

SAMPLE DELIVERY GROUP CHECKLIST - GC/MS ORGANICS

FORM DV1b

SDG ID NRP008 VOCs ✓ Semi-Vol___ Data Package Complete Yes ✓ No___ Review Date 9/24/92

REVIEW CRITERIA		COMMENTS
INITIAL CALIBRATION		
RRFs (%RSD ≤ 30%)	OK ✓ No___	acetone poor RSDs
Minimum RFs	OK ✓ No___	
CONTINUING CALIBRATION		
RRFs (%RSD ≤ 25%)	OK ✓ No___	
Minimum RFs	OK ✓ No___	
RRTs	OK ✓ No___	
TUNING CRITERIA	OK ✓ No___	
INTERNAL STANDARDS	OK ✓ No___	
SURROGATES	OK ✓ No___	
MS/MSD RESULTS	OK ✓ No___	
SAMPLE RESULTS		
RT Windows (RRT ±.06 min.)	OK ✓ No ✓	RT shift on some samples - changed column to
Quantitation	OK ✓ No___	correct problem. Data not effected
Matching Spectra	OK ✓ No___	
TIC REVIEW COMMENTS		
LABORATORY BLANKS	Yes ✓ No___	toluene, acetone, chloroform, 2-butanone
How Many? 5		
FIELD BLANKS	Yes ✓ No___	R-94559 - acetone, carbon disulfide, 2-butanone
Number	FB 1 TB 1	T-94560 - acetone, 2-butanone
FIELD DUPLICATES	Yes ✓ No___	94558/94557 OK
HOLDING TIMES	OK ✓ No___	
OTHER COMMENTS		94269, 94273 - over diluted
		94557, 94791 - hydrocarbons

SAMPLE DELIVERY GROUP CHECKLIST - GC/MS ORGANICS

FORM DV1b

SDG ID NRP009 VOCs ✓ Semi-Vol ___ Data Package Complete Yes ✓ No ___ Review Date 10/1/92

REVIEW CRITERIA		COMMENTS
INITIAL CALIBRATION		
RRFs (%RSD ≤ 30%)	OK ✓ No ___	
Minimum RFs	OK ✓ No ___	
CONTINUING CALIBRATION		
RRFs (%RSD ≤ 25%)	OK ✓ No ___	
Minimum RFs	OK ✓ No ___	
RRTs	OK ✓ No ___	
TUNING CRITERIA	OK ✓ No ___	
INTERNAL STANDARDS	OK ✓ No ___	
SURROGATES	OK ✓ No ___	
MS/MSD RESULTS	OK ✓ No ___	Trichloroethene out due to sample nonhomogenity
SAMPLE RESULTS		
RT Windows (RRT ±.06 min.)	OK ✓ No ___	
Quantitation	OK ✓ No ___	
Matching Spectra	OK ✓ No ___	
TIC REVIEW COMMENTS		
LABORATORY BLANKS	Yes ✓ No ___	
How Many? 4		
FIELD BLANKS	Yes ✓ No ___	T-94790 T-94846
Number	FB 0 TB 4	T-94830 T-94964
FIELD DUPLICATES	Yes ✓ No ___	94791 / 94792 Off
HOLDING TIMES	OK ✓ No ___	
OTHER COMMENTS		94963 overdilated 1:5 (fuel oil?)

SAMPLE DELIVERY GROUP CHECKLIST - GC/MS ORGANICS

FORM DV1b

SDG ID NRP010 VOCs ✓ Semi-Vol ___ Data Package Complete Yes ✓ No ___ Review Date 10/8/92

REVIEW CRITERIA		COMMENTS
INITIAL CALIBRATION		
RRFs (%RSD ≤ 30%)	OK ✓ No ___	Acetone - high RPD
Minimum RFs	OK ✓ No ___	
CONTINUING CALIBRATION		
RRFs (%RSD ≤ 25%)	OK ✓ No ___	
Minimum RFs	OK ✓ No ___	
RRTs	OK ✓ No ✓	high RT variability .22min
TUNING CRITERIA	OK ___ No ___	
INTERNAL STANDARDS	OK ✓ No ✓	98989 - low CB2
SURROGATES	OK ✓ No ___	
MS/MSD RESULTS	OK ✓ No ___	
SAMPLE RESULTS		
RT Windows (RRT ±.06 min.)	OK ✓ No ✓	high RT variability
Quantitation	OK ✓ No ___	
Matching Spectra	OK ✓ No ___	
TIC REVIEW COMMENTS		
LABORATORY BLANKS	Yes ✓ No ___	MeCl, chloroform, toluene, acetone, 2-butanone
How Many? 7		
FIELD BLANKS	Yes ✓ No ___	R-95582 acetone, 2-butanone R-96270 acetone
Number	FB 2 TB 2	T-95583 $MeCl_2$ T-96271 acetone
FIELD DUPLICATES	Yes ___ No ✓	
HOLDING TIMES	OK ✓ No ___	
OTHER COMMENTS		

SAMPLE DELIVERY GROUP CHECKLIST - GC/MS ORGANICS

FORM DV1b

SDG ID NRP011 VOCs ✓ Semi-Vol ___ Data Package Complete Yes ✓ No ___ Review Date 10/12/92

REVIEW CRITERIA		COMMENTS
INITIAL CALIBRATION		
RRFs (%RSD ≤ 30%)	OK ✓ No ___	
Minimum RFs	OK ✓ No ___	
CONTINUING CALIBRATION		
RRFs (%RSD ≤ 25%)	OK ✓ No ___	
Minimum RFs	OK ✓ No ___	
RRTs	OK ✓ No ___	
TUNING CRITERIA	OK ✓ No ___	
INTERNAL STANDARDS	OK ✓ No ___	
SURROGATES	OK ✓ No ___	
MS/MSD RESULTS	OK ✓ No ___	
SAMPLE RESULTS		
RT Windows (RRT ±.06 min.)	OK ✓ No ___	RTs varied by .08 on one column
Quantitation	OK ✓ No ___	
Matching Spectra	OK ✓ No ___	
TIC REVIEW COMMENTS		
LABORATORY BLANKS	Yes ✓ No ___	$MeCl_2$, Acetone, chloroform, 2-butanone
How Many? 4		
FIELD BLANKS	Yes ✓ No ___	F - 95666 - 2-butanone
Number	FB 1 TB 1	T - 95667 - $MeCl_2$, acetone
FIELD DUPLICATES	Yes ✓ No ___	95668/95658 OK
HOLDING TIMES	OK ✓ No ___	
OTHER COMMENTS		

SAMPLE DELIVERY GROUP CHECKLIST - GC/MS ORGANICS

FORM DV1b

SDG ID NRP012 VOCs ✓ Semi-Vol ___ Data Package Complete Yes ✓ No ___ Review Date 10/14/92

REVIEW CRITERIA		COMMENTS
INITIAL CALIBRATION		
RRFs (%RSD ≤ 30%)	OK ✓ No ___	
Minimum RFs	OK ✓ No ___	
CONTINUING CALIBRATION		
RRFs (%RSD ≤ 25%)	OK ✓ No ___	
Minimum RFs	OK ✓ No ___	
RRTs	OK ✓ No ✓	RRT ± .10 on MS702
TUNING CRITERIA	OK ✓ No ___	
INTERNAL STANDARDS	OK ✓ No ___	
SURROGATES	OK ✓ No ___	
MS/MSD RESULTS	OK ✓ No ___	TCE RPD high
SAMPLE RESULTS		
RT Windows (RRT ±.06 min.)	OK ✓ No ✓	RRT ± .10 on MS702
Quantitation	OK ✓ No ___	
Matching Spectra	OK ✓ No ___	
TIC REVIEW COMMENTS		
LABORATORY BLANKS	Yes ✓ No ___	Acetone, 2-butanone
How Many? 3		
FIELD BLANKS	Yes ✓ No ___	R - 95773 clean
Number	FB 1 TB 1	T - 95774 $MeCl_2$
FIELD DUPLICATES	Yes ✓ No ___	95766/95772 OK
HOLDING TIMES	OK ✓ No ___	
OTHER COMMENTS		

SAMPLE DELIVERY GROUP CHECKLIST - GC/MS ORGANICS

FORM DV1b

SDG ID NRP013 VOCs ✓ Semi-Vol ___ Data Package Complete Yes ✓ No ___ Review Date 10/14/92

REVIEW CRITERIA		COMMENTS
INITIAL CALIBRATION		
RRFs (%RSD ≤ 30%)	OK ✓ No ___	
Minimum RFs	OK ✓ No ___	
CONTINUING CALIBRATION		
RRFs (%RSD ≤ 25%)	OK ✓ No ___	acetone 26%
Minimum RFs	OK ✓ No ___	
RRTs	OK ✓ No ✓	± .26 on MS702
TUNING CRITERIA	OK ✓ No ___	
INTERNAL STANDARDS	OK ✓ No ___	one IS, CB2 out; no positive hits; data not affected
SURROGATES	OK ✓ No ___	
MS/MSD RESULTS	OK ✓ No ___	
SAMPLE RESULTS		
RT Windows (RRT ±.06 min.)	OK ✓ No ✓	± .26 on MS702
Quantitation	OK ✓ No ___	
Matching Spectra	OK ✓ No ___	
TIC REVIEW COMMENTS		
LABORATORY BLANKS	Yes ✓ No ___	2-butanone, MeCl2, acetone
How Many? 3		
FIELD BLANKS	Yes ✓ No ___	R 95827, 95880 MeCl2, Acetone, 2-butanone
Number	FB 2 TB 2	T 95828, 95881 MeCl2, Acetone, TCE (.7)
FIELD DUPLICATES	Yes ✓ No ___	95870/95878 95876/95879 OK
HOLDING TIMES	OK ✓ No ___	
OTHER COMMENTS		Samples analyzed with 95881 on MS702 with TCE hits below CRQL are qualified B

SAMPLE DELIVERY GROUP CHECKLIST - GC/MS ORGANICS

FORM DV1b

SDG ID NRP014 VOCs ✓ Semi-Vol ___ Data Package Complete Yes ✓ No ___ Review Date 10/20/92

REVIEW CRITERIA		COMMENTS
INITIAL CALIBRATION		
RRFs (%RSD ≤ 30%)	OK ✓ No ___	acetone 26.8%
Minimum RFs	OK ✓ No ___	
CONTINUING CALIBRATION		
RRFs (%RSD ≤ 25%)	OK ✓ No ___	
Minimum RFs	OK ✓ No ___	
RRTs	OK ✓ No ✓	RRT ± .15 min
TUNING CRITERIA	OK ✓ No ___	
INTERNAL STANDARDS	OK ✓ No ___	
SURROGATES	OK ✓ No ___	
MS/MSD RESULTS	OK ✓ No ___	
SAMPLE RESULTS		
RT Windows (RRT ±.06 min.)	OK ✓ No ✓	RRT ± .15 min
Quantitation	OK ✓ No ___	
Matching Spectra	OK ✓ No ___	
TIC REVIEW COMMENTS		
LABORATORY BLANKS	Yes ✓ No ___	acetone, 2-butanone
How Many? 5		
FIELD BLANKS	Yes ✓ No ___	R - 95911, 96164 acetone, 2-butanone
Number	FB 2 TB 2	T 95912, 96165 MeCl2, acetone
FIELD DUPLICATES	Yes ✓ No ___	96153/96152 OK
HOLDING TIMES	OK ✓ No ___	
OTHER COMMENTS		

SAMPLE DELIVERY GROUP CHECKLIST - GC/MS ORGANICS

FORM DV1b

SDG ID NRP015 VOCs ✓ Semi-Vol___ Data Package Complete Yes ✓ No___ Review Date 10/13/92

REVIEW CRITERIA		COMMENTS
INITIAL CALIBRATION		
RRFs (%RSD ≤ 30%)	OK ✓ No___	Acetone 39.4%
Minimum RFs	OK ✓ No___	
CONTINUING CALIBRATION		
RRFs (%RSD ≤ 25%)	OK ✓ No___	
Minimum RFs	OK ✓ No___	
RRTs	OK ✓ No ✓	± .12
TUNING CRITERIA	OK ✓ No___	
INTERNAL STANDARDS	OK ✓ No___	
SURROGATES	OK ✓ No___	
MS/MSD RESULTS	OK ✓ No___	
SAMPLE RESULTS		
RT Windows (RRT ±.06 min.)	OK ✓ No ✓	± .12
Quantitation	OK ✓ No___	
Matching Spectra	OK ✓ No___	
TIC REVIEW COMMENTS		
LABORATORY BLANKS	Yes ✓ No___	Acetone, 2-Butanone
How Many? 3		
FIELD BLANKS	Yes ✓ No___	R - 96171, 96418 acetone, 2-butanone
Number	FB 2 TB 2	T - 96172, 96419 MeCl2, acetone
FIELD DUPLICATES	Yes ✓ No___	96415/96417 96410/96412 96166/96170 OK
HOLDING TIMES	OK ✓ No___	
OTHER COMMENTS		

SAMPLE DELIVERY GROUP CHECKLIST - GC/MS ORGANICS

FORM DV1b

SDG ID NRP016 VOCs ✓ Semi-Vol ___ Data Package Complete Yes ✓ No ___ Review Date 10/21/92

REVIEW CRITERIA		COMMENTS
INITIAL CALIBRATION		
RRFs (%RSD ≤ 30%)	OK ✓ No ___	Acetone 39.4%
Minimum RFs	OK ✓ No ___	
CONTINUING CALIBRATION		
RRFs (%RSD ≤ 25%)	OK ✓ No ___	chloromethane 28.1, vinylchloride 25.1 - data not affected
Minimum RFs	OK ✓ No ___	
RRTs	OK ✓ No ✓	RRT ± .32min
TUNING CRITERIA	OK ✓ No ___	
INTERNAL STANDARDS	OK ✓ No ___	
SURROGATES	OK ✓ No ___	
MS/MSD RESULTS	OK ✓ No ___	
SAMPLE RESULTS		
RT Windows (RRT ±.06 min.)	OK ✓ No ✓	RRT ± .32min
Quantitation	OK ✓ No ___	
Matching Spectra	OK ✓ No ___	
TIC REVIEW COMMENTS		
LABORATORY BLANKS	Yes ✓ No ___	acetone, 2-butanone
How Many? 2		
FIELD BLANKS	Yes ✓ No ___	R - 96448, 96484 - acetone
Number	FB 2 TB 2	T - 96449, 96485 - acetone, MECl2
FIELD DUPLICATES	Yes ✓ No ___	96445/96447 OK
HOLDING TIMES	OK ✓ No ___	
OTHER COMMENTS		

SAMPLE DELIVERY GROUP CHECKLIST - GC/MS ORGANICS

FORM DV1b

SDG ID NRP017 VOCs ✓ Semi-Vol ___ Data Package Complete Yes ✓ No ___ Review Date 10/16/92

REVIEW CRITERIA		COMMENTS
INITIAL CALIBRATION		
RRFs (%RSD ≤ 30%)	OK ✓ No ___	acetone 42.6, 2-butanone 29.4
Minimum RFs	OK ✓ No ___	
CONTINUING CALIBRATION		
RRFs (%RSD ≤ 25%)	OK ✓ No ___	carbon disulfide 28.9%, acetone 27.0, 29.5
Minimum RFs	OK ✓ No ___	
RRTs	OK ✓ No ___	
TUNING CRITERIA	OK ___ No ___	
INTERNAL STANDARDS	OK ✓ No ___	96589 -.13 min OK no hits
SURROGATES	OK ✓ No ___	
MS/MSD RESULTS	OK ✓ No ___	
SAMPLE RESULTS		
RT Windows (RRT ±.06 min.)	OK ✓ No ___	
Quantitation	OK ✓ No ___	
Matching Spectra	OK ✓ No ___	
TIC REVIEW COMMENTS		
LABORATORY BLANKS	Yes ✓ No ___	acetone, 2-butanone
How Many? 5		
FIELD BLANKS	Yes ✓ No ___	R - 96592 acetone, 2-butanone, 4 methyl-2-pentanone
Number	FB 1 TB 1	T - 96593 acetone
FIELD DUPLICATES	Yes ✓ No ___	96581/96582 96590/96591 OK
HOLDING TIMES	OK ✓ No ___	
OTHER COMMENTS		

SAMPLE DELIVERY GROUP CHECKLIST - GC/MS ORGANICS

FORM DV1b

SDG ID NRP018 VOCs ✓ Semi-Vol___ Data Package Complete Yes ✓ No___ Review Date 10/17/92

REVIEW CRITERIA		COMMENTS
INITIAL CALIBRATION		
RRFs (%RSD ≤ 30%)	OK ✓ No ✓	39.4 Acetone 42.6, 2-butanone 29.4
Minimum RFs	OK ✓ No ✓	RRT ± .11 min
CONTINUING CALIBRATION		
RRFs (%RSD ≤ 25%)	OK ✓ No ✓	acetone 27, 29.5
Minimum RFs	OK ✓ No___	
RRTs	OK ✓ No ✓	± .11 min
TUNING CRITERIA	OK ✓ No___	
INTERNAL STANDARDS	OK ✓ No___	
SURROGATES	OK ✓ No___	
MS/MSD RESULTS	OK ✓ No___	
SAMPLE RESULTS		
RT Windows (RRT ±.06 min.)	OK ✓ No___	± .11 min
Quantitation	OK ✓ No___	
Matching Spectra	OK ✓ No___	
TIC REVIEW COMMENTS		
LABORATORY BLANKS	Yes ✓ No___	acetone, 2-butanone
How Many? 6		
FIELD BLANKS	Yes ✓ No___	R - 96854 - acetone, TCE (2), 4-methyl-2-pentanone
Number	FB 1 TB 1	T - 96855 - acetone,
FIELD DUPLICATES	Yes ✓ No___	96852/96850 96853/96847 OK
HOLDING TIMES	OK ✓ No___	
OTHER COMMENTS		TCE hits < CRQL qualified B for samples collected 9/30

SAMPLE DELIVERY GROUP CHECKLIST - GC/MS ORGANICS

FORM DV1b

SDG ID NRP001 VOCs___ Semi-Vol ✓ Data Package Complete Yes ✓ No___ Review Date 7/17/92

REVIEW CRITERIA		COMMENTS
INITIAL CALIBRATION		
RRFs (%RSD ≤ 30%)	OK ✓ No___	
Minimum RFs	OK ✓ No___	
CONTINUING CALIBRATION		
RRFs (%RSD ≤ 25%)	OK ✓ No___	
Minimum RFs	OK ✓ No___	
RRTs	OK ✓ No___	
TUNING CRITERIA	OK ✓ No___	
INTERNAL STANDARDS	OK ✓ No___	
SURROGATES	OK ✓ No___	
MS/MSD RESULTS	OK ✓ No___	
SAMPLE RESULTS		
RT Windows (RRT ±.06 min.)	OK ✓ No ✓	Some RTs shift up to .10 min
Quantitation	OK ✓ No___	
Matching Spectra	OK ✓ No___	
TIC REVIEW COMMENTS		Column bleed and artifacts qualified BQ
LABORATORY BLANKS	Yes ✓ No___	SBLK39 / SBLK41 / SBLK55
How Many? 3		29.75, 19.56 / 8.57, 9.12, 25.83, 27.67 / 8.54, 9.4
		column bleed / column bleed
FIELD BLANKS	Yes ✓ No___	
Number	FB 1 TB NA	93383
FIELD DUPLICATES	Yes ✓ No___	12.26 93382/93379 OK
HOLDING TIMES	OK ✓ No___	
OTHER COMMENTS		

SAMPLE DELIVERY GROUP CHECKLIST - GC/MS ORGANICS

FORM DV1b

SDG ID NRP002 VOCs___ Semi-Vol ✓ Data Package Complete Yes ✓ No___ Review Date 7/24/92

REVIEW CRITERIA		COMMENTS
INITIAL CALIBRATION		
RRFs (%RSD ≤ 30%)	OK ✓ No___	
Minimum RFs	OK ✓ No___	
CONTINUING CALIBRATION		
RRFs (%RSD ≤ 25%)	OK ✓ No___	
Minimum RFs	OK ✓ No___	
RRTs	OK ✓ No___	
TUNING CRITERIA	OK ✓ No___	
INTERNAL STANDARDS	OK ✓ No___	
SURROGATES	OK ✓ No___	
MS/MSD RESULTS	OK ✓ No___	
SAMPLE RESULTS		
RT Windows (RRT ±.06 min.)	OK ✓ No___	
Quantitation	OK ✓ No___	
Matching Spectra	OK ✓ No___	
TIC REVIEW COMMENTS		Column bleed and artifacts qualified DQ
LABORATORY BLANKS	Yes ✓ No___	5BLK50 5BLK55 5BLK56 5BLK42
How Many? 4		29.71 8.54, 9.11 8.47, 9.03, 27.69 29.75
FIELD BLANKS	Yes ✓ No___	93531, 93665 - butylbenzylphthalate, bis(2-ethylhexyl)phthalate
Number	FB 2 TB NA	
FIELD DUPLICATES	Yes ✓ No___	93529/93526 OK
HOLDING TIMES	OK ✓ No___	
OTHER COMMENTS		

SAMPLE DELIVERY GROUP CHECKLIST - GC/MS ORGANICS

FORM DV1b

SDG ID NRP 003 VOCs___ Semi-Vol ✓ Data Package Complete Yes ✓ No___ Review Date 8/26/92

REVIEW CRITERIA		COMMENTS
INITIAL CALIBRATION		
RRFs (%RSD ≤ 30%)	OK ✓ No___	
Minimum RFs	OK ✓ No___	
CONTINUING CALIBRATION		
RRFs (%RSD ≤ 25%)	OK ✓ No___	
Minimum RFs	OK ✓ No___	
RRTs	OK ✓ No___	
TUNING CRITERIA	OK ✓ No___	
INTERNAL STANDARDS	OK ✓ No___	
SURROGATES	OK ✓ No ✓	2-Fluorophenol out on 2 samples, terphenyl high on 4 samples phenol low on 1 sample no phenols in samples data not effected
MS/MSD RESULTS	OK ✓ No___	
SAMPLE RESULTS		
RT Windows (RRT ±.06 min.)	OK ✓ No___	
Quantitation	OK ✓ No___	
Matching Spectra	OK ✓ No___	
TIC REVIEW COMMENTS		artifacts and column bleed qualified BY
LABORATORY BLANKS	Yes ✓ No___	SBLK07 SBLK54 SBLK61 SBLK63
How Many? 4		8.33, 8.90 19.53 8.47, 9.03, 9.71 8.64, 9.03, 9.19, 9.52, column bleed
FIELD BLANKS	Yes ✓ No___	
Number	FB 1 TB NA	93730 butylbenzylphthalate -3, bis(2-ethylhexyl)phthalate -3
FIELD DUPLICATES	Yes ✓ No___	93721, 93722 / 93724 93723 OK
HOLDING TIMES	OK ✓ No ✓	Some samples reanalyzed after holding times, method blank also late data from original used because all results < dl
OTHER COMMENTS		

SAMPLE DELIVERY GROUP CHECKLIST - GC/MS ORGANICS

FORM DV1b

SDG ID NRP004 VOCs___ Semi-Vol ✓ Data Package Complete Yes ✓ No___ Review Date 9/18/92

REVIEW CRITERIA		COMMENTS
INITIAL CALIBRATION		
RRFs (%RSD ≤ 30%)	OK ✓ No___	
Minimum RFs	OK___ No___	
CONTINUING CALIBRATION		
RRFs (%RSD ≤ 25%)	OK ✓ No___	
Minimum RFs	OK ✓ No___	
RRTs	OK ✓ No___	
TUNING CRITERIA	OK ✓ No___	
INTERNAL STANDARDS	OK ✓ No___	
SURROGATES	OK ✓ No ✓	low phenol and fluorophenol - data not effected samples 93777-9
MS/MSD RESULTS	OK ✓ No ✓	low phenol and fluorophenol - data not effected
SAMPLE RESULTS		
RT Windows (RRT ±.06 min.)	OK ✓ No___	
Quantitation	OK ✓ No___	
Matching Spectra	OK ✓ No___	
TIC REVIEW COMMENTS		hydrocarbon humps - 93966, 93968 column bleed and artifacts qualified as BU
LABORATORY BLANKS	Yes 5 No___	SB1K58 SB1K63 SB1K68
How Many? 5		19.58 8.64, 9.03, 9.19, 9.52, column bleed 8.34
FIELD BLANKS	Yes ✓ No___	
Number	FB 1 TB NA	93787
FIELD DUPLICATES	Yes ✓ No___	93783/93782 OK
HOLDING TIMES	OK ✓ No ✓	93666 - reextracted 12 days past holding time
OTHER COMMENTS		low phenol and fluorophenol surrogates could be GPC collection problem

SAMPLE DELIVERY GROUP CHECKLIST - GC/MS ORGANICS

FORM DV1b

SDG ID NRP005 VOCs___ Semi-Vol ✓ Data Package Complete Yes ✓ No___ Review Date 9/18/92

REVIEW CRITERIA		COMMENTS
INITIAL CALIBRATION		
RRFs (%RSD ≤ 30%)	OK ✓ No ✓	
Minimum RFs	OK ✓ No___	
CONTINUING CALIBRATION		
RRFs (%RSD ≤ 25%)	OK ✓ No___	
Minimum RFs	OK ✓ No___	
RRTs	OK ✓ No___	
TUNING CRITERIA	OK ✓ No___	
INTERNAL STANDARDS	OK ✓ No___	
SURROGATES	OK ✓ No___	
MS/MSD RESULTS	OK ✓ No___	2,4-DNT high - data not effected
SAMPLE RESULTS		
RT Windows (RRT ±.06 min.)	OK ✓ No___	
Quantitation	OK ✓ No___	
Matching Spectra	OK ✓ No___	
TIC REVIEW COMMENTS		93977 - fuel oil pattern Artifacts + Column Bleed TICs qualified as BU
LABORATORY BLANKS	Yes ✓ No___	SBLK62 SBLK64 SBLK68 SBLK75
How Many? 4		19.51 26.87, 29.61 8.34, Column Bleed 8.32, 8.89, 9.72, Column Bleed
FIELD BLANKS	Yes ✓ No___	93979 and 94015
Number	FB 2 TB NA	
FIELD DUPLICATES	Yes ✓ No___	93978, 94014 / 93973 94013 BDT
HOLDING TIMES	OK ✓ No___	Most 10 days to extraction
OTHER COMMENTS		

SAMPLE DELIVERY GROUP CHECKLIST - GC/MS ORGANICS

FORM DV1b

SDG ID NRP006 VOCs___ Semi-Vol ✓ Data Package Complete Yes ✓ No___ Review Date 9/21/92

REVIEW CRITERIA		COMMENTS
INITIAL CALIBRATION		
RRFs (%RSD ≤ 30%)	OK ✓ No___	
Minimum RFs	OK ✓ No___	
CONTINUING CALIBRATION		
RRFs (%RSD ≤ 25%)	OK ✓ No___	
Minimum RFs	OK ✓ No___	
RRTs	OK ✓ No___	
TUNING CRITERIA	OK ✓ No___	
INTERNAL STANDARDS	OK ✓ No___	
SURROGATES	OK ✓ No___	
MS/MSD RESULTS	OK ✓ No___	N-Nitroso-di-n-propylamine low - data not affected
SAMPLE RESULTS		
RT Windows (RRT ±.06 min.)	OK ✓ No___	
Quantitation	OK ✓ No___	
Matching Spectra	OK ✓ No___	
TIC REVIEW COMMENTS		artifacts and column bleed qualified BU
LABORATORY BLANKS	Yes ✓ No___	SBLK64 SBLK86 SBLK90
How Many? 4		26.87, 29.66 8.29, 8.86, 25.52 column bleed 8.24 column bleed
FIELD BLANKS	Yes ✓ No___	94182
Number	FB 1 TB NA	
FIELD DUPLICATES	Yes ✓ No___	94301, 94181 OK 94300 94176
HOLDING TIMES	OK ✓ No___	Several samples extracted 10+1 day after collection
OTHER COMMENTS		Fuel oil pattern - 94177, 94185, 94297 hydrocarbon hump 94297, 94298, 94299

SAMPLE DELIVERY GROUP CHECKLIST - GC/MS ORGANICS

FORM DV1b

SDG ID NRP008 VOCs___ Semi-Vol ✓ Data Package Complete Yes ✓ No___ Review Date 9/21/92

REVIEW CRITERIA		COMMENTS
INITIAL CALIBRATION		
RRFs (%RSD ≤ 30%)	OK ✓ No___	
Minimum RFs	OK ✓ No___	
CONTINUING CALIBRATION		
RRFs (%RSD ≤ 25%)	OK ✓ No___	
Minimum RFs	OK ✓ No___	
RRTs	OK ✓ No___	
TUNING CRITERIA	OK ✓ No___	
INTERNAL STANDARDS	OK ✓ No___	
SURROGATES	OK ✓ No___	
MS/MSD RESULTS	OK ✓ No___	extracted late pyrene out / sample high
SAMPLE RESULTS		
RT Windows (RRT ±.06 min.)	OK ✓ No___	
Quantitation	OK ✓ No___	
Matching Spectra	OK ✓ No___	
TIC REVIEW COMMENTS		artifacts and column bleed qualified BU 94577 - pp2000 ID
LABORATORY BLANKS How Many? 4	Yes ✓ No___	SBLK77 26.72, 29.48 / SBLK90 8.25, 8.88, column bleed / SBLK95 8.23, 8.10, 25.92, 27.25, column bleed / SBLK12 8.67
FIELD BLANKS Number	Yes ✓ No___ FB 1 TB NA	94559
FIELD DUPLICATES	Yes ✓ No___	94558/94557 OK
HOLDING TIMES	OK ✓ No___	most extracted 10th day after collection
OTHER COMMENTS		hydrocarbon hump 94557

SAMPLE DELIVERY GROUP CHECKLIST - GC/MS ORGANICS

FORM DV1b

SDG ID NAP009 VOCs___ Semi-Vol ✓ Data Package Complete Yes ✓ No___ Review Date 10/9/92

REVIEW CRITERIA		COMMENTS
INITIAL CALIBRATION		
RRFs (%RSD ≤ 30%)	OK ✓ No___	
Minimum RFs	OK ✓ No___	
CONTINUING CALIBRATION		
RRFs (%RSD ≤ 25%)	OK ✓ No___	
Minimum RFs	OK ✓ No___	
RRTs	OK ✓ No___	
TUNING CRITERIA	OK ✓ No___	
INTERNAL STANDARDS	OK ✓ No___	
SURROGATES	OK ✓ No___	
MS/MSD RESULTS	OK ✓ No___	
SAMPLE RESULTS		
RT Windows (RRT ±.06 min.)	OK ✓ No___	
Quantitation	OK ✓ No___	
Matching Spectra	OK ✓ No___	
TIC REVIEW COMMENTS		
LABORATORY BLANKS	Yes ✓ No___	SBLK01
How Many? 1		8/12 9.00
FIELD BLANKS	Yes___ No ✓	
Number	FB___ TB NA	
FIELD DUPLICATES	Yes ✓ No___	94792 / 94791 Oil
HOLDING TIMES	OK ✓ No___	
OTHER COMMENTS		hydrocarbons [94848, 94963] [94791, 94792, 94847] - light RT 8-14 minutes; 94848 - heavier RT 22-32 min

SAMPLE DELIVERY GROUP CHECKLIST - GC/MS ORGANICS

FORM DV1b

SDG ID NRP010 VOCs___ Semi-Vol ✓ Data Package Complete Yes ✓ No___ Review Date 10/22/92

REVIEW CRITERIA		COMMENTS
INITIAL CALIBRATION		
RRFs (%RSD ≤ 30%)	OK ✓ No___	
Minimum RFs	OK ✓ No___	
CONTINUING CALIBRATION		
RRFs (%RSD ≤ 25%)	OK ✓ No___	
Minimum RFs	OK ✓ No___	
RRTs	OK ✓ No___	
TUNING CRITERIA	OK ✓ No___	
INTERNAL STANDARDS	OK ✓ No___	
SURROGATES	OK ✓ No___	
MS/MSD RESULTS	OK ✓ No___	
SAMPLE RESULTS		
RT Windows (RRT ±.06 min.)	OK ✓ No___	
Quantitation	OK ✓ No___	
Matching Spectra	OK ✓ No___	
TIC REVIEW COMMENTS		
LABORATORY BLANKS	Yes ✓ No___	8.24, 27.4, 8.82, 9.65, 29.13, column bleed
How Many? 5		
FIELD BLANKS	Yes ✓ No___	R- 95582, 96270 ~~42.05~~ 11.90, 14.83, 31.32
Number	FB 2 TB NA	MJL
FIELD DUPLICATES	Yes___ No ✓	
HOLDING TIMES	OK ✓ No___	
OTHER COMMENTS		hydrocarbons - 96266, 96267, 96268, 96269

PESTICIDE/PCB
SAMPLE DELIVERY GROUP CHECKLIST

FORM DV3a

Review Date 8/31/92 SDG ID NRP001

REVIEW CRITERIA		COMMENTS
INITIAL CALIBRATION		
Injection Sequence	OK ✓ No	
Peak Resolution Criteria	OK ✓ No	
DDT/Endrin Breakdown	OK ✓ No	
PEM Criteria	OK ✓ No	
Absolute RT Criteria	OK ✓ No	
Linearity (% RSD)	OK ✓ No	
CALIBRATION VERIFICATION		
Instrument Blanks	OK ✓ No	
PEM Results	OK ✓ No ✓	Some compounds over limits - data not effected
Mid-Point Standards	OK ✓ No ✓	
SAMPLE RESULTS		
RT Windows	OK ✓ No	
Quantitation	OK ✓ No	
ID Summary Form	OK ✓ No	
Surrogates	OK ✓ No ✓	93521-24 extracted with PDK550 had low DCBP on both columns - data not effected
FLORISIL CHECK	OK ✓ No	
GPC CALIBRATION	OK ✓ No	
MS/MSD RESULTS	OK ✓ No	re-extracted late
DETECTION LIMITS	OK ✓ No	
LABORATORY BLANKS	OK ✓ No	
FIELD BLANKS	OK ✓ No	
FIELD DUPLICATES	OK ✓ No	93382/93379 OK
HOLDING TIMES	OK ✓ No ✓	93528 reextracted 16 days past holding time, <dl data not effected

PESTICIDE/PCB
SAMPLE DELIVERY GROUP CHECKLIST

FORM DV3a

Review Date 8/6/92 SDG ID NRP002

REVIEW CRITERIA			COMMENTS
INITIAL CALIBRATION			
Injection Sequence	OK ✓	No	(1) Some RPDs > limits, data not effected
Peak Resolution Criteria	OK ✓	No	
DDT/Endrin Breakdown	OK ✓	No	
PEM Criteria	OK ✓	No	
Absolute RT Criteria	OK ✓	No	
Linearity (% RSD) (1)	OK	No ✓	
CALIBRATION VERIFICATION			
Instrument Blanks	OK ✓	No	
PEM Results	OK ✓	No	
Mid-Point Standards (2)	OK	No ✓	(2) several with RPD > 25%, data not effected
SAMPLE RESULTS			
RT Windows	OK ✓	No	
Confirmation Column	OK ✓	No	
Quantitation (3)	OK	No ✓	(3) 93657, 93662 busy hydrocarbon/PCB chromatogram RTs shaky to confirmation
MS/MSD RESULTS	OK ✓	No	
DETECTION LIMITS	OK ✓	No	
LABORATORY BLANKS	OK ✓	No	
FIELD BLANKS	OK ✓	No	
FIELD DUPLICATES	OK ✓	No	93529/93526 OK

PESTICIDE/PCB
SAMPLE DELIVERY GROUP CHECKLIST

FORM DV3a

Review Date 8/26/92 SDG ID NRP003

REVIEW CRITERIA		COMMENTS
INITIAL CALIBRATION		
Injection Sequence	OK ✓ No ___	
Peak Resolution Criteria	OK ✓ No ___	
DDT/Endrin Breakdown	OK ✓ No ___	
PEM Criteria	OK ✓ No ___	
Absolute RT Criteria	OK ✓ No ___	
Linearity (% RSD)	OK ✓ No ___	several RSDs > 20%
CALIBRATION VERIFICATION		
Instrument Blanks	OK ✓ No ___	
PEM Results	OK ✓ No ___	
Mid-Point Standards	OK ✓ No ___	
SAMPLE RESULTS		
RT Windows	OK ✓ No ___	
Quantitation	OK ✓ No ___	
ID Summary Form	OK ✓ No ___	
Surrogates	OK ✓ No ___	
FLORISIL CHECK	OK ✓ No ___	
GPC CALIBRATION	OK ✓ No ___	
MS/MSD RESULTS	OK ✓ No ___	
DETECTION LIMITS	OK ✓ No ___	
LABORATORY BLANKS	OK ✓ No ___	
FIELD BLANKS	OK ✓ No ___	
FIELD DUPLICATES	OK ✓ No ___	93721, 93722 / 93729 93723 OK
HOLDING TIMES	OK ✓ No ___	

PESTICIDE/PCB
SAMPLE DELIVERY GROUP CHECKLIST

FORM DV3a

Review Date 8/21/92 SDG ID NRP004

REVIEW CRITERIA		COMMENTS
INITIAL CALIBRATION		
Injection Sequence	OK ✓ No	
Peak Resolution Criteria	OK ✓ No	
DDT/Endrin Breakdown	OK ✓ No	
PEM Criteria	OK ✓ No	
Absolute RT Criteria	OK ✓ No	
Linearity (% RSD)	OK ✓ No	Some RSDs > 20% - data not effected
CALIBRATION VERIFICATION		
Instrument Blanks	OK ✓ No	
PEM Results	OK ✓ No	
Mid-Point Standards	OK ✓ No	
SAMPLE RESULTS		
RT Windows	OK ✓ No	
Quantitation	OK ✓ No	
ID Summary Form	OK ✓ No	
Surrogates	OK — No	
FLORISIL CHECK	OK ✓ No	
GPC CALIBRATION	OK ✓ No ✓	60% recoveries 114-130%
MS/MSD RESULTS	OK ✓ No	
DETECTION LIMITS	OK ✓ No	
LABORATORY BLANKS	OK ✓ No	
FIELD BLANKS	OK ✓ No	93782
FIELD DUPLICATES	OK ✓ No	93783/93782 OK
HOLDING TIMES	OK ✓ No	

PESTICIDE/PCB
SAMPLE DELIVERY GROUP CHECKLIST

FORM DV3a

Review Date 9/21/92 SDG ID NRP005

REVIEW CRITERIA		COMMENTS
INITIAL CALIBRATION		
Injection Sequence	OK ✓ No	
Peak Resolution Criteria	OK ✓ No	
DDT/Endrin Breakdown	OK ✓ No	
PEM Criteria	OK ✓ No	
Absolute RT Criteria	OK ✓ No	
Linearity (% RSD)	OK No ✓	DB1701 had RSDs > 20%
CALIBRATION VERIFICATION		
Instrument Blanks	OK ✓ No	
PEM Results	OK ✓ No	
Mid-Point Standards	OK ✓ No	INOBM - high RPDs on 7/31-8/1 calibration and run samples 94174, 94175, 94178, MS, MSD - data not effected
SAMPLE RESULTS		
RT Windows	OK ✓ No	
Quantitation	OK ✓ No ✓	some variability
ID Summary Form	OK ✓ No	
SURROGATES	OK ✓ No	
FLORISIL CHECK	OK ✓ No	
GPC CALIBRATION	OK ✓ No ✓	1 run slightly high 93975-78, 94006, 94008-9
MS/MSD RESULTS	OK ✓ No ✓	RPD OK recoveries high on MS
DETECTION LIMITS	OK ✓ No	
LABORATORY BLANKS	OK ✓ No	3 blanks
FIELD BLANKS	OK ✓ No	
FIELD DUPLICATES	OK ✓ No ✓	93978/93973 low level ODE/DDD/DDT on one/2nd clean 94014/94013 OK
HOLDING TIMES	OK ✓ No	94174-5, 94178 MS, MSD analyzed past holding time (40 days) - data not effected

PESTICIDE/PCB
SAMPLE DELIVERY GROUP CHECKLIST

FORM DV3a

Review Date 10/1/92 SDG ID NRP006

REVIEW CRITERIA			COMMENTS
INITIAL CALIBRATION			
Injection Sequence	OK ✓	No	
Peak Resolution Criteria	OK ✓	No	
DDT/Endrin Breakdown	OK	No ✓	20 + 24% on 2 of 6
PEM Criteria	OK ✓	No	
Absolute RT Criteria	OK ✓	No	
Linearity (% RSD)	OK ✓	No	
CALIBRATION VERIFICATION			
Instrument Blanks	OK ✓	No	
PEM Results	OK ✓	No ✓	some high on 1 column
Mid-Point Standards	OK ✓	No ✓	Mix B ~~has~~ high + 20 and more on both columns - attributed to seals on injection vials, DDE results qualified J, 94177, 94186, 94297, 94298, 94299
SAMPLE RESULTS			Endrin aldehyde qualified J - 94185, 94293, 94299
RT Windows	OK ✓	No	
Quantitation	OK ✓	No	
ID Summary Form	OK ✓	No	
Surrogates	OK ✓	No ✓	94245 - all < 20% some high - matrix effect qualified J
FLORISIL CHECK	OK ✓	No	
GPC CALIBRATION	OK ✓	No ✓	slightly high for 1 set
MS/MSD RESULTS	OK	No ✓	biased high, clean sample
DETECTION LIMITS	OK ✓	No	
LABORATORY BLANKS	OK ✓	No	3 blanks
FIELD BLANKS	OK ✓	No	94182
FIELD DUPLICATES	OK ✓	No	94181, 94301 / 94176 94300 Off
HOLDING TIMES	OK ✓	No ✓	

PESTICIDE/PCB
SAMPLE DELIVERY GROUP CHECKLIST

FORM DV3a

Review Date 10/1/92 SDG ID NRP007

REVIEW CRITERIA		COMMENTS
INITIAL CALIBRATION		
Injection Sequence	OK ✓ No	
Peak Resolution Criteria	OK ✓ No	
DDT/Endrin Breakdown	OK ✓ No	
PEM Criteria	OK ✓ No	
Absolute RT Criteria	OK ✓ No	
Linearity (% RSD)	OK ✓ No	
CALIBRATION VERIFICATION		
Instrument Blanks	OK ✓ No	
PEM Results	OK ✓ No	
Mid-Point Standards	OK ✓ No	
SAMPLE RESULTS		
RT Windows	OK ✓ No	
Quantitation	OK ✓ No	
ID Summary Form	OK ✓ No	
Surrogates	OK No ✓	several high and low - advisory
FLORISIL CHECK	OK ✓ No	
GPC CALIBRATION	OK ✓ No	
MS/MSD RESULTS	OK ✓ No ✓	RPD OK 3 out of 12 just high
DETECTION LIMITS	OK ✓ No	
LABORATORY BLANKS	OK ✓ No	3 blanks
FIELD BLANKS	OK ✓ No	94436, 94437
FIELD DUPLICATES	OK ✓ No	94435/94422
HOLDING TIMES	OK No ✓	all samples analyzed 2-8 days past Extract holding time

PESTICIDE/PCB
SAMPLE DELIVERY GROUP CHECKLIST

FORM DV3a

Review Date 10/5/92 SDG ID NRP008

REVIEW CRITERIA		COMMENTS
INITIAL CALIBRATION		
Injection Sequence	OK ✓ No	
Peak Resolution Criteria	OK ✓ No	
DDT/Endrin Breakdown	OK ✓ No	
PEM Criteria	OK ✓ No	
Absolute RT Criteria	OK ✓ No	
Linearity (% RSD)	OK ✓ No	
CALIBRATION VERIFICATION		
Instrument Blanks	OK ✓ No	
PEM Results	OK ✓ No	
Mid-Point Standards	OK ✓ No	
SAMPLE RESULTS		
RT Windows	OK ✓ No	
Quantitation	OK ✓ No	
ID Summary Form	OK ✓ No	
Surrogates	OK ✓ No	Some high - limits advisory
FLORISIL CHECK	OK ✓ No	
GPC CALIBRATION	OK ✓ No	
MS/MSD RESULTS	OK ✓ No ✓	4 of 12 high, endrin + 4,4'-DDT out on both columns
DETECTION LIMITS	OK ✓ No	
LABORATORY BLANKS	OK ✓ No	4
FIELD BLANKS	OK ✓ No	94559
FIELD DUPLICATES	OK ✓ No	94558/94553
HOLDING TIMES	OK ✓ No ✓	reanalyzed past extract holding times - 26 & 9 days - no action

PESTICIDE/PCB
SAMPLE DELIVERY GROUP CHECKLIST

FORM DV3a

Review Date 10/13/92 SDG ID NRP009

REVIEW CRITERIA		COMMENTS
INITIAL CALIBRATION		
Injection Sequence	OK ✓ No	
Peak Resolution Criteria	OK ✓ No	
DDT/Endrin Breakdown	OK ✓ No	
PEM Criteria	OK ✓ No	
Absolute RT Criteria	OK ✓ No	
Linearity (% RSD)	OK ✓ No	
CALIBRATION VERIFICATION		
Instrument Blanks	OK ✓ No	
PEM Results	OK ✓ No	column performance OK, RPD for DDT high on 4 of 10
Mid-Point Standards	OK ✓ No ✓	INDAM - OK INDBM high 3 of 3 DDE high, Endosulfan II high, delta-BHC high qualified J
SAMPLE RESULTS		
RT Windows	OK ✓ No	
Quantitation	OK ✓ No	
ID Summary Form	OK ✓ No	
Surrogates	OK ✓ No ✓	11 of 35 high, limits advisory only
FLORISIL CHECK	OK ✓ No	
GPC CALIBRATION	OK ✓ No	
MS/MSD RESULTS	OK ✓ No ✓	8 of 12 recoveries high RPDs - OK
DETECTION LIMITS	OK ✓ No	
LABORATORY BLANKS	OK ✓ No	
FIELD BLANKS	OK NA No	No field blank in SDG
FIELD DUPLICATES	OK ✓ No	94789/94788
HOLDING TIMES	OK ✓ No	

- INDBM has high RPD for many compounds 3 of 3.
- DDE, Endosulfan II and delta-BHC results qualified J biased high
- samples with hits have many interfering peaks

PESTICIDE/PCB
SAMPLE DELIVERY GROUP CHECKLIST

FORM DV3a

Review Date 10/13/92 SDG ID NRP010

REVIEW CRITERIA		COMMENTS
INITIAL CALIBRATION		
Injection Sequence	OK ✓ No	
Peak Resolution Criteria	OK ✓ No	
DDT/Endrin Breakdown	OK ✓ No	
PEM Criteria	OK ✓ No	
Absolute RT Criteria	OK ✓ No	
Linearity (% RSD)	OK ✓ No ✓	high on DB-1701 for 8/15-16/92 (17 compounds) DB-608 OK
CALIBRATION VERIFICATION		
Instrument Blanks	OK ✓ No	
PEM Results	OK ✓ No ✓	column performance OK, RPDs high 8 of 16 high for DDT
Mid-Point Standards	OK ✓ No	INDBM high on 3 of 4 - DDE high
		INDAM high on 1 of 4 - DDT, DDD OK
SAMPLE RESULTS		
RT Windows	OK ✓ No	
Quantitation	OK ✓ No	
ID Summary Form	OK ✓ No	
Surrogates	OK ✓ No ✓	high on 28 of 66 QC limits advisory only, lots of interfering peaks
FLORISIL CHECK	OK ✓ No	
GPC CALIBRATION	OK ✓ No	
MS/MSD RESULTS	OK ✓ No ✓	high on 9 of 12 recoveries RPD 1 of 6
DETECTION LIMITS	OK ✓ No	
LABORATORY BLANKS	OK ✓ No	95582 and 96270
FIELD BLANKS	OK ✓ No	
FIELD DUPLICATES	OK NA No	no duplicate in SDG
HOLDING TIMES	OK ✓ No	

- Calibration and continuing calibration 0-0-C for many compounds. Target compounds found in samples, DDT, DDD and DDE better than most. DDT and DDD not effect, DDE biased high (estimated J)

7/16/9

SAMPLE DELIVERY GROUP CHECKLIST - INORGANICS

Form DV4

SDG ID NRP001 Water_____ Soil ✓ Data Package (complete) Yes ✓ No_____.

Action Item	ICP	Hg	CN	Graphite Furnace AA Sb	As	Pb	Se	Tl
Initial Calibration		✓	✓	✓	✓	✓	✓	✓
ICV/CCV		✓	✓	✓	✓	✓	✓	✓
Corr. Coefficient		✓	✓	✓	✓	✓	✓	✓
Lab Control Sample		✓	✓	✓	✓	✓	✓	✓
Lab Duplicate Sample		✓	✓	✓	✓	✓	✓	✓
Lab Spiked Sample		✓	✓	✓	✓	✓	✓	✓

Comments CN⁻ spike 54% data <dl not affected, Mn 143% spike

ICP Analyses ICS Analyzed? Yes ✓ No____, Serial Dilution Needed? Yes ✓ No____, OK? ✓

Comments dup inj for Ni, K, Cr, Cd ~~[illegible]~~ K below CRDL Ni, Cr, Cd near or at CRDL qualified J.

GFAA Analyses GFAA Scheme Followed? Yes ✓ No____, Method of Standard Additions Used?

Comments some post spikes just out, samples <dl Yes____ No ✓

Cyanide Analyses Mid-range Standard Analyzed? Yes ✓ No ✓, Comments

Mercury Analyses

Comments ok

Holding Times Mercury (28 days) ✓ OK, Cyanide (14 days) ✓ OK, Metals (180 days) ✓ OK

Comments

Laboratory Blanks Comments ok

Field Blanks Comments Rinsate 93383 Fe at .14 ug/L

reviewed 7/1/92

SAMPLE DELIVERY GROUP CHECKLIST - INORGANICS

Form DV4

SDG ID NRP002 Water_____ Soil ✓ Data Package (complete) Yes ✓ No_____.

Action Item	ICP	Hg	CN	Graphite Furnace AA Sb	As	Pb	Se	Tl
Initial Calibration	✓	✓	✓	✓	✓	✓	✓	✓
ICV/CCV	✓	✓	✓	✓	✓	✓	✓	✓
Corr. Coefficient		✓	✓	✓	✓	✓	✓	✓
Lab Control Sample	✓	✓	✓	✓	✓	✓	✓	✓
Lab Duplicate Sample	✓	✓	✓	✓	✓	✓	✓	✓
Lab Spiked Sample	✓	✓	✓	✓ (1)	✓	✓	✓	✓

Comments (1) Sb spike 47%

ICP Analyses ICS Analyzed? Yes ✓ No____, OK Serial Dilution Needed? Yes ✓ No____, OK? ✓
Comments rep injections > 20% RSD Zn, K, Ni, Cu at or near IDL qualified U

GFAA Analyses GFAA Scheme Followed? Yes ✓ No____, Method of Standard Additions Used? Yes____ No ✓
Comments N/A

Cyanide Analyses Mid-range Standard Analyzed? Yes____ No ✓, Comments

Mercury Analyses
Comments OK

Holding Times Mercury (28 days) ✓ OK, Cyanide (14 days) ✓ OK, Metals (180 days) ✓ OK
Comments

Laboratory Blanks Comments clean OK

Field Blanks Comments 93665/QCRP003 Fe at 167
93531/QCRP002 - OK

SAMPLE DELIVERY GROUP CHECKLIST - INORGANICS

Form DV4

SDG ID NRP003 Water_____ Soil ✓ Data Package (complete) Yes ✓ No_____.

Action Item	ICP	Hg	CN	Graphite Furnace AA Sb	As	Pb	Se	Tl
Initial Calibration	✓	✓	✓	✓	✓	✓	✓	✓
ICV/CCV	✓	✓	✓	✓	✓	✓	✓	✓
Corr. Coefficient	NA	✓	✓	✓	✓	✓	✓	✓
Lab Control Sample	✓	✓	✓	✓	✓	✓	✓	✓
Lab Duplicate Sample	Al 29.1, Cu-27 Cu, Mn-415, Zn 8.1	✓	✓	✓	✓	✓	✓	✓
Lab Spiked Sample	Mn 58.4%	✓	✓	57.1%	✓	✓	✓	✓

Comments K, Ni, Ba, Cr some poor reproducibility near IDL labeled J

ICP Analyses ICS Analyzed? Yes____ No ✓, Serial Dilution Needed? Yes ✓ No____, OK? ✓

Comments

GFAA Analyses GFAA Scheme Followed? Yes ✓ No____, Method of Standard Additions Used? Yes____ No ✓

Comments NA

Cyanide Analyses Mid-range Standard Analyzed? Yes ✓ No____, Comments

OK

Mercury Analyses

Comments OK

Holding Times Mercury (28 days) ✓ OK, Cyanide (14 days) ✓ OK, Metals (180 days) ✓ OK

Comments

Laboratory Blanks Comments K at 700 ug/L (140 mg/kg) Mn at 2.2 ug/L (.44 mg/kg) K data < 5X are U

Cu, Ba, As just above IDL but < CRDL, sample data < 5X are U

Field Blanks Comments OK < IDL

8/18/94 MJC

SAMPLE DELIVERY GROUP CHECKLIST - INORGANICS

Form DV4

SDG ID NRP004 Water_____ Soil ✓ Data Package (complete) Yes ✓ No_____.

Action Item	ICP	Hg	CN	Graphite Furnace AA Sb	As	Pb	Se	Tl
Initial Calibration	✓	✓		✓	✓	✓	✓	✓
ICV/CCV	✓	✓		✓	✓	✓	✓	✓
Corr. Coefficient	—	✓		✓	✓	✓	✓	✓
Lab Control Sample	✓	✓		✓	✓	✓	✓	✓
Lab Duplicate Sample	✓	✓		✓	✓	✓	✓	✓
Lab Spiked Sample	✓	✓		72% ①	✓	✓	✓	✓

Comments ① Sb unaffected by low spike recovery all else than OK

ICP Analyses ICS Analyzed? Yes ✓ No____, Serial Dilution Needed? Yes____ No ✓, OK?____

Comments OK some low level potassium and nickel with poor duplicate injections

GFAA Analyses GFAA Scheme Followed? Yes ✓ No____, Method of Standard Additions Used? Yes____ No ✓ N/A

Comments OK

Cyanide Analyses Mid-range Standard Analyzed? Yes ✓ No____, Comments

Mercury Analyses

Comments OK

Holding Times Mercury (28 days) ✓ OK, Cyanide (14 days) ✓ OK, Metals (180 days) ✓ OK

Comments

Laboratory Blanks Comments Prep blank lead at 1.28 ug/kg, samples reprepped

Field Blanks Comments 93787 QCR005, Mn at 5 ug/L

8/2 92 MJC

SAMPLE DELIVERY GROUP CHECKLIST - INORGANICS

Form DV4

SDG ID NRP005 Water_____ Soil ✓ Data Package (complete) Yes ✓ No_____.

Action Item	ICP	Hg	CN	Graphite Furnace AA Sb	As	Pb	Se	Tl
Initial Calibration	✓	✓	✓	✓	✓	✓	✓	✓
ICV/CCV	✓	✓	✓	✓	✓	✓	✓	✓
Corr. Coefficient	—	✓	✓	✓	✓	✓	✓	✓
Lab Control Sample	✓	✓	✓	✓	✓	✓	✓	✓
Lab Duplicate Sample	✓	✓	✓	✓	✓	✓	✓	✓
Lab Spiked Sample	① ✓	✓	✓	② ✓	✓	✓	✓	✓

Comments ① Silver and manganese spiked ② spike low 28%
71.5 47.4

ICP Analyses ICS Analyzed? Yes ✓ No____, Serial Dilution Needed? Yes ✓ No____, OK? ✓
Comments 94175

GFAA Analyses GFAA Scheme Followed? Yes ✓ No____, Method of Standard Additions Used? Yes ✓ No____
Comments As 94010 OK

Cyanide Analyses Mid-range Standard Analyzed? Yes ✓ No____, Comments OK

Mercury Analyses
Comments OK

Holding Times Mercury (28 days) ✓ OK, Cyanide (14 days) ✓ OK, Metals (180 days) ✓ OK
Comments

Laboratory Blanks Comments

Field Blanks Comments QCR006 and QCR007
93979 94015
OK OK

9/9/92

SAMPLE DELIVERY GROUP CHECKLIST - INORGANICS

Form DV4

SDG ID NRP006 Water_____ Soil ✓ Data Package (complete) Yes ✓ No_____.

Action Item	ICP	Hg	CN	Graphite Furnace AA Sb	As	Pb	Se	Tl
Initial Calibration	✓	✓	✓	✓	✓	✓	✓	✓
ICV/CCV	✓	✓	✓	✓	✓	✓	✓	✓
Corr. Coefficient		✓	✓	✓	✓	✓	✓	✓
Lab Control Sample	✓	✓	✓	✓	✓	✓	✓	✓
Lab Duplicate Sample	✓	✓	✓	✓	✓	✓	✓	✓
Lab Spiked Sample	✓	✓	low	* ✓	✓	✓	✓	✓

Comments * 39.6

ICP Analyses ICS Analyzed? Yes ✓ No____, Serial Dilution Needed? Yes ✓ No____, OK? ✓

Comments some poor reproducibility < CRDL > IDL for K, Ni, Zn, Ca

GFAA Analyses GFAA Scheme Followed? Yes ✓ No____, Method of Standard Additions Used? Yes____ No ✓

Comments NA

Cyanide Analyses Mid-range Standard Analyzed? Yes ✓ No____, Comments

Mercury Analyses

Comments OK

Holding Times Mercury (28 days) * ✓ OK, Cyanide (14 days) ✓ OK, Metals (180 days) ✓ OK

Comments * 94183 drilling water 30 days

Laboratory Blanks Comments OK

Field Blanks Comments 94182 DCR008 OK

9/23/9

SAMPLE DELIVERY GROUP CHECKLIST - INORGANICS

Form DV4

SDG ID NRP007 Water_____ Soil ✓ Data Package (complete) Yes ✓ No_____.

Action Item	ICP	Hg	CN	Graphite Furnace AA Sb	As	Pb	Se	Tl
Initial Calibration	✓	✓		✓	✓	✓	✓	✓
ICV/CCV	✓	✓		✓	✓	✓	✓	✓
Corr. Coefficient		✓		✓	✓	✓	✓	✓
Lab Control Sample	✓	* ✓		✓	✓	✓	✓	✓
Lab Duplicate Sample	✓	✓		✓	✓	✓	✓	✓
Lab Spiked Sample	✓	✓		✓	✓	✓	* ✓	✓

Comments

* NoLCS forwarded

low recovery 25.9

ICP Analyses ICS Analyzed? Yes ✓ No____, Serial Dilution Needed? Yes ✓ No____, OK? ✓

Comments

GFAA Analyses GFAA Scheme Followed? Yes ✓ No____, Method of Standard Additions Used? Yes ✓ No____

Comments OK

Cyanide Analyses Mid-range Standard Analyzed? Yes ✓ No____, Comments OK

Mercury Analyses

Comments OK

Holding Times Mercury (28 days) ✓ OK, Cyanide (14 days) ✓ OK, Metals (180 days) ✓ OK

Comments

Laboratory Blanks Comments OK

Field Blanks Comments 94436, 94437

8/29/92

SAMPLE DELIVERY GROUP CHECKLIST - INORGANICS

Form DV4

SDG ID NRP008 Water_____ Soil ✓ Data Package (complete) Yes ✓ No_____.

Action Item	ICP	Hg	CN	Graphite Furnace AA Sb	As	Pb	Se	Tl
Initial Calibration	✓	✓	✓	✓	✓	✓	✓	✓
ICV/CCV	✓	✓	✓	✓	✓	✓	✓	✓
Corr. Coefficient		✓	✓	✓	✓	✓	✓	✓
Lab Control Sample	✓	✓	✓	✓	✓	✓	✓	✓
Lab Duplicate Sample	✓	✓	✓	✓	✓	✓	✓	✓
Lab Spiked Sample	* ✓	* ✓	✓	* ✓	✓	✓	* ✓	✓
Comments	Cr -127.6 Ag134.5	52.5		30.2			128.3	

ICP Analyses ICS Analyzed? Yes ✓ No____, Serial Dilution Needed? Yes ✓ No ✓, OK? ✓
Comments Potassium has blank problem, see below data qualified 1000u 94280

GFAA Analyses GFAA Scheme Followed? Yes ✓ No____, Method of Standard Additions Used?
Comments N/A Yes____ No ✓

Cyanide Analyses Mid-range Standard Analyzed? Yes ✓ No____, Comments OK

Mercury Analyses
Comments Spike calculated incorrect 52.5 should be 105%

Holding Times Mercury (28 days) ✓ OK, Cyanide (14 days) ✓ OK, Metals (180 days) ✓ OK
Comments

Laboratory Blanks Comments Initial calibration blank -695.9 ug/L, prep blank -414.9 ug/L prep blank -406.6 ug/L

Field Blanks Comments 94559 - qualified < 2500u for potassium

SAMPLE DELIVERY GROUP CHECKLIST - INORGANICS 9/28/92

Form DV4

SDG ID NRP009 Water_____ Soil ✓ Data Package (complete) Yes ✓ No_____.

Action Item	ICP	Hg	CN	Graphite Furnace AA Sb	As	Pb	Se	Tl
Initial Calibration	✓	✓	✓	✓	✓	✓	✓	✓
ICV/CCV	✓	✓	✓	✓	✓	✓	✓	✓
Corr. Coefficient		✓	✓	✓	✓	✓	✓	✓
Lab Control Sample	✓	✓	✓	✓	✓	✓	✓	✓
Lab Duplicate Sample	✓	✓	✓	✓	✓	✓	✓	✓
Lab Spiked Sample	✓	✓	✓	X 24.1% ✓	✓	✓	✓	✓

Comments

ICP Analyses ICS Analyzed? Yes ✓ No____, Serial Dilution Needed? Yes____ No ✓, OK?____

Comments potassium and sodium have negative values for most samples, Sodium ok reanalyzed prep blank -221 mg/kg for potassium raised dl for potassium to 10004

GFAA Analyses GFAA Scheme Followed? Yes ✓ No____, Method of Standard Additions Used? Yes____ No ✓

Comments

Cyanide Analyses Mid-range Standard Analyzed? Yes ✓ No____, Comments

Mercury Analyses

Comments OK

Holding Times Mercury (28 days) ✓ OK, Cyanide (14 days) ✓ OK, Metals (180 days) ✓ OK

Comments

Laboratory Blanks Comments potassium had -221 for prepblank

Field Blanks Comments no field blank with small SOF

6/23-4

9/29

SAMPLE DELIVERY GROUP CHECKLIST - INORGANICS

Form DV4

SDG ID NRP010 Water_____ Soil ✓ Data Package (complete) Yes ✓ No_____.

Action Item	ICP	Hg	CN	Graphite Furnace AA Sb	As	Pb	Se	Tl
Initial Calibration	✓	✓	✓	✓	✓	✓	✓	✓
ICV/CCV	✓	✓	✓	✓	✓	✓	✓	✓
Corr. Coefficient		✓	✓	✓	✓	✓	✓	✓
Lab Control Sample	✓	* ✓	✓	✓	✓	✓	✓	✓
Lab Duplicate Sample	✓	✓	✓	✓	✓	✓	✓	✓
Lab Spiked Sample	✓		* ✓	* ✓	✓	✓	✓	✓
Comments		no LCS for water	70%	41.3%				

ICP Analyses ICS Analyzed? Yes ✓ No____, Serial Dilution Needed? Yes ✓ No ✓, OK? ✓
Comments Potassium has negative blank and some negative samples 96269
dl raised to 2500u for water and 1000u for soil

GFAA Analyses GFAA Scheme Followed? Yes ✓ No____, Method of Standard Additions Used? Yes ✓ No____
Comments 95577 As OK

Cyanide Analyses Mid-range Standard Analyzed? Yes ✓ No____, Comments OK

Mercury Analyses
Comments OK

Holding Times Mercury (28 days) ✓ OK, Cyanide (14 days) ✓ OK, Metals (180 days) ✓ OK
Comments

Laboratory Blanks Comments Potassium has negative instrument blank and prep blank 330 - 600 ug/L

Field Blanks Comments 95582, 96210

APPENDIX C

SUB-AREA PHYSICAL DESCRIPTIONS AND RESULTS OF SOILS ANALYTICAL LABORATORY PHYSICAL ANALYSES

APPENDIX C
SUB-AREA PHYSICAL DESCRIPTIONS AND RESULTS OF SOILS ANALYTICAL LABORATORY PHYSICAL ANALYSES

Background Area

- Location:
  - The locations of background soil borings can be found on Figure 3-1.
  - Six of the ten background soil borings were installed off-site in an area north of the NIROP Fridley.
  - Two of the ten background soil borings were installed off-site northwest of the NIROP Fridley in the Anoka County Islands of Peace Mississippi Riverfront Park.
  - Two of the ten background soil borings were installed off-site just west of the northern NIROP Fridley employee parking lot.
  - A summary table of surveyed boring coordinates is included in Table J-1, which is located in Appendix J.
- Ten Type I soil borings were installed to a total depth of 10 feet.
- Physical soil samples were collected from the 8- to 10-foot-depth interval at eight of the ten borings. Two physical soil samples were collected from the 6- to 8-foot depth, due to insufficient sample volume of the 8- to 10-foot-depth interval.
- Surface materials consist of topsoil covered with vegetation.
- Borings encountered no apparent fill material except for boring BG010, which encountered 3 feet of fill. The fill may be a result of construction activities related to the northern NIROP Fridley employee parking lot.
- The main geologic soil type is sand, ranging from poorly graded sand (SP) to well graded sand (SW). The grain-size distribution of the sand encountered and collected varies significantly to represent a wide range of USCS classifications for sand.
- The off-site background soils encountered appear to be representative of the soils encountered on-site.

- Borings in the Background Area include the following:

BG001	BG006
BG002	BG007
BG003	BG008
BG004	BG009
BG005	BG010

- A summary of the physical soil parameters analyzed by the RMT Soils Laboratory is included in Table J-2, which is located within Appendix J.

- Physical laboratory results are included in Appendix J.

- Soil boring logs are located within Appendix K.

Sub-Area A1

- Location:

  - Sub-Area A1 is located in the northern portion of the NIROP Fridley, north of the northwestern corner of the main plant, and in the southwestern corner of Area A. Figure 4-1 shows the location of this sub-area.

- Dimensions

  - Sub-Area A1 is divided into two portions: one location contains one soil boring; the other area has two soil borings. It measures 55 feet by 90 feet, or 4,950 ft^2.

- A total of three Type I soil borings were installed to a depth of 20 feet.

- Surface materials:

  - At the location of soil boring AB040, the surface material is gravel with some coarse sands (GP).

  - At the location of soil borings AB041 and AB042, the surface material is concrete, approximately 10 inches in thickness.

- Fill materials:

  - Most of the fill material encountered is within 3 to 5 feet of the ground surface and consists of a silty sand (SM).

- Main soil types:
  - Most of the soils encountered below the fill materials within the study area consist of a poorly graded sand (SP); however, at a few locations, a well graded sand (SW) was encountered.
- Soil borings located in Sub-Area A1 are as follows:
  - Type I Soil Borings:

    AB040
    AB041
    AB042
- A summary of the physical soil parameters analyzed by the RMT Soil Laboratory is included in Table J-2, which is located in Appendix J.
- The physical laboratory results are included in Appendix J.
- Soil boring logs are included in Appendix K.

Sub-Area A2

- Location:
  - Sub-Area A2 is located in the north-central portion of the NIROP Fridley, north of the main plant, and north of Building #50. This is the northwestern corner of what is also referred to as the "North 40." Figure 4-1 shows the location of this sub-area.
- Dimensions:
  - The area is approximately 65 feet by 340 feet, or 22,100 ft^2.
- A total of two Type I soil borings were installed to a depth of 20 feet.
- A total of six Type II soil borings were installed at a depth of 20 feet.
- Surface materials consist of a gravel with silty sands.
- Fill materials:
  - Most of the fill encountered is within 3 feet of the ground surface and consists of a silty sand (SM).

- Main soil types:
  - Most of the soils encountered below the fill material within the study area consist of poorly graded sand (SP).
- Soil borings located within Sub-Area A2 are:
  - Type I Soil Borings:

    AB024
    AB025

  - Type II Soil Borings:

AB201	AB223
AB202	AB225
AB222	AB230

- A summary of the physical soil parameters analyzed by the RMT Soil Laboratory is included in Table J-2, which is located in Appendix J.
- The physical laboratory results are included in Appendix J.
- Soil boring logs are included in Appendix K.

Sub-Area A3

- Location:
  - Sub-Area A3 is in the north-central portion of the NIROP Fridley, north of the main plant, east of Sub-Area A4, and east of the main north-south concrete roadway (Broadway). This is the eastern half of what has also been known as the North 40. Figure 4-1 shows the location of this sub-area.
- Dimensions:
  - The area is approximately 380 feet by 435 feet, or 165,300 ft^2.
- Six Type I soil borings were installed to a depth of 20 feet.
- Two Type I test pits were installed to a depth of 12 feet.
- Thirty-two Type II soil borings were installed to a depth of 20 feet.

- Surface materials:

  - Surface materials consist of a gravel with silty sands, which covers the entire study area with the exception of the 10-inch concrete roadway, railroad spurs, and the concrete decontamination pad.

- Fill materials:

  - Most of the fill encountered is within 3 feet of the ground surface and consists of a silty sand (SM).

  - Test pit AT008 encountered a buried trench (previously unexcavated conductivity anomaly #14). Table J-3 lists the contents of the fill materials encountered at each of the test pits.

- Main soil types:

  - Most of the soils encountered within the study area consist of poorly graded sands (SP) and some well graded sands (SW).

  - A shallow (3- to 7-foot) highly variable fine-grained soil (CL, SC, ML, SM) unit underlies much of Area A3. However, this unit is not found in the northeastern area or in much of the eastern area. The lateral extent of this soil unit is shown on Figure 4-6. The unit ranges in thickness from 0.4 to 4 feet.

- Soil borings/test pits located within Sub-Area A3 are as follows:

  - Type I borings/test pits:

AB035	AB043
AB036	AB044
AB037	AT007
AB039	AT008

  - Type II borings:

AB209	AB217	AB237	AB246
AB210	AB218	AB238	AB247
AB211	AB231	AB239	AB248
AB212	AB232	AB240	AB250
AB213	AB233	AB241	AB251
AB214	AB234	AB242	AB252
AB215	AB235	AB244	AB253
AB216	AB236	AB245	AB254

- A summary of the physical soil parameters analyzed by the RMT Soils Laboratory is included in Table J-2, which is located in Appendix J.

- The physical laboratory results are included in Appendix J.

- Soil boring logs are included in Appendix K.

Sub-Area A4

- Location:
  - Sub-Area A4 is in the north-central portion of the NIROP, north of the main plant, west of Sub-Area A3, and west of the main north-south roadway (Broadway). This is the western half of what has also been known as the North 40. Figure 4-1 shows the location of this sub-area.
- Dimensions:
  - The area is approximately 600 feet by 600 feet, or 360,000 ft^2.
- Six Type I test pits were installed to a depth of 20 feet.
- Ten Type I soil borings were installed to a depth of 20 feet.
- Fifteen Type II soil borings were installed to a depth of 20 feet.
- Surface materials:
  - Surface materials consist of a gravel with silty sands, which covers the entire study area with the exception of 10-inch concrete roadways and railroad spurs.
- Fill materials:
  - Most of the fill material encountered is within 3 feet of the ground surface and consists of a silty sand (SM).
  - Table J-3 lists the contents of the fill materials which were encountered at each of the six test pits installed in this sub-area.
- Main soil types:
  - Most of the soils encountered within the study area consist of poorly graded sands (SP) and some well graded sands (SW).
  - A shallow (3- to 7-foot) highly variable fine-grained soil (CL, SC, ML, SM) unit underlies part of the east-central portion Sub-Area A4. The lateral extent of this soil unit is shown on Figure 4-6. The unit ranges in thickness from 0.4 to 4-feet. Most of this soil unit is located within Sub-Area A3.

- Soil borings/test pits located within Sub-Area A4 are as follows:

  - Type I test pits:

AT001	AT004
AT002	AT005
AT003	AT006

  - Type I soil borings:

AB026	AB031
AB027	AB032
AB028	AB033
AB029	AB034
AB030	AB038

  - Type II soil borings:

AB203	AB208	AB226
AB204	AB219	AB227
AB205	AB220	AB228
AB206	AB221	AB229
AB207	AB224	AB243

- A summary of the physical soil parameters analyzed by the RMT Soils Laboratory is included in Table J-2, which is located in Appendix J.

- The physical laboratory results are included in Appendix J.

- Soil boring logs are included in Appendix K.

Sub-Area B1

- Location:

  - Sub-Area B1 is located in the northeastern portion of the NIROP, east of Sub-Area A3, north of Sub-Area D, and north of Sub-Area B2. Figure 3-1 shows the location of Sub-Area B1. Soil boring and test pit locations are shown on Figure 4-7.

- Dimensions:

  - This sub-area includes approximately 54,000 ft^2.

- Two Type I test pits were installed to a depth of 12 feet.

- Three Type I soil borings were installed to a depth of 20 feet.

- Five Type II soil borings were installed to a depth of 20 feet.

- Surface materials:

- Surface materials consist of a gravel with slight vegetation.

- Fill materials:

  - Most of the fill material encountered is within 0 to 3 feet of the ground surface and consists of a silty sand (SM).

  - Soil borings BB002, BB003, BB202, BB205, and BB206 encountered waste debris (e.g., glass, brick, scrap metal, asphalt, and wood) to depths off 7.8 feet below the ground surface.

  - Table J-3 lists the contents of the fill materials which were encountered at each of the two test pits installed in this sub-area.

- Main soil types:

  - Below the fill materials, a fine-grained soil (CL, ML, SM) unit was encountered from 7 to 10 feet.

  - An organic soil (OL/OH), approximately 3 feet thick beginning at a depth of 5 feet was encountered at four boring locations (BB201, BB202, BB204, and BB206), located in the west-central portion of Sub-Area B1.

- Soil borings/test pits located within Sub-Area B1 are as follows:

  - Type I soil borings/test pits:

BT001	BB001
BT002	BB002
	BB003

  - Type II soil borings:

BB201	BB205
BB202	BB206
BB204	

- A summary of the physical soil parameters analyzed by the RMT Soils Laboratory is included in Table J-2, which is located in Appendix J.

- The physical laboratory results are included in Appendix J.

- Soil boring logs are included in Appendix K.

Sub-Area B2

- Location:
  - Sub-Area B2 is located in the northeastern portion of the NIROP, east of Sub-Area A3, north of Sub-Area D, and south of Sub-Area B1. Figure 3-1 shows the location of Sub-Area B2. Soil boring and test pit locations are shown on Figure 4-7.
- Dimensions:
  - This sub-area contains two test pit locations. Each is approximately 12 feet by 12 feet. The log of each test pit indicates the actual dimensions of each test pit.
- A total of two Type I test pits were installed to a depth of 12 feet.
- Surface materials:
  - Surface materials consist of a gravel with silty sand and a little vegetation.
- Fill materials:
  - A silty sand (SM) was encountered from the surface to a depth of 6.5 feet. Brick, scrap metal, slag, and wood were encountered in the fill material.
- Main soil types:
  - Below the fill materials, a 2-foot-thick silt with a peat layer was encountered (from 5.5 to 7.5-feet) at both test pit locations.
  - Below the silt, poorly graded sand (SP) and well graded sand (SW) were encountered.
- Test pits located in Sub-Area B2 are as follows:

  BT003 BT004
- A summary of the physical soil parameters analyzed by the RMT Soils Laboratory is included in Table J-2, which is located in Appendix J.
- The physical laboratory results are included in Appendix J.
- Soil boring logs are included in Appendix K.

Area D

- Location:
  - This area is located in the east-central portion of the NIROP Fridley, immediately northeast of the northeastern corner of the main plant building. This area has been formerly known as the Hazardous Waste Storage Area C. A portion of this area is currently undergoing RCRA closure by FMC. Figure 3-1 shows the location of Area D. Soil boring locations and the RCRA closure area are shown on Figure 4-8.
- Dimensions:
  - This area is approximately 300 feet by 270 feet or approximately 65,000 ft^2 (minus the RCRA area).
- Six Type I soil borings were installed to a depth of 20 feet.
- Surface materials:
  - Approximately 1/3 of the area is grassy vegetation.
  - Approximately 2/3 of the area is gravel with some vegetation.
  - A concrete access road bisects the area.
- Fill materials:
  - The main feature within Area D is a burial trench, approximately 80 feet by 200 feet. The fill material within the trench is a silty sand (SM). Gravel, glass, concrete, wood, foundry slag, and scrap metal were encountered to a depth of 13 feet in the silty sand.
  - Outside of the trench, most fill is encountered within 3 feet of the ground surface and consists of a silty sand (SM).
- Main soil types:
  - Below the fill material, a shallow (2- to 6-foot deep) clay (till) unit is present in the southern and eastern portions of the study area.
  - Below the fill material or clay unit, a poorly graded sand (SP) exists.
- Soil borings located within Area D are as follows:

DB029	DB032
DB030	DB033
DB031	DB034

- A summary of the physical soil parameters analyzed by the RMT Soil Laboratory is included in Table J-2, which is located in Appendix J.

- The physical laboratory results are included in Appendix J.
- Soil boring logs are included in Appendix K.

Sub-Area E1

- Location:
  - Sub-Area E1 is located on the southeastern portion of the NIROP, immediately north of Sub-Area E2. Figure 3-1 shows the location of Sub-Area E1. Soil boring locations are shown on Figure 4-9.
- Dimensions:
  - This sub-area is approximately 100 feet by 90 feet or approximately 9,000 ft^2 (minus the RCRA area).
- Two Type I soil borings were installed to a depth of 20 feet.
- Six Type II soil borings were installed to a depth of 20 feet.
- Surface materials:
  - Soil borings EB001 and EB002 are located on a grassy area.
  - The remaining surface area is covered with a minimum of 10 inches of concrete.
- Fill materials:
  - The main upper approximately 7 feet of soil is a fine-grained fill (CL-ML, CL, ML).
- Main soil types:
  - Below the fill, a poorly graded sand (SP) is encountered at most locations. At some locations, a well graded sand (SW) was encountered.
  - Soil boring EB202, located in the central-westernmost portion of Sub-Area E1, encountered a 3-foot lean clay (CL) till unit.
- Soil borings located within Sub-Area E1 are as follows:
  - Type I soil borings:

    EB001 EB002

  - Type II soil borings:

    EB204 EB207
    EB205 EB208

- A summary of the physical soil parameters analyzed by the RMT Soils Laboratory is included in Table J-2, which is located in Appendix J.

- The physical laboratory results are included in Appendix J.

- Soil boring logs are included in Appendix K.

Sub-Area E2

- Location:

  - Sub-Area E2 is located on the southeastern portion of the NIROP, immediately south of Sub-Area E1. Figure 3-1 shows the location of Sub-Area E1. Soil boring locations are shown on Figure 4-9.

- Dimensions:

  - This sub-area is approximately 85 feet by 90 feet or approximately 7,650 ft^2 (minus the RCRA area).

- Two Type I soil borings were installed to a depth of 20 feet.

- Four Type II soil borings were installed to a depth of 20 feet.

- Surface materials:

  - All soil boring locations are covered with a minimum of 10 inches of concrete.

- Fill materials:

  - The upper 6 to 8 feet of fill is a fine-grained soil (ML, CL, or SC). Soil boring EB205 encountered only 3.5 feet of similar fill material.

- Main soil types:

  - Below the fill is a poorly graded sand (SP) with some well graded sand (SW) zones.

  - Soil boring EB205 encountered 10 feet of a lean clay (CL) at depths of 10 to 20 feet.

- Soil borings located within Sub-Area E2 are as follows:
  - Type I soil borings:

    EB003 EB004

  - Type II soil borings:

    EB204 EB207
    EB205 EB208

- A summary of the physical soil parameters analyzed by the RMT Soils Laboratory is included in Table J-2, which is located in Appendix J.
- The physical laboratory results are included in Appendix J.
- Soil boring logs are included in Appendix K.

Sub-Area F1

- Location:
  - Sub-Area F1 is located in the southwestern portion of the NIROP, north of Sub-Area F2. Figure 3-1 shows the location of this sub-area. Soil boring location is shown on Figure 4-11.
- Dimensions:
  - Area defined as one soil boring.
- One Type I soil boring was installed to a depth of 20 feet.
- Surface materials:
  - The soil boring is located on a grassy area.
- Fill materials:
  - Approximately 4 feet of silty sand (SM) and silt (ML) were encountered, and a few brick fragments were reported.
- Main soil types:
  - Below the fill material is a 0.5-foot lean clay unit with sand (CL).
  - Below the clay unit is poorly graded sand (SP).

- The soil boring located within Sub-Area is as follows:

  FB001

- A summary of the physical soil parameters analyzed by the RMT Soils Laboratory is included in Table J-2, which is located in Appendix J.

- The physical laboratory results are included in Appendix J.

- Soil boring logs are included in Appendix K.

Sub-Area F2

- Location:

  - Sub-Area F2 is located on the southwestern portion of the NIROP, south of Sub-Area F1. Figure 3-1 shows the location of Sub-Area F2. Soil boring locations are shown on Figure 4-11.

- Dimensions:

  - This sub-area is approximately 60 feet by 200 feet or approximately 12,000 ft^2.

- Three Type I soil borings were installed to a depth of 20 feet.

- Surface materials:

  - Soil borings FB002 and FB003 are located with a minimum of 10 inches of concrete covering the area.

  - Soil boring FB004 is located in a grassy area.

- Fill materials:

  - Approximately 6 to 9 feet of fill material consisting of silty sand (SM), well graded sand (SW), and/or silt (ML) were encountered.

- Main soil types:

  - Below the fill materials is a poorly graded sand (SP) with zones of well graded sand (SW).

  - Soil boring FB002 encountered a sandy silt at a depth of 6 to 7 feet and a lean clay (CL) from a depth of 7 to 8 feet.

  - Soil borings located within this sub-area are as follows:

- Type I soil borings:

  FB002 FB003 FB004

- A summary of the physical soil parameters analyzed by the RMT Soils Laboratory is included in Table J-2, which is located in Appendix J.

- The physical laboratory results are included in Appendix J.

- Soil boring logs are included in Appendix K.

TABLE C-1

SUMMARY OF BORING LOCATIONS AND SURFACE ELEVATIONS

Boring I.D.	Boring Elevation (MSL)[1]	Boring Coordinates[2]	
		North	East
BACKGROUND SOIL BORINGS - TYPE I			
BG001	835.00	--	--
BG002	833.00	--	--
BG003	834.00	--	--
BG004	833.00	--	--
BG005	833.00	--	--
BG006	836.00	--	--
BG007	832.00	--	--
BG008	834.00	--	--
BG009	834.00	--	--
BG010	834.00	--	--
AREA A TEST PITS - TYPE I			
AT001	834.894	7351.318	5445.474
AT002	835.883	7400.135	5393.567
AT003	834.917	7322.199	5445.474
AT004	835.483	7375.729	5460.979
AT005	835.899	7397.474	5587.309
AT006	835.308	7277.553	5659.046
AT007	830.784	7276.708	5799.746
AT008	837.107	7469.900	5999.505
AREA A SOIL BORINGS - TYPE I			
AB024	834.982	7478.299	5099.313
AB025	835.068	7481.962	5227.584
AB026	NS	NS	NS
AB027	834.411	7230.215	5440.401
AB028	834.799	7350.590	5478.600
AB029	836.982	7335.074	5497.839
AB030	834.829	7267.691	5470.691
AB031	835.283	7357.087	5550.291
AB032	835.054	7269.409	5577.361

TABLE C-1 (Continued)

SUMMARY OF BORING LOCATIONS AND SURFACE ELEVATIONS

Boring I.D.	Boring Elevation (MSL)[1]	Boring Coordinates[2]	
		North	East
AREA A SOIL BORINGS - TYPE I (continued)			
AB033	835.760	7388.839	5662.151
AB034	835.022	7330.777	5665.006
AB035	835.832	7340.806	5803.092
AB036	835.634	7340.590	5876.257
AB037	835.235	7297.396	5859.810
AB038	834.580	7270.473	5501.147
AB039	831.011	7267.801	6046.041
AB040	834.034	6951.814	5365.559
AB041	834.965	6770.496	5197.198
AB042	834.927	6781.383	5197.762
AB043	836.016	7340.667	5805.944
AB044	836.295	7341.656	5824.164
AREA A SOIL BORINGS - TYPE II			
AB201	835.089	7483.427	5058.677
AB202	835.225	7481.984	5307.117
AB203	835.769	7396.634	5354.258
AB204	834.965	7321.691	5404.478
AB205	834.594	7221.840	5400.621
AB206	834.417	7221.205	5479.678
AB207	834.725	7245.487	5627.159
AB208	835.273	7311.766	5586.150
AB209	834.974	7257.655	5764.238
AB210	834.624	7264.057	5863.253
AB211	835.312	7296.662	5906.993
AB212	836.634	7376.914	5866.703
AB213	835.513	7383.080	5791.072
AB214	835.683	7382.474	5727.382
AB215	834.599	7432.206	6004.393
AB216	834.385	7486.461	6035.556
AB217	835.296	7491.188	5962.336
AB218	835.404	7329.198	5767.259
AB219	834.463	7204.527	5364.612
AB220	835.218	7307.496	5365.315
AB221	835.901	7392.028	5312.798
AB222	835.258	7483.050	5307.117
AB223	835.100	7481.718	5206.101
AB224	834.720	7188.680	5486.937
AB225	835.460	7483.665	5346.948
AB226	835.866	7391.054	5332.778

TABLE C-1 (Continued)

SUMMARY OF BORING LOCATIONS AND SURFACE ELEVATIONS

Boring I.D.	Boring Elevation (MSL)[1]	Boring Coordinates[2]	
		North	East
AREA A SOIL BORINGS - TYPE II (continued)			
AB227	835.570	7308.643	5344.813
AB228	834.340	7209.831	5384.614
AB229	834.962	7264.443	5629.569
AB230	835.222	7482.210	5325.536
AB231	834.897	7411.886	6005.501
AB232	834.844	7488.706	6075.571
AB233	835.212	7490.042	5924.047
AB234	834.557	7488.673	6054.277
AB235	834.964	7492.455	5883.235
AB236	835.262	7491.645	5903.705
AB237	835.708	7329.795	5727.744
AB238	834.734	7212.904	5762.200
AB239	834.737	7213.130	5862.161
AB240	835.502	7293.281	5949.991
AB241	836.206	7741.374	5890.040
AB242	835.317	7416.508	5767.710
AB243	834.991	7330.449	5687.298
AB244	834.439	7233.355	5763.800
AB245	834.766	7192.601	5861.943
AB246	835.511	7293.338	5970.769
AB247	835.585	7444.727	5914.051
AB248	835.217	7356.158	5762.920
AB250	835.554	7426.992	5725.961
AREA B TEST PITS - TYPE I			
BT001	836.027	7377.916	6201.820
BT002	835.862	7485.912	6323.379
BT003	835.351	7123.732	6186.599
BT004	836.144	7078.940	6190.552
AREA B SOIL BORINGS - TYPE I			
BB001	835.283	7335.950	6223.906
BB002	834.857	7367.954	6316.830
BB003	835.342	7437.272	6374.868

TABLE C-1 (Continued)

SUMMARY OF BORING LOCATIONS AND SURFACE ELEVATIONS

Boring I.D.	Boring Elevation (MSL)[1]	Boring Coordinates[2]	
		North	East
AREA B SOIL BORINGS - TYPE II			
BB201	835.375	7408.112	6313.896
BB202	835.092	7335.126	6288.851
BB203	835.306	7381.083	6355.181
BB204	835.316	7389.049	6316.449
BB205	835.330	7352.042	6303.799
BB206	835.302	7373.583	6335.162
AREA D SOIL BORINGS - TYPE I			
DB029	835.850	6953.177	6408.158
DB030	835.963	6987.101	6410.327
DB031	835.717	6765.192	6402.323
DB032	835.866	6724.668	6407.952
DB033	835.689	6815.161	6404.061
DB034	835.239	6916.516	6414.235
AREA E SOIL BORINGS - TYPE I			
EB001	835.616	6072.700	6318.352
EB002	836.084	6094.301	6339.315
EB003	834.918	5871.046	6332.084
EB004	834.807	5966.218	6310.637
AREA E SOIL BORINGS - TYPE 2			
EB201	835.701	6122.330	6325.916
EB202	835.063	6058.973	6264.365
EB203	834.872	6018.899	6316.125
EB204	835.056	5912.033	6332.294
EB205	834.825	5876.623	6292.509
EB206	835.328	6099.828	6314.696
EB207	834.850	5888.752	6340.614
EB208	834.659	5879.623	6314.145
EB209	834.961	5999.458	6317.308
EB210	834.985	6070.368	6298.856

TABLE C-1 (Continued)

SUMMARY OF BORING LOCATIONS AND SURFACE ELEVATIONS

Boring I.D.	Boring Elevation (MSL)[1]	Boring Coordinates[2]	
		North	East
AREA F SOIL BORINGS - TYPE I			
FB001	834.768	6310.331	4862.680
FB002	834.594	5907.353	4859.863
FB003	834.656	5804.929	4865.001
FB004	835.047	5766.474	4922.839

Notes:

[1] MSL = Mean Sea Level
[2] Survey coordinates based on ....
NS = Not surveyed.

TABLE C-2

SUMMARY OF SOIL PHYSICAL ANALYSES - BACKGROUND

Borehole Location	Sample Interval	Depth Below Ground (feet)	% Gravel	% Sand	% Silt	% Clay	% Natural Moisture	Unified Soil Classification System
BG001	D	8-10	24.5	70.9	3.5	1.1	3.7	SP
BG002	D	8-10	3.4	76.3	15.7	4.6	66.8	SM
BG003	D	8-10	0.5	98.3	1.0	0.2	2.7	SP
BG004	D	8-10	0.4	96.4	2.0	1.2	3.4	SP
BG005	C	6-8	22.5	74.8	2.3	0.4	2.6	SP
BG006	D	8-10	5.1	45.9	27.1	21.9	15.4	SC
BG007	D	8-10	12.9	77.2	6.6	3.3	13.8	SP-SM
BG008	D	8-10	18.0	79.6	1.6	0.8	2.9	SP
BG009	D	8-10	6.4	89.0	3.1	1.5	3.4	SP
BG010	C	6-8	1.1	95.3	1.5	2.1	3.5	SP

TABLE C-2 (Continued)

SUMMARY OF SOIL PHYSICAL ANALYSES: AREA A

Borehole Location	Sample Interval	Depth Below Ground (feet)	% Gravel	% Sand	% Silt	% Clay	% Natural Moisture	Unified Soil Classification System
AT001	C	6-8	29.6	69.4	0.8	0.2	3.2	SP
AT002	B	3-5	5.6	71.5	16.7	6.2	9.3	SM
AT003	B	3-5	0.8	16.0	47.6	35.6	29.6	CH
AT004	B	3-5	3.1	38.1	37.6	21.2	22.0	CL
AT005	C	6-8	0.0	57.4	31.3	11.3	20.2	SM
AT006	B	3-5	0.0	49.1	36.7	14.2	16.6	CL-ML
AT007	C	6-8	0.0	13.9	70.7	15.4	98.6	MH
AT008	D	8-10	1.9	85.1	8.6	4.4	25.2	SM
AB024	G	16-18	2.2	95.2	1.3	1.3	4.7	SP
AB025	G	16-18	2.8	94.0	2.3	0.9	4.6	SP
AB026	G	16-18	1.9	96.1	1.0	1.0	2.8	SP
AB027	G	16-18	9.4	89.2	0.1	1.3	2.9	SP
AB028	F	13-15	1.4	96.6	0.9	1.1	3.1	SP
AB029	H	18-20	6.5	91.6	0.9	1.0	8.4	SP
AB030	H	18-20	2.9	93.2	2.5	1.4	4.1	SP
AB031	H	8-10	0.9	96.5	0.7	1.9	3.3	SP
AB032	E	10-12	28.1	70.1	1.2	0.6	3.1	SP
AB033	H	18-20	0.5	97.2	1.5	0.8	3.9	SP
AB034	D	8-10	24.4	68.9	4.7	2.0	4.6	SP-SM
AB035	B	3-5	12.4	63.1	15.2	9.3	11.3	SC-SM
AB036	H	16-18	0.2	97.8	1.2	0.8	3.7	SP

TABLE C-2 (Continued)

SUMMARY OF SOIL PHYSICAL ANALYSES: AREA A

Borehole Location	Sample Interval	Depth Below Ground (feet)	% Gravel	% Sand	% Silt	% Clay	% Natural Moisture	Unified Soil Classification System
AB037	D	8-10	2.5	90.9	5.1	1.5	2.9	SP-SM
AB038	G	16-18	1.2	95.7	1.6	1.5	4.1	SP
AB039	G	16-18	0.1	97.5	0.8	1.6	5.0	SP
AB040	D	8-10	18.3	80.1	1.1	0.5	2.9	SP
AB041	C	6-8	9.1	86.9	2.8	1.2	4.7	SP
AB042	G	16-18	6.8	91.7	0.6	0.9	3.4	SP
AB043	H	18-20	0.0	97.5	0.8	1.7	5.5	SP
AB044	H	18-20	0.0	95.1	2.3	2.6	7.5	SP
AB201	H	18-20	1.8	96.0	1.0	1.2	3.4	SP
AB202	B	3-5	2.1	39.1	34.3	24.5	21.3	ML
AB203	B	3-5	0.2	28.5	37.1	34.2	23.2	ML
AB204	B	3-5	0.3	62.2	19.5	18.0	14.7	SM
AB205	G	16-18	32.6	57.6	8.5	1.3	12.4	SP-SM
AB206	B	3-5	0.9	35.1	45.9	18.1	30.5	ML
AB207	H	18-20	0.2	96.8	1.9	1.1	6.4	SP
AB208	H	18-20	2.3	95.4	1.9	0.4	4.1	SP
AB209	B	3-5	4.0	65.6	20.4	10.0	16.5	SM
AB210	D	8-10	5.2	93.3	0.2	1.3	2.8	SP
AB211	B	3-5	0.1	72.5	16.4	11.0	10.9	SM
AB212	B	3-5	21.1	64.0	10.1	4.8	6.1	SM
AB213	B	3-5	1.3	65.9	20.4	12.4	16.4	SC

TABLE C-2 (Continued)

SUMMARY OF SOIL PHYSICAL ANALYSES: AREA A

Borehole Location	Sample Interval	Depth Below Ground (feet)	% Gravel	% Sand	% Silt	% Clay	% Natural Moisture	Unified Soil Classification System
AB214	C	6-8	0.0	49.8	35.8	14.4	29.2	ML
AB215	H	18-20	0.1	90.3	1.9	7.7	11.6	SW-SM
AB216	D	8-10	12.1	61.6	5.9	20.4	12.5	SC
AB217	D	8-10	10.8	61.1	9.9	18.2	12.9	SC
AB218	H	18-20	0.7	95.6	2.0	1.7	6.8	SP
AB219	F	13-15	13.5	81.4	1.8	3.3	3.3	SP-SM
AB220	G	16-18	6.8	87.5	2.1	3.6	3.0	SP-SM
AB221	G	16-18	2.7	91.9	2.0	3.4	3.7	SP-SM
AB222	C	6-8	4.9	88.8	1.3	5.0	5.1	SP-SM
AB223	C	6-8	0.3	66.7	14.9	18.1	16.2	SC-SM
AB224	H	18-20	0.8	89.5	1.5	8.2	11.8	SP-SM
AB226	G	16-18	6.2	85.9	1.8	6.1	2.9	SW-SM
AB227	G	16-18	12.4	85.0	2.5	0.1	3.9	SP
AB228	F	13-15	22.4	71.1	1.3	5.2	3.9	SP-SM
AB229	H	18-20	1.4	88.3	2.7	7.6	8.6	SP-SM
AB230	B	3-5	19.0	56.5	6.9	17.6	6.0	SM
AB231	H	18-20	1.0	97.3	1.6	0.1	7.4	SP
AB233	H	18-20	1.2	95.1	3.1	0.6	11.0	SP
AB234	D	8-10	17.1	72.6	8.1	2.2	8.1	SP-SM
AB235	H	18-20	0.7	96.2	1.6	1.5	12.0	SP
AB236	H	18-20	0.1	97.5	2.0	0.4	10.8	SP
AB237	C	6-8	8.4	79.4	9.6	2.6	7.2	SM

TABLE C-2 (Continued)

SUMMARY OF SOIL PHYSICAL ANALYSES: AREA A

Borehole Location	Sample Interval	Depth Below Ground (feet)	% Gravel	% Sand	% Silt	% Clay	% Natural Moisture	Unified Soil Classification System
AB238	H	18-20	0.1	94.1	4.1	1.7	15.6	SP-SM
AB239	G	16-18	0.7	94.6	3.5	1.2	5.6	SP
AB240	H	18-20	0.5	97.5	1.9	0.1	4.8	SP
AB241	C	6-8	0.9	65.5	28.5	5.1	20.3	SM
AB242	B	3-5	0.0	68.0	25.7	6.3	19.7	SC-SM
AB243	B	3-5	3.0	60.1	26.3	10.6	16.3	SC-SM
AB244	H	18-20	0.0	97.6	0.9	1.5	15.2	SP
AB245	G	16-18	0.0	97.4	1.6	1.0	5.1	SP
AB246	B	3-5	0.0	29.7	43.0	27.3	18.9	CL
AB247	D	8-10	3.1	89.4	6.2	1.3	7.2	SP-SM
AB248	C	6-8	0.0	48.7	35.8	15.5	31.1	ML
AB251	C	6-8	0.0	22.4	65.1	12.5	23.1	ML
AB252	H	18-20	0.3	97.1	1.7	0.9	8.5	SP
AB253	H	18-20	0.0	30.6	47.7	21.7	36.7	CL-ML
AB254	C	6-8	1.2	93.5	4.6	0.7	3.5	SP-SM

TABLE C-2 (Continued)

SUMMARY OF SOIL PHYSICAL ANALYSES: AREA B

Borehole Location	Sample Interval	Depth Below Ground (feet)	% Gravel	% Sand	% Silt	% Clay	% Natural Moisture	Unified Soil Classification System
BB001	B	3-5	0.0	96.2	2.5	1.3	13.6	SP
BB002	H	18-20	2.1	94.8	2.2	0.9	14.1	SP
BB003	D	8-10	0.4	67.4	25.7	6.5	30.9	SM
BT001	B	3-5	2.2	77.0	13.6	7.2	10.8	SM
BT002	B	3-5	1.1	59.0	24.0	15.9	19.2	SC
BT003	D	8-10	0.0	98.8	0.9	0.3	4.8	SP
BT004	D	8-10	1.3	94.6	2.5	1.6	19.0	SP
BB204	G	16-18	2.7	94.8	1.1	1.4	3.7	SP
BB205	G	16-18	4.1	93.7	0.7	1.5	5.2	SP
BB206	G	16-18	3.2	94.7	0.7	1.4	7.5	SP

TABLE C-2 (Continued)

SUMMARY OF SOIL PHYSICAL ANALYSES: AREA D

Borehole Location	Sample Interval	Depth Below Ground (feet)	% Gravel	% Sand	% Silt	% Clay	% Natural Moisture	Unified Soil Classification System
DB029	F	13-15	0.0	93.6	5.5	0.9	7.0	SP-SM
DB030	F	13-15	0.1	96.4	2.9	0.6	3.2	SP
DB031	F	13-15	1.8	84.7	8.7	4.8	7.8	SM
DB032	C	6-8	0.6	78.5	16.7	4.2	6.7	SM
DB033	E	10-12	2.5	79.6	13.2	4.7	13.0	SM
DB034	C	6-8	1.6	79.8	13.7	4.9	14.9	SM

TABLE C-2 (Continued)

SUMMARY OF SOIL PHYSICAL ANALYSES: AREA E

Borehole Location	Sample Interval	Depth Below Ground (feet)	% Gravel	% Sand	% Silt	% Clay	% Natural Moisture	Unified Soil Classification System
EB001	D	8-10	2.7	39.4	44.3	13.6	8.3	CL-ML
EB002	D	8-10	3.6	92.5	2.9	1.0	3.4	SP
EB003	E	10-12	8.8	79.0	9.4	2.8	6.7	SM
EB004	D	8-10	1.7	75.3	19.0	4.0	6.6	SM
EB203	B	3-5	13.3	64.9	11.1	10.7	12.2	SC-SM
EB206	E	10-12	0.4	95.4	3.1	1.1	5.5	SP
EB207	F	13-15	0.1	97.2	2.1	0.6	4.7	SP
EB208	F	13-15	4.4	46.0	38.4	11.2	15.7	SC
EB209	B	3-5	22.4	62.1	12.1	3.4	9.6	SM
EB210	E	10-12	0.0	93.3	5.6	1.1	6.1	SP-SM

TABLE C-2 (Continued)

SUMMARY OF SOIL PHYSICAL ANALYSES: AREA F

Borehole Location	Sample Interval	Depth Below Ground (feet)	% Gravel	% Sand	% Silt	% Clay	% Natural Moisture	Unified Soil Classification System
FB001	E	10-12	5.9	91.2	2.0	0.9	3.4	SP
FB002	H	18-20	2.9	94.9	1.7	0.5	3.4	SP
FB003	E	10-12	5.2	92.5	0.7	1.6	4.0	SP
FB004	H	18-20	2.0	96.4	1.1	0.5	2.4	SP

TABLE C-3

FILL MATERIAL FROM AREA A TEST PITS

Pit Location	Depth of Fill (ft)	Soil Matrix Type (USCS)	Fill-Related Materials	Odor
AT001	7	SW, ML, SP	Wood, concrete	None
AT002	6	SW, ML, SM	Concrete, wood, metal, building footing	None
AT003	5	SM-CH	Wood, asphalt	None
AT004	6.5	SW, SM, CL	Wood, wire, metal scrap, plastic sheeting, concrete, crushed metal buckets	Solvent-like odor to 12 feet depth
AT005	6.5	SM, SP	Wood, concrete, rusty nails	None
AT006	4	SM, CL	Plastic, concrete, asphalt, wood, brick	None
AT007	7	SM	Metal, wood, asphalt, brick	None
AT008	11	ML, SW-SM	Foam, wire, bolts, ceramic, metal cuttings, scrap metal, plastic hose, wood, glass, mesh fencing, sheet metal, small metal box containing white paste	Cutting oil-like color to 12 feet depth

RMT Soils Laboratory - Moisture Content Determination

PROJECT: NIROP

					by	date
		Tech:	DLH	06/23/92	QC	6-26-92
JOB #:	2313.13	Input:	DEW	06/25/92	QA	6-30-92

BORING	SAMPLE	DEPTH	TARE	WET WT	DRY WT	% MOISTURE
BG001D		8-10'	87.26	428.65	416.50	3.7
BG002D		8-10'	87.27	212.62	162.41	66.8
BG003D		8-10'	83.78	414.46	405.89	2.7
BG004D		8-10'	84.11	425.78	414.63	3.4
BG005C		6-8'	84.40	457.02	447.70	2.6
BG006D		8-10'	83.49	238.52	217.88	15.4
BG007D		8-10'	84.66	435.27	392.65	13.8
BG008D		8-10'	85.35	421.18	411.79	2.9
BG009D		8-10'	83.24	414.53	403.60	3.4
BG010C		6-8'	83.68	376.58	366.66	3.5
AB024G		16-18'	84.04	686.20	659.20	4.7
AB025G		16-18'	84.31	687.40	660.90	4.6
AB026G		16-18'	83.51	779.80	761.10	2.8
AB027G		16-18'	83.42	797.90	778.00	2.9
AB028F		13-15'	83.88	614.60	598.60	3.1
AB029H		18-20'	83.34	813.10	756.30	8.4
AB030H		18-20'	83.64	830.50	801.40	4.1
AB031H		18-20'	82.89	701.20	681.30	3.3
AB032E		10-12'	83.52	728.00	708.50	3.1
AB033H		18-20'	84.18	769.00	743.20	3.9

RMT Soils Laboratory - Moisture Content Determination

PROJECT: NIROP

JOB #: 2313.13

			by	date
Tech:	DLH	06/23/92	QC	9/22/92
Input:	DEW	09/17/92	QA	9/22/92

BORING	SAMPLE	DEPTH	TARE	WET WT	DRY WT	% MOISTURE
AB034D		8-10'	85.19	572.50	551.10	4.6
AB035B		3-5'	87.48	330.90	306.15	11.3
AB036H		16-18'	87.67	618.50	599.56	3.7
AB037D		8-10'	86.88	752.90	734.30	2.9
AB038G		16-18'	84.24	566.08	547.22	4.1
AB039G		16-18'	83.38	706.10	676.40	5.0
AB040D		8-10'	84.84	724.60	706.60	2.9
AB041C		6-8'	84.52	869.10	834.20	4.7
AB042G		16-18'	82.72	672.20	652.90	3.4
AT001C		6-8'	84.53	787.00	765.20	3.2
AT002B		3-5'	84.98	386.29	360.76	9.3
AT003B		3-5'	84.74	288.75	242.10	29.6
AT004B		3-5'	84.73	309.05	268.64	22.0
AT005C		6-8'	84.26	301.65	265.14	20.2
AT006B		3-5'	83.81	312.83	280.27	16.6
AT007C		6-8'	83.72	228.53	156.63	98.6
AT008D		8-10'	88.14	328.33	279.96	25.2
BB001B		3-5'	87.79	698.30	625.20	13.6
BB002H		18-20'	84.52	806.30	717.30	14.1
BB003D		8-10'	83.09	291.30	242.12	30.9

RMT Soils Laboratory - Moisture Content Determination

PROJECT: NIROP

JOB #: 2313.13

			by	date
Tech:	DLH	06/23/92	QC	6-26-92
Input:	DEW	06/25/92	QA	6-30-92

BORING	SAMPLE	DEPTH	TARE	WET WT	DRY WT	% MOISTURE
BT001B		3-5'	82.32	322.77	299.28	10.8
BT002B		3-5'	83.29	300.79	265.74	19.2
BT003D		8-10'	84.92	704.70	676.30	4.8
BT004D		8-10'	83.93	591.83	510.66	19.0
DB029F		13-15'	82.78	693.30	653.30	7.0
DB030F		13-15'	84.17	707.90	688.30	3.2
DB031F		13-15'	84.16	754.70	705.90	7.8
DB032C		6-8'	83.18	376.87	358.46	6.7
EB001D		8-10'	83.35	425.87	399.66	8.3
EB002D		8-10'	82.88	747.80	725.90	3.4
EB003E		10-12'	84.33	837.10	790.10	6.7
EB004D		8-10'	82.73	698.00	660.00	6.6
FB001E		10-12'	83.98	724.80	703.70	3.4
FB002H		18-20'	84.29	763.20	741.00	3.4
FB003E		10-12'	83.35	600.60	580.86	4.0
FB004H			83.56	671.40	657.70	2.4

RMT Soils Laboratory - Moisture Content Determination

PROJECT: NIROP

JOB #: 2313.15

			by	date
Tech:	DLH	08/03/92	QC	HJW 8-10-92
Input:	DEW	08/06/92	QA	JPL 8-13-92

BORING	SAMPLE	DEPTH	TARE	WET WT	DRY WT	% MOISTURE
DB033E		10-12'	84.38	745.50	669.70	13.0
DB034C		6-8'	83.77	694.10	615.10	14.9
AB206B		3-5'	83.19	334.76	275.97	30.5
AB205G		16-18'	83.96	773.40	697.40	12.4
AB201H		18-20'	83.09	684.20	664.50	3.4
AB202B		3-5'	83.55	373.57	322.58	21.3
AB203B		3-5'	83.49	388.74	331.31	23.2
AB204B		3-5'	83.96	700.30	621.40	14.7
AB223C		6-8'	83.55	235.95	214.72	16.2
AB221G		16-18'	83.65	735.70	712.70	3.7
AB219F		13-15'	83.57	827.80	804.20	3.3
AB220G		16-18'	83.93	800.20	779.10	3.0
AB222C		6-8'	82.82	688.80	659.40	5.1
AB215H		18-20'	82.92	790.40	717.00	11.6
AB207H		18-20'	82.78	739.00	699.40	6.4
AB230B		3-5'	83.37	302.13	289.81	6.0
AB228F		13-15'	83.28	807.40	780.40	3.9
AB229H		18-20'	83.30	756.50	703.20	8.6
AB226G		16-18'	83.06	721.00	703.10	2.9
AB216D		8-10'	83.61	753.80	679.10	12.5

RMT Soils Laboratory - Moisture Content Determination

PROJECT: NIROP

JOB #: 2313.15

				by	date
Tech:	DLH	08/03/92	QC	KWW	8-10-92
Input:	DEW	08/06/92	QA	JPV	8-13-92

BORING	SAMPLE	DEPTH	TARE	WET WT	DRY WT	% MOISTURE
AB217D		8-10'	84.02	768.20	689.90	12.9
AB224H		18-20'	84.45	808.70	732.40	11.8
AB208H		18-20'	83.83	749.00	722.70	4.1
AB227G		16-18'	83.69	836.80	808.20	3.9
AB233H		18-20'	83.17	816.30	743.60	11.0
AB231H		18-20'	83.82	781.90	733.60	7.4
AB236H		18-20'	83.29	773.40	706.20	10.8
AB235H		18-20'	83.68	785.10	709.90	12.0
BB205G		16-18'	83.79	776.90	742.50	5.2
BB204G		16-18'	83.11	754.60	730.80	3.7
BB206G		16-18'	83.56	802.00	752.10	7.5
EB206E		10-12'	83.81	686.90	655.60	5.5
AB043H		18-20'	83.57	621.90	593.87	5.5
AB044H		18-20'	83.77	565.39	531.95	7.5
EB203B		3-5'	83.99	449.50	409.81	12.2
EB207F		13-15'	84.11	621.50	597.26	4.7
EB208F		13-15'	83.36	445.01	395.97	15.7
EB210E		10-12'	83.13	726.30	689.30	6.1
EB209B		3-5'	82.95	391.59	364.48	9.6
AB211B		3-5'	84.15	710.20	648.90	10.9

RMT Soils Laboratory - Moisture Content Determination

PROJECT: NIROP

JOB #: 2313.15

				by	date
Tech:	DLH	08/03/92	QC	DLH	8-11-92
Input:	DEW	08/11/92	QA	JPM	8-13-92

BORING	SAMPLE	DEPTH	TARE	WET WT	DRY WT	% MOISTURE
AB213B		3-5'	84.14	379.17	337.68	16.4
AB209B		3-5'	84.56	418.96	371.64	16.5
AB210D		8-10'	83.67	827.00	806.70	2.8
AB212B		3-5'	83.05	757.80	718.90	6.1
AB218H		18-20'	83.62	752.30	709.50	6.8
AB241C		6-8'	83.27	681.60	580.72	20.3
AB239G		16-18'	83.64	716.90	683.20	5.6
AB240H		18-20'	84.38	733.40	703.40	4.8
AB237C		6-8'	84.22	846.80	795.30	7.2
AB238H		18-20'	84.07	747.60	658.20	15.6
AB242B		3-5'	83.86	351.36	307.35	19.7
AB243B		3-5'	83.33	369.10	329.03	16.3
AB244H		18-20'	83.11	734.90	648.70	15.2
AB214C		6-8'	83.56	346.94	287.40	29.2
AB253H		18-20'	83.98	455.40	355.76	36.7
AB247D		8-10'	83.45	766.80	720.90	7.2
AB251C		6-8'	84.10	412.81	351.13	23.1
AB245G		16-18'	83.73	709.90	679.60	5.1
AB246B		3-5'	73.86	435.57	378.20	18.9
AB248C		6-8'	83.58	339.14	278.54	31.1

RMT Soils Laboratory - Moisture Content Determination

PROJECT: NIROP

JOB #: 2313.15

			by	date
Tech:	DLH	08/03/92	QC	8-6-92
Input:	DEW	08/05/92	QA	8-13-92

BORING	SAMPLE	DEPTH	TARE	WET WT	DRY WT	% MOISTURE
AB252H		18-20'	85.03	731.00	680.30	8.5
AB254C		6-8'	84.90	776.30	752.80	3.5
AB234D		8-10'	81.33	823.50	768.10	8.1

RMT Soils Laboratory - Atterberg Limit Determination

PROJECT: NIROP

JOB #: 2313.13

			By	Date
Tech :	JPH	09/15/92	QC JPH	9/22/92
Input:	DEW	09/21/92	QA JPH	9/22/92

BORING: AB034D DEPTH: 8-10'

	LIQUID LIMIT	OVEN LL	PLASTIC LIMIT
TARE			
BLOWS			
WET WT			
DRY WT			
% WATER	NON-PLASTIC		

BORING	AB034D
DEPTH	8-10'
LL	
PL	
PI	
CLASS	NP

BORING: AB037D DEPTH: 8-10'

	LIQUID LIMIT	OVEN LL	PLASTIC LIMIT
TARE			
BLOWS			
WET WT			
DRY WT			
% WATER	NON-PLASTIC		

BORING	AB037D
DEPTH	8-10'
LL	
PL	
PI	
CLASS	NP

BORING: AB043H DEPTH: 18-20'

	LIQUID LIMIT	OVEN LL	PLASTIC LIMIT
TARE			
BLOWS			
WET WT			
DRY WT			
% WATER	NON-PLASTIC		

BORING	AB043H
DEPTH	18-20'
LL	
PL	
PI	
CLASS	NP

RMT Soils Laboratory - Atterberg Limit Determination

PROJECT: NIROP

JOB #: 2313.13

			By	Date
Tech :	JPH	09/15/92	QC JPH	9/22/92
Input:	DEW	09/21/92	QA JPH	9/22/92

BORING: AB204B DEPTH: 3-5'

	LIQUID LIMIT	OVEN LL	PLASTIC LIMIT
TARE			
BLOWS			
WET WT			
DRY WT			
% WATER	NON-PLASTIC		

BORING	AB204B
DEPTH	3-5'
LL	
PL	
PI	
CLASS	NP

BORING: AB205G DEPTH: 16-18'

	LIQUID LIMIT	OVEN LL	PLASTIC LIMIT
TARE			
BLOWS			
WET WT			
DRY WT			
% WATER	NON-PLASTIC		

BORING	AB205G
DEPTH	16-18'
LL	
PL	
PI	
CLASS	NP

BORING: AB207H DEPTH: 18-20'

	LIQUID LIMIT	OVEN LL	PLASTIC LIMIT
TARE			
BLOWS			
WET WT			
DRY WT			
% WATER	NON-PLASTIC		

BORING	AB207H
DEPTH	18-20'
LL	
PL	
PI	
CLASS	NP

RMT Soils Laboratory - Atterberg Limit Determination

PROJECT: NIROP

JOB #: 2313.13

			By	Date
Tech :	JPH	09/15/92	QC JPH	9/22/92
Input:	DEW	09/21/92	QA JPH	9/22/92

BORING: AB211B DEPTH: 3-5'

	LIQUID LIMIT	OVEN LL	PLASTIC LIMIT
TARE			
BLOWS			
WET WT			
DRY WT			
% WATER	NON-PLASTIC		

BORING	AB211B
DEPTH	3-5'
LL	
PL	
PI	
CLASS	NP

BORING: AB212B DEPTH: 3-5'

	LIQUID LIMIT	OVEN LL	PLASTIC LIMIT
TARE			
BLOWS			
WET WT			
DRY WT			
% WATER	NON-PLASTIC		

BORING	AB212B
DEPTH	3-5'
LL	
PL	
PI	
CLASS	NP

BORING: AB215H DEPTH: 18-20'

	LIQUID LIMIT	OVEN LL	PLASTIC LIMIT
TARE			
BLOWS			
WET WT			
DRY WT			
% WATER	NON-PLASTIC		

BORING	AB215H
DEPTH	18-20'
LL	
PL	
PI	
CLASS	NP

RMT Soils Laboratory - Atterberg Limit Determination

PROJECT: NIROP

JOB #: 2313.13

				By	Date
Tech :	JPH	09/15/92	QC	JPH	9/22/92
Input:	DEW	09/21/92	QA	JPH	9/22/92

BORING: AB216D DEPTH: 8-10'

	LIQUID LIMIT	OVEN LL	PLASTIC LIMIT
TARE			
BLOWS			
WET WT			
DRY WT			
% WATER	NON-PLASTIC		

BORING	AB216D
DEPTH	8-10'
LL	
PL	
PI	
CLASS	NP

BORING: AB217D DEPTH: 8-10'
INSUFFICI SAMPLE

	LIQUID LIMIT	OVEN LL	PLASTIC LIMIT
TARE			
BLOWS			
WET WT			
DRY WT			
% WATER	NON-PLASTIC		

BORING	AB217D
DEPTH	8-10'
LL	
PL	
PI	
CLASS	NP

BORING: AB219F DEPTH: 13-15'
INSUFFICI SAMPLE

	LIQUID LIMIT	OVEN LL	PLASTIC LIMIT
TARE			
BLOWS			
WET WT			
DRY WT			
% WATER	NON-PLASTIC		

BORING	AB219F
DEPTH	13-15'
LL	
PL	
PI	
CLASS	NP

RMT Soils Laboratory - Atterberg Limit Determination

PROJECT: NIROP

JOB #: 2313.13

				By	Date
Tech :	JPH	09/15/92	QC	JPH	9/22/92
Input:	DEW	09/21/92	QA	JPH	9/22/92

BORING: AB220G DEPTH: 16-18'

	LIQUID LIMIT	OVEN LL	PLASTIC LIMIT
TARE			
BLOWS			
WET WT			
DRY WT			
% WATER	NON-PLASTIC		

BORING	AB220G
DEPTH	16-18'
LL	
PL	
PI	
CLASS	NP

BORING: AB221G DEPTH: 16-18'
INSUFFICI SAMPLE

	LIQUID LIMIT	OVEN LL	PLASTIC LIMIT
TARE			
BLOWS			
WET WT			
DRY WT			
% WATER	NON-PLASTIC		

BORING	AB221G
DEPTH	16-18'
LL	
PL	
PI	
CLASS	NP

BORING: AB222C DEPTH: 6-8'
INSUFFICI SAMPLE

	LIQUID LIMIT	OVEN LL	PLASTIC LIMIT
TARE			
BLOWS			
WET WT			
DRY WT			
% WATER	NON-PLASTIC		

BORING	AB222C
DEPTH	6-8'
LL	
PL	
PI	
CLASS	NP

RMT Soils Laboratory - Atterberg Limit Determination

PROJECT: NIROP

JOB #: 2313.13

			By	Date
Tech :	JPH	09/15/92	QC JPH	9/22/92
Input:	DEW	09/21/92	QA JPH	9/22/92

BORING: AB224H DEPTH: 18-20'

	LIQUID LIMIT	OVEN LL	PLASTIC LIMIT
TARE			
BLOWS			
WET WT			
DRY WT			
% WATER	NON-PLASTIC		

BORING	AB224H
DEPTH	18-20'
LL	
PL	
PI	
CLASS	NP

BORING: AB226G DEPTH: 16-18'

	LIQUID LIMIT	OVEN LL	PLASTIC LIMIT
TARE			
BLOWS			
WET WT			
DRY WT			
% WATER	NON-PLASTIC		

BORING	AB226G
DEPTH	16-18'
LL	
PL	
PI	
CLASS	NP

BORING: AB228F DEPTH: 13-15'

	LIQUID LIMIT	OVEN LL	PLASTIC LIMIT
TARE			
BLOWS			
WET WT			
DRY WT			
% WATER	NON-PLASTIC		

BORING	AB228F
DEPTH	13-15'
LL	
PL	
PI	
CLASS	NP

RMT Soils Laboratory - Atterberg Limit Determination

PROJECT: NIROP

JOB #: 2313.13

				By	Date
Tech :	JPH	09/15/92	QC	JPH	9/22/92
Input:	DEW	09/21/92	QA	JPH	9/22/92

BORING: AB229H DEPTH: 18-20'

	LIQUID LIMIT	OVEN LL	PLASTIC LIMIT
TARE			
BLOWS			
WET WT			
DRY WT			
% WATER	NON-PLASTIC		

BORING	AB229H
DEPTH	18-20'
LL	
PL	
PI	
CLASS	NP

BORING: AB234D DEPTH: 8-10'

	LIQUID LIMIT	OVEN LL	PLASTIC LIMIT
TARE			
BLOWS			
WET WT			
DRY WT			
% WATER	NON-PLASTIC		

BORING	AB234D
DEPTH	8-10'
LL	
PL	
PI	
CLASS	NP

BORING: AB237C DEPTH: 6-8'

	LIQUID LIMIT	OVEN LL	PLASTIC LIMIT
TARE			
BLOWS			
WET WT			
DRY WT			
% WATER	NON-PLASTIC		

BORING	AB237C
DEPTH	6-8'
LL	
PL	
PI	
CLASS	NP

RMT Soils Laboratory - Atterberg Limit Determination

PROJECT: NIROP

JOB #: 2313.13

				By	Date
Tech :	JPH	09/15/92	QC	JPH	9/22/92
Input:	DEW	09/21/92	QA	[illegible]	9/22/92

BORING: AB238H DEPTH: 18-20'

	LIQUID LIMIT	OVEN LL	PLASTIC LIMIT
TARE			
BLOWS			
WET WT			
DRY WT			
% WATER	NON-PLASTIC		

BORING	AB238H
DEPTH	18-20'
LL	
PL	
PI	
CLASS	NP

BORING: AB241C DEPTH: 6-8'

	LIQUID LIMIT	OVEN LL	PLASTIC LIMIT
TARE			
BLOWS			
WET WT			
DRY WT			
% WATER	NON-PLASTIC		

BORING	AB241C
DEPTH	6-8'
LL	
PL	
PI	
CLASS	NP

BORING: AB247D DEPTH: 8-10'

	LIQUID LIMIT	OVEN LL	PLASTIC LIMIT
TARE			
BLOWS			
WET WT			
DRY WT			
% WATER	NON-PLASTIC		

BORING	AB247D
DEPTH	8-10'
LL	
PL	
PI	
CLASS	NP

RMT Soils Laboratory - Atterberg Limit Determination

PROJECT: NIROP

JOB #: 2313.13

			By	Date
Tech :	JPH	09/15/92	QC JPH	9/22/92
Input:	DEW	09/21/92	QA JPH	9/22/92

BORING: AB254C DEPTH: 6-8'

	LIQUID LIMIT	OVEN LL	PLASTIC LIMIT
TARE			
BLOWS			
WET WT			
DRY WT			
% WATER	NON-PLASTIC		

BORING	AB254C
DEPTH	6-8'
LL	
PL	
PI	
CLASS	NP

BORING: BG007D DEPTH: 8-10'

	LIQUID LIMIT	OVEN LL	PLASTIC LIMIT
TARE			
BLOWS			
WET WT			
DRY WT			
% WATER	NON-PLASTIC		

BORING	BG007D
DEPTH	8-10'
LL	
PL	
PI	
CLASS	NP

BORING: DB029F DEPTH: 13-15'

	LIQUID LIMIT	OVEN LL	PLASTIC LIMIT
TARE			
BLOWS			
WET WT			
DRY WT			
% WATER	NON-PLASTIC		

BORING	DB029F
DEPTH	13-15'
LL	
PL	
PI	
CLASS	NP

RMT Soils Laboratory - Atterberg Limit Determination

PROJECT: NIROP

JOB #: 2313.13

				By	Date
Tech :	JPH	09/15/92	QC	JPH	9/22/92
Input:	DEW	09/21/92	QA	JPH	9/22/92

BORING: DB031F DEPTH: 13-15'

	LIQUID LIMIT	OVEN LL	PLASTIC LIMIT
TARE			
BLOWS			
WET WT			
DRY WT			
% WATER	NON-PLASTIC		

BORING	DB031F
DEPTH	13-15'
LL	
PL	
PI	
CLASS	NP

BORING: DB033E DEPTH: 10-12'

	LIQUID LIMIT	OVEN LL	PLASTIC LIMIT
TARE			
BLOWS			
WET WT			
DRY WT			
% WATER	NON-PLASTIC		

BORING	DB033E
DEPTH	10-12'
LL	
PL	
PI	
CLASS	NP

BORING: DB034C DEPTH: 6-8'

	LIQUID LIMIT	OVEN LL	PLASTIC LIMIT
TARE			
BLOWS			
WET WT			
DRY WT			
% WATER	NON-PLASTIC		

BORING	DB034C
DEPTH	6-8'
LL	
PL	
PI	
CLASS	NP

RMT Soils Laboratory - Atterberg Limit Determination

PROJECT: NIROP

JOB #: 2313.13

				By	Date
Tech :	JPH	09/15/92	QC	JPH	9/22/92
Input:	DEW	09/21/92	QA	DDH	9/22/92

BORING: EB003E DEPTH: 10-12'

	LIQUID LIMIT	OVEN LL	PLASTIC LIMIT
TARE			
BLOWS			
WET WT			
DRY WT			
% WATER	NON-PLASTIC		

BORING	EB003E
DEPTH	10-12'
LL	
PL	
PI	
CLASS	NP

BORING: EB004D DEPTH: 8-10'

	LIQUID LIMIT	OVEN LL	PLASTIC LIMIT
TARE			
BLOWS			
WET WT			
DRY WT			
% WATER	NON-PLASTIC		

BORING	EB004D
DEPTH	8-10'
LL	
PL	
PI	
CLASS	NP

BORING: EB210E DEPTH: 10-12'

	LIQUID LIMIT	OVEN LL	PLASTIC LIMIT
TARE			
BLOWS			
WET WT			
DRY WT			
% WATER	NON-PLASTIC		

BORING	EB210E
DEPTH	10-12'
LL	
PL	
PI	
CLASS	NP

RMT Soils Laboratory - Moisture Content Determination

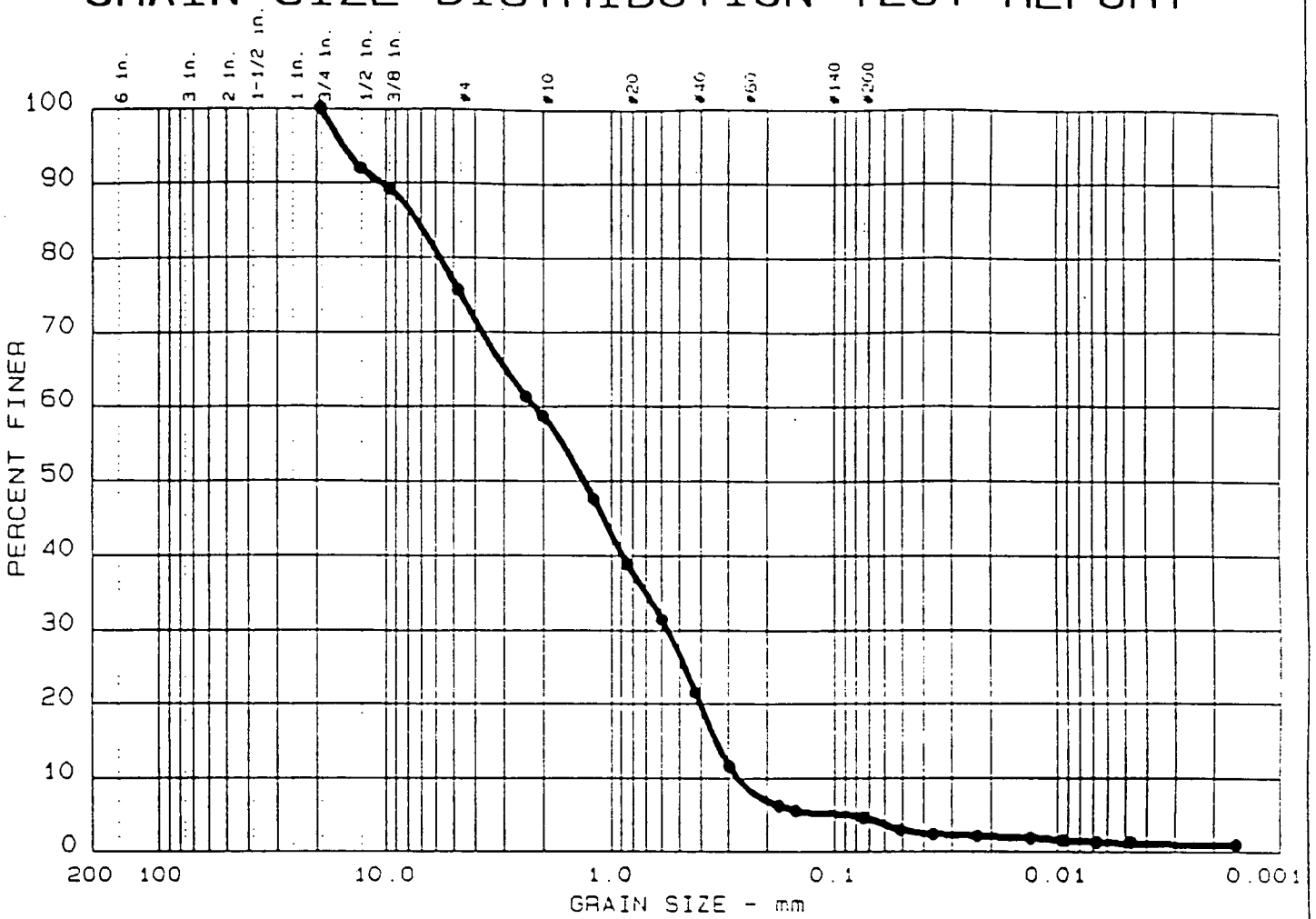
PROJECT: NIROP

JOB #: 2313.13

			by	date
Tech:	DLH	06/23/92	QC	9/22/92
Input:	DEW	09/17/92	QA	9/22/92

BORING	SAMPLE	DEPTH	TARE	WET WT	DRY WT	% MOISTURE
AB034D		8-10'	85.19	572.50	551.10	4.6
AB035B		3-5'	87.48	330.90	306.15	11.3
AB036H		16-18'	87.67	618.50	599.56	3.7
AB037D		8-10'	86.88	752.90	734.30	2.9
AB038G		16-18'	84.24	566.08	547.22	4.1
AB039G		16-18'	83.38	706.10	676.40	5.0
AB040D		8-10'	84.84	724.60	706.60	2.9
AB041C		6-8'	84.52	869.10	834.20	4.7
AB042G		16-18'	82.72	672.20	652.90	3.4
AT001C		6-8'	84.53	787.00	765.20	3.2
AT002B		3-5'	84.98	386.29	360.76	9.3
AT003B		3-5'	84.74	288.75	242.10	29.6
AT004B		3-5'	84.73	309.05	268.64	22.0
AT005C		6-8'	84.26	301.65	265.14	20.2
AT006B		3-5'	83.81	312.83	280.27	16.6
AT007C		6-8'	83.72	228.53	156.63	98.6
AT008D		8-10'	88.14	328.33	279.96	25.2
BB001B		3-5'	87.79	698.30	625.20	13.6
BB002H		18-20'	84.52	806.30	717.30	14.1
BB003D		8-10'	83.09	291.30	242.12	30.9

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	7	0.0	24.5	70.9	3.5	1.1

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			7.24	2.16	1.32	0.555	0.3385	0.2720	0.52	8.0

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand with gravel	SP	

Project No.: 2313.13
Project: NIROP
● Location: BG001D, 8-10'

Date: 07/09/92

Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT

	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	8	0.0	3.4	76.3	15.7	4.6

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	47	10	0.99	0.43	0.34	0.189	0.0509	0.0348	2.41	12.2

MATERIAL DESCRIPTION	USCS	AASHTO
● Silty sand	SM	

Project No.: 2313.13
Project: NIROP
● Location: BG002D, 8-10'

Date: 07/09/92

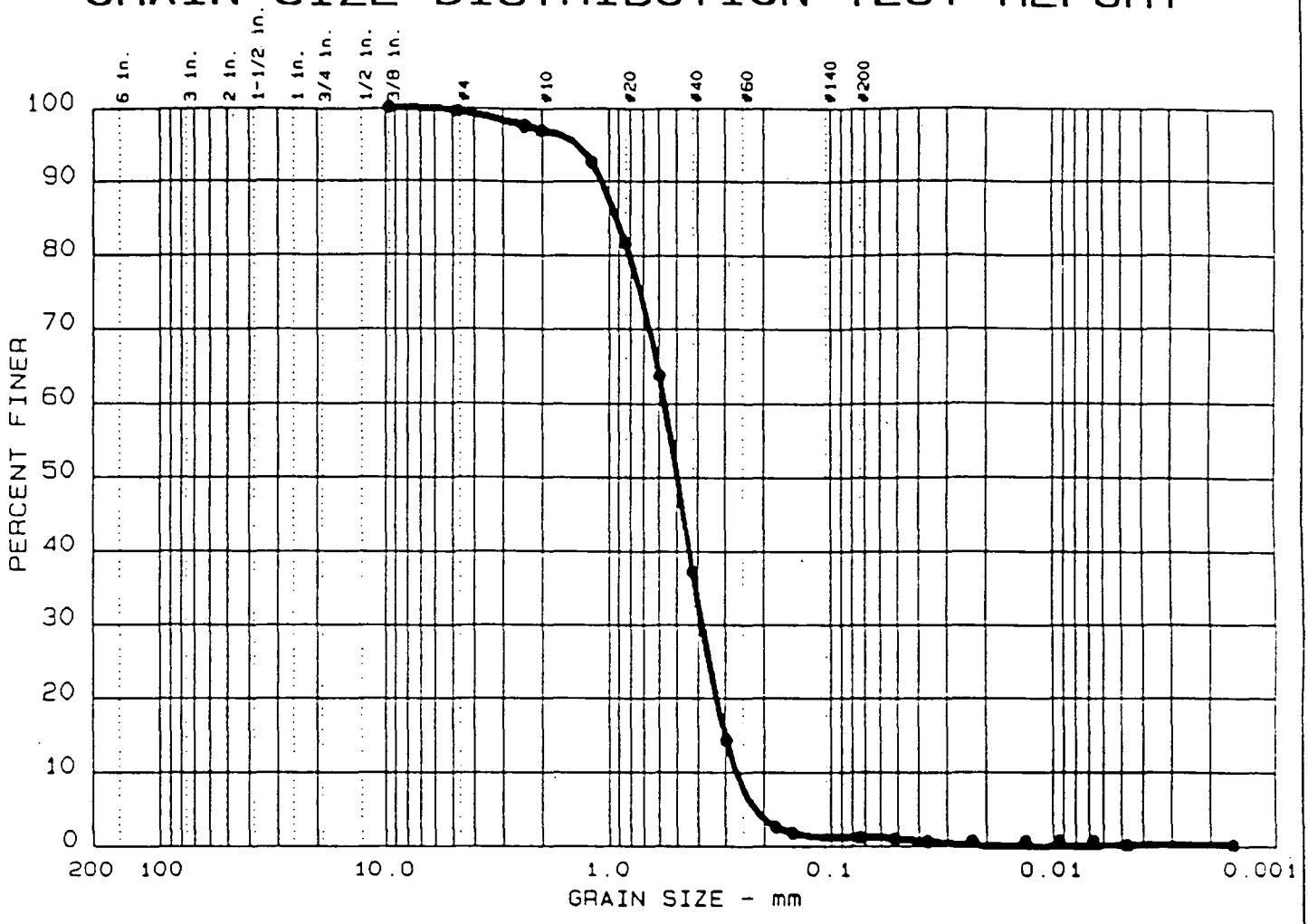
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	20	0.0	0.5	98.3	1.0	0.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.92	0.56	0.49	0.382	0.3003	0.2673	0.98	2.1

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand	SP	

Project No.: 2313.13
Project: NIROP
● Location: BG003D, 8-10'

Date: 07/08/92

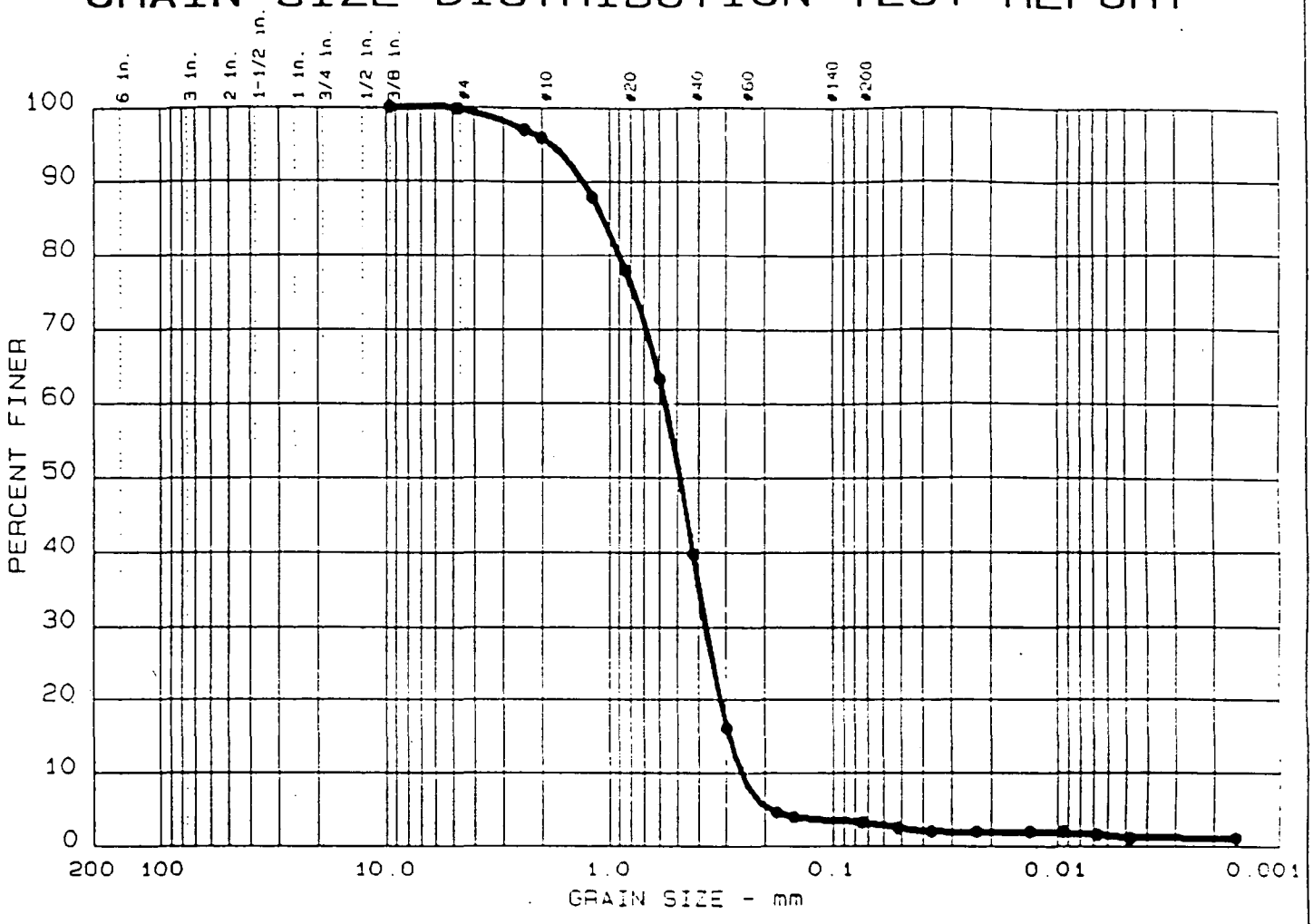
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	2	0.0	0.4	96.4	2.0	1.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.06	0.56	0.48	0.369	0.2897	0.2553	0.95	2.2

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand	SP	

Project No.: 2313.13
Project: NIROP
● Location: BG004D, 8-10'

Date: 07/09/92

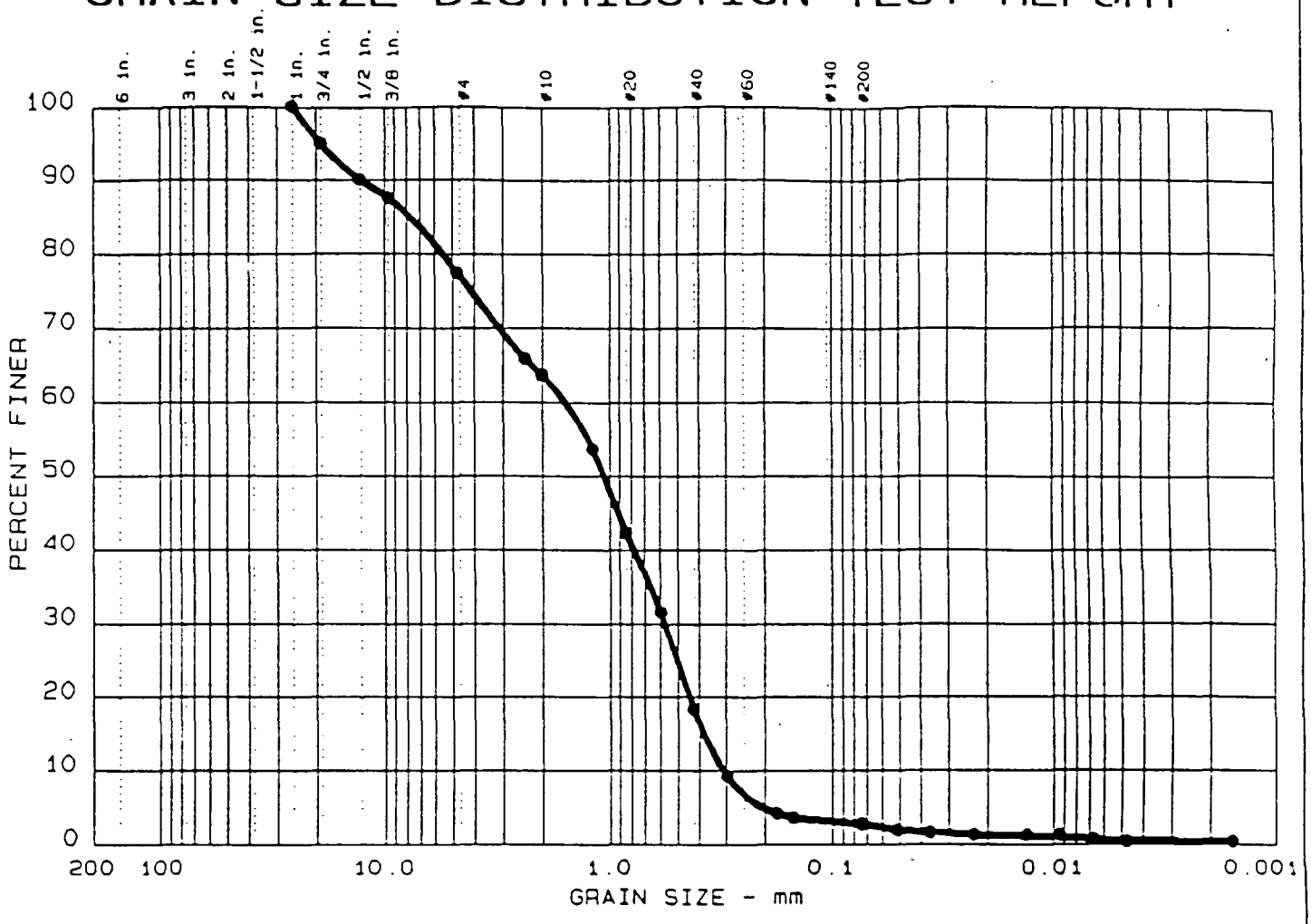
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	9	0.0	22.5	74.8	2.3	0.4

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			7.67	1.57	1.06	0.566	0.3784	0.3076	0.67	5.1

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand with gravel	SP	

Project No.: 2313.13
Project: NIROP
● Location: BG005C, 6-8'

Date: 07/09/92

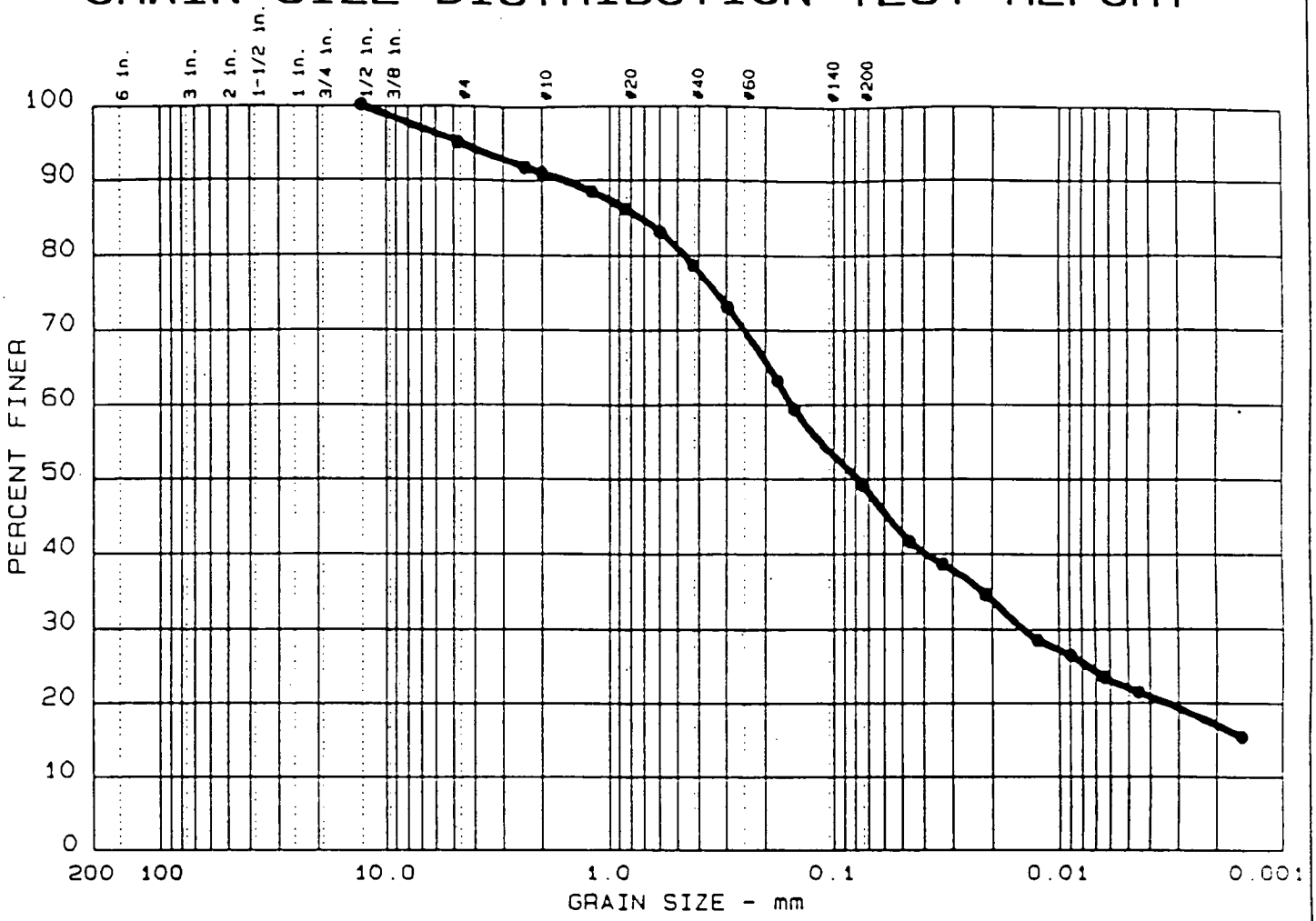
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	10	0.0	5.1	45.9	27.1	21.9

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	27	10	0.72	0.15	0.08	0.015				

MATERIAL DESCRIPTION	USCS	AASHTO
● Clayey sand	SC	

Project No.: 2313.13
Project: NIROP
● Location: BG006D, 8-10'

Date: 07/09/92

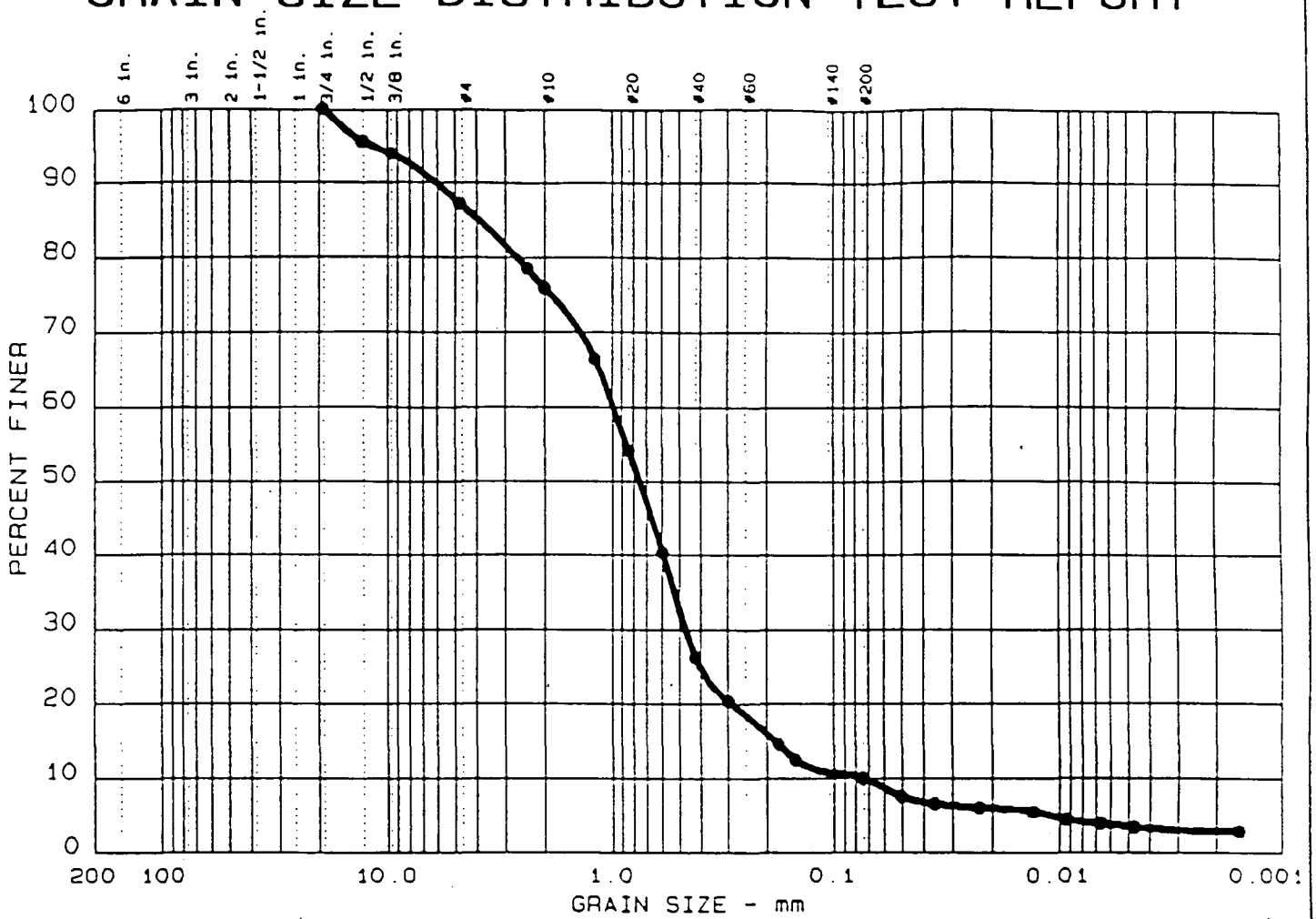
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	11	0.0	12.9	77.2	6.6	3.3

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	NP	NP	3.94	0.98	0.75	0.467	0.1818	0.0740	3.02	13.2

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand with silt	SP-SM	

Project No.: 2313.13
Project: NIROP
● Location: BG007D, 8-10'

Date: 07/09/92

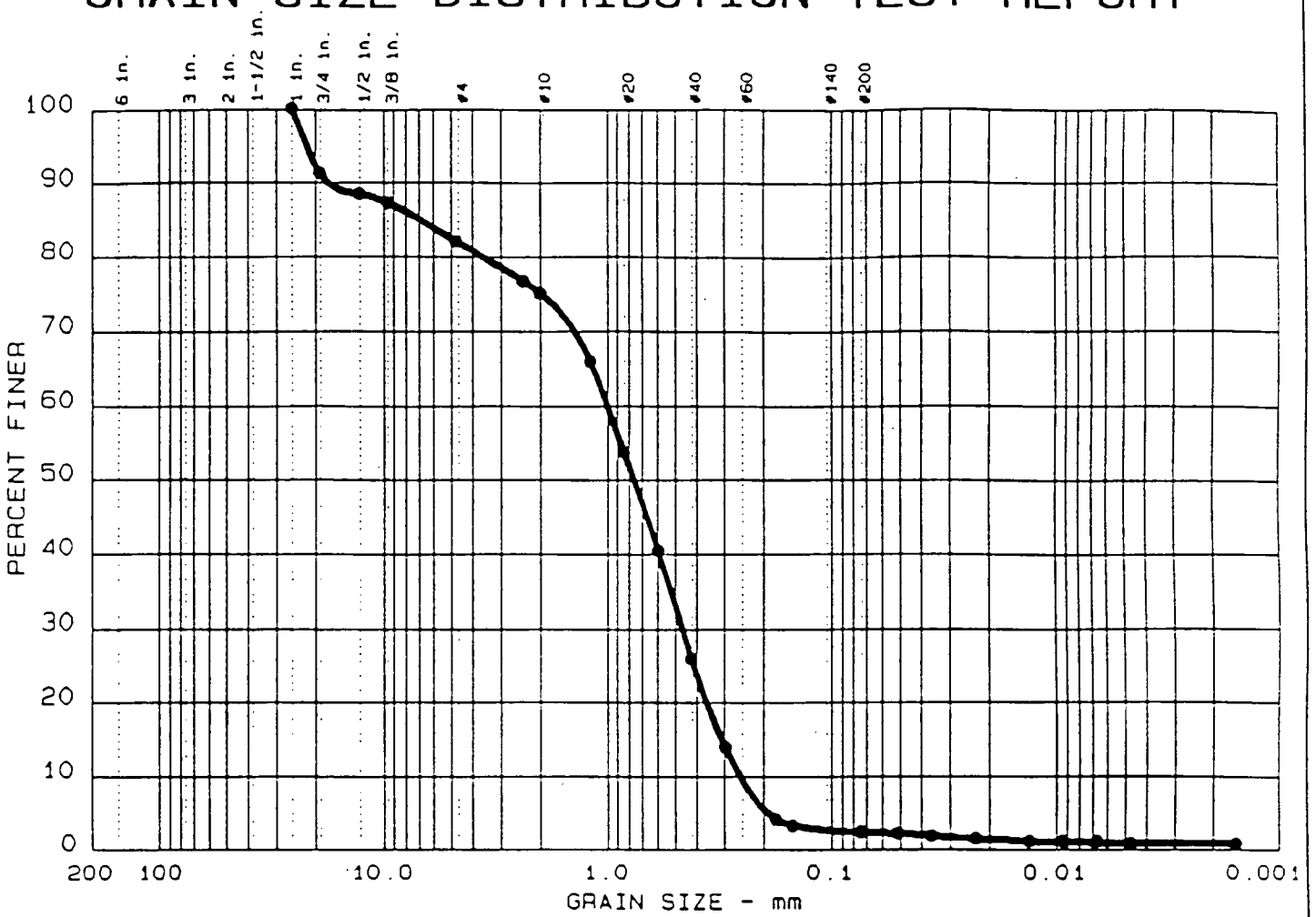
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	12	0.0	18.0	79.6	1.6	0.8

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			6.84	1.00	0.76	0.462	0.3076	0.2553	0.84	3.9

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand with gravel	SP	

Project No.: 2313.13
Project: NIROP
● Location: BG008D, 8-10'

Date: 07/09/92

Remarks:

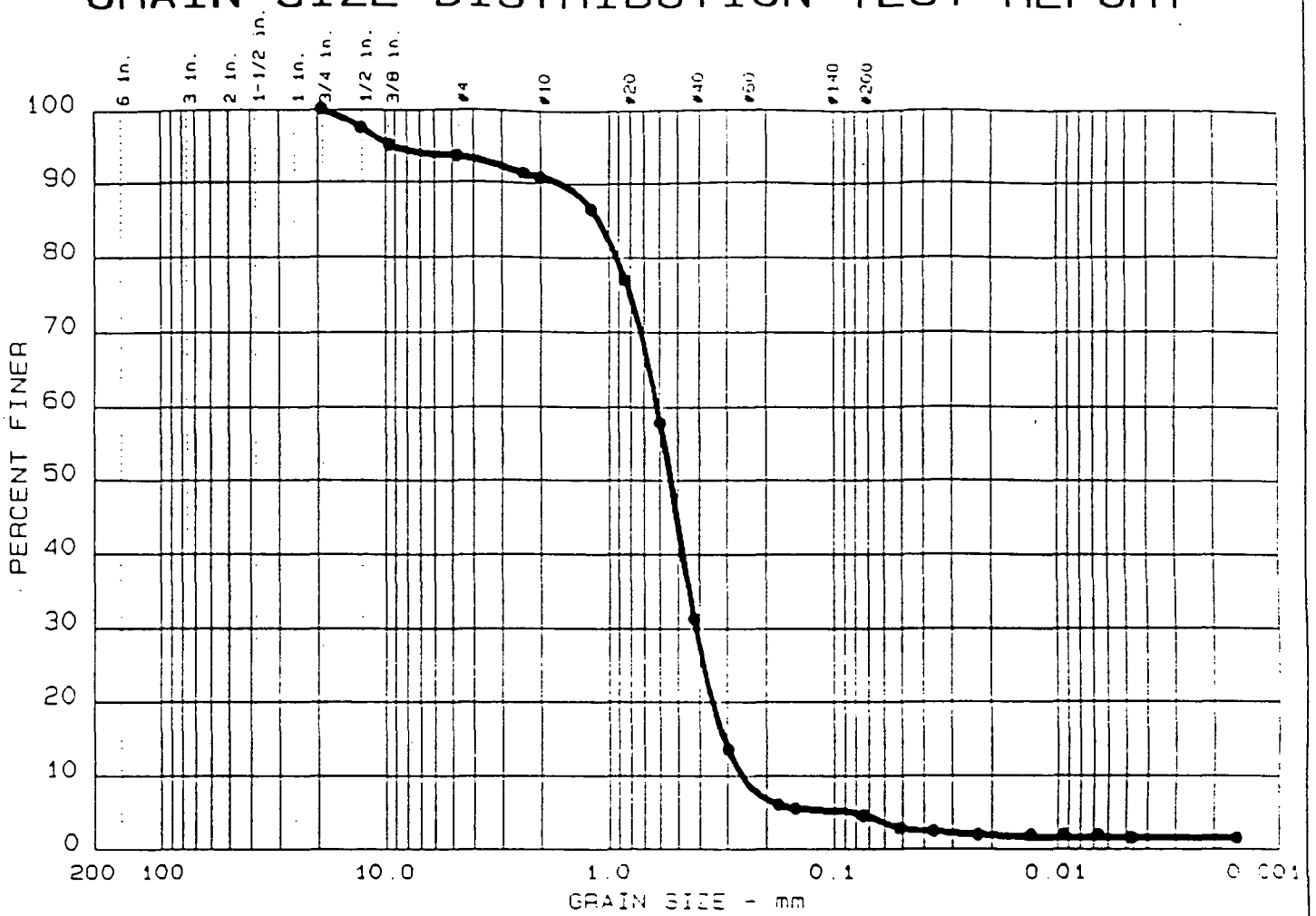
GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

8-19-92

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	3	0.0	6.4	89.0	3.1	1.5

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.10	0.61	0.53	0.413	0.3097	0.2576	1.09	2.4

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand	SP	

Project No.: 2313.13
Project: NIROP
● Location: BG009D, 8-10'

Date: 07/09/92

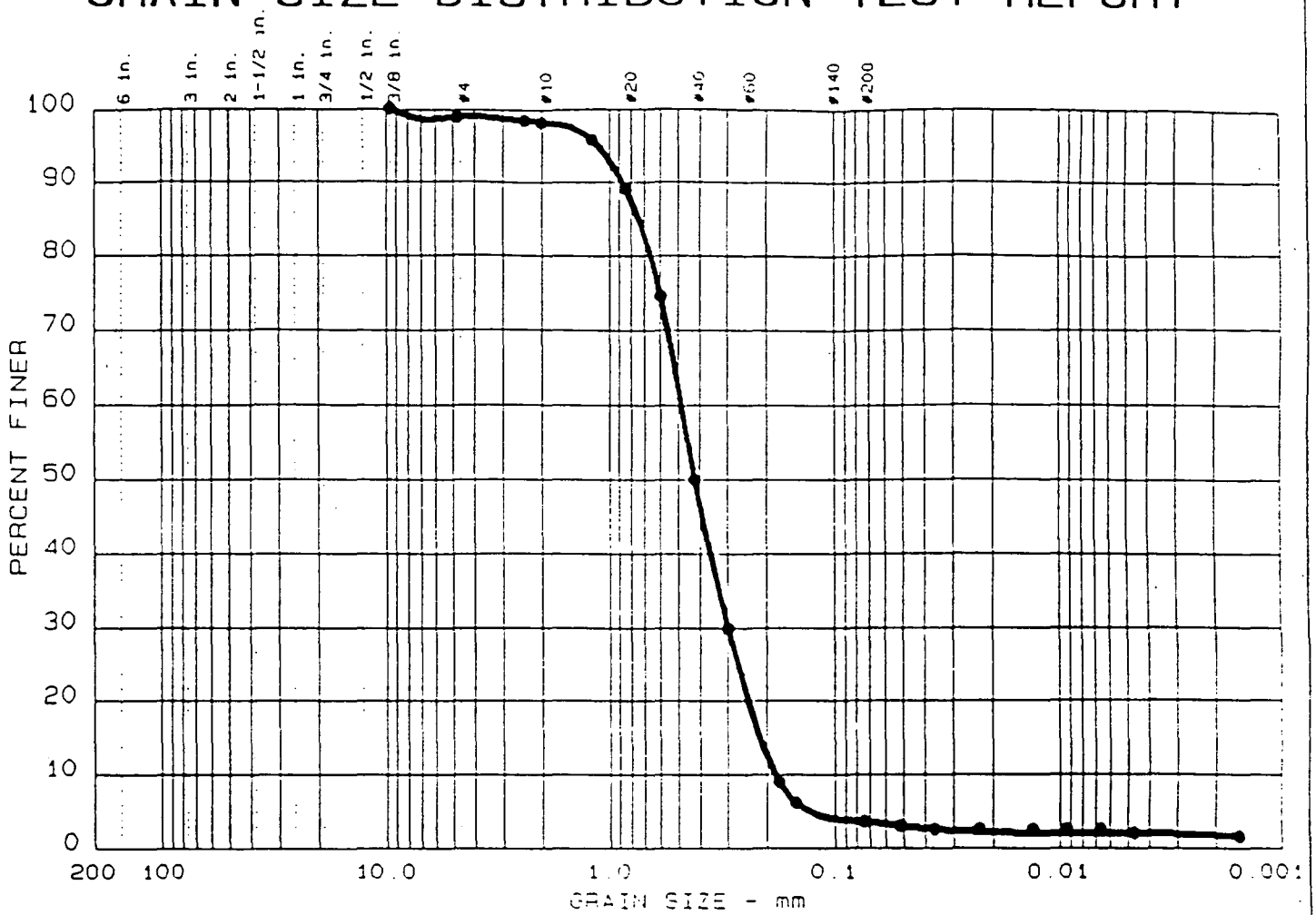
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	4	0.0	1.1	95.3	1.5	2.1

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.74	0.48	0.42	0.298	0.2150	0.1845	1.00	2.6

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand	SP	

Project No.: 2313.13
Project: NIROP
● Location: BG010C 6-8'

Date: 07/09/92

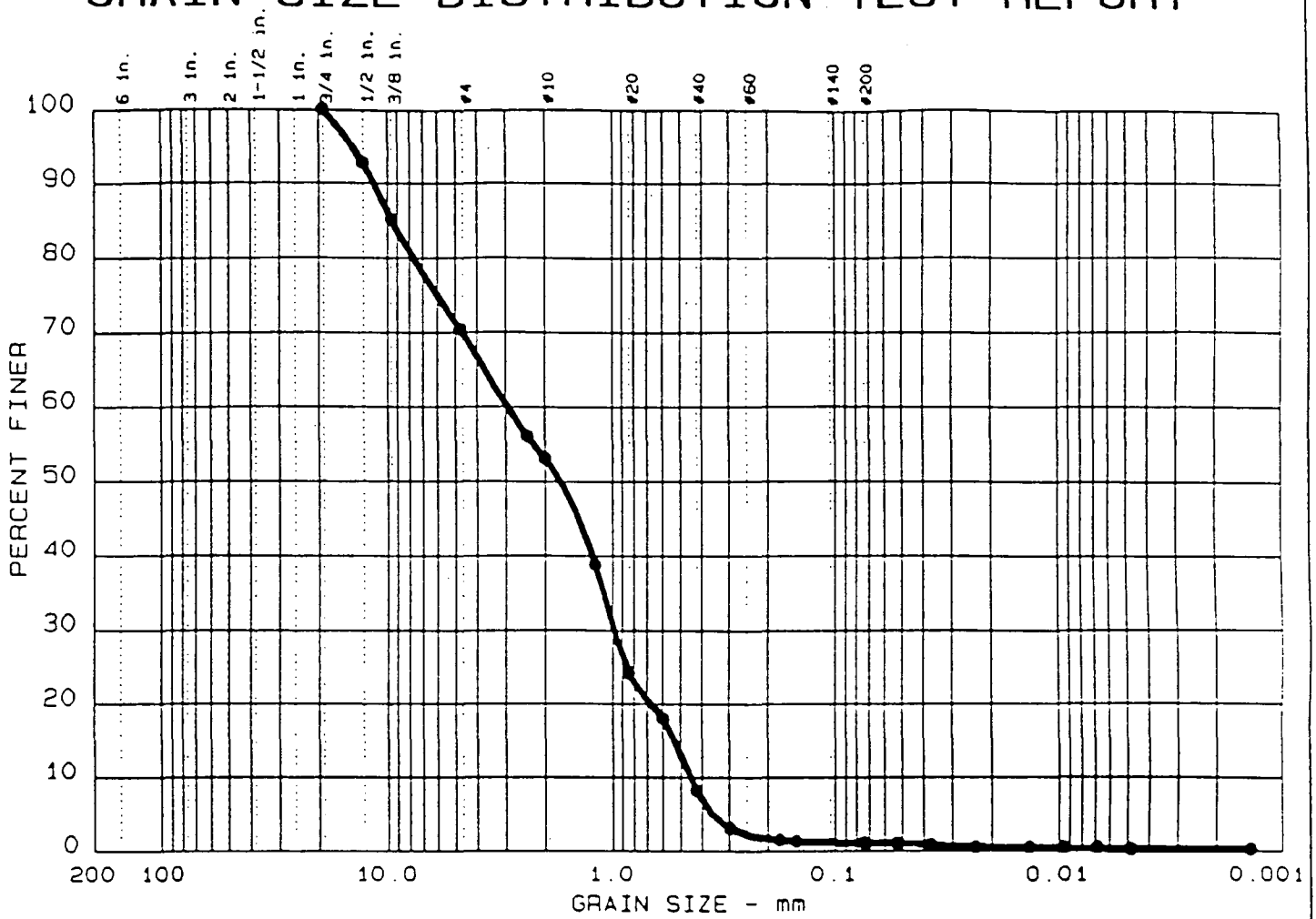
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	13	0.0	29.6	69.4	0.8	0.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			9.44	2.92	1.70	0.977	0.5248	0.4467	0.73	6.5

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand with gravel	SP	

Project No.: 2313.13
Project: NIROP
● Location: AT001C, 6-8'

Date: 07/14/92

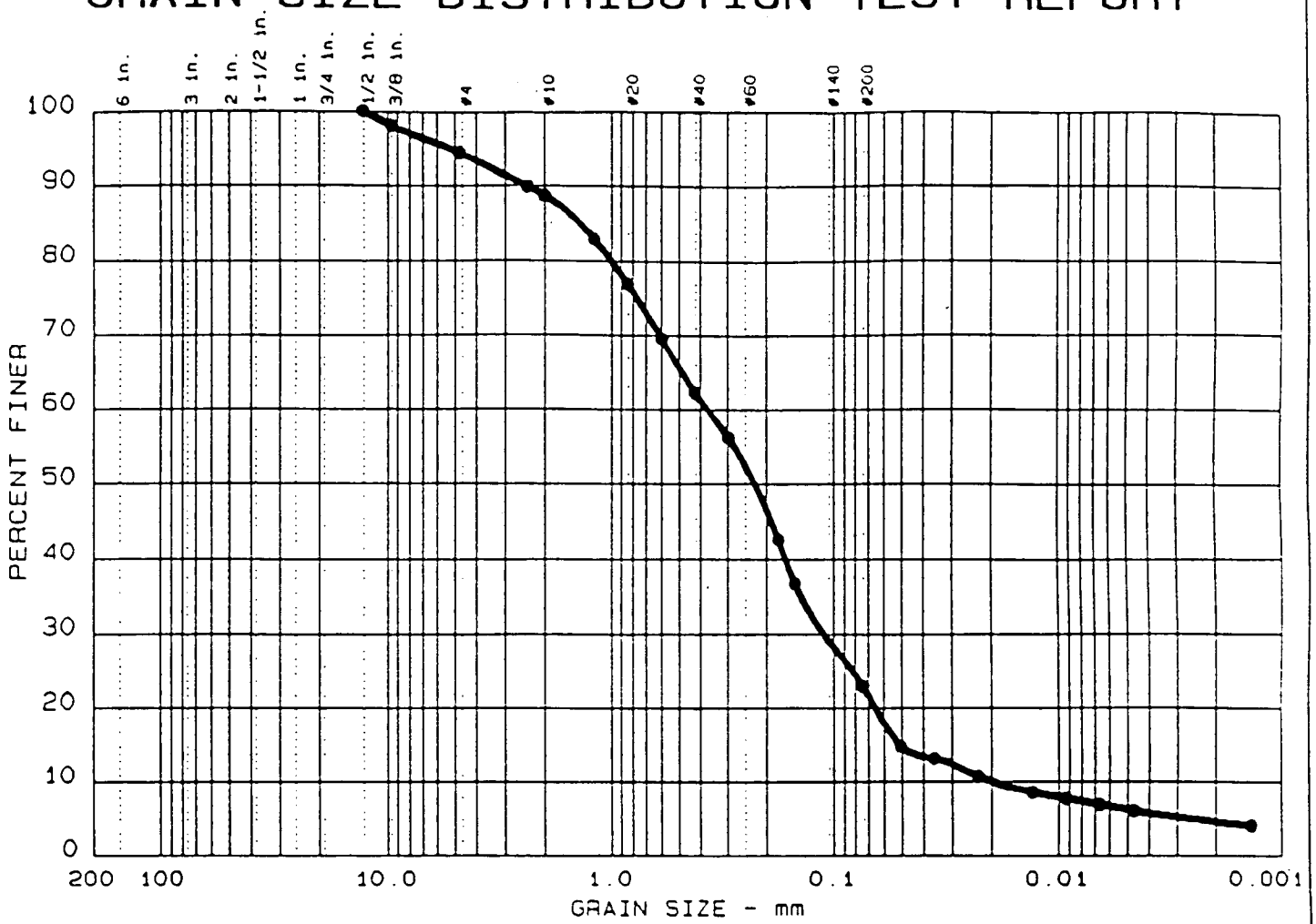
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	14	0.0	5.6	71.5	16.7	6.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	21	3	1.36	0.37	0.23	0.111	0.0506	0.0199	1.68	18.4

MATERIAL DESCRIPTION	USCS	AASHTO
● Silty sand	SM	

Project No.: 2313.13
Project: NIROP
● Location: AT002B, 3-5'

Date: 07/14/92

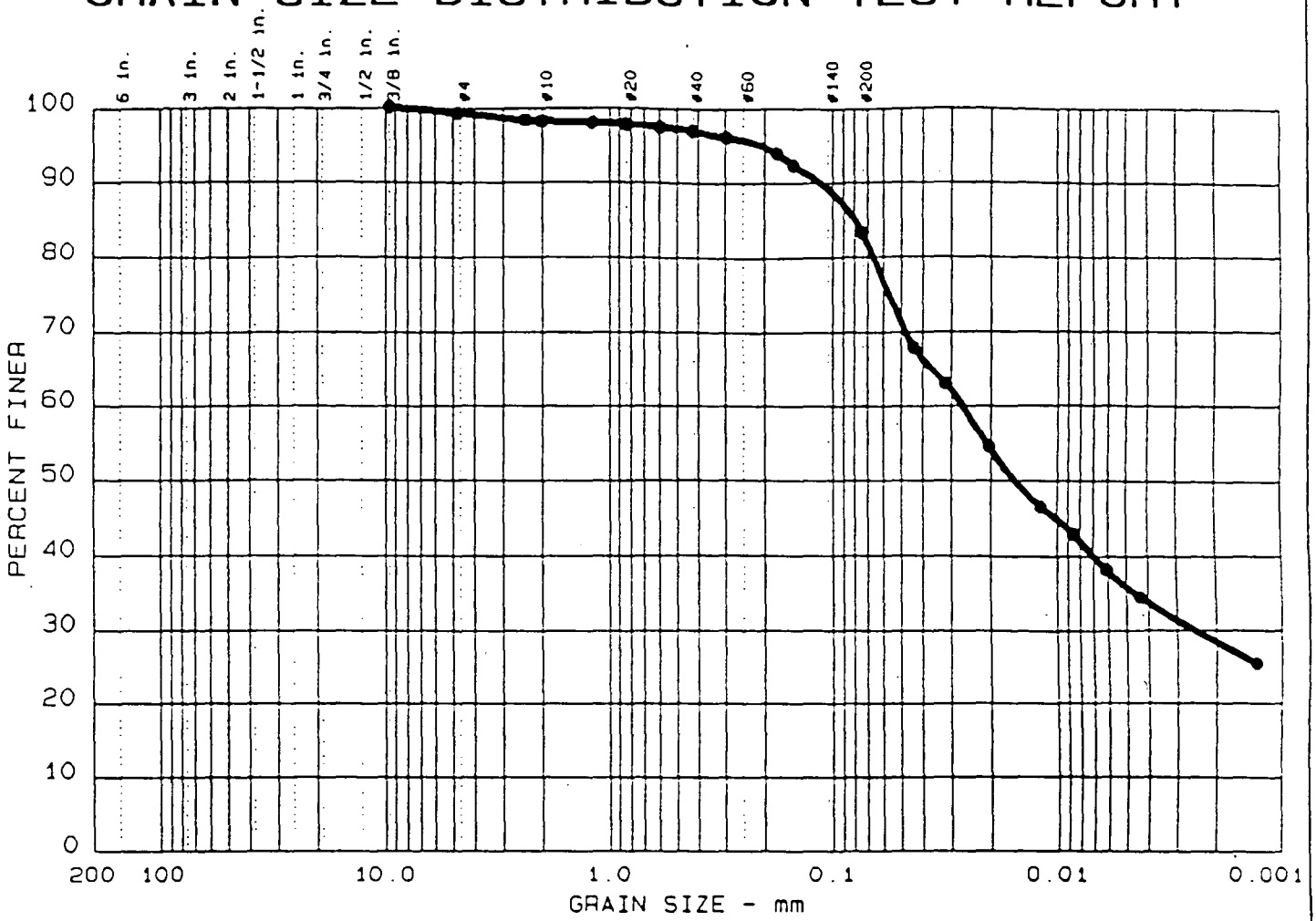
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	9	0.0	0.8	16.0	47.6	35.6

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	59	29	0.08		0.02	0.003				

MATERIAL DESCRIPTION	USCS	AASHTO
● Fat clay with sand	CH	

Project No.: 2313.13
Project: NIROP
● Location: AT0038, 3-5'

Date: 08/13/92

Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

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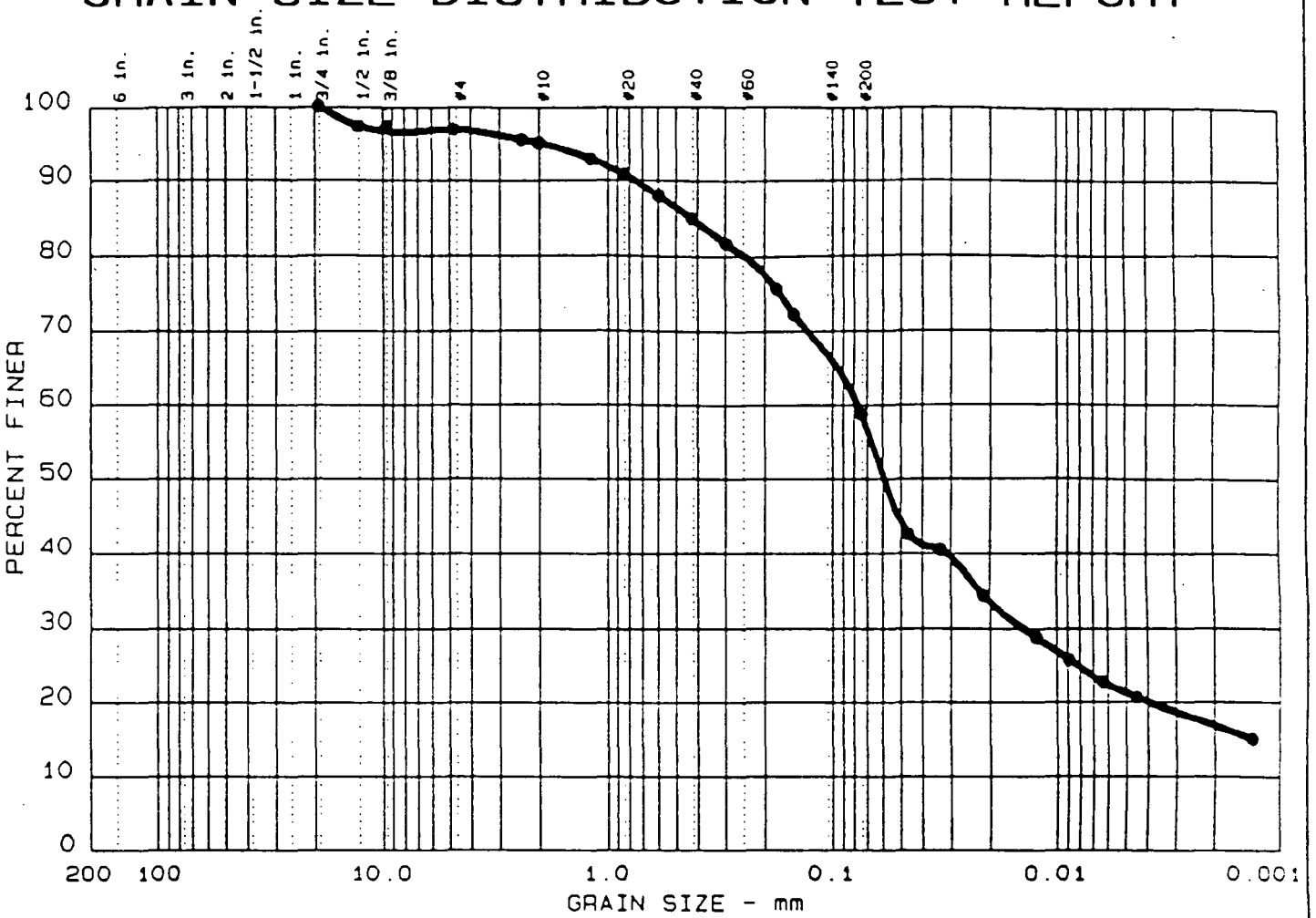
Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	3.1	38.1	37.6	21.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	38	16	0.42	0.08	0.06	0.014				

MATERIAL DESCRIPTION	USCS	AASHTO
● Sandy lean clay	CL	

Project No.: 2313.13
Project: NIROP
◆ Location: AT004B, 3-5'

Date: 07/14/92

Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

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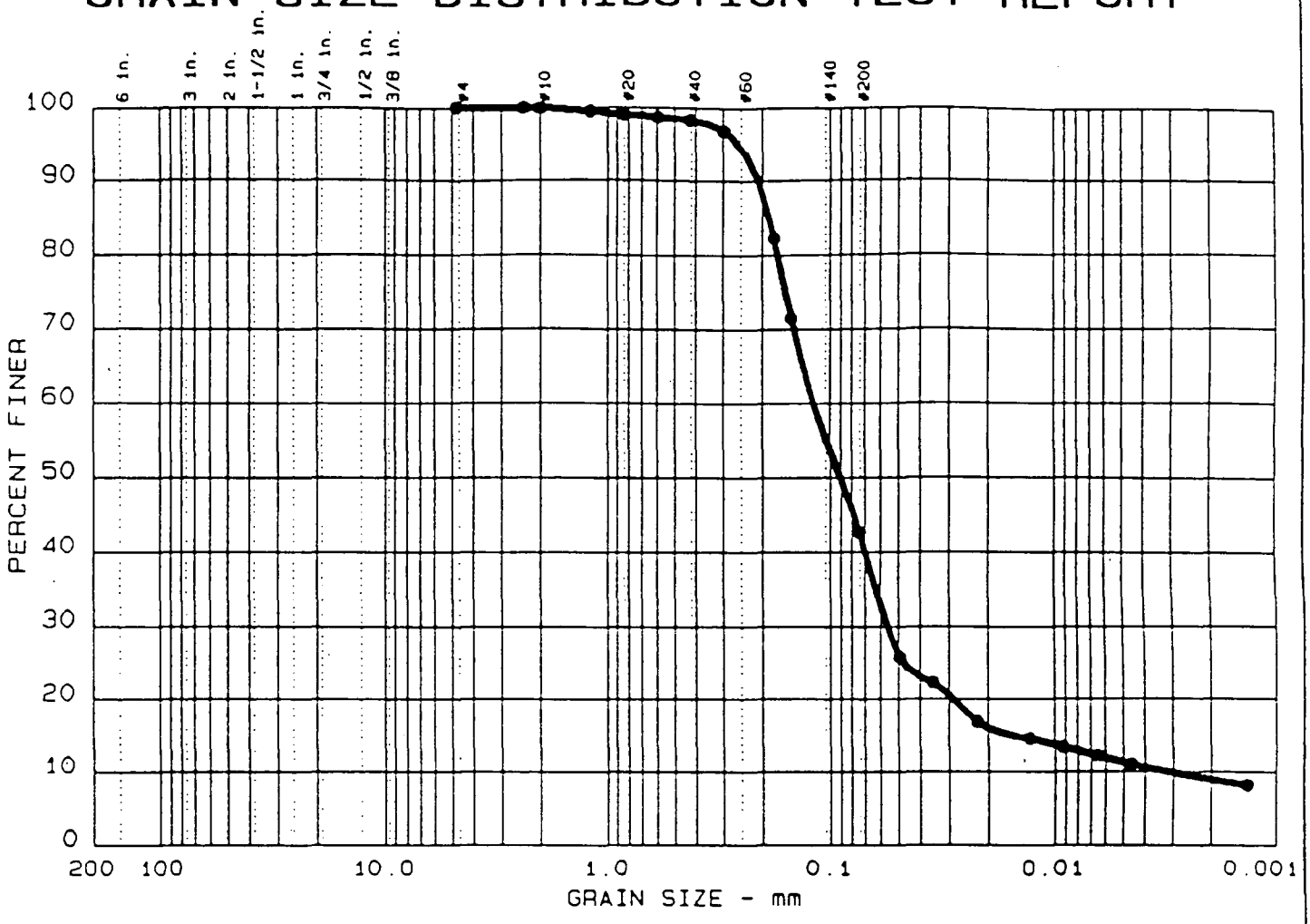
Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	3	0.0	0.0	57.4	31.3	11.3

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	NP	NP	0.19	0.12	0.09	0.056	0.0157	0.0032	8.09	36.5

MATERIAL DESCRIPTION	USCS	AASHTO
● Silty sand	SM	

Project No.: 2313.13
Project: NIROP
● Location: AT005C, 6-8'

Date: 07/14/92

Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

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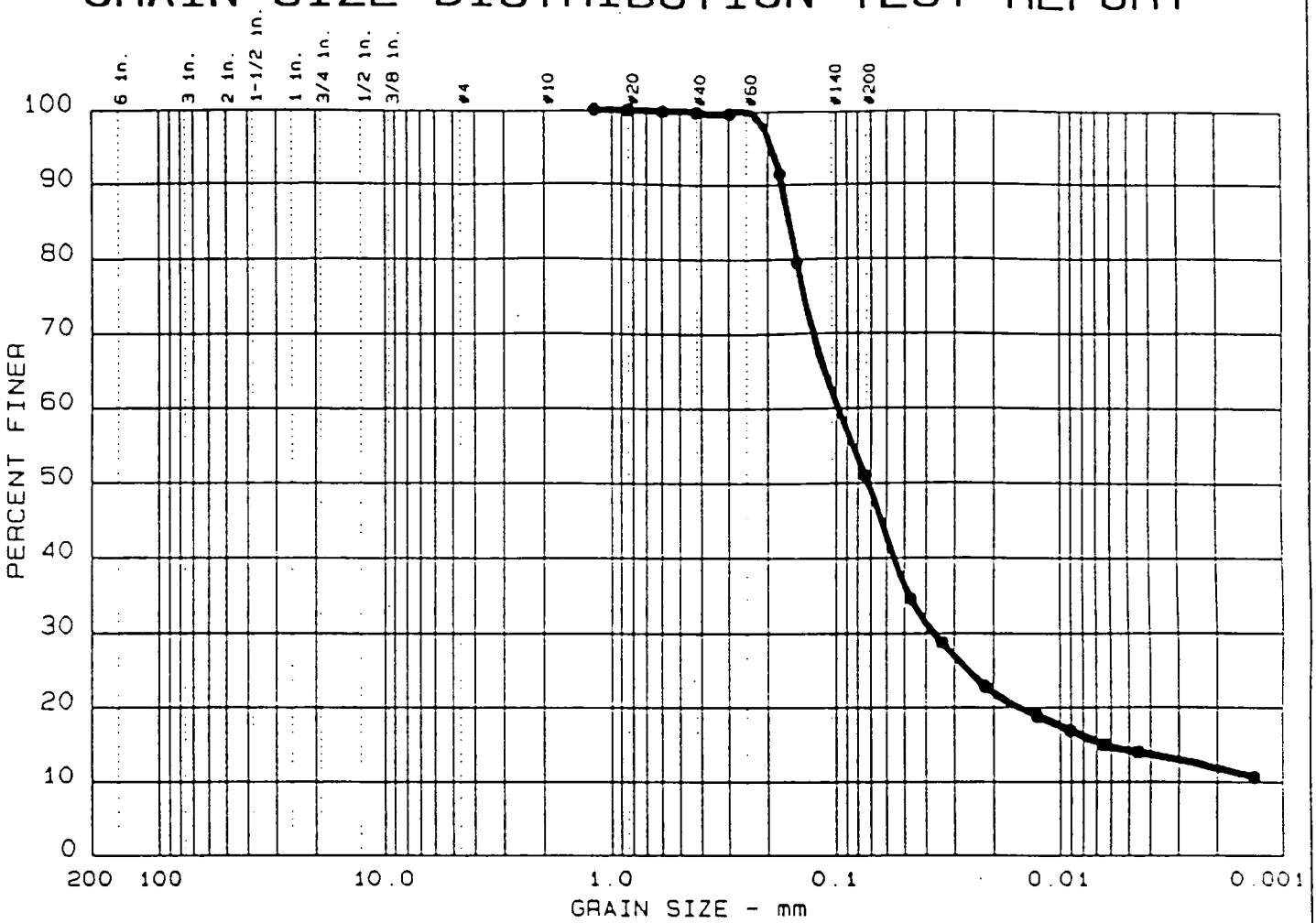
Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	10	0.0	0.0	49.1	36.7	14.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	23	5	0.16	0.10	0.07	0.037	0.0064			

MATERIAL DESCRIPTION	USCS	AASHTO
● Sandy silty clay	CL-ML	

Project No.: 2313.13
Project: NIROP
● Location: AT006B, 3-5'

Date: 08/13/92

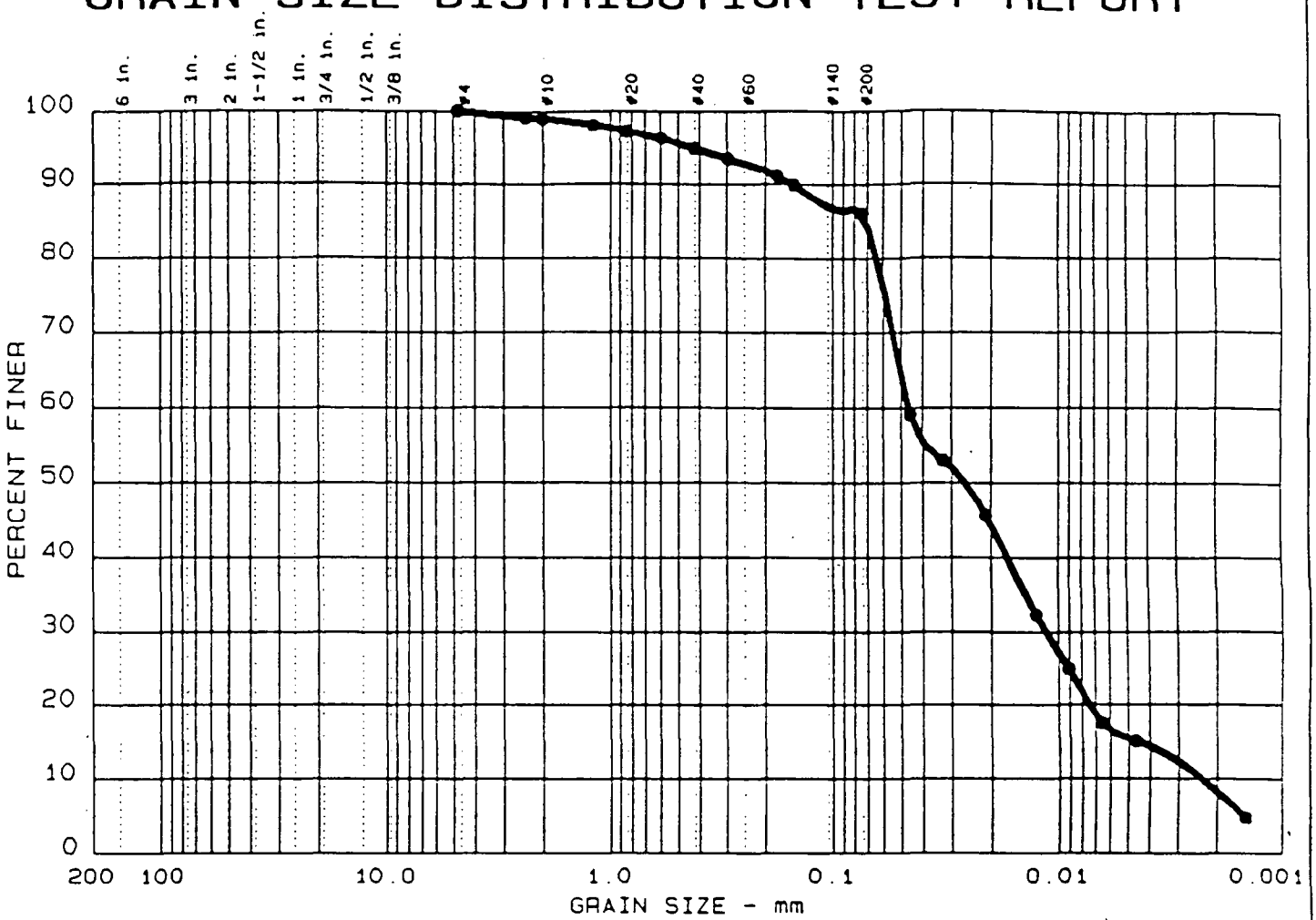
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	17	0.0	0.0	13.9	70.7	15.4

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	72	12			0.03	0.011	0.0045	0.0023	1.19	19.7

MATERIAL DESCRIPTION	USCS	AASHTO
● Elastic silt	MH	

Project No.: 2313.13
Project: NIROP
● Location: AT007C, 6-8'

Date: 07/14/92

Remarks:

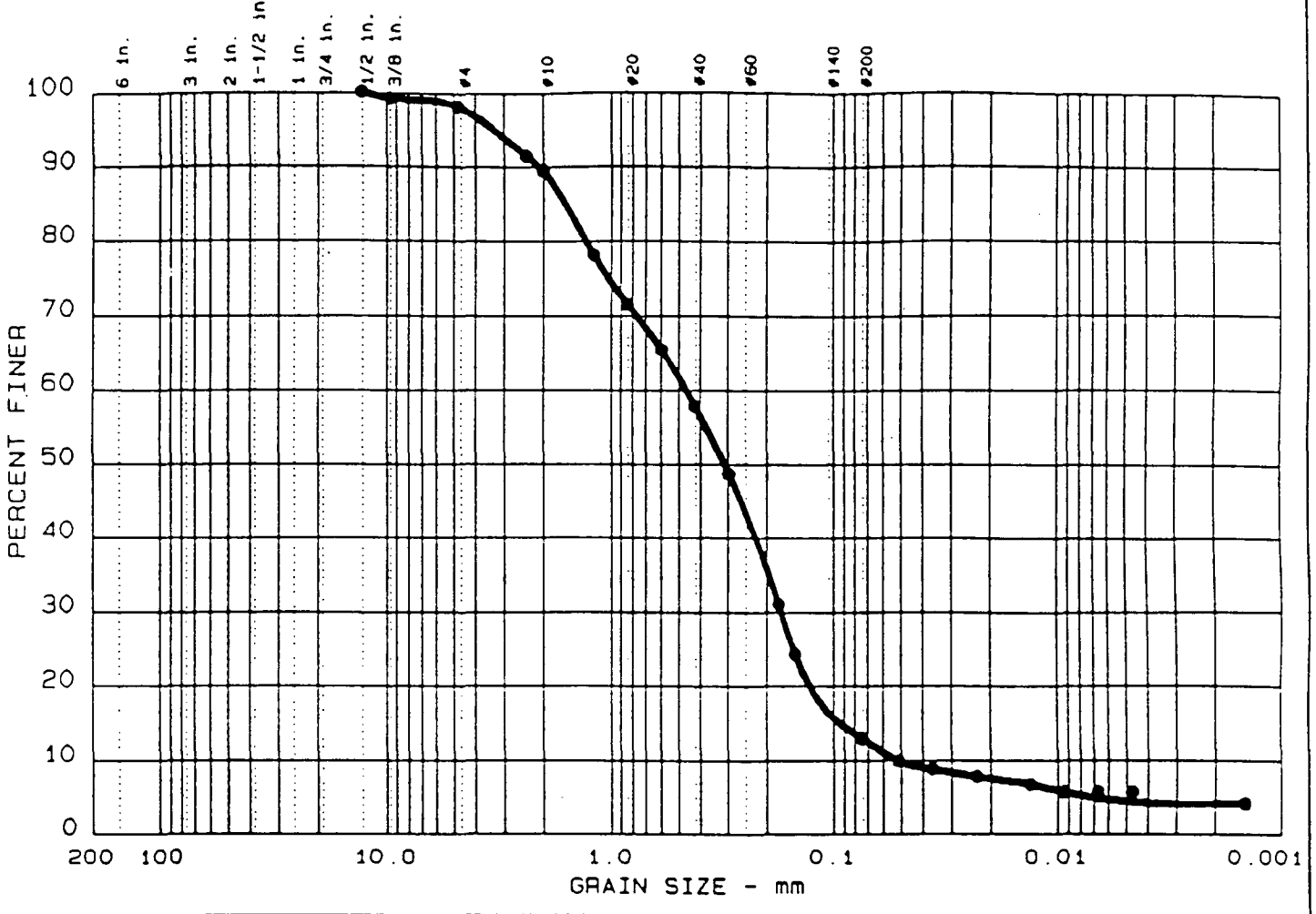
GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

5-21-92

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	12	0.0	1.9	85.1	8.6	4.4

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	NP	NP	1.58	0.46	0.31	0.173	0.0938	0.0515	1.26	8.9

MATERIAL DESCRIPTION	USCS	AASHTO
● Silty sand	SM	

Project No.: 2313.13
Project: NIROP
● Location: AT008D, 8-10'

Date: 07/14/92

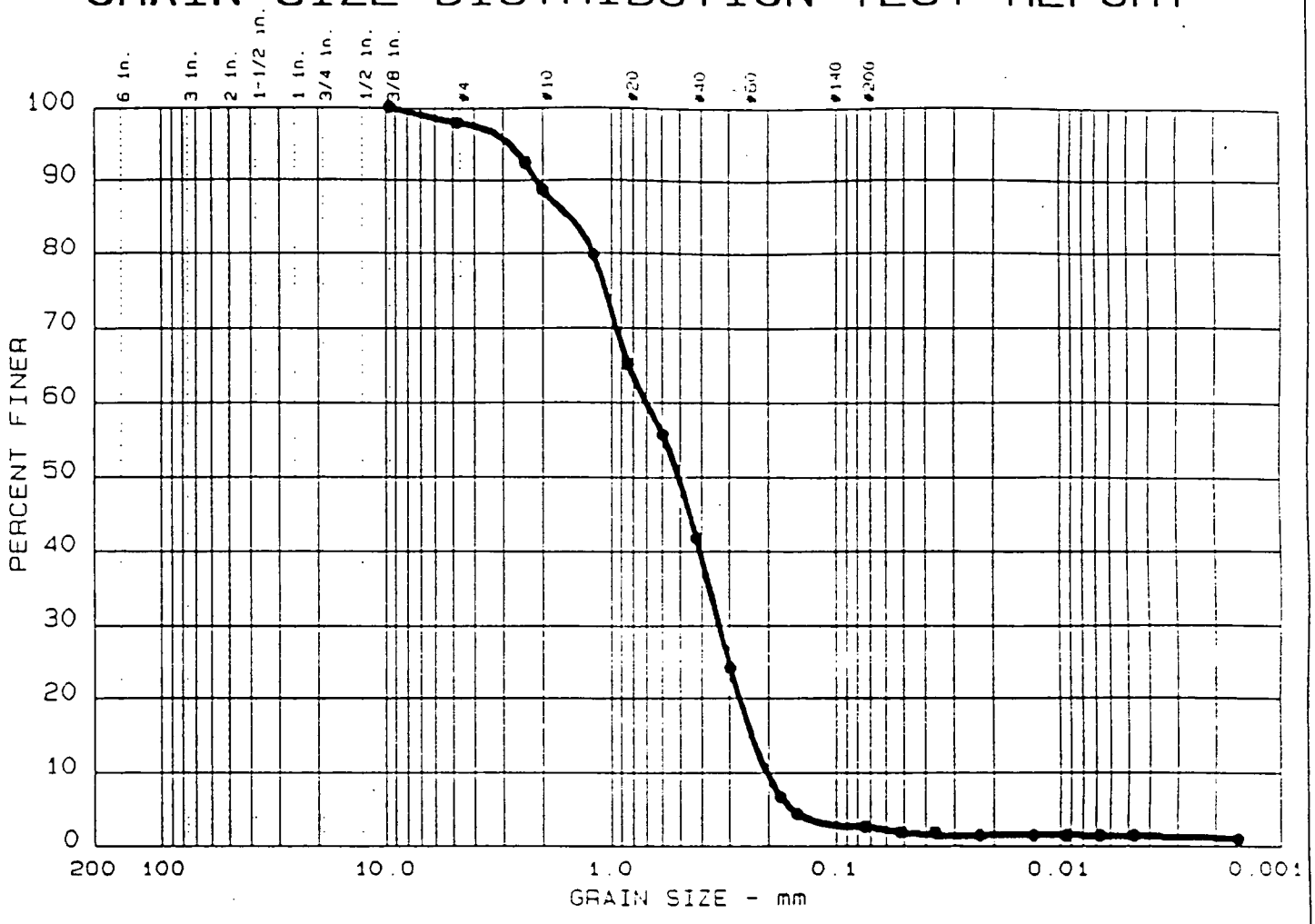
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	5	0.0	2.2	95.2	1.3	1.3

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.50	0.70	0.50	0.334	0.2388	0.2032	0.79	3.4

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand	SP	

Project No.: 2313.13
Project: NIROP
● Location: AB024G, 16-18'

Date: 07/09/92

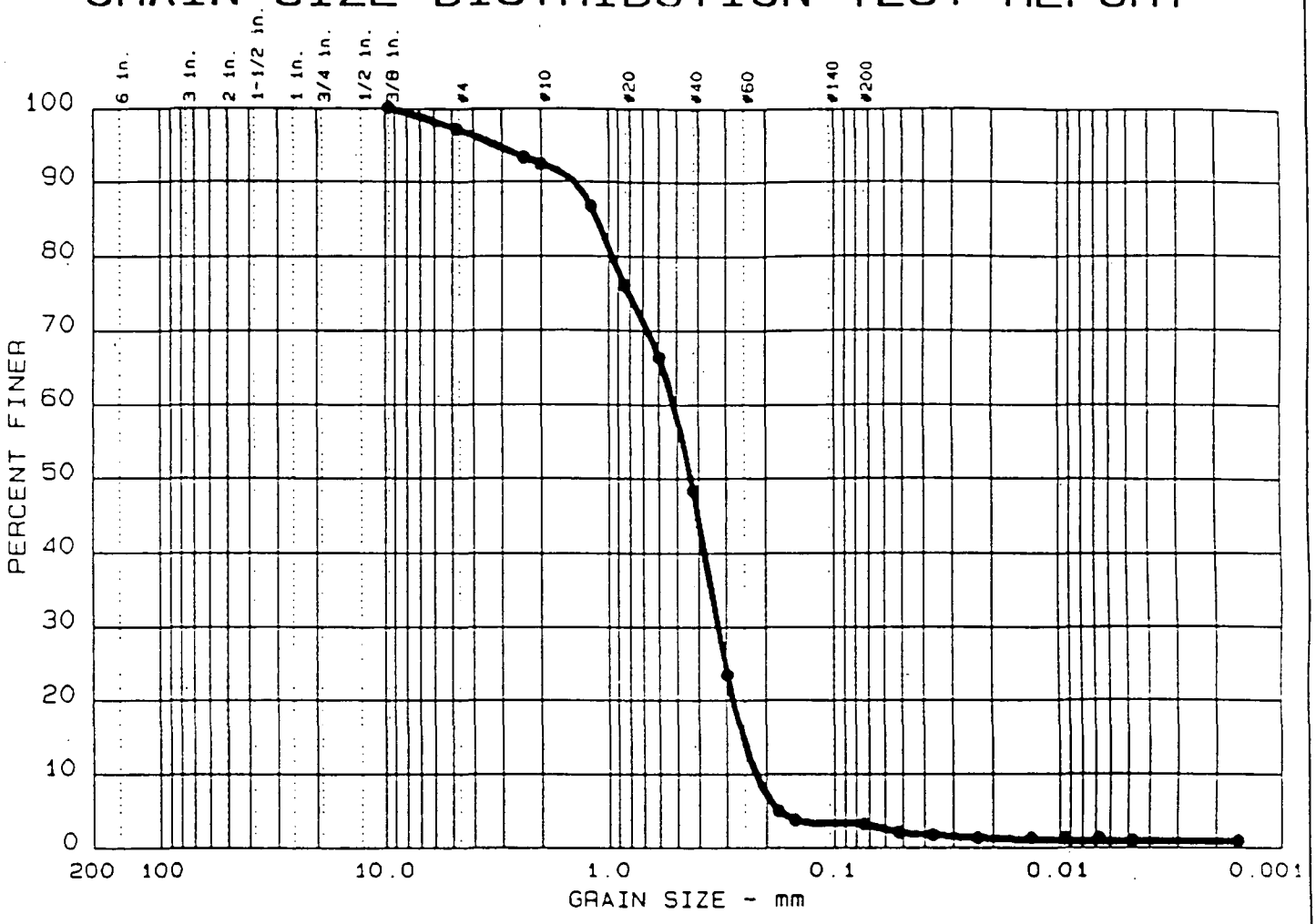
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	6	0.0	2.8	94.0	2.3	0.9

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.12	0.51	0.43	0.327	0.2535	0.2231	0.94	2.3

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand	SP	

Project No.: 2313.13
Project: NIROP
● Location: AB025G, 16-18'

Date: 07/09/92

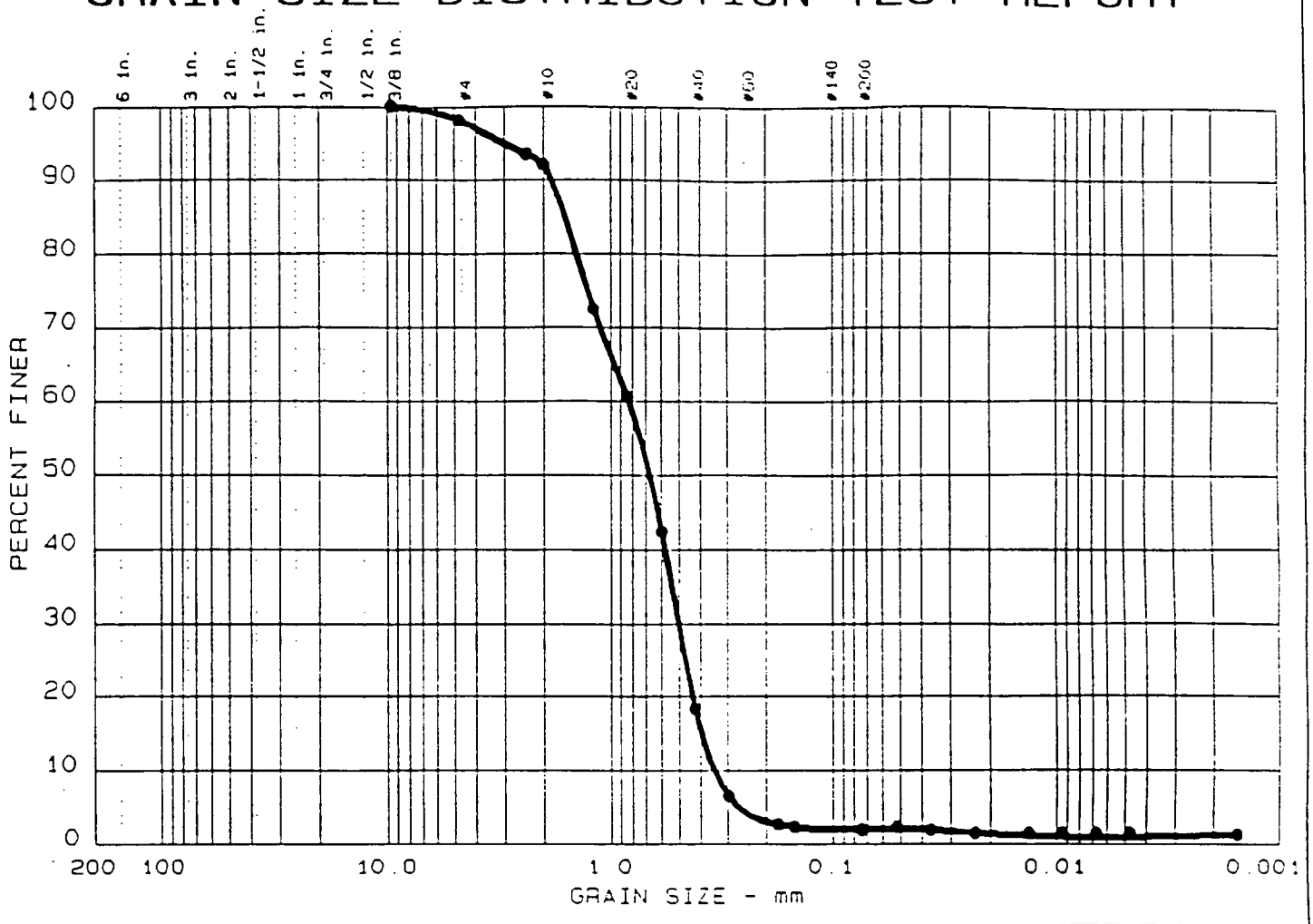
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	13	0.0	1.9	96.1	1.0	1.0

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.58	0.83	0.67	0.498	0.3940	0.3455	0.87	2.4

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand	SP	

Project No.: 2313.13
Project: NIROP
● Location: AB026G, 16-18'

Date: 07/10/92

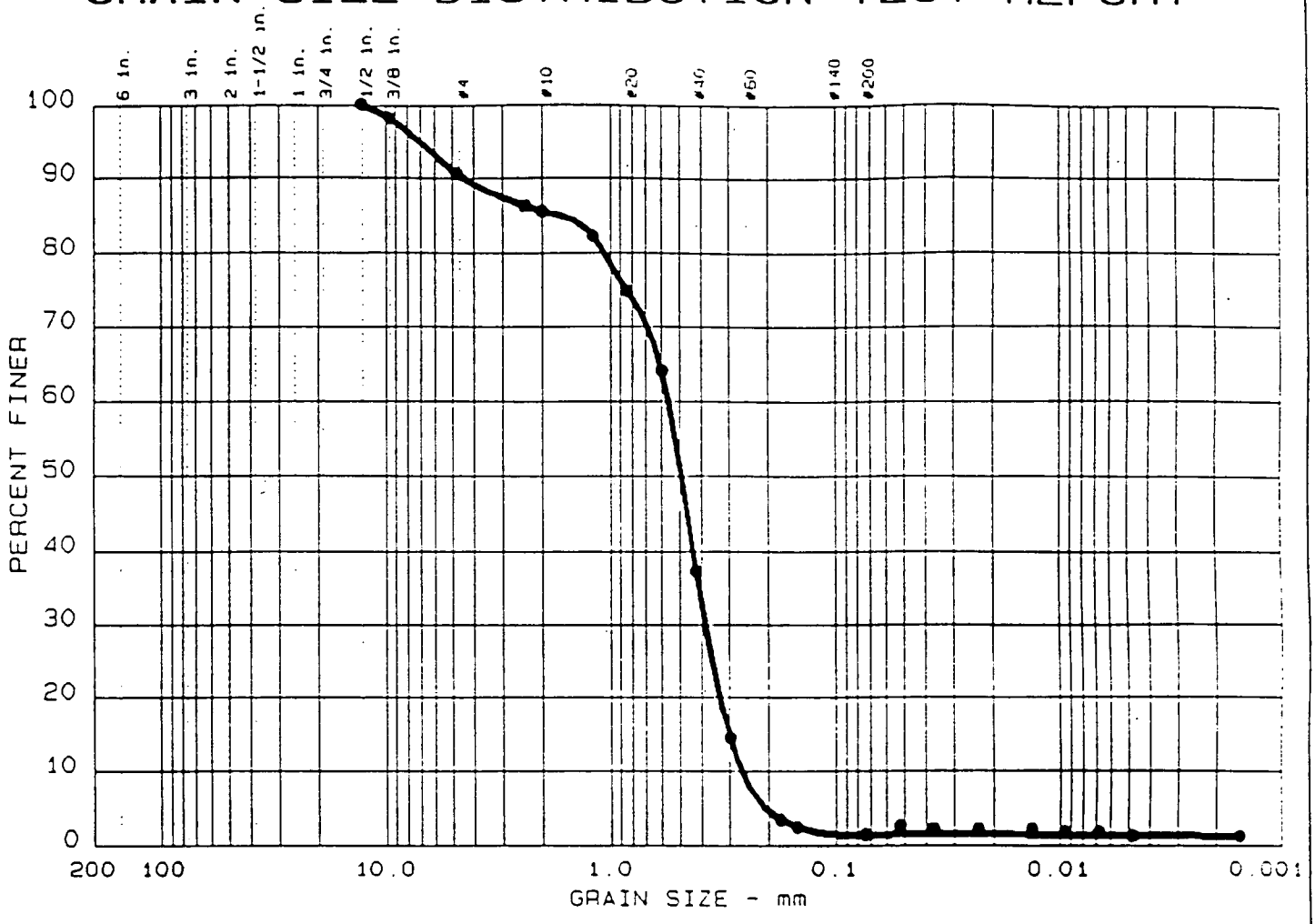
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	15	0.0	9.4	89.2	0.1	1.3

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.58	0.55	0.49	0.382	0.3003	0.2642	1.00	2.1

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand	SP	

Project No.: 2313.13
Project: NIROP
● Location: AB027G, 16-18'

Date: 07/10/92

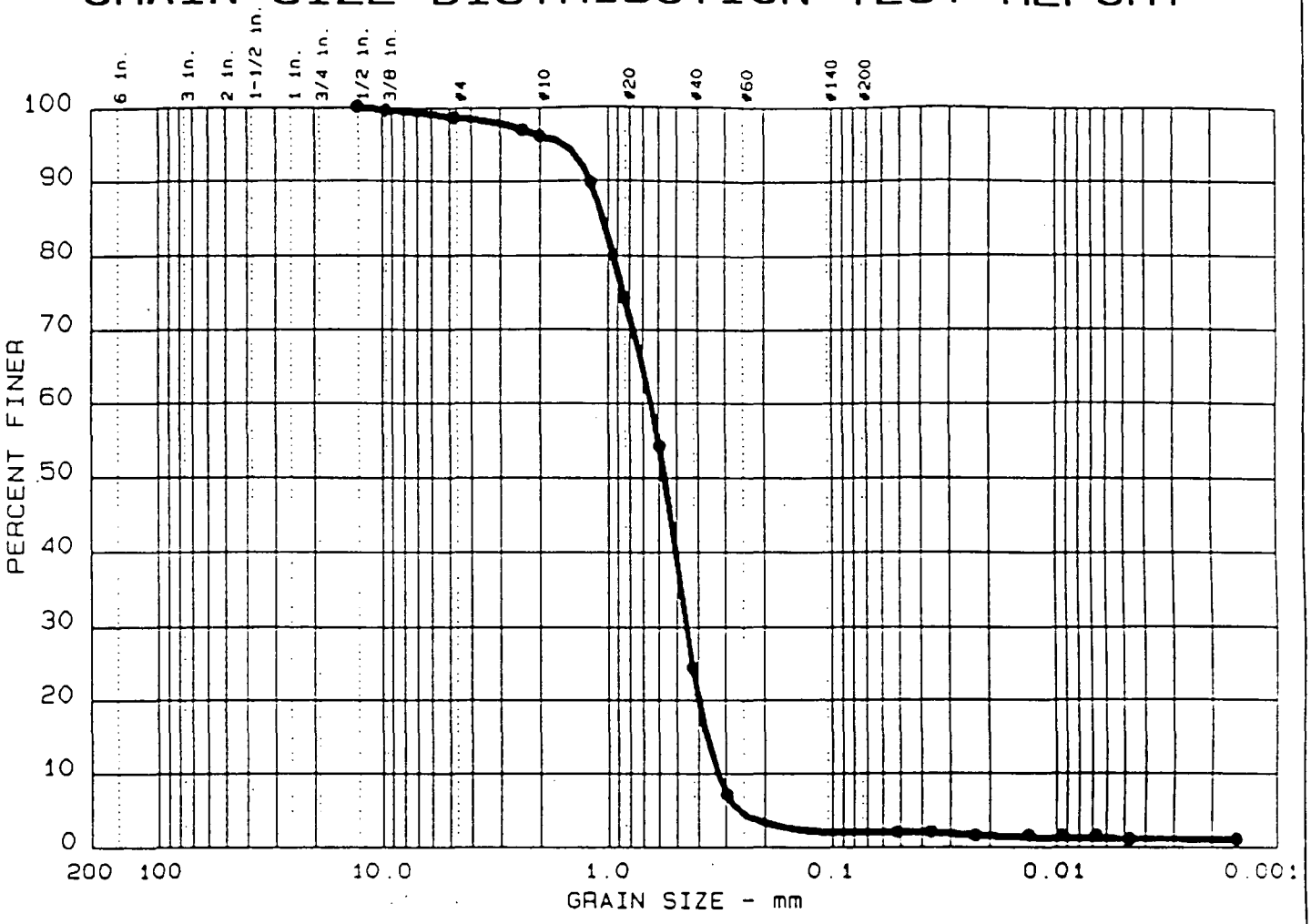
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	16	0.0	1.4	96.6	0.9	1.1

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.05	0.64	0.56	0.449	0.3635	0.3258	0.96	2.0

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand	SP	

Project No.: 2313.13
Project: NIROP
● Location: AB028F, 13-15'

Date: 07/10/92

Remarks:

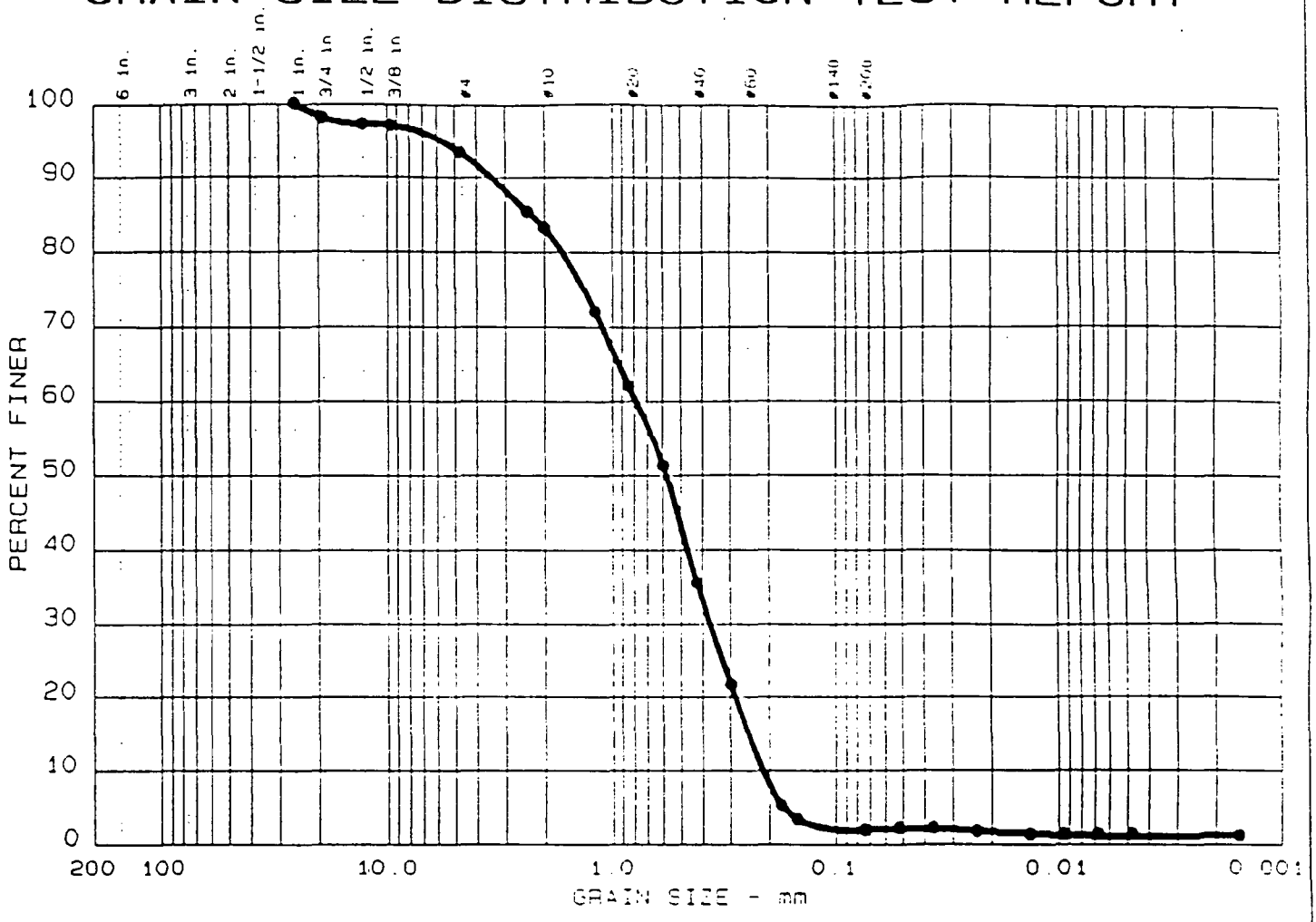
GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No.

8-20-92

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	18	0.0	6.5	91.6	0.9	1.0

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			2.29	0.78	0.57	0.369	0.2489	0.2143	0.82	3.6

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand	SP	

Project No.: 2313.13
Project: NIROP
● Location: AB029H, 18-20'

Date: 08/10/92

Remarks:

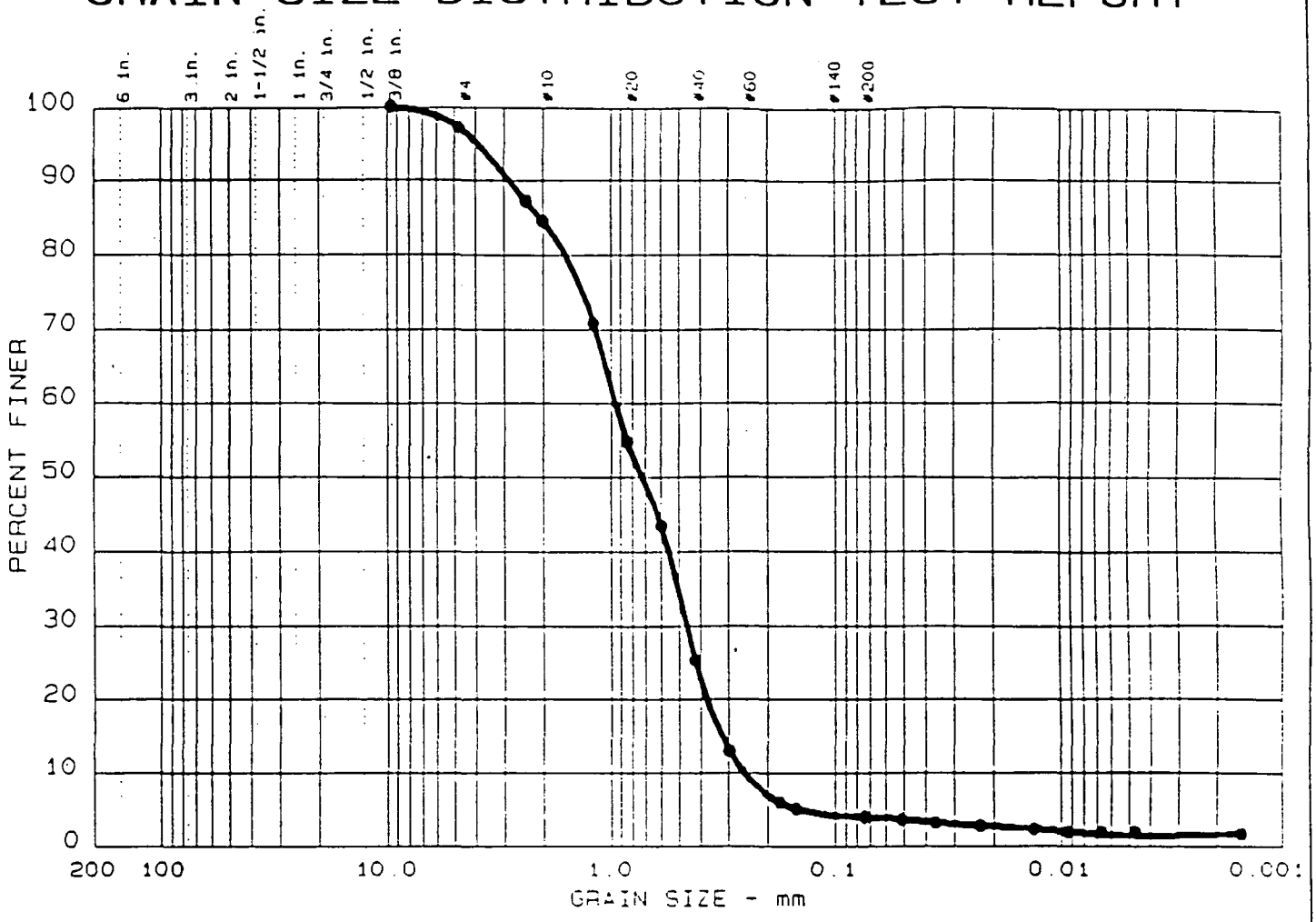
GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

8-18-92

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	14	0.0	2.9	93.2	2.5	1.4

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			2.04	0.95	0.72	0.458	0.3206	0.2547	0.87	3.7

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand	SP	

Project No.: 2313.13
Project: NIROP
● Location: AB030H, 18-20'

Date: 07/14/92

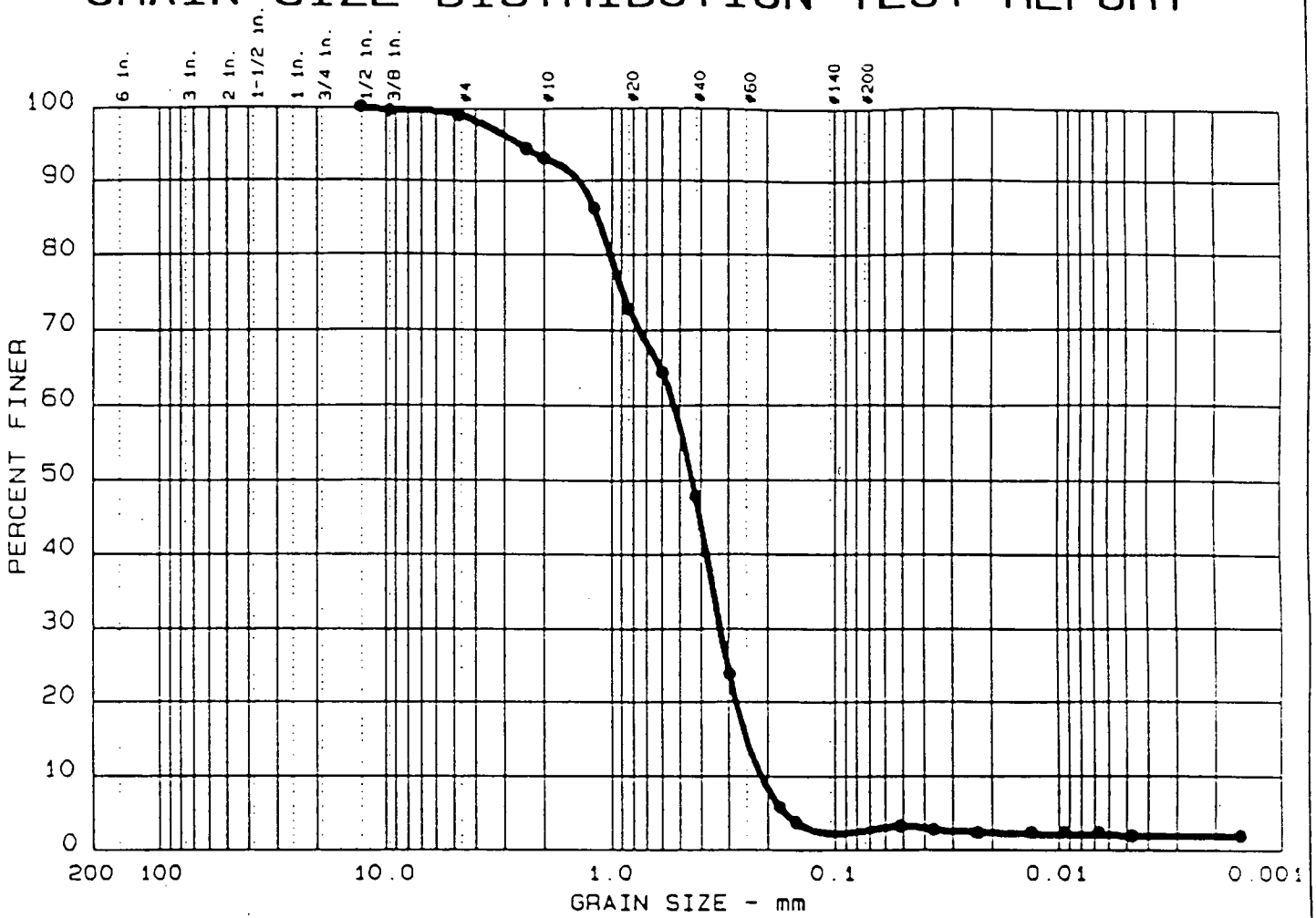
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	18	0.0	0.9	96.5	0.7	1.9

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.15	0.52	0.43	0.326	0.2492	0.2145	0.95	2.4

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand	SP	

Project No.: 2313.13
Project: NIROP
● Location: AB031H, 18-20'

Date: 07/10/92

Remarks:

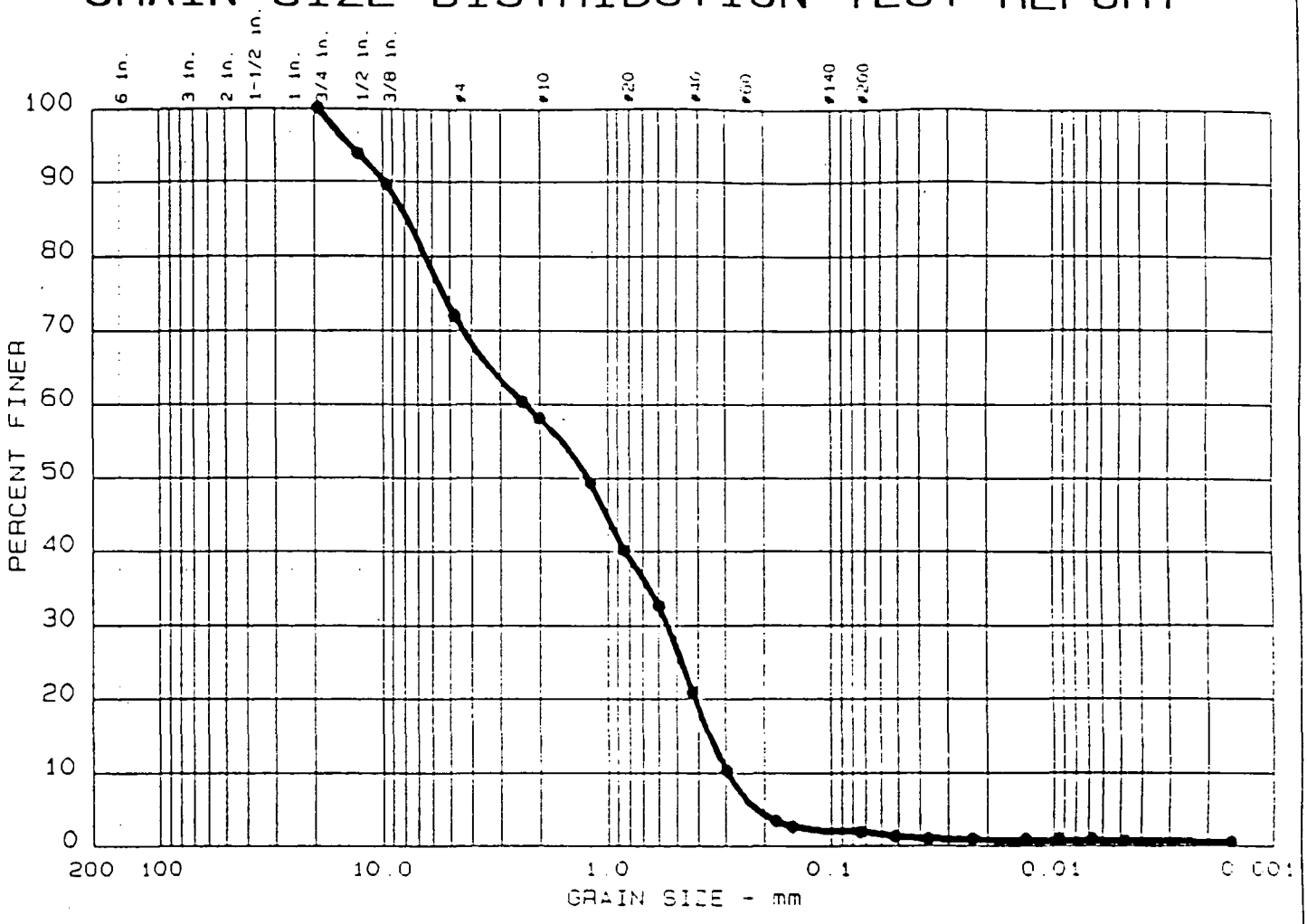
GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

8-20-92

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	19	0.0	28.1	70.1	1.2	0.6

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			7.74	2.31	1.23	0.542	0.3524	0.2931	0.43	7.9

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand with gravel	SP	

Project No.: 2313.13

Project: NIROP

● Location: A8032E, 10-12'

Date: 08/10/92

Remarks:

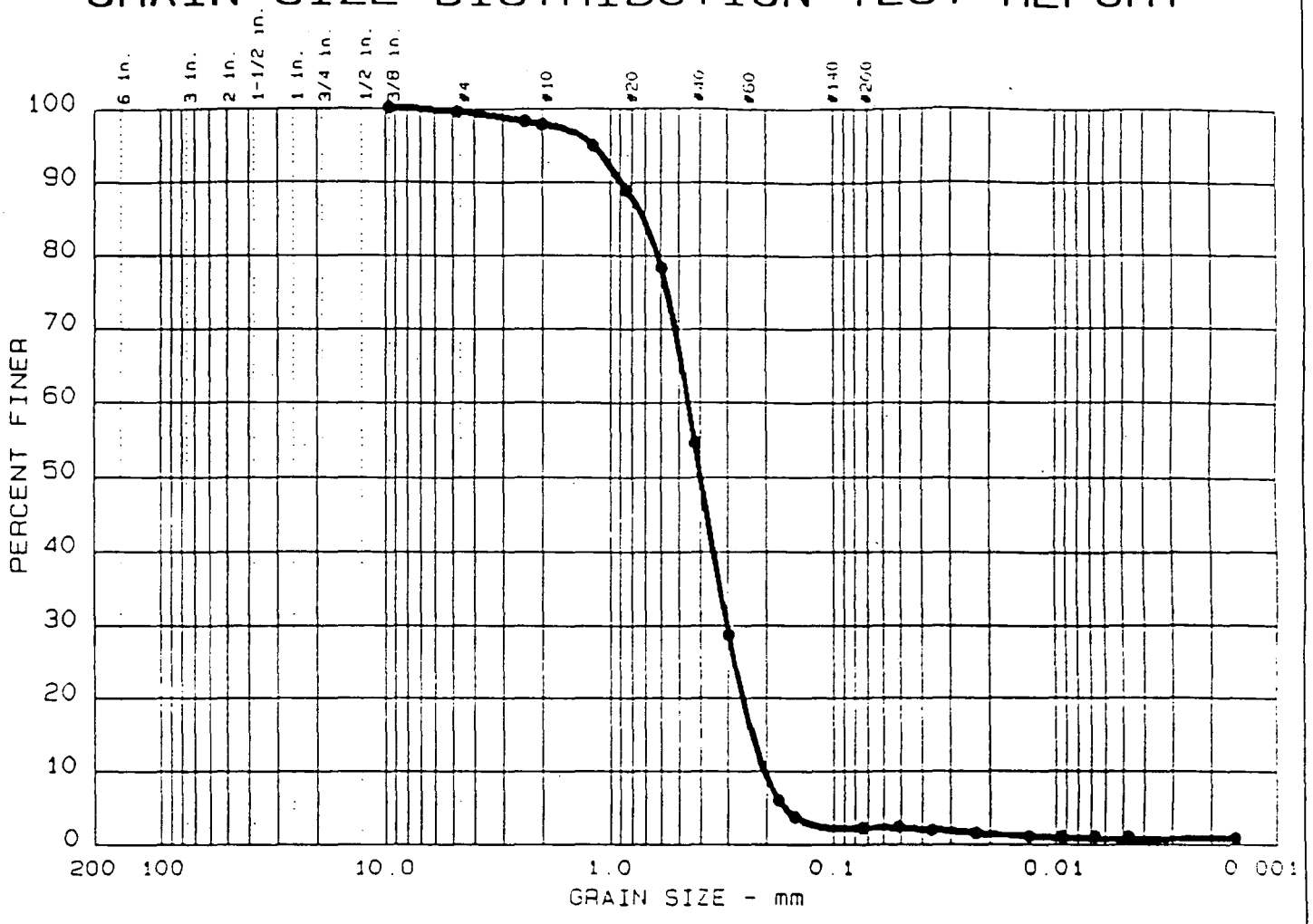
GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

8-18-92 ✓

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	19	0.0	0.5	97.2	1.5	0.8

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.71	0.45	0.40	0.303	0.2325	0.2049	1.00	2.2

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand	SP	

Project No.: 2313.13
Project: NIROP
● Location: AB033H, 18-20'

Date: 07/10/92

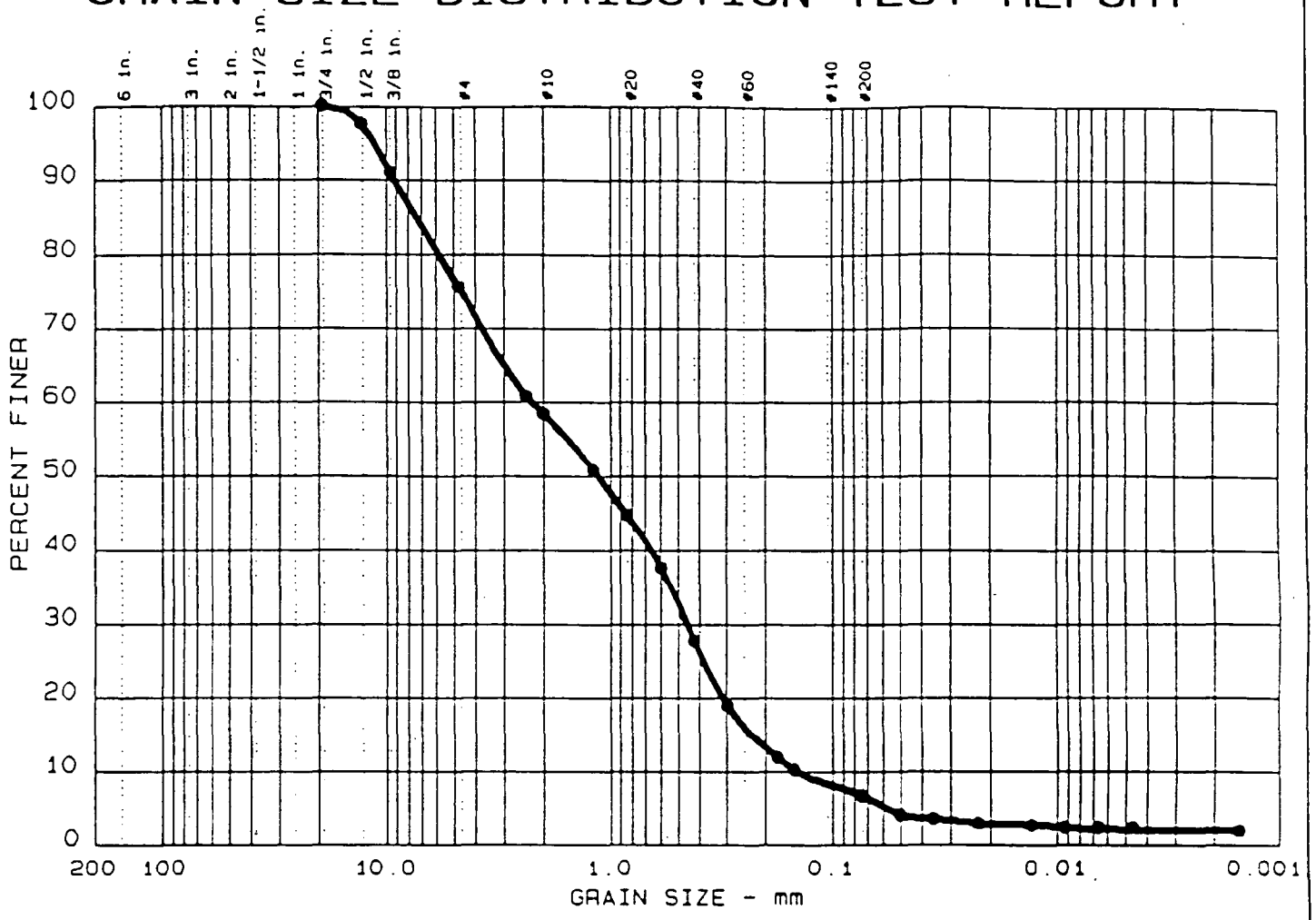
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	20	0.0	24.4	68.9	4.7	2.0

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	NP	NP	7.31	2.23	1.13	0.451	0.2312	0.1442	0.63	15.5

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand with silt and gravel	SP-SM	

Project No.: 2313.13
Project: NIROP
● Location: AB034D, 8-10'

Date: 08/10/92

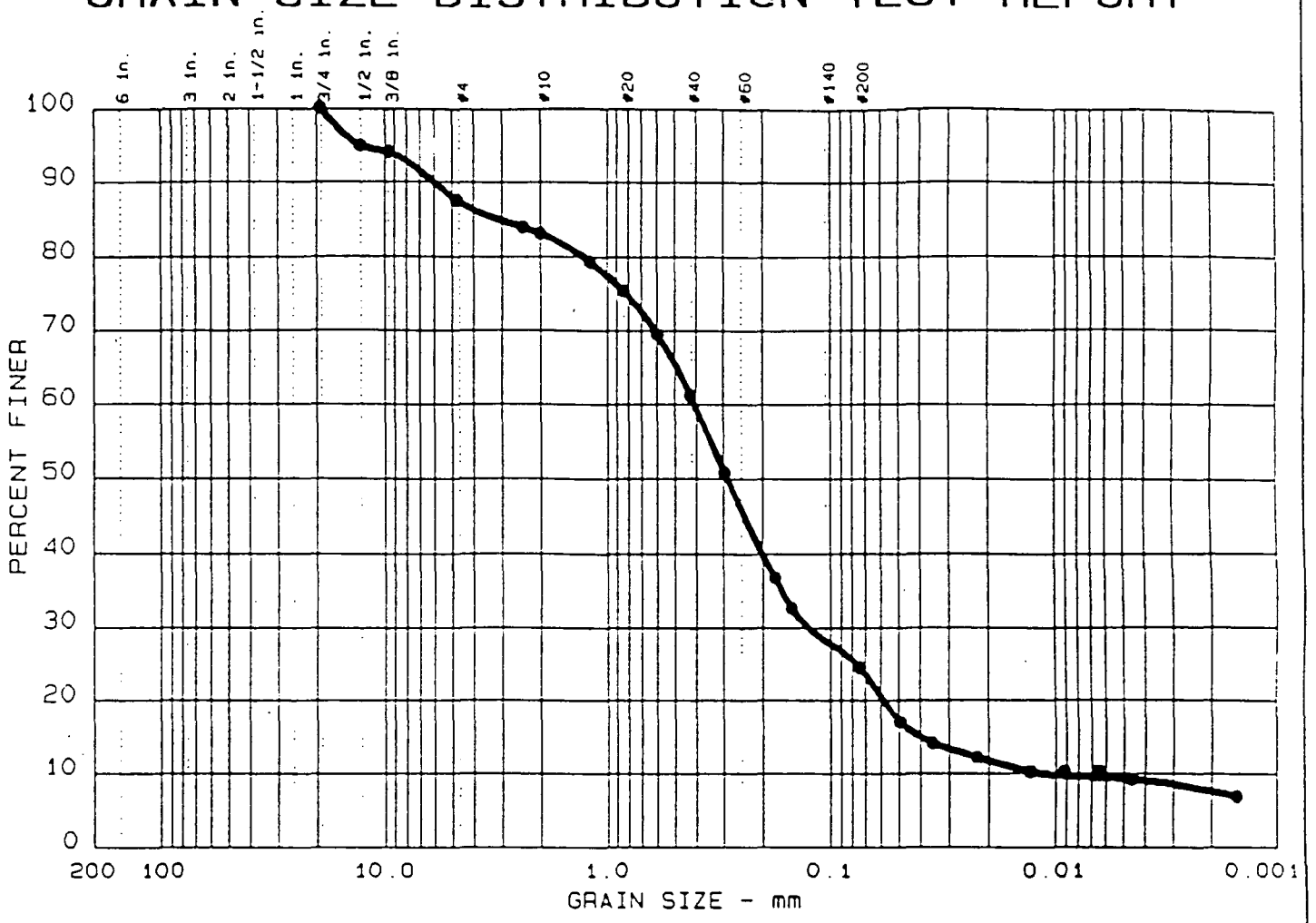
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	5	0.0	12.4	53.1	15.2	9.3

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	22	4	2.99	0.40	0.29	0.126	0.0403	0.0115	3.43	35.1

MATERIAL DESCRIPTION	USCS	AASHTO
● Silty, clayey sand	SC-SM	

Project No.: 2313.13
Project: NIROP
● Location: A80358, 3-5'

Date: 08/13/92

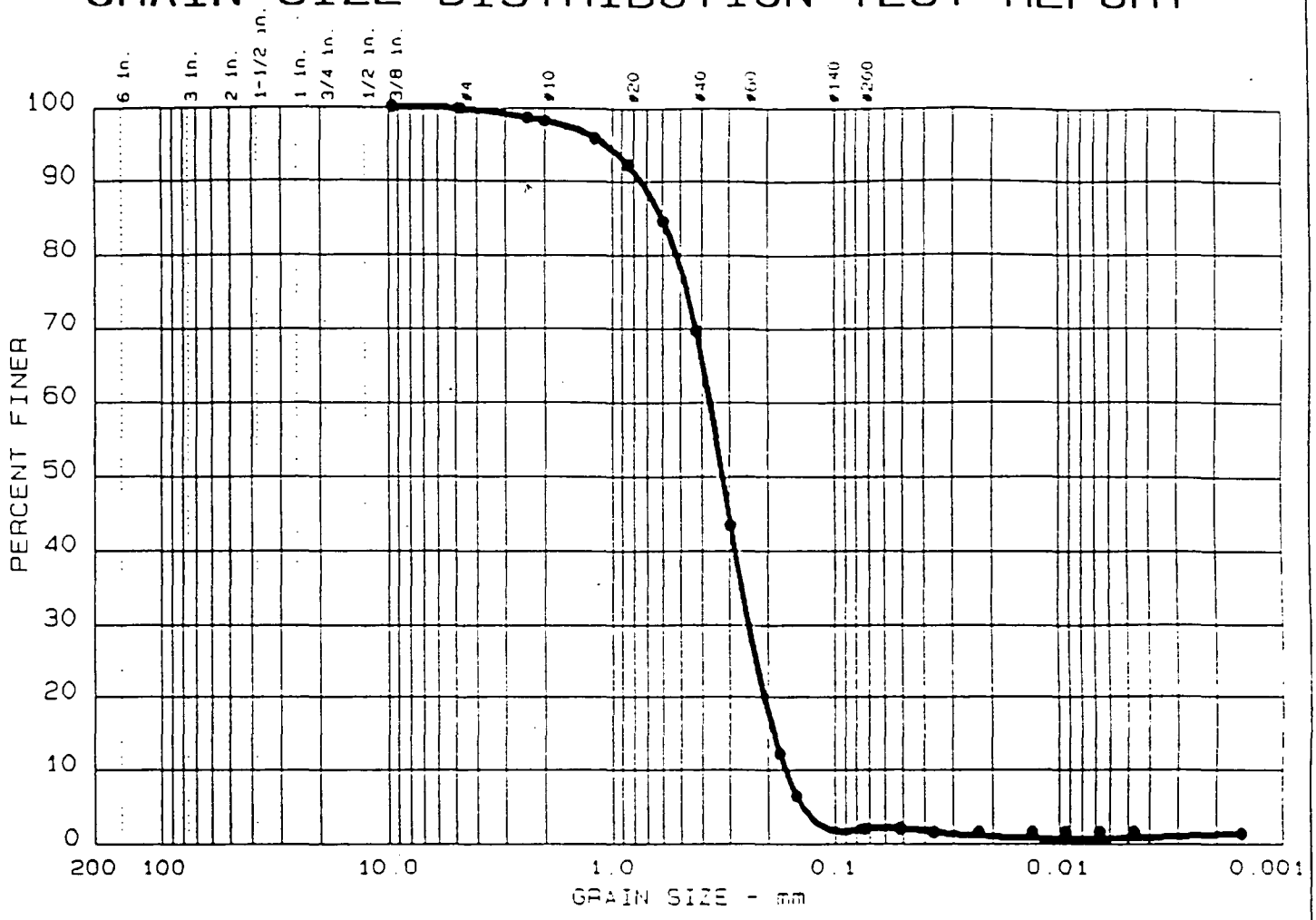
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	20	0.0	0.2	97.8	1.2	0.8

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.60	0.37	0.32	0.245	0.1888	0.1663	1.00	2.2

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand	SP	

Project No.: 2313.13
Project: NIROP
● Location: AB036H, 16-18'

Date: 07/10/92

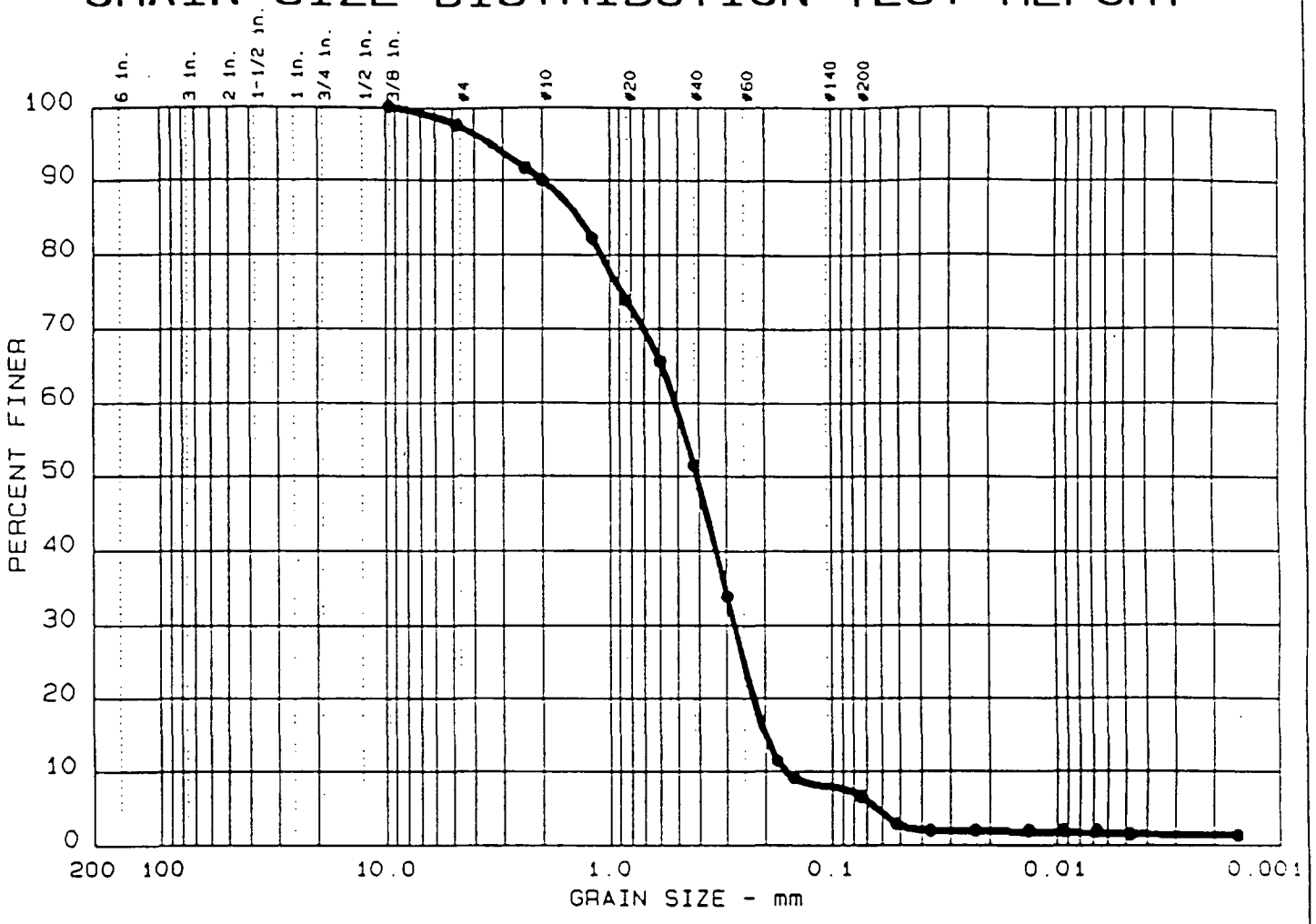
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	6	0.0	2.5	90.9	5.1	1.5

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	NP	NP	1.36	0.51	0.41	0.276	0.2002	0.1627	0.93	3.1

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand with silt	SP-SM	

Project No.: 2313.13
Project: NIROP
● Location: AB037D, 8-10'

Date: 08/13/92

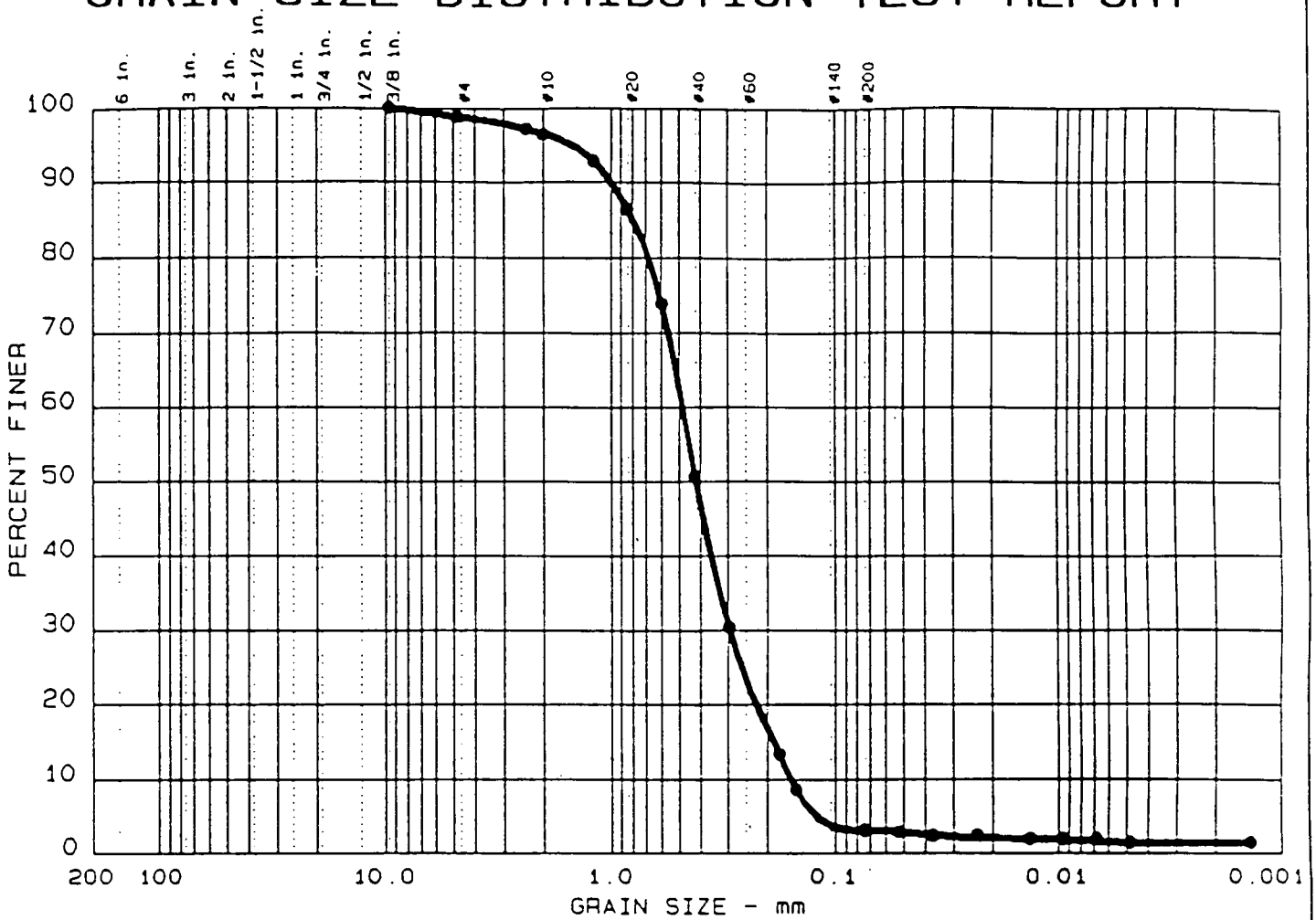
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	7	0.0	1.2	95.7	1.6	1.5

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.79	0.48	0.42	0.295	0.1873	0.1572	1.16	3.0

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand	SP	

Project No.: 2313.13
Project: NIROP
● Location: AB038G, 16-18'

Date: 08/13/92

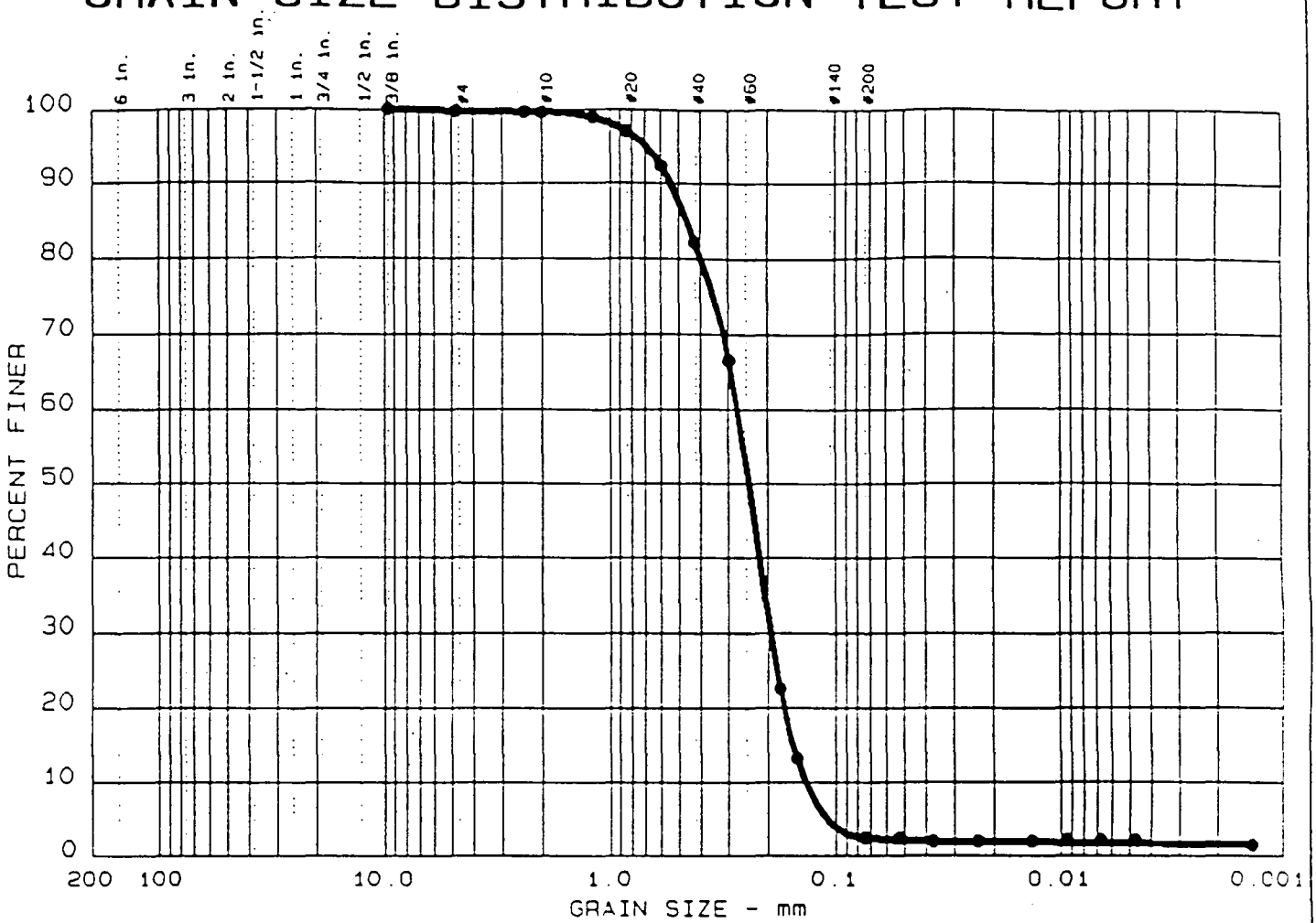
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	8	0.0	0.1	97.5	0.8	1.6

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.46	0.27	0.24	0.195	0.1549	0.1363	1.03	2.0

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand	SP	

Project No.: 2313.13
Project: NIROP
● Location: AB039G, 16-18'

Date: 08/13/92

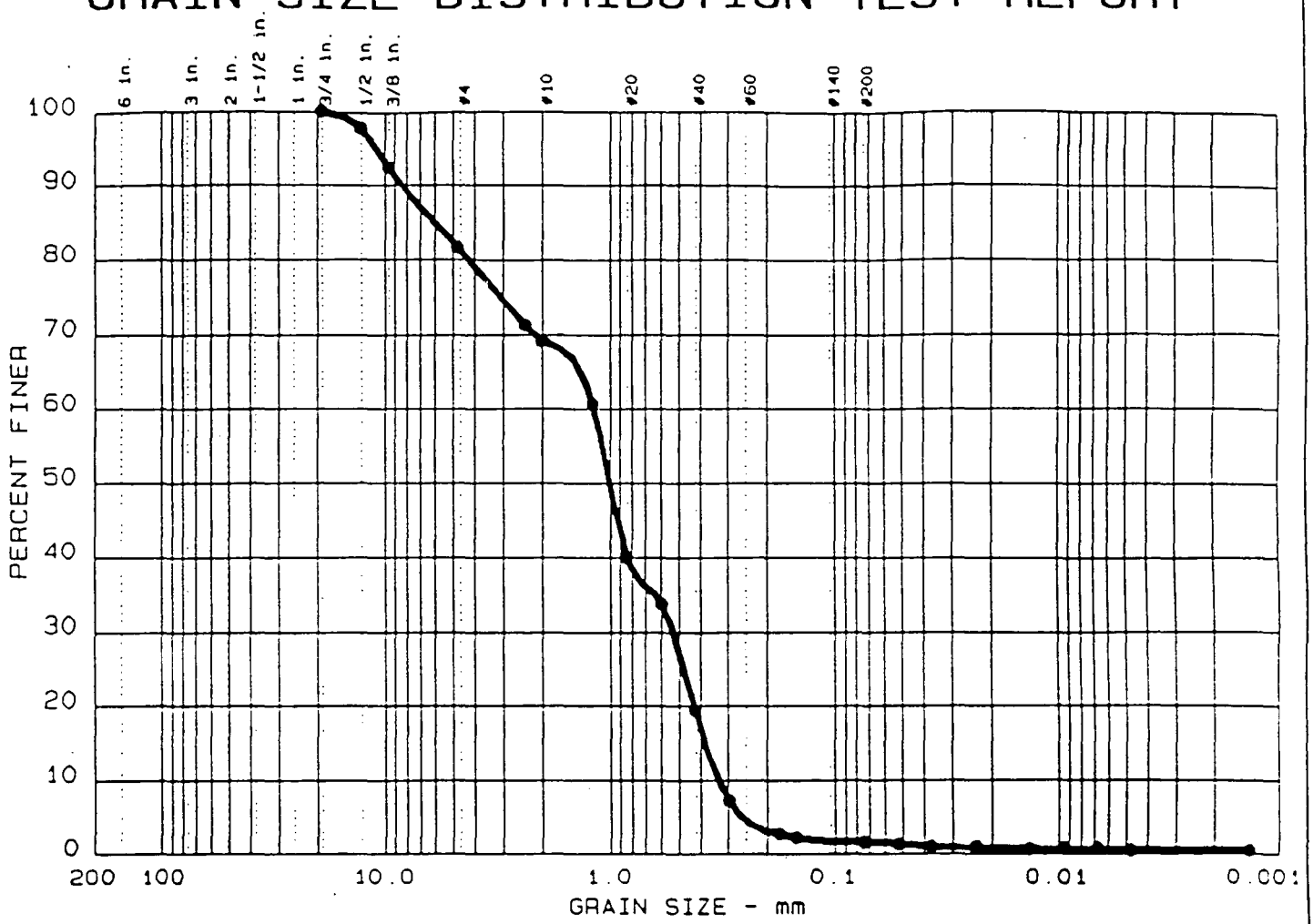
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	4	0.0	18.3	80.1	1.1	0.5

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			5.96	1.17	1.00	0.525	0.3793	0.3296	0.71	3.6

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand with gravel	SP	

Project No.: 2313.13
Project: NIROP
● Location: AB040D, 8-10'

Date: 07/14/92

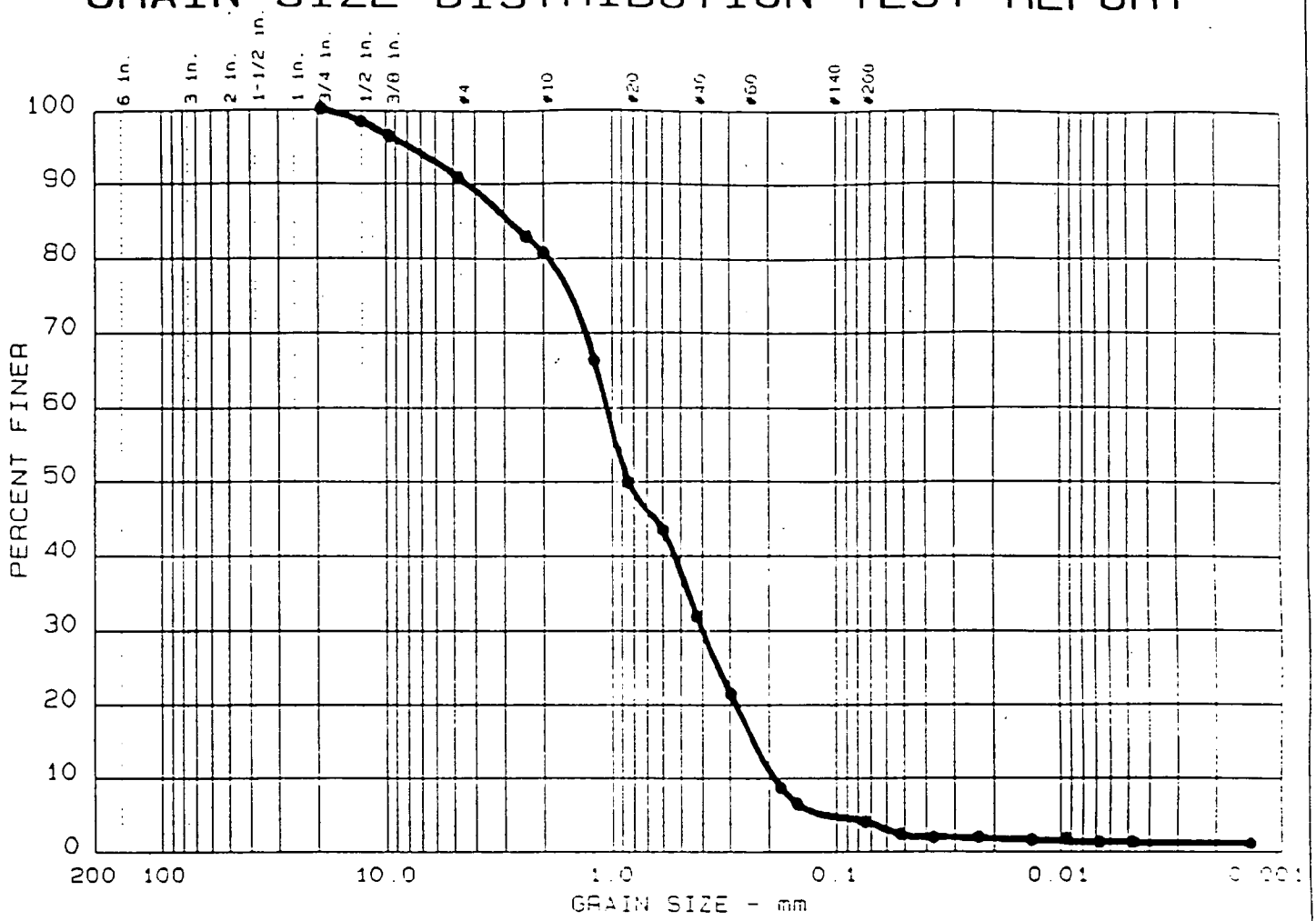
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	16	0.0	9.1	88.9	2.8	1.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			2.79	1.05	0.84	0.398	0.2344	0.1884	0.80	5.6

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand	SP	

Project No.: 2313.13
Project: NIROP
● Location: AB041C, 6-8'

Date: 07/14/92

Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

9-17-92
[illegible]

GRAIN SIZE DISTRIBUTION TEST REPORT

	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	15	0.0	6.8	91.7	0.6	0.9

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.50	0.82	0.62	0.453	0.3455	0.2975	0.85	2.7

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand	SP	

Project No.: 2313.13
Project: NIROP
● Location: AB042G, 16-18'

Date: 07/14/92

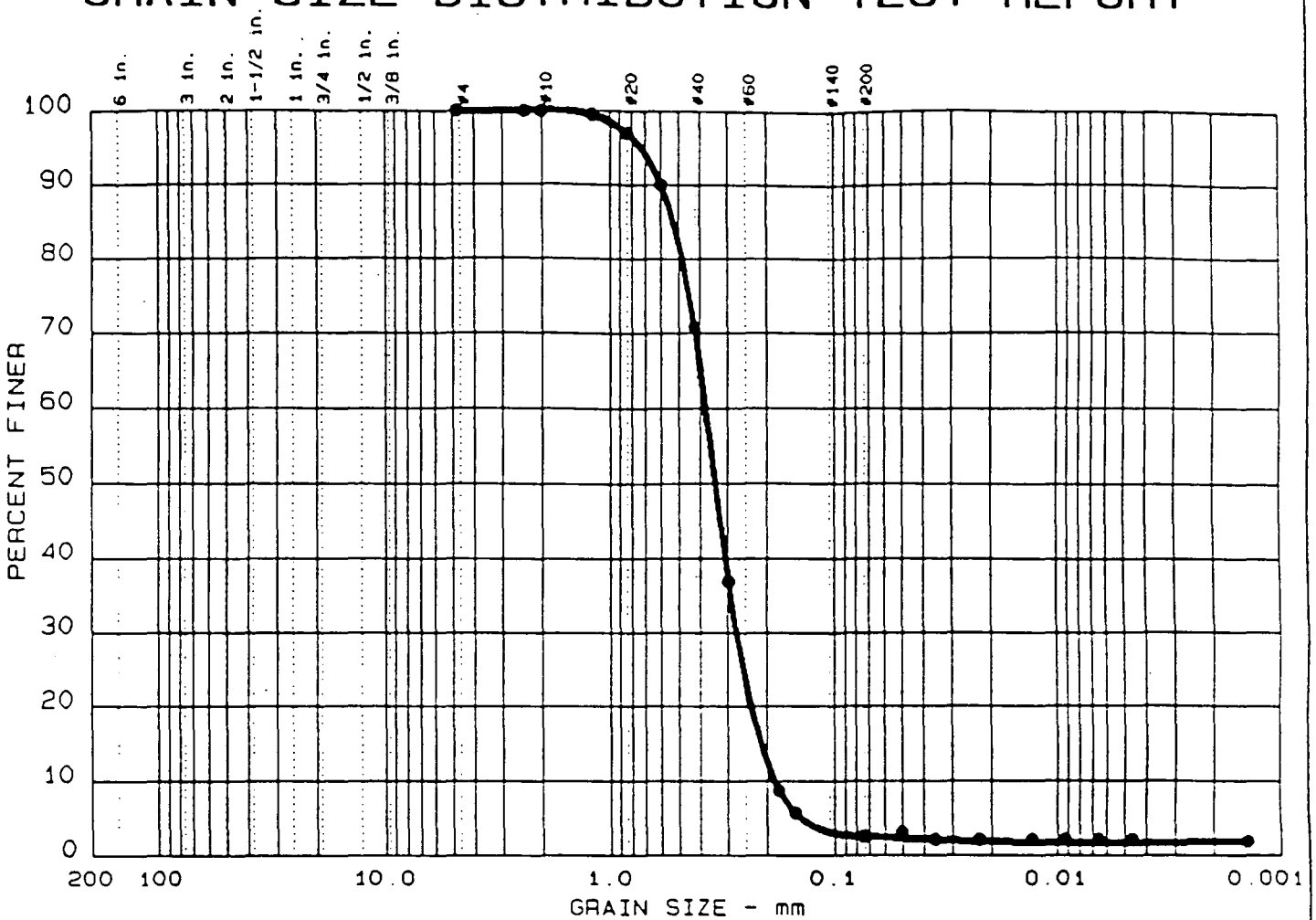
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	9	0.0	0.0	97.5	0.8	1.7

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	NP	NP	0.52	0.37	0.34	0.274	0.2136	0.1860	1.08	2.0

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand	SP	

Project No.: 2313.15
Project: NIROP
● Location: A8043H, 18-20'

Date: 08/21/92

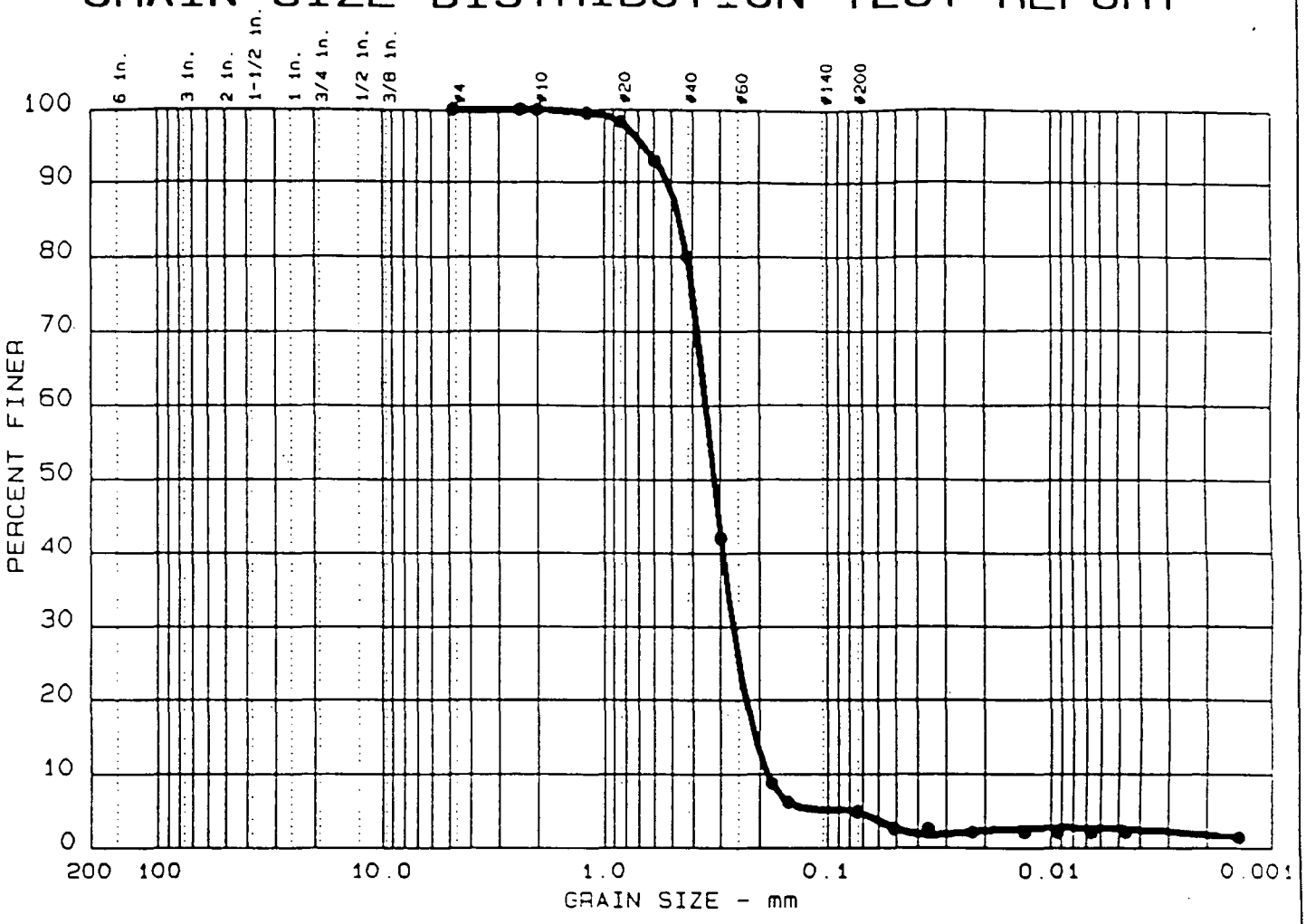
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	10	0.0	0.0	95.1	2.3	2.6

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.45	0.35	0.32	0.262	0.2101	0.1851	1.07	1.9

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand	SP	

Project No.: 2313.15
Project: NIROP
● Location: AB044H, 18-20'

Date: 08/21/92

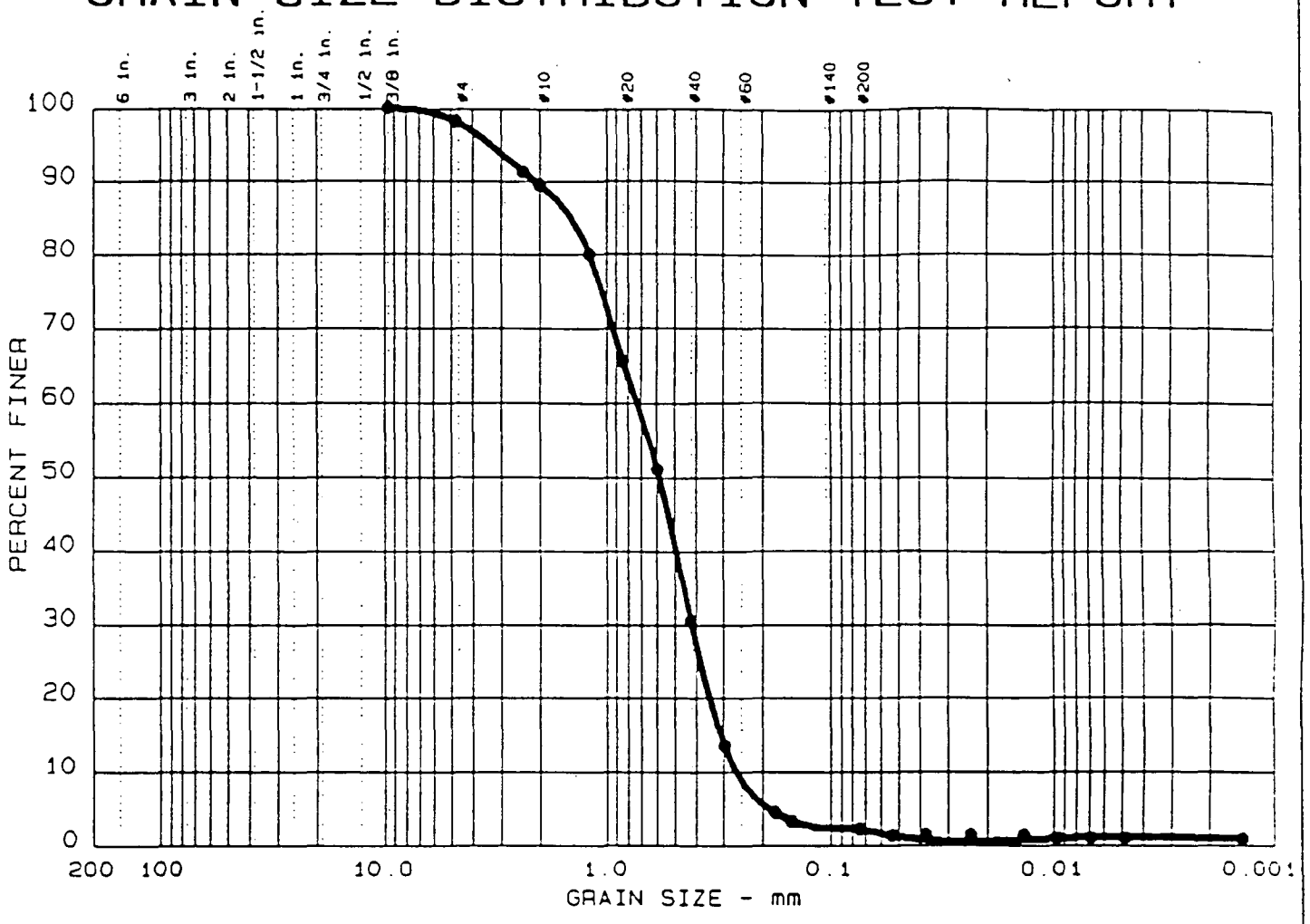
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT. INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	7	0.0	1.8	96.0	1.0	1.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.43	0.72	0.58	0.416	0.3087	0.2627	0.91	2.8

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand	SP	

Project No.: 2313.15
Project: NIROP
● Location: A8201H, 18-20'

Date: 08/20/92

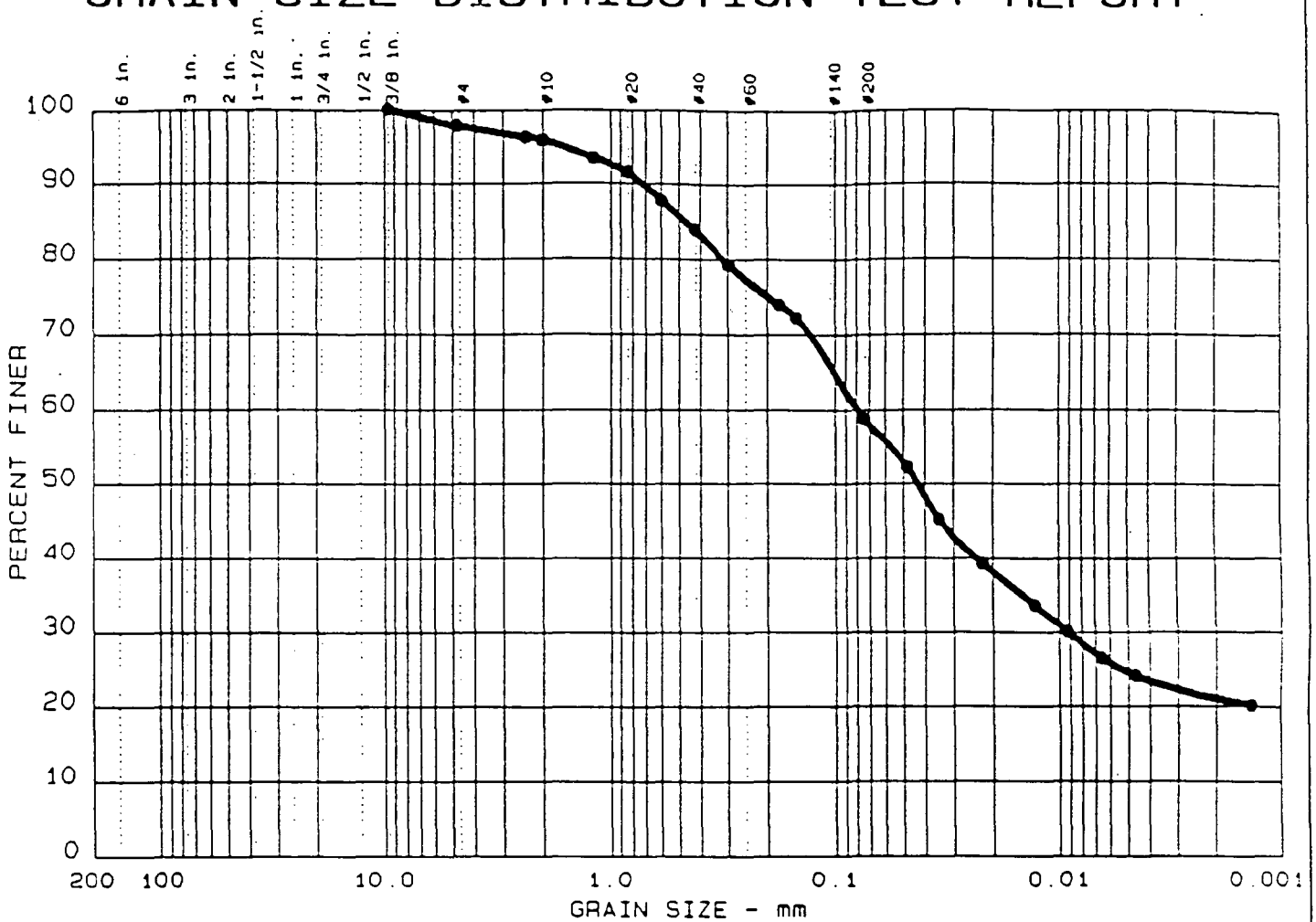
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	8	0.0	2.1	39.1	34.3	24.5

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	37	10	0.46	0.08	0.04	0.009				

MATERIAL DESCRIPTION	USCS	AASHTO
● Sandy silt	ML	

Project No.: 2313.15
Project: NIROP
● Location: AB202B, 3-5'

Date: 08/20/92

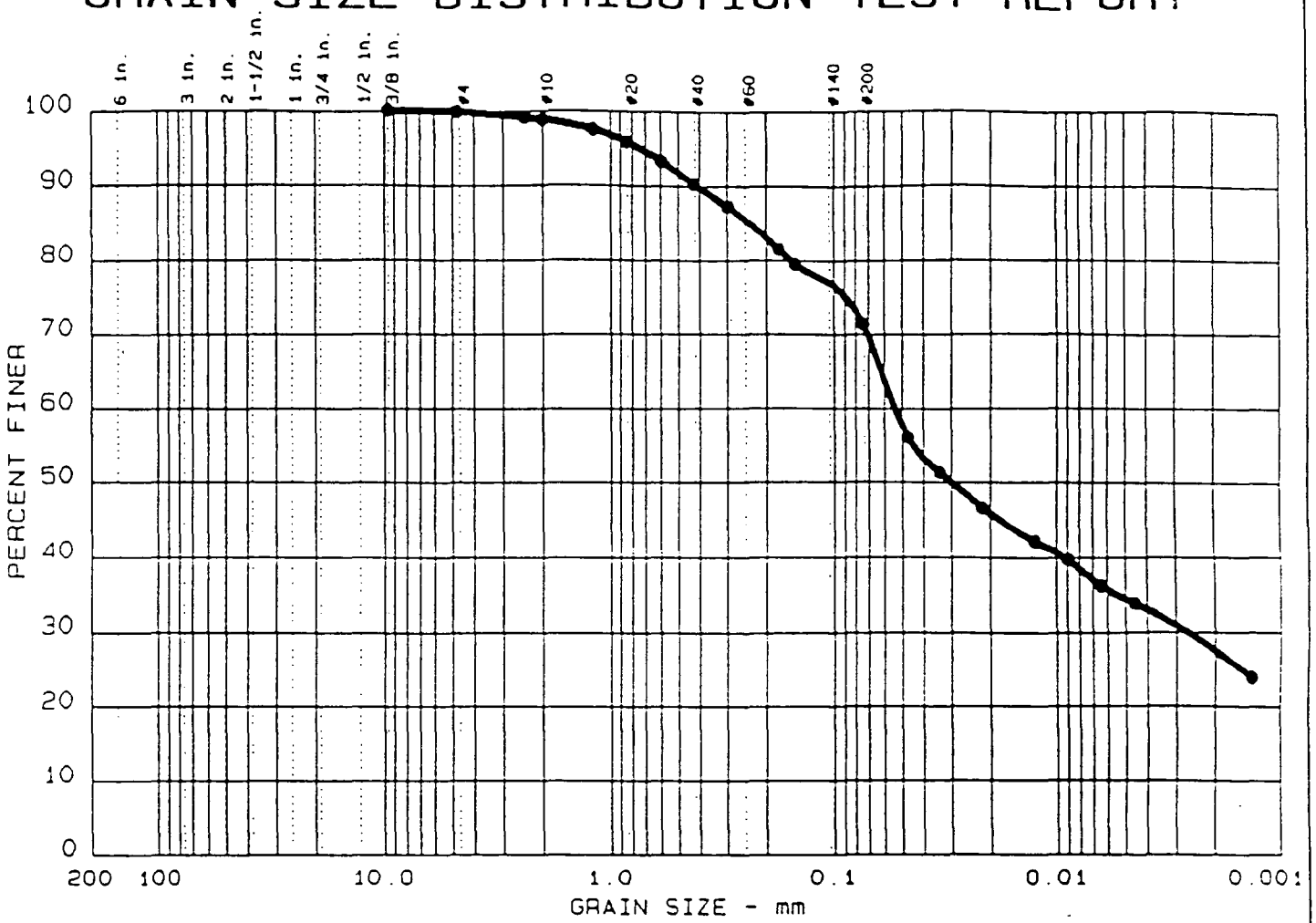
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	9	0.0	0	28.5	37.1	34.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	42	15	0.23		0.03	0.003				

MATERIAL DESCRIPTION	USCS	AASHTO
● Silt with sand	ML	

Project No.: 2313.15
Project: NIROP
● Location: AB203B, 3-5'

Date: 08/20/92

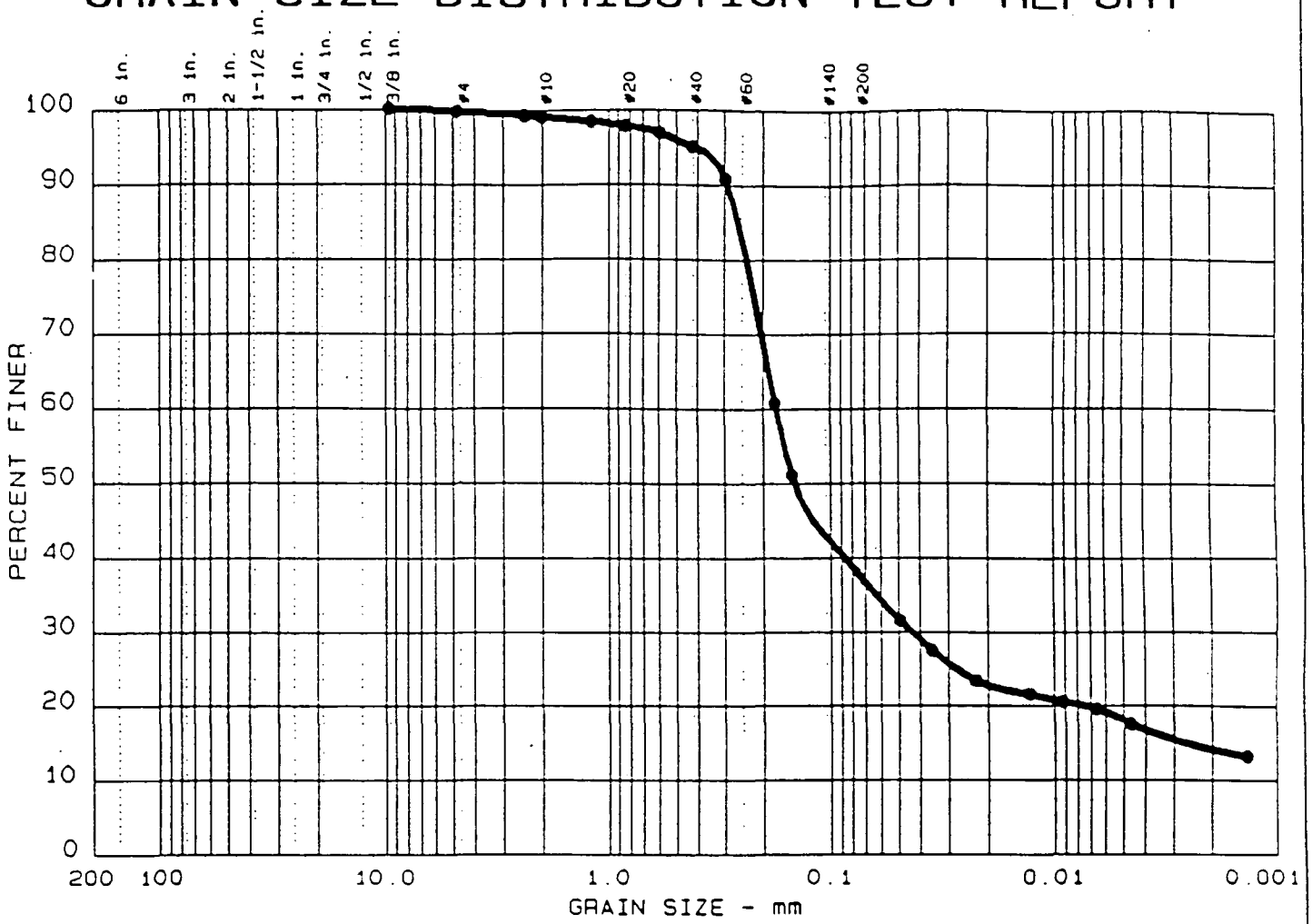
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	10	0.0	0.3	62.2	19.5	18.0

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_C	C_U
●	NP	NP	0.26	0.17	0.15	0.043	0.0026			

MATERIAL DESCRIPTION	USCS	AASHTO
● Silty sand	SM	

Project No.: 2313.15

Project: NIAOP

● Location: A82048, 3-5'

Date: 08/20/92

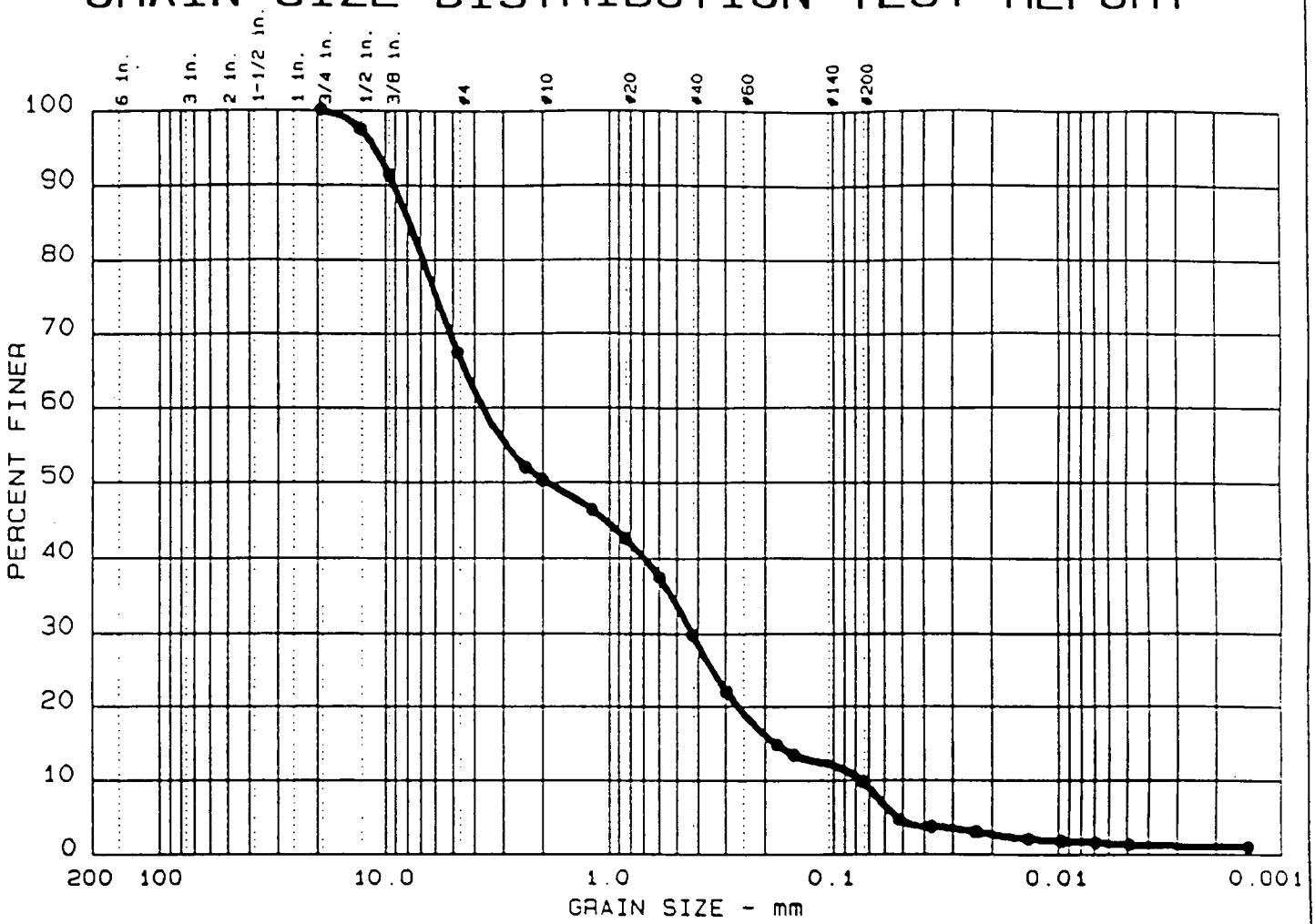
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	15	0.0	32.6	57.6	8.5	1.3

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	NP	NP	7.76	3.67	1.93	0.422	0.1799	0.0741	0.65	49.5

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand with silt and gravel	SP-SM	

Project No.: 2313.15

Project: NIROP

● Location: AB205G, 16-18'

Date: 09/14/92

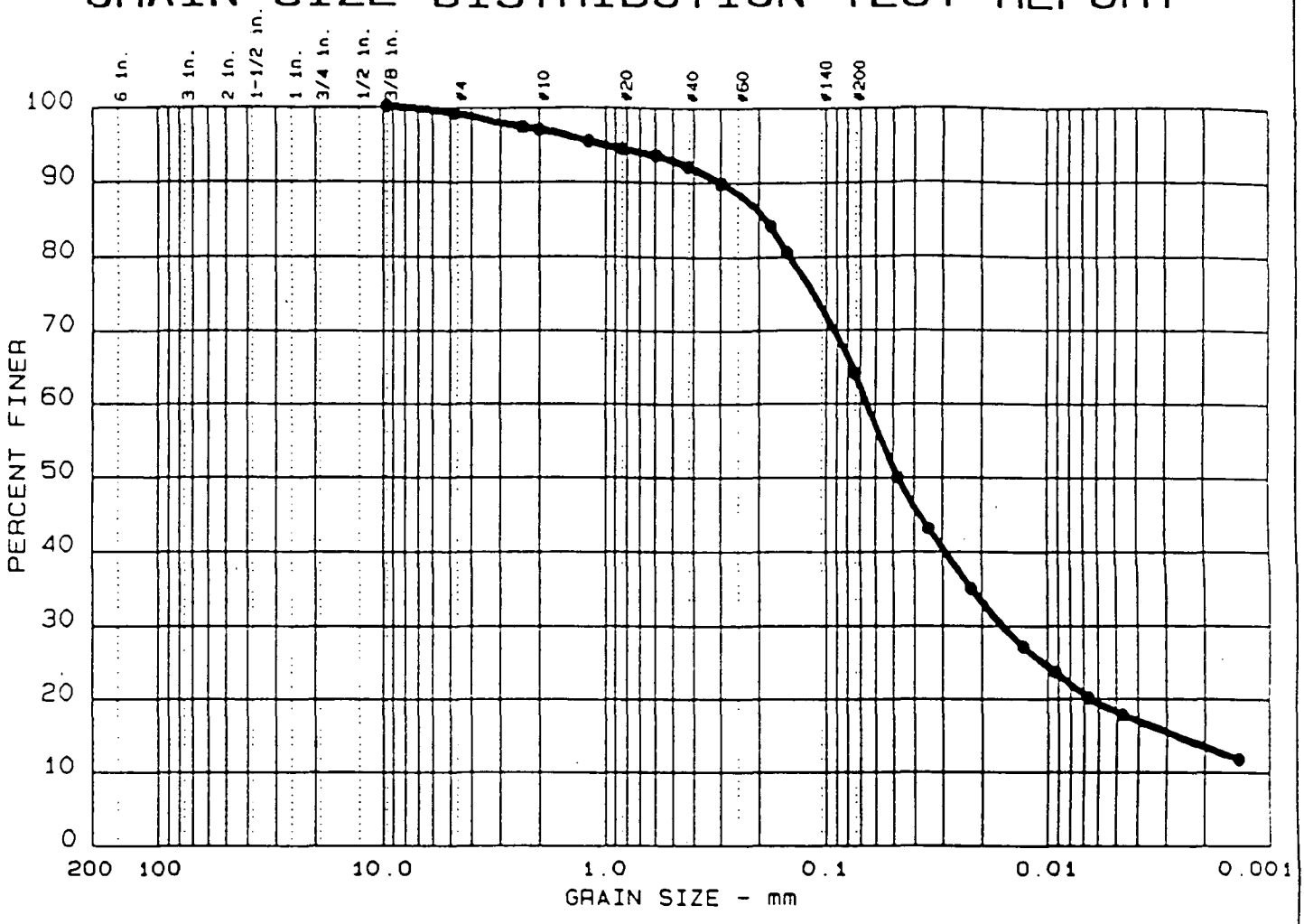
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	14	0.0	0.9	35.1	45.9	18.1

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	39	11	0.18		0.05	0.016	0.0027			

MATERIAL DESCRIPTION	USCS	AASHTO
● Sandy silt	ML	

Project No.: 2313.15
Project: NIROP
● Location: AB206B, 3-5'

Date: 09/14/92

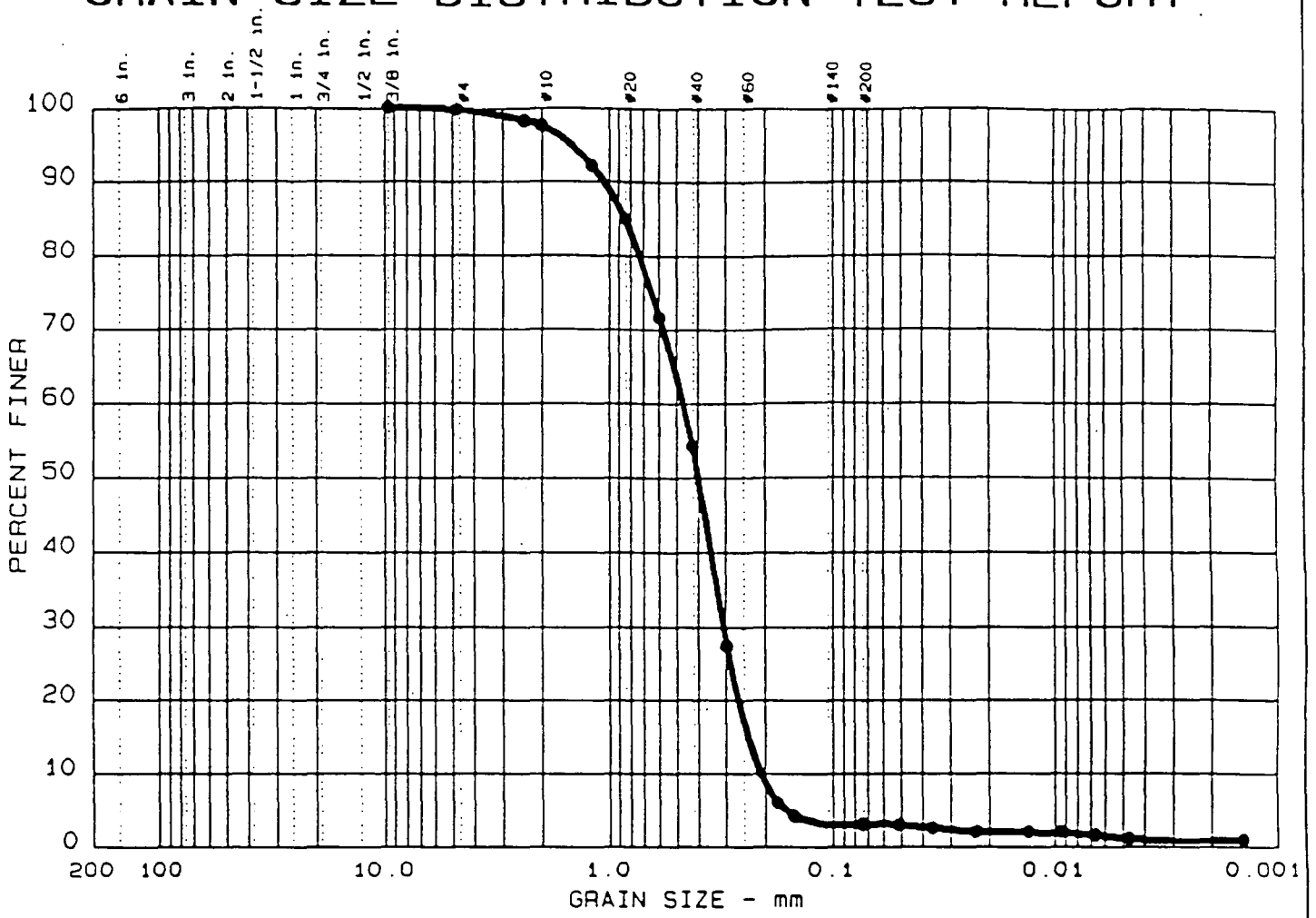
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	11	0.0	0.2	96.8	1.9	1.1

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_C	C_U
●	NP	NP	0.84	0.46	0.40	0.308	0.2388	0.2101	0.98	2.2

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand	SP	

Project No.: 2313.15
Project: NIROP
● Location: AB207H, 18-20'

Date: 09/14/92

Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT

	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	4	0.0	2.3	95.4	1.9	0.4

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.04	0.49	0.42	0.288	0.2136	0.1881	0.90	2.5

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand	SP	

Project No.: 2313.15
Project: NIROP
● Location: AB208H, 18-20'

Date: 08/21/92

Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT

	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	18	0.0	4.0	65.6	20.4	10.0

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	30	5	0.75	0.34	0.26	0.072	0.0142	0.0047	3.31	72.4

MATERIAL DESCRIPTION	USCS	AASHTO
● Silty sand	SM	

Project No.: 2313.15
Project: NIROP
● Location: AB2098, 3-5'

Date: 08/26/92

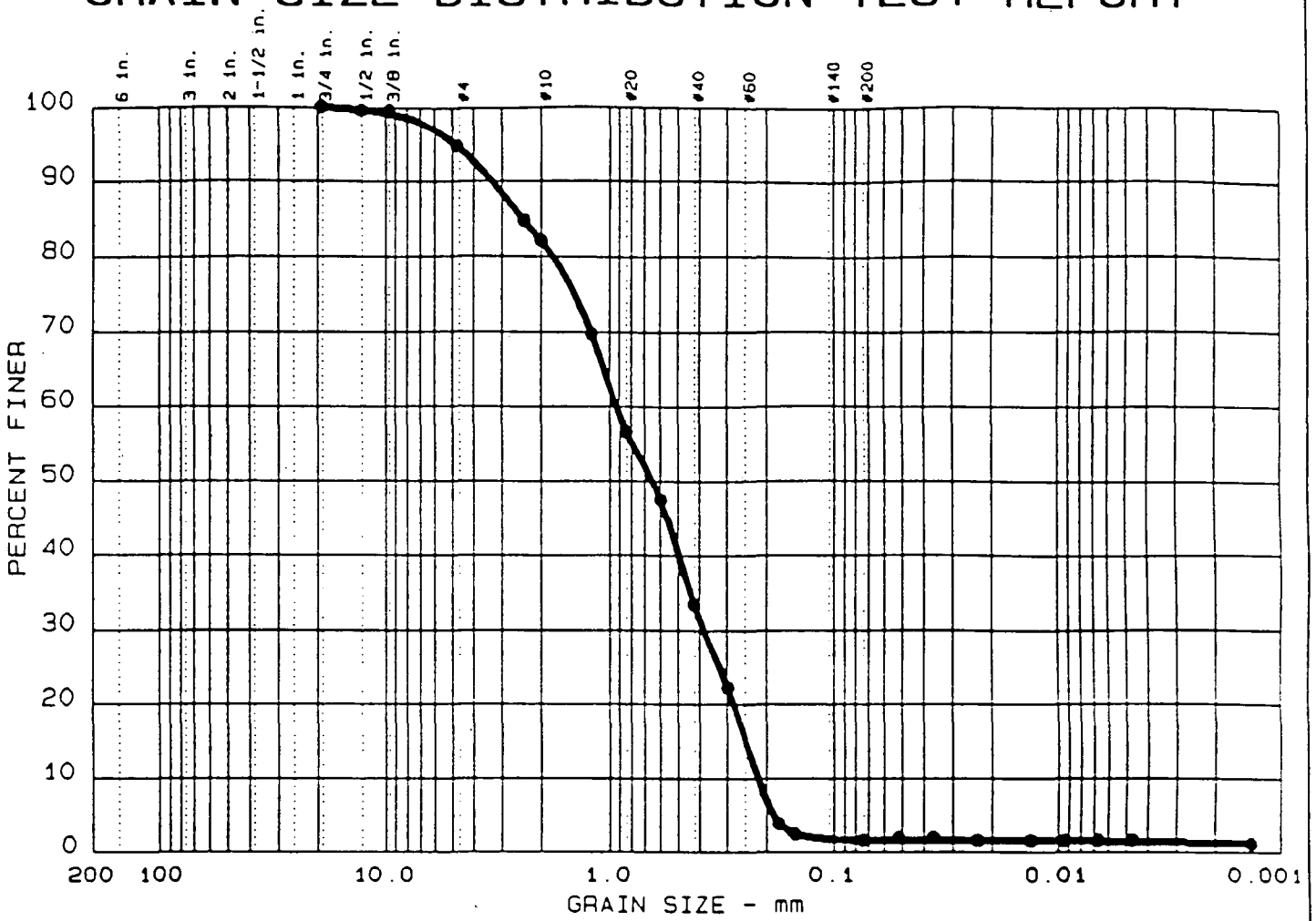
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT. INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	19	0.0	5.2	93.3	0.2	1.3

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			2.40	0.93	0.64	0.378	0.2472	0.2188	0.70	4.2

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand	SP	

Project No.: 2313.15
Project: NIROP
● Location: AB210D, 8-10'

Date: 08/26/92

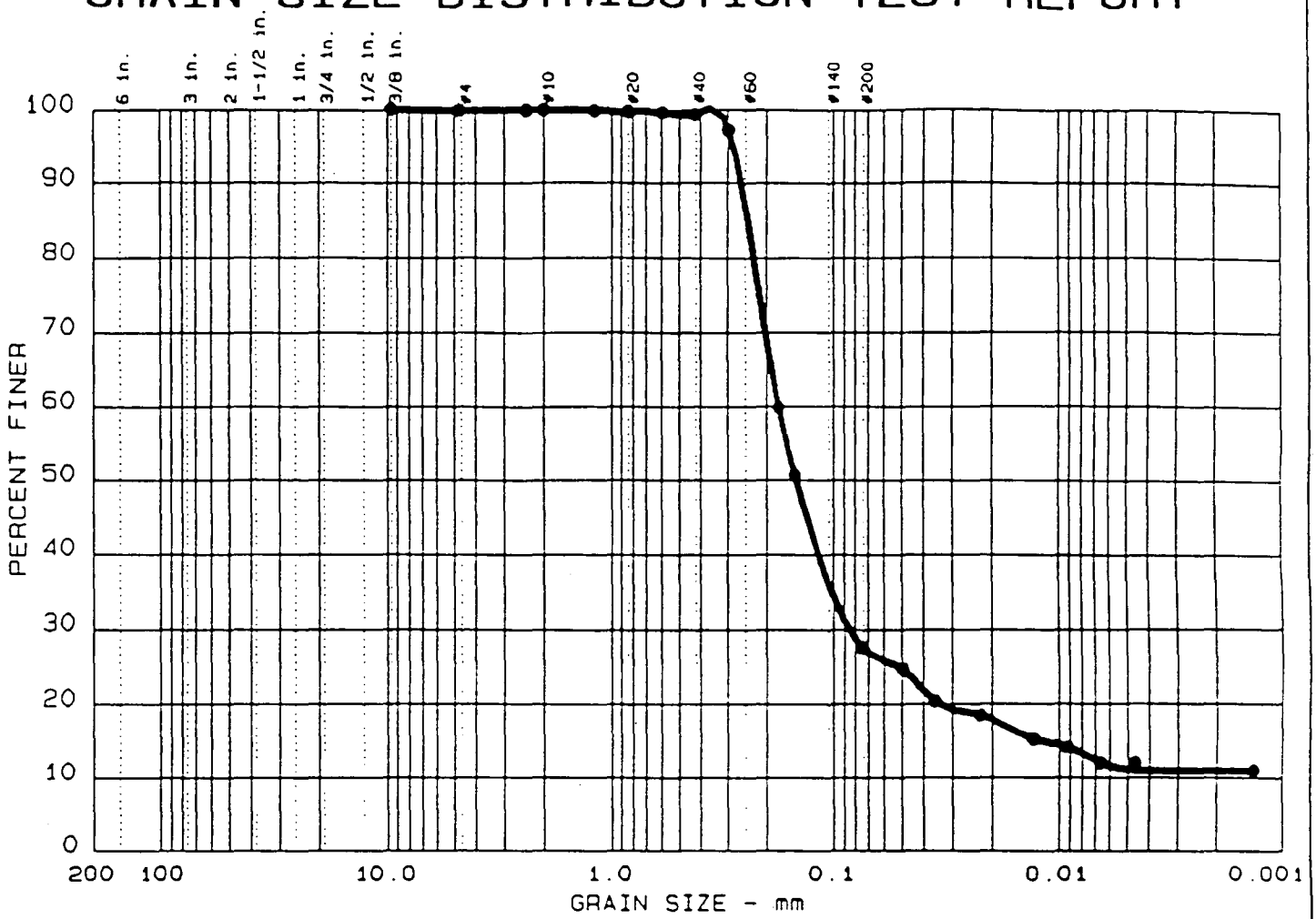
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	16	0.0	0.1	72.5	16.4	11.0

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	NP	NP	0.24	0.18	0.15	0.085	0.0115			

MATERIAL DESCRIPTION	USCS	AASHTO
● Silty sand	SM	

Project No.: 2313.15
Project: NIROP
● Location: AB2118, 3-5'

Date: 08/26/92

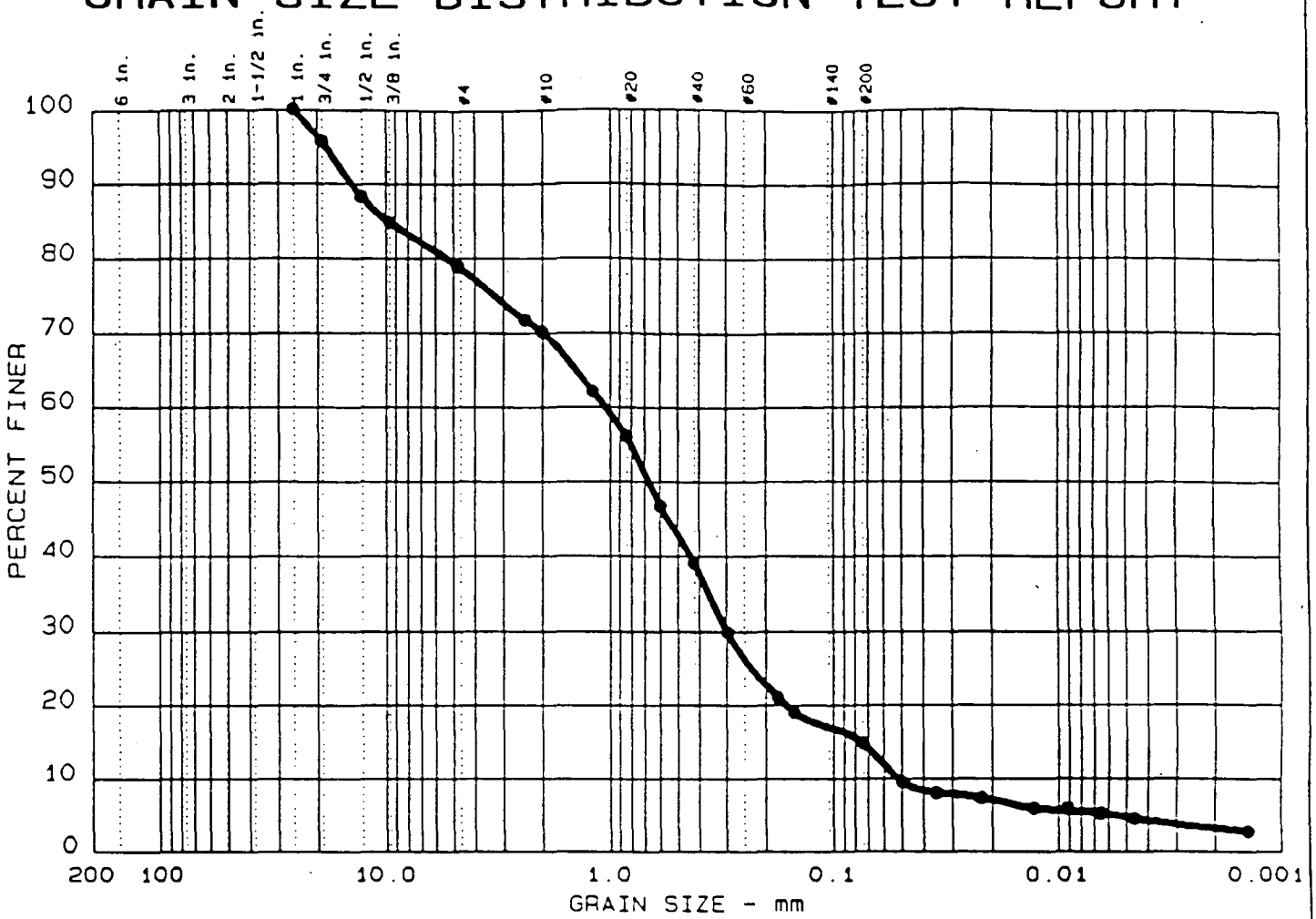
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	20	0.0	21.1	64.0	10.1	4.8

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	NP	NP	9.55	1.04	0.67	0.299	0.0741	0.0513	1.68	20.2

MATERIAL DESCRIPTION	USCS	AASHTO
● Silty sand with gravel	SM	

Project No.: 2313.15
Project: NIROP
● Location: AB2128, 3-5'

Date: 08/26/92

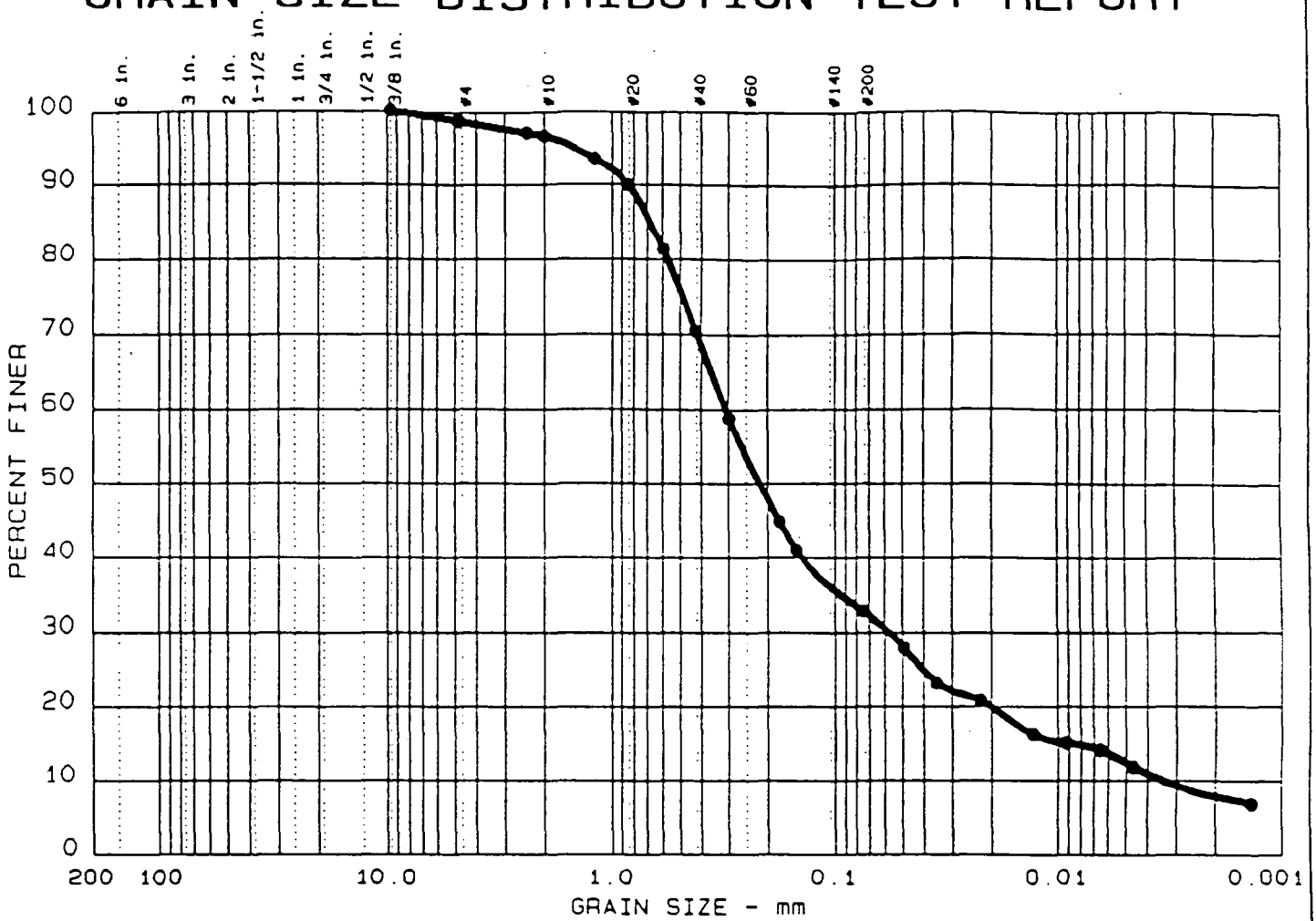
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	17	0.0	1.3	65.9	20.4	12.4

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	30	8	0.67	0.31	0.22	0.057	0.0082	0.0034	3.13	90.2

MATERIAL DESCRIPTION	USCS	AASHTO
● Clayey sand	SC	

Project No.: 2313.15
Project: NIROP
● Location: AB213B, 3-5'

Date: 08/26/92

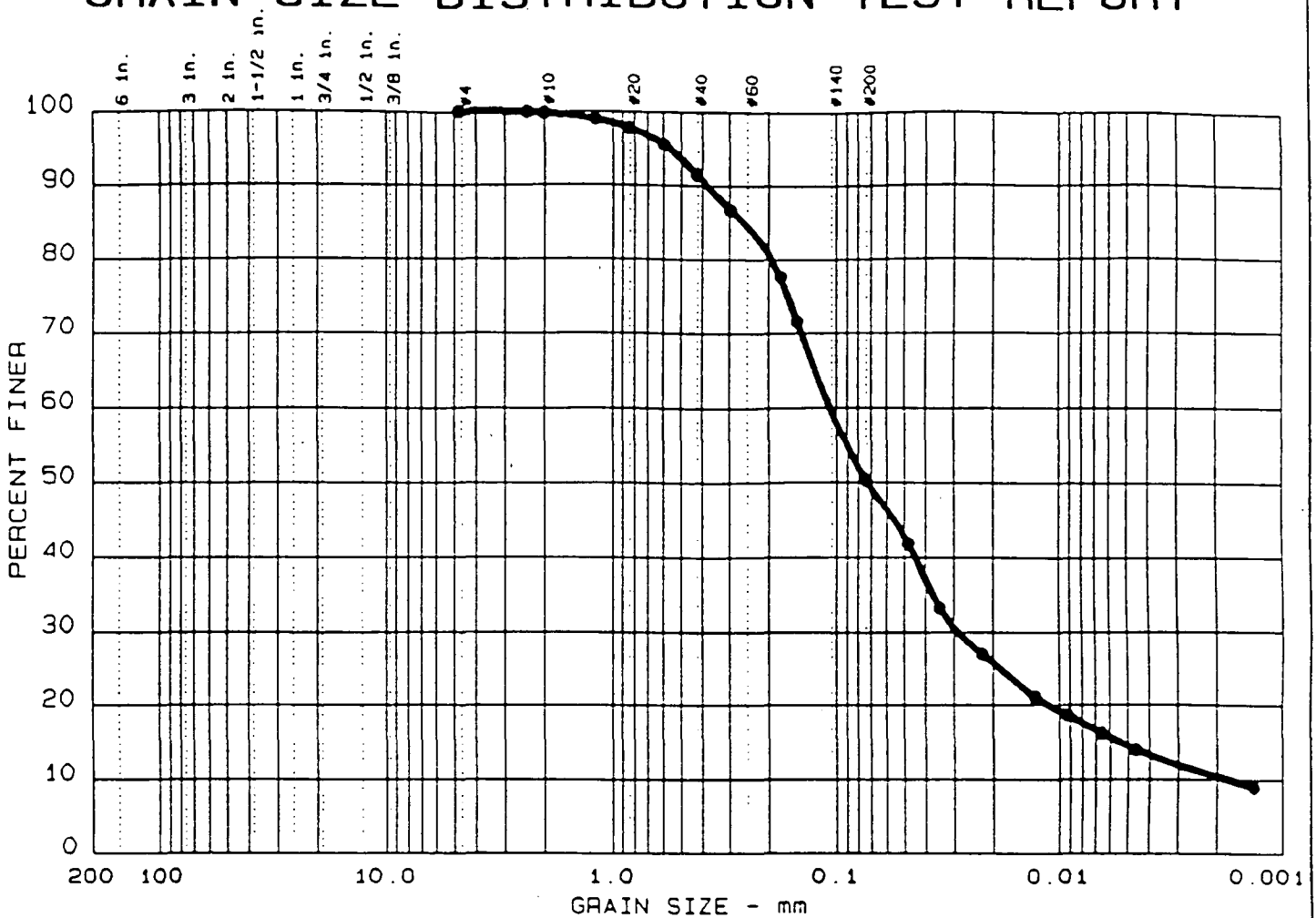
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	10	0.0	0.0	49.8	35.8	14.4

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	31	6	0.26	0.11	0.07	0.029	0.0055	0.0018	4.32	59.6

MATERIAL DESCRIPTION	USCS	AASHTO
● Sandy silt	ML	

Project No.: 2313.15
Project: NIROP
● Location: AB214C, 6-8'

Date: 08/26/92

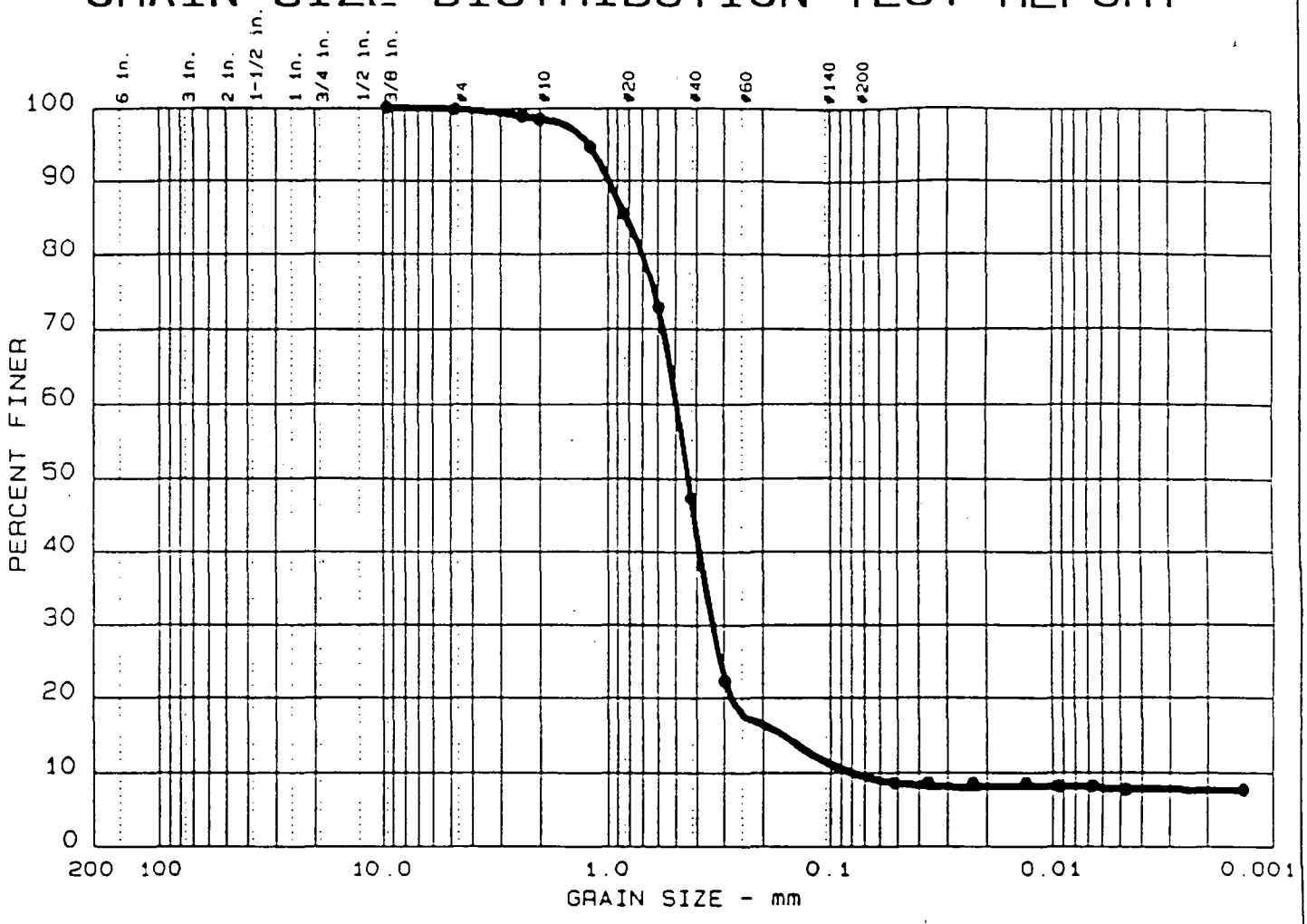
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	16	0.0	0.1	90.3	1.9	7.7

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_C	C_U
●	NP	NP	0.82	0.49	0.43	0.339	0.1622	0.0804	2.92	6.1

MATERIAL DESCRIPTION	USCS	AASHTO
● Well-graded sand with silt	SW-SM	

Project No.: 2313.15
Project: NIAOP
● Location: AB215H, 18-20'

Date: 08/21/92

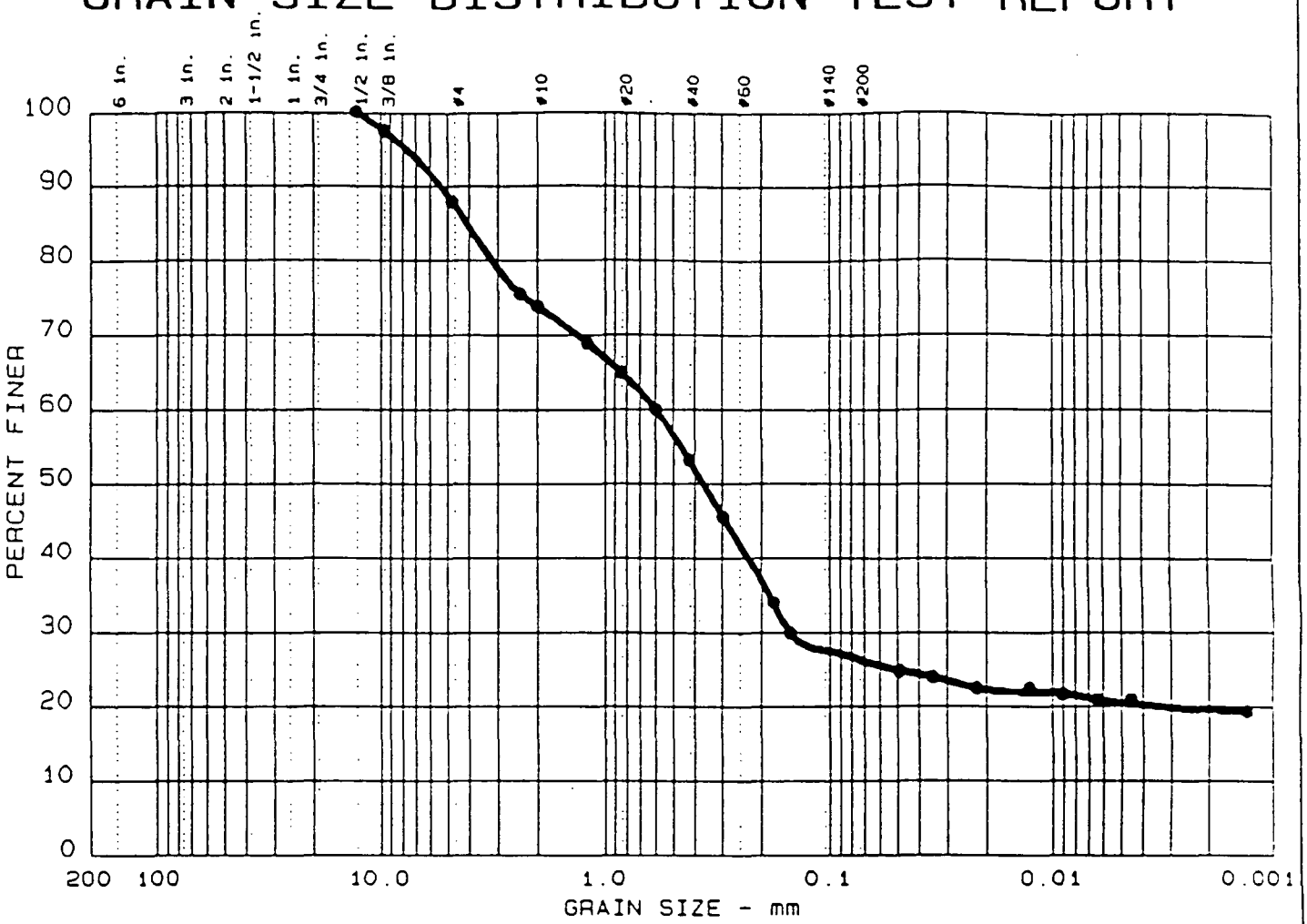
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	12.1	61.6	5.9	20.4

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			4.07	0.59	0.36	0.150				

MATERIAL DESCRIPTION	USCS	AASHTO
●		

Project No.: 2313.15
Project: NIROP
● Location: AB216D, 8-10'

Date: 08/21/92

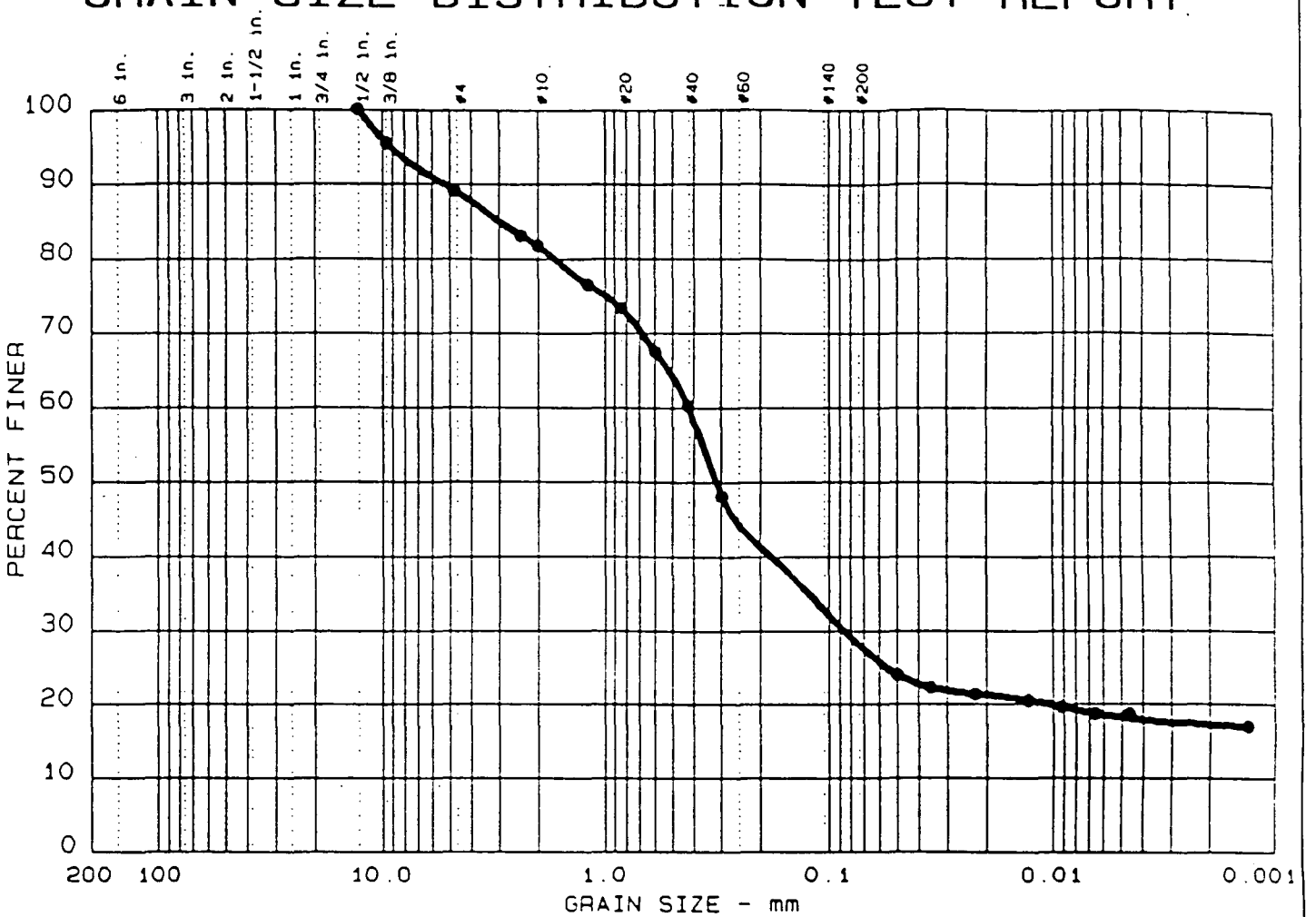
Remarks:
Insufficient sample to run Atterberg Limits! Probably would classify as a SC (Clayey sand).

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	2	0.0	10.8	61.1	9.9	18.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			2.95	0.42	0.32	0.086				

MATERIAL DESCRIPTION	USCS	AASHTO
●		

Project No.: 2313.15
Project: NIROP
● Location: A8217D, 8-10'

Date: 08/21/92

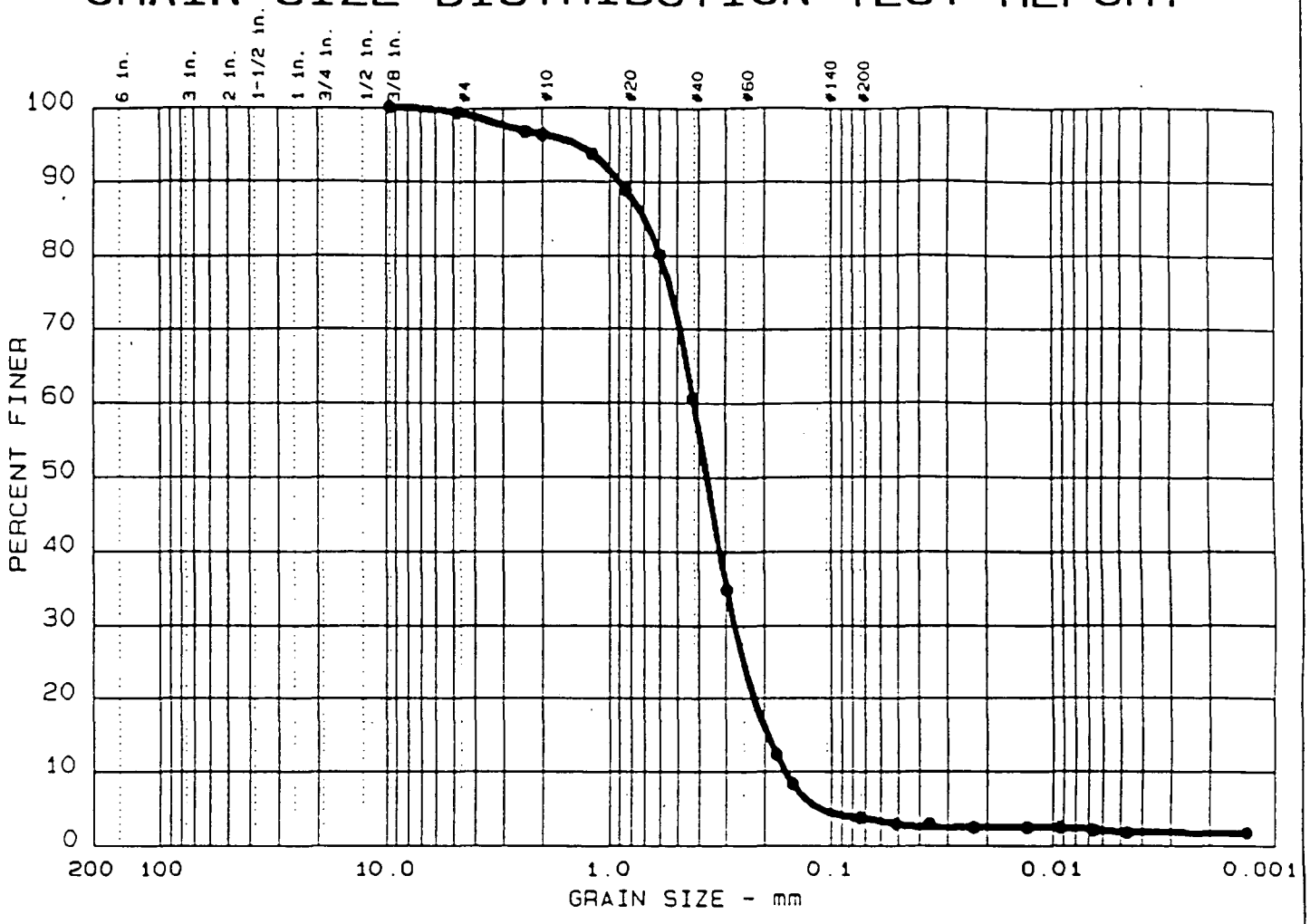
GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Remarks:
Insufficient sample to run Atterberg Limits! Probably would classify as a SC (Clayey sand).

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	0.7	95.6	2.0	1.7

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.68	0.42	0.36	0.275	0.1943	0.1614	1.12	2.6

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand	SP	

Project No.: 2313.15
Project: NIROP
● Location: AB218H, 18-20'

Date: 08/26/92

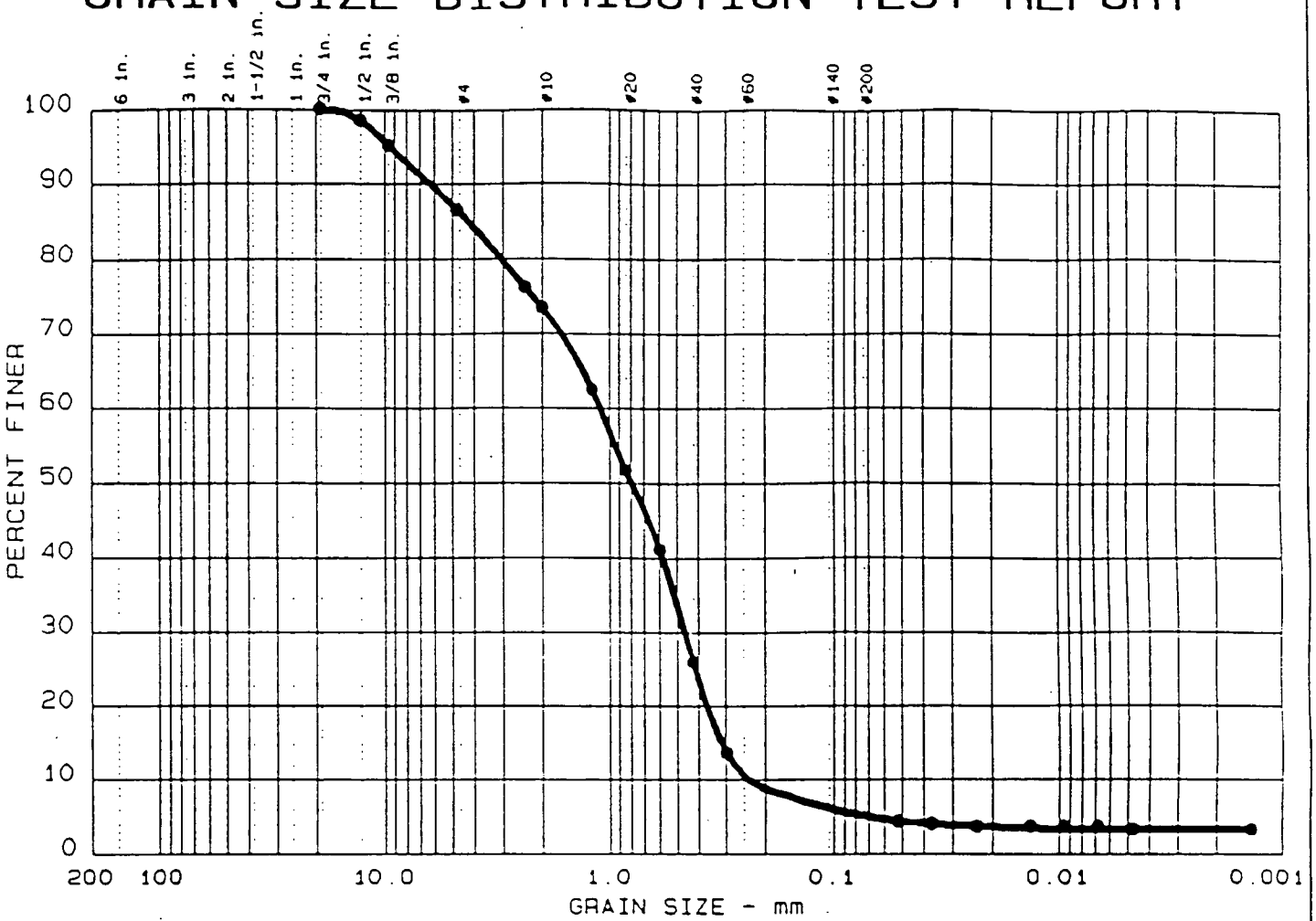
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	13	0.0	13.5	81.4	1.8	3.3

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	NP	NP	4.22	1.09	0.79	0.459	0.3126	0.2344	0.82	4.7

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand with silt	SP-SM	

Project No.: 2313.15
Project: NIROP
● Location: AB219F, 13-15'

Date: 08/20/92

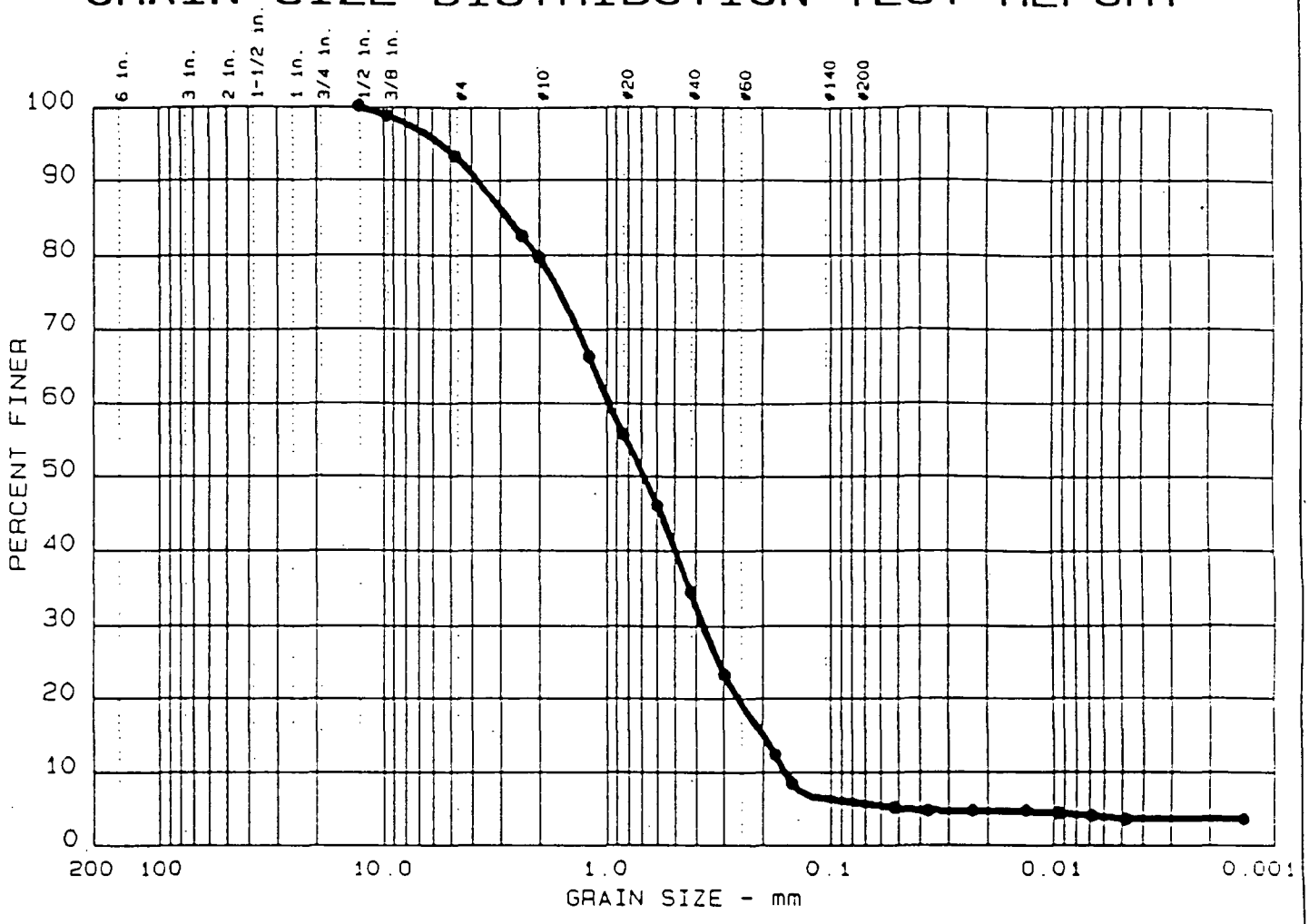
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	14	0.0	6.8	87.5	2.1	3.6

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	NP	NP	2.75	0.97	0.68	0.369	0.1984	0.1594	0.88	6.1

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand with silt	SP-SM	

Project No.: 2313.15
Project: NIROP
● Location: AB220G, 16-18'

Date: 08/21/92

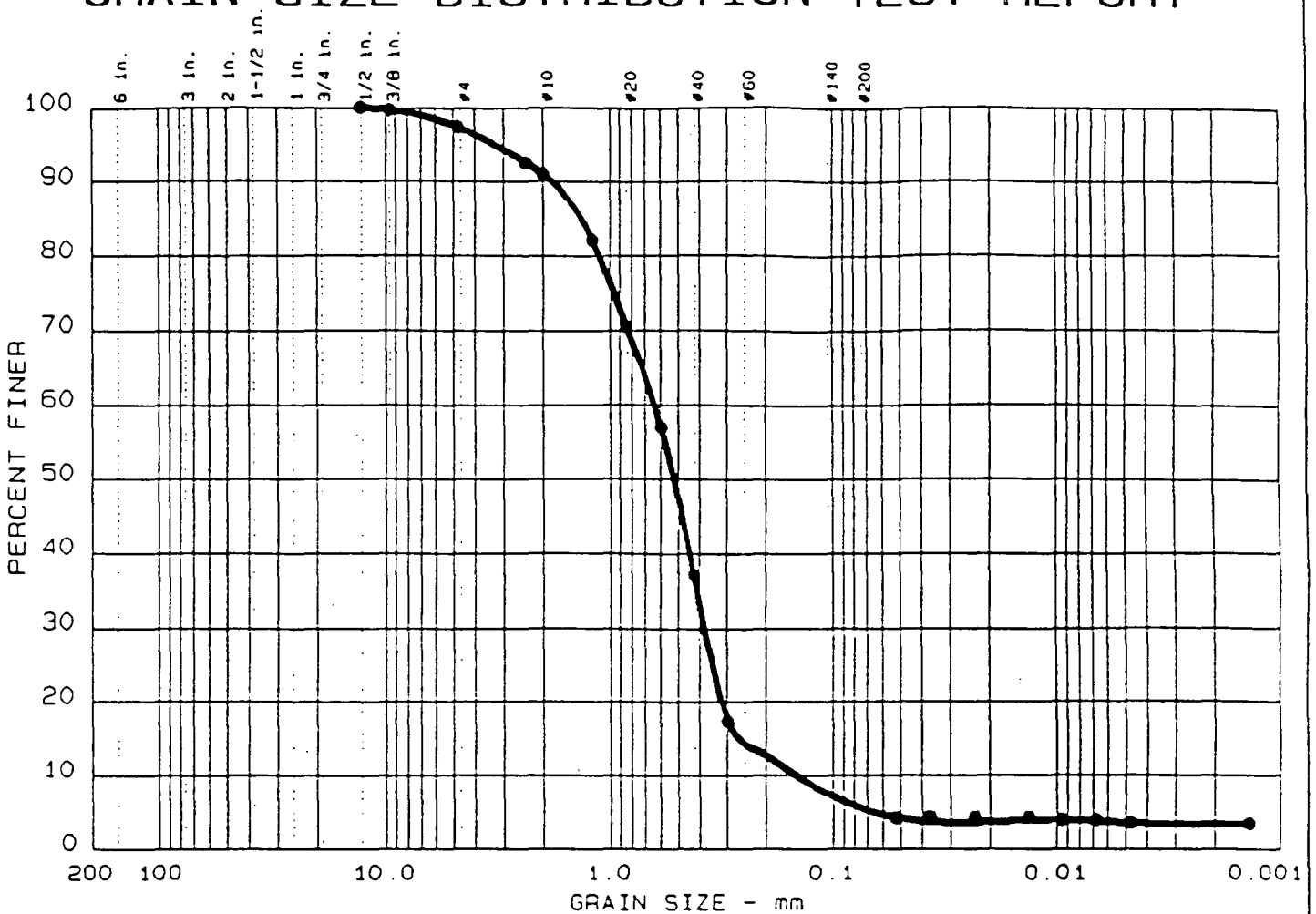
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	12	0.0	2.7	91.9	2.0	3.4

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	NP	NP	1.33	0.63	0.52	0.378	0.2642	0.1469	1.54	4.3

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand with silt	SP-SM	

Project No.: 2313.15
Project: NIROP
● Location: AB221G, 16-18'

Date: 08/20/92

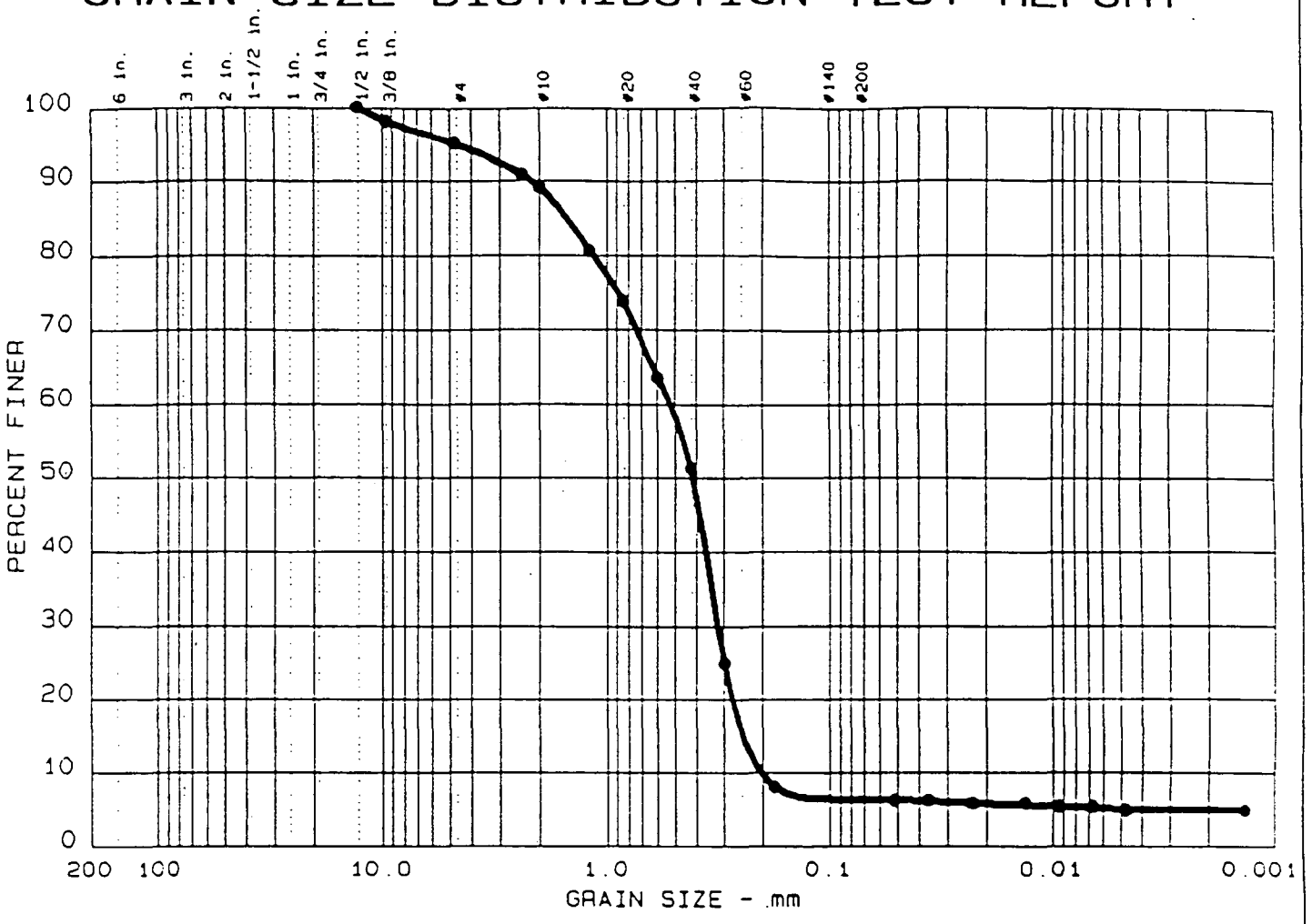
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT. INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	15	0.0	4.9	88.8	1.3	5.0

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	NP	NP	1.50	0.52	0.41	0.318	0.2452	0.2039	0.96	2.5

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand with silt	SP-SM	

Project No.: 2313.15
Project: NIROP
● Location: AB222C, 6-8'

Date: 08/21/92

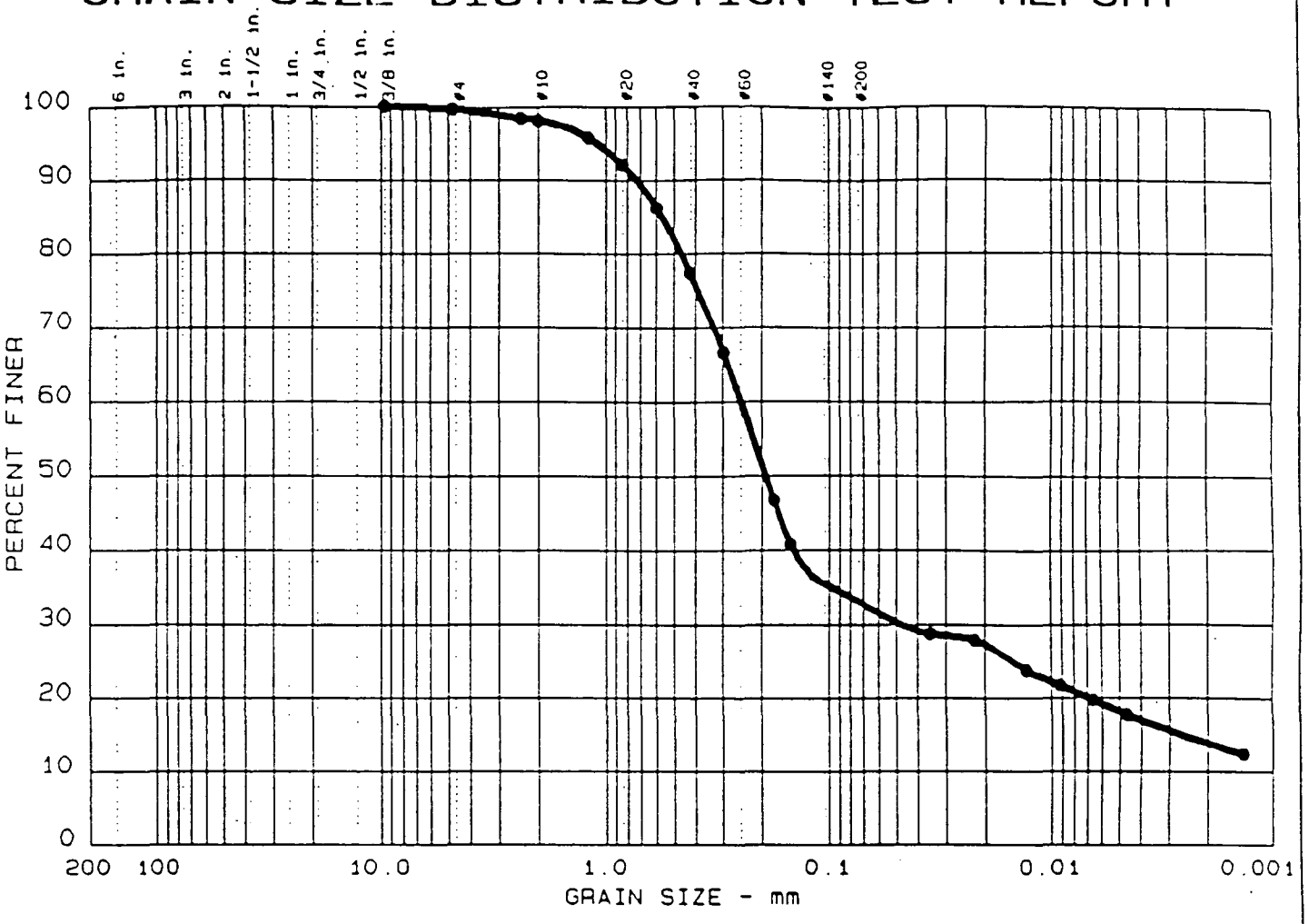
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	11	0.0	0.3	66.7	14.9	18.1

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	29	7	0.56	0.25	0.19	0.047	0.0026			

MATERIAL DESCRIPTION	USCS	AASHTO
● Silty, clayey sand	SC-SM	

Project No.: 2313.15
Project: NIROP
● Location: AB223C, 6-8'

Date: 08/20/92

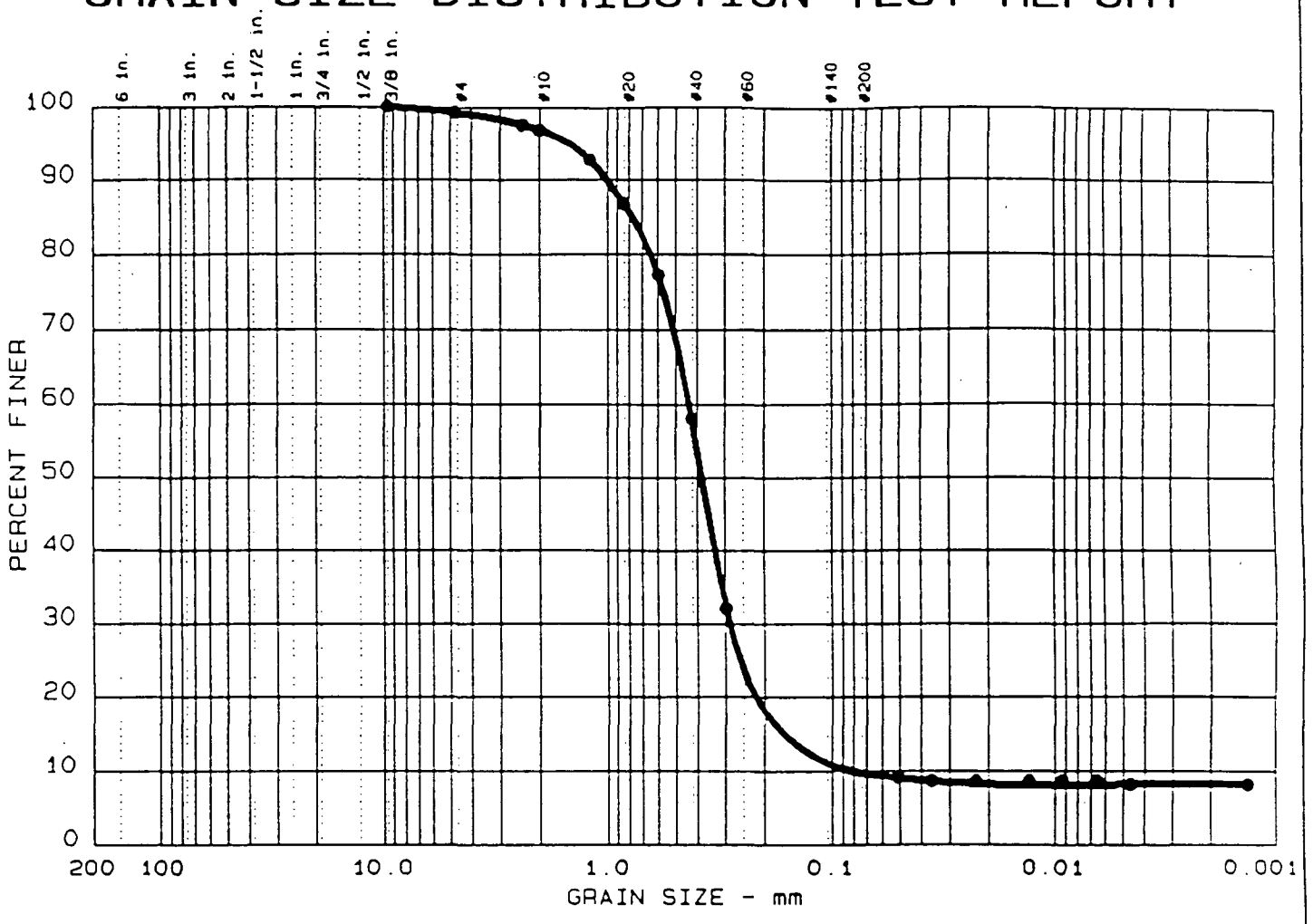
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	3	0.0	0.8	89.5	1.5	8.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	NP	NP	0.77	0.43	0.38	0.287	0.1614	0.0800	2.39	5.4

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand with silt	SP-SM	

Project No.: 2313.15
Project: NIROP
● Location: AB224H, 18-20'

Date: 08/21/92

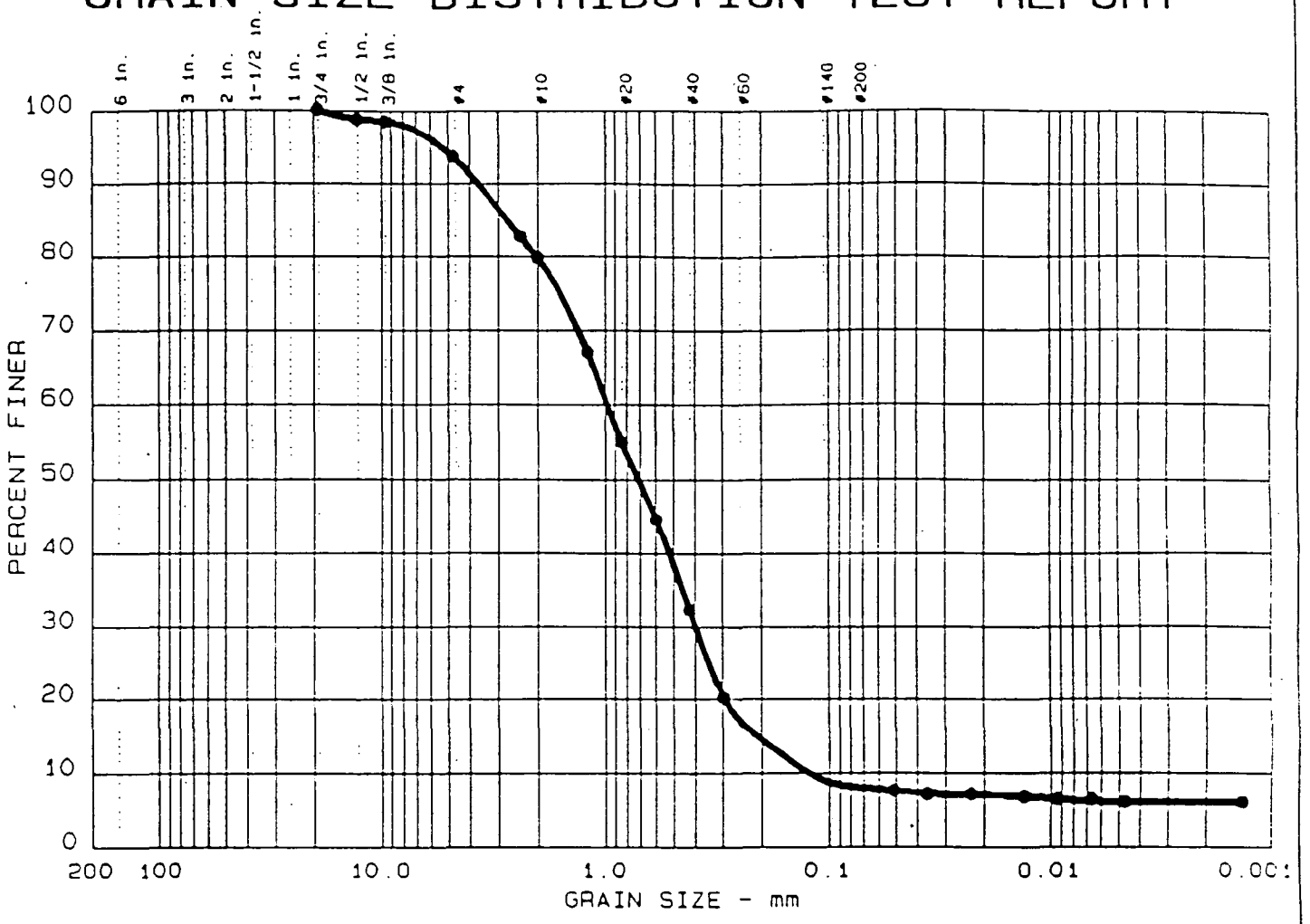
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	20	0.0	6.2	85.9	1.8	6.1

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	NP	NP	2.72	0.97	0.71	0.395	0.2097	0.1206	1.33	8.1

MATERIAL DESCRIPTION	USCS	AASHTO
● Well-graded sand with silt	SW-SM	

Project No.: 2313.15
Project: NIROP
● Location: A8226G, 16-18'

Date: 08/21/92

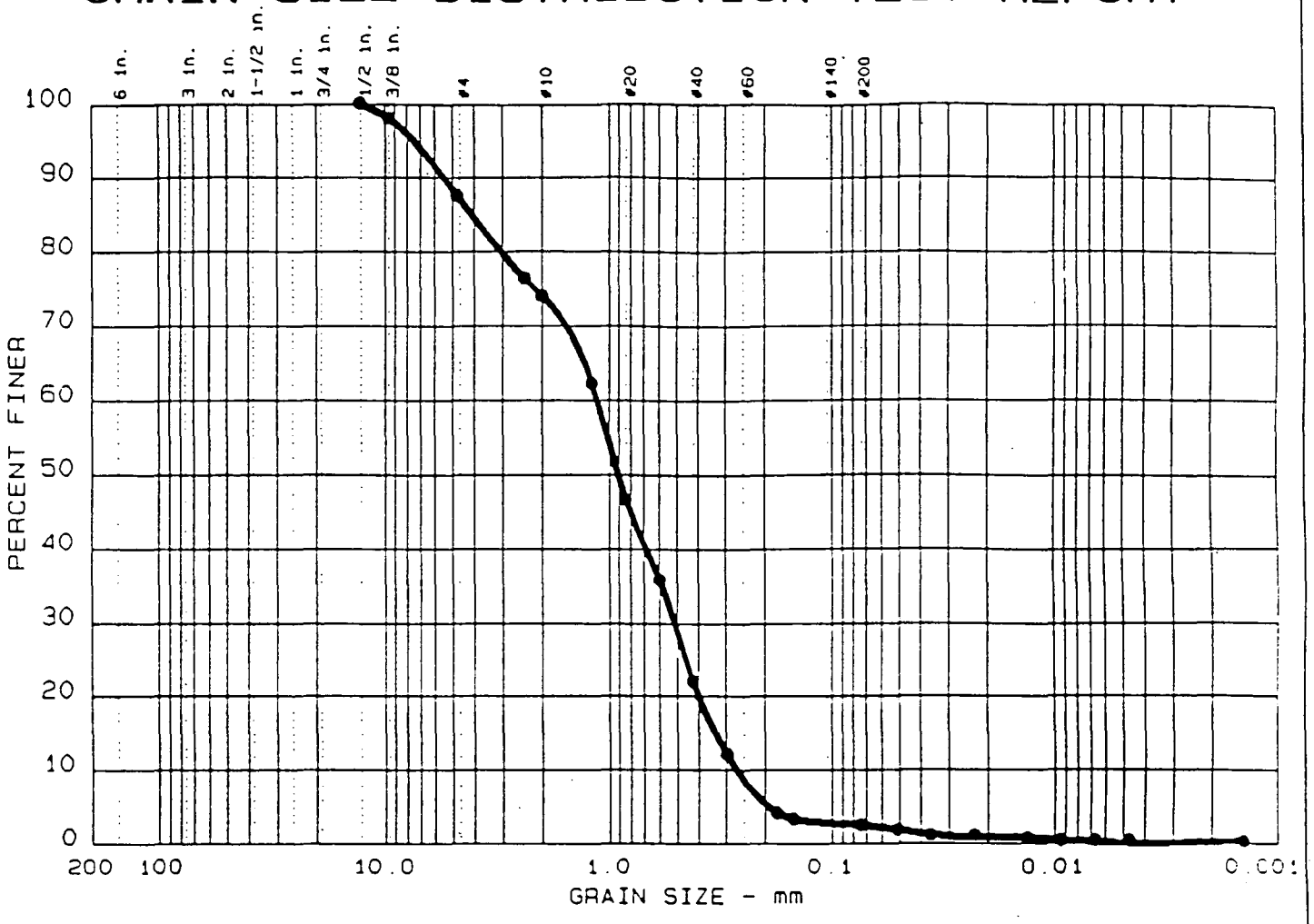
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	5	0.0	12.4	85.0	2.5	0.1

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			4.07	1.13	0.91	0.507	0.3350	0.2685	0.85	4.2

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand	SP	

Project No.: 2313.15
Project: NIROP
● Location: AB227G, 16-18'

Date: 08/21/92

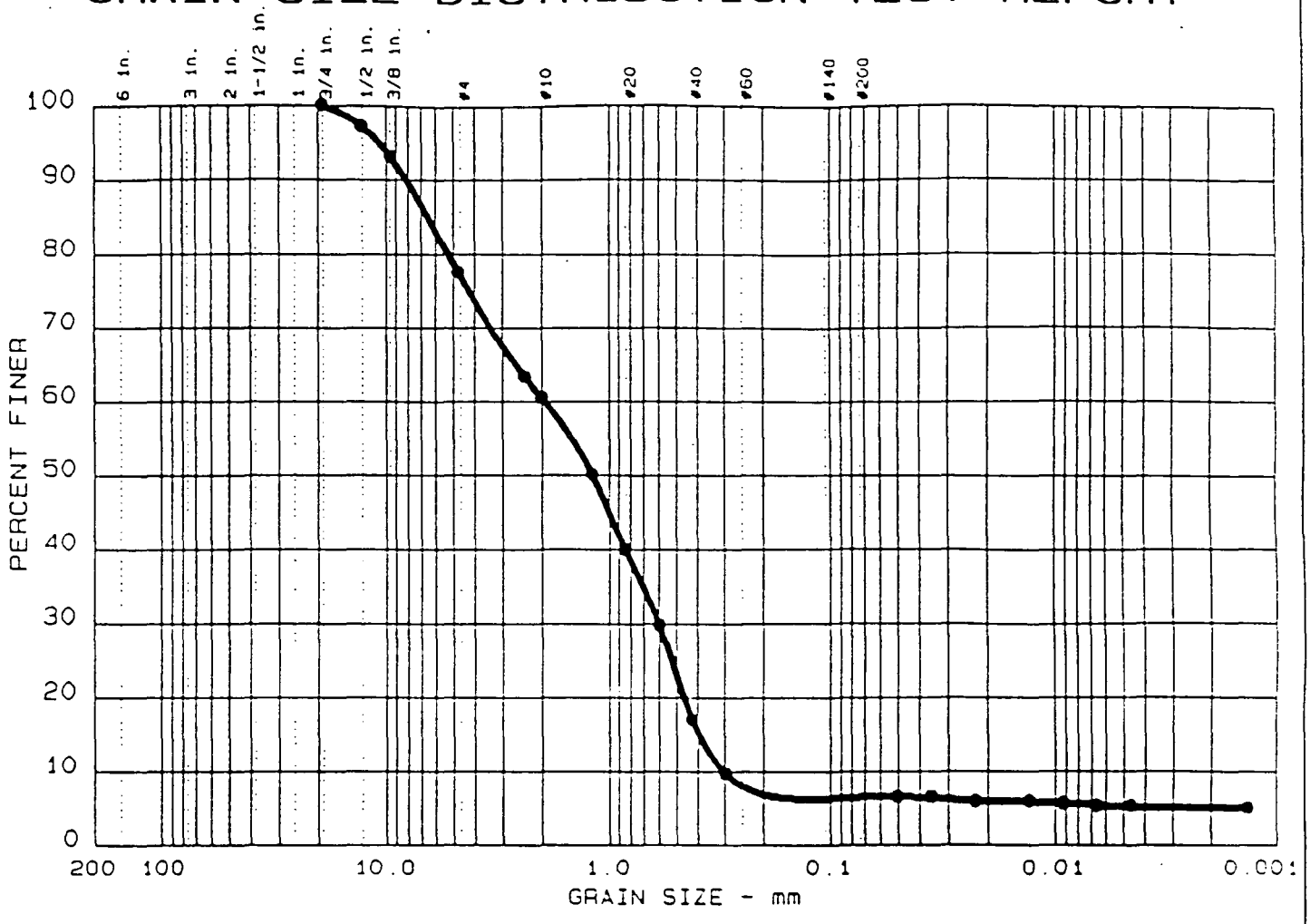
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	18	0.0	22.4	71.1	1.3	5.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	NP	NP	6.46	1.93	1.19	0.590	0.3898	0.3026	0.60	6.4

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand with silt	SP-SM	

Project No.: 2313.15
Project: NIROP
● Location: AB228F, 13-15'

Date: 08/21/92

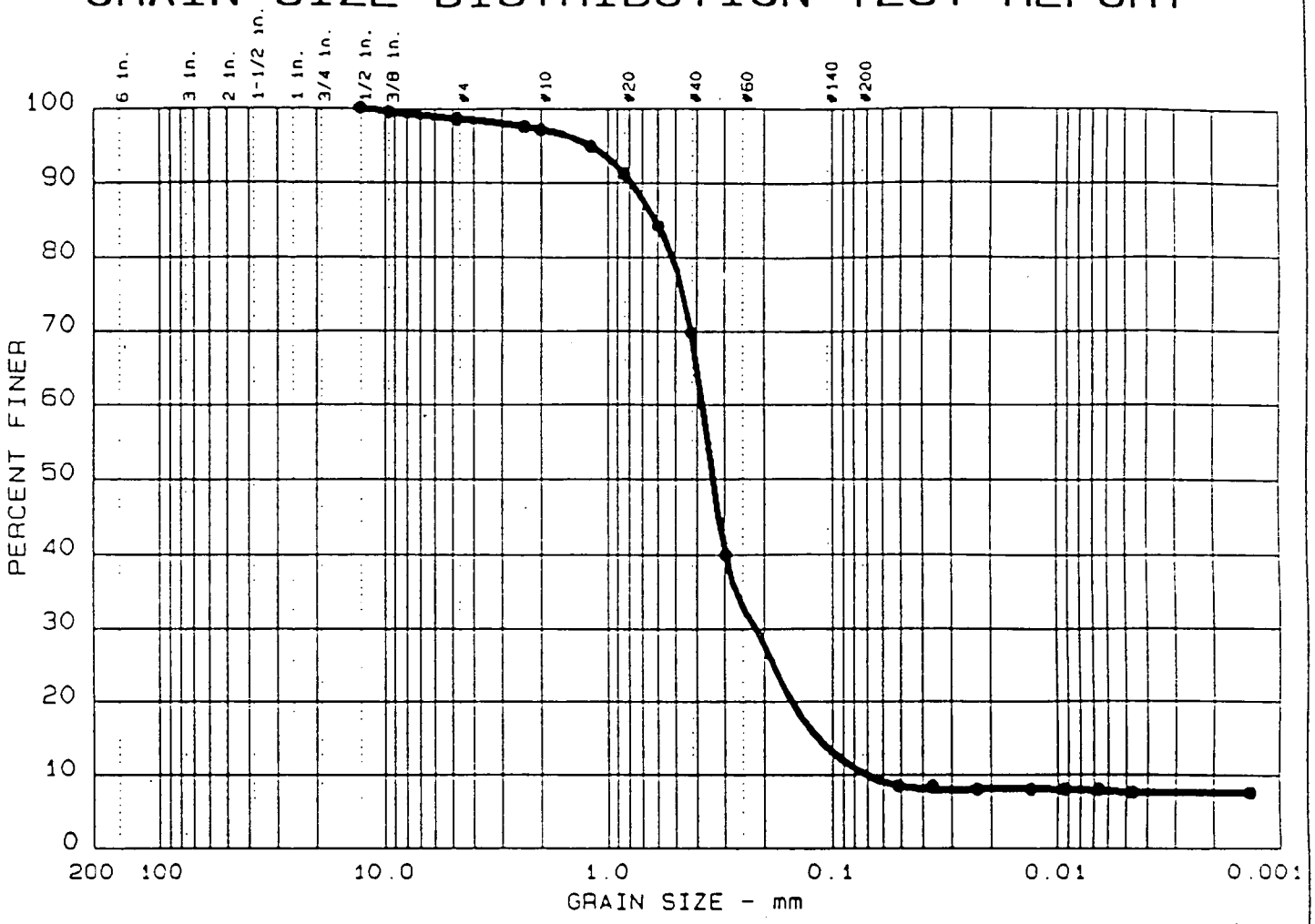
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT. INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	19	0.0	1.4	88.3	2.7	7.6

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	NP	NP	0.61	0.37	0.34	0.218	0.1143	0.0689	1.84	5.4

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand with silt	SP-SM	

Project No.: 2313.15
Project: NIROP
● Location: AB229H, 18-20'

Date: 08/21/92

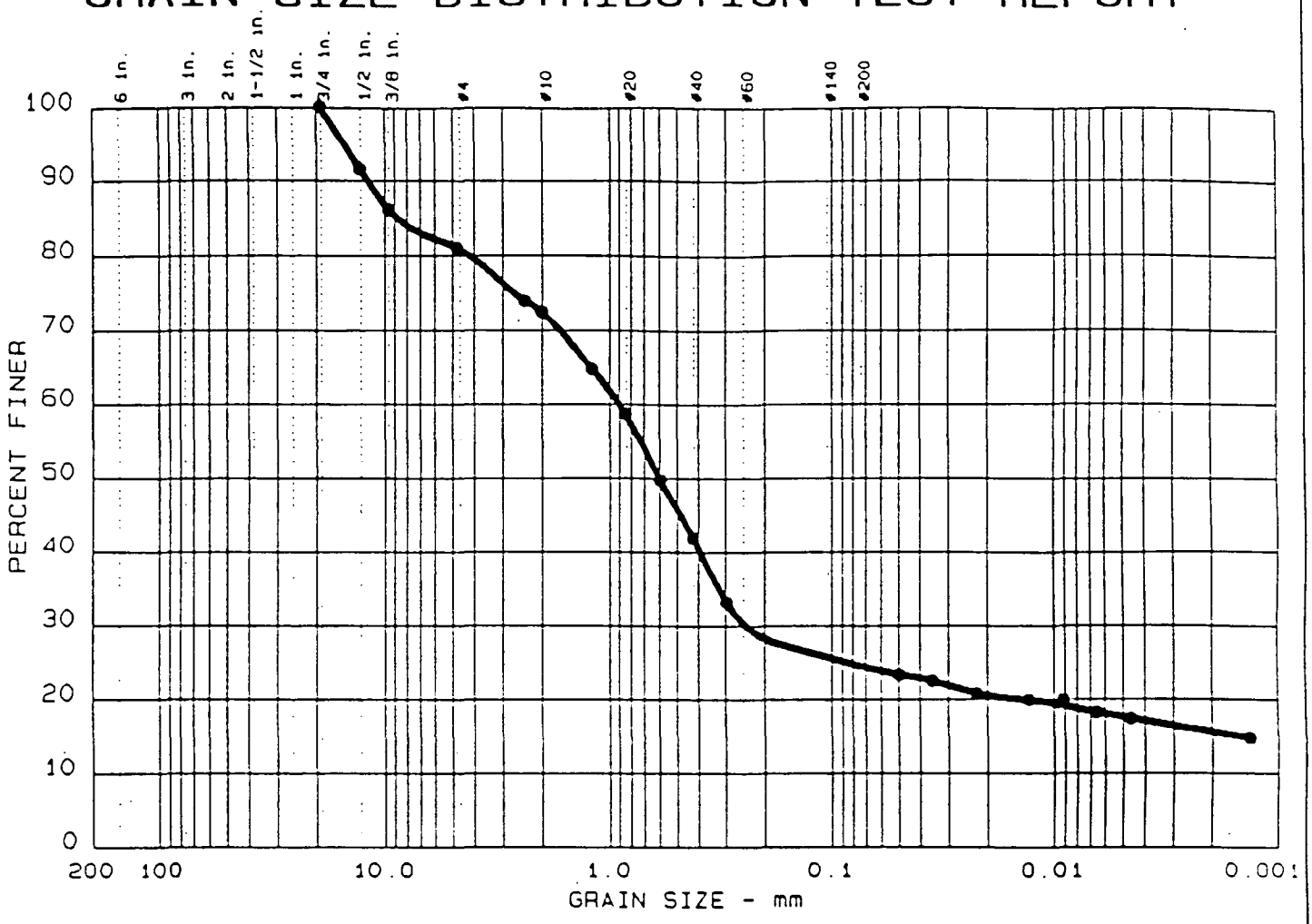
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	17	0.0	19.0	56.5	6.9	17.6

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	NP	NP	8.71	0.89	0.60	0.245	0.0014			

MATERIAL DESCRIPTION	USCS	AASHTO
● Silty sand with gravel	SM	

Project No.: 2313.15

Project: NIROP

● Location: AB2308, 3-5'

Date: 08/21/92

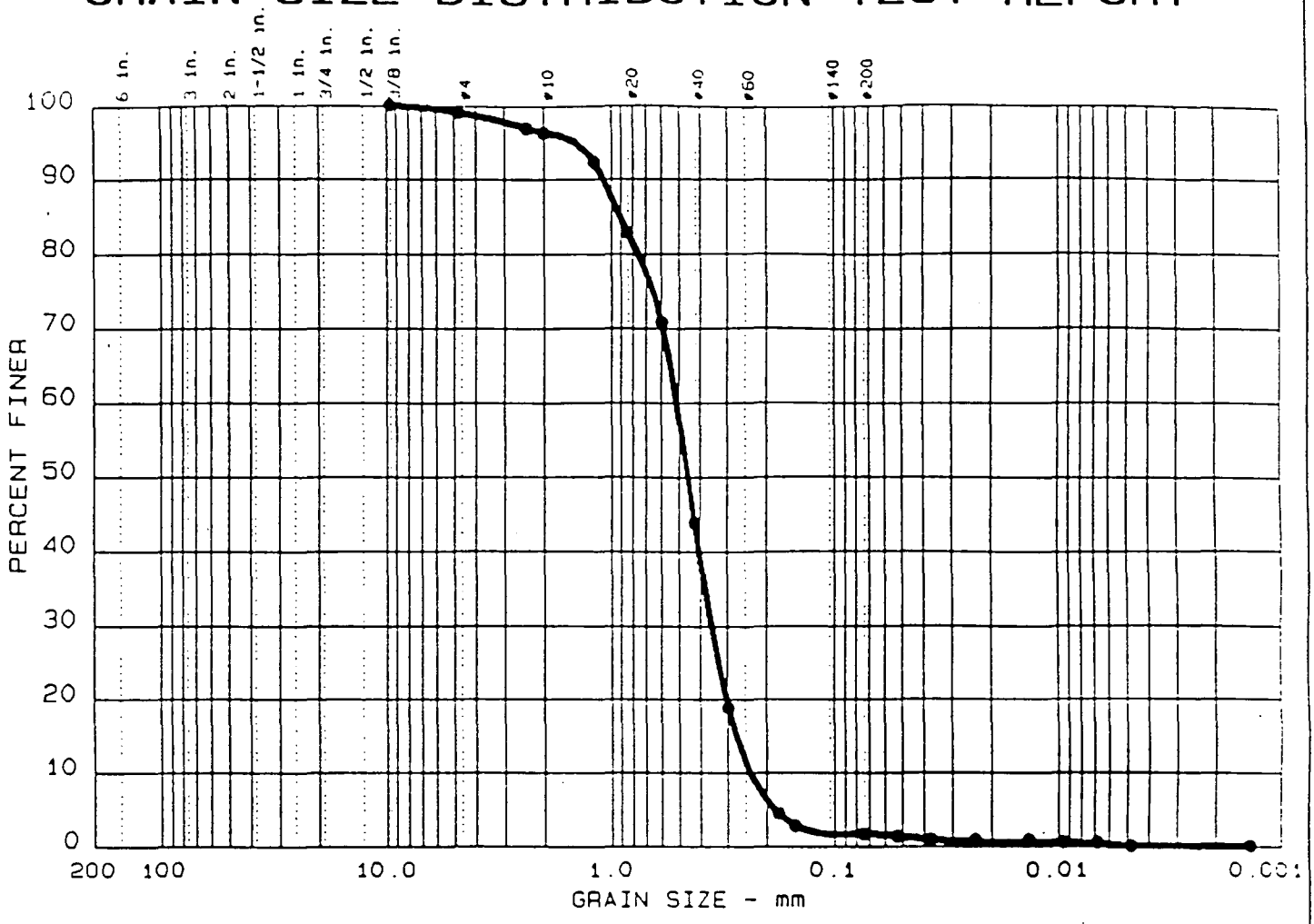
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	1.0	97.3	1.6	0.1

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.90	0.51	0.45	0.354	0.2735	0.2374	1.04	2.1

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand	SP	

Project No.: 2313.15
Project: NIROP
● Location: AB231H, 18-20'

Date: 08/21/92

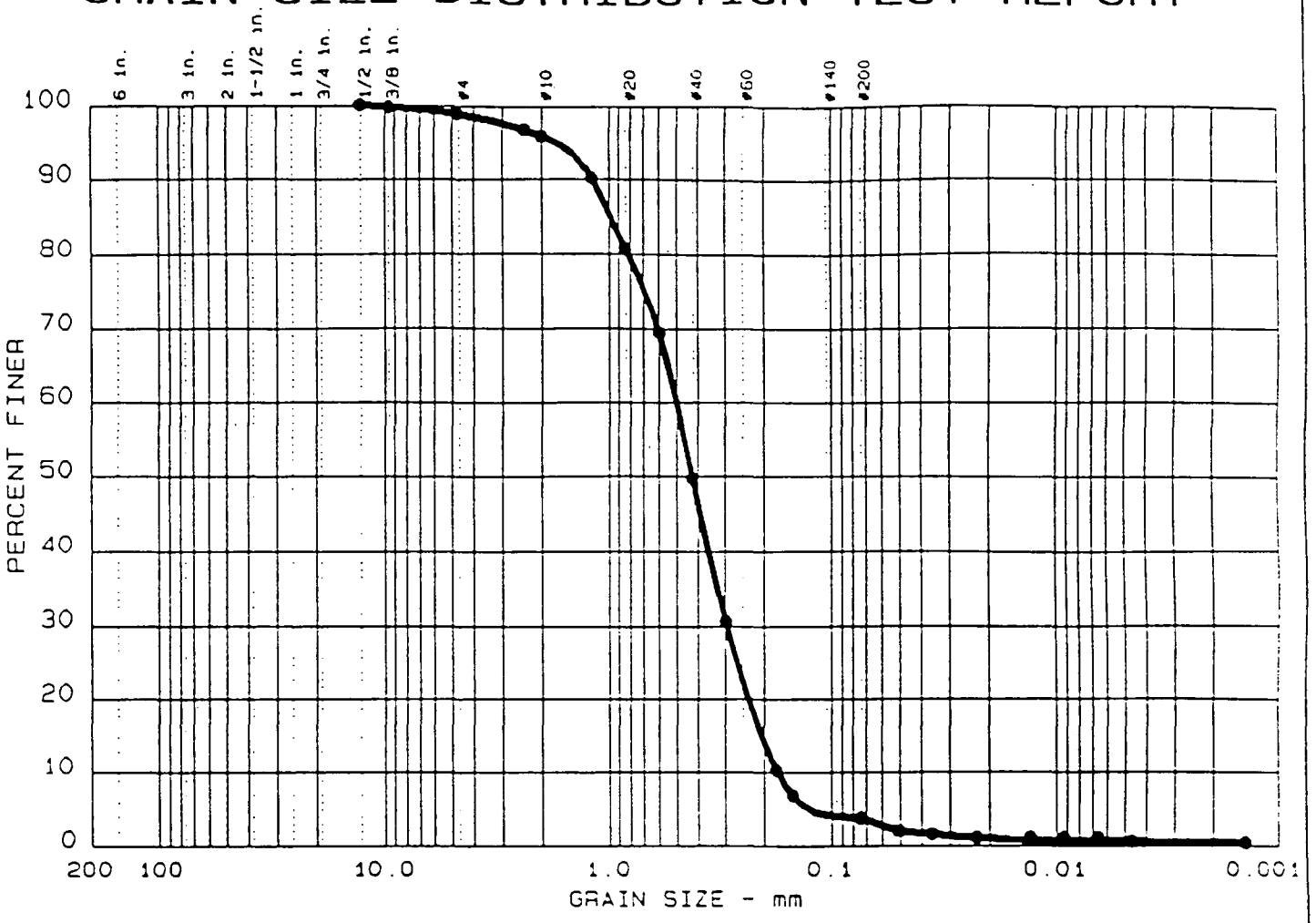
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	6	0.0	1.2	95.1	3.1	0.6

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.98	0.50	0.42	0.294	0.2056	0.1748	1.00	2.9

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand	SP	

Project No.: 2313.15
Project: NIROP
● Location: AB233H, 18-20'

Date: 08/21/92

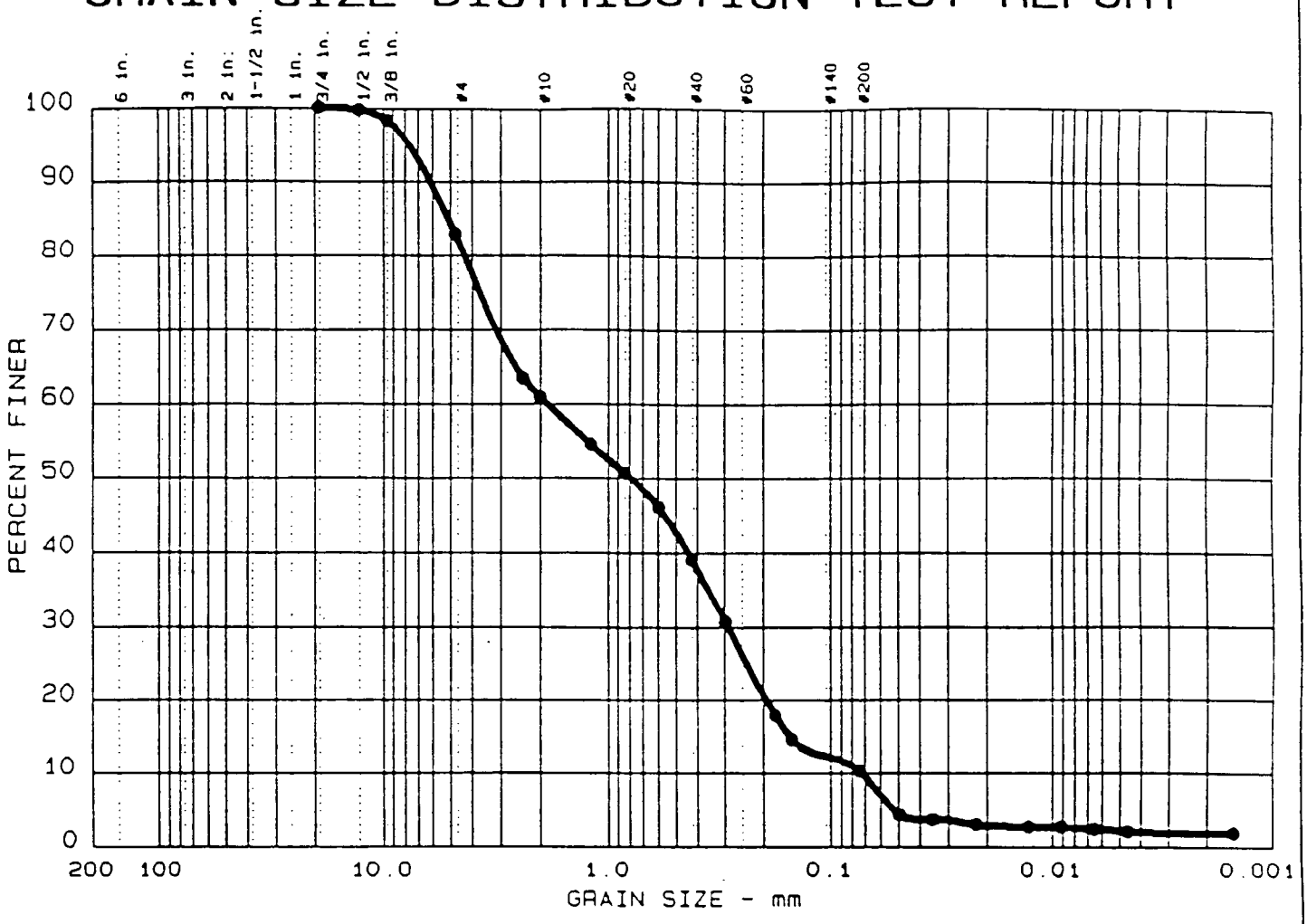
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	19	0.0	17.1	72.6	8.1	2.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	NP	NP	5.07	1.86	0.79	0.288	0.1514	0.0716	0.62	26.0

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand with silt and gravel	SP-SM	

Project No.: 2313.15
Project: NIROP
● Location: AB234D, 8-10'

Date: 08/26/92

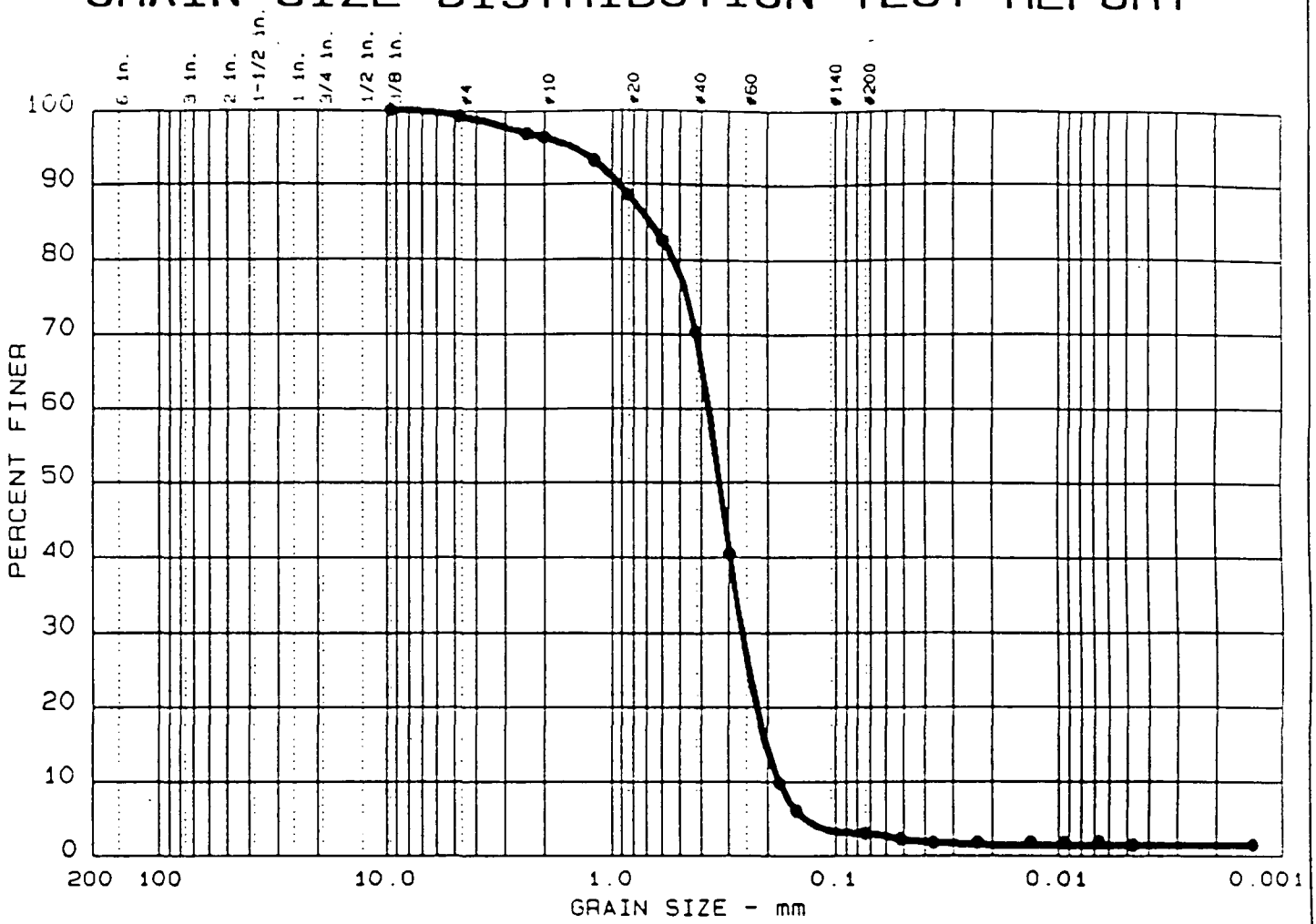
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	3	0.0	0.7	96.2	1.6	1.5

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_C	C_U
●			0.67	0.37	0.33	0.261	0.2028	0.1770	1.05	2.1

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand	SP	

Project No.: 2313.15
Project: NIROP
● Location: AB235H, 18-20'

Date: 08/21/92

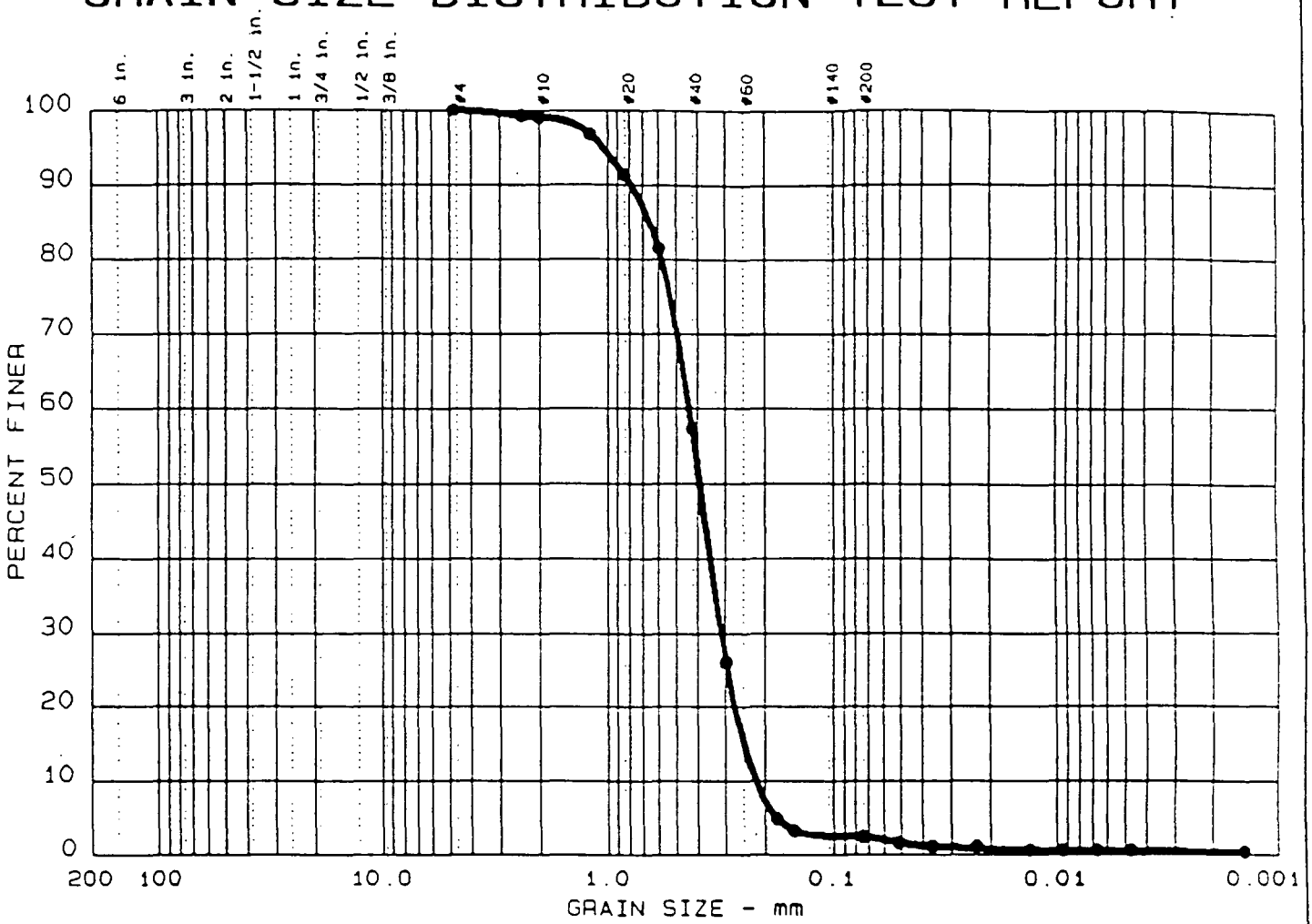
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	2	0.0	0.1	97.5	2.0	0.4

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.64	0.43	0.39	0.312	0.2477	0.2203	1.02	2.0

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand	SP	

Project No.: 2313.15
Project: NIROP
● Location: AB236H, 18-20'

Date: 08/21/92

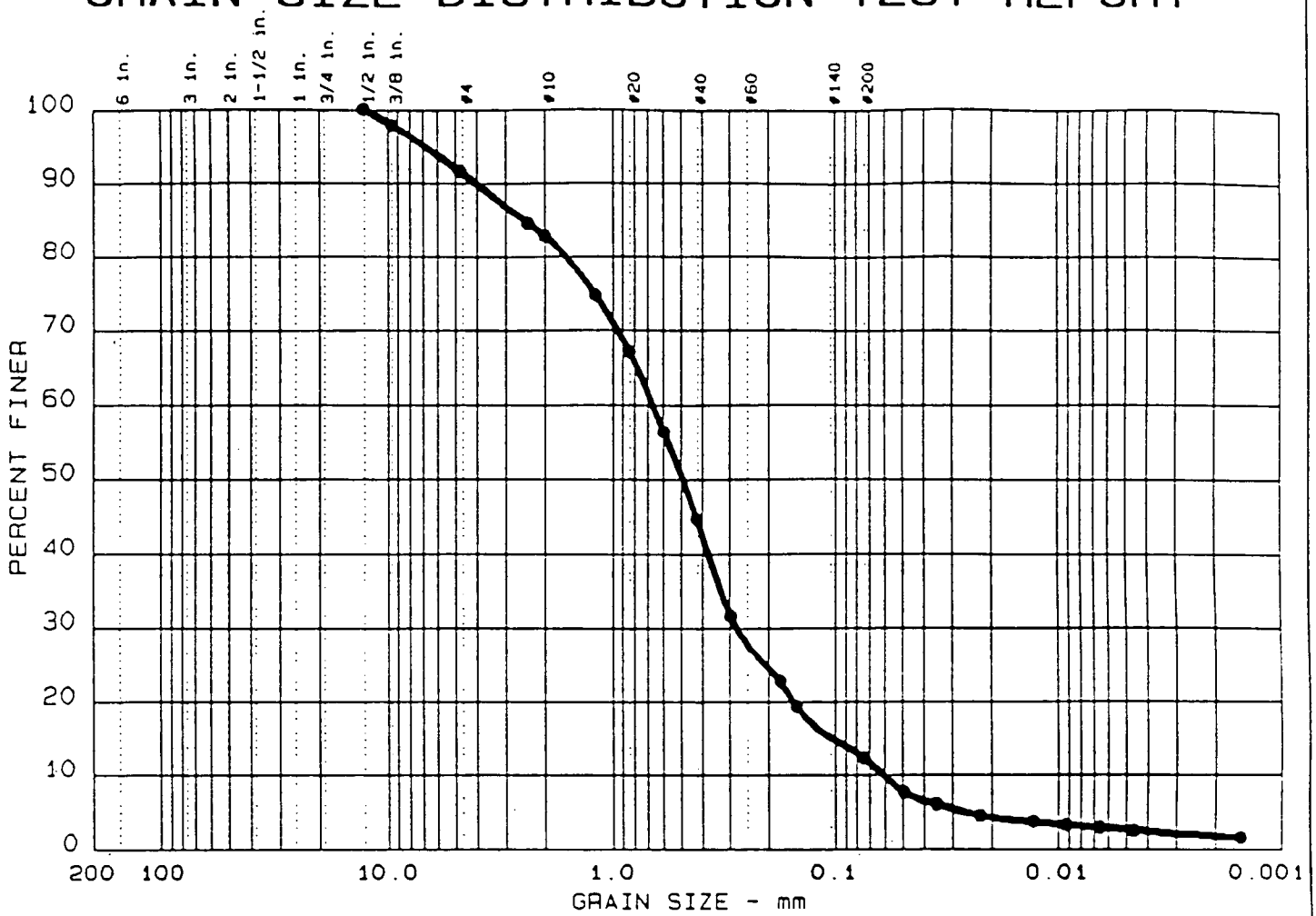
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	5	0.0	8.4	79.4	9.6	2.6

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	NP	NP	2.45	0.66	0.48	0.281	0.1032	0.0607	1.97	10.9

MATERIAL DESCRIPTION	USCS	AASHTO
● Silty sand	SM	

Project No.: 2313.15
Project: NIROP
● Location: AB237C, 6-8'

Date: 08/26/92

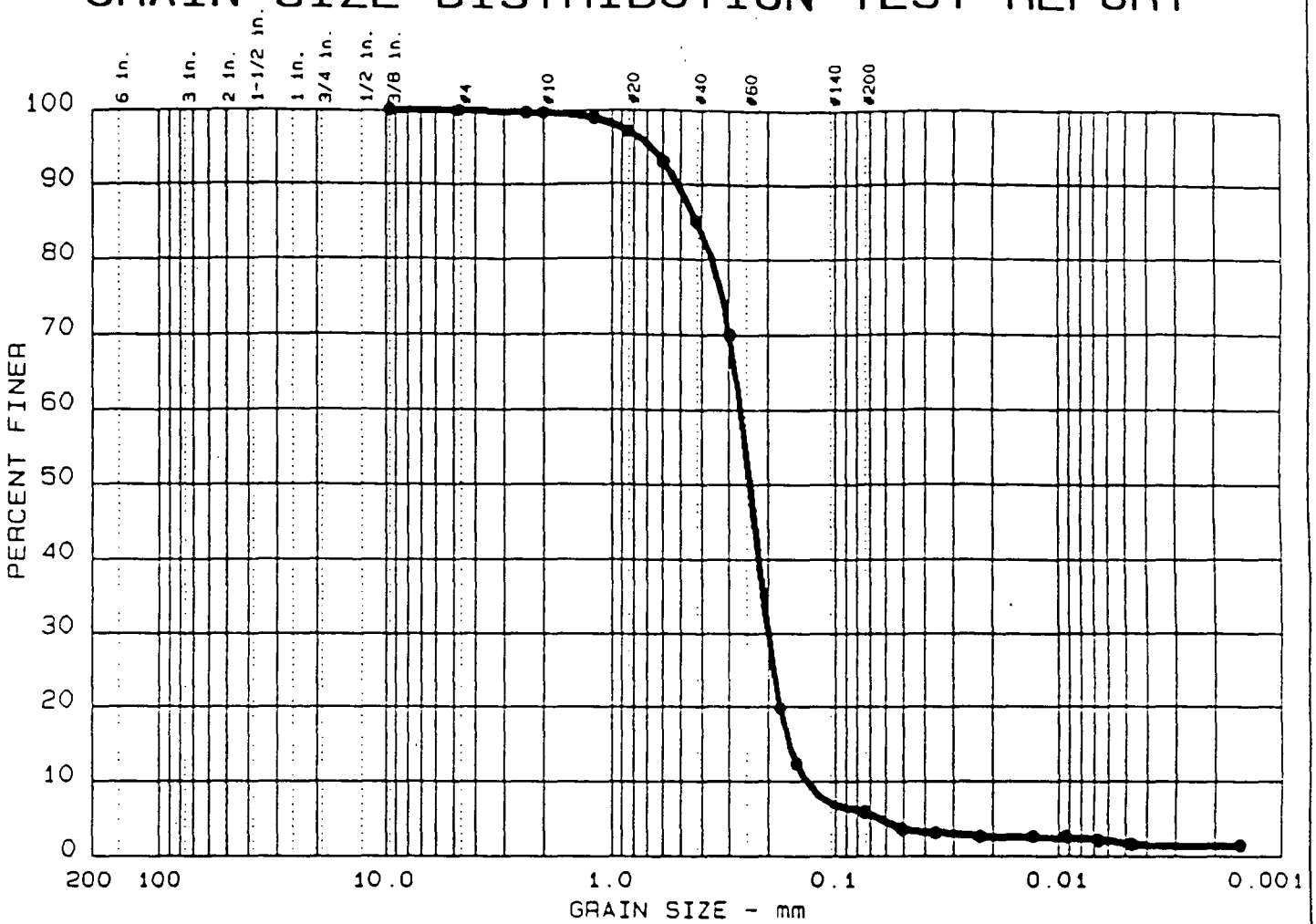
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	6	0.0	0.1	94.1	4.1	1.7

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	NP	NP	0.42	0.27	0.24	0.200	0.1609	0.1338	1.13	2.0

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand with silt	SP-SM	

Project No.: 2313.15
Project: NIROP
● Location: AB238H, 18-20'

Date: 08/26/92

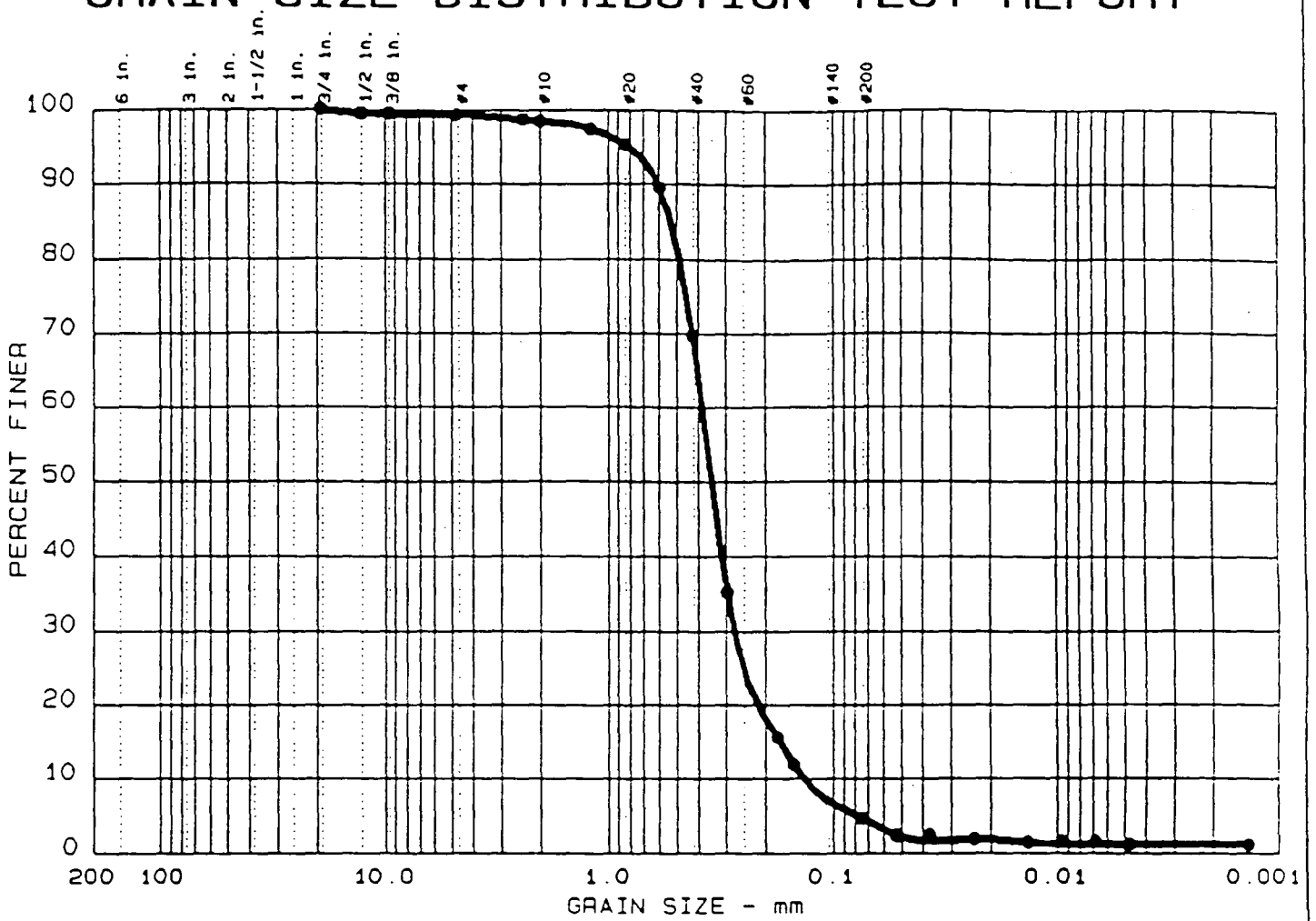
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	3	0.0	0.7	94.6	3.5	1.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_C	C_U
●			0.52	0.38	0.35	0.276	0.1720	0.1351	1.49	2.8

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand	SP	

Project No.: 2313.15
Project: NIROP
● Location: AB239G, 16-18'

Date: 08/26/92

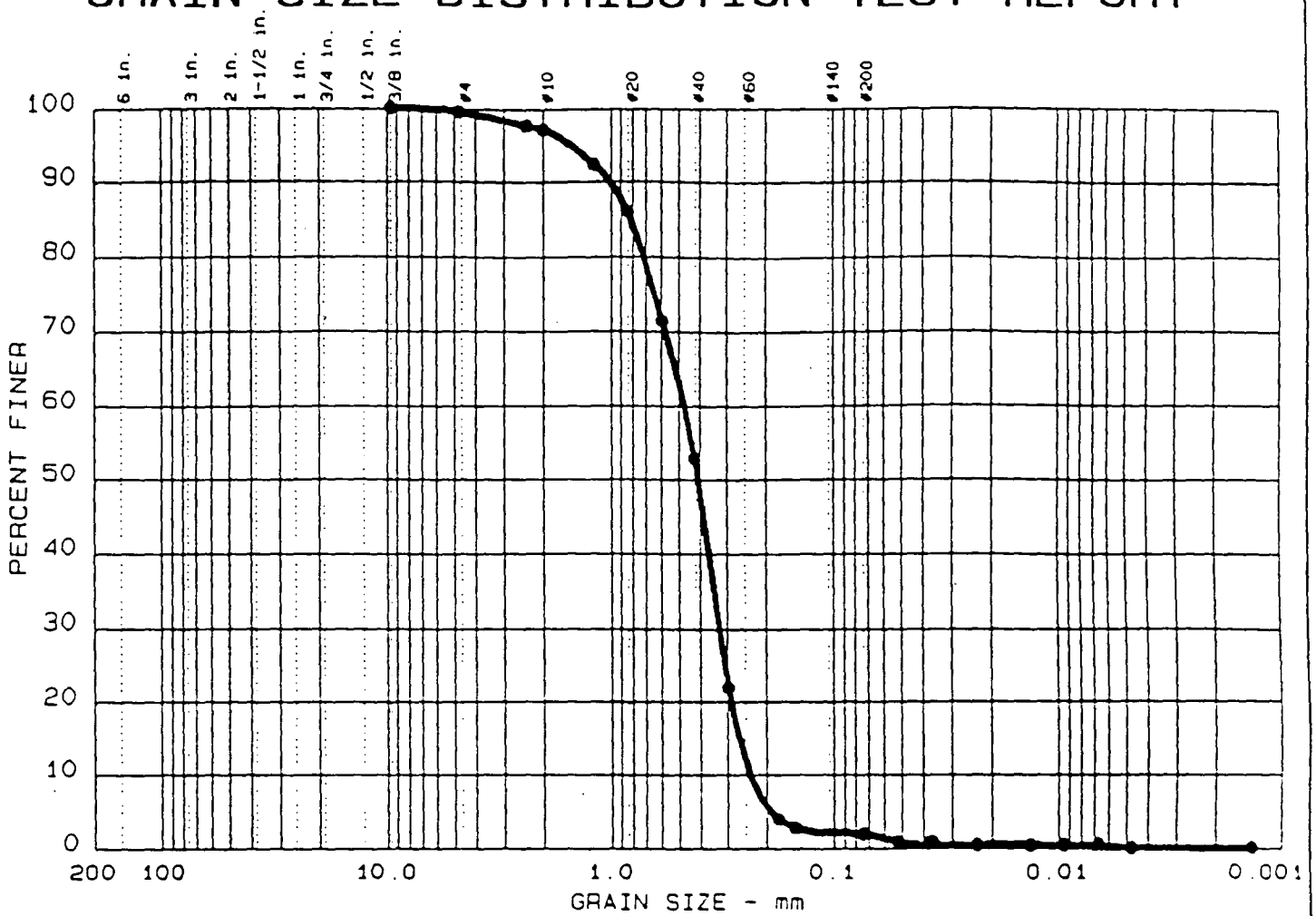
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	4	0.0	0.5	97.5	1.9	0.1

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.81	0.47	0.41	0.326	0.2664	0.2374	0.96	2.0

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand	SP	

Project No.: 2313.15
Project: NIROP
● Location: AB240H, 18-20'

Date: 08/26/92

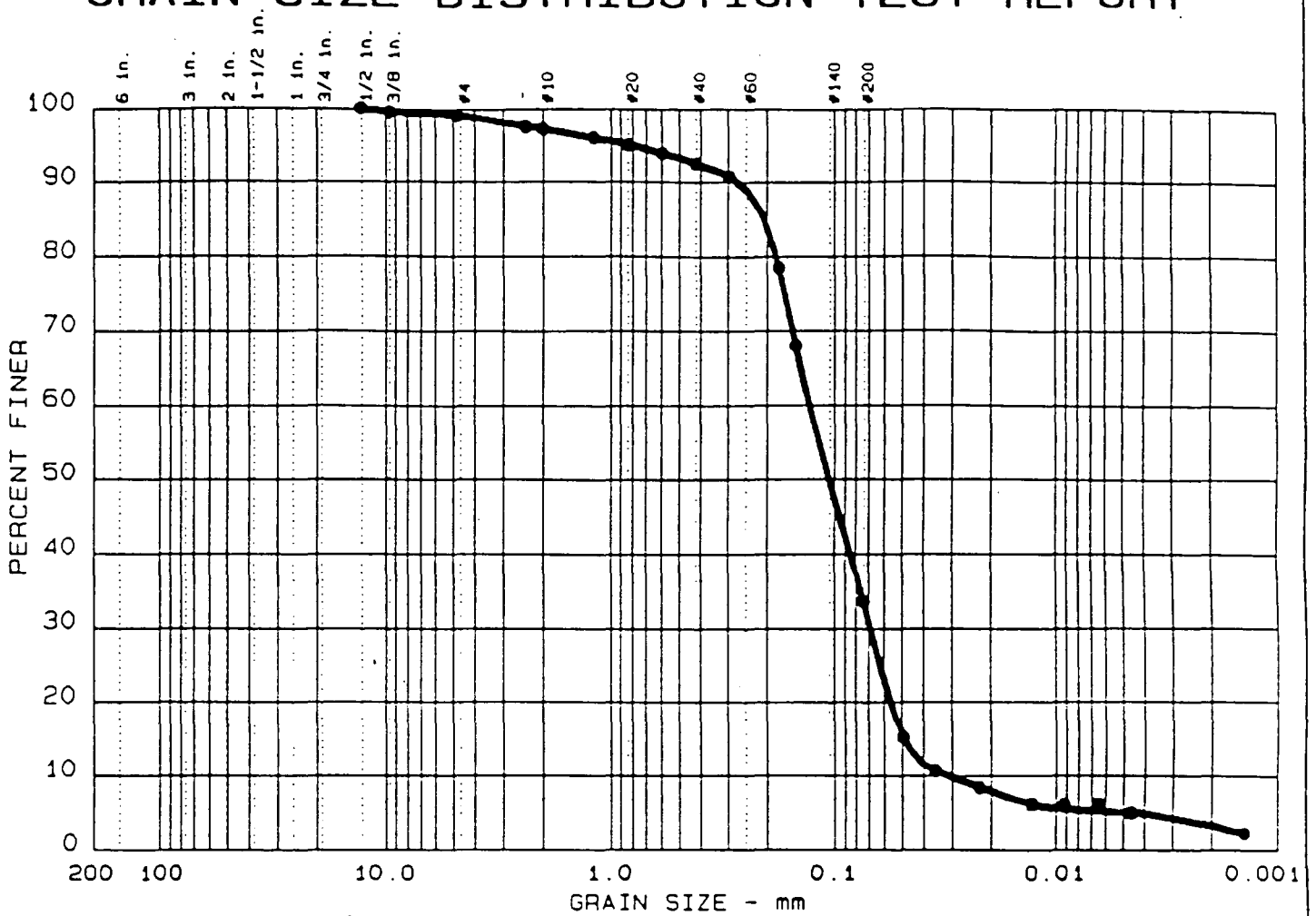
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	2	0.0	0.9	65.5	28.5	5.1

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	NP	NP	0.21	0.13	0.11	0.069	0.0486	0.0307	1.19	4.2

MATERIAL DESCRIPTION	USCS	AASHTO
● Silty sand	SM	

Project No.: 2313.15
Project: NIROP
● Location: AB241C, 6-8'

Date: 08/26/92

Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

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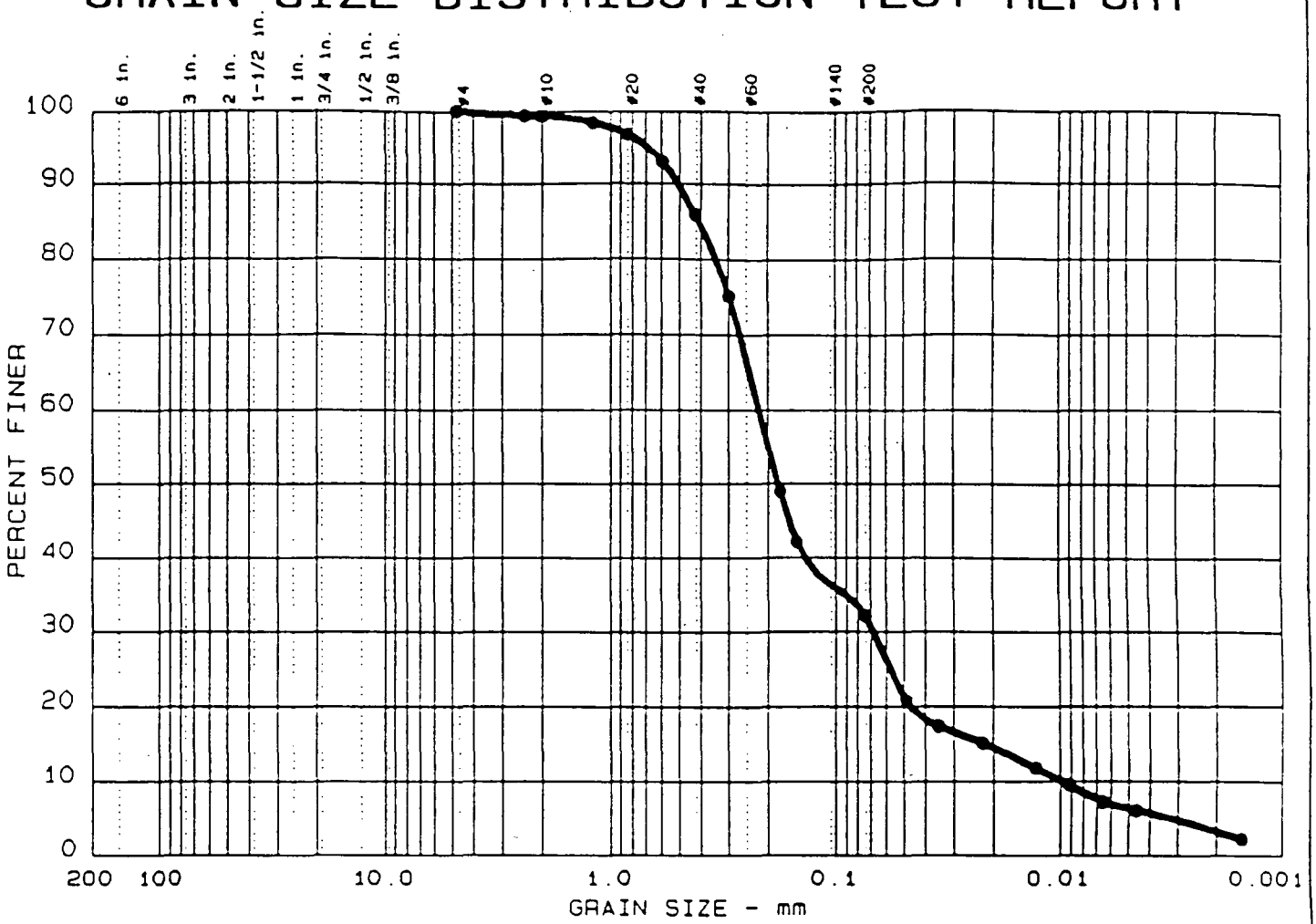
Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	7	0.0	0.0	68.0	25.7	6.3

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	26	4	0.40	0.22	0.18	0.068	0.0215	0.0098	2.15	22.3

MATERIAL DESCRIPTION	USCS	AASHTO
● Silty, clayey sand	SC-SM	

Project No.: 2313.15
Project: NIROP
● Location: AB2428, 3-5'

Date: 08/26/92

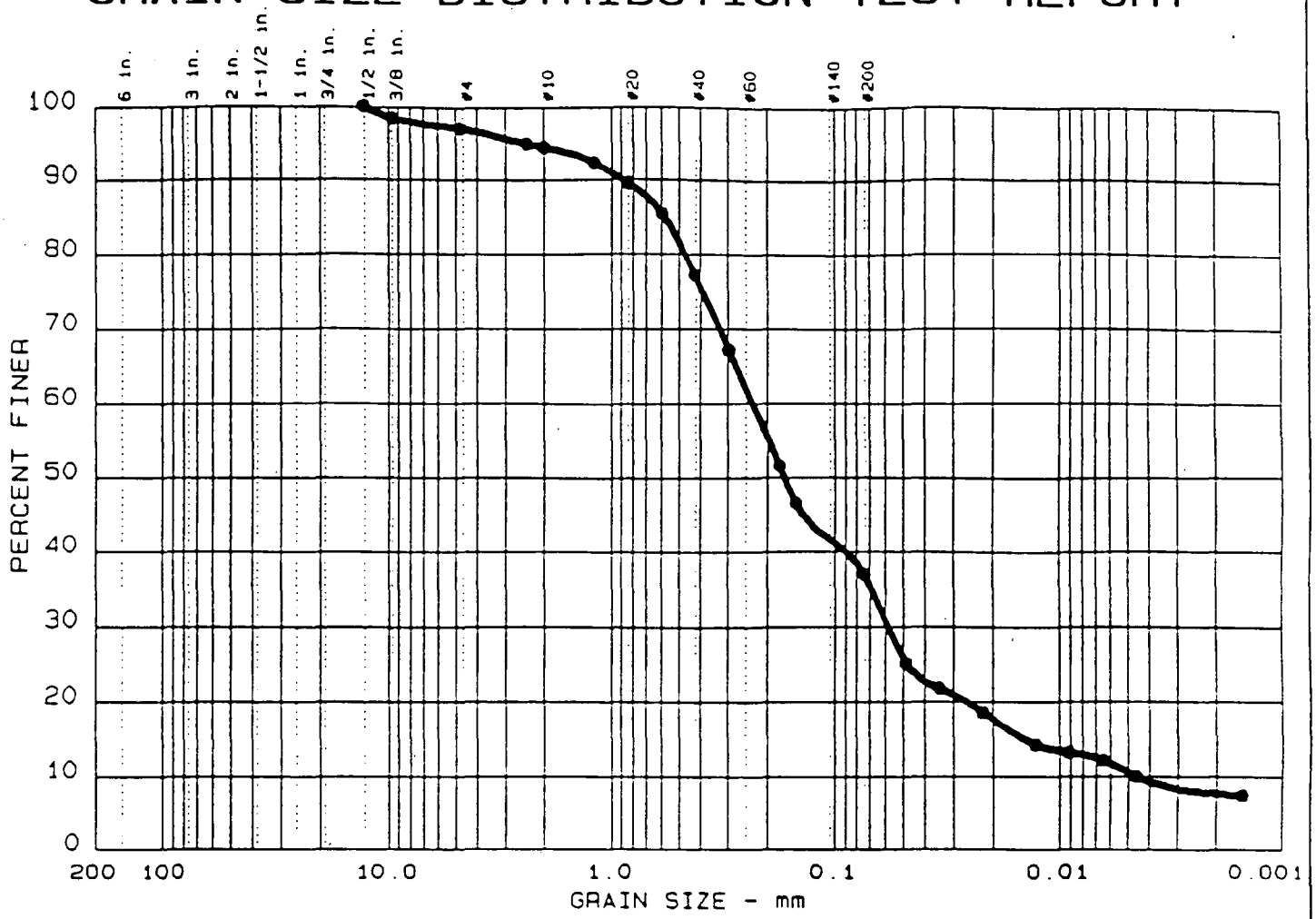
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	8	0.0	3.0	60.1	26.3	10.6

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	26	6	0.57	0.23	0.17	0.058	0.0143	0.0046	3.20	50.7

MATERIAL DESCRIPTION	USCS	AASHTO
● Silty, clayey sand	SC-SM	

Project No.: 2313.15
Project: NIROP
● Location: AB243B, 3-5'

Date: 08/26/92

Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

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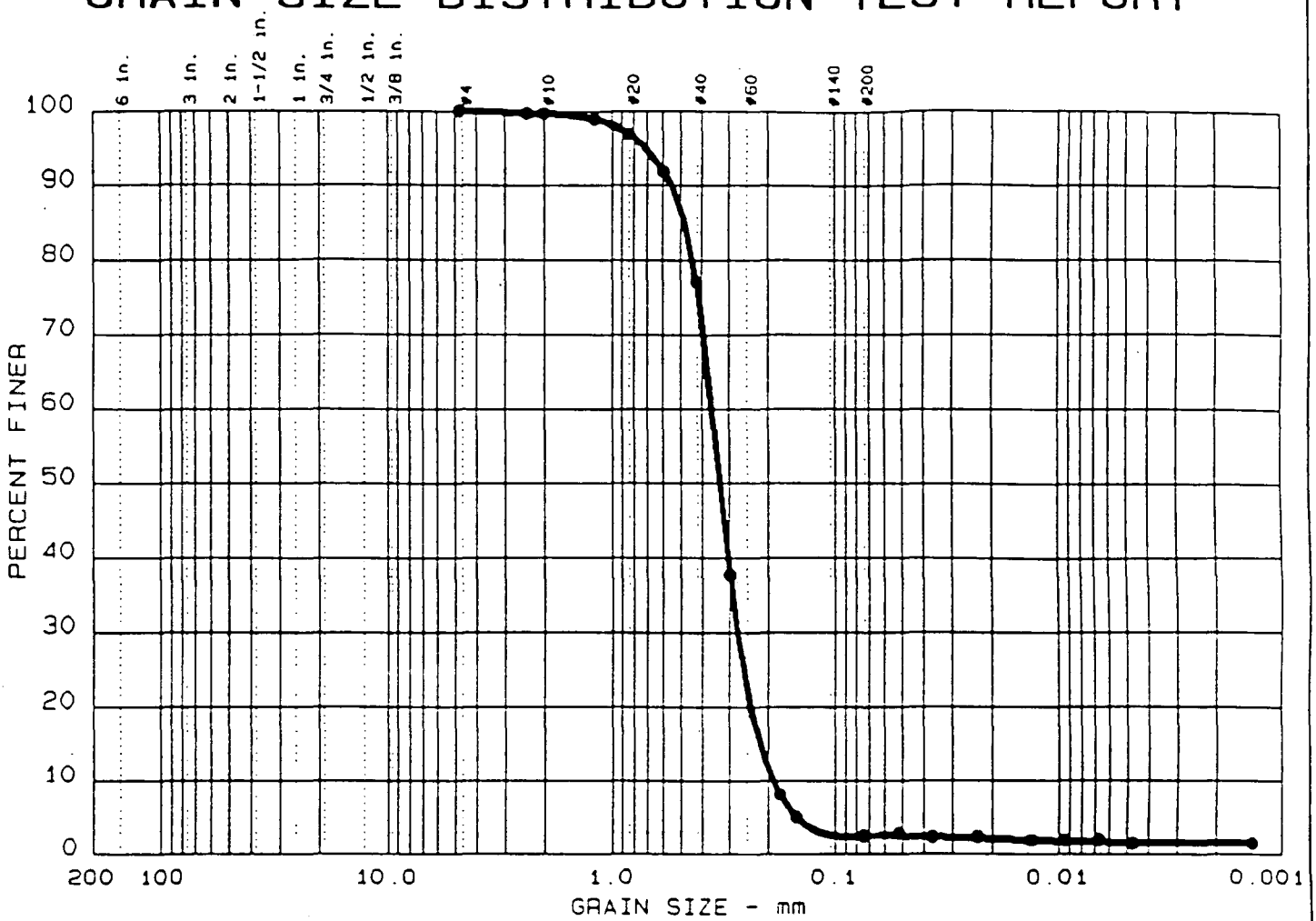
Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	9	0.0	0.0	97.6	0.9	1.5

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.47	0.36	0.33	0.274	0.2180	0.1899	1.11	1.9

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand	SP	

Project No.: 2313.15

Project: NIROP

● Location: AB244H, 18-20'

Date: 08/26/92

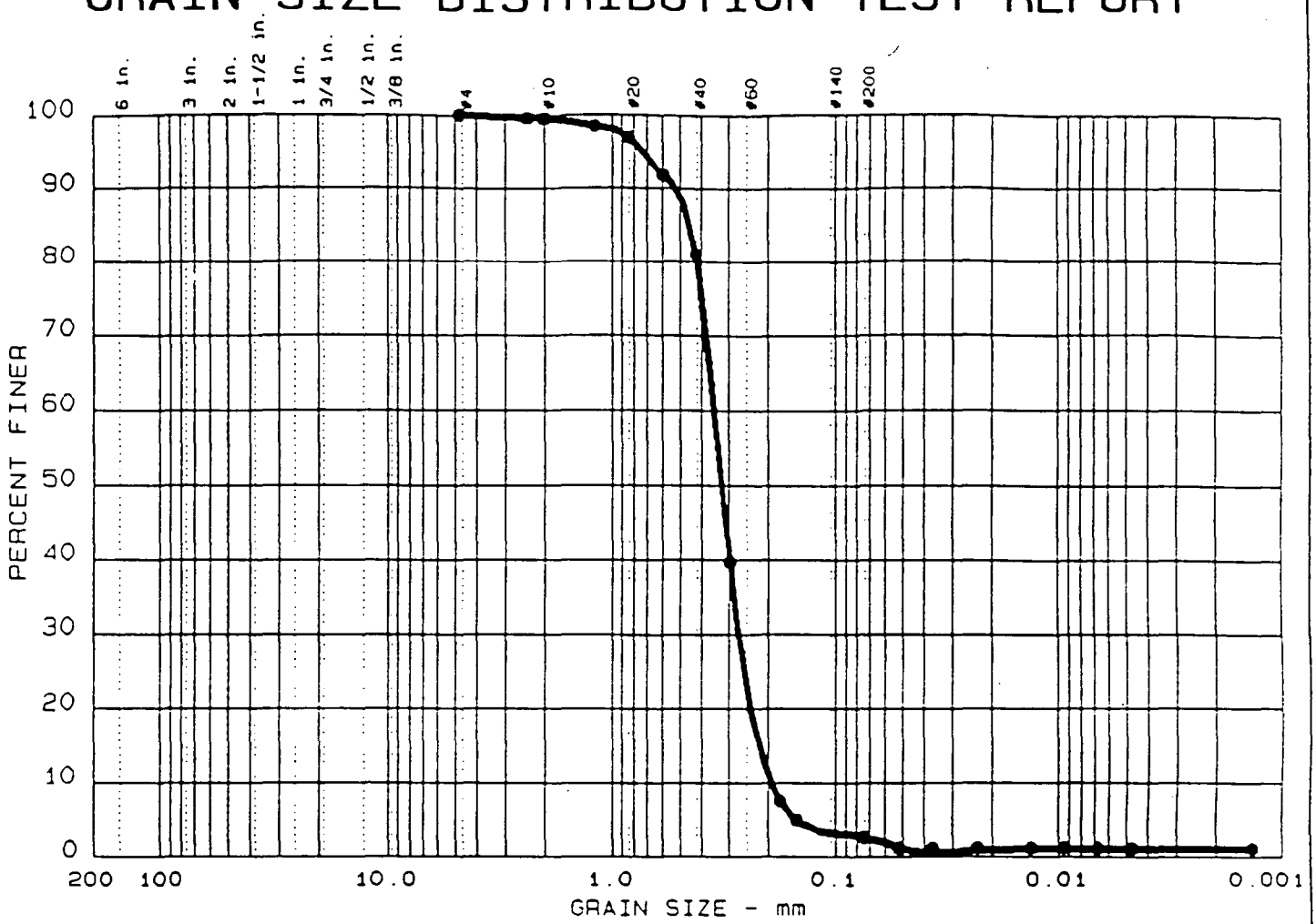
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	14	0.0	0.0	97.4	1.6	1.0

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.45	0.35	0.32	0.271	0.2193	0.1932	1.09	1.8

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand	SP	

Project No.: 2313.15
Project: NIROP
● Location: AB245G, 16-18'

Date: 08/26/92

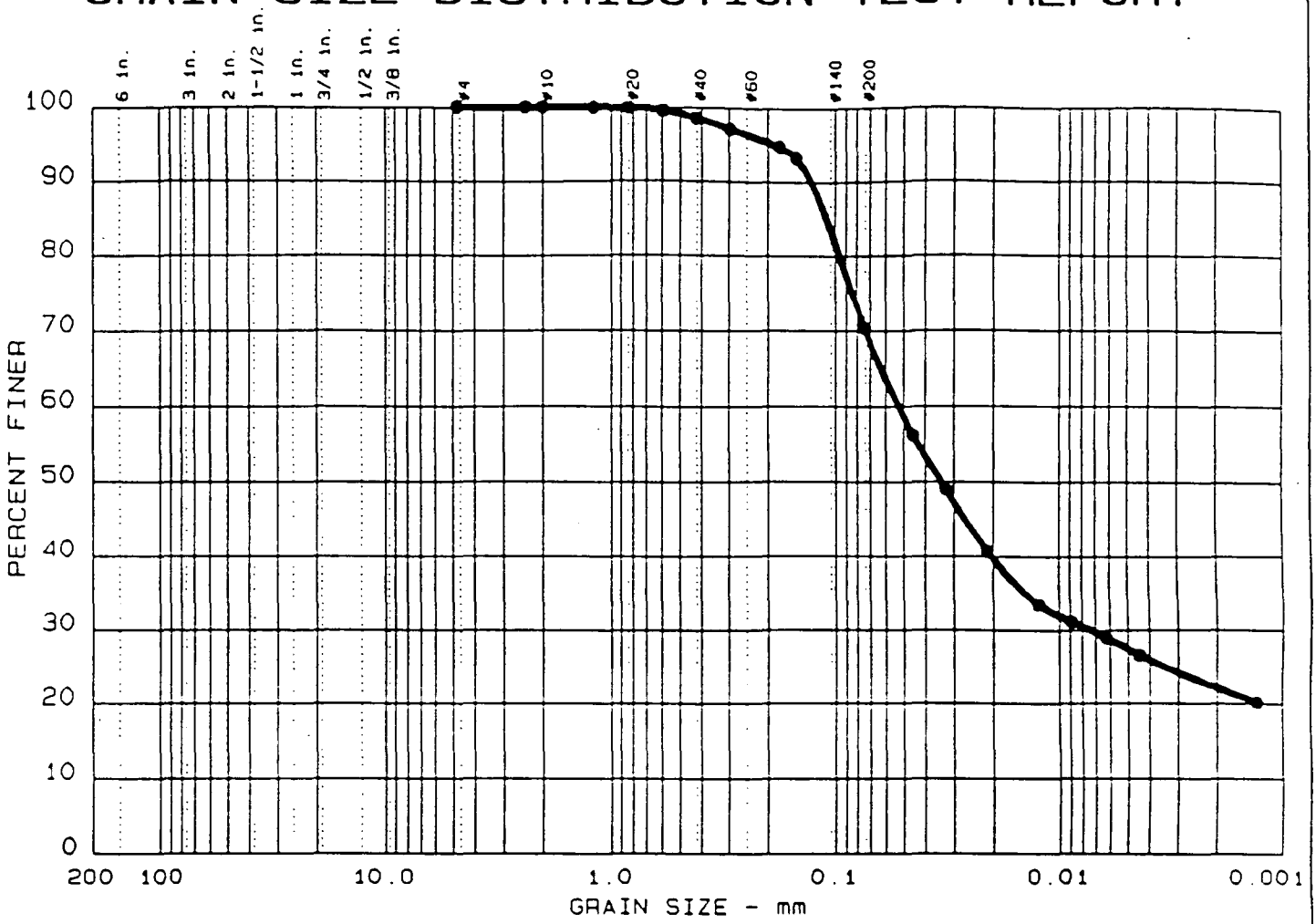
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	15	0.0	0.0	29.7	43.0	27.3

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	28	8	0.11		0.03	0.007				

MATERIAL DESCRIPTION	USCS	AASHTO
● Lean clay with sand	CL	

Project No.: 2313.15
Project: NRIOP
● Location: AB245B, 3-5'

Date: 08/26/92

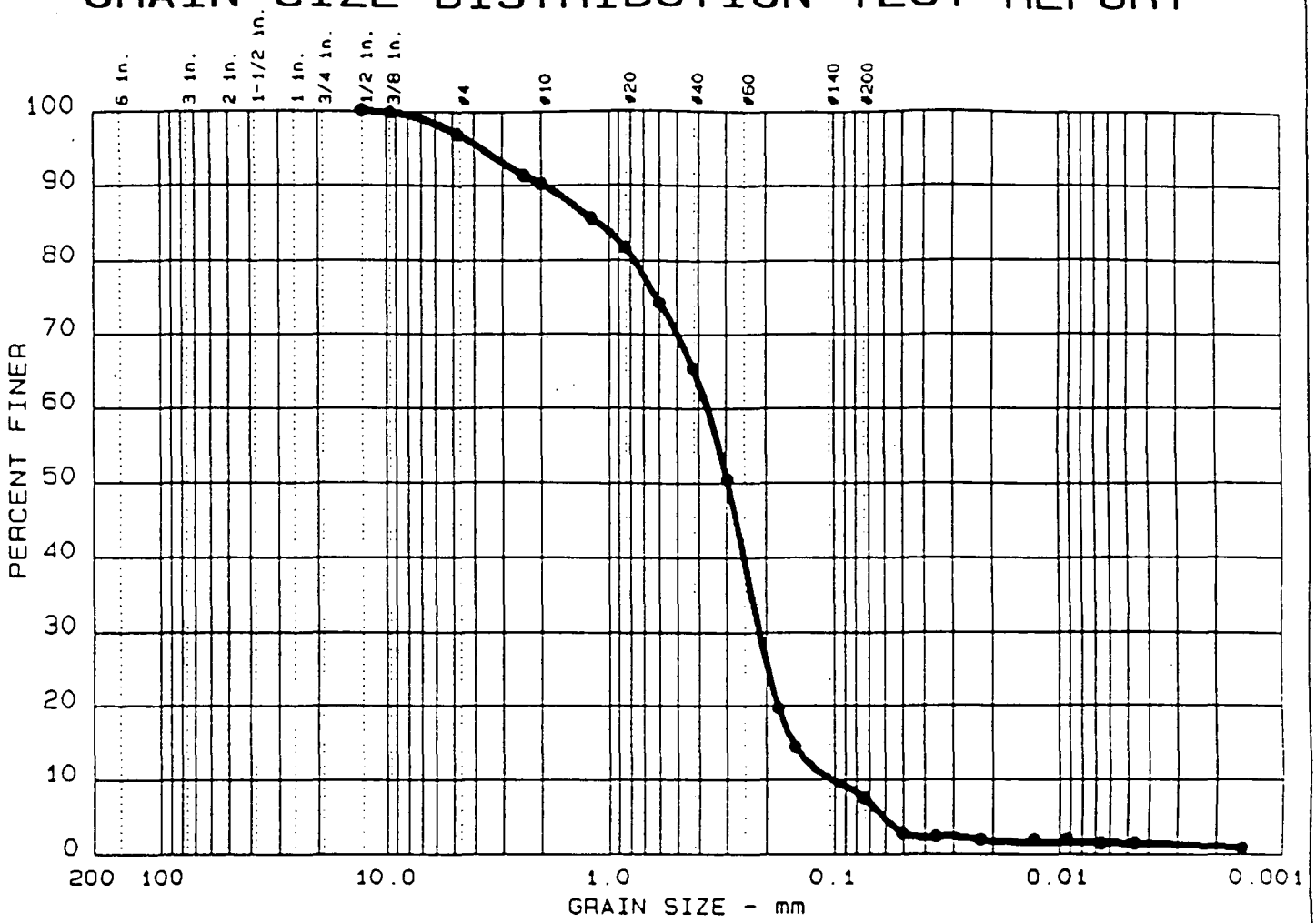
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	12	0.0	3.1	89.4	6.2	1.3

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	NP	NP	1.11	0.36	0.29	0.215	0.1521	0.1040	1.23	3.5

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand with silt	SP-SM	

Project No.: 2313.15
Project: NIROP
● Location: AB247D, 8-10'

Date: 08/26/92

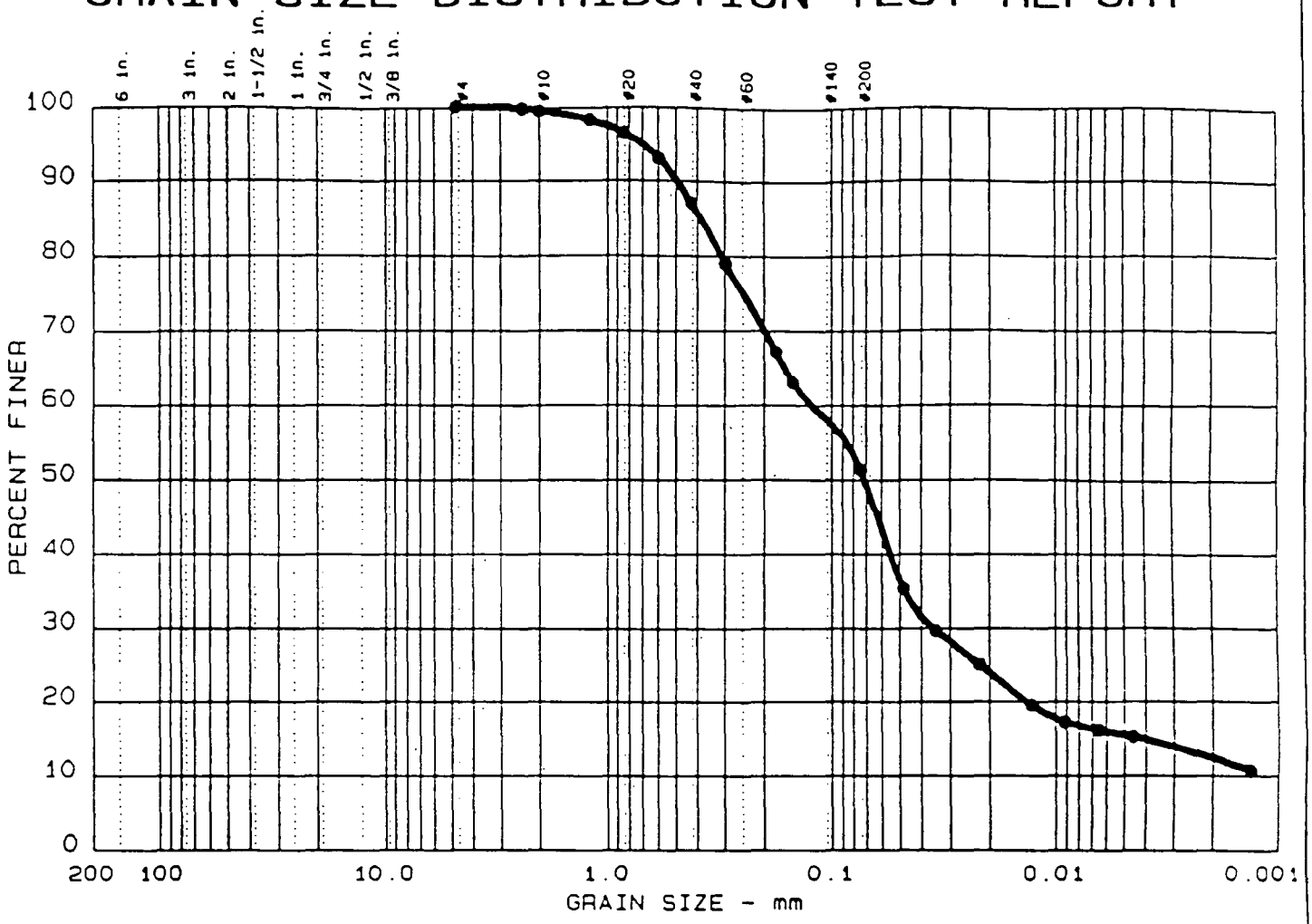
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	16	0.0	0.0	48.7	35.8	15.5

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	40	13	0.38	0.12	0.07	0.036	0.0040			

MATERIAL DESCRIPTION	USCS	AASHTO
● Sandy silt	ML	

Project No.: 2313.15
Project: NIROP
● Location: A8248C, 6-8'

Date: 08/26/92

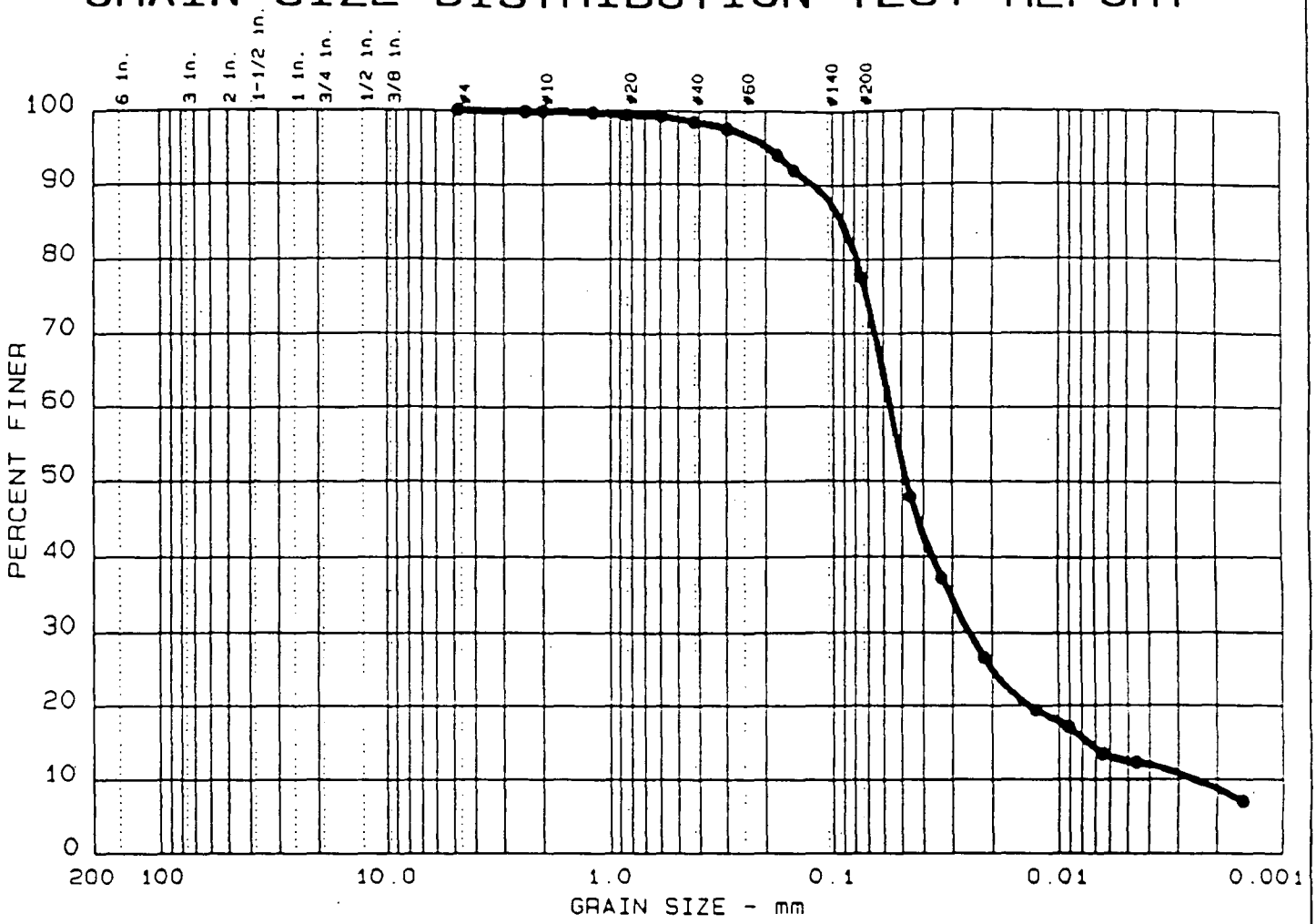
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	13	0.0	0.0	22.4	65.1	12.5

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	32	8	0.09		0.05	0.025	0.0075	0.0025	4.51	22.2

MATERIAL DESCRIPTION	USCS	AASHTO
● Silt with sand	ML	

Project No.: 2313.15
Project: NIROP
● Location: AB251C, 6-8'

Date: 08/26/92

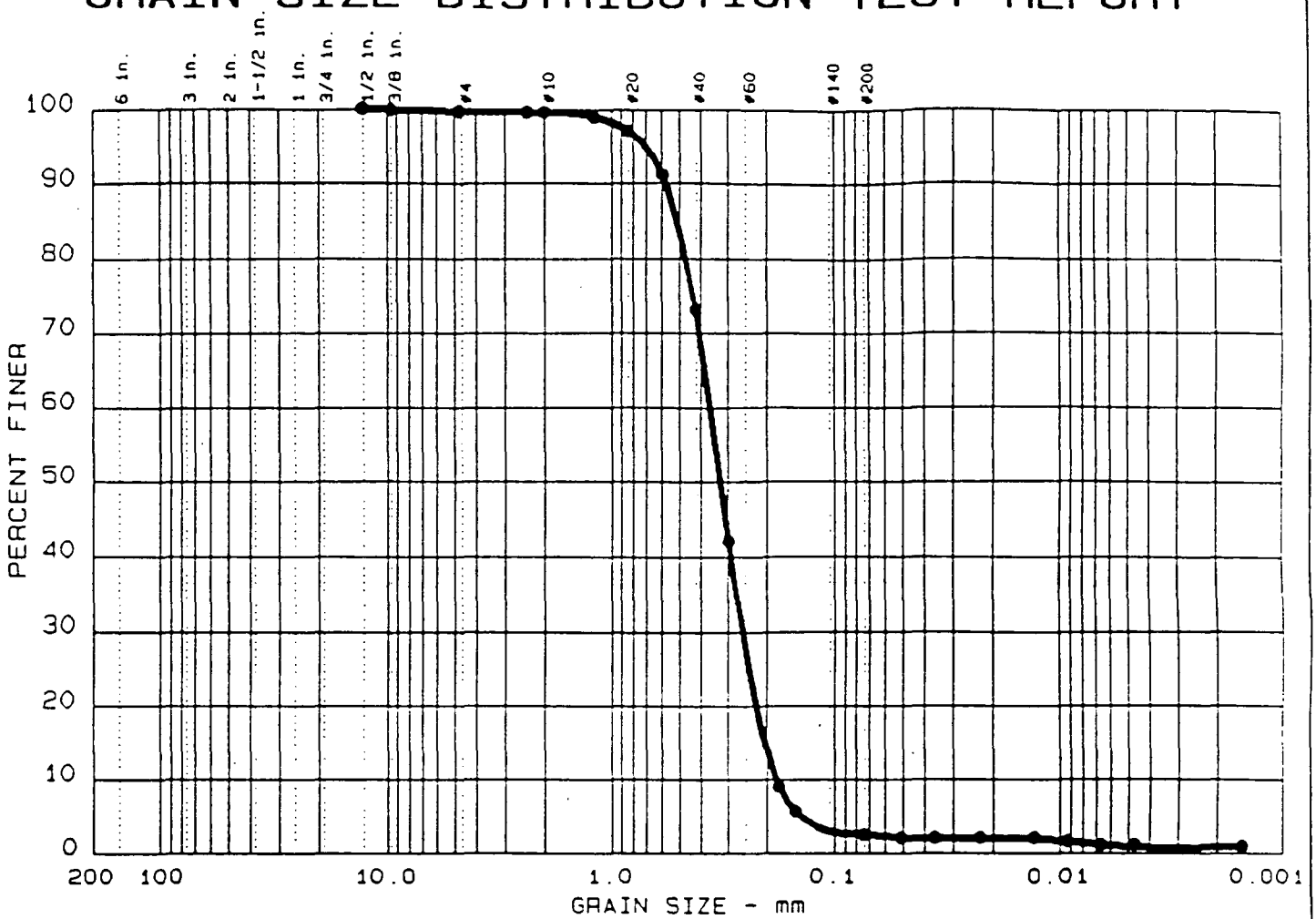
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	17	0.0	0.3	97.1	1.7	0.9

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.51	0.36	0.32	0.257	0.2044	0.1822	1.01	2.0

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand	SP	

Project No.: 2313.15
Project: NIROP
● Location: A8252H, 18-20'

Date: 08/26/92

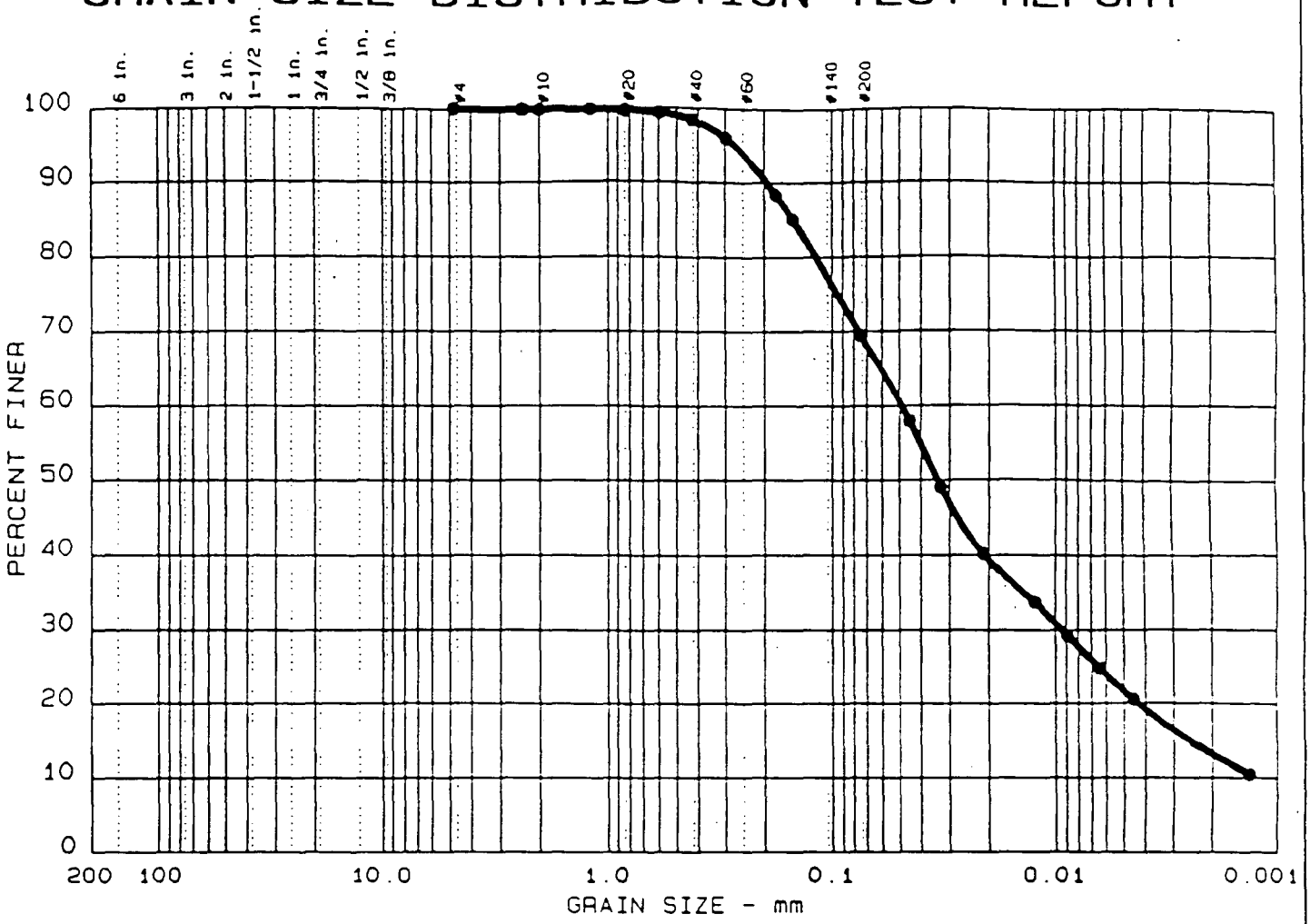
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	11	0.0	0.0	30.6	47.7	21.7

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	27	5	0.15		0.03	0.009	0.0025			

MATERIAL DESCRIPTION	USCS	AASHTO
● Sandy silty clay	CL-ML	

Project No.: 2313.15
Project: NIROP
● Location: AB253H, 18-20'

Date: 08/26/92

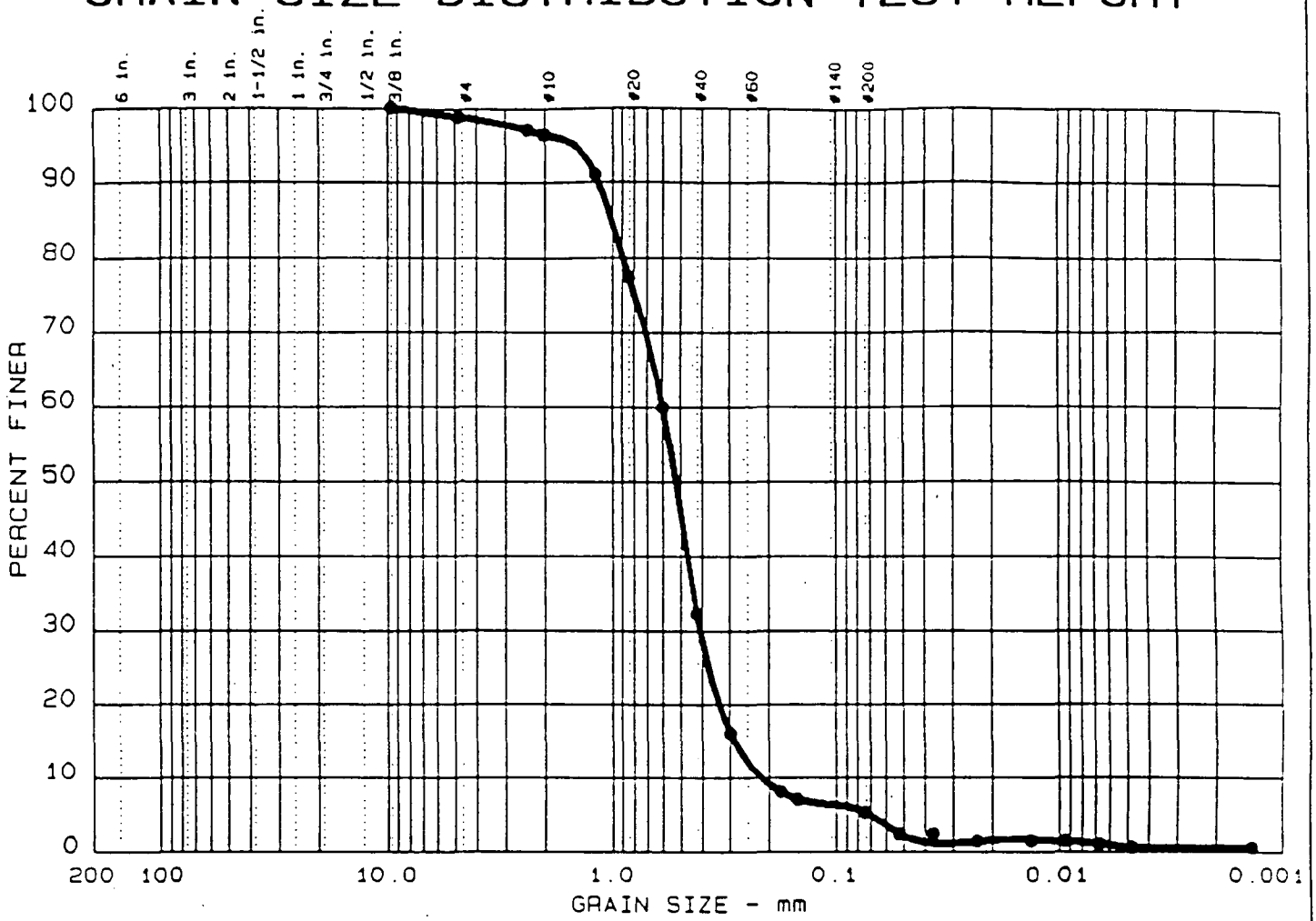
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	18	0.0	1.2	93.5	4.6	0.7

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	NP	NP	1.01	0.59	0.52	0.406	0.2844	0.2158	1.30	2.7

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand with silt	SP-SM	

Project No.: 2313.15
Project: NIROP
● Location: A8254C, 6-8'

Date: 08/26/92

Remarks:

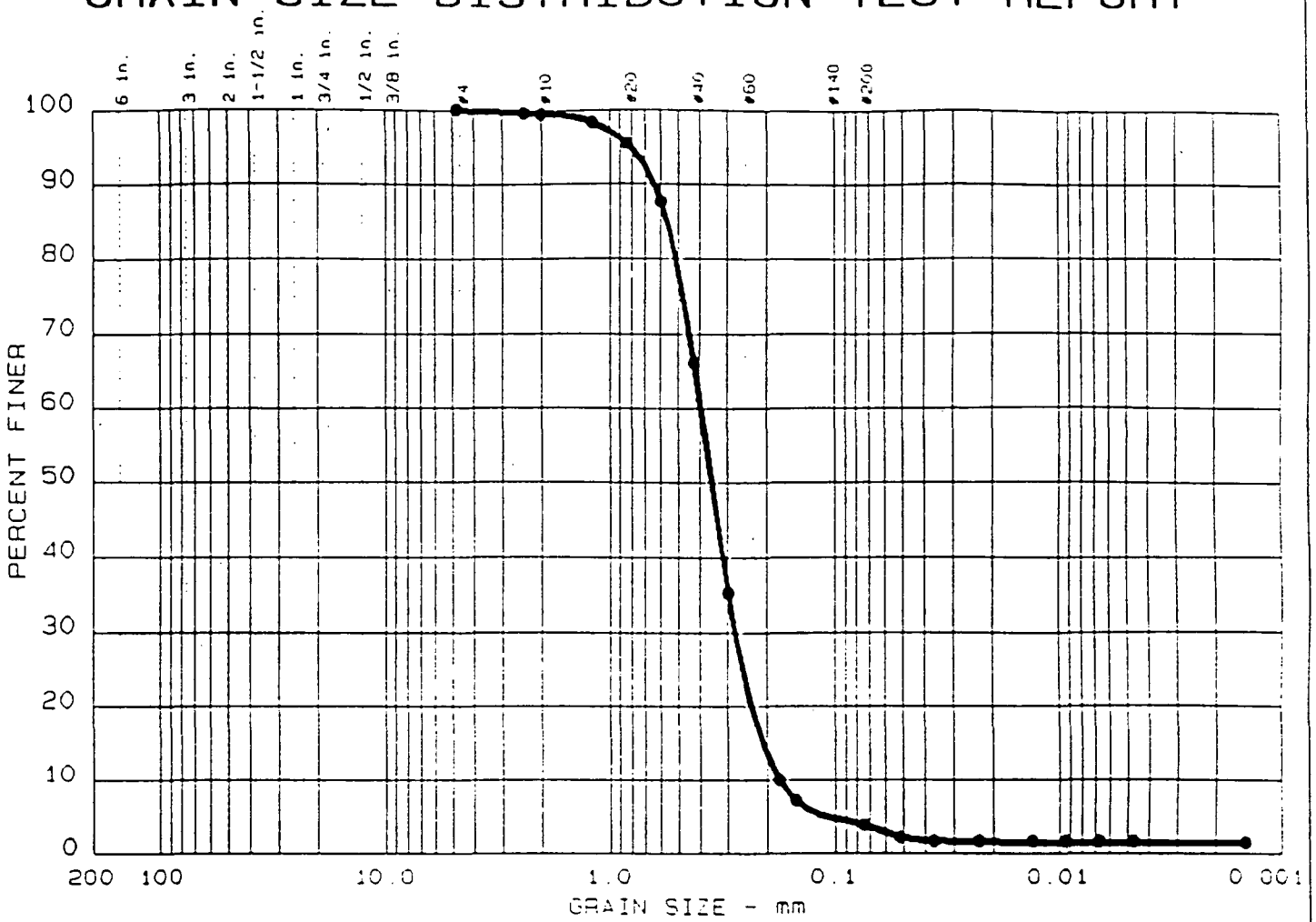
GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

8-20-92

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	18	0.0	0.0	96.2	2.5	1.3

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.56	0.39	0.35	0.277	0.2094	0.1762	1.11	2.2

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand	SP	

Project No.: 2313.13
Project: NIROP
● Location: BB001B, 3-5'

Date: 07/14/92

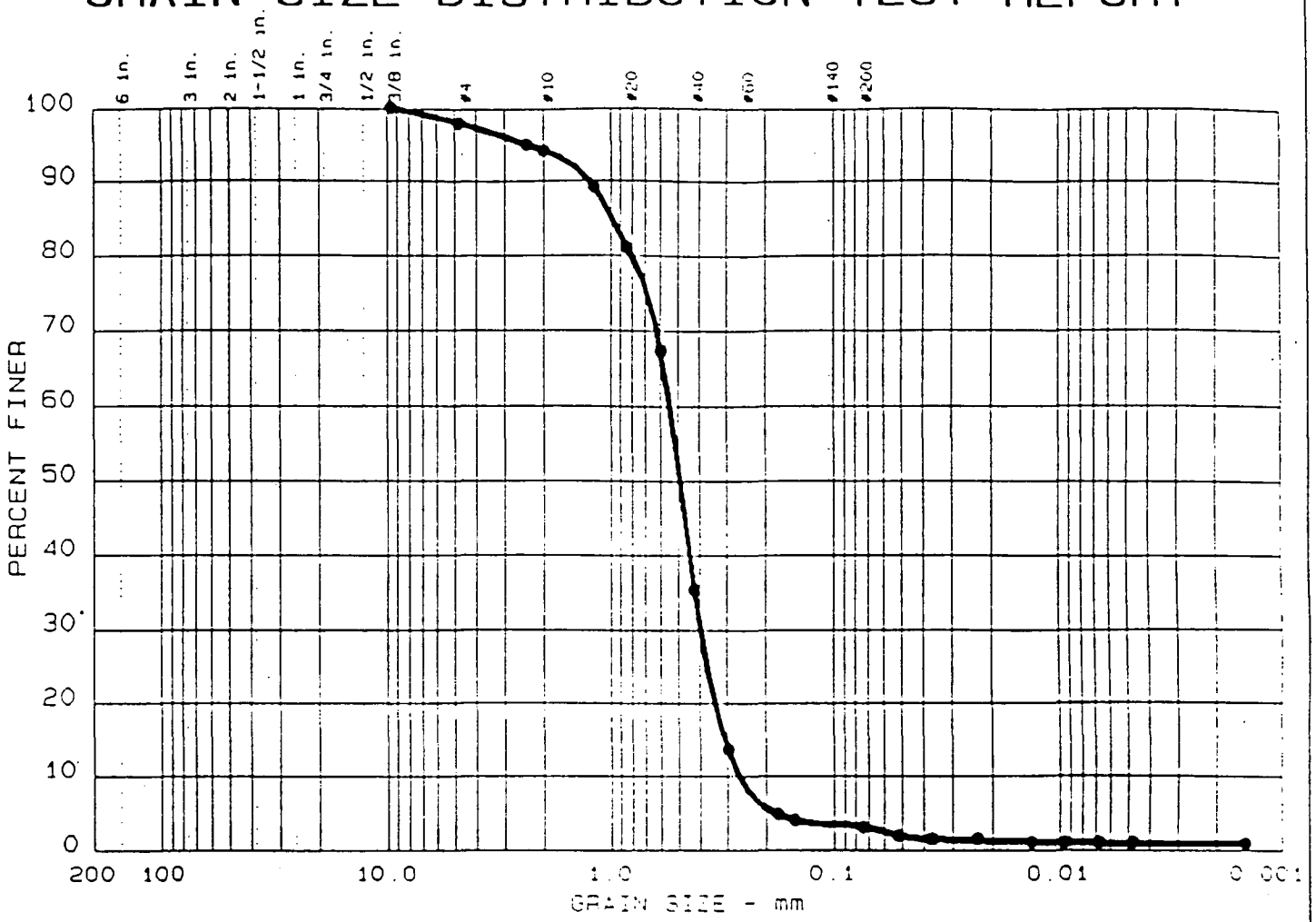
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	19	0.0	2.1	94.8	2.2	0.9

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.99	0.54	0.49	0.394	0.3076	0.2649	1.09	2.0

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand	SP	

Project No.: 2313.13
Project: NIROP
● Location: B8002H, 18-20'

Date: 07/14/92

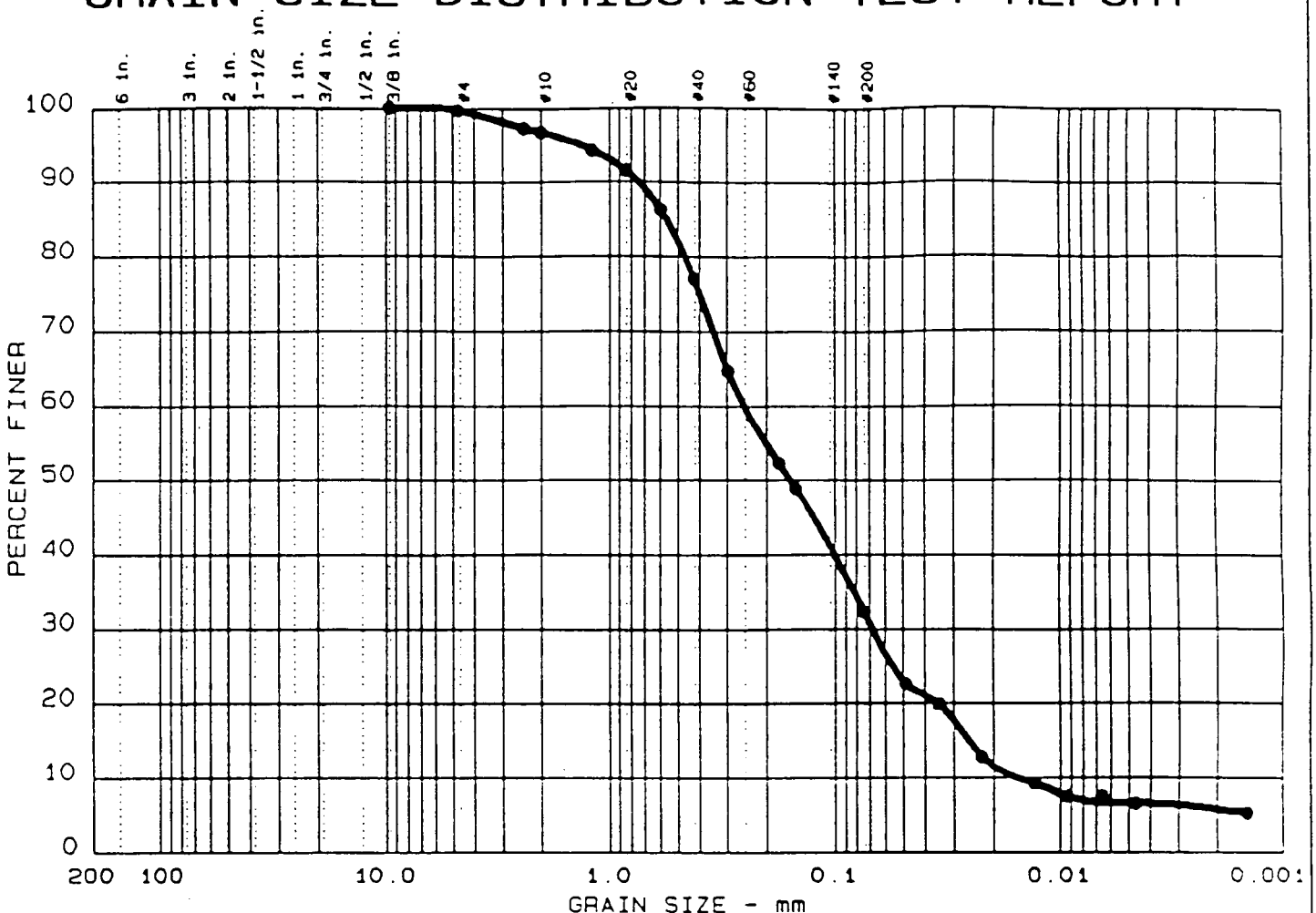
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	20	0.0	0.4	67.4	25.7	6.5

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	NP	NP	0.56	0.25	0.16	0.068	0.0253	0.0156	1.18	16.1

MATERIAL DESCRIPTION	USCS	AASHTO
● Silty sand	SM	

Project No.: 2313.13
Project: NIROP
● Location: BB003D, 8-10'

Date: 07/14/92

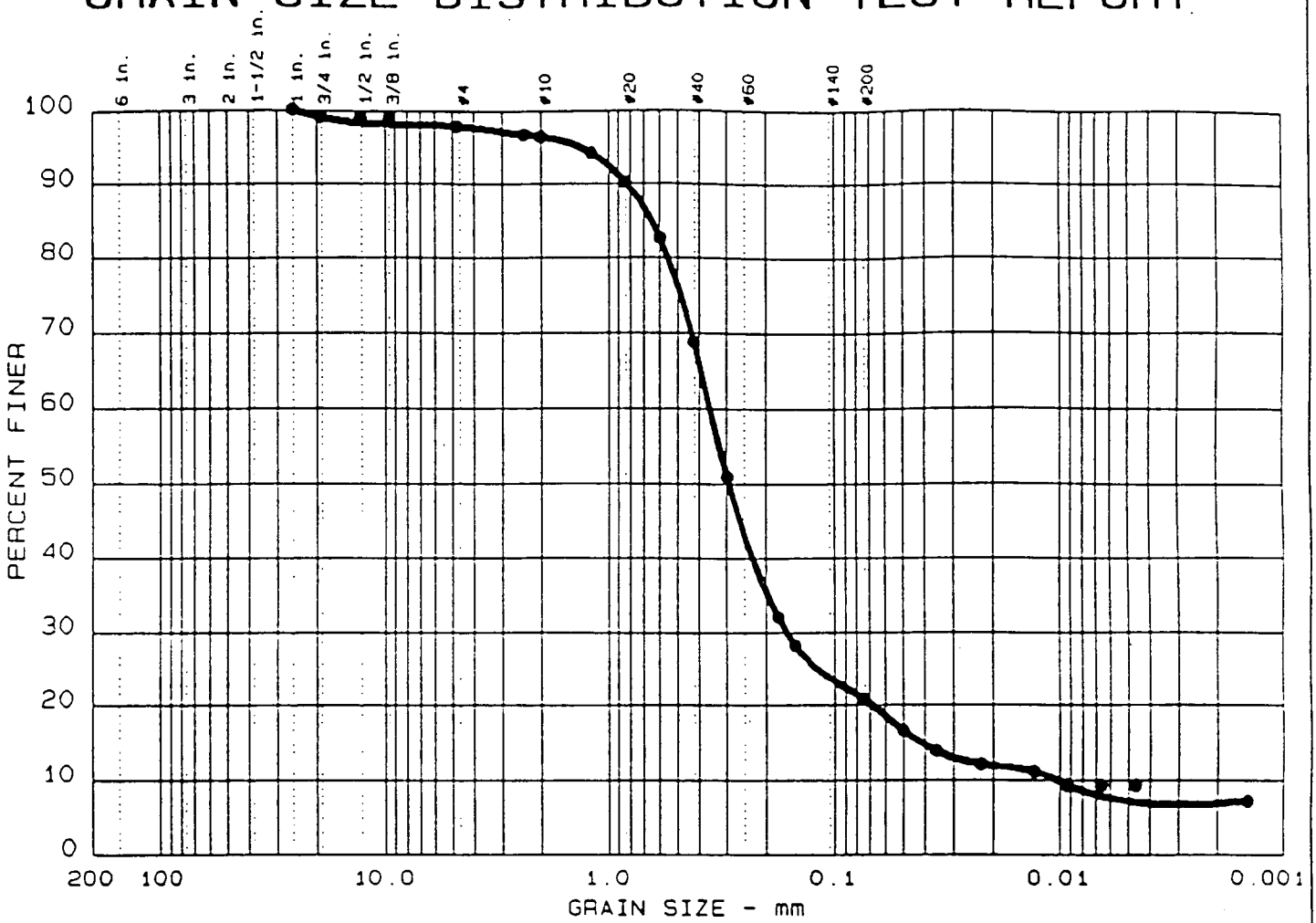
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	5	0.0	2.2	77.0	13.6	7.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	19	2	0.64	0.35	0.29	0.162	0.0412	0.0103	7.16	34.3

MATERIAL DESCRIPTION	USCS	AASHTO
● Silty sand	SM	

Project No.: 2313.13
Project: NIROP
● Location: BT001B, 3-5'

Date: 07/14/92

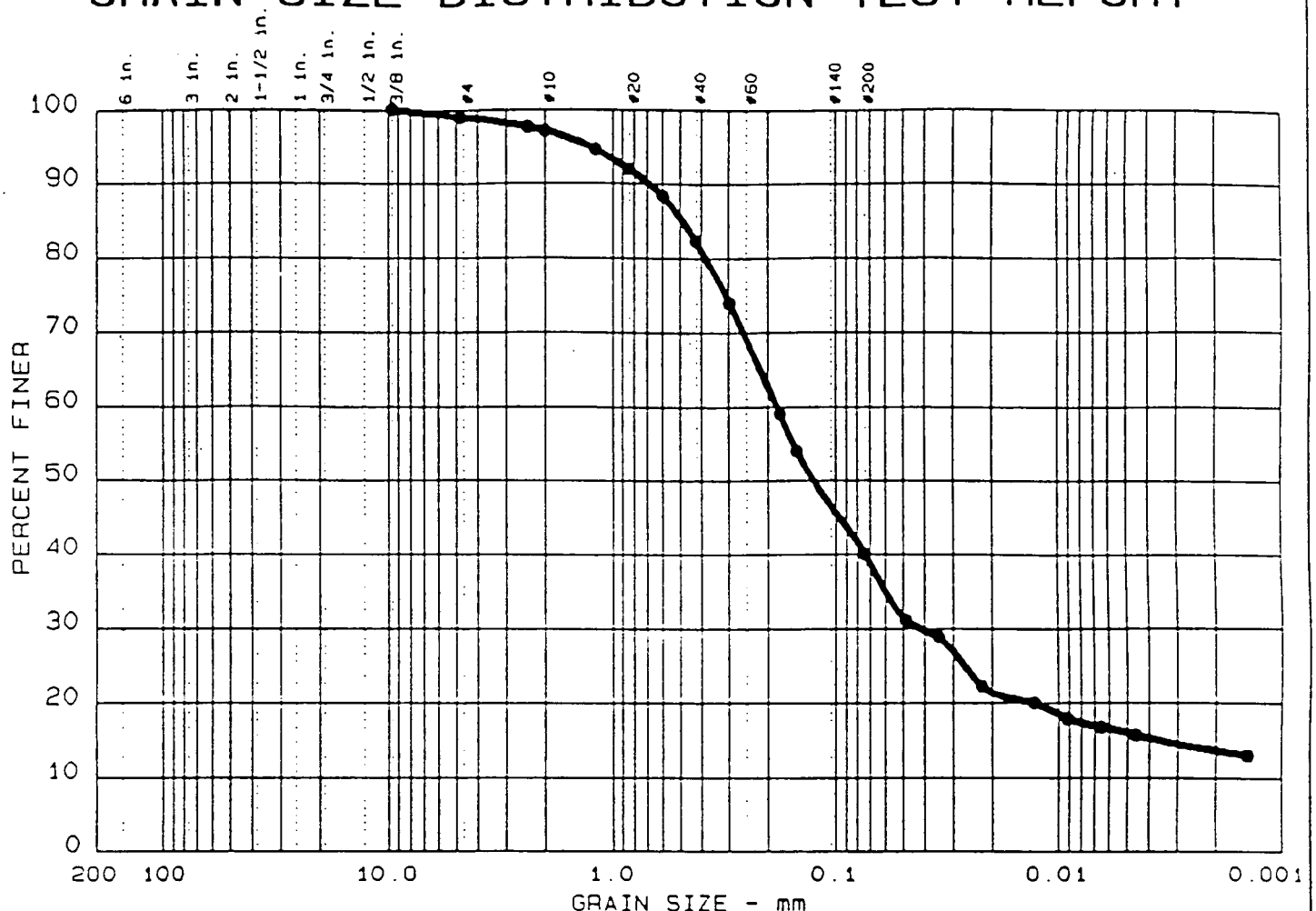
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	2	0.0	1.1	59.0	24.0	15.9

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	30	10	0.48	0.18	0.13	0.043	0.0036			

MATERIAL DESCRIPTION	USCS	AASHTO
● Clayey sand	SC	

Project No.: 2313.13
Project: NIROP
● Location: BT002B, 3-5'

Date: 07/14/92

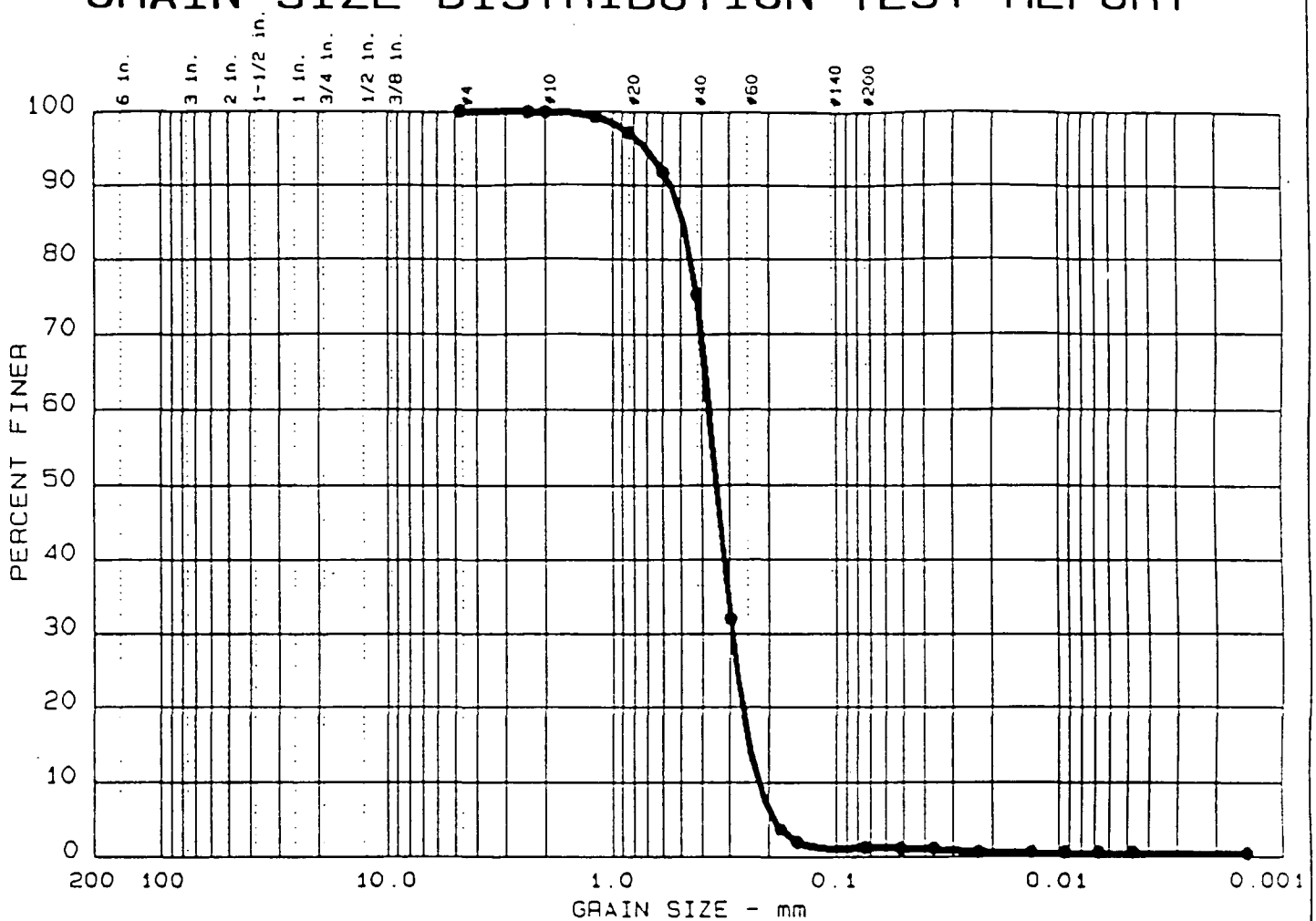
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	11	0.0	0.0	98.8	0.9	0.3

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.48	0.37	0.34	0.292	0.2443	0.2223	1.04	1.7

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand	SP	

Project No.: 2313.13
Project: NIROP
● Location: BT003D, 8-10'

Date: 08/13/92

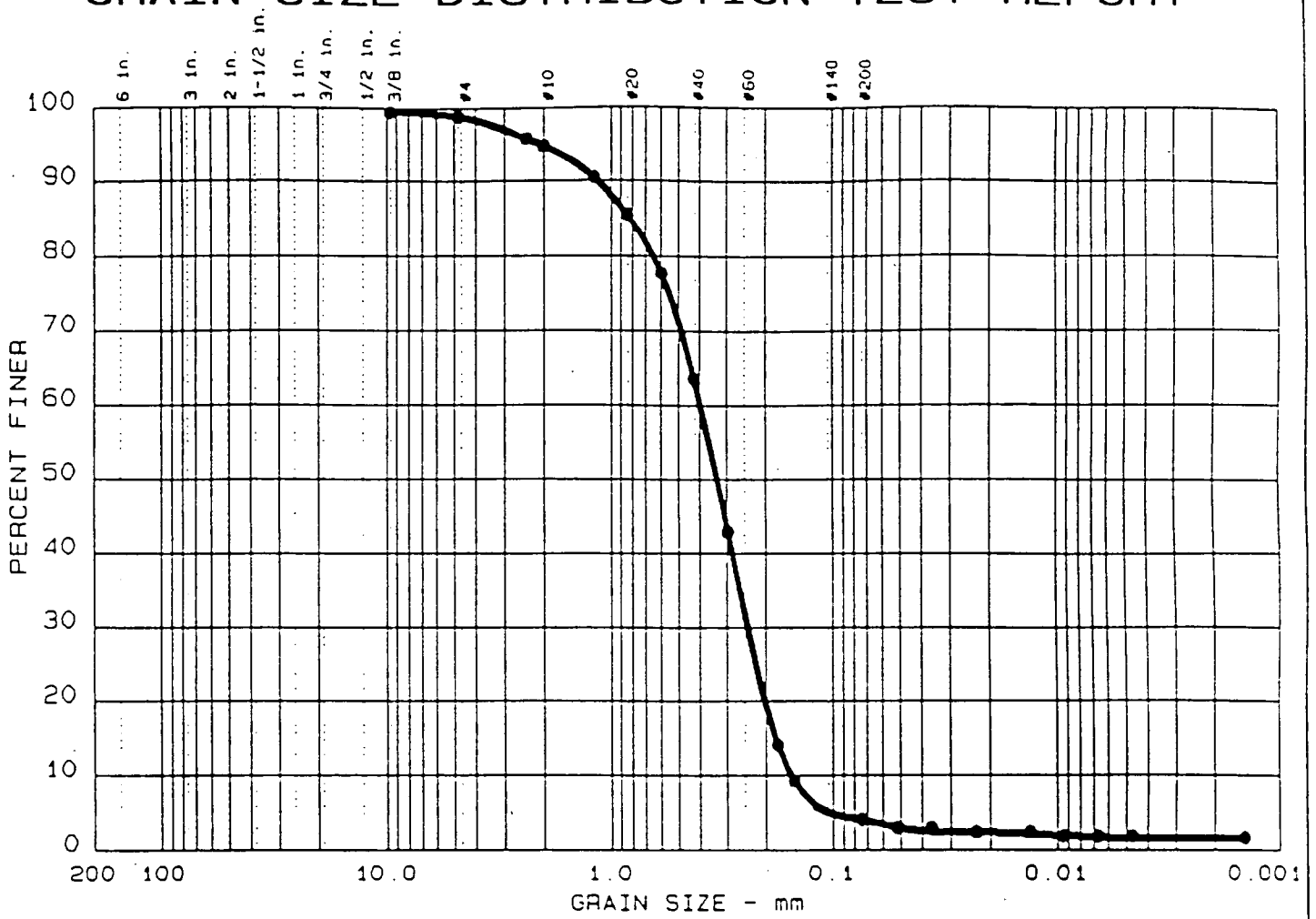
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	12	0.0	1.3	94.6	2.5	1.6

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.81	0.39	0.33	0.242	0.1811	0.1540	0.97	2.6

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand	SP	

Project No.: 2313.13
Project: NIROP
● Location: BT004D, 8-10'

Date: 08/13/92

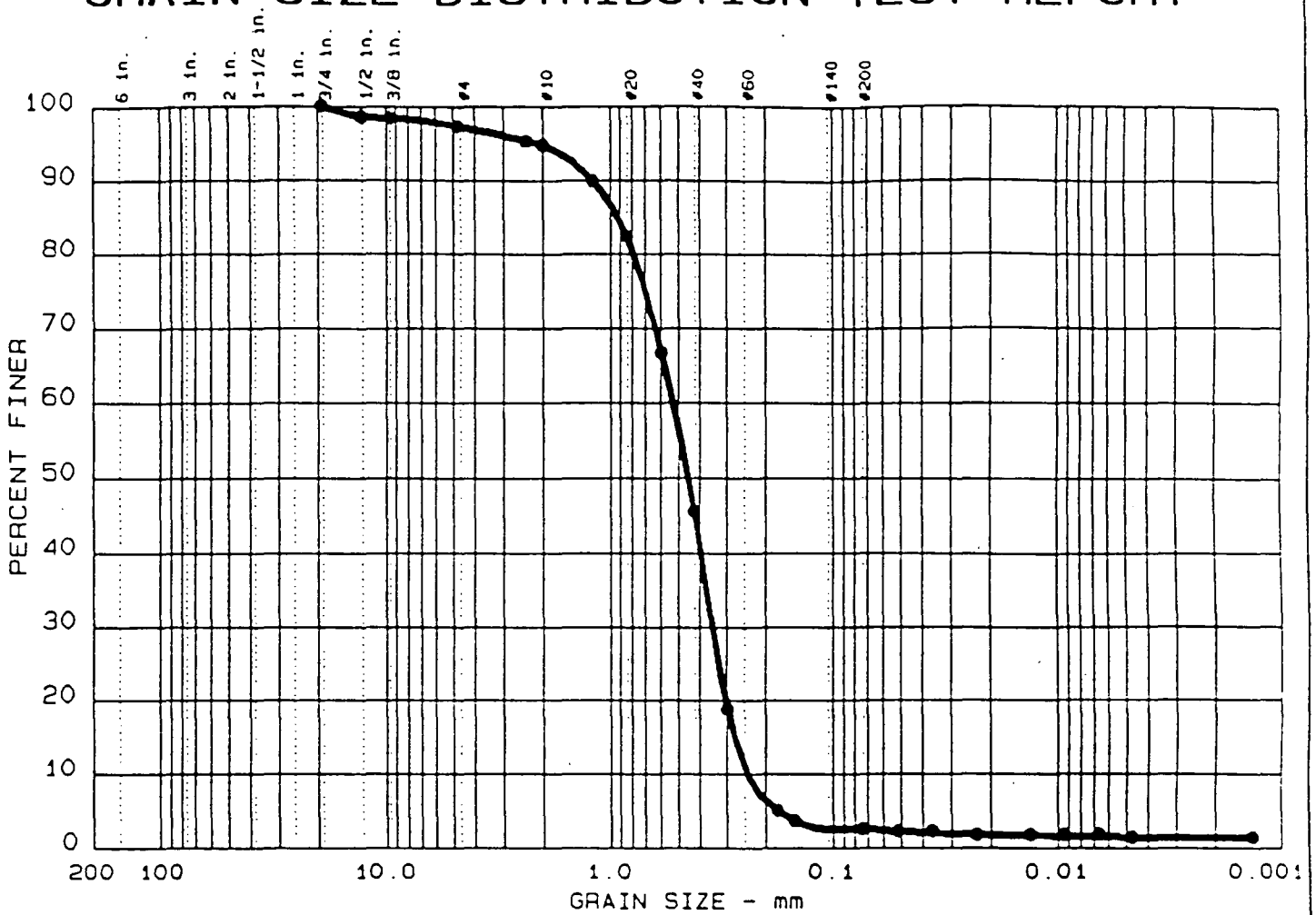
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	6	0.0	2.7	94.8	1.1	1.4

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.92	0.52	0.45	0.347	0.2754	0.2415	0.95	2.2

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand	SP	

Project No.: 2313.15
Project: NIROP
● Location: BB204G, 16-18'

Date: 08/21/92

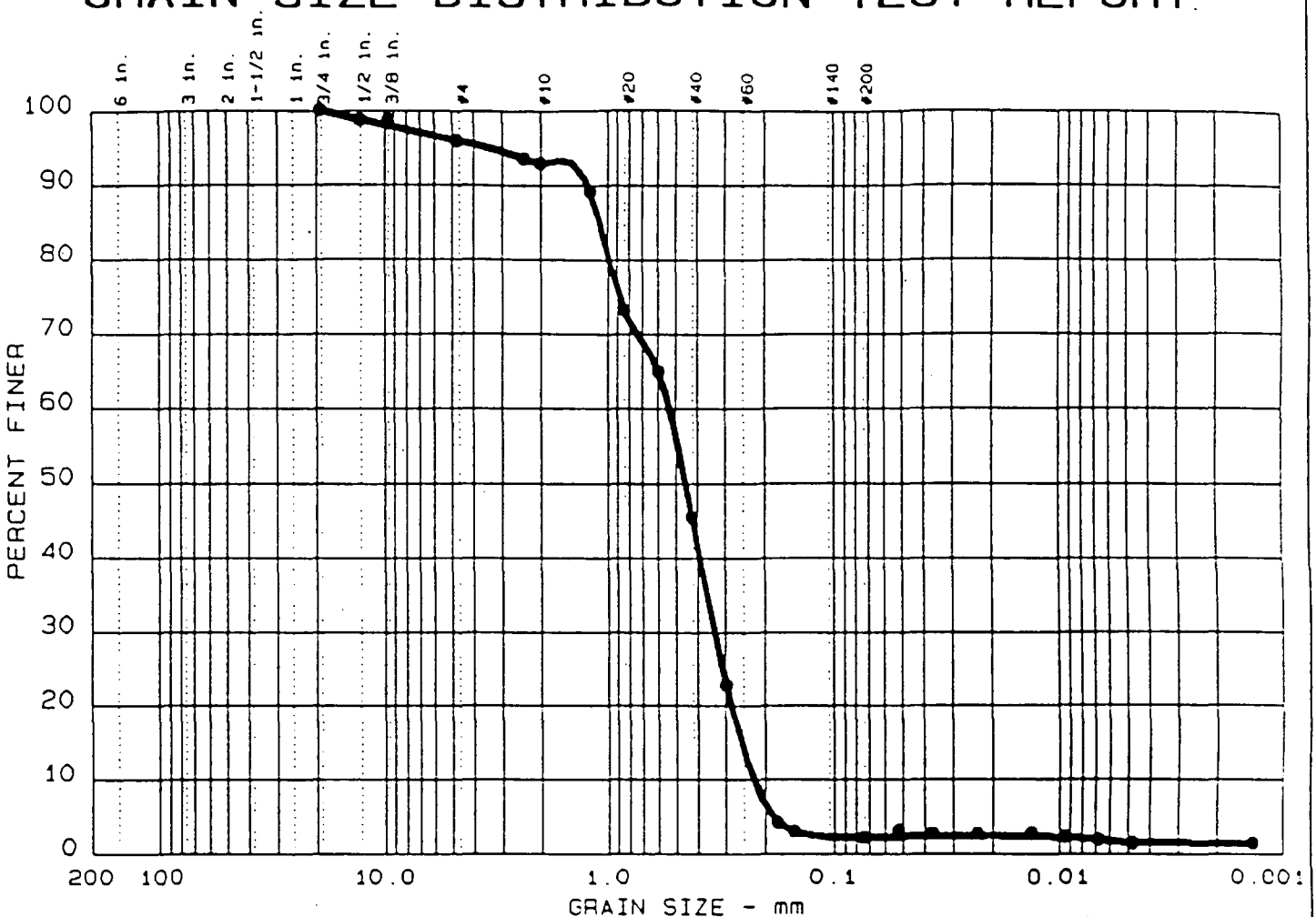
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	4	0.0	4.1	93.7	0.7	1.5

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.08	0.53	0.45	0.334	0.2550	0.2246	0.94	2.3

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand	SP	

Project No.: 2313.15
Project: NIROP
● Location: BB205G, 16-18'

Date: 08/21/92

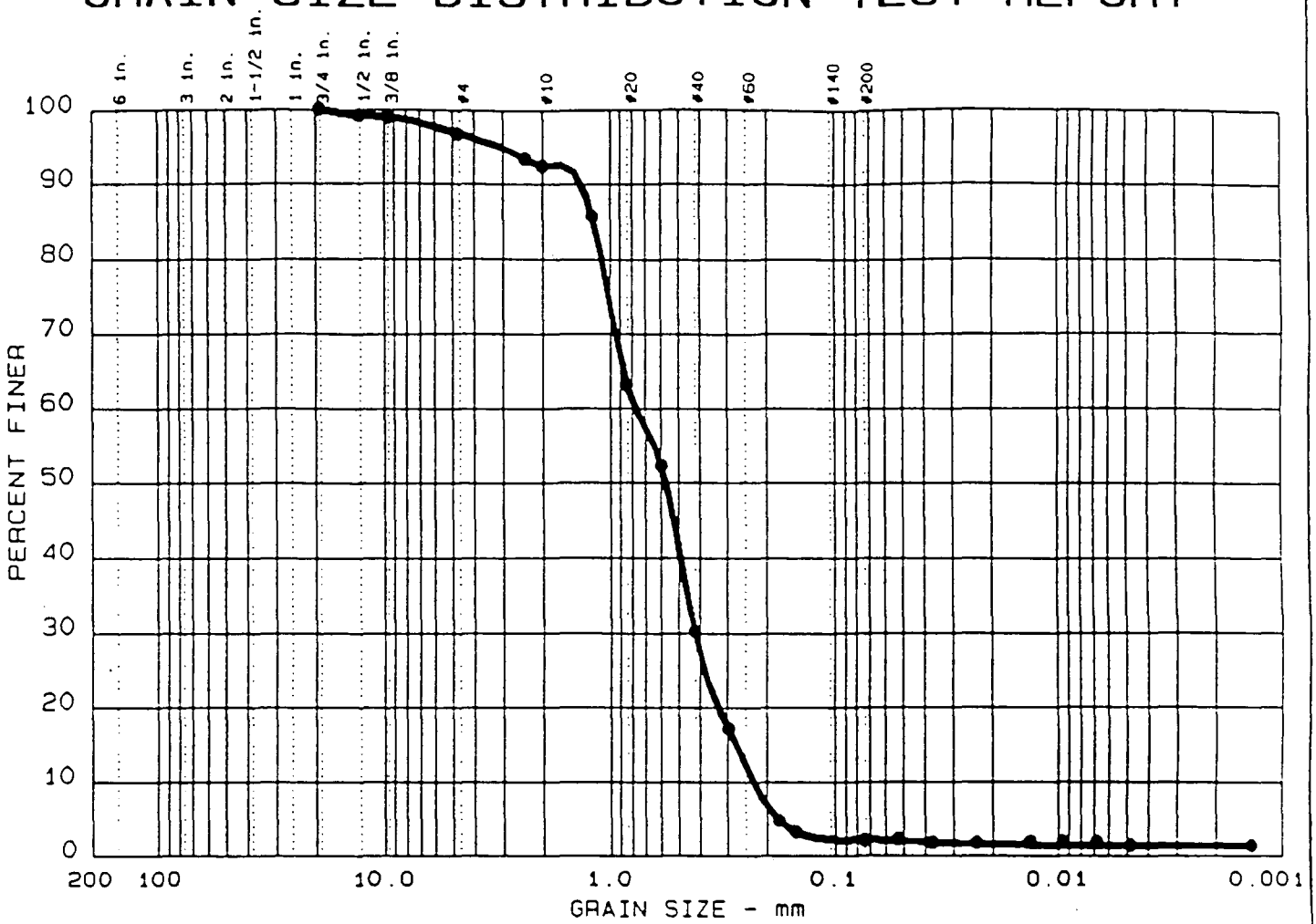
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	7	0.0	3.2	94.7	0.7	1.4

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.17	0.77	0.56	0.419	0.2735	0.2275	1.00	3.4

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand	SP	

Project No.: 2313.15
Project: NIROP
● Location: BB206G, 16-18'

Date: 08/21/92

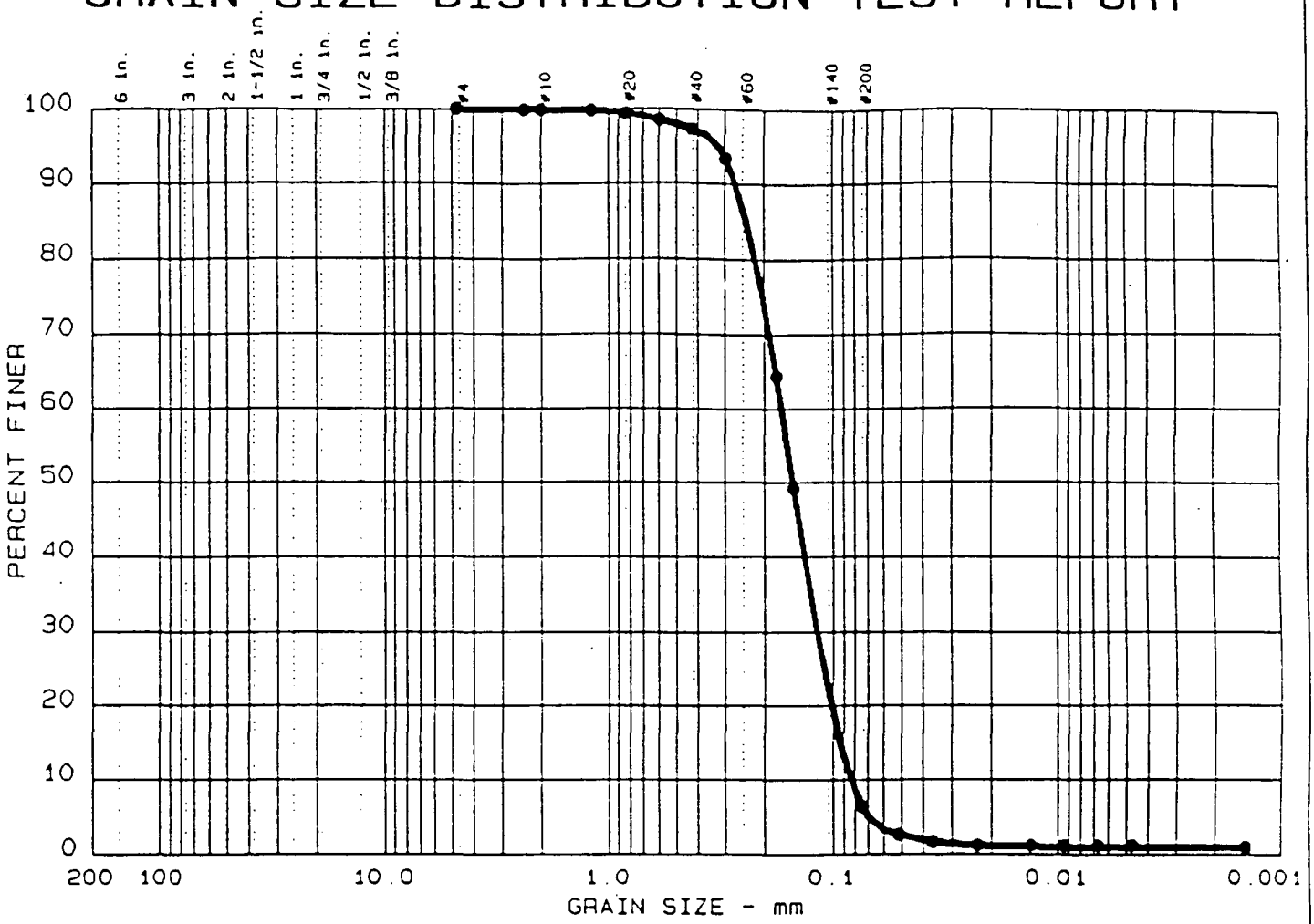
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	13	0.0	0.0	93.6	5.5	0.9

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	NP	NP	0.24	0.17	0.15	0.118	0.0925	0.0828	1.00	2.0

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand with silt	SP-SM	

Project No.: 2313.13
Project: NIROP
● Location: DB029F, 13-15'

Date: 08/13/92

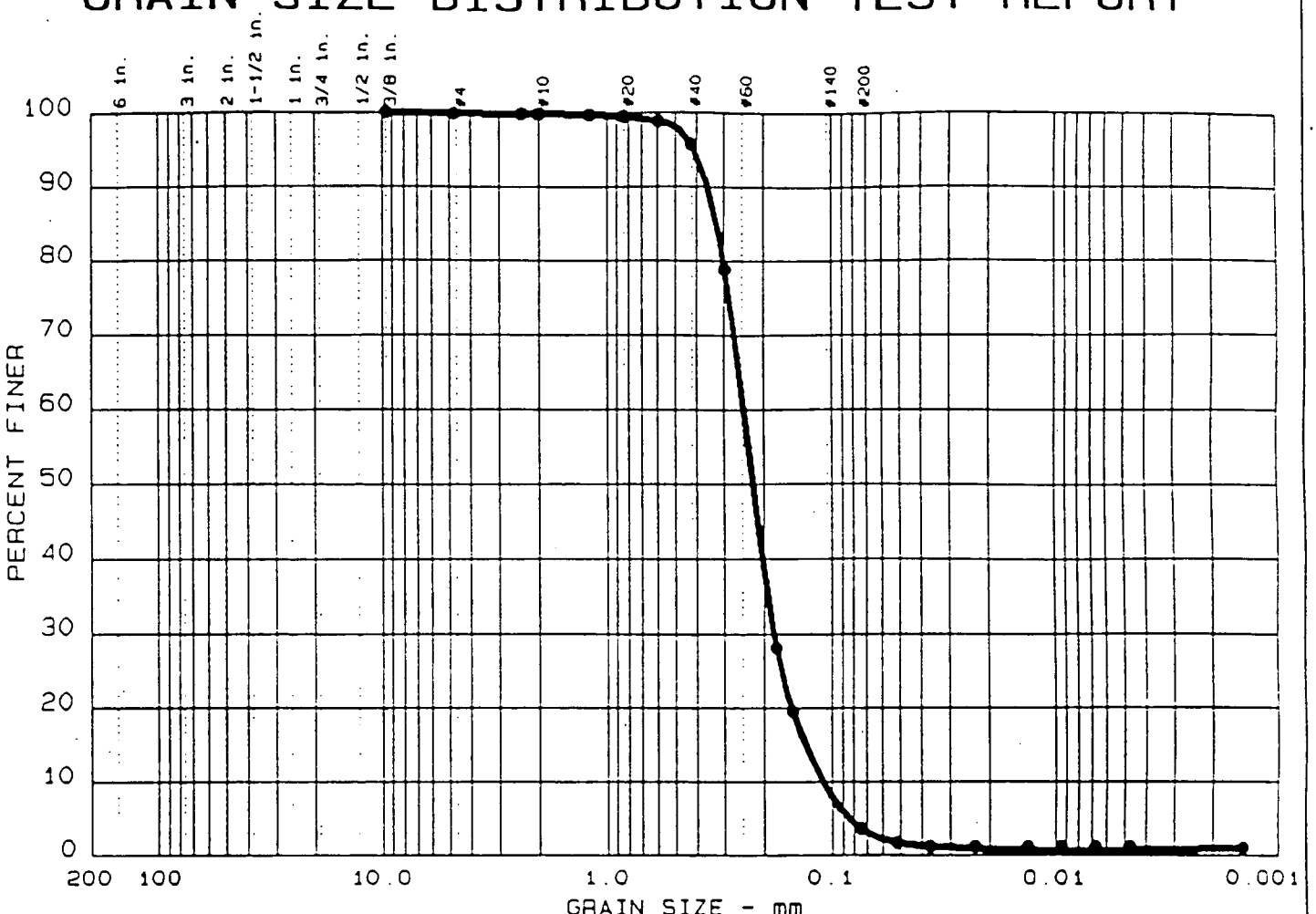
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	14	0.0	0.1	96.4	2.9	0.6

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.32	0.25	0.22	0.182	0.1312	0.1091	1.24	2.2

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand	SP	

Project No.: 2313.13
Project: NIROP
● Location: DB030F, 13-15'

Date: 08/13/92

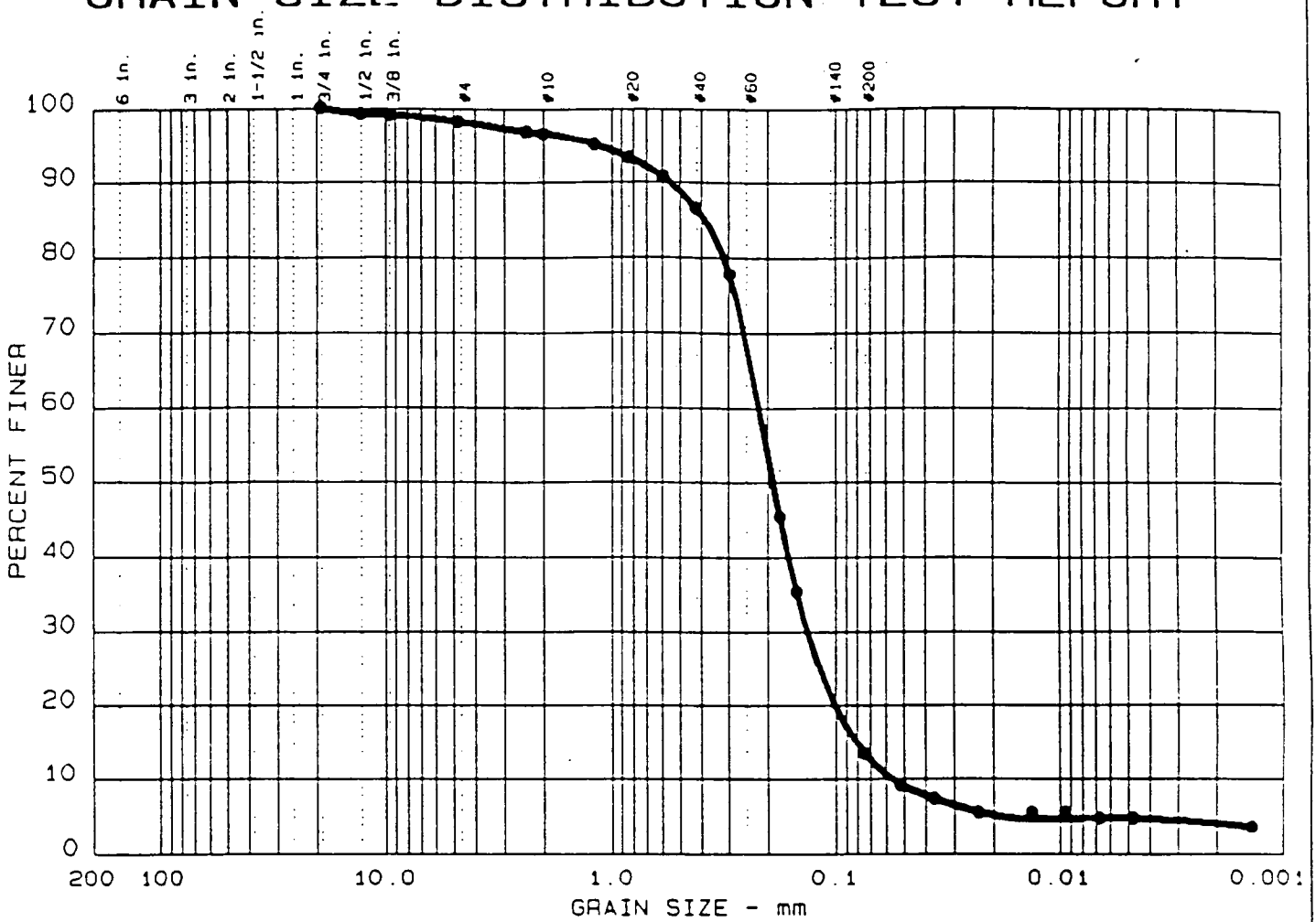
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	15	0.0	1.8	84.7	8.7	4.8

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	NP	NP	0.38	0.22	0.19	0.133	0.0801	0.0560	1.44	3.9

MATERIAL DESCRIPTION	USCS	AASHTO
● Silty sand	SM	

Project No.: 2313.13
Project: NIROP
● Location: DB031F, 13-15'

Date: 08/13/92

Remarks:

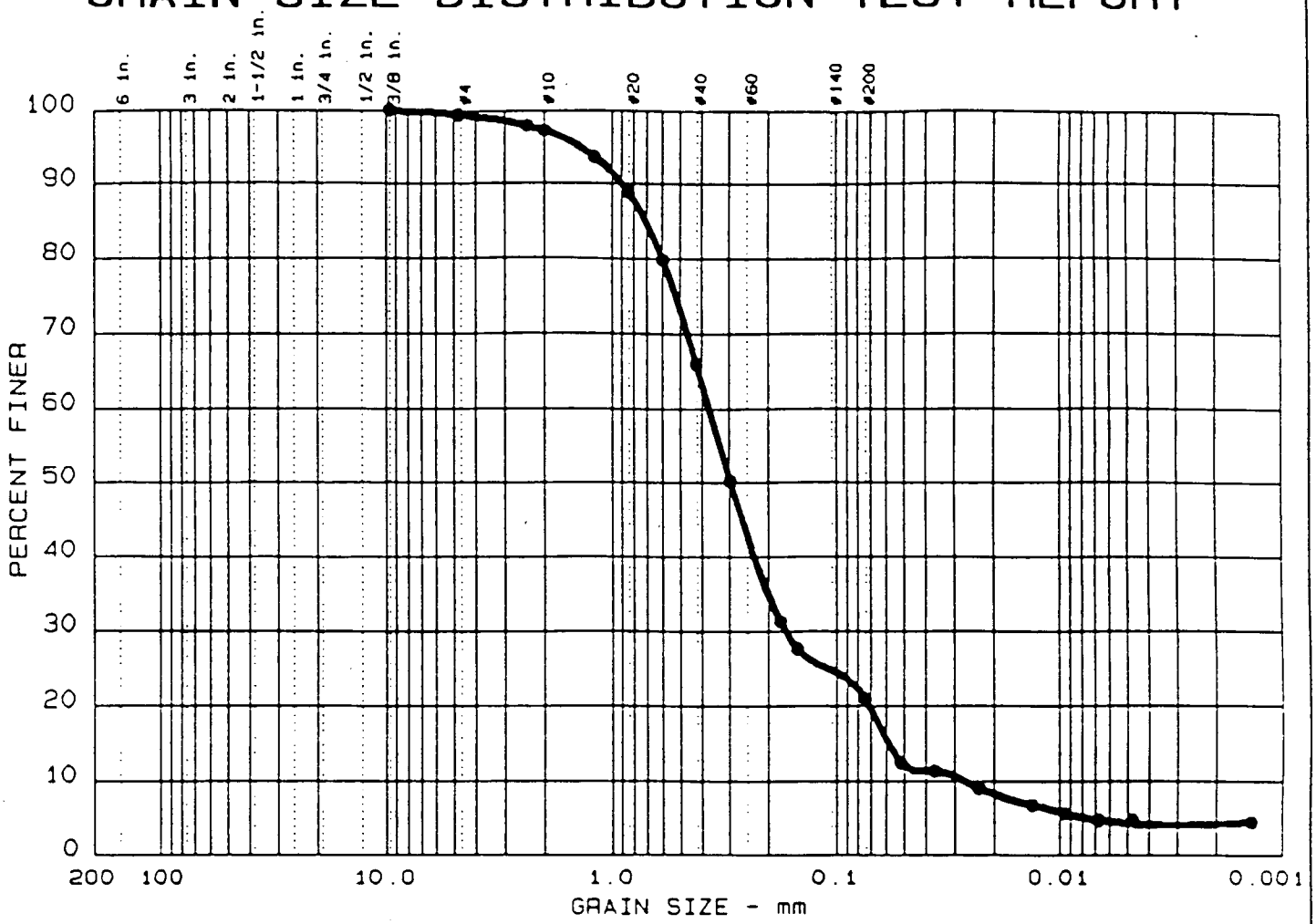
GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

F-24-52

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	8	0.0	0.6	78.5	16.7	4.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	NP	NP	0.70	0.37	0.30	0.168	0.0583	0.0266	2.88	13.8

MATERIAL DESCRIPTION	USCS	AASHTO
● Silty sand	SM	

Project No.: 2313.13
Project: NIROP
● Location: DB032C, 6-8'

Date: 07/14/92

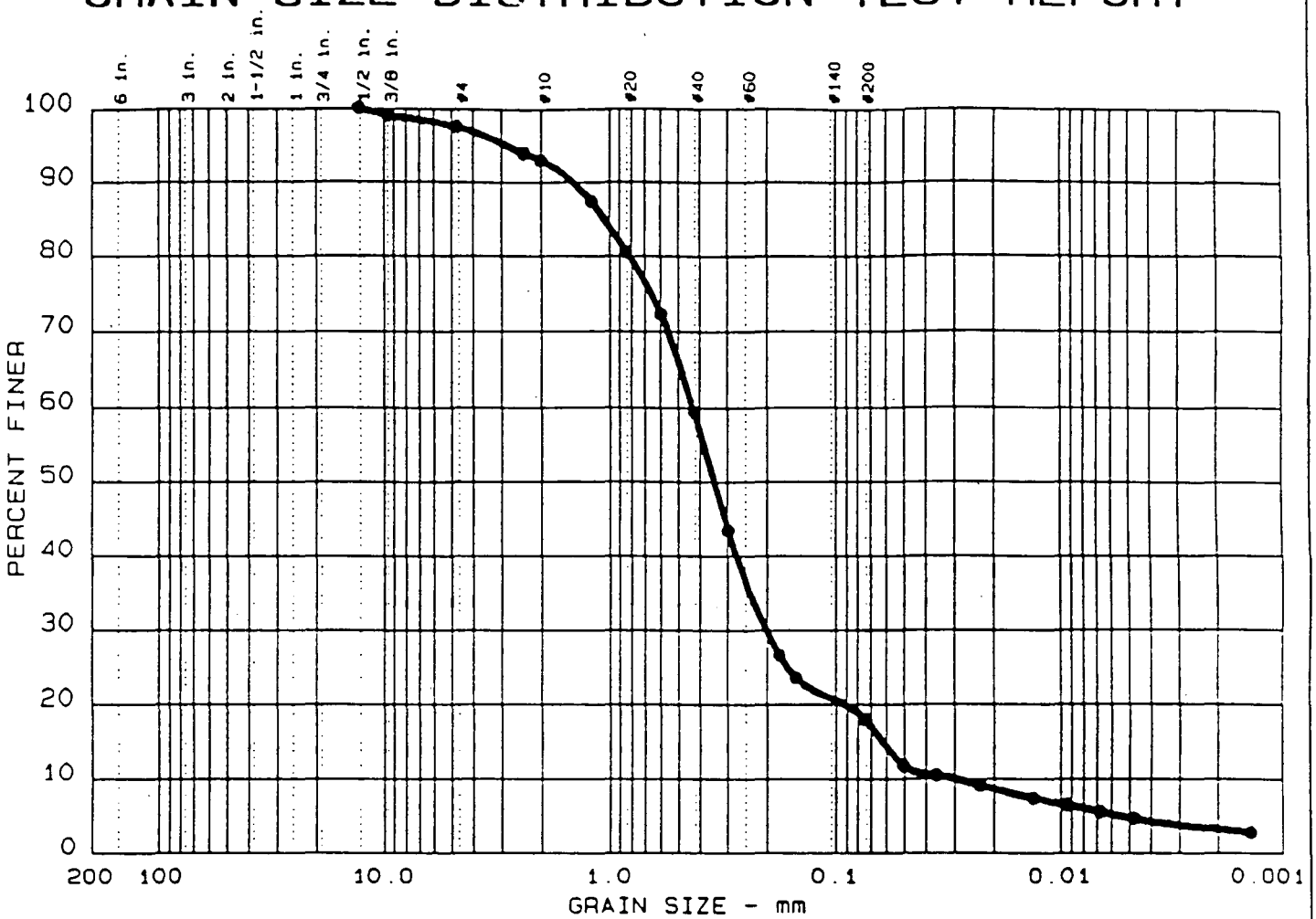
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	12	0.0	2.5	79.6	13.2	4.7

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	NP	NP	1.05	0.43	0.34	0.204	0.0615	0.0284	3.43	15.0

MATERIAL DESCRIPTION	USCS	AASHTO
● Silty sand	SM	

Project No.: 2313.15
Project: NIROP
● Location: DB033E, 10-12'

Date: 09/14/92

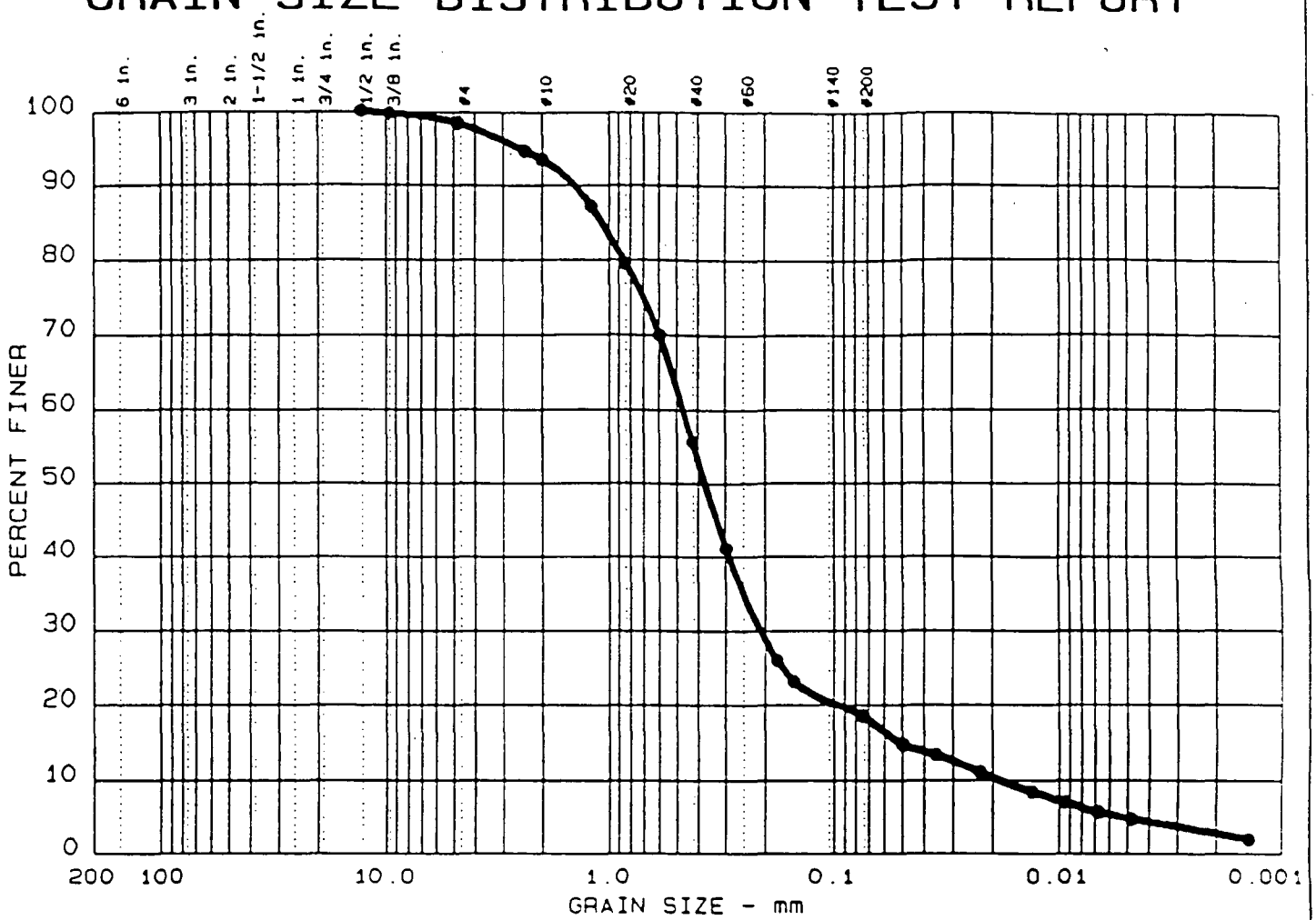
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	13	0.0	1.6	79.8	13.7	4.9

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	NP	NP	1.06	0.46	0.37	0.210	0.0511	0.0179	5.35	25.8

MATERIAL DESCRIPTION	USCS	AASHTO
● Silty sand	SM	

Project No.: 2313-.15
Project: NIROP
● Location: DB034C, 6-8'

Date: 09/14/92

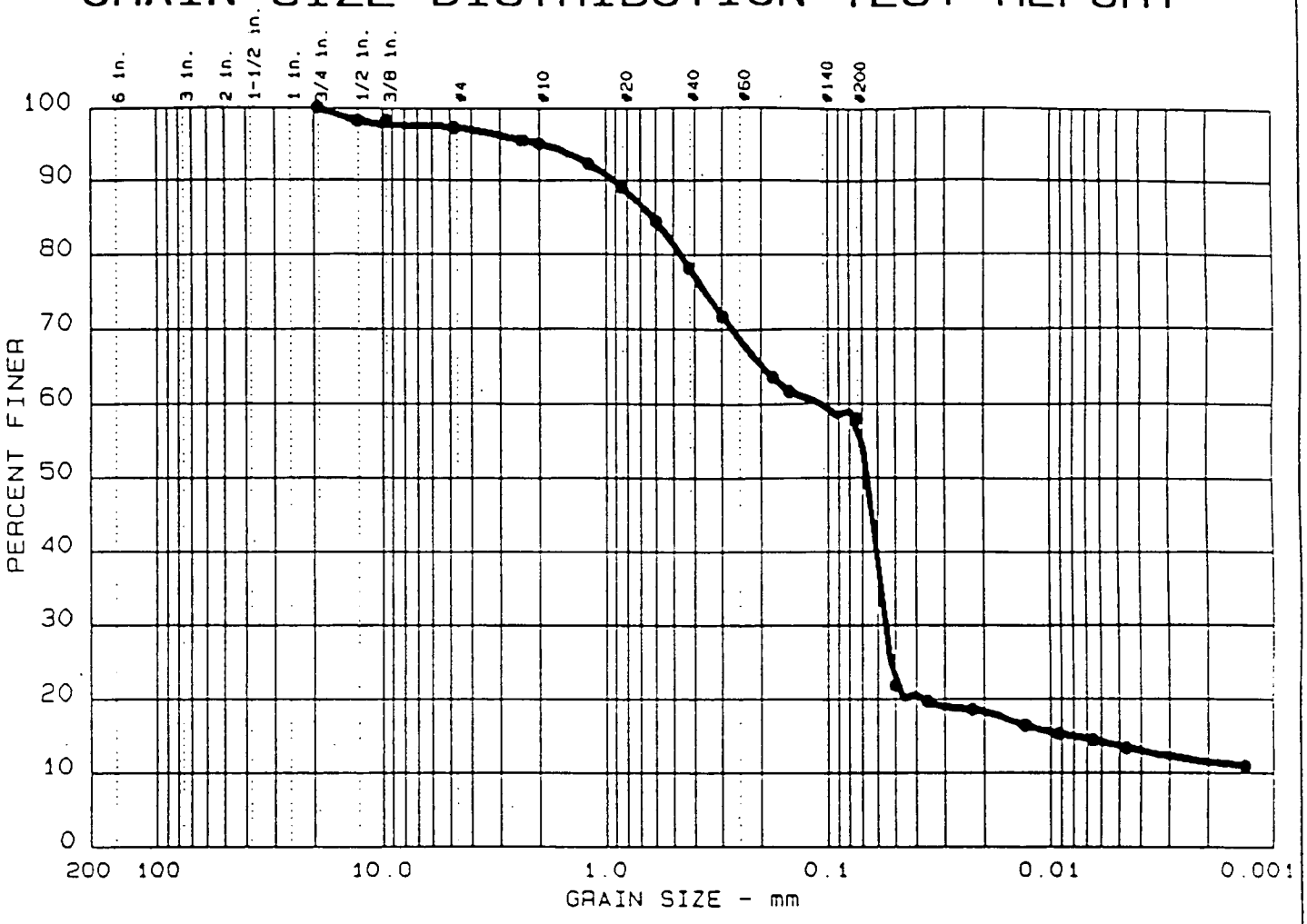
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	16	0.0	2.7	39.4	44.3	13.6

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	23	7	0.61	0.11	0.07	0.055	0.0082			

MATERIAL DESCRIPTION	USCS	AASHTO
● Sandy silty clay	CL-ML	

Project No.: 2313.13
Project: NIROP
● Location: EB001D, 8-10'

Date: 08/13/92

Remarks:

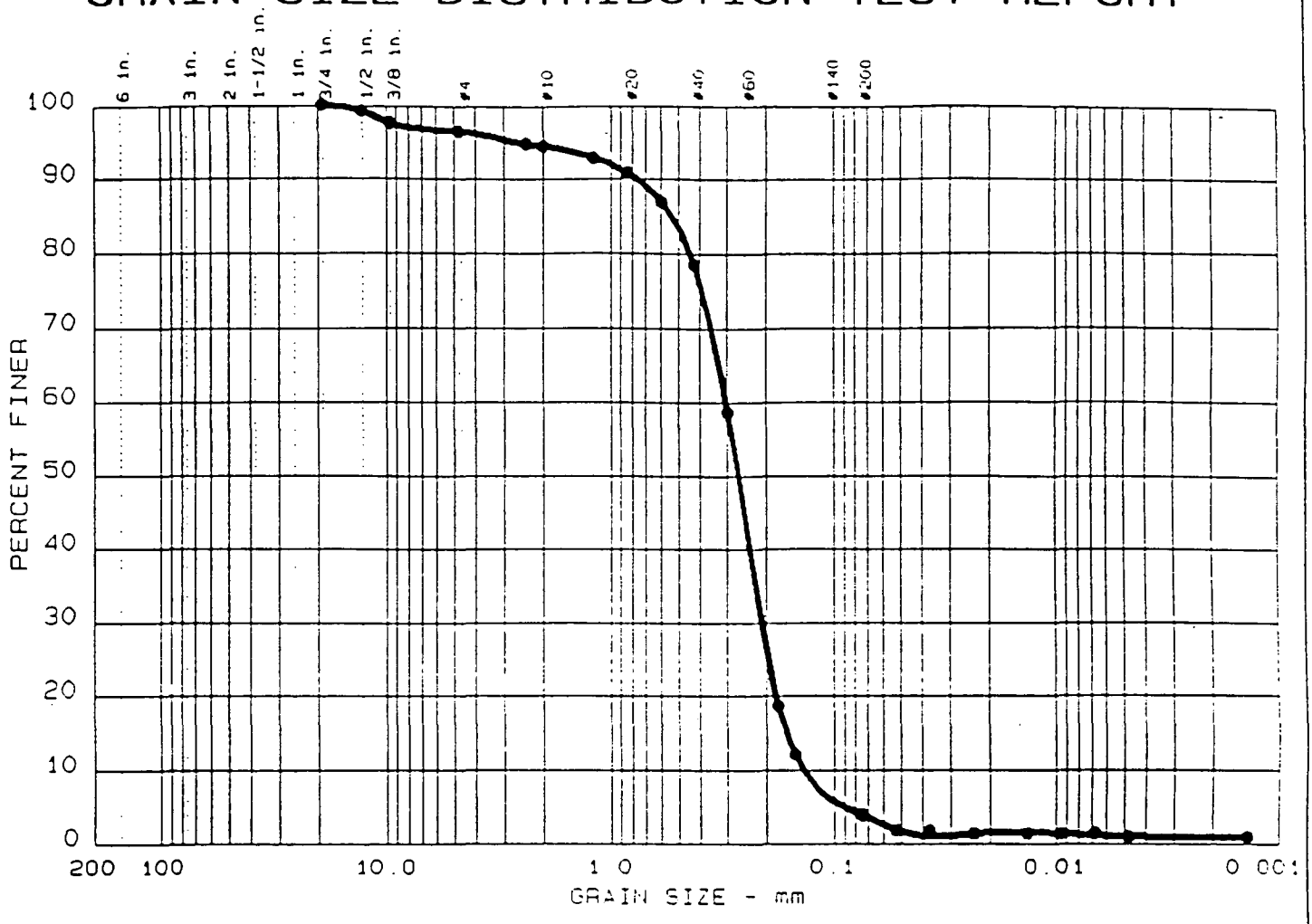
GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

8-20-92

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	9	0.0	3.6	92.5	2.9	1.0

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.52	0.30	0.27	0.210	0.1627	0.1354	1.08	2.2

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand	SP	

Project No.: 2313.13
Project: NIROP
● Location: EB002D, 8-10'

Date: 07/14/92

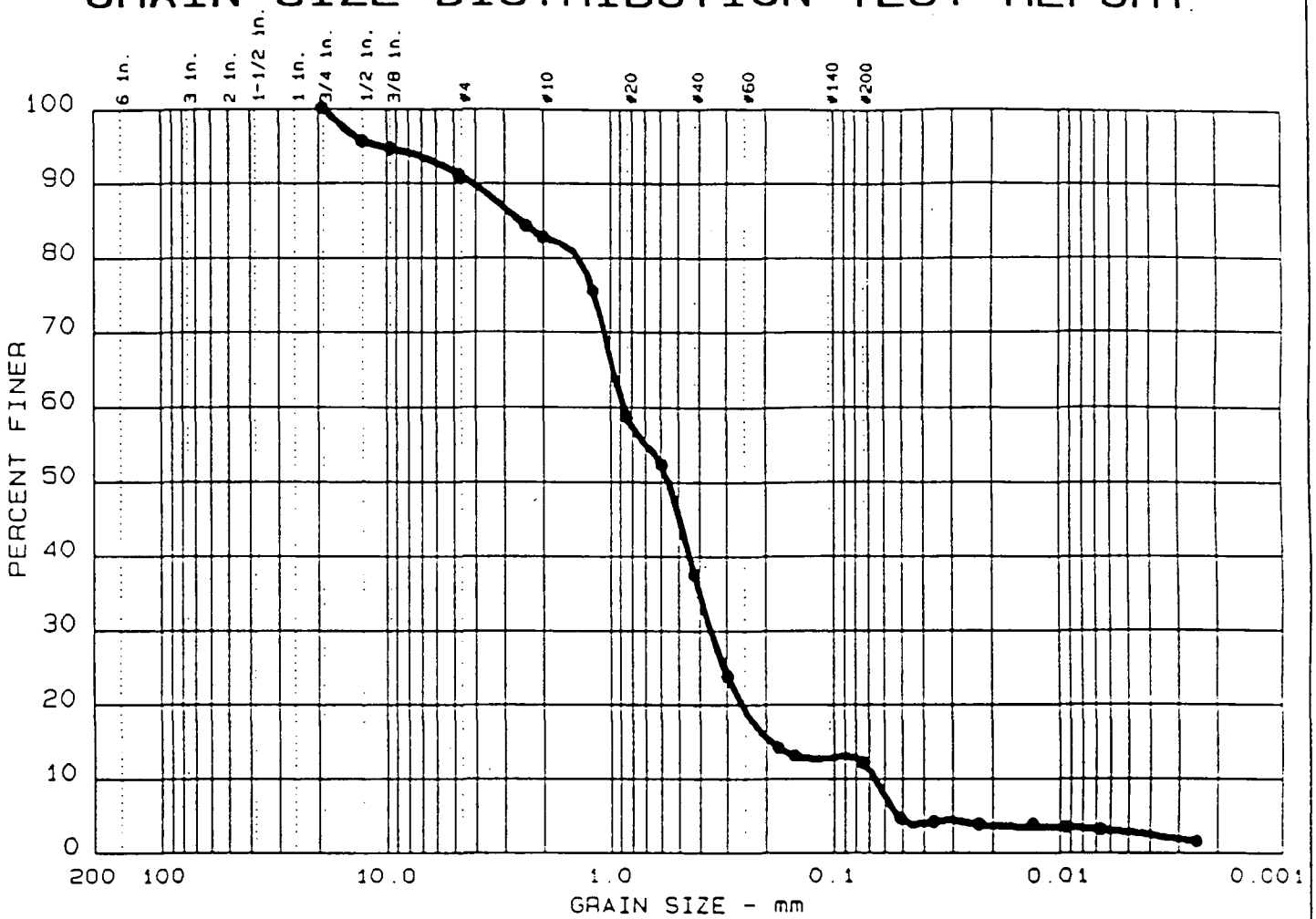
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	17	0.0	8.8	79.0	9.4	2.8

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	NP	NP	2.51	0.87	0.55	0.354	0.1903	0.0652	2.21	13.4

MATERIAL DESCRIPTION	USCS	AASHTO
● Silty sand	SM	

Project No.: 2313.13
Project: NIROP
● Location: EB003E, 10-12'

Date: 08/13/92

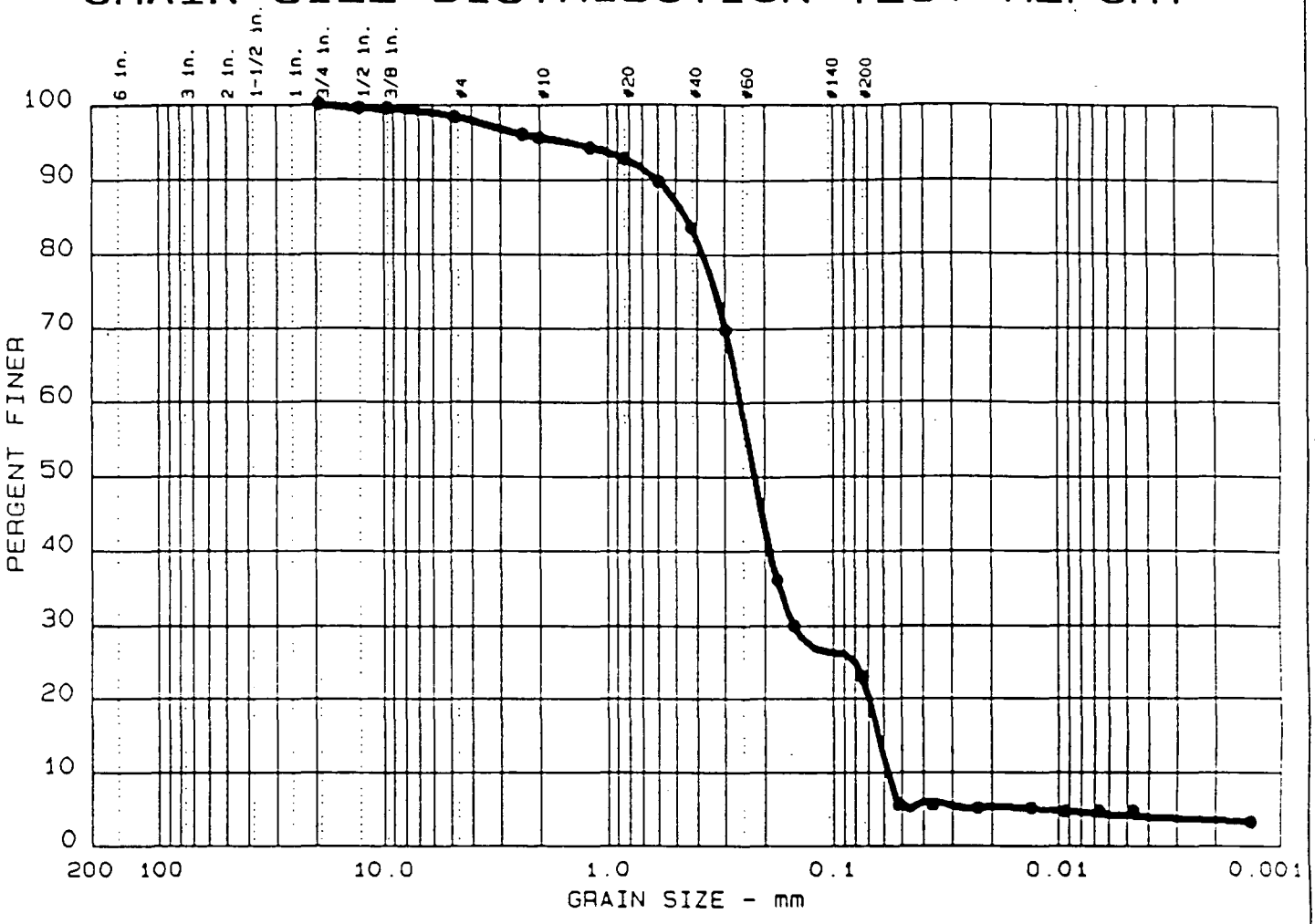
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	18	0.0	1.7	75.3	19.0	4.0

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	NP	NP	0.44	0.26	0.22	0.148	0.0630	0.0575	1.50	4.4

MATERIAL DESCRIPTION	USCS	AASHTO
● Silty sand	SM	

Project No.: 2313.13
Project: NIROP
● Location: EB004D, 8-10'

Date: 08/13/92

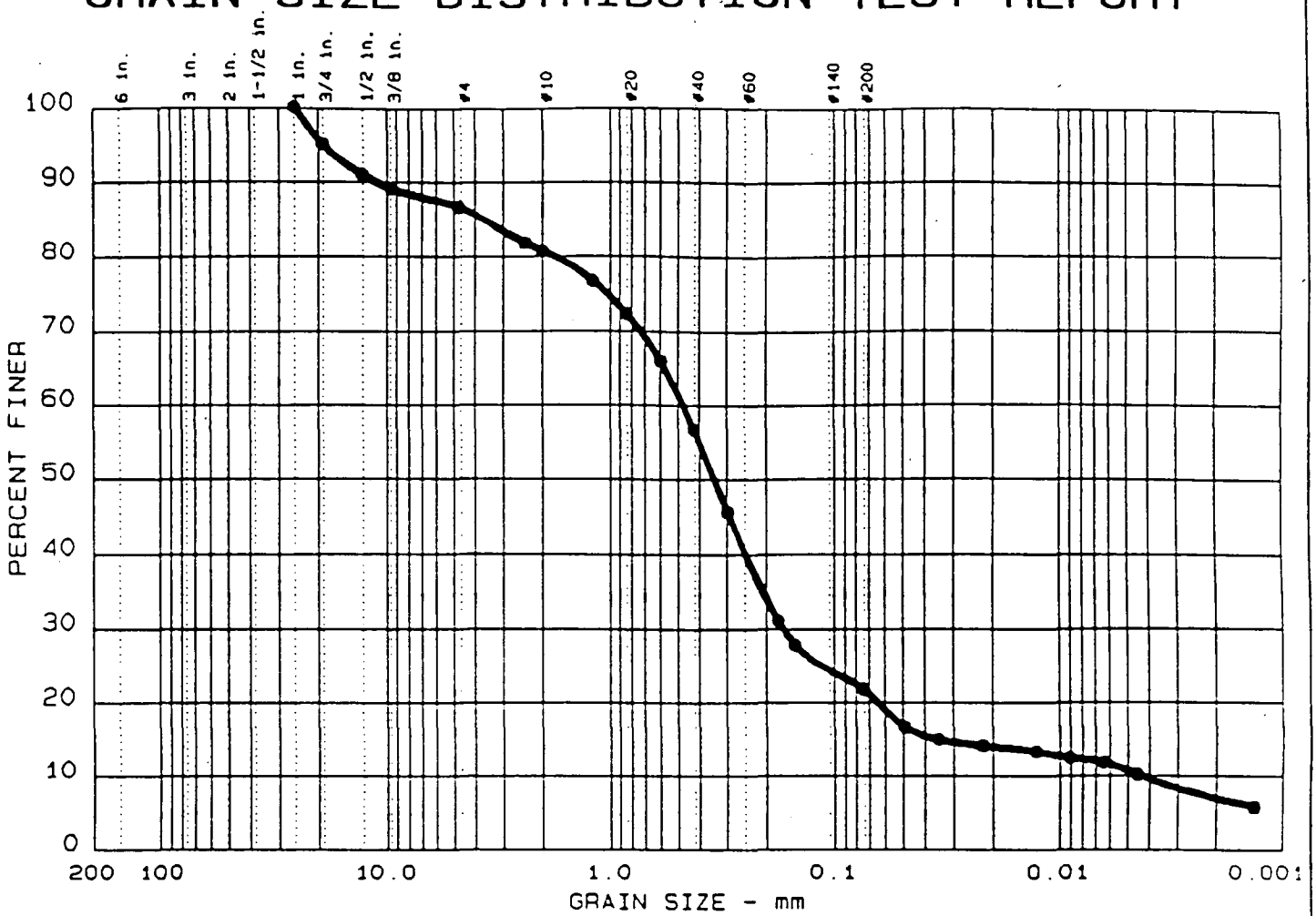
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	11	0.0	13.3	64.9	11.1	10.7

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	20	4	3.63	0.47	0.34	0.168	0.0343	0.0044	13.80	107.2

MATERIAL DESCRIPTION	USCS	AASHTO
● Silty, clayey sand	SC-SM	

Project No.: 2313.15
Project: NIROP
● Location: EB2038, 3-5'

Date: 08/21/92

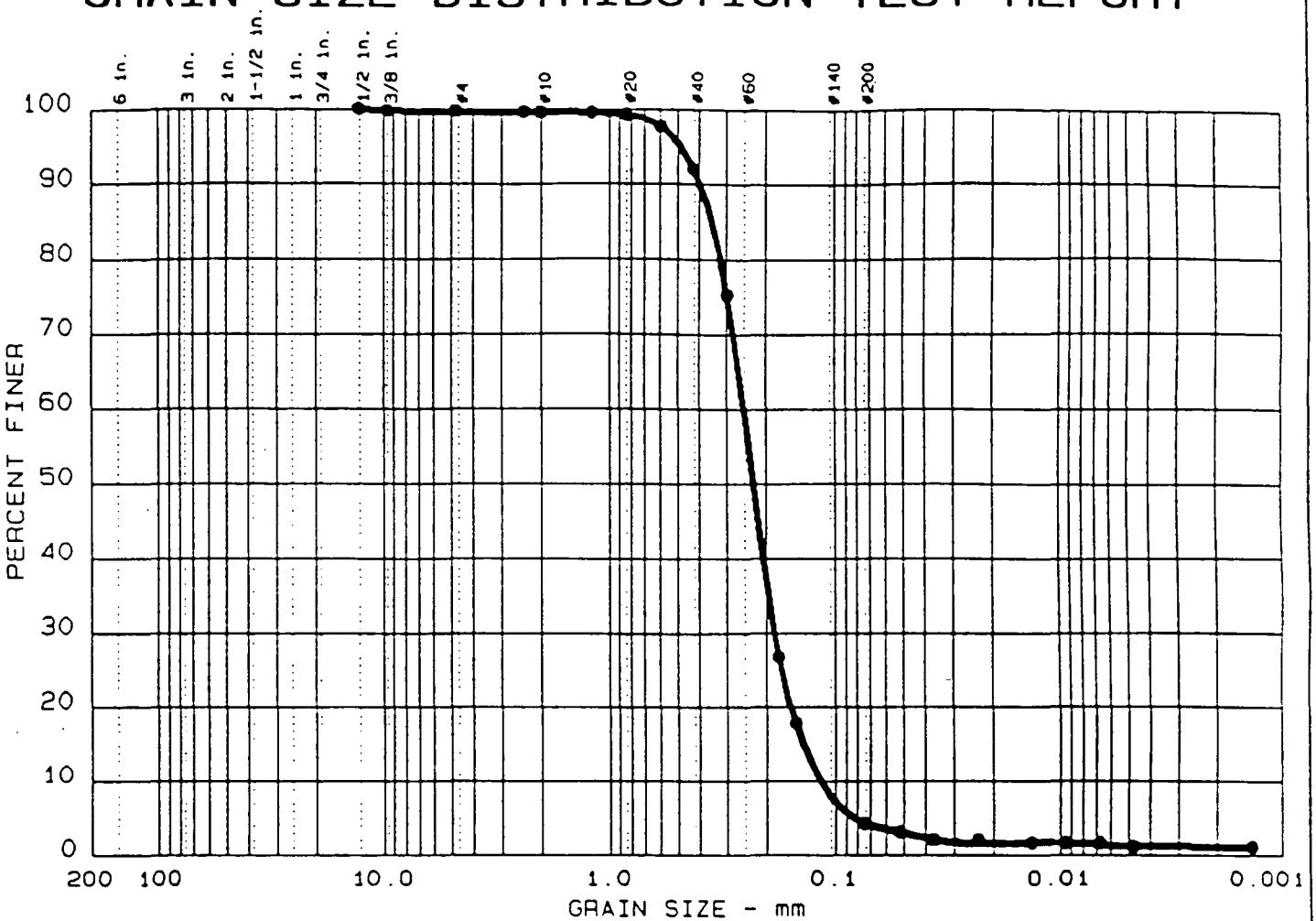
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	8	0.0	0.4	95.4	3.1	1.1

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.35	0.25	0.23	0.185	0.1382	0.1160	1.17	2.2

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand	SP	

Project No.: 2131.15
Project: NIROP
● Location: EB206E, 10-12'

Date: 08/21/92

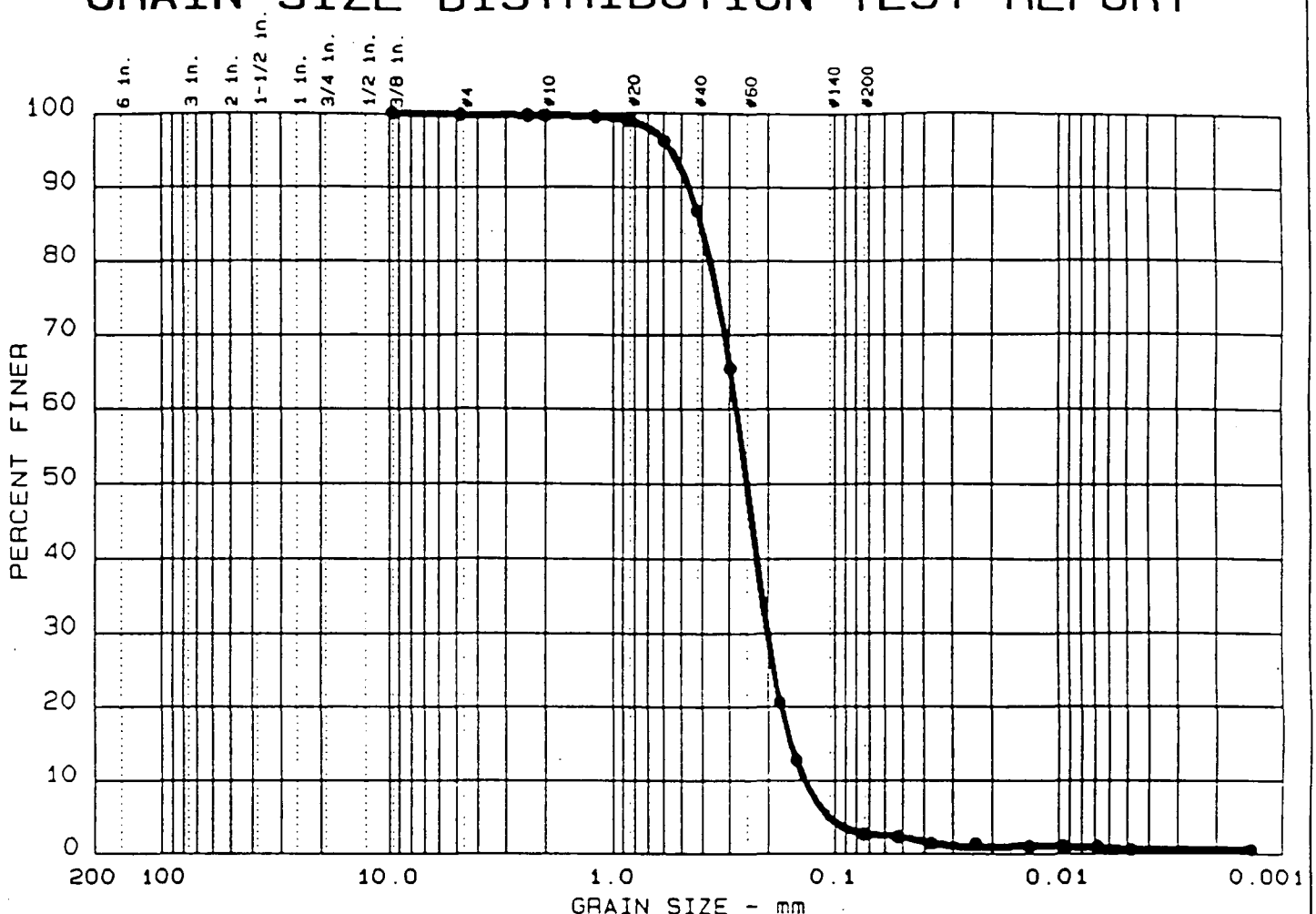
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	12	0.0	0.1	97.2	2.1	0.6

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.40	0.28	0.25	0.201	0.1581	0.1361	1.07	2.0

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand	SP	

Project No.: 2313.15
Project: NIROP
● Location: EB207F, 13-15'

Date: 08/26/92

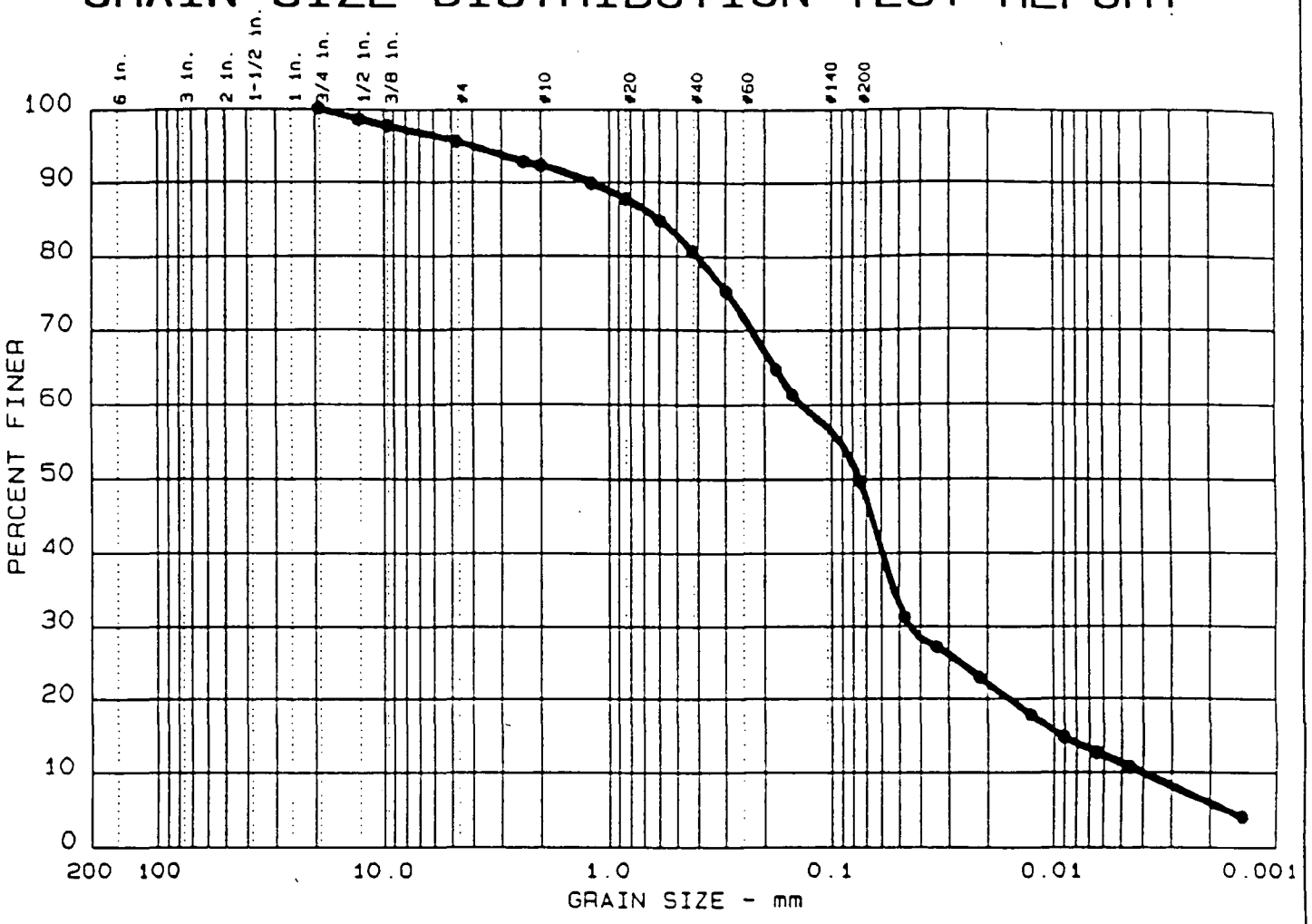
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	13	0.0	4.4	46.0	38.4	11.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	23	8	0.60	0.13	0.07	0.045	0.0093	0.0041	3.62	33.2

MATERIAL DESCRIPTION	USCS	AASHTO
● Clayey sand	SC	

Project No.: 2313.15
Project: NIROP
● Location: EB208F, 13-15'

Date: 08/26/92

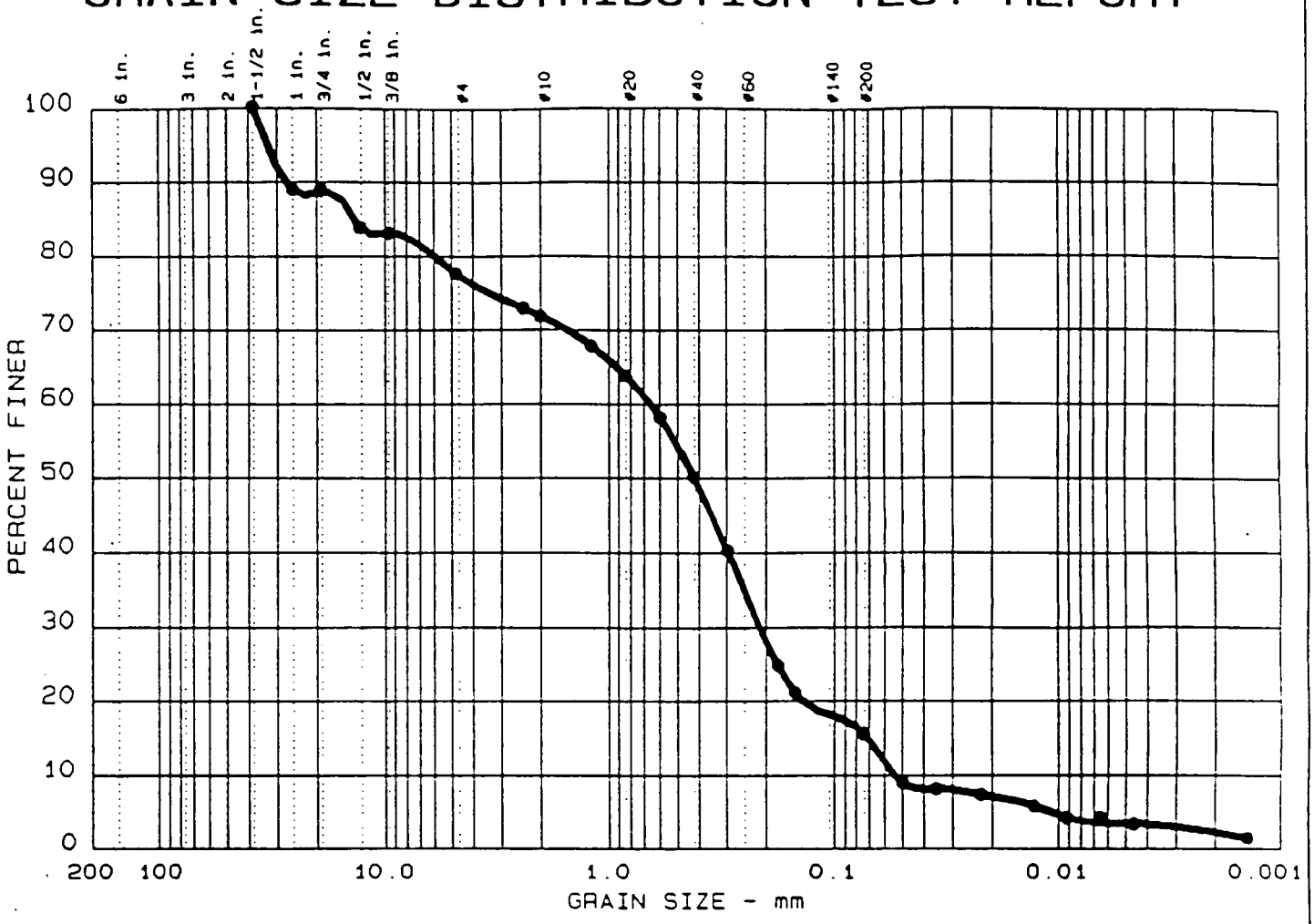
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	15	0.0	22.4	62.1	12.1	3.4

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	NP	NP	13.47	0.64	0.42	0.213	0.0712	0.0534	1.31	12.1

MATERIAL DESCRIPTION	USCS	AASHTO
● Silty sand with gravel	SM	

Project No.: 2313.15
Project: NIROP
● Location: EB2098, 3-5'

Date: 08/26/92

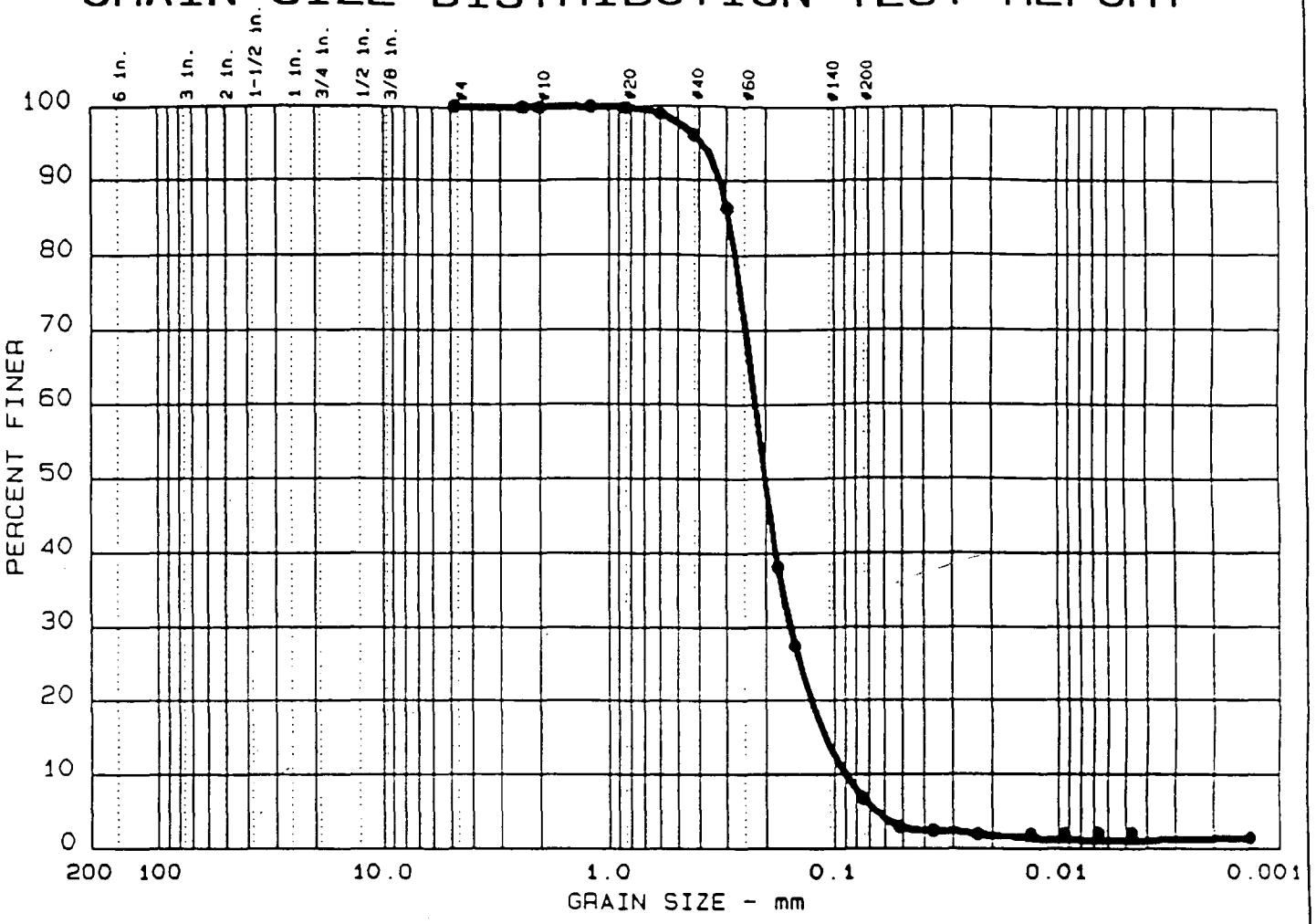
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT. INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	14	0.0	0.0	93.3	5.6	1.1

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	NP	NP	0.29	0.22	0.20	0.156	0.1093	0.0888	1.24	2.5

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand with silt	SP-SM	

Project No.: 2313.15
Project: NIROP
● Location: EB210E, 10-12'

Date: 08/26/92

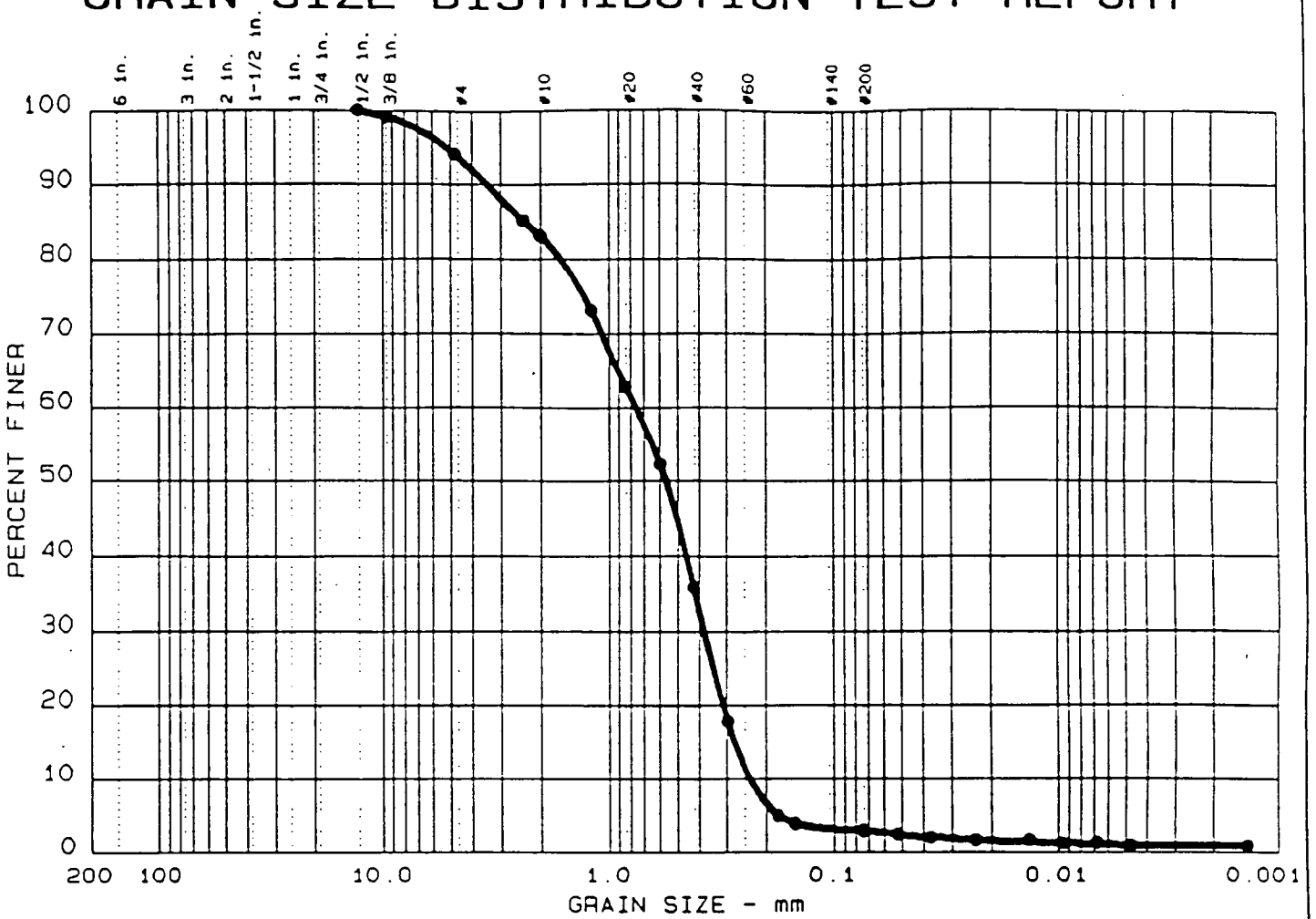
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	11	0.0	5.9	91.2	2.0	0.9

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			2.34	0.76	0.56	0.378	0.2767	0.2355	0.80	3.2

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand	SP	

Project No.: 2313.13
Project: NIROP
● Location: FB001E, 10-12'

Date: 07/14/92

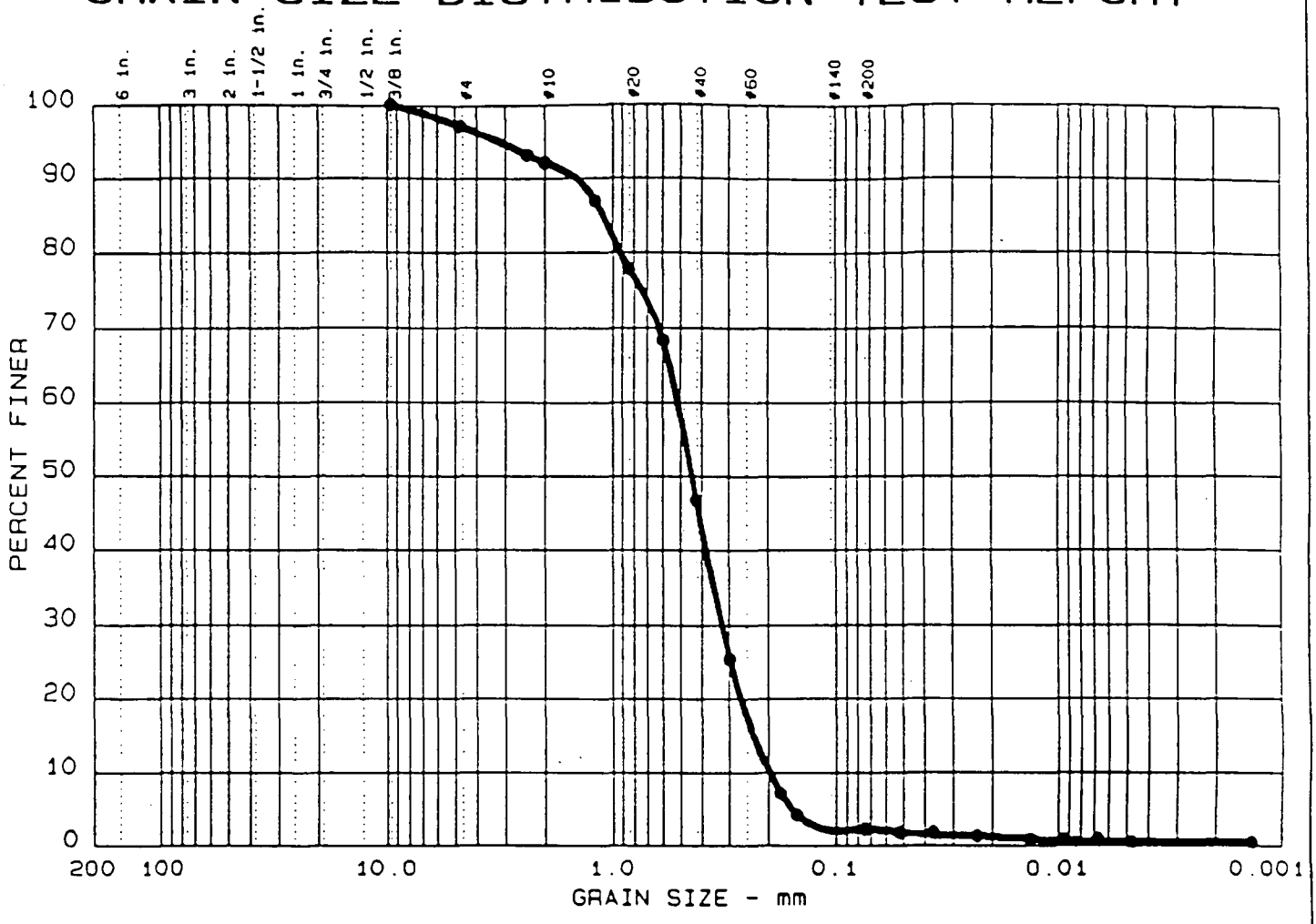
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	10	0.0	2.9	94.9	1.7	0.5

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.10	0.51	0.44	0.324	0.2333	0.1986	1.04	2.6

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand	SP	

Project No.: 2313.13

Project: NIROP

● Location: FB002H, 18-20'

Date: 07/14/92

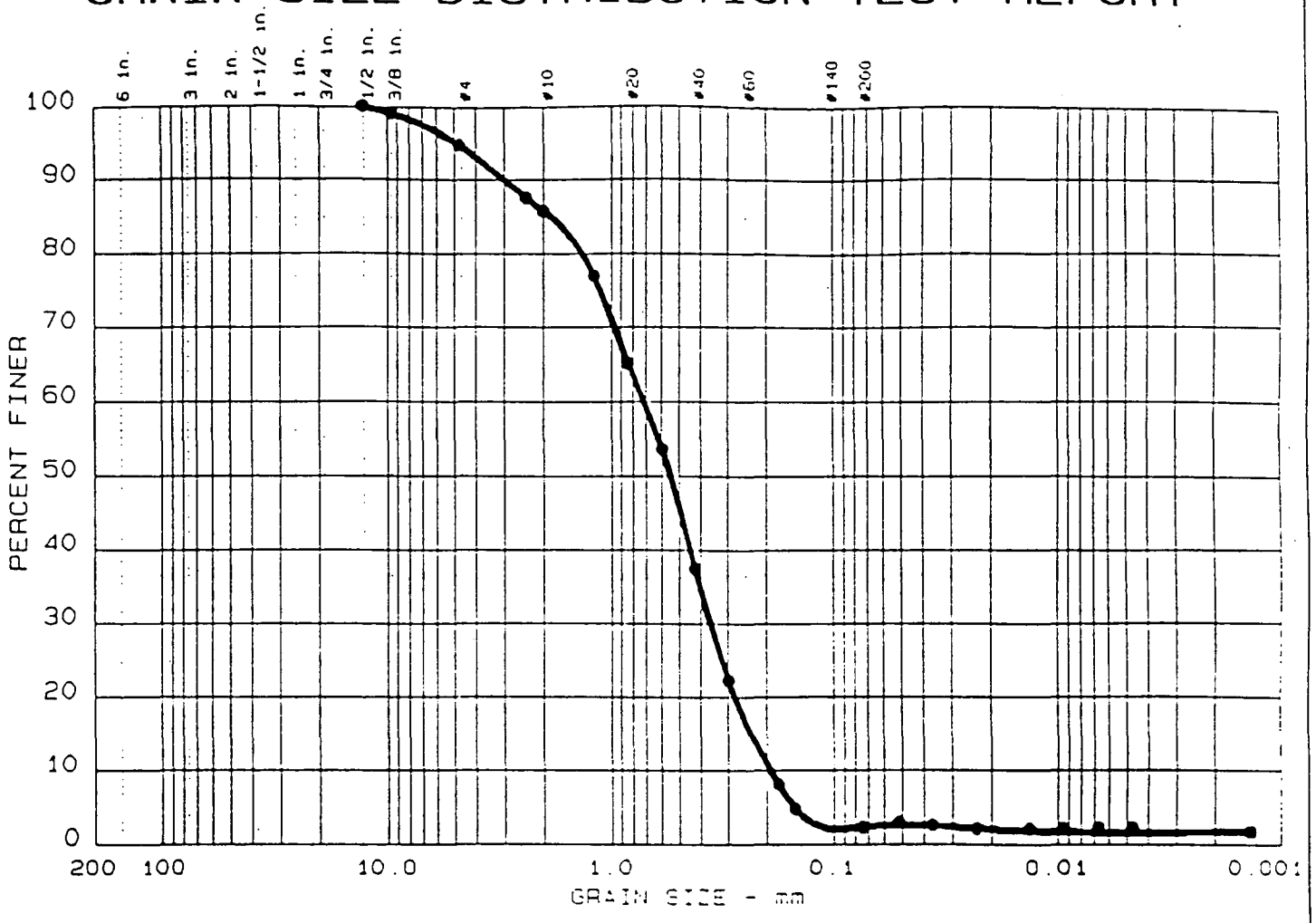
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	6	0.0	5.2	92.5	0.7	1.6

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.84	0.71	0.54	0.358	0.2366	0.1923	0.94	3.7

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand	SP	

Project No.: 2313.13
Project: NIROP
● Location: FB003E, 10-12'

Date: 07/14/92

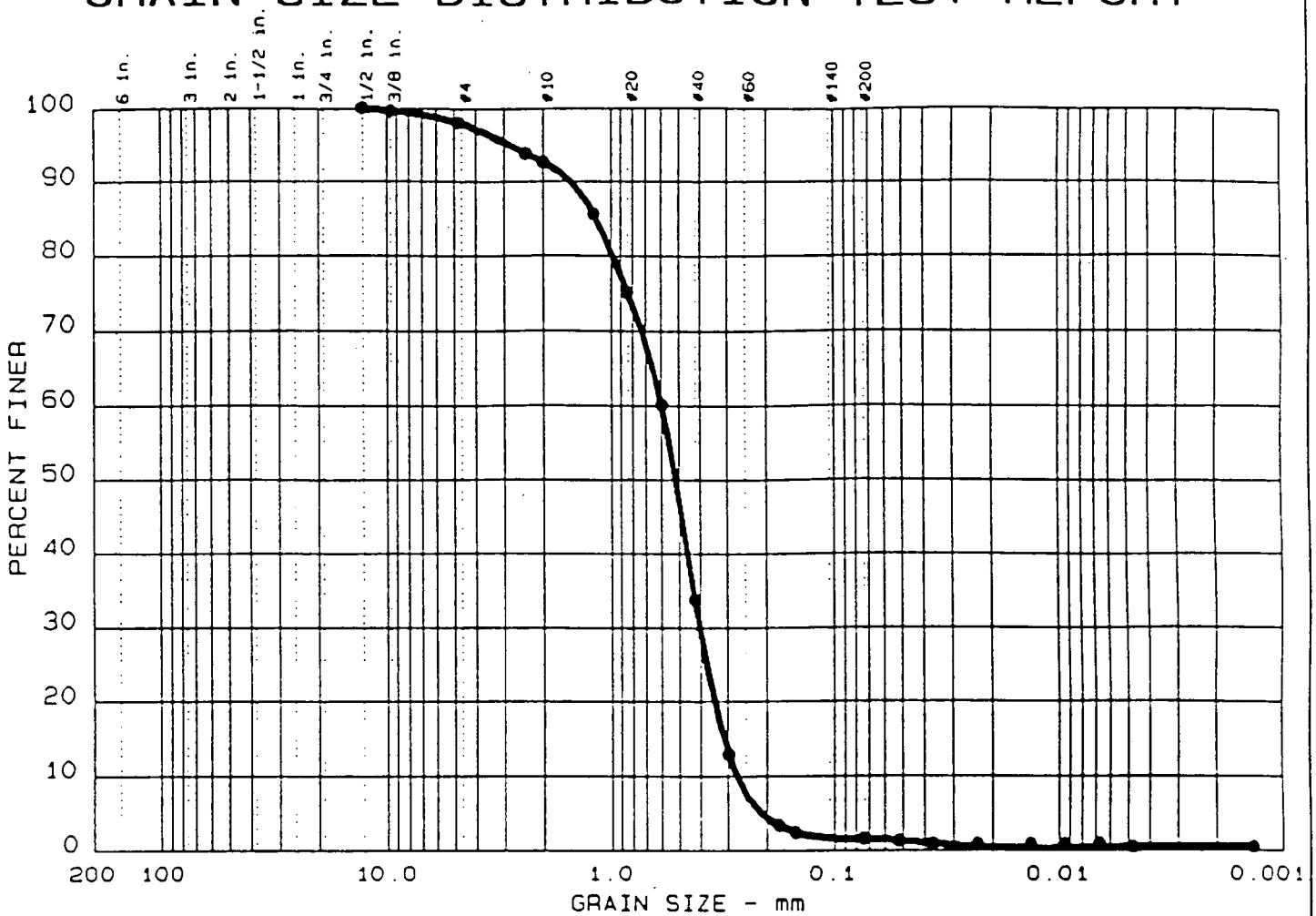
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	7	0.0	2.0	96.4	1.1	0.5

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.16	0.59	0.51	0.400	0.3105	0.2729	1.00	2.2

MATERIAL DESCRIPTION	USCS	AASHTO
● Poorly graded sand	SP	

Project No.: 2313.13
Project: NIROP
● Location: FB004H, 18-20'

Date: 07/14/92

Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

RMT, INC.

Figure No. _____

APPENDIX D

SOIL BORING LOGS

BACKGROUND

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. BG001
SHEET NO. 1 OF 1

PROJECT NAME NIROP RI Soils
LOCATION Fridley, MN
CONTRACTOR Bergerson-Caswell
DRILLING METHOD 4-1/4" ID HSA

PROJECT NO. 2313.13
INSTALLATION N/A
SURFACE ELEV. 835.0
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL NO.	TYPE	RECOVERY N	RECOVERY IN	MOISTURE	DEPTH	
				D		TOPSOIL, very dark grayish-brown 10YR 3/2, sandy, silty.
A	SS3	10	18	D		POORLY GRADED SAND (SP), fine- to medium-grained, dark yellowish-brown 10YR 3/4, loose, non-plastic.
B	SS	7	10	M		
					5	SANDY SILT (ML), black 10YR 2/1, trace clay, medium stiff, slightly plastic, rootlets.
C	SS	9	15	M		SILTY SAND (SM), fine-grained, brown 10YR5/3, poorly-graded, loose, slightly plastic.
D	SS3	19	20	M		Grading to POORLY-GRADED SAND (SP) below 7.3 ft., brown 10YR 5/3, loose, well-rounded grains, fine- to medium-grained, trace course sand, trace gravel.
					10	As above, 1 - 3 in. silt lens, variable fine and course bedding about 1 - 2 in. thick.
						End Of Boring at 10 ft.
					15	
					20	

GENERAL NOTES

DATE STARTED JUN 3 92
DATE COMPLETED JUN 3 92
RIG CME-55
CREW CHIEF C. Wilkens
LOGGED G. Keating CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME DEPTH
WATER: DATE/TIME DEPTH

LOG OF TEST BORING

F-203 (R 01-87)

PROJECT NAME	NIROP RI Soils	BORING NO.	BG002
LOCATION	Fridley, MN	SHEET NO.	1 OF 1
CONTRACTOR	Bergerson-Caswell	PROJECT NO.	2313.13
DRILLING METHOD	4-1/4" ID HSA	INSTALLATION	N/A
		SURFACE ELEV.	833.0
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
				D		TOPSOIL, very dark grayish-brown 10YR 3/2.
A	SS3	12	24	M		POORLY-GRADED SAND (SP), fine- to medium-grained, trace silt, dark brown 10YR 3/3, loose, bottom 3 in. of spoon very dark brown 10YR 2/2, becoming "sticky", no odor.
B	SS	2	8	M		As above, little silt.
					5	
C	SS	5	20	M		WELL-GRADED SAND (SW), fine- to medium-grained, little coarse, some silt lenses, brown 10YR 5/3 to black 10YR 2/1, loose, sticky.
D	SS3	8	18	M		As above, increasing number of black silt lenses grading to a (SM).
					10	SILT (ML), black 10YR 2/1, soft, slightly plastic, thin (1-2 mm), laminations.
						End Of Boring at 10 ft.
					15	
					20	

GENERAL NOTES

DATE STARTED JUN 3 92

DATE COMPLETED JUN 3 92

RIG CME-55

CREW CHIEF C. Wilkens

LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None

AT COMPLETION ▼

AFTER DRILLING

CAVE-IN: DATE/TIME _____ DEPTH _____

WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

PROJECT NAME	NIROP RI Soils	BORING NO.	BG003
LOCATION	Fridley, MN	SHEET NO.	1 OF 1
CONTRACTOR	Bergerson-Caswell	PROJECT NO.	2313.13
DRILLING METHOD	4-1/4" ID HSA	INSTALLATION	N/A
		SURFACE ELEV.	834.0
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
				D		TOPSOIL, very dark grayish-brown 10YR 3/2, sandy, silty.
A	SS3	19	20	D		POORLY-GRADED SAND (SP), fine-grained, brown 10YR 5/3, medium dense, well-rounded, rootlets.
B	SS	11	17	M		As above, grading to WELL-GRADED SAND (SW), fine- to medium- grained, trace gravel, trace silt, brown 10YR 5/3, medium dense, well rounded.
					5	
C	SS	19	15	M		As above, but grading to POORLY-GRADED SAND (SP), no silt.
D	SS3	19	24	M		As above.
					10	End Of Boring at 10 ft.
					15	
					20	

GENERAL NOTES

DATE STARTED JUN 3 92

DATE COMPLETED JUN 3 92

RIG CME-55

CREW CHIEF C. Wilkens

LOGGED G. Keating CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None

AT COMPLETION ▼

AFTER DRILLING

CAVE-IN: DATE/TIME _____ DEPTH _____

WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. BG004
SHEET NO. 1 OF 1

PROJECT NAME NIROP RI Soils
LOCATION Fridley, MN
CONTRACTOR Bergerson-Caswell
DRILLING METHOD 4-1/4" ID HSA

PROJECT NO. 2313.13
INSTALLATION N/A
SURFACE ELEV. 833.0
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
				D		TOPSOIL, very dark grayish brown 10YR 3/2.
A	SS3	45	18	M		POORLY-GRADED SAND (SP), dark yellowish-brown 10YR 4/4, loose, some very dark brown 10YR 2/2 layering.
B	SS	16	14	M		WELL-GRADED SAND (SW), fine- to coarse-grained, some gravel, brownish-yellow 10YR 6/6, some gravel, loose.
					5	
C	SS	11	24	M		As above, no gravel.
D	SS3	16	24	M		As above, but POORLY-GRADED SAND (SP), fine- to coarse-grained, trace gravel. Mostly medium grained.
					10	End Of Boring at 10 ft.
					15	
					20	

GENERAL NOTES

DATE STARTED JUN 3 92
DATE COMPLETED JUN 3 92
RIG CME-55
CREW CHIEF C. Wilkens
LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. BG005
SHEET NO. 1 OF 1

PROJECT NAME NIROP RI Soils
PROJECT NO. 2313.13
LOCATION Fridley, MN
INSTALLATION N/A
CONTRACTOR Bergerson-Caswell
SURFACE ELEV. 833.0
DRILLING METHOD 4-1/4" ID HSA
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
				D		TOPSOIL, very dark grayish-brown 10YR 3/2, sandy, silty.
A	SS3	11	19	D		WELL-GRADED SAND (SW), trace silt, few gravel, well-rounded, dark brown 10YR 4/3, trace silt, few gravel, well-rounded, medium dense, one 3" sandy silt lens, black 10YR 2/1, stiff, slightly plastic, fine- to medium-grained.
B	SS	6	8	M		As above.
					5	
C	SS	11	19	M		As above, yellowish-brown 10YR 5/4, parts are POORLY-GRADED SAND (SP).
D	SS3	9	20	M		As above, brown 10YR 5/7, fine- to coarse-grained, few gravel, trace clay lenses, very plastic.
E	SS3	10	12	M	10	As above, no gravel.
						End Of Boring at 12 ft.
					15	
					20	

GENERAL NOTES

DATE STARTED JUN 3 92
DATE COMPLETED JUN 3 92
RIG CME-55
CREW CHIEF C. Wilkens
LOGGED G. Keating CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME DEPTH
WATER: DATE/TIME DEPTH

LOG OF TEST BORING

F-203 (R 01-87)

PROJECT NAME	NIROP RI Soils	BORING NO.	BG006
LOCATION	Fridley, MN	SHEET NO.	1 OF 1
CONTRACTOR	Bergerson-Caswell	PROJECT NO.	2313.13
DRILLING METHOD	4-1/4" ID HSA	INSTALLATION	N/A
		SURFACE ELEV.	836.0
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
						TOPSOIL.
A	SS3	15	22	M		SANDY SILT (ML), little clay, dark reddish-brown 5YR 3/2, dense, some roots.
B	SS	13	18	M		POORLY-GRADED SAND (SP), little silt, loose to medium dense, alternating from dark red 2.5YR 3/6 to brownish-yellow 10YR 6/6 to dark reddish-brown 2.5YR 2.5/3.
					5	
C	SS	19	16	M-D		WELL-GRADED SAND (SW), with gravel, little silt, brown 10YR 5/3, dense, subangular grains.
D	SS3	29	18	M		SILTY CLAY (CL), some sand, dark grayish-brown 2.5YR 4/2, very stiff, moderately plastic.
					10	SILTY CLAY (CL), to SANDY CLAY (SC) some sand, little gravel (to 1.5" in diameter), dark olive gray 5Y 3/2, medium plastic, Pp = 3.75, very stiff to hard.
						End Of Boring at 10 ft.
					15	
					20	

GENERAL NOTES

DATE STARTED JUN 3 92

DATE COMPLETED JUN 3 92

RIG CME-55

CREW CHIEF C. Wilkens

LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None

AT COMPLETION ▼

AFTER DRILLING

CAVE-IN: DATE/TIME _____ DEPTH _____

WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

PROJECT NAME	NIROP RI Soils	BORING NO.	BG007
LOCATION	Fridley, MN	SHEET NO.	1 OF 1
CONTRACTOR	Bergerson-Caswell	PROJECT NO.	2313.13
DRILLING METHOD	4-1/4" ID HSA	INSTALLATION	N/A
		SURFACE ELEV.	832.0
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
				D-M		TOPSOIL, very dark brownish-gray 2.5Y 3/2.
A	SS3	9	20	M		SANDY SILT (ML), black 2.5Y 2/0, loose.
B	SS	6	10	M M		POORLY-GRADED SAND (SP), fine-grained, trace medium-grained sand, brown 10YR 4/3, little silt, trace clay, dense.
					5	WELL-GRADED SAND (SW), fine- to coarse-grained, little gravel, trace silt, dark yellowish-brown 10YR 4/4, loose.
C	SS	8	16	M		As above, color ranging from yellowish-red 5YR 4/6 to dark reddish-brown 5YR 2.5/2, which has a sticky" consistency.
D	SS3	22	19	M		As above, little silt, continued color fluctuations.
						At 9.0 ft., 2 in. sandy silt seam, becoming a POORLY-GRADED SAND WITH SILT (SP-SM).
					10	End Of Boring at 10 ft.
					15	
					20	

GENERAL NOTES

DATE STARTED JUN 4 92

DATE COMPLETED JUN 4 92

RIG CME-55

CREW CHIEF C. Wilkens

LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None

AT COMPLETION ▼

AFTER DRILLING

CAVE-IN: DATE/TIME _____ DEPTH _____

WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. BG008
SHEET NO. 1 OF 1
PROJECT NO. 2313.13
INSTALLATION N/A
SURFACE ELEV. 834.0
BOREHOLE DIA. 8 IN.

PROJECT NAME NIROP RI Soils
LOCATION Fridley, MN
CONTRACTOR Bergerson-Caswell
DRILLING METHOD 4-1/4" ID HSA

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
				D		TOPSOIL, very dark grayish-brown 10YR 3/2, sandy, silty.
A	SS3	30	21	D		WELL-GRADED SAND (SW), fine- to medium-grained, trace gravel, brown 10YR 5/3, medium dense. Well-rounded to subrounded grains,
B	SS	11	16	M		some faint bedding producing poorly-graded, fine-grained zones, about 2 in. thick. As above, color varying from brown 10YR 5/3 to yellowish brown 10YR 5/8, no odor.
					5	
C	SS	16	18	M		As above, brown 10YR 5/3 to pale brown 10YR 6/3, alternating fine-grained, poorly-graded sand, and fine- to medium-grained, well-graded sand, no odor.
D	SS3	21	22	M		As above, brown 10YR 5/3, trace gravel, medium dense, no odor.
					10	End Of Boring at 10 ft.
					15	
					20	

GENERAL NOTES

DATE STARTED JUN 4 92
DATE COMPLETED JUN 4 92
RIG CME-55
CREW CHIEF C. Wilkens
LOGGED G. Keating CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME DEPTH
WATER: DATE/TIME DEPTH

LOG OF TEST BORING

F-203 (R 01-87)

RMT

PROJECT NAME	NIROP RI Soils	BORING NO.	BG009
LOCATION	Fridley, MN	SHEET NO.	1 OF 1
CONTRACTOR	Bergerson-Caswell	PROJECT NO.	2313.13
DRILLING METHOD	4-1/4" ID HSA	INSTALLATION	N/A
		SURFACE ELEV.	834.0
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
				D-M		TOPSOIL, very dark brownish-gray 2.5Y 3/2.
A	SS3	19	19	M		POORLY-GRADED SAND (SP), fine-grained, trace medium, light yellowish-brown 2.5Y 6/3, medium dense.
B	SS	8	16	M		As above, grading to medium-grained sand by 4.5 ft., loose.
					5	
C	SS	13	19	M		WELL-GRADED SAND (SW), fine- to medium-grained, some coarse, light olive brown 2.5Y 5/3, medium dense.
D	SS3	22	22	M		As above.
E	SS3	30	15	M	10	As above, but POORLY-GRADED SAND (SP), medium-grained.
						End Of Boring at 11.3 ft.
					15	
					20	

GENERAL NOTES

DATE STARTED JUN 4 92

DATE COMPLETED JUN 4 92

RIG CME-55

CREW CHIEF C. Wilkens

LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None

AT COMPLETION ▼

AFTER DRILLING

CAVE-IN: DATE/TIME _____ DEPTH _____

WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. BG010
SHEET NO. 1 OF 1

PROJECT NAME NIROP RI Soils
LOCATION Fridley, MN
CONTRACTOR Bergerson-Caswell
DRILLING METHOD 4-1/4" ID HSA

PROJECT NO. 2313.13
INSTALLATION N/A
SURFACE ELEV. 834.0
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
				D		TOPSOIL, very dark grayish-brown 10YR 3/2, sandy, silty, rootlets.
A	SS3	30	19	D		SANDY SILT (ML), very dark brown 10YR 2/2, dense, slightly plastic, (FILL).
B	SS	14	16	D		SANDY CLAY (CL), trace gravel, dark grayish-brown 10YR 4/2 to dark red 2.5YR 3/6, very stiff to hard, clay forming the interval is divided into lenses by silt (as above), (FILL).
					5	POORLY-GRADED SAND (SP), fine-grained, light yellowish-brown 10YR 6/4, medium dense, no odor.
C	SS	12	18	M		As above, grading to well-graded sand (SW), pale brown 10YR 6/3, trace shell fragments, trace coarse sand, generally fine- to medium-grained, medium dense, no odor.
D	SS3	22	21	M		As above.
E	SS3	14	12	M	10	As above.
						End Of Boring at 11 ft.
					15	
					20	

GENERAL NOTES

DATE STARTED JUN 4 92
DATE COMPLETED JUN 4 92
RIG CME-55
CREW CHIEF C. Wilkens
LOGGED G. Keating CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

AREA A

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. AB024
SHEET NO. 1 OF 1
PROJECT NO. 2313.15
INSTALLATION N/A
SURFACE ELEV. 835.0
BOREHOLE DIA. 8 IN.

PROJECT NAME NIROP RI Soils
LOCATION Fridley, MN
CONTRACTOR Bergerson-Caswell
DRILLING METHOD 4-1/4" ID HSA

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3	22	22	M		SILTY SAND (SW), fine- to coarse-grained, trace gravel, little clay, black 10YR 2/1 to dark yellowish-brown 10YR 3/6, medium dense, pieces of asphalt (FILL).
B	SS3	28	19	M		
				M	5	SILTY CLAY (CL), little sand, mottled yellowish-red 5YR4/6 and dark yellowish brown 10YR4/4, medium dense.
				M		SILTY SAND (SM), very fine, little clay, light yellowish brown 2.5Y6/3, medium dense.
C	SS3	46	20	M		WELL-GRADED SAND (SW), fine to coarse, trace gravel, brown 10YR 3/6, dense.
D	SS3	40	19	M		
						As above.
E	SS3	52	19	M	10	
						As above.
F	SS3	43	18	M		As above.
				M	15	POORLY-GRADED SAND (SP), fine-grained, brown 10YR 5/3, dense.
G	SS3	43	18	M		As above, alternating with 6 in. layers of medium sand.
H	SS3	53	18	M		
						Grading to medium sand with trace of coarse.
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUN 9 92
DATE COMPLETED JUN 9 92
RIG CME-55
CREW CHIEF C. Wilkens
LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME DEPTH
WATER: DATE/TIME DEPTH

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. AB025
SHEET NO. 1 OF 1
PROJECT NAME NIROP RI Soils
PROJECT NO. 2313.13
LOCATION Fridley, MN
INSTALLATION N/A
CONTRACTOR Bergerson-Caswell
SURFACE ELEV. 835.1
DRILLING METHOD 4-1/4" ID HSA
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3	23	16	M		WELL-GRADED SAND (SW), fine- to medium-grained, little coarse-grained, little gravel, light yellowish-brown 2.5Y 6/3, medium dense, (FILL).
B	SS3	31	14	M	5	CLAYEY SILT TO SILTY CLAY (ML/CL - CL/ML), some sand, black 10YR2/1, medium dense.
C	SS3	41	20	M		SILTY CLAY (CL), dark grayish-brown, 2.5Y 4/2, medium dense.
						POORLY-GRADED SAND (SP), fine-grained, light yellowish-brown, 2.5Y 6/3, medium dense.
D	SS3	41	19	M M		WELL-GRADED SAND (SW), fine- to coarse-grained, brown 10YR 5/3, medium dense.
E	SS3	30	19	M	10	POORLY-GRADED SAND (SP), fine- to medium-grained, brown 10YR 5/3, medium dense. As above.
F	SS3	28	20	M	15	As above, alternating between poorly-graded and well-graded in about 6 in. layers.
G	SS3	36	21	M		As above, poorly-graded.
H	SS3	35	21	M		As above, becoming fine-grained.
					▽ 20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUN 9 92
DATE COMPLETED JUN 9 92
RIG CME-55
CREW CHIEF C. Wilkens
LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ 19.8 Ft. b.g.s.
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. AB026
SHEET NO. 1 OF 1
PROJECT NO. 2313.13
INSTALLATION N/A
SURFACE ELEV. 835.0
BOREHOLE DIA. 8 IN.

PROJECT NAME NIROP RI Soils
LOCATION Fridley, MN
CONTRACTOR Bergerson-Caswell
DRILLING METHOD 4-1/4" ID HSA

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
				D		SILTY SAND, some gravel, very pale brown 10YR 7/4, loose (FILL).
A	SS3	39	18	M		SILTY SAND (SM), some clay, trace gravel, black 5YR 2.5/1, dense, pieces of asphalt, glass fragments (FILL).
B	SS3	25	20	M		POORLY-GRADED SAND (SP), very fine-grained, little silt, light olive brown 2.5Y 5/3, medium dense.
					5	
C	SS3	48	19	M		WELL-GRADED SAND (SW), fine- to coarse-grained, trace gravel, trace silt, brown 10YR 5/3, dense.
D	SS3	52	19	M		As above.
E	SS3	40	19	M	10	As above, alternating between well-graded and poorly-graded sand in 6 in. layers, no gravel.
F	SS3	18	20	M		POORLY-GRADED SAND (SP), fine- to medium-grained, trace coarse-grained sand, brown 10YR 5/3.
					15	
G	SS3	12	24	M		As above, grading to medium-grained sand.
						As above, grading to fine-grained sand. Silty sand seam at 17.7 ft., 0.5 in., dark gray.
H	SS3	11	20	W		
						As above, strong brown 7.5YR 4/8, and wood (roots) below 19.8 ft.
					▽ 20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUN 10 92
DATE COMPLETED JUN 10 92
RIG CME-55
CREW CHIEF C. Wilkens
LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ 19.8 Ft. b.g.s.
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

PROJECT NAME	NIROP RI Soils	BORING NO.	AB027
LOCATION	Fridley, MN	SHEET NO.	1 OF 1
CONTRACTOR	Bergerson-Caswell	PROJECT NO.	2313.13
DRILLING METHOD	4-1/4" ID HSA	INSTALLATION	N/A
		SURFACE ELEV.	834.4
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3	33	18	M-D		SILTY SAND (SM), fine- to coarse-grained, little gravel, black 5YR 2.5/1 to dark brown 10YR 3/3, pieces of asphalt (FILL).
B	SS3	13	20	M		WELL-GRADED SAND (SW), fine- to coarse-grained, trace gravel, trace silt, yellowish-brown 10YR 5/4 (FILL).
					5	SILTY CLAY (CL), olive brown 2.5YR 4/3, medium stiff.
C	SS3	37	19	M		POORLY-GRADED SAND (SP), fine-grained, some stringers of medium-grained to coarse-grained, brown 10YR 5/3, medium dense.
D	SS3	34	20	M		2 in. dark brown 7.5 YR 3/2, layer of (SW) at 8.0 ft.
E	SS3	36	21	M	10	WELL-GRADED SAND (SW), fine- to coarse-grained, brown 10YR 5/3, trace gravel, medium dense.
						As above, no gravel.
F	SS3	30	20	M		POORLY-GRADED SAND (SP), fine- to medium-grained, little coarse-grained in stringers, brown 10YR 5/3, medium dense.
					15	
G	SS3	38	22	M		As above, 4 in. well-graded sand seam at 16.8 ft.
H	SS3	17	23	W	▽	As above, fine-grained sand only.
					20	End of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUN 9 92

DATE COMPLETED JUN 9 92

RIG CME-55

CREW CHIEF C. Wilkens

LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ 18.2 Ft. b.g.s.

AT COMPLETION ▼

AFTER DRILLING

CAVE-IN: DATE/TIME _____ DEPTH _____

WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. AB028
SHEET NO. 1 OF 1

PROJECT NAME NIROP RI Soils
LOCATION Fridley, MN
CONTRACTOR Bergerson-Caswell
DRILLING METHOD 4-1/4" ID HSA

PROJECT NO. 2313.13
INSTALLATION N/A
SURFACE ELEV. 834.8
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3	28	16	M		SILTY SAND (SM), little clay, trace gravel, yellowish-red 5YR 4/6 to black 5YR 2.5/1, medium dense, (FILL).
B	SS3	17	17	M		POORLY-GRADED SAND (SP), fine-grained, some silt, trace clay, olive brown 2.5Y 4/3, medium dense.
					5	
C	SS3	46	19	M		POORLY-GRADED SAND (SP), fine- to medium-grained, little coarse, light olive brown 2.5Y 5/3, dense.
D	SS3	50	20	M		WELL-GRADED SAND (SW), fine- to coarse-grained, trace gravel, brown 10YR 5/3, dense.
					10	
E	SS3	26	19	M		As above.
F	SS3	12	19	M		POORLY-GRADED SAND (SP), fine- to medium-grained, trace coarse, trace gravel, brown 10YR 5/3, at 13 ft., 2 in. dark brown sand seam.
					15	
G	SS3	7	24	M		As above, fine-grained sand only. At 16.7 ft., 1 in. seam of black clayey silt.
H	SS3	17	18	M M W		CLAYEY SILT (ML), black 10YR 2/1, soft, sticky. POORLY-GRADED SAND (SP), fine- to medium-grained, dark yellowish-brown 10YR 4/4, medium dense.
					20	POORLY-GRADED SAND (SP), fine-grained, grayish-brown, 10YR 5/2.
						End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUN 8 92
DATE COMPLETED JUN 8 92
RIG CME-55
CREW CHIEF C. Wilkens
LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ 19.7 Ft. b.g.s.
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. AB029
SHEET NO. 1 OF 1
PROJECT NAME NIROP RI Soils
PROJECT NO. 2313.13
LOCATION Fridley, MN
INSTALLATION N/A
CONTRACTOR Bergerson-Caswell
SURFACE ELEV. 837.0
DRILLING METHOD 4-1/4" ID HSA
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
				D		SILTY SAND (SM), some gravel, very pale brown 10YR 7/4, loose, (FILL).
				M		
A	SS3	43	16	M		SILTY SAND (SM), some clay, trace gravel, black 10YR 2/1, dense, bits of asphalt, (FILL).
B	SS3	33	17	M		CLAYEY SILT (ML), some fine-grained sand, mottled strong brown 7.5YR 4/6 and black 10YR 2/1 and brown 10YR 5/3, dense.
					5	POORLY-GRADED SAND (SP), very fine-grained, little silt, light olive brown 2.5Y 5/3, dense.
C	SS3	48	18	M		At 6.8 ft., 1 in. SILTY CLAY seam at 6.8 ft.
				M		WELL-GRADED SAND (SP), fine-grained, trace medium sand, light gray 10YR 7/2, at 7.8 ft., dense.
				M		
D	SS3	38	19	M		WELL-GRADED SAND (SP), fine- to coarse-grained, trace gravel, brown 10YR 5/3, dense.
						POORLY-GRADED SAND (SP), fine-grained, trace medium-grained sand, light gray 10YR 7/2, changing to yellowish-brown 10YR 5/4 at 7.8 ft., dense.
E	SS3	23	21	M	10	
						WELL-GRADED SAND (SW), fine- to coarse-grained, trace gravel, dark yellowish-brown 10YR 4/6, dense.
F	SS3	23	20	M		POORLY-GRADED SAND (SP), dark yellowish-brown 10YR 4/6, occasional seams of well-graded sand.
						As above, poorly-graded, few well-graded seams.
					15	
G	SS3	24	20	M		As above.
H	SS3	21	24	M		
				W	▽	As above, wet at 19.5 ft.
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUN 10 92
DATE COMPLETED JUN 10 92
RIG CME-55
CREW CHIEF C. Wilkens
LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ 19.5 Ft. b.g.s.
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME DEPTH
WATER: DATE/TIME DEPTH

LOG OF TEST BORING

F-203 (R 01-87)

RMT

PROJECT NAME	NIROP RI Soils	BORING NO.	AB030
LOCATION	Fridley, MN	SHEET NO.	1 OF 1
CONTRACTOR	Bergerson-Caswell	PROJECT NO.	2313.13
DRILLING METHOD	4-1/4" ID HSA	INSTALLATION	N/A
		SURFACE ELEV.	834.8
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
				D		WELL-GRADED SAND AND GRAVEL (SW), very pale brown 10YR 7/4, dense, (FILL).
A	SS3	26	22			
				D		SANDY SILT WITH GRAVEL (ML), little gravel, trace debris, very dark brown 10YR 2/2 to black 10YR 2/1, slightly plastic, medium dense, no odor (FILL).
B	SS3	14	22			
				M		As above.
					5	POORLY-GRADED SAND (SP), fine-grained yellowish-brown 10YR 5/4 to 10YR 5/6, medium dense, slightly plastic, trace debris (FILL).
C	SS3	20	20	M		
				M		SANDY SILT (ML), little gravel, black 10YR 2/1, medium dense, slightly plastic, no odor (FILL).
				M		CLAYEY SAND (SC), fine-grained, brown 10YR 5/3, medium dense, slightly plastic.
D	SS3	18	16	M		
					10	WELL-GRADED SAND (SW), fine- to coarse-grained, little gravel, pale brown 10YR 6/3, medium dense, no odor.
E	SS3	16	16	M		As above, trace shell fragments, well-rounded.
						As above, one 3 in. silty sand section had highest PID reading.
F	SS3	11	18	M		As above, silty, non-plastic, no odor.
				M	15	As above, no silt, no odor.
G	SS3	13	20	M		As above, silty, non-plastic, no odor.
				M		As above, no silt grading to POORLY-GRADED SAND (SP), fine-grained, well-rounded, brown 10YR 5/3, medium dense, no odor.
H	SS3	16	22			
				M		POORLY-GRADED SAND (SP), mostly medium-grained, fine- to coarse-grained, trace silt, pale brown 10YR 6/3, medium dense, no odor.
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUN 9 92

DATE COMPLETED JUN 9 92

RIG CME-75

CREW CHIEF T. Nemitz

LOGGED G. Keating CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None

AT COMPLETION ▼

AFTER DRILLING

CAVE-IN: DATE/TIME _____ DEPTH _____

WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

PROJECT NAME	NIROP RI Soils	BORING NO.	AB031
LOCATION	Fridley, MN	SHEET NO.	1 OF 1
CONTRACTOR	Bergerson-Caswell	PROJECT NO.	2313.15
DRILLING METHOD	4-1/4" ID HSA	INSTALLATION	N/A
		SURFACE ELEV.	835.3
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
				M		WELL-GRADED SAND WITH GRAVEL (SW), light yellowish-brown 10YR 6/4, medium dense, (FILL).
A	SS3	14	18	M		CLAY (CL), few sand and gravel, light brownish-gray 10YR 6/2 to very dark grayish-brown 10YR 3/2, medium stiff, plastic, (FILL).
				M		
B	SS3	6	10			SANDY SILT (ML), trace gravel, very dark brown 10YR 7/2, medium dense, slightly plastic, slight odor of solvent, (FILL).
					5	
C	SS3	10	23	M		As above.
				M		Plastic sheet at 6.5 ft.
				M		SANDY CLAY (CL), grenish-gray 5GY 5/1, stiff, plastic, strong solvent-like odor, (FILL).
D	SS3	16	20			WELL-GRADED SAND AND GRAVEL (SW), dark brown 10YR 3/3, medium dense, strong solvent-like odor.
					10	
E	SS3	17	20	M		As above, brown 10YR 5/3.
						As above, little gravel, strong solvent-like odor.
F	SS3	16	22	M		As above, trace shell fragments, few gravel, one 12 in. bed of poorly-graded, medium-grained sand.
					15	
G	SS3	10	22	M		As above, trace silt.
				M		CLAY (CL), black 10YR 2/1 to yellowish-brown 10YR 5/6, stiff, plastic, some wood fragments.
H	SS3	9	22	M		POORLY-GRADED SAND (SP), fine-grained, pale brown 10YR 6/3, medium dense, moderate solvent-like odor.
					20	
						As above, grading to WELL-GRADED SAND (SW), fine- to medium-grained, brown 10YR 5/3 to dark gray 10YR 4/1, nearing saturation at base of sample.
						End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUN 15 92

DATE COMPLETED JUN 15 92

RIG CME-75

CREW CHIEF T. Nemitz

LOGGED G. Keating CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None

AT COMPLETION ▼

AFTER DRILLING

CAVE-IN: DATE/TIME _____ DEPTH _____

WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. AB032
SHEET NO. 1 OF 1
PROJECT NO. 2313.13
INSTALLATION N/A
SURFACE ELEV. 835.1
BOREHOLE DIA. 8 IN.

PROJECT NAME NIROP RI Soils
LOCATION Fridley, MN
CONTRACTOR Bergerson-Caswell
DRILLING METHOD 4-1/4" ID HSA

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
				D		3 in. WELL-GRADED SAND AND GRAVEL (SW), very pale brown 10YR 7/4, dense (FILL).
A	SS3	50	22	D		WELL-GRADED SAND WITH SILT AND GRAVEL (SW-SM), dark yellowish-brown 10YR 3/6, to black 10YR 2/6, dense, non-plastic, no odor (FILL).
B	SS3	20	24	M		POORLY-GRADED SAND (SP), fine-grained, yellowish-brown 10YR 5/4 to 10YR 5/6, medium dense, no odor (FILL).
					5	
C	SS3	9	24	M		As above.
						CLAYEY SAND (SC), fine-grained, brown 10YR 5/3, loose, slightly plastic, no odor (FILL).
D	SS3	16	22	M		WELL-GRADED SAND (SW), fine- to coarse-grained, few gravel, trace shell fragments, yellowish-brown 10YR 5/4, medium dense, no odor.
					10	
E	SS3	30	18	M		As above, but grading to POORLY-GRADED SAND WITH GRAVEL (SP).
F	SS3	16	24	M		As above, fine- to medium-grained, trace gravel.
					15	
G	SS3	24	24	M		As above, grading to:
				M		POORLY-GRADED SAND (SP), medium-grained, brown 10YR 5/3, medium dense, no odor.
H	SS3	21	24	M		WELL-GRADED SAND (SW), fine- to medium-grained, brown 10YR 5/3, medium dense, no odor.
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUN 9 92
DATE COMPLETED JUN 9 92
RIG CME-75
CREW CHIEF T. Nemitz
LOGGED G. Keating CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

PROJECT NAME	NIROP RI Soils	BORING NO.	AB033
LOCATION	Fridley, MN	SHEET NO.	1 OF 1
CONTRACTOR	Bergerson-Caswell	PROJECT NO.	2313.13
DRILLING METHOD	4-1/4" ID HSA	INSTALLATION	N/A
		SURFACE ELEV.	835.7
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
						CONCRETE.
A	SS3					No sample taken at 1 - 3 ft. interval due to difficulty in drilling.
B	SS3	15	14	M		SILTY SAND (SM), some clay, trace gravel, mottled black 5YR 2.5/1 and yellowish-red 5YR 4/6, medium dense.
					5	
C	SS3	19	18	M		SILT (ML), dark grayish-brown 2/5Y 4/2, little sand.
				M		WELL-GRADED SAND (SW), fine- to coarse-grained, some silt, trace gravel, brown 10YR 5/4, meidum dense.
D	SS3	38	20	M		As above.
				M		POORLY-GRADED SAND (SP), fine-grained, brown 10YR 5/4, dense.
					10	
E	SS3	40	24	M		WELL-GRADED SAND (SW), fine- to coarse-grained, trace gravel, trace silt, brown 10YR 5/4, dense.
F	SS3	24	24	M		As above.
				M		POORLY-GRADED SAND (SP), fine-grained, trace silt, brown 10YR 5/4, medium dense.
					15	
G	SS3	23	24	M		As above.
H	SS3	28	20	M		As above, trace medium- to coarse-grained sand.
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUN 11 92

DATE COMPLETED JUN 11 92

RIG CME-55

CREW CHIEF C. Wilkens

LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None

AT COMPLETION ▼

AFTER DRILLING

CAVE-IN: DATE/TIME _____ DEPTH _____

WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. AB034
SHEET NO. 1 OF 1
PROJECT NO. 2313.13
INSTALLATION N/A
SURFACE ELEV. 835.0
BOREHOLE DIA. 8 IN.

PROJECT NAME NIROP RI Soils
LOCATION Fridley, MN
CONTRACTOR Bergerson-Caswell
DRILLING METHOD 4-1/4" ID HSA

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
				M		WELL-GRADED SAND WITH GRAVEL (SW), yellowish-brown 10YR 5/4, dense (FILL).
A	SS3	47	16			SANDY SILT (ML), black 10YR 2/1, dense, non-plastic, (FILL).
				D		
B	SS3	9	16	D		POORLY-GRADED SAND WITH SILT (SP-SM), fine-grained, yellowish-brown 10YR 5/4, dense, no odor.
				M	5	As above.
						LEAN CLAY (CL), black 10YR 2/1 to brown 10YR 5/3, stiff, plastic, no odor.
C	SS3	13	18	D		POORLY-GRADED SAND WITH SILT (SP-SM), very dark brown 10YR 2/2, medium dense, no odor.
				M		SILTY SAND (SM), fine-grained, dark brown 10YR 4/3, medium dense, slightly plastic, no odor.
D	SS3	42	20	M		
				M		POORLY-GRADED SAND WITH GRAVEL (SP), little gravel, well-rounded, dark brown 10YR 4/3, dense, no odor.
E	SS3	38	21	M	10	
						SILTY SAND, as above.
						WELL-GRADED SAND (SW), few gravel, well-rounded, brown 10YR 5/3, dense, no odor.
F	SS3	17	19	M		As above, fine- to medium-grained, trace gravel.
					15	
G	SS3	22	20	M		As above, grading to POORLY-GRADED SAND (SP), fine-grained, light brownish-gray 10YR 6/2, medium dense, no odor.
H	SS3	21	22			As above, trace gravel.
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUN 8 92
DATE COMPLETED JUN 8 92
RIG CME-55
CREW CHIEF T. Nemitz
LOGGED G. Keating CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

PROJECT NAME	NIROP RI Soils	BORING NO.	AB035
LOCATION	Fridley, MN	SHEET NO.	1 OF 1
CONTRACTOR	Bergerson-Caswell	PROJECT NO.	2313.13
DRILLING METHOD	4-1/4" ID HSA	INSTALLATION	N/A
		SURFACE ELEV.	835.8
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
				D		WELL-GRADED SAND AND GRAVEL (SW), few silt, grayish-brown 10YR 5/2, medium dense, (FILL).
A	SS3	25	18	D		SANDY SILT AND GRAVEL (ML), dark brown 10YR 3/3, medium dense, slightly plastic, (FILL).
B	SS3	13	24	D		As above, SILTY-CLAYEY SAND (SC-SM), trace debris, (FILL).
					5	
C	SS3	8	6	W		As above, saturated with brown, oily liquid with sheen on surface. Strong solvent odor.
						Boring Abandoned at 8 ft. due to contamination encountered.
					10	
					15	
					20	

GENERAL NOTES

DATE STARTED JUN 10 92

DATE COMPLETED JUN 10 92

RIG CME-75

CREW CHIEF T. Nemitz

LOGGED G. Keating CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None

AT COMPLETION ▼

AFTER DRILLING

CAVE-IN: DATE/TIME _____ DEPTH _____

WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

PROJECT NAME	NIROP RI Soils	BORING NO.	AB036
LOCATION	Fridley, MN	SHEET NO.	1 OF 1
CONTRACTOR	Bergerson-Caswell	PROJECT NO.	2313.13
DRILLING METHOD	4-1/4" ID HSA	INSTALLATION	N/A
		SURFACE ELEV.	835.7
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
				M		WELL-GRADED SAND AND GRAVEL (SW), brownish-yellow 10YR6/6, medium dense, (FILL).
A	SS3	20	20	M		SANDY SILT (ML), very dark brown 10YR 2/2, medium dense, slightly plastic, (FILL).
				M		
				M		SANDY CLAY (CL), very dark gray 10YR 2/1, very stiff, plastic, (FILL).
B	SS3	15	18			SILTY SAND (SM), well-graded, trace gravel, trace debris (including glass), medium dense, (FILL).
					5	SANDY CLAY (CL), as above, (FILL).
						SANDY SILT (ML), as above, (FILL).
C	SS3	14	20	M		CLAYEY SAND (SC), fine-grained, few gravel, medium dense, slightly plastic, trace wood fragments, (FILL).
				M		
D	SS3	23	18	M		WELL-GRADED SAND AND GRAVEL (SW), brown 10YR 5/3, medium dense, no odor. As above, trace gravel.
					10	
E	SS3	34	20	M		As above, trace shell fragments, no odor.
F	SS3	19	23	M		As above.
					15	
G	SS3	12	23	M		As above, grading to POORLY-GRADED SAND (SP), fine-grained, brown 10YR 5/3, medium dense, no odor.
H	SS3	14	22			
				M		CLAY (CL), dark gray 2.5YR 4/0, stiff, plastic.
				M		WELL-GRADED SAND (SW), trace gravel, medium dense.
					20	End of boring at 20 ft.

GENERAL NOTES

DATE STARTED JUN 15 92

DATE COMPLETED JUN 15 92

RIG CME-75

CREW CHIEF T. Nemitz

LOGGED G. Keating CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None

AT COMPLETION ▼

AFTER DRILLING

CAVE-IN: DATE/TIME _____ DEPTH _____

WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

RMT

PROJECT NAME	NIROP RI Soils	BORING NO.	AB037
LOCATION	Fridley, MN	SHEET NO.	1 OF 1
CONTRACTOR	Bergerson-Caswell	PROJECT NO.	2313.13
DRILLING METHOD	4-1/4" ID HSA	INSTALLATION	N/A
		SURFACE ELEV.	835.2
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
				D		WELL-GRADED SAND AND GRAVEL (SW), very pale brown 10YR 7/4, dense, (FILL).
A	SS3	39	20			
				D		SANDY SILT (ML), trace gravel, trace debris, very dark brown 10YR 2/2, dense, slightly plastic, no odor, (FILL).
B	SS3	32	8	D		
					5	As above, some gravel, (FILL). Stone in split spoon limited recovery.
C	SS3	23	22	M		POORLY-GRADED SAND (SP), fine-grained, well-rounded, yellowish-brown 10YR 5/6 to pale brown 10YR 6/3, medium dense, no odor.
				M		
D	SS3	25	22	M		POORLY-GRADED SAND WITH SILT (SP-SM), fine- to coarse-grained, trace shell fragments, dark brown 10YR 3/3, medium dense, non-plastic, no odor.
					10	
E	SS3	30	24	M		SANDY SILT (ML), very dark brown 10YR 2/2, medium dense, plastic, no odor.
						WELL-GRADED SAND (SW), trace gravel, trace shell fragments, brown 10YR 5/3, medium dense, no odor.
F	SS3	16	24	M		As above.
						As above, 3 in. silty layer at top of sample interval.
					15	Grading to:
G	SS3	9	23	M		POORLY-GRADED SAND (SP), medium-grained, trace coarse sand, brown 10YR 5/3, loose, no odor.
H	SS3	10	24	M		As above, note: moisture content increased with depth in sample, base of interval near capillary fringe.
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUN 10 92

DATE COMPLETED JUN 10 92

RIG CME-75

CREW CHIEF T. Nemitz

LOGGED G. Keating CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None

AT COMPLETION ▼

AFTER DRILLING

CAVE-IN: DATE/TIME _____ DEPTH _____

WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. AB038
SHEET NO. 1 OF 1
PROJECT NO. 2313.13
INSTALLATION N/A
SURFACE ELEV. 834.6
BOREHOLE DIA. 8 IN.

PROJECT NAME NIROP RI Soils
LOCATION Fridley, MN
CONTRACTOR Bergerson-Caswell
DRILLING METHOD 4-1/4" ID HSA

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
				D		WELL-GRADED SAND WITH SILT (SM), and some gravel, dark brown 10YR 3/3, medium dense, (FILL).
A	SS3	28	22			
				D		SANDY SILT WITH GRAVEL (ML), very dark brown 10YR2/2, medium dense, slightly plastic, (FILL).
				D		
B	SS3	11	20			
				M		WELL-GRADED SAND (SW), trace gravel, dark brown 10YR 4/3, medium dense, (FILL).
				M	5	SILT as above (FILL).
C	SS3	17	22	M		SILTY SAND (SM), fine-grained, poorly-graded, brown 10YR 5/3, loose, slightly plastic, slight musty odor.
D	SS3	15	18	M		WELL-GRADED SAND (SW), fine- to medium-grained, well-rounded, few coarse-grained sand, brown 10YR 5/3, medium dense. As above, trace gravel, medium dense. As above, fine- to coarse-grained, little gravel.
E	SS3	17	18	M	10	WELL-GRADED SAND (SW), trace silt, fine- to medium-grained, trace gravel, trace coarse sand, brown 10YR 3/3, medium dense, no odor.
						As above, no silt, brown 10YR 5/3.
F	SS3	21	22	M		As above, grain size varies from fine- to coarse-grained with little gravel and fine- to medium-grained sand. Variation is a result of crude bedding.
					15	
G	SS3	16	24	M		As above, silty, dark brown 10YR 4/3.
H	SS3	11	20	M		POORLY-GRADED SAND (SP), medium-grained, well-rounded, trace gravel, brown 10YR5/3, medium dense, no odor. As above, trace silt.
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUN 10 92
DATE COMPLETED JUN 10 92
RIG CME-75
CREW CHIEF T. Nemitz
LOGGED G. Keating CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME DEPTH
WATER: DATE/TIME DEPTH

LOG OF TEST BORING

F-203 (R 01-87)

RMT

PROJECT NAME	NIROP RI Soils	BORING NO.	AB039
LOCATION	Fridley, MN	SHEET NO.	1 OF 1
CONTRACTOR	Bergerson-Caswell	PROJECT NO.	2313.13
DRILLING METHOD	4-1/4" ID HSA	INSTALLATION	N/A
		SURFACE ELEV.	831.0
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
				D		SILTY SAND, some gravel, very pale brown 10YR 7/4, loose, (FILL).
A	SS3	23	15	M		SANDY SILT (ML), trace gravel, black 7.5YR 2/0, medium dense.
				M		POORLY-GRADED SAND (SP), fine-grained, little silt, light yellowish-brown 10YR 6/4, medium dense.
B	SS3	25	15	M		SILTY CLAY (CL), light olive brown 2.5Y 5/3 and strong brown 7.5YR 5/6, mottled.
					5	Fine-grained sand, as above.
				M		WELL-GRADED SAND (SW), fine- to coarse-grained, trace gravel, yellowish- brown 10YR 5/4.
C	SS3	25	20			
D	SS3	24	20	M		As above, brown 10YR 5/3.
					10	
E	SS3	35	20	M		POORLY-GRADED SAND (SP), fine- to medium-grained, trace coarse-grained, brown 10YR 5/3, dense.
F	SS3	15	20	M		As above, medium-grained sand only.
					15	
G	SS3	28	22	M		POORLY-GRADED SAND (SP), fine- to medium-grained, brown 10YR 5/3, medium dense.
H	SS3	25	19	W	▽	As above, wet at 18.8 ft.
					20	End Of Boring at 20 ft.

GENERAL NOTES		WATER LEVEL OBSERVATIONS	
DATE STARTED	JUN 10 92	WHILE DRILLING ▽	18.8 Ft. b.g.s.
DATE COMPLETED	JUN 10 92	AT COMPLETION ▼	
RIG	CME-55	AFTER DRILLING	
CREW CHIEF	C. Wilkens	CAVE-IN: DATE/TIME	DEPTH
LOGGED L. Page	CHECKED R.V.	WATER: DATE/TIME	DEPTH

LOG OF TEST BORING

F-203 (R 01-87)

RMT

PROJECT NAME	NIROP RI Soils
LOCATION	Fridley, MN
CONTRACTOR	Bergerson-Caswell
DRILLING METHOD	4-1/4" ID HSA
BORING NO.	AB040
SHEET NO.	1 OF 1
PROJECT NO.	2313.13
INSTALLATION	N/A
SURFACE ELEV.	834.0
BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
				M		WELL-GRADED SAND AND GRAVEL (SW), brownish-yellow 10YR 6/6, loose, (FILL).
A	SS3	5	20	M		SILTY SAND (SM), fine-grained, trace gravel, brown 10YR 5/3, trace clay lenses, medium dense, (FILL).
B	SS3	11	22	M		As above, dark yellowish-brown 10YR 4/6 to brown 10YR 5/3, (FILL).
					5	
C	SS3	27	18	M		POORLY-GRADED SAND WITH GRAVEL (SP), fine- to coarse-grained sand, few gravel, trace shell fragments, brown 10YR 5/3, medium dense.
D	SS3	19	22	M		As above.
E	SS3	22	23	M	10	As above.
F	SS3	22	22	M		As above, trace silt, trace to little gravel.
					15	
G	SS3	18	23	M		As above, grading to POORLY-GRADED SAND (SP), medium-grained, trace gravel, trace shell fragments, brown 10YR 5/3, medium dense, no odor.
H	SS3	11	20	S		Grading to WELL-GRADED SAND (SW), trace gravel, trace silt, fine- to medium-grained sand, brown 10YR 5/3, medium dense, near water saturation.
					20	End of boring at 20 ft.

GENERAL NOTES

DATE STARTED JUN 15 92

DATE COMPLETED JUN 15 92

RIG CME-75

CREW CHIEF T. Nemitz

LOGGED G. Keating CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None

AT COMPLETION ▼

AFTER DRILLING

CAVE-IN: DATE/TIME _____ DEPTH _____

WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. AB041
SHEET NO. 1 OF 1

PROJECT NAME NIROP RI Soils
LOCATION Fridley, MN
CONTRACTOR Bergerson-Caswell
DRILLING METHOD 4-1/4" ID HSA

PROJECT NO. 2313.13
INSTALLATION N/A
SURFACE ELEV. 835.0
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
						CONCRETE, 8 in.
A	SS3	11	15			SANDY SILT (ML), black 10YR 2/1, medium dense, slightly plastic, (water from driller during cement penetration), rootlets, no odor.
B	SS3	22	24	M		As above, sparse gravel.
					5	POORLY-GRADED SAND (SP), fine-grained, brown 10YR 5/3, medium dense, moist, no odor.
C	SS3	26	15	M		SANDY SILT, as above.
D	SS3	25	17	M		Grading to SILTY SAND (SM), brown 10YR 5/3, slightly plastic, medium dense, grading to POORLY-GRADED SAND (SP), fine- to medium-grained, brown 10YR 5/3, medium dense, no odor.
E	SS3	21	16	M	10	As above, few gravel.
						As above.
F	SS3	19	18	M		As above, grain size varies from fine to medium to fine to coarse sand with few gravel, variation results from crude bedding.
					15	
G	SS3	25	16	M		As above.
H	SS3	18	20	M		As above.
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUN 8 92
DATE COMPLETED JUN 8 92
RIG CME-75
CREW CHIEF T. Nemitz
LOGGED G. Keating CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. AB042
SHEET NO. 1 OF 1

PROJECT NAME NIROP RI Soils
LOCATION Fridley, MN
CONTRACTOR Bergerson-Caswell
DRILLING METHOD 4-1/4" ID HSA

PROJECT NO. 2313.13
INSTALLATION N/A
SURFACE ELEV. 834.9
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
						8 in. CONCRETE.
A	SS3	17	18	D		SILTY SAND (SM), trace gravel, dark brown 10YR 3/3, medium dense, slightly plastic, no odor, (FILL).
B	SS3	18	22	M/D		SANDY SILT (ML), black 10YR 2/1, medium dense, slightly plastic.
				M		POORLY-GRADED SAND (SP), fine-grained, yellowish-brown 10YR 5/4, medium dense.
					5	
C	SS3	23	18	M		As above, 3 in. black sandy silt lens had highest HNU PID on Reading.
D	SS3	31	22	M		WELL-GRADED SAND (SW), fine- to coarse-grained, brown 10YR 5/3, medium dense, grading to fine- to coarse-grained, one 3 in. sandy silt lens.
E	SS3	25	22	M	10	As above, trace shell fragments, trace gravel, grading varies from fine to medium to fine- to coarse-grained according to crude bedding about 5 to 8 in thick.
F	SS3	34	20	M		As above.
					15	
G	SS3	26	22	M		As above, but grading to POORLY-GRADED SAND (SP).
H	SS3	23	20	M		As above.
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUN 9 92
DATE COMPLETED JUN 9 92
RIG CME-75
CREW CHIEF T. Nemitz
LOGGED G. Keating CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. AB043
SHEET NO. 1 OF 1

PROJECT NAME NIROP RI Soils
LOCATION Fridley, MN
CONTRACTOR Bergerson-Caswell
DRILLING METHOD 4-1/4" ID HSA

PROJECT NO. 2313.13
INSTALLATION N/A
SURFACE ELEV. 836.0
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3					No sample taken.
B	SS3	20	18	M		SILTY SAND (SM), dark brown 7.5YR 3/2, medium dense, pieces of wood, concrete, slag, (FILL).
					5	
C	SS3	16	20	M		As above, trace gravel, piece of rubber.
D	SS3	13	19	M		As above, trace silt, piece of glass.
E	SS3	17	19	M	10	As above.
F	SS3	11	22	M		POORLY-GRADED SAND (SP), fine- to medium-grained, brown 10YR 5/3, medium dense.
					15	
G	SS3	12	19	M		As above. At 16.7 ft., 5 in. dark gray clayey sand layer.
H	SS3	21	24	M		As above, trace medium sand, wet below 19.8 ft.
				W	▽ 20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 20 92
DATE COMPLETED JUL 20 92
RIG CME-55
CREW CHIEF C. Wilkens
LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ 19.8 Ft.
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME DEPTH
WATER: DATE/TIME DEPTH

LOG OF TEST BORING

F-203 (R 01-87)

PROJECT NAME: NIROP RI Soils
LOCATION: Fridley, MN
CONTRACTOR: Bergerson-Caswell
DRILLING METHOD: 4-1/4" ID HSA

BORING NO.: AB044
SHEET NO. 1 OF 1
PROJECT NO.: 2313.13
INSTALLATION: N/A
SURFACE ELEV.: 836.3
BOREHOLE DIA.: 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3					No sample taken.
B	SS3	21	17	M		SILTY SAND (SM), trace gravel, trace clay, dark brown 7.5YR 3/2, pieces of wood, glass, plastic, metal, (FILL).
					5	
C	SS3	17	20	M		As above.
D	SS3	18	16	M		As above, piece of concrete lodged in end of spoon.
E	SS3	14	14	M	10	As above, piece of concrete lodged in top of spoon.
F	SS3	16	23	M		POORLY-GRADED SAND (SP), fine- to medium-grained, brown 10YR 5/3, medium dense.
					15	
G	SS3	16	23	M		As above.
H	SS3	12	23	M		As above, at 19.8 ft., 1/2-in. gray silty clay seam, wet at 19.9 ft.
				W	▽ 20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED: JUL 20 92
DATE COMPLETED: JUL 20 92
RIG: CME-55
CREW CHIEF: C. Wilkens
LOGGED: L. Page CHECKED: R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽: 19.9 Ft.
AT COMPLETION ▼:
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. AB201
SHEET NO. 1 OF 1

PROJECT NAME NIROP RI Soils
LOCATION Fridley, MN
CONTRACTOR Bergerson-Caswell
DRILLING METHOD 4-1/4" ID HSA

PROJECT NO. 2313.13
INSTALLATION N/A
SURFACE ELEV. 835.1
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
				D		WELL-GRADED SAND AND GRAVEL (SW), brown 10YR 5/3, dense, (FILL).
				D		
A	SS3	23	20			SANDY SILT (ML), few gravel, very dark brown 10YR 2/2, medium dense, non-plastic, (FILL).
B	SS3	18	24			As above, very dense, black 10YR 2/1, (FILL).
				D		SANDY CLAY (CL), trace gravel, strong brown 7.5YR 4/6, stiff, plastic, no odor.
				D	5	
C	SS3	14	18	M		POORLY-GRADED SAND (SP), fine-grained, yellowish-brown 10YR5/4, medium dense, no odor. As above, grading to well-graded sand (SW), little gravel, brown 10YR 5/7, medium dense, no odor.
D	SS3	20	24	M		POORLY-GRADED SAND (SP), trace silt, medium-grained, brown 10YR 5/3 to strong brown 7.5YR 4/6, medium dense, no odor.
E	SS3	12	20		10	POORLY-GRADED SAND (SP), as above, brown 10YR 5/3, grain size and grading vary from poorly-graded medium-grained to well-sorted few gravel, variation a result of crude stratification.
F	SS3	12	24	M		As above, no odor.
					15	
G	SS3	14	24	M		As above, no odor.
H	SS3	16	22	M		As above, no odor.
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 8 92
DATE COMPLETED JUL 8 92
RIG Shelby 28-A
CREW CHIEF G. Holman
LOGGED G. Keating CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. AB202
SHEET NO. 1 OF 1
PROJECT NAME NIROP RI Soils
PROJECT NO. 2313.13
LOCATION Fridley, MN
INSTALLATION N/A
CONTRACTOR Bergerson-Caswell
SURFACE ELEV. 835.2
DRILLING METHOD 4-1/4" ID HSA
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
				D		WELL-GRADED SAND AND GRAVEL (SW-SG), brown 10YR 5/3, dense, (FILL).
A	SS3	20	24	D		WELL-GRADED SAND (SW), little gravel, brown 10YR 4/3, medium dense, no odor, (FILL).
B	SS3	12	20	D		SANDY SILT (ML), trace gravel, very dark brown 10YR 2/2, medium dense, non-plastic, no odor (FILL).
				D		SANDY CLAY (CL), dark gray 10YR 4/1, stiff, plastic, no odor.
				M	5	
C	SS3	12	16			POORLY-GRADED SAND (SP), medium-grained, no odor.
D	SS3	26	22	M		As above, trace gravel, medium-grained.
E	SS3	14	22		10	As above.
F	SS3	14	21			As above.
					15	
G	SS3	16	22			As above, interbedded with well-graded sand (SW), trace gravel, crude fluvial stratification.
H	SS3	20	22			As above, trace silt (SP).
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 8 92
DATE COMPLETED JUL 8 92
RIG Shelby 28-A
CREW CHIEF G. Holman
LOGGED G. Keating CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. AB203
SHEET NO. 1 OF 1

PROJECT NAME NIROP RI Soils
LOCATION Fridley, MN
CONTRACTOR Bergerson-Caswell
DRILLING METHOD 4-1/4" ID HSA

PROJECT NO. 2313.15
INSTALLATION N/A
SURFACE ELEV. 835.8
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3	39	14	M		SILT WITH SAND (ML), little gravel, little clay, very dark grayish-brown 10YR 3/2, dense, (FILL).
B	SS3	28	14			As above, pieces of concrete.
				M	5	LEAN CLAY (CL), some silt, very dark gray 2.5YR 2.5/0 to olive brown 2.5Y 4/3, medium dense, (FILL).
C	SS3	46	20	M		WELL-GRADED SAND (SW), fine- to coarse-grained, brown 10YR 5/3, dense.
D	SS3	32	19			As above, trace gravel.
E	SS3	27	19		10	As above, little gravel.
F	SS3	36	17			As above.
					15	
G	SS3	32	18	M		POORLY-GRADED SAND (SP), fine- to medium-grained, brown 10YR5/4, dense.
H	SS3	35	18			As above, fine sand only by 19.1 ft.
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 8 92
DATE COMPLETED JUL 8 92
RIG CME-55
CREW CHIEF C. Wilkens
LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. AB204
SHEET NO. 1 OF 1

PROJECT NAME NIROP RI Soils
LOCATION Fridley, MN
CONTRACTOR Bergerson-Caswell
DRILLING METHOD 4-1/4" ID HSA

PROJECT NO. 2313.13
INSTALLATION N/A
SURFACE ELEV. 836.0
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3	67	15	M		SILTY SAND (SM), little gravel, trace clay, black 10YR 2/1 to light yellowish-brown 10YR 6/4, pieces of concrete, (FILL).
B	SS3	31	19	M		SILTY SAND (SM), fine, yellowish-brown 10YR 5/4, with black and rust colored mottling.
				M	5	POORLY-GRADED SAND (SP), fine-grained, brown 10YR 5/3.
C	SS3	47	20	M		WELL-GRADED SAND (SW), fine- to coarse-grained, trace gravel, brown 10YR 4/3, dense.
D	SS3	30	20	M		As above, no gravel.
E	SS3	36	18	M	10	As above.
F	SS3	28	20	M		As above.
					15	
G	SS3	19	23	M		As above, trace coarse sand.
H	SS3	23	20	M		
				W	▽ 20	POORLY-GRADED SAND, very fine-grained, grayish-brown 10YR 5/2, medium dense.
						End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 8 92
DATE COMPLETED JUL 8 92
RIG CME-55
CREW CHIEF C. Wilkens
LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ 19.7 Ft.
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME DEPTH
WATER: DATE/TIME DEPTH

LOG OF TEST BORING

F-203 (R 01-87)

PROJECT NAME	NIROP RI Soils	BORING NO.	AB205
LOCATION	Fridley, MN	SHEET NO.	1 OF 1
CONTRACTOR	Bergerson-Caswell	PROJECT NO.	2313.13
DRILLING METHOD	4-1/4" ID HSA	INSTALLATION	N/A
		SURFACE ELEV.	834.6
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3	47	18	M		SILTY SAND (SM), trace gravel, black 10YR 2/1 to dark yellowish-brown 10YR 4/6, dense, pieces of coal and concrete, (FILL).
B	SS3	13	19	M	5	POORLY-GRADED SAND (SP), fine-grained, trace silt, strong brown 7.5YR 5/8 to pale brown 10YR 6/3, medium dense.
C	SS3	36	19	M		WELL-GRADED SAND (SW), fine- to coarse-grained, trace gravel, brown 10YR 5/4, dense.
D	SS3	26	20	M		As above.
E	SS3	38	23	M	10	As above.
F	SS3	24	20	M		As above, shell fragments grading to POORLY-GRADED SAND WITH SILT AND GRAVEL (SP-SM).
G	SS3	13	24		15	As above.
H	SS3	24	20	M W	▽	LEAN CLAY (CL), some silt, black 10YR 2/1, roots. WELL-GRADED SAND (SW), as above. POORLY-GRADED SAND (SP), fine-grained, brown 10YR 5/3.
					20	End Of Boring at 20 ft.

GENERAL NOTES		WATER LEVEL OBSERVATIONS	
DATE STARTED	JUL 8 92	WHILE DRILLING ▽	18.8 Ft.
DATE COMPLETED	JUL 8 92	AT COMPLETION ▼	
RIG	CME-55	AFTER DRILLING	
CREW CHIEF	C. Wilkens	CAVE-IN: DATE/TIME	DEPTH
LOGGED L. Page	CHECKED R.V.	WATER: DATE/TIME	DEPTH

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. AB206
SHEET NO. 1 OF 1
PROJECT NAME NIROP RI Soils
PROJECT NO. 2313.13
LOCATION Fridley, MN
INSTALLATION N/A
CONTRACTOR Bergerson-Caswell
SURFACE ELEV. 834.4
DRILLING METHOD 4-1/4" ID HSA
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3	42	18	M		SILTY SAND (SM), trace gravel, trace clay, black 10YR 2/1, very dense, pieces of coal and slag, (FILL).
B	SS3	12	19			As above, black 10YR 2/1 to yellowish-red 5YR 4/6.
				M		LEAN CLAY (CL), some silt, very dark gray 10YR 3/1 to light grayish-brown 10YR 6/2, medium dense.
				M	5	SANDY SILT (ML), little clay, light grayish-brown 10YR 6/2, medium dense.
				M		
C	SS3	34	20			POORLY-GRADED SAND (SP), fine-grained, brown 10YR 5/3, dense, 2 in. well-graded seam at 7.5 ft.
D	SS3	29	21			
				M		WELL-GRADED SAND (SW), fine- to coarse-grained, little gravel, brown 10YR 5/4, medium dense.
E	SS3	33	19		10	As above, trace gravel.
				M		POORLY-GRADED SAND (SP), fine- to medium-grained, brown 10YR 5/3, medium dense.
F	SS3	25	21			
					15	
G	SS3	22	22	M		As above, fine sand only.
H	SS3	22	23			POORLY-GRADED SAND (SP), as above, wet at 19.0 ft.
				W	▽	
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 8 92
DATE COMPLETED JUL 8 92
RIG CME-55
CREW CHIEF C. Wilkens
LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ 19.0 Ft.
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME DEPTH
WATER: DATE/TIME DEPTH

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. AB207
SHEET NO. 1 OF 1
PROJECT NAME NIROP RI Soils
PROJECT NO. 2313.13
LOCATION Fridley, MN
INSTALLATION N/A
CONTRACTOR Bergerson-Caswell
SURFACE ELEV. 834.7
DRILLING METHOD 4-1/4" ID HSA
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
				D		WELL-GRADED SAND AND GRAVEL (SW-GW), pale brown 10YR 6/3, medium dense, (FILL).
				D		
A	SS3	16	20			SANDY SILT (ML), very dark brown 10YR 2/2, medium dense, non-plastic, (FILL).
B	SS3	19	14	D		CLAYEY SAND (SC), fine-grained, light yellowish-brown 10YR 6/4, medium dense, slightly plastic, (FILL).
				M		
					5	Grading to POORLY-GRADED SAND (SP), fine-grained, light yellowish-brown 10YR 6/4, medium dense, (FILL).
C	SS3	17	16	M		POORLY-GRADED SAND (SP), medium-grained, brown 10YR 5/3, medium dense.
D	SS3	18	16	M		Grading to WELL-GRADED SAND (SW), some gravel, brown 10YR 5/3, medium dense, no odor.
					10	
E	SS3	16	20			As above, little gravel, trace silt (SW).
F	SS3	10	22			As above, crude bedding alternates between SW, as above, and SP, poorly-graded sand, medium-grained.
					15	
G	SS3	18	22			POORLY-GRADED SAND (SP), as above, trace gravel.
H	SS3	15	22	M		Crudely-bedded SP and SW, as above, no odor.
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 9 92
DATE COMPLETED JUL 9 92
RIG Shelby 28-A
CREW CHIEF G. Holman
LOGGED G. Keating CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. AB208
SHEET NO. 1 OF 1

PROJECT NAME NIROP RI Soils
LOCATION Fridley, MN
CONTRACTOR Bergerson-Caswell
DRILLING METHOD 4-1/4" ID HSA

PROJECT NO. 2313.13
INSTALLATION N/A
SURFACE ELEV. 835.3
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
				D		WELL-GRADED GRAVEL WITH SAND (GW), pale brown 10YR 6/3, medium dense, (FILL).
A	SS3	21	22	D		SANDY SILT (ML), fine-grained sand, trace gravel, brown 10YR 5/3 to very dark grayish-brown 10YR 3/2, medium dense, slightly plastic, (FILL).
B	SS3	19	22			
				D		LEAN CLAY (CL), brown 10YR 5/3 to strong brown 7.5YR 4/6, very stiff, moderately plastic, (FILL).
				M	5	
C	SS3	8	20			POORLY-GRADED SAND (SP), fine-grained, trace gravel, trace silt, pale brown 10YR 6/3, medium dense.
D	SS3	21	18	M		WELL-GRADED SAND (SW), little gravel, yellowish brown 10YR 5/6, medium dense.
E	SS3	17	18		10	As above, brown 10YR 5/3.
F	SS3	16	22			As above, few gravel.
					15	
G	SS3	14	24	M		Alternating beds of WELL-GRADED SAND (SW), as above, and POORLY-GRADED SAND (SP), trace gravel, medium-grained, brown 10YR 5/3, medium dense.
H	SS3	14	24	M		As above, no odor.
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 13 92
DATE COMPLETED JUL 13 92
RIG Shelby 28-A
CREW CHIEF G. Holman
LOGGED G. Keating CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

PROJECT NAME	NIROP RI Soils	BORING NO.	AB209
LOCATION	Fridley, MN	SHEET NO.	1 OF 1
CONTRACTOR	Bergerson-Caswell	PROJECT NO.	2313.15
DRILLING METHOD	4-1/4" ID HSA	INSTALLATION	N/A
		SURFACE ELEV.	835.0
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3	55	20	M/D		SAND AND GRAVEL (SP-GP), (FILL). SILTY SAND (SM), trace fine gravel, medium-grained, very dark gray 10YR 3/1, dense, (FILL).
B	SS3	20	20	M		SILTY SAND (SM), trace clay, black 10YR 2/1, stiff, nonplastic, (FILL).
				W	5	At 4.8 ft., 3 in. fine sand seam.
C	SS3	25	20			As above, but dark yellowish brown 10YR 4/6, increase of fine- to medium-grained sand (SM) with depth.
D	SS3	19	20	W		POORLY-GRADED SAND (SP), medium- to coarse-grained, yellowish brown 10YR 5/6, loose to medium dense, trace shells, trace wood.
						At 9.8 ft., 2 in., SILT (ML) seam.
E	SS3	23	20	M	10	
F	SS3	16	20			As above, (SW).
					15	
G	SS3	17	20			As above, (SW).
H	SS3	15	20		▽	As above, (SW).
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 23 92

DATE COMPLETED JUL 23 92

RIG CME-55

CREW CHIEF C. Wilkens

LOGGED R. Vaughn CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ 18.0 Ft.

AT COMPLETION ▼

AFTER DRILLING

CAVE-IN: DATE/TIME _____ DEPTH _____

WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. AB210
SHEET NO. 1 OF 1

PROJECT NAME NIROP RI Soils
LOCATION Fridley, MN
CONTRACTOR Bergerson-Caswell
DRILLING METHOD 4-1/4" ID HSA

PROJECT NO. 2313.13
INSTALLATION N/A
SURFACE ELEV. 834.6
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
						SAND AND GRAVEL (SP-GP).
A	SS3	62	20			SILTY SAND (SM), trace fine-grained gravel, black 10YR 2/1, dense, (FILL).
B	SS3	26	20			As above, less silt (SP-SM).
					5	SILT (ML), trace fine- to medium-grained sand, black 10YR 2/1, stiff, nonplastic.
C	SS3	28	20			POORLY-GRADED SAND (SP), medium, trace fine gravel, yellowish brown 10YR 5/6, medium dense.
D	SS3	62	20			As above, (SP).
E	SS3	29	20		10	As above, (SP), medium- to coarse-grained sand.
F	SS3	23	20			Grading to: as above, but trace fine-grained gravel. Grading to: WELL-GRADED SAND (SW), medium-grained.
					15	
G	SS3	18	20			As above, (SW).
H	SS3	13	20			As above, (SW).
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 23 92
DATE COMPLETED JUL 23 92
RIG CME-55
CREW CHIEF C. Wilkens
LOGGED R. Vaughn CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

RMT

PROJECT NAME	NIROP RI Soils	BORING NO.	AB211
LOCATION	Fridley, MN	SHEET NO.	1 OF 1
CONTRACTOR	Bergerson-Caswell	PROJECT NO.	2313.13
DRILLING METHOD	4-1/4" ID HSA	INSTALLATION	N/A
		SURFACE ELEV.	835.3
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3	45	20	M/D		SILTY SAND (SM), trace fine gravel, black 10YR 2/1, medium-grained sand, medium dense, (FILL).
B	SS3	34	20	M		As above, parts CLAY (CL).
				M	5	WELL-GRADED SAND (SW), medium-grained sand, yellowish brown 10YR 5/6, medium dense.
C	SS3	34	20			Grading to: POORLY-GRADED SAND (SP), medium to coarse sand, trace fine gravel.
D	SS3	38	20	M		As above, (SP).
E	SS3	51	20	M	10	As above, (SP), less fine-grained gravel.
F	SS3	48	20	M		As above, (SP), increase in fine-grained gravel.
					15	
G	SS3	20	20	M		
				M		WELL-GRADED SAND (SW), medium-grained, yellowish brown 10YR 5/6, medium dense.
H	SS3	24	20			As above, (SW).
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 23 92

DATE COMPLETED JUL 23 92

RIG CME-55

CREW CHIEF C. Wilkens

LOGGED R. Vaughn CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None

AT COMPLETION ▼

AFTER DRILLING

CAVE-IN: DATE/TIME _____ DEPTH _____

WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

RMT

PROJECT NAME	NIROP RI Soils	BORING NO.	AB212
LOCATION	Fridley, MN	SHEET NO.	1 OF 1
CONTRACTOR	Bergerson-Caswell	PROJECT NO.	2313.13
DRILLING METHOD	4-1/4" ID HSA	INSTALLATION	N/A
		SURFACE ELEV.	836.6
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
						SAND AND GRAVEL (SP-GP).
A	SS3	35	20	M		SANDY LEAN CLAY (CL), trace fine-grained gravel, black 10YR 2/1, stiff, nonplastic to slightly plastic, (FILL).
B	SS3	51	20	M		As above, but less clay, approaching SILTY SAND WITH GRAVEL (SM), (FILL).
					5	
C	SS3	100	3	M		As above, (SC) to (CL), poor recovery due to rock at 7 ft.
D	SS3	40	20	M		POORLY-GRADED SAND (SP), trace fine-grained gravel, yellowish brown 10YR 5/6, medium dense.
E	SS3	63	20	M	10	As above, (SP).
F	SS3	36	20	M		As above, (SP).
					15	
G	SS3	18	20	M		As above, (SP).
H	SS3	19	20	M		As above, (SP).
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 24 92

DATE COMPLETED JUL 24 92

RIG CME-55

CREW CHIEF C. Wilkens

LOGGED R. Vaughn CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None

AT COMPLETION ▼

AFTER DRILLING

CAVE-IN: DATE/TIME _____ DEPTH _____

WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

PROJECT NAME	NIROP RI Soils	BORING NO.	AB213
LOCATION	Fridley, MN	SHEET NO.	1 OF 1
CONTRACTOR	Bergerson-Caswell	PROJECT NO.	2313.13
DRILLING METHOD	4-1/4" ID HSA	INSTALLATION	N/A
		SURFACE ELEV.	835.5
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
						SAND AND GRAVEL (SP-GP).
A	SS3	87	20	M/D		SILTY SAND (SM), trace fine-grained gravel, trace slag, black 10YR 2/1, medium dense.
B	SS3	24	20	M		As above, parts have clay, CLAYEY SAND (SC), (FILL).
					5	
C	SS3	100	0	M		No recovery. Barrel not advancing.
D	SS3	25	20	M		WELL-GRADED SAND (SW), medium-grained, yellowish brown 10YR 5/6, medium dense.
E	SS3	42	22	M	10	As above, but grading to POORLY-GRADED SAND (SP).
F	SS3	23	20	M		As above, (SP).
					15	
G	SS3	30	20	M		As above, but grading to WELL-GRADED SAND (SW), medium-grained.
H	SS3	26	20	M		
				M	20	SILT (ML), dark gray 10YR 4/1, stiff, nonplastic.
						End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 23 92

DATE COMPLETED JUL 23 92

RIG CME-55

CREW CHIEF C. Wilkens

LOGGED R. Vaughn CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None

AT COMPLETION ▼

AFTER DRILLING

CAVE-IN: DATE/TIME _____ DEPTH _____

WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. AB214
SHEET NO. 1 OF 1

PROJECT NAME NIROP RI Soils
LOCATION Fridley, MN
CONTRACTOR Bergerson-Caswell
DRILLING METHOD 4-1/4" ID HSA

PROJECT NO. 2313.15
INSTALLATION N/A
SURFACE ELEV. 835.7
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3	54	22	M		WELL-GRADED SAND WITH SILT (SW-SM), little gravel, black 10YR 2/1 to dark brown 10YR 3/3, very dense.
B	SS3	25	18	M		At 3.8 ft., 3 in. layer of hard gray clay with gravel, medium dense, (FILL).
					5	WELL-GRADED SAND (SW), fine- to coarse-grained, black 7.5YR 2/0 to brown 10YR 5/3.
C	SS3	17	18	M		SANDY SILT (ML), little clay, black 7.5YR 2/0 to dark red 10R 3/6 to yellowish red 5YR 4/6, medium stiff.
D	SS3	42	20	M		POORLY-GRADED SAND (SP), little silt, fine- to medium-grained, brown 10YR 5/3, medium dense.
E	SS3	20	20	M	10	WELL-GRADED SAND (SW), trace silt, trace gravel, fine- to coarse-grained, brown 7.5YR 4/6, medium dense.
						As above, no gravel, trace coarse sand, brown 10YR 5/3, piece of wood.
F	SS3	28	24	M		As above, trace gravel, fine- to coarse-grained.
					15	
G	SS3	40	20	M		
H	SS3	28	20	M		As above.
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 28 92
DATE COMPLETED JUL 28 92
RIG CME-55
CREW CHIEF C. Wilkens
LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME DEPTH
WATER: DATE/TIME DEPTH

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. AB215
SHEET NO. 1 OF 1

PROJECT NAME NIROP RI Soils
LOCATION Fridley, MN
CONTRACTOR Bergerson-Caswell
DRILLING METHOD 4-1/4" ID HSA

PROJECT NO. 2313.13
INSTALLATION N/A
SURFACE ELEV. 834.6
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
				M		SILTY SAND (SM), black 7.5YR 2/0, dense, roots.
A	SS3	34	19			
				M		POORLY-GRADED SAND (SP), fine-grained, yellowish-brown 10YR 4/3, medium dense. As above, fine- to medium-grained sand, brown 10YR 5/3.
B	SS3	26	17			
					5	
				M		WELL-GRADED SAND (SW), fine- to coarse-grained, trace gravel, brown 10YR 4/3, very dense.
C	SS3	76	21			
D	SS3	27	22	M		As above.
E	SS3	33	24	M	10	As above.
				M		POORLY-GRADED SAND (SP), fine- to medium-grained, brown 10YR 4/3, medium dense.
F	SS3	16	19			
					15	
G	SS3	20	19	M		As above.
H	SS3	20	20			As above, but WELL-GRADED SAND WITH SILT (SW-SM), wet at 19.1 ft.
				W	▽	
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 9 92
DATE COMPLETED JUL 9 92
RIG CME-55
CREW CHIEF C. Wilkens
LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ 19.1 Ft.
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. AB216
SHEET NO. 1 OF 1
PROJECT NAME NIROP RI Soils
PROJECT NO. 2313.13
LOCATION Fridley, MN
INSTALLATION N/A
CONTRACTOR Bergerson-Caswell
SURFACE ELEV. 834.4
DRILLING METHOD 4-1/4" ID HSA
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3	15	15	M		POORLY-GRADED SAND WITH GRAVEL (SP), trace silt, trace clay, brown 10YR 5/3, to very dark gray 10YR 3/1, medium dense, (FILL).
B	SS3	23	17	M		WELL-GRADED SAND WITH SILT AND GRAVEL (SW-SM), brown 10YR 5/3 to black 10YR 2/1, medium dense, pieces of asphalt, (FILL).
					5	
C	SS3	8	20	M		As above, trace clay.
D	SS3	13	18	M		CLAYEY SAND (SC), dark grayish-brown 10YR 4/2, medium dense, (FILL).
				M		WELL-GRADED SAND (SW), trace gravel, fine- to coarse-grained, dark yellowish brown 10YR 4/4.
E	SS3	9	20	M	10	POORLY-GRADED SAND (SP), fine- to medium-grained, brown 10YR 4/3. At 11.5 ft., 2 in. silty sand seam, roots.
F	SS3	25	24	M		As above, trace coarse sand.
					15	
G	SS3	24	22	M		
H	SS3	19	22	W	▽	As above, fine sand only at 17.5 ft. As above, trace coarse sand, fine- to medium-grained.
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 13 92
DATE COMPLETED JUL 13 92
RIG CME-55
CREW CHIEF C. Wilkens
LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ 18.9 Ft.
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. AB217
SHEET NO. 1 OF 1

PROJECT NAME NIROP RI Soils
LOCATION Fridley, MN
CONTRACTOR Bergerson-Caswell
DRILLING METHOD 4-1/4" ID HSA

PROJECT NO. 2313.15
INSTALLATION N/A
SURFACE ELEV. 835.3
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
				D		WELL-GRADED GRAVEL WITH SAND (GW), brownish-yellow 10YR 6/6, medium dense, (FILL).
A	SS3	17	23			
				M		SILTY SAND (SM), fine- to medium-grained, trace gravel, trace debrish (glass, plastic), dark brown 10YR 4/3, medium dense, slightly plastic, (FILL).
B	SS3	12	24			
				M	5	CLAYEY SAND (SC), fine-grained, pale brown 10YR 6/3, medium dense, slightly plastic, (FILL).
C	SS3	4	24	M		SILTY SAND (SM), as above.
D	SS3	4	24	M		POORLY-GRADED SAND (SP), fine-grained, little clay balls, little silt balls, fine-grained, brown 10YR 5/3, loose, slightly plastic to non-plastic, (FILL). Small (1 cm.) layers of sandy silt, as above. Alternating layers of CLAYEY SAND (SC) and POORLY-GRADED SAND (SP), as above.
E	SS3	6	24	M	10	As above, (Fill).
						WELL-GRADED SAND (SW), medium-grained, little gravel, brown 10YR 5/3, loose to medium dense.
F	SS3	10	24	M		As above, trace gravel, trace shell fragments, fine- to medium-grained.
					15	
G	SS3	18	24	M		As above, grading to POORLY-GRADED SAND (SP), medium-grained, brown 10YR 5/3 to 10YR 4/3, medium dense. 8 in. section at top of interval contains trace silt.
H	SS3	16	24	M		As above.
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 13 92
DATE COMPLETED JUL 13 92
RIG Shelby 28-A
CREW CHIEF G. Holman
LOGGED G. Keating CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME DEPTH
WATER: DATE/TIME DEPTH

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. AB218
SHEET NO. 1 OF 1
PROJECT NAME NIROP RI Soils
PROJECT NO. 2313.13
LOCATION Fridley, MN
INSTALLATION N/A
CONTRACTOR Bergerson-Caswell
SURFACE ELEV. 835.4
DRILLING METHOD 4-1/4" ID HSA
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3	45	20	M		CLAYEY SAND (SC), trace fine-grained gravel, black to very dark brown 10YR 2/1, medium dense, (FILL).
B	SS3	17	20	M		As above.
				M	5	LEAN CLAY (CL), little silt, yellowish red 5YR 4/6, stiff, plastic, perched water at 5.0 ft., (FILL).
C	SS3	16	20			
				M		WELL-GRADED SAND (SW), medium-grained sand, little silt, gray 10YR 4/1, medium dense. At about 8.5 ft., 2 in. silt seam. Grading to POORLY-GRADED SAND (SP), trace fine-grained gravel, yellowish brown 10YR 5/6.
D	SS3	14	20			
E	SS3	11	23	M	10	As above, (SP).
F	SS3	27	20	M		As above, (SP).
					15	As above, but WELL-GRADED SAND (SW), medium-grained.
G	SS3	23	20	M		As above, (SP).
H	SS3	26	20	M		
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 24 92
DATE COMPLETED JUL 24 92
RIG CME-55
CREW CHIEF C. Wilkens
LOGGED R. Vaughn CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. AB219
SHEET NO. 1 OF 1

PROJECT NAME NIROP RI Soils
LOCATION Fridley, MN
CONTRACTOR Bergerson-Caswell
DRILLING METHOD 4-1/4" ID HSA

PROJECT NO. 2313.13
INSTALLATION N/A
SURFACE ELEV. 834.5
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
						WELL-GRADED GRAVEL (GW), railroad gravel, (FILL).
A	SS3	15	20	D		SANDY SILT (ML), black 10YR 2/1, medium dense, non-plastic, (FILL).
B	SS3	12	22	M		SILTY SAND (SM), brown 10YR 4/3, medium dense, slightly plastic, (FILL).
						SANDY SILT (ML), as above, (FILL).
				M	5	CLAYEY SAND (SC), fine-grained, dark yellowish-brown 10YR 4/6, medium dense, plastic, (FILL).
C	SS3	16	22			As above, (Fill).
				M		POORLY-GRADED SAND (SP), fine- to medium-grained, brown 10YR 5/3, medium dense.
D	SS3	26	24			As above, few gravel.
E	SS3	13	24	M	10	As above.
F	SS3	17	24	M		As above, some gravel at base of interval, trace silt. POORLY-GRADED SAND WITH SILT (SP-SM).
					15	
G	SS3	18	24	M		As above, some gravel, subrounded.
H	SS3	16	24	M		As above, grain size decreasing to medium-grained sand through interval, near saturation (water) at base.
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 9 92
DATE COMPLETED JUL 9 92
RIG Shelby 28-A
CREW CHIEF G. Holman
LOGGED G. Keating CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ About 20-21 Ft.
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. AB220
SHEET NO. 1 OF 1

PROJECT NAME NIROP RI Soils
LOCATION Fridley, MN
CONTRACTOR Bergerson-Caswell
DRILLING METHOD 4-1/4" ID HSA

PROJECT NO. 2313.15
INSTALLATION N/A
SURFACE ELEV. 835.2
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3	34	16	M		SILTY SAND (SM), trace clay, trace gravel, very dark grayish-brown 10YR 3/2, dense.
				M		SILT (ML), little sand, trace clay, black 7.5YR 2/0, medium dense.
B	SS3	18	17	M		SANDY LEAN CLAY (CL), trace silt, brown 10YR 4/3, with black and rust mottling, medium dense.
				M	5	POORLY-GRADED SAND (SP), fine-grained, brown 10YR 5/3, medium dense.
C	SS3	64	21	M		WELL-GRADED SAND (SW), fine- to coarse-grained, little gravel, brown 10YR 4/3, very dense.
D	SS3	28	19	M		As above, trace gravel, less dense.
E	SS3	25	19	M	10	As above, no gravel.
F	SS3	22	18	M		As above.
					15	
G	SS3	27	17	M		As above, trace gravel, shell fragments.
				M		POORLY-GRADED SAND (SP), fine-grained, brown 10YR 5/3, medium dense.
H	SS3	25	21	M		WELL-GRADED SAND (SW), fine- to coarse-grained, brown 10YR 4/3, medium dense.
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 9 92
DATE COMPLETED JUL 9 92
RIG CME-55
CREW CHIEF C. Wilkens
LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME DEPTH
WATER: DATE/TIME DEPTH

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. AB221
SHEET NO. 1 OF 1

PROJECT NAME NIROP RI Soils
LOCATION Fridley, MN
CONTRACTOR Bergerson-Caswell
DRILLING METHOD 4-1/4" ID HSA

PROJECT NO. 2313.13
INSTALLATION N/A
SURFACE ELEV. 835.9
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL NO.	TYPE	RECOVERY N	IN	MOISTURE	DEPTH	
A	SS3	50	16	M		SILTY SAND (SM), little gravel, dark brown 7.5YR 3/2, very dense, piece of coal, (FILL).
B	SS3	47	21	M		LEAN CLAY WITH SAND (CL), little silt, black 7.5YR 2/0, dense.
					5	POORLY-GRADED SAND (SP), fine-grained, yellowish-brown 10YR 5/4, dense.
C	SS3	26	21	M		POORLY-GRADED SAND (SP), fine- to coarse-grained, mostly medium grained, brown 10YR 5/3, medium dense.
D	SS3	43	20	M		As above, trace gravel.
E	SS3	28	18	M	10	As above.
F	SS3	29	20	M		As above.
					15	
G	SS3	38	19	M		As above, trace coarse sand, trace gravel, trace silt (SP-SM).
H	SS3	28	20	M		As above.
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 9 92
DATE COMPLETED JUL 9 92
RIG CME-55
CREW CHIEF C. Wilkens
LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. AB222
SHEET NO. 1 OF 1

PROJECT NAME NIROP RI Soils
LOCATION Fridley, MN
CONTRACTOR Bergerson-Caswell
DRILLING METHOD 4-1/4" ID HSA

PROJECT NO. 2313.13
INSTALLATION N/A
SURFACE ELEV. 835.3
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3	18	24	D D D		WELL-GRADED SAND WITH SILT AND GRAVEL (SW-SM), dark brown 10YR 3/2 to brown 10YR 5/3, medium dense, (FILL).
B	SS3	17	24	M M		SILT (ML), black 10YR 2/1, medium dense, slightly plastic, (FILL).
						CLAYEY SAND (SC), fine-grained, brownish-yellow 10YR 6/6, medium dense, slightly plastic, (FILL).
					5	WELL-GRADED SAND WITH SILT AND GRAVEL (SW-SM), as above, (FILL).
C	SS3	16	22	M		POORLY-GRADED SAND WITH SILT (SP-SM), fine-grained, brown 10YR 5/3 to strong brown 7.5YR 5/8, medium dense, (FILL).
D	SS3	12	24	M		WELL-GRADED SAND WITH SILT AND GRAVEL (SW-SM), as above, (FILL).
E	SS3	14	24	M	10	WELL-GRADED SAND (SW), trace gravel, trace shell fragments, brown 10YR 5/3, medium dense, no odor.
						As above, alternating beds of SW and SP, medium-grained.
						As above.
F	SS3	14	24	M		As above.
					15	
G	SS3	15	24	M		As above.
H	SS3	15	24	M		As above.
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 9 92
DATE COMPLETED JUL 9 92
RIG Shelby 28-A
CREW CHIEF G. Holman
LOGGED G. Keating CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. AB223
SHEET NO. 1 OF 1
PROJECT NAME NIROP RI Soils
PROJECT NO. 2313.13
LOCATION Fridley, MN
INSTALLATION N/A
CONTRACTOR Bergerson-Caswell
SURFACE ELEV. 835.1
DRILLING METHOD 4-1/4" ID HSA
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3	15	22	D		WELL-GRADED SAND WITH SILT AND GRAVEL (SW-SM), dark brown 10YR 3/2, medium dense, non-plastic.
B	SS3	18	24	D		SANDY SILT (ML), very dark brown 10YR 2/2, trace gravel, medium dense, slightly plastic, (FILL).
				M	5	POORLY-GRADED SAND (SP), fine-grained, brown 10YR 5/3, medium dense, no odor, (FILL).
C	SS3	13	24	M		LEAN CLAY (CL), some silt, trace gravel, black 10YR 2/1, medium dense, plastic, (FILL).
D	SS3	15	24	M		POORLY-GRADED SAND (SP), medium-grained, brown 10YR 5/3, medium dense. As above, trace shell fragments.
E	SS3	15	24	M	10	As above, some well-graded sand beds, trace gravel.
F	SS3	18	24	M		As above.
					15	
G	SS3	14	24	M		As above.
H	SS3	14	22	M		As above.
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 9 92
DATE COMPLETED JUL 9 92
RIG Shelby 28-A
CREW CHIEF G. Holman
LOGGED G. Keating CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

PROJECT NAME	NIROP RI Soils	BORING NO.	AB224
LOCATION	Fridley, MN	SHEET NO.	1 OF 1
CONTRACTOR	Bergerson-Caswell	PROJECT NO.	2313.13
DRILLING METHOD	4-1/4" ID HSA	INSTALLATION	N/A
		SURFACE ELEV.	834.7
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3	27	19	M		SILTY SAND (SM), trace clay, black 7.5YR 2/0 to very dark grayish-brown 10YR 3/2, medium dense.
B	SS3	20	21	M		POORLY-GRADED SAND (SP), fine-grained, yellowish brown 10YR 5/6, meduim dense.
					5	POORLY-GRADED SAND (SP), fine- to medium-grained, trace clay, brown 10YR 5/3, medium dense.
C	SS3	31	22	M		As above.
D	SS3	30	20	M		WELL-GRADED SAND (SW), fine- to coarse-grained, trace gravel, brown 10YR 4/3, medium dense.
						As above, shell fragments.
E	SS3	27	22	M	10	As above.
F	SS3	23	19	M		As above.
					15	POORLY-GRADED SAND (SP), fine- to medium-grained, trace clay, brown 10YR 5/3, medium dense.
G	SS3	33	19	M		At 16.4 ft., 3 in. seam of coarse sand.
H	SS3	34	18	W		POORLY-GRADED SAND WITH SILT (SP-SM), as above.
					▽	As above, wet at 19.0 ft.
					20	End Of Boring at 20 ft.

GENERAL NOTES		WATER LEVEL OBSERVATIONS	
DATE STARTED	JUL 13 92	WHILE DRILLING ▽	19.0 Feet
DATE COMPLETED	JUL 13 92	AT COMPLETION ▼	
RIG	CME-55	AFTER DRILLING	
CREW CHIEF	C. Wilkens	CAVE-IN: DATE/TIME	DEPTH
LOGGED L. Page	CHECKED R.V.	WATER: DATE/TIME	DEPTH

LOG OF TEST BORING

F-203 (R 01-87)

PROJECT NAME	NIROP RI Soils	BORING NO.	AB225
LOCATION	Fridley, MN	SHEET NO.	1 OF 1
CONTRACTOR	Bergerson-Caswell	PROJECT NO.	2313.15
DRILLING METHOD	4-1/4" ID HSA	INSTALLATION	N/A
		SURFACE ELEV.	835.5
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3	26	24	D		WELL-GRADED SAND WITH SILT AND GRAVEL (SW-SM), brown 10YR 5/3, medium dense, (FILL).
B	SS3	9	24	D		SANDY SILT (ML), black 10YR 2/1, medium dense, slightly plastic, no odor, (FILL).
						WELL-GRADED SAND WITH SILT (SW-SM), as above, few gravel, (FILL).
					5	CLAYEY SAND (SC), fine-grained, mottled brown 10YR 5/3 to strong brown 7.5YR 4/6, loose, plastic, (FILL).
C	SS3	20	24	M		As above, layering present due to color changes.
D	SS3	18	24	M		POORLY-GRADED SAND (SP), trace shell fragments, medium-grained, brown 10YR 5/3, medium dense, no odor.
E	SS3	15	22	M	10	POORLY-GRADED SAND (SP), as above, fine- to medium-grained, trace gravel.
F	SS3	11	22	M		POORLY-GRADED SAND (SP), as above, medium-grained. As above.
					15	
G	SS3	10	22	M		As above.
H	SS3	12	22	M		POORLY-GRADED SAND (SP), as above, fine- to medium-grained.
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 10 92

DATE COMPLETED JUL 10 92

RIG Shelby 28-A

CREW CHIEF G. Holman

LOGGED G. Keating CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None

AT COMPLETION ▼

AFTER DRILLING

CAVE-IN: DATE/TIME _____ DEPTH _____

WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. AB226
SHEET NO. 1 OF 1

PROJECT NAME NIROP RI Soils
PROJECT NO. 2313.13
LOCATION Fridley, MN
INSTALLATION N/A
CONTRACTOR Bergerson-Caswell
SURFACE ELEV. 835.9
DRILLING METHOD 4-1/4" ID HSA
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3					No sample taken. Concrete footings, (FILL).
B	SS3	33	3	D		SILT (ML), little sand, pale brown 10YR 6/3, dense, concrete chunks, (FILL).
					5	
C	SS3	24	20	M		WELL-GRADED SAND (SW), fine- to coarse-grained, trace gravel, brown 10YR 4/3.
D	SS3	20	21	M		As above.
E	SS3	40	21	M	10	As above.
F	SS3	44	21	M		As above, little gravel, shell fragments.
					15	
G	SS3	40	22	M		WELL-GRADED SAND WITH SILT (SW-SM), as above, trace to little silt, trace gravel, no shells, brown 10YR 5/3.
H	SS3	37	21	M		As above, fine- to medium-grained sand, trace coarse sand.
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 10 92
DATE COMPLETED JUL 10 92
RIG CME-55
CREW CHIEF C. Wilkens
LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

PROJECT NAME	NIROP RI Soils	BORING NO.	AB227
LOCATION	Fridley, MN	SHEET NO.	1 OF 1
CONTRACTOR	Bergerson-Caswell	PROJECT NO.	2313.13
DRILLING METHOD	4-1/4" ID HSA	INSTALLATION	N/A
		SURFACE ELEV.	835.6
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3	19	24	D		WELL-GRADED GRAVEL WITH SAND (GW), brownish-yellow 10YR 6/6, medium dense, (FILL).
B	SS3	16	12	D		SANDY SILT (ML), trace ceramic debris, very dark brown 10YR 2/2, medium dense, non-plastic to slightly plastic, (FILL).
				M		SANDY LEAN CLAY (CL), dark yellowish-brown 10YR 4/6, stiff, plastic, (FILL).
				M	5	POORLY-GRADED SAND (SP), fine-grained, brown 10YR 5/3, medium dense, no odor.
C	SS3	20	15	M		WELL-GRADED SAND AND GRAVEL (SW), medium-grained, little gravel, brown 10YR 5/3, medium dense.
D	SS3	12	24	M		As above, trace silt, brown 10YR 4/3.
E	SS3	17	24	M	10	POORLY-GRADED SAND (SP), medium-grained, trace shell fragments, brown 10YR 5/3 to dark yellowish-brown 10YR 4/6, medium dense. Alternating POORLY-GRADED SAND (SP) and WELL-GRADED SAND AND GRAVEL (SW), trace silt, as above, brown 10YR 5/3 to dark yellowish-brown 10YR 3/6.
F	SS3	14	24	M		As above, brown 10YR 5/3 to streaked strong brown 10YR 4/6.
					15	
G	SS3	13	24	M		As above, brown 10YR 5/3.
H	SS3	11	24	M		As above, at 18 ft., 6 in. layer with coarse sand and gravel.
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 13 92

DATE COMPLETED JUL 13 92

RIG Shelby 28-A

CREW CHIEF G. Holman

LOGGED G. Keating CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None

AT COMPLETION ▼

AFTER DRILLING

CAVE-IN: DATE/TIME _____ DEPTH _____

WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

PROJECT NAME	NIROP RI Soils	BORING NO.	AB228
LOCATION	Fridley, MN	SHEET NO.	1 OF 1
CONTRACTOR	Bergerson-Caswell	PROJECT NO.	2313.13
DRILLING METHOD	4-1/4" ID HSA	INSTALLATION	N/A
		SURFACE ELEV.	834.3
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3	40	18	M		SILTY SAND (SM), trace gravel, black 10YR 2/1, dense.
B	SS3	13	20	M		POORLY-GRADED SAND (SP), fine-grained, dark yellowish-brown 10YR 4/4, dense.
C	SS3	42	19	M M W	5	SILTY SAND (SM), little clay, yellowish-brown 10YR 5/8, soft. POORLY-GRADED SAND (SP), fine-grained, brown 10YR 5/3, medium dense.
D	SS3	31	22	M		POORLY-GRADED SAND (SW-SP), fine- to coarse-grained, trace gravel, brown 10YR 4/3, dense. As above, trace coarse sand.
E	SS3	17	24	M	10	As above, 3 in. section of log in bottom of spoon.
F	SS3	47	18	M	15	POORLY-GRADED SAND WITH SILT (SP-SM), fine- to coarse-grained, trace gravel, brown 10YR 4/3, dense.
G	SS3	63	17	M		As above, little gravel.
H	SS3	31	20	W		As above.
					20	POORLY-GRADED SAND (SP), fine- to medium-grained, brown 10YR 5/3, dense, wet at 18.9 ft. End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 10 92

DATE COMPLETED JUL 10 92

RIG CME-55

CREW CHIEF C. Wilkens

LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ 18.9 Ft.

AT COMPLETION ▼

AFTER DRILLING

CAVE-IN: DATE/TIME _____ DEPTH _____

WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. AB229
SHEET NO. 1 OF 1
PROJECT NO. 2313.13
INSTALLATION N/A
SURFACE ELEV. 835.0
BOREHOLE DIA. 8 IN.

PROJECT NAME NIROP RI Soils
LOCATION Fridley, MN
CONTRACTOR Bergerson-Caswell
DRILLING METHOD 4-1/4" ID HSA

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
						WELL-GRADED SAND WITH SILT AND GRAVEL (SW-SM), dark brown 10YR 4/3, medium dense, (FILL).
A	SS3	19	22	D		
				D		SANDY SILT (SM), trace wood debris, few gravel, dark brown 10YR 3/3, medium dense, (FILL).
B	SS3	16	24			As above, (FILL).
				M	5	POORLY-GRADED SAND (SP), few clay, pale brown 10YR 6/3, medium dense, non-plastic.
C	SS3	15	22			Layered sandy silt and SP, as above, (FILL).
				M		POORLY-GRADED SAND (SP), trace gravel, brown 10YR 5/3, medium dense.
D	SS3	23	18			As above, little gravel.
E	SS3	22	19	M	10	As above, trace shell fragments.
F	SS3	12	16	M		As above, trace gravel.
					15	
G	SS3	13	18	M		As above.
H	SS3	13	24	M		As above, little silt and clay, becoming finer-grained with depth. Wet at base of interval (SP-SM).
				W	▽ 20	
						End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 10 92
DATE COMPLETED JUL 10 92
RIG Shelby 28-A
CREW CHIEF G. Holman
LOGGED G. Keating CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ 20.0 Ft.
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. AB230
SHEET NO. 1 OF 1

PROJECT NAME NIROP RI Soils
LOCATION Fridley, MN
CONTRACTOR Bergerson-Caswell
DRILLING METHOD 4-1/4" ID HSA

PROJECT NO. 2313.13
INSTALLATION N/A
SURFACE ELEV. 835.2
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3	21	20	D		WELL-GRADED SAND WITH SILT AND GRAVEL (SW-SM), brown 10YR 5/3 to dark brown 10YR 3/3, medium dense, (FILL).
B	SS3	16	18	M		CLAYEY SAND (SC), fine-grained, pale brown 10YR 6/3, medium dense, slightly plastic, (FILL).
				M	5	WELL-GRADED SAND WITH SILT AND GRAVEL (SW-SM), as above.
C	SS3	14	20			POORLY-GRADED SAND (SP), fine-grained, trace silt, brownish-yellow 10YR 6/6, medium dense, (FILL).
D	SS3	16	22	M		Layered SANDY SILT (SM) and CLAYEY SAND (SC), as above, (FILL).
						WELL-GRADED SAND (SW), few gravel, brown 10YR 5/3, medium dense, no odor.
						As above.
E	SS3	18	24	M	10	As above, trace silt.
F	SS3	21	22	M		As above.
					15	
G	SS3	13	20	M		As above.
						POORLY-GRADED SAND (SP), fine-grained, pale brown 10YR 6/3, medium dense.
H	SS3	10	20			As above.
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 10 92
DATE COMPLETED JUL 10 92
RIG Shelby 28-A
CREW CHIEF G. Holman
LOGGED G. Keating CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME DEPTH
WATER: DATE/TIME DEPTH

LOG OF TEST BORING

F-203 (R 01-87)

PROJECT NAME	NIROP RI Soils	BORING NO.	AB231
LOCATION	Fridley, MN	SHEET NO.	1 OF 1
CONTRACTOR	Bergerson-Caswell	PROJECT NO.	2313.13
DRILLING METHOD	4-1/4" ID HSA	INSTALLATION	N/A
		SURFACE ELEV.	834.9
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3	24	2	M		SILTY SAND (SM), dark brown 7.5YR 3/2, medium dense.
B	SS3	17	21	M		POORLY-GRADED SAND (SP), fine- to medium-grained, brown 10YR 5/3, medium dense.
				M		SILTY SAND (SM), brown 10YR 4/3, medium dense.
				M	5	POORLY-GRADED SAND (SP), fine- to medium-grained, brown 10YR 5/3.
C	SS3	37	24	M		WELL-GRADED SAND (SW), fine- to coarse-grained, trace gravel, brown 10YR 5/3, dense, stained dark brown from 7.2 to 7.4 ft.
D	SS3	32	21	M		As above.
E	SS3	26	24	M	10	POORLY-GRADED SAND (SP), fine- to medium-grained, brown 10YR 5/3, medium dense.
F	SS3	25	23	M		As above.
					15	
G	SS3	21	20	M		As above.
H	SS3	18	19	W		As above.
					▽ 20	End Of Boring at 20 ft.

GENERAL NOTES		WATER LEVEL OBSERVATIONS	
DATE STARTED	JUL 14 92	WHILE DRILLING ▽	19.5 Ft.
DATE COMPLETED	JUL 14 92	AT COMPLETION ▼	
RIG	CME-55	AFTER DRILLING	
CREW CHIEF	C. Wilken	CAVE-IN: DATE/TIME	DEPTH
LOGGED L. Page	CHECKED R.V.	WATER: DATE/TIME	DEPTH

LOG OF TEST BORING

F-203 (R 01-87)

PROJECT NAME	NIROP RI Soils	BORING NO.	AB232
LOCATION	Fridley, MN	SHEET NO.	1 OF 1
CONTRACTOR	Bergerson-Caswell	PROJECT NO.	2313.13
DRILLING METHOD	4-1/4" ID HSA	INSTALLATION	N/A
		SURFACE ELEV.	834.8
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3	21	18	M		WELL-GRADED SAND WITH SILT (SW-SM), trace gravel, pale brown 10YR 6/3 to black 10YR 2/1, medium dense, pieces of concrete and coal, (FILL).
B	SS3	20	22	M		As above, no concrete or coal.
					5	
C	SS3	5	19	M		As above.
D	SS3	5	14	M		Interbedded SILT (ML) and SAND (SP), silt: black 10YR 2/1, fine-grained sand: very pale brown 10YR 7/3, loose.
						WELL-GRADED SAND WITH SILT (SW-SM), trace gravel, very dark gray 10YR 3/2, loose, (FILL).
E	SS3	25	21	M	10	WELL-GRADED SAND (SW), fine- to coarse-grained, trace gravel, dark yellowish-brown 10YR 4/4, medium dense.
						As above, little gravel, at 10.5 ft., 6 in. section of wood.
F	SS3	32	21	M		POORLY-GRADED SAND (SP), fine- to medium-grained, brown 10YR 5/3, medium dense. As above.
					15	
G	SS3	30	21	M		As above, trace coarse sand.
H	SS3	30	18	W		As above, trace silt below 19.7 ft., wet below 19.5 ft.
					▽ 20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 14 92

DATE COMPLETED JUL 14 92

RIG CME-55

CREW CHIEF C. Wilken

LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ 19.5 Ft.

AT COMPLETION ▼

AFTER DRILLING

CAVE-IN: DATE/TIME _____ DEPTH _____

WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

PROJECT NAME	NIROP RI Soils	BORING NO.	AB233
LOCATION	Fridley, MN	SHEET NO.	1 OF 1
CONTRACTOR	Bergerson-Caswell	PROJECT NO.	2313.15
DRILLING METHOD	4-1/4" ID HSA	INSTALLATION	N/A
		SURFACE ELEV.	835.2
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3	17	14	M		WELL-GRADED SAND WITH SILT (SW-SM), trace gravel, black 10YR 2/1 to dark yellowish-brown 10YR 4/4, medium dense, (FILL).
B	SS3	15	16	M		As above.
					5	
C	SS3	14	24	M		SILTY SAND (SM), brown 10YR 5/3, medium dense, occ. balls of clay and silt, (FILL).
D	SS3	11	17	M		As above.
E	SS3	4	22	M	10	At 9.6 ft., 2 in. silty clay seam. POORLY-GRADED SAND (SP), fine- to coarse-grained, trace gravel, brown 10YR 5/3, loose.
				M		
F	SS3	42	21	M		As above, little gravel, dense.
					15	
G	SS3	32	24	M		As above, no gravel.
H	SS3	26	19	W		POORLY-GRADED SAND (SP), trace clay, fine- to medium-grained, brown 10YR 5/3, medium dense, wet below 19.5 ft.
					▽ 20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 14 92

DATE COMPLETED JUL 14 92

RIG CME-55

CREW CHIEF C. Wilken

LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ 19.5 Ft.

AT COMPLETION ▼

AFTER DRILLING

CAVE-IN: DATE/TIME _____ DEPTH _____

WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. AB234
SHEET NO. 1 OF 1

PROJECT NAME NIROP RI Soils
LOCATION Fridley, MN
CONTRACTOR Bergerson-Caswell
DRILLING METHOD 4-1/4" ID HSA

PROJECT NO. 2313.13
INSTALLATION N/A
SURFACE ELEV. 834.6
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3	18	19	M		WELL-GRADED SAND WITH SILT (SW-SM), trace gravel, black 10YR 2/1 to strong brown 7.5YR 4/6, medium dense, (FILL).
B	SS3	14	17			
				M	5	Interbedded SILT and SAND (ML-SP), silt: black 10YR 2/1, sand: fine-grained, pale yellow 2.5Y 7/2, medium dense, (FILL).
C	SS3	4	15			As above, interbedded with 2 in. to 3 in. layers of well-graded sand and layers of clay with silt.
D	SS3	17	18			
				M	10	POORLY-GRADED SAND WITH SILT AND GRAVEL (SP-SM), little gravel, trace silt, brown 10YR 4/3, medium dense.
E	SS3	26	14			As above, little fine- to medium-grained sand.
				M		POORLY-GRADED SAND (SP), fine-grained, brown 10YR 5/3, medium dense.
F	SS3	29	19		15	
G	SS3	29	19	M		As above, trace medium-grained sand, trace coarse-grained sand.
H	SS3	18	22	W	▽	As above, fine- to medium-grained sand below 19.1 ft., wet at 19.2 ft.
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 15 92
DATE COMPLETED JUL 15 92
RIG CME-55
CREW CHIEF C. Wilken
LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ 19.2 Ft.
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME DEPTH
WATER: DATE/TIME DEPTH

LOG OF TEST BORING

F-203 (R 01-87)

PROJECT NAME	NIROP RI Soils	BORING NO.	AB235
LOCATION	Fridley, MN	SHEET NO.	1 OF 1
CONTRACTOR	Bergerson-Caswell	PROJECT NO.	2313.15
DRILLING METHOD	4-1/4" ID HSA	INSTALLATION	N/A
		SURFACE ELEV.	835.0
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3	18	22	M		SILTY SAND (SM), trace gravel, trace clay, black 10YR 2/1 to light yellowish brown 10YR 6/4, medium dense, (FILL).
B	SS3	19	22	M		WELL-GRADED SAND (SW), fine- to coarse-grained, trace gravel, brown 10YR 4/3, medium dense, occasional clay and silt balls, (FILL).
					5	
C	SS3	28	21	M		POORLY-GRADED SAND (SP), fine-grained, trace silt, brown 10YR 5/3, medium dense.
				M		WELL-GRADED SAND (SW), trace gravel, brown 10YR 5/3, medium dense.
D	SS3	27	23			As above.
					10	
E	SS3	34	21	M		POORLY-GRADED SAND (SP), fine-grained, trace gravel, brown 10YR 5/3, dense.
				M		WELL-GRADED SAND (SW), fine- to coarse-grained, trace gravel, brown 10YR 5/3, dense.
F	SS3	36	20	M		As above.
					15	
G	SS3	33	23	M		As above, no gravel, little coarse-grained sand.
H	SS3	29	22	M		As above.
				W	▽	POORLY-GRADED SAND (SP), fine-grained, brown 10YR 5/3, medium dense, wet below 19.2 ft.
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 15 92

DATE COMPLETED JUL 15 92

RIG CME-55

CREW CHIEF C. Wilken

LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ 19.2 Ft.

AT COMPLETION ▼

AFTER DRILLING

CAVE-IN: DATE/TIME _____ DEPTH _____

WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. AB236
SHEET NO. 1 OF 1

PROJECT NAME NIROP RI Soils
LOCATION Fridley, MN
CONTRACTOR Bergerson-Caswell
DRILLING METHOD 4-1/4" ID HSA

PROJECT NO. 2313.13
INSTALLATION N/A
SURFACE ELEV. 835.3
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3	31	18	M		POORLY-GRADED SAND WITH SILT (SP-SM), trace gravel, black 10YR 2/1 to dark yellowish-brown 10YR 4/4 and pale yellow 2.5Y 7/3, dense, (FILL).
B	SS3	9	18			As above.
				M	5	LEAN CLAY (CL), very dark gray 10YR 3/2 and dark reddish-brown 5YR 3/4, mottled, soft.
				M		
C	SS3	16	24			POORLY-GRADED SAND (SP), trace silt, fine- to medium-grained, brown 10YR 4/3, medium dense.
D	SS3	14	22			As above.
				M		WELL-GRADED SAND (SW), fine- to coarse-grained, trace gravel, brown 10YR 4/3, medium dense.
E	SS3	30	20		10	As above.
F	SS3	27	23	M		As above, no gravel.
					15	
				M		POORLY-GRADED SAND (SP), fine-grained, trace medium-grained, brown 10YR 5/3, medium dense, at 17.3 ft., 1 in. seam of well-graded sand.
G	SS3	25	20			
H	SS3	26	23	M		As above.
				W	▽ 20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 16 92
DATE COMPLETED JUL 16 92
RIG CME-55
CREW CHIEF C. Wilken
LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ 19.4 Ft.
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

RMT

PROJECT NAME	NIROP RI Soils	BORING NO.	AB237
LOCATION	Fridley, MN	SHEET NO.	1 OF 1
CONTRACTOR	Bergerson-Caswell	PROJECT NO.	2313.13
DRILLING METHOD	4-1/4" ID HSA	INSTALLATION	N/A
		SURFACE ELEV.	835.7
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3	38	19	M		SILTY SAND (SM), trace gravel, black 7.5YR 2/0 to grayish-brown 2.5Y 5/2, dense, some clay balls, pieces of concrete and coal, (FILL).
B	SS3	26	15	M	5	SILT WITH SAND (ML), black 7.5YR 2/0, medium dense.
C	SS3	29	18	M		SILT WITH SAND (ML), trace clay, brown 10YR 5/3, medium dense, at 6.4 ft., 4 in. layer of fine sand.
D	SS3	24	19	M		WELL-GRADED SAND (SW), fine- to coarse-grained, trace gravel, brown 10YR 5/3, medium dense. As above, little gravel, brown 10YR 4/3.
E	SS3	36	12	M	10	As above, trace gravel, brown 10YR 5/3.
F	SS3	26	19	M	15	As above. POORLY-GRADED SAND (SP), fine- to medium-grained, brown 10YR 5/3, medium dense.
G	SS3	26	22	M		As above.
H	SS3	26	22	M	20	As above.
						End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 27 92

DATE COMPLETED JUL 27 92

RIG CME-55

CREW CHIEF C. Wilkens

LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None

AT COMPLETION ▼

AFTER DRILLING

CAVE-IN: DATE/TIME _____ DEPTH _____

WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. AB238
SHEET NO. 1 OF 1
PROJECT NAME NIROP RI Soils
PROJECT NO. 2313.13
LOCATION Fridley, MN
INSTALLATION N/A
CONTRACTOR Bergerson-Caswell
SURFACE ELEV. 834.7
DRILLING METHOD 4-1/4" ID HSA
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3	31	19	M		SANDY SILT (ML), black 7.5YR 2/0, dense, pieces of slag metal and plastic, (FILL).
				M		POORLY-GRADED SAND (SP), trace silt, brown 10YR 5/3 to strong brown 7.5YR 4/6, medium dense.
B	SS3	9	19			
				M	5	LEAN CLAY (CL), some silt, becoming sandy by 4.8 ft., black 10YR 2/1 to olive brown 2.5Y 4/3 to reddish brown 2.5YR 4/4, soft.
				M		WELL-GRADED SAND (SW), fine- to coarse-grained, trace gravel, brown 10YR 5/3, dense.
C	SS3	31	22			
D	SS3	45	21	M		As above, no gravel, shell fragments.
E	SS3	23	20	M	10	As above, no shell fragments, at 11.3 ft., 1 in. silty sand layer.
				M		POORLY GRADED SAND (SP), fine-grained, brown 10YR 4/3, brown 10YR 4/3, medium dense.
F	SS3	22	24			As above.
					15	As above.
G	SS3	21	20	M		
H	SS3	21	24	M		As above, trace silt (SP-SM).
				W	▽	
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 27 92
DATE COMPLETED JUL 27 92
RIG CME-55
CREW CHIEF C. Wilkens
LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ 18.7 Ft.
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. AB239
SHEET NO. 1 OF 1
PROJECT NO. 2313.13
INSTALLATION N/A
SURFACE ELEV. 834.7
BOREHOLE DIA. 8 IN.

PROJECT NAME NIROP RI Soils
LOCATION Fridley, MN
CONTRACTOR Bergerson-Caswell
DRILLING METHOD 4-1/4" ID HSA

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3	58	20	M		SILTY SAND (SM), trace gravel, black 7.5YR 2/0, very dense, bits of slag and plastic, (FILL).
B	SS3	20	19	M		POORLY-GRADED SAND (SP), fine- to medium-grained, little silt, strong brown 7.5YR 4/6, mixed with chunks of lean clay, grayish brown 2.5YR 5/2, medium dense.
				M	5	SILT (ML), little clay, black 7.5YR 2/1, medium dense.
C	SS3	44	22	M		POORLY-GRADED SAND (SP), fine-grained, little silt, brown 10YR 5/3 with trace dark brown staining, dense.
D	SS3	32	24	M		WELL-GRADED SAND (SW), fine- to coarse-grained, trace gravel, brown 10YR 5/3, dense.
E	SS3	36	20	M	10	As above.
F	SS3	22	20			As above.
				M	15	POORLY GRADED SAND (SP), fine- to medium-grained, brown 10YR 5/3, medium dense.
G	SS3	30	20	M		As above.
H	SS3	28	18	M		As above.
				W	20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 27 92
DATE COMPLETED JUL 27 92
RIG CME-55
CREW CHIEF C. Wilkens
LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ 19.5 Ft.
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. AB240
SHEET NO. 1 OF 1
PROJECT NO. 2313.13
INSTALLATION N/A
SURFACE ELEV. 835.5
BOREHOLE DIA. 8 IN.

PROJECT NAME NIROP RI Soils
LOCATION Fridley, MN
CONTRACTOR Bergerson-Caswell
DRILLING METHOD 4-1/4" ID HSA

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3	49	18	M		SILTY SAND (SM), trace gravel, brown 10YR 5/3 to very dark brown 10YR 2/2, very dense, pieces of slag and painted wood, (FILL).
B	SS3	40	3	M		WELL-GRADED SAND (SW), fine- to coarse-grained, yellowish-brown 10YR 5/4, very dense, very low recovery.
					5	
C	SS3	60	18			As above.
				M		POORLY-GRADED SAND (SP), fine-grained, brown 10YR 5/3, very dense.
D	SS3	44	19	M		WELL-GRADED SAND (SW), fine- to coarse-grained, trace gravel, brown 10YR 4/3, dense, pieces of shells.
					10	
E	SS3	40	22	M		As above, no shells.
				M		POORLY-GRADED SAND (SP), fine-grained, occasional 0.5 cm silt layers, brown 10YR 5/3, medium dense.
F	SS3	16	22			
					15	
G	SS3	21	24	M		As above, no silt.
H	SS3	20	23	M		As above.
				W	▽ 20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 27 92
DATE COMPLETED JUL 27 92
RIG CME-55
CREW CHIEF C. Wilkens
LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ 19.8 Ft.
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

RMT

PROJECT NAME	NIROP RI Soils	BORING NO.	AB241
LOCATION	Fridley, MN	SHEET NO.	1 OF 1
CONTRACTOR	Bergerson-Caswell	PROJECT NO.	2313.13
DRILLING METHOD	4-1/4" ID HSA	INSTALLATION	N/A
		SURFACE ELEV.	836.2
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3	57	22	D/M		SILTY SAND (SM), trace gravel, grayish-brown 2.5Y 5/2 to black 7.5YR 2/0, very dense, occasional clay balls, (FILL).
B	SS3	24	18			
				M		SILT (ML), trace sand, black 10YR 2/0, medium dense.
				M	5	SILTY SAND (SM), fine grained, little clay, strong brown 7.5YR 4/4, fine grayish-brown 2.5Y 5/2, mottled, medium dense.
C	SS3	12	24			As above, interbedded with clayey sand, brown 10YR 5/3 to strong brown 7.5YR 4/4.
D	SS3	74	21	M		WELL-GRADED SAND (SW), fine- to coarse-grained, trace gravel, dark yellowish-brown 10YR 4/4, very dense.
E	SS3	34	22		10	As above.
				M		POORLY-GRADED SAND (SP), fine- to medium-grained, brown 10YR 5/3, dense.
F	SS3	36	22	M		WELL-GRADED SAND (SW), fine- to coarse-grained, trace gravel, brown 10YR 4/3, dense.
					15	
G	SS3	26	22	M		POORLY-GRADED SAND (SP), fine-grained, brown 10YR 5/3, medium dense.
H	SS3	28	24	M		As above, trace coarse sand and gravel.
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 27 92

DATE COMPLETED JUL 27 92

RIG CME-55

CREW CHIEF C. Wilkens

LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None

AT COMPLETION ▼

AFTER DRILLING

CAVE-IN: DATE/TIME _____ DEPTH _____

WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

PROJECT NAME	NIROP RI Soils	BORING NO.	AB242
LOCATION	Fridley, MN	SHEET NO.	1 OF 1
CONTRACTOR	Bergerson-Caswell	PROJECT NO.	2313.13
DRILLING METHOD	4-1/4" ID HSA	INSTALLATION	N/A
		SURFACE ELEV.	835.3
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3	51	19	M		SILTY SAND (SM), little gravel, black 10YR 2/1, very dense, pieces of slag metal and wood, (FILL).
B	SS3	11	22			As above, no gravel, no debris.
				M	5	LEAN CLAY (CL), little silt, trace sand, black 10YR 2/1 to brown 10YR 5/3, medium stiff.
C	SS3	32	23	M		POORLY-GRADED SAND (SP), fine-grained, trace silt, brown 10YR 5/3, dense.
D	SS3	44	19			
				M		WELL-GRADED SAND (SW), fine- to coarse-grained, trace gravel, brown 10YR4/3, dense.
E	SS3	46	20	M	10	As above.
F	SS3	29	24			As above.
				M	15	POORLY-GRADED SAND (SP), fine-grained, brown 10YR 5/3, dense.
G	SS3	34	22	M		
H	SS3	31	22	M		As above.
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 28 92

DATE COMPLETED JUL 28 92

RIG CME-55

CREW CHIEF C. Wilkens

LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None

AT COMPLETION ▼

AFTER DRILLING

CAVE-IN: DATE/TIME _____ DEPTH _____

WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. AB243
SHEET NO. 1 OF 1
PROJECT NO. 2313.13
INSTALLATION N/A
SURFACE ELEV. 835.0
BOREHOLE DIA. 8 IN.

PROJECT NAME NIROP RI Soils
LOCATION Fridley, MN
CONTRACTOR Bergerson-Caswell
DRILLING METHOD 4-1/4" ID HSA

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3	46	20	M		SILTY SAND (SM), trace gravel, black 7.5YR 2/0, dense, pieces of slag metal and coal, (FILL).
B	SS3	15	20			As above, no debris.
				M	5	LEAN CLAY (CL), little silt, black 7.5YR 2/0 to grayish-brown 2.5Y 5/2 to strong brown 7.5YR 4/4, medium stiff.
C	SS3	44	23	M		WELL-GRADED SAND (SW), fine- to coarse-grained, trace gravel, brown 10YR 4/3, very dense.
D	SS3	67	22	M		POORLY-GRADED SAND, fine- to medium-grained, brown 10YR 5/3, very dense, at 7.8 ft., 1 in. clay layer.
E	SS3	63	22	M	10	WELL-GRADED SAND (SW), as above. As above, shell fragments.
F	SS3	21	20	M		As above, no shell fragments.
				M	15	POORLY-GRADED SAND (SP), fine-grained, brown 10YR 5/3, dense.
G	SS3	36	22			
H	SS3	36	22	M		As above, fine- to medium-grained sand.
				W	20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 28 92
DATE COMPLETED JUL 28 92
RIG CME-55
CREW CHIEF C. Wilkens
LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ 19.6 Ft.
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. AB244
SHEET NO. 1 OF 1
PROJECT NAME NIROP RI Soils
PROJECT NO. 2313.13
LOCATION Fridley, MN
INSTALLATION N/A
CONTRACTOR Bergerson-Caswell
SURFACE ELEV. 834.4
DRILLING METHOD 4-1/4" ID HSA
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3	36	22	M		SILTY SAND (SM), trace gravel, black 7.5YR 2/1, dense, pieces of asphalt, (FILL).
B	SS3	5	19	M		WELL-GRADED SAND (SW), fine- to coarse-grained, trace silt, trace gravel, dark grayish-brown 2.5Y 4/2, loose.
				M	5	LEAN CLAY (CL), trace sand, trace silt, black 7.5YR 2/1 to dark brown 7.5YR 3/4 to dark grayish-brown 2.5Y 4/2, soft.
C	SS3	66	22	M		WELL-GRADED SAND (SW), fine- to coarse-grained, trace gravel, yellowish- brown 10YR 5/4, very dense, at 7.3 ft., 1 in. dark brown staining.
D	SS3	51	24	M		As above, shell fragments.
E	SS3	40	22	M	10	As above.
F	SS3	17	22	M		POORLY-GRADED SAND (SP), fine-grained, brown 10YR 5/3, medium dense, at 14.5 ft., 0.5 in. sandy silt seam.
					15	
G	SS3	34	22	M		As above, at 17.9 ft., 0.5 in. silt seam.
H	SS3	34	24	W	▽	As above, medium grained.
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 28 92
DATE COMPLETED JUL 28 92
RIG CME-55
CREW CHIEF C. Wilkens
LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ 18.2 Ft.
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. AB245
SHEET NO. 1 OF 1

PROJECT NAME NIROP RI Soils
LOCATION Fridley, MN
CONTRACTOR Bergerson-Caswell
DRILLING METHOD 4-1/4" ID HSA

PROJECT NO. 2313.13
INSTALLATION N/A
SURFACE ELEV. 834.7
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3	27	18	M		CLAYEY SAND (SC), trace gravel, trace silt, black 7.5YR 2/0 to brown 10YR 5/3, medium dense, pieces of coal, (FILL).
B	SS3	26	23	M		WELL-GRADED SAND (SW), trace gravel, occasional silt and clay balls, dark- yellowish brown 10YR 3/6, medium dense, (FILL).
				M	5	LEAN CLAY (CL), little silt, black 7.5YR 2/0 to strong brown 7.5YR 4/6, medium stiff.
C	SS3	40	24			As above, light olive brown 2.5Y 5/3.
				M		POORLY-GRADED SAND (SP), fine- to medium-grained, brown 10YR 5/3, dense.
D	SS3	59	24	M		WELL-GRADED SAND (SW), fine- to coarse-grained, trace gravel, brown 10YR 5/3, very dense.
E	SS3	61	22	M	10	As above, no gravel.
F	SS3	26	23	M		As above.
				M	15	
G	SS3	24	22	M		POORLY-GRADED SAND (SP), fine-grained, brown 10YR 5/3, medium dense.
H	SS3	43	22	M		As above.
				W	▽ 20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 29 92
DATE COMPLETED JUL 29 92
RIG CME-55
CREW CHIEF C. Wilkens
LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ 19.5 Ft.
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

RMT

PROJECT NAME	NIROP RI Soils	BORING NO.	AB246
LOCATION	Fridley, MN	SHEET NO.	1 OF 1
CONTRACTOR	Bergerson-Caswell	PROJECT NO.	2313.13
DRILLING METHOD	4-1/4" ID HSA	INSTALLATION	N/A
		SURFACE ELEV.	835.5
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3	53	18	M		CLAYEY SAND (SC), trace silt, trace gravel, black 10YR 2/1 to light olive brown 2.5Y 5/3, very dense, (FILL).
B	SS3	18	18	M		LEAN CLAY WITH SAND (CL), fine grained, some silt, black 10YR 2/1 to dark yellowish-brown 10YR 3/6 to olive brown 2.5Y 4/3, medium stiff.
				M	5	POORLY-GRADED SAND (SP), fine-grained, brown 10YR 5/3, medium dense.
C	SS3	25	22			
				M		WELL-GRADED SAND WITH GRAVEL (SW), brown 10YR 4/3, dense.
D	SS3	49	20			
E	SS3	27	19	M	10	As above, trace gravel.
				M		POORLY-GRADED SAND (SP), fine- to medium-grained, brown 10YR 5/3, dense.
F	SS3	32	24			
					15	
G	SS3	30	23	M		As above, fine-grained sand only.
H	SS3	23	22	M		As above.
				W	20	End Of Boring at 20 ft.

GENERAL NOTES		WATER LEVEL OBSERVATIONS	
DATE STARTED	JUL 29 92	WHILE DRILLING ▽	19.5 Ft.
DATE COMPLETED	JUL 29 92	AT COMPLETION ▼	
RIG	CME-55	AFTER DRILLING	
CREW CHIEF	C. Wilkens	CAVE-IN: DATE/TIME	DEPTH
LOGGED L. Page	CHECKED R.V.	WATER: DATE/TIME	DEPTH

LOG OF TEST BORING

F-203 (R 01-87)

RMT

PROJECT NAME	NIROP RI Soils	BORING NO.	AB247
LOCATION	Fridley, MN	SHEET NO.	1 OF 1
CONTRACTOR	Bergerson-Caswell	PROJECT NO.	2313.13
DRILLING METHOD	4-1/4" ID HSA	INSTALLATION	N/A
		SURFACE ELEV.	835.6
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3	100	0			No recovery.
B	SS3	28	18	M		SILTY SAND (SM), trace gravel, black 10YR 2/1, medium dense.
				M		LEAN CLAY (CL), little silt, black 7.5YR 2/0, to olive brown 2.5Y 4/3, medium stiff, at 4.4 ft., 3 in. sand layer.
					5	
C	SS3	114	6			As above, some sand.
D	SS3	32	22	M		POORLY-GRADED SAND WITH SILT (SP-SM), fine-grained, brown 10YR 5/5, dense.
				M		WELL-GRADED SAND (SW), fine- to coarse-grained, trace gravel, brown 10YR 5/3, dense.
E	SS3	35	24		10	As above, no gravel.
F	SS3	46	17	M		As above, trace gravel.
					15	
G	SS3	42	24	M		As above.
H	SS3	22	24	M		POORLY-GRADED SAND (SP), fine- to medium-grained, brown 10YR 5/3, medium dense.
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 29 92

DATE COMPLETED JUL 29 92

RIG CME-55

CREW CHIEF T. Nemitz

LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None

AT COMPLETION ▼

AFTER DRILLING

CAVE-IN: DATE/TIME _____ DEPTH _____

WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

PROJECT NAME	NIROP RI Soils	BORING NO.	AB248
LOCATION	Fridley, MN	SHEET NO.	1 OF 1
CONTRACTOR	Bergerson-Caswell	PROJECT NO.	2313.15
DRILLING METHOD	4-1/4" ID HSA	INSTALLATION	N/A
		SURFACE ELEV.	835.2
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
						CONCRETE.
A	SS3	30	18	M		SILTY SAND (SM), trace gravel, black 7.5YR 2/0 to dark yellowish-brown 10YR 4/6, dense.
B	SS3	24	24	M		POORLY-GRADED SAND WITH SILT (SP-SM), fine-grained, black 10YR 2/1 to light yellowish-brown 10YR 6/4, medium dense.
					5	
C	SS3	7	20	M		SANDY SILT (ML), some clay, dark red 2.5YR 3/6 to black 7.5YR 2/0 to very dark grayish-brown 2.5Y 3/2, soft.
D	SS3	37	22	M		WELL-GRADED SAND (SW), fine- to coarse-grained, trace gravel, dark yellowish-brown 10YR 4/4, dense, shell fragments.
E	SS3	23	24	M	10	As above.
F	SS3	13	24	M		POORLY-GRADED SAND (SP), fine-grained, brown 10YR 5/3, medium dense, at 13.4 ft., 2 in. sand clay seam.
					15	
G	SS3	23	21	M		As above, trace silt.
H	SS3	33	24	M		As above.
				W	▽ 20	End Of Boring at 19.8 ft.

GENERAL NOTES

DATE STARTED JUL 30 92

DATE COMPLETED JUL 30 92

RIG CME-55

CREW CHIEF C. Wilkens

LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ 19.8 Ft.

AT COMPLETION ▼

AFTER DRILLING

CAVE-IN: DATE/TIME _____ DEPTH _____

WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. AB250
SHEET NO. 1 OF 1

PROJECT NAME NIROP RI Soils
LOCATION Fridley, MN
CONTRACTOR Bergerson-Caswell
DRILLING METHOD 4-1/4" ID HSA

PROJECT NO. 2313.13
INSTALLATION N/A
SURFACE ELEV. 835.5
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3					Auger refusal 3 times about 20 ft. east of building 50, due to presence of buried concrete footings. For similar geology, see log of closest borings AB242 and AB252.
B	SS3					
					5	
C	SS3					
D	SS3					
E	SS3				10	
F	SS3					
					15	
G	SS3					
H	SS3					
					20	

GENERAL NOTES

DATE STARTED JUL 29 92
DATE COMPLETED JUL 29 92
RIG CME-55
CREW CHIEF T. Nemitz
LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ N/A
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME DEPTH
WATER: DATE/TIME DEPTH

LOG OF TEST BORING

F-203 (R 01-87)

PROJECT NAME	NIROP RI Soils	BORING NO.	AB251
LOCATION	Fridley, MN	SHEET NO.	1 OF 1
CONTRACTOR	Bergerson-Caswell	PROJECT NO.	2313.15
DRILLING METHOD	4-1/4" ID HSA	INSTALLATION	N/A
		SURFACE ELEV.	836.0
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3	88	19	M		SILTY SAND (SM), trace clay, trace gravel, black 5YR 2.5/1, very dense, pieces of glass and concrete, (FILL).
B	SS3	29	22	M		As above, to dark reddish-brown 5YR 2.5/2, steel bearing.
					5	
C	SS3	15	24			As above, no debris, (FILL).
				M		SILT WITH SAND (ML), little clay, black 7.5YR 2/0 to light olive brown 2.5Y 5/3 to yellowish-red 5YR 5/6, medium stiff.
D	SS3	28	20	M		POORLY-GRADED SAND (SP), fine-grained, brown 10YR 5/3.
					10	
E	SS3	36	19	M		WELL-GRADED SAND (SW), fine- to coarse-grained, trace gravel, brown 10YR 5/3, dense.
F	SS3	21	24	M		POORLY-GRADED SAND (SP), fine-grained, brown 10YR 5/3, medium dense.
					15	
G	SS3	20	24	M		As above.
H	SS3	14	24	M		As above, fine- to medium-grained sand, piece of wood at 19.9 ft.
				W	▽ 20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 29 92

DATE COMPLETED JUL 29 92

RIG CME-55

CREW CHIEF T. Nemitz

LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ 19.9 Ft.

AT COMPLETION ▼

AFTER DRILLING

CAVE-IN: DATE/TIME _____ DEPTH _____

WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. AB252
SHEET NO. 1 OF 1

PROJECT NAME NIROP RI Soils
LOCATION Fridley, MN
CONTRACTOR Bergerson-Caswell
DRILLING METHOD 4-1/4" ID HSA

PROJECT NO. 2313.13
INSTALLATION N/A
SURFACE ELEV. 835.0
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3	22	19	M		SILTY SAND (SM), trace gravel, dark yellowish-brown 10YR 4/4, (FILL).
B	SS3	30	22	M M		SILT WITH SAND (ML), black 10YR 2/1, medium dense, pieces of slag metal, (FILL).
					5	POORLY-GRADED SAND (SP), very fine, light yellowish-brown 2.5Y 6/3, dense.
C	SS3	27	24			As above, alternating with layers of well-graded sand.
D	SS3	32	18	M		WELL-GRADED SAND (SW), fine- to coarse-grained, trace gravel, brown 10YR 5/3, dense, pieces of shells.
E	SS3	29	22	M	10	As above, no shells.
F	SS3	22	24			As above, shell fragments, piece of log at 14 ft.
				M	15	POORLY-GRADED SAND (SP), fine-grained, brown 10YR 5/3, medium dense.
G	SS3	26	24	M		As above, trace medium sand.
H	SS3	29	24	M		As above.
				W	20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 30 92
DATE COMPLETED JUL 30 92
RIG CME-55
CREW CHIEF C. Wilkens
LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ 19.5 Ft.
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. AB253
SHEET NO. 1 OF 1
PROJECT NO. 2313.13
INSTALLATION N/A
SURFACE ELEV. 835.0
BOREHOLE DIA. 8 IN.

PROJECT NAME NIROP RI Soils
LOCATION Fridley, MN
CONTRACTOR Bergerson-Caswell
DRILLING METHOD 4-1/4" ID HSA

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3	26	19	M		WELL-GRADED SAND WITH SILT AND GRAVEL (SW-SM), light yellowish-brown 10YR 6/4, medium dense, (FILL).
B	SS3	27	24	M		SILTY SAND (SM), trace gravel, black 5YR 2.5/1, medium dense. As above, occasional balls, at 4.3 ft., 4 in. fine-grained sand layer, (FILL).
					5	
C	SS3	23	24	M		LEAN CLAY (CL), little silt, black 7.5YR 2/0 to light olive brown 2.5Y 5/3, medium stiff, trace veg. plant matter.
D	SS3	68	24	M		POORLY-GRADED SAND (SP), fine-grained, brown 10YR 5/3, very dense.
E	SS3	30	24	M	10	WELL-GRADED SAND (SW), fine- to coarse-grained, trace gravel, brown 10YR 4/3, dense. As above.
F	SS3	15	24	M	15	POORLY-GRADED SAND (SP), fine- to medium-grained, brown 10YR 5/3.
G	SS3	13	24	M		WELL-GRADED SAND (SW), fine- to coarse-grained, brown 10YR 4/3, wood fragments.
H	SS3	7	24	M		SANDY SILTY CLAY (CL-ML), brown 10YR 5/3, to very dark gray 7.5YR 3/0. As above, grading between lean clay and fine sand, dark gray, shells.
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 29 92
DATE COMPLETED JUL 29 92
RIG CME-55
CREW CHIEF T. Nemitz
LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. AB254
SHEET NO. 1 OF 1
PROJECT NO. 2313.13
INSTALLATION N/A
SURFACE ELEV. 835.0
BOREHOLE DIA. 8 IN.

PROJECT NAME NIROP RI Soils
LOCATION Fridley, MN
CONTRACTOR Bergerson-Caswell
DRILLING METHOD 4-1/4" ID HSA

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3	36	17	M		SILTY SAND (SM), trace clay, trace gravel, very dark grayish-brown 10YR 3/2, dense, (FILL).
B	SS3	19	22			
				M		SILTY SAND (SM), trace clay, light olive brown 2.5Y 5/4 to dark yellowish- brown 10YR 3/6, medium dense.
				M	5	
C	SS3	25	22			SILT (ML), some clay, dark grayish-brown 2.5Y 4/2, medium stiff, slightly plastic.
				M		POORLY-GRADED SAND (SP), fine- to coarse-grained, brown 10YR 5/3 to yellowish-brown 10YR 5/8, medium dense.
D	SS3	30	22			As above, brown 10YR 5/3, trace gravel.
E	SS3	18	24	M	10	As above.
F	SS3	34	24	M		As above.
				M	15	POORLY-GRADED SAND (SP), fine-grained, brown 10YR 5/3, dense.
G	SS3	35	24	M		As above.
H	SS3	35	16	M		As above.
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 30 92
DATE COMPLETED JUL 30 92
RIG CME-55
CREW CHIEF C. Wilkens
LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. AT001
SHEET NO. 1 OF 1

PROJECT NAME NIROP RI Soils
PROJECT NO. 2313.13
LOCATION Fridley, MN
INSTALLATION N/A
CONTRACTOR Bergerson-Caswell
SURFACE ELEV. 834.9
DRILLING METHOD Backhoe/Bucket
BOREHOLE DIA. IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
				D		WELL-GRADED SAND AND GRAVEL (SW), brownish-yellow 10YR 6/6, medium dense.
A	GRAB	NA		D		SANDY SILT (ML), trace gravel, trace debris, very dark brown 10YR 2/2, medium dense, slightly plastic, (FILL).
B	GRAB	NA		M		POORLY-GRADED SAND (SP), fine-grained, trace debris, trace silt, strong brown 10YR 4/6, to pale brown 10YR 6/3, medium dense, slightly plastic, no odor, (FILL).
					5	
C	GRAB	NA		M		As above, (FILL).
D	GRAB	NA		M		WELL-GRADED SAND AND GRAVEL (SW), some gravel, trace shell fragments, dark yellowish-brown 10YR 4/4, medium dense, no odor.
E	GRAB	NA		M	10	SAND (SP), as above, grain size and grading variable from well-graded sand and gravel to well-graded sand, trace gravel, brown 10YR 5/3.
						SAND (SP), as above, trace silt in upper 6 in. of interval, yellowish- brown 10YR 5/4.
						Bottom of test pit at 12 ft. Dimensions of the test pit: 3 ft. x 12 ft. x 12 ft. deep.
					15	
					20	

GENERAL NOTES

DATE STARTED JUN 12 92
DATE COMPLETED JUN 12 92
RIG Ford
CREW CHIEF D. Isinger
LOGGED G. Keating CHECKED R. V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. AT002
SHEET NO. 1 OF 1
PROJECT NO. 2313.13
INSTALLATION N/A
SURFACE ELEV. 835.9
BOREHOLE DIA. IN.

PROJECT NAME NIROP RI Soils
LOCATION Fridley, MN
CONTRACTOR Bergerson-Caswell
DRILLING METHOD Backhoe/Bucket

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
				D		WELL-GRADED SAND AND GRAVEL (SW), brownish-yellow 10YR 6/6, medium dense, (FILL).
A	GRAB	NA		D		SANDY SILT AND GRAVEL (ML), little gravel, very dark brown 10YR 2/2, medium dense, slightly plastic, trace debris.
B	GRAB	NA				As above.
				D	5	SILTY SAND (SM), fine-grained, yellowish-brown 10YR 5/6, medium dense, slightly plastic, no odor, trace debris as above, trace boulders, (FILL).
C	GRAB	NA		M		WELL-GRADED SAND AND GRAVEL (SW), little gravel, brown 10YR 5/3, medium dense, no odors.
D	GRAB	NA		M		As above, trace shells, few gravel.
E	GRAB	NA		M	10	As above.
						Bottom of test pit at 12 ft. Dimensions of the test pit: 3 ft. x 12 ft. x 12 ft. deep.
					15	
					20	

GENERAL NOTES

DATE STARTED JUN 12 92
DATE COMPLETED JUN 12 92
RIG Ford
CREW CHIEF D. Isinger
LOGGED G. Keating CHECKED R. V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME DEPTH
WATER: DATE/TIME DEPTH

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. AT003
SHEET NO. 1 OF 1

PROJECT NAME NIROP RI Soils
LOCATION Fridley, MN
CONTRACTOR Bergerson-Caswell
DRILLING METHOD Backhoe/Bucket

PROJECT NO. 2313.13
INSTALLATION N/A
SURFACE ELEV. 834.9
BOREHOLE DIA. IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	GRAB	NA		M		SILTY SAND (SM), little gravel, black 5YR2.5/1, dense, pieces of wood, asphalt, (FILL).
B	GRAB	NA		M		FAT CLAY WITH SILT (CH), strong brown 7.5YR 4/6, medium stiff.
				M	5	FAT CLAY (CH), little silt, olive gray 5Y 4/2, very stiff, (FILL).
C	GRAB	NA		M		POORLY-GRADED SAND (SP), fine- to medium-grained, trace coarse sand, light yellowish-brown 2.5Y 6/3, loose.
D	GRAB	NA		M		WELL-GRADED SAND (SW), fine- to coarse-grained, little gravel, loose, many shells.
E	GRAB	NA		M	10	As above.
						End of test pit at 12 ft. Dimensions of the test pit: 3 ft. x 14 ft. x 12 ft. deep.
					15	
					20	

GENERAL NOTES

DATE STARTED JUN 16 92
DATE COMPLETED JUN 16 92
RIG Ford
CREW CHIEF M. Klein
LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME DEPTH
WATER: DATE/TIME DEPTH

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. AT004
SHEET NO. 1 OF 1

PROJECT NAME NIROP RI Soils
PROJECT NO. 2313.13
LOCATION Fridley, MN
INSTALLATION N/A
CONTRACTOR Bergerson-Caswell
SURFACE ELEV. 835.5
DRILLING METHOD Backhoe/Bucket
BOREHOLE DIA. IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
		-		W		WELL-GRADED SAND AND GRAVEL (SW), brown 10YR 4/3, medium dense, (FILL).
A	GRAB	NA				As above, brownish-yellow 10YR 6/8, (FILL).
				M		SANDY SILT (SM), little gravel, very dark brown 10YR 2/2, medium dense, slightly plastic, moderate solvent-like odor, debris (includes: wood, crushed metal bucket, wire, metal scrap, plastic sheeting, concrete), (FILL).
B	GRAB	NA		M		
				M	5	As above.
				M		LEAN CLAY (CL), trace sand, yellowish brown 10YR 5/6 to greenish-gray 5gL 5/1, trace debris as above, medium stiff, plastic, moderate solvent-like odor, (FILL).
C	GRAB	NA		M		
D	GRAB	NA		M		SANDY CLAY (CL), brown 10YR 5/3, medium stiff, plastic, (FILL).
						WELL-GRADED SAND (SW), fine- to coarse-grained, pale brown, yellowish-brown streaks, medium dense, moderate solvent-like odor.
E	GRAB	NA		M	10	
						WELL-GRADED SAND WITH GRAVEL (SW), some gravel, dark yellowish-brown 10YR 4/4, medium dense, slight solvent-like odor.
						As above, trace gravel, trace shell fragments.
						Bottom of test pit at 12 ft. Dimensions of the test pit: 3 ft. x 12 ft. x 12 ft. deep.
					15	
					20	

GENERAL NOTES

DATE STARTED JUN 16 92
DATE COMPLETED JUN 16 92
RIG Ford
CREW CHIEF M. Klein
LOGGED G. Keating CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME DEPTH
WATER: DATE/TIME DEPTH

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. AT005
SHEET NO. 1 OF 1

PROJECT NAME NIROP RI Soils
LOCATION Fridley, MN
CONTRACTOR Bergerson-Caswell
DRILLING METHOD Backhoe/Bucket

PROJECT NO. 2313.13
INSTALLATION N/A
SURFACE ELEV. 835.9
BOREHOLE DIA. IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	GRAB	NA		M		SILTY SAND (SM), some gravel, dark brown 7.5YR 3/3, pieces of wood, concrete, rusty nails, (FILL).
B	GRAB	NA		M	5	POORLY-GRADED SAND (SP), fine to medium, trace coarse, trace gravel, brown 10YR 5/3, pieces of wood and concrete, (FILL).
C	GRAB	NA		M		SILTY SAND (SM), very fine, trace clay, yellowish-brown 10YR 3/6 to very dark grayish-brown 10YR 3/2 to olive brown 2.5Y 4/3, medium dense.
D	GRAB	NA		M		WELL-GRADED SAND (SW), fine- to coarse-grained, little gravel, dark yellowish-brown 10YR 4/6, medium dense.
E	GRAB	NA		M	10	CLAY seam with silt, light olive brown 2.5Y 5/3, medium stiff.
						WELL-GRADED SAND (SW), as above.
						End of test pit at 12 ft. Dimensions of the test pit: 3 x 12 x 12 ft. deep.
					15	
					20	

GENERAL NOTES

DATE STARTED JUN 16 92
DATE COMPLETED JUN 16 92
RIG Ford
CREW CHIEF M. Klein
LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME DEPTH
WATER: DATE/TIME DEPTH

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. AT006
SHEET NO. 1 OF 1
PROJECT NO. 2313.13
INSTALLATION N/A
SURFACE ELEV. 835.3
BOREHOLE DIA. IN.

PROJECT NAME NIROP RI Soils
LOCATION Fridley, MN
CONTRACTOR Bergerson-Caswell
DRILLING METHOD Backhoe/Bucket

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	GRAB	NA		M		SILTY SAND (SM), trace gravel, dark reddish-brown 5YR 3/2, medium dense, pieces of plastic, concrete, asphalt, wood, brick, (FILL).
B	GRAB	NA				
				M		LEAN CLAY (CL), some silt, little fine-grained sand, dark grayish-brown 2.5Y 4/2, and dark yellowish-brown 10YR 3/6, mottled, medium stiff.
				M	5	POORLY-GRADED SAND (SP), very fine-grained, light olive brown 2.5Y 5/4, medium dense.
C	GRAB	NA		M		WELL-GRADED SAND (SW), little gravel, dark yellowish-brown 10YR 4/4, medium dense.
D	GRAB	NA		M		As above, but trace gravel, shell fragments.
E	GRAB	NA		M	10	As above.
						End of test pit at 12 ft. Dimensions of the test pit: 3 ft. x 13 ft. x 12 ft. deep.
					15	
					20	

GENERAL NOTES

DATE STARTED JUN 17 92
DATE COMPLETED JUN 17 92
RIG Ford
CREW CHIEF M. Klein
LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. AT007
SHEET NO. 1 OF 1
PROJECT NAME NIROP RI Soils
PROJECT NO. 2313.13
LOCATION Fridley, MN
INSTALLATION N/A
CONTRACTOR Bergerson-Caswell
SURFACE ELEV. 830.8
DRILLING METHOD Backhoe/Bucket
BOREHOLE DIA. IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	GRAB	NA		M-D		SILTY SAND (SM), little gravel, black 5YR 2.5/1, loose, pieces of metal, wood, asphalt, brick, (FILL).
B	GRAB	NA		M		At 3.8 ft., 6 in. clay layer, olive brown.
					5	As above, strong brown 7.5YR 4/6, no debris, (FILL).
C	GRAB	NA				(At 7.0 ft., end of FILL.)
				M		ELASTIC SILT (MH), some clay, dusky red 10R 3/4, soft.
D	GRAB	NA		M		ELASTIC SILT (MH), some clay, dark gray 4/1, loose, about 50% wood fiber and vegetation.
				M		
E	GRAB	NA			10	WELL-GRADED SAND (SW), trace silt, trace gravel, dark yellowish-brown 10YR4/4, medium dense, pieces of wood, shell fragments.
						As above, becoming brown 10YR5/3.
						End of test pit at 12 ft. Dimensions of the test pit: 3 ft. x 13 ft. x 12 ft. deep.
					15	
					20	

GENERAL NOTES

DATE STARTED JUN 17 92
DATE COMPLETED JUN 17 92
RIG Ford
CREW CHIEF M. Klein
LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME DEPTH
WATER: DATE/TIME DEPTH

LOG OF TEST BORING

F-203 (R 01-87)

RMT

PROJECT NAME	NIROP RI Soils	BORING NO.	AT008
LOCATION	Fridley, MN	SHEET NO.	1 OF 1
CONTRACTOR	Bergerson-Caswell	PROJECT NO.	2313.13
DRILLING METHOD	Backhoe/Bucket	INSTALLATION	N/A
		SURFACE ELEV.	837.1
		BOREHOLE DIA.	IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
				M		SANDY SILT (ML), very dark grayish brown 10YR 3/2, slightly plastic, medium dense, debris, (FILL).
A	GRAB	NA		M		WELL-GRADED SAND WITH SILT (SW-SM), dark brown 10YR 4/3, medium dense, trace debris (includes: wood, wire), (FILL).
				D		
B	GRAB	NA		M		SANDY SILT (ML), brown 10YR 5/3 to dark gray 10YR 4/1, dense, non-plastic, some debris (includes: foam, wire, bolts, ceramic, metal cuttings, scrap metal, plastic hose), (FILL). Note: strong oily odor accompanies densely-compacted debris, mostly metallic.
					5	
C	GRAB	NA		M		Odor: cutting-oil-like.
						As above, increase in sand content to SILTY SAND (SM), strong brown 7.5YR 4/6, to dark grayish-brown 10YR 4/2, abundant debris (as above, and glass), rusted color to strong brown, (FILL).
D	GRAB	NA		M		
						As above, interval includes metal box containing gray-white paste, sheet metal, (FILL).
E	GRAB	NA		M	10	
				M		SILTY SAND (SM), fine-grained, trace debris, dark yellowish brown 10YR 4/4 to black 10YR 2/1, medium dense, slightly plastic, slight oily odor, trace gray-white paste, as above.
						End of test pit at 12.0 ft.
						Dimensions of the test pit: 3 ft. x 12 ft. x 12 ft. deep.
					15	
					20	

GENERAL NOTES		WATER LEVEL OBSERVATIONS	
DATE STARTED	JUN 17 92	WHILE DRILLING ▽	None
DATE COMPLETED	JUN 17 92	AT COMPLETION ▼	
RIG	Ford	AFTER DRILLING	
CREW CHIEF	M. Klein	CAVE-IN: DATE/TIME	DEPTH
LOGGED G. Keating	CHECKED R.V.	WATER: DATE/TIME	DEPTH

AREA B

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. BB001
SHEET NO. 1 OF 1

PROJECT NAME NIROP RI Soils
LOCATION Fridley, MN
CONTRACTOR Bergerson-Caswell
DRILLING METHOD 4-1/4" ID HSA

PROJECT NO. 2313.13
INSTALLATION N/A
SURFACE ELEV. 835.3
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL NO.	TYPE	RECOVERY N	RECOVERY IN	MOISTURE	DEPTH	
				M		SILTY SAND (SM), trace gravel, trace clay, black 2.5YR 2/0, very dense.
A	SS3	57	19	M		POORLY-GRADED SAND (SP), fine to medium, dark yellowish-brown 10YR 3/4, medium dense.
B	SS3	28	17	W		As above.
					5	
C	SS3	9	20	W		POORLY-GRADED SAND (SP), fine- to medium-grained, dark gray 5Y 4/1, loose.
D	SS3	13	24	M		SILT (ML), little sand, little clay, black 7.5YR 2/0, medium dense, roots, septic odor. As above, with peat, wood fibers, shell fragments.
					10	
E	SS3	14	6	M		POORLY-GRADED SAND (SP), fine- to medium-grained, trace coarse, dark gray 7.5YR 4/0, medium dense, silt seams at 10.6 and 10.8 ft.
F	SS3	39	20	M		WELL-GRADED SAND (SW), medium-grained, trace gravel, grayish-brown 2.5Y 5/2, dense.
					15	
G	SS3	21	20	M		POORLY-GRADED SAND (SP), fine- to medium-grained, trace clay, gray 10YR 5/1, medium dense.
H	SS3	16	18			As above.
					20	End of boring at 20 ft.

GENERAL NOTES

DATE STARTED JUN 15 92
DATE COMPLETED JUN 15 92
RIG CME-55
CREW CHIEF B. Meyer
LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

PROJECT NAME	NIROP RI Soils	BORING NO.	BB002
LOCATION	Fridley, MN	SHEET NO.	1 OF 1
CONTRACTOR	Bergerson-Caswell	PROJECT NO.	2313.13
DRILLING METHOD	4-1/4" ID HSA	INSTALLATION	N/A
		SURFACE ELEV.	834.9
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3	15	10	M		SILTY SAND (SM), black 10YR 2/1, medium dense, rock lodged in end of spoon, (FILL).
B	SS3	6	16	M		SANDY LEAN CLAY (CL), little gravel, black 2.5Y 2.5/0, some very pale green clay nodules, soft, pieces of wood, (FILL).
					5	
C	SS3	13	16	M		SILT (ML), very dark brown 10YR 2/2, medium dense, roots and pieces of wood, pieces of glass, (FILL).
D	SS3	10	20	M		LEAN CLAY (CL), some silt, very dark gray 5Y 3/1, soft.
						SILT (ML), as above.
					10	
E	SS3	23	22	M		POORLY-GRADED SAND (SP), fine- to medium-grained, dark gray 2.5Y 4/0, medium dense, occasional silt seams.
F	SS3	11	22			POORLY-GRADED SAND (SP), fine- to medium-grained, trace clay, brown 10YR 4/3, medium dense. As above, some dark yellowish-brown 10YR 4/6 in bands. 1 in. dark gray sand seams at 15.5 and 15.8 ft.
					15	
G	SS3	11	21			As above, light yellowish-brown 2.5Y 6/3.
H	SS3	13	19	W		POORLY-GRADED SAND (SP), fine- to coarse-grained, mostly medium-grained, light olive brown 2.5Y 5/3, medium dense.
					20	End of boring at 20 ft.

GENERAL NOTES

DATE STARTED JUN 15 92

DATE COMPLETED JUN 15 92

RIG CME-55

CREW CHIEF B. Meyer

LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None

AT COMPLETION ▼

AFTER DRILLING

CAVE-IN: DATE/TIME _____ DEPTH _____

WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

PROJECT NAME	NIROP RI Soils	BORING NO.	BB003
LOCATION	Fridley, MN	SHEET NO.	1 OF 1
CONTRACTOR	Bergerson-Caswell	PROJECT NO.	2313.13
DRILLING METHOD	4-1/4" ID HSA	INSTALLATION	N/A
		SURFACE ELEV.	835.3
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3	8	18	M		SILTY SAND (SM), trace clay, black 5YR 2.5/1, loose, piece of glass, (FILL).
B	SS3	11	10	M		As above, yellowish-brown 10YR 5/4.
					5	
C	SS3	7	17	M		As above, color varying from black 10YR 2/1, to dark yellowish-brown 10YR 3/4.
						2" black silt layer at 7.6 ft., spongy, (FILL).
D	SS3	5	21	M		POORLY-GRADED SAND (SP), fine-grained, some silt, brown to gray.
						SILT (ML), trace clay, very dark gray 10YR 3/1, with black mottling, loose, spongy, musty-odor.
E	SS3	3	18	M	10	POORLY-GRADED SAND (SP), fine- to medium-grained, brown 7.5YR 4/6, loose, strong, musty.
						As above, trace coarse sand, color varying from strong brown 7.5YR 4/6 to brown 10YR 5/3.
F	SS3	6	23	M		SILT (ML), as above.
						POORLY-GRADED SAND (SP), fine- to medium-grained, trace clay, brown 10YR 4/3.
					15	
G	SS3	5	21	M		As above.
H	SS3	10	21	M		
						POORLY-GRADED SAND (SP), very fine-grained, light brownish-gray 2.5Y 6/2, loose.
					20	End of boring at 20 ft.

GENERAL NOTES

DATE STARTED JUN 16 92

DATE COMPLETED JUN 16 92

RIG CME-55

CREW CHIEF B. Meyer

LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None

AT COMPLETION ▼

AFTER DRILLING

CAVE-IN: DATE/TIME _____ DEPTH _____

WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

PROJECT NAME	NIROP RI Soils	BORING NO.	BB201
LOCATION	Fridley, MN	SHEET NO.	1 OF 1
CONTRACTOR	Bergerson-Caswell	PROJECT NO.	2313.15
DRILLING METHOD	4-1/4" ID HSA	INSTALLATION	N/A
		SURFACE ELEV.	835.4
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3	17	20	M		SILTY SAND (SM), dark brown 7.5YR 3/2, medium dense.
B	SS3	6	19	M		WELL-GRADED SAND WITH SILT (SW-SM), fine- to coarse-grained, dark brown 7.5YR 3/2, loose.
				M	5	ORGANIC SOIL (OL/OH), black 7.5YR 2/0, medium dense, roots and grass fibers, spongy texture, slight odor.
C	SS3	13	23			
						As above, little clay, very dark gray 7.5YR 3/0.
D	SS3	13	24	M		POORLY-GRADED SAND (SP), fine-grained, little silt, very dark gray 10YR 3/1, medium dense.
E	SS3	17	22		10	
				M		POORLY-GRADED SAND (SP), fine- to medium-grained, brown 10YR 4/3, medium dense, at 11.1 ft., 1 in. gray sand seam.
F	SS3	17	20	M		At 13.4 ft., 1/2-in. gray sand silt seam. POORLY-GRADED SAND, as above, brown 10YR 5/3.
					15	
				M		WELL-GRADED SAND (SW), fine- to coarse-grained, trace gravel, brown 10YR 5/3, medium dense.
G	SS3	17	20			
H	SS3	21	24	M		
				W	▽	POORLY-GRADED SAND (SP), fine- to medium-grained, brown 10YR 5/3, medium dense.
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 16 92

DATE COMPLETED JUL 16 92

RIG CME-55

CREW CHIEF C. Wilken

LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ 19.1 Ft.

AT COMPLETION ▼

AFTER DRILLING

CAVE-IN: DATE/TIME _____ DEPTH _____

WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

RMT

PROJECT NAME	NIROP RI Soils	BORING NO.	BB202
LOCATION	Fridley, MN	SHEET NO.	1 OF 1
CONTRACTOR	Bergerson-Caswell	PROJECT NO.	2313.15
DRILLING METHOD	4-1/4" ID HSA	INSTALLATION	N/A
		SURFACE ELEV.	835.1
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3	30	8	M		WELL-GRADED SAND WITH SILT (SW-SM), fine-grained, very dark brown 10YR 2/2, medium dense.
B	SS3	13	18			As above, black 7.5YR 2/0, at 4.2 ft., 2 in. seam of gray clay, at 4.4 ft., 6 in. piece of sawed log, (FILL).
				M	5	ORGANIC SOIL (OL), black 10YR 2/1, medium dense, roots and grass, spongy.
C	SS3	15	23	M		SILTY SAND (SM), very dark gray 7.5YR 3/0, medium dense, roots.
D	SS3	30	17	M		WELL-GRADED SAND (SW), fine- to coarse-grained, trace gravel, trace silt, grayish-brown 2.5Y 5/2, dense.
E	SS3	30	19	M	10	As above, no silt.
F	SS3	31	23	M		POORLY-GRADED SAND (SP), fine-grained, trace medium and coarse sand, light grayish-brown 10YR 6/2, dense.
					15	
G	SS3	36	22	M		As above, fine sand only.
H	SS3	26	19	W		As above.
					▽ 20	End Of Boring at 20 ft.

GENERAL NOTES		WATER LEVEL OBSERVATIONS	
DATE STARTED	JUL 16 92	WHILE DRILLING ▽	19.5 Ft.
DATE COMPLETED	JUL 16 92	AT COMPLETION ▼	
RIG	CME-55	AFTER DRILLING	
CREW CHIEF	C. Wilken	CAVE-IN: DATE/TIME	DEPTH
LOGGED L. Page	CHECKED R.V.	WATER: DATE/TIME	DEPTH

LOG OF TEST BORING

F-203 (R 01-87)

PROJECT NAME	NIROP RI Soils	BORING NO.	BB204
LOCATION	Fridley, MN	SHEET NO.	1 OF 1
CONTRACTOR	Bergerson-Caswell	PROJECT NO.	2313.15
DRILLING METHOD	4-1/4" ID HSA	INSTALLATION	N/A
		SURFACE ELEV.	835.3
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3	17	24	M		SILTY SAND (SM), trace gravel, dark brown 7.5YR 3/2, medium dense.
B	SS3	5	19	W		As above, becoming very dark gray 5YR 3/1, and wet by 4.0 ft.
				M	5	ORGANIC SOIL (OL), black 10YR 2/1, medium dense, spongy texture, roots and grass.
C	SS3	25	20			
				M		SILTY SAND (SM), little clay, very dark gray 5YR 3/1, medium dense.
D	SS3	9	24	M		POORLY-GRADED SAND (SP), fine-grained, dark gray 10YR 4/1, loose, occasional 1-2 mm laminations of silt.
E	SS3	16	22		10	At 11.0 ft., 1/2-in. gray silt layer.
				M		POORLY-GRADED SAND (SP), fine- to medium-grained, brown 10YR 5/3, medium dense.
F	SS3	13	23			As above, little silt. At 13.7 ft., 1 in. gray silt layer.
				M	15	WELL-GRADED SAND (SW), fine- to coarse-grained, brown 10YR 5/3, medium dense.
G	SS3	20	23			POORLY-GRADED SAND (SP), medium-grained, as above, occasional well-graded seams.
H	SS3	13	24			As above, wet below 18.9 ft.
				W	▽	
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED	JUL 16 92
DATE COMPLETED	JUL 16 92
RIG	CME-55
CREW CHIEF	C. Wilken
LOGGED	L. Page
CHECKED	R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽	18.9 Ft.
AT COMPLETION ▼	
AFTER DRILLING	
CAVE-IN: DATE/TIME	DEPTH
WATER: DATE/TIME	DEPTH

LOG OF TEST BORING

F-203 (R 01-87)

PROJECT NAME	NIROP RI Soils	BORING NO.	BB205
LOCATION	Fridley, MN	SHEET NO.	1 OF 1
CONTRACTOR	Bergerson-Caswell	PROJECT NO.	2313.15
DRILLING METHOD	4-1/4" ID HSA	INSTALLATION	N/A
		SURFACE ELEV.	835.3
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3	19	16	M		SILTY SAND (SM), little gravel, black 7.5YR 2/0, medium dense. At 2.8 ft., 2 in. gray silty clay seam.
B	SS3	8	17			As above, trace gravel, black 7.5YR 2/0 to dark brown 7.5YR 3/3, piece of glass, (FILL).
					5	
C	SS3	14	15	W		As above, wet by 6.0 ft.
						At 7.5 ft., 1 in. brown clay layer, (FILL).
D	SS3	17	24	M		SILTY SAND (SM), little clay, dark gray 5YR 4/1, medium dense.
				M		WELL-GRADED SAND (SW), fine- to coarse-grained, grayish-brown 2.5Y 5/2, medium dense.
E	SS3	17	21		10	As above, brown 10YR 5/3.
F	SS3	20	20	M		POORLY-GRADED SAND (SP), fine-grained, occ. seams of well-graded sand, brown 10YR 5/3, medium dense.
					15	
G	SS3	30	23	M		As above, medium grained, at 16.4 ft., 4 in. well-graded sand seam.
H	SS3	26	24	M		As above, fine- to medium-grained sand, wet below 19.2 ft.
				W	▽	
				W	20	WELL-GRADED SAND (SW), fine- to coarse-grained, little gravel, brown 10YR 5/3, medium dense.

GENERAL NOTES

DATE STARTED JUL 16 92

DATE COMPLETED JUL 16 92

RIG CME-55

CREW CHIEF C. Wilken

LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ 19.2 Ft.

AT COMPLETION ▼

AFTER DRILLING

CAVE-IN: DATE/TIME _____ DEPTH _____

WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. BB206
SHEET NO. 1 OF 1
PROJECT NAME NIROP RI Soils
PROJECT NO. 2313.15
LOCATION Fridley, MN
INSTALLATION N/A
CONTRACTOR Bergerson-Caswell
SURFACE ELEV. 835.3
DRILLING METHOD 4-1/4" ID HSA
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3	24	18	M		WELL-GRADED SAND WITH SILT (SW-SM), trace gravel, dark reddish-brown 5YR 3/2 to black 7.5YR 2/0, medium dense.
B	SS3	6	17			As above, slag metal and asphalt pieces, at 4.1 ft., 2 in. clay layer, (FILL).
					5	
C	SS3	6	17	M-W		ORGANIC SOIL WITH SAND (OL), black 10YR 2/1 to brown 7.5YR 5/4, loose, wood fibers. At 7.5 ft., 2 in. clay layer.
D	SS3	6	24	M		POORLY-GRADED SAND WITH CLAY (SP-SC), brown 10YR 5/3, loose.
E	SS3	13	24		10	As above, interbedded with 1 in. layers of well-graded sand.
F	SS3	6	20	M		WELL-GRADED SAND (SW), fine- to coarse-grained, yellowish brown 10YR 5/4, medium dense. As above, trace gravel, becoming brown 10YR 5/3.
					15	
G	SS3	9	21			As above.
H	SS3	10	22	M-W		POORLY-GRADED SAND (SP), fine- to medium-grained, brown 10YR 5/3, loose.
				W	▽	As above.
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 17 92
DATE COMPLETED JUL 17 92
RIG CME-55
CREW CHIEF C. Wilken
LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ 19.0 Ft.
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME DEPTH
WATER: DATE/TIME DEPTH

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. BT001
SHEET NO. 1 OF 1
PROJECT NAME NIROP RI Soils
PROJECT NO. 2313.13
LOCATION Fridley, MN
INSTALLATION N/A
CONTRACTOR Bergerson-Caswell
SURFACE ELEV. 836.0
DRILLING METHOD Backhoe Test Pit
BOREHOLE DIA. IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	GRAB	NA		M		SILTY SAND (SM), little gravel, dark brown 7.5YR 3/3 to black 7.5YR 2/0, medium dense, pieces of metal, glass, (FILL).
B	GRAB	NA				As above, trace gravel, black 10YR 2/1, no debris.
					5	
C	GRAB	NA				As above, some color variation, (FILL).
				M		LEAN CLAY (CL), little silt, pale yellow 2.5Y 7/3, with banding darker to yellowish-red 5YR 4/6, soft, slight odor.
D	GRAB	NA		M		
				M		LEAN CLAY (CL), little silt, very dark gray 10YR 3/1, medium dense, wood fibers.
					10	
E	GRAB	NA		M		POORLY-GRADED SAND (SP), fine-grained, light yellowish-brown 2.5Y 6/4, medium dense.
						WELL-GRADED SAND (SW), fine- to coarse-grained, brown 10YR 5/3, medium dense.
						End of test pit at 12 ft. Dimensions of the test pit: 3 ft. x 13 ft. x 12 ft. depth.
					15	
					20	

GENERAL NOTES

DATE STARTED JUN 18 92
DATE COMPLETED JUN 18 92
RIG Ford-Backhoe
CREW CHIEF M. Klein
LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. BT002
SHEET NO. 1 OF 1
PROJECT NAME NIROP RI Soils
PROJECT NO. 2313.13
LOCATION Fridley, MN
INSTALLATION N/A
CONTRACTOR Bergerson-Caswell
SURFACE ELEV. 835.9
DRILLING METHOD Backhoe Test Pit
BOREHOLE DIA. IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
				M		SANDY SILT (ML), very dark brown 10YR 2/1, medium dense, slightly plastic.
A	GRAB	NA		D		SILTY SAND (SM), fine-grained, brown 10YR 5/3, medium dense, non-plastic, no odor, trace wood debris, (FILL).
B	GRAB	NA		M		As above, lenses of sandy clay (SC), brown 10YR 5/3, medium stiff, plastic, moderate solvent-like odor in the wood, trace debris, wire.
					5	
C	GRAB	NA		D		SILT (ML), little vegetative matter, black 10YR 2/1, medium dense, slightly plastic, (FILL).
				M		SILT (ML), trace sand, trace vegetative matter, dark gray 10YR 4/1, medium stiff, plastic, (FILL).
D	GRAB	NA		M		WELL-GRADED SAND (SW), fine- to medium-grained, trace coarse sand, light yellowish-brown 10YR 6/4 to brownish-yellow 10YR 6/8, medium dense.
E	GRAB	NA		M	10	Grading to POORLY-GRADED SAND (SP), fine-grained, brownish-yellow 10YR 6/6, medium dense, no odor.
						As above.
						End of test pit at 12 ft. Dimension of the test pit: 3 ft. x 13 ft. x 12 ft. depth.
					15	
					20	

GENERAL NOTES

DATE STARTED JUN 17 92
DATE COMPLETED JUN 17 92
RIG Ford-Backhoe
CREW CHIEF M. Klein
LOGGED G. Keating CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME DEPTH
WATER: DATE/TIME DEPTH

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. BT003
SHEET NO. 1 OF 1

PROJECT NAME NIROP RI Soils
LOCATION Fridley, MN
CONTRACTOR Bergerson-Caswell
DRILLING METHOD Backhoe Test Pit

PROJECT NO. 2313.13
INSTALLATION N/A
SURFACE ELEV. 835.4
BOREHOLE DIA. IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	GRAB	NA		M		SILTY SAND (SM), trace gravel, black 10YR 2/1 to dark yellowish-brown 10YR 4/4, medium dense, (FILL).
B	GRAB	NA		M	5	SILTY SAND (SM), little gravel, dark brown 7.5YR 3/2 to brownish-yellow 10YR 6/6, medium dense, some slag metal, bricks, (FILL). (Utility at 4 ft.)
C	GRAB	NA		M		Fluid seapage at 6.5 ft. (End of FILL).
						SILT (ML), little clay, black 7.5YR2/0, loose, crumbly, vegetation, peat.
D	GRAB	NA		M		POORLY-GRADED SAND (SP), fine-grained, trace medium, light olive brown 2.5Y 5/4, medium dense.
E	GRAB	NA		M	10	WELL-GRADED SAND (SW), fine- to coarse-grained, trace gravel, light olive brown 2.5Y 5/4, medium dense.
						End of test pit at 12 ft. Dimensions of the test pit: 3 ft. x 13 ft. x 12 ft. depth.
					15	
					20	

GENERAL NOTES

DATE STARTED JUN 18 92
DATE COMPLETED JUN 18 92
RIG Ford-Backhoe
CREW CHIEF M. Klein
LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

PROJECT NAME	NIROP RI Soils	BORING NO.	BT004
LOCATION	Fridley, MN	SHEET NO.	1 OF 1
CONTRACTOR	Bergerson-Caswell	PROJECT NO.	2313.13
DRILLING METHOD	Backhoe Test Pit	INSTALLATION	N/A
		SURFACE ELEV.	836.1
		BOREHOLE DIA.	IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	GRAB	NA		M		SILTY SAND (SM), little gravel, strong brown 7.5YR4/4 to black 10YR2/1 to light olive brown 2.5Y5/3, medium dense, pieces of brick, metal, wood, (FILL).
B	GRAB	NA				As above, very dark brown 10YR2/2, little debris.
					5	Large pieces of metal and wood from 5 to 6 ft.
C	GRAB	NA		M		Fluid seapage at 6.5 ft., colorless.
						SILT (ML), trace clay, black 10YR2/1, loose, excessive vegetation, Peat.
D	GRAB	NA		M		POORLY-GRADED SAND (SP), fine- to medium-grained, dark gray 7.5YR4/0, dense, pieces of logs.
E	GRAB	NA		M	10	As above, yellowish brown 10YR5/4.
						WELL-GRADED SAND (SW), fine- to coarse-grained, olive gray, 5Y4/2, dense.
						End of test pit at 12 ft. Dimensions of the test pit: 3 ft. x 14 ft. x 12 ft. depth.
					15	
					20	

GENERAL NOTES

DATE STARTED JUN 18 92

DATE COMPLETED JUN 18 92

RIG Ford-Backhoe

CREW CHIEF M. Klein

LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None

AT COMPLETION ▼

AFTER DRILLING

CAVE-IN: DATE/TIME _____ DEPTH _____

WATER: DATE/TIME _____ DEPTH _____

APPENDIX E

RESULTS FOR VOLATILE ORGANIC COMPOUND ANALYSES

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: BG

RESULTS FOR VOLATILE ORGANIC COMPOUND ANALYSES
SUB-AREA BG

Parameter	Units	BG001A 03-JUN-92		BG001D 03-JUN-92		BG002A 03-JUN-92		BG002D 03-JUN-92		BG003A 03-JUN-92		BG003D 03-JUN-92	
CHLOROMETHANE	UG/KG	10	U	10	U	11	U	14	U	11	U	10	U
BROMOMETHANE	UG/KG	10	U	10	U	11	U	14	U	11	U	10	U
VINYL CHLORIDE	UG/KG	10	U	10	U	11	U	14	U	11	U	10	U
CHLOROETHANE	UG/KG	10	U	10	U	11	U	14	U	11	U	10	U
METHYLENE CHLORIDE	UG/KG	10	U	10	U	11	U	14	U	1	JBU	10	U
ACETONE	UG/KG	81	BU	11	BU	3	BJU	89	BU	3	BJU	5	BJU
CARBON DISULFIDE	UG/KG	9	JBU	10	U	11	U	4	JBU	11	U	10	U
1,1-DICHLOROETHENE	UG/KG	10	U	10	U	11	U	14	U	11	U	10	U
1,1-DICHLOROETHANE	UG/KG	10	U	10	U	11	U	14	U	11	U	10	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG	10	U	10	U	11	U	14	U	11	U	10	U
CHLOROFORM	UG/KG	10	U	10	U	11	U	14	U	11	U	10	U
1,2-DICHLOROETHANE	UG/KG	10	U	10	U	11	U	14	U	11	U	10	U
2-BUTANONE	UG/KG	10	U	10	U	11	U	14	U	3	BJU	10	U
1,1,1-TRICHLOROETHANE	UG/KG	10	U	10	U	11	U	14	U	11	U	10	U
CARBON TETRACHLORIDE	UG/KG	10	U	10	U	11	U	14	U	11	U	10	U
BROMODICHLOROMETHANE	UG/KG	10	U	10	U	11	U	14	U	11	U	10	U
1,2-DICHLOROPROPANE	UG/KG	10	U	10	U	11	U	14	U	11	U	10	U
CIS-1,3-DICHLOROPROPENE	UG/KG	10	U	10	U	11	U	14	U	11	U	10	U
TRICHLOROETHENE	UG/KG	10	U	10	U	11	U	14	U	11	U	10	U
CHLORODIBROMOMETHANE	UG/KG	10	U	10	U	11	U	14	U	11	U	10	U
1,1,2-TRICHLOROETHANE	UG/KG	10	U	10	U	11	U	14	U	11	U	10	U
BENZENE	UG/KG	10	U	10	U	11	U	14	U	11	U	10	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	10	U	10	U	11	U	14	U	11	U	10	U
BROMOFORM	UG/KG	10	U	10	U	11	U	14	U	11	U	10	U
4-METHYL-2-PENTANONE	UG/KG	10	U	10	U	11	U	14	U	11	U	10	U
2-HEXANONE	UG/KG	10	U	10	U	11	U	14	U	11	U	10	U
TETRACHLOROETHENE	UG/KG	10	U	10	U	11	U	14	U	11	U	10	U
1,1,2,2-TETRACHLOROETHANE	UG/KG	10	U	10	U	11	U	14	U	11	U	10	U
TOLUENE	UG/KG	1	JBU	10	U	2	JBU	14	U	11	U	10	U
CHLOROBENZENE	UG/KG	10	U	10	U	11	U	14	U	11	U	10	U
ETHYLBENZENE	UG/KG	10	U	10	U	11	U	14	U	11	U	10	U
STYRENE	UG/KG	10	U	10	U	11	U	14	U	11	U	10	U
XYLENE, TOTAL	UG/KG	10	U	10	U	11	U	14	U	11	U	10	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: BG

RESULTS FOR VOLATILE ORGANIC COMPOUND ANALYSES
SUB-AREA BG

Parameter	Units	BG004A 03-JUN-92		BG004D 03-JUN-92		BG005A 03-JUN-92		BG005D 03-JUN-92		BG005D DUP 03-JUN-92		BG006A 03-JUN-92	
CHLOROMETHANE	UG/KG	10	U	10	U	10	U	11	U	10	U	18	U
BROMOMETHANE	UG/KG	10	U	10	U	10	U	11	U	10	U	18	U
VINYL CHLORIDE	UG/KG	10	U	10	U	10	U	11	U	10	U	18	U
CHLOROETHANE	UG/KG	10	U	10	U	10	U	11	U	10	U	18	U
METHYLENE CHLORIDE	UG/KG	10	U	10	U	10	U	11	U	2	JBU	18	U
ACETONE	UG/KG	63	BU	140	B	4	BJU	190	B	350	BE	10	BJU
CARBON DISULFIDE	UG/KG	10	U	10	U	10	U	11	U	10	U	18	U
1,1-DICHLOROETHENE	UG/KG	10	U	10	U	10	U	11	U	10	U	18	U
1,1-DICHLOROETHANE	UG/KG	10	U	10	U	10	U	11	U	10	U	18	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG	10	U	10	U	10	U	11	U	10	U	18	U
CHLOROFORM	UG/KG	10	U	10	U	10	U	11	U	10	U	18	U
1,2-DICHLOROETHANE	UG/KG	10	U	10	U	10	U	11	U	10	U	18	U
2-BUTANONE	UG/KG	2	BJU	10	U	2	BJU	3	BJU	10	U	18	U
1,1,1-TRICHLOROETHANE	UG/KG	10	U	10	U	10	U	11	U	10	U	18	U
CARBON TETRACHLORIDE	UG/KG	10	U	10	U	10	U	11	U	10	U	18	U
BROMODICHLOROMETHANE	UG/KG	10	U	10	U	10	U	11	U	10	U	18	U
1,2-DICHLOROPROPANE	UG/KG	10	U	10	U	10	U	11	U	10	U	18	U
CIS-1,3-DICHLOROPROPENE	UG/KG	10	U	10	U	10	U	11	U	10	U	18	U
TRICHLOROETHENE	UG/KG	10	U	10	U	10	U	11	U	10	U	18	U
CHLORODIBROMOMETHANE	UG/KG	10	U	10	U	10	U	11	U	10	U	18	U
1,1,2-TRICHLOROETHANE	UG/KG	10	U	10	U	10	U	11	U	10	U	18	U
BENZENE	UG/KG	10	U	10	U	10	U	11	U	10	U	18	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	10	U	10	U	10	U	11	U	10	U	18	U
BROMOFORM	UG/KG	10	U	10	U	10	U	11	U	10	U	18	U
4-METHYL-2-PENTANONE	UG/KG	10	U	10	U	10	U	11	U	10	U	18	U
2-HEXANONE	UG/KG	10	U	10	U	10	U	11	U	10	U	18	U
TETRACHLOROETHENE	UG/KG	10	U	10	U	10	U	11	U	10	U	18	U
1,1,2,2-TETRACHLOROETHANE	UG/KG	10	U	10	U	10	U	11	U	10	U	18	U
TOLUENE	UG/KG	10	U	10	U	10	U	11	U	10	U	18	U
CHLOROBENZENE	UG/KG	10	U	10	U	10	U	11	U	10	U	18	U
ETHYLBENZENE	UG/KG	10	U	10	U	10	U	11	U	10	U	18	U
STYRENE	UG/KG	10	U	10	U	10	U	11	U	10	U	18	U
XYLENE, TOTAL	UG/KG	10	U	10	U	10	U	11	U	10	U	18	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: BG

RESULTS FOR VOLATILE ORGANIC COMPOUND ANALYSES
SUB-AREA BG

Parameter	Units	BG006D 03-JUN-92		BG007A 04-JUN-92		BG007D 04-JUN-92		BG008A 04-JUN-92		BG008D 04-JUN-92		BG009A 04-JUN-92	
CHLOROMETHANE	UG/KG	11	U	11	U	10	U	10	U	10	U	11	U
BROMOMETHANE	UG/KG	11	U	11	U	10	U	10	U	10	U	11	U
VINYL CHLORIDE	UG/KG	11	U	11	U	10	U	10	U	10	U	11	U
CHLOROETHANE	UG/KG	11	U	11	U	10	U	10	U	10	U	11	U
METHYLENE CHLORIDE	UG/KG	11	U	3	JBU	10	U	10	U	3	JBU	11	U
ACETONE	UG/KG	390	BE	6	BJU	92	BU	42	BU	77	BU	6	JBU
CARBON DISULFIDE	UG/KG	11	U	11	U	10	U	10	U	10	U	11	U
1,1-DICHLOROETHENE	UG/KG	11	U	11	U	10	U	10	U	10	U	11	U
1,1-DICHLOROETHANE	UG/KG	11	U	11	U	10	U	10	U	10	U	11	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG	11	U	11	U	10	U	10	U	10	U	11	U
CHLOROFORM	UG/KG	11	U	11	U	10	U	10	U	10	U	11	U
1,2-DICHLOROETHANE	UG/KG	11	U	11	U	10	U	10	U	10	U	11	U
2-BUTANONE	UG/KG	11	U	11	U	3	JBU	10	U	4	JBU	3	BJU
1,1,1-TRICHLOROETHANE	UG/KG	11	U	11	U	10	U	10	U	10	U	11	U
CARBON TETRACHLORIDE	UG/KG	11	U	11	U	10	U	10	U	10	U	11	U
BROMODICHLOROMETHANE	UG/KG	11	U	11	U	10	U	10	U	10	U	11	U
1,2-DICHLOROPROPANE	UG/KG	11	U	11	U	10	U	10	U	10	U	11	U
CIS-1,3-DICHLOROPROPENE	UG/KG	11	U	11	U	10	U	10	U	10	U	11	U
TRICHLOROETHENE	UG/KG	11	U	11	U	10	U	10	U	10	U	11	U
CHLORODIBROMOMETHANE	UG/KG	11	U	11	U	10	U	10	U	10	U	11	U
1,1,2-TRICHLOROETHANE	UG/KG	11	U	11	U	10	U	10	U	10	U	11	U
BENZENE	UG/KG	11	U	11	U	10	U	10	U	10	U	11	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	11	U	11	U	10	U	10	U	10	U	11	U
BROMOFORM	UG/KG	11	U	11	U	10	U	10	U	10	U	11	U
4-METHYL-2-PENTANONE	UG/KG	11	U	11	U	10	U	10	U	10	U	11	U
2-HEXANONE	UG/KG	11	U	11	U	10	U	10	U	10	U	11	U
TETRACHLOROETHENE	UG/KG	11	U	11	U	10	U	10	U	10	U	11	U
1,1,2,2-TETRACHLOROETHANE	UG/KG	11	U	11	U	10	U	10	U	10	U	11	U
TOLUENE	UG/KG	11	U	6	JBU	10	U	10	U	10	U	11	U
CHLOROBENZENE	UG/KG	11	U	11	U	10	U	10	U	10	U	11	U
ETHYLBENZENE	UG/KG	11	U	11	U	10	U	10	U	10	U	11	U
STYRENE	UG/KG	11	U	11	U	10	U	10	U	10	U	11	U
XYLENE, TOTAL	UG/KG	11	U	11	U	10	U	10	U	10	U	11	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: BG

RESULTS FOR VOLATILE ORGANIC COMPOUND ANALYSES
SUB-AREA BG

Parameter	Units	BG009D 04-JUN-92		BG009D DUP 04-JUN-92		BG010A 04-JUN-92		BG010D 04-JUN-92	
CHLOROMETHANE	UG/KG	10	U	13	U	11	U	11	U
BROMOMETHANE	UG/KG	10	U	13	U	11	U	11	U
VINYL CHLORIDE	UG/KG	10	U	13	U	11	U	11	U
CHLOROETHANE	UG/KG	10	U	13	U	11	U	11	U
METHYLENE CHLORIDE	UG/KG	0.8	BJU	0.8	BJU	4	BJU	11	U
ACETONE	UG/KG	10	U	13	U	8	JBU	32	BU
CARBON DISULFIDE	UG/KG	10	U	13	U	11	U	11	U
1,1-DICHLOROETHENE	UG/KG	10	U	13	U	11	U	11	U
1,1-DICHLOROETHANE	UG/KG	10	U	13	U	11	U	11	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG	10	U	13	U	11	U	11	U
CHLOROFORM	UG/KG	10	U	13	U	11	U	11	U
1,2-DICHLOROETHANE	UG/KG	10	U	13	U	11	U	11	U
2-BUTANONE	UG/KG	2	JBU	13	U	11	U	4	JBU
1,1,1-TRICHLOROETHANE	UG/KG	10	U	13	U	11	U	11	U
CARBON TETRACHLORIDE	UG/KG	10	U	13	U	11	U	11	U
BROMODICHLOROMETHANE	UG/KG	10	U	13	U	11	U	11	U
1,2-DICHLOROPROPANE	UG/KG	10	U	13	U	11	U	11	U
CIS-1,3-DICHLOROPROPENE	UG/KG	10	U	13	U	11	U	11	U
TRICHLOROETHENE	UG/KG	10	U	13	U	11	U	11	U
CHLORODIBROMOMETHANE	UG/KG	10	U	13	U	11	U	11	U
1,1,2-TRICHLOROETHANE	UG/KG	10	U	13	U	11	U	11	U
BENZENE	UG/KG	10	U	13	U	11	U	11	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	10	U	13	U	11	U	11	U
BROMOFORM	UG/KG	10	U	13	U	11	U	11	U
4-METHYL-2-PENTANONE	UG/KG	10	U	13	U	11	U	11	U
2-HEXANONE	UG/KG	10	U	13	U	11	U	11	U
TETRACHLOROETHENE	UG/KG	10	U	13	U	11	U	11	U
1,1,2,2-TETRACHLOROETHANE	UG/KG	10	U	13	U	11	U	11	U
TOLUENE	UG/KG	2	BJU	13	U	3	JBU	11	U
CHLOROBENZENE	UG/KG	10	U	13	U	11	U	11	U
ETHYLBENZENE	UG/KG	10	U	13	U	11	U	11	U
STYRENE	UG/KG	10	U	13	U	11	U	11	U
XYLENE, TOTAL	UG/KG	10	U	13	U	11	U	11	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A1

RESULTS FOR VOLATILE ORGANIC COMPOUND ANALYSES
SUB-AREA A1

Parameter	Units	AB040A 15-JUN-92		AB040D 15-JUN-92		AB041A 08-JUN-92		AB041C 08-JUN-92		AB042A 09-JUN-92		AB042G 09-JUN-92	
CHLOROMETHANE	UG/KG	11	U	10	U	12	U	11	U	11	U	10	U
BROMOMETHANE	UG/KG	11	U	10	U	12	U	11	U	11	U	10	U
VINYL CHLORIDE	UG/KG	11	U	10	U	12	U	11	U	11	U	10	U
CHLOROETHANE	UG/KG	11	U	10	U	12	U	11	U	11	U	10	U
METHYLENE CHLORIDE	UG/KG	11	U	10	U	3	BJU	11	U	11	U	10	U
ACETONE	UG/KG	11	U	4	JBU	2700	BDE	2600	BDE	1000	BD	600	BD
CARBON DISULFIDE	UG/KG	11	U	10	U	12	U	11	U	11	U	10	U
1,1-DICHLOROETHENE	UG/KG	11	U	10	U	12	U	11	U	11	U	10	U
1,1-DICHLOROETHANE	UG/KG	11	U	10	U	12	U	11	U	11	U	10	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG	2	J	10	U	12	U	11	U	11	U	10	U
CHLOROFORM	UG/KG	11	U	10	U	12	U	11	U	11	U	10	U
1,2-DICHLOROETHANE	UG/KG	11	U	10	U	12	U	11	U	11	U	10	U
2-BUTANONE	UG/KG	11	U	10	U	12	U	11	U	5	JBU	10	U
1,1,1-TRICHLOROETHANE	UG/KG	11	U	10	U	12	U	11	U	11	U	10	U
CARBON TETRACHLORIDE	UG/KG	11	U	10	U	12	U	11	U	11	U	10	U
BROMODICHLOROMETHANE	UG/KG	11	U	10	U	12	U	11	U	11	U	10	U
1,2-DICHLOROPROPANE	UG/KG	11	U	10	U	12	U	11	U	11	U	10	U
CIS-1,3-DICHLOROPROPENE	UG/KG	11	U	10	U	12	U	11	U	11	U	10	U
TRICHLOROETHENE	UG/KG	11	U	10	U	12	U	11	U	11	U	10	U
CHLORODIBROMOMETHANE	UG/KG	11	U	10	U	12	U	11	U	11	U	10	U
1,1,2-TRICHLOROETHANE	UG/KG	11	U	10	U	12	U	11	U	11	U	10	U
BENZENE	UG/KG	11	U	10	U	12	U	11	U	11	U	10	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	11	U	10	U	12	U	11	U	11	U	10	U
BROMOFORM	UG/KG	11	U	10	U	12	U	11	U	11	U	10	U
4-METHYL-2-PENTANONE	UG/KG	11	U	10	U	12	U	11	U	11	U	10	U
2-HEXANONE	UG/KG	11	U	10	U	12	U	11	U	11	U	10	U
TETRACHLOROETHENE	UG/KG	11	U	10	U	12	U	11	U	11	U	10	U
1,1,2,2-TETRACHLOROETHANE	UG/KG	11	U	10	U	12	U	11	U	11	U	10	U
TOLUENE	UG/KG	1	BJU	1	BJU	12	U	11	U	11	U	10	U
CHLOROBENZENE	UG/KG	11	U	10	U	12	U	11	U	11	U	10	U
ETHYLBENZENE	UG/KG	3	J	10	U	12	U	11	U	11	U	10	U
STYRENE	UG/KG	11	U	10	U	12	U	11	U	11	U	10	U
XYLENE, TOTAL	UG/KG	5	JB	10	U	12	U	11	U	11	U	10	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A1

RESULTS FOR VOLATILE ORGANIC COMPOUND ANALYSES
SUB-AREA A1

Parameter	Units	AB042G DUP 09-JUN-92	
CHLOROMETHANE	UG/KG	10	U
BROMOMETHANE	UG/KG	10	U
VINYL CHLORIDE	UG/KG	10	U
CHLOROETHANE	UG/KG	10	U
METHYLENE CHLORIDE	UG/KG	10	U
ACETONE	UG/KG	650	BD
CARBON DISULFIDE	UG/KG	10	U
1,1-DICHLOROETHENE	UG/KG	10	U
1,1-DICHLOROETHANE	UG/KG	10	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG	10	U
CHLOROFORM	UG/KG	10	U
1,2-DICHLOROETHANE	UG/KG	10	U
2-BUTANONE	UG/KG	10	U
1,1,1-TRICHLOROETHANE	UG/KG	10	U
CARBON TETRACHLORIDE	UG/KG	10	U
BROMODICHLOROMETHANE	UG/KG	10	U
1,2-DICHLOROPROPANE	UG/KG	10	U
CIS-1,3-DICHLOROPROPENE	UG/KG	10	U
TRICHLOROETHENE	UG/KG	10	U
CHLORODIBROMOMETHANE	UG/KG	10	U
1,1,2-TRICHLOROETHANE	UG/KG	10	U
BENZENE	UG/KG	10	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	10	U
BROMOFORM	UG/KG	10	U
4-METHYL-2-PENTANONE	UG/KG	10	U
2-HEXANONE	UG/KG	10	U
TETRACHLOROETHENE	UG/KG	10	U
1,1,2,2-TETRACHLOROETHANE	UG/KG	10	U
TOLUENE	UG/KG	10	U
CHLOROBENZENE	UG/KG	10	U
ETHYLBENZENE	UG/KG	10	U
STYRENE	UG/KG	10	U
XYLENE, TOTAL	UG/KG	10	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A2

RESULTS FOR VOLATILE ORGANIC COMPOUND ANALYSES
SUB-AREA A2

Parameter	Units	AB024A 09-JUN-92		AB024G 09-JUN-92		AB025A 09-JUN-92		AB025B 09-JUN-92		AB201A 08-JUL-92		AB201H 08-JUL-92	
CHLOROMETHANE	UG/KG	11	U	11	U	54	U	1500	U	11	U	10	U
BROMOMETHANE	UG/KG	11	U	11	U	54	U	1500	U	11	U	10	U
VINYL CHLORIDE	UG/KG	11	U	11	U	54	U	1500	U	11	U	10	U
CHLOROETHANE	UG/KG	11	U	11	U	54	U	1500	U	11	U	10	U
METHYLENE CHLORIDE	UG/KG	2	JBU	11	U	54	U	1500	U	11	U	10	U
ACETONE	UG/KG	18	BU	72	BU	25	BJU	1500	JBU	12	BU	12	BU
CARBON DISULFIDE	UG/KG	16	BU	11	U	54	U	1500	U	11	U	10	U
1,1-DICHLOROETHENE	UG/KG	11	U	11	U	54	U	1500	U	11	U	10	U
1,1-DICHLOROETHANE	UG/KG	11	U	11	U	54	U	1500	U	11	U	10	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG	11	U	11	U	54	U	1500	U	11	U	10	U
CHLOROFORM	UG/KG	11	U	11	U	54	U	1500	U	11	U	10	U
1,2-DICHLOROETHANE	UG/KG	11	U	11	U	54	U	1500	U	11	U	10	U
2-BUTANONE	UG/KG	11	U	11	U	54	U	1500	U	11	U	10	U
1,1,1-TRICHLOROETHANE	UG/KG	11	U	11	U	54	U	1500	U	11	U	10	U
CARBON TETRACHLORIDE	UG/KG	11	U	11	U	54	U	1500	U	11	U	10	U
BROMODICHLOROMETHANE	UG/KG	11	U	11	U	54	U	1500	U	11	U	10	U
1,2-DICHLOROPROPANE	UG/KG	11	U	11	U	54	U	1500	U	11	U	10	U
CIS-1,3-DICHLOROPROPENE	UG/KG	11	U	11	U	54	U	1500	U	11	U	10	U
TRICHLOROETHENE	UG/KG	11	U	11	U	920		4100		11	U	10	U
CHLORODIBROMOMETHANE	UG/KG	11	U	11	U	54	U	1500	U	11	U	10	U
1,1,2-TRICHLOROETHANE	UG/KG	11	U	11	U	54	U	1500	U	11	U	10	U
BENZENE	UG/KG	11	U	11	U	54	U	1500	U	11	U	10	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	11	U	11	U	54	U	1500	U	11	U	10	U
BROMOFORM	UG/KG	11	U	11	U	54	U	1500	U	11	U	10	U
4-METHYL-2-PENTANONE	UG/KG	11	U	11	U	54	U	1500	U	11	U	10	U
2-HEXANONE	UG/KG	11	U	11	U	54	U	1500	U	11	U	10	U
TETRACHLOROETHENE	UG/KG	11	U	11	U	54	U	1500	U	11	U	10	U
1,1,2,2-TETRACHLOROETHANE	UG/KG	11	U	11	U	54	U	1500	U	11	U	10	U
TOLUENE	UG/KG	2	JBU	11	U	54	U	1500	U	1	JBU	10	U
CHLOROBENZENE	UG/KG	11	U	11	U	54	U	1500	U	11	U	10	U
ETHYLBENZENE	UG/KG	11	U	11	U	54	U	1500	U	11	U	10	U
STYRENE	UG/KG	11	U	11	U	54	U	1500	U	11	U	10	U
XYLENE, TOTAL	UG/KG	11	U	11	U	54	U	1500	U	11	U	10	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A2

RESULTS FOR VOLATILE ORGANIC COMPOUND ANALYSES
SUB-AREA A2

Parameter	Units	AB202A 08-JUL-92		AB202B 08-JUL-92		AB222A 09-JUL-92		AB222A DUP 09-JUL-92		AB222C 09-JUL-92		AB223A 09-JUL-92	
CHLOROMETHANE	UG/KG	10	U	12	U	11	U	11	U	10	U	11	U
BROMOMETHANE	UG/KG	10	U	12	U	11	U	11	U	10	U	11	U
VINYL CHLORIDE	UG/KG	10	U	12	U	11	U	11	U	10	U	11	U
CHLOROETHANE	UG/KG	10	U	12	U	11	U	11	U	10	U	11	U
METHYLENE CHLORIDE	UG/KG	10	U	12	U	11	U	11	U	10	U	11	U
ACETONE	UG/KG	7	BJU	6	BJU	6	BJU	15	BU	410	BD	36	BU
CARBON DISULFIDE	UG/KG	10	U	3	JBU	11	U	11	U	10	U	11	U
1,1-DICHLOROETHENE	UG/KG	10	U	12	U	11	U	11	U	10	U	11	U
1,1-DICHLOROETHANE	UG/KG	10	U	12	U	11	U	11	U	10	U	11	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG	10	U	2	J	11	U	11	U	10	U	11	U
CHLOROFORM	UG/KG	10	U	12	U	11	U	11	U	10	U	11	U
1,2-DICHLOROETHANE	UG/KG	10	U	12	U	11	U	11	U	10	U	11	U
2-BUTANONE	UG/KG	2	BJU	12	U	11	U	10	JBU	10	U	6	JBU
1,1,1-TRICHLOROETHANE	UG/KG	10	U	12	U	11	U	11	U	10	U	11	U
CARBON TETRACHLORIDE	UG/KG	10	U	12	U	11	U	11	U	10	U	11	U
BROMODICHLOROMETHANE	UG/KG	10	U	12	U	11	U	11	U	10	U	11	U
1,2-DICHLOROPROPANE	UG/KG	10	U	12	U	11	U	11	U	10	U	11	U
CIS-1,3-DICHLOROPROPENE	UG/KG	10	U	12	U	11	U	11	U	10	U	11	U
TRICHLOROETHENE	UG/KG	0.9	JB	360	D	75		85		5	JB	89	
CHLORODIBROMOMETHANE	UG/KG	10	U	12	U	11	U	11	U	10	U	11	U
1,1,2-TRICHLOROETHANE	UG/KG	10	U	12	U	11	U	11	U	10	U	11	U
BENZENE	UG/KG	10	U	12	U	11	U	11	U	10	U	11	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	10	U	12	U	11	U	11	U	10	U	11	U
BROMOFORM	UG/KG	10	U	12	U	11	U	11	U	10	U	11	U
4-METHYL-2-PENTANONE	UG/KG	10	U	12	U	11	U	11	U	10	U	11	U
2-HEXANONE	UG/KG	10	U	12	U	11	U	11	U	10	U	11	U
TETRACHLOROETHENE	UG/KG	10	U	25		26		35		3	J	11	U
1,1,2,2-TETRACHLOROETHANE	UG/KG	10	U	12	U	11	U	11	U	10	U	11	U
TOLUENE	UG/KG	10	U	5	JBU	11	U	11	U	10	U	2	JBU
CHLOROBENZENE	UG/KG	10	U	12	U	11	U	11	U	10	U	11	U
ETHYLBENZENE	UG/KG	10	U	12	U	11	U	11	U	10	U	11	U
STYRENE	UG/KG	10	U	12	U	11	U	11	U	10	U	11	U
XYLENE, TOTAL	UG/KG	10	U	12	U	11	U	11	U	10	U	11	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A2

RESULTS FOR VOLATILE ORGANIC COMPOUND ANALYSES
SUB-AREA A2

Parameter	Units	AB223C 09-JUL-92		AB230A 10-JUL-92		AB230B 10-JUL-92	
CHLOROMETHANE	UG/KG	12	U	11	U	11	U
BROMOMETHANE	UG/KG	12	U	11	U	11	U
VINYL CHLORIDE	UG/KG	12	U	11	U	11	U
CHLOROETHANE	UG/KG	12	U	11	U	11	U
METHYLENE CHLORIDE	UG/KG	12	U	11	U	1	BJU
ACETONE	UG/KG	170	B	6	BJU	6	BJU
CARBON DISULFIDE	UG/KG	12	U	11	U	2	JBU
1,1-DICHLOROETHENE	UG/KG	12	U	11	U	11	U
1,1-DICHLOROETHANE	UG/KG	12	U	11	U	11	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG	12	U	11	U	11	U
CHLOROFORM	UG/KG	12	U	11	U	11	U
1,2-DICHLOROETHANE	UG/KG	12	U	11	U	11	U
2-BUTANONE	UG/KG	14	BU	11	BU	9	BJU
1,1,1-TRICHLOROETHANE	UG/KG	12	U	11	U	11	U
CARBON TETRACHLORIDE	UG/KG	12	U	11	U	11	U
BROMODICHLOROMETHANE	UG/KG	12	U	11	U	11	U
1,2-DICHLOROPROPANE	UG/KG	12	U	11	U	11	U
CIS-1,3-DICHLOROPROPENE	UG/KG	12	U	11	U	11	U
TRICHLOROETHENE	UG/KG	150		11	U	2	JB
CHLORODIBROMOMETHANE	UG/KG	12	U	11	U	11	U
1,1,2-TRICHLOROETHANE	UG/KG	12	U	11	U	11	U
BENZENE	UG/KG	12	U	11	U	11	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	12	U	11	U	11	U
BROMOFORM	UG/KG	12	U	11	U	11	U
4-METHYL-2-PENTANONE	UG/KG	12	U	11	U	11	U
2-HEXANONE	UG/KG	12	U	11	U	11	U
TETRACHLOROETHENE	UG/KG	0.7	J	1	J	4	J
1,1,2,2-TETRACHLOROETHANE	UG/KG	12	U	11	U	11	U
TOLUENE	UG/KG	12	U	11	U	11	U
CHLOROBENZENE	UG/KG	12	U	11	U	11	U
ETHYLBENZENE	UG/KG	12	U	11	U	11	U
STYRENE	UG/KG	12	U	11	U	11	U
XYLENE, TOTAL	UG/KG	12	U	11	U	11	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A3

RESULTS FOR VOLATILE ORGANIC COMPOUND ANALYSES
SUB-AREA A3

Parameter	Units	AB035A 10-JUN-92		AB036A 15-JUN-92		AB036H 15-JUN-92		AB037A 10-JUN-92		AB037D 10-JUN-92		AB039A 10-JUN-92	
CHLOROMETHANE	UG/KG	11	U	11	U	11	U	11	U	10	U	11	U
BROMOMETHANE	UG/KG	11	U	11	U	11	U	11	U	10	U	11	U
VINYL CHLORIDE	UG/KG	11	U	11	U	11	U	11	U	10	U	11	U
CHLOROETHANE	UG/KG	11	U	11	U	11	U	11	U	10	U	11	U
METHYLENE CHLORIDE	UG/KG	2	JBU	2	BJU	1	BJU	2	JBU	10	U	3	BJU
ACETONE	UG/KG	5	BJU	11	U	11	U	11	U	6	BJU	11	U
CARBON DISULFIDE	UG/KG	11	U	11	U	2	JBU	5	JBU	10	U	23	BU
1,1-DICHLOROETHENE	UG/KG	11	U	11	U	11	U	11	U	10	U	11	U
1,1-DICHLOROETHANE	UG/KG	11	U	8	J	0.5	J	11	U	10	U	11	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG	13		210		9	J	11	U	4	J	11	U
CHLOROFORM	UG/KG	11	U	11	U	11	U	0.5	BJU	10	U	11	U
1,2-DICHLOROETHANE	UG/KG	11	U	11	U	11	U	11	U	10	U	11	U
2-BUTANONE	UG/KG	11	U	11	U	11	U	11	U	10	U	11	U
1,1,1-TRICHLOROETHANE	UG/KG	2	J	1	J	0.4	J	11	U	10	U	11	U
CARBON TETRACHLORIDE	UG/KG	11	U	11	U	11	U	11	U	10	U	11	U
BROMODICHLOROMETHANE	UG/KG	11	U	11	U	11	U	11	U	10	U	11	U
1,2-DICHLOROPROPANE	UG/KG	11	U	11	U	11	U	11	U	10	U	11	U
CIS-1,3-DICHLOROPROPENE	UG/KG	11	U	11	U	11	U	11	U	10	U	11	U
TRICHLOROETHENE	UG/KG	36		8	JB	15	B	0.8	JB	9	JB	2	JB
CHLORODIBROMOMETHANE	UG/KG	11	U	11	U	11	U	11	U	10	U	11	U
1,1,2-TRICHLOROETHANE	UG/KG	11	U	11	U	11	U	11	U	10	U	11	U
BENZENE	UG/KG	11	U	11	U	11	U	11	U	10	U	11	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	11	U	11	U	11	U	11	U	10	U	11	U
BROMOFORM	UG/KG	11	U	11	U	11	U	11	U	10	U	11	U
4-METHYL-2-PENTANONE	UG/KG	11	U	11	U	11	U	11	U	10	U	11	U
2-HEXANONE	UG/KG	11	U	11	U	11	U	11	U	10	U	11	U
TETRACHLOROETHENE	UG/KG	7	J	11	U	2	J	11	U	1	J	11	U
1,1,2,2-TETRACHLOROETHANE	UG/KG	11	U	11	U	11	U	11	U	10	U	11	U
TOLUENE	UG/KG	11	U	1	BJU	1	BJU	1	BJU	10	U	27	B
CHLOROBENZENE	UG/KG	11	U	11	U	11	U	11	U	10	U	11	U
ETHYLBENZENE	UG/KG	11	U	11	U	11	U	11	U	10	U	11	U
STYRENE	UG/KG	11	U	11	U	11	U	11	U	10	U	11	U
XYLENE, TOTAL	UG/KG	11	U	4	JBU	11	U	11	U	10	U	11	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A3

RESULTS FOR VOLATILE ORGANIC COMPOUND ANALYSES
SUB-AREA A3

Parameter	Units	AB039H 10-JUN-92		AB039H DUP 10-JUN-92		AB043D 20-JUL-92		AB043H 20-JUL-92		AB044D 20-JUL-92		AB044H 20-JUL-92	
CHLOROMETHANE	UG/KG	11	U	11	U	57	U	110	U	56	U	54	U
BROMOMETHANE	UG/KG	11	U	11	U	57	U	110	U	56	U	54	U
VINYL CHLORIDE	UG/KG	11	U	11	U	57	U	110	U	56	U	54	U
CHLOROETHANE	UG/KG	11	U	11	U	57	U	110	U	56	U	54	U
METHYLENE CHLORIDE	UG/KG	2	JBU	1	JBU	6	JBU	110	U	56	U	54	U
ACETONE	UG/KG	42	BU	64	BU	57	BU	12000	BD	83	BU	430	BU
CARBON DISULFIDE	UG/KG	11	U	11	U	57	U	110	U	56	U	54	U
1,1-DICHLOROETHENE	UG/KG	11	U	11	U	57	U	110	U	56	U	54	U
1,1-DICHLOROETHANE	UG/KG	11	U	11	U	84		110	U	37	J	22	J
1,2-DICHLOROETHENE (TOTAL)	UG/KG	11	U	11	U	1800	D	42	J	670		730	
CHLOROFORM	UG/KG	11	U	11	U	57	U	110	U	56	U	54	U
1,2-DICHLOROETHANE	UG/KG	11	U	11	U	4	J	110	U	56	U	54	U
2-BUTANONE	UG/KG	11	U	3	JBU	57	U	83	BJU	58	BU	54	U
1,1,1-TRICHLOROETHANE	UG/KG	11	U	11	U	7200	D	88	J	1500	E	63	
CARBON TETRACHLORIDE	UG/KG	11	U	11	U	57	U	110	U	56	U	54	U
BROMODICHLOROMETHANE	UG/KG	11	U	11	U	57	U	110	U	56	U	54	U
1,2-DICHLOROPROPANE	UG/KG	11	U	11	U	57	U	110	U	56	U	54	U
CIS-1,3-DICHLOROPROPENE	UG/KG	11	U	11	U	57	U	110	U	56	U	54	U
TRICHLOROETHENE	UG/KG	0.6	JB	11	U	69000	D	1400		11000	D	2300	D
CHLORODIBROMOMETHANE	UG/KG	11	U	11	U	57	U	110	U	56	U	54	U
1,1,2-TRICHLOROETHANE	UG/KG	11	U	11	U	57	U	110	U	56	U	54	U
BENZENE	UG/KG	11	U	11	U	57	U	110	U	56	U	54	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	11	U	11	U	57	U	110	U	56	U	54	U
BROMOFORM	UG/KG	11	U	11	U	57	U	110	U	56	U	54	U
4-METHYL-2-PENTANONE	UG/KG	11	U	11	U	57	U	110	U	56	U	54	U
2-HEXANONE	UG/KG	11	U	11	U	57	U	110	U	56	U	54	U
TETRACHLOROETHENE	UG/KG	11	U	11	U	17000	D	2800	E	2800	D	590	
1,1,2,2-TETRACHLOROETHANE	UG/KG	11	U	11	U	57	U	110	U	56	U	54	U
TOLUENE	UG/KG	11	U	11	U	1300	JD	110	U	58	B	54	U
CHLOROBENZENE	UG/KG	11	U	11	U	57	U	110	U	56	U	54	U
ETHYLBENZENE	UG/KG	11	U	11	U	1600	D	110	U	25	J	54	U
STYRENE	UG/KG	11	U	11	U	57	U	110	U	56	U	54	U
XYLENE, TOTAL	UG/KG	11	U	11	U	6500	D	110	U	170		54	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A3

RESULTS FOR VOLATILE ORGANIC COMPOUND ANALYSES
SUB-AREA A3

Parameter	Units	AB209A 23-JUL-92		AB209B 23-JUL-92		AB210A 23-JUL-92		AB210D 23-JUL-92		AB211A 23-JUL-92		AB211B 23-JUL-92	
CHLOROMETHANE	UG/KG	11	U	12	U	11	U	10	U	11	U	11	U
BROMOMETHANE	UG/KG	11	U	12	U	11	U	10	U	11	U	11	U
VINYL CHLORIDE	UG/KG	11	U	12	U	11	U	10	U	11	U	11	U
CHLOROETHANE	UG/KG	11	U	12	U	11	U	10	U	11	U	11	U
METHYLENE CHLORIDE	UG/KG	11	U	12	U	11	U	10	U	11	U	11	U
ACETONE	UG/KG	9	BJU	7	BJU	64	BU	13	BU	9	BJU	10	BJU
CARBON DISULFIDE	UG/KG	3	JBU	2	JBU	11	U	10	U	11	U	11	U
1,1-DICHLOROETHENE	UG/KG	11	U	12	U	11	U	10	U	11	U	11	U
1,1-DICHLOROETHANE	UG/KG	11	U	12	U	2	J	10	U	2	J	11	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG	11	U	6	J	48		2	J	16		1	J
CHLOROFORM	UG/KG	11	U	12	U	11	U	10	U	11	U	11	U
1,2-DICHLOROETHANE	UG/KG	11	U	12	U	11	U	10	U	11	U	11	U
2-BUTANONE	UG/KG	11	BU	10	BJU	15	BU	9	BJU	9	BJU	11	BJU
1,1,1-TRICHLOROETHANE	UG/KG	11	U	3	J	11	U	10	U	8	J	11	U
CARBON TETRACHLORIDE	UG/KG	11	U	12	U	11	U	10	U	11	U	11	U
BROMODICHLOROMETHANE	UG/KG	11	U	12	U	11	U	10	U	11	U	11	U
1,2-DICHLOROPROPANE	UG/KG	11	U	12	U	11	U	10	U	11	U	11	U
CIS-1,3-DICHLOROPROPENE	UG/KG	11	U	12	U	11	U	10	U	11	U	11	U
TRICHLOROETHENE	UG/KG	0.8	JB	29		1	JB	3	JB	120		1	JB
CHLORODIBROMOMETHANE	UG/KG	11	U	12	U	11	U	10	U	11	U	11	U
1,1,2-TRICHLOROETHANE	UG/KG	11	U	12	U	11	U	10	U	11	U	11	U
BENZENE	UG/KG	11	U	12	U	11	U	10	U	11	U	11	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	11	U	12	U	11	U	10	U	11	U	11	U
BROMOFORM	UG/KG	11	U	12	U	11	U	10	U	11	U	11	U
4-METHYL-2-PENTANONE	UG/KG	11	U	12	U	11	U	10	U	11	U	11	U
2-HEXANONE	UG/KG	11	U	12	U	11	U	10	U	11	U	11	U
TETRACHLOROETHENE	UG/KG	11	U	3	J	11	U	10	U	11	U	11	U
1,1,2,2-TETRACHLOROETHANE	UG/KG	11	U	12	U	11	U	10	U	11	U	11	U
TOLUENE	UG/KG	11	U	12	U	11	U	10	U	11	U	11	U
CHLOROBENZENE	UG/KG	11	U	12	U	11	U	10	U	11	U	11	U
ETHYLBENZENE	UG/KG	11	U	12	U	11	U	10	U	11	U	11	U
STYRENE	UG/KG	11	U	12	U	11	U	10	U	11	U	11	U
XYLENE, TOTAL	UG/KG	11	U	12	U	11	U	10	U	11	U	11	U

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Parameter	Units	AB212A 24-JUL-92		AB212B 24-JUL-92		AB213A 23-JUL-92		AB213A DUP 23-JUL-92		AB213B 23-JUL-92		AB214A 28-JUL-92	
CHLOROMETHANE	UG/KG	11	U	11	U	15	U	12	U	11	U	11	U
BROMOMETHANE	UG/KG	11	U	11	U	15	U	12	U	11	U	11	U
VINYL CHLORIDE	UG/KG	11	U	11	U	15	U	12	U	11	U	11	U
CHLOROETHANE	UG/KG	11	U	11	U	15	U	12	U	11	U	11	U
METHYLENE CHLORIDE	UG/KG	11	U	11	U	15	U	12	U	11	U	11	U
ACETONE	UG/KG	9	BJU	12	BU	12	BJU	10	BJU	7	BJU	6	BJU
CARBON DISULFIDE	UG/KG	11	U	11	U	15	U	12	U	9	JBU	11	U
1,1-DICHLOROETHENE	UG/KG	11	U	11	U	15	U	12	U	11	U	11	U
1,1-DICHLOROETHANE	UG/KG	11	U	11	U	15	U	12	U	11	U	11	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG	2	J	13		2	J	6	J	9	J	7	J
CHLOROFORM	UG/KG	11	U	11	U	15	U	12	U	11	U	11	U
1,2-DICHLOROETHANE	UG/KG	11	U	11	U	15	U	12	U	11	U	11	U
2-BUTANONE	UG/KG	10	BJU	12	BU	11	BJU	10	BJU	11	BJU	10	BJU
1,1,1-TRICHLOROETHANE	UG/KG	11	U	11	U	2	J	5	J	4	J	0.8	J
CARBON TETRACHLORIDE	UG/KG	11	U	11	U	15	U	12	U	11	U	11	U
BROMODICHLOROMETHANE	UG/KG	11	U	11	U	15	U	12	U	11	U	11	U
1,2-DICHLOROPROPANE	UG/KG	11	U	11	U	15	U	12	U	11	U	11	U
CIS-1,3-DICHLOROPROPENE	UG/KG	11	U	11	U	15	U	12	U	11	U	11	U
TRICHLOROETHENE	UG/KG	2	JB	21		35		90		130		100	
CHLORODIBROMOMETHANE	UG/KG	11	U	11	U	15	U	12	U	11	U	11	U
1,1,2-TRICHLOROETHANE	UG/KG	11	U	11	U	15	U	12	U	11	U	11	U
BENZENE	UG/KG	11	U	11	U	15	U	12	U	11	U	11	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	11	U	11	U	15	U	12	U	11	U	11	U
BROMOFORM	UG/KG	11	U	11	U	15	U	12	U	11	U	11	U
4-METHYL-2-PENTANONE	UG/KG	11	U	11	U	15	U	12	U	11	U	11	U
2-HEXANONE	UG/KG	11	U	11	U	15	U	12	U	11	U	11	U
TETRACHLOROETHENE	UG/KG	11	U	2	J	2	J	4	J	13		11	U
1,1,2,2-TETRACHLOROETHANE	UG/KG	11	U	11	U	15	U	12	U	11	U	11	U
TOLUENE	UG/KG	11	U	11	U	15	U	12	U	11	U	11	U
CHLOROBENZENE	UG/KG	11	U	11	U	15	U	12	U	11	U	11	U
ETHYLBENZENE	UG/KG	11	U	11	U	15	U	12	U	11	U	11	U
STYRENE	UG/KG	11	U	11	U	15	U	12	U	11	U	11	U
XYLENE, TOTAL	UG/KG	11	U	11	U	15	U	12	U	11	U	11	U

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Parameter	Units	AB214C 28-JUL-92		AB215A 09-JUL-92		AB215H 09-JUL-92		AB216A 13-JUL-92		AB216D 13-JUL-92		AB217A 13-JUL-92	
CHLOROMETHANE	UG/KG	16	U	11	U	11	U	11	U	11	U	11	U
BROMOMETHANE	UG/KG	16	U	11	U	11	U	11	U	11	U	11	U
VINYL CHLORIDE	UG/KG	16	U	11	U	11	U	11	U	11	U	11	U
CHLOROETHANE	UG/KG	16	U	11	U	11	U	11	U	11	U	11	U
METHYLENE CHLORIDE	UG/KG	2	JBU	11	U	11	U	11	U	11	U	11	U
ACETONE	UG/KG	8	BJU	6	BJU	7	BJU	11	U	8	JBU	7	BJU
CARBON DISULFIDE	UG/KG	16	U	11	U	11	U	11	U	11	U	11	U
1,1-DICHLOROETHENE	UG/KG	16	U	11	U	11	U	11	U	11	U	11	U
1,1-DICHLOROETHANE	UG/KG	8	J	11	U	11	U	11	U	11	U	11	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG	240		11	U	11	U	11	U	11	U	3	J
CHLOROFORM	UG/KG	16	U	11	U	11	U	11	U	11	U	11	U
1,2-DICHLOROETHANE	UG/KG	16	U	11	U	11	U	11	U	11	U	11	U
2-BUTANONE	UG/KG	16	U	11	U	11	U	10	BJU	11	U	13	BU
1,1,1-TRICHLOROETHANE	UG/KG	87		11	U	11	U	11	U	11	U	11	U
CARBON TETRACHLORIDE	UG/KG	16	U	11	U	11	U	11	U	11	U	11	U
BROMODICHLOROMETHANE	UG/KG	16	U	11	U	11	U	11	U	11	U	11	U
1,2-DICHLOROPROPANE	UG/KG	16	U	11	U	11	U	11	U	11	U	11	U
CIS-1,3-DICHLOROPROPENE	UG/KG	16	U	11	U	11	U	11	U	11	U	11	U
TRICHLOROETHENE	UG/KG	7700	D	12	B	5	JB	30		92		91	
CHLORODIBROMOMETHANE	UG/KG	16	U	11	U	11	U	11	U	11	U	11	U
1,1,2-TRICHLOROETHANE	UG/KG	3	J	11	U	11	U	11	U	11	U	11	U
BENZENE	UG/KG	16	U	11	U	11	U	11	U	11	U	11	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	16	U	11	U	11	U	11	U	11	U	11	U
BROMOFORM	UG/KG	16	U	11	U	11	U	11	U	11	U	11	U
4-METHYL-2-PENTANONE	UG/KG	16	U	11	U	11	U	11	U	11	U	11	U
2-HEXANONE	UG/KG	16	U	11	U	11	U	11	U	11	U	11	U
TETRACHLOROETHENE	UG/KG	120		11	U	11	U	11	U	11	U	11	U
1,1,2,2-TETRACHLOROETHANE	UG/KG	16	U	11	U	11	U	11	U	11	U	11	U
TOLUENE	UG/KG	16	U	11	U	4	JBU	11	U	11	U	11	U
CHLOROBENZENE	UG/KG	16	U	11	U	11	U	11	U	11	U	11	U
ETHYLBENZENE	UG/KG	16	U	11	U	11	U	11	U	11	U	11	U
STYRENE	UG/KG	16	U	11	U	11	U	11	U	11	U	11	U
XYLENE, TOTAL	UG/KG	16	U	11	U	11	U	11	U	11	U	11	U

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Parameter	Units	AB217D 13-JUL-92		AB218A 24-JUL-92		AB218H 24-JUL-92		AB231A 14-JUL-92		AB231H 14-JUL-92		AB233A 14-JUL-92	
CHLOROMETHANE	UG/KG	56	U	11	U	11	U	11	U	11	U	11	U
BROMOMETHANE	UG/KG	56	U	11	U	11	U	11	U	11	U	11	U
VINYL CHLORIDE	UG/KG	56	U	11	U	11	U	11	U	11	U	11	U
CHLOROETHANE	UG/KG	56	U	11	U	11	U	11	U	11	U	11	U
METHYLENE CHLORIDE	UG/KG	7	BJU	11	U	11	U	1	BJU	1	BJU	11	U
ACETONE	UG/KG	180	BU	7	BJU	31	BU	5	BJU	15	BU	5	BJU
CARBON DISULFIDE	UG/KG	10	JBU	11	U	11	U	11	U	11	U	11	U
1,1-DICHLOROETHENE	UG/KG	56	U	11	U	11	U	11	U	11	U	11	U
1,1-DICHLOROETHANE	UG/KG	56	U	11	U	11	U	11	U	11	U	11	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG	16	J	3	J	8	J	11	U	11	U	11	U
CHLOROFORM	UG/KG	56	U	11	U	11	U	11	U	11	U	11	U
1,2-DICHLOROETHANE	UG/KG	56	U	11	U	11	U	11	U	11	U	11	U
2-BUTANONE	UG/KG	52	BJU	10	BJU	13	BU	7	BJU	13	BU	11	BJU
1,1,1-TRICHLOROETHANE	UG/KG	56	U	3	J	0.9	J	11	U	11	U	11	U
CARBON TETRACHLORIDE	UG/KG	56	U	11	U	11	U	11	U	11	U	11	U
BROMODICHLOROMETHANE	UG/KG	56	U	11	U	11	U	11	U	11	U	11	U
1,2-DICHLOROPROPANE	UG/KG	56	U	11	U	11	U	11	U	11	U	11	U
CIS-1,3-DICHLOROPROPENE	UG/KG	56	U	11	U	11	U	11	U	11	U	11	U
TRICHLOROETHENE	UG/KG	700		24		31		18		7	JB	33	
CHLORODIBROMOMETHANE	UG/KG	56	U	11	U	11	U	11	U	11	U	11	U
1,1,2-TRICHLOROETHANE	UG/KG	56	U	11	U	11	U	11	U	11	U	11	U
BENZENE	UG/KG	56	U	11	U	11	U	11	U	11	U	11	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	56	U	11	U	11	U	11	U	11	U	11	U
BROMOFORM	UG/KG	56	U	11	U	11	U	11	U	11	U	11	U
4-METHYL-2-PENTANONE	UG/KG	56	U	11	U	11	U	11	U	11	U	11	U
2-HEXANONE	UG/KG	56	U	11	U	11	U	11	U	11	U	11	U
TETRACHLOROETHENE	UG/KG	56	U	11	U	11		11	U	11	U	11	U
1,1,2,2-TETRACHLOROETHANE	UG/KG	56	U	11	U	11	U	11	U	11	U	11	U
TOLUENE	UG/KG	12	JBU	11	U	11	U	11	U	1	JBU	11	U
CHLOROBENZENE	UG/KG	56	U	11	U	11	U	11	U	11	U	11	U
ETHYLBENZENE	UG/KG	56	U	11	U	11	U	11	U	11	U	11	U
STYRENE	UG/KG	56	U	11	U	11	U	11	U	11	U	11	U
XYLENE, TOTAL	UG/KG	56	U	11	U	11	U	11	U	11	U	11	U

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Parameter	Units	AB233H 14-JUL-92		AB234A 15-JUL-92		AB234A DUP 15-JUL-92		AB234D 15-JUL-92		AB235A 15-JUL-92		AB235H 15-JUL-92	
CHLOROMETHANE	UG/KG	11	U	11	U	11	U	11	U	12	U	11	U
BROMOMETHANE	UG/KG	11	U	11	U	11	U	11	U	12	U	11	U
VINYL CHLORIDE	UG/KG	11	U	11	U	11	U	11	U	12	U	11	U
CHLOROETHANE	UG/KG	11	U	11	U	11	U	11	U	12	U	11	U
METHYLENE CHLORIDE	UG/KG	1	JBU	11	U	11	U	11	U	12	U	11	U
ACETONE	UG/KG	27	BU	10	BJU	7	BJU	88	BU	7	BJU	11	BJU
CARBON DISULFIDE	UG/KG	11	U	11	U	11	U	11	U	12	U	11	U
1,1-DICHLOROETHENE	UG/KG	11	U	11	U	11	U	11	U	12	U	11	U
1,1-DICHLOROETHANE	UG/KG	11	U	11	U	11	U	11	U	12	U	11	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG	11	U	11	U	11	U	11	U	12	U	1	J
CHLOROFORM	UG/KG	11	U	11	U	11	U	11	U	12	U	11	U
1,2-DICHLOROETHANE	UG/KG	11	U	11	U	11	U	11	U	12	U	11	U
2-BUTANONE	UG/KG	10	BJU	15	BU	10	BJU	12	BU	10	BJU	10	BJU
1,1,1-TRICHLOROETHANE	UG/KG	11	U	11	U	11	U	11	U	12	U	2	J
CARBON TETRACHLORIDE	UG/KG	11	U	11	U	11	U	11	U	12	U	11	U
BROMODICHLOROMETHANE	UG/KG	11	U	11	U	11	U	11	U	12	U	11	U
1,2-DICHLOROPROPANE	UG/KG	11	U	11	U	11	U	11	U	12	U	11	U
CIS-1,3-DICHLOROPROPENE	UG/KG	11	U	11	U	11	U	11	U	12	U	11	U
TRICHLOROETHENE	UG/KG	10	JB	3	JB	4	JB	3	JB	10	JB	71	
CHLORODIBROMOMETHANE	UG/KG	11	U	11	U	11	U	11	U	12	U	11	U
1,1,2-TRICHLOROETHANE	UG/KG	11	U	11	U	11	U	11	U	12	U	11	U
BENZENE	UG/KG	11	U	11	U	11	U	11	U	12	U	11	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	11	U	11	U	11	U	11	U	12	U	11	U
BROMOFORM	UG/KG	11	U	11	U	11	U	11	U	12	U	11	U
4-METHYL-2-PENTANONE	UG/KG	11	U	11	U	11	U	11	U	12	U	11	U
2-HEXANONE	UG/KG	11	U	11	U	11	U	11	U	12	U	11	U
TETRACHLOROETHENE	UG/KG	11	U	11	U	11	U	11	U	12	U	11	U
1,1,2,2-TETRACHLOROETHANE	UG/KG	11	U	11	U	11	U	11	U	12	U	11	U
TOLUENE	UG/KG	11	U	11	U	11	U	11	U	12	U	11	U
CHLOROBENZENE	UG/KG	11	U	11	U	11	U	11	U	12	U	11	U
ETHYLBENZENE	UG/KG	11	U	11	U	11	U	11	U	12	U	11	U
STYRENE	UG/KG	11	U	11	U	11	U	11	U	12	U	11	U
XYLENE, TOTAL	UG/KG	11	U	11	U	11	U	11	U	12	U	11	U

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Parameter	Units	AB236A 15-JUL-92		AB236H 15-JUL-92		AB237A 27-JUL-92		AB237C 27-JUL-92		AB238A 27-JUL-92		AB238H 27-JUL-92	
CHLOROMETHANE	UG/KG	11	U	11	U	11	U	11	U	11	U	11	U
BROMOMETHANE	UG/KG	11	U	11	U	11	U	11	U	11	U	11	U
VINYL CHLORIDE	UG/KG	11	U	11	U	11	U	11	U	11	U	11	U
CHLOROETHANE	UG/KG	11	U	11	U	11	U	11	U	11	U	11	U
METHYLENE CHLORIDE	UG/KG	11	U	11	U	1	JBU	11	U	11	U	11	U
ACETONE	UG/KG	9	BJU	17	BU	9	BJU	8	BJU	6	BJU	17	BU
CARBON DISULFIDE	UG/KG	11	U	11	U	11	U	11	U	11	U	11	U
1,1-DICHLOROETHENE	UG/KG	11	U	11	U	11	U	11	U	11	U	11	U
1,1-DICHLOROETHANE	UG/KG	11	U	11	U	11	U	11	U	11	U	11	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG	11	U	11	U	5	J	7	J	11	U	11	U
CHLOROFORM	UG/KG	11	U	11	U	11	U	11	U	11	U	11	U
1,2-DICHLOROETHANE	UG/KG	11	U	11	U	11	U	11	U	11	U	11	U
2-BUTANONE	UG/KG	12	BU	11	BJU	11	U	10	BJU	9	BJU	10	BJU
1,1,1-TRICHLOROETHANE	UG/KG	11	U	11	U	11	U	11	U	11	U	11	U
CARBON TETRACHLORIDE	UG/KG	11	U	11	U	11	U	11	U	11	U	11	U
BROMODICHLOROMETHANE	UG/KG	11	U	11	U	11	U	11	U	11	U	11	U
1,2-DICHLOROPROPANE	UG/KG	11	U	11	U	11	U	11	U	11	U	11	U
CIS-1,3-DICHLOROPROPENE	UG/KG	11	U	11	U	11	U	11	U	11	U	11	U
TRICHLOROETHENE	UG/KG	23		14	B	16		18		11	U	2	JB
CHLORODIBROMOMETHANE	UG/KG	11	U	11	U	11	U	11	U	11	U	11	U
1,1,2-TRICHLOROETHANE	UG/KG	11	U	11	U	11	U	11	U	11	U	11	U
BENZENE	UG/KG	11	U	11	U	11	U	11	U	11	U	11	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	11	U	11	U	11	U	11	U	11	U	11	U
BROMOFORM	UG/KG	11	U	11	U	11	U	11	U	11	U	11	U
4-METHYL-2-PENTANONE	UG/KG	11	U	11	U	11	U	11	U	11	U	11	U
2-HEXANONE	UG/KG	11	U	11	U	11	U	11	U	11	U	11	U
TETRACHLOROETHENE	UG/KG	11	U	11	U	11	U	3	J	11	U	11	U
1,1,2,2-TETRACHLOROETHANE	UG/KG	11	U	11	U	11	U	11	U	11	U	11	U
TOLUENE	UG/KG	11	U	11	U	11	U	11	U	11	U	11	U
CHLOROBENZENE	UG/KG	11	U	11	U	11	U	11	U	11	U	11	U
ETHYLBENZENE	UG/KG	11	U	11	U	11	U	11	U	11	U	11	U
STYRENE	UG/KG	11	U	11	U	11	U	11	U	11	U	11	U
XYLENE, TOTAL	UG/KG	11	U	11	U	11	U	11	U	11	U	11	U

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Parameter	Units	AB238H DUP 27-JUL-92		AB239A 27-JUL-92		AB239G 27-JUL-92		AB240A 27-JUL-92		AB240H 27-JUL-92		AB241A 27-JUL-92	
CHLOROMETHANE	UG/KG	12	U	11	U	11	U	11	U	11	U	11	U
BROMOMETHANE	UG/KG	12	U	11	U	11	U	11	U	11	U	11	U
VINYL CHLORIDE	UG/KG	12	U	11	U	11	U	11	U	11	U	11	U
CHLOROETHANE	UG/KG	12	U	11	U	11	U	11	U	11	U	11	U
METHYLENE CHLORIDE	UG/KG	12	U	11	U	11	U	11	U	11	U	11	U
ACETONE	UG/KG	16	BU	11	U	16	BU	8	BJU	20	BU	7	BJU
CARBON DISULFIDE	UG/KG	12	U	11	U	11	U	11	U	11	U	11	U
1,1-DICHLOROETHENE	UG/KG	12	U	11	U	11	U	11	U	11	U	11	U
1,1-DICHLOROETHANE	UG/KG	12	U	11	U	11	U	11	U	11	U	1	J
1,2-DICHLOROETHENE (TOTAL)	UG/KG	12	U	5	J	3	J	11	U	1	J	14	
CHLOROFORM	UG/KG	12	U	11	U	11	U	11	U	11	U	11	U
1,2-DICHLOROETHANE	UG/KG	12	U	11	U	11	U	11	U	11	U	11	U
2-BUTANONE	UG/KG	7	BJU	11	U	12	BU	10	BJU	13	BU	9	BJU
1,1,1-TRICHLOROETHANE	UG/KG	12	U	11	U	1	J	11	U	11	U	4	J
CARBON TETRACHLORIDE	UG/KG	12	U	11	U	11	U	11	U	11	U	11	U
BROMODICHLOROMETHANE	UG/KG	12	U	11	U	11	U	11	U	11	U	11	U
1,2-DICHLOROPROPANE	UG/KG	12	U	11	U	11	U	11	U	11	U	11	U
CIS-1,3-DICHLOROPROPENE	UG/KG	12	U	11	U	11	U	11	U	11	U	11	U
TRICHLOROETHENE	UG/KG	4	JB	6	JB	19		3	JB	10	JB	73	
CHLORODIBROMOMETHANE	UG/KG	12	U	11	U	11	U	11	U	11	U	11	U
1,1,2-TRICHLOROETHANE	UG/KG	12	U	11	U	11	U	11	U	11	U	11	U
BENZENE	UG/KG	12	U	11	U	11	U	11	U	11	U	11	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	12	U	11	U	11	U	11	U	11	U	11	U
BROMOFORM	UG/KG	12	U	11	U	11	U	11	U	11	U	11	U
4-METHYL-2-PENTANONE	UG/KG	12	U	11	U	11	U	11	U	11	U	11	U
2-HEXANONE	UG/KG	12	U	11	U	11	U	11	U	11	U	11	U
TETRACHLOROETHENE	UG/KG	12	U	11	U	2	J	11	U	11	U	11	U
1,1,2,2-TETRACHLOROETHANE	UG/KG	12	U	11	U	11	U	11	U	11	U	11	U
TOLUENE	UG/KG	12	U	11	U	11	U	11	U	11	U	11	U
CHLOROBENZENE	UG/KG	12	U	11	U	11	U	11	U	11	U	11	U
ETHYLBENZENE	UG/KG	12	U	11	U	11	U	11	U	11	U	11	U
STYRENE	UG/KG	12	U	11	U	11	U	11	U	11	U	11	U
XYLENE, TOTAL	UG/KG	12	U	11	U	11	U	11	U	11	U	11	U

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RESULTS FOR VOLATILE ORGANIC COMPOUND ANALYSES
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Parameter	Units	AB241C 27-JUL-92		AB242A 28-JUL-92		AB242B 28-JUL-92		AB244A 28-JUL-92		AB244H 28-JUL-92		AB244H DUP 28-JUL-92	
CHLOROMETHANE	UG/KG	10	U	11	U	11	U	11	U	12	U	12	U
BROMOMETHANE	UG/KG	10	U	11	U	11	U	11	U	12	U	12	U
VINYL CHLORIDE	UG/KG	10	U	11	U	11	U	11	U	12	U	12	U
CHLOROETHANE	UG/KG	10	U	11	U	11	U	11	U	12	U	12	U
METHYLENE CHLORIDE	UG/KG	10	U	11	U	11	U	11	U	12	U	12	U
ACETONE	UG/KG	7	BJU	11	BU	6	BJU	12	BU	12	BU	8	BJU
CARBON DISULFIDE	UG/KG	10	U	11	U	11	U	11	U	12	U	12	U
1,1-DICHLOROETHENE	UG/KG	10	U	11	U	11	U	11	U	12	U	12	U
1,1-DICHLOROETHANE	UG/KG	10	U	11	U	1	J	11	U	12	U	12	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG	10	U	12		17		11	U	12	U	12	U
CHLOROFORM	UG/KG	10	U	11	U	11	U	11	U	12	U	12	U
1,2-DICHLOROETHANE	UG/KG	10	U	11	U	11	U	11	U	12	U	12	U
2-BUTANONE	UG/KG	9	BJU	10	BJU	10	JBU	10	BJU	11	BJU	12	U
1,1,1-TRICHLOROETHANE	UG/KG	10	U	3	J	15		11	U	12	U	12	U
CARBON TETRACHLORIDE	UG/KG	10	U	11	U	11	U	11	U	12	U	12	U
BROMODICHLOROMETHANE	UG/KG	10	U	11	U	11	U	11	U	12	U	12	U
1,2-DICHLOROPROPANE	UG/KG	10	U	11	U	11	U	11	U	12	U	12	U
CIS-1,3-DICHLOROPROPENE	UG/KG	10	U	11	U	11	U	11	U	12	U	12	U
TRICHLOROETHENE	UG/KG	10	U	140		340	E	11	U	4	JB	3	JB
CHLORODIBROMOMETHANE	UG/KG	10	U	11	U	11	U	11	U	12	U	12	U
1,1,2-TRICHLOROETHANE	UG/KG	10	U	11	U	11	U	11	U	12	U	12	U
BENZENE	UG/KG	10	U	11	U	11	U	11	U	12	U	12	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	10	U	11	U	11	U	11	U	12	U	12	U
BROMOFORM	UG/KG	10	U	11	U	11	U	11	U	12	U	12	U
4-METHYL-2-PENTANONE	UG/KG	10	U	11	U	11	U	11	U	12	U	12	U
2-HEXANONE	UG/KG	10	U	11	U	11	U	11	U	12	U	12	U
TETRACHLOROETHENE	UG/KG	10	U	5	J	17		11	U	12	U	12	U
1,1,2,2-TETRACHLOROETHANE	UG/KG	10	U	11	U	11	U	11	U	12	U	12	U
TOLUENE	UG/KG	10	U	11	U	11	U	11	U	12	U	12	U
CHLOROBENZENE	UG/KG	10	U	11	U	11	U	11	U	12	U	12	U
ETHYLBENZENE	UG/KG	10	U	11	U	11	U	11	U	12	U	12	U
STYRENE	UG/KG	10	U	11	U	11	U	11	U	12	U	12	U
XYLENE, TOTAL	UG/KG	10	U	11	U	11	U	11	U	12	U	12	U

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Parameter	Units	AB245A 29-JUL-92		AB245G 29-JUL-92		AB246A 29-JUL-92		AB246B 29-JUL-92		AB247A 29-JUL-92		AB247C 29-JUL-92	
CHLOROMETHANE	UG/KG	13	U	11	U	11	U	14	U	11	U	11	U
BROMOMETHANE	UG/KG	13	U	11	U	11	U	14	U	11	U	11	U
VINYL CHLORIDE	UG/KG	13	U	11	U	11	U	14	U	11	U	11	U
CHLOROETHANE	UG/KG	13	U	11	U	11	U	14	U	11	U	11	U
METHYLENE CHLORIDE	UG/KG	13	U	11	U	11	U	14	U	11	U	11	U
ACETONE	UG/KG	8	BJU	10	BJU	8	BJU	10	BJU	7	BJU	18	BU
CARBON DISULFIDE	UG/KG	13	U	11	U	11	U	14	U	11	U	11	U
1,1-DICHLOROETHENE	UG/KG	13	U	11	U	11	U	14	U	11	U	11	U
1,1-DICHLOROETHANE	UG/KG	13	U	11	U	11	U	14	U	11	U	11	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG	13	U	11	U	11	U	14	U	11	U	11	U
CHLOROFORM	UG/KG	13	U	11	U	11	U	14	U	11	U	11	U
1,2-DICHLOROETHANE	UG/KG	13	U	11	U	11	U	14	U	11	U	11	U
2-BUTANONE	UG/KG	10	BJU	8	BJU	11	U	12	BJU	9	BJU	9	JBU
1,1,1-TRICHLOROETHANE	UG/KG	13	U	11	U	11	U	1	J	5	J	11	U
CARBON TETRACHLORIDE	UG/KG	13	U	11	U	11	U	14	U	11	U	11	U
BROMODICHLOROMETHANE	UG/KG	13	U	11	U	11	U	14	U	11	U	11	U
1,2-DICHLOROPROPANE	UG/KG	13	U	11	U	11	U	14	U	11	U	11	U
CIS-1,3-DICHLOROPROPENE	UG/KG	13	U	11	U	11	U	14	U	11	U	11	U
TRICHLOROETHENE	UG/KG	13	U	1	JB	6	JB	31		210		20	
CHLORODIBROMOMETHANE	UG/KG	13	U	11	U	11	U	14	U	11	U	11	U
1,1,2-TRICHLOROETHANE	UG/KG	13	U	11	U	11	U	14	U	11	U	11	U
BENZENE	UG/KG	13	U	11	U	11	U	14	U	11	U	11	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	13	U	11	U	11	U	14	U	11	U	11	U
BROMOFORM	UG/KG	13	U	11	U	11	U	14	U	11	U	11	U
4-METHYL-2-PENTANONE	UG/KG	13	U	11	U	11	U	14	U	11	U	11	U
2-HEXANONE	UG/KG	13	U	11	U	11	U	14	U	11	U	11	U
TETRACHLOROETHENE	UG/KG	13	U	11	U	11	U	14	U	11	U	11	U
1,1,2,2-TETRACHLOROETHANE	UG/KG	13	U	11	U	11	U	14	U	11	U	11	U
TOLUENE	UG/KG	13	U	11	U	11	U	14	U	11	U	11	U
CHLOROBENZENE	UG/KG	13	U	11	U	11	U	14	U	11	U	11	U
ETHYLBENZENE	UG/KG	13	U	11	U	11	U	14	U	11	U	11	U
STYRENE	UG/KG	13	U	11	U	11	U	14	U	11	U	11	U
XYLENE, TOTAL	UG/KG	13	U	11	U	11	U	14	U	11	U	11	U

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Parameter	Units	AB248A 30-JUL-92		AB248C 30-JUL-92		AB248C DUP 30-JUL-92		AB251A 29-JUL-92		AB251C 29-JUL-92		AB252A 30-JUL-92	
CHLOROMETHANE	UG/KG	11	U	65	U	35	U	11	U	62	U	11	U
BROMOMETHANE	UG/KG	11	U	65	U	35	U	11	U	62	U	11	U
VINYL CHLORIDE	UG/KG	11	U	65	U	35	U	11	U	62	U	11	U
CHLOROETHANE	UG/KG	11	U	65	U	35	U	11	U	62	U	11	U
METHYLENE CHLORIDE	UG/KG	11	U	65	U	4	JBU	11	U	62	U	11	U
ACETONE	UG/KG	7	BJU	36	BJU	42	BU	7	BJU	44	BJU	28	BU
CARBON DISULFIDE	UG/KG	11	U	65	U	35	U	11	U	62	U	11	U
1,1-DICHLOROETHENE	UG/KG	11	U	65	U	35	U	11	U	62	U	11	U
1,1-DICHLOROETHANE	UG/KG	11	U	8	J	9	J	11	U	52	J	11	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG	13		150		120		1	J	640		2	J
CHLOROFORM	UG/KG	11	U	65	U	35	U	11	U	62	U	11	U
1,2-DICHLOROETHANE	UG/KG	11	U	65	U	35	U	11	U	62	U	11	U
2-BUTANONE	UG/KG	12	BU	54	BJU	33	BJU	9	BJU	47	JBU	16	BU
1,1,1-TRICHLOROETHANE	UG/KG	2	J	73		51		11	U	79		1	J
CARBON TETRACHLORIDE	UG/KG	11	U	65	U	35	U	11	U	62	U	11	U
BROMODICHLOROMETHANE	UG/KG	11	U	65	U	35	U	11	U	62	U	11	U
1,2-DICHLOROPROPANE	UG/KG	11	U	65	U	35	U	11	U	62	U	11	U
CIS-1,3-DICHLOROPROPENE	UG/KG	11	U	65	U	35	U	11	U	62	U	11	U
TRICHLOROETHENE	UG/KG	92		1200		700	E	5	JB	4000	D	67	
CHLORODIBROMOMETHANE	UG/KG	11	U	65	U	35	U	11	U	62	U	11	U
1,1,2-TRICHLOROETHANE	UG/KG	11	U	65	U	35	U	11	U	62	U	11	U
BENZENE	UG/KG	11	U	65	U	35	U	11	U	62	U	11	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	11	U	65	U	35	U	11	U	62	U	11	U
BROMOFORM	UG/KG	11	U	65	U	35	U	11	U	62	U	11	U
4-METHYL-2-PENTANONE	UG/KG	11	U	65	U	35	U	11	U	62	U	11	U
2-HEXANONE	UG/KG	11	U	65	U	35	U	11	U	62	U	11	U
TETRACHLOROETHENE	UG/KG	6	J	160		89		11	U	140		0.8	J
1,1,2,2-TETRACHLOROETHANE	UG/KG	11	U	65	U	35	U	11	U	62	U	11	U
TOLUENE	UG/KG	11	U	65	U	35	U	11	U	62	U	11	U
CHLOROBENZENE	UG/KG	11	U	65	U	35	U	11	U	62	U	11	U
ETHYLBENZENE	UG/KG	11	U	65	U	35	U	11	U	62	U	11	U
STYRENE	UG/KG	11	U	65	U	35	U	11	U	62	U	11	U
XYLENE, TOTAL	UG/KG	11	U	65	U	35	U	11	U	62	U	11	U

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Parameter	Units	AB252H 30-JUL-92		AB253A 29-JUL-92		AB253H 29-JUL-92		AB254A 30-JUL-92		AB254A DUP 30-JUL-92		AB254C 30-JUL-92	
CHLOROMETHANE	UG/KG	11	U	11	U	71	U	54	U	54	U	26	U
BROMOMETHANE	UG/KG	11	U	11	U	71	U	54	U	54	U	26	U
VINYL CHLORIDE	UG/KG	11	U	11	U	71	U	54	U	54	U	26	U
CHLOROETHANE	UG/KG	11	U	11	U	71	U	54	U	54	U	26	U
METHYLENE CHLORIDE	UG/KG	11	U	11	U	71	U	54	U	54	U	2	JBU
ACETONE	UG/KG	9	BJU	7	BJU	140	BU	24	BJU	35	BJU	59	BU
CARBON DISULFIDE	UG/KG	11	U	11	U	41	JBU	54	U	54	U	26	U
1,1-DICHLOROETHENE	UG/KG	11	U	11	U	71	U	54	U	54	U	26	U
1,1-DICHLOROETHANE	UG/KG	11	U	11	U	56	J	54	U	54	U	2	J
1,2-DICHLOROETHENE (TOTAL)	UG/KG	11	U	11	U	260		190		150		47	
CHLOROFORM	UG/KG	11	U	11	U	71	U	54	U	54	U	26	U
1,2-DICHLOROETHANE	UG/KG	11	U	11	U	71	U	54	U	54	U	26	U
2-BUTANONE	UG/KG	7	BJU	9	JBU	74	BU	39	BJU	54	U	27	BU
1,1,1-TRICHLOROETHANE	UG/KG	11	U	11	U	71	U	25	J	6	J	10	J
CARBON TETRACHLORIDE	UG/KG	11	U	11	U	71	U	54	U	54	U	26	U
BROMODICHLOROMETHANE	UG/KG	11	U	11	U	71	U	54	U	54	U	26	U
1,2-DICHLOROPROPANE	UG/KG	11	U	11	U	71	U	54	U	54	U	26	U
CIS-1,3-DICHLOROPROPENE	UG/KG	11	U	11	U	71	U	54	U	54	U	26	U
TRICHLOROETHENE	UG/KG	3	JB	11	U	1800	E	4100	D	660		370	
CHLORODIBROMOMETHANE	UG/KG	11	U	11	U	71	U	54	U	54	U	26	U
1,1,2-TRICHLOROETHANE	UG/KG	11	U	11	U	71	U	54	U	54	U	26	U
BENZENE	UG/KG	11	U	11	U	71	U	54	U	54	U	26	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	11	U	11	U	71	U	54	U	54	U	26	U
BROMOFORM	UG/KG	11	U	11	U	71	U	54	U	54	U	26	U
4-METHYL-2-PENTANONE	UG/KG	11	U	11	U	71	U	54	U	54	U	26	U
2-HEXANONE	UG/KG	11	U	11	U	71	U	54	U	54	U	26	U
TETRACHLOROETHENE	UG/KG	11	U	11	U	62	J	13	J	54	U	9	J
1,1,2,2-TETRACHLOROETHANE	UG/KG	11	U	11	U	71	U	54	U	54	U	26	U
TOLUENE	UG/KG	11	U	11	U	71	U	54	U	54	U	26	U
CHLOROBENZENE	UG/KG	11	U	11	U	71	U	54	U	54	U	26	U
ETHYLBENZENE	UG/KG	11	U	11	U	71	U	54	U	54	U	26	U
STYRENE	UG/KG	11	U	11	U	71	U	54	U	54	U	26	U
XYLENE, TOTAL	UG/KG	11	U	11	U	71	U	54	U	54	U	26	U

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Parameter	Units	AT007A 17-JUN-92		AT007C 17-JUN-92		AT008A 17-JUN-92		AT008D 17-JUN-92		AT008D DUP 17-JUN-92		AT009B1 23-JUN-92	
CHLOROMETHANE	UG/KG	11	U	22	U	12	U	13	U	12	U	57	U
BROMOMETHANE	UG/KG	11	U	22	U	12	U	13	U	12	U	57	U
VINYL CHLORIDE	UG/KG	11	U	22	U	12	U	13	U	12	U	57	U
CHLOROETHANE	UG/KG	11	U	22	U	12	U	13	U	12	U	57	U
METHYLENE CHLORIDE	UG/KG	11	U	22	U	12	U	13	U	12	U	57	U
ACETONE	UG/KG	8	JBU	22	U	10	BJU	210	B	85	BU	29	BJU
CARBON DISULFIDE	UG/KG	2	JBU	22	U	12	U	13	U	12	U	57	U
1,1-DICHLOROETHENE	UG/KG	11	U	22	U	12	U	13	U	12	U	57	U
1,1-DICHLOROETHANE	UG/KG	3	J	15	J	12	U	13	U	12	U	73	JD
1,2-DICHLOROETHENE (TOTAL)	UG/KG	24		140		2	J	1000	JD	890	JD	590	JD
CHLOROFORM	UG/KG	0.5	JBU	22	U	12	U	13	U	12	U	57	U
1,2-DICHLOROETHANE	UG/KG	11	U	22	U	12	U	13	U	12	U	57	U
2-BUTANONE	UG/KG	11	U	22	U	12	U	13	U	12	U	57	U
1,1,1-TRICHLOROETHANE	UG/KG	1	J	4	J	12	U	13	U	12	U	500	JD
CARBON TETRACHLORIDE	UG/KG	11	U	22	U	12	U	13	U	12	U	57	U
BROMODICHLOROMETHANE	UG/KG	11	U	22	U	12	U	13	U	12	U	57	U
1,2-DICHLOROPROPANE	UG/KG	11	U	22	U	12	U	13	U	12	U	57	U
CIS-1,3-DICHLOROPROPENE	UG/KG	11	U	22	U	12	U	13	U	12	U	57	U
TRICHLOROETHENE	UG/KG	27		280		9	JB	11000	D	7500	D	1500	D
CHLORODIBROMOMETHANE	UG/KG	11	U	22	U	12	U	13	U	12	U	57	U
1,1,2-TRICHLOROETHANE	UG/KG	11	U	22	U	12	U	13	U	12	U	57	U
BENZENE	UG/KG	11	U	14	J	12	U	1	J	12	U	57	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	11	U	22	U	12	U	13	U	12	U	57	U
BROMOFORM	UG/KG	11	U	22	U	12	U	13	U	12	U	57	U
4-METHYL-2-PENTANONE	UG/KG	11	U	22	U	12	U	1	J	12	U	57	U
2-HEXANONE	UG/KG	11	U	22	U	12	U	2	J	12	U	57	U
TETRACHLOROETHENE	UG/KG	11	U	21	J	12	U	13	U	12	U	11000	D
1,1,2,2-TETRACHLOROETHANE	UG/KG	11	U	22	U	12	U	13	U	12	U	57	U
TOLUENE	UG/KG	11	U	3	JBU	12	U	13	U	12	U	57	U
CHLOROBENZENE	UG/KG	11	U	22	U	12	U	13	U	12	U	57	U
ETHYLBENZENE	UG/KG	11	U	22	U	12	U	13	U	12	U	57	U
STYRENE	UG/KG	11	U	22	U	12	U	13	U	12	U	57	U
XYLENE, TOTAL	UG/KG	11	U	22	U	12	U	13	U	12	U	230	JD

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A3

RESULTS FOR VOLATILE ORGANIC COMPOUND ANALYSES
SUB-AREA A3

Parameter	Units	AT009B1 DUP 23-JUN-92		AT009D1 24-JUN-92		AT009D2 24-JUN-92		AT009D3 24-JUN-92		AT009E1 25-JUN-92		AT009E2 26-JUN-92	
CHLOROMETHANE	UG/KG	57	U	67000	U	1300	U	11	U	10	U	52	U
BROMOMETHANE	UG/KG	57	U	67000	U	1300	U	11	U	10	U	52	U
VINYL CHLORIDE	UG/KG	57	U	67000	U	1300	U	11	U	10	U	52	U
CHLOROETHANE	UG/KG	57	U	67000	U	1300	U	11	U	10	U	52	U
METHYLENE CHLORIDE	UG/KG	57	U	67000	U	1300	U	1	BJU	1	BJU	5	BJU
ACETONE	UG/KG	20	BJU	67000	U	1300	U	4	JBU	2	JBU	52	U
CARBON DISULFIDE	UG/KG	57	U	67000	U	1300	U	11	U	10	U	52	U
1,1-DICHLOROETHENE	UG/KG	57	U	67000	U	1300	U	11	U	10	U	52	U
1,1-DICHLOROETHANE	UG/KG	41	J	34000	J	1300	U	11	U	10	U	52	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG	710	JD	67000	U	230	J	9	J	6	J	31	J
CHLOROFORM	UG/KG	57	U	67000	U	1300	U	11	U	10	U	52	U
1,2-DICHLOROETHANE	UG/KG	57	U	67000	U	1300	U	11	U	10	U	52	U
2-BUTANONE	UG/KG	57	U	3500000	D	1300	U	3	JBU	10	U	52	U
1,1,1-TRICHLOROETHANE	UG/KG	1200	JD	2600000	D	400	J	0.8	J	0.8	J	3	J
CARBON TETRACHLORIDE	UG/KG	57	U	67000	U	1300	U	11	U	10	U	52	U
BROMODICHLOROMETHANE	UG/KG	57	U	67000	U	1300	U	11	U	10	U	52	U
1,2-DICHLOROPROPANE	UG/KG	57	U	67000	U	1300	U	11	U	10	U	52	U
CIS-1,3-DICHLOROPROPENE	UG/KG	57	U	67000	U	1300	U	11	U	10	U	52	U
TRICHLOROETHENE	UG/KG	2700	D	120000		8800		5	JB	7	JB	3	JB
CHLORODIBROMOMETHANE	UG/KG	57	U	67000	U	1300	U	11	U	10	U	52	U
1,1,2-TRICHLOROETHANE	UG/KG	57	U	67000	U	1300	U	11	U	10	U	52	U
BENZENE	UG/KG	57	U	67000	U	1300	U	11	U	10	U	52	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	57	U	67000	U	1300	U	11	U	10	U	52	U
BROMOFORM	UG/KG	57	U	67000	U	1300	U	11	U	10	U	52	U
4-METHYL-2-PENTANONE	UG/KG	57	U	67000	U	1300	U	11	U	10	U	52	U
2-HEXANONE	UG/KG	57	U	67000	U	1300	U	11	U	10	U	52	U
TETRACHLOROETHENE	UG/KG	25000	D	1200000		28000	D	2	J	3	J	2	J
1,1,2,2-TETRACHLOROETHANE	UG/KG	57	U	67000	U	1300	U	11	U	10	U	52	U
TOLUENE	UG/KG	57	U	190000		1300	U	11	U	6	JBU	52	U
CHLOROBENZENE	UG/KG	57	U	67000	U	1300	U	11	U	10	U	52	U
ETHYLBENZENE	UG/KG	57	U	140000		1300	U	11	U	10	U	52	U
STYRENE	UG/KG	57	U	67000	U	1300	U	11	U	10	U	52	U
XYLENE, TOTAL	UG/KG	520	JD	580000		440	J	11	U	10	U	17	J

AREA D

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. DB029
SHEET NO. 1 OF 1

PROJECT NAME NIROP RI Soils
PROJECT NO. 2313.13
LOCATION Fridley, MN
INSTALLATION N/A
CONTRACTOR Bergerson-Caswell
SURFACE ELEV. 835.9
DRILLING METHOD 4-1/4" ID HSA
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3	16	18	M		SILTY SAND (SM), trace gravel, trace clay, poorly-graded, dark reddish brown 5YR 3/2, medium dense, pieces of glass, wood, cinders (FILL).
B	SS3	5	16	M		POORLY-GRADED SAND (SP), fine- to medium-grained, dark brown 7.5YR 4/3, loose.
					5	As above, trace coarse-grained sand, brown 10YR 4/3.
C	SS3	26	16	M		As above, little coarse-grained sand.
D	SS3	27	16	M		WELL-GRADED SAND (SW), fine- to coarse-grained, little gravel, trace silt, brown 10YR 4/3, medium dense.
E	SS3	38	18	M	10	POORLY-GRADED SAND (SP), very fine-grained, some silt, dense.
						As above.
						At 11.8 ft., 1 in. dark brown silt seam.
F	SS3	26	19	M		As above, 1 - 2 mm. silt laminations, (SP-SM).
					15	
G	SS3	26	20	M		As above, at 16 ft., 1-1/2 in. silt seam.
H	SS3	20	20	M		As above, no laminations.
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUN 11 92
DATE COMPLETED JUN 11 92
RIG CME-55
CREW CHIEF C. Wilkens
LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. DB030
SHEET NO. 1 OF 1

PROJECT NAME NIROP RI Soils
LOCATION Fridley, MN
CONTRACTOR Bergerson-Caswell
DRILLING METHOD 4-1/4" ID HSA

PROJECT NO. 2313.13
INSTALLATION N/A
SURFACE ELEV. 836.0
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3	19	16	M		WELL-GRADED SAND (SW), little gravel, trace silt, dark brown 10YR 3/3, medium dense.
						At 2.3 ft., 3 in. black silty sand seam.
B	SS3	17	20	M		CLAYEY SAND (SC), trace silt, olive gray 5Y 4/2, medium dense.
				M	5	POORLY-GRADED SAND (SP), fine- to medium-grained, trace coarse-grained, light yellowish-brown 2.5Y 6/3, medium dense.
C	SS3	13	22	M		As above.
D	SS3	50	10	M		As above. Rock lodged in tip of spoon.
E	SS3	24	20	M	10	POORLY-GRADED SAND (SP), very fine-grained, little silt, brown 10YR 5/3, medium dense.
F	SS3	19	21	M		As above, occasional 1 - 2 mm. laminations.
					15	
G	SS3	13	24	M		As above, no laminations, little medium-grained sand.
H	SS3	22	22	M		WELL-GRADED SAND (SW), trace gravel, trace silt, brown 10YR 5/3, meidum dense.
						At 19.3 ft., 1 in. silt seam.
					20	At 19.5 ft., 1 in. silt seam.
						End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUN 12 92
DATE COMPLETED JUN 12 92
RIG CME-55
CREW CHIEF C. Wilkens
LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. DB031
SHEET NO. 1 OF 1

PROJECT NAME NIROP RI Soils
LOCATION Fridley, MN
CONTRACTOR Bergerson-Caswell
DRILLING METHOD 4-1/4" ID HSA

PROJECT NO. 2313.13
INSTALLATION N/A
SURFACE ELEV. 835.7
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3	35	17	M		SILTY SAND (SM), little clay, trace gravel, black 7.5YR 2/0 to yellowish-brown 10YR 5/8 medium dense, pieces of concrete, (FILL).
B	SS3	75	10	M		As above, some gravel, pieces of metal, glass, and wood, (FILL).
					5	
C	SS3	33	2			Refusal - concrete lodged in spoon.
D	SS3	53	14			Turpentine odor comming up through auger.
						As above, concrete, (FILL).
E	SS3	33	4	M	10	
						Concrete lodged in spoon.
F	SS3	45	24	M		SILTY SAND (SM), very fine-grained, little silt, dark grayish-brown 2.5Y 4/2, dense, extremely strong odor, turpentine, solvent-like.
					15	
G	SS3	33	24	M		As above, dark yellowish-brown 10YR 4/4, no odor.
H	SS3	30	21	M		As above.
					20	
						End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUN 11 92
DATE COMPLETED JUN 11 92
RIG CME-55
CREW CHIEF C. Wilkens
LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

PROJECT NAME	NIROP RI Soils	BORING NO.	DB032
LOCATION	Fridley, MN	SHEET NO.	1 OF 1
CONTRACTOR	Bergerson-Caswell	PROJECT NO.	2313.13
DRILLING METHOD	4-1/4" ID HSA	INSTALLATION	N/A
		SURFACE ELEV.	835.9
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3	24	14	M		SILTY SAND (SM), trace gravel, trace clay, black 10YR 2/1, pieces of asphalt, (FILL).
B	SS3	26	3	M		CLAY (CL), little sand, trace gravel, mottled grayish-brown 2.5Y and dark yellowish-brown 10YR 3/6. As above, no gravel, dark grayish-brown 2.5Y 4/2.
					5	
C	SS3	31	20	M		SILTY SAND (SM), trace clay, fine- to coarse-grained, very dark grayish-brown 10YR 3/2.
D	SS3	24	19	M		POORLY-GRADED SAND (SP), fine- to medium-grained.
						WELL-GRADED SAND (SW), fine- to coarse-grained, dark brown 10YR 3/3.
E	SS3	44	20	M	10	POORLY-GRADED SAND (SP), as above. As above, trace coarse-grained sand, brown 10YR 4/3.
F	SS3	34	22	M		As above, little silt.
					15	
G	SS3	60	19	M		WELL-GRADED SAND (SW), fine- to coarse-grained, trace gravel, trace silt, dark yellowish-brown 10YR 4/4.
H	SS3	35	20	M		POORLY-GRADED SAND (SP), as above, occasional seams of well-graded sand.
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED	JUN 11 92
DATE COMPLETED	JUN 11 92
RIG	CME-55
CREW CHIEF	C. Wilkens
LOGGED	L. Page
CHECKED	R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽	None
AT COMPLETION ▼	
AFTER DRILLING	
CAVE-IN: DATE/TIME	DEPTH
WATER: DATE/TIME	DEPTH

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. DB033
SHEET NO. 1 OF 1
PROJECT NO. 2313.13
INSTALLATION N/A
SURFACE ELEV. 835.7
BOREHOLE DIA. 8 IN.

PROJECT NAME NIROP RI Soils
LOCATION Fridley, MN
CONTRACTOR Bergerson-Caswell
DRILLING METHOD 4-1/4" ID HSA

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3	30	20	M		SANDY SILT (ML), trace gravel, very dark brown 10YR 2/2, dense, slightly plastic, no odor, (FILL).
B	SS3	10	14	M		As above, with SILTY SAND (SM) lenses, yellowish-brown 10YR 5/6, no odor, (FILL).
					5	
C	SS3	12	18	M		Alternating layers of SANDY SILT (ML) and SILTY SAND (SM), as above, dark brown 10YR 4/3 to very dark brown 10YR 7/2, no odor, (FILL).
D	SS3	25	18	M		As above, very dark brown 10YR 2/2 to dark yellowish-brown 10YR 4/4, trace foundry slag, (FILL).
E	SS3	32	20		10	
				M		POORLY-GRADED SAND (SP), medium-grained, well-rounded, dark yellowish brown 10YR 4/4, dense, no odor.
F	SS3	37	20	M		As above, brown 10YR 5/3, few gravel in 1 in. seams, no odor.
					15	
G	SS3	37	22	M		As above, no gravel.
H	SS3	36	22	M		As above, nearing saturation (water).
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 7 92
DATE COMPLETED JUL 7 92
RIG CME-35
CREW CHIEF C. Wilkens
LOGGED G. Keating CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. DB034
SHEET NO. 1 OF 1
PROJECT NAME NIROP RI Soils
PROJECT NO. 2313.13
LOCATION Fridley, MN
INSTALLATION N/A
CONTRACTOR Bergerson-Caswell
SURFACE ELEV. 835.2
DRILLING METHOD 4-1/4" ID HSA
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3	17	14	M		SILTY SAND (SM), trace clay, black 7.5 YR 2/0, medium dense, (FILL).
B	SS3	17	18	M		SILTY SAND (SM), little gravel, trace clay, very dark grayish-brown 10YR 3/2 to yellowish-brown 10YR 5/6, medium dense, some slag, little green oxidation.
					5	
C	SS3	12	20	M		As above, black 10YR 2/1, little slag, no green oxidation, (FILL).
D	SS3	23	21	M		WELL-GRADED SAND (SW), fine- to coarse-grained, brown 10YR 5/3, medium dense.
E	SS3	39	20	M	10	As above, little gravel, dense.
F	SS3	47	21	M		POORLY-GRADED SAND (SP), fine-grained, brown 10YR 5/3, dense.
					15	
G	SS3	44	18	M		As above, 1-2 mm laminations of fine black sand, trace silt.
H	SS3	30	18	W	▽	As above, no laminations, wet at 18.0 ft.
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 7 92
DATE COMPLETED JUL 7 92
RIG CME-35
CREW CHIEF C. Wilkens
LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ 18.0 Ft.
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

AREA E

LOG OF TEST BORING

F-203 (R 01-87)

PROJECT NAME	NIROP RI Soils	BORING NO.	EB001
LOCATION	Fridley, MN	SHEET NO.	1 OF 1
CONTRACTOR	Bergerson-Caswell	PROJECT NO.	2313.13
DRILLING METHOD	4-1/4" ID HSA	INSTALLATION	N/A
		SURFACE ELEV.	835.6
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
				M		SANDY SILT (ML), very dark grayish-brown 10YR 3/2, loose, slightly plastic.
A	SS3	13	15			
				D		WELL-GRADED SAND AND GRAVEL (SW), medium-grained, brownish-yellow 10YR 6/6, medium dense, (FILL).
				D		
B	SS3	10	6			WELL-GRADED SAND (SW), medium-grained, trace silt, few gravel, dark yellowish brown 10YR4/4, medium dense, non-plastic, no odor, (FILL).
					5	As above, (FILL).
				M		SANDY SILTY CLAY (CL-ML), well-graded, few gravel, trace concrete, dark grayish- brown 10YR 4/2, loose, slightly plastic, contains clay lenses, no odor, (FILL).
C	SS3	5	18			
D	SS3	4	18			As above, dark grayish-brown 10YR 4/2, clay lenses more abundant.
E	SS3	9	20	M	10	As above, grading to LEAN CLAY (CL), trace sand, dark gray 5YR 4/1, soft, plastic, no odor, (FILL).
				M		POORLY-GRADED SAND (SP), fine-grained, brown 10YR5/3, medium dense, no odor.
F	SS3	51	20			
					15	As above, dense crude stratification present in the form of coarser sand beds.
G	SS3	44	20			As above.
H	SS3	36	24			As above, trace gravel.
					20	End of boring at 20 ft.

GENERAL NOTES

DATE STARTED JUN 16 92

DATE COMPLETED JUN 16 92

RIG CME-55

CREW CHIEF B. Canty

LOGGED G. Keating CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None

AT COMPLETION ▼

AFTER DRILLING

CAVE-IN: DATE/TIME _____ DEPTH _____

WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. EB002
SHEET NO. 1 OF 1

PROJECT NAME NIROP RI Soils
LOCATION Fridley, MN
CONTRACTOR Bergerson-Caswell
DRILLING METHOD 4-1/4" ID HSA

PROJECT NO. 2313.13
INSTALLATION N/A
SURFACE ELEV. 836.1
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
				M		SANDY SILT (ML), very dark grayish brown 10YR 3/2, loose, slightly plastic.
A	SS3	21	16			SANDY SILT (ML), some clay balls, little gravel, dark yellowish brown 10YR 4/6 to very dark brown 10YR 3/2, dense, slightly plastic to plastic, trace asphalt, (FILL).
B	SS3	15	16			As above, dark gray clay 5YR 4/1, abundant, trace angular cobbles, (FILL).
					5	
C	SS3	25/2"	8			As above.
				M		POORLY-GRADED GRAVEL (GP), medium to coarse (1 - 4 in.), variable color, (driller report), (FILL).
D	SS3	37	24			POORLY-GRADED SAND (SP), trace medium-grained sand, trace gravel, fine-grained, brown 10YR 5/3, medium dense, no odor.
E	SS3	56	24		10	As above.
F	SS3	29	24			As above.
					15	
G	SS3	43	20			As above.
H	SS3	50	22			As above.
					20	End of boring at 20 ft.

GENERAL NOTES

DATE STARTED JUN 16 92
DATE COMPLETED JUN 16 92
RIG CME-55
CREW CHIEF B. Canty
LOGGED G. Keating CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

PROJECT NAME: NIROP RI Soils
LOCATION: Fridley, MN
CONTRACTOR: Bergerson-Caswell
DRILLING METHOD: 4-1/4" ID HSA

BORING NO.: EB003
SHEET NO. 1 OF 1
PROJECT NO.: 2313.13
INSTALLATION: N/A
SURFACE ELEV.: 834.9
BOREHOLE DIA.: 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
						CONCRETE, 8 in.
A	SS3	10	14	M M		WELL-GRADED SAND (SW), trace gravel, dark yellowish-brown 10YR 4/4, medium dense, (FILL).
B	SS3	23	18			LEAN CLAY (CL), trace gravel, dark gray 10YR 4/1, very stiff, plastic, no odor, (FILL).
					5	As above, few silt, few sand.
C	SS3	19	13			As above, trace cobbles, (FILL).
D	SS3	26	0			Driller notes: no recovery - rock in spoon.
E	SS3	19	18	M	10	WELL-GRADED SAND (SW) to SILTY SAND (SM), fine- to medium-grained, few gravel, yellowish-brown 10YR5/4, no odor.
F	SS3	25	14	M	15	As above, trace cobbles, one 5 in. layer of silt (ML), brown to dark brown 7.5YR 4/2, dense, non-plastic, no odor.
G	SS3	26	22	M		POORLY-GRADED SAND (SP), fine-grained, trace medium grained, yellowish-brown 10YR 5/4, medium dense, no odor.
H	SS3	23	23			As above.
					20	End of boring at 20 ft.

GENERAL NOTES

DATE STARTED: JUN 18 92
DATE COMPLETED: JUN 18 92
RIG: CME-75
CREW CHIEF: C. Wilkens
LOGGED: G. Keating CHECKED: R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽: None
AT COMPLETION ▼:
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. EB004
SHEET NO. 1 OF 1

PROJECT NAME NIROP RI Soils
LOCATION Fridley, MN
CONTRACTOR Bergerson-Caswell
DRILLING METHOD 4-1/4" ID HSA

PROJECT NO. 2313.13
INSTALLATION N/A
SURFACE ELEV. 834.8
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
						CONCRETE, 1 ft.
A	SS3	9	20	M		SANDY SILT (ML), little gravel, very dark grayish-brown 10YR3/2, loose, slightly plastic, no odor, (FILL).
B	SS3	14	22	M		SANDY SILT (ML), as above, to SILTY SAND (SM), well-graded, trace gravel, dark yellowish-brown 10YR4/4, medium dense, no odor, (FILL).
					5	
C	SS3	7	18	M		SILTY SAND, as above, to SILT (ML), dark gray 5YR 4/1, medium stiff to stiff, plastic, (FILL).
D	SS3	10	19	M		WELL-GRADED SAND (SW), fine- to medium-grained, trace gravel, yellowish- brown 10YR 5/4, medium dense.
E	SS3	17	15	M	10	POORLY-GRADED SAND (SP), fine-grained, yellowish-brown 10YR 5/4, medium dense, with 2 in. layers of SILT (ML), very dark gray 10YR 3/1, medium dense, slightly plastic, PID hits concentrated in silt.
F	SS3	32	20	M		As above, no gravel, no silt lenses.
					15	
G	SS3	36	23	M		As above, finely laminated, defined by colors alternating between brown 10YR 5/3, and strong brown 7.5YR 5/8.
H	SS3	33	22	M		As above, becoming slightly coarser (fine- to medium-grained) with depth.
					20	End of boring at 20 ft.

GENERAL NOTES

DATE STARTED JUN 17 92
DATE COMPLETED JUN 18 92
RIG CME-75
CREW CHIEF B. Canty/C. Wilkens
LOGGED G. Keating CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. EB201
SHEET NO. 1 OF 1
PROJECT NAME NIROP RI Soils
PROJECT NO. 2313.15
LOCATION Fridley, MN
INSTALLATION N/A
CONTRACTOR Bergerson-Caswell
SURFACE ELEV. 835.7
DRILLING METHOD 4-1/4" ID HSA
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3	22	12	D		TOPSOIL.
B	SS3	10	18	M		SANDY LEAN CLAY (CL), trace gravel, grayish-brown 2.5Y 5/2 with strong brown mottling, stiff, (FILL).
						As above, dark gray 10YR 4/1.
					5	
C	SS3	68	20	M		As above.
D	SS3	54	21	M		POORLY-GRADED SAND (SP), fine-grained, brown 10YR 5/3, very dense.
						As above, trace coarse-grained gravel.
E	SS3	76	21	M	10	As above, no gravel.
F	SS3	131	22	M		As above, well-graded sand (SW) seam from 13.8 ft. to 14.4 ft.
					15	
G	SS3	52	22	M		As above.
H	SS3	74	20	M		As above, wet below 19.3 ft.
				W	▽	
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 17 92
DATE COMPLETED JUL 17 92
RIG CME-55
CREW CHIEF C. Wilken
LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ 19.3 Ft.
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. EB202
SHEET NO. 1 OF 1
PROJECT NO. 2313.15
INSTALLATION N/A
SURFACE ELEV. 835.1
BOREHOLE DIA. 8 IN.

PROJECT NAME NIROP RI Soils
LOCATION Fridley, MN
CONTRACTOR Bergerson-Caswell
DRILLING METHOD 4-1/4" ID HSA

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
						CONCRETE.
A	SS3	5	12			BASE GRAVEL AND SAND (SP-GP), (FILL).
				M		LEAN CLAY (CL), trace fine-grained gravel, trace silt, dark grayish brown 10YR 4/2, soft, plastic.
B	SS3	8	16			As above, little fine- to coarse-grained sand.
					5	
				M		WELL-GRADED SAND (SW), trace silt, yellowish-brown 10YR 5/6, dense.
C	SS3	81	18			
D	SS3	300	0	M		No recovery, very dense.
					10	
E	SS3	300	6	M		As above, very dense, split-spoon not advancing through this sand.
F	SS3	400	6	M		As above.
					15	
G	SS3	400	14	M		As above.
H	SS3	400	12	M		As above (SW).
					20	
						End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 22 92
DATE COMPLETED JUL 22 92
RIG CME-55
CREW CHIEF C. Wilkens
LOGGED R. Vaughn CHECKED G.K.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. EB203
SHEET NO. 1 OF 1
PROJECT NAME NIROP RI Soils
PROJECT NO. 2313.15
LOCATION Fridley, MN
INSTALLATION N/A
CONTRACTOR Bergerson-Caswell
SURFACE ELEV. 834.9
DRILLING METHOD 4-1/4" ID HSA
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
						CONCRETE.
A	SS3	15	18			BASE GRAVEL AND SAND (SP-GP), (FILL).
				M		LEAN CLAY (CL), little fine-grained gravel, little silt, little fine- to medium-grained sand, very dark gray 10YR 3/1, soft to stiff, slightly plastic, (FILL).
B	SS3	5	20			As above, but increase in sand content, clayey sand (SC).
					5	
C	SS3	6	20	M		As above.
D	SS3	44	20	M		POORLY-GRADED SAND (SP), fine- to coarse-grained, little gravel, yellowish brown 10YR 5/6, loose to dense.
					10	Grading to WELL-GRADED SAND (SW), medium-grained sand.
E	SS3	54	20	M		As above.
F	SS3	52	20	M		As above, but fine- to medium-grained sand. Sand below 13.6 ft. has a layered varved-like structure, trace silt.
					15	
G	SS3	81	22	M		As above, trace silt, very dense.
H	SS3	70	20	M		As above.
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 21 92
DATE COMPLETED JUL 21 92
RIG CME-55
CREW CHIEF C. Wilkens
LOGGED R. Vaughn CHECKED G.K.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. EB204
SHEET NO. 1 OF 1

PROJECT NAME NIROP RI Soils
PROJECT NO. 2313.15
LOCATION Fridley, MN
INSTALLATION N/A
CONTRACTOR Bergerson-Caswell
SURFACE ELEV. 835.1
DRILLING METHOD 4-1/4" ID HSA
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
						CONCRETE, (FILL).
A	SS3	19	18			BASE GRAVEL AND SAND (SP), silt, very dark gray 10YR 3/1.
				M		LEAN CLAY (CL), little fine-grained sand, very dark gray 10YR 3/1, stiff, plastic, mottled texture, (FILL).
B	SS3	17	20			As above.
					5	
C	SS3	38	20	M		As above.
D	SS3	25	20	M		POORLY-GRADED SAND (SP), coarse-grained sand, dark yellowish brown 10YR 4/6, loose. As above, trace fine-grained gravel.
E	SS3	23	20	M	10	As above, but WELL-GRADED SAND (SW), fine- to medium grained.
F	SS3	26	20	M		As above.
					15	
G	SS3	32	20	M		As above, trace silt.
H	SS3	42	20	M		As above, slightly less silt.
					▽ 20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 21 92
DATE COMPLETED JUL 21 92
RIG CME-55
CREW CHIEF C. Wilkens
LOGGED R. Vaughn CHECKED G.K.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ 19.8 Ft.
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

PROJECT NAME	NIROP RI Soils	BORING NO.	EB205
LOCATION	Fridley, MN	SHEET NO.	1 OF 1
CONTRACTOR	Bergerson-Caswell	PROJECT NO.	2313.15
DRILLING METHOD	4-1/4" ID HSA	INSTALLATION	N/A
		SURFACE ELEV.	834.8
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
						CONCRETE.
A	SS3	12	20	M		LEAN CLAY (CL), trace fine-grained gravel, little fine- to coarse-grained sand, little silt, very dark gray 10YR 3/1, stiff, slightly plastic, trace brick, (FILL).
B	SS3	22	20	M M		POORLY-GRADED SAND (SP), coarse-grained, little silt, very dark gray 10YR 3/1, loose, medium dense, (FILL).
					5	WELL-GRADED SAND (SW), fine-grained sand to medium-grained sand, yellowish brown 10YR 5/6, loose to medium dense.
C	SS3	27	20	M		As above, medium-grained sand.
D	SS3	36	20	M		As above, trace coarse-grained sand, small (2 in.) zones of poorly-graded sand (SP).
					10	
E	SS3	33	22	M		LEAN CLAY (CL), trace fine-grained gravel, trace fine- to medium-grained sand, trace silt, very dark gray 10YR 3/1, stiff to hard, plastic, (TILL).
F	SS3	27	22	M		As above.
					15	
G	SS3	30	22			As above.
H	SS3	27	22			As above.
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 21 92

DATE COMPLETED JUL 21 92

RIG CME-55

CREW CHIEF C. Wilkens

LOGGED R. Vaughn CHECKED G.K.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None

AT COMPLETION ▼

AFTER DRILLING

CAVE-IN: DATE/TIME _____ DEPTH _____

WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

PROJECT NAME	NIROP RI Soils	BORING NO.	EB206
LOCATION	Fridley, MN	SHEET NO.	1 OF 1
CONTRACTOR	Bergerson-Caswell	PROJECT NO.	2313.15
DRILLING METHOD	4-1/4" ID HSA	INSTALLATION	N/A
		SURFACE ELEV.	835.3
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3	9	18	M		SILTY SAND (SM), trace gravel, trace clay, dark brown 7.5YR 3/2, (FILL).
B	SS3	6	18	M	5	LEAN CLAY WITH SAND (CL), trace gravel, dark grayish-brown 2.5Y 4/2, with strong brown mottling, from 2.7 ft. to 4.2 ft., mixed with fine sand, piece of concrete, (FILL).
C	SS3	10	24	M		SANDY LEAN CLAY to CLAYEY SAND (CL-SC), black 10YR 2/1 to brown 10YR 5/3 to dark grayish-brown 2.5Y 4/2, (FILL).
D	SS3	36	22	M		POORLY-GRADED SAND (SP), fine- to medium-grained, trace coarse-grained sand and gravel, brown 10YR 4/3.
E	SS3	39	21	M	10	As above, no coarse sand or gravel, 1 mm cross-laminations visible.
F	SS3	79	21	M	15	As above, trace coarse sand.
G	SS3	90	24	M		As above, no coarse sand.
H	SS3	75	23	M	▽	As above, wet below 19.1 ft.
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 17 92

DATE COMPLETED JUL 17 92

RIG CME-55

CREW CHIEF C. Wilken

LOGGED L. Page CHECKED G.K.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ 19.1 Ft.

AT COMPLETION ▼

AFTER DRILLING

CAVE-IN: DATE/TIME _____ DEPTH _____

WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. EB207
SHEET NO. 1 OF 1
PROJECT NO. 2313.15
INSTALLATION N/A
SURFACE ELEV. 834.9
BOREHOLE DIA. 8 IN.

PROJECT NAME NIROP RI Soils
LOCATION Fridley, MN
CONTRACTOR Bergerson-Caswell
DRILLING METHOD 4-1/4" ID HSA

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
						CONCRETE, (FILL).
A	SS3	15	18			BASE GRAVEL AND SAND (SP), (FILL).
B	SS3	14	18	M		LEAN CLAY (CL), little silt, trace fine-grained gravel, very dark gray 10YR 3/1, soft to stiff, slightly plastic, (FILL). As above.
					5	(Driller noted change at 5.5 ft.)
C	SS3	38	0			(No recovery, possible that a large rock plugged tip of spoon.)
D	SS3	23	18	M		POORLY-GRADED SAND (SP), medium to coarse, loose to medium dense.
E	SS3	43	20	M	10	As above, trace to little fine-grained gravel.
F	SS3	22	20	M		As above, but no gravel, sand is POORLY-GRADED SAND (SP), fine- to medium grained. As above, trace silt near bottom of spoon.
					15	
G	SS3	36	20	M		As above.
H	SS3	30	20	M		As above.
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 21 92
DATE COMPLETED JUL 21 92
RIG CME-55
CREW CHIEF C. Wilkens
LOGGED R. Vaughn CHECKED G.K.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME DEPTH
WATER: DATE/TIME DEPTH

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. EB208
SHEET NO. 1 OF 1
PROJECT NO. 2313.15
INSTALLATION N/A
SURFACE ELEV. 834.7
BOREHOLE DIA. 8 IN.

PROJECT NAME NIROP RI Soils
LOCATION Fridley, MN
CONTRACTOR Bergerson-Caswell
DRILLING METHOD 4-1/4" ID HSA

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
						CONCRETE.
A	SS3	13	18	M		BASE GRAVEL AND SAND (SP-GP), little clay and silt, very dark gray 10YR 3/1, loose, soft, (FILL).
B	SS3	7	20	M		As above, but increase in clay content (GW-GC).
					5	
C	SS3	14	20			As above, (FILL).
				M		LEAN CLAY (CL), trace fine- to coarse-grained sand, trace fine gravel, very dark grayish-brown 10YR 3/2, stiff, slightly plastic, (TILL).
D	SS3	28	20			
				M		POORLY-GRADED SAND (SP), fine- to coarse-grained, brown 10YR 5/3, loose, medium dense.
E	SS3	22	20	M	10	LEAN CLAY (CL), as above, (TILL).
F	SS3	16	22	W		As above, occasional 0.5 in. thick coarse-grained sand, grading to CLAYEY SAND (SC).
					15	
				M		POORLY-GRADED SAND (SP), trace fine- to medium-grained gravel, yellowish brown 10YR 5/6, loose, medium dense.
G	SS3	42	24			
H	SS3	18	24	M		As above, but grading to WELL-GRADED SAND (SW), medium- to coarse-grained.
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 21 92
DATE COMPLETED JUL 21 92
RIG CME-55
CREW CHIEF C. Wilkens
LOGGED R. Vaughn CHECKED G.K.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. EB209
SHEET NO. 1 OF 1
PROJECT NO. 2313.15
INSTALLATION N/A
SURFACE ELEV. 835.0
BOREHOLE DIA. 8 IN.

PROJECT NAME NIROP RI Soils
LOCATION Fridley, MN
CONTRACTOR Bergerson-Caswell
DRILLING METHOD 4-1/4" ID HSA

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
						CONCRETE.
A	SS3	17	16	M		BASE GRAVEL AND SAND (SP-GP). POORLY GRADED SAND (SP), trace fine-grained gravel, trace silt and clay, yellowish brown 10YR 5/6, loose, (FILL).
B	SS3	13	18	M		As above, but increase in silt (SM) content, (FILL).
					5	
C	SS3	6	20	M		As above, but no clay (SP), medium- to coarse-grained sand, trace fine-grained gravel.
D	SS3	30	20	M		As above, below 9 ft., grading to WELL-GRADED SAND (SW), medium-grained.
E	SS3	56	20	M	10	As above.
F	SS3	33	20	M		As above.
					15	
G	SS3	80	20	M		As above.
H	SS3	82	20	M		As above.
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 22 92
DATE COMPLETED JUL 22 92
RIG CME-55
CREW CHIEF C. Wilkens
LOGGED R. Vaughn CHECKED G.K.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. EB210
SHEET NO. 1 OF 1
PROJECT NAME NIROP RI Soils
PROJECT NO. 2313.15
LOCATION Fridley, MN
INSTALLATION N/A
CONTRACTOR Bergerson-Caswell
SURFACE ELEV. 835.0
DRILLING METHOD 4-1/4" ID HSA
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
						CONCRETE.
A	SS3	12	18	M		BASE GRAVEL AND SAND (SP-GP). CLAYEY SAND (SC), little silt, yellowish-brown 10YR 5/6, loose to soft, non-plastic to slightly plastic, trace slag, (FILL).
B	SS3	4	18	M		As above.
					5	
C	SS3	7	20	M		
D	SS3	25	20	M		POORLY-GRADED SAND (SP), trace fine-grained gravel, medium- to coarse-grained, yellowish brown 10YR 5/6, loose to medium dense.
E	SS3	46	20	M	10	Grading to POORLY-GRADED SAND WITH SILT (SP-SM), medium-grained. As above.
F	SS3	44	20	M		As above.
					15	
G	SS3	66	20	M		As above, increase in silt content.
H	SS3	97	20	M		As above.
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUL 22 92
DATE COMPLETED JUL 22 92
RIG CME-55
CREW CHIEF C. Wilkens
LOGGED R. Vaughn CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

AREA F

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. FB001
SHEET NO. 1 OF 1
PROJECT NAME NIROP RI Soils
PROJECT NO. 2313.15
LOCATION Fridley, MN
INSTALLATION N/A
CONTRACTOR Bergerson-Caswell
SURFACE ELEV. 834.8
DRILLING METHOD 4-1/4" ID HSA
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3	18	19	M		SILTY SAND (SM), little gravel, trace clay, yellowish-brown 10YR 5/6 to black 5YR 2.5/1, medium dense, brick fragments, (FILL).
B	SS3	11	17	M		SILT (ML), trace sand, black 7.5YR 2/0, medium dense, roots.
				M		LEAN CLAY WITH SAND (CL), trace silt, olive brown 2.5Y 4/2, rust-colored vertical fractures.
				M	5	
				M		SILTY SAND (SM), light olive brown 2.5Y 5/3.
C	SS3	21	23			POORLY-GRADED SAND (SP), fine- to medium-grained, trace silt, dark yellowish-brown 10YR 4/4, dense.
D	SS3	33	24	M		As above, trace coarse sand.
					10	
E	SS3	23	24	M		POORLY-GRADED SAND (SP), fine- to coarse-grained, mostly medium-grained, brown 10YR 5/4, medium dense, shell fragments.
F	SS3	5	24	M		As above, at 14.4 ft., 1-1/2 ft. clay seam, dark brown.
					15	
G	SS3	24	21	M		POORLY-GRADED SAND (SP), fine- to medium-grained, mostly medium-grained, trace coarse-grained, pale brown 10YR 6/3, medium dense.
H	SS3	24	23	M		As above, wet at 19.3 ft.
				W	▽	
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUN 12 92
DATE COMPLETED JUN 12 92
RIG CME-75
CREW CHIEF C. Wilkens
LOGGED L. Page CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ 19.3 Ft.
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

PROJECT NAME	NIROP RI Soils	BORING NO.	FB002
LOCATION	Fridley, MN	SHEET NO.	1 OF 1
CONTRACTOR	Bergerson-Caswell	PROJECT NO.	2313.15
DRILLING METHOD	4-1/4" ID HSA	INSTALLATION	N/A
		SURFACE ELEV.	834.7
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
						CONCRETE.
A	SS3	21	20	M		SANDY SILT (ML), very dark brown 10YR2/2, medium dense, slightly plastic, (FILL).
B	SS3	22	22			POORLY-GRADED SAND (SP), fine-grained, trace silt, brown 10YR5/3, to dark yellowish-brown 10YR4/6, medium dense, (FILL).
						SANDY SILT, as above.
					5	SAND (SP), as above, banded very dark brown 10YR3/2, to yellowish-brown 10YR5/6, (FILL).
C	SS3	12	20	D		SANDY SILT (ML), as above, (very dark brown).
D	SS3	7	22			LEAN CLAY (CL), dark gray 10YR 4/1, to black 10YR 2/1, stiff plastic, grading to clayey sand (SC), fine-grained sand, brown 10YR 5/3, medium dense, slightly plastic.
E	SS3	20	20		10	WELL-GRADED SAND AND GRAVEL (SW), fine- to coarse-grained, some gravel, brown 10YR 5/3, to yellowish-brown 10YR 5/6, loose, becoming clayey at base of interval, trace shell fragments.
				M		POORLY-GRADED SAND (SP), medium-grained, trace gravel, brown 10YR 5/3, medium dense, no odor.
F	SS3	15	23	M		POORLY-GRADED SAND (SP), brown, as above, grain size and grading varies between well-graded fine- to medium-grained sand (SW), to poorly-graded medium-grained sand (SP), in 6 to 8 in beds.
					15	
G	SS3	15	22	M		POORLY-GRADED SAND (SP), as above, silty sand in top 6 in. of interval, remainder generally poorly-graded, medium-grained sand.
H	SS3	12	22	M		Brown sand as above, trace silt.
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUN 11 92

DATE COMPLETED JUN 11 92

RIG CME-75

CREW CHIEF T. Nemitz

LOGGED G. Keating CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None

AT COMPLETION ▼

AFTER DRILLING

CAVE-IN: DATE/TIME _____ DEPTH _____

WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

PROJECT NAME	NIROP RI Soils	BORING NO.	FB003
LOCATION	Fridley, MN	SHEET NO.	1 OF 1
CONTRACTOR	Bergerson-Caswell	PROJECT NO.	2313.15
DRILLING METHOD	4-1/4" ID HSA	INSTALLATION	N/A
		SURFACE ELEV.	834.7
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
						CONCRETE.
A	SS3	25	14	D		SILTY GRAVEL (GM), brown 10YR 4/3, medium dense, (FILL).
B	SS3	12	20	D		SANDY SILT (ML), very dark brown 10YR 2/2, medium dense, slightly plastic, (FILL).
					5	SANDY SILT (ML), to silty sand (SM), fine-grained, very dark, grayish-brown 10YR 3/2, to yellowish-brown 10YR 5/8, slightly plastic to non-plastic.
C	SS3	14	22	M		SILT (ML), as above, grayish-brown 10YR 3/2, (FILL).
D	SS3	18	22	M		WELL-GRADED SAND (SW), fine- to coarse-grained sand, strong brown 7.5YR 4/6 to yellowish-brown 10YR 5/4, medium dense, (FILL).
E	SS3	20	20	M	10	POORLY-GRADED SAND WITH GRAVEL (SP), fine to coarse sand, little gravel, brown 10YR5/3, medium desne, no odor. As above, one 6 in bed of silty sand (SM), dark brown 10YR3/3, slightly plastic, medium dark, no odor.
F	SS3	12	20	M		SAND (SW), brown, as above, grain size and grading variable between poorly-graded medium grained beds and well-graded fine to coarse, trace gravel, bedding 2 to 8 in. thick.
					15	
G	SS3	14	19	M		SAND (SP), brown, as above, generally poorly-graded, trace gravel, occasional seam of well-graded sand.
H	SS3	8	21	M		SAND (SP), brown, as above, well-graded, fine to medium grained, trace gravel, loose. NOTE: sand nearly water saturated at base of interval.
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUN 11 92

DATE COMPLETED JUN 11 92

RIG CME-75

CREW CHIEF T. Nemitz

LOGGED G. Keating CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None

AT COMPLETION ▼

AFTER DRILLING

CAVE-IN: DATE/TIME _____ DEPTH _____

WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. FB004
SHEET NO. 1 OF 1

PROJECT NAME NIROP RI Soils
LOCATION Fridley, MN
CONTRACTOR Bergerson-Caswell
DRILLING METHOD 4-1/4" ID HSA

PROJECT NO. 2313.15
INSTALLATION N/A
SURFACE ELEV. 835.0
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL		RECOVERY		MOISTURE		
NO.	TYPE	N	IN		DEPTH	
A	SS3	17	18	D		WELL-GRADED SAND WITH SILT AND GRAVEL (SW-SM), dark brown 10YR3/3, medium dense, non-plastic, (FILL).
B	SS3	10	20	D		SANDY SILT (ML), black 10YR2/1, medium dense, slightly plastic, no odor (FILL).
				D	5	Grading to SILTY SAND (SM), fine to medium grained, dark yellowish brown 10YR3/4, loose, non-plastic, no odor, (FILL).
C	SS3	20	20	M		WELL-GRADED SAND (SW), trace gravel, brown 10YR5/3, loose, no odor, black streaks, (FILL).
						SILTY SAND, as above (FILL).
D	SS3	20	22			POORLY-GRADED SAND (SP), medium-grained, yellowish brown 10YR5/6, to 10YR5/4, medium dense, mottled appearance, (FILL).
E	SS3	32	20	M	10	WELL-GRADED SAND (SW), fine to coarse grained, trace gravel, brown 10YR5/3, medium dense, no odor.
						As above, trace cobbles, trace shell fragments.
F	SS3	14	20	M	15	POORLY-GRADED SAND (SP), fine-grained or medium-grained, trace gravel, brown 10YR5/3, to strong brown 7.5YR5/8, in streaks, medium dense, no odor, grain size varies in crude bedding.
G	SS3	16	22	M		As above, fine-grained.
H	SS3	17	22	M		POORLY-GRADED SAND (SP), fine to coarse grained, mostly medium-grained, trace shale gravel, brown 10YR5/3, medium dense, no odor.
						As above.
					20	End Of Boring at 20 ft.

GENERAL NOTES

DATE STARTED JUN 11 92
DATE COMPLETED JUN 11 92
RIG CME-75
CREW CHIEF T. Nemitz
LOGGED G. Keating CHECKED R.V.

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ None
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME DEPTH
WATER: DATE/TIME DEPTH

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A4

RESULTS FOR VOLATILE ORGANIC COMPOUND ANALYSES
SUB-AREA A4

Parameter	Units	AB026A 10-JUN-92		AB026G 10-JUN-92		AB027A 09-JUN-92		AB027H 09-JUN-92		AB028A 08-JUN-92		AB028G 08-JUN-92	
CHLOROMETHANE	UG/KG	11	U	10	U	10	U	12	U	11	U	62	U
BROMOMETHANE	UG/KG	11	U	10	U	10	U	12	U	11	U	62	U
VINYL CHLORIDE	UG/KG	11	U	10	U	10	U	12	U	11	U	62	U
CHLOROETHANE	UG/KG	11	U	10	U	10	U	12	U	11	U	62	U
METHYLENE CHLORIDE	UG/KG	3	JBU	10	U	10	U	12	U	11	U	62	U
ACETONE	UG/KG	10	BJU	50	BU	7	BJU	190	B	6	BJU	87	BU
CARBON DISULFIDE	UG/KG	10	JBU	10	U	5	JBU	12	U	11	U	62	U
1,1-DICHLOROETHENE	UG/KG	11	U	10	U	10	U	12	U	11	U	62	U
1,1-DICHLOROETHANE	UG/KG	11	U	10	U	10	U	12	U	11	U	62	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG	25		6	J	10	U	12	U	11	U	920	D
CHLOROFORM	UG/KG	11	U	10	U	10	U	12	U	11	U	62	U
1,2-DICHLOROETHANE	UG/KG	11	U	10	U	10	U	12	U	11	U	62	U
2-BUTANONE	UG/KG	11	U	10	U	10	U	12	U	11	U	62	U
1,1,1-TRICHLOROETHANE	UG/KG	11	U	10	U	10	U	12	U	11	U	8	J
CARBON TETRACHLORIDE	UG/KG	11	U	10	U	10	U	12	U	11	U	62	U
BROMODICHLOROMETHANE	UG/KG	11	U	10	U	10	U	12	U	11	U	62	U
1,2-DICHLOROPROPANE	UG/KG	11	U	10	U	10	U	12	U	11	U	62	U
CIS-1,3-DICHLOROPROPENE	UG/KG	11	U	10	U	10	U	12	U	11	U	62	U
TRICHLOROETHENE	UG/KG	15	B	45		50		5	JB	18		6100	D
CHLORODIBROMOMETHANE	UG/KG	11	U	10	U	10	U	12	U	11	U	62	U
1,1,2-TRICHLOROETHANE	UG/KG	11	U	10	U	10	U	12	U	11	U	62	U
BENZENE	UG/KG	11	U	10	U	10	U	12	U	11	U	62	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	11	U	10	U	10	U	12	U	11	U	62	U
BROMOFORM	UG/KG	11	U	10	U	10	U	12	U	11	U	62	U
4-METHYL-2-PENTANONE	UG/KG	11	U	10	U	10	U	12	U	11	U	62	U
2-HEXANONE	UG/KG	11	U	10	U	10	U	12	U	11	U	62	U
TETRACHLOROETHENE	UG/KG	11	U	2	J	10	U	12	U	11	U	610	
1,1,2,2-TETRACHLOROETHANE	UG/KG	11	U	10	U	10	U	12	U	11	U	62	U
TOLUENE	UG/KG	3	JBU	10	U	10	U	12	U	11	U	62	U
CHLOROBENZENE	UG/KG	11	U	10	U	10	U	12	U	11	U	62	U
ETHYLBENZENE	UG/KG	11	U	10	U	10	U	12	U	11	U	62	U
STYRENE	UG/KG	11	U	10	U	10	U	12	U	11	U	62	U
XYLENE, TOTAL	UG/KG	11	U	10	U	10	U	12	U	11	U	62	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A4

RESULTS FOR VOLATILE ORGANIC COMPOUND ANALYSES
SUB-AREA A4

Parameter	Units	AB029A 10-JUN-92		AB029H 10-JUN-92		AB030A 09-JUN-92		AB030G 09-JUN-92		AB030G DUP 09-JUN-92		AB031A 15-JUN-92	
CHLOROMETHANE	UG/KG	11	U	11	U	11	U	10	U	10	U	11	U
BROMOMETHANE	UG/KG	11	U	11	U	11	U	10	U	10	U	11	U
VINYL CHLORIDE	UG/KG	11	U	11	U	11	U	10	U	10	U	11	U
CHLOROETHANE	UG/KG	11	U	11	U	11	U	10	U	10	U	11	U
METHYLENE CHLORIDE	UG/KG	11	U	11	U	2	JBU	10	U	10	U	11	U
ACETONE	UG/KG	8	BJU	32	BU	8	BJU	30	BU	58	BU	5	JBU
CARBON DISULFIDE	UG/KG	15	BU	3	JBU	11	U	10	U	10	U	4	JBU
1,1-DICHLOROETHENE	UG/KG	11	U	11	U	11	U	10	U	10	U	11	U
1,1-DICHLOROETHANE	UG/KG	11	U	11	U	11	U	10	U	10	U	11	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG	14		110		4	J	10	U	10	U	470	D
CHLOROFORM	UG/KG	11	U	11	U	0.5	JBU	10	U	10	U	11	U
1,2-DICHLOROETHANE	UG/KG	11	U	11	U	11	U	10	U	10	U	11	U
2-BUTANONE	UG/KG	11	U	11	U	11	U	2	JBU	2	JBU	11	U
1,1,1-TRICHLOROETHANE	UG/KG	11	U	11	U	11	U	10	U	10	U	11	U
CARBON TETRACHLORIDE	UG/KG	11	U	11	U	11	U	10	U	10	U	11	U
BROMODICHLOROMETHANE	UG/KG	11	U	11	U	11	U	10	U	10	U	11	U
1,2-DICHLOROPROPANE	UG/KG	11	U	11	U	11	U	10	U	10	U	11	U
CIS-1,3-DICHLOROPROPENE	UG/KG	11	U	11	U	11	U	10	U	10	U	11	U
TRICHLOROETHENE	UG/KG	190		89		36		2	JB	4	JB	9	JB
CHLORODIBROMOMETHANE	UG/KG	11	U	11	U	11	U	10	U	10	U	11	U
1,1,2-TRICHLOROETHANE	UG/KG	11	U	11	U	11	U	10	U	10	U	3	J
BENZENE	UG/KG	11	U	11	U	11	U	10	U	10	U	11	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	11	U	11	U	11	U	10	U	10	U	11	U
BROMOFORM	UG/KG	11	U	11	U	11	U	10	U	10	U	11	U
4-METHYL-2-PENTANONE	UG/KG	11	U	11	U	11	U	10	U	10	U	11	U
2-HEXANONE	UG/KG	11	U	11	U	11	U	10	U	10	U	11	U
TETRACHLOROETHENE	UG/KG	11	U	6	J	11	U	10	U	10	U	11	U
1,1,2,2-TETRACHLOROETHANE	UG/KG	11	U	11	U	11	U	10	U	10	U	2	J
TOLUENE	UG/KG	3	JBU	11	U	2	JBU	10	U	10	U	10	BJ
CHLOROBENZENE	UG/KG	11	U	11	U	11	U	10	U	10	U	11	U
ETHYLBENZENE	UG/KG	11	U	11	U	11	U	10	U	10	U	380	E
STYRENE	UG/KG	11	U	11	U	11	U	10	U	10	U	11	U
XYLENE, TOTAL	UG/KG	11	U	11	U	11	U	10	U	10	U	550	E

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A4

RESULTS FOR VOLATILE ORGANIC COMPOUND ANALYSES
SUB-AREA A4

Parameter	Units	AB031G 15-JUN-92		AB032A 09-JUN-92		AB032D 09-JUN-92		AB033B 08-JUN-92		AB033H 08-JUN-92		AB034A 08-JUN-92	
CHLOROMETHANE	UG/KG	11	U	11	U	10	U	11	U	12	U	11	U
BROMOMETHANE	UG/KG	11	U	11	U	10	U	11	U	12	U	11	U
VINYL CHLORIDE	UG/KG	11	U	11	U	10	U	11	U	12	U	11	U
CHLOROETHANE	UG/KG	11	U	11	U	10	U	11	U	12	U	11	U
METHYLENE CHLORIDE	UG/KG	11	U	11	U	10	U	11	U	12	U	11	U
ACETONE	UG/KG	51	BU	8	BJU	46	BU	54	BU	1000	BD	9	BJU
CARBON DISULFIDE	UG/KG	1	JBU	9	JBU	10	U	11	U	12	U	11	U
1,1-DICHLOROETHENE	UG/KG	11	U	11	U	10	U	11	U	12	U	11	U
1,1-DICHLOROETHANE	UG/KG	11	U	11	U	10	U	11	U	12	U	11	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG	85		2	J	10	U	200	D	12	U	11	U
CHLOROFORM	UG/KG	11	U	11	U	10	U	11	U	12	U	11	U
1,2-DICHLOROETHANE	UG/KG	11	U	11	U	10	U	11	U	12	U	11	U
2-BUTANONE	UG/KG	38	BU	11	U	10	U	11	U	12	U	11	U
1,1,1-TRICHLOROETHANE	UG/KG	11	U	11	U	10	U	11	U	12	U	11	U
CARBON TETRACHLORIDE	UG/KG	11	U	11	U	10	U	11	U	12	U	11	U
BROMODICHLOROMETHANE	UG/KG	11	U	11	U	10	U	11	U	12	U	11	U
1,2-DICHLOROPROPANE	UG/KG	11	U	11	U	10	U	11	U	12	U	11	U
CIS-1,3-DICHLOROPROPENE	UG/KG	11	U	11	U	10	U	11	U	12	U	11	U
TRICHLOROETHENE	UG/KG	2	JB	150		2	JB	300	D	2	JB	24	
CHLORODIBROMOMETHANE	UG/KG	11	U	11	U	10	U	11	U	12	U	11	U
1,1,2-TRICHLOROETHANE	UG/KG	11	U	11	U	10	U	11	U	12	U	11	U
BENZENE	UG/KG	11	U	11	U	10	U	11	U	12	U	11	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	11	U	11	U	10	U	11	U	12	U	11	U
BROMOFORM	UG/KG	11	U	11	U	10	U	11	U	12	U	11	U
4-METHYL-2-PENTANONE	UG/KG	11	U	11	U	10	U	11	U	12	U	11	U
2-HEXANONE	UG/KG	11	U	11	U	10	U	11	U	12	U	11	U
TETRACHLOROETHENE	UG/KG	56		11	U	10	U	11	U	12	U	11	U
1,1,2,2-TETRACHLOROETHANE	UG/KG	11	U	11	U	10	U	11	U	12	U	11	U
TOLUENE	UG/KG	45	B	11	U	10	U	11	U	12	U	4	JBU
CHLOROBENZENE	UG/KG	11	U	11	U	10	U	11	U	12	U	11	U
ETHYLBENZENE	UG/KG	3400	D	11	U	10	U	11	U	12	U	11	U
STYRENE	UG/KG	11	U	11	U	10	U	11	U	12	U	11	U
XYLENE, TOTAL	UG/KG	28000	D	11	U	10	U	11	U	12	U	11	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A4

RESULTS FOR VOLATILE ORGANIC COMPOUND ANALYSES
SUB-AREA A4

Parameter	Units	AB034D 08-JUN-92		AB038A 10-JUN-92		AB038G 10-JUN-92		AB203A 08-JUL-92		AB203B 08-JUL-92		AB204A 08-JUL-92	
CHLOROMETHANE	UG/KG	11	U	10	U	11	U	11	U	14	U	11	U
BROMOMETHANE	UG/KG	11	U	10	U	11	U	11	U	14	U	11	U
VINYL CHLORIDE	UG/KG	11	U	10	U	11	U	11	U	14	U	11	U
CHLOROETHANE	UG/KG	11	U	10	U	11	U	11	U	14	U	11	U
METHYLENE CHLORIDE	UG/KG	11	U	10	U	11	U	11	U	14	U	11	U
ACETONE	UG/KG	3	BJU	1200	BDE	62	BU	8	BJU	7	BJU	64	BU
CARBON DISULFIDE	UG/KG	11	U	10	U	11	U	11	U	14	U	11	U
1,1-DICHLOROETHENE	UG/KG	11	U	10	U	11	U	11	U	14	U	11	U
1,1-DICHLOROETHANE	UG/KG	11	U	10	U	11	U	11	U	14	U	11	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG	11	U	10	U	11	U	11	U	14	U	110	
CHLOROFORM	UG/KG	11	U	10	U	11	U	11	U	14	U	11	U
1,2-DICHLOROETHANE	UG/KG	11	U	10	U	11	U	11	U	14	U	11	U
2-BUTANONE	UG/KG	11	U	10	U	11	U	11	U	14	U	14	BU
1,1,1-TRICHLOROETHANE	UG/KG	11	U	10	U	11	U	11	U	14	U	11	U
CARBON TETRACHLORIDE	UG/KG	11	U	10	U	11	U	11	U	14	U	11	U
BROMODICHLOROMETHANE	UG/KG	11	U	10	U	11	U	11	U	14	U	11	U
1,2-DICHLOROPROPANE	UG/KG	11	U	10	U	11	U	11	U	14	U	11	U
CIS-1,3-DICHLOROPROPENE	UG/KG	11	U	10	U	11	U	11	U	14	U	11	U
TRICHLOROETHENE	UG/KG	5	JB	4	JB	9	JB	11	U	20		26	
CHLORODIBROMOMETHANE	UG/KG	11	U	10	U	11	U	11	U	14	U	11	U
1,1,2-TRICHLOROETHANE	UG/KG	11	U	10	U	11	U	11	U	14	U	11	U
BENZENE	UG/KG	11	U	10	U	11	U	11	U	14	U	11	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	11	U	10	U	11	U	11	U	14	U	11	U
BROMOFORM	UG/KG	11	U	10	U	11	U	11	U	14	U	11	U
4-METHYL-2-PENTANONE	UG/KG	11	U	10	U	11	U	11	U	14	U	11	U
2-HEXANONE	UG/KG	11	U	10	U	11	U	11	U	14	U	11	U
TETRACHLOROETHENE	UG/KG	11	U	10	U	11	U	11	U	7	J	1	J
1,1,2,2-TETRACHLOROETHANE	UG/KG	11	U	10	U	11	U	11	U	14	U	11	U
TOLUENE	UG/KG	1	JBU	1	JBU	11	U	11	U	14	U	11	U
CHLOROBENZENE	UG/KG	11	U	10	U	11	U	11	U	14	U	11	U
ETHYLBENZENE	UG/KG	11	U	10	U	11	U	11	U	14	U	11	U
STYRENE	UG/KG	11	U	10	U	11	U	11	U	14	U	11	U
XYLENE, TOTAL	UG/KG	11	U	10	U	11	U	11	U	14	U	11	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A4

RESULTS FOR VOLATILE ORGANIC COMPOUND ANALYSES
SUB-AREA A4

Parameter	Units	AB204A DUP 08-JUL-92		AB204B 08-JUL-92		AB205A 08-JUL-92		AB205G 08-JUL-92		AB206A 08-JUL-92		AB206B 08-JUL-92	
CHLOROMETHANE	UG/KG	11	U	12	U	11	U	11	U	12	U	13	U
BROMOMETHANE	UG/KG	11	U	12	U	11	U	11	U	12	U	13	U
VINYL CHLORIDE	UG/KG	11	U	12	U	11	U	11	U	12	U	13	U
CHLOROETHANE	UG/KG	11	U	12	U	11	U	11	U	12	U	13	U
METHYLENE CHLORIDE	UG/KG	11	U	12	U	2	BJU	11	U	12	U	13	U
ACETONE	UG/KG	11	U	56	BU	14	BU	11	BJU	9	BJU	6	BJU
CARBON DISULFIDE	UG/KG	0.9	JBU	12	U	11	U	11	U	12	U	3	JBU
1,1-DICHLOROETHENE	UG/KG	11	U	12	U	11	U	11	U	12	U	13	U
1,1-DICHLOROETHANE	UG/KG	11	U	12	U	11	U	11	U	12	U	13	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG	85		7	J	11	U	9	J	12	U	13	U
CHLOROFORM	UG/KG	11	U	12	U	11	U	11	U	12	U	13	U
1,2-DICHLOROETHANE	UG/KG	11	U	12	U	11	U	11	U	12	U	13	U
2-BUTANONE	UG/KG	11	U	12	U	11	U	11	U	12	U	13	U
1,1,1-TRICHLOROETHANE	UG/KG	11	U	12	U	11	U	1	J	12	U	2	J
CARBON TETRACHLORIDE	UG/KG	11	U	12	U	11	U	11	U	12	U	13	U
BROMODICHLOROMETHANE	UG/KG	11	U	12	U	11	U	11	U	12	U	13	U
1,2-DICHLOROPROPANE	UG/KG	11	U	12	U	11	U	11	U	12	U	13	U
CIS-1,3-DICHLOROPROPENE	UG/KG	11	U	12	U	11	U	11	U	12	U	13	U
TRICHLOROETHENE	UG/KG	18		4	JB	31		230		2	JB	330	D
CHLORODIBROMOMETHANE	UG/KG	11	U	12	U	11	U	11	U	12	U	13	U
1,1,2-TRICHLOROETHANE	UG/KG	11	U	12	U	11	U	11	U	12	U	13	U
BENZENE	UG/KG	11	U	12	U	11	U	11	U	12	U	13	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	11	U	12	U	11	U	11	U	12	U	13	U
BROMOFORM	UG/KG	11	U	12	U	11	U	11	U	12	U	13	U
4-METHYL-2-PENTANONE	UG/KG	11	U	12	U	11	U	11	U	12	U	13	U
2-HEXANONE	UG/KG	11	U	12	U	11	U	11	U	12	U	13	U
TETRACHLOROETHENE	UG/KG	0.7	J	12	U	1	J	8	J	12	U	9	J
1,1,2,2-TETRACHLOROETHANE	UG/KG	11	U	12	U	11	U	11	U	12	U	13	U
TOLUENE	UG/KG	0.9	JBU	12	U	11	U	11	U	12	U	9	JBU
CHLOROBENZENE	UG/KG	11	U	12	U	11	U	11	U	12	U	13	U
ETHYLBENZENE	UG/KG	11	U	12	U	11	U	11	U	12	U	13	U
STYRENE	UG/KG	11	U	12	U	11	U	11	U	12	U	13	U
XYLENE, TOTAL	UG/KG	11	U	12	U	11	U	11	U	12	U	13	U

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Parameter	Units	AB207A 09-JUL-92		AB207H 09-JUL-92		AB208A 13-JUL-92		AB208A DUP 13-JUL-92		AB208H 13-JUL-92		AB219A 09-JUL-92	
CHLOROMETHANE	UG/KG	11	U	11	U	11	U	11	U	10	U	11	U
BROMOMETHANE	UG/KG	11	U	11	U	11	U	11	U	10	U	11	U
VINYL CHLORIDE	UG/KG	11	U	11	U	11	U	11	U	10	U	11	U
CHLOROETHANE	UG/KG	11	U	11	U	11	U	11	U	10	U	11	U
METHYLENE CHLORIDE	UG/KG	11	U	11	U	11	U	1	BJU	10	U	11	U
ACETONE	UG/KG	11	U	15	BU	5	JBU	8	BJU	17	BU	19	BU
CARBON DISULFIDE	UG/KG	11	U	11	U	11	U	0.9	JBU	10	U	11	U
1,1-DICHLOROETHENE	UG/KG	11	U	11	U	11	U	11	U	10	U	11	U
1,1-DICHLOROETHANE	UG/KG	11	U	11	U	11	U	0.4	J	10	U	11	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG	11	U	11	U	14		14		16		11	U
CHLOROFORM	UG/KG	11	U	11	U	11	U	11	U	10	U	11	U
1,2-DICHLOROETHANE	UG/KG	11	U	11	U	11	U	11	U	10	U	11	U
2-BUTANONE	UG/KG	11	U	1	JBU	9	BJU	11	BU	10	U	11	U
1,1,1-TRICHLOROETHANE	UG/KG	11	U	11	U	11	U	11	U	10	U	11	U
CARBON TETRACHLORIDE	UG/KG	11	U	11	U	11	U	11	U	10	U	11	U
BROMODICHLOROMETHANE	UG/KG	11	U	11	U	11	U	11	U	10	U	11	U
1,2-DICHLOROPROPANE	UG/KG	11	U	11	U	11	U	11	U	10	U	11	U
CIS-1,3-DICHLOROPROPENE	UG/KG	11	U	11	U	11	U	11	U	10	U	11	U
TRICHLOROETHENE	UG/KG	15	B	3	JB	70		73		52		11	U
CHLORODIBROMOMETHANE	UG/KG	11	U	11	U	11	U	11	U	10	U	11	U
1,1,2-TRICHLOROETHANE	UG/KG	11	U	11	U	11	U	11	U	10	U	11	U
BENZENE	UG/KG	11	U	11	U	11	U	11	U	10	U	11	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	11	U	11	U	11	U	11	U	10	U	11	U
BROMOFORM	UG/KG	11	U	11	U	11	U	11	U	10	U	11	U
4-METHYL-2-PENTANONE	UG/KG	11	U	11	U	11	U	11	U	10	U	11	U
2-HEXANONE	UG/KG	11	U	11	U	11	U	11	U	10	U	11	U
TETRACHLOROETHENE	UG/KG	11	U	11	U	11	U	11	U	2	J	11	U
1,1,2,2-TETRACHLOROETHANE	UG/KG	11	U	11	U	11	U	11	U	10	U	11	U
TOLUENE	UG/KG	11	U	11	U	11	U	1	JBU	10	U	11	U
CHLOROBENZENE	UG/KG	11	U	11	U	11	U	11	U	10	U	11	U
ETHYLBENZENE	UG/KG	11	U	11	U	11	U	11	U	10	U	11	U
STYRENE	UG/KG	11	U	11	U	11	U	11	U	10	U	11	U
XYLENE, TOTAL	UG/KG	11	U	11	U	11	U	11	U	10	U	11	U

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Parameter	Units	AB219F 09-JUL-92		AB220A 09-JUL-92		AB220G 09-JUL-92		AB221A 09-JUL-92		AB221G 09-JUL-92		AB224A 13-JUL-92	
CHLOROMETHANE	UG/KG	11	U	11	U	10	U	12	U	10	U	11	U
BROMOMETHANE	UG/KG	11	U	11	U	10	U	12	U	10	U	11	U
VINYL CHLORIDE	UG/KG	11	U	11	U	10	U	12	U	10	U	11	U
CHLOROETHANE	UG/KG	11	U	11	U	10	U	12	U	10	U	11	U
METHYLENE CHLORIDE	UG/KG	11	U	11	U	10	U	12	U	10	U	11	U
ACETONE	UG/KG	12	BU	14	U	5	JBU	7	BJU	6	BJU	7	JBU
CARBON DISULFIDE	UG/KG	11	U	3	JBU	10	U	12	U	10	U	11	U
1,1-DICHLOROETHENE	UG/KG	11	U	11	U	10	U	12	U	10	U	11	U
1,1-DICHLOROETHANE	UG/KG	11	U	11	U	10	U	12	U	10	U	11	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG	11	U	2	J	10	U	12	U	10	U	11	U
CHLOROFORM	UG/KG	11	U	11	U	10	U	12	U	10	U	11	U
1,2-DICHLOROETHANE	UG/KG	11	U	11	U	10	U	12	U	10	U	11	U
2-BUTANONE	UG/KG	11	U	13	BU	5	BJU	12	U	10	U	11	BJU
1,1,1-TRICHLOROETHANE	UG/KG	11	U	11	U	10	U	12	U	10	U	11	U
CARBON TETRACHLORIDE	UG/KG	11	U	11	U	10	U	12	U	10	U	11	U
BROMODICHLOROMETHANE	UG/KG	11	U	11	U	10	U	12	U	10	U	11	U
1,2-DICHLOROPROPANE	UG/KG	11	U	11	U	10	U	12	U	10	U	11	U
CIS-1,3-DICHLOROPROPENE	UG/KG	11	U	11	U	10	U	12	U	10	U	11	U
TRICHLOROETHENE	UG/KG	11	U	28		3	JB	12	U	0.8	JB	11	U
CHLORODIBROMOMETHANE	UG/KG	11	U	11	U	10	U	12	U	10	U	11	U
1,1,2-TRICHLOROETHANE	UG/KG	11	U	11	U	10	U	12	U	10	U	11	U
BENZENE	UG/KG	11	U	11	U	10	U	12	U	10	U	11	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	11	U	11	U	10	U	12	U	10	U	11	U
BROMOFORM	UG/KG	11	U	11	U	10	U	12	U	10	U	11	U
4-METHYL-2-PENTANONE	UG/KG	11	U	11	U	10	U	12	U	10	U	11	U
2-HEXANONE	UG/KG	11	U	11	U	10	U	12	U	10	U	11	U
TETRACHLOROETHENE	UG/KG	11	U	1	J	10	U	12	U	10	U	11	U
1,1,2,2-TETRACHLOROETHANE	UG/KG	11	U	11	U	10	U	12	U	10	U	11	U
TOLUENE	UG/KG	11	U	3	JBU	0.6	JBU	12	U	10	U	11	U
CHLOROBENZENE	UG/KG	11	U	11	U	10	U	12	U	10	U	11	U
ETHYLBENZENE	UG/KG	11	U	11	U	10	U	12	U	10	U	11	U
STYRENE	UG/KG	11	U	11	U	10	U	12	U	10	U	11	U
XYLENE, TOTAL	UG/KG	11	U	11	U	10	U	12	U	10	U	11	U

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Parameter	Units	AB224H 13-JUL-92		AB226B 10-JUL-92		AB226G 10-JUL-92		AB227A 13-JUL-92		AB227A DUP 13-JUL-92		AB227G 13-JUL-92	
CHLOROMETHANE	UG/KG	11	U	13	U	10	U	11	U	11	U	10	U
BROMOMETHANE	UG/KG	11	U	13	U	10	U	11	U	11	U	10	U
VINYL CHLORIDE	UG/KG	11	U	13	U	10	U	11	U	11	U	10	U
CHLOROETHANE	UG/KG	11	U	13	U	10	U	11	U	11	U	10	U
METHYLENE CHLORIDE	UG/KG	11	U	13	U	10	U	1	BJU	1	BJU	1	BJU
ACETONE	UG/KG	7	JBU	30	BU	6	BJU	7	BJU	6	BJU	35	BU
CARBON DISULFIDE	UG/KG	11	U	13	U	10	U	11	U	11	U	0.4	JBU
1,1-DICHLOROETHENE	UG/KG	11	U	13	U	10	U	11	U	11	U	10	U
1,1-DICHLOROETHANE	UG/KG	11	U	13	U	10	U	11	U	11	U	10	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG	11	U	13	U	10	U	11	U	11	U	10	U
CHLOROFORM	UG/KG	11	U	13	U	10	U	11	U	11	U	10	U
1,2-DICHLOROETHANE	UG/KG	11	U	13	U	10	U	11	U	11	U	10	U
2-BUTANONE	UG/KG	10	BJU	6	JBU	9	JBU	9	BJU	10	BJU	8	BJU
1,1,1-TRICHLOROETHANE	UG/KG	11	U	13	U	10	U	11	U	11	U	10	U
CARBON TETRACHLORIDE	UG/KG	11	U	13	U	10	U	11	U	11	U	10	U
BROMODICHLOROMETHANE	UG/KG	11	U	13	U	10	U	11	U	11	U	10	U
1,2-DICHLOROPROPANE	UG/KG	11	U	13	U	10	U	11	U	11	U	10	U
CIS-1,3-DICHLOROPROPENE	UG/KG	11	U	13	U	10	U	11	U	11	U	10	U
TRICHLOROETHENE	UG/KG	0.9	JBU	2	JB	10	U	12	B	18		0.9	JBU
CHLORODIBROMOMETHANE	UG/KG	11	U	13	U	10	U	11	U	11	U	10	U
1,1,2-TRICHLOROETHANE	UG/KG	11	U	13	U	10	U	11	U	11	U	10	U
BENZENE	UG/KG	11	U	13	U	10	U	11	U	11	U	10	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	11	U	13	U	10	U	11	U	11	U	10	U
BROMOFORM	UG/KG	11	U	13	U	10	U	11	U	11	U	10	U
4-METHYL-2-PENTANONE	UG/KG	11	U	13	U	10	U	11	U	11	U	10	U
2-HEXANONE	UG/KG	11	U	13	U	10	U	11	U	11	U	10	U
TETRACHLOROETHENE	UG/KG	11	U	13	U	10	U	11	U	0.6	J	10	U
1,1,2,2-TETRACHLOROETHANE	UG/KG	11	U	13	U	10	U	11	U	11	U	10	U
TOLUENE	UG/KG	11	U	13	U	10	U	11	U	11	U	2	JBU
CHLOROBENZENE	UG/KG	11	U	13	U	10	U	11	U	11	U	10	U
ETHYLBENZENE	UG/KG	11	U	13	U	10	U	11	U	11	U	10	U
STYRENE	UG/KG	11	U	13	U	10	U	11	U	11	U	10	U
XYLENE, TOTAL	UG/KG	11	U	13	U	10	U	11	U	11	U	10	U

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Parameter	Units	AB228A 10-JUL-92		AB228F 10-JUL-92		AB229A 10-JUL-92		AB229H 10-JUL-92		AB243A 28-JUL-92		AB243B 28-JUL-92	
CHLOROMETHANE	UG/KG	11	U	10	U	13	U	12	U	11	U	12	U
BROMOMETHANE	UG/KG	11	U	10	U	13	U	12	U	11	U	12	U
VINYL CHLORIDE	UG/KG	11	U	10	U	13	U	12	U	11	U	12	U
CHLOROETHANE	UG/KG	11	U	10	U	13	U	12	U	11	U	12	U
METHYLENE CHLORIDE	UG/KG	11	U	10	U	13	U	12	U	11	U	12	U
ACETONE	UG/KG	11	U	12	BU	6	BJU	7	BJU	69	BU	10	BJU
CARBON DISULFIDE	UG/KG	11	U	10	U	13	U	12	U	11	U	12	U
1,1-DICHLOROETHENE	UG/KG	11	U	10	U	13	U	12	U	11	U	12	U
1,1-DICHLOROETHANE	UG/KG	11	U	10	U	13	U	12	U	11	U	2	J
1,2-DICHLOROETHENE (TOTAL)	UG/KG	11	U	10	U	13	U	12	U	21		230	
CHLOROFORM	UG/KG	11	U	10	U	13	U	12	U	11	U	12	U
1,2-DICHLOROETHANE	UG/KG	11	U	10	U	13	U	12	U	11	U	12	U
2-BUTANONE	UG/KG	11	U	9	JBU	12	JBU	10	JBU	20	BU	12	U
1,1,1-TRICHLOROETHANE	UG/KG	11	U	10	U	13	U	12	U	11	U	2	J
CARBON TETRACHLORIDE	UG/KG	11	U	10	U	13	U	12	U	11	U	12	U
BROMODICHLOROMETHANE	UG/KG	11	U	10	U	13	U	12	U	11	U	12	U
1,2-DICHLOROPROPANE	UG/KG	11	U	10	U	13	U	12	U	11	U	12	U
CIS-1,3-DICHLOROPROPENE	UG/KG	11	U	10	U	13	U	12	U	11	U	12	U
TRICHLOROETHENE	UG/KG	5	JB	3	JB	110		3	JB	11	U	80	
CHLORODIBROMOMETHANE	UG/KG	11	U	10	U	13	U	12	U	11	U	12	U
1,1,2-TRICHLOROETHANE	UG/KG	11	U	10	U	13	U	12	U	11	U	12	U
BENZENE	UG/KG	11	U	10	U	13	U	12	U	11	U	12	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	11	U	10	U	13	U	12	U	11	U	12	U
BROMOFORM	UG/KG	11	U	10	U	13	U	12	U	11	U	12	U
4-METHYL-2-PENTANONE	UG/KG	11	U	10	U	13	U	12	U	11	U	12	U
2-HEXANONE	UG/KG	11	U	10	U	13	U	12	U	11	U	12	U
TETRACHLOROETHENE	UG/KG	11	U	10	U	13	U	12	U	11	U	2	J
1,1,2,2-TETRACHLOROETHANE	UG/KG	11	U	10	U	13	U	12	U	11	U	12	U
TOLUENE	UG/KG	0.7	JBU	10	U	13	U	12	U	11	U	12	U
CHLOROBENZENE	UG/KG	11	U	10	U	13	U	12	U	11	U	12	U
ETHYLBENZENE	UG/KG	11	U	10	U	13	U	12	U	11	U	12	U
STYRENE	UG/KG	11	U	10	U	13	U	12	U	11	U	12	U
XYLENE, TOTAL	UG/KG	11	U	10	U	13	U	12	U	11	U	12	U

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Parameter	Units	AT001A 12-JUN-92		AT001C 12-JUN-92		AT002A 12-JUN-92		AT002B 12-JUN-92		AT002B DUP 12-JUN-92		AT003A 16-JUN-92	
CHLOROMETHANE	UG/KG	11	U	10	U	11	U	11	U	11	U	11	U
BROMOMETHANE	UG/KG	11	U	10	U	11	U	11	U	11	U	11	U
VINYL CHLORIDE	UG/KG	11	U	10	U	11	U	11	U	11	U	11	U
CHLOROETHANE	UG/KG	11	U	10	U	11	U	11	U	11	U	11	U
METHYLENE CHLORIDE	UG/KG	11	U	10	U	11	U	11	U	11	U	1	BJU
ACETONE	UG/KG	10	BJU	8	BJU	7	BJU	9	BJU	7	BJU	11	U
CARBON DISULFIDE	UG/KG	5	JBU	10	U	11	U	11	U	11	U	3	JBU
1,1-DICHLOROETHENE	UG/KG	11	U	10	U	11	U	11	U	11	U	11	U
1,1-DICHLOROETHANE	UG/KG	11	U	10	U	11	U	11	U	11	U	11	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG	11		10	U	11	U	11	U	11	U	22	
CHLOROFORM	UG/KG	11	U	10	U	11	U	11	U	11	U	11	U
1,2-DICHLOROETHANE	UG/KG	11	U	10	U	11	U	11	U	11	U	11	U
2-BUTANONE	UG/KG	11	U	10	U	11	U	11	U	11	U	11	U
1,1,1-TRICHLOROETHANE	UG/KG	11	U	10	U	11	U	11	U	11	U	11	U
CARBON TETRACHLORIDE	UG/KG	11	U	10	U	11	U	11	U	11	U	11	U
BROMODICHLOROMETHANE	UG/KG	11	U	10	U	11	U	11	U	11	U	11	U
1,2-DICHLOROPROPANE	UG/KG	11	U	10	U	11	U	11	U	11	U	11	U
CIS-1,3-DICHLOROPROPENE	UG/KG	11	U	10	U	11	U	11	U	11	U	11	U
TRICHLOROETHENE	UG/KG	31		3	JB	10	JB	35		31		38	
CHLORODIBROMOMETHANE	UG/KG	11	U	10	U	11	U	11	U	11	U	11	U
1,1,2-TRICHLOROETHANE	UG/KG	11	U	10	U	11	U	11	U	11	U	11	U
BENZENE	UG/KG	11	U	10	U	11	U	11	U	11	U	11	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	11	U	10	U	11	U	11	U	11	U	11	U
BROMOFORM	UG/KG	11	U	10	U	11	U	11	U	11	U	11	U
4-METHYL-2-PENTANONE	UG/KG	11	U	10	U	11	U	11	U	11	U	11	U
2-HEXANONE	UG/KG	11	U	10	U	11	U	11	U	11	U	11	U
TETRACHLOROETHENE	UG/KG	11	U	10	U	11	U	2	J	2	J	11	U
1,1,2,2-TETRACHLOROETHANE	UG/KG	11	U	10	U	11	U	11	U	11	U	11	U
TOLUENE	UG/KG	11	U	10	U	11	U	11	U	11	U	3	BJU
CHLOROBENZENE	UG/KG	11	U	10	U	11	U	11	U	11	U	11	U
ETHYLBENZENE	UG/KG	11	U	10	U	11	U	11	U	11	U	11	U
STYRENE	UG/KG	11	U	10	U	11	U	11	U	11	U	11	U
XYLENE, TOTAL	UG/KG	11	U	10	U	11	U	11	U	11	U	11	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
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SITE AREA: A4

RESULTS FOR VOLATILE ORGANIC COMPOUND ANALYSES
SUB-AREA A4

Parameter	Units	AT003B 16-JUN-92		AT004A 16-JUN-92		AT004B 16-JUN-92		AT005A 16-JUN-92		AT005C 16-JUN-92		AT005C DUP 16-JUN-92	
CHLOROMETHANE	UG/KG	14	U	11	U	13	U	11	U	12	U	12	U
BROMOMETHANE	UG/KG	14	U	11	U	13	U	11	U	12	U	12	U
VINYL CHLORIDE	UG/KG	14	U	11	U	13	U	11	U	12	U	12	U
CHLOROETHANE	UG/KG	14	U	11	U	13	U	11	U	12	U	12	U
METHYLENE CHLORIDE	UG/KG	2	BJU	1	BJU	2	JBU	2	JBU	3	JBU	12	U
ACETONE	UG/KG	14	U	11	U	22	BU	11	U	12	U	12	U
CARBON DISULFIDE	UG/KG	5	JBU	11	U	5	JBU	2	JBU	2	JBU	12	U
1,1-DICHLOROETHENE	UG/KG	14	U	11	U	13	U	11	U	12	U	12	U
1,1-DICHLOROETHANE	UG/KG	14	U	11	U	13	U	11	U	12	U	12	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG	25		140		570	JD	1	J	1	J	2	J
CHLOROFORM	UG/KG	14	U	11	U	0.6	JBU	11	U	12	U	12	U
1,2-DICHLOROETHANE	UG/KG	14	U	11	U	13	U	11	U	12	U	12	U
2-BUTANONE	UG/KG	14	U	11	U	13	U	11	U	12	U	12	U
1,1,1-TRICHLOROETHANE	UG/KG	0.8	J	11	U	2	J	11	U	12	U	12	U
CARBON TETRACHLORIDE	UG/KG	14	U	11	U	13	U	11	U	12	U	12	U
BROMODICHLOROMETHANE	UG/KG	14	U	11	U	13	U	11	U	12	U	12	U
1,2-DICHLOROPROPANE	UG/KG	14	U	11	U	13	U	11	U	12	U	12	U
CIS-1,3-DICHLOROPROPENE	UG/KG	14	U	11	U	13	U	11	U	12	U	12	U
TRICHLOROETHENE	UG/KG	290	E	1	JB	47000	D	10	JB	8	JB	11	JB
CHLORODIBROMOMETHANE	UG/KG	14	U	11	U	13	U	11	U	12	U	12	U
1,1,2-TRICHLOROETHANE	UG/KG	14	U	11	U	7	J	11	U	12	U	12	U
BENZENE	UG/KG	14	U	11	U	13	U	11	U	12	U	12	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	14	U	11	U	13	U	11	U	12	U	12	U
BROMOFORM	UG/KG	14	U	11	U	13	U	11	U	12	U	12	U
4-METHYL-2-PENTANONE	UG/KG	14	U	11	U	13	U	11	U	12	U	12	U
2-HEXANONE	UG/KG	14	U	11	U	13	U	11	U	12	U	12	U
TETRACHLOROETHENE	UG/KG	28		11	U	2700	D	11	U	12	U	0.9	J
1,1,2,2-TETRACHLOROETHANE	UG/KG	14	U	11	U	2	J	11	U	12	U	12	U
TOLUENE	UG/KG	8	BJU	1	BJU	20	B	16	B	17	B	2	BJU
CHLOROBENZENE	UG/KG	14	U	11	U	13	U	11	U	12	U	12	U
ETHYLBENZENE	UG/KG	14	U	11	U	72		11	U	12	U	12	U
STYRENE	UG/KG	14	U	11	U	13	U	11	U	12	U	12	U
XYLENE, TOTAL	UG/KG	14	U	2	JBU	2000	D	11	U	12	U	12	U

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SITE AREA: A4

RESULTS FOR VOLATILE ORGANIC COMPOUND ANALYSES
SUB-AREA A4

Parameter	Units	AT006A 17-JUN-92		AT006B 17-JUN-92	
CHLOROMETHANE	UG/KG	11	U	11	U
BROMOMETHANE	UG/KG	11	U	11	U
VINYL CHLORIDE	UG/KG	11	U	11	U
CHLOROETHANE	UG/KG	11	U	11	U
METHYLENE CHLORIDE	UG/KG	11	U	11	U
ACETONE	UG/KG	11	U	8	BJU
CARBON DISULFIDE	UG/KG	11	U	11	U
1,1-DICHLOROETHENE	UG/KG	11	U	11	U
1,1-DICHLOROETHANE	UG/KG	11	U	11	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG	11	U	11	U
CHLOROFORM	UG/KG	11	U	11	U
1,2-DICHLOROETHANE	UG/KG	11	U	11	U
2-BUTANONE	UG/KG	11	U	11	U
1,1,1-TRICHLOROETHANE	UG/KG	11	U	11	U
CARBON TETRACHLORIDE	UG/KG	11	U	11	U
BROMODICHLOROMETHANE	UG/KG	11	U	11	U
1,2-DICHLOROPROPANE	UG/KG	11	U	11	U
CIS-1,3-DICHLOROPROPENE	UG/KG	11	U	11	U
TRICHLOROETHENE	UG/KG	5	JB	11	U
CHLORODIBROMOMETHANE	UG/KG	11	U	11	U
1,1,2-TRICHLOROETHANE	UG/KG	11	U	11	U
BENZENE	UG/KG	11	U	11	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	11	U	11	U
BROMOFORM	UG/KG	11	U	11	U
4-METHYL-2-PENTANONE	UG/KG	11	U	11	U
2-HEXANONE	UG/KG	11	U	11	U
TETRACHLOROETHENE	UG/KG	11	U	11	U
1,1,2,2-TETRACHLOROETHANE	UG/KG	11	U	11	U
TOLUENE	UG/KG	11	U	5	JBU
CHLOROBENZENE	UG/KG	11	U	11	U
ETHYLBENZENE	UG/KG	11	U	11	U
STYRENE	UG/KG	11	U	11	U
XYLENE, TOTAL	UG/KG	11	U	11	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: B1

RESULTS FOR VOLATILE ORGANIC COMPOUND ANALYSES
SUB-AREA B1

Parameter	Units	BB001A 15-JUN-92		BB001B 15-JUN-92		BB001C 07-JUL-92		BB002B 15-JUN-92		BB002G 15-JUN-92		BB002G DUP 15-JUN-92	
CHLOROMETHANE	UG/KG	11	U	11	U	170	U	12	U	10	U	10	U
BROMOMETHANE	UG/KG	11	U	11	U	170	U	12	U	10	U	10	U
VINYL CHLORIDE	UG/KG	11	U	11	U	170	U	12	U	10	U	10	U
CHLOROETHANE	UG/KG	11	U	11	U	170	U	12	U	10	U	10	U
METHYLENE CHLORIDE	UG/KG	1	BJU	1	BJU	23	BJU	1	BJU	10	U	1	BJU
ACETONE	UG/KG	11	U	37	BU	2600	B	12	U	10	U	10	U
CARBON DISULFIDE	UG/KG	11	U	11	U	170	U	12	U	10	U	10	U
1,1-DICHLOROETHENE	UG/KG	11	U	11	U	170	U	12	U	10	U	10	U
1,1-DICHLOROETHANE	UG/KG	11	U	11	U	170	U	2	J	10	U	10	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG	11	U	11	U	120	J	160		10	U	10	U
CHLOROFORM	UG/KG	11	U	11	U	170	U	12	U	10	U	10	U
1,2-DICHLOROETHANE	UG/KG	11	U	11	U	170	U	12	U	10	U	10	U
2-BUTANONE	UG/KG	11	U	11	U	800	BU	12	U	10	U	10	U
1,1,1-TRICHLOROETHANE	UG/KG	11	U	11	U	170	U	12	U	10	U	10	U
CARBON TETRACHLORIDE	UG/KG	11	U	11	U	170	U	12	U	10	U	10	U
BROMODICHLOROMETHANE	UG/KG	11	U	11	U	170	U	12	U	10	U	10	U
1,2-DICHLOROPROPANE	UG/KG	11	U	11	U	170	U	12	U	10	U	10	U
CIS-1,3-DICHLOROPROPENE	UG/KG	11	U	11	U	170	U	12	U	10	U	10	U
TRICHLOROETHENE	UG/KG	11	U	11	U	170	U	4	JB	10	U	10	U
CHLORODIBROMOMETHANE	UG/KG	11	U	11	U	170	U	12	U	10	U	10	U
1,1,2-TRICHLOROETHANE	UG/KG	11	U	11	U	170	U	12	U	10	U	10	U
BENZENE	UG/KG	11	U	11	U	170	U	12	U	10	U	10	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	11	U	11	U	170	U	12	U	10	U	10	U
BROMOFORM	UG/KG	11	U	11	U	170	U	12	U	10	U	10	U
4-METHYL-2-PENTANONE	UG/KG	11	U	11	U	170	U	12	U	10	U	10	U
2-HEXANONE	UG/KG	11	U	11	U	170	U	12	U	10	U	10	U
TETRACHLOROETHENE	UG/KG	11	U	11	U	170	U	12	U	10	U	10	U
1,1,2,2-TETRACHLOROETHANE	UG/KG	11	U	11	U	170	U	12	U	10	U	10	U
TOLUENE	UG/KG	11	U	11	U	170	U	1	BJU	0.8	BJU	0.8	BJU
CHLOROBENZENE	UG/KG	11	U	11	U	170	U	12	U	10	U	10	U
ETHYLBENZENE	UG/KG	11	U	11	U	170	U	12	U	10	U	10	U
STYRENE	UG/KG	11	U	11	U	170	U	12	U	10	U	10	U
XYLENE, TOTAL	UG/KG	11	U	11	U	170	U	12	U	10	U	10	U

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RESULTS FOR VOLATILE ORGANIC COMPOUND ANALYSES
SUB-AREA B1

Parameter	Units	BB003A 16-JUN-92		BB003D 16-JUN-92		BB202B 16-JUL-92		BB204A 16-JUL-92		BB204G 16-JUL-92		BB205A 16-JUL-92	
CHLOROMETHANE	UG/KG	11	U	12	U	12	U	11	U	10	U	12	U
BROMOMETHANE	UG/KG	11	U	12	U	12	U	11	U	10	U	12	U
VINYL CHLORIDE	UG/KG	11	U	12	U	12	U	11	U	10	U	12	U
CHLOROETHANE	UG/KG	11	U	12	U	12	U	11	U	10	U	12	U
METHYLENE CHLORIDE	UG/KG	11	U	12	U	12	U	11	U	10	U	12	U
ACETONE	UG/KG	11	U	100	BU	11	BJU	9	BJU	1500	BDE	12	U
CARBON DISULFIDE	UG/KG	2	JBU	2	JBU	12	U	11	U	10	U	12	U
1,1-DICHLOROETHENE	UG/KG	11	U	12	U	12	U	11	U	10	U	12	U
1,1-DICHLOROETHANE	UG/KG	11	U	12	U	12	U	11	U	10	U	12	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG	11	U	12	U	12	U	11	U	10	U	12	U
CHLOROFORM	UG/KG	11	U	12	U	12	U	11	U	10	U	12	U
1,2-DICHLOROETHANE	UG/KG	11	U	12	U	12	U	11	U	10	U	12	U
2-BUTANONE	UG/KG	11	U	15	BU	15	BU	12	BU	12	BU	12	U
1,1,1-TRICHLOROETHANE	UG/KG	11	U	12	U	12	U	11	U	10	U	12	U
CARBON TETRACHLORIDE	UG/KG	11	U	12	U	12	U	11	U	10	U	12	U
BROMODICHLOROMETHANE	UG/KG	11	U	12	U	12	U	11	U	10	U	12	U
1,2-DICHLOROPROPANE	UG/KG	11	U	12	U	12	U	11	U	10	U	12	U
CIS-1,3-DICHLOROPROPENE	UG/KG	11	U	12	U	12	U	11	U	10	U	12	U
TRICHLOROETHENE	UG/KG	11	U	12	U	12	U	11	U	27	JD	12	U
CHLORODIBROMOMETHANE	UG/KG	11	U	12	U	12	U	11	U	10	U	12	U
1,1,2-TRICHLOROETHANE	UG/KG	11	U	12	U	12	U	11	U	10	U	12	U
BENZENE	UG/KG	11	U	12	U	12	U	11	U	10	U	12	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	11	U	12	U	12	U	11	U	10	U	12	U
BROMOFORM	UG/KG	11	U	12	U	12	U	11	U	10	U	12	U
4-METHYL-2-PENTANONE	UG/KG	11	U	12	U	12	U	11	U	10	U	12	U
2-HEXANONE	UG/KG	11	U	12	U	12	U	11	U	10	U	12	U
TETRACHLOROETHENE	UG/KG	11	U	12	U	12	U	11	U	14	JD	12	U
1,1,2,2-TETRACHLOROETHANE	UG/KG	11	U	12	U	12	U	11	U	10	U	12	U
TOLUENE	UG/KG	2	BJU	2	BJU	12	U	11	U	10	U	12	U
CHLOROBENZENE	UG/KG	11	U	12	U	12	U	11	U	10	U	12	U
ETHYLBENZENE	UG/KG	11	U	12	U	12	U	11	U	10	U	12	U
STYRENE	UG/KG	11	U	12	U	12	U	11	U	10	U	12	U
XYLENE, TOTAL	UG/KG	11	U	12	U	12	U	11	U	10	U	12	U

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RESULTS FOR VOLATILE ORGANIC COMPOUND ANALYSES
SUB-AREA B1

Parameter	Units	BB205G 16-JUL-92		BB206A 17-JUL-92		BB206A DUP 17-JUL-92		BB206G 17-JUL-92		BT001A 18-JUN-92		BT001B 18-JUN-92	
CHLOROMETHANE	UG/KG	11	U	14	U	11	U	11	U	11	U	11	U
BROMOMETHANE	UG/KG	11	U	14	U	11	U	11	U	11	U	11	U
VINYL CHLORIDE	UG/KG	11	U	14	U	11	U	11	U	11	U	11	U
CHLOROETHANE	UG/KG	11	U	14	U	11	U	11	U	11	U	11	U
METHYLENE CHLORIDE	UG/KG	11	U	14	U	11	U	11	U	11	U	11	U
ACETONE	UG/KG	130	B	210	B	240	BD	170	B	5	JBU	11	U
CARBON DISULFIDE	UG/KG	11	U	2	JBU	2	JBU	11	U	0.7	JBU	11	U
1,1-DICHLOROETHENE	UG/KG	11	U	14	U	11	U	11	U	11	U	11	U
1,1-DICHLOROETHANE	UG/KG	11	U	14	U	11	U	11	U	11	U	11	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG	11	U	14	U	11	U	11	U	11	U	11	U
CHLOROFORM	UG/KG	11	U	14	U	11	U	11	U	0.5	BJU	11	U
1,2-DICHLOROETHANE	UG/KG	11	U	14	U	11	U	11	U	11	U	11	U
2-BUTANONE	UG/KG	9	BJU	15	BU	7	BJU	9	BJU	11	U	11	U
1,1,1-TRICHLOROETHANE	UG/KG	11	U	14	U	11	U	11	U	11	U	11	U
CARBON TETRACHLORIDE	UG/KG	11	U	14	U	11	U	11	U	11	U	11	U
BROMODICHLOROMETHANE	UG/KG	11	U	14	U	11	U	11	U	11	U	11	U
1,2-DICHLOROPROPANE	UG/KG	11	U	14	U	11	U	11	U	11	U	11	U
CIS-1,3-DICHLOROPROPENE	UG/KG	11	U	14	U	11	U	11	U	11	U	11	U
TRICHLOROETHENE	UG/KG	11	U	14	U	11	U	11	U	11	U	11	U
CHLORODIBROMOMETHANE	UG/KG	11	U	14	U	11	U	11	U	11	U	11	U
1,1,2-TRICHLOROETHANE	UG/KG	11	U	14	U	11	U	11	U	11	U	11	U
BENZENE	UG/KG	11	U	14	U	11	U	11	U	11	U	11	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	11	U	14	U	11	U	11	U	11	U	11	U
BROMOFORM	UG/KG	11	U	14	U	11	U	11	U	11	U	11	U
4-METHYL-2-PENTANONE	UG/KG	11	U	14	U	11	U	11	U	11	U	11	U
2-HEXANONE	UG/KG	11	U	14	U	11	U	11	U	11	U	11	U
TETRACHLOROETHENE	UG/KG	11	U	14	U	11	U	11	U	11	U	11	U
1,1,2,2-TETRACHLOROETHANE	UG/KG	11	U	14	U	11	U	11	U	11	U	11	U
TOLUENE	UG/KG	11	U	14	U	11	U	11	U	0.9	JBU	11	U
CHLOROBENZENE	UG/KG	11	U	14	U	11	U	11	U	11	U	11	U
ETHYLBENZENE	UG/KG	11	U	14	U	11	U	11	U	11	U	11	U
STYRENE	UG/KG	11	U	14	U	11	U	11	U	11	U	11	U
XYLENE, TOTAL	UG/KG	11	U	14	U	11	U	11	U	11	U	11	U

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SITE AREA: B1

RESULTS FOR VOLATILE ORGANIC COMPOUND ANALYSES
SUB-AREA B1

Parameter	Units	BT002A 17-JUN-92		BT002B 17-JUN-92	
CHLOROMETHANE	UG/KG	12	U	15	U
BROMOMETHANE	UG/KG	12	U	15	U
VINYL CHLORIDE	UG/KG	12	U	15	U
CHLOROETHANE	UG/KG	12	U	15	U
METHYLENE CHLORIDE	UG/KG	12	U	15	U
ACETONE	UG/KG	9	JBU	20	BU
CARBON DISULFIDE	UG/KG	2	JBU	18	BU
1,1-DICHLOROETHENE	UG/KG	12	U	15	U
1,1-DICHLOROETHANE	UG/KG	12	U	15	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG	12	U	15	U
CHLOROFORM	UG/KG	12	U	15	U
1,2-DICHLOROETHANE	UG/KG	12	U	15	U
2-BUTANONE	UG/KG	12	U	15	U
1,1,1-TRICHLOROETHANE	UG/KG	12	U	15	U
CARBON TETRACHLORIDE	UG/KG	12	U	15	U
BROMODICHLOROMETHANE	UG/KG	12	U	15	U
1,2-DICHLOROPROPANE	UG/KG	12	U	15	U
CIS-1,3-DICHLOROPROPENE	UG/KG	12	U	15	U
TRICHLOROETHENE	UG/KG	12	U	15	U
CHLORODIBROMOMETHANE	UG/KG	12	U	15	U
1,1,2-TRICHLOROETHANE	UG/KG	12	U	15	U
BENZENE	UG/KG	12	U	15	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	12	U	15	U
BROMOFORM	UG/KG	12	U	15	U
4-METHYL-2-PENTANONE	UG/KG	12	U	15	U
2-HEXANONE	UG/KG	12	U	15	U
TETRACHLOROETHENE	UG/KG	12	U	15	U
1,1,2,2-TETRACHLOROETHANE	UG/KG	12	U	15	U
TOLUENE	UG/KG	2	JBU	14	JBU
CHLOROBENZENE	UG/KG	12	U	15	U
ETHYLBENZENE	UG/KG	12	U	15	U
STYRENE	UG/KG	12	U	15	U
XYLENE, TOTAL	UG/KG	12	U	15	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: B2

RESULTS FOR VOLATILE ORGANIC COMPOUND ANALYSES
SUB-AREA B2

Parameter	Units	BT003A 18-JUN-92		BT003D 18-JUN-92		BT004A 18-JUN-92		BT004D 18-JUN-92		BT004D DUP 18-JUN-92	
CHLOROMETHANE	UG/KG	11	U	10	U	11	U	11	U	13	U
BROMOMETHANE	UG/KG	11	U	10	U	11	U	11	U	13	U
VINYL CHLORIDE	UG/KG	11	U	10	U	11	U	11	U	13	U
CHLOROETHANE	UG/KG	11	U	10	U	11	U	11	U	13	U
METHYLENE CHLORIDE	UG/KG	2	JBU	10	U	11	U	11	U	13	U
ACETONE	UG/KG	11	U	15	BU	6	JBU	17	BU	13	BU
CARBON DISULFIDE	UG/KG	11	U	10	U	11	U	11	U	13	U
1,1-DICHLOROETHENE	UG/KG	11	U	10	U	11	U	11	U	13	U
1,1-DICHLOROETHANE	UG/KG	11	U	10	U	11	U	11	U	13	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG	11	U	10	U	11	U	11	U	13	U
CHLOROFORM	UG/KG	11	U	10	U	11	U	11	U	13	U
1,2-DICHLOROETHANE	UG/KG	11	U	10	U	11	U	11	U	13	U
2-BUTANONE	UG/KG	11	U	3	BJU	11	U	11	U	13	U
1,1,1-TRICHLOROETHANE	UG/KG	11	U	10	U	11	U	11	U	13	U
CARBON TETRACHLORIDE	UG/KG	11	U	10	U	11	U	11	U	13	U
BROMODICHLOROMETHANE	UG/KG	11	U	10	U	11	U	11	U	13	U
1,2-DICHLOROPROPANE	UG/KG	11	U	10	U	11	U	11	U	13	U
CIS-1,3-DICHLOROPROPENE	UG/KG	11	U	10	U	11	U	11	U	13	U
TRICHLOROETHENE	UG/KG	11	U	10	U	11	U	11	U	13	U
CHLORODIBROMOMETHANE	UG/KG	11	U	10	U	11	U	11	U	13	U
1,1,2-TRICHLOROETHANE	UG/KG	11	U	10	U	11	U	11	U	13	U
BENZENE	UG/KG	11	U	10	U	11	U	11	U	13	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	11	U	10	U	11	U	11	U	13	U
BROMOFORM	UG/KG	11	U	10	U	11	U	11	U	13	U
4-METHYL-2-PENTANONE	UG/KG	11	U	10	U	11	U	11	U	13	U
2-HEXANONE	UG/KG	11	U	10	U	11	U	11	U	13	U
TETRACHLOROETHENE	UG/KG	11	U	10	U	11	U	11	U	13	U
1,1,2,2-TETRACHLOROETHANE	UG/KG	11	U	10	U	11	U	11	U	13	U
TOLUENE	UG/KG	11	U	10	U	11	U	2	JBU	13	U
CHLOROBENZENE	UG/KG	11	U	10	U	11	U	11	U	13	U
ETHYLBENZENE	UG/KG	11	U	10	U	11	U	11	U	13	U
STYRENE	UG/KG	11	U	10	U	11	U	11	U	13	U
XYLENE, TOTAL	UG/KG	11	U	10	U	11	U	11	U	13	U

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BEGINNING DATE: 01-JUN-92
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RESULTS FOR VOLATILE ORGANIC COMPOUND ANALYSES
SUB-AREA D

Parameter	Units	DB029A 11-JUN-92		DB029E 11-JUN-92		DB029E DUP 11-JUN-92		DB030A 12-JUN-92		DB030E 12-JUN-92		DB031A 11-JUN-92	
CHLOROMETHANE	UG/KG	11	U	10	U	10	U	11	U	10	U	11	U
BROMOMETHANE	UG/KG	11	U	10	U	10	U	11	U	10	U	11	U
VINYL CHLORIDE	UG/KG	11	U	10	U	10	U	11	U	10	U	11	U
CHLOROETHANE	UG/KG	11	U	10	U	10	U	11	U	10	U	11	U
METHYLENE CHLORIDE	UG/KG	11	U	10	U	10	U	11	U	10	U	11	U
ACETONE	UG/KG	11	U	130	B	160	B	7	BJU	140	B	22	UB
CARBON DISULFIDE	UG/KG	2	JBU	0.9	JBU	10	U	11	U	0.6	JBU	1	JBU
1,1-DICHLOROETHENE	UG/KG	11	U	10	U	10	U	11	U	10	U	11	U
1,1-DICHLOROETHANE	UG/KG	11	U	10	U	10	U	11	U	10	U	11	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG	11	U	10	U	10	U	11	U	10	U	11	U
CHLOROFORM	UG/KG	11	U	10	U	10	U	11	U	10	U	11	U
1,2-DICHLOROETHANE	UG/KG	11	U	10	U	10	U	11	U	10	U	11	U
2-BUTANONE	UG/KG	11	U	10	U	10	U	11	U	10	U	2	JBU
1,1,1-TRICHLOROETHANE	UG/KG	0.8	J	10	U	10	U	11	U	10	U	11	U
CARBON TETRACHLORIDE	UG/KG	11	U	10	U	10	U	11	U	10	U	11	U
BROMODICHLOROMETHANE	UG/KG	11	U	10	U	10	U	11	U	10	U	11	U
1,2-DICHLOROPROPANE	UG/KG	11	U	10	U	10	U	11	U	10	U	11	U
CIS-1,3-DICHLOROPROPENE	UG/KG	11	U	10	U	10	U	11	U	10	U	11	U
TRICHLOROETHENE	UG/KG	9	JB	10	U	10	U	11	U	10	U	11	U
CHLORODIBROMOMETHANE	UG/KG	11	U	10	U	10	U	11	U	10	U	11	U
1,1,2-TRICHLOROETHANE	UG/KG	11	U	10	U	10	U	11	U	10	U	11	U
BENZENE	UG/KG	11	U	10	U	10	U	11	U	10	U	11	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	11	U	10	U	10	U	11	U	10	U	11	U
BROMOFORM	UG/KG	11	U	10	U	10	U	11	U	10	U	11	U
4-METHYL-2-PENTANONE	UG/KG	11	U	10	U	10	U	11	U	10	U	11	U
2-HEXANONE	UG/KG	11	U	10	U	10	U	11	U	10	U	11	U
TETRACHLOROETHENE	UG/KG	2	J	10	U	10	U	11	U	10	U	11	U
1,1,2,2-TETRACHLOROETHANE	UG/KG	11	U	10	U	10	U	11	U	10	U	11	U
TOLUENE	UG/KG	2	JBU	2	JBU	10	U	11	U	10	U	1	JBU
CHLOROBENZENE	UG/KG	11	U	10	U	10	U	11	U	10	U	11	U
ETHYLBENZENE	UG/KG	11	U	10	U	10	U	11	U	10	U	11	U
STYRENE	UG/KG	11	U	10	U	10	U	11	U	10	U	11	U
XYLENE, TOTAL	UG/KG	11	U	10	U	10	U	11	U	10	U	11	U

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RESULTS FOR VOLATILE ORGANIC COMPOUND ANALYSES
SUB-AREA D

Parameter	Units	DB031F 11-JUN-92		DB032A 11-JUN-92		DB032C 11-JUN-92		DB033A 07-JUL-92		DB033E 07-JUL-92		DB034A 07-JUL-92	
CHLOROMETHANE	UG/KG	53	U	11	U	11	U	12	U	13	U	11	U
BROMOMETHANE	UG/KG	53	U	11	U	11	U	12	U	13	U	11	U
VINYL CHLORIDE	UG/KG	53	U	11	U	11	U	12	U	13	U	11	U
CHLOROETHANE	UG/KG	53	U	11	U	11	U	12	U	13	U	11	U
METHYLENE CHLORIDE	UG/KG	53	U	11	U	11	U	3	BJU	2	BJU	11	U
ACETONE	UG/KG	82	BU	4	JBU	11	U	15	BU	470	BD	6	BJU
CARBON DISULFIDE	UG/KG	53	U	3	JBU	2	JBU	12	U	13	U	11	U
1,1-DICHLOROETHENE	UG/KG	53	U	11	U	11	U	12	U	13	U	11	U
1,1-DICHLOROETHANE	UG/KG	53	U	11	U	11	U	12	U	13	U	11	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG	53	U	11	U	11	U	12	U	13	U	11	U
CHLOROFORM	UG/KG	53	U	11	U	11	U	12	U	13	U	11	U
1,2-DICHLOROETHANE	UG/KG	53	U	11	U	11	U	12	U	13	U	11	U
2-BUTANONE	UG/KG	53	U	11	U	2	JBU	4	JBU	5	JBU	11	U
1,1,1-TRICHLOROETHANE	UG/KG	53	U	11	U	11	U	12	U	13	U	11	U
CARBON TETRACHLORIDE	UG/KG	53	U	11	U	11	U	12	U	13	U	11	U
BROMODICHLOROMETHANE	UG/KG	53	U	11	U	11	U	12	U	13	U	11	U
1,2-DICHLOROPROPANE	UG/KG	53	U	11	U	11	U	12	U	13	U	11	U
CIS-1,3-DICHLOROPROPENE	UG/KG	53	U	11	U	11	U	12	U	13	U	11	U
TRICHLOROETHENE	UG/KG	53	U	11	U	11	U	12	U	46		7	JB
CHLORODIBROMOMETHANE	UG/KG	53	U	11	U	11	U	12	U	13	U	11	U
1,1,2-TRICHLOROETHANE	UG/KG	53	U	11	U	11	U	12	U	13	U	11	U
BENZENE	UG/KG	53	U	11	U	11	U	12	U	13	U	11	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	53	U	11	U	11	U	12	U	13	U	11	U
BROMOFORM	UG/KG	53	U	11	U	11	U	12	U	13	U	11	U
4-METHYL-2-PENTANONE	UG/KG	53	U	11	U	11	U	12	U	13	U	11	U
2-HEXANONE	UG/KG	53	U	11	U	11	U	12	U	13	U	11	U
TETRACHLOROETHENE	UG/KG	9	J	11	U	11	U	1	J	11	J	2	J
1,1,2,2-TETRACHLOROETHANE	UG/KG	53	U	11	U	11	U	12	U	13	U	11	U
TOLUENE	UG/KG	4	JBU	10	JBU	3	JBU	12	U	13	U	11	U
CHLOROBENZENE	UG/KG	53	U	11	U	11	U	12	U	13	U	11	U
ETHYLBENZENE	UG/KG	53	U	11	U	11	U	12	U	13	U	11	U
STYRENE	UG/KG	53	U	11	U	11	U	12	U	13	U	11	U
XYLENE, TOTAL	UG/KG	53	U	11	U	11	U	12	U	13	U	11	U

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BEGINNING DATE: 01-JUN-92
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RESULTS FOR VOLATILE ORGANIC COMPOUND ANALYSES
SUB-AREA D

Parameter	Units	DB034C 07-JUL-92	
CHLOROMETHANE	UG/KG	12	U
BROMOMETHANE	UG/KG	12	U
VINYL CHLORIDE	UG/KG	12	U
CHLOROETHANE	UG/KG	12	U
METHYLENE CHLORIDE	UG/KG	1	BJU
ACETONE	UG/KG	1400	BDE
CARBON DISULFIDE	UG/KG	12	U
1,1-DICHLOROETHENE	UG/KG	12	U
1,1-DICHLOROETHANE	UG/KG	12	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG	12	U
CHLOROFORM	UG/KG	12	U
1,2-DICHLOROETHANE	UG/KG	12	U
2-BUTANONE	UG/KG	12	U
1,1,1-TRICHLOROETHANE	UG/KG	2	J
CARBON TETRACHLORIDE	UG/KG	12	U
BROMODICHLOROMETHANE	UG/KG	12	U
1,2-DICHLOROPROPANE	UG/KG	12	U
CIS-1,3-DICHLOROPROPENE	UG/KG	12	U
TRICHLOROETHENE	UG/KG	63	
CHLORODIBROMOMETHANE	UG/KG	12	U
1,1,2-TRICHLOROETHANE	UG/KG	12	U
BENZENE	UG/KG	12	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	12	U
BROMOFORM	UG/KG	12	U
4-METHYL-2-PENTANONE	UG/KG	12	U
2-HEXANONE	UG/KG	12	U
TETRACHLOROETHENE	UG/KG	10	J
1,1,2,2-TETRACHLOROETHANE	UG/KG	12	U
TOLUENE	UG/KG	12	U
CHLOROBENZENE	UG/KG	12	U
ETHYLBENZENE	UG/KG	12	U
STYRENE	UG/KG	12	U
XYLENE, TOTAL	UG/KG	12	U

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SITE AREA: E1

RESULTS FOR VOLATILE ORGANIC COMPOUND ANALYSES
SUB-AREA E1

Parameter	Units	EB001A 16-JUN-92		EB001E 16-JUN-92		EB002A 16-JUN-92		EB002D 16-JUN-92		EB203A 21-JUL-92		EB203B 21-JUL-92	
CHLOROMETHANE	UG/KG	53	U	28	U	11	U	10	U	11	U	11	U
BROMOMETHANE	UG/KG	53	U	28	U	11	U	10	U	11	U	11	U
VINYL CHLORIDE	UG/KG	53	U	28	U	11	U	10	U	11	U	11	U
CHLOROETHANE	UG/KG	53	U	28	U	11	U	10	U	11	U	11	U
METHYLENE CHLORIDE	UG/KG	53	U	28	U	11	U	1	JBU	11	U	11	U
ACETONE	UG/KG	23	JBU	28	U	11	U	10	U	13	BU	14	BU
CARBON DISULFIDE	UG/KG	30	JBU	28	U	3	JBU	10	U	11	U	11	U
1,1-DICHLOROETHENE	UG/KG	53	U	28	U	11	U	10	U	11	U	11	U
1,1-DICHLOROETHANE	UG/KG	53	U	28	U	11	U	10	U	11	U	11	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG	53	U	28	U	11	U	10	U	11	U	11	U
CHLOROFORM	UG/KG	53	U	28	U	11	U	10	U	11	U	11	U
1,2-DICHLOROETHANE	UG/KG	53	U	28	U	11	U	10	U	11	U	11	U
2-BUTANONE	UG/KG	53	U	28	U	11	U	10	U	10	BJU	10	BJU
1,1,1-TRICHLOROETHANE	UG/KG	53	U	28	U	11	U	10	U	11	U	11	U
CARBON TETRACHLORIDE	UG/KG	53	U	28	U	11	U	10	U	11	U	11	U
BROMODICHLOROMETHANE	UG/KG	53	U	28	U	11	U	10	U	11	U	11	U
1,2-DICHLOROPROPANE	UG/KG	53	U	28	U	11	U	10	U	11	U	11	U
CIS-1,3-DICHLOROPROPENE	UG/KG	53	U	28	U	11	U	10	U	11	U	11	U
TRICHLOROETHENE	UG/KG	53	U	3	JB	11	U	2	JB	31		27	
CHLORODIBROMOMETHANE	UG/KG	53	U	28	U	11	U	10	U	11	U	11	U
1,1,2-TRICHLOROETHANE	UG/KG	53	U	28	U	11	U	10	U	11	U	11	U
BENZENE	UG/KG	53	U	28	U	11	U	10	U	11	U	11	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	53	U	28	U	11	U	10	U	11	U	11	U
BROMOFORM	UG/KG	53	U	28	U	11	U	10	U	11	U	11	U
4-METHYL-2-PENTANONE	UG/KG	53	U	28	U	11	U	10	U	11	U	11	U
2-HEXANONE	UG/KG	53	U	28	U	11	U	10	U	11	U	11	U
TETRACHLOROETHENE	UG/KG	53	U	28	U	11	U	10	U	11	U	2	J
1,1,2,2-TETRACHLOROETHANE	UG/KG	53	U	28	U	11	U	10	U	11	U	11	U
TOLUENE	UG/KG	48	BJU	9	BJU	10	BJU	2	BJU	11	U	11	U
CHLOROBENZENE	UG/KG	53	U	28	U	11	U	10	U	11	U	11	U
ETHYLBENZENE	UG/KG	53	U	28	U	11	U	10	U	11	U	11	U
STYRENE	UG/KG	53	U	28	U	11	U	10	U	11	U	11	U
XYLENE, TOTAL	UG/KG	53	U	28	U	11	U	10	U	11	U	11	U

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RESULTS FOR VOLATILE ORGANIC COMPOUND ANALYSES
SUB-AREA E1

Parameter	Units	EB206A 17-JUL-92		EB206E 17-JUL-92		EB209A 22-JUL-92		EB209B 22-JUL-92		EB210A 22-JUL-92		EB210A DUP 22-JUL-92	
CHLOROMETHANE	UG/KG	11	U	10	U	11	U	11	U	11	U	11	U
BROMOMETHANE	UG/KG	11	U	10	U	11	U	11	U	11	U	11	U
VINYL CHLORIDE	UG/KG	11	U	10	U	11	U	11	U	11	U	11	U
CHLOROETHANE	UG/KG	11	U	10	U	11	U	11	U	11	U	11	U
METHYLENE CHLORIDE	UG/KG	11	U	2	JBU	11	U	11	U	11	U	11	U
ACETONE	UG/KG	11	U	48	BU	11	BU	20	BU	34	BU	84	BU
CARBON DISULFIDE	UG/KG	11	U	10	U	1	JBU	11	U	11	U	3	JBU
1,1-DICHLOROETHENE	UG/KG	11	U	10	U	11	U	11	U	11	U	11	U
1,1-DICHLOROETHANE	UG/KG	11	U	10	U	11	U	11	U	11	U	11	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG	11	U	10	U	11	U	11	U	11	U	11	U
CHLOROFORM	UG/KG	11	U	10	U	11	U	11	U	11	U	11	U
1,2-DICHLOROETHANE	UG/KG	11	U	10	U	11	U	11	U	11	U	11	U
2-BUTANONE	UG/KG	11	U	8	BJU	10	BJU	11	BJU	12	BU	14	BU
1,1,1-TRICHLOROETHANE	UG/KG	11	U	10	U	11	U	11	U	11	U	11	U
CARBON TETRACHLORIDE	UG/KG	11	U	10	U	11	U	11	U	11	U	11	U
BROMODICHLOROMETHANE	UG/KG	11	U	10	U	11	U	11	U	11	U	11	U
1,2-DICHLOROPROPANE	UG/KG	11	U	10	U	11	U	11	U	11	U	11	U
CIS-1,3-DICHLOROPROPENE	UG/KG	11	U	10	U	11	U	11	U	11	U	11	U
TRICHLOROETHENE	UG/KG	8	JB	10	U	0.7	JB	2	JB	11	U	11	U
CHLORODIBROMOMETHANE	UG/KG	11	U	10	U	11	U	11	U	11	U	11	U
1,1,2-TRICHLOROETHANE	UG/KG	11	U	10	U	11	U	11	U	11	U	11	U
BENZENE	UG/KG	11	U	10	U	11	U	11	U	11	U	11	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	11	U	10	U	11	U	11	U	11	U	11	U
BROMOFORM	UG/KG	11	U	10	U	11	U	11	U	11	U	11	U
4-METHYL-2-PENTANONE	UG/KG	11	U	10	U	11	U	11	U	11	U	11	U
2-HEXANONE	UG/KG	11	U	10	U	11	U	11	U	11	U	11	U
TETRACHLOROETHENE	UG/KG	11	U	10	U	11	U	11	U	11	U	11	U
1,1,2,2-TETRACHLOROETHANE	UG/KG	11	U	10	U	11	U	11	U	11	U	11	U
TOLUENE	UG/KG	11	U	10	U	11	U	11	U	11	U	3	JBU
CHLOROBENZENE	UG/KG	11	U	10	U	11	U	11	U	11	U	11	U
ETHYLBENZENE	UG/KG	11	U	10	U	11	U	11	U	11	U	11	U
STYRENE	UG/KG	11	U	10	U	11	U	11	U	11	U	11	U
XYLENE, TOTAL	UG/KG	11	U	10	U	11	U	11	U	11	U	11	U

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RESULTS FOR VOLATILE ORGANIC COMPOUND ANALYSES
SUB-AREA E1

Parameter	Units	EB210E 22-JUL-92	
CHLOROMETHANE	UG/KG	10	U
BROMOMETHANE	UG/KG	10	U
VINYL CHLORIDE	UG/KG	10	U
CHLOROETHANE	UG/KG	10	U
METHYLENE CHLORIDE	UG/KG	10	U
ACETONE	UG/KG	35	BU
CARBON DISULFIDE	UG/KG	10	U
1,1-DICHLOROETHENE	UG/KG	10	U
1,1-DICHLOROETHANE	UG/KG	10	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG	10	U
CHLOROFORM	UG/KG	10	U
1,2-DICHLOROETHANE	UG/KG	10	U
2-BUTANONE	UG/KG	12	BU
1,1,1-TRICHLOROETHANE	UG/KG	10	U
CARBON TETRACHLORIDE	UG/KG	10	U
BROMODICHLOROMETHANE	UG/KG	10	U
1,2-DICHLOROPROPANE	UG/KG	10	U
CIS-1,3-DICHLOROPROPENE	UG/KG	10	U
TRICHLOROETHENE	UG/KG	10	U
CHLORODIBROMOMETHANE	UG/KG	10	U
1,1,2-TRICHLOROETHANE	UG/KG	10	U
BENZENE	UG/KG	10	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	10	U
BROMOFORM	UG/KG	10	U
4-METHYL-2-PENTANONE	UG/KG	10	U
2-HEXANONE	UG/KG	10	U
TETRACHLOROETHENE	UG/KG	10	U
1,1,2,2-TETRACHLOROETHANE	UG/KG	10	U
TOLUENE	UG/KG	10	U
CHLOROBENZENE	UG/KG	10	U
ETHYLBENZENE	UG/KG	10	U
STYRENE	UG/KG	10	U
XYLENE, TOTAL	UG/KG	10	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: E2

RESULTS FOR VOLATILE ORGANIC COMPOUND ANALYSES
SUB-AREA E2

Parameter	Units	EB003A 18-JUN-92		EB003F 18-JUN-92		EB004A 18-JUN-92		EB004D 18-JUN-92		EB207A 21-JUL-92		EB207F 21-JUL-92	
CHLOROMETHANE	UG/KG	11	U	11	U	11	U	11	U	12	U	10	U
BROMOMETHANE	UG/KG	11	U	11	U	11	U	11	U	12	U	10	U
VINYL CHLORIDE	UG/KG	11	U	11	U	11	U	11	U	12	U	10	U
CHLOROETHANE	UG/KG	11	U	11	U	11	U	11	U	12	U	10	U
METHYLENE CHLORIDE	UG/KG	11	U	11	U	11	U	11	U	12	U	1	JBU
ACETONE	UG/KG	19	BU	42	BU	120	B	120	B	10	BJU	9	BJU
CARBON DISULFIDE	UG/KG	3	JBU	0.7	JBU	11	U	1	JBU	12	U	10	U
1,1-DICHLOROETHENE	UG/KG	11	U	11	U	11	U	11	U	12	U	10	U
1,1-DICHLOROETHANE	UG/KG	11	U	11	U	11	U	11	U	12	U	10	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG	11	U	11	U	4	J	11	U	12	U	10	U
CHLOROFORM	UG/KG	11	U	11	U	11	U	11	U	12	U	10	U
1,2-DICHLOROETHANE	UG/KG	11	U	11	U	11	U	11	U	12	U	10	U
2-BUTANONE	UG/KG	3	BJU	11	U	16	BU	11	U	11	BJU	8	BJU
1,1,1-TRICHLOROETHANE	UG/KG	11	U	11	U	11	U	11	U	12	U	10	U
CARBON TETRACHLORIDE	UG/KG	11	U	11	U	11	U	11	U	12	U	10	U
BROMODICHLOROMETHANE	UG/KG	11	U	11	U	11	U	11	U	12	U	10	U
1,2-DICHLOROPROPANE	UG/KG	11	U	11	U	11	U	11	U	12	U	10	U
CIS-1,3-DICHLOROPROPENE	UG/KG	11	U	11	U	11	U	11	U	12	U	10	U
TRICHLOROETHENE	UG/KG	11	U	2	JB	3	JB	0.6	JB	6	JB	10	U
CHLORODIBROMOMETHANE	UG/KG	11	U	11	U	11	U	11	U	12	U	10	U
1,1,2-TRICHLOROETHANE	UG/KG	11	U	11	U	11	U	11	U	12	U	10	U
BENZENE	UG/KG	11	U	11	U	11	U	11	U	12	U	10	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	11	U	11	U	11	U	11	U	12	U	10	U
BROMOFORM	UG/KG	11	U	11	U	11	U	11	U	12	U	10	U
4-METHYL-2-PENTANONE	UG/KG	11	U	11	U	11	U	11	U	12	U	10	U
2-HEXANONE	UG/KG	11	U	11	U	11	U	11	U	12	U	10	U
TETRACHLOROETHENE	UG/KG	11	U	0.7	J	11	U	3	J	2	J	10	U
1,1,2,2-TETRACHLOROETHANE	UG/KG	11	U	11	U	11	U	11	U	12	U	10	U
TOLUENE	UG/KG	11	U	11	U	11	U	1	JBU	12	U	10	U
CHLOROBENZENE	UG/KG	11	U	11	U	11	U	11	U	12	U	10	U
ETHYLBENZENE	UG/KG	11	U	11	U	11	U	11	U	12	U	10	U
STYRENE	UG/KG	11	U	11	U	11	U	11	U	12	U	10	U
XYLENE, TOTAL	UG/KG	11	U	11	U	11	U	11	U	12	U	10	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: E2

RESULTS FOR VOLATILE ORGANIC COMPOUND ANALYSES
SUB-AREA E2

Parameter	Units	EB208A 21-JUL-92		EB208A DUP 21-JUL-92		EB208F 21-JUL-92	
CHLOROMETHANE	UG/KG	12	U	11	U	12	U
BROMOMETHANE	UG/KG	12	U	11	U	12	U
VINYL CHLORIDE	UG/KG	12	U	11	U	12	U
CHLOROETHANE	UG/KG	12	U	11	U	12	U
METHYLENE CHLORIDE	UG/KG	12	U	11	U	12	U
ACETONE	UG/KG	18	BU	20	BU	24	BU
CARBON DISULFIDE	UG/KG	12	U	11	U	3	JBU
1,1-DICHLOROETHENE	UG/KG	12	U	11	U	12	U
1,1-DICHLOROETHANE	UG/KG	12	U	11	U	12	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG	12	U	11	U	33	
CHLOROFORM	UG/KG	12	U	11	U	12	U
1,2-DICHLOROETHANE	UG/KG	12	U	11	U	12	U
2-BUTANONE	UG/KG	13	BU	15	BU	12	BU
1,1,1-TRICHLOROETHANE	UG/KG	12	U	11	U	12	U
CARBON TETRACHLORIDE	UG/KG	12	U	11	U	12	U
BROMODICHLOROMETHANE	UG/KG	12	U	11	U	12	U
1,2-DICHLOROPROPANE	UG/KG	12	U	11	U	12	U
CIS-1,3-DICHLOROPROPENE	UG/KG	12	U	11	U	12	U
TRICHLOROETHENE	UG/KG	12	U	11	U	12	U
CHLORODIBROMOMETHANE	UG/KG	12	U	11	U	12	U
1,1,2-TRICHLOROETHANE	UG/KG	12	U	11	U	12	U
BENZENE	UG/KG	12	U	11	U	12	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	12	U	11	U	12	U
BROMOFORM	UG/KG	12	U	11	U	12	U
4-METHYL-2-PENTANONE	UG/KG	12	U	11	U	12	U
2-HEXANONE	UG/KG	12	U	11	U	12	U
TETRACHLOROETHENE	UG/KG	12	U	11	U	12	U
1,1,2,2-TETRACHLOROETHANE	UG/KG	12	U	11	U	12	U
TOLUENE	UG/KG	12	U	11	U	12	U
CHLOROBENZENE	UG/KG	12	U	11	U	12	U
ETHYLBENZENE	UG/KG	12	U	11	U	12	U
STYRENE	UG/KG	12	U	11	U	12	U
XYLENE, TOTAL	UG/KG	12	U	11	U	12	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: F2

RESULTS FOR VOLATILE ORGANIC COMPOUND ANALYSES
SUB-AREA F

Parameter	Units	FB001A 12-JUN-92		FB001E 12-JUN-92		FB002A 11-JUN-92		FB002C 07-JUL-92		FB002H 11-JUN-92		FB003A 11-JUN-92	
CHLOROMETHANE	UG/KG	13	U	10	U	11	U	11	U	10	U	12	U
BROMOMETHANE	UG/KG	13	U	10	U	11	U	11	U	10	U	12	U
VINYL CHLORIDE	UG/KG	13	U	10	U	11	U	11	U	10	U	12	U
CHLOROETHANE	UG/KG	13	U	10	U	11	U	11	U	10	U	12	U
METHYLENE CHLORIDE	UG/KG	13	U	10	U	1	BJU	1	BJU	10	U	1	BJU
ACETONE	UG/KG	17	BU	140	BU	5	JBU	79	BU	710	BD	510	BDE
CARBON DISULFIDE	UG/KG	6	JBU	10	U	9	JBU	11	U	10	U	12	U
1,1-DICHLOROETHENE	UG/KG	13	U	10	U	11	U	11	U	10	U	12	U
1,1-DICHLOROETHANE	UG/KG	13	U	10	U	11	U	11	U	10	U	12	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG	13	U	10	U	11	U	11	U	10	U	12	U
CHLOROFORM	UG/KG	13	U	10	U	11	U	11	U	10	U	12	U
1,2-DICHLOROETHANE	UG/KG	13	U	10	U	11	U	11	U	10	U	12	U
2-BUTANONE	UG/KG	13	U	10	U	11	U	11	U	10	U	23	BU
1,1,1-TRICHLOROETHANE	UG/KG	13	U	10	U	11	U	11	U	10	U	12	U
CARBON TETRACHLORIDE	UG/KG	13	U	10	U	11	U	11	U	10	U	12	U
BROMODICHLOROMETHANE	UG/KG	13	U	10	U	11	U	11	U	10	U	12	U
1,2-DICHLOROPROPANE	UG/KG	13	U	10	U	11	U	11	U	10	U	12	U
CIS-1,3-DICHLOROPROPENE	UG/KG	13	U	10	U	11	U	11	U	10	U	12	U
TRICHLOROETHENE	UG/KG	13	U	10	U	11	U	11	U	10	U	12	U
CHLORODIBROMOMETHANE	UG/KG	13	U	10	U	11	U	11	U	10	U	12	U
1,1,2-TRICHLOROETHANE	UG/KG	13	U	10	U	11	U	11	U	10	U	12	U
BENZENE	UG/KG	13	U	10	U	11	U	11	U	10	U	12	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	13	U	10	U	11	U	11	U	10	U	12	U
BROMOFORM	UG/KG	13	U	10	U	11	U	11	U	10	U	12	U
4-METHYL-2-PENTANONE	UG/KG	13	U	10	U	11	U	11	U	10	U	12	U
2-HEXANONE	UG/KG	13	U	10	U	11	U	11	U	10	U	12	U
TETRACHLOROETHENE	UG/KG	13	U	10	U	11	U	11	U	10	U	12	U
1,1,2,2-TETRACHLOROETHANE	UG/KG	13	U	10	U	11	U	11	U	10	U	12	U
TOLUENE	UG/KG	13	U	10	U	10	JBU	11	U	5	JBU	2	JBU
CHLOROBENZENE	UG/KG	13	U	10	U	11	U	11	U	10	U	12	U
ETHYLBENZENE	UG/KG	13	U	10	U	11	U	11	U	10	U	12	U
STYRENE	UG/KG	13	U	10	U	11	U	11	U	10	U	12	U
XYLENE, TOTAL	UG/KG	13	U	10	U	11	U	11	U	10	U	12	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: F2

RESULTS FOR VOLATILE ORGANIC COMPOUND ANALYSES
SUB-AREA F

Parameter	Units	FB003E 11-JUN-92		FB004A 11-JUN-92		FB004G 11-JUN-92	
CHLOROMETHANE	UG/KG	11	U	11	U	10	U
BROMOMETHANE	UG/KG	11	U	11	U	10	U
VINYL CHLORIDE	UG/KG	11	U	11	U	10	U
CHLOROETHANE	UG/KG	11	U	11	U	10	U
METHYLENE CHLORIDE	UG/KG	0.9	BJU	11	U	10	U
ACETONE	UG/KG	1600	BDE	11	U	180	B
CARBON DISULFIDE	UG/KG	11	U	1	JBU	10	U
1,1-DICHLOROETHENE	UG/KG	11	U	11	U	10	U
1,1-DICHLOROETHANE	UG/KG	11	U	11	U	10	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG	11	U	11	U	10	U
CHLOROFORM	UG/KG	11	U	11	U	10	U
1,2-DICHLOROETHANE	UG/KG	11	U	11	U	10	U
2-BUTANONE	UG/KG	11	U	3	JBU	10	U
1,1,1-TRICHLOROETHANE	UG/KG	11	U	11	U	10	U
CARBON TETRACHLORIDE	UG/KG	11	U	11	U	10	U
BROMODICHLOROMETHANE	UG/KG	11	U	11	U	10	U
1,2-DICHLOROPROPANE	UG/KG	11	U	11	U	10	U
CIS-1,3-DICHLOROPROPENE	UG/KG	11	U	11	U	10	U
TRICHLOROETHENE	UG/KG	11	U	11	U	10	U
CHLORODIBROMOMETHANE	UG/KG	11	U	11	U	10	U
1,1,2-TRICHLOROETHANE	UG/KG	11	U	11	U	10	U
BENZENE	UG/KG	11	U	11	U	10	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	11	U	11	U	10	U
BROMOFORM	UG/KG	11	U	11	U	10	U
4-METHYL-2-PENTANONE	UG/KG	11	U	11	U	10	U
2-HEXANONE	UG/KG	11	U	11	U	10	U
TETRACHLOROETHENE	UG/KG	11	U	11	U	10	U
1,1,2,2-TETRACHLOROETHANE	UG/KG	11	U	11	U	10	U
TOLUENE	UG/KG	11	U	3	JBU	0.9	JBU
CHLOROBENZENE	UG/KG	11	U	11	U	10	U
ETHYLBENZENE	UG/KG	11	U	11	U	10	U
STYRENE	UG/KG	11	U	11	U	10	U
XYLENE, TOTAL	UG/KG	11	U	11	U	10	U

SUMMARY OF TENTATIVELY IDENTIFIED COMPOUNDS (ASSAY CODE V)
NIROP

PROJECT NUMBER: 2313.13
BEGINNING DATE: 03-JUN-92
ENDING DATE: 30-JUL-92

	Sample ID	Sample Date	Parameter	Conc	Qualifiers	Units
MATRIX CODE: QCW	QCR001	03-JUN-92	2-PROPANOL	29	JN	UG/L
			TETRAHYDROFURAN	31	JN	UG/L
	QCR002	04-JUN-92	TETRAHYDROFURAN	38	JN	UG/L
	QCR003	08-JUN-92	2-PROPANOL	220	JN	UG/L
			TETRAHYDROFURAN	15	JN	UG/L
	QCR004	09-JUN-92	TETRAHYDROFURAN	34	JN	UG/L
	QCR005	10-JUN-92	TETRAHYDROFURAN	19	JN	UG/L
	QCR006	11-JUN-92	FURAN, TETRAHYDRO-	29	JN	UG/L
	QCR007	12-JUN-92	2-PROPANOL	230	JN	UG/L
			FURAN, TETRAHYDRO-	35	JN	UG/L
	QCR008	15-JUN-92	FURAN, TETRAHYDRO-	16	JN	UG/L
MATRIX CODE: SB	AB024G	09-JUN-92	2-PROPANOL	230	JNBU	UG/KG
	AB026G	10-JUN-92	2-PROPANOL	27	JNBU	UG/KG
	AB027H	09-JUN-92	2-PROPANOL	27	JNBU	UG/KG
	AB029H	10-JUN-92	2-PROPANOL	50	JNBU	UG/KG
	AB030G	09-JUN-92	2-PROPANOL	120	JNBU	UG/KG
	AB030G DUP	09-JUN-92	2-PROPANOL	340	JNBU	UG/KG
	AB031A	15-JUN-92	CYCLOHEXANE, PROPYL-	22	JN	UG/KG
			UNKNOWN, SUBSTITUTED B RT23.74	34	J	UG/KG
			UNKNOWN, SUBSTITUTED B RT25.57	57	J	UG/KG
			UNKNOWN, SUBSTITUTED B RT25.89	54	J	UG/KG
	AB031G	15-JUN-92	CYCLOHEXANE, ETHYL-	21	JN	UG/KG
			HEPTANE, 2,6-DIMETHYL-	7.0	JN	UG/KG
			HEPTANE, 2-METHYL-	8.0	JN	UG/KG
			HEXANE, 2,3,4-TRIMETHYL-	39	JN	UG/KG
			NONANE	350	JN	UG/KG
			OCTANE, 3-METHYL-	37	JN	UG/KG
			UNKNOWN RT16.30	29	J	UG/KG
			UNKNOWN RT23.79	410	J	UG/KG
			UNKNOWN, C9H18 RT18.52	18	J	UG/KG

SUMMARY OF TENTATIVELY IDENTIFIED COMPOUNDS (ASSAY CODE V)
NIROP

PROJECT NUMBER: 2313.13
BEGINNING DATE: 03-JUN-92
ENDING DATE: 30-JUL-92

	Sample ID	Sample Date	Parameter	Conc	Qualifiers	Units
MATRIX CODE: SB	AB031G	15-JUN-92	UNKNOWN, C9H18 RT19.33	13	J	UG/KG
	AB032D	09-JUN-92	2-PROPANOL	850	JNBU	UG/KG
	AB033H	08-JUN-92	2-PROPANOL	97	JNBU	UG/KG
	AB038A	10-JUN-92	2-PROPANOL	480	JNBU	UG/KG
	AB038G	10-JUN-92	2-PROPANOL	450	JNBU	UG/KG
	AB039H DUP	10-JUN-92	2-PROPANOL	79	JNBU	UG/KG
	AB041C	08-JUN-92	2-PROPANOL	950	JNBU	UG/KG
	AB042A	09-JUN-92	2-PROPANOL	56	JNBU	UG/KG
	AB042G	09-JUN-92	2-PROPANOL	200	JNBU	UG/KG
	AB042G DUP	09-JUN-92	2-PROPANOL	230	JNBU	UG/KG
	AB043D	20-JUL-92	CYCLOHEXANE,1-ETHYL-4-METHY	420	JN	UG/KG
			OCTANE,2,4,6-TRIMETHYL-	410	JN	UG/KG
			UNKNOWN RT20.10	130	J	UG/KG
			UNKNOWN RT23.19	1100	J	UG/KG
			UNKNOWN RT23.60	500	J	UG/KG
			UNKNOWN(BENZENE,C9H12) RT25.45	980	J	UG/KG
			UNKNOWN(BENZENE,C9H12) RT25.77	1000	J	UG/KG
			UNKNOWN(C10H20)	1100	J	UG/KG
			UNKNOWN(C10H22)	290	J	UG/KG
			UNKNOWN(C9H16)	550	J	UG/KG
	AB043H	20-JUL-92	UNKNOWN RT22.77	240	J	UG/KG
			UNKNOWN RT23.20	430	J	UG/KG
			UNKNOWN RT23.61	370	J	UG/KG
			UNKNOWN RT24.57	620	J	UG/KG
			UNKNOWN(C10H20)	240	J	UG/KG
			UNKNOWN(CYCLOHEXANE,C10H20)	390	J	UG/KG
			UNKNOWN(CYCLOHEXANE,C9H18)	330	J	UG/KG
	AB044D	20-JUL-92	CYCLOHEXANE, 1,1,2,3-TETRAM	330	JN	UG/KG
			UNKNOWN RT21.03	190	J	UG/KG
			UNKNOWN RT22.75	180	J	UG/KG
			UNKNOWN RT23.18	330	J	UG/KG
			UNKNOWN RT25.76	280	J	UG/KG
			UNKNOWN(ALKANE,C10H22)	140	J	UG/KG

SUMMARY OF TENTATIVELY IDENTIFIED COMPOUNDS (ASSAY CODE V)
NIROP

PROJECT NUMBER: 2313.13
BEGINNING DATE: 03-JUN-92
ENDING DATE: 30-JUL-92

	Sample ID	Sample Date	Parameter	Conc	Qualifiers	Units
MATRIX CODE: SB	AB044D	20-JUL-92	UNKNOWN(CYCLOHEXANE,C9H18)	160	J	UG/KG
	AB201A	08-JUL-92	UNKNOWN (C8H18)	7.0	J	UG/KG
	AB207H	09-JUL-92	UNKNOWN	7.0	J	UG/KG
	AB215H	09-JUL-92	UNKNOWN	20	J	UG/KG
	AB219F	09-JUL-92	UNKNOWN	12	J	UG/KG
	AB223C	09-JUL-92	2-PROPANONE	10	JN	UG/KG
	AB229A	10-JUL-92	UNKNOWN	12	J	UG/KG
	AB240H	27-JUL-92	UNKNOWN	11	J	UG/KG
	AT004B	16-JUN-92	UNKNOWN, TRIMETHYLBENZENE	28	J	UG/KG
	AT008D	17-JUN-92	UNKNOWN(ALKANE)	11	J	UG/KG
	AT009B1	23-JUN-92	UNKNOWN	270	J	UG/KG
			UNKNOWN(ALKANE) RT26.75	290	J	UG/KG
			UNKNOWN(ALKANE) RT31.56	740	J	UG/KG
			UNKNOWN(BENZENE, C9H12)	310	J	UG/KG
			UNKNOWN(CYCLOHEXANE)	200	J	UG/KG
	AT009B1 DUP	23-JUN-92	UNKNOWN (ALKANE)	280	J	UG/KG
			UNKNOWN (BENZENE, C9H12)	140	J	UG/KG
			UNKNOWN RT18.63	140	J	UG/KG
	AT009D1	24-JUN-92	OCTANE, 2,4,6-TRIMETHYL	180000	JN	UG/KG
			UNKNOWN (ALKANE)	430000	J	UG/KG
			UNKNOWN RT30.23	150000	J	UG/KG
	AT009D2	24-JUN-92	UNKNOWN (CYCLOHEXANE) RT28.65	2100	J	UG/KG
			UNKNOWN (CYCLOHEXANE) RT30.18	2200	J	UG/KG
			UNKNOWN (CYLOHEXANE, ETHYLM	4000	J	UG/KG
	AT009E2	26-JUN-92	NONANE	180	JN	UG/KG
			UNKNOWN RT22.81	88	J	UG/KG
			UNKNOWN RT23.26	310	J	UG/KG
			UNKNOWN RT24.63	510	J	UG/KG
			UNKNOWN RT25.34	83	J	UG/KG
			UNKNOWN RT25.83	380	J	UG/KG
			UNKNOWN(C10H22) RT23.67	160	J	UG/KG

SUMMARY OF TENTATIVELY IDENTIFIED COMPOUNDS (ASSAY CODE V)
NIROP

PROJECT NUMBER: 2313.13
BEGINNING DATE: 03-JUN-92
ENDING DATE: 30-JUL-92

	Sample ID	Sample Date	Parameter	Conc	Qualifiers	Units
MATRIX CODE: SB	AT009E2	26-JUN-92	UNKNOWN(C10H22) RT25.00	120	J	UG/KG
			UNKNOWN(CYCLOHEXANE, 1-ETHY	63	J	UG/KG
			UNKNOWN(CYCLOHEXANE,1-ETHYL	86	J	UG/KG
	BB001B	15-JUN-92	2-PROPANOL	60	JNBU	UG/KG
	BB202B	16-JUL-92	UNKNOWN,C10H18	13	J	UG/KG
			UNKNOWN,C10H20	110	J	UG/KG
	BG003D	03-JUN-92	2-PROPANOL	19	JNBU	UG/KG
	BG004D	03-JUN-92	2-PROPANOL	130	JNBU	UG/KG
	BG005D	03-JUN-92	2-PROPANOL	13	JNBU	UG/KG
	BG005D DUP	03-JUN-92	2-PROPANOL	12	JNBU	UG/KG
	BG006D	03-JUN-92	2-PROPANOL	27	JNBU	UG/KG
	BG007D	04-JUN-92	2-PROPANOL	210	JNBU	UG/KG
	BG008D	04-JUN-92	2-PROPANOL	16	JN	UG/KG
	BG010D	04-JUN-92	2-PROPANOL	54	JNBU	UG/KG
	DB031F	11-JUN-92	CYCLOHEXANE,1,1,2,3-TETRAME	5400	JN	UG/KG
			NONANE,4-METHYL-	3300	JN	UG/KG
			UNKNOWN RT31.02	710	J	UG/KG
			UNKNOWN RT31.29	3900	J	UG/KG
			UNKNOWN RT32.00	2800	J	UG/KG
			UNKNOWN RT32.33	1100	J	UG/KG
			UNKNOWN(ALKANE) RT29.00	3900	J	UG/KG
			UNKNOWN(ALKANE) RT32.74	9200	J	UG/KG
			UNKNOWN(C10H22)	1600	J	UG/KG
			UNKNOWN(CYCLOHEXANE,1-ETHYL	1300	J	UG/KG
	EB003A	18-JUN-92	CYCLOHEXANE,1,1,2,3-TETRAME	860	JN	UG/KG
			CYCLOHEXANE,1,1,3-TRIMETHYL	290	JN	UG/KG
			CYCLOHEXANE,CYCLOPROPYL-	500	JN	UG/KG
			UNKNOWN RT23.31	770	J	UG/KG
			UNKNOWN RT24.33	370	J	UG/KG
			UNKNOWN RT25.40	430	J	UG/KG
			UNKNOWN RT25.87	410	J	UG/KG
			UNKNOWN(C10H22)	470	J	UG/KG
			UNKNOWN(C9H18) RT21.18	320	J	UG/KG

SUMMARY OF TENTATIVELY IDENTIFIED COMPOUNDS (ASSAY CODE V)
NIROP

PROJECT NUMBER: 2313.13
BEGINNING DATE: 03-JUN-92
ENDING DATE: 30-JUL-92

	Sample ID	Sample Date	Parameter	Conc	Qualifiers	Units
MATRIX CODE: SB	EB003A	18-JUN-92	UNKNOWN(C9H18) RT22.18	730	J	UG/KG
	EB003F	18-JUN-92	CYCLOHEXANE,1,1,2,3-TETRAME	14	JN	UG/KG
			UNKNOWN RT23.31	7.0	J	UG/KG
			UNKNOWN(CYCLOHEXANE,1-ETHYL	8.0	J	UG/KG
			UNKNOWN(CYCLOHEXANE,ETHYLME	6.0	J	UG/KG
	EB004D	18-JUN-92	1,1'-BICYCLOHEXYL, 2-METHYL	580	JN	UG/KG
			1-HEXENE, 3,5,5-TRIMETHYL-	1000	JN	UG/KG
			NONANE, 4-METHYL-	270	JN	UG/KG
			UNDECANE, 5,6-DIMETHYL-	640	JN	UG/KG
			UNKNOWN RT22.23	180	J	UG/KG
			UNKNOWN(ALKANE) RT22.55	170	J	UG/KG
			UNKNOWN(ALKANE) RT23.35	780	J	UG/KG
			UNKNOWN(C10H22)	700	J	UG/KG
			UNKNOWN(C9H18)	130	J	UG/KG
			UNKNOWN(CYCLOHEXANE)	570	J	UG/KG
	EB206E	17-JUL-92	2-PROPANOL	38	JNBU	UG/KG
	FB001E	12-JUN-92	2-PROPANOL	540	JNBU	UG/KG
	FB002A	11-JUN-92	TRICYCLO[3.3.1.13,7]DECANE	12	JN	UG/KG
			UNKNOWN RT30.86	21	J	UG/KG
			UNKNOWN RT31.57	29	J	UG/KG
			UNKNOWN RT32.55	7.0	J	UG/KG
			UNKNOWN RT34.25	12	J	UG/KG
	FB002H	11-JUN-92	PROPANOIC ACID, 2-HYDROXY-	51	JNBU	UG/KG
			UNKNOWN RT30.99	18	J	UG/KG
	FB003A	11-JUN-92	UNKNOWN RT31.56	12	J	UG/KG
			UNKNOWN RT32.58	10	J	UG/KG
			UNKNOWN RT36.54	6.0	J	UG/KG
			UNKNOWN, C10H18	6.0	J	UG/KG
			UNKNOWN, C13H28	12	J	UG/KG
	FB004G	11-JUN-92	2-PROPANOL	350	JNBU	UG/KG

APPENDIX F

RESULTS FOR SEMIVOLATILE COMPOUND ANALYSES

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: BG

RESULTS FOR SEMIVOLATILE COMPOUND ANALYSES
SUB-AREA BG

Parameter	Units	BG001A 03-JUN-92		BG001D 03-JUN-92		BG002A 03-JUN-92		BG002D 03-JUN-92		BG003A 03-JUN-92		BG003D 03-JUN-92	
PHENOL	UG/KG	340	U	350	U	340	U	410	U	360	U	330	U
BIS(2-CHLOROETHYL)ETHER	UG/KG	340	U	350	U	340	U	410	U	360	U	330	U
2-CHLOROPHENOL	UG/KG	340	U	350	U	340	U	410	U	360	U	330	U
1,3-DICHLOROBENZENE	UG/KG	340	U	350	U	340	U	410	U	360	U	330	U
1,4-DICHLOROBENZENE	UG/KG	340	U	350	U	340	U	410	U	360	U	330	U
1,2-DICHLOROBENZENE	UG/KG	340	U	350	U	340	U	410	U	360	U	330	U
2-METHYLPHENOL	UG/KG	340	U	350	U	340	U	410	U	360	U	330	U
2,2'-OXYBIS(1-CHLOROPROPANE)	UG/KG	340	U	350	U	340	U	410	U	360	U	330	U
4-METHYLPHENOL	UG/KG	340	U	350	U	340	U	410	U	360	U	330	U
N-NITROSODI-N-PROPYLAMINE	UG/KG	340	U	350	U	340	U	410	U	360	U	330	U
HEXACHLOROETHANE	UG/KG	340	U	350	U	340	U	410	U	360	U	330	U
NITROBENZENE	UG/KG	340	U	350	U	340	U	410	U	360	U	330	U
ISOPHORONE	UG/KG	340	U	350	U	340	U	410	U	360	U	330	U
2-NITROPHENOL	UG/KG	340	U	350	U	340	U	410	U	360	U	330	U
2,4-DIMETHYLPHENOL	UG/KG	340	U	350	U	340	U	410	U	360	U	330	U
BIS(2-CHLOROETHOXY)METHANE	UG/KG	340	U	350	U	340	U	410	U	360	U	330	U
2,4-DICHLOROPHENOL	UG/KG	340	U	350	U	340	U	410	U	360	U	330	U
1,2,4-TRICHLOROBENZENE	UG/KG	340	U	350	U	340	U	410	U	360	U	330	U
NAPHTHALENE	UG/KG	340	U	350	U	340	U	410	U	360	U	330	U
4-CHLOROANILINE	UG/KG	340	U	350	U	340	U	410	U	360	U	330	U
HEXACHLOROBUTADIENE	UG/KG	340	U	350	U	340	U	410	U	360	U	330	U
4-CHLORO-3-METHYLPHENOL	UG/KG	340	U	350	U	340	U	410	U	360	U	330	U
2-METHYLNAPHTHALENE	UG/KG	340	U	350	U	340	U	410	U	360	U	330	U
HEXACHLOROCYCLOPENTADIENE	UG/KG	340	U	350	U	340	U	410	U	360	U	330	U
2,4,6-TRICHLOROPHENOL	UG/KG	340	U	350	U	340	U	410	U	360	U	330	U
2,4,5-TRICHLOROPHENOL	UG/KG	820	U	840	U	820	U	1000	U	880	U	810	U
2-CHLORONAPHTHALENE	UG/KG	340	U	350	U	340	U	410	U	360	U	330	U
2-NITROANILINE	UG/KG	820	U	840	U	820	U	1000	U	880	U	810	U
DIMETHYLPHTHALATE	UG/KG	340	U	350	U	340	U	410	U	360	U	330	U
ACENAPHTHYLENE	UG/KG	340	U	350	U	340	U	410	U	360	U	330	U
2,6-DINITROTOLUENE	UG/KG	340	U	350	U	340	U	410	U	360	U	330	U
3-NITROANILINE	UG/KG	820	U	840	U	820	U	1000	U	880	U	810	U
ACENAPHTHENE	UG/KG	340	U	350	U	340	U	410	U	360	U	330	U
2,4-DINITROPHENOL	UG/KG	820	U	840	U	820	U	1000	U	880	U	810	U
4-NITROPHENOL	UG/KG	820	U	840	U	820	U	1000	U	880	U	810	U
DIBENZOFURAN	UG/KG	340	U	350	U	340	U	410	U	360	U	330	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: BG

RESULTS FOR SEMIVOLATILE COMPOUND ANALYSES
SUB-AREA BG

Parameter	Units	BG004A 03-JUN-92		BG004D 03-JUN-92		BG005A 03-JUN-92		BG005D 03-JUN-92		BG005D DUP 03-JUN-92		BG006A 03-JUN-92	
PHENOL	UG/KG	330	U	330	U	340	U	340	U	340	U	360	U
BIS(2-CHLOROETHYL)ETHER	UG/KG	330	U	330	U	340	U	340	U	340	U	360	U
2-CHLOROPHENOL	UG/KG	330	U	330	U	340	U	340	U	340	U	360	U
1,3-DICHLOROBENZENE	UG/KG	330	U	330	U	340	U	340	U	340	U	360	U
1,4-DICHLOROBENZENE	UG/KG	330	U	330	U	340	U	340	U	340	U	360	U
1,2-DICHLOROBENZENE	UG/KG	330	U	330	U	340	U	340	U	340	U	360	U
2-METHYLPHENOL	UG/KG	330	U	330	U	340	U	340	U	340	U	360	U
2,2'-OXYBIS(1-CHLOROPROPANE)	UG/KG	330	U	330	U	340	U	340	U	340	U	360	U
4-METHYLPHENOL	UG/KG	330	U	330	U	340	U	340	U	340	U	360	U
N-NITROSODI-N-PROPYLAMINE	UG/KG	330	U	330	U	340	U	340	U	340	U	360	U
HEXACHLOROETHANE	UG/KG	330	U	330	U	340	U	340	U	340	U	360	U
NITROBENZENE	UG/KG	330	U	330	U	340	U	340	U	340	U	360	U
ISOPHORONE	UG/KG	330	U	330	U	340	U	340	U	340	U	360	U
2-NITROPHENOL	UG/KG	330	U	330	U	340	U	340	U	340	U	360	U
2,4-DIMETHYLPHENOL	UG/KG	330	U	330	U	340	U	340	U	340	U	360	U
BIS(2-CHLOROETHOXY)METHANE	UG/KG	330	U	330	U	340	U	340	U	340	U	360	U
2,4-DICHLOROPHENOL	UG/KG	330	U	330	U	340	U	340	U	340	U	360	U
1,2,4-TRICHLOROBENZENE	UG/KG	330	U	330	U	340	U	340	U	340	U	360	U
NAPHTHALENE	UG/KG	330	U	330	U	340	U	340	U	340	U	360	U
4-CHLOROANILINE	UG/KG	330	U	330	U	340	U	340	U	340	U	360	U
HEXACHLOROBUTADIENE	UG/KG	330	U	330	U	340	U	340	U	340	U	360	U
4-CHLORO-3-METHYLPHENOL	UG/KG	330	U	330	U	340	U	340	U	340	U	360	U
2-METHYLNAPHTHALENE	UG/KG	330	U	330	U	340	U	340	U	340	U	360	U
HEXACHLOROCYCLOPENTADIENE	UG/KG	330	U	330	U	340	U	340	U	340	U	360	U
2,4,6-TRICHLOROPHENOL	UG/KG	330	U	330	U	340	U	340	U	340	U	360	U
2,4,5-TRICHLOROPHENOL	UG/KG	800	U	810	U	820	U	820	U	820	U	870	U
2-CHLORONAPHTHALENE	UG/KG	330	U	330	U	340	U	340	U	340	U	360	U
2-NITROANILINE	UG/KG	800	U	810	U	820	U	820	U	820	U	870	U
DIMETHYLPHTHALATE	UG/KG	330	U	330	U	340	U	340	U	340	U	360	U
ACENAPHTHYLENE	UG/KG	330	U	330	U	340	U	340	U	340	U	360	U
2,6-DINITROTOLUENE	UG/KG	330	U	330	U	340	U	340	U	340	U	360	U
3-NITROANILINE	UG/KG	800	U	810	U	820	U	820	U	820	U	870	U
ACENAPHTHENE	UG/KG	330	U	330	U	340	U	340	U	340	U	360	U
2,4-DINITROPHENOL	UG/KG	800	U	810	U	820	U	820	U	820	U	870	U
4-NITROPHENOL	UG/KG	800	U	810	U	820	U	820	U	820	U	870	U
DIBENZOFURAN	UG/KG	330	U	330	U	340	U	340	U	340	U	360	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: BG

RESULTS FOR SEMIVOLATILE COMPOUND ANALYSES
SUB-AREA BG

Parameter	Units	BG006D 03-JUN-92		BG007A 04-JUN-92		BG007D 04-JUN-92		BG008A 04-JUN-92		BG008D 04-JUN-92		BG009A 04-JUN-92	
PHENOL	UG/KG	370	U	370	U	360	U	330	U	340	U	340	U
BIS(2-CHLOROETHYL)ETHER	UG/KG	370	U	370	U	360	U	330	U	340	U	340	U
2-CHLOROPHENOL	UG/KG	370	U	370	U	360	U	330	U	340	U	340	U
1,3-DICHLOROBENZENE	UG/KG	370	U	370	U	360	U	330	U	340	U	340	U
1,4-DICHLOROBENZENE	UG/KG	370	U	370	U	360	U	330	U	340	U	340	U
1,2-DICHLOROBENZENE	UG/KG	370	U	370	U	360	U	330	U	340	U	340	U
2-METHYLPHENOL	UG/KG	370	U	370	U	360	U	330	U	340	U	340	U
2,2'-OXYBIS(1-CHLOROPROPANE)	UG/KG	370	U	370	U	360	U	330	U	340	U	340	U
4-METHYLPHENOL	UG/KG	370	U	370	U	360	U	330	U	340	U	340	U
N-NITROSODI-N-PROPYLAMINE	UG/KG	370	U	370	U	360	U	330	U	340	U	340	U
HEXACHLOROETHANE	UG/KG	370	U	370	U	360	U	330	U	340	U	340	U
NITROBENZENE	UG/KG	370	U	370	U	360	U	330	U	340	U	340	U
ISOPHORONE	UG/KG	370	U	370	U	360	U	330	U	340	U	340	U
2-NITROPHENOL	UG/KG	370	U	370	U	360	U	330	U	340	U	340	U
2,4-DIMETHYLPHENOL	UG/KG	370	U	370	U	360	U	330	U	340	U	340	U
BIS(2-CHLOROETHOXY)METHANE	UG/KG	370	U	370	U	360	U	330	U	340	U	340	U
2,4-DICHLOROPHENOL	UG/KG	370	U	370	U	360	U	330	U	340	U	340	U
1,2,4-TRICHLOROBENZENE	UG/KG	370	U	370	U	360	U	330	U	340	U	340	U
NAPHTHALENE	UG/KG	370	U	370	U	360	U	330	U	340	U	340	U
4-CHLOROANILINE	UG/KG	370	U	370	U	360	U	330	U	340	U	340	U
HEXACHLOROBUTADIENE	UG/KG	370	U	370	U	360	U	330	U	340	U	340	U
4-CHLORO-3-METHYLPHENOL	UG/KG	370	U	370	U	360	U	330	U	340	U	340	U
2-METHYLNAPHTHALENE	UG/KG	370	U	370	U	360	U	330	U	340	U	340	U
HEXACHLOROCYCLOPENTADIENE	UG/KG	370	U	370	U	360	U	330	U	340	U	340	U
2,4,6-TRICHLOROPHENOL	UG/KG	370	U	370	U	360	U	330	U	340	U	340	U
2,4,5-TRICHLOROPHENOL	UG/KG	900	U	890	U	880	U	810	U	820	U	820	U
2-CHLORONAPHTHALENE	UG/KG	370	U	370	U	360	U	330	U	340	U	340	U
2-NITROANILINE	UG/KG	900	U	890	U	880	U	810	U	820	U	820	U
DIMETHYLPHTHALATE	UG/KG	370	U	370	U	360	U	330	U	340	U	340	U
ACENAPHTHYLENE	UG/KG	370	U	370	U	360	U	330	U	340	U	340	U
2,6-DINITROTOLUENE	UG/KG	370	U	370	U	360	U	330	U	340	U	340	U
3-NITROANILINE	UG/KG	900	U	890	U	880	U	810	U	820	U	820	U
ACENAPHTHENE	UG/KG	370	U	370	U	360	U	330	U	340	U	340	U
2,4-DINITROPHENOL	UG/KG	900	U	890	U	880	U	810	U	820	U	820	U
4-NITROPHENOL	UG/KG	900	U	890	U	880	U	810	U	820	U	820	U
DIBENZOFURAN	UG/KG	370	U	370	U	360	U	330	U	340	U	340	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: BG

RESULTS FOR SEMIVOLATILE COMPOUND ANALYSES
SUB-AREA BG

Parameter	Units	BG009D 04-JUN-92		BG009D DUP 04-JUN-92		BG010A 04-JUN-92		BG010D 04-JUN-92	
PHENOL	UG/KG	340	U	340	U	430	U	350	U
BIS(2-CHLOROETHYL)ETHER	UG/KG	340	U	340	U	430	U	350	U
2-CHLOROPHENOL	UG/KG	340	U	340	U	430	U	350	U
1,3-DICHLOROBENZENE	UG/KG	340	U	340	U	430	U	350	U
1,4-DICHLOROBENZENE	UG/KG	340	U	340	U	430	U	350	U
1,2-DICHLOROBENZENE	UG/KG	340	U	340	U	430	U	350	U
2-METHYLPHENOL	UG/KG	340	U	340	U	430	U	350	U
2,2'-OXYBIS(1-CHLOROPROPANE)	UG/KG	340	U	340	U	430	U	350	U
4-METHYLPHENOL	UG/KG	340	U	340	U	430	U	350	U
N-NITROSODI-N-PROPYLAMINE	UG/KG	340	U	340	U	430	U	350	U
HEXACHLOROETHANE	UG/KG	340	U	340	U	430	U	350	U
NITROBENZENE	UG/KG	340	U	340	U	430	U	350	U
ISOPHORONE	UG/KG	340	U	340	U	430	U	350	U
2-NITROPHENOL	UG/KG	340	U	340	U	430	U	350	U
2,4-DIMETHYLPHENOL	UG/KG	340	U	340	U	430	U	350	U
BIS(2-CHLOROETHOXY)METHANE	UG/KG	340	U	340	U	430	U	350	U
2,4-DICHLOROPHENOL	UG/KG	340	U	340	U	430	U	350	U
1,2,4-TRICHLOROBENZENE	UG/KG	340	U	340	U	430	U	350	U
NAPHTHALENE	UG/KG	340	U	340	U	430	U	350	U
4-CHLOROANILINE	UG/KG	340	U	340	U	430	U	350	U
HEXACHLOROBUTADIENE	UG/KG	340	U	340	U	430	U	350	U
4-CHLORO-3-METHYLPHENOL	UG/KG	340	U	340	U	430	U	350	U
2-METHYLNAPHTHALENE	UG/KG	340	U	340	U	430	U	350	U
HEXACHLOROCYCLOPENTADIENE	UG/KG	340	U	340	U	430	U	350	U
2,4,6-TRICHLOROPHENOL	UG/KG	340	U	340	U	430	U	350	U
2,4,5-TRICHLOROPHENOL	UG/KG	820	U	820	U	1000	U	840	U
2-CHLORONAPHTHALENE	UG/KG	340	U	340	U	430	U	350	U
2-NITROANILINE	UG/KG	820	U	820	U	1000	U	840	U
DIMETHYLPHTHALATE	UG/KG	340	U	340	U	430	U	350	U
ACENAPHTHYLENE	UG/KG	340	U	340	U	430	U	350	U
2,6-DINITROTOLUENE	UG/KG	340	U	340	U	430	U	350	U
3-NITROANILINE	UG/KG	820	U	820	U	1000	U	840	U
ACENAPHTHENE	UG/KG	340	U	340	U	430	U	350	U
2,4-DINITROPHENOL	UG/KG	820	U	820	U	1000	U	840	U
4-NITROPHENOL	UG/KG	820	U	820	U	1000	U	840	U
DIBENZOFURAN	UG/KG	340	U	340	U	430	U	350	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: BG

RESULTS FOR SEMIVOLATILE COMPOUND ANALYSES
SUB-AREA BG

Parameter	Units	BG001A 03-JUN-92		BG001D 03-JUN-92		BG002A 03-JUN-92		BG002D 03-JUN-92		BG003A 03-JUN-92		BG003D 03-JUN-92	
2,4-DINITROTOLUENE	UG/KG	340	U	350	U	340	U	410	U	360	U	330	U
DIETHYLPHTHALATE	UG/KG	340	U	350	U	340	U	410	U	360	U	330	U
4-CHLOROPHENYL-PHENYLETHER	UG/KG	340	U	350	U	340	U	410	U	360	U	330	U
FLUORENE	UG/KG	340	U	350	U	340	U	410	U	360	U	330	U
4-NITROANILINE	UG/KG	820	U	840	U	820	U	1000	U	880	U	810	U
4,6-DINITRO-2-METHYLPHENOL	UG/KG	820	U	840	U	820	U	1000	U	880	U	810	U
N-NITROSODIPHENYLAMINE	UG/KG	340	U	350	U	340	U	410	U	360	U	330	U
4-BROMOPHENYL-PHENYLETHER	UG/KG	340	U	350	U	340	U	410	U	360	U	330	U
HEXACHLOROBENZENE	UG/KG	340	U	350	U	340	U	410	U	360	U	330	U
PENTACHLOROPHENOL	UG/KG	820	U	840	U	820	U	1000	U	880	U	810	U
PHENANTHRENE	UG/KG	340	U	350	U	340	U	410	U	360	U	330	U
ANTHRACENE	UG/KG	340	U	350	U	340	U	410	U	360	U	330	U
CARBAZOLE	UG/KG	340	U	350	U	340	U	410	U	360	U	330	U
DI-N-BUTYLPHTHALATE	UG/KG	340	U	350	U	340	U	410	U	360	U	330	U
FLUORANTHENE	UG/KG	340	U	350	U	340	U	410	U	360	U	330	U
PYRENE	UG/KG	340	U	350	U	340	U	410	U	360	U	330	U
BUTYLBENZYLPHTHALATE	UG/KG	340	U	350	U	340	U	410	U	360	U	330	U
3,3'-DICHLOROBENZIDINE	UG/KG	340	U	350	U	340	U	410	U	360	U	330	U
BENZO(A)ANTHRACENE	UG/KG	340	U	350	U	340	U	410	U	360	U	330	U
CHRYSENE	UG/KG	340	U	350	U	340	U	410	U	360	U	330	U
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	340	U	350	U	340	U	170	JB	360	U	330	U
DI-N-OCTYLPHTHALATE	UG/KG	340	U	350	U	340	U	410	U	360	U	330	U
BENZO(B)FLUORANTHENE	UG/KG	340	U	350	U	340	U	410	U	360	U	330	U
BENZO(K)FLUORANTHENE	UG/KG	340	U	350	U	340	U	410	U	360	U	330	U
BENZO(A)PYRENE	UG/KG	340	U	350	U	340	U	410	U	360	U	330	U
INDENO(1,2,3-CD)PYRENE	UG/KG	340	U	350	U	340	U	410	U	360	U	330	U
DIBENZ(A,H)ANTHRACENE	UG/KG	340	U	350	U	340	U	410	U	360	U	330	U
BENZO(G,H,I)PERYLENE	UG/KG	340	U	350	U	340	U	410	U	360	U	330	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: BG

RESULTS FOR SEMIVOLATILE COMPOUND ANALYSES
SUB-AREA BG

Parameter	Units	BG004A 03-JUN-92		BG004D 03-JUN-92		BG005A 03-JUN-92		BG005D 03-JUN-92		BG005D DUP 03-JUN-92		BG006A 03-JUN-92	
2,4-DINITROTOLUENE	UG/KG	330	U	330	U	340	U	340	U	340	U	360	U
DIETHYLPHTHALATE	UG/KG	330	U	330	U	340	U	340	U	340	U	360	U
4-CHLOROPHENYL-PHENYLETHER	UG/KG	330	U	330	U	340	U	340	U	340	U	360	U
FLUORENE	UG/KG	330	U	330	U	340	U	340	U	340	U	360	U
4-NITROANILINE	UG/KG	800	U	810	U	820	U	820	U	820	U	870	U
4,6-DINITRO-2-METHYLPHENOL	UG/KG	800	U	810	U	820	U	820	U	820	U	870	U
N-NITROSODIPHENYLAMINE	UG/KG	330	U	330	U	340	U	340	U	340	U	360	U
4-BROMOPHENYL-PHENYLETHER	UG/KG	330	U	330	U	340	U	340	U	340	U	360	U
HEXACHLOROBENZENE	UG/KG	330	U	330	U	340	U	340	U	340	U	360	U
PENTACHLOROPHENOL	UG/KG	800	U	810	U	820	U	820	U	820	U	870	U
PHENANTHRENE	UG/KG	330	U	330	U	340	U	340	U	340	U	360	U
ANTHRACENE	UG/KG	330	U	330	U	340	U	340	U	340	U	360	U
CARBAZOLE	UG/KG	330	U	330	U	340	U	340	U	340	U	360	U
DI-N-BUTYLPHTHALATE	UG/KG	330	U	330	U	340	U	340	U	340	U	360	U
FLUORANTHENE	UG/KG	330	U	330	U	340	U	340	U	340	U	360	U
PYRENE	UG/KG	330	U	330	U	340	U	340	U	340	U	360	U
BUTYLBENZYLPHTHALATE	UG/KG	330	U	330	U	340	U	340	U	340	U	360	U
3,3'-DICHLOROBENZIDINE	UG/KG	330	U	330	U	340	U	340	U	340	U	360	U
BENZO(A)ANTHRACENE	UG/KG	330	U	330	U	340	U	340	U	340	U	360	U
CHRYSENE	UG/KG	330	U	330	U	340	U	340	U	340	U	360	U
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	330	U	330	U	340	U	340	U	160	JB	360	U
DI-N-OCTYLPHTHALATE	UG/KG	330	U	330	U	340	U	340	U	340	U	360	U
BENZO(B)FLUORANTHENE	UG/KG	330	U	330	U	340	U	340	U	340	U	360	U
BENZO(K)FLUORANTHENE	UG/KG	330	U	330	U	340	U	340	U	340	U	360	U
BENZO(A)PYRENE	UG/KG	330	U	330	U	340	U	340	U	340	U	360	U
INDENO(1,2,3-CD)PYRENE	UG/KG	330	U	330	U	340	U	340	U	340	U	360	U
DIBENZ(A,H)ANTHRACENE	UG/KG	330	U	330	U	340	U	340	U	340	U	360	U
BENZO(G,H,I)PERYLENE	UG/KG	330	U	330	U	340	U	340	U	340	U	360	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: BG

RESULTS FOR SEMIVOLATILE COMPOUND ANALYSES
SUB-AREA BG

Parameter	Units	BG006D 03-JUN-92		BG007A 04-JUN-92		BG007D 04-JUN-92		BG008A 04-JUN-92		BG008D 04-JUN-92		BG009A 04-JUN-92	
2,4-DINITROTOLUENE	UG/KG	370	U	370	U	360	U	330	U	340	U	340	U
DIETHYLPHTHALATE	UG/KG	370	U	370	U	360	U	330	U	340	U	340	U
4-CHLOROPHENYL-PHENYLETHER	UG/KG	370	U	370	U	360	U	330	U	340	U	340	U
FLUORENE	UG/KG	370	U	370	U	360	U	330	U	340	U	340	U
4-NITROANILINE	UG/KG	900	U	890	U	880	U	810	U	820	U	820	U
4,6-DINITRO-2-METHYLPHENOL	UG/KG	900	U	890	U	880	U	810	U	820	U	820	U
N-NITROSODIPHENYLAMINE	UG/KG	370	U	370	U	360	U	330	U	340	U	340	U
4-BROMOPHENYL-PHENYLETHER	UG/KG	370	U	370	U	360	U	330	U	340	U	340	U
HEXACHLOROBENZENE	UG/KG	370	U	370	U	360	U	330	U	340	U	340	U
PENTACHLOROPHENOL	UG/KG	900	U	890	U	880	U	810	U	820	U	820	U
PHENANTHRENE	UG/KG	370	U	370	U	360	U	330	U	340	U	340	U
ANTHRACENE	UG/KG	370	U	370	U	360	U	330	U	340	U	340	U
CARBAZOLE	UG/KG	370	U	370	U	360	U	330	U	340	U	340	U
DI-N-BUTYLPHTHALATE	UG/KG	370	U	370	U	360	U	330	U	340	U	340	U
FLUORANTHENE	UG/KG	370	U	370	U	360	U	330	U	340	U	340	U
PYRENE	UG/KG	370	U	370	U	360	U	330	U	340	U	340	U
BUTYLBENZYLPHTHALATE	UG/KG	370	U	370	U	360	U	330	U	340	U	340	U
3,3'-DICHLOROBENZIDINE	UG/KG	370	U	370	U	360	U	330	U	340	U	340	U
BENZO(A)ANTHRACENE	UG/KG	370	U	370	U	360	U	330	U	340	U	340	U
CHRYSENE	UG/KG	370	U	370	U	360	U	330	U	340	U	340	U
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	370	U	370	U	250	JB	330	U	340	U	340	U
DI-N-OCTYLPHTHALATE	UG/KG	370	U	370	U	360	U	330	U	340	U	340	U
BENZO(B)FLUORANTHENE	UG/KG	370	U	370	U	360	U	330	U	340	U	340	U
BENZO(K)FLUORANTHENE	UG/KG	370	U	370	U	360	U	330	U	340	U	340	U
BENZO(A)PYRENE	UG/KG	370	U	370	U	360	U	330	U	340	U	340	U
INDENO(1,2,3-CD)PYRENE	UG/KG	370	U	370	U	360	U	330	U	340	U	340	U
DIBENZ(A,H)ANTHRACENE	UG/KG	370	U	370	U	360	U	330	U	340	U	340	U
BENZO(G,H,I)PERYLENE	UG/KG	370	U	370	U	360	U	330	U	340	U	340	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: BG

RESULTS FOR SEMIVOLATILE COMPOUND ANALYSES
SUB-AREA BG

Parameter	Units	BG009D 04-JUN-92		BG009D DUP 04-JUN-92		BG010A 04-JUN-92		BG010D 04-JUN-92	
2,4-DINITROTOLUENE	UG/KG	340	U	340	U	430	U	350	U
DIETHYLPHTHALATE	UG/KG	340	U	340	U	430	U	350	U
4-CHLOROPHENYL-PHENYLETHER	UG/KG	340	U	340	U	430	U	350	U
FLUORENE	UG/KG	340	U	340	U	430	U	350	U
4-NITROANILINE	UG/KG	820	U	820	U	1000	U	840	U
4,6-DINITRO-2-METHYLPHENOL	UG/KG	820	U	820	U	1000	U	840	U
N-NITROSODIPHENYLAMINE	UG/KG	340	U	340	U	430	U	350	U
4-BROMOPHENYL-PHENYLETHER	UG/KG	340	U	340	U	430	U	350	U
HEXACHLOROBENZENE	UG/KG	340	U	340	U	430	U	350	U
PENTACHLOROPHENOL	UG/KG	820	U	820	U	1000	U	840	U
PHENANTHRENE	UG/KG	340	U	340	U	150	J	350	U
ANTHRACENE	UG/KG	340	U	340	U	430	U	350	U
CARBAZOLE	UG/KG	340	U	340	U	430	U	350	U
DI-N-BUTYLPHTHALATE	UG/KG	340	U	340	U	430	U	350	U
FLUORANTHENE	UG/KG	340	U	340	U	170	J	350	U
PYRENE	UG/KG	340	U	340	U	150	J	350	U
BUTYLBENZYLPHTHALATE	UG/KG	340	U	340	U	430	U	350	U
3,3'-DICHLOROBENZIDINE	UG/KG	340	U	340	U	430	U	350	U
BENZO(A)ANTHRACENE	UG/KG	340	U	340	U	430	U	350	U
CHRYSENE	UG/KG	340	U	340	U	430	U	350	U
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	340	U	340	U	430	U	230	JB
DI-N-OCTYLPHTHALATE	UG/KG	340	U	340	U	430	U	350	U
BENZO(B)FLUORANTHENE	UG/KG	340	U	340	U	430	U	350	U
BENZO(K)FLUORANTHENE	UG/KG	340	U	340	U	430	U	350	U
BENZO(A)PYRENE	UG/KG	340	U	340	U	430	U	350	U
INDENO(1,2,3-CD)PYRENE	UG/KG	340	U	340	U	430	U	350	U
DIBENZ(A,H)ANTHRACENE	UG/KG	340	U	340	U	430	U	350	U
BENZO(G,H,I)PERYLENE	UG/KG	340	U	340	U	430	U	350	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A1

RESULTS FOR SEMIVOLATILE COMPOUND ANALYSES
SUB-AREA A1

Parameter	Units	AB041A 08-JUN-92		AB041C 08-JUN-92		AB042A 09-JUN-92		AB042G 09-JUN-92		AB042G DUP 09-JUN-92	
PHENOL	UG/KG	390	U	350	U	350	U	340	U	350	U
BIS(2-CHLOROETHYL)ETHER	UG/KG	390	U	350	U	350	U	340	U	350	U
2-CHLOROPHENOL	UG/KG	390	U	350	U	350	U	340	U	350	U
1,3-DICHLOROBENZENE	UG/KG	390	U	350	U	350	U	340	U	350	U
1,4-DICHLOROBENZENE	UG/KG	390	U	350	U	350	U	340	U	350	U
1,2-DICHLOROBENZENE	UG/KG	390	U	350	U	350	U	340	U	350	U
2-METHYLPHENOL	UG/KG	390	U	350	U	350	U	340	U	350	U
2,2'-OXYBIS(1-CHLOROPROPANE)	UG/KG	390	U	350	U	350	U	340	U	350	U
4-METHYLPHENOL	UG/KG	390	U	350	U	350	U	340	U	350	U
N-NITROSODI-N-PROPYLAMINE	UG/KG	390	U	350	U	350	U	340	U	350	U
HEXACHLOROETHANE	UG/KG	390	U	350	U	350	U	340	U	350	U
NITROBENZENE	UG/KG	390	U	350	U	350	U	340	U	350	U
ISOPHORONE	UG/KG	390	U	350	U	350	U	340	U	350	U
2-NITROPHENOL	UG/KG	390	U	350	U	350	U	340	U	350	U
2,4-DIMETHYLPHENOL	UG/KG	390	U	350	U	350	U	340	U	350	U
BIS(2-CHLOROETHOXY)METHANE	UG/KG	390	U	350	U	350	U	340	U	350	U
2,4-DICHLOROPHENOL	UG/KG	390	U	350	U	350	U	340	U	350	U
1,2,4-TRICHLOROBENZENE	UG/KG	390	U	350	U	350	U	340	U	350	U
NAPHTHALENE	UG/KG	390	U	350	U	350	U	340	U	350	U
4-CHLOROANILINE	UG/KG	390	U	350	U	350	U	340	U	350	U
HEXACHLOROBUTADIENE	UG/KG	390	U	350	U	350	U	340	U	350	U
4-CHLORO-3-METHYLPHENOL	UG/KG	390	U	350	U	350	U	340	U	350	U
2-METHYLNAPHTHALENE	UG/KG	390	U	350	U	350	U	340	U	350	U
HEXACHLOROCYCLOPENTADIENE	UG/KG	390	U	350	U	350	U	340	U	350	U
2,4,6-TRICHLOROPHENOL	UG/KG	390	U	350	U	350	U	340	U	350	U
2,4,5-TRICHLOROPHENOL	UG/KG	950	U	850	U	850	U	830	U	840	U
2-CHLORONAPHTHALENE	UG/KG	390	U	350	U	350	U	340	U	350	U
2-NITROANILINE	UG/KG	950	U	850	U	850	U	830	U	840	U
DIMETHYLPHTHALATE	UG/KG	390	U	350	U	350	U	340	U	350	U
ACENAPHTHYLENE	UG/KG	390	U	350	U	350	U	340	U	350	U
2,6-DINITROTOLUENE	UG/KG	390	U	350	U	350	U	340	U	350	U
3-NITROANILINE	UG/KG	950	U	850	U	850	U	830	U	840	U
ACENAPHTHENE	UG/KG	390	U	350	U	350	U	340	U	350	U
2,4-DINITROPHENOL	UG/KG	950	U	850	U	850	U	830	U	840	U
4-NITROPHENOL	UG/KG	950	U	850	U	850	U	830	U	840	U
DIBENZOFURAN	UG/KG	390	U	350	U	350	U	340	U	350	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A1

RESULTS FOR SEMIVOLATILE COMPOUND ANALYSES
SUB-AREA A1

Parameter	Units	AB041A 08-JUN-92		AB041C 08-JUN-92		AB042A 09-JUN-92		AB042G 09-JUN-92		AB042G DUP 09-JUN-92	
2,4-DINITROTOLUENE	UG/KG	390	U	350	U	350	U	340	U	350	U
DIETHYLPHTHALATE	UG/KG	390	U	350	U	350	U	340	U	350	U
4-CHLOROPHENYL-PHENYLETHER	UG/KG	390	U	350	U	350	U	340	U	350	U
FLUORENE	UG/KG	390	U	350	U	350	U	340	U	350	U
4-NITROANILINE	UG/KG	950	U	850	U	850	U	830	U	840	U
4,6-DINITRO-2-METHYLPHENOL	UG/KG	950	U	850	U	850	U	830	U	840	U
N-NITROSODIPHENYLAMINE	UG/KG	390	U	350	U	350	U	340	U	350	U
4-BROMOPHENYL-PHENYLETHER	UG/KG	390	U	350	U	350	U	340	U	350	U
HEXACHLOROBENZENE	UG/KG	390	U	350	U	350	U	340	U	350	U
PENTACHLOROPHENOL	UG/KG	950	U	850	U	850	U	830	U	840	U
PHENANTHRENE	UG/KG	390	U	350	U	350	U	340	U	350	U
ANTHRACENE	UG/KG	390	U	350	U	350	U	340	U	350	U
CARBAZOLE	UG/KG	390	U	350	U	350	U	340	U	350	U
DI-N-BUTYLPHTHALATE	UG/KG	390	U	350	U	350	U	340	U	350	U
FLUORANTHENE	UG/KG	390	U	350	U	350	U	340	U	350	U
PYRENE	UG/KG	390	U	350	U	350	U	340	U	350	U
BUTYLBENZYLPHTHALATE	UG/KG	390	U	350	U	350	U	340	U	350	U
3,3'-DICHLOROBENZIDINE	UG/KG	390	U	350	U	350	U	340	U	350	U
BENZO(A)ANTHRACENE	UG/KG	390	U	350	U	350	U	340	U	350	U
CHRYSENE	UG/KG	390	U	350	U	350	U	340	U	350	U
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	390	U	350	U	350	U	340	U	350	U
DI-N-OCTYLPHTHALATE	UG/KG	390	U	350	U	350	U	340	U	350	U
BENZO(B)FLUORANTHENE	UG/KG	390	U	350	U	350	U	340	U	350	U
BENZO(K)FLUORANTHENE	UG/KG	390	U	350	U	350	U	340	U	350	U
BENZO(A)PYRENE	UG/KG	390	U	350	U	350	U	340	U	350	U
INDENO(1,2,3-CD)PYRENE	UG/KG	390	U	350	U	350	U	340	U	350	U
DIBENZ(A,H)ANTHRACENE	UG/KG	390	U	350	U	350	U	340	U	350	U
BENZO(G,H,I)PERYLENE	UG/KG	390	U	350	J	350	U	340	U	350	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A2

RESULTS FOR SEMIVOLATILE COMPOUND ANALYSES
SUB-AREA A2

Parameter	Units	AB024A 09-JUN-92		AB024G 09-JUN-92		AB025A 09-JUN-92		AB025B 09-JUN-92	
PHENOL	UG/KG	360	U	350	U	350	U	400	U
BIS(2-CHLOROETHYL)ETHER	UG/KG	360	U	350	U	350	U	400	U
2-CHLOROPHENOL	UG/KG	360	U	350	U	350	U	400	U
1,3-DICHLOROBENZENE	UG/KG	360	U	350	U	350	U	400	U
1,4-DICHLOROBENZENE	UG/KG	360	U	350	U	350	U	400	U
1,2-DICHLOROBENZENE	UG/KG	360	U	350	U	350	U	400	U
2-METHYLPHENOL	UG/KG	360	U	350	U	350	U	400	U
2,2'-OXYBIS(1-CHLOROPROPANE)	UG/KG	360	U	350	U	350	U	400	U
4-METHYLPHENOL	UG/KG	360	U	350	U	350	U	400	U
N-NITROSODI-N-PROPYLAMINE	UG/KG	360	U	350	U	350	U	400	U
HEXACHLOROETHANE	UG/KG	360	U	350	U	350	U	400	U
NITROBENZENE	UG/KG	360	U	350	U	350	U	400	U
ISOPHORONE	UG/KG	360	U	350	U	350	U	400	U
2-NITROPHENOL	UG/KG	360	U	350	U	350	U	400	U
2,4-DIMETHYLPHENOL	UG/KG	360	U	350	U	350	U	400	U
BIS(2-CHLOROETHOXY)METHANE	UG/KG	360	U	350	U	350	U	400	U
2,4-DICHLOROPHENOL	UG/KG	360	U	350	U	350	U	400	U
1,2,4-TRICHLOROBENZENE	UG/KG	360	U	350	U	350	U	400	U
NAPHTHALENE	UG/KG	360	U	350	U	350	U	400	U
4-CHLOROANILINE	UG/KG	360	U	350	U	350	U	400	U
HEXACHLOROBUTADIENE	UG/KG	360	U	350	U	350	U	400	U
4-CHLORO-3-METHYLPHENOL	UG/KG	360	U	350	U	350	U	400	U
2-METHYLNAPHTHALENE	UG/KG	360	U	350	U	350	U	400	U
HEXACHLOROCYCLOPENTADIENE	UG/KG	360	U	350	U	350	U	400	U
2,4,6-TRICHLOROPHENOL	UG/KG	360	U	350	U	350	U	400	U
2,4,5-TRICHLOROPHENOL	UG/KG	880	U	850	U	850	U	960	U
2-CHLORONAPHTHALENE	UG/KG	360	U	350	U	350	U	400	U
2-NITROANILINE	UG/KG	880	U	850	U	850	U	960	U
DIMETHYLPHTHALATE	UG/KG	360	U	350	U	350	U	400	U
ACENAPHTHYLENE	UG/KG	360	U	350	U	350	U	400	U
2,6-DINITROTOLUENE	UG/KG	360	U	350	U	350	U	400	U
3-NITROANILINE	UG/KG	880	U	850	U	850	U	960	U
ACENAPHTHENE	UG/KG	360	U	350	U	350	U	400	U
2,4-DINITROPHENOL	UG/KG	880	U	850	U	850	U	960	U
4-NITROPHENOL	UG/KG	880	U	850	U	850	U	960	U
DIBENZOFURAN	UG/KG	360	U	350	U	350	U	400	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A2

RESULTS FOR SEMIVOLATILE COMPOUND ANALYSES
SUB-AREA A2

Parameter	Units	AB024A 09-JUN-92		AB024G 09-JUN-92		AB025A 09-JUN-92		AB025B 09-JUN-92	
2,4-DINITROTOLUENE	UG/KG	360	U	350	U	350	U	400	U
DIETHYLPHTHALATE	UG/KG	360	U	350	U	350	U	400	U
4-CHLOROPHENYL-PHENYLETHER	UG/KG	360	U	350	U	350	U	400	U
FLUORENE	UG/KG	360	U	350	U	350	U	400	U
4-NITROANILINE	UG/KG	880	U	850	U	850	U	960	U
4,6-DINITRO-2-METHYLPHENOL	UG/KG	880	U	850	U	850	U	960	U
N-NITROSODIPHENYLAMINE	UG/KG	360	U	350	U	350	U	400	U
4-BROMOPHENYL-PHENYLETHER	UG/KG	360	U	350	U	350	U	400	U
HEXACHLOROBENZENE	UG/KG	360	U	350	U	350	U	400	U
PENTACHLOROPHENOL	UG/KG	880	U	850	U	850	U	960	U
PHENANTHRENE	UG/KG	180	J	350	U	350	U	400	U
ANTHRACENE	UG/KG	360	U	350	U	350	U	400	U
CARBAZOLE	UG/KG	360	U	350	U	350	U	400	U
DI-N-BUTYLPHTHALATE	UG/KG	360	U	350	U	350	U	400	U
FLUORANTHENE	UG/KG	290	J	350	U	350	U	400	U
PYRENE	UG/KG	290	J	350	U	350	U	400	U
BUTYLBENZYLPHTHALATE	UG/KG	360	U	350	U	350	U	400	U
3,3'-DICHLOROBENZIDINE	UG/KG	360	U	350	U	350	U	400	U
BENZO(A)ANTHRACENE	UG/KG	140	J	350	U	350	U	400	U
CHRYSENE	UG/KG	150	J	350	U	350	U	400	U
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	360	U	350	U	350	U	220	JBU
DI-N-OCTYLPHTHALATE	UG/KG	360	U	350	U	350	U	400	U
BENZO(B)FLUORANTHENE	UG/KG	130	J	350	U	350	U	400	U
BENZO(K)FLUORANTHENE	UG/KG	87	J	350	U	350	U	400	U
BENZO(A)PYRENE	UG/KG	120	J	350	U	350	U	400	U
INDENO(1,2,3-CD)PYRENE	UG/KG	360	U	350	U	350	U	400	U
DIBENZ(A,H)ANTHRACENE	UG/KG	360	U	350	U	350	U	400	U
BENZO(G,H,I)PERYLENE	UG/KG	360	U	350	U	350	U	400	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A3

RESULTS FOR SEMIVOLATILE COMPOUND ANALYSES
SUB-AREA A3

Parameter	Units	AB035A 10-JUN-92		AB036A 15-JUN-92		AB036H 15-JUN-92		AB037A 10-JUN-92		AB037D 10-JUN-92		AB039A 10-JUN-92	
PHENOL	UG/KG	360	U	1300		360	U	360	U	340	U	380	U
BIS(2-CHLOROETHYL)ETHER	UG/KG	360	U	720	U	360	U	360	U	340	U	380	U
2-CHLOROPHENOL	UG/KG	360	U	720	U	360	U	360	U	340	U	380	U
1,3-DICHLOROBENZENE	UG/KG	360	U	720	U	360	U	360	U	340	U	380	U
1,4-DICHLOROBENZENE	UG/KG	360	U	720	U	360	U	360	U	340	U	380	U
1,2-DICHLOROBENZENE	UG/KG	360	U	720	U	360	U	360	U	340	U	380	U
2-METHYLPHENOL	UG/KG	360	U	720	U	360	U	360	U	340	U	380	U
2,2'-OXYBIS(1-CHLOROPROPANE)	UG/KG	360	U	720	U	360	U	360	U	340	U	380	U
4-METHYLPHENOL	UG/KG	360	U	720	U	360	U	360	U	340	U	380	U
N-NITROSODI-N-PROPYLAMINE	UG/KG	360	U	720	U	360	U	360	U	340	U	380	U
HEXACHLOROETHANE	UG/KG	360	U	720	U	360	U	360	U	340	U	380	U
NITROBENZENE	UG/KG	360	U	720	U	360	U	360	U	340	U	380	U
ISOPHORONE	UG/KG	360	U	720	U	360	U	360	U	340	U	380	U
2-NITROPHENOL	UG/KG	360	U	720	U	360	U	360	U	340	U	380	U
2,4-DIMETHYLPHENOL	UG/KG	360	U	720	U	360	U	360	U	340	U	380	U
BIS(2-CHLOROETHOXY)METHANE	UG/KG	360	U	720	U	360	U	360	U	340	U	380	U
2,4-DICHLOROPHENOL	UG/KG	360	U	720	U	360	U	360	U	340	U	380	U
1,2,4-TRICHLOROBENZENE	UG/KG	360	U	720	U	360	U	360	U	340	U	380	U
NAPHTHALENE	UG/KG	360	U	720	U	360	U	360	U	340	U	380	U
4-CHLOROANILINE	UG/KG	360	U	720	U	360	U	360	U	340	U	380	U
HEXACHLOROBUTADIENE	UG/KG	360	U	720	U	360	U	360	U	340	U	380	U
4-CHLORO-3-METHYLPHENOL	UG/KG	360	U	720	U	360	U	360	U	340	U	380	U
2-METHYLNAPHTHALENE	UG/KG	360	U	720	U	360	U	360	U	340	U	380	U
HEXACHLOROCYCLOPENTADIENE	UG/KG	360	U	720	U	360	U	360	U	340	U	380	U
2,4,6-TRICHLOROPHENOL	UG/KG	360	U	720	U	360	U	360	U	340	U	380	U
2,4,5-TRICHLOROPHENOL	UG/KG	880	U	1700	U	870	U	870	U	820	U	930	U
2-CHLORONAPHTHALENE	UG/KG	360	U	720	U	360	U	360	U	340	U	380	U
2-NITROANILINE	UG/KG	880	U	1700	U	870	U	870	U	820	U	930	U
DIMETHYLPHTHALATE	UG/KG	360	U	720	U	360	U	360	U	340	U	380	U
ACENAPHTHYLENE	UG/KG	360	U	720	U	360	U	360	U	340	U	380	U
2,6-DINITROTOLUENE	UG/KG	360	U	720	U	360	U	360	U	340	U	380	U
3-NITROANILINE	UG/KG	880	U	1700	U	870	U	870	U	820	U	930	U
ACENAPHTHENE	UG/KG	360	U	120	J	360	U	160	J	340	U	380	U
2,4-DINITROPHENOL	UG/KG	880	U	1700	U	870	U	870	U	820	U	930	U
4-NITROPHENOL	UG/KG	880	U	1700	U	870	U	870	U	820	U	930	U
DIBENZOFURAN	UG/KG	360	U	110	J	360	U	360	U	340	U	380	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A3

RESULTS FOR SEMIVOLATILE COMPOUND ANALYSES
SUB-AREA A3

Parameter	Units	AB039H 10-JUN-92		AB039H DUP 10-JUN-92		AB043D 20-JUL-92		AB043H 20-JUL-92		AB044D 20-JUL-92		AB044H 20-JUL-92	
PHENOL	UG/KG	350	U	350	U	1100	J	1400	U	1000	J	350	U
BIS(2-CHLOROETHYL)ETHER	UG/KG	350	U	350	U	1900	U	1400	U	1900	U	350	U
2-CHLOROPHENOL	UG/KG	350	U	350	U	1900	U	1400	U	1900	U	350	U
1,3-DICHLOROBENZENE	UG/KG	350	U	350	U	1900	U	1400	U	1900	U	350	U
1,4-DICHLOROBENZENE	UG/KG	350	U	350	U	1900	U	1400	U	1900	U	350	U
1,2-DICHLOROBENZENE	UG/KG	350	U	350	U	1900	U	1400	U	1900	U	350	U
2-METHYLPHENOL	UG/KG	350	U	350	U	1900	U	1400	U	1900	U	350	U
2,2'-OXYBIS(1-CHLOROPROPANE)	UG/KG	350	U	350	U	1900	U	1400	U	1900	U	350	U
4-METHYLPHENOL	UG/KG	350	U	350	U	1900	U	1400	U	1900	U	350	U
N-NITROSODI-N-PROPYLAMINE	UG/KG	350	U	350	U	1900	U	1400	U	1900	U	350	U
HEXACHLOROETHANE	UG/KG	350	U	350	U	1900	U	1400	U	1900	U	350	U
NITROBENZENE	UG/KG	350	U	350	U	1900	U	1400	U	1900	U	350	U
ISOPHORONE	UG/KG	350	U	350	U	1900	U	1400	U	1900	U	350	U
2-NITROPHENOL	UG/KG	350	U	350	U	1900	U	1400	U	1900	U	350	U
2,4-DIMETHYLPHENOL	UG/KG	350	U	350	U	1900	U	1400	U	1900	U	350	U
BIS(2-CHLOROETHOXY)METHANE	UG/KG	350	U	350	U	1900	U	1400	U	1900	U	350	U
2,4-DICHLOROPHENOL	UG/KG	350	U	350	U	1900	U	1400	U	1900	U	350	U
1,2,4-TRICHLOROBENZENE	UG/KG	350	U	350	U	1900	U	1400	U	1900	U	350	U
NAPHTHALENE	UG/KG	350	U	350	U	1900	U	1400	U	1900	U	350	U
4-CHLOROANILINE	UG/KG	350	U	350	U	1900	U	1400	U	1900	U	350	U
HEXACHLOROBUTADIENE	UG/KG	350	U	350	U	1900	U	1400	U	1900	U	350	U
4-CHLORO-3-METHYLPHENOL	UG/KG	350	U	350	U	1900	U	1400	U	1900	U	350	U
2-METHYLNAPHTHALENE	UG/KG	350	U	350	U	1900	U	1400	U	1900	U	350	U
HEXACHLOROCYCLOPENTADIENE	UG/KG	350	U	350	U	1900	U	1400	U	1900	U	350	U
2,4,6-TRICHLOROPHENOL	UG/KG	350	U	350	U	1900	U	1400	U	1900	U	350	U
2,4,5-TRICHLOROPHENOL	UG/KG	860	U	860	U	4500	U	3400	U	4500	U	840	U
2-CHLORONAPHTHALENE	UG/KG	350	U	350	U	1900	U	1400	U	1900	U	350	U
2-NITROANILINE	UG/KG	860	U	860	U	4500	U	3400	U	4500	U	840	U
DIMETHYLPHTHALATE	UG/KG	350	U	350	U	1900	U	1400	U	1900	U	350	U
ACENAPHTHYLENE	UG/KG	350	U	350	U	1900	U	1400	U	1900	U	350	U
2,6-DINITROTOLUENE	UG/KG	350	U	350	U	1900	U	1400	U	1900	U	350	U
3-NITROANILINE	UG/KG	860	U	860	U	4500	U	3400	U	4500	U	840	U
ACENAPHTHENE	UG/KG	350	U	350	U	1900	U	1400	U	1900	U	350	U
2,4-DINITROPHENOL	UG/KG	860	U	860	U	4500	U	3400	U	4500	U	840	U
4-NITROPHENOL	UG/KG	860	U	860	U	4500	U	3400	U	4500	U	840	U
DIBENZOFURAN	UG/KG	350	U	350	U	1900	U	1400	U	1900	U	350	U

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RESULTS FOR SEMIVOLATILE COMPOUND ANALYSES
SUB-AREA A3

Parameter	Units	AT007A 17-JUN-92		AT007C 17-JUN-92		AT008A 17-JUN-92		AT008D 17-JUN-92		AT008D DUP 17-JUN-92		AT009B1 23-JUN-92	
PHENOL	UG/KG	350	U	13000	U	340	U	450	U	8600	U	1500	U
BIS(2-CHLOROETHYL)ETHER	UG/KG	350	U	13000	U	340	U	450	U	8600	U	1500	U
2-CHLOROPHENOL	UG/KG	350	U	13000	U	340	U	450	U	8600	U	1500	U
1,3-DICHLOROBENZENE	UG/KG	350	U	13000	U	340	U	450	U	8600	U	1500	U
1,4-DICHLOROBENZENE	UG/KG	350	U	13000	U	340	U	450	U	8600	U	1500	U
1,2-DICHLOROBENZENE	UG/KG	350	U	13000	U	340	U	450	U	8600	U	1500	U
2-METHYLPHENOL	UG/KG	350	U	13000	U	340	U	450	U	8600	U	1500	U
2,2'-OXYBIS(1-CHLOROPROPANE)	UG/KG	350	U	13000	U	340	U	450	U	8600	U	1500	U
4-METHYLPHENOL	UG/KG	350	U	13000	U	340	U	450	U	8600	U	1500	U
N-NITROSODI-N-PROPYLAMINE	UG/KG	350	U	13000	U	340	U	450	U	8600	U	1500	U
HEXACHLOROETHANE	UG/KG	350	U	13000	U	340	U	450	U	8600	U	1500	U
NITROBENZENE	UG/KG	350	U	13000	U	340	U	450	U	8600	U	1500	U
ISOPHORONE	UG/KG	350	U	13000	U	340	U	450	U	8600	U	1500	U
2-NITROPHENOL	UG/KG	350	U	13000	U	340	U	450	U	8600	U	1500	U
2,4-DIMETHYLPHENOL	UG/KG	350	U	13000	U	340	U	450	U	8600	U	1500	U
BIS(2-CHLOROETHOXY)METHANE	UG/KG	350	U	13000	U	340	U	450	U	8600	U	1500	U
2,4-DICHLOROPHENOL	UG/KG	350	U	13000	U	340	U	450	U	8600	U	1500	U
1,2,4-TRICHLOROBENZENE	UG/KG	350	U	13000	U	340	U	450	U	8600	U	1500	U
NAPHTHALENE	UG/KG	350	U	13000	U	340	U	450	U	8600	U	1500	U
4-CHLOROANILINE	UG/KG	350	U	13000	U	340	U	450	U	8600	U	1500	U
HEXACHLOROBUTADIENE	UG/KG	350	U	13000	U	340	U	450	U	8600	U	1500	U
4-CHLORO-3-METHYLPHENOL	UG/KG	350	U	13000	U	340	U	450	U	8600	U	1500	U
2-METHYLNAPHTHALENE	UG/KG	350	U	13000	U	340	U	450	U	8600	U	1500	U
HEXACHLOROCYCLOPENTADIENE	UG/KG	350	U	13000	U	340	U	450	U	8600	U	1500	U
2,4,6-TRICHLOROPHENOL	UG/KG	350	U	13000	U	340	U	450	U	8600	U	1500	U
2,4,5-TRICHLOROPHENOL	UG/KG	860	U	31000	U	830	U	1100	U	21000	U	3500	U
2-CHLORONAPHTHALENE	UG/KG	350	U	13000	U	340	U	450	U	8600	U	1500	U
2-NITROANILINE	UG/KG	860	U	31000	U	830	U	1100	U	21000	U	3500	U
DIMETHYLPHTHALATE	UG/KG	350	U	13000	U	340	U	450	U	8600	U	1500	U
ACENAPHTHYLENE	UG/KG	350	U	13000	U	340	U	450	U	8600	U	1500	U
2,6-DINITROTOLUENE	UG/KG	350	U	13000	U	340	U	450	U	8600	U	1500	U
3-NITROANILINE	UG/KG	860	U	31000	U	830	U	1100	U	21000	U	3500	U
ACENAPHTHENE	UG/KG	350	U	13000	U	340	U	450	U	8600	U	1500	U
2,4-DINITROPHENOL	UG/KG	860	U	31000	U	830	U	1100	U	21000	U	3500	U
4-NITROPHENOL	UG/KG	860	U	31000	U	830	U	1100	U	21000	U	3500	U
DIBENZOFURAN	UG/KG	350	U	13000	U	340	U	450	U	8600	U	1500	U

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RESULTS FOR SEMIVOLATILE COMPOUND ANALYSES
SUB-AREA A3

Parameter	Units	AT009B1 DUP 23-JUN-92		AT009D1 24-JUN-92		AT009D2 24-JUN-92		AT009D3 24-JUN-92		AT009E1 25-JUN-92		AT009E2 26-JUN-92	
PHENOL	UG/KG	2100	U	7200	U	3500	U	360	U	350	U	350	U
BIS(2-CHLOROETHYL)ETHER	UG/KG	2100	U	7200	U	3500	U	360	U	350	U	350	U
2-CHLOROPHENOL	UG/KG	2100	U	7200	U	3500	U	360	U	350	U	350	U
1,3-DICHLOROBENZENE	UG/KG	2100	U	7200	U	3500	U	360	U	350	U	350	U
1,4-DICHLOROBENZENE	UG/KG	2100	U	7200	U	3500	U	360	U	350	U	350	U
1,2-DICHLOROBENZENE	UG/KG	2100	U	7200	U	3500	U	360	U	350	U	350	U
2-METHYLPHENOL	UG/KG	2100	U	7200	U	3500	U	360	U	350	U	350	U
2,2'-OXYBIS(1-CHLOROPROPANE)	UG/KG	2100	U	7200	U	3500	U	360	U	350	U	350	U
4-METHYLPHENOL	UG/KG	2100	U	7200	U	3500	U	360	U	350	U	350	U
N-NITROSODI-N-PROPYLAMINE	UG/KG	2100	U	7200	U	3500	U	360	U	350	U	350	U
HEXACHLOROETHANE	UG/KG	2100	U	7200	U	3500	U	360	U	350	U	350	U
NITROBENZENE	UG/KG	2100	U	7200	U	3500	U	360	U	350	U	350	U
ISOPHORONE	UG/KG	2100	U	7200	U	3500	U	360	U	350	U	350	U
2-NITROPHENOL	UG/KG	2100	U	7200	U	3500	U	360	U	350	U	350	U
2,4-DIMETHYLPHENOL	UG/KG	2100	U	7200	U	3500	U	360	U	350	U	350	U
BIS(2-CHLOROETHOXY)METHANE	UG/KG	2100	U	7200	U	3500	U	360	U	350	U	350	U
2,4-DICHLOROPHENOL	UG/KG	2100	U	7200	U	3500	U	360	U	350	U	350	U
1,2,4-TRICHLOROBENZENE	UG/KG	2100	U	7200	U	3500	U	360	U	350	U	350	U
NAPHTHALENE	UG/KG	2100	U	2700	J	3500	U	360	U	350	U	350	U
4-CHLOROANILINE	UG/KG	2100	U	7200	U	3500	U	360	U	350	U	350	U
HEXACHLOROBUTADIENE	UG/KG	2100	U	7200	U	3500	U	360	U	350	U	350	U
4-CHLORO-3-METHYLPHENOL	UG/KG	2100	U	7200	U	3500	U	360	U	350	U	350	U
2-METHYLNAPHTHALENE	UG/KG	2100	U	7200	U	3500	U	360	U	350	U	350	U
HEXACHLOROCYCLOPENTADIENE	UG/KG	2100	U	7200	U	3500	U	360	U	350	U	350	U
2,4,6-TRICHLOROPHENOL	UG/KG	2100	U	7200	U	3500	U	360	U	350	U	350	U
2,4,5-TRICHLOROPHENOL	UG/KG	5100	U	17000	U	8600	U	880	U	850	U	860	U
2-CHLORONAPHTHALENE	UG/KG	2100	U	7200	U	3500	U	360	U	350	U	350	U
2-NITROANILINE	UG/KG	5100	U	17000	U	8600	U	880	U	850	U	860	U
DIMETHYLPHTHALATE	UG/KG	2100	U	7200	U	3500	U	360	U	350	U	350	U
ACENAPHTHYLENE	UG/KG	2100	U	7200	U	3500	U	360	U	350	U	350	U
2,6-DINITROTOLUENE	UG/KG	2100	U	7200	U	3500	U	360	U	350	U	350	U
3-NITROANILINE	UG/KG	5100	U	17000	U	8600	U	880	U	850	U	860	U
ACENAPHTHENE	UG/KG	2100	U	7200	U	3500	U	360	U	350	U	350	U
2,4-DINITROPHENOL	UG/KG	5100	U	17000	U	8600	U	880	U	850	U	860	U
4-NITROPHENOL	UG/KG	5100	U	17000	U	8600	U	880	U	850	U	860	U
DIBENZOFURAN	UG/KG	2100	U	7200	U	3500	U	360	U	350	U	350	U

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SITE AREA: A3

RESULTS FOR SEMIVOLATILE COMPOUND ANALYSES
SUB-AREA A3

Parameter	Units	AB035A 10-JUN-92		AB036A 15-JUN-92		AB036H 15-JUN-92		AB037A 10-JUN-92		AB037D 10-JUN-92		AB039A 10-JUN-92	
2,4-DINITROTOLUENE	UG/KG	360	U	720	U	360	U	360	U	340	U	380	U
DIETHYLPHTHALATE	UG/KG	360	U	720	U	360	U	360	U	340	U	380	U
4-CHLOROPHENYL-PHENYLETHER	UG/KG	360	U	720	U	360	U	360	U	340	U	380	U
FLUORENE	UG/KG	360	U	240	J	360	U	170	J	340	U	380	U
4-NITROANILINE	UG/KG	880	U	1700	U	870	U	870	U	820	U	930	U
4,6-DINITRO-2-METHYLPHENOL	UG/KG	880	U	1700	U	870	U	870	U	820	U	930	U
N-NITROSODIPHENYLAMINE	UG/KG	360	U	720	U	360	U	360	U	340	U	380	U
4-BROMOPHENYL-PHENYLETHER	UG/KG	360	U	720	U	360	U	360	U	340	U	380	U
HEXACHLOROBENZENE	UG/KG	360	U	720	U	360	U	360	U	340	U	380	U
PENTACHLOROPHENOL	UG/KG	880	U	1700	U	870	U	870	U	820	U	930	U
PHENANTHRENE	UG/KG	360	U	1900		360	U	1800		340	U	380	U
ANTHRACENE	UG/KG	360	U	330	J	360	U	370		340	U	380	U
CARBAZOLE	UG/KG	360	U	720	U	360	U	240	J	340	U	380	U
DI-N-BUTYLPHTHALATE	UG/KG	360	U	720	U	360	U	360	U	340	U	380	U
FLUORANTHENE	UG/KG	110	J	2000		360	U	3000		340	U	380	U
PYRENE	UG/KG	120	J	1600		360	U	3000		340	U	380	U
BUTYLBENZYLPHTHALATE	UG/KG	360	U	720	U	360	U	360	U	340	U	380	U
3,3'-DICHLOROBENZIDINE	UG/KG	360	U	720	U	360	U	360	U	340	U	380	U
BENZO(A)ANTHRACENE	UG/KG	360	U	860		360	U	1300		340	U	380	U
CHRYSENE	UG/KG	360	U	850		360	U	1500		340	U	380	U
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	360	U	720	U	360	U	360	U	340	U	380	U
DI-N-OCTYLPHTHALATE	UG/KG	360	U	720	U	360	U	360	U	340	U	380	U
BENZO(B)FLUORANTHENE	UG/KG	360	U	690	J	360	U	1200		340	U	380	U
BENZO(K)FLUORANTHENE	UG/KG	360	U	580	J	360	U	1200		340	U	380	U
BENZO(A)PYRENE	UG/KG	360	U	720		360	U	1200		340	U	380	U
INDENO(1,2,3-CD)PYRENE	UG/KG	360	U	370	J	360	U	830		340	U	380	U
DIBENZ(A,H)ANTHRACENE	UG/KG	360	U	720	U	360	U	360	U	340	U	380	U
BENZO(G,H,I)PERYLENE	UG/KG	360	U	340	J	360	U	870		340	U	380	U

PROJECT NUMBER: 2313.13
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RESULTS FOR SEMIVOLATILE COMPOUND ANALYSES
SUB-AREA A3

Parameter	Units	AB039H 10-JUN-92		AB039H DUP 10-JUN-92		AB043D 20-JUL-92		AB043H 20-JUL-92		AB044D 20-JUL-92		AB044H 20-JUL-92	
2,4-DINITROTOLUENE	UG/KG	350	U	350	U	1900	U	1400	U	1900	U	350	U
DIETHYLPHTHALATE	UG/KG	350	U	350	U	1900	U	1400	U	1900	U	350	U
4-CHLOROPHENYL-PHENYLETHER	UG/KG	350	U	350	U	1900	U	1400	U	1900	U	350	U
FLUORENE	UG/KG	350	U	350	U	1900	U	1400	U	1900	U	350	U
4-NITROANILINE	UG/KG	860	U	860	U	4500	U	3400	U	4500	U	840	U
4,6-DINITRO-2-METHYLPHENOL	UG/KG	860	U	860	U	4500	U	3400	U	4500	U	840	U
N-NITROSODIPHENYLAMINE	UG/KG	350	U	350	U	1900	U	1400	U	1900	U	350	U
4-BROMOPHENYL-PHENYLETHER	UG/KG	350	U	350	U	1900	U	1400	U	1900	U	350	U
HEXACHLOROBENZENE	UG/KG	350	U	350	U	1900	U	1400	U	1900	U	350	U
PENTACHLOROPHENOL	UG/KG	860	U	860	U	4500	U	3400	U	4500	U	840	U
PHENANTHRENE	UG/KG	350	U	350	U	2700		1400	U	660	J	350	U
ANTHRACENE	UG/KG	350	U	350	U	660	J	1400	U	1900	U	350	U
CARBAZOLE	UG/KG	350	U	350	U	1900	U	1400	U	1900	U	350	U
DI-N-BUTYLPHTHALATE	UG/KG	350	U	350	U	1900	U	1400	U	1900	U	350	U
FLUORANTHENE	UG/KG	350	U	350	U	4400		1400	U	970	J	350	U
PYRENE	UG/KG	350	U	350	U	5100		1400	U	1300	J	350	U
BUTYLBENZYLPHTHALATE	UG/KG	350	U	350	U	1900	U	1400	U	1900	U	350	U
3,3'-DICHLOROBENZIDINE	UG/KG	350	U	350	U	1900	U	1400	U	1900	U	350	U
BENZO(A)ANTHRACENE	UG/KG	350	U	350	U	2100		1400	U	1900	U	350	U
CHRYSENE	UG/KG	350	U	350	U	2100		1400	U	1900	U	350	U
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	350	U	350	U	1700	J	1400	U	1300	J	350	U
DI-N-OCTYLPHTHALATE	UG/KG	350	U	350	U	1900	U	1400	U	1900	U	350	U
BENZO(B)FLUORANTHENE	UG/KG	350	U	350	U	1800	J	1400	U	1900	U	350	U
BENZO(K)FLUORANTHENE	UG/KG	350	U	350	U	1400	J	1400	U	1900	U	350	U
BENZO(A)PYRENE	UG/KG	350	U	350	U	1700	J	1400	U	1900	U	350	U
INDENO(1,2,3-CD)PYRENE	UG/KG	350	U	350	U	1100	J	1400	U	1900	U	350	U
DIBENZ(A,H)ANTHRACENE	UG/KG	350	U	350	U	1900	U	1400	U	1900	U	350	U
BENZO(G,H,I)PERYLENE	UG/KG	350	U	350	U	1100	J	1400	U	1900	U	350	U

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RESULTS FOR SEMIVOLATILE COMPOUND ANALYSES
SUB-AREA A3

Parameter	Units	AT007A 17-JUN-92		AT007C 17-JUN-92		AT008A 17-JUN-92		AT008D 17-JUN-92		AT008D DUP 17-JUN-92		AT009B1 23-JUN-92	
2,4-DINITROTOLUENE	UG/KG	350	U	13000	U	340	U	450	U	8600	U	1500	U
DIETHYLPHTHALATE	UG/KG	350	U	13000	U	340	U	450	U	8600	U	1500	U
4-CHLOROPHENYL-PHENYLETHER	UG/KG	350	U	13000	U	340	U	450	U	8600	U	1500	U
FLUORENE	UG/KG	350	U	13000	U	340	U	450	U	8600	U	1500	U
4-NITROANILINE	UG/KG	860	U	31000	U	830	U	1100	U	21000	U	3500	U
4,6-DINITRO-2-METHYLPHENOL	UG/KG	860	U	31000	U	830	U	1100	U	21000	U	3500	U
N-NITROSODIPHENYLAMINE	UG/KG	350	U	13000	U	340	U	450	U	8600	U	1500	U
4-BROMOPHENYL-PHENYLETHER	UG/KG	350	U	13000	U	340	U	450	U	8600	U	1500	U
HEXACHLOROBENZENE	UG/KG	350	U	13000	U	340	U	450	U	8600	U	1500	U
PENTACHLOROPHENOL	UG/KG	860	U	31000	U	830	U	1100	U	21000	U	3500	U
PHENANTHRENE	UG/KG	350	U	13000	U	340	U	450	U	8600	U	180	J
ANTHRACENE	UG/KG	350	U	13000	U	340	U	450	U	8600	U	1500	U
CARBAZOLE	UG/KG	350	U	13000	U	340	U	450	U	8600	U	1500	U
DI-N-BUTYLPHTHALATE	UG/KG	350	U	13000	U	340	U	450	U	8600	U	1500	U
FLUORANTHENE	UG/KG	350	U	13000	U	340	U	450	U	8600	U	380	J
PYRENE	UG/KG	350	U	13000	U	340	U	450	U	8600	U	320	J
BUTYLBENZYLPHTHALATE	UG/KG	350	U	13000	U	340	U	450	U	8600	U	1500	U
3,3'-DICHLOROBENZIDINE	UG/KG	350	U	13000	U	340	U	450	U	8600	U	1500	U
BENZO(A)ANTHRACENE	UG/KG	350	U	13000	U	340	U	450	U	8600	U	1500	U
CHRYSENE	UG/KG	350	U	13000	U	340	U	450	U	8600	U	1500	U
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	350	U	13000	U	340	U	450	U	8600	U	1500	U
DI-N-OCTYLPHTHALATE	UG/KG	350	U	13000	U	340	U	450	U	8600	U	1500	U
BENZO(B)FLUORANTHENE	UG/KG	350	U	13000	U	340	U	450	U	8600	U	1500	U
BENZO(K)FLUORANTHENE	UG/KG	350	U	13000	U	340	U	450	U	8600	U	1500	U
BENZO(A)PYRENE	UG/KG	350	U	13000	U	340	U	450	U	8600	U	1500	U
INDENO(1,2,3-CD)PYRENE	UG/KG	350	U	13000	U	340	U	450	U	8600	U	1500	U
DIBENZ(A,H)ANTHRACENE	UG/KG	350	U	13000	U	340	U	450	U	8600	U	1500	U
BENZO(G,H,I)PERYLENE	UG/KG	350	U	13000	U	340	U	450	U	8600	U	1500	U

PROJECT NUMBER: 2313.13
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SITE AREA: A3

RESULTS FOR SEMIVOLATILE COMPOUND ANALYSES
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Parameter	Units	AT009B1 DUP 23-JUN-92		AT009D1 24-JUN-92		AT009D2 24-JUN-92		AT009D3 24-JUN-92		AT009E1 25-JUN-92		AT009E2 26-JUN-92	
2,4-DINITROTOLUENE	UG/KG	2100	U	7200	U	3500	U	360	U	350	U	350	U
DIETHYLPHTHALATE	UG/KG	2100	U	7200	U	3500	U	360	U	350	U	350	U
4-CHLOROPHENYL-PHENYLETHER	UG/KG	2100	U	7200	U	3500	U	360	U	350	U	350	U
FLUORENE	UG/KG	2100	U	7200	U	3500	U	360	U	350	U	350	U
4-NITROANILINE	UG/KG	5100	U	17000	U	8600	U	880	U	850	U	860	U
4,6-DINITRO-2-METHYLPHENOL	UG/KG	5100	U	17000	U	8600	U	880	U	850	U	860	U
N-NITROSODIPHENYLAMINE	UG/KG	2100	U	7200	U	3500	U	360	U	350	U	350	U
4-BROMOPHENYL-PHENYLETHER	UG/KG	2100	U	7200	U	3500	U	360	U	350	U	350	U
HEXACHLOROBENZENE	UG/KG	2100	U	7200	U	3500	U	360	U	350	U	350	U
PENTACHLOROPHENOL	UG/KG	5100	U	17000	U	8600	U	880	U	850	U	860	U
PHENANTHRENE	UG/KG	2100	U	7200	U	3500	U	360	U	350	U	350	U
ANTHRACENE	UG/KG	2100	U	7200	U	3500	U	360	U	350	U	350	U
CARBAZOLE	UG/KG	2100	U	7200	U	3500	U	360	U	350	U	350	U
DI-N-BUTYLPHTHALATE	UG/KG	2100	U	7200	U	3500	U	360	U	350	U	350	U
FLUORANTHENE	UG/KG	2100	U	7200	U	3500	U	360	U	350	U	350	U
PYRENE	UG/KG	2100	U	7200	U	3500	U	360	U	350	U	350	U
BUTYLBENZYLPHTHALATE	UG/KG	2100	U	7200	U	3500	U	360	U	350	U	350	U
3,3'-DICHLOROBENZIDINE	UG/KG	2100	U	7200	U	3500	U	360	U	350	U	350	U
BENZO(A)ANTHRACENE	UG/KG	2100	U	7200	U	3500	U	360	U	350	U	350	U
CHRYSENE	UG/KG	2100	U	7200	U	3500	U	360	U	350	U	350	U
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	2100	U	20000		3500	U	360	U	350	U	350	U
DI-N-OCTYLPHTHALATE	UG/KG	2100	U	7200	U	3500	U	360	U	350	U	350	U
BENZO(B)FLUORANTHENE	UG/KG	2100	U	7200	U	3500	U	360	U	350	U	350	U
BENZO(K)FLUORANTHENE	UG/KG	2100	U	7200	U	3500	U	360	U	350	U	350	U
BENZO(A)PYRENE	UG/KG	2100	U	7200	U	3500	U	360	U	350	U	350	U
INDENO(1,2,3-CD)PYRENE	UG/KG	2100	U	7200	U	3500	U	360	U	350	U	350	U
DIBENZ(A,H)ANTHRACENE	UG/KG	2100	U	7200	U	3500	U	360	U	350	U	350	U
BENZO(G,H,I)PERYLENE	UG/KG	2100	U	7200	U	3500	U	360	U	350	U	350	U

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RESULTS FOR SEMIVOLATILE COMPOUND ANALYSES
SUB-AREA A4

Parameter	Units	AB026A 10-JUN-92		AB026G 10-JUN-92		AB027A 09-JUN-92		AB027H 09-JUN-92		AB028A 08-JUN-92		AB028G 08-JUN-92	
PHENOL	UG/KG	730	U	340	U	1800	U	390	U	370	U	370	U
BIS(2-CHLOROETHYL)ETHER	UG/KG	730	U	340	U	1800	U	390	U	370	U	370	U
2-CHLOROPHENOL	UG/KG	730	U	340	U	1800	U	390	U	370	U	370	U
1,3-DICHLOROBENZENE	UG/KG	730	U	340	U	1800	U	390	U	370	U	370	U
1,4-DICHLOROBENZENE	UG/KG	730	U	340	U	1800	U	390	U	370	U	370	U
1,2-DICHLOROBENZENE	UG/KG	730	U	340	U	1800	U	390	U	370	U	370	U
2-METHYLPHENOL	UG/KG	730	U	340	U	1800	U	390	U	370	U	370	U
2,2'-OXYBIS(1-CHLOROPROPANE)	UG/KG	730	U	340	U	1800	U	390	U	370	U	370	U
4-METHYLPHENOL	UG/KG	730	U	340	U	1800	U	390	U	370	U	370	U
N-NITROSODI-N-PROPYLAMINE	UG/KG	730	U	340	U	1800	U	390	U	370	U	370	U
HEXACHLOROETHANE	UG/KG	730	U	340	U	1800	U	390	U	370	U	370	U
NITROBENZENE	UG/KG	730	U	340	U	1800	U	390	U	370	U	370	U
ISOPHORONE	UG/KG	730	U	340	U	1800	U	390	U	370	U	370	U
2-NITROPHENOL	UG/KG	730	U	340	U	1800	U	390	U	370	U	370	U
2,4-DIMETHYLPHENOL	UG/KG	730	U	340	U	1800	U	390	U	370	U	370	U
BIS(2-CHLOROETHOXY)METHANE	UG/KG	730	U	340	U	1800	U	390	U	370	U	370	U
2,4-DICHLOROPHENOL	UG/KG	730	U	340	U	1800	U	390	U	370	U	370	U
1,2,4-TRICHLOROBENZENE	UG/KG	730	U	340	U	1800	U	390	U	370	U	370	U
NAPHTHALENE	UG/KG	730	U	340	U	1800	U	390	U	370	U	370	U
4-CHLOROANILINE	UG/KG	730	U	340	U	1800	U	390	U	370	U	370	U
HEXACHLOROBUTADIENE	UG/KG	730	U	340	U	1800	U	390	U	370	U	370	U
4-CHLORO-3-METHYLPHENOL	UG/KG	730	U	340	U	1800	U	390	U	370	U	370	U
2-METHYLNAPHTHALENE	UG/KG	730	U	340	U	1800	U	390	U	370	U	370	U
HEXACHLOROCYCLOPENTADIENE	UG/KG	730	U	340	U	1800	U	390	U	370	U	370	U
2,4,6-TRICHLOROPHENOL	UG/KG	730	U	340	U	1800	U	390	U	370	U	370	U
2,4,5-TRICHLOROPHENOL	UG/KG	1800	U	820	U	4400	U	950	U	890	U	910	U
2-CHLORONAPHTHALENE	UG/KG	730	U	340	U	1800	U	390	U	370	U	370	U
2-NITROANILINE	UG/KG	1800	U	820	U	4400	U	950	U	890	U	910	U
DIMETHYLPHTHALATE	UG/KG	730	U	340	U	1800	U	390	U	370	U	370	U
ACENAPHTHYLENE	UG/KG	730	U	340	U	1800	U	390	U	370	U	370	U
2,6-DINITROTOLUENE	UG/KG	730	U	340	U	1800	U	390	U	370	U	370	U
3-NITROANILINE	UG/KG	1800	U	820	U	4400	U	950	U	890	U	910	U
ACENAPHTHENE	UG/KG	450	J	340	U	1800	U	390	U	200	J	370	U
2,4-DINITROPHENOL	UG/KG	1800	U	820	U	4400	U	950	U	890	U	910	U
4-NITROPHENOL	UG/KG	1800	U	820	U	4400	U	950	U	890	U	910	U
DIBENZOFURAN	UG/KG	220	J	340	U	1800	U	390	U	110	J	370	U

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SITE AREA: A4

RESULTS FOR SEMIVOLATILE COMPOUND ANALYSES
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Parameter	Units	AB029A 10-JUN-92		AB029H 10-JUN-92		AB030A 09-JUN-92		AB030G 09-JUN-92		AB030G DUP 09-JUN-92		AB031A 15-JUN-92	
PHENOL	UG/KG	730	U	350	U	1800	U	350	U	350	U	3700	U
BIS(2-CHLOROETHYL)ETHER	UG/KG	730	U	350	U	1800	U	350	U	350	U	3700	U
2-CHLOROPHENOL	UG/KG	730	U	350	U	1800	U	350	U	350	U	3700	U
1,3-DICHLOROBENZENE	UG/KG	730	U	350	U	1800	U	350	U	350	U	3700	U
1,4-DICHLOROBENZENE	UG/KG	730	U	350	U	1800	U	350	U	350	U	3700	U
1,2-DICHLOROBENZENE	UG/KG	730	U	350	U	1800	U	350	U	350	U	3700	U
2-METHYLPHENOL	UG/KG	730	U	350	U	1800	U	350	U	350	U	3700	U
2,2'-OXYBIS(1-CHLOROPROPANE)	UG/KG	730	U	350	U	1800	U	350	U	350	U	3700	U
4-METHYLPHENOL	UG/KG	730	U	350	U	1800	U	350	U	350	U	3700	U
N-NITROSODI-N-PROPYLAMINE	UG/KG	730	U	350	U	1800	U	350	U	350	U	3700	U
HEXACHLOROETHANE	UG/KG	730	U	350	U	1800	U	350	U	350	U	3700	U
NITROBENZENE	UG/KG	730	U	350	U	1800	U	350	U	350	U	3700	U
ISOPHORONE	UG/KG	730	U	350	U	1800	U	350	U	350	U	3700	U
2-NITROPHENOL	UG/KG	730	U	350	U	1800	U	350	U	350	U	3700	U
2,4-DIMETHYLPHENOL	UG/KG	730	U	350	U	1800	U	350	U	350	U	3700	U
BIS(2-CHLOROETHOXY)METHANE	UG/KG	730	U	350	U	1800	U	350	U	350	U	3700	U
2,4-DICHLOROPHENOL	UG/KG	730	U	350	U	1800	U	350	U	350	U	3700	U
1,2,4-TRICHLOROBENZENE	UG/KG	730	U	350	U	1800	U	350	U	350	U	3700	U
NAPHTHALENE	UG/KG	730	U	350	U	1800	U	350	U	350	U	3700	U
4-CHLOROANILINE	UG/KG	730	U	350	U	1800	U	350	U	350	U	3700	U
HEXACHLOROBUTADIENE	UG/KG	730	U	350	U	1800	U	350	U	350	U	3700	U
4-CHLORO-3-METHYLPHENOL	UG/KG	730	U	350	U	1800	U	350	U	350	U	3700	U
2-METHYLNAPHTHALENE	UG/KG	730	U	350	U	1800	U	350	U	350	U	3400	J
HEXACHLOROCYCLOPENTADIENE	UG/KG	730	U	350	U	1800	U	350	U	350	U	3700	U
2,4,6-TRICHLOROPHENOL	UG/KG	730	U	350	U	1800	U	350	U	350	U	3700	U
2,4,5-TRICHLOROPHENOL	UG/KG	1800	U	850	U	4300	U	850	U	860	U	9100	U
2-CHLORONAPHTHALENE	UG/KG	730	U	350	U	1800	U	350	U	350	U	3700	U
2-NITROANILINE	UG/KG	1800	U	850	U	4300	U	850	U	860	U	9100	U
DIMETHYLPHTHALATE	UG/KG	730	U	350	U	1800	U	350	U	350	U	3700	U
ACENAPHTHYLENE	UG/KG	730	U	350	U	380	J	350	U	350	U	3700	U
2,6-DINITROTOLUENE	UG/KG	730	U	350	U	1800	U	350	U	350	U	3700	U
3-NITROANILINE	UG/KG	1800	U	850	U	4300	U	850	U	860	U	9100	U
ACENAPHTHENE	UG/KG	300	J	350	U	1800	U	350	U	350	U	3700	U
2,4-DINITROPHENOL	UG/KG	1800	U	850	U	4300	U	850	U	860	U	9100	U
4-NITROPHENOL	UG/KG	1800	U	850	U	4300	U	850	U	860	U	9100	U
DIBENZOFURAN	UG/KG	730	U	350	U	1800	U	350	U	350	U	3700	U

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SITE AREA: A4

RESULTS FOR SEMIVOLATILE COMPOUND ANALYSES
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Parameter	Units	AB031G 15-JUN-92		AB032A 09-JUN-92		AB032D 09-JUN-92		AB033B 08-JUN-92		AB033H 08-JUN-92		AB034A 08-JUN-92	
PHENOL	UG/KG	1700	U	3500	U	340	U	380	U	340	U	360	U
BIS(2-CHLOROETHYL)ETHER	UG/KG	1700	U	3500	U	340	U	380	U	340	U	360	U
2-CHLOROPHENOL	UG/KG	1700	U	3500	U	340	U	380	U	340	U	360	U
1,3-DICHLOROBENZENE	UG/KG	1700	U	3500	U	340	U	380	U	340	U	360	U
1,4-DICHLOROBENZENE	UG/KG	1700	U	3500	U	340	U	380	U	340	U	360	U
1,2-DICHLOROBENZENE	UG/KG	1700	U	3500	U	340	U	380	U	340	U	360	U
2-METHYLPHENOL	UG/KG	1700	U	3500	U	340	U	380	U	340	U	360	U
2,2'-OXYBIS(1-CHLOROPROPANE)	UG/KG	1700	U	3500	U	340	U	380	U	340	U	360	U
4-METHYLPHENOL	UG/KG	1700	U	3500	U	340	U	380	U	340	U	360	U
N-NITROSODI-N-PROPYLAMINE	UG/KG	1700	U	3500	U	340	U	380	U	340	U	360	U
HEXACHLOROETHANE	UG/KG	1700	U	3500	U	340	U	380	U	340	U	360	U
NITROBENZENE	UG/KG	1700	U	3500	U	340	U	380	U	340	U	360	U
ISOPHORONE	UG/KG	1700	U	3500	U	340	U	380	U	340	U	360	U
2-NITROPHENOL	UG/KG	1700	U	3500	U	340	U	380	U	340	U	360	U
2,4-DIMETHYLPHENOL	UG/KG	1700	U	3500	U	340	U	380	U	340	U	360	U
BIS(2-CHLOROETHOXY)METHANE	UG/KG	1700	U	3500	U	340	U	380	U	340	U	360	U
2,4-DICHLOROPHENOL	UG/KG	1700	U	3500	U	340	U	380	U	340	U	360	U
1,2,4-TRICHLOROBENZENE	UG/KG	1700	U	3500	U	340	U	380	U	340	U	360	U
NAPHTHALENE	UG/KG	1100	J	950	J	340	U	380	U	340	U	360	U
4-CHLOROANILINE	UG/KG	1700	U	3500	U	340	U	380	U	340	U	360	U
HEXACHLOROBUTADIENE	UG/KG	1700	U	3500	U	340	U	380	U	340	U	360	U
4-CHLORO-3-METHYLPHENOL	UG/KG	1700	U	3500	U	340	U	380	U	340	U	360	U
2-METHYLNAPHTHALENE	UG/KG	570	J	870	J	340	U	380	U	340	U	360	U
HEXACHLOROCYCLOPENTADIENE	UG/KG	1700	U	3500	U	340	U	380	U	340	U	360	U
2,4,6-TRICHLOROPHENOL	UG/KG	1700	U	3500	U	340	U	380	U	340	U	360	U
2,4,5-TRICHLOROPHENOL	UG/KG	4200	U	8500	U	830	U	920	U	830	U	880	U
2-CHLORONAPHTHALENE	UG/KG	1700	U	3500	U	340	U	380	U	340	U	360	U
2-NITROANILINE	UG/KG	4200	U	8500	U	830	U	920	U	830	U	880	U
DIMETHYLPHTHALATE	UG/KG	1700	U	3500	U	340	U	380	U	340	U	360	U
ACENAPHTHYLENE	UG/KG	1700	U	2600	J	340	U	380	U	340	U	360	U
2,6-DINITROTOLUENE	UG/KG	1700	U	3500	U	340	U	380	U	340	U	360	U
3-NITROANILINE	UG/KG	4200	U	8500	U	830	U	920	U	830	U	880	U
ACENAPHTHENE	UG/KG	1700	U	3400	J	340	U	380	U	340	U	360	U
2,4-DINITROPHENOL	UG/KG	4200	U	8500	U	830	U	920	U	830	U	880	U
4-NITROPHENOL	UG/KG	4200	U	8500	U	830	U	920	U	830	U	880	U
DIBENZOFURAN	UG/KG	1700	U	5500		340	U	380	U	340	U	360	U

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RESULTS FOR SEMIVOLATILE COMPOUND ANALYSES
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Parameter	Units	AB034D 08-JUN-92		AB038A 10-JUN-92		AB038G 10-JUN-92		AT001A 12-JUN-92		AT001C 12-JUN-92		AT002A 12-JUN-92	
PHENOL	UG/KG	350	U	330	U	340	U	3600	U	340	U	350	U
BIS(2-CHLOROETHYL)ETHER	UG/KG	350	U	330	U	340	U	3600	U	340	U	350	U
2-CHLOROPHENOL	UG/KG	350	U	330	U	340	U	3600	U	340	U	350	U
1,3-DICHLOROBENZENE	UG/KG	350	U	330	U	340	U	3600	U	340	U	350	U
1,4-DICHLOROBENZENE	UG/KG	350	U	330	U	340	U	3600	U	340	U	350	U
1,2-DICHLOROBENZENE	UG/KG	350	U	330	U	340	U	3600	U	340	U	350	U
2-METHYLPHENOL	UG/KG	350	U	330	U	340	U	3600	U	340	U	350	U
2,2'-OXYBIS(1-CHLOROPROPANE)	UG/KG	350	U	330	U	340	U	3600	U	340	U	350	U
4-METHYLPHENOL	UG/KG	350	U	330	U	340	U	3600	U	340	U	350	U
N-NITROSODI-N-PROPYLAMINE	UG/KG	350	U	330	U	340	U	3600	U	340	U	350	U
HEXACHLOROETHANE	UG/KG	350	U	330	U	340	U	3600	U	340	U	350	U
NITROBENZENE	UG/KG	350	U	330	U	340	U	3600	U	340	U	350	U
ISOPHORONE	UG/KG	350	U	330	U	340	U	3600	U	340	U	350	U
2-NITROPHENOL	UG/KG	350	U	330	U	340	U	3600	U	340	U	350	U
2,4-DIMETHYLPHENOL	UG/KG	350	U	330	U	340	U	3600	U	340	U	350	U
BIS(2-CHLOROETHOXY)METHANE	UG/KG	350	U	330	U	340	U	3600	U	340	U	350	U
2,4-DICHLOROPHENOL	UG/KG	350	U	330	U	340	U	3600	U	340	U	350	U
1,2,4-TRICHLOROBENZENE	UG/KG	350	U	330	U	340	U	3600	U	340	U	350	U
NAPHTHALENE	UG/KG	350	U	330	U	340	U	3600	U	340	U	350	U
4-CHLOROANILINE	UG/KG	350	U	330	U	340	U	3600	U	340	U	350	U
HEXACHLOROBUTADIENE	UG/KG	350	U	330	U	340	U	3600	U	340	U	350	U
4-CHLORO-3-METHYLPHENOL	UG/KG	350	U	330	U	340	U	3600	U	340	U	350	U
2-METHYLNAPHTHALENE	UG/KG	350	U	330	U	340	U	3600	U	340	U	350	U
HEXACHLOROCYCLOPENTADIENE	UG/KG	350	U	330	U	340	U	3600	U	340	U	350	U
2,4,6-TRICHLOROPHENOL	UG/KG	350	U	330	U	340	U	3600	U	340	U	350	U
2,4,5-TRICHLOROPHENOL	UG/KG	860	U	810	U	820	U	8800	U	820	U	860	U
2-CHLORONAPHTHALENE	UG/KG	350	U	330	U	340	U	3600	U	340	U	350	U
2-NITROANILINE	UG/KG	860	U	810	U	820	U	8800	U	820	U	860	U
DIMETHYLPHTHALATE	UG/KG	350	U	330	U	340	U	3600	U	340	U	350	U
ACENAPHTHYLENE	UG/KG	350	U	330	U	340	U	3600	U	340	U	350	U
2,6-DINITROTOLUENE	UG/KG	350	U	330	U	340	U	3600	U	340	U	350	U
3-NITROANILINE	UG/KG	860	U	810	U	820	U	8800	U	820	U	860	U
ACENAPHTHENE	UG/KG	350	U	330	U	340	U	3600	U	340	U	350	U
2,4-DINITROPHENOL	UG/KG	860	U	810	U	820	U	8800	U	820	U	860	U
4-NITROPHENOL	UG/KG	860	U	810	U	820	U	8800	U	820	U	860	U
DIBENZOFURAN	UG/KG	350	U	330	U	340	U	3600	U	340	U	350	U

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Parameter	Units	AT002B 12-JUN-92		AT002B DUP 12-JUN-92		AT003A 16-JUN-92		AT003B 16-JUN-92		AT004A 16-JUN-92		AT004B 16-JUN-92	
PHENOL	UG/KG	350	U	400	U	750	U	460	U	370	U	4100	U
BIS(2-CHLOROETHYL)ETHER	UG/KG	350	U	400	U	750	U	460	U	370	U	4100	U
2-CHLOROPHENOL	UG/KG	350	U	400	U	750	U	460	U	370	U	4100	U
1,3-DICHLOROBENZENE	UG/KG	350	U	400	U	750	U	460	U	370	U	4100	U
1,4-DICHLOROBENZENE	UG/KG	350	U	400	U	750	U	460	U	370	U	4100	U
1,2-DICHLOROBENZENE	UG/KG	350	U	400	U	750	U	460	U	370	U	4100	U
2-METHYLPHENOL	UG/KG	350	U	400	U	750	U	460	U	370	U	4100	U
2,2'-OXYBIS(1-CHLOROPROPANE)	UG/KG	350	U	400	U	750	U	460	U	370	U	4100	U
4-METHYLPHENOL	UG/KG	350	U	400	U	750	U	460	U	370	U	4100	U
N-NITROSODI-N-PROPYLAMINE	UG/KG	350	U	400	U	750	U	460	U	370	U	4100	U
HEXACHLOROETHANE	UG/KG	350	U	400	U	750	U	460	U	370	U	4100	U
NITROBENZENE	UG/KG	350	U	400	U	750	U	460	U	370	U	4100	U
ISOPHORONE	UG/KG	350	U	400	U	750	U	460	U	370	U	4100	U
2-NITROPHENOL	UG/KG	350	U	400	U	750	U	460	U	370	U	4100	U
2,4-DIMETHYLPHENOL	UG/KG	350	U	400	U	750	U	460	U	370	U	4100	U
BIS(2-CHLOROETHOXY)METHANE	UG/KG	350	U	400	U	750	U	460	U	370	U	4100	U
2,4-DICHLOROPHENOL	UG/KG	350	U	400	U	750	U	460	U	370	U	4100	U
1,2,4-TRICHLOROBENZENE	UG/KG	350	U	400	U	750	U	460	U	370	U	4100	U
NAPHTHALENE	UG/KG	350	U	400	U	750	U	460	U	370	U	4100	U
4-CHLOROANILINE	UG/KG	350	U	400	U	750	U	460	U	370	U	4100	U
HEXACHLOROBUTADIENE	UG/KG	350	U	400	U	750	U	460	U	370	U	4100	U
4-CHLORO-3-METHYLPHENOL	UG/KG	350	U	400	U	750	U	460	U	370	U	4100	U
2-METHYLNAPHTHALENE	UG/KG	350	U	400	U	750	U	460	U	170	J	4100	U
HEXACHLOROCYCLOPENTADIENE	UG/KG	350	U	400	U	750	U	460	U	370	U	4100	U
2,4,6-TRICHLOROPHENOL	UG/KG	350	U	400	U	750	U	460	U	370	U	4100	U
2,4,5-TRICHLOROPHENOL	UG/KG	860	U	960	U	1800	U	1100	U	900	U	9900	U
2-CHLORONAPHTHALENE	UG/KG	350	U	400	U	750	U	460	U	370	U	4100	U
2-NITROANILINE	UG/KG	860	U	960	U	1800	U	1100	U	900	U	9900	U
DIMETHYLPHTHALATE	UG/KG	350	U	400	U	750	U	460	U	370	U	4100	U
ACENAPHTHYLENE	UG/KG	350	U	400	U	750	U	460	U	370	U	4100	U
2,6-DINITROTOLUENE	UG/KG	350	U	400	U	750	U	460	U	370	U	4100	U
3-NITROANILINE	UG/KG	860	U	960	U	1800	U	1100	U	900	U	9900	U
ACENAPHTHENE	UG/KG	350	U	400	U	750	U	460	U	79	J	4100	U
2,4-DINITROPHENOL	UG/KG	860	U	960	U	1800	U	1100	U	900	U	9900	U
4-NITROPHENOL	UG/KG	860	U	960	U	1800	U	1100	U	900	U	9900	U
DIBENZOFURAN	UG/KG	350	U	400	U	750	U	460	U	55	J	4100	U

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RESULTS FOR SEMIVOLATILE COMPOUND ANALYSES
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Parameter	Units	AT005A 16-JUN-92		AT005C 16-JUN-92		AT005C DUP 16-JUN-92		AT006A 17-JUN-92		AT006B 17-JUN-92	
PHENOL	UG/KG	370	U	390	U	400	U	730	U	400	U
BIS(2-CHLOROETHYL)ETHER	UG/KG	370	U	390	U	400	U	730	U	400	U
2-CHLOROPHENOL	UG/KG	370	U	390	U	400	U	730	U	400	U
1,3-DICHLOROBENZENE	UG/KG	370	U	390	U	400	U	730	U	400	U
1,4-DICHLOROBENZENE	UG/KG	370	U	390	U	400	U	730	U	400	U
1,2-DICHLOROBENZENE	UG/KG	370	U	390	U	400	U	730	U	400	U
2-METHYLPHENOL	UG/KG	370	U	390	U	400	U	730	U	400	U
2,2'-OXYBIS(1-CHLOROPROPANE)	UG/KG	370	U	390	U	400	U	730	U	400	U
4-METHYLPHENOL	UG/KG	370	U	390	U	400	U	730	U	400	U
N-NITROSODI-N-PROPYLAMINE	UG/KG	370	U	390	U	400	U	730	U	400	U
HEXACHLOROETHANE	UG/KG	370	U	390	U	400	U	730	U	400	U
NITROBENZENE	UG/KG	370	U	390	U	400	U	730	U	400	U
ISOPHORONE	UG/KG	370	U	390	U	400	U	730	U	400	U
2-NITROPHENOL	UG/KG	370	U	390	U	400	U	730	U	400	U
2,4-DIMETHYLPHENOL	UG/KG	370	U	390	U	400	U	730	U	400	U
BIS(2-CHLOROETHOXY)METHANE	UG/KG	370	U	390	U	400	U	730	U	400	U
2,4-DICHLOROPHENOL	UG/KG	370	U	390	U	400	U	730	U	400	U
1,2,4-TRICHLOROBENZENE	UG/KG	370	U	390	U	400	U	730	U	400	U
NAPHTHALENE	UG/KG	370	U	390	U	400	U	730	U	400	U
4-CHLOROANILINE	UG/KG	370	U	390	U	400	U	730	U	400	U
HEXACHLOROBUTADIENE	UG/KG	370	U	390	U	400	U	730	U	400	U
4-CHLORO-3-METHYLPHENOL	UG/KG	370	U	390	U	400	U	730	U	400	U
2-METHYLNAPHTHALENE	UG/KG	370	U	390	U	400	U	730	U	400	U
HEXACHLOROCYCLOPENTADIENE	UG/KG	370	U	390	U	400	U	730	U	400	U
2,4,6-TRICHLOROPHENOL	UG/KG	370	U	390	U	400	U	730	U	400	U
2,4,5-TRICHLOROPHENOL	UG/KG	890	U	950	U	960	U	1800	U	960	U
2-CHLORONAPHTHALENE	UG/KG	370	U	390	U	400	U	730	U	400	U
2-NITROANILINE	UG/KG	890	U	950	U	960	U	1800	U	960	U
DIMETHYLPHTHALATE	UG/KG	370	U	390	U	400	U	730	U	400	U
ACENAPHTHYLENE	UG/KG	370	U	390	U	400	U	730	U	400	U
2,6-DINITROTOLUENE	UG/KG	370	U	390	U	400	U	730	U	400	U
3-NITROANILINE	UG/KG	890	U	950	U	960	U	1800	U	960	U
ACENAPHTHENE	UG/KG	370	U	390	U	400	U	730	U	400	U
2,4-DINITROPHENOL	UG/KG	890	U	950	U	960	U	1800	U	960	U
4-NITROPHENOL	UG/KG	890	U	950	U	960	U	1800	U	960	U
DIBENZOFURAN	UG/KG	370	U	390	U	400	U	730	U	400	U

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RESULTS FOR SEMIVOLATILE COMPOUND ANALYSES
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Parameter	Units	AB026A 10-JUN-92		AB026G 10-JUN-92		AB027A 09-JUN-92		AB027H 09-JUN-92		AB028A 08-JUN-92		AB028G 08-JUN-92	
2,4-DINITROTOLUENE	UG/KG	730	U	340	U	1800	U	390	U	370	U	370	U
DIETHYLPHTHALATE	UG/KG	730	U	340	U	1800	U	390	U	370	U	370	U
4-CHLOROPHENYL-PHENYLETHER	UG/KG	730	U	340	U	1800	U	390	U	370	U	370	U
FLUORENE	UG/KG	450	J	340	U	1800	U	390	U	190	J	370	U
4-NITROANILINE	UG/KG	1800	U	820	U	4400	U	950	U	890	U	910	U
4,6-DINITRO-2-METHYLPHENOL	UG/KG	1800	U	820	U	4400	U	950	U	890	U	910	U
N-NITROSODIPHENYLAMINE	UG/KG	730	U	340	U	1800	U	390	U	370	U	370	U
4-BROMOPHENYL-PHENYLETHER	UG/KG	730	U	340	U	1800	U	390	U	370	U	370	U
HEXACHLOROBENZENE	UG/KG	730	U	340	U	1800	U	390	U	370	U	370	U
PENTACHLOROPHENOL	UG/KG	1800	U	820	U	4400	U	950	U	890	U	910	U
PHENANTHRENE	UG/KG	4400		340	U	2300		390	U	1400		370	U
ANTHRACENE	UG/KG	830		340	U	1800	U	390	U	260	J	370	U
CARBAZOLE	UG/KG	840		340	U	1800	U	390	U	250	J	370	U
DI-N-BUTYLPHTHALATE	UG/KG	730	U	340	U	1800	U	390	U	370	U	370	U
FLUORANTHENE	UG/KG	5900		340	U	5600		390	U	1500		370	U
PYRENE	UG/KG	5200		340	U	5900		390	U	1600		370	U
BUTYLBENZYLPHTHALATE	UG/KG	730	U	340	U	1800	U	390	U	370	U	370	U
3,3'-DICHLOROBENZIDINE	UG/KG	730	U	340	U	1800	U	390	U	370	U	370	U
BENZO(A)ANTHRACENE	UG/KG	2300		340	U	2200		390	U	590		370	U
CHRYSENE	UG/KG	2500		340	U	2500		390	U	650		370	U
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	730	U	340	U	1800	U	390	U	370	U	370	U
DI-N-OCTYLPHTHALATE	UG/KG	730	U	340	U	1800	U	390	U	370	U	370	U
BENZO(B)FLUORANTHENE	UG/KG	2200		340	U	2600		390	U	620		370	U
BENZO(K)FLUORANTHENE	UG/KG	1700		340	U	2000		390	U	460		370	U
BENZO(A)PYRENE	UG/KG	2100		340	U	2300		390	U	560		370	U
INDENO(1,2,3-CD)PYRENE	UG/KG	1200		340	U	1700	J	390	U	400		370	U
DIBENZ(A,H)ANTHRACENE	UG/KG	520	J	340	U	1800	U	390	U	370	U	370	U
BENZO(G,H,I)PERYLENE	UG/KG	1400		340	U	1900		390	U	430		370	U

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RESULTS FOR SEMIVOLATILE COMPOUND ANALYSES
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Parameter	Units	AB029A 10-JUN-92		AB029H 10-JUN-92		AB030A 09-JUN-92		AB030G 09-JUN-92		AB030G DUP 09-JUN-92		AB031A 15-JUN-92	
2,4-DINITROTOLUENE	UG/KG	730	U	350	U	1800	U	350	U	350	U	3700	U
DIETHYLPHTHALATE	UG/KG	730	U	350	U	1800	U	350	U	350	U	3700	U
4-CHLOROPHENYL-PHENYLETHER	UG/KG	730	U	350	U	1800	U	350	U	350	U	3700	U
FLUORENE	UG/KG	280	J	350	U	430	J	350	U	350	U	530	J
4-NITROANILINE	UG/KG	1800	U	850	U	4300	U	850	U	860	U	9100	U
4,6-DINITRO-2-METHYLPHENOL	UG/KG	1800	U	850	U	4300	U	850	U	860	U	9100	U
N-NITROSODIPHENYLAMINE	UG/KG	730	U	350	U	1800	U	350	U	350	U	3700	U
4-BROMOPHENYL-PHENYLETHER	UG/KG	730	U	350	U	1800	U	350	U	350	U	3700	U
HEXACHLOROBENZENE	UG/KG	730	U	350	U	1800	U	350	U	350	U	3700	U
PENTACHLOROPHENOL	UG/KG	1800	U	850	U	4300	U	850	U	860	U	9100	U
PHENANTHRENE	UG/KG	4800		350	U	7400		160	J	440		1700	J
ANTHRACENE	UG/KG	700	J	350	U	1100	J	350	U	350	U	3700	U
CARBAZOLE	UG/KG	930		350	U	790	J	350	U	350	U	3700	U
DI-N-BUTYLPHTHALATE	UG/KG	730	U	350	U	1800	U	350	U	350	U	3700	U
FLUORANTHENE	UG/KG	6600		350	U	15000		390		1100		960	J
PYRENE	UG/KG	8100		110	J	18000		360		930		1000	J
BUTYLBENZYLPHTHALATE	UG/KG	730	U	350	U	1800	U	350	U	350	U	3700	U
3,3'-DICHLOROBENZIDINE	UG/KG	730	U	350	U	1800	U	350	U	350	U	3700	U
BENZO(A)ANTHRACENE	UG/KG	2400		350	U	6900		150	J	400		3700	U
CHRYSENE	UG/KG	2800		350	U	7800		170	J	440		3700	U
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	730	U	350	U	1800	U	350	U	350	U	3700	U
DI-N-OCTYLPHTHALATE	UG/KG	730	U	350	U	1800	U	350	U	350	U	3700	U
BENZO(B)FLUORANTHENE	UG/KG	2600		350	U	7200		180	J	460		3700	U
BENZO(K)FLUORANTHENE	UG/KG	1900		350	U	7200		140	J	360		3700	U
BENZO(A)PYRENE	UG/KG	2400		350	U	7400		170	J	410		3700	U
INDENO(1,2,3-CD)PYRENE	UG/KG	1800		350	U	5200		130	J	290	J	3700	U
DIBENZ(A,H)ANTHRACENE	UG/KG	650	J	350	U	1000	J	350	U	350	U	3700	U
BENZO(G,H,I)PERYLENE	UG/KG	2000		700		5800		210	J	330	J	3700	U

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RESULTS FOR SEMIVOLATILE COMPOUND ANALYSES
SUB-AREA A4

Parameter	Units	AB031G 15-JUN-92		AB032A 09-JUN-92		AB032D 09-JUN-92		AB033B 08-JUN-92		AB033H 08-JUN-92		AB034A 08-JUN-92	
2,4-DINITROTOLUENE	UG/KG	1700	U	3500	U	340	U	380	U	340	U	360	U
DIETHYLPHTHALATE	UG/KG	1700	U	3500	U	340	U	380	U	340	U	360	U
4-CHLOROPHENYL-PHENYLETHER	UG/KG	1700	U	3500	U	340	U	380	U	340	U	360	U
FLUORENE	UG/KG	1700	U	8400		340	U	380	U	340	U	360	U
4-NITROANILINE	UG/KG	4200	U	8500	U	830	U	920	U	830	U	880	U
4,6-DINITRO-2-METHYLPHENOL	UG/KG	4200	U	8500	U	830	U	920	U	830	U	880	U
N-NITROSODIPHENYLAMINE	UG/KG	1700	U	3500	U	340	U	380	U	340	U	360	U
4-BROMOPHENYL-PHENYLETHER	UG/KG	1700	U	3500	U	340	U	380	U	340	U	360	U
HEXACHLOROBENZENE	UG/KG	1700	U	3500	U	340	U	380	U	340	U	360	U
PENTACHLOROPHENOL	UG/KG	4200	U	8500	U	830	U	920	U	830	U	880	U
PHENANTHRENE	UG/KG	1700	U	95000	D	140	J	380	U	340	U	810	
ANTHRACENE	UG/KG	1700	U	15000		340	U	380	U	340	U	200	J
CARBAZOLE	UG/KG	1700	U	4900		340	U	380	U	340	U	130	J
DI-N-BUTYLPHTHALATE	UG/KG	1700	U	3500	U	340	U	380	U	340	U	360	U
FLUORANTHENE	UG/KG	1700	U	160000	D	240	J	380	U	340	U	2400	
PYRENE	UG/KG	1700	U	130000	D	260	J	380	U	340	U	2300	
BUTYLBENZYLPHTHALATE	UG/KG	1700	U	3500	U	340	U	380	U	340	U	360	U
3,3'-DICHLOROBENZIDINE	UG/KG	1700	U	3500	U	340	U	380	U	340	U	360	U
BENZO(A)ANTHRACENE	UG/KG	1700	U	43000		340	U	380	U	340	U	950	
CHRYSENE	UG/KG	1700	U	43000		340	U	380	U	340	U	1200	
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	2200		3500	U	340	U	380	U	140	JB	360	U
DI-N-OCTYLPHTHALATE	UG/KG	1700	U	3500	U	340	U	380	U	340	U	360	U
BENZO(B)FLUORANTHENE	UG/KG	1700	U	46000		340	U	380	U	340	U	1200	
BENZO(K)FLUORANTHENE	UG/KG	1700	U	29000		340	U	380	U	340	U	980	
BENZO(A)PYRENE	UG/KG	1700	U	41000		120	J	380	U	340	U	1100	
INDENO(1,2,3-CD)PYRENE	UG/KG	1700	U	28000		340	U	380	U	340	U	800	
DIBENZ(A,H)ANTHRACENE	UG/KG	1700	U	7700		340	U	380	U	340	U	360	U
BENZO(G,H,I)PERYLENE	UG/KG	1700	U	34000		420		380	U	340	U	980	

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RESULTS FOR SEMIVOLATILE COMPOUND ANALYSES
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Parameter	Units	AB034D 08-JUN-92		AB038A 10-JUN-92		AB038G 10-JUN-92		AT001A 12-JUN-92		AT001C 12-JUN-92		AT002A 12-JUN-92	
2,4-DINITROTOLUENE	UG/KG	350	U	330	U	340	U	3600	U	340	U	350	U
DIETHYLPHTHALATE	UG/KG	350	U	330	U	340	U	3600	U	340	U	350	U
4-CHLOROPHENYL-PHENYLETHER	UG/KG	350	U	330	U	340	U	3600	U	340	U	350	U
FLUORENE	UG/KG	350	U	330	U	340	U	3600	U	340	U	350	U
4-NITROANILINE	UG/KG	860	U	810	U	820	U	8800	U	820	U	860	U
4,6-DINITRO-2-METHYLPHENOL	UG/KG	860	U	810	U	820	U	8800	U	820	U	860	U
N-NITROSODIPHENYLAMINE	UG/KG	350	U	330	U	340	U	3600	U	340	U	350	U
4-BROMOPHENYL-PHENYLETHER	UG/KG	350	U	330	U	340	U	3600	U	340	U	350	U
HEXACHLOROBENZENE	UG/KG	350	U	330	U	340	U	3600	U	340	U	350	U
PENTACHLOROPHENOL	UG/KG	860	U	810	U	820	U	8800	U	820	U	860	U
PHENANTHRENE	UG/KG	350	U	180	J	340	U	8600		340	U	350	U
ANTHRACENE	UG/KG	350	U	330	U	340	U	1300	J	340	U	350	U
CARBAZOLE	UG/KG	350	U	330	U	340	U	1300	J	340	U	350	U
DI-N-BUTYLPHTHALATE	UG/KG	350	U	330	U	340	U	3600	U	340	U	350	U
FLUORANTHENE	UG/KG	350	U	500		340	U	20000		340	U	420	
PYRENE	UG/KG	80	J	440		340	U	14000		340	U	350	J
BUTYLBENZYLPHTHALATE	UG/KG	350	U	330	U	340	U	3600	U	340	U	350	U
3,3'-DICHLOROBENZIDINE	UG/KG	350	U	330	U	340	U	3600	U	340	U	350	U
BENZO(A)ANTHRACENE	UG/KG	350	U	150	J	340	U	5700		340	U	210	J
CHRYSENE	UG/KG	350	U	260	J	340	U	7300		340	U	250	J
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	350	U	330	U	340	U	3600	U	340	U	350	U
DI-N-OCTYLPHTHALATE	UG/KG	350	U	330	U	340	U	3600	U	340	U	350	U
BENZO(B)FLUORANTHENE	UG/KG	350	U	340		340	U	8200		340	U	210	J
BENZO(K)FLUORANTHENE	UG/KG	350	U	230	J	340	U	5400		340	U	210	J
BENZO(A)PYRENE	UG/KG	73	J	190	J	340	U	6600		340	U	170	J
INDENO(1,2,3-CD)PYRENE	UG/KG	350	U	200	J	340	U	5100		340	U	350	U
DIBENZ(A,H)ANTHRACENE	UG/KG	350	U	330	U	340	U	3600	U	340	U	350	U
BENZO(G,H,I)PERYLENE	UG/KG	320	J	240	J	340	U	5100		340	U	350	U

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RESULTS FOR SEMIVOLATILE COMPOUND ANALYSES
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Parameter	Units	AT002B 12-JUN-92		AT002B DUP 12-JUN-92		AT003A 16-JUN-92		AT003B 16-JUN-92		AT004A 16-JUN-92		AT004B 16-JUN-92	
2,4-DINITROTOLUENE	UG/KG	350	U	400	U	750	U	460	U	370	U	4100	U
DIETHYLPHTHALATE	UG/KG	350	U	400	U	750	U	460	U	370	U	4100	U
4-CHLOROPHENYL-PHENYLETHER	UG/KG	350	U	400	U	750	U	460	U	370	U	4100	U
FLUORENE	UG/KG	350	U	400	U	750	U	460	U	110	J	4100	U
4-NITROANILINE	UG/KG	860	U	960	U	1800	U	1100	U	900	U	9900	U
4,6-DINITRO-2-METHYLPHENOL	UG/KG	860	U	960	U	1800	U	1100	U	900	U	9900	U
N-NITROSODIPHENYLAMINE	UG/KG	350	U	400	U	750	U	460	U	370	U	4100	U
4-BROMOPHENYL-PHENYLETHER	UG/KG	350	U	400	U	750	U	460	U	370	U	4100	U
HEXACHLOROBENZENE	UG/KG	350	U	400	U	750	U	460	U	370	U	4100	U
PENTACHLOROPHENOL	UG/KG	860	U	960	U	1800	U	1100	U	900	U	9900	U
PHENANTHRENE	UG/KG	350	U	400	U	1200		460	U	850		4100	U
ANTHRACENE	UG/KG	350	U	400	U	200	J	460	U	130	J	4100	U
CARBAZOLE	UG/KG	350	U	400	U	160	J	460	U	87	J	4100	U
DI-N-BUTYLPHTHALATE	UG/KG	350	U	400	U	750	U	460	U	370	U	4100	U
FLUORANTHENE	UG/KG	350	U	400	U	2100		460	U	1300		4100	U
PYRENE	UG/KG	350	U	400	U	2000		460	U	1100		4100	U
BUTYLBENZYLPHTHALATE	UG/KG	350	U	400	U	750	U	460	U	370	U	4100	U
3,3'-DICHLOROBENZIDINE	UG/KG	350	U	400	U	750	U	460	U	370	U	4100	U
BENZO(A)ANTHRACENE	UG/KG	350	U	400	U	890		460	U	530		4100	U
CHRYSENE	UG/KG	350	U	400	U	960		460	U	600		4100	U
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	350	U	400	U	750	U	460	U	370	U	7200	
DI-N-OCTYLPHTHALATE	UG/KG	350	U	400	U	750	U	460	U	370	U	4100	U
BENZO(B)FLUORANTHENE	UG/KG	350	U	400	U	1000		460	U	600		4100	U
BENZO(K)FLUORANTHENE	UG/KG	350	U	400	U	800		460	U	340	J	4100	U
BENZO(A)PYRENE	UG/KG	350	U	400	U	810		460	U	480		4100	U
INDENO(1,2,3-CD)PYRENE	UG/KG	350	U	400	U	240	J	460	U	290	J	4100	U
DIBENZ(A,H)ANTHRACENE	UG/KG	350	U	400	U	750	U	460	U	370	U	4100	U
BENZO(G,H,I)PERYLENE	UG/KG	350	U	400	U	360	J	460	U	270	J	4100	U

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RESULTS FOR SEMIVOLATILE COMPOUND ANALYSES
SUB-AREA A4

Parameter	Units	AT005A 16-JUN-92		AT005C 16-JUN-92		AT005C DUP 16-JUN-92		AT006A 17-JUN-92		AT006B 17-JUN-92	
2,4-DINITROTOLUENE	UG/KG	370	U	390	U	400	U	730	U	400	U
DIETHYLPHTHALATE	UG/KG	370	U	390	U	400	U	730	U	400	U
4-CHLOROPHENYL-PHENYLETHER	UG/KG	370	U	390	U	400	U	730	U	400	U
FLUORENE	UG/KG	370	U	390	U	400	U	730	U	400	U
4-NITROANILINE	UG/KG	890	U	950	U	960	U	1800	U	960	U
4,6-DINITRO-2-METHYLPHENOL	UG/KG	890	U	950	U	960	U	1800	U	960	U
N-NITROSODIPHENYLAMINE	UG/KG	370	U	390	U	400	U	730	U	400	U
4-BROMOPHENYL-PHENYLETHER	UG/KG	370	U	390	U	400	U	730	U	400	U
HEXACHLOROBENZENE	UG/KG	370	U	390	U	400	U	730	U	400	U
PENTACHLOROPHENOL	UG/KG	890	U	950	U	960	U	1800	U	960	U
PHENANTHRENE	UG/KG	130	J	390	U	400	U	1500		400	U
ANTHRACENE	UG/KG	370	U	390	U	400	U	360	J	400	U
CARBAZOLE	UG/KG	370	U	390	U	400	U	200	J	400	U
DI-N-BUTYLPHTHALATE	UG/KG	370	U	390	U	400	U	730	U	400	U
FLUORANTHENE	UG/KG	250	J	390	U	400	U	2800		400	U
PYRENE	UG/KG	220	J	390	U	400	U	2400		400	U
BUTYLBENZYLPHTHALATE	UG/KG	370	U	390	U	400	U	730	U	400	U
3,3'-DICHLOROBENZIDINE	UG/KG	370	U	390	U	400	U	730	U	400	U
BENZO(A)ANTHRACENE	UG/KG	130	J	390	U	400	U	1100		400	U
CHRYSENE	UG/KG	130	J	390	U	400	U	1300		400	U
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	370	U	390	U	400	U	730	U	400	U
DI-N-OCTYLPHTHALATE	UG/KG	370	U	390	U	400	U	730	U	400	U
BENZO(B)FLUORANTHENE	UG/KG	150	J	390	U	400	U	1200		400	U
BENZO(K)FLUORANTHENE	UG/KG	100	J	390	U	400	U	810		400	U
BENZO(A)PYRENE	UG/KG	370	U	390	U	400	U	1100		400	U
INDENO(1,2,3-CD)PYRENE	UG/KG	370	U	390	U	400	U	600	J	400	U
DIBENZ(A,H)ANTHRACENE	UG/KG	370	U	390	U	400	U	730	U	400	U
BENZO(G,H,I)PERYLENE	UG/KG	370	U	390	U	400	U	730	J	400	U

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SITE AREA: B1

RESULTS FOR SEMIVOLATILE COMPOUND ANLAYSES
SUB-AREA B1

Parameter	Units	BB001A 15-JUN-92		BB001B 15-JUN-92		BB001C 07-JUL-92		BB002B 15-JUN-92		BB002G 15-JUN-92		BB002G DUP 15-JUN-92	
PHENOL	UG/KG	340	U	370	U	970	U	380	U	350	U	370	U
BIS(2-CHLOROETHYL)ETHER	UG/KG	340	U	370	U	970	U	380	U	350	U	370	U
2-CHLOROPHENOL	UG/KG	340	U	370	U	970	U	380	U	350	U	370	U
1,3-DICHLOROBENZENE	UG/KG	340	U	370	U	970	U	380	U	350	U	370	U
1,4-DICHLOROBENZENE	UG/KG	340	U	370	U	970	U	380	U	350	U	370	U
1,2-DICHLOROBENZENE	UG/KG	340	U	370	U	970	U	380	U	350	U	370	U
2-METHYLPHENOL	UG/KG	340	U	370	U	970	U	380	U	350	U	370	U
2,2'-OXYBIS(1-CHLOROPROPANE)	UG/KG	340	U	370	U	970	U	380	U	350	U	370	U
4-METHYLPHENOL	UG/KG	340	U	370	U	970	U	380	U	350	U	370	U
N-NITROSODI-N-PROPYLAMINE	UG/KG	340	U	370	U	970	U	380	U	350	U	370	U
HEXACHLOROETHANE	UG/KG	340	U	370	U	970	U	380	U	350	U	370	U
NITROBENZENE	UG/KG	340	U	370	U	970	U	380	U	350	U	370	U
ISOPHORONE	UG/KG	340	U	370	U	970	U	380	U	350	U	370	U
2-NITROPHENOL	UG/KG	340	U	370	U	970	U	380	U	350	U	370	U
2,4-DIMETHYLPHENOL	UG/KG	340	U	370	U	970	U	380	U	350	U	370	U
BIS(2-CHLOROETHOXY)METHANE	UG/KG	340	U	370	U	970	U	380	U	350	U	370	U
2,4-DICHLOROPHENOL	UG/KG	340	U	370	U	970	U	380	U	350	U	370	U
1,2,4-TRICHLOROBENZENE	UG/KG	340	U	370	U	970	U	380	U	350	U	370	U
NAPHTHALENE	UG/KG	340	U	370	U	970	U	380	U	350	U	370	U
4-CHLOROANILINE	UG/KG	340	U	370	U	970	U	380	U	350	U	370	U
HEXACHLOROBUTADIENE	UG/KG	340	U	370	U	970	U	380	U	350	U	370	U
4-CHLORO-3-METHYLPHENOL	UG/KG	340	U	370	U	970	U	380	U	350	U	370	U
2-METHYLNAPHTHALENE	UG/KG	340	U	370	U	970	U	380	U	350	U	370	U
HEXACHLOROCYCLOPENTADIENE	UG/KG	340	U	370	U	970	U	380	U	350	U	370	U
2,4,6-TRICHLOROPHENOL	UG/KG	340	U	370	U	970	U	380	U	350	U	370	U
2,4,5-TRICHLOROPHENOL	UG/KG	830	U	890	U	2400	U	930	U	860	U	890	U
2-CHLORONAPHTHALENE	UG/KG	340	U	370	U	970	U	380	U	350	U	370	U
2-NITROANILINE	UG/KG	830	U	890	U	2400	U	930	U	860	U	890	U
DIMETHYLPHTHALATE	UG/KG	340	U	370	U	970	U	380	U	350	U	370	U
ACENAPHTHYLENE	UG/KG	340	U	370	U	970	U	380	U	350	U	370	U
2,6-DINITROTOLUENE	UG/KG	340	U	370	U	970	U	380	U	350	U	370	U
3-NITROANILINE	UG/KG	830	U	890	U	2400	U	930	U	860	U	890	U
ACENAPHTHENE	UG/KG	340	U	370	U	970	U	380	U	350	U	370	U
2,4-DINITROPHENOL	UG/KG	830	U	890	U	2400	U	930	U	860	U	890	U
4-NITROPHENOL	UG/KG	830	U	890	U	2400	U	930	U	860	U	890	U
DIBENZOFURAN	UG/KG	340	U	370	U	970	U	380	U	350	U	370	U

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SITE AREA: B1

RESULTS FOR SEMIVOLATILE COMPOUND ANLAYSES
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Parameter	Units	BB003A 16-JUN-92		BB003D 16-JUN-92		BT001A 18-JUN-92		BT001B 18-JUN-92		BT002A 17-JUN-92		BT002B 17-JUN-92	
PHENOL	UG/KG	380	U	450	U	360	U	360	U	390	U	480	U
BIS(2-CHLOROETHYL)ETHER	UG/KG	380	U	450	U	360	U	360	U	390	U	480	U
2-CHLOROPHENOL	UG/KG	380	U	450	U	360	U	360	U	390	U	480	U
1,3-DICHLOROBENZENE	UG/KG	380	U	450	U	360	U	360	U	390	U	480	U
1,4-DICHLOROBENZENE	UG/KG	380	U	450	U	360	U	360	U	390	U	480	U
1,2-DICHLOROBENZENE	UG/KG	380	U	450	U	360	U	360	U	390	U	480	U
2-METHYLPHENOL	UG/KG	380	U	450	U	360	U	360	U	390	U	480	U
2,2'-OXYBIS(1-CHLOROPROPANE)	UG/KG	380	U	450	U	360	U	360	U	390	U	480	U
4-METHYLPHENOL	UG/KG	380	U	450	U	360	U	360	U	390	U	480	U
N-NITROSODI-N-PROPYLAMINE	UG/KG	380	U	450	U	360	U	360	U	390	U	480	U
HEXACHLOROETHANE	UG/KG	380	U	450	U	360	U	360	U	390	U	480	U
NITROBENZENE	UG/KG	380	U	450	U	360	U	360	U	390	U	480	U
ISOPHORONE	UG/KG	380	U	450	U	360	U	360	U	390	U	480	U
2-NITROPHENOL	UG/KG	380	U	450	U	360	U	360	U	390	U	480	U
2,4-DIMETHYLPHENOL	UG/KG	380	U	450	U	360	U	360	U	390	U	480	U
BIS(2-CHLOROETHOXY)METHANE	UG/KG	380	U	450	U	360	U	360	U	390	U	480	U
2,4-DICHLOROPHENOL	UG/KG	380	U	450	U	360	U	360	U	390	U	480	U
1,2,4-TRICHLOROBENZENE	UG/KG	380	U	450	U	360	U	360	U	390	U	480	U
NAPHTHALENE	UG/KG	380	U	450	U	360	U	360	U	390	U	480	U
4-CHLOROANILINE	UG/KG	380	U	450	U	360	U	360	U	390	U	480	U
HEXACHLOROBUTADIENE	UG/KG	380	U	450	U	360	U	360	U	390	U	480	U
4-CHLORO-3-METHYLPHENOL	UG/KG	380	U	450	U	360	U	360	U	390	U	480	U
2-METHYLNAPHTHALENE	UG/KG	380	U	450	U	360	U	360	U	390	U	480	U
HEXACHLOROCYCLOPENTADIENE	UG/KG	380	U	450	U	360	U	360	U	390	U	480	U
2,4,6-TRICHLOROPHENOL	UG/KG	380	U	450	U	360	U	360	U	390	U	480	U
2,4,5-TRICHLOROPHENOL	UG/KG	920	U	1100	U	870	U	880	U	940	U	1200	U
2-CHLORONAPHTHALENE	UG/KG	380	U	450	U	360	U	360	U	390	U	480	U
2-NITROANILINE	UG/KG	920	U	1100	U	870	U	880	U	940	U	1200	U
DIMETHYLPHTHALATE	UG/KG	380	U	450	U	360	U	360	U	390	U	480	U
ACENAPHTHYLENE	UG/KG	380	U	450	U	360	U	360	U	390	U	480	U
2,6-DINITROTOLUENE	UG/KG	380	U	450	U	360	U	360	U	390	U	480	U
3-NITROANILINE	UG/KG	920	U	1100	U	870	U	880	U	940	U	1200	U
ACENAPHTHENE	UG/KG	380	U	450	U	360	U	360	U	390	U	480	U
2,4-DINITROPHENOL	UG/KG	920	U	1100	U	870	U	880	U	940	U	1200	U
4-NITROPHENOL	UG/KG	920	U	1100	U	870	U	880	U	940	U	1200	U
DIBENZOFURAN	UG/KG	380	U	450	U	360	U	360	U	390	U	480	U

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RESULTS FOR SEMIVOLATILE COMPOUND ANLAYSES
SUB-AREA B1

Parameter	Units	BB001A 15-JUN-92		BB001B 15-JUN-92		BB001C 07-JUL-92		BB002B 15-JUN-92		BB002G 15-JUN-92		BB002G DUP 15-JUN-92	
2,4-DINITROTOLUENE	UG/KG	340	U	370	U	970	U	380	U	350	U	370	U
DIETHYLPHTHALATE	UG/KG	340	U	370	U	970	U	380	U	350	U	370	U
4-CHLOROPHENYL-PHENYLETHER	UG/KG	340	U	370	U	970	U	380	U	350	U	370	U
FLUORENE	UG/KG	340	U	370	U	970	U	380	U	350	U	370	U
4-NITROANILINE	UG/KG	830	U	890	U	2400	U	930	U	860	U	890	U
4,6-DINITRO-2-METHYLPHENOL	UG/KG	830	U	890	U	2400	U	930	U	860	U	890	U
N-NITROSODIPHENYLAMINE	UG/KG	340	U	370	U	970	U	380	U	350	U	370	U
4-BROMOPHENYL-PHENYLETHER	UG/KG	340	U	370	U	970	U	380	U	350	U	370	U
HEXACHLOROBENZENE	UG/KG	340	U	370	U	970	U	380	U	350	U	370	U
PENTACHLOROPHENOL	UG/KG	830	U	890	U	2400	U	930	U	860	U	890	U
PHENANTHRENE	UG/KG	170	J	370	U	970	U	440		350	U	370	U
ANTHRACENE	UG/KG	340	U	370	U	970	U	89	J	350	U	370	U
CARBAZOLE	UG/KG	340	U	370	U	970	U	380	U	350	U	370	U
DI-N-BUTYLPHTHALATE	UG/KG	340	U	370	U	970	U	380	U	350	U	370	U
FLUORANTHENE	UG/KG	340	J	370	U	200	J	770		350	U	370	U
PYRENE	UG/KG	310	J	370	U	190	J	640		350	U	370	U
BUTYLBENZYLPHTHALATE	UG/KG	340	U	370	U	970	U	380	U	350	U	370	U
3,3'-DICHLOROBENZIDINE	UG/KG	340	U	370	U	970	U	380	U	350	U	370	U
BENZO(A)ANTHRACENE	UG/KG	140	J	370	U	970	U	300	J	350	U	370	U
CHRYSENE	UG/KG	180	J	370	U	970	U	380	J	350	U	370	U
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	340	U	370	U	970	U	380	U	350	U	370	U
DI-N-OCTYLPHTHALATE	UG/KG	340	U	370	U	970	U	380	U	350	U	370	U
BENZO(B)FLUORANTHENE	UG/KG	140	J	370	U	970	U	340	J	350	U	370	U
BENZO(K)FLUORANTHENE	UG/KG	98	J	370	U	970	U	240	J	350	U	370	U
BENZO(A)PYRENE	UG/KG	120	J	370	U	970	U	270	J	350	U	370	U
INDENO(1,2,3-CD)PYRENE	UG/KG	340	U	370	U	970	U	380	U	350	U	370	U
DIBENZ(A,H)ANTHRACENE	UG/KG	340	U	370	U	970	U	380	U	350	U	370	U
BENZO(G,H,I)PERYLENE	UG/KG	340	U	370	U	970	U	380	U	350	U	370	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: B1

RESULTS FOR SEMIVOLATILE COMPOUND ANLAYSES
SUB-AREA B1

Parameter	Units	BB003A 16-JUN-92		BB003D 16-JUN-92		BT001A 18-JUN-92		BT001B 18-JUN-92		BT002A 17-JUN-92		BT002B 17-JUN-92	
2,4-DINITROTOLUENE	UG/KG	380	U	450	U	360	U	360	U	390	U	480	U
DIETHYLPHTHALATE	UG/KG	380	U	450	U	360	U	360	U	390	U	480	U
4-CHLOROPHENYL-PHENYLETHER	UG/KG	380	U	450	U	360	U	360	U	390	U	480	U
FLUORENE	UG/KG	380	U	450	U	51	J	360	U	390	U	480	U
4-NITROANILINE	UG/KG	920	U	1100	U	870	U	880	U	940	U	1200	U
4,6-DINITRO-2-METHYLPHENOL	UG/KG	920	U	1100	U	870	U	880	U	940	U	1200	U
N-NITROSODIPHENYLAMINE	UG/KG	380	U	450	U	360	U	360	U	390	U	480	U
4-BROMOPHENYL-PHENYLETHER	UG/KG	380	U	450	U	360	U	360	U	390	U	480	U
HEXACHLOROBENZENE	UG/KG	380	U	450	U	360	U	360	U	390	U	480	U
PENTACHLOROPHENOL	UG/KG	920	U	1100	U	870	U	880	U	940	U	1200	U
PHENANTHRENE	UG/KG	380	U	450	U	580		360	U	390	U	480	U
ANTHRACENE	UG/KG	380	U	450	U	150	J	360	U	390	U	480	U
CARBAZOLE	UG/KG	380	U	450	U	77	J	360	U	390	U	480	U
DI-N-BUTYLPHTHALATE	UG/KG	380	U	450	U	360	U	360	U	390	U	480	U
FLUORANTHENE	UG/KG	110	J	450	U	990		360	U	390	U	480	U
PYRENE	UG/KG	110	J	450	U	810		360	U	390	U	480	U
BUTYLBENZYLPHTHALATE	UG/KG	380	U	450	U	360	U	360	U	390	U	480	U
3,3'-DICHLOROBENZIDINE	UG/KG	380	U	450	U	360	U	360	U	390	U	480	U
BENZO(A)ANTHRACENE	UG/KG	380	U	450	U	450		360	U	390	U	480	U
CHRYSENE	UG/KG	380	U	450	U	500		360	U	390	U	480	U
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	380	U	450	U	360	U	360	U	390	U	480	U
DI-N-OCTYLPHTHALATE	UG/KG	380	U	450	U	360	U	360	U	390	U	480	U
BENZO(B)FLUORANTHENE	UG/KG	380	U	450	U	490		360	U	390	U	480	U
BENZO(K)FLUORANTHENE	UG/KG	380	U	450	U	380		360	U	390	U	480	U
BENZO(A)PYRENE	UG/KG	380	U	450	U	450		360	U	390	U	480	U
INDENO(1,2,3-CD)PYRENE	UG/KG	380	U	450	U	310	J	360	U	390	U	480	U
DIBENZ(A,H)ANTHRACENE	UG/KG	380	U	450	U	360	U	360	U	390	U	480	U
BENZO(G,H,I)PERYLENE	UG/KG	380	U	450	U	290	J	360	U	390	U	480	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: B2

RESULTS FOR SEMIVOLATILE COMPOUND ANALYSES
SUB-AREA B2

Parameter	Units	BT004A 18-JUN-92		BT004D 18-JUN-92		BT004D DUP 18-JUN-92	
PHENOL	UG/KG	360	U	360	U	390	U
BIS(2-CHLOROETHYL)ETHER	UG/KG	360	U	360	U	390	U
2-CHLOROPHENOL	UG/KG	360	U	360	U	390	U
1,3-DICHLOROBENZENE	UG/KG	360	U	360	U	390	U
1,4-DICHLOROBENZENE	UG/KG	360	U	360	U	390	U
1,2-DICHLOROBENZENE	UG/KG	360	U	360	U	390	U
2-METHYLPHENOL	UG/KG	360	U	360	U	390	U
2,2'-OXYBIS(1-CHLOROPROPANE)	UG/KG	360	U	360	U	390	U
4-METHYLPHENOL	UG/KG	360	U	360	U	390	U
N-NITROSODI-N-PROPYLAMINE	UG/KG	360	U	360	U	390	U
HEXACHLOROETHANE	UG/KG	360	U	360	U	390	U
NITROBENZENE	UG/KG	360	U	360	U	390	U
ISOPHORONE	UG/KG	360	U	360	U	390	U
2-NITROPHENOL	UG/KG	360	U	360	U	390	U
2,4-DIMETHYLPHENOL	UG/KG	360	U	360	U	390	U
BIS(2-CHLOROETHOXY)METHANE	UG/KG	360	U	360	U	390	U
2,4-DICHLOROPHENOL	UG/KG	360	U	360	U	390	U
1,2,4-TRICHLOROBENZENE	UG/KG	360	U	360	U	390	U
NAPHTHALENE	UG/KG	360	U	360	U	390	U
4-CHLOROANILINE	UG/KG	360	U	360	U	390	U
HEXACHLOROBUTADIENE	UG/KG	360	U	360	U	390	U
4-CHLORO-3-METHYLPHENOL	UG/KG	360	U	360	U	390	U
2-METHYLNAPHTHALENE	UG/KG	360	U	360	U	390	U
HEXACHLOROCYCLOPENTADIENE	UG/KG	360	U	360	U	390	U
2,4,6-TRICHLOROPHENOL	UG/KG	360	U	360	U	390	U
2,4,5-TRICHLOROPHENOL	UG/KG	880	U	880	U	940	U
2-CHLORONAPHTHALENE	UG/KG	360	U	360	U	390	U
2-NITROANILINE	UG/KG	880	U	880	U	940	U
DIMETHYLPHTHALATE	UG/KG	360	U	360	U	390	U
ACENAPHTHYLENE	UG/KG	360	U	360	U	390	U
2,6-DINITROTOLUENE	UG/KG	360	U	360	U	390	U
3-NITROANILINE	UG/KG	880	U	880	U	940	U
ACENAPHTHENE	UG/KG	360	U	360	U	390	U
2,4-DINITROPHENOL	UG/KG	880	U	880	U	940	U
4-NITROPHENOL	UG/KG	880	U	880	U	940	U
DIBENZOFURAN	UG/KG	360	U	360	U	390	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: B2

RESULTS FOR SEMIVOLATILE COMPOUND ANALYSES
SUB-AREA B2

Parameter	Units	BT004A 18-JUN-92		BT004D 18-JUN-92		BT004D DUP 18-JUN-92	
2,4-DINITROTOLUENE	UG/KG	360	U	360	U	390	U
DIETHYLPHTHALATE	UG/KG	360	U	360	U	390	U
4-CHLOROPHENYL-PHENYLETHER	UG/KG	360	U	360	U	390	U
FLUORENE	UG/KG	360	U	360	U	390	U
4-NITROANILINE	UG/KG	880	U	880	U	940	U
4,6-DINITRO-2-METHYLPHENOL	UG/KG	880	U	880	U	940	U
N-NITROSODIPHENYLAMINE	UG/KG	360	U	360	U	390	U
4-BROMOPHENYL-PHENYLETHER	UG/KG	360	U	360	U	390	U
HEXACHLOROBENZENE	UG/KG	360	U	360	U	390	U
PENTACHLOROPHENOL	UG/KG	880	U	880	U	940	U
PHENANTHRENE	UG/KG	360	U	360	U	390	U
ANTHRACENE	UG/KG	360	U	360	U	390	U
CARBAZOLE	UG/KG	360	U	360	U	390	U
DI-N-BUTYLPHTHALATE	UG/KG	360	U	360	U	390	U
FLUORANTHENE	UG/KG	86	J	360	U	390	U
PYRENE	UG/KG	96	J	360	U	390	U
BUTYLBENZYLPHTHALATE	UG/KG	360	U	360	U	390	U
3,3'-DICHLOROBENZIDINE	UG/KG	360	U	360	U	390	U
BENZO(A)ANTHRACENE	UG/KG	64	J	360	U	390	U
CHRYSENE	UG/KG	68	J	360	U	390	U
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	360	U	360	U	390	U
DI-N-OCTYLPHTHALATE	UG/KG	360	U	360	U	390	U
BENZO(B)FLUORANTHENE	UG/KG	130	J	360	U	390	U
BENZO(K)FLUORANTHENE	UG/KG	360	U	360	U	390	U
BENZO(A)PYRENE	UG/KG	360	U	360	U	390	U
INDENO(1,2,3-CD)PYRENE	UG/KG	360	U	360	U	390	U
DIBENZ(A,H)ANTHRACENE	UG/KG	360	U	360	U	390	U
BENZO(G,H,I)PERYLENE	UG/KG	360	U	360	U	390	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: D

RESULTS FOR SEMIVOLATILE COMPOUND ANALYSES
SUB-AREA D

Parameter	Units	DB029A 11-JUN-92		DB029E 11-JUN-92		DB029E DUP 11-JUN-92		DB030A 12-JUN-92		DB030E 12-JUN-92		DB031A 11-JUN-92	
PHENOL	UG/KG	360	U	340	U	340	U	370	U	340	U	370	U
BIS(2-CHLOROETHYL)ETHER	UG/KG	360	U	340	U	340	U	370	U	340	U	370	U
2-CHLOROPHENOL	UG/KG	360	U	340	U	340	U	370	U	340	U	370	U
1,3-DICHLOROBENZENE	UG/KG	360	U	340	U	340	U	370	U	340	U	370	U
1,4-DICHLOROBENZENE	UG/KG	360	U	340	U	340	U	370	U	340	U	370	U
1,2-DICHLOROBENZENE	UG/KG	360	U	340	U	340	U	370	U	340	U	370	U
2-METHYLPHENOL	UG/KG	360	U	340	U	340	U	370	U	340	U	370	U
2,2'-OXYBIS(1-CHLOROPROPANE)	UG/KG	360	U	340	U	340	U	370	U	340	U	370	U
4-METHYLPHENOL	UG/KG	360	U	340	U	340	U	370	U	340	U	370	U
N-NITROSODI-N-PROPYLAMINE	UG/KG	360	U	340	U	340	U	370	U	340	U	370	U
HEXACHLOROETHANE	UG/KG	360	U	340	U	340	U	370	U	340	U	370	U
NITROBENZENE	UG/KG	360	U	340	U	340	U	370	U	340	U	370	U
ISOPHORONE	UG/KG	360	U	340	U	340	U	370	U	340	U	370	U
2-NITROPHENOL	UG/KG	360	U	340	U	340	U	370	U	340	U	370	U
2,4-DIMETHYLPHENOL	UG/KG	360	U	340	U	340	U	370	U	340	U	370	U
BIS(2-CHLOROETHOXY)METHANE	UG/KG	360	U	340	U	340	U	370	U	340	U	370	U
2,4-DICHLOROPHENOL	UG/KG	360	U	340	U	340	U	370	U	340	U	370	U
1,2,4-TRICHLOROBENZENE	UG/KG	360	U	340	U	340	U	370	U	340	U	370	U
NAPHTHALENE	UG/KG	360	U	340	U	340	U	370	U	340	U	370	U
4-CHLOROANILINE	UG/KG	360	U	340	U	340	U	370	U	340	U	370	U
HEXACHLOROBUTADIENE	UG/KG	360	U	340	U	340	U	370	U	340	U	370	U
4-CHLORO-3-METHYLPHENOL	UG/KG	360	U	340	U	340	U	370	U	340	U	370	U
2-METHYLNAPHTHALENE	UG/KG	360	U	340	U	340	U	370	U	340	U	370	U
HEXACHLOROCYCLOPENTADIENE	UG/KG	360	U	340	U	340	U	370	U	340	U	370	U
2,4,6-TRICHLOROPHENOL	UG/KG	360	U	340	U	340	U	370	U	340	U	370	U
2,4,5-TRICHLOROPHENOL	UG/KG	880	U	830	U	820	U	910	U	820	U	890	U
2-CHLORONAPHTHALENE	UG/KG	360	U	340	U	340	U	370	U	340	U	370	U
2-NITROANILINE	UG/KG	880	U	830	U	820	U	910	U	820	U	890	U
DIMETHYLPHTHALATE	UG/KG	360	U	340	U	340	U	370	U	340	U	370	U
ACENAPHTHYLENE	UG/KG	360	U	340	U	340	U	370	U	340	U	370	U
2,6-DINITROTOLUENE	UG/KG	360	U	340	U	340	U	370	U	340	U	370	U
3-NITROANILINE	UG/KG	880	U	830	U	820	U	910	U	820	U	890	U
ACENAPHTHENE	UG/KG	360	U	340	U	340	U	370	U	340	U	370	U
2,4-DINITROPHENOL	UG/KG	880	U	830	U	820	U	910	U	820	U	890	U
4-NITROPHENOL	UG/KG	880	U	830	U	820	U	910	U	820	U	890	U
DIBENZOFURAN	UG/KG	360	U	340	U	340	U	370	U	340	U	370	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: D

RESULTS FOR SEMIVOLATILE COMPOUND ANALYSES
SUB-AREA D

Parameter	Units	DB031F 11-JUN-92		DB032A 11-JUN-92		DB032C 11-JUN-92		DB033A 07-JUL-92		DB033E 07-JUL-92		DB034A 07-JUL-92	
PHENOL	UG/KG	3600	U	370	U	350	U	380	U	370	U	370	U
BIS(2-CHLOROETHYL)ETHER	UG/KG	3600	U	370	U	350	U	380	U	370	U	370	U
2-CHLOROPHENOL	UG/KG	3600	U	370	U	350	U	380	U	370	U	370	U
1,3-DICHLOROBENZENE	UG/KG	3600	U	370	U	350	U	380	U	370	U	370	U
1,4-DICHLOROBENZENE	UG/KG	3600	U	370	U	350	U	380	U	370	U	370	U
1,2-DICHLOROBENZENE	UG/KG	3600	U	370	U	350	U	380	U	370	U	370	U
2-METHYLPHENOL	UG/KG	3600	U	370	U	350	U	380	U	370	U	370	U
2,2'-OXYBIS(1-CHLOROPROPANE)	UG/KG	3600	U	370	U	350	U	380	U	370	U	370	U
4-METHYLPHENOL	UG/KG	3600	U	370	U	350	U	380	U	370	U	370	U
N-NITROSODI-N-PROPYLAMINE	UG/KG	3600	U	370	U	350	U	380	U	370	U	370	U
HEXACHLOROETHANE	UG/KG	3600	U	370	U	350	U	380	U	370	U	370	U
NITROBENZENE	UG/KG	3600	U	370	U	350	U	380	U	370	U	370	U
ISOPHORONE	UG/KG	3600	U	370	U	350	U	380	U	370	U	370	U
2-NITROPHENOL	UG/KG	3600	U	370	U	350	U	380	U	370	U	370	U
2,4-DIMETHYLPHENOL	UG/KG	3600	U	370	U	350	U	380	U	370	U	370	U
BIS(2-CHLOROETHOXY)METHANE	UG/KG	3600	U	370	U	350	U	380	U	370	U	370	U
2,4-DICHLOROPHENOL	UG/KG	3600	U	370	U	350	U	380	U	370	U	370	U
1,2,4-TRICHLOROBENZENE	UG/KG	3600	U	370	U	350	U	380	U	370	U	370	U
NAPHTHALENE	UG/KG	3600	U	370	U	350	U	380	U	370	U	370	U
4-CHLOROANILINE	UG/KG	3600	U	370	U	350	U	380	U	370	U	370	U
HEXACHLOROBUTADIENE	UG/KG	3600	U	370	U	350	U	380	U	370	U	370	U
4-CHLORO-3-METHYLPHENOL	UG/KG	3600	U	370	U	350	U	380	U	370	U	370	U
2-METHYLNAPHTHALENE	UG/KG	3600	U	370	U	350	U	380	U	370	U	370	U
HEXACHLOROCYCLOPENTADIENE	UG/KG	3600	U	370	U	350	U	380	U	370	U	370	U
2,4,6-TRICHLOROPHENOL	UG/KG	3600	U	370	U	350	U	380	U	370	U	370	U
2,4,5-TRICHLOROPHENOL	UG/KG	8700	U	900	U	850	U	920	U	910	U	910	U
2-CHLORONAPHTHALENE	UG/KG	3600	U	370	U	350	U	380	U	370	U	370	U
2-NITROANILINE	UG/KG	8700	U	900	U	850	U	920	U	910	U	910	U
DIMETHYLPHTHALATE	UG/KG	3600	U	370	U	350	U	380	U	370	U	370	U
ACENAPHTHYLENE	UG/KG	3600	U	370	U	350	U	380	U	370	U	370	U
2,6-DINITROTOLUENE	UG/KG	3600	U	370	U	350	U	380	U	370	U	370	U
3-NITROANILINE	UG/KG	8700	U	900	U	850	U	920	U	910	U	910	U
ACENAPHTHENE	UG/KG	3600	U	370	U	350	U	380	U	370	U	370	U
2,4-DINITROPHENOL	UG/KG	8700	U	900	U	850	U	920	U	910	U	910	U
4-NITROPHENOL	UG/KG	8700	U	900	U	850	U	920	U	910	U	910	U
DIBENZOFURAN	UG/KG	3600	U	370	U	350	U	380	U	370	U	370	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: D

RESULTS FOR SEMIVOLATILE COMPOUND ANALYSES
SUB-AREA D

Parameter	Units	DB034C 07-JUL-92	
PHENOL	UG/KG	380	U
BIS(2-CHLOROETHYL)ETHER	UG/KG	380	U
2-CHLOROPHENOL	UG/KG	380	U
1,3-DICHLOROBENZENE	UG/KG	380	U
1,4-DICHLOROBENZENE	UG/KG	380	U
1,2-DICHLOROBENZENE	UG/KG	380	U
2-METHYLPHENOL	UG/KG	380	U
2,2'-OXYBIS(1-CHLOROPROPANE)	UG/KG	380	U
4-METHYLPHENOL	UG/KG	380	U
N-NITROSODI-N-PROPYLAMINE	UG/KG	380	U
HEXACHLOROETHANE	UG/KG	380	U
NITROBENZENE	UG/KG	380	U
ISOPHORONE	UG/KG	380	U
2-NITROPHENOL	UG/KG	380	U
2,4-DIMETHYLPHENOL	UG/KG	380	U
BIS(2-CHLOROETHOXY)METHANE	UG/KG	380	U
2,4-DICHLOROPHENOL	UG/KG	380	U
1,2,4-TRICHLOROBENZENE	UG/KG	380	U
NAPHTHALENE	UG/KG	380	U
4-CHLOROANILINE	UG/KG	380	U
HEXACHLOROBUTADIENE	UG/KG	380	U
4-CHLORO-3-METHYLPHENOL	UG/KG	380	U
2-METHYLNAPHTHALENE	UG/KG	380	U
HEXACHLOROCYCLOPENTADIENE	UG/KG	380	U
2,4,6-TRICHLOROPHENOL	UG/KG	380	U
2,4,5-TRICHLOROPHENOL	UG/KG	920	U
2-CHLORONAPHTHALENE	UG/KG	380	U
2-NITROANILINE	UG/KG	920	U
DIMETHYLPHTHALATE	UG/KG	380	U
ACENAPHTHYLENE	UG/KG	380	U
2,6-DINITROTOLUENE	UG/KG	380	U
3-NITROANILINE	UG/KG	920	U
ACENAPHTHENE	UG/KG	380	U
2,4-DINITROPHENOL	UG/KG	920	U
4-NITROPHENOL	UG/KG	920	U
DIBENZOFURAN	UG/KG	380	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: D

RESULTS FOR SEMIVOLATILE COMPOUND ANALYSES
SUB-AREA D

Parameter	Units	DB029A 11-JUN-92		DB029E 11-JUN-92		DB029E DUP 11-JUN-92		DB030A 12-JUN-92		DB030E 12-JUN-92		DB031A 11-JUN-92	
2,4-DINITROTOLUENE	UG/KG	360	U	340	U	340	U	370	U	340	U	370	U
DIETHYLPHTHALATE	UG/KG	360	U	340	U	340	U	370	U	340	U	370	U
4-CHLOROPHENYL-PHENYLETHER	UG/KG	360	U	340	U	340	U	370	U	340	U	370	U
FLUORENE	UG/KG	360	U	340	U	340	U	370	U	340	U	370	U
4-NITROANILINE	UG/KG	880	U	830	U	820	U	910	U	820	U	890	U
4,6-DINITRO-2-METHYLPHENOL	UG/KG	880	U	830	U	820	U	910	U	820	U	890	U
N-NITROSODIPHENYLAMINE	UG/KG	360	U	340	U	340	U	370	U	340	U	370	U
4-BROMOPHENYL-PHENYLETHER	UG/KG	360	U	340	U	340	U	370	U	340	U	370	U
HEXACHLOROBENZENE	UG/KG	360	U	340	U	340	U	370	U	340	U	370	U
PENTACHLOROPHENOL	UG/KG	880	U	830	U	820	U	910	U	820	U	890	U
PHENANTHRENE	UG/KG	220	J	340	U	340	U	370	U	340	U	370	U
ANTHRACENE	UG/KG	85	J	340	U	340	U	370	U	340	U	370	U
CARBAZOLE	UG/KG	84	J	340	U	340	U	370	U	340	U	370	U
DI-N-BUTYLPHTHALATE	UG/KG	360	U	340	U	340	U	370	U	340	U	370	U
FLUORANTHENE	UG/KG	680		340	U	340	U	370	U	340	U	370	U
PYRENE	UG/KG	960		340	U	340	U	370	U	340	U	370	U
BUTYLBENZYLPHTHALATE	UG/KG	360	U	340	U	340	U	370	U	340	U	370	U
3,3'-DICHLOROBENZIDINE	UG/KG	360	U	340	U	340	U	370	U	340	U	370	U
BENZO(A)ANTHRACENE	UG/KG	520		340	U	340	U	370	U	340	U	370	U
CHRYSENE	UG/KG	860		340	U	340	U	370	U	340	U	370	U
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	360	U	340	U	340	U	370	U	340	U	370	U
DI-N-OCTYLPHTHALATE	UG/KG	360	U	340	U	340	U	370	U	340	U	370	U
BENZO(B)FLUORANTHENE	UG/KG	1600		340	U	340	U	370	U	340	U	370	U
BENZO(K)FLUORANTHENE	UG/KG	760		340	U	340	U	370	U	340	U	370	U
BENZO(A)PYRENE	UG/KG	980		340	U	340	U	370	U	340	U	370	U
INDENO(1,2,3-CD)PYRENE	UG/KG	840		340	U	340	U	370	U	340	U	370	U
DIBENZ(A,H)ANTHRACENE	UG/KG	310	J	340	U	340	U	370	U	340	U	370	U
BENZO(G,H,I)PERYLENE	UG/KG	990		340	U	340	U	370	U	340	U	370	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: D

RESULTS FOR SEMIVOLATILE COMPOUND ANALYSES
SUB-AREA D

Parameter	Units	DB031F 11-JUN-92		DB032A 11-JUN-92		DB032C 11-JUN-92		DB033A 07-JUL-92		DB033E 07-JUL-92		DB034A 07-JUL-92	
2,4-DINITROTOLUENE	UG/KG	3600	U	370	U	350	U	380	U	370	U	370	U
DIETHYLPHTHALATE	UG/KG	3600	U	370	U	350	U	380	U	370	U	370	U
4-CHLOROPHENYL-PHENYLETHER	UG/KG	3600	U	370	U	350	U	380	U	370	U	370	U
FLUORENE	UG/KG	3600	U	370	U	350	U	380	U	370	U	370	U
4-NITROANILINE	UG/KG	8700	U	900	U	850	U	920	U	910	U	910	U
4,6-DINITRO-2-METHYLPHENOL	UG/KG	8700	U	900	U	850	U	920	U	910	U	910	U
N-NITROSODIPHENYLAMINE	UG/KG	3600	U	370	U	350	U	380	U	370	U	370	U
4-BROMOPHENYL-PHENYLETHER	UG/KG	3600	U	370	U	350	U	380	U	370	U	370	U
HEXACHLOROBENZENE	UG/KG	3600	U	370	U	350	U	380	U	370	U	370	U
PENTACHLOROPHENOL	UG/KG	8700	U	900	U	850	U	920	U	910	U	910	U
PHENANTHRENE	UG/KG	3600	U	370	U	350	U	380	U	370	U	370	U
ANTHRACENE	UG/KG	3600	U	370	U	350	U	380	U	370	U	370	U
CARBAZOLE	UG/KG	3600	U	370	U	350	U	380	U	370	U	370	U
DI-N-BUTYLPHTHALATE	UG/KG	3600	U	370	U	350	U	380	U	370	U	370	U
FLUORANTHENE	UG/KG	3600	U	370	U	350	U	170	J	370	U	370	U
PYRENE	UG/KG	3600	U	370	U	350	U	140	J	370	U	370	U
BUTYLBENZYLPHTHALATE	UG/KG	3600	U	370	U	350	U	380	U	370	U	370	U
3,3'-DICHLOROBENZIDINE	UG/KG	3600	U	370	U	350	U	380	U	370	U	370	U
BENZO(A)ANTHRACENE	UG/KG	3600	U	370	U	350	U	380	U	370	U	370	U
CHRYSENE	UG/KG	3600	U	370	U	350	U	380	U	370	U	370	U
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	3600	U	370	U	350	U	380	U	370	U	370	U
DI-N-OCTYLPHTHALATE	UG/KG	3600	U	370	U	350	U	380	U	370	U	370	U
BENZO(B)FLUORANTHENE	UG/KG	3600	U	370	U	350	U	380	U	370	U	370	U
BENZO(K)FLUORANTHENE	UG/KG	3600	U	370	U	350	U	380	U	370	U	370	U
BENZO(A)PYRENE	UG/KG	3600	U	370	U	350	U	380	U	370	U	370	U
INDENO(1,2,3-CD)PYRENE	UG/KG	3600	U	370	U	350	U	380	U	370	U	370	U
DIBENZ(A,H)ANTHRACENE	UG/KG	3600	U	370	U	350	U	380	U	370	U	370	U
BENZO(G,H,I)PERYLENE	UG/KG	3600	U	370	U	350	U	380	U	370	U	370	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: D

RESULTS FOR SEMIVOLATILE COMPOUND ANALYSES
SUB-AREA D

Parameter	Units	DB034C 07-JUL-92	
2,4-DINITROTOLUENE	UG/KG	380	U
DIETHYLPHTHALATE	UG/KG	380	U
4-CHLOROPHENYL-PHENYLETHER	UG/KG	380	U
FLUORENE	UG/KG	380	U
4-NITROANILINE	UG/KG	920	U
4,6-DINITRO-2-METHYLPHENOL	UG/KG	920	U
N-NITROSODIPHENYLAMINE	UG/KG	380	U
4-BROMOPHENYL-PHENYLETHER	UG/KG	380	U
HEXACHLOROBENZENE	UG/KG	380	U
PENTACHLOROPHENOL	UG/KG	920	U
PHENANTHRENE	UG/KG	380	U
ANTHRACENE	UG/KG	380	U
CARBAZOLE	UG/KG	380	U
DI-N-BUTYLPHTHALATE	UG/KG	380	U
FLUORANTHENE	UG/KG	380	U
PYRENE	UG/KG	380	U
BUTYLBENZYLPHTHALATE	UG/KG	380	U
3,3'-DICHLOROBENZIDINE	UG/KG	380	U
BENZO(A)ANTHRACENE	UG/KG	380	U
CHRYSENE	UG/KG	380	U
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	380	U
DI-N-OCTYLPHTHALATE	UG/KG	380	U
BENZO(B)FLUORANTHENE	UG/KG	380	U
BENZO(K)FLUORANTHENE	UG/KG	380	U
BENZO(A)PYRENE	UG/KG	380	U
INDENO(1,2,3-CD)PYRENE	UG/KG	380	U
DIBENZ(A,H)ANTHRACENE	UG/KG	380	U
BENZO(G,H,I)PERYLENE	UG/KG	380	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: E1

RESULTS FOR SEMIVOLATILE COMPOUND ANALYSES
SUB-AREA E1

Parameter	Units	EB001A 16-JUN-92		EB001E 16-JUN-92		EB002A 16-JUN-92		EB002D 16-JUN-92	
PHENOL	UG/KG	350	U	380	U	370	U	340	U
BIS(2-CHLOROETHYL)ETHER	UG/KG	350	U	380	U	370	U	340	U
2-CHLOROPHENOL	UG/KG	350	U	380	U	370	U	340	U
1,3-DICHLOROBENZENE	UG/KG	350	U	380	U	370	U	340	U
1,4-DICHLOROBENZENE	UG/KG	350	U	380	U	370	U	340	U
1,2-DICHLOROBENZENE	UG/KG	350	U	380	U	370	U	340	U
2-METHYLPHENOL	UG/KG	350	U	380	U	370	U	340	U
2,2'-OXYBIS(1-CHLOROPROPANE)	UG/KG	350	U	380	U	370	U	340	U
4-METHYLPHENOL	UG/KG	350	U	380	U	370	U	340	U
N-NITROSODI-N-PROPYLAMINE	UG/KG	350	U	380	U	370	U	340	U
HEXACHLOROETHANE	UG/KG	350	U	380	U	370	U	340	U
NITROBENZENE	UG/KG	350	U	380	U	370	U	340	U
ISOPHORONE	UG/KG	350	U	380	U	370	U	340	U
2-NITROPHENOL	UG/KG	350	U	380	U	370	U	340	U
2,4-DIMETHYLPHENOL	UG/KG	350	U	380	U	370	U	340	U
BIS(2-CHLOROETHOXY)METHANE	UG/KG	350	U	380	U	370	U	340	U
2,4-DICHLOROPHENOL	UG/KG	350	U	380	U	370	U	340	U
1,2,4-TRICHLOROBENZENE	UG/KG	350	U	380	U	370	U	340	U
NAPHTHALENE	UG/KG	350	U	380	U	370	U	340	U
4-CHLOROANILINE	UG/KG	350	U	380	U	370	U	340	U
HEXACHLOROBUTADIENE	UG/KG	350	U	380	U	370	U	340	U
4-CHLORO-3-METHYLPHENOL	UG/KG	350	U	380	U	370	U	340	U
2-METHYLNAPHTHALENE	UG/KG	350	U	380	U	370	U	340	U
HEXACHLOROCYCLOPENTADIENE	UG/KG	350	U	380	U	370	U	340	U
2,4,6-TRICHLOROPHENOL	UG/KG	350	U	380	U	370	U	340	U
2,4,5-TRICHLOROPHENOL	UG/KG	850	U	930	U	890	U	830	U
2-CHLORONAPHTHALENE	UG/KG	350	U	380	U	370	U	340	U
2-NITROANILINE	UG/KG	850	U	930	U	890	U	830	U
DIMETHYLPHTHALATE	UG/KG	350	U	380	U	370	U	340	U
ACENAPHTHYLENE	UG/KG	350	U	380	U	370	U	340	U
2,6-DINITROTOLUENE	UG/KG	350	U	380	U	370	U	340	U
3-NITROANILINE	UG/KG	850	U	930	U	890	U	830	U
ACENAPHTHENE	UG/KG	140	J	380	U	55	J	340	U
2,4-DINITROPHENOL	UG/KG	850	U	930	U	890	U	830	U
4-NITROPHENOL	UG/KG	850	U	930	U	890	U	830	U
DIBENZOFURAN	UG/KG	50	J	380	U	370	U	340	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: E1

RESULTS FOR SEMIVOLATILE COMPOUND ANALYSES
SUB-AREA E1

Parameter	Units	EB001A 16-JUN-92		EB001E 16-JUN-92		EB002A 16-JUN-92		EB002D 16-JUN-92	
2,4-DINITROTOLUENE	UG/KG	350	U	380	U	370	U	340	U
DIETHYLPHTHALATE	UG/KG	350	U	380	U	370	U	340	U
4-CHLOROPHENYL-PHENYLETHER	UG/KG	350	U	380	U	370	U	340	U
FLUORENE	UG/KG	130	J	380	U	370	U	340	U
4-NITROANILINE	UG/KG	850	U	930	U	890	U	830	U
4,6-DINITRO-2-METHYLPHENOL	UG/KG	850	U	930	U	890	U	830	U
N-NITROSODIPHENYLAMINE	UG/KG	350	U	380	U	370	U	340	U
4-BROMOPHENYL-PHENYLETHER	UG/KG	350	U	380	U	370	U	340	U
HEXACHLOROBENZENE	UG/KG	350	U	380	U	370	U	340	U
PENTACHLOROPHENOL	UG/KG	850	U	930	U	890	U	830	U
PHENANTHRENE	UG/KG	1800		380	U	610		340	U
ANTHRACENE	UG/KG	320	J	380	U	130	J	340	U
CARBAZOLE	UG/KG	250	J	380	U	82	J	340	U
DI-N-BUTYLPHTHALATE	UG/KG	350	U	380	U	370	U	340	U
FLUORANTHENE	UG/KG	3700		380	U	1200		340	U
PYRENE	UG/KG	3200		380	U	1000		340	U
BUTYLBENZYLPHTHALATE	UG/KG	350	U	380	U	370	U	340	U
3,3'-DICHLOROBENZIDINE	UG/KG	350	U	380	U	370	U	340	U
BENZO(A)ANTHRACENE	UG/KG	1300		380	U	460		340	U
CHRYSENE	UG/KG	1500		380	U	530		340	U
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	350	U	380	U	370	U	340	U
DI-N-OCTYLPHTHALATE	UG/KG	350	U	380	U	370	U	340	U
BENZO(B)FLUORANTHENE	UG/KG	1500		380	U	510		340	U
BENZO(K)FLUORANTHENE	UG/KG	900		380	U	340	J	340	U
BENZO(A)PYRENE	UG/KG	1200		380	U	460		340	U
INDENO(1,2,3-CD)PYRENE	UG/KG	790		380	U	300	J	340	U
DIBENZ(A,H)ANTHRACENE	UG/KG	350	U	380	U	370	U	340	U
BENZO(G,H,I)PERYLENE	UG/KG	870		380	U	300	J	340	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: E2

RESULTS FOR SEMIVOLATILE COMPOUND ANALYSES
SUB-AREA E2

Parameter	Units	EB003A 18-JUN-92		EB003F 18-JUN-92		EB004A 18-JUN-92		EB004D 18-JUN-92	
PHENOL	UG/KG	390	U	340	U	750	U	350	U
BIS(2-CHLOROETHYL)ETHER	UG/KG	390	U	340	U	750	U	350	U
2-CHLOROPHENOL	UG/KG	390	U	340	U	750	U	350	U
1,3-DICHLOROBENZENE	UG/KG	390	U	340	U	750	U	350	U
1,4-DICHLOROBENZENE	UG/KG	390	U	340	U	750	U	350	U
1,2-DICHLOROBENZENE	UG/KG	390	U	340	U	750	U	350	U
2-METHYLPHENOL	UG/KG	390	U	340	U	750	U	350	U
2,2'-OXYBIS(1-CHLOROPROPANE)	UG/KG	390	U	340	U	750	U	350	U
4-METHYLPHENOL	UG/KG	390	U	340	U	750	U	350	U
N-NITROSODI-N-PROPYLAMINE	UG/KG	390	U	340	U	750	U	350	U
HEXACHLOROETHANE	UG/KG	390	U	340	U	750	U	350	U
NITROBENZENE	UG/KG	390	U	340	U	750	U	350	U
ISOPHORONE	UG/KG	390	U	340	U	750	U	350	U
2-NITROPHENOL	UG/KG	390	U	340	U	750	U	350	U
2,4-DIMETHYLPHENOL	UG/KG	390	U	340	U	750	U	350	U
BIS(2-CHLOROETHOXY)METHANE	UG/KG	390	U	340	U	750	U	350	U
2,4-DICHLOROPHENOL	UG/KG	390	U	340	U	750	U	350	U
1,2,4-TRICHLOROBENZENE	UG/KG	390	U	340	U	750	U	350	U
NAPHTHALENE	UG/KG	390	U	340	U	750	U	350	U
4-CHLOROANILINE	UG/KG	390	U	340	U	750	U	350	U
HEXACHLOROBUTADIENE	UG/KG	390	U	340	U	750	U	350	U
4-CHLORO-3-METHYLPHENOL	UG/KG	390	U	340	U	750	U	350	U
2-METHYLNAPHTHALENE	UG/KG	390	U	340	U	750	U	350	U
HEXACHLOROCYCLOPENTADIENE	UG/KG	390	U	340	U	750	U	350	U
2,4,6-TRICHLOROPHENOL	UG/KG	390	U	340	U	750	U	350	U
2,4,5-TRICHLOROPHENOL	UG/KG	950	U	830	U	1800	U	840	U
2-CHLORONAPHTHALENE	UG/KG	390	U	340	U	750	U	350	U
2-NITROANILINE	UG/KG	950	U	830	U	1800	U	840	U
DIMETHYLPHTHALATE	UG/KG	390	U	340	U	750	U	350	U
ACENAPHTHYLENE	UG/KG	390	U	340	U	750	U	350	U
2,6-DINITROTOLUENE	UG/KG	390	U	340	U	750	U	350	U
3-NITROANILINE	UG/KG	950	U	830	U	1800	U	840	U
ACENAPHTHENE	UG/KG	390	U	340	U	380	J	350	U
2,4-DINITROPHENOL	UG/KG	950	U	830	U	1800	U	840	U
4-NITROPHENOL	UG/KG	950	U	830	U	1800	U	840	U
DIBENZOFURAN	UG/KG	390	U	340	U	160	J	350	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: E2

RESULTS FOR SEMIVOLATILE COMPOUND ANALYSES
SUB-AREA E2

Parameter	Units	EB003A 18-JUN-92		EB003F 18-JUN-92		EB004A 18-JUN-92		EB004D 18-JUN-92	
2,4-DINITROTOLUENE	UG/KG	390	U	340	U	750	U	350	U
DIETHYLPHTHALATE	UG/KG	390	U	340	U	750	U	350	U
4-CHLOROPHENYL-PHENYLETHER	UG/KG	390	U	340	U	750	U	350	U
FLUORENE	UG/KG	390	U	340	U	390	J	350	U
4-NITROANILINE	UG/KG	950	U	830	U	1800	U	840	U
4,6-DINITRO-2-METHYLPHENOL	UG/KG	950	U	830	U	1800	U	840	U
N-NITROSODIPHENYLAMINE	UG/KG	390	U	340	U	750	U	350	U
4-BROMOPHENYL-PHENYLETHER	UG/KG	390	U	340	U	750	U	350	U
HEXACHLOROBENZENE	UG/KG	390	U	340	U	750	U	350	U
PENTACHLOROPHENOL	UG/KG	950	U	830	U	1800	U	840	U
PHENANTHRENE	UG/KG	390	U	340	U	3100		150	J
ANTHRACENE	UG/KG	390	U	340	U	860		120	J
CARBAZOLE	UG/KG	390	U	340	U	200	J	350	U
DI-N-BUTYLPHTHALATE	UG/KG	390	U	340	U	750	U	350	U
FLUORANTHENE	UG/KG	390	U	340	U	7600		260	J
PYRENE	UG/KG	390	U	340	U	6600		300	J
BUTYLBENZYLPHTHALATE	UG/KG	390	U	340	U	750	U	350	U
3,3'-DICHLOROBENZIDINE	UG/KG	390	U	340	U	750	U	350	U
BENZO(A)ANTHRACENE	UG/KG	390	U	340	U	3300		100	J
CHRYSENE	UG/KG	390	U	340	U	3400		140	J
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	390	U	340	U	750	U	350	U
DI-N-OCTYLPHTHALATE	UG/KG	390	U	340	U	750	U	350	U
BENZO(B)FLUORANTHENE	UG/KG	390	U	340	U	3400		170	J
BENZO(K)FLUORANTHENE	UG/KG	390	U	340	U	2000		83	J
BENZO(A)PYRENE	UG/KG	390	U	340	U	2900		140	J
INDENO(1,2,3-CD)PYRENE	UG/KG	390	U	340	U	1800		350	U
DIBENZ(A,H)ANTHRACENE	UG/KG	390	U	340	U	750	U	350	U
BENZO(G,H,I)PERYLENE	UG/KG	390	U	340	U	2000		400	

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: F2

RESULTS FOR SEMIVOLATILE COMPOUND ANALYSES
SUB-AREA F

Parameter	Units	FB001A 12-JUN-92		FB001E 12-JUN-92		FB002A 11-JUN-92		FB002C 07-JUL-92		FB002H 11-JUN-92		FB003A 11-JUN-92	
PHENOL	UG/KG	500	U	340	U	1500	U	380	U	340	U	3700	U
BIS(2-CHLOROETHYL)ETHER	UG/KG	500	U	340	U	1500	U	380	U	340	U	3700	U
2-CHLOROPHENOL	UG/KG	500	U	340	U	1500	U	380	U	340	U	3700	U
1,3-DICHLOROBENZENE	UG/KG	500	U	340	U	1500	U	380	U	340	U	3700	U
1,4-DICHLOROBENZENE	UG/KG	500	U	340	U	1500	U	380	U	340	U	3700	U
1,2-DICHLOROBENZENE	UG/KG	500	U	340	U	1500	U	380	U	340	U	3700	U
2-METHYLPHENOL	UG/KG	500	U	340	U	1500	U	380	U	340	U	3700	U
2,2'-OXYBIS(1-CHLOROPROPANE)	UG/KG	500	U	340	U	1500	U	380	U	340	U	3700	U
4-METHYLPHENOL	UG/KG	500	U	340	U	1500	U	380	U	340	U	3700	U
N-NITROSODI-N-PROPYLAMINE	UG/KG	500	U	340	U	1500	U	380	U	340	U	3700	U
HEXACHLOROETHANE	UG/KG	500	U	340	U	1500	U	380	U	340	U	3700	U
NITROBENZENE	UG/KG	500	U	340	U	1500	U	380	U	340	U	3700	U
ISOPHORONE	UG/KG	500	U	340	U	1500	U	380	U	340	U	3700	U
2-NITROPHENOL	UG/KG	500	U	340	U	1500	U	380	U	340	U	3700	U
2,4-DIMETHYLPHENOL	UG/KG	500	U	340	U	1500	U	380	U	340	U	3700	U
BIS(2-CHLOROETHOXY)METHANE	UG/KG	500	U	340	U	1500	U	380	U	340	U	3700	U
2,4-DICHLOROPHENOL	UG/KG	500	U	340	U	1500	U	380	U	340	U	3700	U
1,2,4-TRICHLOROBENZENE	UG/KG	500	U	340	U	1500	U	380	U	340	U	3700	U
NAPHTHALENE	UG/KG	500	U	340	U	1500	U	380	U	340	U	3700	U
4-CHLOROANILINE	UG/KG	500	U	340	U	1500	U	380	U	340	U	3700	U
HEXACHLOROBUTADIENE	UG/KG	500	U	340	U	1500	U	380	U	340	U	3700	U
4-CHLORO-3-METHYLPHENOL	UG/KG	500	U	340	U	1500	U	380	U	340	U	3700	U
2-METHYLNAPHTHALENE	UG/KG	500	U	340	U	1500	U	380	U	340	U	3700	U
HEXACHLOROCYCLOPENTADIENE	UG/KG	500	U	340	U	1500	U	380	U	340	U	3700	U
2,4,6-TRICHLOROPHENOL	UG/KG	500	U	340	U	1500	U	380	U	340	U	3700	U
2,4,5-TRICHLOROPHENOL	UG/KG	1200	U	820	U	3500	U	930	U	830	U	9100	U
2-CHLORONAPHTHALENE	UG/KG	500	U	340	U	1500	U	380	U	340	U	3700	U
2-NITROANILINE	UG/KG	1200	U	820	U	3500	U	930	U	830	U	9100	U
DIMETHYLPHTHALATE	UG/KG	500	U	340	U	1500	U	380	U	340	U	3700	U
ACENAPHTHYLENE	UG/KG	500	U	340	U	1500	U	380	U	340	U	3700	U
2,6-DINITROTOLUENE	UG/KG	500	U	340	U	1500	U	380	U	340	U	3700	U
3-NITROANILINE	UG/KG	1200	U	820	U	3500	U	930	U	830	U	9100	U
ACENAPHTHENE	UG/KG	500	U	340	U	1500	U	380	U	340	U	3700	U
2,4-DINITROPHENOL	UG/KG	1200	U	820	U	3500	U	930	U	830	U	9100	U
4-NITROPHENOL	UG/KG	1200	U	820	U	3500	U	930	U	830	U	9100	U
DIBENZOFURAN	UG/KG	500	U	340	U	1500	U	380	U	340	U	3700	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: F2

RESULTS FOR SEMIVOLATILE COMPOUND ANALYSES
SUB-AREA F

Parameter	Units	FB003E 11-JUN-92		FB004A 11-JUN-92		FB004G 11-JUN-92	
PHENOL	UG/KG	330	U	360	U	340	U
BIS(2-CHLOROETHYL)ETHER	UG/KG	330	U	360	U	340	U
2-CHLOROPHENOL	UG/KG	330	U	360	U	340	U
1,3-DICHLOROBENZENE	UG/KG	330	U	360	U	340	U
1,4-DICHLOROBENZENE	UG/KG	330	U	360	U	340	U
1,2-DICHLOROBENZENE	UG/KG	330	U	360	U	340	U
2-METHYLPHENOL	UG/KG	330	U	360	U	340	U
2,2'-OXYBIS(1-CHLOROPROPANE)	UG/KG	330	U	360	U	340	U
4-METHYLPHENOL	UG/KG	330	U	360	U	340	U
N-NITROSODI-N-PROPYLAMINE	UG/KG	330	U	360	U	340	U
HEXACHLOROETHANE	UG/KG	330	U	360	U	340	U
NITROBENZENE	UG/KG	330	U	360	U	340	U
ISOPHORONE	UG/KG	330	U	360	U	340	U
2-NITROPHENOL	UG/KG	330	U	360	U	340	U
2,4-DIMETHYLPHENOL	UG/KG	330	U	360	U	340	U
BIS(2-CHLOROETHOXY)METHANE	UG/KG	330	U	360	U	340	U
2,4-DICHLOROPHENOL	UG/KG	330	U	360	U	340	U
1,2,4-TRICHLOROBENZENE	UG/KG	330	U	360	U	340	U
NAPHTHALENE	UG/KG	330	U	360	U	340	U
4-CHLOROANILINE	UG/KG	330	U	360	U	340	U
HEXACHLOROBUTADIENE	UG/KG	330	U	360	U	340	U
4-CHLORO-3-METHYLPHENOL	UG/KG	330	U	360	U	340	U
2-METHYLNAPHTHALENE	UG/KG	330	U	360	U	340	U
HEXACHLOROCYCLOPENTADIENE	UG/KG	330	U	360	U	340	U
2,4,6-TRICHLOROPHENOL	UG/KG	330	U	360	U	340	U
2,4,5-TRICHLOROPHENOL	UG/KG	810	U	880	U	820	U
2-CHLORONAPHTHALENE	UG/KG	330	U	360	U	340	U
2-NITROANILINE	UG/KG	810	U	880	U	820	U
DIMETHYLPHTHALATE	UG/KG	330	U	360	U	340	U
ACENAPHTHYLENE	UG/KG	330	U	360	U	340	U
2,6-DINITROTOLUENE	UG/KG	330	U	360	U	340	U
3-NITROANILINE	UG/KG	810	U	880	U	820	U
ACENAPHTHENE	UG/KG	330	U	360	U	340	U
2,4-DINITROPHENOL	UG/KG	810	U	880	U	820	U
4-NITROPHENOL	UG/KG	810	U	880	U	820	U
DIBENZOFURAN	UG/KG	330	U	360	U	340	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: F2

RESULTS FOR SEMIVOLATILE COMPOUND ANALYSES
SUB-AREA F

Parameter	Units	FB001A 12-JUN-92		FB001E 12-JUN-92		FB002A 11-JUN-92		FB002C 07-JUL-92		FB002H 11-JUN-92		FB003A 11-JUN-92	
2,4-DINITROTOLUENE	UG/KG	500	U	340	U	1500	U	380	U	340	U	3700	U
DIETHYLPHTHALATE	UG/KG	500	U	340	U	1500	U	380	U	340	U	3700	U
4-CHLOROPHENYL-PHENYLETHER	UG/KG	500	U	340	U	1500	U	380	U	340	U	3700	U
FLUORENE	UG/KG	500	U	340	U	1500	U	380	U	340	U	3700	U
4-NITROANILINE	UG/KG	1200	U	820	U	3500	U	930	U	830	U	9100	U
4,6-DINITRO-2-METHYLPHENOL	UG/KG	1200	U	820	U	3500	U	930	U	830	U	9100	U
N-NITROSODIPHENYLAMINE	UG/KG	500	U	340	U	1500	U	380	U	340	U	3700	U
4-BROMOPHENYL-PHENYLETHER	UG/KG	500	U	340	U	1500	U	380	U	340	U	3700	U
HEXACHLOROBENZENE	UG/KG	500	U	340	U	1500	U	380	U	340	U	3700	U
PENTACHLOROPHENOL	UG/KG	1200	U	820	U	3500	U	930	U	830	U	9100	U
PHENANTHRENE	UG/KG	220	J	340	U	1500	U	380	U	340	U	3700	U
ANTHRACENE	UG/KG	500	U	340	U	1500	U	380	U	340	U	3700	U
CARBAZOLE	UG/KG	500	U	340	U	1500	U	380	U	340	U	3700	U
DI-N-BUTYLPHTHALATE	UG/KG	500	U	340	U	1500	U	380	U	340	U	3700	U
FLUORANTHENE	UG/KG	390	J	340	U	1500	U	380	U	340	U	3700	U
PYRENE	UG/KG	410	J	340	U	1500	U	380	U	340	U	3700	U
BUTYLBENZYLPHTHALATE	UG/KG	500	U	340	U	1500	U	380	U	340	U	3700	U
3,3'-DICHLOROBENZIDINE	UG/KG	500	U	340	U	1500	U	380	U	340	U	3700	U
BENZO(A)ANTHRACENE	UG/KG	200	J	340	U	1500	U	380	U	340	U	3700	U
CHRYSENE	UG/KG	230	J	340	U	1500	U	380	U	340	U	3700	U
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	500	U	340	U	1500	U	380	U	340	U	3700	U
DI-N-OCTYLPHTHALATE	UG/KG	500	U	340	U	1500	U	380	U	340	U	3700	U
BENZO(B)FLUORANTHENE	UG/KG	240	J	340	U	1500	U	380	U	340	U	3700	U
BENZO(K)FLUORANTHENE	UG/KG	160	J	340	U	1500	U	380	U	340	U	3700	U
BENZO(A)PYRENE	UG/KG	170	J	340	U	1500	U	380	U	340	U	3700	U
INDENO(1,2,3-CD)PYRENE	UG/KG	500	U	340	U	1500	U	380	U	340	U	3700	U
DIBENZ(A,H)ANTHRACENE	UG/KG	500	U	340	U	1500	U	380	U	340	U	3700	U
BENZO(G,H,I)PERYLENE	UG/KG	500	U	340	U	1500	U	380	U	340	U	3700	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: F2

RESULTS FOR SEMIVOLATILE COMPOUND ANALYSES
SUB-AREA F

Parameter	Units	FB003E 11-JUN-92		FB004A 11-JUN-92		FB004G 11-JUN-92	
2,4-DINITROTOLUENE	UG/KG	330	U	360	U	340	U
DIETHYLPHTHALATE	UG/KG	330	U	360	U	340	U
4-CHLOROPHENYL-PHENYLETHER	UG/KG	330	U	360	U	340	U
FLUORENE	UG/KG	330	U	360	U	340	U
4-NITROANILINE	UG/KG	810	U	880	U	820	U
4,6-DINITRO-2-METHYLPHENOL	UG/KG	810	U	880	U	820	U
N-NITROSODIPHENYLAMINE	UG/KG	330	U	360	U	340	U
4-BROMOPHENYL-PHENYLETHER	UG/KG	330	U	360	U	340	U
HEXACHLOROBENZENE	UG/KG	330	U	360	U	340	U
PENTACHLOROPHENOL	UG/KG	810	U	880	U	820	U
PHENANTHRENE	UG/KG	330	U	360	U	340	U
ANTHRACENE	UG/KG	330	U	360	U	340	U
CARBAZOLE	UG/KG	330	U	360	U	340	U
DI-N-BUTYLPHTHALATE	UG/KG	330	U	360	U	340	U
FLUORANTHENE	UG/KG	330	U	96	J	340	U
PYRENE	UG/KG	330	U	79	J	340	U
BUTYLBENZYLPHTHALATE	UG/KG	330	U	360	U	340	U
3,3'-DICHLOROBENZIDINE	UG/KG	330	U	360	U	340	U
BENZO(A)ANTHRACENE	UG/KG	330	U	360	U	340	U
CHRYSENE	UG/KG	330	U	360	U	340	U
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	330	U	360	U	340	U
DI-N-OCTYLPHTHALATE	UG/KG	330	U	360	U	340	U
BENZO(B)FLUORANTHENE	UG/KG	330	U	360	U	340	U
BENZO(K)FLUORANTHENE	UG/KG	330	U	360	U	340	U
BENZO(A)PYRENE	UG/KG	330	U	360	U	340	U
INDENO(1,2,3-CD)PYRENE	UG/KG	330	U	360	U	340	U
DIBENZ(A,H)ANTHRACENE	UG/KG	330	U	360	U	340	U
BENZO(G,H,I)PERYLENE	UG/KG	330	U	360	U	340	U

SUMMARY OF TENTATIVELY IDENTIFIED COMPOUNDS (ASSAY CODE S)
NIROP

PROJECT NUMBER: 2313.13
BEGINNING DATE: 03-JUN-92
ENDING DATE: 30-JUL-92

	Sample ID	Sample Date	Parameter	Conc	Qualifiers	Units
MATRIX CODE: QCW	QCR001	03-JUN-92	ETHANOL, 2-BUTOXY-	4	JNBU	UG/L
			HEXANOIC ACID, 2-ETHYL-	5	JN	UG/L
			PROPANOIC ACID, 3-ETHOXY-,	10	JNBU	UG/L
	QCR002	04-JUN-92	9-OCTADECENAMIDE, (Z)-	4	JN	UG/L
			CYCLOHEXANONE	45	JNBU	UG/L
			ETHANOL, 2-BUTOXY-	7	JNBU	UG/L
			HEXANOIC ACID, 2-ETHYL-	6	JN	UG/L
			PHOSPHINE OXIDE, TRIPHENYL-	7	BJNU	UG/L
			PROPANOIC ACID, 3-ETHOXY-,	14	JNBU	UG/L
			UNKNOWN	5	J	UG/L
	QCR003	08-JUN-92	CYCLOHEXANONE	34	JNBU	UG/L
			ETHANOL, 2-BUTOXY-	5	JNBU	UG/L
			HEXANOIC ACID, 2-ETHYL-	6	JN	UG/L
			PHENOL, (1,1-DIMETHYLETHYL)	5	JN	UG/L
			PROPANOIC ACID, 3-ETHOXY-,	11	JNBU	UG/L
	QCR004	09-JUN-92	1H-INDENE, 2,3-DIHYDRO-1,1,	5	JNBU	UG/L
			CYCLOHEXANONE	29	JNBU	UG/L
			ETHANOL, 2-BUTOXY-	4	JNBU	UG/L
			HEXANOIC ACID, 2-ETHYL-	7	JNBU	UG/L
			PROPANOIC ACID, 3-ETHOXY-,	8	JNBU	UG/L
			UNKNOWN RT17.86	5	JBU	UG/L
			UNKNOWN RT19.53	9	BJU	UG/L
	QCR005	10-JUN-92	CYCLOHEXANONE	43	JNBU	UG/L
			ETHANOL, 2-BUTOXY-	8	JNBU	UG/L
			HEXANOIC ACID, 2-ETHYL-	6	JNBU	UG/L
			PHOSPHINE OXIDE, TRIPHENYL-	13	JNBU	UG/L
			PROPANOIC ACID, 3-ETHOXY-,	15	JNBU	UG/L
	QCR006	11-JUN-92	CYCLOHEXANONE	33	JNBU	UG/L
			ETHANOL, 2-BUTOXY-	5	JNBU	UG/L
			HEXANOIC ACID, 2-ETHYL-	6	JNBU	UG/L
			PROPANOIC ACID, 3-ETHOXY-,	10	JNBU	UG/L
			UNKNOWN	6	BJU	UG/L
	QCR007	12-JUN-92	3-OCTANONE	6	JNBU	UG/L
			CYCLOHEXANONE	31	JNBU	UG/L
			ETHANOL, 2-BUTOXY-	5	JNBU	UG/L
			HEXANOIC ACID, 2-ETHYL-	5	JNBU	UG/L
			PROPANOIC ACID, 3-ETHOXY-,	9	JNBU	UG/L
			UNKNOWN RT21.67	5	JBU	UG/L
			UNKNOWN RT32.02	4	JBU	UG/L

SUMMARY OF TENTATIVELY IDENTIFIED COMPOUNDS (ASSAY CODE S)
NIROP

PROJECT NUMBER: 2313.13
BEGINNING DATE: 03-JUN-92
ENDING DATE: 30-JUL-92

	Sample ID	Sample Date	Parameter	Conc	Qualifiers	Units
MATRIX CODE: QCW	QCR008	15-JUN-92	BENZALDEHYDE, 4-HYDROXY-3-M	5	JNBU	UG/L
			CYCLOHEXANONE	29	JNBU	UG/L
			DODECANAMIDE	10	JNBU	UG/L
			ETHANOL, 2-BUTOXY-	6	JNBU	UG/L
			HEXANOIC ACID, 2-ETHYL-	6	JNBU	UG/L
			PHENOL, (1,1-DIMETHYLETHYL)	4	JNBU	UG/L
			PROPANOIC ACID, 3-ETHOXY-,	9	JNBU	UG/L
			UNKNOWN	8	JBU	UG/L
	QCR010	17-JUN-92	UNKNOWN	12	JBU	UG/L
	QCR012	07-JUL-92	UNKNOWN	6	J	UG/L
	QCR020	20-JUL-92	DODECANAMIDE	22	JN	UG/L
			HEXANOIC ACID, 2-ETHYL-	9	JNBU	UG/L
			PHENOL, 2-(1,1-DIMETHYLETHY	20	JN	UG/L
	SRC001	04-JUN-92	PHOSPHINE OXIDE, TRIPHENYL-	8	BJNU	UG/L
MATRIX CODE: SB	AB024A	09-JUN-92	HEPTADECANE	200	JNBU	UG/KG
			HEXADECANE	240	JNBU	UG/KG
			OCTACOSANE	190	JNBU	UG/KG
			OCTADECANE	200	JNBU	UG/KG
			UNKNOWN RT43.63	270	J	UG/KG
			UNKNOWN RT8.47	450	BJU	UG/KG
			UNKNOWN RT9.03	210	BJU	UG/KG
			UNKNOWN RT9.86	230	JBU	UG/KG
	AB024G	09-JUN-92	UNKNOWN RT27.38	190	JBU	UG/KG
			UNKNOWN RT8.31	320	BJU	UG/KG
			UNKNOWN RT8.88	160	JBU	UG/KG
	AB025A	09-JUN-92	2-PENTANONE	340	JNBU	UG/KG
			HEPTADECANE	190	JNBU	UG/KG
			HEXADECANOIC ACID, BUTYL ES	360	JNBU	UG/KG
			OCTACOSANE	150	JNBU	UG/KG
			OCTADECANOIC ACID, 2-METHYL	300	JNBU	UG/KG
			TRICOSANE	190	JNBU	UG/KG
			UNKNOWN ALKANE	210	JBU	UG/KG
			UNKNOWN RT8.46	390	BJU	UG/KG
			UNKNOWN RT9.03	230	BJU	UG/KG
			UNKNOWN RT9.86	250	JBU	UG/KG
	AB025B	09-JUN-92	2-PENTANONE	380	JNBU	UG/KG
			2-PENTANONE, 3-METHYL-	440	JNBU	UG/KG

SUMMARY OF TENTATIVELY IDENTIFIED COMPOUNDS (ASSAY CODE S)
NIROP

PROJECT NUMBER: 2313.13
BEGINNING DATE: 03-JUN-92
ENDING DATE: 30-JUL-92

	Sample ID	Sample Date	Parameter	Conc	Qualifiers	Units
MATRIX CODE: SB	AB025B	09-JUN-92	HEPTACOSANE	260	JNBU	UG/KG
			NONADECANE	310	JNBU	UG/KG
			PENTACOSANE	280	JNBU	UG/KG
			TETRATETRACONTANE	320	JNBU	UG/KG
			UNKNOWN RT33.93	240	JBU	UG/KG
			UNKNOWN RT43.75	3400	J	UG/KG
			UNKNOWN RT44.58	470	J	UG/KG
			UNKNOWN RT8.47	480	BJU	UG/KG
			UNKNOWN RT9.04	390	BJU	UG/KG
	AB026A	10-JUN-92	1-OCTADECANOL	300	JN	UG/KG
			11H-BENZO[B]FLUORENE	630	JN	UG/KG
			1H-INDENE, 1-PHENYL-	320	JN	UG/KG
			4,4'-DDD (TIC)	640	JN	UG/KG
			4,4'-DDE (TIC)	750	JN	UG/KG
			4H-CYCLOPENTA[DEF]PHENANTHR	910	JN	UG/KG
			ANTHRACENE, 9-METHYL-	350	JN	UG/KG
			BENZO[B]NAPHTHO[2,1-D]THIOP	350	JN	UG/KG
			BENZO[E]PYRENE	1600	JN	UG/KG
			BENZO[GHI]FLUORANTHENE	450	JN	UG/KG
			PERYLENE	500	JN	UG/KG
			PYRENE ,4-METHYL-	410	JN	UG/KG
			PYRENE, 1-METHYL-	970	JN	UG/KG
			UNKNOWN ALKANE	370	J	UG/KG
			UNKNOWN POLYNUCLEAR AR RT29.53	510	J	UG/KG
			UNKNOWN POLYNUCLEAR AR RT33.66	410	J	UG/KG
			UNKNOWN RT10.08	430	JBU	UG/KG
			UNKNOWN RT28.51	490	J	UG/KG
			UNKNOWN RT32.44	510	J	UG/KG
			UNKNOWN RT9.49	1300	BJU	UG/KG
	AB026G	10-JUN-92	1-TETRACOSANOL	150	JNBU	UG/KG
			DOCOSANE	230	JNBU	UG/KG
			HEPTACOSANE	250	JNBU	UG/KG
			HEPTADECANE	170	JNBU	UG/KG
			HEXADECANE	280	JNBU	UG/KG
			HEXADECANOIC ACID, BUTYL ES	660	JNBU	UG/KG
			OCTACOSANE	200	JNBU	UG/KG
			TETRADECANE	140	JNBU	UG/KG
			UNKNOWN ALKANE	250	JBU	UG/KG
			UNKNOWN RT27.54	530	JBU	UG/KG
			UNKNOWN RT27.68	200	JBU	UG/KG
			UNKNOWN RT8.41	280	JBU	UG/KG
			UNKNOWN RT8.98	140	BJU	UG/KG
			UNKNOWN RT9.16	190	BJU	UG/KG

SUMMARY OF TENTATIVELY IDENTIFIED COMPOUNDS (ASSAY CODE S)
NIROP

PROJECT NUMBER: 2313.13
BEGINNING DATE: 03-JUN-92
ENDING DATE: 30-JUL-92

	Sample ID	Sample Date	Parameter	Conc	Qualifiers	Units
MATRIX CODE: SB	AB026G	10-JUN-92	UNKNOWN RT9.49	930	BJU	UG/KG
	AB027A	09-JUN-92	11H-BENZO[B]FLUORENE	1100	JN	UG/KG
			CYCLOPENTA[CD]PYRENE	1000	JN	UG/KG
			PERYLENE	2100	JN	UG/KG
	AB027H	09-JUN-92	HEXANEDIOIC ACID, DIOCTYL E	370	BJNU	UG/KG
			UNKNOWN	200	BJU	UG/KG
	AB028A	08-JUN-92	11H-BENZO[A]FLUORENE	300	JN	UG/KG
			11H-BENZO[B]FLUORENE	400	JN	UG/KG
			2 PENTANONE, 3-METHYL-	230	JNBU	UG/KG
			4,4'-DDE (TIC)	970	JN	UG/KG
			4,4'-DDT (TIC)	740	JN	UG/KG
			4H-CYCLOPENTA[DEF]PHENANTHR	370	JN	UG/KG
			BENZENE, 1-CHLORO-2-[2,2,2-	370	JN	UG/KG
			BENZO[GHI]FLUORANTHENE	310	JN	UG/KG
			DOCOSANE	310	JNBU	UG/KG
			HEPTADECANE	980	JNBU	UG/KG
			NONADECANE	480	JNBU	UG/KG
			PERYLENE	430	JN	UG/KG
			PYRENE, 1-METHYL-	400	JN	UG/KG
			TETRACOSANE	370	JNBU	UG/KG
			TRIACONTANE	490	JNBU	UG/KG
			UNKNOWN POLYNUCLEAR AR RT27.18	380	J	UG/KG
			UNKNOWN POLYNUCLEAR AR RT30.06	220	J	UG/KG
			UNKNOWN RT44.09	810	J	UG/KG
			UNKNOWN RT8.54	340	BJU	UG/KG
			UNKNOWN RT9.11	440	BJU	UG/KG
	AB028G	08-JUN-92	1-HEXADECANOL	270	JNBU	UG/KG
			2-PENTANONE	270	JN	UG/KG
			DOCOSANE	530	JNBU	UG/KG
			HEPTACOSANE	570	JNBU	UG/KG
			HEPTADECANE	590	JNBU	UG/KG
			TRITETRACONTANE	330	JNBU	UG/KG
			UNKNOWN RT10.27	220	J	UG/KG
			UNKNOWN RT29.53	290	J	UG/KG
			UNKNOWN RT43.19	170	J	UG/KG
			UNKNOWN RT8.54	450	BJU	UG/KG
			UNKNOWN RT9.11	440	BJU	UG/KG
			UNKNOWN RT9.94	230	JBU	UG/KG
	AB029A	10-JUN-92	11H-BENZO[B]FLUORENE	830	JN	UG/KG
			4,4'-DDD (TIC)	590	JN	UG/KG

SUMMARY OF TENTATIVELY IDENTIFIED COMPOUNDS (ASSAY CODE S)
NIROP

PROJECT NUMBER: 2313.13
BEGINNING DATE: 03-JUN-92
ENDING DATE: 30-JUL-92

	Sample ID	Sample Date	Parameter	Conc	Qualifiers	Units
MATRIX CODE: SB	AB029A	10-JUN-92	4,4'-DDE (TIC)	1000	JN	UG/KG
			4,4'-DDT (TIC)	470	JN	UG/KG
			4H-CYCLOPENTA[DEF]PHENANTHR	840	JN	UG/KG
			BENZO[B]NAPHTHO[2,1-D]THIOP	530	JN	UG/KG
			BENZO[C]PHENANTHRENE	630	JN	UG/KG
			BENZO[E]PYRENE	680	JN	UG/KG
			CYCLOPENTA[CD]PYRENE	580	JN	UG/KG
			PERYLENE	1900	JN	UG/KG
			PYRENE, 1-METHYL-	1300	JN	UG/KG
			UNKNOWN POLYNUCLEAR AR RT29.53	660	J	UG/KG
			UNKNOWN POLYNUCLEAR AR RT29.88	360	J	UG/KG
			UNKNOWN RT10.07	590	JBU	UG/KG
			UNKNOWN RT32.45	540	J	UG/KG
			UNKNOWN RT9.49	1600	BJU	UG/KG
	AB029H	10-JUN-92	ACETIC ACID, PENTYL ESTER	240	JNBU	UG/KG
			UNKNOWN RT8.47	400	JBU	UG/KG
			UNKNOWN RT9.50	1100	BJBU	UG/KG
	AB030A	09-JUN-92	11H-BENZO[A]FLUORENE	4000	JN	UG/KG
			11H-BENZO[B]FLUORENE	2000	JN	UG/KG
			4H-CYCLOPENTA[DEF]PHENANTHR	1900	JN	UG/KG
			7H-BENZ[DE]ANTHRACEN-7-ONE	2100	JN	UG/KG
			BENZO[B]NAPHTHO[2,1-D]THIOP	2600	JN	UG/KG
			BENZO[B]NAPHTHO[2,3-D]FURAN	1200	JN	UG/KG
			BENZO[C]PHENANTHRENE	2200	JN	UG/KG
			BENZO[E]PYRENE	6600	JN	UG/KG
			BENZO[J]FLUORANTHENE	1400	JN	UG/KG
			CHRYSENE, 5-METHYL-	1200	JN	UG/KG
			CYCLOPENTA[CD]PYRENE	2800	JN	UG/KG
			PERYLENE	2100	JN	UG/KG
			PHENANTHRO[4,5-BCD]THIOPHEN	1600	JN	UG/KG
			PYRENE, 1-METHYL-	2500	JN	UG/KG
			UNKNOWN POLYNUCLEAR AR RT27.09	1400	J	UG/KG
			UNKNOWN POLYNUCLEAR AR RT27.43	1300	J	UG/KG
			UNKNOWN POLYNUCLEAR AR RT28.75	1800	J	UG/KG
			UNKNOWN POLYNUCLEAR AR RT29.95	1600	J	UG/KG
			UNKNOWN RT29.59	1500	J	UG/KG
			UNKNOWN RT31.06	1200	J	UG/KG
	AB030G	09-JUN-92	2-PENTANONE	250	JNBU	UG/KG
			PERYLENE	160	JN	UG/KG
			UNKNOWN RT8.47	440	BJU	UG/KG
			UNKNOWN RT9.05	220	BJU	UG/KG
			UNKNOWN RT9.88	260	JBU	UG/KG

SUMMARY OF TENTATIVELY IDENTIFIED COMPOUNDS (ASSAY CODE S)
NIROP

PROJECT NUMBER: 2313.13
BEGINNING DATE: 03-JUN-92
ENDING DATE: 30-JUL-92

	Sample ID	Sample Date	Parameter	Conc	Qualifiers	Units
MATRIX CODE: SB	AB030G DUP	09-JUN-92	11H-BENZO[B]FLUORENE	170	JN	UG/KG
			2-PENTANONE	270	JNBU	UG/KG
			2-PENTANONE, 3-METHYL-	300	JNBU	UG/KG
			CYCLOPENTA[CD]PYRENE	170	JN	UG/KG
			PERYLENE	360	JN	UG/KG
			UNKNOWN RT28.54	160	J	UG/KG
			UNKNOWN RT8.47	270	BJU	UG/KG
			UNKNOWN RT9.04	300	BJU	UG/KG
	AB031A	15-JUN-92	DECANE	2400	JN	UG/KG
			DECANE, 2,3,5-TRIMETHYL-	3400	JN	UG/KG
			DECANE, 2-METHYL-	2900	JN	UG/KG
			DODECANE, 2-METHYL-6-PROPYL	3800	JN	UG/KG
			HEPTADECANE	5600	JN	UG/KG
			HEXADECANE	3100	JN	UG/KG
			NAPHTHALENE, 1,2-DIMETHYL-	4900	JN	UG/KG
			NAPHTHALENE, 1,3-DIMETHYL-	5700	JN	UG/KG
			NAPHTHALENE, 1,4,6-TRIMETHY	3300	JN	UG/KG
			NAPHTHALENE, 1-METHYL-	3500	JN	UG/KG
			NAPHTHALENE, 2,3,6-TRIMETHY	2400	JN	UG/KG
			NAPHTHALENE, 2-(1-METHYLETH	2500	JN	UG/KG
			NONACOSANE	2500	JN	UG/KG
			OCTADECANE	3100	JN	UG/KG
			PENTATRIACONTANE	2700	JN	UG/KG
			TETRADECANE	2500	JN	UG/KG
			TRICOSANE	3100	JN	UG/KG
			UNKNOWN ALKANE RT23.56	3100	J	UG/KG
			UNKNOWN ALKANE RT24.58	4200	J	UG/KG
			UNKNOWN ALKANE RT26.47	3000	J	UG/KG
	AB031G	15-JUN-92	BENZENE, 1,2,4-TRIMETHYL-	12000	JN	UG/KG
			BENZENE, 1-ETHYL-2-METHYL-	4100	JN	UG/KG
			DECANE, 2,3,6-TRIMETHYL-	2800	JN	UG/KG
			DOCOSANE	8800	JN	UG/KG
			DODECANE, 2-METHYL-6-PROPYL	7800	JN	UG/KG
			DODECANE, 4-METHYL-	3300	JN	UG/KG
			HEXADECANE	11000	JN	UG/KG
			HEXADECANE, 2,6,10,14-TETRA	5400	JN	UG/KG
			HEXADECANE, 7,9-DIMETHYL-	5600	JN	UG/KG
			NONADECANE, 3-METHYL-	4400	JN	UG/KG
			PENTADECANE	13000	JN	UG/KG
			TETRACOSANE, 2,6,10,15,19,2	5500	JN	UG/KG
			TRICOSANE	19000	JN	UG/KG
			TRIDECANE, 7-HEXYL-	6500	JN	UG/KG
			UNKNOWN ALKANE RT25.43	4900	J	UG/KG

SUMMARY OF TENTATIVELY IDENTIFIED COMPOUNDS (ASSAY CODE S)
NIROP

PROJECT NUMBER: 2313.13
BEGINNING DATE: 03-JUN-92
ENDING DATE: 30-JUL-92

	Sample ID	Sample Date	Parameter	Conc	Qualifiers	Units
MATRIX CODE: SB	AB031G	15-JUN-92	UNKNOWN ALKANE RT26.19	10000	J	UG/KG
			UNKNOWN ALKANE RT27.10	10000	J	UG/KG
			UNKNOWN ALKANE RT29.50	11000	J	UG/KG
			UNKNOWN RT25.59	5500	J	UG/KG
			UNKNOWN RT26.52	8800	J	UG/KG
			UNKNOWN RT27.43	9500	J	UG/KG
	AB032A	09-JUN-92	11H-BENZO[B]FLUORENE	18000	JN	UG/KG
			4H-CYCLOPENTA[DEF]PHENANTHR	33000	JN	UG/KG
			7H-BENZ[DE]ANTHRACEN-7-ONE	11000	JN	UG/KG
			9,10-ANTHRACENEDIONE	10000	JN	UG/KG
			ANTHRACENE, 2-METHYL-	11000	JN	UG/KG
			BENZO[B]NAPHTHO[2,1-D]THIOP	13000	JN	UG/KG
			BENZO[J]FLUORANTHENE	13000	JN	UG/KG
			CYCLOPENTA[CD]PYRENE	17000	JN	UG/KG
			DIBENZOTHIOPHENE	8500	JN	UG/KG
			NAPHTHALENE, 1-PHENYL-	10000	JN	UG/KG
			PERYLENE	30000	JN	UG/KG
			PHENANTHRENE, 3-METHYL-	11000	JN	UG/KG
			PHENANTHRO[4,5-BCD]THIOPHEN	9300	JN	UG/KG
			PYRENE, 1,3-DIMETHYL-	11000	JN	UG/KG
			PYRENE, 1-METHYL-	11000	JN	UG/KG
			PYRENE, 4-METHYL-	12000	JN	UG/KG
			UNKNOWN	7400	J	UG/KG
			UNKNOWN POLYNUCLEAR AR RT28.58	11000	J	UG/KG
			UNKNOWN POLYNUCLEAR AR RT33.82	7300	J	UG/KG
			[1,1'-BIPHENYL]-4,4'-DICARB	14000	JN	UG/KG
	AB032D	09-JUN-92	2-PENTANONE	190	JNBU	UG/KG
			UNKNOWN RT34.62	260	J	UG/KG
			UNKNOWN RT8.47	400	BJU	UG/KG
			UNKNOWN RT9.03	200	BJU	UG/KG
			UNKNOWN RT9.88	360	JBU	UG/KG
	AB033B	08-JUN-92	EICOSANE, 10-METHYL-	230	JNBU	UG/KG
			HEPTACOSANE	190	JNBU	UG/KG
			HEPTADECANE	190	JNBU	UG/KG
			UNKNOWN RT44.04	1600	J	UG/KG
			UNKNOWN RT44.92	200	J	UG/KG
			UNKNOWN RT8.54	360	BJU	UG/KG
			UNKNOWN RT9.09	320	BJU	UG/KG
	AB033H	08-JUN-92	UNKNOWN RT8.54	400	BJU	UG/KG
			UNKNOWN RT9.09	360	BJU	UG/KG

SUMMARY OF TENTATIVELY IDENTIFIED COMPOUNDS (ASSAY CODE S)
NIROP

PROJECT NUMBER: 2313.13
BEGINNING DATE: 03-JUN-92
ENDING DATE: 30-JUL-92

	Sample ID	Sample Date	Parameter	Conc	Qualifiers	Units
MATRIX CODE: SB	AB034A	08-JUN-92	11H-BENZO[A]FLUORENE	370	JN	UG/KG
			11H-BENZO[B]FLUORENE	320	JN	UG/KG
			2-PENTANONE	240	JN	UG/KG
			4,4'-DDE (TIC)	910	JN	UG/KG
			4,4'-DDT (TIC)	370	JN	UG/KG
			4H-CYCLOPENTA[DEF]PHENANTHR	290	JN	UG/KG
			BENZENE, 1-CHLORO-2-[2,2,2-	1000	JN	UG/KG
			BENZO[B]NAPHTHO[2,1-D]THIOP	390	JN	UG/KG
			CYCLOPENTA[CD]PYRENE	430	JN	UG/KG
			HEPTADECANE	330	JNBU	UG/KG
			HEXADECANE	490	JNBU	UG/KG
			HEXADECANE, 2,6,10,14-TETRA	280	JNBU	UG/KG
			PERYLENE	900	JN	UG/KG
			PYRENE, 1-METHYL-	710	JN	UG/KG
			UNKNOWN POLYNECLEAR AR RT30.05	280	J	UG/KG
			UNKNOWN POLYNUCLEAR AR RT27.17	410	J	UG/KG
			UNKNOWN POLYNUCLEAR AR29.68	290	J	UG/KG
			UNKNOWN RT44.05	620	J	UG/KG
			UNKNOWN RT8.54	320	BJU	UG/KG
			UNKNOWN RT9.11	440	BJU	UG/KG
	AB034D	08-JUN-92	HEXATRIACONTANE	150	JNBU	UG/KG
			UNKNOWN RT8.54	390	BJU	UG/KG
			UNKNOWN RT9.11	390	BJU	UG/KG
	AB035A	10-JUN-92	HENEICOSANE	180	JNBU	UG/KG
			UNKNOWN RT 43.00	360	J	UG/KG
			UNKNOWN RT10.89	480	JBU	UG/KG
			UNKNOWN RT8.34	290	JBU	UG/KG
			UNKNOWN RT8.91	470	JBU	UG/KG
			UNKNOWN RT9.37	150	JBU	UG/KG
			UNKNOWN RT9.75	340	JBU	UG/KG
	AB036A	15-JUN-92	11H-BENZO[B]FLUORENE	930	JN	UG/KG
			4H-CYCLOPENTA[DEF]PHENANTHR	450	JN	UG/KG
			BENZENE, 1,2,3-TRIMETHYL-	470	JN	UG/KG
			BENZENE, 1-ETHYL-4-METHYL-	340	JN	UG/KG
			BENZO[B]NAPHTHO[2,1-D]THIOP	310	JN	UG/KG
			PYRENE, 1-METHYL-	420	JN	UG/KG
			PYRIDINE, 4-(3-PHENYLPROPYL	400	JN	UG/KG
			UNKNOWN POLYNUCLEAR AR RT26.63	720	J	UG/KG
			UNKNOWN POLYNUCLEAR AR RT26.75	550	J	UG/KG
			UNKNOWN POLYNUCLEAR AR RT28.19	480	J	UG/KG
			UNKNOWN POLYNUCLEAR AR RT29.15	600	J	UG/KG
			UNKNOWN RT27.36	300	BJ	UG/KG

SUMMARY OF TENTATIVELY IDENTIFIED COMPOUNDS (ASSAY CODE S)
NIROP

PROJECT NUMBER: 2313.13
BEGINNING DATE: 03-JUN-92
ENDING DATE: 30-JUL-92

	Sample ID	Sample Date	Parameter	Conc	Qualifiers	Units
MATRIX CODE: SB	AB036A	15-JUN-92	UNKNOWN RT29.48	290	J	UG/KG
			UNKNOWN RT31.30	380	J	UG/KG
			UNKNOWN RT8.78	410	BJ	UG/KG
			UNKNOWN RT9.63	410	J	UG/KG
	AB037A	10-JUN-92	11H-BENZO[B]FLUORENE	350	JN	UG/KG
			4,4'-DDD (TIC)	550	JN	UG/KG
			4,4'-DDT (TIC)	320	JN	UG/KG
			4H-CYCLOPENTA[DEF]PHENANTHR	450	JN	UG/KG
			9H-XANTHEN-9-ONE, 1,3,8-TRI	2300	JN	UG/KG
			BENZO[B]NAPHTHO[2,1-D]THIOP	450	JN	UG/KG
			BENZO[C]PHENANTHRENE	540	JN	UG/KG
			CYCLOPENTA[CD]PYRENE	520	JN	UG/KG
			HEXADECANE	350	JN	UG/KG
			NAPHTHALENE, 2-(PHENYLMETHY	380	JN	UG/KG
			PERYLENE	960	JN	UG/KG
			PYRENE, 1-METHYL-	980	JN	UG/KG
			UNKNOWN POLYNUCLEAR AR RT26.98	610	J	UG/KG
			UNKNOWN POLYNUCLEAR AR RT29.58	510	J	UG/KG
			UNKNOWN POLYNUCLEAR AR RT29.93	340	J	UG/KG
			UNKNOWN RT10.11	400	J	UG/KG
			UNKNOWN RT31.06	270	J	UG/KG
			UNKNOWN RT43.67	230	J	UG/KG
			UNKNOWN RT8.47	220	JBU	UG/KG
			UNKNOWN RT9.52	990	BJU	UG/KG
	AB037D	10-JUN-92	HEXADECANE	150	JNBU	UG/KG
			OCTACOSANE	190	JNBU	UG/KG
			OCTADECANOIC ACID, BUTYL ES	310	JNBU	UG/KG
			TRICOSANE	140	JNBU	UG/KG
			UNKNOWN ALKANE	190	JBU	UG/KG
			UNKNOWN RT10.07	160	J	UG/KG
			UNKNOWN RT25.69	380	JBU	UG/KG
			UNKNOWN RT8.44	270	JBU	UG/KG
			UNKNOWN RT9.49	740	BJU	UG/KG
	AB038A	10-JUN-92	PERYLENE	250	JN	UG/KG
			UNKNOWN RT10.11	250	J	UG/KG
			UNKNOWN RT8.47	210	JBU	UG/KG
			UNKNOWN RT9.52	800	BJU	UG/KG
	AB038G	10-JUN-92	UNKNOWN RT8.49	270	JBU	UG/KG
			UNKNOWN RT8.64	140	BJU	UG/KG
			UNKNOWN RT9.03	250	BJU	UG/KG
			UNKNOWN RT9.21	310	BJU	UG/KG

SUMMARY OF TENTATIVELY IDENTIFIED COMPOUNDS (ASSAY CODE S)
NIROP

PROJECT NUMBER: 2313.13
BEGINNING DATE: 03-JUN-92
ENDING DATE: 30-JUL-92

	Sample ID	Sample Date	Parameter	Conc	Qualifiers	Units
MATRIX CODE: SB	AB038G	10-JUN-92	UNKNOWN RT9.52	1200	BJU	UG/KG
	AB039A	10-JUN-92	PENTATRIACONTANE	170	JNBU	UG/KG
			UNKNOWN RT43.72	2800	J	UG/KG
			UNKNOWN RT44.57	350	J	UG/KG
			UNKNOWN RT8.47	270	JBU	UG/KG
			UNKNOWN RT9.04	410	JBU	UG/KG
			UNKNOWN RT9.88	170	JBU	UG/KG
	AB039H	10-JUN-92	UNKNOWN RT8.47	330	JBU	UG/KG
			UNKNOWN RT9.03	290	JBU	UG/KG
			UNKNOWN RT9.88	210	JBU	UG/KG
	AB039H DUP	10-JUN-92	UNKNOWN RT8.41	320	JBU	UG/KG
			UNKNOWN RT8.98	200	JBU	UG/KG
	AB041A	08-JUN-92	DECANEDIOIC ACID, DIDECYL E	160	JNBU	UG/KG
			EICOSANE, 7-HEXYL-	230	JNBU	UG/KG
			HEXANEDIOIC ACID, DIOCTYL E	1800	BJNU	UG/KG
			UNKNOWN RT10.27	190	J	UG/KG
			UNKNOWN RT31.70	280	J	UG/KG
			UNKNOWN RT37.42	250	JBU	UG/KG
			UNKNOWN RT44.11	4800	J	UG/KG
			UNKNOWN RT44.96	1100	J	UG/KG
			UNKNOWN RT8.54	400	BJU	UG/KG
			UNKNOWN RT9.11	310	BJU	UG/KG
	AB041C	08-JUN-92	UNKNOWN RT44.04	800	J	UG/KG
			UNKNOWN RT8.54	250	BJU	UG/KG
			UNKNOWN RT9.11	200	BJU	UG/KG
	AB042A	09-JUN-92	UNKNOWN RT13.46	440	J	UG/KG
			UNKNOWN RT43.64	770	J	UG/KG
			UNKNOWN RT44.52	210	J	UG/KG
			UNKNOWN RT8.49	620	BJU	UG/KG
			UNKNOWN RT9.04	150	BJU	UG/KG
			UNKNOWN RT9.88	180	JBU	UG/KG
	AB042G	09-JUN-92	UNKNOWN RT8.46	380	BJU	UG/KG
			UNKNOWN RT9.03	150	BJU	UG/KG
			UNKNOWN RT9.86	140	JBU	UG/KG
	AB042G DUP	09-JUN-92	EICOSANE	140	JNBU	UG/KG
			HEXADECANE	160	JNBU	UG/KG
			HEXATRIACONTANE	150	JNBU	UG/KG

SUMMARY OF TENTATIVELY IDENTIFIED COMPOUNDS (ASSAY CODE S)
NIROP

PROJECT NUMBER: 2313.13
BEGINNING DATE: 03-JUN-92
ENDING DATE: 30-JUL-92

	Sample ID	Sample Date	Parameter	Conc	Qualifiers	Units
MATRIX CODE: SB	AB042G DUP	09-JUN-92	TRICOSANE	150	JNBU	UG/KG
			UNKNOWN RT25.70	220	JBU	UG/KG
			UNKNOWN RT27.55	180	JBU	UG/KG
			UNKNOWN RT8.47	310	BJU	UG/KG
			UNKNOWN RT9.03	150	BJU	UG/KG
			UNKNOWN RT9.86	150	JBU	UG/KG
	AB043D	20-JUL-92	5-UNDECENE	4100	JN	UG/KG
			CYCLOHEXANE, (1-METHYLPROPY	3500	JN	UG/KG
			CYCLOHEXANE, 1-METHYL-2-PRO	2100	JN	UG/KG
			CYCLOHEXANE, OCTYL-	4300	JN	UG/KG
			CYCLOHEXANE, UNDECYL-	6400	JN	UG/KG
			DECANE	6300	JN	UG/KG
			DECANE, 3-METHYL-	3200	JN	UG/KG
			EICOSANE	2100	JN	UG/KG
			HEXADECANE, 2,6,10,14-TETRA	6600	JN	UG/KG
			NAPHTHALENE, DECAHYDRO-2-ME	2000	JN	UG/KG
			NONANE, 2,6-DIMETHYL-	3700	JN	UG/KG
			NONANE, 3,7-DIMETHYL-	4700	JN	UG/KG
			NONANE, 4,5-DIMETHYL-	2200	JN	UG/KG
			PENTADECANE	2400	JN	UG/KG
			UNDECANE	11000	JN	UG/KG
			UNKNOWN ALKANE 24.11	2000	J	UG/KG
			UNKNOWN ALKANE RT28.86	2500	J	UG/KG
			UNKNOWN RT11.34	3000	J	UG/KG
			UNKNOWN RT12.86	2600	J	UG/KG
			UNKNOWN RT9.21	2300	JBU	UG/KG
	AB043H	20-JUL-92	1-UNDECENE, 4-METHYL-	2000	JN	UG/KG
			CYCLOHEXANE, EICOSYL-	4700	JN	UG/KG
			CYCLOHEXANE, UNDECYL-	5400	JN	UG/KG
			DECANE, 2,6,8-TRIMETHYL-	3000	JN	UG/KG
			DECANEDIOIC ACID, DIDECYL E	3700	JN	UG/KG
			DOCOSANE	2700	JN	UG/KG
			EICOSANE	4200	JN	UG/KG
			HEPTACOSANE	2000	JN	UG/KG
			HEPTADECANE	3900	JN	UG/KG
			HEPTADECANE, 2,6,10,15-TETR	5500	JN	UG/KG
			HEXADECANE, 2,6,10,14-TETRA	2400	JN	UG/KG
			NONACOSANE	9100	JN	UG/KG
			PENTADECANE, 2,6,10,14-TETR	2800	JN	UG/KG
			TRICOSANE	5400	JN	UG/KG
			TRIDECANE, 7-HEXYL-	4100	JN	UG/KG
			UNDECANE, 3-METHYL-	2500	JN	UG/KG
			UNKNOWN RT25.76	1800	J	UG/KG

SUMMARY OF TENTATIVELY IDENTIFIED COMPOUNDS (ASSAY CODE S)
NIROP

PROJECT NUMBER: 2313.13
BEGINNING DATE: 03-JUN-92
ENDING DATE: 30-JUL-92

	Sample ID	Sample Date	Parameter	Conc	Qualifiers	Units
MATRIX CODE: SB	AB043H	20-JUL-92	UNKNOWN RT26.10	4100	J	UG/KG
			UNKNOWN RT27.44	3800	J	UG/KG
			UNKNOWN RT27.62	1500	J	UG/KG
	AB044D	20-JUL-92	2-PENTANONE, 5-(1,2-PROPADI	1600	JN	UG/KG
			3-HEXENE-2,5-DIONE	1300	JN	UG/KG
			CYCLOHEXANE, (1-METHYLPROPY	2400	JN	UG/KG
			CYCLOHEXANE, EICOSYL-	4700	JN	UG/KG
			CYCLOHEXANE, UNDECYL-	3100	JN	UG/KG
			DECANE	4100	JN	UG/KG
			DECANE, 2-METHYL-	1500	JN	UG/KG
			DECANE, 3-METHYL-	2200	JN	UG/KG
			EICOSANE	1400	JN	UG/KG
			EICOSANE, 10-METHYL-	1500	JN	UG/KG
			HEPTADECANE	1500	JN	UG/KG
			HEXADECANOIC ACID	1300	JN	UG/KG
			NONANE, 2,6-DIMETHYL-	2400	JN	UG/KG
			OCTADECANE	1800	JN	UG/KG
			TRIDECANE	3900	JN	UG/KG
			UNDECANE	7300	JN	UG/KG
			UNKNOWN RT11.34	2300	J	UG/KG
			UNKNOWN RT12.86	1300	J	UG/KG
			UNKNOWN RT25.97	2600	J	UG/KG
			UNKNOWN RT9.21	1400	JBU	UG/KG
	AB044H	20-JUL-92	2-BUTANONE, 3-METHYL-	200	JN	UG/KG
			BUTANE	220	JNBU	UG/KG
			EICOSANE	170	JNBU	UG/KG
			HEXATRIACONTANE	160	JNBU	UG/KG
			UNKNOWN RT10.06	220	JBU	UG/KG
			UNKNOWN RT28.01	160	JBU	UG/KG
			UNKNOWN RT9.23	330	JBU	UG/KG
	AT001A	12-JUN-92	11H-BENZO[B]FLUORENE	2100	JN	UG/KG
			4,4'-DDD (TIC)	6700	JN	UG/KG
			4,4'-DDT (TIC)	16000	JN	UG/KG
			4H-CYCLOPENTA[DEF]PHENANTHR	2000	JN	UG/KG
			BENZENE, 1-CHLORO-2-[2,2-DI	5900	JN	UG/KG
			BENZO[B]NAPHTHO[2,1-D]THIOP	1700	JN	UG/KG
			BENZO[E]PYRENE	5400	JN	UG/KG
			CYCLOPENTA[CD]PYRENE	2100	JN	UG/KG
			PYRENE, 1-METHYL-	1700	JN	UG/KG
			PYRENE, 4-METHYL-	3500	JN	UG/KG
			TRIPHENYLENE	1600	JN	UG/KG
			UNKNOWN RT26.88	3800	J	UG/KG

SUMMARY OF TENTATIVELY IDENTIFIED COMPOUNDS (ASSAY CODE S)
NIROP

PROJECT NUMBER: 2313.13
BEGINNING DATE: 03-JUN-92
ENDING DATE: 30-JUL-92

	Sample ID	Sample Date	Parameter	Conc	Qualifiers	Units
MATRIX CODE: SB	AT001A	12-JUN-92	UNKNOWN RT29.52	1600	J	UG/KG
	AT001C	12-JUN-92	UNKNOWN RT8.33	240	BJU	UG/KG
			UNKNOWN RT8.90	230	BJU	UG/KG
	AT002A	12-JUN-92	11H-BENZO[A]FLUORENE	220	JN	UG/KG
			BENZO(A)PYRENE (TIC)	150	JN	UG/KG
			UNKNOWN ALKANE	140	JBU	UG/KG
			UNKNOWN RT10.87	990	J	UG/KG
			UNKNOWN RT42.87	380	J	UG/KG
			UNKNOWN RT8.32	450	BJU	UG/KG
			UNKNOWN RT8.90	560	BJU	UG/KG
			UNKNOWN RT9.73	460	BJU	UG/KG
	AT002B	12-JUN-92	UNKNOWN RT10.92	450	J	UG/KG
			UNKNOWN RT42.93	280	J	UG/KG
			UNKNOWN RT8.33	290	BJU	UG/KG
			UNKNOWN RT8.90	360	BJU	UG/KG
			UNKNOWN RT9.73	310	BJU	UG/KG
	AT002B DUP	12-JUN-92	UNKNOWN RT10.91	470	J	UG/KG
			UNKNOWN RT42.93	170	J	UG/KG
			UNKNOWN RT8.33	320	BJU	UG/KG
			UNKNOWN RT8.60	170	J	UG/KG
			UNKNOWN RT8.90	300	BJU	UG/KG
			UNKNOWN RT9.73	360	BJU	UG/KG
	AT003A	16-JUN-92	11H-BENZO[B]FLUORENE	310	JN	UG/KG
			4H-CYCLOPENTA[DEF]PHENANTHR	340	JN	UG/KG
			BENZO[E]PYRENE	650	JN	UG/KG
			UNKNOWN RT10.78	320	J	UG/KG
			UNKNOWN RT29.13	340	J	UG/KG
			UNKNOWN RT42.32	490	J	UG/KG
			UNKNOWN RT8.80	360	BJU	UG/KG
			UNKNOWN RT9.63	360	JBU	UG/KG
	AT003B	16-JUN-92	UNKNOWN RT33.30	440	J	UG/KG
			UNKNOWN RT42.47	4700	J	UG/KG
			UNKNOWN RT44.99	300	J	UG/KG
			UNKNOWN RT8.25	250	BJU	UG/KG
	AT004A	16-JUN-92	4,4'-DDE (TIC)	990	JN	UG/KG
			DOCOSANE	640	JN	UG/KG
			EICOSANE	500	JN	UG/KG
			HEPTACOSANE	590	JN	UG/KG

SUMMARY OF TENTATIVELY IDENTIFIED COMPOUNDS (ASSAY CODE S)
NIROP

PROJECT NUMBER: 2313.13
BEGINNING DATE: 03-JUN-92
ENDING DATE: 30-JUL-92

	Sample ID	Sample Date	Parameter	Conc	Qualifiers	Units
MATRIX CODE: SB	AT004A	16-JUN-92	HEPTADECANE, 2,6,10,15-TETR	700	JN	UG/KG
			HEXADECANE	640	JN	UG/KG
			HEXADECANE, 2,6,10,14-TETRA	990	JN	UG/KG
			NAPHTHALENE, 2,6-DIMETHYL-	470	JN	UG/KG
			OCTADECANE	620	JN	UG/KG
			PENTADECANE	440	JN	UG/KG
			PHENANTHRENE, 4-METHYL-	500	JN	UG/KG
			TETRACOSANE	610	JN	UG/KG
			TETRADECANE	420	JN	UG/KG
			TRICOSANE	730	JN	UG/KG
			UNKNOWN ALKANE	390	J	UG/KG
			UNKNOWN RT10.78	390	J	UG/KG
			UNKNOWN RT25.40	360	J	UG/KG
			UNKNOWN RT26.49	1000	J	UG/KG
			UNKNOWN RT8.82	660	BJU	UG/KG
			UNKNOWN RT9.65	430	JBU	UG/KG
	AT004B	16-JUN-92	CYCLOHEXANE, DECYL-	1800	JN	UG/KG
			DOCOSANE	3700	JN	UG/KG
			EICOSANE	1800	JN	UG/KG
			EICOSANE, 2-METHYL-	2300	JN	UG/KG
			HENTRIACONTANE	5700	JN	UG/KG
			HEPTADECANE	4700	JN	UG/KG
			HEPTADECANE, 2,6,10,15-TETR	2600	JN	UG/KG
			HEXADECANE	2900	JN	UG/KG
			HEXATRIACONTANE	5500	JN	UG/KG
			OCTACOSANE	4000	JN	UG/KG
			PENTADECANE	3000	JN	UG/KG
			TETRACOSANE, 2,6,10,15,19,2	3800	JN	UG/KG
			TETRADECANE	3400	JN	UG/KG
			TRICOSANE	6100	JN	UG/KG
			UNKNOWN ALKANE 30.14	3300	J	UG/KG
			UNKNOWN ALKANE RT25.39	2000	J	UG/KG
			UNKNOWN ALKANE RT26.80	1700	J	UG/KG
			UNKNOWN ALKANE RT29.73	1900	J	UG/KG
			UNKNOWN RT26.59	2100	J	UG/KG
			UNKNOWN RT39.69	2500	J	UG/KG
	AT005A	16-JUN-92	4-HEPTANONE	170	JN	UG/KG
			UNKNOWN RT10.76	400	J	UG/KG
			UNKNOWN RT42.28	220	J	UG/KG
			UNKNOWN RT8.23	230	BJU	UG/KG
			UNKNOWN RT8.80	450	JBU	UG/KG
			UNKNOWN RT9.63	320	JBU	UG/KG

SUMMARY OF TENTATIVELY IDENTIFIED COMPOUNDS (ASSAY CODE S)
NIROP

PROJECT NUMBER: 2313.13
BEGINNING DATE: 03-JUN-92
ENDING DATE: 30-JUL-92

	Sample ID	Sample Date	Parameter	Conc	Qualifiers	Units
MATRIX CODE: SB	AT005C	16-JUN-92	NONACOSANE	220	JBU	UG/KG
			UNKNOWN RT30.13	180	JBU	UG/KG
			UNKNOWN RT8.23	220	BJU	UG/KG
	AT005C DUP	16-JUN-92	UNKNOWN 32.74	170	JBU	UG/KG
			UNKNOWN RT37.23	190	JBU	UG/KG
			UNKNOWN RT8.25	300	BJU	UG/KG
			UNKNOWN RT8.88	200	JBU	UG/KG
	AT006A	17-JUN-92	11H-BENZO[B]FLUORENE	660	JN	UG/KG
			4,4'-DDD (TIC)	960	JN	UG/KG
			4,4'-DDE (TIC)	800	JN	UG/KG
			4,4'-DDT (TIC)	460	JN	UG/KG
			4H-CYCLOPENTA[DEF]PHENANTHR	400	JN	UG/KG
			BENZO[C]PHENANTHRENE	570	JN	UG/KG
			BENZO[GHI]FLUORANTHENE	500	JN	UG/KG
			PERYLENE	850	JN	UG/KG
			PYRENE, 1-METHYL-	970	JN	UG/KG
			UNKNOWN POLYNUCLEAR AROMATI	590	J	UG/KG
			UNKNOWN RT42.36	410	J	UG/KG
			UNKNOWN RT8.82	530	BJU	UG/KG
			UNKNOWN RT9.65	330	BJU	UG/KG
	AT006B	17-JUN-92	UNKNOWN	360	BJU	UG/KG
	AT007A	17-JUN-92	UNKNOWN RT42.31	600	J	UG/KG
			UNKNOWN RT8.23	350	BJU	UG/KG
			UNKNOWN RT9.64	150	BJU	UG/KG
	AT007C	17-JUN-92	CYCLOHEXANE, HEXYL-	5500	JN	UG/KG
			EICOSANE	5900	JN	UG/KG
			EICOSANE, 10-METHYL-	21000	JN	UG/KG
			HEXATRIACONTANE	11000	JN	UG/KG
			OCTADECANE	20000	JN	UG/KG
			PENTADECANE	18000	JN	UG/KG
			TRICOSANE	11000	JN	UG/KG
			TRIDECANE, 7-HEXYL-	7500	JN	UG/KG
			TRITETRACONTANE	6400	JN	UG/KG
			UNKNOWN	6600	J	UG/KG
			UNKNOWN ALKANE RT26.17	7300	J	UG/KG
			UNKNOWN ALKANE RT26.51	12000	J	UG/KG
			UNKNOWN ALKANE RT27.40	12000	J	UG/KG
			UNKNOWN ALKANE RT28.25	11000	J	UG/KG
			UNKNOWN ALKANE RT30.18	9900	J	UG/KG
			UNKNOWN RT23.42	9500	J	UG/KG

SUMMARY OF TENTATIVELY IDENTIFIED COMPOUNDS (ASSAY CODE S)
NIROP

PROJECT NUMBER: 2313.13
BEGINNING DATE: 03-JUN-92
ENDING DATE: 30-JUL-92

	Sample ID	Sample Date	Parameter	Conc	Qualifiers	Units
MATRIX CODE: SB	AT007C	17-JUN-92	UNKNOWN RT36.36	7000	J	UG/KG
	AT008A	17-JUN-92	UNKNOWN RT8.23	410	BJU	UG/KG
			UNKNOWN RT8.80	190	BJU	UG/KG
			UNKNOWN RT9.63	210	BJU	UG/KG
	AT008D	17-JUN-92	UNKNOWN RT8.23	280	BJU	UG/KG
			UNKNOWN RT8.80	210	BJU	UG/KG
			UNKNOWN RT9.63	660	BJU	UG/KG
	AT008D DUP	17-JUN-92	DOCOSANE	10000	JN	UG/KG
			EICOSANE, 10-METHYL-	17000	JN	UG/KG
			HEPTACOSANE	5100	JN	UG/KG
			HEPTADECANE	8500	JN	UG/KG
			HEXADECANE	5300	JN	UG/KG
			NONADECANE	27000	JN	UG/KG
			OCTACOSANE	7600	JN	UG/KG
			PENTACOSANE	23000	JN	UG/KG
			TETRACOSANE	4200	JN	UG/KG
			TRICOSANE	9100	JN	UG/KG
			TRIDECANE, 2-METHYL-	6200	JN	UG/KG
			UNDECANE, 5-METHYL-	4700	JN	UG/KG
			UNKNOWN	4200	J	UG/KG
			UNKNOWN ALKANE RT23.98	5000	J	UG/KG
			UNKNOWN ALKANE RT26.48	9900	J	UG/KG
			UNKNOWN ALKANE RT29.14	35000	J	UG/KG
			UNKNOWN ALKANE RT30.16	26000	J	UG/KG
			UNKNOWN ALKANE RT31.34	21000	J	UG/KG
	AT009B1	23-JUN-92	4-OCTEN-3-ONE	630	JN	UG/KG
			BENZENE, 1,3,5-TRIMETHYL-	750	JN	UG/KG
			CYCLOHEXANE, BUTYL-	970	JN	UG/KG
			DECANE, 3-METHYL-	1000	JN	UG/KG
			DECANE, 4-METHYL-	590	JN	UG/KG
			HEXACOSANE	920	JN	UG/KG
			HEXADECANE	4100	JN	UG/KG
			NONANE, 2-METHYL-	4500	JN	UG/KG
			OCTANE, 2,4,6-TRIMETHYL-	870	JN	UG/KG
			OCTANE, 3,3-DIMETHYL-	890	JN	UG/KG
			UNKNOWN RT10.96	920	J	UG/KG
			UNKNOWN RT11.11	910	J	UG/KG
			UNKNOWN RT9.00	700	J	UG/KG
			UNKNOWN RT9.34	610	J	UG/KG
			UNKNOWN RT9.83	710	J	UG/KG

SUMMARY OF TENTATIVELY IDENTIFIED COMPOUNDS (ASSAY CODE S)
NIROP

PROJECT NUMBER: 2313.13
BEGINNING DATE: 03-JUN-92
ENDING DATE: 30-JUL-92

	Sample ID	Sample Date	Parameter	Conc	Qualifiers	Units
MATRIX CODE: SB	AT009B1 DUP	23-JUN-92	BENZENE, 1,3,5-TRIMETHYL-	1500	JN	UG/KG
			BENZENE, 1-METHYL-3-(1-METH	1000	JN	UG/KG
			CYCLOHEXANE, 1-METHYL-3-PRO	960	JN	UG/KG
			CYCLOHEXANE, BUTYL-	1900	JN	UG/KG
			DECANE, 3-METHYL-	1900	JN	UG/KG
			DECANE, 4-METHYL-	1200	JN	UG/KG
			DECANE, 5-METHYL-	870	JN	UG/KG
			HEXADECANE	8800	JN	UG/KG
			NONANE	1100	JN	UG/KG
			NONANE, 2,6-DIMETHYL-	1800	JN	UG/KG
			NONANE, 2-METHYL-	10000	JN	UG/KG
			NONANE, 3-METHYL-	1400	JN	UG/KG
			PENTANE, 2,2,3,3-TETRAMETHY	1100	JN	UG/KG
			UNKNOWN RT10.94	970	J	UG/KG
			UNKNOWN RT11.11	1800	J	UG/KG
			UNKNOWN RT11.22	1800	J	UG/KG
			UNKNOWN RT12.61	1100	J	UG/KG
			UNKNOWN RT8.82	1200	J	UG/KG
			UNKNOWN RT8.98	960	J	UG/KG
			UNKNOWN RT9.39	2200	J	UG/KG
	AT009D1	24-JUN-92	CYCLOHEXANE, (1-METHYLPROPY	50000	JN	UG/KG
			CYCLOHEXANE, 1-METHYL-3-PRO	28000	JN	UG/KG
			DECANE	250000	JN	UG/KG
			DECANE, 2,5,6-TRIMETHYL-	35000	JN	UG/KG
			DECANE, 2,9-DIMETHYL-	27000	JN	UG/KG
			DECANE, 2-METHYL-	46000	JN	UG/KG
			DECANE, 3-METHYL-	64000	JN	UG/KG
			DECANE, 5-METHYL-	43000	JN	UG/KG
			HEXADECANE	230000	JN	UG/KG
			NONANE	38000	JN	UG/KG
			NONANE, 2,6-DIMETHYL-	50000	JN	UG/KG
			NONANE, 2-METHYL-	61000	JN	UG/KG
			NONANE, 3-METHYL-	37000	JN	UG/KG
			NONANE, 4-METHYL-	37000	JN	UG/KG
			OCTANE, 2,6-DIMETHYL-	41000	JN	UG/KG
			PENTADECANE	27000	JN	UG/KG
			UNDECANE	33000	JN	UG/KG
			UNKNOWN RT10.62	35000	J	UG/KG
			UNKNOWN RT12.34	29000	J	UG/KG
			UNKNOWN RT12.62	36000	J	UG/KG
	AT009D2	24-JUN-92	CYCLOHEXANE, DECYL- RT24.74	4900	JN	UG/KG
			CYCLOHEXANE, DECYL- RT27.72	10000	JN	UG/KG
			CYCLOHEXANE, EICOSYL-	12000	JN	UG/KG

SUMMARY OF TENTATIVELY IDENTIFIED COMPOUNDS (ASSAY CODE S)
NIROP

PROJECT NUMBER: 2313.13
BEGINNING DATE: 03-JUN-92
ENDING DATE: 30-JUL-92

	Sample ID	Sample Date	Parameter	Conc	Qualifiers	Units
MATRIX CODE: SB	AT009D2	24-JUN-92	CYCLOHEXANE, UNDECYL-	10000	JN	UG/KG
			DOCOSANE	19000	JN	UG/KG
			HEPTACOSANE	7000	JN	UG/KG
			HEXADECANE	14000	JN	UG/KG
			HEXADECANE, 2,6,10,14-TETRA	4600	JN	UG/KG
			HEXATRIACONTANE	8400	JN	UG/KG
			NONACOSANE	7400	JN	UG/KG
			NONADECANE	4400	JN	UG/KG
			NONANE, 2,6-DIMETHYL-	3700	JN	UG/KG
			NONANE, 3-METHYL-5-PROPYL-	7100	JN	UG/KG
			OCTADECANE	4600	JN	UG/KG
			PENTADECANE	4000	JN	UG/KG
			PENTANE, 2,3,3-TRIMETHYL-	6800	JN	UG/KG
			PHOSPHONIC ACID, DIOCTADECY	4000	JN	UG/KG
			TRICOSANE	11000	JN	UG/KG
			UNDECANE, 3-METHYL-	6800	JN	UG/KG
			UNKNOWN ALKANE	6300	J	UG/KG
	AT009D3	24-JUN-92	UNKNOWN RT10.96	170	J	UG/KG
			UNKNOWN RT8.42	400	BJU	UG/KG
			UNKNOWN RT9.00	220	JBU	UG/KG
			UNKNOWN RT9.83	200	J	UG/KG
	AT009E1	25-JUN-92	UNKNOWN	340	BJU	UG/KG
	AT009E2	26-JUN-92	BENZENE, 1,3,5-TRIMETHYL-	350	JN	UG/KG
			UNDECANE	440	JN	UG/KG
			UNKNOWN RT12.59	150	J	UG/KG
			UNKNOWN RT8.42	330	BJU	UG/KG
			UNKNOWN RT9.00	190	JBU	UG/KG
	BB001A	15-JUN-92	UNKNOWN RT10.86	700	J	UG/KG
			UNKNOWN RT42.85	140	J	UG/KG
			UNKNOWN RT8.33	370	BJU	UG/KG
			UNKNOWN RT8.90	460	BJU	UG/KG
			UNKNOWN RT9.73	410	BJU	UG/KG
	BB001B	15-JUN-92	UNKNOWN	240	BJU	UG/KG
	BB001C	07-JUL-92	CYCLOPENTANE, 1,1,3,4-TETRA	820	JNBU	UG/KG
			DOCOSANE	1100	JNBU	UG/KG
			HEPTACOSANE	2400	JN	UG/KG
			HEXADECANOIC ACID	750	JNBU	UG/KG
			OCTADECANE	1200	JNBU	UG/KG
			OCTANE, 2,3,7-TRIMETHYL-	1200	JN	UG/KG

SUMMARY OF TENTATIVELY IDENTIFIED COMPOUNDS (ASSAY CODE S)
NIROP

PROJECT NUMBER: 2313.13
BEGINNING DATE: 03-JUN-92
ENDING DATE: 30-JUL-92

	Sample ID	Sample Date	Parameter	Conc	Qualifiers	Units
MATRIX CODE: SB	BB001C	07-JUL-92	PENTATRIACONTANE	920	JNBU	UG/KG
			PHOSPHONIC ACID, DIOCTADECY	790	JN	UG/KG
			UNKNOWN RT23.03	1300	J	UG/KG
			UNKNOWN RT23.31	1600	J	UG/KG
			UNKNOWN RT23.74	2100	J	UG/KG
			UNKNOWN RT23.90	12000	J	UG/KG
			UNKNOWN RT27.26	1600	JBU	UG/KG
			UNKNOWN RT27.62	1000	J	UG/KG
			UNKNOWN RT28.15	690	JBU	UG/KG
			UNKNOWN RT30.23	890	J	UG/KG
			UNKNOWN RT35.67	740	J	UG/KG
			UNKNOWN RT8.23	870	BJU	UG/KG
			UNKNOWN RT8.80	2400	JBU	UG/KG
			UNKNOWN RT9.63	950	JBU	UG/KG
	BB002B	15-JUN-92	11H-BENZO[B]FLUORENE	620	JN	UG/KG
			4H-CYCLOPENTA[DEF]PHENANTHR	170	JN	UG/KG
			ANTHRACENE, 9,10-DICHLORO-	600	JN	UG/KG
			BENZO[GHI]FLUORANTHENE	250	JN	UG/KG
			BENZO[J]FLUORANTHENE	310	JN	UG/KG
			PYRENE, 1-METHYL-	180	JN	UG/KG
			UNKNOWN RT10.87	230	J	UG/KG
			UNKNOWN RT26.26	220	J	UG/KG
			UNKNOWN RT27.51	240	J	UG/KG
			UNKNOWN RT28.35	270	J	UG/KG
			UNKNOWN RT29.63	450	J	UG/KG
			UNKNOWN RT42.88	270	J	UG/KG
			UNKNOWN RT8.32	260	BJU	UG/KG
			UNKNOWN RT8.89	330	BJU	UG/KG
			UNKNOWN RT9.72	320	BJU	UG/KG
	BB002G	15-JUN-92	UNKNOWN	230	BJU	UG/KG
			UNKNOWN RT10.78	460	J	UG/KG
			UNKNOWN RT29.00	190	J	UG/KG
			UNKNOWN RT8.80	390	BJU	UG/KG
			UNKNOWN RT9.63	280	JBU	UG/KG
	BB002G DUP	15-JUN-92	DOCOSANE	160	JNBU	UG/KG
			HEPTACOSANE	190	JNBU	UG/KG
			OCTACOSANE	190	JNBU	UG/KG
			PENTATRIACONTANE	210	JNBU	UG/KG
			UNKNOWN RT25.44	300	BJU	UG/KG
			UNKNOWN RT27.27	250	BJU	UG/KG
			UNKNOWN RT30.15	170	JBU	UG/KG
			UNKNOWN RT8.24	350	BJU	UG/KG

SUMMARY OF TENTATIVELY IDENTIFIED COMPOUNDS (ASSAY CODE S)
NIROP

PROJECT NUMBER: 2313.13
BEGINNING DATE: 03-JUN-92
ENDING DATE: 30-JUL-92

	Sample ID	Sample Date	Parameter	Conc	Qualifiers	Units
MATRIX CODE: SB	BB002G DUP	15-JUN-92	UNKNOWN RT8.91	630	BJU	UG/KG
			UNKNOWN RT9.65	440	JBU	UG/KG
	BB003A	16-JUN-92	3-HEXANONE, 2-METHYL-	180	JN	UG/KG
			TETRACOSANE, 2,6,10,15,19,2	290	JNBU	UG/KG
			UNKNOWN RT10.76	680	J	UG/KG
			UNKNOWN RT27.39	370	BJU	UG/KG
			UNKNOWN RT36.32	170	J	UG/KG
			UNKNOWN RT42.29	190	J	UG/KG
			UNKNOWN RT8.23	270	BJU	UG/KG
			UNKNOWN RT8.80	460	BJU	UG/KG
			UNKNOWN RT9.63	340	JBU	UG/KG
	BB003D	16-JUN-92	HEPTADECANE	710	JNBU	UG/KG
			HEXANEDIOIC ACID, DIOCTYL E	420	JNBU	UG/KG
			HEXATRIACONTANE	1300	JNBU	UG/KG
			TRIACONTANE	570	JNBU	UG/KG
			TRITETRACONTANE	210	JNBU	UG/KG
			UNKNOWN 8.80	650	BJU	UG/KG
			UNKNOWN ALKANE	1200	J	UG/KG
			UNKNOWN RT10.78	520	J	UG/KG
			UNKNOWN RT28.36	300	J	UG/KG
			UNKNOWN RT29.01	1400	J	UG/KG
			UNKNOWN RT8.23	310	BJU	UG/KG
			UNKNOWN RT9.63	310	JBU	UG/KG
	BG001A	03-JUN-92	2-BUTANONE, 3-METHYL-	330	JN	UG/KG
			DOCOSANE	1000	JNBU	UG/KG
			HENEICOSANE	150	JNBU	UG/KG
			HEPTACOSANE	580	JNBU	UG/KG
			HEXANEDIOIC ACID, DIOCTYL E	840	JNBU	UG/KG
			PENTATRIACONTANE	370	JN	UG/KG
			TRICOSANE	160	JNBU	UG/KG
			UNKNOWN RT25.83	140	BJU	UG/KG
			UNKNOWN RT44.18	270	J	UG/KG
			UNKNOWN RT8.57	270	BJU	UG/KG
			UNKNOWN RT9.14	310	BJU	UG/KG
			UNKNOWN RT9.98	160	JBU	UG/KG
	BG001D	03-JUN-92	HEXANEDIOIC ACID, DIOCTYL E	610	JNBU	UG/KG
			UNKNOWN	230	BJU	UG/KG
	BG002A	03-JUN-92	3-HEXENE-2,5-DIONE	160	JNBU	UG/KG
			HEXANEDIOIC ACID, DIOCTYL E	370	JNBU	UG/KG
			UNKNOWN RT8.57	300	BJU	UG/KG

SUMMARY OF TENTATIVELY IDENTIFIED COMPOUNDS (ASSAY CODE S)
NIROP

PROJECT NUMBER: 2313.13
BEGINNING DATE: 03-JUN-92
ENDING DATE: 30-JUL-92

	Sample ID	Sample Date	Parameter	Conc	Qualifiers	Units
MATRIX CODE: SB	BG002A	03-JUN-92	UNKNOWN RT9/14	210	BJU	UG/KG
	BG002D	03-JUN-92	2-PENTANONE, 3-METHYL-	210	JNBU	UG/KG
			2-PROPANONE, 1-HYDROXY-	730	JN	UG/KG
			DOCOSANE	340	JNBU	UG/KG
			HEPTADECANE	170	JNBU	UG/KG
			HEXANEDIOIC ACID, DIOCTYL E	680	JNBU	UG/KG
			HEXATRIACONTANE	640	JNBU	UG/KG
			OCTACOSANE	630	JNBU	UG/KG
			PHOSPHONIC ACID, DIOCTADECY	240	JN	UG/KG
			TETRATETRACONTANE	520	JNBU	UG/KG
			TRIACONTANE	290	JNBU	UG/KG
			UNKNOWN RT10.92	200	J	UG/KG
			UNKNOWN RT25.83	180	BJBU	UG/KG
			UNKNOWN RT27.68	180	BJBU	UG/KG
			UNKNOWN RT28.87	430	J	UG/KG
			UNKNOWN RT33.97	170	J	UG/KG
			UNKNOWN RT38.20	200	J	UG/KG
			UNKNOWN RT8.57	250	BJU	UG/KG
			UNKNOWN RT9.13	290	BJU	UG/KG
	BG003A	03-JUN-92	TRICOSANE	390	JNBU	UG/KG
			UNKNOWN RT8.57	260	BJU	UG/KG
			UNKNOWN RT9.14	190	BJU	UG/KG
	BG003D	03-JUN-92	UNKNOWN RT8.57	280	BJU	UG/KG
			UNKNOWN RT9.14	240	BJU	UG/KG
	BG004A	03-JUN-92	UNKNOWN RT8.57	240	BJU	UG/KG
			UNKNOWN RT9.14	170	BJU	UG/KG
	BG004D	03-JUN-92	DOCOSANE	160	JNBU	UG/KG
			HEPTADECANE	160	JNBU	UG/KG
			HEXADECANE	160	JNBU	UG/KG
			OCTACOSANE	170	JNBU	UG/KG
			TRICOSANE	140	JNBU	UG/KG
			UNKNOWN RT25.83	270	BJU	UG/KG
			UNKNOWN RT27.68	270	BJU	UG/KG
			UNKNOWN RT37.51	140	JBU	UG/KG
			UNKNOWN RT8.57	250	BJU	UG/KG
			UNKNOWN RT9.14	200	BJU	UG/KG
	BG005A	03-JUN-92	UNKNOWN	250	BJU	UG/KG
	BG005D	03-JUN-92	UNKNOWN RT8.57	260	BJU	UG/KG

SUMMARY OF TENTATIVELY IDENTIFIED COMPOUNDS (ASSAY CODE S)
NIROP

PROJECT NUMBER: 2313.13
BEGINNING DATE: 03-JUN-92
ENDING DATE: 30-JUL-92

	Sample ID	Sample Date	Parameter	Conc	Qualifiers	Units
MATRIX CODE: SB	BG005D	03-JUN-92	UNKNOWN RT9.14	150	BJU	UG/KG
	BG005D DUP	03-JUN-92	HEPTADECANE	180	JNBU	UG/KG
			HEPTADECANE, 2,6,10,15-TETR	200	JNBU	UG/KG
			HEXADECANE	200	JNBU	UG/KG
			HEXATRIACONTANE	140	JNBU	UG/KG
			OCTACOSANE	170	JNBU	UG/KG
			PENTADECANE	170	JNBU	UG/KG
			UNKNOWN RT25.84	410	BJU	UG/KG
			UNKNOWN RT27.67	380	BJU	UG/KG
			UNKNOWN RT37.54	140	JBU	UG/KG
			UNKNOWN RT8.57	270	BJU	UG/KG
			UNKNOWN RT9.14	160	BJU	UG/KG
	BG006A	03-JUN-92	UNKNOWN RT44.19	480	J	UG/KG
			UNKNOWN RT45.10	150	J	UG/KG
			UNKNOWN RT8.57	270	BJU	UG/KG
			UNKNOWN RT9.14	210	BJU	UG/KG
	BG006D	03-JUN-92	3-HEXENE-2,5-DIONE	160	JNBU	UG/KG
			DOCOSANE, 11-DECYL-	230	JNBU	UG/KG
			PENTATRIACONTANE	190	JNBU	UG/KG
			TRITETRACONTANE	340	JNBU	UG/KG
			UNKNOWN	270	BJU	UG/KG
	BG007A	04-JUN-92	HEPTACOSANE	300	JNBU	UG/KG
			HEXANE, 2,4,4-TRIMETHYL-	370	JNBU	UG/KG
			UNKNOWN RT34.22	200	JBU	UG/KG
			UNKNOWN RT36.72	410	JBU	UG/KG
			UNKNOWN RT44.35	3000	J	UG/KG
			UNKNOWN RT45.20	160	J	UG/KG
			UNKNOWN RT45.27	150	J	UG/KG
			UNKNOWN RT8.59	380	BJU	UG/KG
			UNKNOWN RT9.16	260	BJU	UG/KG
	BG007D	04-JUN-92	UNKNOWN RT8.58	400	BJU	UG/KG
			UNKNOWN RT9.16	190	BJU	UG/KG
	BG008A	04-JUN-92	HEXANEDIOIC ACID, DIOCTYL E	530	JNBU	UG/KG
			UNKNOWN RT8.59	450	BJU	UG/KG
			UNKNOWN RT9.16	260	BJU	UG/KG
	BG008D	04-JUN-92	HEXANEDIOIC ACID, DIOCTYL E	260	JNBU	UG/KG
			UNKNOWN RT8.59	440	BJU	UG/KG
			UNKNOWN RT9.16	200	BJU	UG/KG

SUMMARY OF TENTATIVELY IDENTIFIED COMPOUNDS (ASSAY CODE S)
NIROP

PROJECT NUMBER: 2313.13
BEGINNING DATE: 03-JUN-92
ENDING DATE: 30-JUL-92

	Sample ID	Sample Date	Parameter	Conc	Qualifiers	Units
MATRIX CODE: SB	BG009A	04-JUN-92	HEXANEDIOIC ACID, DIOCTYL E	410	JNU	UG/KG
			UNKNOWN RT8.59	400	BJU	UG/KG
			UNKNOWN RT9.16	210	BJU	UG/KG
	BG009D	04-JUN-92	UNKNOWN RT8.59	480	BJU	UG/KG
			UNKNOWN RT9.16	260	BJU	UG/KG
			UNKNOWN RT9.99	240	JBU	UG/KG
	BG009D DUP	04-JUN-92	UNKNOWN RT8.59	470	BJU	UG/KG
			UNKNOWN RT9.14	210	BJU	UG/KG
	BG010A	04-JUN-92	DOCOSANE	240	JNBU	UG/KG
			DOTRIACONTANE	300	JNBU	UG/KG
			HEPTACOSANE	500	JNBU	UG/KG
			HEXATRIACONTANE	380	JNBU	UG/KG
			TETRATETRACONTANE	210	JNBU	UG/KG
			UNKNOWN RT31.04	190	J	UG/KG
			UNKNOWN RT34.21	510	J	UG/KG
			UNKNOWN RT44.31	1900	J	UG/KG
			UNKNOWN RT45.23	300	J	UG/KG
			UNKNOWN RT8.58	510	BJU	UG/KG
			UNKNOWN RT9.14	240	BJU	UG/KG
			UNKNOWN RT9.99	570	JBU	UG/KG
	BG010D	04-JUN-92	UNKNOWN RT8.58	450	BJU	UG/KG
			UNKNOWN RT9.16	210	BJU	UG/KG
	BT001A	18-JUN-92	11H-BENZO[A]FLUORENE	360	JN	UG/KG
			11H-BENZO[B]FLUORENE	220	JN	UG/KG
			4H-CYCLOPENTA[DEF]PHENANTHR	190	JN	UG/KG
			BENZO[E]PYRENE	340	JN	UG/KG
			BENZO[GHI]FLUORANTHENE	180	JN	UG/KG
			UNKNOWN ALKANE	210	J	UG/KG
			UNKNOWN POLYNUCLEAR AR RT26.75	170	J	UG/KG
			UNKNOWN POLYNUCLEAR AR RT27.01	150	J	UG/KG
			UNKNOWN POLYNUCLEAR AR RT28.21	250	J	UG/KG
			UNKNOWN POLYNUCLEAR AR RT29.16	150	J	UG/KG
			UNKNOWN RT42.35	190	J	UG/KG
			UNKNOWN RT8.80	180	BJU	UG/KG
			UNKNOWN RT9.63	240	JBU	UG/KG
	BT001B	18-JUN-92	UNKNOWN RT42.31	810	J	UG/KG
			UNKNOWN RT8.23	240	BJU	UG/KG
			UNKNOWN RT8.80	230	BJU	UG/KG
			UNKNOWN RT9.63	160	JBU	UG/KG

SUMMARY OF TENTATIVELY IDENTIFIED COMPOUNDS (ASSAY CODE S)
NIROP

PROJECT NUMBER: 2313.13
BEGINNING DATE: 03-JUN-92
ENDING DATE: 30-JUL-92

	Sample ID	Sample Date	Parameter	Conc	Qualifiers	Units
MATRIX CODE: SB	BT002A	17-JUN-92	UNKNOWN 32.70	190	J	UG/KG
			UNKNOWN RT10.79	280	J	UG/KG
			UNKNOWN RT42.29	430	J	UG/KG
			UNKNOWN RT8.23	370	BJU	UG/KG
			UNKNOWN RT8.80	810	BJU	UG/KG
			UNKNOWN RT9.63	480	BJU	UG/KG
	BT002B	17-JUN-92	HENEICOSANE	280	JNBU	UG/KG
			HEXATRIACONTANE	650	JNBU	UG/KG
			TRICOSANE	310	JNBU	UG/KG
			UNKNOWN RT23.11	240	J	UG/KG
			UNKNOWN RT30.22	240	J	UG/KG
			UNKNOWN RT32.85	350	J	UG/KG
			UNKNOWN RT36.31	390	J	UG/KG
			UNKNOWN RT41.56	240	J	UG/KG
			UNKNOWN RT8.23	470	BJU	UG/KG
			UNKNOWN RT8.80	290	BJU	UG/KG
			UNKNOWN RT9.63	1200	BJU	UG/KG
	BT004A	18-JUN-92	TRICOSANE	180	JNBU	UG/KG
			UNKNOWN RT25.43	290	BJU	UG/KG
			UNKNOWN RT27.26	270	BJU	UG/KG
			UNKNOWN RT42.36	360	J	UG/KG
			UNKNOWN RT8.24	270	BJU	UG/KG
			UNKNOWN RT8.82	230	BJU	UG/KG
	BT004D	18-JUN-92	HENTRIACONTANE	220	JNBU	UG/KG
			OCTACOSANE	200	JNBU	UG/KG
			UNKNOWN ALKANE	230	JBU	UG/KG
			UNKNOWN RT25.42	330	BJU	UG/KG
			UNKNOWN RT27.25	290	BJU	UG/KG
			UNKNOWN RT8.24	270	BJU	UG/KG
			UNKNOWN RT8.81	290	BJU	UG/KG
			UNKNOWN RT9.65	230	JBU	UG/KG
	BT004D DUP	18-JUN-92	HEXADECANE, 2,6,10,14-TETRA	320	JNBU	UG/KG
			OCTACOSANE	170	JNBU	UG/KG
			OCTADECANE	380	JNBU	UG/KG
			PENTADECANE	210	JNBU	UG/KG
			TRIACONTANE	410	JNBU	UG/KG
			UNKNOWN RT10.79	240	J	UG/KG
			UNKNOWN RT25.42	270	BJU	UG/KG
			UNKNOWN RT27.26	230	BJU	UG/KG
			UNKNOWN RT29.04	220	J	UG/KG
			UNKNOWN RT8.24	310	BJU	UG/KG

SUMMARY OF TENTATIVELY IDENTIFIED COMPOUNDS (ASSAY CODE S)
NIROP

PROJECT NUMBER: 2313.13
BEGINNING DATE: 03-JUN-92
ENDING DATE: 30-JUL-92

	Sample ID	Sample Date	Parameter	Conc	Qualifiers	Units
MATRIX CODE: SB	BT004D DUP	18-JUN-92	UNKNOWN RT8.82	410	BJU	UG/KG
			UNKNOWN RT9.65	280	JBU	UG/KG
	DB029A	11-JUN-92	11H-BENZO[A]FLUORENE	250	JN	UG/KG
			11H-BENZO[B]FLUORENE	290	JN	UG/KG
			4H-1-BENZOPYRAN-4-ONE, 5,7-	280	JN	UG/KG
			7H-BENZ[DE]ANTHRACEN-7-ONE	240	JN	UG/KG
			BENZO[B]NAPHTHO[2,1-D]THIOP	240	JN	UG/KG
			BENZO[E]PYRENE	900	JN	UG/KG
			BENZO[GHI]FLUORANTHENE	240	JN	UG/KG
			BENZ[A]ANTHRACENE, 12-METHY	200	JN	UG/KG
			PERYLENE	180	JN	UG/KG
			PYRENE, 1-METHYL-	530	JN	UG/KG
			PYRENE, 4-METHYL-	180	JN	UG/KG
			UNKNOWN RT28.38	350	J	UG/KG
			UNKNOWN RT30.80	350	J	UG/KG
	DB029E DUP	11-JUN-92	5-EICOSENE, (E)-	190	JNBU	UG/KG
			DOCOSANE	290	JNBU	UG/KG
			HEPTACOSANE	210	JNBU	UG/KG
			HEPTADECANE	290	JNBU	UG/KG
			HEXADECANE	360	JNBU	UG/KG
			PENTADECANE	240	JNBU	UG/KG
			TRIACONTANE	230	JNBU	UG/KG
			TRICOSANE	210	JNBU	UG/KG
			UNKNOWN RT25.56	740	JBU	UG/KG
			UNKNOWN RT27.41	600	JBU	UG/KG
			UNKNOWN RT8.33	320	BJU	UG/KG
			UNKNOWN RT8.90	210	JBU	UG/KG
	DB030A	12-JUN-92	2-BUTANONE, 2-METHYL-	300	JN	UG/KG
			4-HEPTANONE	240	JN	UG/KG
			UNKNOWN RT43.03	270	J	UG/KG
			UNKNOWN RT8.34	290	BJU	UG/KG
			UNKNOWN RT8.91	290	JBU	UG/KG
			UNKNOWN RT9.75	280	JBU	UG/KG
	DB030E	12-JUN-92	UNKNOWN RT8.34	250	BJU	UG/KG
			UNKNOWN RT8.92	200	JBU	UG/KG
	DB031A	11-JUN-92	HEPTADECANE, 9-OCTYL-	180	JN	UG/KG
			UNKNOWN RT10.87	220	J	UG/KG
			UNKNOWN RT43.03	1800	J	UG/KG
			UNKNOWN RT8.34	370	BJU	UG/KG
			UNKNOWN RT8.91	190	JBU	UG/KG

SUMMARY OF TENTATIVELY IDENTIFIED COMPOUNDS (ASSAY CODE S)
NIROP

PROJECT NUMBER: 2313.13
BEGINNING DATE: 03-JUN-92
ENDING DATE: 30-JUL-92

	Sample ID	Sample Date	Parameter	Conc	Qualifiers	Units
MATRIX CODE: SB	DB031A	11-JUN-92	UNKNOWN RT9.75	230	JBU	UG/KG
	DB031F	11-JUN-92	BENZENE, 1,2,3,4-TETRAMETHY	12000	JN	UG/KG
			BENZENE, 1,3-DIETHYL-5-METH	3800	JN	UG/KG
			CYCLOHEXANE, 1-ETHYL-1,3-DI	4800	JN	UG/KG
			DECANE, 5-METHYL-	6400	JN	UG/KG
			HEPTADECANE, 2,6,10,14-TETR	8200	JN	UG/KG
			HEPTANE, 2,3,6-TRIMETHYL-	5700	JN	UG/KG
			HEPTANE, 3-ETHYL-2-METHYL-	4600	JNBU	UG/KG
			NAPHTHALENE, 1,2,3,4-TETRAH	6100	JN	UG/KG
			NAPHTHALENE, DECAHYDRO-, TR	4900	JN	UG/KG
			NAPHTHALENE, DECAHYDRO-2-ME	12000	JN	UG/KG
			NONANE, 2,6-DIMETHYL-	11000	JN	UG/KG
			NONANE, 3,7-DIMETHYL-	5000	JN	UG/KG
			UNDECANE, 2,6-DIMETHYL-	5300	JN	UG/KG
			UNDECANE, 3-METHYL-	3100	JN	UG/KG
			UNKNOWN RT10.70	6400	J	UG/KG
			UNKNOWN RT11.14	6400	J	UG/KG
			UNKNOWN RT11.60	18000	J	UG/KG
			UNKNOWN RT11.84	3800	J	UG/KG
			UNKNOWN RT12.52	13000	J	UG/KG
			UNKNOWN RT9.29	6900	J	UG/KG
	DB032A	11-JUN-92	UNKNOWN RT8.41	300	JBU	UG/KG
			UNKNOWN RT8.98	260	JBU	UG/KG
			UNKNOWN RT9.81	200	JBU	UG/KG
	DB032C	11-JUN-92	UNKNOWN	290	BJU	UG/KG
	DB033A	07-JUL-92	HEXANEDIOIC ACID, DIOCTYL E	370	BJNU	UG/KG
			TETRACOSANE, 2,6,10,15,19,2	370	JN	UG/KG
			UNKNOWN RT33.25	190	J	UG/KG
			UNKNOWN RT42.32	1700	J	UG/KG
			UNKNOWN RT8.23	330	BJU	UG/KG
			UNKNOWN RT8.80	350	JBU	UG/KG
			UNKNOWN RT9.65	230	JBU	UG/KG
	DB033E	07-JUL-92	HEXANEDIOIC ACID, DIOCTYL E	1200	BJNU	UG/KG
			UNKNOWN ALKANE	210	J	UG/KG
			UNKNOWN RT42.32	1100	J	UG/KG
			UNKNOWN RT43.12	160	J	UG/KG
			UNKNOWN RT8.23	310	BJU	UG/KG
			UNKNOWN RT8.80	330	JBU	UG/KG
			UNKNOWN RT9.65	280	JBU	UG/KG

SUMMARY OF TENTATIVELY IDENTIFIED COMPOUNDS (ASSAY CODE S)
NIROP

PROJECT NUMBER: 2313.13
BEGINNING DATE: 03-JUN-92
ENDING DATE: 30-JUL-92

	Sample ID	Sample Date	Parameter	Conc	Qualifiers	Units
MATRIX CODE: SB	DB034A	07-JUL-92	.GAMMA.-SELINENE	880	JN	UG/KG
			HEXANEDIOIC ACID, DIOCTYL E	590	BJNU	UG/KG
			UNKNOWN RT42.41	4100	J	UG/KG
			UNKNOWN RT8.25	380	BJU	UG/KG
			UNKNOWN RT8.82	420	JBU	UG/KG
			UNKNOWN RT9.65	190	JBU	UG/KG
	DB034C	07-JUL-92	BUTANAL, 2-ETHYL-	180	JNBU	UG/KG
			UNKNOWN RT42.35	1700	J	UG/KG
			UNKNOWN RT8.23	350	BJU	UG/KG
			UNKNOWN RT8.80	320	JBU	UG/KG
	EB001A	16-JUN-92	11H-BENZO[B]FLUORENE	680	JN	UG/KG
			4,4'-DDD (TIC)	620	JN	UG/KG
			4,4'-DDE (TIC)	870	JN	UG/KG
			4H-CYCLOPENTA[DEF]PHENANTHR	470	JN	UG/KG
			7H-BENZ[DE]ANTHRACEN-7-ONE	580	JN	UG/KG
			ANTHRACENE, 2-METHYL-	230	JN	UG/KG
			ANTHRACENE, 9-METHYL-	190	JN	UG/KG
			BENZO[B]NAPHTHO[2,1-D]THIOP	770	JN	UG/KG
			BENZO[J]FLUORANTHENE	880	JN	UG/KG
			CYCLOPENTA[CD]PYRENE	550	JN	UG/KG
			PYRENE, 1-METHYL-	590	JN	UG/KG
			PYRENE, 4-METHYL-	1300	JN	UG/KG
			UNKNOWN POLYNUCLEAR AROMATI	340	J	UG/KG
			UNKNOWN RT25.42	350	J	UG/KG
			UNKNOWN RT27.25	330	J	UG/KG
			UNKNOWN RT27.62	340	J	UG/KG
			UNKNOWN RT28.21	920	J	UG/KG
			UNKNOWN RT29.16	520	J	UG/KG
			UNKNOWN RT29.35	370	J	UG/KG
			UNKNOWN RT36.30	260	J	UG/KG
	EB001E	16-JUN-92	UNKNOWN RT10.79	280	J	UG/KG
			UNKNOWN RT8.23	320	BJU	UG/KG
			UNKNOWN RT8.80	270	JBU	UG/KG
			UNKNOWN RT9.65	340	JBU	UG/KG
	EB002A	16-JUN-92	11H-BENZO[B]FLUORENE	300	JN	UG/KG
			4,4'-DDD (TIC)	500	JN	UG/KG
			4,4'-DDT (TIC)	230	JN	UG/KG
			4H-CYCLOPENTA[DEF]PHENANTHR	170	JN	UG/KG
			CYCLOPENTA[CD]PYRENE	210	JN	UG/KG
			HEXADECANE	330	JN	UG/KG
			PERYLENE	320	JN	UG/KG

SUMMARY OF TENTATIVELY IDENTIFIED COMPOUNDS (ASSAY CODE S)
NIROP

PROJECT NUMBER: 2313.13
BEGINNING DATE: 03-JUN-92
ENDING DATE: 30-JUL-92

	Sample ID	Sample Date	Parameter	Conc	Qualifiers	Units
MATRIX CODE: SB	EB002A	16-JUN-92	PYRENE, 1-METHYL-	470	JN	UG/KG
			UNKNOWN POLYNUCLEAR AROMATI	270	J	UG/KG
			UNKNOWN RT10.78	430	J	UG/KG
			UNKNOWN RT25.88	800	J	UG/KG
			UNKNOWN RT30.10	220	J	UG/KG
			UNKNOWN RT8.23	290	BJU	UG/KG
			UNKNOWN RT8.80	380	JBU	UG/KG
			UNKNOWN RT9.63	430	JBU	UG/KG
	EB002D	16-JUN-92	UNKNOWN RT8.24	250	BJU	UG/KG
			UNKNOWN RT8.80	170	JBU	UG/KG
	EB003A	18-JUN-92	TRICOSANE	170	JNBU	UG/KG
			UNKNOWN RT25.43	290	BJU	UG/KG
			UNKNOWN RT27.26	240	BJU	UG/KG
			UNKNOWN RT8.24	210	BJU	UG/KG
			UNKNOWN RT8.80	200	BJU	UG/KG
	EB003F	18-JUN-92	UNKNOWN RT25.42	160	BJU	UG/KG
			UNKNOWN RT8.24	310	BJU	UG/KG
			UNKNOWN RT9.65	170	JBU	UG/KG
	EB004A	18-JUN-92	1,4-NAPHTHOQUINONE, 6-ETHYL	940	JN	UG/KG
			11H-BENZO[A]FLUORENE	3400	JN	UG/KG
			11H-BENZO[B]FLUORENE	2300	JN	UG/KG
			4H-CYCLOPENTA[DEF]PHENANTHR	1300	JN	UG/KG
			ANTHRACENE, 2-METHYL-	450	JN	UG/KG
			BENZO[B]NAPHTHO[2,1-D]THIOP	990	JN	UG/KG
			BENZO[C]PHENANTHRENE	1600	JN	UG/KG
			BENZO[E]PYRENE	2200	JN	UG/KG
			BENZO[J]FLUORANTHENE	3100	JN	UG/KG
			CHRYSENE, 5-METHYL-	1100	JN	UG/KG
			PYRENE, 1-METHYL-	1600	JN	UG/KG
			UNKNOWN	930	J	UG/KG
			UNKNOWN POLYNUCLEAR AR RT26.76	1000	J	UG/KG
			UNKNOWN POLYNUCLEAR AR RT27.62	1000	J	UG/KG
			UNKNOWN POLYNUCLEAR AR RT28.28	1400	J	UG/KG
			UNKNOWN POLYNUCLEAR AR RT29.18	2300	J	UG/KG
			UNKNOWN POLYNUCLEAR AR RT29.51	860	J	UG/KG
			UNKNOWN POLYNUCLEAR AR RT30.80	840	J	UG/KG
			UNKNOWN POLYNUCLEAR AR RT33.10	610	J	UG/KG
			UNKNOWN POLYNUCLEAR AR RT36.08	600	J	UG/KG
	EB004D	18-JUN-92	4H-CYCLOPENTA[DEF]PHENANTHR	170	JN	UG/KG
			DODECANE, 2,7,10-TRIMETHYL-	140	JN	UG/KG

SUMMARY OF TENTATIVELY IDENTIFIED COMPOUNDS (ASSAY CODE S)
NIROP

PROJECT NUMBER: 2313.13
BEGINNING DATE: 03-JUN-92
ENDING DATE: 30-JUL-92

	Sample ID	Sample Date	Parameter	Conc	Qualifiers	Units
MATRIX CODE: SB	EB004D	18-JUN-92	HEXANE, 2,2,4-TRIMETHYL-	140	JN	UG/KG
			NONANE, 2,6-DIMETHYL-	230	JN	UG/KG
			NONANE, 5-METHYL-5-PROPYL-	220	JN	UG/KG
			PENTATRIACONTANE	170	JN	UG/KG
			UNDECANE, 2,6-DIMETHYL-	250	JN	UG/KG
			UNDECANE, 3,6-DIMETHYL-	160	JN	UG/KG
			UNKNOWN RT10.81	170	J	UG/KG
			UNKNOWN RT11.48	170	J	UG/KG
			UNKNOWN RT12.38	260	J	UG/KG
			UNKNOWN RT17.63	150	J	UG/KG
			UNKNOWN RT25.43	170	BJ	UG/KG
			UNKNOWN RT27.28	210	BJ	UG/KG
			UNKNOWN RT8.24	370	BJU	UG/KG
			UNKNOWN RT8.82	650	BJU	UG/KG
			UNKNOWN RT9.65	580	JBU	UG/KG
	FB001A	12-JUN-92	HEXATRIACONTANE	330	JNBU	UG/KG
			OCTACOSANE	530	JNBU	UG/KG
			TRICOSANE	610	JNBU	UG/KG
			UNKNOWN ALKANE	350	J	UG/KG
			UNKNOWN RT10.87	390	J	UG/KG
			UNKNOWN RT26.62	340	JBU	UG/KG
			UNKNOWN RT43.10	6400	J	UG/KG
			UNKNOWN RT43.91	1100	J	UG/KG
			UNKNOWN RT8.34	370	BJU	UG/KG
			UNKNOWN RT8.91	530	JBU	UG/KG
			UNKNOWN RT9.75	380	JBU	UG/KG
	FB001E	12-JUN-92	UNKNOWN RT8.34	220	BJU	UG/KG
			UNKNOWN RT8.91	160	JBU	UG/KG
	FB002A	11-JUN-92	DOCOSANE	650	JN	UG/KG
			EICOSANE, 2-METHYL-	770	JN	UG/KG
			HEXADECANE, 2,6,10,14-TETRA	2000	JN	UG/KG
			UNKNOWN 25.93	890	J	UG/KG
			UNKNOWN RT25.81	1100	J	UG/KG
			UNKNOWN RT30.69	600	J	UG/KG
			UNKNOWN RT31.14	1000	J	UG/KG
			UNKNOWN RT31.86	950	J	UG/KG
	FB002C	07-JUL-92	UNKNOWN RT8.24	340	BJU	UG/KG
			UNKNOWN RT8.82	270	JBU	UG/KG
	FB002H	11-JUN-92	UNKNOWN RT8.41	290	JBU	UG/KG
			UNKNOWN RT8.97	200	JBU	UG/KG

SUMMARY OF TENTATIVELY IDENTIFIED COMPOUNDS (ASSAY CODE S)
NIROP

PROJECT NUMBER: 2313.13
BEGINNING DATE: 03-JUN-92
ENDING DATE: 30-JUL-92

	Sample ID	Sample Date	Parameter	Conc	Qualifiers	Units
MATRIX CODE: SB	FB002H	11-JUN-92	UNKNOWN RT9.82	200	JBU	UG/KG
	FB003A	11-JUN-92	CYCLOHEXANE, UNDECYL-	3500	JN	UG/KG
			EICOSANE	1800	JN	UG/KG
			HEXADECANE	1600	JN	UG/KG
			NONACOSANE	1900	JN	UG/KG
			PENTADECANE	2200	JN	UG/KG
			UNDECANE, 3,6-DIMETHYL-	1600	JN	UG/KG
			UNKNOWN ALKANE	2500	J	UG/KG
			UNKNOWN RT22.86	3300	J	UG/KG
			UNKNOWN RT23.14	1900	J	UG/KG
			UNKNOWN RT23.60	2700	J	UG/KG
			UNKNOWN RT23.96	2800	J	UG/KG
			UNKNOWN RT31.21	1700	J	UG/KG
	FB003E	11-JUN-92	OCTACOSANE	140	JNBU	UG/KG
			UNKNOWN RT25.71	140	JBU	UG/KG
			UNKNOWN RT8.64	150	BJU	UG/KG
			UNKNOWN RT9.01	280	BJU	UG/KG
			UNKNOWN RT9.19	370	BJU	UG/KG
			UNKNOWN RT9.52	1200	BJU	UG/KG
	FB004A	11-JUN-92	UNKNOWN RT43.35	1200	J	UG/KG
			UNKNOWN RT44.23	240	J	UG/KG

APPENDIX G

RESULTS FOR PESTICIDE/PCB COMPOUND ANALYSES

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: BG

RESULTS FOR PESTICIDE/PCB COMPOUND ANALYSES
SUB-AREA BG

Parameter	Units	BG001A 03-JUN-92		BG001D 03-JUN-92		BG002A 03-JUN-92		BG002D 03-JUN-92		BG003A 03-JUN-92		BG003D 03-JUN-92	
ALPHA-BHC	UG/KG	1.8	U	1.8	U	1.8	U	2.1	U	1.9	U	1.7	U
BETA-BHC	UG/KG	1.8	U	1.8	U	1.8	U	2.1	U	1.9	U	1.7	U
DELTA-BHC	UG/KG	1.8	U	1.8	U	1.8	U	2.1	U	1.9	U	1.7	U
GAMMA-BHC (LINDANE)	UG/KG	1.8	U	1.8	U	1.8	U	2.1	U	1.9	U	1.7	U
HEPTACHLOR	UG/KG	1.8	U	1.8	U	1.8	U	2.1	U	1.9	U	1.7	U
ALDRIN	UG/KG	1.8	U	1.8	U	1.8	U	2.1	U	1.9	U	1.7	U
HEPTACHLOR EPOXIDE	UG/KG	1.8	U	1.8	U	1.8	U	2.1	U	1.9	U	1.7	U
ENDOSULFAN I	UG/KG	1.8	U	1.8	U	1.8	U	2.1	U	1.9	U	1.7	U
DIELDRIN	UG/KG	3.4	U	3.5	U	3.4	U	4.1	U	3.6	U	3.3	U
4,4'-DDE	UG/KG	3.4	U	3.5	U	3.4	U	4.1	U	3.6	U	3.3	U
ENDRIN	UG/KG	3.4	U	3.5	U	3.4	U	4.1	U	3.6	U	3.3	U
ENDOSULFAN II	UG/KG	3.4	U	3.5	U	3.4	U	4.1	U	3.6	U	3.3	U
4,4'-DDD	UG/KG	3.4	U	3.5	U	3.4	U	4.1	U	3.6	U	3.3	U
ENDOSULFAN SULFATE	UG/KG	3.4	U	3.5	U	3.4	U	4.1	U	3.6	U	3.3	U
4,4'-DDT	UG/KG	3.4	U	3.5	U	3.4	U	4.1	U	3.6	U	3.3	U
METHOXYCHLOR	UG/KG	18	U	18	U	18	U	21	U	19	U	17	U
ENDRIN KETONE	UG/KG	3.4	U	3.5	U	3.4	U	4.1	U	3.6	U	3.3	U
ENDRIN ALDEHYDE	UG/KG	3.4	U	3.5	U	3.4	U	4.1	U	3.6	U	3.3	U
ALPHA-CHLORDANE	UG/KG	1.8	U	1.8	U	1.8	U	2.1	U	1.9	U	1.7	U
GAMMA-CHLORDANE	UG/KG	1.8	U	1.8	U	1.8	U	2.1	U	1.9	U	1.7	U
TOXAPHENE	UG/KG	180	U	180	U	180	U	210	U	190	U	170	U
AROCLOR-1016	UG/KG	34	U	35	U	34	U	41	U	36	U	33	U
AROCLOR-1221	UG/KG	69	U	71	U	69	U	84	U	74	U	68	U
AROCLOR-1232	UG/KG	34	U	35	U	34	U	41	U	36	U	33	U
AROCLOR-1242	UG/KG	34	U	35	U	34	U	41	U	36	U	33	U
AROCLOR-1248	UG/KG	34	U	35	U	34	U	41	U	36	U	33	U
AROCLOR-1254	UG/KG	34	U	35	U	34	U	41	U	36	U	33	U
AROCLOR-1260	UG/KG	34	U	35	U	34	U	41	U	36	U	33	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: BG

RESULTS FOR PESTICIDE/PCB COMPOUND ANALYSES
SUB-AREA BG

Parameter	Units	BG004A 03-JUN-92		BG004D 03-JUN-92		BG005A 03-JUN-92		BG005D 03-JUN-92		BG005D DUP 03-JUN-92		BG006A 03-JUN-92	
ALPHA-BHC	UG/KG	1.7	U	1.7	U	1.8	U	1.7	U	1.8	U	1.8	U
BETA-BHC	UG/KG	1.7	U	1.7	U	1.8	U	1.7	U	1.8	U	1.8	U
DELTA-BHC	UG/KG	1.7	U	1.7	U	1.8	U	1.7	U	1.8	U	1.8	U
GAMMA-BHC (LINDANE)	UG/KG	1.7	U	1.7	U	1.8	U	1.7	U	1.8	U	1.8	U
HEPTACHLOR	UG/KG	1.7	U	1.7	U	1.8	U	1.7	U	1.8	U	1.8	U
ALDRIN	UG/KG	1.7	U	1.7	U	1.8	U	1.7	U	1.8	U	1.8	U
HEPTACHLOR EPOXIDE	UG/KG	1.7	U	1.7	U	1.8	U	1.7	U	1.8	U	1.8	U
ENDOSULFAN I	UG/KG	1.7	U	1.7	U	1.8	U	1.7	U	1.8	U	1.8	U
DIELDRIN	UG/KG	3.3	U	3.3	U	3.4	U	3.4	U	3.4	U	3.6	U
4,4'-DDE	UG/KG	3.3	U	3.3	U	3.4	U	3.4	U	3.4	U	6.6	
ENDRIN	UG/KG	3.3	U	3.3	U	3.4	U	3.4	U	3.4	U	3.6	U
ENDOSULFAN II	UG/KG	3.3	U	3.3	U	3.4	U	3.4	U	3.4	U	3.6	U
4,4'-DDD	UG/KG	3.3	U	3.3	U	3.4	U	3.4	U	3.4	U	3.6	U
ENDOSULFAN SULFATE	UG/KG	3.3	U	3.3	U	3.4	U	3.4	U	3.4	U	3.6	U
4,4'-DDT	UG/KG	3.3	U	3.3	U	3.4	U	3.4	U	3.4	U	4.7	
METHOXYCHLOR	UG/KG	17	U	17	U	18	U	17	U	18	U	18	U
ENDRIN KETONE	UG/KG	3.3	U	3.3	U	3.4	U	3.4	U	3.4	U	3.6	U
ENDRIN ALDEHYDE	UG/KG	3.3	U	3.3	U	3.4	U	3.4	U	3.4	U	3.6	U
ALPHA-CHLORDANE	UG/KG	1.7	U	1.7	U	1.8	U	1.7	U	1.8	U	1.8	U
GAMMA-CHLORDANE	UG/KG	1.7	U	1.7	U	1.8	U	1.7	U	1.8	U	1.8	U
TOXAPHENE	UG/KG	170	U	170	U	180	U	170	U	180	U	180	U
AROCLOR-1016	UG/KG	33	U	33	U	34	U	34	U	34	U	36	U
AROCLOR-1221	UG/KG	67	U	68	U	69	U	68	U	69	U	73	U
AROCLOR-1232	UG/KG	33	U	33	U	34	U	34	U	34	U	36	U
AROCLOR-1242	UG/KG	33	U	33	U	34	U	34	U	34	U	36	U
AROCLOR-1248	UG/KG	33	U	33	U	34	U	34	U	34	U	36	U
AROCLOR-1254	UG/KG	33	U	33	U	34	U	34	U	34	U	36	U
AROCLOR-1260	UG/KG	33	U	33	U	34	U	34	U	34	U	36	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: BG

RESULTS FOR PESTICIDE/PCB COMPOUND ANALYSES
SUB-AREA BG

Parameter	Units	BG006D 03-JUN-92		BG007A 04-JUN-92		BG007D 04-JUN-92		BG008A 04-JUN-92		BG008D 04-JUN-92		BG009A 04-JUN-92	
ALPHA-BHC	UG/KG	1.9	U	1.9	U	1.9	U	1.7	U	1.7	U	1.7	U
BETA-BHC	UG/KG	1.9	U	1.9	U	1.9	U	1.7	U	1.7	U	1.7	U
DELTA-BHC	UG/KG	1.9	U	1.9	U	1.9	U	1.7	U	1.7	U	1.7	U
GAMMA-BHC (LINDANE)	UG/KG	1.9	U	1.9	U	1.9	U	1.7	U	1.7	U	1.7	U
HEPTACHLOR	UG/KG	1.9	U	1.9	U	1.9	U	1.7	U	1.7	U	1.7	U
ALDRIN	UG/KG	1.9	U	1.9	U	1.9	U	1.7	U	1.7	U	1.7	U
HEPTACHLOR EPOXIDE	UG/KG	1.9	U	1.9	U	1.9	U	1.7	U	1.7	U	1.7	U
ENDOSULFAN I	UG/KG	1.9	U	1.9	U	1.9	U	1.7	U	1.7	U	1.7	U
DIELDRIN	UG/KG	3.7	U	3.7	U	3.6	U	3.3	U	3.4	U	3.4	U
4,4'-DDE	UG/KG	3.7	U	110		3.6	U	3.3	U	3.4	U	3.4	U
ENDRIN	UG/KG	3.7	U	3.7	U	3.6	U	3.3	U	3.4	U	3.4	U
ENDOSULFAN II	UG/KG	3.7	U	3.7	U	3.6	U	3.3	U	3.4	U	3.4	U
4,4'-DDD	UG/KG	3.7	U	3.7	U	3.6	U	3.3	U	3.4	U	3.4	U
ENDOSULFAN SULFATE	UG/KG	3.7	U	3.7	U	3.6	U	3.3	U	3.4	U	3.4	U
4,4'-DDT	UG/KG	3.7	U	76		3.6	U	3.3	U	3.4	U	3.4	U
METHOXYCHLOR	UG/KG	19	U	19	U	19	U	17	U	17	U	17	U
ENDRIN KETONE	UG/KG	3.7	U	3.7	U	3.6	U	3.3	U	3.4	U	3.4	U
ENDRIN ALDEHYDE	UG/KG	3.7	U	3.7	U	3.6	U	3.3	U	3.4	U	3.4	U
ALPHA-CHLORDANE	UG/KG	1.9	U	1.9	U	1.9	U	1.7	U	1.7	U	1.7	U
GAMMA-CHLORDANE	UG/KG	1.9	U	1.9	U	1.9	U	1.7	U	1.7	U	1.7	U
TOXAPHENE	UG/KG	190	U	190	U	190	U	170	U	170	U	170	U
AROCLOR-1016	UG/KG	37	U	37	U	36	U	33	U	34	U	34	U
AROCLOR-1221	UG/KG	75	U	74	U	74	U	68	U	68	U	68	U
AROCLOR-1232	UG/KG	37	U	37	U	36	U	33	U	34	U	34	U
AROCLOR-1242	UG/KG	37	U	37	U	36	U	33	U	34	U	34	U
AROCLOR-1248	UG/KG	37	U	37	U	36	U	33	U	34	U	34	U
AROCLOR-1254	UG/KG	37	U	37	U	36	U	33	U	34	U	34	U
AROCLOR-1260	UG/KG	37	U	37	U	36	U	33	U	34	U	34	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: BG

RESULTS FOR PESTICIDE/PCB COMPOUND ANALYSES
SUB-AREA BG

Parameter	Units	BG009D 04-JUN-92		BG009D DUP 04-JUN-92		BG010A 04-JUN-92		BG010D 04-JUN-92	
ALPHA-BHC	UG/KG	1.7	U	1.7	U	2.2	U	1.8	U
BETA-BHC	UG/KG	1.7	U	1.7	U	2.2	U	1.8	U
DELTA-BHC	UG/KG	1.7	U	1.7	U	2.2	U	1.8	U
GAMMA-BHC (LINDANE)	UG/KG	1.7	U	1.7	U	2.2	U	1.8	U
HEPTACHLOR	UG/KG	1.7	U	1.7	U	2.2	U	1.8	U
ALDRIN	UG/KG	1.7	U	1.7	U	2.2	U	1.8	U
HEPTACHLOR EPOXIDE	UG/KG	1.7	U	1.7	U	2.2	U	1.8	U
ENDOSULFAN I	UG/KG	1.7	U	1.7	U	2.2	U	1.8	U
DIELDRIN	UG/KG	3.4	U	3.4	U	4.3	U	3.5	U
4,4'-DDE	UG/KG	3.4	U	3.4	U	4.3	U	3.5	U
ENDRIN	UG/KG	3.4	U	3.4	U	4.3	U	3.5	U
ENDOSULFAN II	UG/KG	3.4	U	3.4	U	4.3	U	3.5	U
4,4'-DDD	UG/KG	3.4	U	3.4	U	4.3	U	3.5	U
ENDOSULFAN SULFATE	UG/KG	3.4	U	3.4	U	4.3	U	3.5	U
4,4'-DDT	UG/KG	3.4	U	3.4	U	4.3	U	3.5	U
METHOXYCHLOR	UG/KG	17	U	17	U	22	U	18	U
ENDRIN KETONE	UG/KG	3.4	U	3.4	U	4.3	U	3.5	U
ENDRIN ALDEHYDE	UG/KG	3.4	U	3.4	U	4.3	U	3.5	U
ALPHA-CHLORDANE	UG/KG	1.7	U	1.7	U	2.2	U	1.8	U
GAMMA-CHLORDANE	UG/KG	1.7	U	1.7	U	2.2	U	1.8	U
TOXAPHENE	UG/KG	170	U	170	U	220	U	180	U
AROCLOR-1016	UG/KG	34	U	34	U	43	U	35	U
AROCLOR-1221	UG/KG	68	U	68	U	87	U	71	U
AROCLOR-1232	UG/KG	34	U	34	U	43	U	35	U
AROCLOR-1242	UG/KG	34	U	34	U	43	U	35	U
AROCLOR-1248	UG/KG	34	U	34	U	43	U	35	U
AROCLOR-1254	UG/KG	34	U	34	U	43	U	35	U
AROCLOR-1260	UG/KG	34	U	34	U	43	U	35	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A1

RESULTS FOR PESTICIDE/PCB COMPOUND ANALYSES
SUB-AREA A1

Parameter	Units	AB041A 08-JUN-92		AB041C 08-JUN-92		AB042A 09-JUN-92		AB042G 09-JUN-92		AB042G DUP 09-JUN-92	
ALPHA-BHC	UG/KG	2.0	U	1.8	U	1.8	U	1.8	U	1.8	U
BETA-BHC	UG/KG	2.0	U	1.8	U	1.8	U	1.8	U	1.8	U
DELTA-BHC	UG/KG	2.0	U	1.8	U	1.8	U	1.8	U	1.8	U
GAMMA-BHC (LINDANE)	UG/KG	2.0	U	1.8	U	1.8	U	1.8	U	1.8	U
HEPTACHLOR	UG/KG	2.0	U	1.8	U	1.8	U	1.8	U	1.8	U
ALDRIN	UG/KG	2.0	U	1.8	U	1.8	U	1.8	U	1.8	U
HEPTACHLOR EPOXIDE	UG/KG	2.0	U	1.8	U	1.8	U	1.8	U	1.8	U
ENDOSULFAN I	UG/KG	2.0	U	1.8	U	1.8	U	1.8	U	1.8	U
DIELDRIN	UG/KG	3.9	U	3.5	U	3.5	U	3.4	U	3.5	U
4,4'-DDE	UG/KG	3.9	U	3.5	U	3.5	U	3.4	U	3.5	U
ENDRIN	UG/KG	3.9	U	3.5	U	3.5	U	3.4	U	3.5	U
ENDOSULFAN II	UG/KG	3.9	U	3.5	U	3.5	U	3.4	U	3.5	U
4,4'-DDD	UG/KG	3.9	U	3.5	U	3.5	U	3.4	U	3.5	U
ENDOSULFAN SULFATE	UG/KG	3.9	U	3.5	U	3.5	U	3.4	U	3.5	U
4,4'-DDT	UG/KG	3.9	U	3.5	U	3.5	U	3.4	U	3.5	U
METHOXYCHLOR	UG/KG	20	U	18	U	18	U	18	U	18	U
ENDRIN KETONE	UG/KG	3.9	U	3.5	U	3.5	U	3.4	U	3.5	U
ENDRIN ALDEHYDE	UG/KG	3.9	U	3.5	U	3.5	U	3.4	U	3.5	U
ALPHA-CHLORDANE	UG/KG	2.0	U	1.8	U	1.8	U	1.8	U	1.8	U
GAMMA-CHLORDANE	UG/KG	2.0	U	1.8	U	1.8	U	1.8	U	1.8	U
TOXAPHENE	UG/KG	200	U	180	U	180	U	180	U	180	U
AROCLOR-1016	UG/KG	39	U	35	U	35	U	34	U	35	U
AROCLOR-1221	UG/KG	80	U	71	U	71	U	70	U	71	U
AROCLOR-1232	UG/KG	39	U	35	U	35	U	34	U	35	U
AROCLOR-1242	UG/KG	39	U	35	U	35	U	34	U	35	U
AROCLOR-1248	UG/KG	39	U	35	U	35	U	34	U	35	U
AROCLOR-1254	UG/KG	39	U	35	U	35	U	34	U	35	U
AROCLOR-1260	UG/KG	39	U	35	U	35	U	34	U	35	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A2

RESULTS FOR PESTICIDE/PCB COMPOUND ANALYSES
SUB-AREA A2

Parameter	Units	AB024A 09-JUN-92		AB024G 09-JUN-92		AB025A 09-JUN-92		AB025B 09-JUN-92	
ALPHA-BHC	UG/KG	1.9	U	1.8	U	1.8	U	2.0	U
BETA-BHC	UG/KG	1.9	U	1.8	U	1.8	U	2.0	U
DELTA-BHC	UG/KG	1.9	U	1.8	U	1.8	U	2.0	U
GAMMA-BHC (LINDANE)	UG/KG	1.9	U	1.8	U	1.8	U	2.0	U
HEPTACHLOR	UG/KG	1.9	U	1.8	U	1.8	U	2.0	U
ALDRIN	UG/KG	1.9	U	1.8	U	1.8	U	2.0	U
HEPTACHLOR EPOXIDE	UG/KG	1.9	U	1.8	U	1.8	U	2.0	U
ENDOSULFAN I	UG/KG	1.9	U	1.8	U	1.8	U	2.0	U
DIELDRIN	UG/KG	3.6	U	3.5	U	3.5	U	4.0	U
4,4'-DDE	UG/KG	3.6	U	3.5	U	9.6		5.3	
ENDRIN	UG/KG	3.6	U	3.5	U	3.5	U	4.0	U
ENDOSULFAN II	UG/KG	3.6	U	3.5	U	3.5	U	4.0	U
4,4'-DDD	UG/KG	3.6	U	3.5	U	4.8	P	4.4	P
ENDOSULFAN SULFATE	UG/KG	3.6	U	3.5	U	3.5	U	4.0	U
4,4'-DDT	UG/KG	4.5		3.5	U	28		14	
METHOXYCHLOR	UG/KG	19	U	18	U	18	U	20	U
ENDRIN KETONE	UG/KG	3.6	U	3.5	U	3.5	U	4.0	U
ENDRIN ALDEHYDE	UG/KG	3.6	U	3.5	U	3.5	U	4.0	U
ALPHA-CHLORDANE	UG/KG	1.9	U	1.8	U	1.8	U	2.0	U
GAMMA-CHLORDANE	UG/KG	1.9	U	1.8	U	1.8	U	2.0	U
TOXAPHENE	UG/KG	190	U	180	U	180	U	200	U
AROCLOR-1016	UG/KG	36	U	35	U	35	U	40	U
AROCLOR-1221	UG/KG	74	U	71	U	71	U	81	U
AROCLOR-1232	UG/KG	36	U	35	U	35	U	40	U
AROCLOR-1242	UG/KG	36	U	35	U	35	U	40	U
AROCLOR-1248	UG/KG	36	U	35	U	35	U	40	U
AROCLOR-1254	UG/KG	36	U	35	U	35	U	40	U
AROCLOR-1260	UG/KG	36	U	35	U	35	U	40	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A3

RESULTS FOR PESTICIDE/PCB COMPOUND ANALYSES
SUB-AREA A3

Parameter	Units	AB035A 10-JUN-92		AB036A 15-JUN-92		AB036H 15-JUN-92		AB037A 10-JUN-92		AB037D 10-JUN-92		AB039A 10-JUN-92	
ALPHA-BHC	UG/KG	1.9	U	1.8	U	1.8	U	18	U	1.8	U	2.0	U
BETA-BHC	UG/KG	1.9	U	1.8	U	1.8	U	18	U	1.8	U	2.0	U
DELTA-BHC	UG/KG	1.9	U	1.8	U	1.8	U	18	U	1.8	U	2.0	U
GAMMA-BHC (LINDANE)	UG/KG	1.9	U	1.8	U	1.8	U	18	U	1.8	U	2.0	U
HEPTACHLOR	UG/KG	1.9	U	1.8	U	1.8	U	18	U	1.8	U	2.0	U
ALDRIN	UG/KG	1.9	U	3.1	P	1.8	U	18	U	1.8	U	2.0	U
HEPTACHLOR EPOXIDE	UG/KG	1.9	U	2.6	P	1.8	U	18	U	1.8	U	2.0	U
ENDOSULFAN I	UG/KG	1.9	U	1.8	U	1.8	U	18	U	1.8	U	2.0	U
DIELDRIN	UG/KG	3.6	U	4.0	P	3.6	U	36	U	3.4	U	3.8	U
4,4'-DDE	UG/KG	21		120	J	3.6	U	450		3.4	U	8.5	
ENDRIN	UG/KG	3.6	U	3.6	U	3.6	U	36	U	3.4	U	3.8	U
ENDOSULFAN II	UG/KG	3.6	U	3.6	U	3.6	U	36	U	3.4	U	3.8	U
4,4'-DDD	UG/KG	3.6	U	130	P	3.6	U	220	P	3.4	U	3.8	U
ENDOSULFAN SULFATE	UG/KG	3.6	U	3.6	U	3.6	U	36	U	3.4	U	3.8	U
4,4'-DDT	UG/KG	32		130	P	3.6	U	400		3.4	U	6.3	P
METHOXYCHLOR	UG/KG	19	U	18	U	18	U	180	U	18	U	20	U
ENDRIN KETONE	UG/KG	3.6	U	3.6	U	3.6	U	36	U	3.4	U	3.8	U
ENDRIN ALDEHYDE	UG/KG	3.6	U	3.6	U	3.6	U	36	U	3.4	U	3.8	U
ALPHA-CHLORDANE	UG/KG	1.9	U	1.8	U	1.8	U	18	U	1.8	U	2.0	U
GAMMA-CHLORDANE	UG/KG	1.9	U	3.4	P	1.8	U	18	U	1.8	U	2.0	U
TOXAPHENE	UG/KG	190	U	180	U	180	U	1800	U	180	U	200	U
AROCLOR-1016	UG/KG	36	U	36	U	36	U	360	U	34	U	38	U
AROCLOR-1221	UG/KG	74	U	73	U	73	U	730	U	69	U	78	U
AROCLOR-1232	UG/KG	36	U	36	U	36	U	360	U	34	U	38	U
AROCLOR-1242	UG/KG	36	U	36	U	36	U	360	U	34	U	38	U
AROCLOR-1248	UG/KG	36	U	36	U	36	U	360	U	34	U	38	U
AROCLOR-1254	UG/KG	36	U	36	U	36	U	360	U	34	U	38	U
AROCLOR-1260	UG/KG	36	U	36	U	36	U	360	U	34	U	38	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A3

RESULTS FOR PESTICIDE/PCB COMPOUND ANALYSES
SUB-AREA A3

Parameter	Units	AB039H 10-JUN-92		AB039H DUP 10-JUN-92		AB043D 20-JUL-92		AB043H 20-JUL-92		AB044D 20-JUL-92		AB044H 20-JUL-92	
ALPHA-BHC	UG/KG	1.8	U	1.8	U	19	U	1.8	U	19	U	1.8	U
BETA-BHC	UG/KG	1.8	U	1.8	U	19	U	1.8	U	19	U	1.8	U
DELTA-BHC	UG/KG	1.8	U	1.8	U	19	U	1.8	U	19	U	1.8	U
GAMMA-BHC (LINDANE)	UG/KG	1.8	U	1.8	U	19	U	1.8	U	19	U	1.8	U
HEPTACHLOR	UG/KG	1.8	U	1.8	U	19	U	1.8	U	19	U	1.8	U
ALDRIN	UG/KG	1.8	U	1.8	U	19	U	1.8	U	19	U	1.8	U
HEPTACHLOR EPOXIDE	UG/KG	1.8	U	1.8	U	19	U	1.8	U	19	U	1.8	U
ENDOSULFAN I	UG/KG	1.8	U	1.8	U	19	U	1.8	U	19	U	1.8	U
DIELDRIN	UG/KG	3.5	U	3.5	U	37	U	3.5	U	37	U	3.5	U
4,4'-DDE	UG/KG	3.5	U	3.5	U	180	PJ	3.5	U	140	PJ	3.5	U
ENDRIN	UG/KG	3.5	U	3.5	U	37	U	3.5	U	37	U	3.5	U
ENDOSULFAN II	UG/KG	3.5	U	3.5	U	37	U	3.5	U	37	U	3.5	U
4,4'-DDD	UG/KG	3.5	U	3.5	U	190	P	3.5	U	170	P	3.5	U
ENDOSULFAN SULFATE	UG/KG	3.5	U	3.5	U	37	U	3.5	U	37	U	3.5	U
4,4'-DDT	UG/KG	3.5	U	3.5	U	270		3.5	U	200		3.5	U
METHOXYCHLOR	UG/KG	18	U	18	U	190	U	18	U	190	U	18	U
ENDRIN KETONE	UG/KG	3.5	U	3.5	U	37	U	3.5	U	37	U	3.5	U
ENDRIN ALDEHYDE	UG/KG	3.5	U	3.5	U	37	U	3.5	U	37	U	3.5	U
ALPHA-CHLORDANE	UG/KG	1.8	U	1.8	U	19	U	1.8	U	19	U	1.8	U
GAMMA-CHLORDANE	UG/KG	1.8	U	1.8	U	19	U	1.8	U	19	U	1.8	U
TOXAPHENE	UG/KG	180	U	180	U	1900	U	180	U	1900	U	180	U
AROCLOR-1016	UG/KG	35	U	35	U	370	U	35	U	370	U	35	U
AROCLOR-1221	UG/KG	72	U	72	U	760	U	72	U	750	U	71	U
AROCLOR-1232	UG/KG	35	U	35	U	370	U	35	U	370	U	35	U
AROCLOR-1242	UG/KG	35	U	35	U	370	U	35	U	370	U	35	U
AROCLOR-1248	UG/KG	35	U	35	U	370	U	35	U	370	U	35	U
AROCLOR-1254	UG/KG	35	U	35	U	370	U	35	U	370	U	35	U
AROCLOR-1260	UG/KG	35	U	35	U	370	U	35	U	370	U	35	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A3

RESULTS FOR PESTICIDE/PCB COMPOUND ANALYSES
SUB-AREA A3

Parameter	Units	AT007A 17-JUN-92		AT007C 17-JUN-92		AT008A 17-JUN-92		AT008D 17-JUN-92		AT008D DUP 17-JUN-92		AT009B1 23-JUN-92	
ALPHA-BHC	UG/KG	1.8	U	3.3	U	1.8	U	46	U	44	U	19	U
BETA-BHC	UG/KG	1.8	U	3.3	U	1.8	U	46	U	44	U	19	U
DELTA-BHC	UG/KG	1.8	U	3.3	U	1.8	U	46	U	44	U	19	U
GAMMA-BHC (LINDANE)	UG/KG	1.8	U	3.3	U	1.8	U	46	U	44	U	19	U
HEPTACHLOR	UG/KG	1.8	U	3.3	U	1.8	U	46	U	44	U	19	U
ALDRIN	UG/KG	1.8	U	3.3	U	1.8	U	46	U	44	U	19	U
HEPTACHLOR EPOXIDE	UG/KG	1.8	U	3.3	U	1.8	U	46	U	44	U	19	U
ENDOSULFAN I	UG/KG	1.8	U	3.3	U	1.8	U	46	U	44	U	19	U
DIELDRIN	UG/KG	3.5	U	6.5	U	3.4	U	89	U	86	U	36	U
4,4'-DDE	UG/KG	3.5	U	6.5	U	31		89	U	86	U	110	J
ENDRIN	UG/KG	3.5	U	6.5	U	3.4	U	89	U	86	U	36	U
ENDOSULFAN II	UG/KG	3.5	U	6.5	U	3.4	U	89	U	86	U	37	P
4,4'-DDD	UG/KG	3.5	U	6.5	U	3.4	U	89	U	86	U	86	P
ENDOSULFAN SULFATE	UG/KG	3.5	U	6.5	U	3.4	U	89	U	86	U	36	U
4,4'-DDT	UG/KG	3.5	U	6.5	U	3.4	U	89	U	86	U	230	
METHOXYCHLOR	UG/KG	18	U	33	U	18	U	460	U	440	U	190	U
ENDRIN KETONE	UG/KG	3.5	U	6.5	U	3.4	U	89	U	86	U	36	U
ENDRIN ALDEHYDE	UG/KG	3.5	U	6.5	U	3.4	U	89	U	86	U	36	U
ALPHA-CHLORDANE	UG/KG	1.8	U	3.3	U	1.8	U	46	U	44	U	19	U
GAMMA-CHLORDANE	UG/KG	1.8	U	3.3	U	1.8	U	46	U	44	U	19	U
TOXAPHENE	UG/KG	180	U	330	U	180	U	4600	U	4400	U	1900	U
AROCLOR-1016	UG/KG	35	U	65	U	34	U	890	U	860	U	360	U
AROCLOR-1221	UG/KG	72	U	130	U	70	U	1800	U	1700	U	740	U
AROCLOR-1232	UG/KG	35	U	65	U	34	U	890	U	860	U	360	U
AROCLOR-1242	UG/KG	35	U	65	U	34	U	890	U	860	U	360	U
AROCLOR-1248	UG/KG	35	U	65	U	34	U	890	U	860	U	360	U
AROCLOR-1254	UG/KG	35	U	65	U	34	U	890	U	860	U	360	U
AROCLOR-1260	UG/KG	35	U	65	U	34	U	890	U	860	U	360	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A3

RESULTS FOR PESTICIDE/PCB COMPOUND ANALYSES
SUB-AREA A3

Parameter	Units	AT009B1 DUP 23-JUN-92		AT009D1 24-JUN-92		AT009D2 24-JUN-92		AT009D3 24-JUN-92		AT009E1 25-JUN-92		AT009E2 26-JUN-92	
ALPHA-BHC	UG/KG	22	U	18	U	1.8	U	1.9	U	1.8	U	1.8	U
BETA-BHC	UG/KG	22	U	18	U	1.8	U	1.9	U	1.8	U	1.8	U
DELTA-BHC	UG/KG	22	U	18	U	2.6	J	1.9	U	1.8	U	1.8	U
GAMMA-BHC (LINDANE)	UG/KG	22	U	18	U	1.8	U	1.9	U	1.8	U	1.8	U
HEPTACHLOR	UG/KG	22	U	18	U	1.8	U	1.9	U	1.8	U	1.8	U
ALDRIN	UG/KG	22	U	18	U	1.8	U	1.9	U	1.8	U	1.8	U
HEPTACHLOR EPOXIDE	UG/KG	22	U	18	U	1.8	U	1.9	U	1.8	U	1.8	U
ENDOSULFAN I	UG/KG	22	U	18	U	1.8	U	1.9	U	1.8	U	1.8	U
DIELDRIN	UG/KG	42	U	43	P	3.5	U	3.6	U	3.5	U	3.5	U
4,4'-DDE	UG/KG	300	J	36	U	11	J	3.6	U	3.5	U	3.5	U
ENDRIN	UG/KG	42	U	36	U	3.5	U	3.6	U	3.5	U	3.5	U
ENDOSULFAN II	UG/KG	54	PJ	53	J	3.5	U	3.6	U	3.5	U	3.5	U
4,4'-DDD	UG/KG	220	P	120	P	21	P	3.6	U	3.5	U	3.5	U
ENDOSULFAN SULFATE	UG/KG	42	U	36	U	3.5	U	3.6	U	3.5	U	3.5	U
4,4'-DDT	UG/KG	430		36	U	7.2		3.6	U	3.5	U	3.5	U
METHOXYCHLOR	UG/KG	220	U	180	U	18	U	19	U	18	U	18	U
ENDRIN KETONE	UG/KG	42	U	36	U	3.5	U	3.6	U	3.5	U	3.5	U
ENDRIN ALDEHYDE	UG/KG	42	U	36	U	3.5	U	3.6	U	3.5	U	3.5	U
ALPHA-CHLORDANE	UG/KG	22	U	18	U	1.8	U	1.9	U	1.8	U	1.8	U
GAMMA-CHLORDANE	UG/KG	22	U	18	U	1.8	U	1.9	U	1.8	U	1.8	U
TOXAPHENE	UG/KG	2200	U	1800	U	180	U	190	U	180	U	180	U
AROCLOR-1016	UG/KG	420	U	360	U	35	U	36	U	35	U	35	U
AROCLOR-1221	UG/KG	850	U	730	U	72	U	74	U	71	U	72	U
AROCLOR-1232	UG/KG	420	U	360	U	35	U	36	U	35	U	35	U
AROCLOR-1242	UG/KG	420	U	360	U	35	U	36	U	35	U	35	U
AROCLOR-1248	UG/KG	420	U	360	U	35	U	36	U	35	U	35	U
AROCLOR-1254	UG/KG	420	U	360	U	35	U	36	U	35	U	35	U
AROCLOR-1260	UG/KG	420	U	360	U	35	U	36	U	35	U	35	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A4

RESULTS FOR PESTICIDE/PCB COMPOUND ANALYSES
SUB-AREA A4

Parameter	Units	AB026A 10-JUN-92		AB026G 10-JUN-92		AB027A 09-JUN-92		AB027H 09-JUN-92		AB028A 08-JUN-92		AB028G 08-JUN-92	
ALPHA-BHC	UG/KG	1.9	U	1.7	U	19	U	2.0	U	1.9	U	1.9	U
BETA-BHC	UG/KG	1.9	U	1.7	U	19	U	2.0	U	1.9	U	1.9	U
DELTA-BHC	UG/KG	1.9	U	1.7	U	19	U	2.0	U	1.9	U	1.9	U
GAMMA-BHC (LINDANE)	UG/KG	1.9	U	1.7	U	19	U	2.0	U	1.9	U	1.9	U
HEPTACHLOR	UG/KG	1.9	U	1.7	U	19	U	2.0	U	1.9	U	1.9	U
ALDRIN	UG/KG	1.9	U	1.7	U	19	U	2.0	U	1.9	U	1.9	U
HEPTACHLOR EPOXIDE	UG/KG	1.9	U	1.7	U	19	U	2.0	U	1.9	U	1.9	U
ENDOSULFAN I	UG/KG	1.9	U	1.7	U	19	U	2.0	U	1.9	U	1.9	U
DIELDRIN	UG/KG	3.6	U	3.4	U	37	U	3.9	U	3.7	U	3.7	U
4,4'-DDE	UG/KG	200	P	3.4	U	37	U	3.9	U	3.7	U	3.7	U
ENDRIN	UG/KG	3.6	U	3.4	U	37	U	3.9	U	8.7	P	3.7	U
ENDOSULFAN II	UG/KG	3.6	U	3.4	U	37	U	3.9	U	3.7	U	3.7	U
4,4'-DDD	UG/KG	230	P	3.4	U	37	U	3.9	U	3.7	U	3.7	U
ENDOSULFAN SULFATE	UG/KG	4.8	P	3.4	U	37	U	3.9	U	15	P	3.7	U
4,4'-DDT	UG/KG	190	P	3.4	U	160		3.9	U	3.7	U	3.7	U
METHOXYCHLOR	UG/KG	19	U	17	U	190	U	20	U	19	U	19	U
ENDRIN KETONE	UG/KG	3.6	U	3.4	U	37	U	3.9	U	3.7	U	3.7	U
ENDRIN ALDEHYDE	UG/KG	3.6	U	3.4	U	37	U	3.9	U	3.7	U	3.7	U
ALPHA-CHLORDANE	UG/KG	2.8	P	1.7	U	19	U	2.0	U	1.9	U	1.9	U
GAMMA-CHLORDANE	UG/KG	3.0	P	1.7	U	19	U	2.0	U	1.9	U	1.9	U
TOXAPHENE	UG/KG	190	U	170	U	1900	U	200	U	190	U	190	U
AROCLOR-1016	UG/KG	36	U	34	U	370	U	39	U	37	U	37	U
AROCLOR-1221	UG/KG	74	U	68	U	740	U	80	U	74	U	76	U
AROCLOR-1232	UG/KG	36	U	34	U	370	U	39	U	37	U	37	U
AROCLOR-1242	UG/KG	36	U	34	U	370	U	39	U	37	U	37	U
AROCLOR-1248	UG/KG	36	U	34	U	370	U	39	U	37	U	37	U
AROCLOR-1254	UG/KG	36	U	34	U	370	U	39	U	37	U	37	U
AROCLOR-1260	UG/KG	36	U	34	U	370	U	39	U	37	U	37	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A4

RESULTS FOR PESTICIDE/PCB COMPOUND ANALYSES
SUB-AREA A4

Parameter	Units	AB029A 10-JUN-92		AB029H 10-JUN-92		AB030A 09-JUN-92		AB030G 09-JUN-92		AB030G DUP 09-JUN-92		AB031A 15-JUN-92	
ALPHA-BHC	UG/KG	19	U	1.8	U	18	U	1.8	U	1.8	U	19	U
BETA-BHC	UG/KG	19	U	1.8	U	18	U	1.8	U	1.8	U	19	U
DELTA-BHC	UG/KG	19	U	1.8	U	18	U	1.8	U	1.8	U	19	U
GAMMA-BHC (LINDANE)	UG/KG	19	U	1.8	U	18	U	1.8	U	1.8	U	19	U
HEPTACHLOR	UG/KG	19	U	1.8	U	18	U	1.8	U	1.8	U	19	U
ALDRIN	UG/KG	19	U	1.8	U	18	U	1.8	U	1.8	U	19	U
HEPTACHLOR EPOXIDE	UG/KG	19	U	1.8	U	18	U	1.8	U	1.8	U	19	U
ENDOSULFAN I	UG/KG	19	U	1.8	U	18	U	1.8	U	1.8	U	19	U
DIELDRIN	UG/KG	37	U	3.5	U	35	U	3.5	U	3.5	U	37	U
4,4'-DDE	UG/KG	390		3.5	U	92		3.5	U	3.5	U	120	J
ENDRIN	UG/KG	37	U	3.5	U	35	U	3.5	U	3.5	U	37	U
ENDOSULFAN II	UG/KG	37	U	3.5	U	35	U	3.5	U	3.5	U	37	U
4,4'-DDD	UG/KG	220	P	3.5	U	150		3.5	U	4.3		130	
ENDOSULFAN SULFATE	UG/KG	37	U	3.5	U	35	U	3.5	U	3.5	U	37	U
4,4'-DDT	UG/KG	280		3.5	U	220		3.5	U	9.2		67	P
METHOXYCHLOR	UG/KG	190	U	18	U	180	U	18	U	18	U	190	U
ENDRIN KETONE	UG/KG	37	U	3.5	U	35	U	3.5	U	3.5	U	37	U
ENDRIN ALDEHYDE	UG/KG	37	U	3.5	U	35	U	3.5	U	3.5	U	37	U
ALPHA-CHLORDANE	UG/KG	19	U	1.8	U	18	U	1.8	U	1.8	U	19	U
GAMMA-CHLORDANE	UG/KG	19	U	1.8	U	18	U	1.8	U	1.8	U	19	U
TOXAPHENE	UG/KG	1900	U	180	U	1800	U	180	U	180	U	1900	U
AROCLOR-1016	UG/KG	370	U	35	U	350	U	35	U	35	U	370	U
AROCLOR-1221	UG/KG	740	U	71	U	710	U	71	U	72	U	760	U
AROCLOR-1232	UG/KG	370	U	35	U	350	U	35	U	35	U	370	U
AROCLOR-1242	UG/KG	370	U	35	U	350	U	35	U	35	U	370	U
AROCLOR-1248	UG/KG	370	U	35	U	350	U	35	U	35	U	370	U
AROCLOR-1254	UG/KG	370	U	35	U	350	U	35	U	35	U	370	U
AROCLOR-1260	UG/KG	370	U	35	U	350	U	35	U	35	U	370	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A4

RESULTS FOR PESTICIDE/PCB COMPOUND ANALYSES
SUB-AREA A4

Parameter	Units	AB031G 15-JUN-92		AB032A 09-JUN-92		AB032D 09-JUN-92		AB033B 08-JUN-92		AB033H 08-JUN-92		AB034A 08-JUN-92	
ALPHA-BHC	UG/KG	1.8	U	45	U	1.8	U	2.0	U	1.8	U	1.9	U
BETA-BHC	UG/KG	1.8	U	45	U	1.8	U	2.0	U	1.8	U	1.9	U
DELTA-BHC	UG/KG	1.8	U	45	U	1.8	U	2.0	U	1.8	U	1.9	U
GAMMA-BHC (LINDANE)	UG/KG	1.8	U	45	U	1.8	U	2.0	U	1.8	U	1.9	U
HEPTACHLOR	UG/KG	1.8	U	45	U	1.8	U	2.0	U	1.8	U	1.9	U
ALDRIN	UG/KG	1.8	U	45	U	1.8	U	2.0	U	1.8	U	1.9	U
HEPTACHLOR EPOXIDE	UG/KG	1.8	U	45	U	1.8	U	2.0	U	1.8	U	1.9	U
ENDOSULFAN I	UG/KG	1.8	U	45	U	1.8	U	2.0	U	1.8	U	1.9	U
DIELDRIN	UG/KG	3.4	U	88	U	3.4	U	3.8	U	3.4	U	3.6	U
4,4'-DDE	UG/KG	3.4	U	310		3.4	U	3.8	U	3.4	U	3.6	U
ENDRIN	UG/KG	3.4	U	88	U	3.4	U	3.8	U	3.4	U	14	P
ENDOSULFAN II	UG/KG	3.4	U	88	U	3.4	U	3.8	U	3.4	U	3.6	U
4,4'-DDD	UG/KG	3.7	P	120	P	3.4	U	3.8	U	3.4	U	160	P
ENDOSULFAN SULFATE	UG/KG	3.4	U	88	U	3.4	U	3.8	U	3.4	U	9.8	P
4,4'-DDT	UG/KG	6.1		460		3.4	U	3.8	U	3.4	U	400	P
METHOXYCHLOR	UG/KG	19		450	U	18	U	20	U	18	U	19	U
ENDRIN KETONE	UG/KG	3.4	U	88	U	3.4	U	3.8	U	3.4	U	3.6	U
ENDRIN ALDEHYDE	UG/KG	5.9	PJ	88	U	3.4	U	3.8	U	3.4	U	3.6	U
ALPHA-CHLORDANE	UG/KG	1.8	U	45	U	1.8	U	2.0	U	1.8	U	1.9	U
GAMMA-CHLORDANE	UG/KG	1.8	U	45	U	1.8	U	2.0	U	1.8	U	1.9	U
TOXAPHENE	UG/KG	180	U	4500	U	180	U	200	U	180	U	190	U
AROCLOR-1016	UG/KG	34	U	880	U	34	U	38	U	34	U	36	U
AROCLOR-1221	UG/KG	70	U	1800	U	70	U	77	U	70	U	74	U
AROCLOR-1232	UG/KG	34	U	880	U	34	U	38	U	34	U	36	U
AROCLOR-1242	UG/KG	34	U	880	U	34	U	38	U	34	U	36	U
AROCLOR-1248	UG/KG	34	U	880	U	34	U	38	U	34	U	36	U
AROCLOR-1254	UG/KG	34	U	880	U	34	U	38	U	34	U	36	U
AROCLOR-1260	UG/KG	34	U	880	U	34	U	38	U	34	U	36	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A4

RESULTS FOR PESTICIDE/PCB COMPOUND ANALYSES
SUB-AREA A4

Parameter	Units	AB034D 08-JUN-92		AB038A 10-JUN-92		AB038G 10-JUN-92		AT001A 12-JUN-92		AT001C 12-JUN-92		AT002A 12-JUN-92	
ALPHA-BHC	UG/KG	1.8	U	1.7	U	1.8	U	19	U	1.7	U	1.8	U
BETA-BHC	UG/KG	1.8	U	1.7	U	1.8	U	19	U	1.7	U	1.8	U
DELTA-BHC	UG/KG	1.8	U	1.7	U	1.8	U	19	U	1.7	U	1.8	U
GAMMA-BHC (LINDANE)	UG/KG	1.8	U	1.7	U	1.8	U	19	U	1.7	U	1.8	U
HEPTACHLOR	UG/KG	1.8	U	1.7	U	1.8	U	19	U	1.7	U	1.8	U
ALDRIN	UG/KG	1.8	U	1.7	U	1.8	U	19	U	1.7	U	1.8	U
HEPTACHLOR EPOXIDE	UG/KG	1.8	U	1.7	U	1.8	U	30	P	1.7	U	1.8	U
ENDOSULFAN I	UG/KG	1.8	U	1.7	U	1.8	U	19	U	1.7	U	1.8	U
DIELDRIN	UG/KG	3.5	U	4.0	P	3.4	U	36	U	3.4	U	3.5	U
4,4'-DDE	UG/KG	3.5	U	22		3.4	U	1900	P	3.4	U	3.5	U
ENDRIN	UG/KG	3.5	U	3.3	U	3.4	U	36	U	3.4	U	3.5	U
ENDOSULFAN II	UG/KG	3.5	U	3.3	U	3.4	U	36	U	3.4	U	3.5	U
4,4'-DDD	UG/KG	3.5	U	11	P	3.4	U	2900		3.4	U	3.5	U
ENDOSULFAN SULFATE	UG/KG	3.5	U	3.3	U	3.4	U	36	U	3.4	U	3.5	U
4,4'-DDT	UG/KG	4.2	P	45		3.4	U	36	U	3.4	U	3.5	U
METHOXYCHLOR	UG/KG	18	U	17	U	18	U	190	U	17	U	18	U
ENDRIN KETONE	UG/KG	3.5	U	3.3	U	3.4	U	36	U	3.4	U	3.5	U
ENDRIN ALDEHYDE	UG/KG	3.5	U	3.3	U	3.4	U	36	U	3.4	U	3.5	U
ALPHA-CHLORDANE	UG/KG	1.8	U	1.7	U	1.8	U	36	P	1.7	U	1.8	U
GAMMA-CHLORDANE	UG/KG	1.8	U	1.7	U	1.8	U	19	U	1.7	U	1.8	U
TOXAPHENE	UG/KG	180	U	170	U	180	U	1900	U	170	U	180	U
AROCLOR-1016	UG/KG	35	U	33	U	34	U	360	U	34	U	35	U
AROCLOR-1221	UG/KG	72	U	68	U	69	U	740	U	68	U	72	U
AROCLOR-1232	UG/KG	35	U	33	U	34	U	360	U	34	U	35	U
AROCLOR-1242	UG/KG	35	U	33	U	34	U	360	U	34	U	35	U
AROCLOR-1248	UG/KG	35	U	33	U	34	U	360	U	34	U	35	U
AROCLOR-1254	UG/KG	35	U	33	U	34	U	360	U	34	U	35	U
AROCLOR-1260	UG/KG	35	U	33	U	34	U	360	U	34	U	35	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
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SITE AREA: A4

RESULTS FOR PESTICIDE/PCB COMPOUND ANALYSES
SUB-AREA A4

Parameter	Units	AT002B 12-JUN-92		AT002B DUP 12-JUN-92		AT003A 16-JUN-92		AT003B 16-JUN-92		AT004A 16-JUN-92		AT004B 16-JUN-92	
ALPHA-BHC	UG/KG	1.8	U	2.0	U	1.9	U	2.4	U	19	U	21	U
BETA-BHC	UG/KG	1.8	U	2.0	U	1.9	U	2.4	U	19	U	21	U
DELTA-BHC	UG/KG	1.8	U	2.0	U	1.9	U	2.4	U	19	U	25	P
GAMMA-BHC (LINDANE)	UG/KG	1.8	U	2.0	U	1.9	U	2.4	U	19	U	21	U
HEPTACHLOR	UG/KG	1.8	U	2.0	U	1.9	U	2.4	U	19	U	21	U
ALDRIN	UG/KG	1.8	U	2.0	U	1.9	U	2.4	U	19	U	21	U
HEPTACHLOR EPOXIDE	UG/KG	1.8	U	2.0	U	1.9	U	2.4	U	19	U	21	U
ENDOSULFAN I	UG/KG	1.8	U	2.0	U	1.9	U	2.4	U	19	U	21	U
DIELDRIN	UG/KG	3.5	U	4.0	U	3.7	U	4.6	U	37	U	41	U
4,4'-DDE	UG/KG	3.5	U	4.0	U	52	J	4.6	U	310	J	74	J
ENDRIN	UG/KG	3.5	U	4.0	U	3.7	U	4.6	U	37	U	41	U
ENDOSULFAN II	UG/KG	3.5	U	4.0	U	3.7	U	4.6	U	37	U	41	U
4,4'-DDD	UG/KG	3.5	U	4.0	U	24	PJ	4.6	U	240		41	U
ENDOSULFAN SULFATE	UG/KG	3.5	U	4.0	U	3.7	U	4.6	U	37	U	41	U
4,4'-DDT	UG/KG	3.5	U	4.0	U	18	J	4.6	U	67	P	93	P
METHOXYCHLOR	UG/KG	18	U	20	U	19	U	24	U	190	U	210	U
ENDRIN KETONE	UG/KG	3.5	U	4.0	U	3.7	U	4.6	U	37	U	41	U
ENDRIN ALDEHYDE	UG/KG	3.5	U	4.0	U	3.7	U	4.6	U	37	U	41	U
ALPHA-CHLORDANE	UG/KG	1.8	U	2.0	U	1.9	U	2.4	U	19	U	21	U
GAMMA-CHLORDANE	UG/KG	1.8	U	2.0	U	1.9	U	2.4	U	19	U	21	U
TOXAPHENE	UG/KG	180	U	200	U	190	U	240	U	1900	U	2100	U
AROCLOR-1016	UG/KG	35	U	40	U	37	U	46	U	370	U	410	U
AROCLOR-1221	UG/KG	72	U	81	U	76	U	93	U	750	U	830	U
AROCLOR-1232	UG/KG	35	U	40	U	37	U	46	U	370	U	410	U
AROCLOR-1242	UG/KG	35	U	40	U	37	U	46	U	370	U	410	U
AROCLOR-1248	UG/KG	35	U	40	U	37	U	46	U	370	U	410	U
AROCLOR-1254	UG/KG	35	U	40	U	37	U	46	U	370	U	410	U
AROCLOR-1260	UG/KG	35	U	40	U	37	U	46	U	370	U	410	U

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SITE AREA: A4

RESULTS FOR PESTICIDE/PCB COMPOUND ANALYSES
SUB-AREA A4

Parameter	Units	AT005A 16-JUN-92		AT005C 16-JUN-92		AT005C DUP 16-JUN-92		AT006A 17-JUN-92		AT006B 17-JUN-92	
ALPHA-BHC	UG/KG	1.9	U	2.0	U	2.0	U	19	U	2.0	U
BETA-BHC	UG/KG	1.9	U	2.0	U	2.0	U	19	U	2.0	U
DELTA-BHC	UG/KG	1.9	U	2.0	U	2.0	U	19	U	2.0	U
GAMMA-BHC (LINDANE)	UG/KG	1.9	U	2.0	U	2.0	U	19	U	2.0	U
HEPTACHLOR	UG/KG	1.9	U	2.0	U	2.0	U	19	U	2.0	U
ALDRIN	UG/KG	1.9	U	2.0	U	2.0	U	19	U	2.0	U
HEPTACHLOR EPOXIDE	UG/KG	1.9	U	2.0	U	2.0	U	19	U	2.0	U
ENDOSULFAN I	UG/KG	1.9	U	2.0	U	2.0	U	19	U	2.0	U
DIELDRIN	UG/KG	3.7	U	3.9	U	4.0	U	37	U	4.0	U
4,4'-DDE	UG/KG	31	J	3.9	U	4.0	U	660		4.0	U
ENDRIN	UG/KG	3.7	U	3.9	U	4.0	U	37	U	4.0	U
ENDOSULFAN II	UG/KG	3.7	U	3.9	U	4.0	U	37	U	4.0	U
4,4'-DDD	UG/KG	17		3.9	U	4.0	U	300	P	4.0	U
ENDOSULFAN SULFATE	UG/KG	3.7	U	3.9	U	4.0	U	37	U	4.0	U
4,4'-DDT	UG/KG	63		3.9	U	4.0	U	1400		4.0	U
METHOXYCHLOR	UG/KG	19	U	20	U	20	U	190	U	20	U
ENDRIN KETONE	UG/KG	3.7	U	3.9	U	4.0	U	37	U	4.0	U
ENDRIN ALDEHYDE	UG/KG	7.1	PJ	3.9	U	4.0	U	37	U	4.0	U
ALPHA-CHLORDANE	UG/KG	1.9	U	2.0	U	2.0	U	19	U	2.0	U
GAMMA-CHLORDANE	UG/KG	1.9	U	2.0	U	2.0	U	19	U	2.0	U
TOXAPHENE	UG/KG	190	U	200	U	200	U	1900	U	200	U
AROCLOR-1016	UG/KG	37	U	39	U	40	U	370	U	40	U
AROCLOR-1221	UG/KG	74	U	80	U	81	U	740	U	81	U
AROCLOR-1232	UG/KG	37	U	39	U	40	U	370	U	40	U
AROCLOR-1242	UG/KG	37	U	39	U	40	U	370	U	40	U
AROCLOR-1248	UG/KG	37	U	39	U	40	U	370	U	40	U
AROCLOR-1254	UG/KG	37	U	39	U	40	U	370	U	40	U
AROCLOR-1260	UG/KG	37	U	39	U	40	U	370	U	40	U

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ENDING DATE: 01-SEP-92
SITE AREA: B1

RESULTS FOR PESTICIDE/PCB COMPOUND ANALYSES
SUB-AREA B1

Parameter	Units	BB001A 15-JUN-92		BB001B 15-JUN-92		BB001C 07-JUL-92		BB002B 15-JUN-92		BB002G 15-JUN-92		BB002G DUP 15-JUN-92	
ALPHA-BHC	UG/KG	1.8	U	1.9	U	5.0	U	2.0	U	1.8	U	1.9	U
BETA-BHC	UG/KG	1.8	U	1.9	U	5.0	U	2.0	U	1.8	U	1.9	U
DELTA-BHC	UG/KG	1.8	U	1.9	U	5.0	U	2.0	U	1.8	U	1.9	U
GAMMA-BHC (LINDANE)	UG/KG	1.8	U	1.9	U	5.0	U	2.0	U	1.8	U	1.9	U
HEPTACHLOR	UG/KG	1.8	U	1.9	U	5.0	U	2.0	U	1.8	U	1.9	U
ALDRIN	UG/KG	1.8	U	1.9	U	5.0	U	2.0	U	1.8	U	1.9	U
HEPTACHLOR EPOXIDE	UG/KG	1.8	U	1.9	U	5.0	U	2.0	U	1.8	U	1.9	U
ENDOSULFAN I	UG/KG	1.8	U	1.9	U	5.0	U	2.0	U	1.8	U	1.9	U
DIELDRIN	UG/KG	3.4	U	3.7	U	9.7	U	3.8	U	3.5	U	3.7	U
4,4'-DDE	UG/KG	37		3.7	U	9.7	U	160	P	3.5	U	3.7	U
ENDRIN	UG/KG	3.4	U	3.7	U	9.7	U	4.7	P	3.5	U	3.7	U
ENDOSULFAN II	UG/KG	3.4	U	3.7	U	9.7	U	3.8	U	3.5	U	3.7	U
4,4'-DDD	UG/KG	26		3.7	U	9.7	U	180		3.5	U	3.7	U
ENDOSULFAN SULFATE	UG/KG	3.4	U	3.7	U	9.7	U	7.7	P	3.5	U	3.7	U
4,4'-DDT	UG/KG	11		3.7	U	9.7	U	160		3.5	U	3.7	U
METHOXYCHLOR	UG/KG	18	U	19	U	50	U	20	U	18	U	19	U
ENDRIN KETONE	UG/KG	3.4	U	3.7	U	9.7	U	3.8	U	3.5	U	3.7	U
ENDRIN ALDEHYDE	UG/KG	3.4	U	3.7	U	9.7	U	5.9		3.5	U	3.7	U
ALPHA-CHLORDANE	UG/KG	1.8	U	1.9	U	5.0	U	2.0	U	1.8	U	1.9	U
GAMMA-CHLORDANE	UG/KG	1.8	U	1.9	U	5.0	U	2.0	U	1.8	U	1.9	U
TOXAPHENE	UG/KG	180	U	190	U	500	U	200	U	180	U	190	U
AROCLOR-1016	UG/KG	34	U	37	U	97	U	38	U	35	U	37	U
AROCLOR-1221	UG/KG	70	U	74	U	200	U	78	U	72	U	74	U
AROCLOR-1232	UG/KG	34	U	37	U	97	U	38	U	35	U	37	U
AROCLOR-1242	UG/KG	34	U	37	U	97	U	38	U	35	U	37	U
AROCLOR-1248	UG/KG	34	U	37	U	97	U	38	U	35	U	37	U
AROCLOR-1254	UG/KG	34	U	37	U	97	U	38	U	35	U	37	U
AROCLOR-1260	UG/KG	34	U	37	U	97	U	38	U	35	U	37	U

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SITE AREA: B1

RESULTS FOR PESTICIDE/PCB COMPOUND ANALYSES
SUB-AREA B1

Parameter	Units	BB003A 16-JUN-92		BB003D 16-JUN-92		BT001A 18-JUN-92		BT001B 18-JUN-92		BT002A 17-JUN-92		BT002B 17-JUN-92	
ALPHA-BHC	UG/KG	2.0	U	2.3	U	1.8	U	1.9	U	2.0	U	2.5	U
BETA-BHC	UG/KG	2.0	U	2.3	U	1.8	U	1.9	U	2.0	U	2.5	U
DELTA-BHC	UG/KG	2.0	U	2.3	U	1.8	U	1.9	U	2.0	U	2.5	U
GAMMA-BHC (LINDANE)	UG/KG	2.0	U	2.3	U	1.8	U	1.9	U	2.0	U	2.5	U
HEPTACHLOR	UG/KG	2.0	U	2.3	U	1.8	U	1.9	U	2.0	U	2.5	U
ALDRIN	UG/KG	2.0	U	2.3	U	1.8	U	1.9	U	2.0	U	2.5	U
HEPTACHLOR EPOXIDE	UG/KG	2.0	U	2.3	U	1.8	U	1.9	U	2.0	U	2.5	U
ENDOSULFAN I	UG/KG	2.0	U	2.3	U	1.8	U	1.9	U	2.0	U	2.5	U
DIELDRIN	UG/KG	3.8	U	4.5	U	3.6	U	3.6	U	3.9	U	4.8	U
4,4'-DDE	UG/KG	3.8	U	4.5	U	52	P	3.6	U	3.9	U	4.8	U
ENDRIN	UG/KG	3.8	U	4.5	U	5.1	P	3.6	U	3.9	U	4.8	U
ENDOSULFAN II	UG/KG	3.8	U	4.5	U	3.6	U	3.6	U	3.9	U	4.8	U
4,4'-DDD	UG/KG	3.8	U	4.5	U	63		3.6	U	3.9	U	4.8	U
ENDOSULFAN SULFATE	UG/KG	3.8	U	4.5	U	3.6	U	3.6	U	3.9	U	4.8	U
4,4'-DDT	UG/KG	8.2	P	4.5	U	78		3.6	U	3.9	U	4.8	U
METHOXYCHLOR	UG/KG	20	U	23	U	18	U	19	U	20	U	25	U
ENDRIN KETONE	UG/KG	3.8	U	4.5	U	3.6	U	3.6	U	3.9	U	4.8	U
ENDRIN ALDEHYDE	UG/KG	5.8	PJ	4.5	U	3.6	U	3.6	U	3.9	U	4.8	U
ALPHA-CHLORDANE	UG/KG	2.0	U	2.3	U	4.8	P	1.9	U	2.0	U	2.5	U
GAMMA-CHLORDANE	UG/KG	2.0	U	2.3	U	1.8	U	1.9	U	2.0	U	2.5	U
TOXAPHENE	UG/KG	200	U	230	U	180	U	190	U	200	U	250	U
AROCLOR-1016	UG/KG	38	U	45	U	36	U	36	U	39	U	48	U
AROCLOR-1221	UG/KG	77	U	92	U	73	U	74	U	79	U	97	U
AROCLOR-1232	UG/KG	38	U	45	U	36	U	36	U	39	U	48	U
AROCLOR-1242	UG/KG	38	U	45	U	36	U	36	U	39	U	48	U
AROCLOR-1248	UG/KG	38	U	45	U	36	U	36	U	39	U	48	U
AROCLOR-1254	UG/KG	38	U	45	U	36	U	36	U	39	U	48	U
AROCLOR-1260	UG/KG	38	U	45	U	36	U	36	U	39	U	48	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: B2

RESULTS FOR PESTICIDE/PCB COMPOUND ANALYSES
SUB-AREA B2

Parameter	Units	BT004A 18-JUN-92		BT004D 18-JUN-92		BT004D DUP 18-JUN-92	
ALPHA-BHC	UG/KG	1.9	U	1.9	U	2.0	U
BETA-BHC	UG/KG	1.9	U	1.9	U	2.0	U
DELTA-BHC	UG/KG	1.9	U	1.9	U	2.0	U
GAMMA-BHC (LINDANE)	UG/KG	1.9	U	1.9	U	2.0	U
HEPTACHLOR	UG/KG	1.9	U	1.9	U	2.0	U
ALDRIN	UG/KG	1.9	U	1.9	U	2.0	U
HEPTACHLOR EPOXIDE	UG/KG	1.9	U	1.9	U	2.0	U
ENDOSULFAN I	UG/KG	1.9	U	1.9	U	2.0	U
DIELDRIN	UG/KG	3.6	U	3.6	U	3.9	U
4,4'-DDE	UG/KG	18		3.6	U	3.9	U
ENDRIN	UG/KG	3.6	U	3.6	U	3.9	U
ENDOSULFAN II	UG/KG	3.6	U	3.6	U	3.9	U
4,4'-DDD	UG/KG	11		3.6	U	3.9	U
ENDOSULFAN SULFATE	UG/KG	3.6	U	3.6	U	3.9	U
4,4'-DDT	UG/KG	3.7	P	3.6	U	3.9	U
METHOXYCHLOR	UG/KG	19	U	19	U	20	U
ENDRIN KETONE	UG/KG	3.6	U	3.6	U	3.9	U
ENDRIN ALDEHYDE	UG/KG	3.6	U	3.6	U	3.9	U
ALPHA-CHLORDANE	UG/KG	1.9	U	1.9	U	2.0	U
GAMMA-CHLORDANE	UG/KG	1.9	U	1.9	U	2.0	U
TOXAPHENE	UG/KG	190	U	190	U	200	U
AROCLOR-1016	UG/KG	36	U	36	U	39	U
AROCLOR-1221	UG/KG	74	U	74	U	79	U
AROCLOR-1232	UG/KG	36	U	36	U	39	U
AROCLOR-1242	UG/KG	36	U	36	U	39	U
AROCLOR-1248	UG/KG	36	U	36	U	39	U
AROCLOR-1254	UG/KG	36	U	36	U	39	U
AROCLOR-1260	UG/KG	36	U	36	U	39	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: D

RESULTS FOR PESTICIDE/PCB COMPOUND ANALYSES
SUB-AREA D

Parameter	Units	DB029A 11-JUN-92		DB029E 11-JUN-92		DB029E DUP 11-JUN-92		DB030A 12-JUN-92		DB030E 12-JUN-92		DB031A 11-JUN-92	
ALPHA-BHC	UG/KG	1.9	U	1.8	U	1.8	U	1.9	U	1.8	U	1.9	U
BETA-BHC	UG/KG	1.9	U	1.8	U	1.8	U	1.9	U	1.8	U	1.9	U
DELTA-BHC	UG/KG	1.9	U	1.8	U	1.8	U	1.9	U	1.8	U	1.9	U
GAMMA-BHC (LINDANE)	UG/KG	1.9	U	1.8	U	1.8	U	1.9	U	1.8	U	1.9	U
HEPTACHLOR	UG/KG	1.9	U	1.8	U	1.8	U	1.9	U	1.8	U	1.9	U
ALDRIN	UG/KG	1.9	U	1.8	U	1.8	U	1.9	U	1.8	U	1.9	U
HEPTACHLOR EPOXIDE	UG/KG	1.9	U	1.8	U	1.8	U	1.9	U	1.8	U	1.9	U
ENDOSULFAN I	UG/KG	1.9	U	1.8	U	1.8	U	1.9	U	1.8	U	1.9	U
DIELDRIN	UG/KG	16	P	3.4	U	3.4	U	3.7	U	3.4	U	3.7	U
4,4'-DDE	UG/KG	17		26		3.4	U	3.7	U	3.4	U	140	P
ENDRIN	UG/KG	15	P	3.4	U	3.4	U	3.7	U	3.4	U	3.7	U
ENDOSULFAN II	UG/KG	3.6	U	3.4	U	3.4	U	3.7	U	3.4	U	3.7	U
4,4'-DDD	UG/KG	29		7.4		3.4	U	3.7	U	3.4	U	70	
ENDOSULFAN SULFATE	UG/KG	3.6	U	3.4	U	3.4	U	3.7	U	3.4	U	3.7	U
4,4'-DDT	UG/KG	84		19		3.4	U	6.3	P	3.4	U	81	
METHOXYCHLOR	UG/KG	19	U	18	U	18	U	19	U	18	U	19	U
ENDRIN KETONE	UG/KG	3.6	U	3.4	U	3.4	U	3.7	U	3.4	U	3.7	U
ENDRIN ALDEHYDE	UG/KG	3.6	U	3.4	U	3.4	U	3.7	U	3.4	U	3.7	U
ALPHA-CHLORDANE	UG/KG	1.9	U	1.8	U	1.8	U	1.9	U	1.8	U	1.9	U
GAMMA-CHLORDANE	UG/KG	1.9	U	1.8	U	1.8	U	1.9	U	1.8	U	1.9	U
TOXAPHENE	UG/KG	190	U	180	U	180	U	190	U	180	U	190	U
AROCLOR-1016	UG/KG	36	U	34	U	34	U	37	U	34	U	37	U
AROCLOR-1221	UG/KG	74	U	70	U	69	U	76	U	69	U	74	U
AROCLOR-1232	UG/KG	36	U	34	U	34	U	37	U	34	U	37	U
AROCLOR-1242	UG/KG	36	U	34	U	34	U	37	U	34	U	37	U
AROCLOR-1248	UG/KG	36	U	34	U	34	U	37	U	34	U	37	U
AROCLOR-1254	UG/KG	36	U	34	U	34	U	37	U	34	U	37	U
AROCLOR-1260	UG/KG	36	U	34	U	34	U	37	U	34	U	37	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: D

RESULTS FOR PESTICIDE/PCB COMPOUND ANALYSES
SUB-AREA D

Parameter	Units	DB031F 11-JUN-92		DB032A 11-JUN-92		DB032C 11-JUN-92		DB033A 07-JUL-92		DB033E 07-JUL-92		DB034A 07-JUL-92	
ALPHA-BHC	UG/KG	1.8	U	1.9	U	1.8	U	2.0	U	1.9	U	1.9	U
BETA-BHC	UG/KG	1.8	U	1.9	U	1.8	U	2.0	U	1.9	U	1.9	U
DELTA-BHC	UG/KG	1.8	U	1.9	U	1.8	U	2.0	U	1.9	U	1.9	U
GAMMA-BHC (LINDANE)	UG/KG	1.8	U	1.9	U	1.8	U	2.0	U	1.9	U	1.9	U
HEPTACHLOR	UG/KG	1.8	U	1.9	U	1.8	U	2.0	U	1.9	U	1.9	U
ALDRIN	UG/KG	1.8	U	1.9	U	1.8	U	2.0	U	1.9	U	1.9	U
HEPTACHLOR EPOXIDE	UG/KG	1.8	U	1.9	U	1.8	U	2.0	U	1.9	U	1.9	U
ENDOSULFAN I	UG/KG	1.8	U	1.9	U	1.8	U	2.0	U	1.9	U	1.9	U
DIELDRIN	UG/KG	3.6	U	3.7	U	3.5	U	3.8	U	3.7	U	3.7	U
4,4'-DDE	UG/KG	3.6	U	3.7	U	3.5	U	130	PJ	3.7	U	26	J
ENDRIN	UG/KG	3.6	U	3.7	U	3.5	U	3.8	U	3.7	U	3.7	U
ENDOSULFAN II	UG/KG	3.6	U	3.7	U	3.5	U	3.8	U	3.7	U	3.7	U
4,4'-DDD	UG/KG	3.6	U	3.7	U	3.5	U	21	P	3.7	U	3.7	U
ENDOSULFAN SULFATE	UG/KG	3.6	U	3.7	U	3.5	U	3.8	U	3.7	U	3.7	U
4,4'-DDT	UG/KG	3.6	U	3.7	U	3.5	U	200	P	3.7	U	20	
METHOXYCHLOR	UG/KG	18	U	19	U	18	U	20	U	19	U	19	U
ENDRIN KETONE	UG/KG	3.6	U	3.7	U	3.5	U	3.8	U	3.7	U	3.7	U
ENDRIN ALDEHYDE	UG/KG	3.6	U	3.7	U	3.5	U	3.8	U	3.7	U	3.7	U
ALPHA-CHLORDANE	UG/KG	1.8	U	1.9	U	1.8	U	2.0	U	1.9	U	1.9	U
GAMMA-CHLORDANE	UG/KG	1.8	U	1.9	U	1.8	U	2.0	U	1.9	U	1.9	U
TOXAPHENE	UG/KG	180	U	190	U	180	U	200	U	190	U	190	U
AROCLOR-1016	UG/KG	36	U	37	U	35	U	38	U	37	U	37	U
AROCLOR-1221	UG/KG	73	U	75	U	71	U	77	U	76	U	76	U
AROCLOR-1232	UG/KG	36	U	37	U	35	U	38	U	37	U	37	U
AROCLOR-1242	UG/KG	36	U	37	U	35	U	38	U	37	U	37	U
AROCLOR-1248	UG/KG	36	U	37	U	35	U	38	U	37	U	37	U
AROCLOR-1254	UG/KG	36	U	37	U	35	U	38	U	37	U	37	U
AROCLOR-1260	UG/KG	36	U	37	U	35	U	38	U	37	U	37	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: D

RESULTS FOR PESTICIDE/PCB COMPOUND ANALYSES
SUB-AREA D

Parameter	Units	DB034C 07-JUL-92	
ALPHA-BHC	UG/KG	2.0	U
BETA-BHC	UG/KG	2.0	U
DELTA-BHC	UG/KG	2.0	U
GAMMA-BHC (LINDANE)	UG/KG	2.0	U
HEPTACHLOR	UG/KG	2.0	U
ALDRIN	UG/KG	2.0	U
HEPTACHLOR EPOXIDE	UG/KG	2.0	U
ENDOSULFAN I	UG/KG	2.0	U
DIELDRIN	UG/KG	3.8	U
4,4'-DDE	UG/KG	4.8	J
ENDRIN	UG/KG	3.8	U
ENDOSULFAN II	UG/KG	3.8	U
4,4'-DDD	UG/KG	3.8	U
ENDOSULFAN SULFATE	UG/KG	3.8	U
4,4'-DDT	UG/KG	5.4	
METHOXYCHLOR	UG/KG	20	U
ENDRIN KETONE	UG/KG	3.8	U
ENDRIN ALDEHYDE	UG/KG	3.8	U
ALPHA-CHLORDANE	UG/KG	2.0	U
GAMMA-CHLORDANE	UG/KG	2.0	U
TOXAPHENE	UG/KG	200	U
AROCLOR-1016	UG/KG	38	U
AROCLOR-1221	UG/KG	77	U
AROCLOR-1232	UG/KG	38	U
AROCLOR-1242	UG/KG	38	U
AROCLOR-1248	UG/KG	38	U
AROCLOR-1254	UG/KG	38	U
AROCLOR-1260	UG/KG	38	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: E1

RESULTS FOR PESTICIDE/PCB COMPOUND ANALYSES
SUB-AREA E1

Parameter	Units	EB001A 16-JUN-92		EB001E 16-JUN-92		EB002A 16-JUN-92		EB002D 16-JUN-92	
ALPHA-BHC	UG/KG	18	U	2.0	U	19	U	1.8	U
BETA-BHC	UG/KG	18	U	2.0	U	19	U	1.8	U
DELTA-BHC	UG/KG	18	U	2.0	U	19	U	1.8	U
GAMMA-BHC (LINDANE)	UG/KG	18	U	2.0	U	19	U	1.8	U
HEPTACHLOR	UG/KG	18	U	2.0	U	19	U	1.8	U
ALDRIN	UG/KG	18	U	2.0	U	19	U	1.8	U
HEPTACHLOR EPOXIDE	UG/KG	18	U	2.0	U	19	U	1.8	U
ENDOSULFAN I	UG/KG	18	U	2.0	U	19	U	1.8	U
DIELDRIN	UG/KG	35	U	3.8	U	37	U	3.4	U
4,4'-DDE	UG/KG	700		3.8	U	420		3.4	U
ENDRIN	UG/KG	35	U	3.8	U	37	U	3.4	U
ENDOSULFAN II	UG/KG	35	U	3.8	U	37	U	3.4	U
4,4'-DDD	UG/KG	35	U	3.8	U	110	P	3.4	U
ENDOSULFAN SULFATE	UG/KG	35	U	3.8	U	37	U	3.4	U
4,4'-DDT	UG/KG	930		3.8	U	500		3.4	U
METHOXYCHLOR	UG/KG	180	U	20	U	190	U	18	U
ENDRIN KETONE	UG/KG	35	U	3.8	U	37	U	3.4	U
ENDRIN ALDEHYDE	UG/KG	35	U	3.8	U	37	U	3.4	U
ALPHA-CHLORDANE	UG/KG	18	U	2.0	U	19	U	1.8	U
GAMMA-CHLORDANE	UG/KG	18	U	2.0	U	19	U	1.8	U
TOXAPHENE	UG/KG	1800	U	200	U	1900	U	180	U
AROCLOR-1016	UG/KG	350	U	38	U	370	U	34	U
AROCLOR-1221	UG/KG	710	U	78	U	740	U	70	U
AROCLOR-1232	UG/KG	350	U	38	U	370	U	34	U
AROCLOR-1242	UG/KG	350	U	38	U	370	U	34	U
AROCLOR-1248	UG/KG	350	U	38	U	370	U	34	U
AROCLOR-1254	UG/KG	350	U	38	U	370	U	34	U
AROCLOR-1260	UG/KG	350	U	38	U	370	U	34	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: E2

RESULTS FOR PESTICIDE/PCB COMPOUND ANALYSES
SUB-AREA E2

Parameter	Units	EB003A 18-JUN-92		EB003F 18-JUN-92		EB004A 18-JUN-92		EB004D 18-JUN-92	
ALPHA-BHC	UG/KG	2.0	U	1.8	U	19	U	1.8	U
BETA-BHC	UG/KG	2.0	U	1.8	U	19	U	1.8	U
DELTA-BHC	UG/KG	2.0	U	1.8	U	19	U	1.8	U
GAMMA-BHC (LINDANE)	UG/KG	2.0	U	1.8	U	19	U	1.8	U
HEPTACHLOR	UG/KG	2.0	U	1.8	U	19	U	1.8	U
ALDRIN	UG/KG	2.0	U	1.8	U	19	U	1.8	U
HEPTACHLOR EPOXIDE	UG/KG	2.0	U	1.8	U	19	U	1.8	U
ENDOSULFAN I	UG/KG	2.0	U	1.8	U	19	U	1.8	U
DIELDRIN	UG/KG	3.9	U	3.4	U	37	U	3.5	U
4,4'-DDE	UG/KG	3.9	U	3.4	U	69		3.5	U
ENDRIN	UG/KG	3.9	U	3.4	U	37	U	5.3	P
ENDOSULFAN II	UG/KG	3.9	U	3.4	U	37	U	3.5	U
4,4'-DDD	UG/KG	3.9	U	3.4	U	42	P	3.5	U
ENDOSULFAN SULFATE	UG/KG	3.9	U	3.4	U	37	U	3.5	U
4,4'-DDT	UG/KG	3.9	U	3.4	U	37	U	3.5	U
METHOXYCHLOR	UG/KG	20	U	18	U	190	U	18	U
ENDRIN KETONE	UG/KG	3.9	U	3.4	U	37	U	3.5	U
ENDRIN ALDEHYDE	UG/KG	3.9	U	3.4	U	37	U	3.5	U
ALPHA-CHLORDANE	UG/KG	2.0	U	1.8	U	19	U	1.8	U
GAMMA-CHLORDANE	UG/KG	2.0	U	1.8	U	19	U	1.8	P
TOXAPHENE	UG/KG	200	U	180	U	1900	U	180	U
AROCLOR-1016	UG/KG	39	U	34	U	370	U	35	U
AROCLOR-1221	UG/KG	80	U	70	U	760	U	71	U
AROCLOR-1232	UG/KG	39	U	34	U	370	U	35	U
AROCLOR-1242	UG/KG	39	U	34	U	370	U	35	U
AROCLOR-1248	UG/KG	39	U	34	U	370	U	35	U
AROCLOR-1254	UG/KG	39	U	34	U	370	U	35	U
AROCLOR-1260	UG/KG	39	U	34	U	370	U	35	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: F2

RESULTS FOR PESTICIDE/PCB COMPOUND ANALYSES
SUB-AREA F

Parameter	Units	FB001A 12-JUN-92		FB001E 12-JUN-92		FB002A 11-JUN-92		FB002C 07-JUL-92		FB002H 11-JUN-92		FB003A 11-JUN-92	
ALPHA-BHC	UG/KG	2.6	U	1.8	U	1.9	U	2.0	U	1.8	U	1.9	U
BETA-BHC	UG/KG	2.6	U	1.8	U	1.9	U	2.0	U	1.8	U	1.9	U
DELTA-BHC	UG/KG	2.6	U	1.8	U	1.9	U	2.0	U	1.8	U	1.9	U
GAMMA-BHC (LINDANE)	UG/KG	2.6	U	1.8	U	1.9	U	2.0	U	1.8	U	1.9	U
HEPTACHLOR	UG/KG	2.6	U	1.8	U	1.9	U	2.0	U	1.8	U	1.9	U
ALDRIN	UG/KG	2.6	U	1.8	U	1.9	U	2.0	U	1.8	U	1.9	U
HEPTACHLOR EPOXIDE	UG/KG	2.6	U	1.8	U	1.9	U	2.0	U	1.8	U	1.9	U
ENDOSULFAN I	UG/KG	2.6	U	1.8	U	1.9	U	2.0	U	1.8	U	1.9	U
DIELDRIN	UG/KG	5.0	U	3.4	U	3.6	U	3.8	U	3.4	U	3.7	U
4,4'-DDE	UG/KG	18		3.4	U	3.6	U	3.8	U	3.4	U	15	
ENDRIN	UG/KG	5.0	U	3.4	U	3.6	U	3.8	U	3.4	U	3.7	U
ENDOSULFAN II	UG/KG	5.0	U	3.4	U	3.6	U	3.8	U	3.4	U	3.7	U
4,4'-DDD	UG/KG	5.0	U	3.4	U	3.6	U	3.8	U	3.4	U	30	P
ENDOSULFAN SULFATE	UG/KG	5.0	U	3.4	U	3.6	U	3.8	U	3.4	U	3.7	U
4,4'-DDT	UG/KG	21		3.4	U	3.6	U	3.8	U	3.4	U	3.7	U
METHOXYCHLOR	UG/KG	26	U	18	U	19	U	20	U	18	U	19	U
ENDRIN KETONE	UG/KG	5.0	U	3.4	U	3.6	U	3.8	U	3.4	U	3.7	U
ENDRIN ALDEHYDE	UG/KG	5.0	U	3.4	U	3.6	U	3.8	U	3.4	U	3.7	U
ALPHA-CHLORDANE	UG/KG	2.6	U	1.8	U	1.9	U	2.0	U	1.8	U	1.9	U
GAMMA-CHLORDANE	UG/KG	2.6	U	1.8	U	1.9	U	2.0	U	1.8	U	1.9	U
TOXAPHENE	UG/KG	260	U	180	U	190	U	200	U	180	U	190	U
AROCLOR-1016	UG/KG	50	U	34	U	36	U	38	U	34	U	37	U
AROCLOR-1221	UG/KG	100	U	69	U	74	U	78	U	70	U	76	U
AROCLOR-1232	UG/KG	50	U	34	U	36	U	38	U	34	U	37	U
AROCLOR-1242	UG/KG	50	U	34	U	36	U	38	U	34	U	37	U
AROCLOR-1248	UG/KG	50	U	34	U	36	U	38	U	34	U	37	U
AROCLOR-1254	UG/KG	50	U	34	U	36	U	38	U	34	U	37	U
AROCLOR-1260	UG/KG	50	U	34	U	36	U	38	U	34	U	37	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: F2

RESULTS FOR PESTICIDE/PCB COMPOUND ANALYSES
SUB-AREA F

Parameter	Units	FB003E 11-JUN-92		FB004A 11-JUN-92		FB004G 11-JUN-92	
ALPHA-BHC	UG/KG	1.7	U	1.9	U	1.8	U
BETA-BHC	UG/KG	1.7	U	1.9	U	1.8	U
DELTA-BHC	UG/KG	1.7	U	1.9	U	1.8	U
GAMMA-BHC (LINDANE)	UG/KG	1.7	U	1.9	U	1.8	U
HEPTACHLOR	UG/KG	1.7	U	1.9	U	1.8	U
ALDRIN	UG/KG	1.7	U	1.9	U	1.8	U
HEPTACHLOR EPOXIDE	UG/KG	1.7	U	1.9	U	1.8	U
ENDOSULFAN I	UG/KG	1.7	U	1.9	U	1.8	U
DIELDRIN	UG/KG	3.3	U	3.6	U	3.4	U
4,4'-DDE	UG/KG	3.3	U	6.5		3.4	U
ENDRIN	UG/KG	3.3	U	3.6	U	3.4	U
ENDOSULFAN II	UG/KG	3.3	U	3.6	U	3.4	U
4,4'-DDD	UG/KG	3.3	U	3.6	U	3.4	U
ENDOSULFAN SULFATE	UG/KG	3.3	U	3.6	U	3.4	U
4,4'-DDT	UG/KG	3.3	U	9.9		3.4	U
METHOXYCHLOR	UG/KG	17	U	19	U	18	U
ENDRIN KETONE	UG/KG	3.3	U	3.6	U	3.4	U
ENDRIN ALDEHYDE	UG/KG	3.3	U	3.6	U	3.4	U
ALPHA-CHLORDANE	UG/KG	1.7	U	1.9	U	1.8	U
GAMMA-CHLORDANE	UG/KG	1.7	U	1.9	U	1.8	U
TOXAPHENE	UG/KG	170	U	190	U	180	U
AROCLOR-1016	UG/KG	33	U	36	U	34	U
AROCLOR-1221	UG/KG	68	U	74	U	69	U
AROCLOR-1232	UG/KG	33	U	36	U	34	U
AROCLOR-1242	UG/KG	33	U	36	U	34	U
AROCLOR-1248	UG/KG	33	U	36	U	34	U
AROCLOR-1254	UG/KG	33	U	36	U	34	U
AROCLOR-1260	UG/KG	33	U	36	U	34	U

APPENDIX H

RESULTS FOR INORGANIC AND TOTAL ORGANIC CARBON CONSTITUENT ANALYSES

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: BG

RESULTS FOR INORGANIC AND TOC CONSTITUENT ANALYSES
SUB-AREA BG

Parameter	Units	BG001A 03-JUN-92		BG001D 03-JUN-92		BG002A 03-JUN-92		BG002D 03-JUN-92		BG003A 03-JUN-92		BG003D 03-JUN-92	
ALUMINUM	MG/KG	3330		1990		3420		2560		3460		1280	
ANTIMONY	MG/KG	2.1	U	2.1	U	2.1	U	2.8	U	2.2	U	2.0	U
ARSENIC	MG/KG	2.1		1.2	B	1.5	B	16.5		0.66	U	1.0	B
BARIUM	MG/KG	52.8		10.4	U	30.4	B	34.5	B	19.9	B	10.2	U
BERYLLIUM	MG/KG	1.0	U	1.0	U	1.1	U	1.4	U	1.1	U	1.0	U
CADMIUM	MG/KG	1.0	U	1.0	U	1.1	U	3.4	J	1.1	U	1.0	U
CALCIUM	MG/KG	3230		27500		697	B	20100		5060		22800	
CHROMIUM	MG/KG	5.8	*	7.2	*	4.4	*	7.1	*	11.2	*	4.8	*J
COBALT	MG/KG	10.3	U	10.4	U	10.6	U	22.3		10.9	U	10.2	U
COPPER	MG/KG	6.3		5.0	B	4.2	U	16.6		4.4	U	4.1	U
IRON	MG/KG	8510		6100		6000		13000		7190		3850	
LEAD	MG/KG	9.9		1.7		4.4		3.4		3.1		1.3	
MAGNESIUM	MG/KG	1600		12400		921	B	3660		3100		8100	
MANGANESE	MG/KG	459	N*	164	N*	261	N*	97.7	N*	94.3	N*	257	N*
MERCURY	MG/KG	0.10	U	0.10	U	0.11	U	0.14	U	0.11	U	0.10	U
NICKEL	MG/KG	11.8	*J	12.9	*	8.5	U*	51.8	*	8.8	U*	8.2	U*
POTASSIUM	MG/KG	140	BJ	142	BJ	212	B	140	U	109	U	102	U
SELENIUM	MG/KG	0.62	UW	0.63	U	0.64	UW	6.1		0.66	UW	0.61	U
SILVER	MG/KG	2.1	U	2.1	U	2.1	U	2.8	U	2.2	U	2.0	U
SODIUM	MG/KG	103	U	104	U	106	U	140	U	120	B	102	U
THALLIUM	MG/KG	0.62	U	0.63	U	0.64	U	0.84	UW	0.66	U	0.61	U
VANADIUM	MG/KG	14.0		14.5		11.3		42.0		21.8		10.2	U
ZINC	MG/KG	25.2		13.0		12.8		49.3		17.4		9.6	
CYANIDE, TOTAL	MG/KG	2.6	UN	2.6	UN	2.7	UN	3.5	UN	2.7	UN	2.6	UN
TOTAL ORGANIC CARBON	MG/KG	7900		630		1500		4600		1000		470	

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: BG

RESULTS FOR INORGANIC AND TOC CONSTITUENT ANALYSES
SUB-AREA BG

Parameter	Units	BG004A 03-JUN-92		BG004D 03-JUN-92		BG005A 03-JUN-92		BG005D 03-JUN-92		BG005D DUP 03-JUN-92		BG006A 03-JUN-92	
ALUMINUM	MG/KG	2280		1200		2430		1860		1310		5090	
ANTIMONY	MG/KG	2.1	U	2.1	U	2.1	U	2.1	U	2.1	U	2.1	U
ARSENIC	MG/KG	2.6		0.62	UW	0.83	BW	2.3		1.5	B	8.2	
BARIUM	MG/KG	142		10.4	U	17.3	B	10.4	U	10.6	U	241	
BERYLLIUM	MG/KG	1.0	U	1.0	U	1.0	U	1.0	U	1.1	U	1.1	U
CADMIUM	MG/KG	1.0	U	1.0	U	1.0	U	1.0	U	1.1	U	1.1	U
CALCIUM	MG/KG	1010	B	19800		27500		25900		16700		1270	
CHROMIUM	MG/KG	5.8	*	3.6	*J	9.2	*	10.3	*	5.1	*	8.1	*
COBALT	MG/KG	10.4	U	10.4	U	10.3	U	10.4	U	10.6	U	10.7	U
COPPER	MG/KG	4.1	U	4.1	U	4.1	U	4.2	U	4.2	U	4.7	B
IRON	MG/KG	7480		3750		7590		6730		7780		15500	
LEAD	MG/KG	7.0		2.3		3.2		3.0		1.7		4.3	
MAGNESIUM	MG/KG	1220		6690		6500		9340		4950		1480	
MANGANESE	MG/KG	1080	N*	192	N*	468	N*	255	N*	152	N*	2870	N*
MERCURY	MG/KG	0.10	U	0.10	U	0.10	U	0.10	U	0.11	U	0.11	U
NICKEL	MG/KG	9.7	*J	11.0	*	12.0	*	11.2	*	10.9	*J	13.6	*
POTASSIUM	MG/KG	104	U	104	U	151	BJ	135	BJ	106	U	615	BJ
SELENIUM	MG/KG	0.62	UW	0.62	U	0.62	UW	0.62	U	0.64	U	0.64	UW
SILVER	MG/KG	2.1	U	2.1	U	2.1	U	2.1	U	2.1	U	2.1	U
SODIUM	MG/KG	104	U	104	U	103	U	104	U	106	U	107	U
THALLIUM	MG/KG	0.62	U	0.62	U	0.62	U	0.62	U	0.64	U	0.64	U
VANADIUM	MG/KG	10.4	U	10.4	U	13.1		12.6		17.3		18.6	
ZINC	MG/KG	16.5		9.4		14.5		10.5		11.3		21.8	
CYANIDE, TOTAL	MG/KG	2.6	UN	2.6	UN	2.6	UN	2.6	UN	2.7	UN	2.7	UN
TOTAL ORGANIC CARBON	MG/KG	120		1700		3900		1900		1000		2400	

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: BG

RESULTS FOR INORGANIC AND TOC CONSTITUENT ANALYSES
SUB-AREA BG

Parameter	Units	BG006D 03-JUN-92		BG007A 04-JUN-92		BG007D 04-JUN-92		BG008A 04-JUN-92		BG008D 04-JUN-92		BG009A 04-JUN-92	
ALUMINUM	MG/KG	4540		3500		3300		2280		1640		2100	
ANTIMONY	MG/KG	2.3	U	2.2	U	2.2	U	2.0	U	2.1	U	2.1	UN
ARSENIC	MG/KG	3.7		2.3		26.3		2.1		0.78	B	0.63	U
BARIUM	MG/KG	71.9		66.4		6330		58.0		10.3	U	17.6	B
BERYLLIUM	MG/KG	1.1	U	1.1	U	1.1	U	1.0	U	1.0	U	1.1	U
CADMIUM	MG/KG	1.1	U	1.1	U	1.1	U	1.0	U	1.0	U	1.1	U
CALCIUM	MG/KG	37300		2670		14500		675	B	22000		1260	
CHROMIUM	MG/KG	10.6	*	8.7	*	12.8	*	5.9	*	5.9	*	7.8	
COBALT	MG/KG	11.4	U	11.1	U	13.8		10.1	U	10.3	U	10.6	U
COPPER	MG/KG	9.0		6.1		5.3	B	4.0	U	4.1	U	4.2	U
IRON	MG/KG	13200		7010		23100		6900		6000		4750	
LEAD	MG/KG	5.6		3.8		1.9		1.4		2.5		2.0	
MAGNESIUM	MG/KG	14100		1770		5960		1150		5960		895	B
MANGANESE	MG/KG	529	N*	414	N*	35500	N*	510	N*	190	N*	44.7	
MERCURY	MG/KG	0.11	U	0.11	U	0.11	U	0.10	U	0.10	U	0.11	U
NICKEL	MG/KG	15.4	*	8.9	U*	37.7	*	8.1	U*	11.3	*J	8.4	U
POTASSIUM	MG/KG	1130	B	384	B	268	BJ	101	U	113	BJ	176	BJ
SELENIUM	MG/KG	0.69	U	0.67	U	0.67	U	0.61	U	0.62	U	0.63	U
SILVER	MG/KG	2.3	U	2.2	U	4.4		2.0	U	2.1	U	2.1	U
SODIUM	MG/KG	142	B	111	U	111	U	101	U	103	U	106	U
THALLIUM	MG/KG	0.69	U	0.67	U	0.67	U	0.61	U	0.62	U	0.63	U
VANADIUM	MG/KG	20.9		19.8		28.2		11.0		11.8		10.9	
ZINC	MG/KG	36.4		21.5		21.2		10.6		13.2		8.4	
CYANIDE, TOTAL	MG/KG	2.9	UN	2.8	UN	2.8	UN	2.5	UN	2.6	UN	2.6	U
TOTAL ORGANIC CARBON	MG/KG	4300		10000		8100		130		5500		250	

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: BG

RESULTS FOR INORGANIC AND TOC CONSTITUENT ANALYSES
SUB-AREA BG

Parameter	Units	BG009D 04-JUN-92		BG009D DUP 04-JUN-92		BG010A 04-JUN-92		BG010D 04-JUN-92	
ALUMINUM	MG/KG	1630		1590		5860		1290	
ANTIMONY	MG/KG	2.1	UN	2.1	UN	2.3	UN	2.1	U
ARSENIC	MG/KG	0.87	B	0.87	B	4.7		1.0	B
BARIUM	MG/KG	10.3	U	10.3	U	103		10.4	B
BERYLLIUM	MG/KG	1.0	U	1.0	U	1.1	U	1.0	U
CADMIUM	MG/KG	1.0	U	1.0	U	1.1	U	1.0	U
CALCIUM	MG/KG	27000		33300		9140		13000	
CHROMIUM	MG/KG	8.0		9.3		15.2		4.2	*J
COBALT	MG/KG	10.3	U	10.3	U	11.5	U	10.3	U
COPPER	MG/KG	4.1	U	4.1	U	7.1		4.1	U
IRON	MG/KG	5080		4830		18000		3900	
LEAD	MG/KG	1.7		1.6		7.6		1.1	
MAGNESIUM	MG/KG	6790		12400		3760		3870	
MANGANESE	MG/KG	230		335		871		246	N*
MERCURY	MG/KG	0.10	U	0.10	U	0.11	U	0.10	U
NICKEL	MG/KG	15.2		12.2		13.7		8.2	U*
POTASSIUM	MG/KG	144	B	143	BJ	314	BJ	103	U
SELENIUM	MG/KG	0.62	U	0.62	U	0.69	U	0.62	U
SILVER	MG/KG	2.1	U	2.1	U	2.3	U	2.1	U
SODIUM	MG/KG	103	U	103	U	119	B	103	U
THALLIUM	MG/KG	0.62	U	0.62	U	0.69	U	0.62	U
VANADIUM	MG/KG	10.3	U	10.3	U	23.4		10.3	U
ZINC	MG/KG	10.9		11.2		27.9		8.2	
CYANIDE, TOTAL	MG/KG	2.6	U	2.6	U	2.9	U	2.6	UN
TOTAL ORGANIC CARBON	MG/KG	3600		350	*	> 16000	E	1200	*

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A1

RESULTS FOR INORGANIC AND TOC CONSTITUENT ANALYSES
SUB-AREA A1

Parameter	Units	AB040A 15-JUN-92		AB040D 15-JUN-92		AB041A 08-JUN-92		AB041C 08-JUN-92		AB042A 09-JUN-92		AB042G 09-JUN-92	
ALUMINUM	MG/KG					4190		2490		3590	*	1410	*
ANTIMONY	MG/KG					2.4	UN	2.1	UN	2.2	UN	2.1	UN
ARSENIC	MG/KG					3.3		0.64	UW	3.4		0.98	BU
BARIUM	MG/KG					113		21.9	B	84.4		10.4	U
BERYLLIUM	MG/KG					1.2	U	1.1	U	1.1	U	1.0	U
CADMIUM	MG/KG					1.2	U	1.1	U	1.1	U	1.0	U
CALCIUM	MG/KG					16700		12600		17000	*	37300	*
CHROMIUM	MG/KG					10.5		13.6		8.9		6.3	
COBALT	MG/KG					11.8	U	10.7	U	10.8	U	10.4	U
COPPER	MG/KG					6.7		4.3	U	10.3	*	4.6	B*U
IRON	MG/KG					10600		6270		24300		5110	
LEAD	MG/KG					5.6		1.9		4.2		2.1	
MAGNESIUM	MG/KG					1600		3490		4140		10500	
MANGANESE	MG/KG					927		162		882	N*	421	N*
MERCURY	MG/KG					0.12	U	0.11	U	0.11	U	0.10	U
NICKEL	MG/KG					9.5	U	8.6	U	12.1	J	12.9	
POTASSIUM	MG/KG					208	BJ	107	U	327	BU	104	U
SELENIUM	MG/KG					0.71	U	0.64	U	0.65	U	0.62	UW
SILVER	MG/KG					2.4	U	2.1	U	2.2	U	2.1	U
SODIUM	MG/KG					141	B	107	U	165	BU	104	U
THALLIUM	MG/KG					0.71	U	0.64	U	0.65	U	0.62	U
VANADIUM	MG/KG					13.3		12.7		14.0		10.4	U
ZINC	MG/KG					24.4		10.2		26.0		8.0	
CYANIDE, TOTAL	MG/KG					3.0	U	2.7	U	2.7	U	2.6	U
TOTAL ORGANIC CARBON	MG/KG	4400		420		14000		470		6600		2600	

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A1

RESULTS FOR INORGANIC AND TOC CONSTITUENT ANALYSES
SUB-AREA A1

Parameter	Units	AB042G DUP 09-JUN-92	
ALUMINUM	MG/KG	1460	*
ANTIMONY	MG/KG	2.1	UN
ARSENIC	MG/KG	1.4	B
BARIUM	MG/KG	10.3	U
BERYLLIUM	MG/KG	1.0	U
CADMIUM	MG/KG	1.0	U
CALCIUM	MG/KG	30400	*
CHROMIUM	MG/KG	4.7	
COBALT	MG/KG	10.3	U
COPPER	MG/KG	5.1	B*U
IRON	MG/KG	5670	
LEAD	MG/KG	1.5	
MAGNESIUM	MG/KG	6830	
MANGANESE	MG/KG	339	N*
MERCURY	MG/KG	0.10	U
NICKEL	MG/KG	14.7	J
POTASSIUM	MG/KG	214	BU
SELENIUM	MG/KG	0.62	UW
SILVER	MG/KG	2.1	U
SODIUM	MG/KG	103	U
THALLIUM	MG/KG	0.62	U
VANADIUM	MG/KG	10.3	U
ZINC	MG/KG	11.3	
CYANIDE, TOTAL	MG/KG	2.6	U
TOTAL ORGANIC CARBON	MG/KG	2100	

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A2

RESULTS FOR INORGANIC AND TOC CONSTITUENT ANALYSES
SUB-AREA A2

Parameter	Units	AB024A 09-JUN-92		AB024G 09-JUN-92		AB025A 09-JUN-92		AB025B 09-JUN-92		AB201A 08-JUL-92		AB201H 08-JUL-92
ALUMINUM	MG/KG	5270	*	1470	*	3010	*	4990	*			
ANTIMONY	MG/KG	2.2	UN	2.1	UN	2.2	UN	2.6	UN			
ARSENIC	MG/KG	4.7		1.4	B	1.9	B	8.3				
BARIUM	MG/KG	87.5		10.4	U	43.6		227				
BERYLLIUM	MG/KG	1.1	U	1.0	U	1.1	U	1.3	U			
CADMIUM	MG/KG	1.1	U	1.0	U	1.1	U	1.3	U			
CALCIUM	MG/KG	8180	*	25900	*	11700	*	67400	*			
CHROMIUM	MG/KG	11.3		4.2		7.5		8.8				
COBALT	MG/KG	11.2	U	10.4	U	10.9	U	13.1	U			
COPPER	MG/KG	158	*	4.5	B*U	11.1	*	12.8	*			
IRON	MG/KG	12800		4160		7100		18000				
LEAD	MG/KG	143		1.8		5.1		5.8				
MAGNESIUM	MG/KG	2400		7830		3950		2750				
MANGANESE	MG/KG	873	N*	230	N*	397	N*	2230	N*			
MERCURY	MG/KG	0.11	U	0.10	U	0.11	U	0.13	U			
NICKEL	MG/KG	12.4		24.2		10.7		12.0				
POTASSIUM	MG/KG	262	BU	115	BU	247	BU	280	BU			
SELENIUM	MG/KG	0.67	U	0.62	U	0.65	UW	0.79	U			
SILVER	MG/KG	2.2	U	2.1	U	2.2	U	2.6	U			
SODIUM	MG/KG	112	U	104	U	109	U	131	U			
THALLIUM	MG/KG	0.67	U	0.62	U	0.65	U	0.79	U			
VANADIUM	MG/KG	18.6		10.9		12.9		19.7				
ZINC	MG/KG	141		12.0		17.6		24.3				
CYANIDE, TOTAL	MG/KG	2.8	U	2.6	U	2.7	U	3.3	U			
TOTAL ORGANIC CARBON	MG/KG	> 15000	E,*	1100		2000		> 16000	E	> 16000	E	5400

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A2

RESULTS FOR INORGANIC AND TOC CONSTITUENT ANALYSES
SUB-AREA A2

Parameter	Units	AB202A 08-JUL-92	AB202B 08-JUL-92	AB222A 09-JUL-92	AB222A DUP 09-JUL-92	AB222C 09-JUL-92	AB223A 09-JUL-92
ALUMINUM	MG/KG						
ANTIMONY	MG/KG						
ARSENIC	MG/KG						
BARIUM	MG/KG						
BERYLLIUM	MG/KG						
CADMIUM	MG/KG						
CALCIUM	MG/KG						
CHROMIUM	MG/KG						
COBALT	MG/KG						
COPPER	MG/KG						
IRON	MG/KG						
LEAD	MG/KG						
MAGNESIUM	MG/KG						
MANGANESE	MG/KG						
MERCURY	MG/KG						
NICKEL	MG/KG						
POTASSIUM	MG/KG						
SELENIUM	MG/KG						
SILVER	MG/KG						
SODIUM	MG/KG						
THALLIUM	MG/KG						
VANADIUM	MG/KG						
ZINC	MG/KG						
CYANIDE, TOTAL	MG/KG						
TOTAL ORGANIC CARBON	MG/KG	11000	> 16000 E	> 16000 E	3800	590	4100

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A2

RESULTS FOR INORGANIC AND TOC CONSTITUENT ANALYSES
SUB-AREA A2

Parameter	Units	AB223C 09-JUL-92	AB230A 10-JUL-92	AB230B 10-JUL-92
ALUMINUM	MG/KG			
ANTIMONY	MG/KG			
ARSENIC	MG/KG			
BARIUM	MG/KG			
BERYLLIUM	MG/KG			
CADMIUM	MG/KG			
CALCIUM	MG/KG			
CHROMIUM	MG/KG			
COBALT	MG/KG			
COPPER	MG/KG			
IRON	MG/KG			
LEAD	MG/KG			
MAGNESIUM	MG/KG			
MANGANESE	MG/KG			
MERCURY	MG/KG			
NICKEL	MG/KG			
POTASSIUM	MG/KG			
SELENIUM	MG/KG			
SILVER	MG/KG			
SODIUM	MG/KG			
THALLIUM	MG/KG			
VANADIUM	MG/KG			
ZINC	MG/KG			
CYANIDE, TOTAL	MG/KG			
TOTAL ORGANIC CARBON	MG/KG	8700	7000	660

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A3

RESULTS FOR INORGANIC AND TOC CONSTITUENT ANALYSES
SUB-AREA A3

Parameter	Units	AB035A 10-JUN-92		AB036A 15-JUN-92		AB036H 15-JUN-92		AB037A 10-JUN-92		AB037D 10-JUN-92		AB039A 10-JUN-92	
ALUMINUM	MG/KG	5050	*	2450		1360		3900	*	1450	*	4050	*
ANTIMONY	MG/KG	2.1	UN	2.2	UN	2.1	UN	2.1	UN	2.0	UN	2.3	UN
ARSENIC	MG/KG	2.0	B	4.5		1.3	B	4.2		0.61	UW	4.2	
BARIUM	MG/KG	41.3	B	36.7	B	10.6	U	73.6		10.2	U	188	
BERYLLIUM	MG/KG	1.1	U	1.1	U	1.1	U	1.1	U	1.0	U	1.1	U
CADMIUM	MG/KG	1.1	U	1.1	U	1.1	U	1.1	U	1.0	U	1.1	U
CALCIUM	MG/KG	8590		21800	*	24500		18700		22900		21400	
CHROMIUM	MG/KG	16.4		16.8		3.4		11.7		5.8		11.3	
COBALT	MG/KG	10.6	U	10.8	U	10.6	U	10.6	U	10.2	U	11.4	U
COPPER	MG/KG	20.7		155		4.2	U	43.9		4.1	B	204	
IRON	MG/KG	11100	*	8710	*	4080		11000	*	3820	*	16200	*
LEAD	MG/KG	12.4		54.9		2.0		50.7		1.4		15.6	
MAGNESIUM	MG/KG	4540		11200		6140		9770		5360		8860	
MANGANESE	MG/KG	470		447	*	392	N	493		431		2060	
MERCURY	MG/KG	0.11	U	0.11	U	0.11	U	0.11	U	0.10	U	0.11	U
NICKEL	MG/KG	14.1	J	25.5		9.9	*	9.1		8.2	U	12.7	
POTASSIUM	MG/KG	216	BJ	230	B	113	BJ	270	BJ	102	U	227	BJ
SELENIUM	MG/KG	0.64	U	0.82	B	0.63	U	0.63	U	0.61	U	0.68	U
SILVER	MG/KG	2.1	U	2.2	U	2.1	UN	2.1	U	2.0	U	2.3	U
SODIUM	MG/KG	189	B	108	U	106	U	106	U	102	U	114	U
THALLIUM	MG/KG	0.64	U	0.65	U	0.63	U	0.63	U	0.61	U	0.68	U
VANADIUM	MG/KG	23.1	*	10.8	U	10.6	U	15.9	*	10.2	U*	17.1	*
ZINC	MG/KG	35.5		56.0		9.5		80.8		9.2		58.2	
CYANIDE, TOTAL	MG/KG	2.7	U	2.7	UN	2.6	U	2.6	U	2.6	U	2.8	U
TOTAL ORGANIC CARBON	MG/KG	1800		12000		1600		> 16000	E	180		1300	

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A3

RESULTS FOR INORGANIC AND TOC CONSTITUENT ANALYSES
SUB-AREA A3

Parameter	Units	AB039H 10-JUN-92		AB039H DUP 10-JUN-92		AB043D 20-JUL-92		AB043H 20-JUL-92		AB044D 20-JUL-92		AB044H 20-JUL-92	
ALUMINUM	MG/KG	1050	*	1010	*	3740	*	1040	*	3570	*	1010	*
ANTIMONY	MG/KG	2.2	UN	2.2	UN	2.3	UN	2.1	UN	2.2	UN	2.1	UN
ARSENIC	MG/KG	0.94	B	1.2	B	3.3		1.2	B	3.4		3.2	
BARIUM	MG/KG	10.8	U	10.9	U	82.5		10.5	U	77.0		10.5	U
BERYLLIUM	MG/KG	1.1	U	1.1	U	1.1	U	1.0	U	1.1	U	1.1	U
CADMIUM	MG/KG	1.1	U	1.1	U	5.3		1.0	U	2.7		1.1	U
CALCIUM	MG/KG	21000		22100		39200	*	17800	*	17400	*	19600	*
CHROMIUM	MG/KG	4.1		3.8		17.0		2.8		20.7		3.6	
COBALT	MG/KG	10.8	U	10.9	U	11.3	U	10.5	U	11.1	U	10.5	U
COPPER	MG/KG	4.3	U	4.4	U	239	*	4.2	U*	314	*	4.2	U*
IRON	MG/KG	3580	*	3120	*	11000		2990		13300		3220	
LEAD	MG/KG	2.2		2.1		59.5	*	1.8	*	73.8	*	2.2	*
MAGNESIUM	MG/KG	4280		5870		20600	*	4350	*	6540	*	4920	*
MANGANESE	MG/KG	326		335		474	*	222	*	631	*	439	*
MERCURY	MG/KG	0.11	U	0.11	U	0.11	U	0.10	U	0.11	U	0.11	U
NICKEL	MG/KG	13.0	J	9.5	J	49.8		8.4	U	40.5		13.1	
POTASSIUM	MG/KG	108	U	109	U	1000	U	1000	U	1000	U	1000	U
SELENIUM	MG/KG	0.65	U	0.65	U	0.68	U	0.63	U	0.67	U	0.63	U
SILVER	MG/KG	2.2	U	2.2	U	11.8		2.1	U	6.1		2.1	U
SODIUM	MG/KG	108	U	109	U	195	B	105	U	122	B	105	U
THALLIUM	MG/KG	0.65	U	0.65	U	0.68	U	0.63	U	0.67	U	0.63	U
VANADIUM	MG/KG	10.8	U*	10.9	U*	20.2		10.5	U	22.8		10.5	U
ZINC	MG/KG	11.3		9.1		329	*	6.6	*	314	*	10.5	*
CYANIDE, TOTAL	MG/KG	2.7	U	2.7	U	2.8	UN	2.6	UN	5.3	N	2.6	UN
TOTAL ORGANIC CARBON	MG/KG	730		100		9800		370		12000	N,*	830	

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A3

RESULTS FOR INORGANIC AND TOC CONSTITUENT ANALYSES
SUB-AREA A3

Parameter	Units	AB209A 23-JUL-92	AB209B 23-JUL-92	AB210A 23-JUL-92	AB210D 23-JUL-92	AB211A 23-JUL-92	AB211B 23-JUL-92
ALUMINUM	MG/KG						
ANTIMONY	MG/KG						
ARSENIC	MG/KG						
BARIUM	MG/KG						
BERYLLIUM	MG/KG						
CADMIUM	MG/KG						
CALCIUM	MG/KG						
CHROMIUM	MG/KG						
COBALT	MG/KG						
COPPER	MG/KG						
IRON	MG/KG						
LEAD	MG/KG						
MAGNESIUM	MG/KG						
MANGANESE	MG/KG						
MERCURY	MG/KG						
NICKEL	MG/KG						
POTASSIUM	MG/KG						
SELENIUM	MG/KG						
SILVER	MG/KG						
SODIUM	MG/KG						
THALLIUM	MG/KG						
VANADIUM	MG/KG						
ZINC	MG/KG						
CYANIDE, TOTAL	MG/KG						
TOTAL ORGANIC CARBON	MG/KG	> 16000 E	11000	6300	140	4700	5600

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A3

RESULTS FOR INORGANIC AND TOC CONSTITUENT ANALYSES
SUB-AREA A3

Parameter	Units	AB212A 24-JUL-92	AB212B 24-JUL-92	AB213A 23-JUL-92	AB213A DUP 23-JUL-92	AB213B 23-JUL-92	AB214A 28-JUL-92
ALUMINUM	MG/KG						
ANTIMONY	MG/KG						
ARSENIC	MG/KG						
BARIUM	MG/KG						
BERYLLIUM	MG/KG						
CADMIUM	MG/KG						
CALCIUM	MG/KG						
CHROMIUM	MG/KG						
COBALT	MG/KG						
COPPER	MG/KG						
IRON	MG/KG						
LEAD	MG/KG						
MAGNESIUM	MG/KG						
MANGANESE	MG/KG						
MERCURY	MG/KG						
NICKEL	MG/KG						
POTASSIUM	MG/KG						
SELENIUM	MG/KG						
SILVER	MG/KG						
SODIUM	MG/KG						
THALLIUM	MG/KG						
VANADIUM	MG/KG						
ZINC	MG/KG						
CYANIDE, TOTAL	MG/KG						
TOTAL ORGANIC CARBON	MG/KG	1500	> 16000 E	4400	14000	6800	12000

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A3

RESULTS FOR INORGANIC AND TOC CONSTITUENT ANALYSES
SUB-AREA A3

Parameter	Units	AB214C 28-JUL-92	AB215A 09-JUL-92	AB215H 09-JUL-92	AB216A 13-JUL-92	AB216D 13-JUL-92	AB217A 13-JUL-92
ALUMINUM	MG/KG						
ANTIMONY	MG/KG						
ARSENIC	MG/KG						
BARIUM	MG/KG						
BERYLLIUM	MG/KG						
CADMIUM	MG/KG						
CALCIUM	MG/KG						
CHROMIUM	MG/KG						
COBALT	MG/KG						
COPPER	MG/KG						
IRON	MG/KG						
LEAD	MG/KG						
MAGNESIUM	MG/KG						
MANGANESE	MG/KG						
MERCURY	MG/KG						
NICKEL	MG/KG						
POTASSIUM	MG/KG						
SELENIUM	MG/KG						
SILVER	MG/KG						
SODIUM	MG/KG						
THALLIUM	MG/KG						
VANADIUM	MG/KG						
ZINC	MG/KG						
CYANIDE, TOTAL	MG/KG						
TOTAL ORGANIC CARBON	MG/KG	> 16000 E	3600	2500	12000 N	360	8600

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A3

RESULTS FOR INORGANIC AND TOC CONSTITUENT ANALYSES
SUB-AREA A3

Parameter	Units	AB217D 13-JUL-92	AB218A 24-JUL-92	AB218H 24-JUL-92	AB231A 14-JUL-92	AB231H 14-JUL-92	AB233A 14-JUL-92
ALUMINUM	MG/KG						
ANTIMONY	MG/KG						
ARSENIC	MG/KG						
BARIUM	MG/KG						
BERYLLIUM	MG/KG						
CADMIUM	MG/KG						
CALCIUM	MG/KG						
CHROMIUM	MG/KG						
COBALT	MG/KG						
COPPER	MG/KG						
IRON	MG/KG						
LEAD	MG/KG						
MAGNESIUM	MG/KG						
MANGANESE	MG/KG						
MERCURY	MG/KG						
NICKEL	MG/KG						
POTASSIUM	MG/KG						
SELENIUM	MG/KG						
SILVER	MG/KG						
SODIUM	MG/KG						
THALLIUM	MG/KG						
VANADIUM	MG/KG						
ZINC	MG/KG						
CYANIDE, TOTAL	MG/KG						
TOTAL ORGANIC CARBON	MG/KG	9100	4600	260	10000	4800	7400

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A3

RESULTS FOR INORGANIC AND TOC CONSTITUENT ANALYSES
SUB-AREA A3

Parameter	Units	AB233H 14-JUL-92	AB234A 15-JUL-92	AB234A DUP 15-JUL-92	AB234D 15-JUL-92	AB235A 15-JUL-92	AB235H 15-JUL-92
ALUMINUM	MG/KG						
ANTIMONY	MG/KG						
ARSENIC	MG/KG						
BARIUM	MG/KG						
BERYLLIUM	MG/KG						
CADMIUM	MG/KG						
CALCIUM	MG/KG						
CHROMIUM	MG/KG						
COBALT	MG/KG						
COPPER	MG/KG						
IRON	MG/KG						
LEAD	MG/KG						
MAGNESIUM	MG/KG						
MANGANESE	MG/KG						
MERCURY	MG/KG						
NICKEL	MG/KG						
POTASSIUM	MG/KG						
SELENIUM	MG/KG						
SILVER	MG/KG						
SODIUM	MG/KG						
THALLIUM	MG/KG						
VANADIUM	MG/KG						
ZINC	MG/KG						
CYANIDE, TOTAL	MG/KG						
TOTAL ORGANIC CARBON	MG/KG	1600	8200	12000	3100	7700	2400

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A3

RESULTS FOR INORGANIC AND TOC CONSTITUENT ANALYSES
SUB-AREA A3

Parameter	Units	AB236A 15-JUL-92		AB236H 15-JUL-92	AB237A 27-JUL-92	AB237C 27-JUL-92	AB238A 27-JUL-92	AB238H 27-JUL-92
ALUMINUM	MG/KG							
ANTIMONY	MG/KG							
ARSENIC	MG/KG							
BARIUM	MG/KG							
BERYLLIUM	MG/KG							
CADMIUM	MG/KG							
CALCIUM	MG/KG							
CHROMIUM	MG/KG							
COBALT	MG/KG							
COPPER	MG/KG							
IRON	MG/KG							
LEAD	MG/KG							
MAGNESIUM	MG/KG							
MANGANESE	MG/KG							
MERCURY	MG/KG							
NICKEL	MG/KG							
POTASSIUM	MG/KG							
SELENIUM	MG/KG							
SILVER	MG/KG							
SODIUM	MG/KG							
THALLIUM	MG/KG							
VANADIUM	MG/KG							
ZINC	MG/KG							
CYANIDE, TOTAL	MG/KG							
TOTAL ORGANIC CARBON	MG/KG	7400	*	2100	2500	510	2900	3100

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A3

RESULTS FOR INORGANIC AND TOC CONSTITUENT ANALYSES
SUB-AREA A3

Parameter	Units	AB238H DUP 27-JUL-92	AB239A 27-JUL-92	AB239G 27-JUL-92	AB240A 27-JUL-92	AB240H 27-JUL-92	AB241A 27-JUL-92
ALUMINUM	MG/KG						
ANTIMONY	MG/KG						
ARSENIC	MG/KG						
BARIUM	MG/KG						
BERYLLIUM	MG/KG						
CADMIUM	MG/KG						
CALCIUM	MG/KG						
CHROMIUM	MG/KG						
COBALT	MG/KG						
COPPER	MG/KG						
IRON	MG/KG						
LEAD	MG/KG						
MAGNESIUM	MG/KG						
MANGANESE	MG/KG						
MERCURY	MG/KG						
NICKEL	MG/KG						
POTASSIUM	MG/KG						
SELENIUM	MG/KG						
SILVER	MG/KG						
SODIUM	MG/KG						
THALLIUM	MG/KG						
VANADIUM	MG/KG						
ZINC	MG/KG						
CYANIDE, TOTAL	MG/KG						
TOTAL ORGANIC CARBON	MG/KG	1800	> 16000 E	1300	6200	1700	5200

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A3

RESULTS FOR INORGANIC AND TOC CONSTITUENT ANALYSES
SUB-AREA A3

Parameter	Units	AB241C 27-JUL-92	AB242A 28-JUL-92	AB242B 28-JUL-92	AB244A 28-JUL-92	AB244H 28-JUL-92	AB244H DUP 28-JUL-92
ALUMINUM	MG/KG						
ANTIMONY	MG/KG						
ARSENIC	MG/KG						
BARIUM	MG/KG						
BERYLLIUM	MG/KG						
CADMIUM	MG/KG						
CALCIUM	MG/KG						
CHROMIUM	MG/KG						
COBALT	MG/KG						
COPPER	MG/KG						
IRON	MG/KG						
LEAD	MG/KG						
MAGNESIUM	MG/KG						
MANGANESE	MG/KG						
MERCURY	MG/KG						
NICKEL	MG/KG						
POTASSIUM	MG/KG						
SELENIUM	MG/KG						
SILVER	MG/KG						
SODIUM	MG/KG						
THALLIUM	MG/KG						
VANADIUM	MG/KG						
ZINC	MG/KG						
CYANIDE, TOTAL	MG/KG						
TOTAL ORGANIC CARBON	MG/KG	980	12000	3200	14000	970	4000

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A3

RESULTS FOR INORGANIC AND TOC CONSTITUENT ANALYSES
SUB-AREA A3

Parameter	Units	AB245A 29-JUL-92		AB245G 29-JUL-92		AB246A 29-JUL-92		AB246B 29-JUL-92		AB247A 29-JUL-92		AB247C 29-JUL-92	
ALUMINUM	MG/KG												
ANTIMONY	MG/KG												
ARSENIC	MG/KG												
BARIUM	MG/KG												
BERYLLIUM	MG/KG												
CADMIUM	MG/KG												
CALCIUM	MG/KG												
CHROMIUM	MG/KG												
COBALT	MG/KG												
COPPER	MG/KG												
IRON	MG/KG												
LEAD	MG/KG												
MAGNESIUM	MG/KG												
MANGANESE	MG/KG												
MERCURY	MG/KG												
NICKEL	MG/KG												
POTASSIUM	MG/KG												
SELENIUM	MG/KG												
SILVER	MG/KG												
SODIUM	MG/KG												
THALLIUM	MG/KG												
VANADIUM	MG/KG												
ZINC	MG/KG												
CYANIDE, TOTAL	MG/KG												
TOTAL ORGANIC CARBON	MG/KG	> 16000	E,N	1600		6200		> 16000	E	12000		8600	

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A3

RESULTS FOR INORGANIC AND TOC CONSTITUENT ANALYSES
SUB-AREA A3

Parameter	Units	AB248A 30-JUL-92	AB248C 30-JUL-92	AB248C DUP 30-JUL-92	AB251A 29-JUL-92	AB251C 29-JUL-92	AB252A 30-JUL-92
ALUMINUM	MG/KG						
ANTIMONY	MG/KG						
ARSENIC	MG/KG						
BARIUM	MG/KG						
BERYLLIUM	MG/KG						
CADMIUM	MG/KG						
CALCIUM	MG/KG						
CHROMIUM	MG/KG						
COBALT	MG/KG						
COPPER	MG/KG						
IRON	MG/KG						
LEAD	MG/KG						
MAGNESIUM	MG/KG						
MANGANESE	MG/KG						
MERCURY	MG/KG						
NICKEL	MG/KG						
POTASSIUM	MG/KG						
SELENIUM	MG/KG						
SILVER	MG/KG						
SODIUM	MG/KG						
THALLIUM	MG/KG						
VANADIUM	MG/KG						
ZINC	MG/KG						
CYANIDE, TOTAL	MG/KG						
TOTAL ORGANIC CARBON	MG/KG	6300	> 16000 E	> 16000 E	8400	1100	3700

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A3

RESULTS FOR INORGANIC AND TOC CONSTITUENT ANALYSES
SUB-AREA A3

Parameter	Units	AB252H 30-JUL-92	AB253A 29-JUL-92		AB253H 29-JUL-92	AB254A 30-JUL-92	AB254A DUP 30-JUL-92	AB254C 30-JUL-92
ALUMINUM	MG/KG							
ANTIMONY	MG/KG							
ARSENIC	MG/KG							
BARIUM	MG/KG							
BERYLLIUM	MG/KG							
CADMIUM	MG/KG							
CALCIUM	MG/KG							
CHROMIUM	MG/KG							
COBALT	MG/KG							
COPPER	MG/KG							
IRON	MG/KG							
LEAD	MG/KG							
MAGNESIUM	MG/KG							
MANGANESE	MG/KG							
MERCURY	MG/KG							
NICKEL	MG/KG							
POTASSIUM	MG/KG							
SELENIUM	MG/KG							
SILVER	MG/KG							
SODIUM	MG/KG							
THALLIUM	MG/KG							
VANADIUM	MG/KG							
ZINC	MG/KG							
CYANIDE, TOTAL	MG/KG							
TOTAL ORGANIC CARBON	MG/KG	900	11000	N	3100	14000	14000	2700

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A3

RESULTS FOR INORGANIC AND TOC CONSTITUENT ANALYSES
SUB-AREA A3

Parameter	Units	AT007A 17-JUN-92		AT007C 17-JUN-92		AT008A 17-JUN-92		AT008D 17-JUN-92		AT008D DUP 17-JUN-92		AT009B1 23-JUN-92	
ALUMINUM	MG/KG	4000		6370		2910		2590		2080		4760	
ANTIMONY	MG/KG	2.1	UN	3.9	UN	2.1	UN	22.5	N	105	N	2.4	UN
ARSENIC	MG/KG	3.0	*	6.6	*	1.5	B*	5.4	S*	4.0	S*	2.9	
BARIUM	MG/KG	54.5		327		22.3	B	22.0	B	22.7	B	58.6	
BERYLLIUM	MG/KG	1.1	U	2.0	U	1.1	U	1.2	U	1.2	U	1.2	U
CADMIUM	MG/KG	1.1	U	2.0	U	1.1	U	1.2	U	1.2	U	1.2	U
CALCIUM	MG/KG	3710		61800		16300		23000		41200		16700	
CHROMIUM	MG/KG	7.7		11.9		7.1		49.6		114		16.5	*
COBALT	MG/KG	10.6	U	34.5		10.6	U	12.2	U	12.3		11.8	U
COPPER	MG/KG	8.8		21.3		7.1		676		1290		35.4	
IRON	MG/KG	8680		275000		7330		20000		43500		12100	
LEAD	MG/KG	10.5		4.2		3.6		453		58.8		27.6	*
MAGNESIUM	MG/KG	2040		3980		8470		3070		1730		7390	
MANGANESE	MG/KG	525		20700		214		339		547		536	
MERCURY	MG/KG	0.11	U	0.20	U	0.11	U	0.14		0.12	U	0.12	U
NICKEL	MG/KG	11.1	*J	16.2	*	8.6	*	70.2	*	142	*	10.9	
POTASSIUM	MG/KG	305	BJ	497	BJ	243	B	226	B	123	U	1000	U
SELENIUM	MG/KG	0.64	UW	2.0		0.63	U	0.73	U	0.74	U	0.71	U
SILVER	MG/KG	2.1	UN*	4.4	N*	2.1	UN*	2.4	UN*	2.5	UN*	2.4	U
SODIUM	MG/KG	106	U	197	U	106	U	122	U	123	U	118	U
THALLIUM	MG/KG	0.64	U	1.2	U	0.63	U	0.73	U	0.74	U	0.71	UW
VANADIUM	MG/KG	13.6		32.9		10.6	U	23.4		20.4		19.5	
ZINC	MG/KG	27.2		105		14.1		152		153		50.5	
CYANIDE, TOTAL	MG/KG	2.7	U*	5.4	*	2.6	U*	3.1	U*	3.1	U*	2.9	U
TOTAL ORGANIC CARBON	MG/KG	3500		1500		2400		> 16000	E	> 16000	E	14000	

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A3

RESULTS FOR INORGANIC AND TOC CONSTITUENT ANALYSES
SUB-AREA A3

Parameter	Units	AT009B1 DUP 23-JUN-92		AT009D1 24-JUN-92		AT009D2 24-JUN-92		AT009D3 24-JUN-92		AT009E1 25-JUN-92		AT009E2 26-JUN-92	
ALUMINUM	MG/KG	4610		1120		1120		1270		1060		1270	
ANTIMONY	MG/KG	2.4	UN	2.1	UN	2.1	UN	2.1	UN	2.0	UN	2.0	UN
ARSENIC	MG/KG	3.1		1.6	B	1.7	B	3.4		0.91	B	1.6	B
BARIUM	MG/KG	64.8		10.4	U	10.3	U	10.5	U	10.2	U	10.2	U
BERYLLIUM	MG/KG	1.2	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
CADMIUM	MG/KG	2.7		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
CALCIUM	MG/KG	10300		17100		17600		28900		25600		19100	
CHROMIUM	MG/KG	16.3	*	4.6	*	4.1	*J	5.5	*	4.0	*	3.9	*J
COBALT	MG/KG	12.2	U	10.4	U	10.3	U	10.5	U	10.2	U	10.2	U
COPPER	MG/KG	56.6		8.7	J	4.1	U	4.2	U	4.1	U	4.1	U
IRON	MG/KG	19200		3520		3330		4730		3460		4120	
LEAD	MG/KG	37.0	*	2.0	*	1.5	*	1.4	*	1.5	*	1.7	*
MAGNESIUM	MG/KG	4860		4110		4070		6950		6190		5370	
MANGANESE	MG/KG	659		376		155		241		283		339	
MERCURY	MG/KG	0.19		0.10	U	0.10	U	0.10	U	0.10	U	0.10	U
NICKEL	MG/KG	10.6		8.3	U	8.2	U	8.4	U	8.2	U	8.2	U
POTASSIUM	MG/KG	1000	U	1000	U	1000	U	1000	U	1000	U	1000	U
SELENIUM	MG/KG	0.73	UW	0.62	U	0.62	U	0.63	U	0.61	U	0.61	U
SILVER	MG/KG	2.4	U	2.1	U	2.1	U	2.1	U	2.0	U	2.0	U
SODIUM	MG/KG	122	U	104	U	103	U	105	U	102	U	102	U
THALLIUM	MG/KG	0.73	UW	0.62	UW	0.62	UW	0.63	UW	0.61	UW	0.61	UW
VANADIUM	MG/KG	20.2		10.4	U	10.3	U	10.5	U	10.2	U	10.2	U
ZINC	MG/KG	72.7		23.1		9.8		7.5		6.2		7.9	
CYANIDE, TOTAL	MG/KG	3.1	U	2.6	U	2.6	U	2.6	U	2.6	U	2.6	U
TOTAL ORGANIC CARBON	MG/KG	9800		4700		4000		3500		4500		2500	

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A4

RESULTS FOR INORGANIC AND TOC CONSTITUENT ANALYSES
SUB-AREA A4

Parameter	Units	AB026A 10-JUN-92		AB026G 10-JUN-92		AB027A 09-JUN-92		AB027H 09-JUN-92		AB028A 08-JUN-92		AB028G 08-JUN-92	
ALUMINUM	MG/KG	3800	*	1290	*	2270	*	1130		3830		3080	
ANTIMONY	MG/KG	2.3	BN	2.1	UN	2.1	UN	2.4	UN	2.2	UN	2.6	UN
ARSENIC	MG/KG	7.8		1.2	B	3.0		1.2	B	5.6		3.0	
BARIUM	MG/KG	306		10.4	U	37.8	B	12.0	U	172		28.6	B
BERYLLIUM	MG/KG	1.1	U	1.0	U	1.0	U	1.2	U	1.1	U	1.3	U
CADMIUM	MG/KG	1.1	U	1.0	U	1.0	U	1.2	U	1.1	U	1.3	U
CALCIUM	MG/KG	11600	*	27500	*	20000	*	22200		5710		26100	
CHROMIUM	MG/KG	19.8		3.1	J	7.4		4.7		13.4		12.2	
COBALT	MG/KG	10.9	U	10.4	U	10.4	U	12.0	U	11.1	U	13.1	U
COPPER	MG/KG	1900	*	4.3	B*U	15.5	*	4.8	U	279		5.2	U
IRON	MG/KG	12800		3570		9380		3080		19200		9970	
LEAD	MG/KG	149		1.0		10.4		2.3		274		4.1	
MAGNESIUM	MG/KG	4170		9280		6030		4780		2420		6850	
MANGANESE	MG/KG	1790	N*	165	N*	424	N*	257		992		465	
MERCURY	MG/KG	0.11	U	0.10	U	0.10	U	0.12	U	0.11	U	0.13	U
NICKEL	MG/KG	32.3		8.3	U	8.4	U	15.5	J	16.8	J	11.0	J
POTASSIUM	MG/KG	473	BU	104	U	221	BU	174	B	308	B	246	BJ
SELENIUM	MG/KG	1.3		0.63	U	0.63	U	0.72	U	0.67	U	0.78	U
SILVER	MG/KG	2.2	U	2.1	U	2.1	U	2.4	U	2.2	U	2.6	U
SODIUM	MG/KG	109	U	104	U	104	U	120	U	111	U	131	U
THALLIUM	MG/KG	0.66	U	0.63	U	0.63	U	0.72	U	0.67	U	0.78	U
VANADIUM	MG/KG	20.5		10.4	U	15.1		12.0	U	17.8		18.1	
ZINC	MG/KG	215		7.1		21.7		9.3		130		21.3	
CYANIDE, TOTAL	MG/KG	2.7	U	2.6	U	2.6	U	3.0	U	2.8	U	3.3	U
TOTAL ORGANIC CARBON	MG/KG	> 16000	E	1100		> 16000	E	290		> 16000	E	8600	

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A4

RESULTS FOR INORGANIC AND TOC CONSTITUENT ANALYSES
SUB-AREA A4

Parameter	Units	AB029A 10-JUN-92		AB029H 10-JUN-92		AB030A 09-JUN-92		AB030G 09-JUN-92		AB030G DUP 09-JUN-92		AB031A 15-JUN-92	
ALUMINUM	MG/KG	4700	*	1950	*	3410	*	1340	*	1410	*	3870	
ANTIMONY	MG/KG	2.3	UN	2.1	UN	2.2	UN	2.1	UN	2.1	UN	2.2	UN
ARSENIC	MG/KG	10.1		1.5	B	7.9		1.3	B	1.0	BU	2.6	
BARIUM	MG/KG	134		10.7	U	87.8		10.6	U	10.6	U	73.9	
BERYLLIUM	MG/KG	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U
CADMIUM	MG/KG	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U
CALCIUM	MG/KG	21500	*	22600	*	24600	*	23100	*	25800	*	17400	*
CHROMIUM	MG/KG	19.2		11.5		19.6		5.1		6.5		22.6	
COBALT	MG/KG	11.3	U	10.7	U	10.9	U	10.6	U	10.6	U	11.0	U
COPPER	MG/KG	138	*	5.3	B*U	642	*	37.3	*	18.2	*	53.7	
IRON	MG/KG	17800		5310		14600		3880		4390		10600	*
LEAD	MG/KG	63.6		1.6		59.5		3.2		2.1		78.5	
MAGNESIUM	MG/KG	3500		6580		9470		6660		6360		6780	
MANGANESE	MG/KG	1060	N*	388	N*	746	N*	353	N*	346	N*	456	*
MERCURY	MG/KG	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U
NICKEL	MG/KG	24.0		16.6		24.2		11.1	J	12.0		11.6	J
POTASSIUM	MG/KG	451	BU	135	BU	353	BU	238	BU	136	BU	452	B
SELENIUM	MG/KG	0.68	U	0.64	U	0.66	U	0.64	UW	0.64	U	0.66	UW
SILVER	MG/KG	2.3	U	2.1	U	2.2	U	2.1	U	2.1	U	2.2	U
SODIUM	MG/KG	113	U	107	U	109	U	106	U	106	U	110	U
THALLIUM	MG/KG	0.68	U	0.64	U	0.66	U	0.64	U	0.64	U	0.66	U
VANADIUM	MG/KG	18.3		10.7	U	15.2		10.6	U	10.6	U	17.9	
ZINC	MG/KG	124		11.4		163		18.3		10.8		62.6	
CYANIDE, TOTAL	MG/KG	2.8	U	2.7	U	2.7	U	2.6	U	2.7	U	2.8	UN
TOTAL ORGANIC CARBON	MG/KG	> 16000	E	1300	*	> 16000	E	380		1700		11000	

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A4

RESULTS FOR INORGANIC AND TOC CONSTITUENT ANALYSES
SUB-AREA A4

Parameter	Units	AB031G 15-JUN-92		AB032A 09-JUN-92		AB032D 09-JUN-92		AB033B 08-JUN-92		AB033H 08-JUN-92		AB034A 08-JUN-92	
ALUMINUM	MG/KG	2310		3480	*	2130	*	3780		1160		4220	
ANTIMONY	MG/KG	2.1	UN	2.1	UN	2.1	UN	2.3	UN	2.1	UN	2.2	UN
ARSENIC	MG/KG	11.4		3.8		1.7	B	4.8		1.8	B	4.7	
BARIUM	MG/KG	10.4	U	65.4		10.5	U	154		10.5	U	67.4	
BERYLLIUM	MG/KG	1.0	U	1.1	U	1.0	U	1.1	U	1.1	U	1.1	U
CADMIUM	MG/KG	1.0	U	1.1	U	1.0	U	1.1	U	1.1	U	1.1	U
CALCIUM	MG/KG	31600	*	19900	*	17100	*	28200		20700		21300	
CHROMIUM	MG/KG	4.4		8.1		9.4		11.7		5.4		13.0	
COBALT	MG/KG	10.4	U	10.5	U	10.5	U	11.5	U	10.5	U	10.8	U
COPPER	MG/KG	4.1	U	49.8	*	4.4	B*U	369		4.2	U	32.5	
IRON	MG/KG	11500	*	11000		6700		17000		3790		12900	
LEAD	MG/KG	1.7		70.0		1.5		80.1		2.0		32.7	
MAGNESIUM	MG/KG	10000		7160		4600		2710		5650		11600	
MANGANESE	MG/KG	356	*	468	N*	271	N*	1510		307		511	
MERCURY	MG/KG	0.10	U	0.11	U	0.10	U	0.11	U	0.11	U	0.12	
NICKEL	MG/KG	8.3	U	12.8		11.1		15.8		11.1	J	11.5	
POTASSIUM	MG/KG	140	BJ	374	BU	207	BU	360	BJ	121	BJ	225	B
SELENIUM	MG/KG	0.62	U	0.63	U	0.63	U	0.69	U	0.63	U	0.65	U
SILVER	MG/KG	2.1	U	2.1	U	2.1	U	2.3	U	2.1	U	2.2	U
SODIUM	MG/KG	162	B	113	BU	105	U	115	U	105	U	112	B
THALLIUM	MG/KG	0.62	U	0.63	U	0.63	U	0.69	U	0.63	U	0.65	U
VANADIUM	MG/KG	10.4	U	15.3		12.4		17.6		10.5	U	18.5	
ZINC	MG/KG	9.3		69.6		10.8		73.1		9.0		62.2	
CYANIDE, TOTAL	MG/KG	2.6	UN	2.6	U	2.6	U	2.9	U	2.6	U	4.3	
TOTAL ORGANIC CARBON	MG/KG	7900		> 16000	E	3500	*	11000		2200		7400	

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
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SITE AREA: A4

RESULTS FOR INORGANIC AND TOC CONSTITUENT ANALYSES
SUB-AREA A4

Parameter	Units	AB034D 08-JUN-92		AB038A 10-JUN-92		AB038G 10-JUN-92		AB203A 08-JUL-92	AB203B 08-JUL-92	AB204A 08-JUL-92	
ALUMINUM	MG/KG	3160		2470	*	1340	*				
ANTIMONY	MG/KG	2.1	UN	2.0	UN	2.1	UN				
ARSENIC	MG/KG	2.2		1.3	B	0.86	B				
BARIUM	MG/KG	17.5	B	20.1	B	10.5	U				
BERYLLIUM	MG/KG	1.1	U	1.0	U	1.0	U				
CADMIUM	MG/KG	1.1	U	1.0	U	1.0	U				
CALCIUM	MG/KG	34900		12300		25600					
CHROMIUM	MG/KG	13.8		8.7		5.2					
COBALT	MG/KG	10.5	U	10.2	U	10.5	U				
COPPER	MG/KG	10.6	J	36.6		4.2	U				
IRON	MG/KG	10800		7500	*	3470	*				
LEAD	MG/KG	2.7		10.6		1.8					
MAGNESIUM	MG/KG	13900		6360		5180					
MANGANESE	MG/KG	913		201		300					
MERCURY	MG/KG	0.11	U	0.10	U	0.10	U				
NICKEL	MG/KG	13.2	J	8.2	U	9.5					
POTASSIUM	MG/KG	143	BJ	138	BJ	173	BJ				
SELENIUM	MG/KG	0.63	U	0.61	U	0.63	U				
SILVER	MG/KG	2.1	U	2.0	U	2.1	U				
SODIUM	MG/KG	122	B	113	B	105	U				
THALLIUM	MG/KG	0.63	U	0.61	UW	0.63	U				
VANADIUM	MG/KG	19.2		12.1	*	10.5	U*				
ZINC	MG/KG	16.6		32.3		13.7					
CYANIDE, TOTAL	MG/KG	2.6	U	2.6	U	2.6	U				
TOTAL ORGANIC CARBON	MG/KG	2800		6800		1600		2300	3400	> 16000	E

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A4

RESULTS FOR INORGANIC AND TOC CONSTITUENT ANALYSES
SUB-AREA A4

Parameter	Units	AB204A DUP 08-JUL-92	AB204B 08-JUL-92	AB205A 08-JUL-92	AB205G 08-JUL-92	AB206A 08-JUL-92	AB206B 08-JUL-92
ALUMINUM	MG/KG						
ANTIMONY	MG/KG						
ARSENIC	MG/KG						
BARIUM	MG/KG						
BERYLLIUM	MG/KG						
CADMIUM	MG/KG						
CALCIUM	MG/KG						
CHROMIUM	MG/KG						
COBALT	MG/KG						
COPPER	MG/KG						
IRON	MG/KG						
LEAD	MG/KG						
MAGNESIUM	MG/KG						
MANGANESE	MG/KG						
MERCURY	MG/KG						
NICKEL	MG/KG						
POTASSIUM	MG/KG						
SELENIUM	MG/KG						
SILVER	MG/KG						
SODIUM	MG/KG						
THALLIUM	MG/KG						
VANADIUM	MG/KG						
ZINC	MG/KG						
CYANIDE, TOTAL	MG/KG						
TOTAL ORGANIC CARBON	MG/KG	> 16000 E	500	7000	16000	10000	> 16000 E

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A4

RESULTS FOR INORGANIC AND TOC CONSTITUENT ANALYSES
SUB-AREA A4

Parameter	Units	AB207A 09-JUL-92	AB207H 09-JUL-92	AB208A 13-JUL-92	AB208A DUP 13-JUL-92	AB208H 13-JUL-92	AB219A 09-JUL-92
ALUMINUM	MG/KG						
ANTIMONY	MG/KG						
ARSENIC	MG/KG						
BARIUM	MG/KG						
BERYLLIUM	MG/KG						
CADMIUM	MG/KG						
CALCIUM	MG/KG						
CHROMIUM	MG/KG						
COBALT	MG/KG						
COPPER	MG/KG						
IRON	MG/KG						
LEAD	MG/KG						
MAGNESIUM	MG/KG						
MANGANESE	MG/KG						
MERCURY	MG/KG						
NICKEL	MG/KG						
POTASSIUM	MG/KG						
SELENIUM	MG/KG						
SILVER	MG/KG						
SODIUM	MG/KG						
THALLIUM	MG/KG						
VANADIUM	MG/KG						
ZINC	MG/KG						
CYANIDE, TOTAL	MG/KG						
TOTAL ORGANIC CARBON	MG/KG	> 16000 E	990	> 16000 E	7000	1400	2800

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A4

RESULTS FOR INORGANIC AND TOC CONSTITUENT ANALYSES
SUB-AREA A4

Parameter	Units	AB219F 09-JUL-92	AB220A 09-JUL-92	AB220G 09-JUL-92	AB221A 09-JUL-92	AB221G 09-JUL-92	AB224A 13-JUL-92
ALUMINUM	MG/KG						
ANTIMONY	MG/KG						
ARSENIC	MG/KG						
BARIUM	MG/KG						
BERYLLIUM	MG/KG						
CADMIUM	MG/KG						
CALCIUM	MG/KG						
CHROMIUM	MG/KG						
COBALT	MG/KG						
COPPER	MG/KG						
IRON	MG/KG						
LEAD	MG/KG						
MAGNESIUM	MG/KG						
MANGANESE	MG/KG						
MERCURY	MG/KG						
NICKEL	MG/KG						
POTASSIUM	MG/KG						
SELENIUM	MG/KG						
SILVER	MG/KG						
SODIUM	MG/KG						
THALLIUM	MG/KG						
VANADIUM	MG/KG						
ZINC	MG/KG						
CYANIDE, TOTAL	MG/KG						
TOTAL ORGANIC CARBON	MG/KG	1300	> 16000 E	9900	4800	1700	3400

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A4

RESULTS FOR INORGANIC AND TOC CONSTITUENT ANALYSES
SUB-AREA A4

Parameter	Units	AB224H 13-JUL-92	AB226B 10-JUL-92	AB226G 10-JUL-92	AB227A 13-JUL-92	AB227A DUP 13-JUL-92	AB227G 13-JUL-92
ALUMINUM	MG/KG						
ANTIMONY	MG/KG						
ARSENIC	MG/KG						
BARIUM	MG/KG						
BERYLLIUM	MG/KG						
CADMIUM	MG/KG						
CALCIUM	MG/KG						
CHROMIUM	MG/KG						
COBALT	MG/KG						
COPPER	MG/KG						
IRON	MG/KG						
LEAD	MG/KG						
MAGNESIUM	MG/KG						
MANGANESE	MG/KG						
MERCURY	MG/KG						
NICKEL	MG/KG						
POTASSIUM	MG/KG						
SELENIUM	MG/KG						
SILVER	MG/KG						
SODIUM	MG/KG						
THALLIUM	MG/KG						
VANADIUM	MG/KG						
ZINC	MG/KG						
CYANIDE, TOTAL	MG/KG						
TOTAL ORGANIC CARBON	MG/KG	1300	2100	4600	> 16000 E	> 16000 E	560

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A4

RESULTS FOR INORGANIC AND TOC CONSTITUENT ANALYSES
SUB-AREA A4

Parameter	Units	AB228A 10-JUL-92	AB228F 10-JUL-92	AB229A 10-JUL-92	AB229H 10-JUL-92	AB243A 28-JUL-92	AB243B 28-JUL-92
ALUMINUM	MG/KG						
ANTIMONY	MG/KG						
ARSENIC	MG/KG						
BARIUM	MG/KG						
BERYLLIUM	MG/KG						
CADMIUM	MG/KG						
CALCIUM	MG/KG						
CHROMIUM	MG/KG						
COBALT	MG/KG						
COPPER	MG/KG						
IRON	MG/KG						
LEAD	MG/KG						
MAGNESIUM	MG/KG						
MANGANESE	MG/KG						
MERCURY	MG/KG						
NICKEL	MG/KG						
POTASSIUM	MG/KG						
SELENIUM	MG/KG						
SILVER	MG/KG						
SODIUM	MG/KG						
THALLIUM	MG/KG						
VANADIUM	MG/KG						
ZINC	MG/KG						
CYANIDE, TOTAL	MG/KG						
TOTAL ORGANIC CARBON	MG/KG	2000	450	> 16000 E	1600	> 16000 E	11000

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A4

RESULTS FOR INORGANIC AND TOC CONSTITUENT ANALYSES
SUB-AREA A4

Parameter	Units	AT001A 12-JUN-92		AT001C 12-JUN-92		AT002A 12-JUN-92		AT002B 12-JUN-92		AT002B DUP 12-JUN-92		AT003A 16-JUN-92	
ALUMINUM	MG/KG	3490		1520		6260		4350		5050		4110	
ANTIMONY	MG/KG	2.2	UN	2.1	UN	2.2	UN	2.2	UN	2.2	UN	2.2	UN
ARSENIC	MG/KG	4.5	S	0.62	U	2.9		6.5		5.9		4.1	
BARIUM	MG/KG	90.2		10.3	U	146		228		165		85.7	
BERYLLIUM	MG/KG	1.1	U	1.0	U	1.1	U	1.1	U	1.1	U	1.1	U
CADMIUM	MG/KG	1.1	U	1.0	U	1.1	U	1.1	U	1.1	U	1.1	U
CALCIUM	MG/KG	14700		23200		5630		10300		4290		4340	*
CHROMIUM	MG/KG	15.9		5.7		13.7		12.2		10.4		10.8	
COBALT	MG/KG	10.9	U	10.3	U	11.1	U	11.1	U	11.1	U	11.1	U
COPPER	MG/KG	103		4.1	U	23.2		9.3		10.9		31.5	
IRON	MG/KG	11700		4370		16900		13000		13900		10500	*
LEAD	MG/KG	231		1.6		9.4		6.8		7.5		123	
MAGNESIUM	MG/KG	6910		4730		4180		5530		3290		1750	
MANGANESE	MG/KG	589	N	185	N	1600	N	2050	N	1370	N	859	*
MERCURY	MG/KG	0.11	U	0.10	U	0.11	U	0.11	U	0.11	U	0.11	U
NICKEL	MG/KG	13.1	*	8.2	U*	18.0	*	14.2	*	13.9	*	11.1	
POTASSIUM	MG/KG	339	B	146	BJ	379	B	322	B	582	B	202	BJ
SELENIUM	MG/KG	0.66	U	0.62	U	0.67	U	0.67	U	0.67	U	0.67	U
SILVER	MG/KG	2.2	UN	2.1	UN	2.2	UN	2.2	UN	2.2	UN	2.2	U
SODIUM	MG/KG	109	U	103	U	111	U	111	U	111	U	111	U
THALLIUM	MG/KG	0.66	U	0.62	U	0.67	U	0.67	U	0.67	U	0.67	U
VANADIUM	MG/KG	19.0		10.3	U	26.1		21.3		21.1		16.8	
ZINC	MG/KG	489		8.5		33.0		24.7		24.3		62.3	
CYANIDE, TOTAL	MG/KG	2.7	U	2.6	U	2.8	U	2.8	U	2.8	U	2.8	UN
TOTAL ORGANIC CARBON	MG/KG	> 16000	E	870		13000		12000		10000		> 16000	E

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A4

RESULTS FOR INORGANIC AND TOC CONSTITUENT ANALYSES
SUB-AREA A4

Parameter	Units	AT003B 16-JUN-92		AT004A 16-JUN-92		AT004B 16-JUN-92		AT005A 16-JUN-92		AT005C 16-JUN-92		AT005C DUP 16-JUN-92	
ALUMINUM	MG/KG	6830		4360		4380		4840		3050		2590	
ANTIMONY	MG/KG	2.6	UN	2.2	UNW	2.3	UN	2.2	UN	2.4	UN	2.4	UN
ARSENIC	MG/KG	2.9		3.6		4.6		4.3		0.72	U	0.71	U
BARIUM	MG/KG	109		97.3		119		126		29.4	B	38.3	B
BERYLLIUM	MG/KG	1.3	U	1.1	U	1.2	U	1.1	U	1.2	U	1.2	U
CADMIUM	MG/KG	1.3	U	1.1	U	1.2	U	1.1	U	1.2	U	1.2	U
CALCIUM	MG/KG	10500	*	14800	*	16300	*	11800	*	27700	*	28700	*
CHROMIUM	MG/KG	13.3		18.9		14.1		13.4		9.3		9.0	
COBALT	MG/KG	12.8	U	11.0	U	11.7	U	11.0	U	12.0	U	11.8	U
COPPER	MG/KG	13.6		90.4		25.5		24.2		5.2	BJ	6.1	J
IRON	MG/KG	38100	*	14200	*	22900	*	10600	*	11500	*	18600	*
LEAD	MG/KG	9.7		54.7		36.2		33.4		3.4		3.1	
MAGNESIUM	MG/KG	2070		5050		3740		5880		7580		7760	
MANGANESE	MG/KG	222	*	635	*	1340	*	1390	*	1870	*	5950	*
MERCURY	MG/KG	0.13	U	0.11	U	0.12	U	0.11	U	0.12	U	0.12	U
NICKEL	MG/KG	18.7		18.5		13.6	J	19.0		9.6	U	12.5	
POTASSIUM	MG/KG	128	U	414	B	280	BJ	334	BJ	120	U	118	U
SELENIUM	MG/KG	0.77	U	0.66	U	0.70	U	0.66	UW	0.72	U	0.71	U
SILVER	MG/KG	2.6	U	2.2	U	2.3	U	2.2	U	2.4	U	2.4	U
SODIUM	MG/KG	128	U	110	U	117	U	110	U	120	U	118	U
THALLIUM	MG/KG	0.77	U	0.66	U	0.70	U	0.66	U	0.72	U	0.71	U
VANADIUM	MG/KG	20.3		20.3		21.7		17.6		22.8		23.0	
ZINC	MG/KG	30.6		87.4		49.3		39.6		14.9		14.5	
CYANIDE, TOTAL	MG/KG	3.2	UN	2.8	UN	2.9	UN	2.8	UN	3.0	UN	3.0	UN
TOTAL ORGANIC CARBON	MG/KG	12000		13000		> 16000	E	3700		1600		2400	

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A4

RESULTS FOR INORGANIC AND TOC CONSTITUENT ANALYSES
SUB-AREA A4

Parameter	Units	AT006A 17-JUN-92		AT006B 17-JUN-92	
ALUMINUM	MG/KG	3760		2690	
ANTIMONY	MG/KG	2.2	UN	2.3	UN
ARSENIC	MG/KG	3.7	*	0.68	UW*
BARIUM	MG/KG	70.4		31.3	B
BERYLLIUM	MG/KG	1.1	U	1.1	U
CADMIUM	MG/KG	1.1	U	1.1	U
CALCIUM	MG/KG	10300		6010	
CHROMIUM	MG/KG	12.6		8.2	
COBALT	MG/KG	10.9	U	11.3	U
COPPER	MG/KG	153		4.5	U
IRON	MG/KG	13900		5010	
LEAD	MG/KG	54.9		3.6	
MAGNESIUM	MG/KG	3840		3040	
MANGANESE	MG/KG	525		213	
MERCURY	MG/KG	0.11	U	0.11	U
NICKEL	MG/KG	12.7	*	9.0	U*
POTASSIUM	MG/KG	413	BJ	113	U
SELENIUM	MG/KG	0.65	UW	0.68	U
SILVER	MG/KG	2.2	UN*	2.3	UN*
SODIUM	MG/KG	109	U	113	U
THALLIUM	MG/KG	0.65	U	0.68	U
VANADIUM	MG/KG	13.9		13.8	
ZINC	MG/KG	298		15.3	
CYANIDE, TOTAL	MG/KG	4.6	*	2.8	U*
TOTAL ORGANIC CARBON	MG/KG	13000		1900	

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: B1

RESULT FOR INORGANIC AND TOC CONSTITUENT ANALYSES
SUB-AREA B1

Parameter	Units	BB001A 15-JUN-92		BB001B 15-JUN-92		BB001C 07-JUL-92		BB002B 15-JUN-92		BB002G 15-JUN-92		BB002G DUP 15-JUN-92	
ALUMINUM	MG/KG	2810		1890		1790	*	4370		1900		1160	
ANTIMONY	MG/KG	2.2	UN	2.5	UN	7.0	UN	2.3	UN	2.2	UN	2.1	UN
ARSENIC	MG/KG	3.0		1.2	B	9.4	S	2.9		0.66	U	0.64	U
BARIUM	MG/KG	74.8		22.5	B	38.4	B	75.6		11.0	U	10.7	U
BERYLLIUM	MG/KG	1.1	U	1.3	U	3.5	U	1.2	U	1.1	U	1.1	U
CADMIUM	MG/KG	1.1	U	1.3	U	3.5	U	1.2	U	1.1	U	1.1	U
CALCIUM	MG/KG	2930		682	B	25500	*	18500		10300	*	10700	*
CHROMIUM	MG/KG	6.0		4.0		7.0	U	12.8		4.7		3.3	
COBALT	MG/KG	10.8	U	12.7	U	35.1	U	11.6	U	11.0	U	10.7	U
COPPER	MG/KG	16.6		5.1	U	14.0	U*	43.1		8.4		4.3	U
IRON	MG/KG	7090		4280		3730		10700		3650	*	2700	*
LEAD	MG/KG	14.8		2.6		2.1	U*	37.0		3.5		3.3	
MAGNESIUM	MG/KG	1500		720	B	1840	B*	7230		3830		3620	
MANGANESE	MG/KG	977	N	275	N	152	*	1350	N	91.8	*	55.6	*
MERCURY	MG/KG	0.11	U	0.13	U	0.35	U	0.12	U	0.11	U	0.11	U
NICKEL	MG/KG	9.9	*	10.2	U*	28.1	U	10.4	*	13.8	J	9.2	J
POTASSIUM	MG/KG	193	B	127	U	1000	U	465	BJ	110	U	107	U
SELENIUM	MG/KG	0.65	U	0.76	U	2.1	U	0.70	U	0.66	U	0.64	U
SILVER	MG/KG	2.2	UN	2.5	UN	7.0	U	2.3	UN	2.2	U	2.1	U
SODIUM	MG/KG	108	U	127	U	536	B	116	U	110	U	107	U
THALLIUM	MG/KG	0.65	U	0.76	U	2.1	U	0.70	U	0.66	U	0.64	U
VANADIUM	MG/KG	10.8		12.7	U	35.1	U	20.4		11.0	U	10.7	U
ZINC	MG/KG	25.1		6.6		14.0	U*	49.6		12.4		9.1	
CYANIDE, TOTAL	MG/KG	2.7	U	3.2	U	8.8	UN	2.9	U	2.7	UN	2.7	UN
TOTAL ORGANIC CARBON	MG/KG	2500		240		> 16000	E	11000		660		310	

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BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: B1

RESULT FOR INORGANIC AND TOC CONSTITUENT ANALYSES
SUB-AREA B1

Parameter	Units	BB003A 16-JUN-92		BB003D 16-JUN-92		BB202B 16-JUL-92	BB204A 16-JUL-92	BB204G 16-JUL-92	BB205A 16-JUL-92	
ALUMINUM	MG/KG	4580		3440						
ANTIMONY	MG/KG	2.3	UN	2.7	UN					
ARSENIC	MG/KG	2.6		4.4						
BARIUM	MG/KG	74.9		30.3	B					
BERYLLIUM	MG/KG	1.1	U	1.3	U					
CADMIUM	MG/KG	1.1	U	1.3	U					
CALCIUM	MG/KG	4410	*	3030	*					
CHROMIUM	MG/KG	8.8		11.0						
COBALT	MG/KG	11.3	U	13.5	U					
COPPER	MG/KG	19.2		7.6						
IRON	MG/KG	12300	*	9980	*					
LEAD	MG/KG	14.4		4.3						
MAGNESIUM	MG/KG	2370		1540						
MANGANESE	MG/KG	670	*	156	*					
MERCURY	MG/KG	0.11	U	0.13	U					
NICKEL	MG/KG	12.2		10.8	U					
POTASSIUM	MG/KG	389	B	269	BJ					
SELENIUM	MG/KG	0.68	U	0.81	UW					
SILVER	MG/KG	2.3	U	2.7	U					
SODIUM	MG/KG	113	U	135	U					
THALLIUM	MG/KG	0.68	U	0.81	U					
VANADIUM	MG/KG	18.4		24.6						
ZINC	MG/KG	32.9		14.4	J					
CYANIDE, TOTAL	MG/KG	2.8	UN	3.4	UN					
TOTAL ORGANIC CARBON	MG/KG	3800		6300		15000	2800	480	> 16000	E

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
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SITE AREA: B1

RESULT FOR INORGANIC AND TOC CONSTITUENT ANALYSES
SUB-AREA B1

Parameter	Units	BB205G 16-JUL-92	BB206A 17-JUL-92	BB206A DUP 17-JUL-92		BB206G 17-JUL-92	BT001A 18-JUN-92		BT001B 18-JUN-92	
ALUMINUM	MG/KG						2430		3400	
ANTIMONY	MG/KG						2.3	BN	2.2	UN
ARSENIC	MG/KG						2.1	*	2.7	*
BARIUM	MG/KG						44.1		70.2	
BERYLLIUM	MG/KG						1.1	U	1.1	U
CADMIUM	MG/KG						1.1	U	1.1	U
CALCIUM	MG/KG						15200		2730	
CHROMIUM	MG/KG						6.6		6.2	
COBALT	MG/KG						10.7	U	11.0	U
COPPER	MG/KG						19.1		8.5	
IRON	MG/KG						6020		8260	
LEAD	MG/KG						19.4		6.8	
MAGNESIUM	MG/KG						5380		1290	
MANGANESE	MG/KG						302		691	
MERCURY	MG/KG						0.11	U	0.11	U
NICKEL	MG/KG						8.6	U*	8.8	U*
POTASSIUM	MG/KG						247	BJ	110	U
SELENIUM	MG/KG						0.64	UW	0.66	UW
SILVER	MG/KG						2.1	UN*	2.2	UN*
SODIUM	MG/KG						107	U	110	U
THALLIUM	MG/KG						0.64	U	0.66	U
VANADIUM	MG/KG						10.7	U	11.4	
ZINC	MG/KG						42.7		22.8	
CYANIDE, TOTAL	MG/KG						2.7	U*	2.8	U*
TOTAL ORGANIC CARBON	MG/KG	290	9200	6500	H(4	720	9900		6900	

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: B1

RESULT FOR INORGANIC AND TOC CONSTITUENT ANALYSES
SUB-AREA B1

Parameter	Units	BT002A 17-JUN-92		BT002B 17-JUN-92	
ALUMINUM	MG/KG	3380		4170	
ANTIMONY	MG/KG	2.3	UN	3.1	UN
ARSENIC	MG/KG	2.5	*	5.8	*
BARIUM	MG/KG	61.4		197	
BERYLLIUM	MG/KG	1.1	U	1.5	U
CADMIUM	MG/KG	1.1	U	1.5	U
CALCIUM	MG/KG	6150		11800	
CHROMIUM	MG/KG	6.5		8.5	
COBALT	MG/KG	11.4	U	15.3	U
COPPER	MG/KG	11.6		9.0	
IRON	MG/KG	7490		9820	
LEAD	MG/KG	5.3		8.6	
MAGNESIUM	MG/KG	2440		2400	
MANGANESE	MG/KG	616		1560	
MERCURY	MG/KG	0.11	U	0.15	U
NICKEL	MG/KG	9.1	*	17.2	*
POTASSIUM	MG/KG	157	BJ	264	BJ
SELENIUM	MG/KG	0.68	UW	1.3	B
SILVER	MG/KG	2.3	UN*	3.1	UN*
SODIUM	MG/KG	114	U	153	U
THALLIUM	MG/KG	0.68	U	0.92	U
VANADIUM	MG/KG	12.3		15.3	U
ZINC	MG/KG	21.7		25.1	
CYANIDE, TOTAL	MG/KG	2.9	U*	3.8	U*
TOTAL ORGANIC CARBON	MG/KG	> 16000	E	2900	

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: B2

RESULTS FOR INORGANIC AND TOC CONSTITUENT ANALYSES
SUB-AREA B2

Parameter	Units	BT003A 18-JUN-92	BT003D 18-JUN-92	BT004A 18-JUN-92		BT004D 18-JUN-92		BT004D DUP 18-JUN-92	
ALUMINUM	MG/KG			3960		1110		1440	
ANTIMONY	MG/KG			2.2	UN	2.2	UN	2.3	UN
ARSENIC	MG/KG			2.4	*	1.8	B*	3.0	
BARIUM	MG/KG			93.9		11.0	U	11.5	U
BERYLLIUM	MG/KG			1.1	U	1.1	U	1.1	U
CADMIUM	MG/KG			1.1	U	1.1	U	1.1	U
CALCIUM	MG/KG			7220		1160		1420	
CHROMIUM	MG/KG			7.8		2.7		3.9	N
COBALT	MG/KG			10.9	U	11.0	U	11.5	U
COPPER	MG/KG			11.5		4.4	U	4.6	U*
IRON	MG/KG			9910		3330		3940	
LEAD	MG/KG			12.0		2.0		2.1	*
MAGNESIUM	MG/KG			2870		703	B	823	B*
MANGANESE	MG/KG			747		29.7		49.3	
MERCURY	MG/KG			0.11	U	0.11	U	0.11	U
NICKEL	MG/KG			14.1	*	8.8	U*	9.2	U
POTASSIUM	MG/KG			246	B	110	U	1000	U
SELENIUM	MG/KG			0.65	UW	0.66	UW	0.69	UNW
SILVER	MG/KG			2.2	UN*	2.2	UN*	2.3	UN*
SODIUM	MG/KG			109	U	110	U	115	U
THALLIUM	MG/KG			0.65	U	0.66	U	0.69	U
VANADIUM	MG/KG			13.8		11.0	U	11.5	U
ZINC	MG/KG			31.8		30.5		49.9	
CYANIDE, TOTAL	MG/KG			2.7	U*	2.8	U*	2.9	U
TOTAL ORGANIC CARBON	MG/KG	11000	220	2800		1300		1800	

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: D

RESULTS FOR INORGANIC AND TOC CONSTITUENT ANALYSES
SUB-AREA D

Parameter	Units	DB029A 11-JUN-92		DB029E 11-JUN-92		DB029E DUP 11-JUN-92		DB030A 12-JUN-92		DB030E 12-JUN-92		DB031A 11-JUN-92	
ALUMINUM	MG/KG	3850	*	1850	*	1570		5090		1670	*	4600	
ANTIMONY	MG/KG	2.2	UN	2.1	UN	2.1	UN	2.2	UN	2.1	UN	2.2	UN
ARSENIC	MG/KG	1.2	B	1.0	B	1.0	B	2.7		0.88	B	2.4	
BARIUM	MG/KG	124		10.3	U	10.4	U	71.4		10.3	U	74.0	
BERYLLIUM	MG/KG	1.1	U	1.0	U	1.0	U	1.1	U	1.0	U	1.1	U
CADMIUM	MG/KG	4.3		1.0	U	1.0	U	1.1	U	1.0	U	1.1	U
CALCIUM	MG/KG	11000		4400		3420		9120		3420		3060	
CHROMIUM	MG/KG	43.2		4.8		5.0		10.6		3.0		11.8	
COBALT	MG/KG	11.0		10.3	U	10.4	U	10.8	U	10.3	U	11.0	U
COPPER	MG/KG	937		7.3		7.3		19.2		5.6		59.4	
IRON	MG/KG	30100	*	4490	*	3890		10200		4050	*	11000	
LEAD	MG/KG	373		1.4		1.1		11.0		1.0		17.5	
MAGNESIUM	MG/KG	4050		1950		1690		2830		1430		1600	
MANGANESE	MG/KG	1960		94.8		98.8	N	345	N	66.5		367	N
MERCURY	MG/KG	0.11	U	0.10	U	0.10	U	0.11	U	0.10	U	0.11	U
NICKEL	MG/KG	40.7		8.3	U	8.3	U*	11.9	*	8.3	U	10.5	*
POTASSIUM	MG/KG	509	B	152	BJ	104	BJ	281	BJ	103	U	315	B
SELENIUM	MG/KG	0.66	UW	0.62	U	0.62	U	0.65	U	0.62	U	0.66	U
SILVER	MG/KG	2.2	U	2.1	U	2.1	UN	2.2	UN	2.1	U	2.2	UN
SODIUM	MG/KG	251	B	107	B	104	U	108	U	103	U	110	U
THALLIUM	MG/KG	0.66	U	0.62	U	0.62	U	0.65	U	0.62	U	0.66	U
VANADIUM	MG/KG	21.2	*	12.3	*	13.2		20.8		10.7	*	21.3	
ZINC	MG/KG	325		9.3		10.3		40.2		7.3		28.5	
CYANIDE, TOTAL	MG/KG	2.7	U	2.6	U	2.6	U	2.7	U	2.6	U	2.7	U
TOTAL ORGANIC CARBON	MG/KG	> 16000	E	150		150		> 16000	E	220		> 16000	E

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: D

RESULTS FOR INORGANIC AND TOC CONSTITUENT ANALYSES
SUB-AREA D

Parameter	Units	DB031F 11-JUN-92		DB032A 11-JUN-92		DB032C 11-JUN-92		DB033A 07-JUL-92		DB033E 07-JUL-92		DB034A 07-JUL-92	
ALUMINUM	MG/KG	1770		5420	*	2470		3160	*	3080	*	3560	*
ANTIMONY	MG/KG	2.1	UN	2.2	UN	2.1	UN	2.3	UN	2.2	UN	2.2	UN
ARSENIC	MG/KG	0.94	BW	6.0		1.5	B	3.5		1.8	B	2.6	
BARIUM	MG/KG	16.6	B	93.2		20.7	B	129		56.3		43.8	B
BERYLLIUM	MG/KG	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1.1	U
CADMIUM	MG/KG	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1.1	U
CALCIUM	MG/KG	6650		13400		15000		23900	*	5080	*	4840	*
CHROMIUM	MG/KG	7.0		13.9		6.6		8.8		7.7		7.1	
COBALT	MG/KG	10.5	U	11.0	U	10.7	U	11.6	U	11.2	U	11.2	U
COPPER	MG/KG	22.7		46.4		9.9		33.9	*	14.5	*	8.0	*
IRON	MG/KG	5550		16200	*	6610		14900		8960		5870	
LEAD	MG/KG	4.1		19.5		2.2		10.2	*	4.2	*	6.4	*
MAGNESIUM	MG/KG	2500		6250		5410		1960	*	1720	*	1300	*
MANGANESE	MG/KG	156	N	604		167	N	1830	*	562	*	168	*
MERCURY	MG/KG	0.11	U	0.11	U	0.11	U	0.12	U	0.11	U	0.11	U
NICKEL	MG/KG	8.4	U*	15.4		8.5	U*	9.5		8.9	U	8.9	U
POTASSIUM	MG/KG	227	BJ	443	B	282	B	1000	U	1000	U	1000	U
SELENIUM	MG/KG	0.63	U	0.66	U	0.64	U	0.70	U	0.67	U	0.67	U
SILVER	MG/KG	2.1	UN	2.2	U	2.1	UN	2.3	U	2.2	U	2.2	U
SODIUM	MG/KG	105	U	110	U	111	B	116	U	112	U	112	U
THALLIUM	MG/KG	0.63	U	0.66	U	0.64	U	0.70	U	0.67	U	0.67	U
VANADIUM	MG/KG	13.6		21.4	*	16.0		13.9		13.6		11.6	
ZINC	MG/KG	12.9		86.3		17.0		30.0	*	21.1	*	17.8	*
CYANIDE, TOTAL	MG/KG	2.6	U	2.7	U	2.7	U	2.9	UN	2.8	UN	2.8	UN
TOTAL ORGANIC CARBON	MG/KG	1200		2000		1800		> 16000	E	13000		> 16000	E

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: D

RESULTS FOR INORGANIC AND TOC CONSTITUENT ANALYSES
SUB-AREA D

Parameter	Units	DB034C 07-JUL-92	
ALUMINUM	MG/KG	4940	*
ANTIMONY	MG/KG	2.3	UN
ARSENIC	MG/KG	2.8	
BARIUM	MG/KG	73.6	
BERYLLIUM	MG/KG	1.2	U
CADMIUM	MG/KG	1.2	U
CALCIUM	MG/KG	5480	*
CHROMIUM	MG/KG	9.2	
COBALT	MG/KG	11.5	U
COPPER	MG/KG	13.3	*
IRON	MG/KG	11100	
LEAD	MG/KG	10.3	*
MAGNESIUM	MG/KG	2610	*
MANGANESE	MG/KG	631	*
MERCURY	MG/KG	0.12	U
NICKEL	MG/KG	13.8	
POTASSIUM	MG/KG	1000	U
SELENIUM	MG/KG	0.69	U
SILVER	MG/KG	2.3	U
SODIUM	MG/KG	115	U
THALLIUM	MG/KG	0.69	U
VANADIUM	MG/KG	16.6	
ZINC	MG/KG	26.3	*
CYANIDE, TOTAL	MG/KG	2.9	UN
TOTAL ORGANIC CARBON	MG/KG	> 16000	E

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: E1

RESULTS FOR INORGANIC AND TOC CONSTITUENT ANALYSES
SUB-AREA E1

Parameter	Units	EB001A 16-JUN-92		EB001E 16-JUN-92		EB002A 16-JUN-92		EB002D 16-JUN-92		EB203A 21-JUL-92	EB203B 21-JUL-92
ALUMINUM	MG/KG	3000		2310		4470		1530			
ANTIMONY	MG/KG	2.1	UN	2.1	UN	2.2	UN	2.1	UN		
ARSENIC	MG/KG	2.6		1.8	B	2.2		0.62	U		
BARIUM	MG/KG	37.4	B	19.0	B	49.3		10.3	U		
BERYLLIUM	MG/KG	1.0	U	1.1	U	1.1	U	1.0	U		
CADMIUM	MG/KG	1.0	U	1.1	U	1.1	U	1.0	U		
CALCIUM	MG/KG	41900		12200		36900		4500			
CHROMIUM	MG/KG	11.4	N	6.7	N	11.4	N	2.3	N		
COBALT	MG/KG	10.4	U	10.6	U	11.2	U	10.3	U		
COPPER	MG/KG	128	*	10.2	*	61.4	*	6.0	*		
IRON	MG/KG	9040		5910		9150		3810			
LEAD	MG/KG	53.1	*	3.0	*	15.5	*	1.2	*		
MAGNESIUM	MG/KG	5980	*	5270	*	15000	*	1440	*		
MANGANESE	MG/KG	361		172		308		91.2			
MERCURY	MG/KG	0.10	U	0.11	U	0.11	U	0.10	U		
NICKEL	MG/KG	13.6		8.5	U	14.9		8.2	U		
POTASSIUM	MG/KG	1000	U	1000	U	1000	U	1000	U		
SELENIUM	MG/KG	0.63	UN	0.63	UN	0.67	UNW	0.62	UN		
SILVER	MG/KG	2.1	UN*	2.1	UN*	2.2	UN*	2.1	UN*		
SODIUM	MG/KG	104	U	106	U	129	B	103	U		
THALLIUM	MG/KG	0.63	U	0.63	U	0.67	U	0.62	U		
VANADIUM	MG/KG	13.8		14.5		18.9		11.1			
ZINC	MG/KG	79.3		13.5		58.2		8.6			
CYANIDE, TOTAL	MG/KG	2.6	U	2.6	U	2.8	U	2.6	U		
TOTAL ORGANIC CARBON	MG/KG	2100	H(1	340	H(1	4500	H(1	240	H(1	8400	1100

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: E1

RESULTS FOR INORGANIC AND TOC CONSTITUENT ANALYSES
SUB-AREA E1

Parameter	Units	EB206A 17-JUL-92	EB206E 17-JUL-92	EB209A 22-JUL-92	EB209B 22-JUL-92	EB210A 22-JUL-92	EB210A DUP 22-JUL-92
ALUMINUM	MG/KG						
ANTIMONY	MG/KG						
ARSENIC	MG/KG						
BARIUM	MG/KG						
BERYLLIUM	MG/KG						
CADMIUM	MG/KG						
CALCIUM	MG/KG						
CHROMIUM	MG/KG						
COBALT	MG/KG						
COPPER	MG/KG						
IRON	MG/KG						
LEAD	MG/KG						
MAGNESIUM	MG/KG						
MANGANESE	MG/KG						
MERCURY	MG/KG						
NICKEL	MG/KG						
POTASSIUM	MG/KG						
SELENIUM	MG/KG						
SILVER	MG/KG						
SODIUM	MG/KG						
THALLIUM	MG/KG						
VANADIUM	MG/KG						
ZINC	MG/KG						
CYANIDE, TOTAL	MG/KG						
TOTAL ORGANIC CARBON	MG/KG	9200	> 16000 E	1300	2300	2300 *	2100

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: E1

RESULTS FOR INORGANIC AND TOC CONSTITUENT ANALYSES
SUB-AREA E1

Parameter	Units	EB210E 22-JUL-92
ALUMINUM	MG/KG	
ANTIMONY	MG/KG	
ARSENIC	MG/KG	
BARIUM	MG/KG	
BERYLLIUM	MG/KG	
CADMIUM	MG/KG	
CALCIUM	MG/KG	
CHROMIUM	MG/KG	
COBALT	MG/KG	
COPPER	MG/KG	
IRON	MG/KG	
LEAD	MG/KG	
MAGNESIUM	MG/KG	
MANGANESE	MG/KG	
MERCURY	MG/KG	
NICKEL	MG/KG	
POTASSIUM	MG/KG	
SELENIUM	MG/KG	
SILVER	MG/KG	
SODIUM	MG/KG	
THALLIUM	MG/KG	
VANADIUM	MG/KG	
ZINC	MG/KG	
CYANIDE, TOTAL	MG/KG	
TOTAL ORGANIC CARBON	MG/KG	170

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: E2

RESULTS FOR INORGANIC AND TOC CONSTITUENT ANALYSES
SUB-AREA E2

Parameter	Units	EB003A 18-JUN-92		EB003F 18-JUN-92		EB004A 18-JUN-92		EB004D 18-JUN-92		EB207A 21-JUL-92	EB207F 21-JUL-92
ALUMINUM	MG/KG	4620		3960		3860		1710			
ANTIMONY	MG/KG	2.3	UN	2.2	UN	2.2	UN	2.1	UN		
ARSENIC	MG/KG	0.97	B*	0.93	B*	3.5		0.83	B		
BARIUM	MG/KG	62.9		24.3	B	61.6		10.6	U		
BERYLLIUM	MG/KG	1.2	U	1.1	U	1.1	U	1.1	U		
CADMIUM	MG/KG	1.2	U	1.1	U	2.3		1.1	U		
CALCIUM	MG/KG	40100		14100		26300		5150			
CHROMIUM	MG/KG	8.9		10.2		28.3	N	6.2	N		
COBALT	MG/KG	11.6	U	10.9	U	11.2	U	10.6	U		
COPPER	MG/KG	13.6		14.8		176	*	6.4	*		
IRON	MG/KG	8400		14500		10700		4200			
LEAD	MG/KG	5.4		1.8		292	*	7.4	*		
MAGNESIUM	MG/KG	13500		7840		9550	*	2350	*		
MANGANESE	MG/KG	387		162		293		82.3			
MERCURY	MG/KG	0.12	U	0.11	U	0.11	U	0.11	U		
NICKEL	MG/KG	12.4	*	13.6	*	26.7		8.5	U		
POTASSIUM	MG/KG	1090	B	383	B	1000	U	1000	U		
SELENIUM	MG/KG	0.70	U	0.73	B	0.67	UNW	0.64	UN		
SILVER	MG/KG	2.3	UN*	2.2	UN*	2.2	UN*	2.1	UN*		
SODIUM	MG/KG	921	B	161	B	150	B	106	U		
THALLIUM	MG/KG	0.70	U	0.65	U	0.67	UW	0.64	U		
VANADIUM	MG/KG	21.2		23.4		18.2		10.6	U		
ZINC	MG/KG	37.9		20.7		232		11.0			
CYANIDE, TOTAL	MG/KG	2.9	U*	2.7	U*	2.8	U	2.7	U		
TOTAL ORGANIC CARBON	MG/KG	3700		170		11000	N	1600		2000	< 100

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: E2

RESULTS FOR INORGANIC AND TOC CONSTITUENT ANALYSES
SUB-AREA E2

Parameter	Units	EB208A 21-JUL-92	EB208A DUP 21-JUL-92	EB208F 21-JUL-92
ALUMINUM	MG/KG			
ANTIMONY	MG/KG			
ARSENIC	MG/KG			
BARIUM	MG/KG			
BERYLLIUM	MG/KG			
CADMIUM	MG/KG			
CALCIUM	MG/KG			
CHROMIUM	MG/KG			
COBALT	MG/KG			
COPPER	MG/KG			
IRON	MG/KG			
LEAD	MG/KG			
MAGNESIUM	MG/KG			
MANGANESE	MG/KG			
MERCURY	MG/KG			
NICKEL	MG/KG			
POTASSIUM	MG/KG			
SELENIUM	MG/KG			
SILVER	MG/KG			
SODIUM	MG/KG			
THALLIUM	MG/KG			
VANADIUM	MG/KG			
ZINC	MG/KG			
CYANIDE, TOTAL	MG/KG			
TOTAL ORGANIC CARBON	MG/KG	2500	4900	5900

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: F2

RESULTS FOR INORGANIC AND TOC CONSTITUENT ANALYSES
SUB-AREA F

Parameter	Units	FB001A 12-JUN-92		FB001E 12-JUN-92		FB002A 11-JUN-92		FB002C 07-JUL-92		FB002H 11-JUN-92		FB003A 11-JUN-92	
ALUMINUM	MG/KG	4650		1240		2510	*	3990	*	1690	*	5920	*
ANTIMONY	MG/KG	2.6	UN	2.2	UN	2.1	UN	2.2	UN	2.1	UN	2.3	UN
ARSENIC	MG/KG	4.8		1.7	B	3.8		0.70	B	0.63	U	3.9	
BARIUM	MG/KG	99.5		10.8	U	92.0		34.6	B	10.5	U	173	
BERYLLIUM	MG/KG	1.3	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U
CADMIUM	MG/KG	1.3	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U
CALCIUM	MG/KG	9640		24300		2880		8530	*	18300		17100	
CHROMIUM	MG/KG	9.9		4.5		8.4		14.3		6.4		18.2	
COBALT	MG/KG	12.9	U	10.8	U	10.7	U	11.1	U	11.0		11.3	U
COPPER	MG/KG	26.2		4.3	U	6.9		4.5	B*	6.2		20.4	
IRON	MG/KG	16200		3490		8420	*	6640		4780	*	16100	*
LEAD	MG/KG	22.4		1.3		4.1		5.8	*	2.5		6.5	
MAGNESIUM	MG/KG	2590		6770		1150		4660	*	5730		3620	
MANGANESE	MG/KG	787	N	281	N	723		87.2	*	161		1610	
MERCURY	MG/KG	0.13	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U
NICKEL	MG/KG	12.4	*J	8.7	U*	8.6	U	9.6		26.8		16.7	
POTASSIUM	MG/KG	457	B	108	U	164	BJ	1000	U	106	BJ	428	B
SELENIUM	MG/KG	0.78	U	0.65	U	0.64	UW	0.67	U	0.63	U	0.68	U
SILVER	MG/KG	2.6	UN	2.2	UN	2.1	U	2.2	U	2.1	U	2.3	U
SODIUM	MG/KG	129	U	108	U	107	U	111	U	105	U	167	B
THALLIUM	MG/KG	0.78	U	0.65	U	0.64	U	0.67	U	0.63	U	0.68	U
VANADIUM	MG/KG	18.3		10.8	U	10.7	U*	20.7		10.5	U*	19.9	*
ZINC	MG/KG	66.7		8.0		12.4		20.1	*	15.6		27.0	
CYANIDE, TOTAL	MG/KG	3.2	U	2.7	U	2.7	U	2.8	UN	2.6	U	2.8	U
TOTAL ORGANIC CARBON	MG/KG	> 16000	E	650		4700		940		1500		> 16000	E

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: F2

RESULTS FOR INORGANIC AND TOC CONSTITUENT ANALYSES
SUB-AREA F

Parameter	Units	FB003E 11-JUN-92		FB004A 11-JUN-92		FB004G 11-JUN-92	
ALUMINUM	MG/KG	1800	*	5620	*	1280	*
ANTIMONY	MG/KG	2.1	UN	2.2	UN	2.1	UN
ARSENIC	MG/KG	0.62	U	3.7		0.78	B
BARIUM	MG/KG	10.6	BU	113		10.4	U
BERYLLIUM	MG/KG	1.0	U	1.1	U	1.0	U
CADMIUM	MG/KG	1.0	U	1.1	U	1.0	U
CALCIUM	MG/KG	25900	*	7260		24900	
CHROMIUM	MG/KG	4.5		11.8		7.5	
COBALT	MG/KG	10.4	U	11.1	U	10.4	U
COPPER	MG/KG	6.8	*	11.2		7.7	
IRON	MG/KG	4870		13900	*	4370	*
LEAD	MG/KG	2.1		6.2		2.3	
MAGNESIUM	MG/KG	8100		3050		6530	
MANGANESE	MG/KG	243	N*	1020		245	
MERCURY	MG/KG	0.10	U	0.11	U	0.10	U
NICKEL	MG/KG	14.1		9.3		18.1	
POTASSIUM	MG/KG	189	BU	273	B	104	U
SELENIUM	MG/KG	0.62	U	0.67	UW	0.62	U
SILVER	MG/KG	2.1	U	2.2	U	2.1	U
SODIUM	MG/KG	104	U	111	U	104	U
THALLIUM	MG/KG	0.62	U	0.67	U	0.62	U
VANADIUM	MG/KG	10.4	U	16.9	*	10.4	U*
ZINC	MG/KG	10.8		24.9		15.3	
CYANIDE, TOTAL	MG/KG	2.6	U	2.8	U	2.6	U
TOTAL ORGANIC CARBON	MG/KG	1600		> 16000	E	7600	

APPENDIX I

RESULTS FOR QUALITY CONTROL ANALYSES

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92

RESULTS FOR QUALITY CONTROL ANALYSES
VOLATILE ORGANIC COMPOUNDS

Parameter	Units	QCR001 03-JUN-92		QCR002 04-JUN-92		QCR003 08-JUN-92		QCR004 09-JUN-92		QCR005 10-JUN-92.		QCR006 11-JUN-92	
CHLOROMETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
BROMOMETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
VINYL CHLORIDE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
CHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
METHYLENE CHLORIDE	UG/L	3	JBU	3	BJU	0.5	BJU	10	U	1	JBU	10	U
ACETONE	UG/L	42	BU	47	BU	30	BU	44	BU	73	BU	37	BU
CARBON DISULFIDE	UG/L	25		10	U	10	U	10	U	10	U	10	U
1,1-DICHLOROETHENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,1-DICHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,2-DICHLOROETHENE (TOTAL)	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
CHLOROFORM	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,2-DICHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
2-BUTANONE	UG/L	84	BU	100	BU	61	BU	79	BU	120	BU	76	BU
1,1,1-TRICHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
CARBON TETRACHLORIDE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
BROMODICHLOROMETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,2-DICHLOROPROPANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
CIS-1,3-DICHLOROPROPENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
TRICHLOROETHENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
CHLORODIBROMOMETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,1,2-TRICHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
BENZENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
TRANS-1,3-DICHLOROPROPENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
BROMOFORM	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
4-METHYL-2-PENTANONE	UG/L	3	J	4	J	10	U	3	J	10	U	3	J
2-HEXANONE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
TETRACHLOROETHENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,1,2,2-TETRACHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
TOLUENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
CHLOROBENZENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
ETHYLBENZENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
STYRENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
XYLENE, TOTAL	UG/L	10	U	10	U	10	U	10	U	10	U	10	U

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PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92

RESULTS FOR QUALITY CONTROL ANALYSES
VOLATILE ORGANIC COMPOUNDS

Parameter	Units	QCR007 12-JUN-92		QCR008 15-JUN-92		QCR009 17-JUN-92		QCR010 17-JUN-92		QCR011 18-JUN-92		QCR012 07-JUL-92	
CHLOROMETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
BROMOMETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
VINYL CHLORIDE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
CHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
METHYLENE CHLORIDE	UG/L	10	U	1	BJU	10	U	10	U	10	U	1	BJU
ACETONE	UG/L	54	BU	31	BU	3	BJU	7	BJU	16	BU	10	U
CARBON DISULFIDE	UG/L	10	U	10	U	10	U	10	U	2	J	10	U
1,1-DICHLOROETHENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,1-DICHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,2-DICHLOROETHENE (TOTAL)	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
CHLOROFORM	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,2-DICHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
2-BUTANONE	UG/L	96	BU	92	BU	10	U	3	JBU	3	BJU	6	JBU
1,1,1-TRICHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
CARBON TETRACHLORIDE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
BROMODICHLOROMETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,2-DICHLOROPROPANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
CIS-1,3-DICHLOROPROPENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
TRICHLOROETHENE	UG/L	10	U	10	U	10	U	3	J	10	U	10	U
CHLORODIBROMOMETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,1,2-TRICHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
BENZENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
TRANS-1,3-DICHLOROPROPENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
BROMOFORM	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
4-METHYL-2-PENTANONE	UG/L	3	J	10	U	10	U	10	U	10	U	10	U
2-HEXANONE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
TETRACHLOROETHENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,1,2,2-TETRACHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
TOLUENE	UG/L	10	U	0.6	BJU	10	U	10	U	10	U	10	U
CHLOROBENZENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
ETHYLBENZENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
STYRENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
XYLENE, TOTAL	UG/L	10	U	1	JBU	10	U	10	U	10	U	10	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92

RESULTS FOR QUALITY CONTROL ANALYSES
VOLATILE ORGANIC COMPOUNDS

Parameter	Units	QCR013 08-JUL-92		QCR014 09-JUL-92		QCR015 10-JUL-92		QCR016 13-JUL-92		QCR017 14-JUL-92		QCR018 16-JUL-92	
CHLOROMETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
BROMOMETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
VINYL CHLORIDE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
CHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
METHYLENE CHLORIDE	UG/L	10	U	10	U	0.9	BJU	10	U	10	U	10	U
ACETONE	UG/L	10	U	10	U	3	BJU	6	BJU	7	BJU	10	BU
CARBON DISULFIDE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,1-DICHLOROETHENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,1-DICHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,2-DICHLOROETHENE (TOTAL)	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
CHLOROFORM	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,2-DICHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
2-BUTANONE	UG/L	5	BJU	10	U	5	BJU	7	BJU	7	BJU	6	BJU
1,1,1-TRICHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
CARBON TETRACHLORIDE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
BROMODICHLOROMETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,2-DICHLOROPROPANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
CIS-1,3-DICHLOROPROPENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
TRICHLOROETHENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
CHLORODIBROMOMETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,1,2-TRICHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
BENZENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
TRANS-1,3-DICHLOROPROPENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
BROMOFORM	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
4-METHYL-2-PENTANONE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
2-HEXANONE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
TETRACHLOROETHENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,1,2,2-TETRACHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
TOLUENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
CHLOROBENZENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
ETHYLBENZENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
STYRENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
XYLENE, TOTAL	UG/L	10	U	10	U	10	U	10	U	10	U	10	U

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RESULTS FOR QUALITY CONTROL ANALYSES
VOLATILE ORGANIC COMPOUNDS

Parameter	Units	QCR019 17-JUL-92		QCR020 20-JUL-92		QCR021 22-JUL-92		QCR022 23-JUL-92		QCR023 24-JUL-92		QCR024 28-JUL-92	
CHLOROMETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
BROMOMETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
VINYL CHLORIDE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
CHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
METHYLENE CHLORIDE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
ACETONE	UG/L	6	BJU	8	BJU	9	BJU	7	BJU	8	BJU	19	BU
CARBON DISULFIDE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,1-DICHLOROETHENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,1-DICHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,2-DICHLOROETHENE (TOTAL)	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
CHLOROFORM	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,2-DICHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
2-BUTANONE	UG/L	5	BJU	10	U	10	U	10	U	10	U	6	BJU
1,1,1-TRICHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
CARBON TETRACHLORIDE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
BROMODICHLOROMETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,2-DICHLOROPROPANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
CIS-1,3-DICHLOROPROPENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
TRICHLOROETHENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
CHLORODIBROMOMETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,1,2-TRICHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
BENZENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
TRANS-1,3-DICHLOROPROPENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
BROMOFORM	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
4-METHYL-2-PENTANONE	UG/L	10	U	10	U	10	U	10	U	10	U	1	J
2-HEXANONE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
TETRACHLOROETHENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,1,2,2-TETRACHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
TOLUENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
CHLOROBENZENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
ETHYLBENZENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
STYRENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
XYLENE, TOTAL	UG/L	10	U	10	U	10	U	10	U	10	U	10	U

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BEGINNING DATE: 01-JUN-92
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RESULTS FOR QUALITY CONTROL ANALYSES
VOLATILE ORGANIC COMPOUNDS

Parameter	Units	QCR025 30-JUL-92		QCT001 03-JUN-92		QCT002 04-JUN-92		QCT003 08-JUN-92		QCT004 09-JUN-92		QCT005 10-JUN-92	
CHLOROMETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
BROMOMETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
VINYL CHLORIDE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
CHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
METHYLENE CHLORIDE	UG/L	10	U	2	JBU	0.6	BJU	1	BJU	10	U	1	JBU
ACETONE	UG/L	6	BJU	5	BJU	3	JBU	7	JBU	7	BJU	7	JBU
CARBON DISULFIDE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,1-DICHLOROETHENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,1-DICHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,2-DICHLOROETHENE (TOTAL)	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
CHLOROFORM	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,2-DICHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
2-BUTANONE	UG/L	10	U	10	U	2	JBU	3	BJU	10	U	3	JBU
1,1,1-TRICHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
CARBON TETRACHLORIDE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
BROMODICHLOROMETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,2-DICHLOROPROPANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
CIS-1,3-DICHLOROPROPENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
TRICHLOROETHENE	UG/L	2	J	10	U	10	U	10	U	10	U	10	U
CHLORODIBROMOMETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,1,2-TRICHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
BENZENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
TRANS-1,3-DICHLOROPROPENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
BROMOFORM	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
4-METHYL-2-PENTANONE	UG/L	0.6	J	10	U	10	U	10	U	10	U	10	U
2-HEXANONE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
TETRACHLOROETHENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,1,2,2-TETRACHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
TOLUENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
CHLOROBENZENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
ETHYLBENZENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
STYRENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
XYLENE, TOTAL	UG/L	10	U	10	U	10	U	10	U	10	U	10	U

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RESULTS FOR QUALITY CONTROL ANALYSES
VOLATILE ORGANIC COMPOUNDS

Parameter	Units	QCT006 11-JUN-92		QCT007 12-JUN-92		QCT008 15-JUN-92		QCT010 16-JUN-92		QCT011 17-JUN-92		QCT012 18-JUN-92	
CHLOROMETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
BROMOMETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
VINYL CHLORIDE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
CHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
METHYLENE CHLORIDE	UG/L	10	U	10	U	1	BJU	10	U	10	U	10	U
ACETONE	UG/L	6	BJU	5	BJU	10	U	4	JBU	5	BJU	8	BJU
CARBON DISULFIDE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,1-DICHLOROETHENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,1-DICHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,2-DICHLOROETHENE (TOTAL)	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
CHLOROFORM	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,2-DICHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
2-BUTANONE	UG/L	10	U	10	U	10	U	3	JBU	10	U	3	JBU
1,1,1-TRICHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
CARBON TETRACHLORIDE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
BROMODICHLOROMETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,2-DICHLOROPROPANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
CIS-1,3-DICHLOROPROPENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
TRICHLOROETHENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
CHLORODIBROMOMETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,1,2-TRICHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
BENZENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
TRANS-1,3-DICHLOROPROPENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
BROMOFORM	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
4-METHYL-2-PENTANONE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
2-HEXANONE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
TETRACHLOROETHENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,1,2,2-TETRACHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
TOLUENE	UG/L	10	U	1	JBU	0.7	BJU	0.7	BJU	10	U	10	U
CHLOROBENZENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
ETHYLBENZENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
STYRENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
XYLENE, TOTAL	UG/L	10	U	10	U	10	U	10	U	10	U	10	U

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RESULTS FOR QUALITY CONTROL ANALYSES
VOLATILE ORGANIC COMPOUNDS

Parameter	Units	QCT013 23-JUN-92		QCT014 24-JUN-92		QCT015 25-JUN-92		QCT016 26-JUN-92		QCT017 07-JUL-92		QCT018 08-JUL-92	
CHLOROMETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
BROMOMETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
VINYL CHLORIDE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
CHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
METHYLENE CHLORIDE	UG/L	10	U	10	U	10	U	10	U	2	BJU	2	BJU
ACETONE	UG/L	8	BJU	6	BJU	6	BJU	7	BJU	10	U	5	BJU
CARBON DISULFIDE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,1-DICHLOROETHENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,1-DICHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,2-DICHLOROETHENE (TOTAL)	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
CHLOROFORM	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,2-DICHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
2-BUTANONE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,1,1-TRICHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
CARBON TETRACHLORIDE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
BROMODICHLOROMETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,2-DICHLOROPROPANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
CIS-1,3-DICHLOROPROPENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
TRICHLOROETHENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
CHLORODIBROMOMETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,1,2-TRICHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
BENZENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
TRANS-1,3-DICHLOROPROPENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
BROMOFORM	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
4-METHYL-2-PENTANONE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
2-HEXANONE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
TETRACHLOROETHENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,1,2,2-TETRACHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
TOLUENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
CHLOROBENZENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
ETHYLBENZENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
STYRENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
XYLENE, TOTAL	UG/L	10	U	10	U	10	U	10	U	10	U	10	U

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RESULTS FOR QUALITY CONTROL ANALYSES
VOLATILE ORGANIC COMPOUNDS

Parameter	Units	QCT019 09-JUL-92		QCT020 10-JUL-92		QCT021 13-JUL-92		QCT022 14-JUL-92		QCT023 16-JUL-92		QCT024 17-JUL-92	
CHLOROMETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
BROMOMETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
VINYL CHLORIDE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
CHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
METHYLENE CHLORIDE	UG/L	0.8	JBU	1	BJU	1	BJU	0.9	JBU	0.9	JBU	2	JBU
ACETONE	UG/L	10	U	5	BJU	6	BJU	7	BJU	10	U	9	BJU
CARBON DISULFIDE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,1-DICHLOROETHENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,1-DICHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,2-DICHLOROETHENE (TOTAL)	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
CHLOROFORM	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,2-DICHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
2-BUTANONE	UG/L	10	U	10	U	2	BJU	10	U	10	U	10	U
1,1,1-TRICHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
CARBON TETRACHLORIDE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
BROMODICHLOROMETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,2-DICHLOROPROPANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
CIS-1,3-DICHLOROPROPENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
TRICHLOROETHENE	UG/L	10	U	10	U	0.7	J	10	U	10	U	10	U
CHLORODIBROMOMETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,1,2-TRICHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
BENZENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
TRANS-1,3-DICHLOROPROPENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
BROMOFORM	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
4-METHYL-2-PENTANONE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
2-HEXANONE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
TETRACHLOROETHENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,1,2,2-TETRACHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
TOLUENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
CHLOROBENZENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
ETHYLBENZENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
STYRENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
XYLENE, TOTAL	UG/L	10	U	10	U	10	U	10	U	10	U	10	U

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RESULTS FOR QUALITY CONTROL ANALYSES
VOLATILE ORGANIC COMPOUNDS

Parameter	Units	QCT025 20-JUL-92		QCT026 22-JUL-92		QCT027 23-JUL-92		QCT028 24-JUL-92		QCT029 29-JUL-92		QCT030 30-JUL-92	
CHLOROMETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
BROMOMETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
VINYL CHLORIDE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
CHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
METHYLENE CHLORIDE	UG/L	10	U	10	U	10	U	1	JBU	10	U	10	U
ACETONE	UG/L	7	BJU	12	BU	9	BJU	6	BJU	9	BJU	5	BJU
CARBON DISULFIDE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,1-DICHLOROETHENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,1-DICHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,2-DICHLOROETHENE (TOTAL)	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
CHLOROFORM	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,2-DICHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
2-BUTANONE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,1,1-TRICHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
CARBON TETRACHLORIDE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
BROMODICHLOROMETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,2-DICHLOROPROPANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
CIS-1,3-DICHLOROPROPENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
TRICHLOROETHENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
CHLORODIBROMOMETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,1,2-TRICHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
BENZENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
TRANS-1,3-DICHLOROPROPENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
BROMOFORM	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
4-METHYL-2-PENTANONE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
2-HEXANONE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
TETRACHLOROETHENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,1,2,2-TETRACHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
TOLUENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
CHLOROBENZENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
ETHYLBENZENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
STYRENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
XYLENE, TOTAL	UG/L	10	U	10	U	10	U	10	U	10	U	10	U

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RESULTS FOR QUALITY CONTROL ANALYSES
VOLATILE ORGANIC COMPOUNDS

Parameter	Units	SRC001 04-JUN-92		SRC002 15-JUN-92		SRC003 16-JUL-92	
CHLOROMETHANE	UG/L	10	U	10	U	10	U
BROMOMETHANE	UG/L	10	U	10	U	10	U
VINYL CHLORIDE	UG/L	10	U	10	U	10	U
CHLOROETHANE	UG/L	10	U	10	U	10	U
METHYLENE CHLORIDE	UG/L	10	U	10	U	10	U
ACETONE	UG/L	4	JBU	3	BJU	10	U
CARBON DISULFIDE	UG/L	10	U	3	JBU	10	U
1,1-DICHLOROETHENE	UG/L	10	U	10	U	10	U
1,1-DICHLOROETHANE	UG/L	10	U	10	U	10	U
1,2-DICHLOROETHENE (TOTAL)	UG/L	10	U	10	U	10	U
CHLOROFORM	UG/L	10	U	10	U	10	U
1,2-DICHLOROETHANE	UG/L	10	U	10	U	10	U
2-BUTANONE	UG/L	10	U	10	U	10	U
1,1,1-TRICHLOROETHANE	UG/L	10	U	10	U	10	U
CARBON TETRACHLORIDE	UG/L	10	U	10	U	10	U
BROMODICHLOROMETHANE	UG/L	10	U	10	U	10	U
1,2-DICHLOROPROPANE	UG/L	10	U	10	U	10	U
CIS-1,3-DICHLOROPROPENE	UG/L	10	U	10	U	10	U
TRICHLOROETHENE	UG/L	10	U	10	U	10	U
CHLORODIBROMOMETHANE	UG/L	10	U	10	U	10	U
1,1,2-TRICHLOROETHANE	UG/L	10	U	10	U	10	U
BENZENE	UG/L	10	U	10	U	10	U
TRANS-1,3-DICHLOROPROPENE	UG/L	10	U	10	U	10	U
BROMOFORM	UG/L	10	U	10	U	10	U
4-METHYL-2-PENTANONE	UG/L	10	U	10	U	10	U
2-HEXANONE	UG/L	10	U	10	U	10	U
TETRACHLOROETHENE	UG/L	10	U	10	U	10	U
1,1,2,2-TETRACHLOROETHANE	UG/L	10	U	10	U	10	U
TOLUENE	UG/L	10	U	10	U	10	U
CHLOROBENZENE	UG/L	10	U	10	U	10	U
ETHYLBENZENE	UG/L	10	U	10	U	10	U
STYRENE	UG/L	10	U	10	U	10	U
XYLENE, TOTAL	UG/L	10	U	10	U	10	U

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BEGINNING DATE: 01-JUN-92
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RESULTS FOR QUALITY CONTROL ANALYSES
SEMIVOLATILE ORGANIC COMPOUNDS

Parameter	Units	QCR001 03-JUN-92		QCR002 04-JUN-92		QCR003 08-JUN-92		QCR004 09-JUN-92		QCR005 10-JUN-92		QCR006 11-JUN-92	
PHENOL	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
BIS(2-CHLOROETHYL)ETHER	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
2-CHLOROPHENOL	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,3-DICHLOROBENZENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,4-DICHLOROBENZENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,2-DICHLOROBENZENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
2-METHYLPHENOL	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
2,2'-OXYBIS(1-CHLOROPROPANE)	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
4-METHYLPHENOL	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
N-NITROSODI-N-PROPYLAMINE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
HEXACHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
NITROBENZENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
ISOPHORONE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
2-NITROPHENOL	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
2,4-DIMETHYLPHENOL	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
BIS(2-CHLOROETHOXY)METHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
2,4-DICHLOROPHENOL	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,2,4-TRICHLOROBENZENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
NAPHTHALENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
4-CHLOROANILINE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
HEXACHLOROBUTADIENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
4-CHLORO-3-METHYLPHENOL	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
2-METHYLNAPHTHALENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
HEXACHLOROCYCLOPENTADIENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
2,4,6-TRICHLOROPHENOL	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
2,4,5-TRICHLOROPHENOL	UG/L	25	U	25	U	25	U	25	U	25	U	25	U
2-CHLORONAPHTHALENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
2-NITROANILINE	UG/L	25	U	25	U	25	U	25	U	25	U	25	U
DIMETHYLPHTHALATE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
ACENAPHTHYLENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
2,6-DINITROTOLUENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
3-NITROANILINE	UG/L	25	U	25	U	25	U	25	U	25	U	25	U
ACENAPHTHENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
2,4-DINITROPHENOL	UG/L	25	U	25	U	25	U	25	U	25	U	25	U
4-NITROPHENOL	UG/L	25	U	25	U	25	U	25	U	25	U	25	U
DIBENZOFURAN	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
2,4-DINITROTOLUENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U

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BEGINNING DATE: 01-JUN-92
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RESULTS FOR QUALITY CONTROL ANALYSES
SEMIVOLATILE ORGANIC COMPOUNDS

Parameter	Units	QCR007 12-JUN-92		QCR008 15-JUN-92		QCR009 17-JUN-92		QCR010 17-JUN-92		QCR011 18-JUN-92		QCR012 07-JUL-92	
PHENOL	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
BIS(2-CHLOROETHYL)ETHER	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
2-CHLOROPHENOL	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,3-DICHLOROBENZENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,4-DICHLOROBENZENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,2-DICHLOROBENZENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
2-METHYLPHENOL	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
2,2'-OXYBIS(1-CHLOROPROPANE)	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
4-METHYLPHENOL	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
N-NITROSODI-N-PROPYLAMINE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
HEXACHLOROETHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
NITROBENZENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
ISOPHORONE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
2-NITROPHENOL	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
2,4-DIMETHYLPHENOL	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
BIS(2-CHLOROETHOXY)METHANE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
2,4-DICHLOROPHENOL	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
1,2,4-TRICHLOROBENZENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
NAPHTHALENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
4-CHLOROANILINE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
HEXACHLOROBUTADIENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
4-CHLORO-3-METHYLPHENOL	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
2-METHYLNAPHTHALENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
HEXACHLOROCYCLOPENTADIENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
2,4,6-TRICHLOROPHENOL	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
2,4,5-TRICHLOROPHENOL	UG/L	25	U	25	U	25	U	25	U	25	U	25	U
2-CHLORONAPHTHALENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
2-NITROANILINE	UG/L	25	U	25	U	25	U	25	U	25	U	25	U
DIMETHYLPHTHALATE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
ACENAPHTHYLENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
2,6-DINITROTOLUENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
3-NITROANILINE	UG/L	25	U	25	U	25	U	25	U	25	U	25	U
ACENAPHTHENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
2,4-DINITROPHENOL	UG/L	25	U	25	U	25	U	25	U	25	U	25	U
4-NITROPHENOL	UG/L	25	U	25	U	25	U	25	U	25	U	25	U
DIBENZOFURAN	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
2,4-DINITROTOLUENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U

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RESULTS FOR QUALITY CONTROL ANALYSES
SEMIVOLATILE ORGANIC COMPOUNDS

Parameter	Units	QCR020 20-JUL-92		SRC001 04-JUN-92		SRC002 15-JUN-92		SRC003 16-JUL-92	
PHENOL	UG/L	10	U	10	U	10	U	10	U
BIS(2-CHLOROETHYL)ETHER	UG/L	10	U	10	U	10	U	10	U
2-CHLOROPHENOL	UG/L	10	U	10	U	10	U	10	U
1,3-DICHLOROBENZENE	UG/L	10	U	10	U	10	U	10	U
1,4-DICHLOROBENZENE	UG/L	10	U	10	U	10	U	10	U
1,2-DICHLOROBENZENE	UG/L	10	U	10	U	10	U	10	U
2-METHYLPHENOL	UG/L	10	U	10	U	10	U	10	U
2,2'-OXYBIS(1-CHLOROPROPANE)	UG/L	10	U	10	U	10	U	10	U
4-METHYLPHENOL	UG/L	10	U	10	U	10	U	10	U
N-NITROSODI-N-PROPYLAMINE	UG/L	10	U	10	U	10	U	10	U
HEXACHLOROETHANE	UG/L	10	U	10	U	10	U	10	U
NITROBENZENE	UG/L	10	U	10	U	10	U	10	U
ISOPHORONE	UG/L	10	U	10	U	10	U	10	U
2-NITROPHENOL	UG/L	10	U	10	U	10	U	10	U
2,4-DIMETHYLPHENOL	UG/L	10	U	10	U	10	U	10	U
BIS(2-CHLOROETHOXY)METHANE	UG/L	10	U	10	U	10	U	10	U
2,4-DICHLOROPHENOL	UG/L	10	U	10	U	10	U	10	U
1,2,4-TRICHLOROBENZENE	UG/L	10	U	10	U	10	U	10	U
NAPHTHALENE	UG/L	10	U	10	U	10	U	10	U
4-CHLOROANILINE	UG/L	10	U	10	U	10	U	10	U
HEXACHLOROBUTADIENE	UG/L	10	U	10	U	10	U	10	U
4-CHLORO-3-METHYLPHENOL	UG/L	10	U	10	U	10	U	10	U
2-METHYLNAPHTHALENE	UG/L	10	U	10	U	10	U	10	U
HEXACHLOROCYCLOPENTADIENE	UG/L	10	U	10	U	10	U	10	U
2,4,6-TRICHLOROPHENOL	UG/L	10	U	10	U	10	U	10	U
2,4,5-TRICHLOROPHENOL	UG/L	25	U	25	U	25	U	25	U
2-CHLORONAPHTHALENE	UG/L	10	U	10	U	10	U	10	U
2-NITROANILINE	UG/L	25	U	25	U	25	U	25	U
DIMETHYLPHTHALATE	UG/L	10	U	10	U	10	U	10	U
ACENAPHTHYLENE	UG/L	10	U	10	U	10	U	10	U
2,6-DINITROTOLUENE	UG/L	10	U	10	U	10	U	10	U
3-NITROANILINE	UG/L	25	U	25	U	25	U	25	U
ACENAPHTHENE	UG/L	10	U	10	U	10	U	10	U
2,4-DINITROPHENOL	UG/L	25	U	25	U	25	U	25	U
4-NITROPHENOL	UG/L	25	U	25	U	25	U	25	U
DIBENZOFURAN	UG/L	10	U	10	U	10	U	10	U
2,4-DINITROTOLUENE	UG/L	10	U	10	U	10	U	10	U

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RESULTS FOR QUALITY CONTROL ANALYSES
SEMIVOLATILE ORGANIC COMPOUNDS

Parameter	Units	QCR001 03-JUN-92		QCR002 04-JUN-92		QCR003 08-JUN-92		QCR004 09-JUN-92		QCR005 10-JUN-92		QCR006 11-JUN-92	
DIETHYLPHTHALATE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
4-CHLOROPHENYL-PHENYLETHER	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
FLUORENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
4-NITROANILINE	UG/L	25	U	25	U	25	U	25	U	25	U	25	U
4,6-DINITRO-2-METHYLPHENOL	UG/L	25	U	25	U	25	U	25	U	25	U	25	U
N-NITROSODIPHENYLAMINE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
4-BROMOPHENYL-PHENYLETHER	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
HEXACHLOROBENZENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
PENTACHLOROPHENOL	UG/L	25	U	25	U	25	U	25	U	25	U	25	U
PHENANTHRENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
ANTHRACENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
CARBAZOLE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
DI-N-BUTYLPHTHALATE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
FLUORANTHENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
PYRENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
BUTYLBENZYLPHTHALATE	UG/L	10	U	10	U	2	JB	3	JBU	10	U	10	U
3,3'-DICHLOROBENZIDINE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
BENZO(A)ANTHRACENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
CHRYSENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
BIS(2-ETHYLHEXYL)PHTHALATE	UG/L	10	U	10	U	6	JB	3	JBU	10	U	10	U
DI-N-OCTYLPHTHALATE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
BENZO(B)FLUORANTHENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
BENZO(K)FLUORANTHENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
BENZO(A)PYRENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
INDENO(1,2,3-CD)PYRENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
DIBENZ(A,H)ANTHRACENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
BENZO(G,H,I)PERYLENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U

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RESULTS FOR QUALITY CONTROL ANALYSES
SEMIVOLATILE ORGANIC COMPOUNDS

Parameter	Units	QCR007 12-JUN-92		QCR008 15-JUN-92		QCR009 17-JUN-92		QCR010 17-JUN-92		QCR011 18-JUN-92		QCR012 07-JUL-92	
DIETHYLPHTHALATE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
4-CHLOROPHENYL-PHENYLETHER	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
FLUORENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
4-NITROANILINE	UG/L	25	U	25	U	25	U	25	U	25	U	25	U
4,6-DINITRO-2-METHYLPHENOL	UG/L	25	U	25	U	25	U	25	U	25	U	25	U
N-NITROSODIPHENYLAMINE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
4-BROMOPHENYL-PHENYLETHER	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
HEXACHLOROBENZENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
PENTACHLOROPHENOL	UG/L	25	U	25	U	25	U	25	U	25	U	25	U
PHENANTHRENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
ANTHRACENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
CARBAZOLE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
DI-N-BUTYLPHTHALATE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
FLUORANTHENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
PYRENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
BUTYLBENZYLPHTHALATE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
3,3'-DICHLOROBENZIDINE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
BENZO(A)ANTHRACENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
CHRYSENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
BIS(2-ETHYLHEXYL)PHTHALATE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
DI-N-OCTYLPHTHALATE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
BENZO(B)FLUORANTHENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
BENZO(K)FLUORANTHENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
BENZO(A)PYRENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
INDENO(1,2,3-CD)PYRENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
DIBENZ(A,H)ANTHRACENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U
BENZO(G,H,I)PERYLENE	UG/L	10	U	10	U	10	U	10	U	10	U	10	U

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RESULTS FOR QUALITY CONTROL ANALYSES
SEMIVOLATILE ORGANIC COMPOUNDS

Parameter	Units	QCR020 20-JUL-92		SRC001 04-JUN-92		SRC002 15-JUN-92		SRC003 16-JUL-92	
DIETHYLPHTHALATE	UG/L	10	U	10	U	10	U	10	U
4-CHLOROPHENYL-PHENYLETHER	UG/L	10	U	10	U	10	U	10	U
FLUORENE	UG/L	10	U	10	U	10	U	10	U
4-NITROANILINE	UG/L	25	U	25	U	25	U	25	U
4,6-DINITRO-2-METHYLPHENOL	UG/L	25	U	25	U	25	U	25	U
N-NITROSODIPHENYLAMINE	UG/L	10	U	10	U	10	U	10	U
4-BROMOPHENYL-PHENYLETHER	UG/L	10	U	10	U	10	U	10	U
HEXACHLOROBENZENE	UG/L	10	U	10	U	10	U	10	U
PENTACHLOROPHENOL	UG/L	25	U	25	U	25	U	25	U
PHENANTHRENE	UG/L	10	U	10	U	10	U	10	U
ANTHRACENE	UG/L	10	U	10	U	10	U	10	U
CARBAZOLE	UG/L	10	U	10	U	10	U	10	U
DI-N-BUTYLPHTHALATE	UG/L	10	U	10	U	10	U	10	U
FLUORANTHENE	UG/L	10	U	10	U	10	U	10	U
PYRENE	UG/L	10	U	10	U	10	U	10	U
BUTYLBENZYLPHTHALATE	UG/L	10	U	10	U	10	U	10	U
3,3'-DICHLOROBENZIDINE	UG/L	10	U	10	U	10	U	10	U
BENZO(A)ANTHRACENE	UG/L	10	U	10	U	10	U	10	U
CHRYSENE	UG/L	10	U	10	U	10	U	10	U
BIS(2-ETHYLHEXYL)PHTHALATE	UG/L	10	U	10	U	10	U	10	U
DI-N-OCTYLPHTHALATE	UG/L	10	U	10	U	10	U	10	U
BENZO(B)FLUORANTHENE	UG/L	10	U	10	U	10	U	10	U
BENZO(K)FLUORANTHENE	UG/L	10	U	10	U	10	U	10	U
BENZO(A)PYRENE	UG/L	10	U	10	U	10	U	10	U
INDENO(1,2,3-CD)PYRENE	UG/L	10	U	10	U	10	U	10	U
DIBENZ(A,H)ANTHRACENE	UG/L	10	U	10	U	10	U	10	U
BENZO(G,H,I)PERYLENE	UG/L	10	U	10	U	10	U	10	U

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RESULTS FOR QUALITY CONTROL ANALYSES
PESTICIDE/PCB COMPOUNDS

Parameter	Units	QCR001 03-JUN-92		QCR002 04-JUN-92		QCR003 08-JUN-92		QCR004 09-JUN-92		QCR005 10-JUN-92		QCR006 11-JUN-92	
ALPHA-BHC	UG/L	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
BETA-BHC	UG/L	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
DELTA-BHC	UG/L	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
GAMMA-BHC (LINDANE)	UG/L	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
HEPTACHLOR	UG/L	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
ALDRIN	UG/L	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
HEPTACHLOR EPOXIDE	UG/L	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
ENDOSULFAN I	UG/L	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
DIELDRIN	UG/L	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U
4,4'-DDE	UG/L	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U
ENDRIN	UG/L	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U
ENDOSULFAN II	UG/L	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U
4,4'-DDD	UG/L	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U
ENDOSULFAN SULFATE	UG/L	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U
4,4'-DDT	UG/L	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U
METHOXYCHLOR	UG/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
ENDRIN KETONE	UG/L	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U
ENDRIN ALDEHYDE	UG/L	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U
ALPHA-CHLORDANE	UG/L	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
GAMMA-CHLORDANE	UG/L	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
TOXAPHENE	UG/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
AROCLOR-1016	UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
AROCLOR-1221	UG/L	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
AROCLOR-1232	UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
AROCLOR-1242	UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
AROCLOR-1248	UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
AROCLOR-1254	UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
AROCLOR-1260	UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U

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RESULTS FOR QUALITY CONTROL ANALYSES
PESTICIDE/PCB COMPOUNDS

Parameter	Units	QCR007 12-JUN-92		QCR008 15-JUN-92		QCR009 17-JUN-92		QCR010 17-JUN-92		QCR011 18-JUN-92		QCR012 07-JUL-92	
ALPHA-BHC	UG/L	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
BETA-BHC	UG/L	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
DELTA-BHC	UG/L	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
GAMMA-BHC (LINDANE)	UG/L	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
HEPTACHLOR	UG/L	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
ALDRIN	UG/L	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
HEPTACHLOR EPOXIDE	UG/L	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
ENDOSULFAN I	UG/L	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
DIELDRIN	UG/L	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U
4,4'-DDE	UG/L	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U
ENDRIN	UG/L	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U
ENDOSULFAN II	UG/L	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U
4,4'-DDD	UG/L	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U
ENDOSULFAN SULFATE	UG/L	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U
4,4'-DDT	UG/L	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U
METHOXYCHLOR	UG/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
ENDRIN KETONE	UG/L	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U
ENDRIN ALDEHYDE	UG/L	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U
ALPHA-CHLORDANE	UG/L	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
GAMMA-CHLORDANE	UG/L	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
TOXAPHENE	UG/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
AROCLOR-1016	UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
AROCLOR-1221	UG/L	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
AROCLOR-1232	UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
AROCLOR-1242	UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
AROCLOR-1248	UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
AROCLOR-1254	UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
AROCLOR-1260	UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U

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RESULTS FOR QUALITY CONTROL ANALYSES
PESTICIDE/PCB COMPOUNDS

Parameter	Units	QCR020 20-JUL-92		SRC001 04-JUN-92		SRC002 15-JUN-92		SRC003 16-JUL-92	
ALPHA-BHC	UG/L	0.050	U	0.050	U	0.050	U	0.050	U
BETA-BHC	UG/L	0.050	U	0.050	U	0.050	U	0.050	U
DELTA-BHC	UG/L	0.050	U	0.050	U	0.050	U	0.050	U
GAMMA-BHC (LINDANE)	UG/L	0.050	U	0.050	U	0.050	U	0.050	U
HEPTACHLOR	UG/L	0.050	U	0.050	U	0.050	U	0.050	U
ALDRIN	UG/L	0.050	U	0.050	U	0.050	U	0.050	U
HEPTACHLOR EPOXIDE	UG/L	0.050	U	0.050	U	0.050	U	0.050	U
ENDOSULFAN I	UG/L	0.050	U	0.050	U	0.050	U	0.050	U
DIELDRIN	UG/L	0.10	U	0.10	U	0.10	U	0.10	U
4,4'-DDE	UG/L	0.10	U	0.10	U	0.10	U	0.10	U
ENDRIN	UG/L	0.10	U	0.10	U	0.10	U	0.10	U
ENDOSULFAN II	UG/L	0.10	U	0.10	U	0.10	U	0.10	U
4,4'-DDD	UG/L	0.10	U	0.10	U	0.10	U	0.10	U
ENDOSULFAN SULFATE	UG/L	0.10	U	0.10	U	0.10	U	0.10	U
4,4'-DDT	UG/L	0.10	U	0.10	U	0.10	U	0.10	U
METHOXYCHLOR	UG/L	0.50	U	0.50	U	0.50	U	0.50	U
ENDRIN KETONE	UG/L	0.10	U	0.10	U	0.10	U	0.10	U
ENDRIN ALDEHYDE	UG/L	0.10	U	0.10	U	0.10	U	0.10	U
ALPHA-CHLORDANE	UG/L	0.050	U	0.050	U	0.050	U	0.050	U
GAMMA-CHLORDANE	UG/L	0.050	U	0.050	U	0.050	U	0.050	U
TOXAPHENE	UG/L	5.0	U	5.0	U	5.0	U	5.0	U
AROCLOR-1016	UG/L	1.0	U	1.0	U	1.0	U	1.0	U
AROCLOR-1221	UG/L	2.0	U	2.0	U	2.0	U	2.0	U
AROCLOR-1232	UG/L	1.0	U	1.0	U	1.0	U	1.0	U
AROCLOR-1242	UG/L	1.0	U	1.0	U	1.0	U	1.0	U
AROCLOR-1248	UG/L	1.0	U	1.0	U	1.0	U	1.0	U
AROCLOR-1254	UG/L	1.0	U	1.0	U	1.0	U	1.0	U
AROCLOR-1260	UG/L	1.0	U	1.0	U	1.0	U	1.0	U

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92

RESULTS FOR QUALITY CONTROL ANALYSES
INORGANIC AND TOC CONSTITUENT ANALYSES

Parameter	Units	QCR001 03-JUN-92		QCR002 04-JUN-92		QCR003 08-JUN-92		QCR004 09-JUN-92		QCR005 10-JUN-92		QCR006 11-JUN-92	
ALUMINUM	UG/L	100	U	100	U	100	U	100	U	100	U	100	U
ANTIMONY	UG/L	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U
ARSENIC	UG/L	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
BARIUM	UG/L	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U
BERYLLIUM	UG/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
CADMIUM	UG/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
CALCIUM	UG/L	500	U	500	U	500	U	500	U	500	U	500	U
CHROMIUM	UG/L	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U
COBALT	UG/L	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U
COPPER	UG/L	20.0	U	20.0	U	20.0	U	20.0	U	20.0	U	20.0	U
IRON	UG/L	144		100	U	167		100	U	100	U	100	U
LEAD	UG/L	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
MAGNESIUM	UG/L	500	U	500	U	500	U	500	U	500	U	500	U
MANGANESE	UG/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	BU	5.0	U
MERCURY	UG/L	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
NICKEL	UG/L	40.0	U	40.0	U	40.0	U	40.0	U	40.0	U	40.0	U
POTASSIUM	UG/L	500	U	500	U	500	U	500	U	500	U	500	U
SELENIUM	UG/L	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
SILVER	UG/L	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U
SODIUM	UG/L	500	U	500	U	500	U	500	U	500	U	500	U
THALLIUM	UG/L	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
VANADIUM	UG/L	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U
ZINC	UG/L	20.0	U	20.0	U	20.0	U	20.0	U	20.0	U	20.0	U
CYANIDE, TOTAL	UG/L	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U
TOTAL ORGANIC CARBON	MG/L	0.56	Z	0.41	Z	0.59	Z	0.67	Z	0.96	Z	0.39	Z

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92

RESULTS FOR QUALITY CONTROL ANALYSES
INORGANIC AND TOC CONSTITUENT ANALYSES

Parameter	Units	QCR007 12-JUN-92		QCR008 15-JUN-92		QCR009 17-JUN-92		QCR010 17-JUN-92		QCR011 18-JUN-92		QCR012 07-JUL-92	
ALUMINUM	UG/L	100	U	100	U	100	U	100	U	100	U	100	U
ANTIMONY	UG/L	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U
ARSENIC	UG/L	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
BARIUM	UG/L	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U
BERYLLIUM	UG/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
CADMIUM	UG/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
CALCIUM	UG/L	500	U	500	U	500	U	500	U	500	U	500	U
CHROMIUM	UG/L	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U
COBALT	UG/L	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U
COPPER	UG/L	20.0	U	20.0	U	20.0	U	20.0	U	20.0	U	20.0	U
IRON	UG/L	100	U	100	U	100	U	100	U	100	U	100	U
LEAD	UG/L	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
MAGNESIUM	UG/L	500	U	500	U	500	U	500	U	500	U	500	U
MANGANESE	UG/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
MERCURY	UG/L	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
NICKEL	UG/L	40.0	U	40.0	U	40.0	U	40.0	U	40.0	U	40.0	U
POTASSIUM	UG/L	500	U	500	U	500	U	500	U	2500	U	2500	U
SELENIUM	UG/L	3.0	U	3.0	U	3.0	UW	3.0	UW	3.0	U	3.0	U
SILVER	UG/L	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U
SODIUM	UG/L	500	U	500	U	500	U	500	U	500	U	500	U
THALLIUM	UG/L	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
VANADIUM	UG/L	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U
ZINC	UG/L	20.0	U	20.0	U	20.0	U	20.0	U	20.0	U	20.0	U
CYANIDE, TOTAL	UG/L	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U
TOTAL ORGANIC CARBON	MG/L	2.0	Z	0.81	Z	< 0.25	Z	0.30	Z	0.27	Z	< 0.25	

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92

RESULTS FOR QUALITY CONTROL ANALYSES
INORGANIC AND TOC CONSTITUENT ANALYSES

Parameter	Units	QCR013 08-JUL-92	QCR014 09-JUL-92	QCR015 10-JUL-92	QCR016 13-JUL-92	QCR017 14-JUL-92	QCR018 16-JUL-92
ALUMINUM	UG/L						
ANTIMONY	UG/L						
ARSENIC	UG/L						
BARIUM	UG/L						
BERYLLIUM	UG/L						
CADMIUM	UG/L						
CALCIUM	UG/L						
CHROMIUM	UG/L						
COBALT	UG/L						
COPPER	UG/L						
IRON	UG/L						
LEAD	UG/L						
MAGNESIUM	UG/L						
MANGANESE	UG/L						
MERCURY	UG/L						
NICKEL	UG/L						
POTASSIUM	UG/L						
SELENIUM	UG/L						
SILVER	UG/L						
SODIUM	UG/L						
THALLIUM	UG/L						
VANADIUM	UG/L						
ZINC	UG/L						
CYANIDE, TOTAL	UG/L						
TOTAL ORGANIC CARBON	MG/L	0.19	0.31	0.57	1.9	0.63	0.32

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92

RESULTS FOR QUALITY CONTROL ANALYSES
INORGANIC AND TOC CONSTITUENT ANALYSES

Parameter	Units	QCR019 17-JUL-92	QCR020 20-JUL-92		QCR021 22-JUL-92	QCR022 23-JUL-92	QCR023 24-JUL-92	QCR024 28-JUL-92
ALUMINUM	UG/L		100	U				
ANTIMONY	UG/L		10.0	U				
ARSENIC	UG/L		3.0	U				
BARIUM	UG/L		50.0	U				
BERYLLIUM	UG/L		5.0	U				
CADMIUM	UG/L		5.0	U				
CALCIUM	UG/L		588	B				
CHROMIUM	UG/L		10.0	U				
COBALT	UG/L		50.0	U				
COPPER	UG/L		20.0	U				
IRON	UG/L		124					
LEAD	UG/L		3.0	U				
MAGNESIUM	UG/L		500	U				
MANGANESE	UG/L		5.0	B				
MERCURY	UG/L		0.20	U				
NICKEL	UG/L		40.0	U				
POTASSIUM	UG/L		2500	U				
SELENIUM	UG/L		3.0	U				
SILVER	UG/L		10.0	U				
SODIUM	UG/L		500	U				
THALLIUM	UG/L		3.0	U				
VANADIUM	UG/L		50.0	U				
ZINC	UG/L		20.0	U				
CYANIDE, TOTAL	UG/L		10.0	U				
TOTAL ORGANIC CARBON	MG/L	1.5	0.39		< 0.25	< 0.25	< 0.25	< 0.25

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92

RESULTS FOR QUALITY CONTROL ANALYSES
INORGANIC AND TOC CONSTITUENT ANALYSES

Parameter	Units	QCR025 30-JUL-92	SRC001 04-JUN-92		SRC002 15-JUN-92		SRC003 16-JUL-92	
ALUMINUM	UG/L		100	U	100	U	100	U
ANTIMONY	UG/L		10.0	U	10.0	U	10.0	U
ARSENIC	UG/L		3.0	U	3.0	U	3.0	U
BARIUM	UG/L		50.0	U	50.0	U	50.0	U
BERYLLIUM	UG/L		5.0	U	5.0	U	5.0	U
CADMIUM	UG/L		5.0	U	5.0	U	5.0	U
CALCIUM	UG/L		34600		35100		34800	
CHROMIUM	UG/L		10.0	U	10.0	U	10.0	U
COBALT	UG/L		50.0	U	50.0	U	50.0	U
COPPER	UG/L		20.0	U	20.0	U	20.0	U
IRON	UG/L		262		569		508	
LEAD	UG/L		3.0	U	3.0	U	3.0	U
MAGNESIUM	UG/L		9560		8860		8950	
MANGANESE	UG/L		147		130		104	
MERCURY	UG/L		0.20	U	0.20	U	0.20	U
NICKEL	UG/L		40.0	U	40.0	U	40.0	U
POTASSIUM	UG/L		848	B	748	BJ	2500	U
SELENIUM	UG/L		3.0	U	3.0	U	3.0	U
SILVER	UG/L		10.0	U	10.0	U	10.0	U
SODIUM	UG/L		6240		5600		5900	
THALLIUM	UG/L		3.0	U	3.0	U	3.0	U
VANADIUM	UG/L		50.0	U	50.0	U	50.0	U
ZINC	UG/L		24.9	J	46.9		27.0	
CYANIDE, TOTAL	UG/L		10.0	U	10.0	U	10.0	U
TOTAL ORGANIC CARBON	MG/L	0.32	0.68	Z	0.67	Z	0.55	

APPENDIX J

RESULTS OF PORTABLE CHROMATOGRAPH ANALYSES

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A1

RESULTS OF PORTABLE GAS CHROMATOGRAPH ANALYSES
SUB-AREA A1

Sample Id	Sample Date	11DCE UL/L	TCE UL/L	BENZENE UL/L	PCE UL/L	TOLUENE UL/L	E_BENZENE UL/L	XYLENE UL/L	12DCE_TRANS UL/L	12DCE_CIS UL/L
AB040A	15-JUN-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
AB040B	15-JUN-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
AB040C	15-JUN-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
AB040D	15-JUN-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
AB040E	15-JUN-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
AB040F	15-JUN-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
AB040G	15-JUN-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
AB040H	15-JUN-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
AB041A	08-JUN-92	< 0.2	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.08	< 0.2	< 0.2
AB041B	08-JUN-92	< 0.2	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.08	< 0.2	< 0.2
AB041C	08-JUN-92	< 10	< 2	< 2	< 2	< 2	< 2	< 4	< 10	< 10
AB041D	08-JUN-92	< 5	< 1	< 1	< 1	< 1	< 1	< 2	< 5	< 5
AB041E	08-JUN-92	< 2	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	< 2
AB041F	08-JUN-92	< 2	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	< 2
AB041G	08-JUN-92	< 1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	< 1
AB041H	08-JUN-92	< 2	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	< 2
AB042A	09-JUN-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
AB042B	09-JUN-92	< 0.5	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
AB042C	09-JUN-92	< 1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	< 1
AB042C DUP	09-JUN-92	< 1	< 0.2	< 0.2		< 0.2			< 1	< 1
AB042D	09-JUN-92	< 0.5	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
AB042E	09-JUN-92	< 1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	< 1
AB042F	09-JUN-92	< 1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	< 1
AB042G	09-JUN-92	< 1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	< 1
AB042H	09-JUN-92	< 1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	< 1

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A2

RESULTS OF PORTABLE GAS CHROMATOGRAPH ANALYSES
SUB-AREA A2

Sample Id	Sample Date	11DCE UL/L	TCE UL/L	BENZENE UL/L	PCE UL/L	TOLUENE UL/L	E_BENZENE UL/L	XYLENE UL/L	12DCE_TRANS UL/L	12DCE_CIS UL/L
AB024A	09-JUN-92	< 0.5	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
AB024B	09-JUN-92	< 0.5	0.56	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
AB024C	09-JUN-92	< 0.5	0.35	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
AB024D	09-JUN-92	< 0.5	0.65	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
AB024D DUP	09-JUN-92	< 0.2	0.72	< 0.04	< 0.04	< 0.04	< 0.04	< 0.08	< 0.2	< 0.2
AB024E	09-JUN-92	< 0.2	0.9	< 0.04	< 0.04	< 0.04	< 0.04	< 0.08	< 0.2	< 0.2
AB024F	09-JUN-92	< 0.5	3	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
AB024G	09-JUN-92	< 0.5	4.3	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
AB024G DUP	09-JUN-92	< 1	6.3	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	< 1
AB024H	09-JUN-92	< 1	1.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	< 1
AB024H DUP	09-JUN-92	< 0.5	2.4	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
AB025A	09-JUN-92	< 40	280	< 8	< 8	< 8	< 8	< 16	< 40	< 40
AB025A DUP	09-JUN-92	< 40	210	< 8	< 8	< 8	< 8	< 16	< 40	< 40
AB025B	09-JUN-92	< 40	350	< 8	< 8	< 8	< 8	< 16	< 40	< 40
AB025C	09-JUN-92	< 20	22	< 4	< 4	< 4	< 4	< 8	< 20	< 20
AB025C DUP	09-JUN-92	< 8	58	< 1.6	< 1.6	< 1.6	< 1.6	< 3.2	< 8	< 8
AB025D	09-JUN-92	< 4	10	< 0.8	< 0.8	< 0.8	< 0.8	< 1.6	< 4	< 4
AB025E	09-JUN-92	< 2	5.9	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	< 2
AB025F	09-JUN-92	< 3.3	14	< 0.67	< 0.67	< 0.67	< 0.67	< 1.3	< 3.3	< 3.3
AB025G	09-JUN-92	< 3.3	24	< 0.67	< 0.67	< 0.67	< 0.67	< 1.3	< 3.3	< 3.3
AB025H	09-JUN-92	< 5	30	< 1	< 1	< 1	< 1	< 2	< 5	< 5
AB201A	08-JUL-92	< 0.1	0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
AB201B	08-JUL-92	< 0.1	0.37	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
AB201C	08-JUL-92	< 0.1	0.24	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
AB201C DUP	08-JUL-92	< 0.1	0.37	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
AB201D	08-JUL-92	< 0.2	0.64	< 0.04	< 0.04	< 0.04	< 0.04	< 0.08	< 0.2	< 0.2
AB201E	08-JUL-92	< 0.1	0.31	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
AB201F	08-JUL-92	< 0.2	0.74	< 0.04	< 0.04	< 0.04	< 0.04	< 0.08	< 0.2	< 0.2
AB201G	08-JUL-92	< 0.33	2.1	< 0.067	< 0.067	< 0.067	< 0.067	< 0.13	< 0.33	< 0.33
AB201H	08-JUL-92	< 0.5	1.8	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
AB202A	08-JUL-92	< 1	4.6	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	< 1
AB202B	08-JUL-92	< 5	20	< 1	< 1	< 1	< 1	< 2	< 5	< 5
AB202C	08-JUL-92	< 0.25	0.96	< 0.05	< 0.05	< 0.05	< 0.05	< 0.1	< 0.25	< 0.25
AB202D	08-JUL-92	< 0.67	3.2	< 0.13	< 0.13	< 0.13	< 0.13	< 0.27	< 0.67	< 0.67

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SITE AREA: A2

RESULTS OF PORTABLE GAS CHROMATOGRAPH ANALYSES
SUB-AREA A2

Sample Id	Sample Date	11DCE UL/L	TCE UL/L	BENZENE UL/L	PCE UL/L	TOLUENE UL/L	E_BENZENE UL/L	XYLENE UL/L	12DCE_TRANS UL/L	12DCE_CIS UL/L
AB202D DUP	08-JUL-92	< 0.67	3.4	< 0.13	< 0.13	< 0.13	< 0.13	< 0.27	< 0.67	< 0.67
AB202E	08-JUL-92	< 1	4.9	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	< 1
AB202F	08-JUL-92	< 2.5	9.6	< 0.5	< 0.5	< 0.5	< 0.5	< 1	< 2.5	< 2.5
AB202G	08-JUL-92	< 1.7	10	< 0.33	0.59	< 0.33	< 0.33	< 0.67	< 1.7	< 1.7
AB202H	08-JUL-92	< 2	9.5	< 0.4	0.4	< 0.4	< 0.4	< 0.8	< 2	< 2
AB222A	09-JUL-92	< 2.5	9.6	< 0.5	3.3	< 0.5	< 0.5	< 1	< 2.5	< 2.5
AB222B	09-JUL-92	< 0.5	2.4	< 0.1	1.7	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
AB222C	09-JUL-92	< 1.2	5.8	< 0.25	3	< 0.25	< 0.25	< 0.5	< 1.2	< 1.2
AB222D	09-JUL-92	< 0.5	1.9	< 0.1	0.72	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
AB222E	09-JUL-92	< 0.25	1.3	< 0.05	0.57	< 0.05	< 0.05	< 0.1	< 0.25	< 0.25
AB222F	09-JUL-92	< 0.5	2.1	< 0.1	0.76	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
AB222G	09-JUL-92	< 0.5	2.8	< 0.1	1.2	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
AB222H	09-JUL-92	< 1	4.1	< 0.2	1.9	< 0.2	< 0.2	< 0.4	< 1	< 1
AB222H DUP	09-JUL-92	< 1	5.2	< 0.2	2.1	< 0.2	< 0.2	< 0.4	< 1	< 1
AB223A	09-JUL-92	< 8	42	< 1.6	< 1.6	< 1.6	< 1.6	< 3.2	< 8	< 8
AB223B	09-JUL-92	< 8	49	< 1.6	< 1.6	< 1.6	< 1.6	< 3.2	< 8	< 8
AB223B DUP	09-JUL-92	< 8	54	< 1.6	< 1.6	< 1.6	< 1.6	< 3.2	< 8	< 8
AB223C	09-JUL-92	< 13	85	< 2.7	< 2.7	< 2.7	< 2.7	< 5.3	< 13	< 13
AB223D	09-JUL-92	< 2.5	14	< 0.5	< 0.5	< 0.5	< 0.5	< 1	< 2.5	< 2.5
AB223E	09-JUL-92	< 1	4.9	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	< 1
AB223F	09-JUL-92	< 1.2	7	< 0.25	< 0.25	< 0.25	< 0.25	< 0.5	< 1.2	< 1.2
AB223G	09-JUL-92	< 2	8.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	< 2
AB223H	09-JUL-92	< 6.7	28	< 1.3	< 1.3	< 1.3	< 1.3	< 2.7	< 6.7	< 6.7
AB225A	10-JUL-92	< 0.62	1.6	< 0.12	9.1	< 0.12	< 0.12	< 0.25	< 0.62	< 0.62
AB225B	10-JUL-92	< 0.28	1.1	< 0.056	2.5	< 0.056	< 0.056	< 0.11	< 0.28	< 0.28
AB225C	10-JUL-92	< 0.25	1.1	< 0.05	3.1	< 0.05	< 0.05	< 0.1	< 0.25	< 0.25
AB225D	10-JUL-92	< 0.1	0.33	< 0.02	0.36	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
AB225E	10-JUL-92	< 0.1	0.57	< 0.02	0.49	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
AB225F	10-JUL-92	< 0.2	0.81	< 0.04	0.67	< 0.04	< 0.04	< 0.08	< 0.2	< 0.2
AB225G	10-JUL-92	< 0.4	2.4	< 0.08	1.8	< 0.08	< 0.08	< 0.16	< 0.4	< 0.4
AB225H	10-JUL-92	< 0.5	2	< 0.1	1.5	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
AB225H DUP	10-JUL-92	< 0.5	2.5	< 0.1	1.9	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
AB230A	10-JUL-92	< 0.5	2	< 0.1	4.5	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
AB230B	10-JUL-92	< 1	1.3	< 0.2	2.5	< 0.2	< 0.2	< 0.4	< 1	< 1

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RESULTS OF PORTABLE GAS CHROMATOGRAPH ANALYSES
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Sample Id	Sample Date	11DCE UL/L	TCE UL/L	BENZENE UL/L	PCE UL/L	TOLUENE UL/L	E_BENZENE UL/L	XYLENE UL/L	12DCE_TRANS UL/L	12DCE_CIS UL/L
AB230C	10-JUL-92	< 0.5	2.2	< 0.1	3.3	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
AB230C DUP	10-JUL-92	< 0.5	1.7	< 0.1	2.8	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
AB230D	10-JUL-92	< 0.2	0.81	< 0.04	0.2	< 0.04	< 0.04	< 0.08	< 0.2	< 0.2
AB230E	10-JUL-92	< 0.25	0.96	< 0.05	0.77	< 0.05	< 0.05	< 0.1	< 0.25	< 0.25
AB230F	10-JUL-92	< 0.67	4.2	< 0.13	3.3	< 0.13	< 0.13	< 0.27	< 0.67	< 0.67
AB230G	10-JUL-92	< 0.5	2.5	< 0.1	2	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
AB230H	10-JUL-92	< 0.5	2.4	< 0.1	1.8	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
AB230H DUP	10-JUL-92	< 0.5	2.6	< 0.1	2	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5

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SITE AREA: A3

RESULTS OF PORTABLE GAS CHROMATOGRAPH ANALYSES
SUB-AREA A3

Sample Id	Sample Date	11DCE UL/L	TCE UL/L	BENZENE UL/L	PCE UL/L	TOLUENE UL/L	E_BENZENE UL/L	XYLENE UL/L	12DCE_TRANS UL/L	12DCE_CIS UL/L
AB035A	10-JUN-92	< 10	51	< 2	< 2	< 2	< 2	< 4	< 10	23
AB035B	10-JUN-92	< 10	53	< 2	< 2	< 2	< 2	< 4	< 10	33
AB036A	15-JUN-92	< 4	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 1.6	1.3	50
AB036B	15-JUN-92	< 20	87	< 4	< 4	< 4	< 4	< 8	< 20	130
AB036C	15-JUN-92	< 10	41	< 2	< 2	< 2	< 2	< 4	< 10	50
AB036D	15-JUN-92	< 4	26	< 0.8	< 0.8	< 0.8	< 0.8	< 1.6	< 4	27
AB036E	15-JUN-92	< 4	32	< 0.8	< 0.8		< 0.8	< 1.6	< 4	36
AB036F	15-JUN-92	< 4	25	< 0.8	< 0.8	< 0.8	< 0.8	< 1.6	< 4	27
AB036G	15-JUN-92	< 4	49	< 0.8	< 0.8	< 0.8	< 0.8	< 1.6	< 4	28
AB036H	15-JUN-92	< 20	140	< 4	< 4	< 4	< 4	< 8	< 20	100
AB037A	10-JUN-92	< 0.5	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
AB037B	10-JUN-92	< 2	11	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	12
AB037B DUP	10-JUN-92	< 2	10	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	11
AB037C	10-JUN-92	< 2	9.7	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	9.3
AB037D	10-JUN-92	< 20	97	< 4	< 4	< 4	< 4	< 8	< 20	93
AB037E	10-JUN-92	< 5	24	< 1	< 1	< 1	< 1	< 2	< 5	36
AB037F	10-JUN-92	< 3.3	22	< 0.67	< 0.67	< 0.67	< 0.67	< 1.3	< 3.3	21
AB037G	10-JUN-92	< 6.7	49	< 1.3	< 1.3	< 1.3	< 1.3	< 2.7	< 6.7	35
AB037H	10-JUN-92	< 10	62	< 2	< 2	< 2	< 2	< 4	< 10	50
AB039A	10-JUN-92	< 0.1	0.076	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
AB039B	10-JUN-92	< 0.1	0.15	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
AB039C	10-JUN-92	< 0.1	0.19	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
AB039D	10-JUN-92	< 0.1	0.3	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
AB039E	10-JUN-92	< 0.1	0.35	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
AB039F	10-JUN-92	< 0.1	0.23	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
AB039G	10-JUN-92	< 0.1	0.46	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
AB039H	10-JUN-92	< 0.1	0.5	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
AB043B	20-JUL-92	< 20	45	< 4	15	< 4	< 4	< 8	< 20	58
AB043C	20-JUL-92	< 250	600	< 50	130	< 50	< 50	< 100	< 250	86
AB043C DUP	20-JUL-92	< 100	340	< 20	65	< 20	< 20	< 40	< 100	71
AB043D	20-JUL-92	< 100	800	< 20	150	< 20	< 20	< 40	< 100	130
AB043E	20-JUL-92	< 100	550	< 20	120	< 20	< 20	< 40	< 100	110
AB043F	20-JUL-92	< 20	62	< 4	35	< 4	< 4	< 8	< 20	15
AB043G	20-JUL-92	< 100	420	< 20	220	< 20	< 20	< 40	< 100	150

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RESULTS OF PORTABLE GAS CHROMATOGRAPH ANALYSES
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Sample Id	Sample Date	11DCE UL/L	TCE UL/L	BENZENE UL/L	PCE UL/L	TOLUENE UL/L	E_BENZENE UL/L	XYLENE UL/L	12DCE_TRANS UL/L	12DCE_CIS UL/L
AB043G DUP	20-JUL-92	< 100	380	< 20	180	< 20	< 20	< 40	< 100	220
AB043H	20-JUL-92	< 20	110	< 4	44	< 4	< 4	< 8	< 20	45
AB044B	20-JUL-92	< 20	70	< 4	32	< 4	< 4	< 8	< 20	58
AB044B DUP	20-JUL-92	< 10	53	< 2	20	< 2	< 2	< 4	< 10	68
AB044C	20-JUL-92	< 40	270	< 8	48	< 8	< 8	< 16	< 40	53
AB044D	20-JUL-92	< 100	490	< 20	81	< 20	< 20	< 40	< 100	84
AB044E	20-JUL-92	< 40	110	< 8	12	< 8	< 8	< 16	< 40	51
AB044F	20-JUL-92	< 40	120	< 8	120	< 8	< 8	< 16	< 40	15
AB044F DUP	20-JUL-92	< 20	70	< 4	72	< 4	< 4	< 8	< 20	12
AB044G	20-JUL-92	< 6.7	32	< 1.3	21	< 1.3	< 1.3	< 2.7	< 6.7	11
AB044H	20-JUL-92	< 40	95	< 8	34	< 8	< 8	< 16	< 40	80
AB209A	23-JUL-92	< 0.1	0.12	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
AB209B	23-JUL-92	< 5	15	< 1	< 1	< 1	< 1	< 2	< 5	3.8
AB209C	23-JUL-92	< 0.5	4	< 0.1	0.42	< 0.1	< 0.1	< 0.2	< 0.5	2.1
AB209D	23-JUL-92	< 0.5	2.6	< 0.1	0.24	< 0.1	< 0.1	< 0.2	< 0.5	1.6
AB209E	23-JUL-92	< 0.5	3.9	< 0.1	0.49	< 0.1	< 0.1	< 0.2	< 0.5	2
AB209F	23-JUL-92	< 0.5	3.1	< 0.1	0.39	< 0.1	< 0.1	< 0.2	< 0.5	1.2
AB209G	23-JUL-92	< 1	7.9	< 0.2	1	< 0.2	< 0.2	< 0.4	< 1	3.8
AB209G DUP	23-JUL-92	< 1	4.3	< 0.2	0.61	< 0.2	< 0.2	< 0.4	< 1	2
AB209H	23-JUL-92	< 4	12	< 0.8	1.9	< 0.8	< 0.8	< 1.6	< 4	5.8
AB210A	23-JUL-92	< 0.33	0.06	< 0.067	< 0.067	< 0.067	< 0.067	< 0.13	0.34	2.1
AB210B	23-JUL-92	< 0.67	< 0.13	< 0.13	< 0.13	2.4	< 0.13	< 0.27	0.22	3.5
AB210C	23-JUL-92	< 0.67	3	< 0.13	< 0.13	< 0.13	< 0.13	< 0.27	< 0.67	2.5
AB210C DUP	23-JUL-92	< 0.5	3.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	2.4
AB210D	23-JUL-92	< 2	11	< 0.4	0.56	< 0.4	< 0.4	< 0.8	< 2	10
AB210E	23-JUL-92	< 2	9.9	< 0.4	0.81	< 0.4	< 0.4	< 0.8	< 2	8
AB210F	23-JUL-92	< 2	11	< 0.4	0.9	< 0.4	< 0.4	< 0.8	< 2	7.1
AB210G	23-JUL-92	< 2	6.8	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	4.7
AB210H	23-JUL-92	< 1	6.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	4
AB211A	23-JUL-92	< 2	16	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	1.9
AB211B	23-JUL-92	< 4	23	< 0.8	< 0.8	< 0.8	< 0.8	< 1.6	< 4	7.9
AB211C	23-JUL-92	< 2	5.1	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	2.7
AB211C DUP	23-JUL-92	< 2	9.2	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	4.4
AB211D	23-JUL-92	< 2	15	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	6.6

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RESULTS OF PORTABLE GAS CHROMATOGRAPH ANALYSES
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Sample Id	Sample Date	11DCE UL/L	TCE UL/L	BENZENE UL/L	PCE UL/L	TOLUENE UL/L	E_BENZENE UL/L	XYLENE UL/L	12DCE_TRANS UL/L	12DCE_CIS UL/L
AB211E	23-JUL-92	< 2	7.2	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	3.9
AB211F	23-JUL-92	< 2	6.8	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	4.1
AB211G	23-JUL-92	< 2	11	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	4.7
AB211H	23-JUL-92	< 2	11	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	4.2
AB212A	24-JUL-92	< 0.1	0.4	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	0.25
AB212B	24-JUL-92	< 20	110	< 4	< 4	< 4	< 4	< 8	6	100
AB212C	24-JUL-92	< 20	79	< 4	< 4	< 4	< 4	< 8	< 20	63
AB212D	24-JUL-92	< 10	37	< 2	< 2	< 2	< 2	< 4	< 10	25
AB212E	24-JUL-92	< 4	26	< 0.8	< 0.8	< 0.8	< 0.8	< 1.6	< 4	17
AB212F	24-JUL-92	< 2	12	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	6.9
AB212G	24-JUL-92	< 10	81	< 2	< 2	< 2	< 2	< 4	< 10	32
AB212H	24-JUL-92	< 10	77	< 2	< 2	< 2	< 2	< 4	< 10	32
AB213A	23-JUL-92	< 0.5	2.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
AB213B	23-JUL-92	< 8	51	< 1.6	< 1.6	< 1.6	< 1.6	< 3.2	< 8	< 8
AB213D	23-JUL-92	< 2	8.9	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	1.1
AB213E	23-JUL-92	< 1	2.9	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	0.8
AB213F	23-JUL-92	< 2	16	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	5.2
AB213G	23-JUL-92	< 2	13	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	3.5
AB213H	23-JUL-92	< 4	18	< 0.8	< 0.8	< 0.8	< 0.8	< 1.6	< 4	4.6
AB214A	28-JUL-92	< 10	60	< 2	< 2	< 2	< 2	< 4	< 10	3.6
AB214B	28-JUL-92	< 10	130	< 2	< 2	< 2	< 2	< 4	< 10	10
AB214B DUP	28-JUL-92	< 20	180	< 4	< 4	< 4	< 4	< 8	< 20	15
AB214C	28-JUL-92	< 40	280	< 8	< 8	< 8	< 8	< 16	< 40	26
AB214D	28-JUL-92	< 20	40	< 4	< 4	< 4	< 4	< 8	< 20	8
AB214E	28-JUL-92	< 8	54	< 1.6	< 1.6	< 1.6	< 1.6	< 3.2	< 8	14
AB214F	28-JUL-92	< 4	19	< 0.8	< 0.8	< 0.8	< 0.8	< 1.6	< 4	4.7
AB214G	28-JUL-92	< 8	50	< 1.6	< 1.6	< 1.6	< 1.6	< 3.2	< 8	13
AB214H	28-JUL-92	< 4	32	< 0.8	< 0.8	< 0.8	< 0.8	< 1.6	< 4	6.7
AB215A	09-JUL-92	< 1	1.6	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	< 1
AB215B	09-JUL-92	< 0.25	1.6	< 0.05	< 0.05	< 0.05	< 0.05	< 0.1	< 0.25	< 0.25
AB215C	09-JUL-92	< 1	3.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	< 1
AB215D	09-JUL-92	< 1	6.7	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	< 1
AB215E	09-JUL-92	< 5	18	< 1	< 1	< 1	< 1	< 2	< 5	< 5
AB215E DUP	09-JUL-92	< 3.3	5.4	< 0.67	< 0.67	< 0.67	< 0.67	< 1.3	< 3.3	< 3.3

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RESULTS OF PORTABLE GAS CHROMATOGRAPH ANALYSES
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Sample Id	Sample Date	11DCE UL/L	TCE UL/L	BENZENE UL/L	PCE UL/L	TOLUENE UL/L	E_BENZENE UL/L	XYLENE UL/L	12DCE_TRANS UL/L	12DCE_CIS UL/L
AB215F	09-JUL-92	< 2.5	11	< 0.5	< 0.5	< 0.5	< 0.5	< 1	< 2.5	< 2.5
AB215G	09-JUL-92	< 2	8.2	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	< 2
AB215H	09-JUL-92	< 5	15	< 1	< 1	< 1	< 1	< 2	< 5	< 5
AB216A	13-JUL-92	< 2	8	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	< 2
AB216B	13-JUL-92	< 2.5	15	< 0.5	< 0.5	< 0.5	< 0.5	< 1	< 2.5	< 2.5
AB216C	13-JUL-92	< 2.5	15	< 0.5	< 0.5	< 0.5	< 0.5	< 1	< 2.5	< 2.5
AB216D	13-JUL-92	< 5	21	< 1	< 1	< 1	< 1	< 2	< 5	< 5
AB216E	13-JUL-92	< 3.3	17	< 0.67	< 0.67	< 0.67	< 0.67	< 1.3	< 3.3	< 3.3
AB216E DUP	13-JUL-92	< 3.3	19	< 0.67	< 0.67	< 0.67	< 0.67	< 1.3	< 3.3	< 3.3
AB216F	13-JUL-92	< 0.67	3.5	< 0.13	< 0.13	< 0.13	< 0.13	< 0.27	< 0.67	< 0.67
AB216G	13-JUL-92	< 0.5	2.4	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
AB216H	13-JUL-92	< 1	5.8	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	< 1
AB217A	13-JUL-92	< 10	45	< 2	< 2	< 2	< 2	< 4	< 10	< 10
AB217B	13-JUL-92	< 10	49	< 2	< 2	< 2	< 2	< 4	< 10	< 10
AB217C	13-JUL-92	< 10	51	< 2	< 2	< 2	< 2	< 4	< 10	< 10
AB217D	13-JUL-92	< 20	86	< 4	< 4	< 4	< 4	< 8	< 20	< 20
AB217E	13-JUL-92	< 20	86	< 4	< 4	< 4	< 4	< 8	< 20	< 20
AB217F	13-JUL-92	< 5	21	< 1	< 1	< 1	< 1	< 2	< 5	< 5
AB217G	13-JUL-92	< 5	12	< 1	< 1	< 1	< 1	< 2	< 5	< 5
AB217H	13-JUL-92	< 6.7	19	< 1.3	< 1.3	< 1.3	< 1.3	< 2.7	< 6.7	< 6.7
AB218A	24-JUL-92	< 0.5	4.4	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	0.3
AB218B	24-JUL-92	< 8	70	< 1.6	2.8	< 1.6	< 1.6	< 3.2	1.1	23
AB218C	24-JUL-92	< 20	110	< 4	< 4	< 4	< 4	< 8	< 20	43
AB218D	24-JUL-92	< 13	120	< 2.7	4.9	< 2.7	< 2.7	< 5.3	2.1	50
AB218D DUP	24-JUL-92	< 13	120	< 2.7	5.4	< 2.7	< 2.7	< 5.3	2.8	54
AB218E	24-JUL-92	< 10	44	< 2	< 2	< 2	< 2	< 4	< 10	26
AB218F	24-JUL-92	< 13	79	< 2.7	< 2.7	< 2.7	< 2.7	< 5.3	< 13	61
AB218G	24-JUL-92	< 4	41	< 0.8	< 0.8	< 0.8	< 0.8	< 1.6	< 4	30
AB218H	24-JUL-92	< 20	170	< 4	< 4	< 4	< 4	< 8	< 20	110
AB231A	14-JUL-92	< 0.5	4	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
AB231B	14-JUL-92	< 0.5	3.7	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
AB231C	14-JUL-92	< 0.67	3.1	< 0.13	< 0.13	< 0.13	< 0.13	< 0.27	< 0.67	< 0.67
AB231D	14-JUL-92	< 1	4.6	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	< 1
AB231E	14-JUL-92	< 1	3.8	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	< 1

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Sample Id	Sample Date	11DCE UL/L	TCE UL/L	BENZENE UL/L	PCE UL/L	TOLUENE UL/L	E_BENZENE UL/L	XYLENE UL/L	12DCE_TRANS UL/L	12DCE_CIS UL/L
AB231F	14-JUL-92	< 1	6.5	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	< 1
AB231F DUP	14-JUL-92	< 1	6.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	< 1
AB231G	14-JUL-92	< 1	4.9	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	< 1
AB231H	14-JUL-92	< 2	8.3	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	< 2
AB232A	14-JUL-92	< 0.25	1.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.1	< 0.25	< 0.25
AB232B	14-JUL-92	< 0.2	1.4	< 0.04	< 0.04	< 0.04	< 0.04	< 0.08	< 0.2	< 0.2
AB232C	14-JUL-92	< 0.5	2.7	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
AB232D	14-JUL-92	< 0.5	2	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
AB232E	14-JUL-92	< 0.5	2.5	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
AB232F	14-JUL-92	< 0.1	0.18	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
AB232G	14-JUL-92	< 0.1	0.25	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
AB232H	14-JUL-92	< 0.2	0.4	< 0.04	< 0.04	< 0.04	< 0.04	< 0.08	< 0.2	< 0.2
AB233A	14-JUL-92	< 5	22	< 1	< 1	< 1	< 1	< 2	< 5	< 5
AB233B	14-JUL-92	< 5	23	< 1	< 1	< 1	< 1	< 2	< 5	< 5
AB233C	14-JUL-92	< 4	22	< 0.8	< 0.8	< 0.8	< 0.8	< 1.6	< 4	< 4
AB233D	14-JUL-92	< 10	23	< 2	< 2	< 2	< 2	< 4	< 10	< 10
AB233E	14-JUL-92	< 0.67	3.5	< 0.13	< 0.13	< 0.13	< 0.13	< 0.27	< 0.67	< 0.67
AB233F	14-JUL-92	< 2.5	9.2	< 0.5	< 0.5	< 0.5	< 0.5	< 1	< 2.5	< 2.5
AB233G	14-JUL-92	< 2	12	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	< 2
AB233H	14-JUL-92	< 5	25	< 1	< 1	< 1	< 1	< 2	< 5	< 5
AB234A	15-JUL-92	< 0.5	2.2	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
AB234B	15-JUL-92	< 0.2	1.4	< 0.04	< 0.04	< 0.04	< 0.04	< 0.08	< 0.2	< 0.2
AB234C	15-JUL-92	< 0.5	3	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
AB234D	15-JUL-92	< 0.5	1.9	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
AB234D DUP	15-JUL-92	< 0.33	1.5	< 0.067	< 0.067	< 0.067	< 0.067	< 0.13	< 0.33	< 0.33
AB234E	15-JUL-92	< 0.1	0.63	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
AB234F	15-JUL-92	< 0.2	0.92	< 0.04	< 0.04	< 0.04	< 0.04	< 0.08	< 0.2	< 0.2
AB234G	15-JUL-92	< 0.2	0.58	< 0.04	< 0.04	< 0.04	< 0.04	< 0.08	< 0.2	< 0.2
AB234H	15-JUL-92	< 0.17	1	< 0.033	< 0.033	< 0.033	< 0.033	< 0.067	< 0.17	< 0.17
AB235A	15-JUL-92	< 0.5	2.7	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
AB235B	15-JUL-92	< 0.5	3.3	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
AB235C	15-JUL-92	< 0.67	2.7	< 0.13	< 0.13	< 0.13	< 0.13	< 0.27	< 0.67	< 0.67
AB235D	15-JUL-92	< 0.2	0.71	< 0.04	< 0.04	< 0.04	< 0.04	< 0.08	< 0.2	< 0.2
AB235E	15-JUL-92	< 0.2	1.5	< 0.04	< 0.04	< 0.04	< 0.04	< 0.08	< 0.2	< 0.2

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Sample Id	Sample Date	11DCE UL/L	TCE UL/L	BENZENE UL/L	PCE UL/L	TOLUENE UL/L	E_BENZENE UL/L	XYLENE UL/L	12DCE_TRANS UL/L	12DCE_CIS UL/L
AB235F	15-JUL-92	< 0.2	1.4	< 0.04	< 0.04	< 0.04	< 0.04	< 0.08	< 0.2	< 0.2
AB235G	15-JUL-92	< 0.33	1.8	< 0.067	< 0.067	< 0.067	< 0.067	< 0.13	< 0.33	< 0.33
AB235H	15-JUL-92	< 2	11	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	< 2
AB235H DUP	15-JUL-92	< 2	6.8	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	< 2
AB236A	15-JUL-92	< 2	10	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	< 2
AB236B	15-JUL-92	< 2.5	12	< 0.5	< 0.5	< 0.5	< 0.5	< 1	< 2.5	< 2.5
AB236B DUP	15-JUL-92	< 2.5	10	< 0.5	< 0.5	< 0.5	< 0.5	< 1	< 2.5	< 2.5
AB236C	15-JUL-92	< 2.5	8.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1	< 2.5	< 2.5
AB236D	15-JUL-92	< 1.7	7.6	< 0.33	< 0.33	< 0.33	< 0.33	< 0.67	< 1.7	< 1.7
AB236E	15-JUL-92	< 0.67	3.5	< 0.13	< 0.13	< 0.13	< 0.13	< 0.27	< 0.67	< 0.67
AB236F	15-JUL-92	< 0.5	2	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
AB236F DUP	15-JUL-92	< 0.33	1.9	< 0.067	< 0.067	< 0.067	< 0.067	< 0.13	< 0.33	< 0.33
AB236G	15-JUL-92	< 2	7.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	< 2
AB236H	15-JUL-92	< 5	21	< 1	< 1	< 1	< 1	< 2	< 5	< 5
AB236H DUP	15-JUL-92	< 5	14	< 1	< 1	< 1	< 1	< 2	< 5	< 5
AB237A	27-JUL-92	< 0.5	3.5	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	1.2
AB237B	27-JUL-92	< 5	30	< 1	< 1	< 1	< 1	< 2	< 5	8.6
AB237C	27-JUL-92	< 6.7	52	< 1.3	2.3	< 1.3	< 1.3	< 2.7	< 6.7	25
AB237C DUP	27-JUL-92	< 6.7	38	< 1.3	2	< 1.3	< 1.3	< 2.7	< 6.7	16
AB237D	27-JUL-92	< 5	21	< 1	< 1	< 1	< 1	< 2	< 5	12
AB237E	27-JUL-92	< 1.3	6.1	< 0.27	< 0.27	< 0.27	< 0.27	< 0.53	< 1.3	3.9
AB237F	27-JUL-92	< 1.7	14	< 0.33	0.7	< 0.33	< 0.33	< 0.67	< 1.7	7
AB237G	27-JUL-92	< 2.5	16	< 0.5	0.12	< 0.5	< 0.5	< 1	< 2.5	6.1
AB237H	27-JUL-92	< 2.5	20	< 0.5	1.7	< 0.5	< 0.5	< 1	< 2.5	9.8
AB238A	27-JUL-92	< 0.1	0.17	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	0.06	< 0.1
AB238B	27-JUL-92	< 0.5	2.3	< 0.1	0.37	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
AB238B DUP	27-JUL-92	< 0.33	1.9	< 0.067	0.41	< 0.067	< 0.067	< 0.13	< 0.33	0.15
AB238C	27-JUL-92	< 0.17	0.71	< 0.033	0.11	< 0.033	< 0.033	< 0.067	< 0.17	< 0.17
AB238D	27-JUL-92	< 0.1	0.34	< 0.02	0.05	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
AB238E	27-JUL-92	< 0.33	2.1	< 0.067	0.27	< 0.067	< 0.067	< 0.13	< 0.33	0.41
AB238F	27-JUL-92	< 0.33	2.3	< 0.067	0.35	< 0.067	< 0.067	< 0.13	< 0.33	0.49
AB238G	27-JUL-92	< 0.5	1.5	< 0.1	0.2	< 0.1	< 0.1	< 0.2	< 0.5	0.2
AB238G DUP	27-JUL-92	< 0.25	0.93	< 0.05	0.15	< 0.05	< 0.05	< 0.1	0.09	0.28
AB238H	27-JUL-92	< 2	10	< 0.4	0.95	< 0.4	< 0.4	< 0.8	< 2	2.4

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Sample Id	Sample Date	11DCE UL/L	TCE UL/L	BENZENE UL/L	PCE UL/L	TOLUENE UL/L	E_BENZENE UL/L	XYLENE UL/L	12DCE_TRANS UL/L	12DCE_CIS UL/L
AB239A	27-JUL-92	< 0.25	0.72	< 0.05	< 0.05	< 0.05	< 0.05	< 0.1	< 0.25	0.92
AB239B	27-JUL-92	< 2	10	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	< 2
AB239C	27-JUL-92	< 1	4.2	< 0.2	0.27	< 0.2	< 0.2	< 0.4	< 1	0.79
AB239D	27-JUL-92	< 0.67	3.8	< 0.13	0.22	< 0.13	< 0.13	< 0.27	< 0.67	1
AB239E	27-JUL-92	< 0.67	2.8	< 0.13	< 0.13	< 0.13	< 0.13	< 0.27	< 0.67	0.96
AB239E DUP	27-JUL-92	< 0.5	2.8	< 0.1	0.16	< 0.1	< 0.1	< 0.2	< 0.5	0.97
AB239F	27-JUL-92	< 1	5.9	< 0.2	0.53	< 0.2	< 0.2	< 0.4	< 1	1.6
AB239G	27-JUL-92	< 2	12	< 0.4	1	< 0.4	< 0.4	< 0.8	< 2	3.2
AB239H	27-JUL-92	< 2	6.8	< 0.4	0.53	< 0.4	< 0.4	< 0.8	< 2	1.9
AB240A	27-JUL-92	< 1	5.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	0.27
AB240B	27-JUL-92	< 0.33	1.5	< 0.067	< 0.067	< 0.067	< 0.067	< 0.13	< 0.33	0.1
AB240C	27-JUL-92	< 0.5	1.8	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	0.39
AB240D	27-JUL-92	< 0.67	4	< 0.13	< 0.13	< 0.13	< 0.13	< 0.27	< 0.67	0.99
AB240E	27-JUL-92	< 0.67	4	< 0.13	< 0.13	< 0.13	< 0.13	< 0.27	< 0.67	1.2
AB240E DUP	27-JUL-92	< 0.67	4	< 0.13	< 0.13	< 0.13	< 0.13	< 0.27	< 0.67	1.2
AB240F	27-JUL-92	< 2	9.8	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	1.6
AB240G	27-JUL-92	< 2	6.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	0.86
AB240H	27-JUL-92	< 4	15	< 0.8	< 0.8	< 0.8	< 0.8	< 1.6	< 4	3.4
AB241A	27-JUL-92	< 8	38	< 1.6	< 1.6	< 1.6	< 1.6	< 3.2	< 8	10
AB241B	27-JUL-92	< 8	61	< 1.6	< 1.6	< 1.6	< 1.6	< 3.2	< 8	14
AB241B DUP	27-JUL-92	< 10	53	< 2	< 2	< 2	< 2	< 4	< 10	12
AB241C	27-JUL-92	< 10	64	< 2	< 2	< 2	< 2	< 4	< 10	24
AB241D	27-JUL-92	< 1.3	5.4	< 0.27	< 0.27	< 0.27	< 0.27	< 0.53	< 1.3	2.4
AB241E	27-JUL-92	< 1	5.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	2.2
AB241F	27-JUL-92	< 4	22	< 0.8	< 0.8	< 0.8	< 0.8	< 1.6	< 4	5.9
AB241G	27-JUL-92	< 4	25	< 0.8	< 0.8	< 0.8	< 0.8	< 1.6	< 4	7.4
AB241G DUP	27-JUL-92	< 4	16	< 0.8	< 0.8	< 0.8	< 0.8	< 1.6	< 4	4.1
AB241H	27-JUL-92	< 4	25	< 0.8	< 0.8	< 0.8	< 0.8	< 1.6	< 4	5.6
AB242A	28-JUL-92	< 8	52	< 1.6	< 1.6	< 1.6	< 1.6	< 3.2	< 8	7
AB242B	28-JUL-92	< 20	110	< 4	< 4	< 4	< 4	< 8	< 20	17
AB242C	28-JUL-92	< 8	43	< 1.6	< 1.6	< 1.6	< 1.6	< 3.2	< 8	7.7
AB242D	28-JUL-92	< 4	15	< 0.8	< 0.8	< 0.8	< 0.8	< 1.6	< 4	2.4
AB242D DUP	28-JUL-92	< 2	12	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	2.5
AB242E	28-JUL-92	< 4	20	< 0.8	< 0.8	< 0.8	< 0.8	< 1.6	< 4	4.6

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Sample Id	Sample Date	11DCE UL/L	TCE UL/L	BENZENE UL/L	PCE UL/L	TOLUENE UL/L	E_BENZENE UL/L	XYLENE UL/L	12DCE_TRANS UL/L	12DCE_CIS UL/L
AB242F	28-JUL-92	< 4	22	< 0.8	< 0.8	< 0.8	< 0.8	< 1.6	< 4	4.7
AB242G	28-JUL-92	< 2.7	19	< 0.53	< 0.53	< 0.53	< 0.53	< 1.1	< 2.7	3.2
AB242H	28-JUL-92	< 2.7	17	< 0.53	< 0.53	< 0.53	< 0.53	< 1.1	< 2.7	4.4
AB244A	28-JUL-92	< 0.1	0.21	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
AB244B	28-JUL-92	< 0.25	1.9	< 0.05	0.26	< 0.05	< 0.05	< 0.1	< 0.25	< 0.25
AB244C	28-JUL-92	< 0.2	1	< 0.04	0.11	< 0.04	< 0.04	< 0.08	< 0.2	0.18
AB244D	28-JUL-92	< 0.5	3.6	< 0.1	0.49	< 0.1	< 0.1	< 0.2	< 0.5	0.96
AB244E	28-JUL-92	< 0.5	2.3	< 0.1	0.31	< 0.1	< 0.1	< 0.2	< 0.5	0.85
AB244F	28-JUL-92	< 2	17	< 0.4	2.1	< 0.4	< 0.4	< 0.8	< 2	6.8
AB244F DUP	28-JUL-92	< 2	14	< 0.4	1.9	< 0.4	< 0.4	< 0.8	< 2	5.4
AB244G	28-JUL-92	< 2	8.7	< 0.4	1.2	< 0.4	< 0.4	< 0.8	< 2	2.8
AB244H	28-JUL-92	< 4	29	< 0.8	2.6	< 0.8	< 0.8	< 1.6	< 4	14
AB245A	29-JUL-92	< 0.1	0.04	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
AB245B	29-JUL-92	< 0.1	0.08	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
AB245C	29-JUL-92	< 0.5	1.7	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
AB245C DUP	29-JUL-92	< 0.25	1.6	< 0.05	0.06	< 0.05	< 0.05	< 0.1	< 0.25	< 0.25
AB245D	29-JUL-92	< 0.25	0.79	< 0.05	< 0.05	< 0.05	< 0.05	< 0.1	< 0.25	0.01
AB245E	29-JUL-92	< 0.2	0.91	< 0.04	< 0.04	< 0.04	< 0.04	< 0.08	< 0.2	0.17
AB245E DUP	29-JUL-92	< 0.17	1.1	< 0.033	< 0.033	< 0.033	< 0.033	< 0.067	0.13	0.45
AB245F	29-JUL-92	< 0.33	2.3	< 0.067	< 0.067	< 0.067	< 0.067	< 0.13	< 0.33	0.65
AB245G	29-JUL-92	< 1	5.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	1.1
AB245H	29-JUL-92	< 1	3.9	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	0.08
AB246A	29-JUL-92	< 0.25	1.8	< 0.05	< 0.05	< 0.05	< 0.05	< 0.1	< 0.25	< 0.25
AB246B	29-JUL-92	< 2	11	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	1
AB246B DUP	29-JUL-92	< 2	15	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	1
AB246C	29-JUL-92	< 1	4.8	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	0.68
AB246D	29-JUL-92	< 0.33	1.6	< 0.067	< 0.067	< 0.067	< 0.067	< 0.13	< 0.33	0.25
AB246E	29-JUL-92	< 1	3.7	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	0.46
AB246F	29-JUL-92	< 0.5	5.6	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	0.78
AB246G	29-JUL-92	< 0.67	4.2	< 0.13	< 0.13	< 0.13	< 0.13	< 0.27	< 0.67	0.5
AB246G DUP	29-JUL-92	< 0.67	4.2	< 0.13	< 0.13	< 0.13	< 0.13	< 0.27	< 0.67	0.42
AB246H	29-JUL-92	< 0.67	3.9	< 0.13	< 0.13	< 0.13	< 0.13	< 0.27	< 0.67	0.43
AB247A	29-JUL-92	< 0.25	0.79	< 0.05	< 0.05	< 0.05	< 0.05	< 0.1	< 0.25	< 0.25
AB247B	29-JUL-92	< 2	14	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	< 2

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RESULTS OF PORTABLE GAS CHROMATOGRAPH ANALYSES
SUB-AREA A3

Sample Id	Sample Date	11DCE UL/L	TCE UL/L	BENZENE UL/L	PCE UL/L	TOLUENE UL/L	E_BENZENE UL/L	XYLENE UL/L	12DCE_TRANS UL/L	12DCE_CIS UL/L
AB247B DUP	29-JUL-92	< 4	23	< 0.8	< 0.8	< 0.8	< 0.8	< 1.6	< 4	< 4
AB247C	29-JUL-92	< 8	21	< 1.6	< 1.6	< 1.6	< 1.6	< 3.2	< 8	< 8
AB247D	29-JUL-92	< 2	12	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	0.57
AB247E	29-JUL-92	< 0.67	5.4	< 0.13	< 0.13	< 0.13	< 0.13	< 0.27	< 0.67	0.29
AB247F	29-JUL-92	< 1	6.3	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	0.4
AB247F DUP	29-JUL-92	< 1	7.4	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	0.51
AB247G	29-JUL-92	< 0.67	5	< 0.13	< 0.13	< 0.13	< 0.13	< 0.27	< 0.67	0.36
AB247H	29-JUL-92	< 2	11	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	0.82
AB248A	30-JUL-92	< 13	60	< 2.7	< 2.7	< 2.7	< 2.7	< 5.3	< 13	10
AB248B	30-JUL-92	< 8	43	< 1.6	< 1.6	< 1.6	< 1.6	< 3.2	< 8	8.2
AB248C	30-JUL-92	< 13	130	< 2.7	9.7	< 2.7	< 2.7	< 5.3	2.4	36
AB248D	30-JUL-92	< 2	12	< 0.4	1.2	< 0.4	< 0.4	< 0.8	< 2	4.2
AB248D DUP	30-JUL-92	< 2	14	< 0.4	1.6	< 0.4	< 0.4	< 0.8	< 2	4.8
AB248E	30-JUL-92	< 2	14	< 0.4	1.5	< 0.4	< 0.4	< 0.8	< 2	6.8
AB248F	30-JUL-92	< 8	31	< 1.6	3.8	< 1.6	< 1.6	< 3.2	< 8	11
AB248G	30-JUL-92	< 5.7	40	< 1.1	4.8	< 1.1	< 1.1	< 2.3	< 5.7	19
AB248H	30-JUL-92	< 5.7	21	< 1.1	2.7	< 1.1	< 1.1	< 2.3	< 5.7	8.5
AB248H DUP	30-JUL-92	< 4	22	< 0.8	3.6	< 0.8	< 0.8	< 1.6	< 4	9.6
AB251A	29-JUL-92	< 0.25	1.8	< 0.05	< 0.05	< 0.05	< 0.05	< 0.1	< 0.25	0.32
AB251B	29-JUL-92	< 4	20	< 0.8	< 0.8	< 0.8	< 0.8	< 1.6	< 4	6.6
AB251C	29-JUL-92	< 8	59	< 1.6	2.2	< 1.6	< 1.6	< 3.2	< 8	21
AB251C DUP	29-JUL-92	< 8	74	< 1.6	< 1.6	< 1.6	< 1.6	< 3.2	< 8	26
AB251D	29-JUL-92	< 4	11	< 0.8	< 0.8	< 0.8	< 0.8	< 1.6	< 4	3.9
AB251D DUP	29-JUL-92	< 2	7.7	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	2.5
AB251E	29-JUL-92	< 1	7.6	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	3.2
AB251F	29-JUL-92	< 1.3	8.9	< 0.27	0.04	< 0.27	< 0.27	< 0.53	< 1.3	2.7
AB251G	29-JUL-92	< 2	13	< 0.4	0.73	< 0.4	< 0.4	< 0.8	< 2	3.8
AB251H	29-JUL-92	< 4	25	< 0.8	< 0.8	< 0.8	< 0.8	< 1.6	< 4	7.6
AB252A	30-JUL-92	< 5	36	< 1	< 1	< 1	< 1	< 2	< 5	1.7
AB252A DUP	30-JUL-92	< 5	35	< 1	< 1	< 1	< 1	< 2	< 5	< 5
AB252B	30-JUL-92	< 1	6.8	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	0.54
AB252C	30-JUL-92	< 1	5.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	0.63
AB252D	30-JUL-92	< 0.67	6	< 0.13	< 0.13	< 0.13	< 0.13	< 0.27	< 0.67	0.95
AB252E	30-JUL-92	< 1	5.5	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	0.83

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RESULTS OF PORTABLE GAS CHROMATOGRAPH ANALYSES
SUB-AREA A3

Sample Id	Sample Date	11DCE UL/L	TCE UL/L	BENZENE UL/L	PCE UL/L	TOLUENE UL/L	E_BENZENE UL/L	XYLENE UL/L	12DCE_TRANS UL/L	12DCE_CIS UL/L
AB252F	30-JUL-92	< 2	11	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	1.1
AB252G	30-JUL-92	< 2	9.8	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	1
AB252H	30-JUL-92	< 2.8	20	< 0.57	< 0.57	< 0.57	< 0.57	< 1.1	< 2.8	3.1
AB253A	29-JUL-92	< 0.1	0.19	< 0.02	0.09	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
AB253B	29-JUL-92	< 0.1	0.04	< 0.02	0.06	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
AB253C	29-JUL-92	< 4	31	< 0.8	< 0.8	< 0.8	< 0.8	< 1.6	0.51	2.7
AB253C DUP	29-JUL-92	< 5.7	44	< 1.1	< 1.1	< 1.1	< 1.1	< 2.3	< 5.7	5.8
AB253D	29-JUL-92	< 2	4.2	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	< 2
AB253E	29-JUL-92	< 1	5.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	0.88
AB253F	29-JUL-92	< 2	8.8	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	1.4
AB253G	29-JUL-92	< 8	49	< 1.6	< 1.6	< 1.6	< 1.6	< 3.2	< 8	8.3
AB253H	29-JUL-92	< 8	54	< 1.6	< 1.6	< 1.6	< 1.6	< 3.2	< 8	10
AB253H DUP	29-JUL-92	< 8	60	< 1.6	< 1.6	< 1.6	< 1.6	< 3.2	1	13
AB254A	30-JUL-92	< 8	62	< 1.6	< 1.6	< 1.6	< 1.6	< 3.2	< 8	19
AB254B	30-JUL-92	< 8	51	< 1.6	< 1.6	< 1.6	< 1.6	< 3.2	< 8	12
AB254C	30-JUL-92	< 8	53	< 1.6	< 1.6	< 1.6	< 1.6	< 3.2	< 8	12
AB254C DUP	30-JUL-92	< 8	49	< 1.6	< 1.6	< 1.6	< 1.6	< 3.2	< 8	11
AB254D	30-JUL-92	< 4	22	< 0.8	< 0.8	< 0.8	< 0.8	< 1.6	< 4	5.4
AB254E	30-JUL-92	< 1	8.4	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	1.7
AB254F	30-JUL-92	< 2.8	22	< 0.57	< 0.57	< 0.57	< 0.57	< 1.1	< 2.8	3.5
AB254F DUP	30-JUL-92	< 2.8	19	< 0.57	< 0.57	< 0.57	< 0.57	< 1.1	< 2.8	3.2
AB254G	30-JUL-92	< 5.7	35	< 1.1	< 1.1	< 1.1	< 1.1	< 2.3	< 5.7	7.1
AB254H	30-JUL-92	< 2.8	20	< 0.57	< 0.57	< 0.57	< 0.57	< 1.1	< 2.8	2.7
AT007A	17-JUN-92	< 0.67	3.4	< 0.13	< 0.13	< 0.13	< 0.13	< 0.27	0.22	5.1
AT007B	17-JUN-92	< 2	15	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	12
AT007C	17-JUN-92	< 10	82	< 2	< 2	< 2	< 2	< 4	2.2	80
AT007D	17-JUN-92	< 10	95	< 2	< 2	< 2	< 2	< 4	< 10	64
AT007E	17-JUN-92	< 10	84	< 2	< 2	< 2	< 2	< 4	< 10	64
AT008A	17-JUN-92	< 2	23	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	8.8
AT008B	17-JUN-92	< 5	11	< 1	< 1	< 1	< 1	< 2	< 5	82
AT008C	17-JUN-92	< 20	15	< 4	< 4	< 4	< 4	< 8	< 20	55
AT008D	17-JUN-92	< 20	230	< 4	< 4	< 4	< 4	< 8	< 20	100
AT008E	17-JUN-92	< 20	280	< 4	< 4	< 4	< 4	< 8	< 20	54

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SITE AREA: A4

RESULTS OF PORTABLE GAS CHROMATOGRAPH ANALYSES
SUB-AREA A4

Sample Id	Sample Date	11DCE UL/L	TCE UL/L	BENZENE UL/L	PCE UL/L	TOLUENE UL/L	E_BENZENE UL/L	XYLENE UL/L	12DCE_TRANS UL/L	12DCE_CIS UL/L
AB026A	10-JUN-92	< 1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	0.19	6.6
AB026B	10-JUN-92	< 2	14	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	6.9
AB026C	10-JUN-92	< 2	13	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	5.5
AB026C DUP	10-JUN-92	< 2	11	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	3.4
AB026D	10-JUN-92	< 2	12	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	5.7
AB026E	10-JUN-92	< 1.4	10	< 0.28	< 0.28	< 0.28	< 0.28	< 0.57	< 1.4	3.5
AB026F	10-JUN-92	< 1.4	9.3	< 0.28	< 0.28	< 0.28	< 0.28	< 0.57	< 1.4	3.7
AB026G	10-JUN-92	< 8	60	< 1.6	3.2	< 1.6	< 1.6	< 3.2	< 8	15
AB026H	10-JUN-92	< 8	29	< 1.6	< 1.6	< 1.6	< 1.6	< 3.2	< 8	10
AB027A	09-JUN-92	< 10	34	< 2	< 2	< 2	< 2	< 4	< 10	< 10
AB027B	09-JUN-92	< 5	8.4	< 1	< 1	< 1	< 1	< 2	< 5	< 5
AB027C	09-JUN-92	< 1	2.4	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	< 1
AB027D	09-JUN-92	< 1	2.7	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	< 1
AB027E	09-JUN-92	< 1	5.8	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	< 1
AB027F	09-JUN-92	< 2	5.1	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	< 2
AB027G	09-JUN-92	< 2	5.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	< 2
AB027H	09-JUN-92	< 8	42	< 1.6	< 1.6	< 1.6	< 1.6	< 3.2	1.6	< 8
AB028A	08-JUN-92	< 4	10	< 0.8	< 0.8	< 0.8	< 0.8	< 1.6	< 4	< 4
AB028B	08-JUN-92	< 4	24	< 0.8	2	< 0.8	< 0.8	< 1.6	< 4	1.7
AB028C	08-JUN-92	< 2	14	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	12
AB028D	08-JUN-92	< 4	16	< 0.8	< 0.8	< 0.8	< 0.8	< 1.6	< 4	20
AB028E	08-JUN-92	< 4	17	< 0.8	< 0.8	< 0.8	< 0.8	< 1.6	< 4	20
AB028F	08-JUN-92	< 4	13	< 0.8	< 0.8	< 0.8	< 0.8	< 1.6	< 4	9.7
AB028G	08-JUN-92	< 100	350	< 20	< 20	< 20	< 20	< 40	< 100	230
AB028H	08-JUN-92	< 8	21	< 1.6	< 1.6	< 1.6	< 1.6	< 3.2	< 8	22
AB029A	10-JUN-92	< 8	25	< 1.6	< 1.6	< 1.6	< 1.6	< 3.2	< 8	1.3
AB029B	10-JUN-92	< 4	18	< 0.8	< 0.8	< 0.8	< 0.8	< 1.6	< 4	18
AB029C	10-JUN-92	< 8	48	< 1.6	< 1.6	< 1.6	< 1.6	< 3.2	< 8	64
AB029D	10-JUN-92	< 4	17	< 0.8	< 0.8	< 0.8	< 0.8	< 1.6	< 4	26
AB029E	10-JUN-92	< 2.5	15	< 0.5	< 0.5	< 0.5	< 0.5	< 1	< 2.5	16
AB029F	10-JUN-92	< 2.5	7.2	< 0.5	< 0.5	< 0.5	< 0.5	< 1	< 2.5	9.3
AB029F DUP	10-JUN-92	< 2	7.3	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	8
AB029G	10-JUN-92	< 2.8	18	< 0.57	< 0.57	< 0.57	< 0.57	< 1.1	< 2.8	20
AB029H	10-JUN-92	< 50	200	< 10	< 10	< 10	< 10	< 20	< 50	290

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SITE AREA: A4

RESULTS OF FIELD GAS CHROMATOGRAPH DATA
SUB-AREA A4

Sample Id	Sample Date	11DCE UL/L	TCE UL/L	BENZENE UL/L	PCE UL/L	TOLUENE UL/L	E_BENZENE UL/L	XYLENE UL/L	12DCE_TRANS UL/L	12DCE_CIS UL/L
AB030A	09-JUN-92	< 0.5	3.7	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	0.12	3.3
AB030B	09-JUN-92	< 2	13	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	1.5
AB030C	09-JUN-92	< 3.3	14	< 0.67	< 0.67	< 0.67	< 0.67	< 1.3	< 3.3	1.5
AB030D	09-JUN-92	< 1	2.7	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	0.67
AB030E	09-JUN-92	< 10	< 2	< 2	< 2	< 2	< 2	< 4	< 10	< 10
AB030F	09-JUN-92	< 5	16	< 1	< 1	< 1	< 1	< 2	< 5	3.5
AB030F DUP	09-JUN-92	< 5	12	< 1	< 1	< 1	< 1	< 2	< 5	2.1
AB030G	09-JUN-92	< 5	16	< 1	< 1	< 1	< 1	< 2	< 5	2.5
AB030H	09-JUN-92	< 5	20	< 1	< 1	< 1	< 1	< 2	< 5	3.2
AB031A	15-JUN-92	< 6.2	< 1.2	< 1.2	< 1.2	< 1.2	7.9	< 2.5	1.4	24
AB031B	15-JUN-92	< 6.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 2.5	< 6.2	17
AB031C	15-JUN-92	< 20	< 4	< 4	< 4	< 4	37	390	< 20	130
AB031D	15-JUN-92	< 20	< 4	< 4	< 4	< 4	< 4	170	< 20	90
AB031D DUP	15-JUN-92	< 20	< 4	< 4	< 4	< 4	< 4	84	< 20	16
AB031E	15-JUN-92	< 2.5	6.2	< 0.5	36	27	36	1100	1	350
AB031F	15-JUN-92	< 20	< 4	< 4	< 4	< 4	< 4	4000	< 20	620
AB031G	15-JUN-92	< 20	< 4	< 4	< 4	< 4	< 4	4900	3.8	1400
AB031H	15-JUN-92	< 20	< 4	< 4	< 4	< 4	< 4	3700	< 20	700
AB032A	09-JUN-92	< 10	18	< 2	< 2	< 2	< 2	< 4	< 10	< 10
AB032B	09-JUN-92	< 1	3.6	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	< 1
AB032B DUP	09-JUN-92	< 1	1.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	< 1
AB032C	09-JUN-92	< 3.3	5.5	< 0.67	< 0.67	< 0.67	< 0.67	< 1.3	< 3.3	< 3.3
AB032D	09-JUN-92	< 2	6.3	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	1.5
AB032E	09-JUN-92	< 1	2.5	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	0.88
AB032F	09-JUN-92	< 2	2.3	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	0.56
AB032G	09-JUN-92	< 2	5.3	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	1
AB032H	09-JUN-92	< 2	6.9	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	1.5
AB033B	08-JUN-92	< 2	1.9	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	1.3
AB033C	08-JUN-92	< 1	7.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	3.2
AB033D	08-JUN-92	< 1	3.6	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	2.3
AB033E	08-JUN-92	< 1	2.7	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	1.8
AB033F	08-JUN-92	< 2	2.9	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	3.9
AB033G	08-JUN-92	< 1	3.6	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	1.8
AB033H	08-JUN-92	< 2	14	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	5.6

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Sample Id	Sample Date	11DCE UL/L	TCE UL/L	BENZENE UL/L	PCE UL/L	TOLUENE UL/L	E_BENZENE UL/L	XYLENE UL/L	12DCE_TRANS UL/L	12DCE_CIS UL/L
AB034A	08-JUN-92	< 10	11	< 2	< 2	< 2	< 2	< 4	< 10	< 10
AB034B	08-JUN-92	< 10	27	< 2	< 2	< 2	< 2	< 4	< 10	1.7
AB034C	08-JUN-92	< 10	16	< 2	< 2	< 2	< 2	< 4	< 10	1.8
AB034D	08-JUN-92	< 10	23	< 2	< 2	< 2	< 2	< 4	< 10	2.4
AB034E	08-JUN-92	< 10	8.8	< 2	< 2	< 2	< 2	< 4	< 10	< 10
AB034F	08-JUN-92	< 2	1.6	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	< 2
AB034G	08-JUN-92	< 4	3.9	< 0.8	< 0.8	< 0.8	< 0.8	< 1.6	< 4	< 4
AB034H	08-JUN-92	< 4	1.5	< 0.8	< 0.8	< 0.8	< 0.8	< 1.6	< 4	0.23
AB038A	10-JUN-92	< 6.7	3.9	< 1.3	< 1.3	< 1.3	< 1.3	< 2.7	< 6.7	< 6.7
AB038B	10-JUN-92	< 3.3	14	< 0.67	< 0.67	< 0.67	< 0.67	< 1.3	< 3.3	< 3.3
AB038B DUP	10-JUN-92	< 3.3	7.7	< 0.67	< 0.67	< 0.67	< 0.67	< 1.3	< 3.3	< 3.3
AB038C	10-JUN-92	< 4	3.8	< 0.8	< 0.8	< 0.8	< 0.8	< 1.6	< 4	< 4
AB038D	10-JUN-92	< 3.3	4.7	< 0.67	< 0.67	< 0.67	< 0.67	< 1.3	< 3.3	1
AB038E	10-JUN-92	< 3.3	3.6	< 0.67	< 0.67	< 0.67	< 0.67	< 1.3	< 3.3	< 3.3
AB038F	10-JUN-92	< 3.3	13	< 0.67	< 0.67	< 0.67	< 0.67	< 1.3	< 3.3	2.7
AB038G	10-JUN-92	< 6.7	20	< 1.3	< 1.3	< 1.3	< 1.3	< 2.7	< 6.7	3.2
AB038H	10-JUN-92	< 4	31	< 0.8	< 0.8	< 0.8	< 0.8	< 1.6	< 4	4.5
AB203A	08-JUL-92	< 0.5	2	< 0.1	0.63	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
AB203B	08-JUL-92	< 2.5	9.6	< 0.5	1.8	< 0.5	< 0.5	< 1	< 2.5	< 2.5
AB203C	08-JUL-92	< 0.5	1.5	< 0.1	0.18	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
AB203D	08-JUL-92	< 0.5	1.4	< 0.1	0.17	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
AB203E	08-JUL-92	< 0.67	3.4	< 0.13	0.34	< 0.13	< 0.13	< 0.27	< 0.67	< 0.67
AB203F	08-JUL-92	< 0.5	2.9	< 0.1	0.44	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
AB203G	08-JUL-92	< 1.7	7	< 0.33	0.88	< 0.33	< 0.33	< 0.67	< 1.7	< 1.7
AB203G DUP	08-JUL-92	< 1.7	5.1	< 0.33	0.63	< 0.33	< 0.33	< 0.67	< 1.7	< 1.7
AB203H	08-JUL-92	< 1.7	5.6	< 0.33	0.82	< 0.33	< 0.33	< 0.67	< 1.7	< 1.7
AB204A	08-JUL-92	< 20	21	< 4	< 4	< 4	< 4	< 8	< 20	78
AB204B	08-JUL-92	< 20	31	< 4	< 4	< 4	< 4	< 8	< 20	20
AB204B DUP	08-JUL-92	< 10	30	< 2	< 2	< 2	< 2	< 4	< 10	13
AB204C	08-JUL-92	< 2	8.3	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	1.6
AB204D	08-JUL-92	< 2	8.5	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	1.8
AB204E	08-JUL-92	< 1.7	5.3	< 0.33	< 0.33	< 0.33	< 0.33	< 0.67	< 1.7	1.1
AB204F	08-JUL-92	< 3.3	18	< 0.67	< 0.67	< 0.67	0.67	< 1.3	< 3.3	3.8
AB204G	08-JUL-92	< 2	5.1	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	1.6

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Sample Id	Sample Date	11DCE UL/L	TCE UL/L	BENZENE UL/L	PCE UL/L	TOLUENE UL/L	E_BENZENE UL/L	XYLENE UL/L	12DCE_TRANS UL/L	12DCE_CIS UL/L
AB204H	08-JUL-92	< 5	20	< 1	< 1	< 1	< 1	< 2	< 5	5
AB205A	08-JUL-92	< 5	12	< 1	< 1	< 1	< 1	< 2	< 5	< 5
AB205B	08-JUL-92	< 0.5	0.89	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
AB205C	08-JUL-92	< 0.5	1.8	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
AB205D	08-JUL-92	< 0.5	1.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
AB205E	08-JUL-92	< 0.5	1.4	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
AB205F	08-JUL-92	< 1	4.8	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	< 1
AB205G	08-JUL-92	< 10	34	< 2	< 2	< 2	< 2	< 4	< 10	< 10
AB205H	08-JUL-92	< 4	17	< 0.8	< 0.8	< 0.8	< 0.8	< 1.6	< 4	1.1
AB206A	08-JUL-92	< 2.5	7.7	< 0.5	< 0.5	< 0.5	< 0.5	< 1	< 2.5	< 2.5
AB206B	08-JUL-92	< 10	27	< 2	< 2	< 2	< 2	< 4	< 10	< 10
AB206C	08-JUL-92	< 0.33	1.2	< 0.067	< 0.067	< 0.067	< 0.067	< 0.13	< 0.33	< 0.33
AB206D	08-JUL-92	< 1.7	6.5	< 0.33	< 0.33	< 0.33	< 0.33	< 0.67	< 1.7	< 1.7
AB206E	08-JUL-92	< 0.67	2.1	< 0.13	< 0.13	< 0.13	< 0.13	< 0.27	< 0.67	< 0.67
AB206F	08-JUL-92	< 0.67	3.8	< 0.13	< 0.13	< 0.13	< 0.13	< 0.27	< 0.67	< 0.67
AB206G	08-JUL-92	< 10	24	< 2	< 2	< 2	< 2	< 4	< 10	< 10
AB206H	08-JUL-92	< 4	13	< 0.8	< 0.8	< 0.8	< 0.8	< 1.6	< 4	< 4
AB207A	09-JUL-92	< 1	2.9	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	< 1
AB207B	09-JUL-92	< 0.25	1.2	< 0.05	< 0.05	< 0.05	< 0.05	< 0.1	< 0.25	< 0.25
AB207C	09-JUL-92	< 0.33	1.6	< 0.067	< 0.067	< 0.067	< 0.067	< 0.13	< 0.33	0.12
AB207D	09-JUL-92	< 0.33	1.5	< 0.067	< 0.067	< 0.067	< 0.067	< 0.13	< 0.33	0.11
AB207E	09-JUL-92	< 0.42	2.2	< 0.083	< 0.083	< 0.083	< 0.083	< 0.17	< 0.42	0.26
AB207F	09-JUL-92	< 0.5	1.6	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	0.13
AB207F DUP	09-JUL-92	< 0.5	1.5	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	0.12
AB207G	09-JUL-92	< 1.2	5	< 0.25	< 0.25	< 0.25	< 0.25	< 0.5	< 1.2	0.29
AB207H	09-JUL-92	< 1.2	6.3	< 0.25	< 0.25	< 0.25	< 0.25	< 0.5	< 1.2	0.62
AB208A	13-JUL-92	< 1	1.6	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	0.21
AB208B	13-JUL-92	< 2	9.3	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	2.2
AB208C	13-JUL-92	< 20	52	< 4	< 4	< 4	< 4	< 8	< 20	24
AB208D	13-JUL-92	< 2.5	13	< 0.5	< 0.5	< 0.5	< 0.5	< 1	< 2.5	11
AB208E	13-JUL-92	< 5	9.3	< 1	< 1	< 1	< 1	< 2	< 5	9.2
AB208F	13-JUL-92	< 4	11	< 0.8	< 0.8	< 0.8	< 0.8	< 1.6	< 4	9.5
AB208F DUP	13-JUL-92	< 4	9	< 0.8	< 0.8	< 0.8	< 0.8	< 1.6	< 4	10
AB208G	13-JUL-92	< 5	22	< 1	< 1	< 1	< 1	< 2	< 5	13

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Sample Id	Sample Date	11DCE UL/L	TCE UL/L	BENZENE UL/L	PCE UL/L	TOLUENE UL/L	E_BENZENE UL/L	XYLENE UL/L	12DCE_TRANS UL/L	12DCE_CIS UL/L
AB208H	13-JUL-92	< 13	49	< 2.7	< 2.7	< 2.7	< 2.7	< 5.3	< 13	32
AB219A	09-JUL-92	< 0.1	0.65	< 0.02	0.08	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
AB219B	09-JUL-92	< 0.1	0.56	< 0.02	< 0.02	0.17	< 0.02	< 0.04	< 0.1	< 0.1
AB219C	09-JUL-92	< 0.1	0.44	< 0.02	0.02	0.18	< 0.02	< 0.04	< 0.1	< 0.1
AB219D	09-JUL-92	< 0.17	0.76	< 0.033	< 0.033	< 0.033	< 0.033	< 0.067	< 0.17	< 0.17
AB219E	09-JUL-92	< 0.17	1.1	< 0.033	< 0.033	< 0.033	< 0.033	< 0.067	< 0.17	< 0.17
AB219F	09-JUL-92	< 0.5	1.8	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
AB219G	09-JUL-92	< 0.28	1.6	< 0.057	0.04	< 0.057	< 0.057	< 0.11	< 0.28	< 0.28
AB219H	09-JUL-92	< 1	3.8	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	< 1
AB220A	09-JUL-92	< 5	18	< 1	< 1	< 1	< 1	< 2	< 5	< 5
AB220B	09-JUL-92	< 1	6.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	0.51
AB220C	09-JUL-92	< 1	3.7	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	0.44
AB220D	09-JUL-92	< 0.5	2.4	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	0.25
AB220E	09-JUL-92	< 0.67	4.4	< 0.13	< 0.13	< 0.13	< 0.13	< 0.27	< 0.67	0.66
AB220F	09-JUL-92	< 0.67	3.6	< 0.13	< 0.13	< 0.13	< 0.13	< 0.27	< 0.67	1.1
AB220F DUP	09-JUL-92	< 0.67	2.6	< 0.13	< 0.13	< 0.13	< 0.13	< 0.27	< 0.67	0.32
AB220G	09-JUL-92	< 3.3	15	< 0.67	< 0.67	< 0.67	< 0.67	< 1.3	< 3.3	1.3
AB220H	09-JUL-92	< 2	9.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	0.75
AB221A	09-JUL-92	< 0.1	< 0.02	< 0.02	0.09	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
AB221B	09-JUL-92	< 0.33	1.4	< 0.067	0.53	< 0.067	< 0.067	< 0.13	< 0.33	< 0.33
AB221C	09-JUL-92	< 0.12	0.68	< 0.02	0.09	< 0.02	< 0.02	< 0.05	< 0.12	< 0.12
AB221D	09-JUL-92	< 0.12	0.48	< 0.02	0.08	< 0.02	< 0.02	< 0.05	< 0.12	< 0.12
AB221D DUP	09-JUL-92	< 0.1	0.66	< 0.02	0.11	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
AB221E	09-JUL-92	< 0.1	0.51	< 0.02	0.09	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
AB221F	09-JUL-92	< 0.17	0.93	< 0.033	0.13	< 0.033	< 0.033	< 0.067	< 0.17	< 0.17
AB221G	09-JUL-92	< 0.67	3.7	< 0.13	0.63	< 0.13	< 0.13	< 0.27	< 0.67	< 0.67
AB221H	09-JUL-92	< 0.67	4.2	< 0.13	0.88	< 0.13	< 0.13	< 0.27	< 0.67	< 0.67
AB224A	13-JUL-92	< 0.1	0.37	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
AB224B	13-JUL-92	< 0.1	0.15	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
AB224B DUP	13-JUL-92	< 0.1	0.17	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
AB224C	13-JUL-92	< 0.1	0.38	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
AB224D	13-JUL-92	< 0.1	0.51	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
AB224E	13-JUL-92	< 0.2	0.95	< 0.04	< 0.04	< 0.04	< 0.04	< 0.08	< 0.2	< 0.2
AB224F	13-JUL-92	< 0.2	0.92	< 0.04	< 0.04	< 0.04	< 0.04	< 0.08	< 0.2	< 0.2

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Sample Id	Sample Date	11DCE UL/L	TCE UL/L	BENZENE UL/L	PCE UL/L	TOLUENE UL/L	E_BENZENE UL/L	XYLENE UL/L	12DCE_TRANS UL/L	12DCE_CIS UL/L
AB224G	13-JUL-92	< 0.5	2.2	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
AB224H	13-JUL-92	< 2	6.2	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	< 2
AB226B	10-JUL-92	< 0.1	0.73	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
AB226C	10-JUL-92	< 0.17	0.88	< 0.033	0.1	< 0.033	< 0.033	< 0.067	< 0.17	< 0.17
AB226D	10-JUL-92	< 0.33	1.5	< 0.067	0.24	< 0.067	< 0.067	< 0.13	< 0.33	< 0.33
AB226E	10-JUL-92	< 0.17	1	< 0.033	0.13	< 0.033	< 0.033	< 0.067	< 0.17	< 0.17
AB226F	10-JUL-92	< 0.33	1.5	< 0.067	0.18	< 0.067	< 0.067	< 0.13	< 0.33	< 0.33
AB226G	10-JUL-92	< 1	3.7	< 0.2	0.52	< 0.2	< 0.2	< 0.4	< 1	< 1
AB226H	10-JUL-92	< 0.5	2.9	< 0.1	0.51	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
AB227A	13-JUL-92	< 1	4.9	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	< 1
AB227A DUP	13-JUL-92	< 1	4.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	< 1
AB227B	13-JUL-92	< 1	2.8	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	< 1
AB227C	13-JUL-92	< 0.25	1.3	< 0.05	0.03	< 0.05	< 0.05	< 0.1	< 0.25	0.09
AB227D	13-JUL-92	< 1	1.8	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	< 1
AB227E	13-JUL-92	< 0.5	2.6	< 0.1	0.08		< 0.1	< 0.2	< 0.5	0.16
AB227F	13-JUL-92	< 1.7	8.1	< 0.33	0.27	< 0.33	< 0.33	< 0.67	< 1.7	0.57
AB227G	13-JUL-92	< 1.7	8.3	< 0.33	0.26	< 0.33	< 0.33	< 0.67	< 1.7	0.41
AB227H	13-JUL-92	< 1.7	7.5	< 0.33	0.36	< 0.33	< 0.33	< 0.67	< 1.7	0.4
AB228A	10-JUL-92	< 0.33	2.6	< 0.067	0.23	< 0.067	< 0.067	< 0.13	< 0.33	< 0.33
AB228B	10-JUL-92	< 0.5	2.4	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
AB228C	10-JUL-92	< 0.5	2.8	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
AB228D	10-JUL-92	< 0.2	0.94	< 0.04	< 0.04	< 0.04	< 0.04	< 0.08	< 0.2	< 0.2
AB228E	10-JUL-92	< 10	32	< 2	< 2	< 2	< 2	< 4	< 10	< 10
AB228F	10-JUL-92	< 10	35	< 2	< 2	< 2	< 2	< 4	< 10	< 10
AB228G	10-JUL-92	< 0.5	3.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
AB228H	10-JUL-92	< 2	11	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	< 2
AB228H DUP	10-JUL-92	< 5	18	< 1	< 1	< 1	< 1	< 2	< 5	< 5
AB229A	10-JUL-92	< 2	8.8	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	< 2
AB229B	10-JUL-92	< 1	4.4	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	< 1
AB229C	10-JUL-92	< 0.4	1.8	< 0.08	< 0.08	< 0.08	< 0.08	< 0.16	< 0.4	0.14
AB229D	10-JUL-92	< 0.67	3.2	< 0.13	< 0.13	< 0.13	< 0.13	< 0.27	< 0.67	0.37
AB229E	10-JUL-92	< 0.67	2.5	< 0.13	< 0.13	< 0.13	< 0.13	< 0.27	< 0.67	0.34
AB229E DUP	10-JUL-92	< 0.67	4.6	< 0.13	< 0.13	< 0.13	< 0.13	< 0.27	< 0.67	0.59
AB229F	10-JUL-92	< 0.67	3.5	< 0.13	< 0.13	< 0.13	< 0.13	< 0.27	< 0.67	0.48

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Sample Id	Sample Date	11DCE UL/L	TCE UL/L	BENZENE UL/L	PCE UL/L	TOLUENE UL/L	E_BENZENE UL/L	XYLENE UL/L	12DCE_TRANS UL/L	12DCE_CIS UL/L
AB229G	10-JUL-92	< 1.7	5.7	< 0.33	< 0.33	< 0.33	< 0.33	< 0.67	< 1.7	0.53
AB229H	10-JUL-92	< 2	6	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	0.57
AB243A	28-JUL-92	< 2	0.58	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	11
AB243B	28-JUL-92	< 13	110	< 2.7	32	< 2.7	< 2.7	< 5.3	< 13	< 13
AB243C	28-JUL-92	< 8	33	< 1.6	< 1.6	< 1.6	< 1.6	< 3.2	< 8	30
AB243D	28-JUL-92	< 2	8.2	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	4
AB243D DUP	28-JUL-92	< 1.4	6.9	< 0.28	< 0.28	< 0.28	< 0.28	< 0.57	< 1.4	2.6
AB243E	28-JUL-92	< 1.4	7.3	< 0.28	< 0.28	< 0.28	< 0.28	< 0.57	< 1.4	2.9
AB243F	28-JUL-92	< 3.3	28	< 0.67	< 0.67	< 0.67	< 0.67	< 1.3	< 3.3	8.9
AB243G	28-JUL-92	< 3.3	19	< 0.67	< 0.67	< 0.67	< 0.67	< 1.3	< 3.3	5.1
AB243H	28-JUL-92	< 3.3	19	< 0.67	< 0.67	< 0.67	< 0.67	< 1.3	< 3.3	4.4
AB243H DUP	28-JUL-92	< 6.7	35	< 1.3	< 1.3	< 1.3	< 1.3	< 2.7	< 6.7	12
AT001A	12-JUN-92	< 1	7.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	2.3
AT001B	12-JUN-92	< 0.5	3	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
AT001C	12-JUN-92	< 1	7.7	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	0.74
AT001D	12-JUN-92	< 0.5	4.4	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	0.39
AT001E	12-JUN-92	< 0.5	4.4	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	0.46
AT001E DUP	12-JUN-92	< 0.5	2.2	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	0.22
AT002A	12-JUN-92	< 1.7	18	< 0.33	< 0.33	< 0.33	< 0.33	< 0.67	< 1.7	< 1.7
AT002B	12-JUN-92	< 10	44	< 2	< 2	< 2	< 2	< 4	< 10	< 10
AT002C	12-JUN-92	< 2.5	20	< 0.5	< 0.5	< 0.5	< 0.5	< 1	< 2.5	2.4
AT002C DUP	12-JUN-92	< 2.5	14	< 0.5	< 0.5	< 0.5	< 0.5	< 1	< 2.5	1.6
AT002D	12-JUN-92	< 1	6.6	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	0.66
AT002E	12-JUN-92	< 1	6.4	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	0.59
AT003A	16-JUN-92	< 0.67	4.3	< 0.13	< 0.13	< 0.13	< 0.13	< 0.27	< 0.67	3.8
AT003B	16-JUN-92	< 40	160	< 8	20	< 8	< 8	< 16	< 40	33
AT003C	16-JUN-92	< 5	47	< 1	< 1	< 1	< 1	< 2	< 5	19
AT003D	16-JUN-92	< 5	63	< 1	< 1	< 1	< 1	< 2	< 5	25
AT003E	16-JUN-92	< 5	65	< 1	< 1	< 1	< 1	< 2	< 5	34
AT004A	16-JUN-92	< 4	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 1.6	1	34
AT004B	16-JUN-92	< 20	9000	< 4	14	< 4	< 4	< 8	6.8	1500
AT004C	16-JUN-92	< 100	1000	< 20	< 20	< 20	< 20	< 40	< 100	230
AT004D	16-JUN-92	< 20	120	< 4	< 4	< 4	< 4	< 8	< 20	100
AT004D DUP	16-JUN-92	< 20	120	< 4	< 4	< 4	< 4	< 8	< 20	95

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: A4

RESULTS OF FIELD GAS CHROMATOGRAPH DATA
SUB-AREA A4

Sample Id	Sample Date	11DCE UL/L	TCE UL/L	BENZENE UL/L	PCE UL/L	TOLUENE UL/L	E_BENZENE UL/L	XYLENE UL/L	12DCE_TRANS UL/L	12DCE_CIS UL/L
AT004E	16-JUN-92	< 20	110	< 4	< 4	< 4	< 4	< 8	< 20	120
AT005A	16-JUN-92	< 2.5	22	< 0.5	< 0.5	< 0.5	< 0.5	< 1	< 2.5	2.2
AT005B	16-JUN-92	< 5	36	< 1	< 1	< 1	< 1	< 2	< 5	3
AT005C	16-JUN-92	< 5	51	< 1	< 1	< 1	< 1	< 2	< 5	25
AT005D	16-JUN-92	< 5	28	< 1	< 1	< 1	< 1	< 2	< 5	17
AT005E	16-JUN-92	< 2.5	16	< 0.5	< 0.5	< 0.5	< 0.5	< 1	< 2.5	6.7
AT006A	17-JUN-92	< 0.25	2.2	< 0.05	< 0.05	< 0.05	< 0.05	< 0.1	< 0.25	< 0.25
AT006B	17-JUN-92	< 3.3	31	< 0.67	< 0.67	< 0.67	< 0.67	< 1.3	< 3.3	2.5
AT006C	17-JUN-92	< 0.5	4.2	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	0.65
AT006D	17-JUN-92	< 0.5	3.8	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	0.6
AT006E	17-JUN-92	< 0.5	4.4	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	0.59

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: B1

RESULTS OF PORTABLE GAS CHROMATOGRAPH ANALYSES
SUB-AREA B1

Sample Id	Sample Date	11DCE UL/L	TCE UL/L	BENZENE UL/L	PCE UL/L	TOLUENE UL/L	E_BENZENE UL/L	XYLENE UL/L	12DCE_TRANS UL/L	12DCE_CIS UL/L
BB001A	15-JUN-92	< 1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	< 1
BB001B	15-JUN-92	< 3.3	< 0.67	< 0.67	< 0.67	< 0.67	< 0.67	< 1.3	< 3.3	< 3.3
BB001C	15-JUN-92	< 0.2	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.08	< 0.2	< 0.2
BB001C DUP	15-JUN-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BB001D	15-JUN-92	< 0.5	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
BB001E	15-JUN-92	< 0.5	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
BB001F	15-JUN-92	< 1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	< 1
BB001G	15-JUN-92	< 0.5	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
BB001H	15-JUN-92	< 0.25	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.1	< 0.25	< 0.25
BB002A	15-JUN-92	< 0.25	0.21	< 0.05	< 0.05	< 0.05	< 0.05	< 0.1	< 0.25	< 0.25
BB002B	15-JUN-92	< 0.25	0.77	< 0.05	< 0.05	< 0.05	< 0.05	< 0.1	2.8	25
BB002C	15-JUN-92	< 0.5	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	1.3
BB002D	15-JUN-92	< 0.25	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.1	< 0.25	0.59
BB002E	15-JUN-92	< 0.25	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.1	< 0.25	< 0.25
BB002E DUP	15-JUN-92	< 0.2	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.08	< 0.2	< 0.2
BB002F	15-JUN-92	< 0.2	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.08	< 0.2	< 0.2
BB002G	15-JUN-92	< 0.67	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.27	< 0.67	< 0.67
BB002H	15-JUN-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BB003A	16-JUN-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BB003B	16-JUN-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BB003C	16-JUN-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	0.3
BB003D	16-JUN-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	0.24
BB003E	16-JUN-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BB003F	16-JUN-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BB003G	16-JUN-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BB003H	16-JUN-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BB201A	16-JUL-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BB201B	16-JUL-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BB201C	16-JUL-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BB201C DUP	16-JUL-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BB201D	16-JUL-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BB201E	16-JUL-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BB201F	16-JUL-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BB201G	16-JUL-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: B1

RESULTS OF FIELD GAS CHROMATOGRAPH DATA
SUB-AREA B1

Sample Id	Sample Date	11DCE UL/L	TCE UL/L	BENZENE UL/L	PCE UL/L	TOLUENE UL/L	E_BENZENE UL/L	XYLENE UL/L	12DCE_TRANS UL/L	12DCE_CIS UL/L
BB201G DUP	16-JUL-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BB201H	16-JUL-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BB202A	16-JUL-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BB202B	16-JUL-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	0.15
BB202C	16-JUL-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BB202D	16-JUL-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BB202E	16-JUL-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BB202F	16-JUL-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BB202G	16-JUL-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BB202H	16-JUL-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BB204A	16-JUL-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BB204B	16-JUL-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BB204C	16-JUL-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BB204D	16-JUL-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BB204E	16-JUL-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BB204F	16-JUL-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BB204G	16-JUL-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BB204H	16-JUL-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BB205A	16-JUL-92	< 0.1	0.07	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BB205B	16-JUL-92	< 0.1	0.18	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	0.03
BB205C	16-JUL-92	< 0.1	0.09	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BB205D	16-JUL-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BB205E	16-JUL-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BB205F	16-JUL-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BB205G	16-JUL-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BB205H	16-JUL-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BB206A	17-JUL-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BB206B	17-JUL-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BB206C	17-JUL-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BB206D	17-JUL-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BB206E	17-JUL-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BB206E DUP	17-JUL-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BB206F	17-JUL-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BB206G	17-JUL-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: B1

RESULTS OF FIELD GAS CHROMATOGRAPH DATA
SUB-AREA B1

Sample Id	Sample Date	11DCE UL/L	TCE UL/L	BENZENE UL/L	PCE UL/L	TOLUENE UL/L	E_BENZENE UL/L	XYLENE UL/L	12DCE_TRANS UL/L	12DCE_CIS UL/L
BB206H	17-JUL-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BB206H DUP	17-JUL-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BT001A	18-JUN-92	< 0.1	0.07	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	0.03
BT001B	18-JUN-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	0.06
BT001C	18-JUN-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BT001D	18-JUN-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BT001E	18-JUN-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BT002A	17-JUN-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BT002B	17-JUN-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	0.18
BT002C	17-JUN-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BT002D	17-JUN-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BT002E	17-JUN-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: B2

RESULTS OF PORTABLE GAS CHROMATOGRAPH ANALYSES
SUB-AREA B2

Sample Id	Sample Date	11DCE UL/L	TCE UL/L	BENZENE UL/L	PCE UL/L	TOLUENE UL/L	E_BENZENE UL/L	XYLENE UL/L	12DCE_TRANS UL/L	12DCE_CIS UL/L
BT003A	18-JUN-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BT003B	18-JUN-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BT003C	18-JUN-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BT003D	18-JUN-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BT003E	18-JUN-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BT004A	18-JUN-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BT004B	18-JUN-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
BT004C	18-JUN-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	0.23
BT004D	18-JUN-92	< 0.1	0.11	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	0.57
BT004E	18-JUN-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	0.12

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: D

RESULTS OF PORTABLE GAS CHROMATOGRAPH ANALYSES
SUB-AREA D

Sample Id	Sample Date	11DCE UL/L	TCE UL/L	BENZENE UL/L	PCE UL/L	TOLUENE UL/L	E_BENZENE UL/L	XYLENE UL/L	12DCE_TRANS UL/L	12DCE_CIS UL/L
DB029A	11-JUN-92	< 0.5	3.7	< 0.1	0.63	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
DB029B	11-JUN-92	< 0.25	0.15	< 0.05	< 0.05	< 0.05	< 0.05	< 0.1	< 0.25	< 0.25
DB029C	11-JUN-92	< 0.5	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
DB029D	11-JUN-92	< 0.25	0.83	< 0.05	< 0.05	< 0.05	< 0.05	< 0.1	< 0.25	< 0.25
DB029E	11-JUN-92	< 0.25	0.18	< 0.05	< 0.05	< 0.05	< 0.05	< 0.1	< 0.25	< 0.25
DB029F	11-JUN-92	< 0.2	0.32	< 0.04	< 0.04	< 0.04	< 0.04	< 0.08	< 0.2	< 0.2
DB029G	11-JUN-92	< 0.25	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.1	< 0.25	< 0.25
DB029H	11-JUN-92	< 0.2	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.08	< 0.2	< 0.2
DB030A	12-JUN-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
DB030B	12-JUN-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
DB030C	12-JUN-92	< 1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	< 1
DB030D	12-JUN-92	< 2	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	< 2
DB030E	12-JUN-92	< 4	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 1.6	< 4	< 4
DB030F	12-JUN-92	< 0.2	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.08	< 0.2	< 0.2
DB030G	12-JUN-92	< 0.2	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.08	< 0.2	< 0.2
DB030H	12-JUN-92	< 1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	< 1
DB031A	11-JUN-92	< 0.1	0.18	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
DB031B	11-JUN-92	< 0.33	0.43	< 0.067	< 0.067	< 0.067	< 0.067	< 0.13	< 0.33	< 0.33
DB031C	11-JUN-92	< 0.4	1.1	< 0.08	< 0.08	< 0.08	< 0.08	< 0.16	< 0.4	< 0.4
DB031D	11-JUN-92	< 0.5	1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
DB031G	11-JUN-92	< 2	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	< 2
DB031H	11-JUN-92	< 0.67	1.8	< 0.13	< 0.13	< 0.13	< 0.13	< 0.27	< 0.67	< 0.67
DB032A	11-JUN-92	< 0.5	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
DB032B	11-JUN-92	< 0.5	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
DB032C	11-JUN-92	< 0.25	0.33	< 0.05	< 0.05	< 0.05	< 0.05	< 0.1	< 0.25	< 0.25
DB032D	11-JUN-92	< 0.1	0.51	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
DB032E	11-JUN-92	< 0.2	0.53	< 0.04	< 0.04	< 0.04	< 0.04	< 0.08	< 0.2	< 0.2
DB032F	11-JUN-92	< 0.2	0.4	< 0.04	< 0.04	< 0.04	< 0.04	< 0.08	< 0.2	< 0.2
DB032G	11-JUN-92	< 0.2	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.08	< 0.2	< 0.2
DB032H	11-JUN-92	< 0.2	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.08	< 0.2	< 0.2
DB033A	07-JUL-92	< 0.1	< 0.02	< 0.02	0.16	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
DB033B	07-JUL-92	< 0.1	< 0.02	< 0.02	0.11	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
DB033B DUP	07-JUL-92	< 0.1	0.05	< 0.02	0.21	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
DB033C	07-JUL-92	< 0.2	0.56	< 0.04	0.1	< 0.04	< 0.04	< 0.08	< 0.2	< 0.2

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: D

RESULTS OF FIELD GAS CHROMATOGRAPH DATA
SUB-AREA D

Sample Id	Sample Date	11DCE UL/L	TCE UL/L	BENZENE UL/L	PCE UL/L	TOLUENE UL/L	E_BENZENE UL/L	XYLENE UL/L	12DCE_TRANS UL/L	12DCE_CIS UL/L
DB033D	07-JUL-92	< 0.2	0.24	< 0.04	< 0.04	< 0.04	< 0.04	< 0.08	< 0.2	< 0.2
DB033E	07-JUL-92	< 6.7	15	< 1.3	1.8	< 1.3	< 1.3	< 2.7	< 6.7	< 6.7
DB033F	07-JUL-92	< 1	1.5	< 0.2	0.23	< 0.2	< 0.2	< 0.4	< 1	< 1
DB033G	07-JUL-92	< 2	3.9	< 0.4	0.55	< 0.4	< 0.4	< 0.8	< 2	< 2
DB033H	07-JUL-92	< 2	4.5	< 0.4	0.6	< 0.4	< 0.4	< 0.8	< 2	< 2
DB034A	07-JUL-92	< 0.2	0.85	< 0.04	0.27	< 0.04	< 0.04	< 0.08	< 0.2	< 0.2
DB034B	07-JUL-92	< 1	4.2	< 0.2	0.5	< 0.2	< 0.2	< 0.4	< 1	< 1
DB034C	07-JUL-92	< 5	11	< 1	0.97	< 1	< 1	< 2	< 5	< 5
DB034D	07-JUL-92	< 0.5	0.85	< 0.1	0.14	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
DB034D DUP	07-JUL-92	< 0.5	1.8	< 0.1	0.25	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
DB034E	07-JUL-92	< 0.5	1.8	< 0.1	0.25	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
DB034F	07-JUL-92	< 0.5	1	< 0.1	0.16	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
DB034G	07-JUL-92	< 0.33	1.3	< 0.067	0.22	< 0.067	< 0.067	< 0.13	< 0.33	< 0.33
DB034H	07-JUL-92	< 1	3.9	< 0.2	0.6	< 0.2	< 0.2	< 0.4	< 1	< 1

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: E1

RESULTS OF PORTABLE GAS CHROMATOGRAPH ANALYSES
SUB-AREA E1

Sample Id	Sample Date	11DCE UL/L	TCE UL/L	BENZENE UL/L	PCE UL/L	TOLUENE UL/L	E_BENZENE UL/L	XYLENE UL/L	12DCE_TRANS UL/L	12DCE_CIS UL/L
EB001A	16-JUN-92	< 0.2	1.1	< 0.04	< 0.04	< 0.04	< 0.04	< 0.08	< 0.2	< 0.2
EB001C	16-JUN-92	< 0.5	3.4	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
EB001D	16-JUN-92	< 1	3.4	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	< 1
EB001E	16-JUN-92	< 2	18	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	< 2
EB001F	16-JUN-92	< 0.5	3.4	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
EB001G	16-JUN-92	< 0.25	0.92	< 0.05	< 0.05	< 0.05	< 0.05	< 0.1	< 0.25	< 0.25
EB001G DUP	16-JUN-92	< 0.25	0.92	< 0.05	< 0.05	< 0.05	< 0.05	< 0.1	< 0.25	< 0.25
EB001H	16-JUN-92	< 0.2	0.99	< 0.04	< 0.04	< 0.04	< 0.04	< 0.08	< 0.2	< 0.2
EB002A	16-JUN-92	< 0.1	0.25	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
EB002B	16-JUN-92	< 0.1	0.46	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
EB002C	16-JUN-92	< 0.5	3.4	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
EB002D	16-JUN-92	< 0.2	1.3	< 0.04	< 0.04	< 0.04	< 0.04	< 0.08	< 0.2	< 0.2
EB002D DUP	16-JUN-92	< 0.2	1.5	< 0.04	< 0.04	< 0.04	< 0.04	< 0.08	< 0.2	< 0.2
EB002E	16-JUN-92	< 0.1	0.46	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
EB002F	16-JUN-92	< 0.1	0.85	< 0.02	< 0.02	0.05	< 0.02	< 0.04	< 0.1	< 0.1
EB002G	16-JUN-92	< 0.25	1.7	< 0.05	< 0.05	< 0.05	< 0.05	< 0.1	< 0.25	< 0.25
EB002H	16-JUN-92	< 0.12	0.83	< 0.02	< 0.02	< 0.02	< 0.02	< 0.05	< 0.12	< 0.12
EB201A	17-JUL-92	< 0.1	0.19	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
EB201B	17-JUL-92	< 0.33	2.1	< 0.067	< 0.067	< 0.067	< 0.067	< 0.13	< 0.33	< 0.33
EB201C	17-JUL-92	< 0.2	7	< 0.04	< 0.04	< 0.04	< 0.04	< 0.08	< 0.2	< 0.2
EB201C DUP	17-JUL-92	< 0.14	6.6	< 0.028	< 0.028	< 0.028	< 0.028	< 0.057	< 0.14	< 0.14
EB201D	17-JUL-92	< 0.5	1.6	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
EB201E	17-JUL-92	< 0.2	1.6	< 0.04	< 0.04	< 0.04	< 0.04	< 0.08	< 0.2	< 0.2
EB201F	17-JUL-92	< 0.2	1.3	< 0.04	< 0.04	< 0.04	< 0.04	< 0.08	< 0.2	< 0.2
EB201G	17-JUL-92	< 0.2	1.1	< 0.04	< 0.04	< 0.04	< 0.04	< 0.08	< 0.2	< 0.2
EB201H	17-JUL-92	< 0.5	2.8	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
EB202A	22-JUL-92	< 0.1	0.4	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
EB202B	22-JUL-92	< 0.1	0.83	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
EB202C	22-JUL-92	< 0.1	0.87	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
EB202E	22-JUL-92	< 0.1	0.17	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
EB202F	22-JUL-92	< 0.1	0.2	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
EB202G	22-JUL-92	< 0.1	0.11	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
EB202H	22-JUL-92	< 0.1	0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
EB203A	21-JUL-92	< 4	17	< 0.8	< 0.8	< 0.8	< 0.8	< 1.6	< 4	< 4

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: E1

RESULTS OF FIELD GAS CHROMATOGRAPH DATA
SUB-AREA E1

Sample Id	Sample Date	11DCE UL/L	TCE UL/L	BENZENE UL/L	PCE UL/L	TOLUENE UL/L	E_BENZENE UL/L	XYLENE UL/L	12DCE_TRANS UL/L	12DCE_CIS UL/L
EB203B	21-JUL-92	< 4	12	< 0.8	< 0.8	< 0.8	< 0.8	< 1.6	< 4	< 4
EB203C	21-JUL-92	< 2	9.2	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	< 2
EB203D	21-JUL-92	< 0.25	0.81	< 0.05	< 0.05	< 0.05	< 0.05	< 0.1	< 0.25	< 0.25
EB203E	21-JUL-92	< 0.1	0.34	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	0.12
EB203F	21-JUL-92	< 0.17	0.62	< 0.033	< 0.033	< 0.033	< 0.033	< 0.067	< 0.17	0.15
EB203G	21-JUL-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
EB203H	21-JUL-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	0.06
EB203H DUP	21-JUL-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	0.23
EB206A	17-JUL-92	< 1	7	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	< 1
EB206B	17-JUL-92	< 1	5.6	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	< 1
EB206B DUP	17-JUL-92	< 1	4.5	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	< 1
EB206C	17-JUL-92	< 1	8.4	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	< 1
EB206D	17-JUL-92	< 1	1.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	< 1
EB206E	17-JUL-92	< 0.5	1.4	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
EB206F	17-JUL-92	< 0.2	0.93	< 0.04	< 0.04	< 0.04	< 0.04	< 0.08	< 0.2	< 0.2
EB206G	17-JUL-92	< 0.14	0.47	< 0.028	< 0.028	< 0.028	< 0.028	< 0.057	< 0.14	< 0.14
EB206H	17-JUL-92	< 0.1	0.97	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
EB209A	22-JUL-92	< 0.1	0.17	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
EB209B	22-JUL-92	< 0.1	0.52	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
EB209C	22-JUL-92	< 0.1	0.58	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
EB209D	22-JUL-92	< 0.1	0.17	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
EB209E	22-JUL-92	< 0.1	0.4	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
EB209F	22-JUL-92	< 0.1	0.22	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
EB209G	22-JUL-92	< 0.1	0.29	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
EB209H	22-JUL-92	< 0.1	0.17	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
EB210A	22-JUL-92	< 0.1	0.03	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
EB210B	22-JUL-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
EB210C	22-JUL-92	< 0.1	0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
EB210D	22-JUL-92	< 0.1	0.07	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
EB210E	22-JUL-92	< 0.1	0.14	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
EB210F	22-JUL-92	< 0.1	0.33	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
EB210G	22-JUL-92	< 0.1	0.16	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
EB210H	22-JUL-92	< 0.1	0.33	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: E2

RESULTS OF PORTABLE GAS CHROMATOGRAPH ANALYSES
SUB-AREA E2

Sample Id	Sample Date	11DCE UL/L	TCE UL/L	BENZENE UL/L	PCE UL/L	TOLUENE UL/L	E_BENZENE UL/L	XYLENE UL/L	12DCE_TRANS UL/L	12DCE_CIS UL/L
EB003A	18-JUN-92	< 0.25	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.1	< 0.25	< 0.25
EB003B	18-JUN-92	< 0.25	0.2	< 0.05	< 0.05	< 0.05	< 0.05	< 0.1	< 0.25	< 0.25
EB003C	18-JUN-92	< 1	7.4	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	< 1
EB003E	18-JUN-92	< 1	3.8	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	< 1
EB003F	18-JUN-92	< 1	10	< 0.2	2.2	< 0.2	< 0.2	< 0.4	< 1	1.2
EB003G	18-JUN-92	< 0.5	2.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
EB003H	18-JUN-92	< 1	9.7	< 0.2	1.2	< 0.2	< 0.2	< 0.4	< 1	1.7
EB004A	18-JUN-92	< 0.5	1.3	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	1.8
EB004B	18-JUN-92	< 0.33	0.95	< 0.067	< 0.067	< 0.067	< 0.067	< 0.13	< 0.33	1.3
EB004C	18-JUN-92	< 0.25	0.5	< 0.05	< 0.05	< 0.05	< 0.05	< 0.1	< 0.25	0.3
EB004D	18-JUN-92	< 0.33	< 0.067	< 0.067	< 0.067	< 0.067	< 0.067	< 0.13	< 0.33	< 0.33
EB004D DUP	18-JUN-92	< 0.2	0.1	< 0.04	< 0.04	< 0.04	< 0.04	< 0.08	< 0.2	< 0.2
EB004E	18-JUN-92	< 0.1	0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
EB004F	18-JUN-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
EB004G	18-JUN-92	< 0.1	0.2	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
EB004H	18-JUN-92	< 0.17	1.5	< 0.033	0.68	< 0.033	< 0.033	< 0.067	< 0.17	0.47
EB204A	21-JUL-92	< 0.1	0.04	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
EB204A DUP	21-JUL-92	< 0.1	0.07	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
EB204B	21-JUL-92	< 0.1	0.62	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
EB204C	21-JUL-92	< 1	4.9	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	< 1
EB204D	21-JUL-92	< 1	6.8	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	0.48
EB204E	21-JUL-92	< 0.33	2.6	< 0.067	< 0.067	< 0.067	< 0.067	< 0.13	< 0.33	0.12
EB204G	21-JUL-92	< 0.5	2.9	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	0.22
EB204H	21-JUL-92	< 0.17	1.2	< 0.033	0.49	< 0.033	< 0.033	< 0.067	< 0.17	0.88
EB205A	21-JUL-92	< 0.5	1.5	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
EB205B	21-JUL-92	< 0.1	0.2	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
EB205C	21-JUL-92	< 0.17	1	< 0.033	< 0.033	< 0.033	< 0.033	< 0.067	< 0.17	< 0.17
EB205C DUP	21-JUL-92	< 0.17	0.22	< 0.033	< 0.033	< 0.033	< 0.033	< 0.067	< 0.17	< 0.17
EB205D	21-JUL-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
EB205E	21-JUL-92	< 0.17	1.9	< 0.033	< 0.033	< 0.033	< 0.033	< 0.067	< 0.17	< 0.17
EB205F	21-JUL-92	< 0.1	0.09	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	0.09	0.72
EB205F DUP	21-JUL-92	< 0.1	0.13	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	0.1	0.88
EB205G	21-JUL-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	0.23
EB205H	21-JUL-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: E2

RESULTS OF FIELD GAS CHROMATOGRAPH DATA
SUB-AREA E2

Sample Id	Sample Date	11DCE UL/L	TCE UL/L	BENZENE UL/L	PCE UL/L	TOLUENE UL/L	E_BENZENE UL/L	XYLENE UL/L	12DCE_TRANS UL/L	12DCE_CIS UL/L
EB207A	21-JUL-92	< 0.17	0.59	< 0.033	< 0.033	< 0.033	< 0.033	< 0.067	< 0.17	< 0.17
EB207B	21-JUL-92	< 0.5	1.8	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
EB207D	21-JUL-92	< 0.5	1.6	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
EB207D DUP	21-JUL-92	< 0.5	2.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
EB207E	21-JUL-92	< 0.5	2	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
EB207F	21-JUL-92	< 0.25	1.2	< 0.05	< 0.05	< 0.05	< 0.05	< 0.1	< 0.25	0.06
EB207G	21-JUL-92	< 0.25	1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.1	< 0.25	< 0.25
EB207H	21-JUL-92	< 0.2	1.1	< 0.04	< 0.04	< 0.04	< 0.04	< 0.08	< 0.2	0.06
EB208A	21-JUL-92	< 0.1	0.14	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
EB208B	21-JUL-92	< 0.1	0.26	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
EB208C	21-JUL-92	< 0.1	0.18	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
EB208D	21-JUL-92	< 0.17	0.41	< 0.033	< 0.033	< 0.033	< 0.033	< 0.067	< 0.17	< 0.17
EB208E	21-JUL-92	< 0.17	0.05	< 0.033	< 0.033	< 0.033	< 0.033	< 0.067	0.09	0.85
EB208F	21-JUL-92	< 0.5	0.11	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	0.06	1.7
EB208G	21-JUL-92	< 0.5	2	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	0.24
EB208H	21-JUL-92	< 0.5	1.2	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5

PROJECT NUMBER: 2313.13
BEGINNING DATE: 01-JUN-92
ENDING DATE: 01-SEP-92
SITE AREA: F2

RESULTS OF PORTABLE GAS CHROMATOGRAPH ANALYSES
SUB-AREA F

Sample Id	Sample Date	11DCE UL/L	TCE UL/L	BENZENE UL/L	PCE UL/L	TOLUENE UL/L	E_BENZENE UL/L	XYLENE UL/L	12DCE_TRANS UL/L	12DCE_CIS UL/L
FB001A	12-JUN-92	< 0.5	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
FB001B	12-JUN-92	< 0.5	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
FB001C	12-JUN-92	< 0.5	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
FB001C DUP	12-JUN-92	< 0.5	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 0.5
FB001D	12-JUN-92	< 1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	< 1
FB001E	12-JUN-92	< 1.7	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.67	< 1.7	< 1.7
FB001F	12-JUN-92	< 1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	< 1
FB001G	12-JUN-92	< 1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	< 1
FB001H	12-JUN-92	< 1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	< 1
FB002A	11-JUN-92	< 1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	< 1
FB002B	11-JUN-92	< 0.2	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.08	< 0.2	< 0.2
FB002C	11-JUN-92	< 0.25	0.59	< 0.05	< 0.05	< 0.05	< 0.05	< 0.1	< 0.25	< 0.25
FB002D	11-JUN-92	< 0.25	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.1	< 0.25	< 0.25
FB002E	11-JUN-92	< 0.25	0.22	< 0.05	< 0.05	< 0.05	< 0.05	< 0.1	< 0.25	< 0.25
FB002F	11-JUN-92	< 2.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1	< 2.5	< 2.5
FB002G	11-JUN-92	< 5	< 1	< 1	< 1	< 1	< 1	< 2	< 5	< 5
FB002H	11-JUN-92	< 2.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1	< 2.5	< 2.5
FB003A	11-JUN-92	< 2	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	< 2
FB003B	11-JUN-92	< 2	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	< 2
FB003C	11-JUN-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
FB003D	11-JUN-92	< 0.25	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.1	< 0.25	< 0.25
FB003E	11-JUN-92	< 2	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	< 2
FB003F	11-JUN-92	< 2	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.8	< 2	< 2
FB003G	11-JUN-92	< 1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	< 1
FB003H	11-JUN-92	< 1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.4	< 1	< 1
FB004A	11-JUN-92	< 0.2	< 0.04	< 0.04	< 0.04	0.93	< 0.04	< 0.08	< 0.2	< 0.2
FB004B	11-JUN-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
FB004C	11-JUN-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
FB004D	11-JUN-92	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.1
FB004E	11-JUN-92	< 2.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1	< 2.5	< 2.5
FB004E DUP	11-JUN-92	< 2.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1	< 2.5	< 2.5
FB004F	11-JUN-92	< 2.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1	< 2.5	< 2.5
FB004G	11-JUN-92	< 10	< 2	< 2	< 2	< 2	< 2	< 4	< 10	< 10
FB004H	11-JUN-92	< 5	< 1	< 1	< 1	< 1	< 1	< 2	< 5	< 5

APPENDIX K

RISK ASSESSMENT LAYER EXPOSURE CONCENTRATIONS - FUTURE LAND USE

SUMMARY OF EXPOSURE CONCENTRATIONS IN SOIL BY LAYER
FUTURE LAND USE - SUB-AREAS A2, A3, AND A4

Soil Layer (1)	Minimum Detected Concentration	Maximum Detected Concentration	Number of Detects	Number of Values	Detection Frequency (%)	Geometric Mean	Layer Exposure Concentration	Exposure Concentration Comment
1,1,1-TRICHLOROETHANE		MG/KG						
1	.000800	.0250000	13	72	18	.004933	.025000	MAX DETECTED
2	.000800	.5000000	14	32	44	.007903	.500000	MAX DETECTED
3	.000800	2600.0000000	7	15	47	.033687	2600.000000	MAX DETECTED
					Average Exposure Concentration:		866.841667	
1,1,2,2-TETRACHLOROETHANE		MG/KG						
1	.002000	.0020000	1	72	1	.005724	.002000	MAX DETECTED
2	.002000	.0020000	1	32	3	.008072	.002000	MAX DETECTED
3			0	15	0	.020487	0.000000	NOT DETECTED
					Average Exposure Concentration:		.001333	
1,1,2-TRICHLOROETHANE		MG/KG						
1	.003000	.0030000	1	72	1	.005756	.003000	MAX DETECTED
2	.003000	.0070000	2	32	6	.008141	.007000	MAX DETECTED
3			0	15	0	.020487	0.000000	NOT DETECTED
					Average Exposure Concentration:		.003333	
1,1-DICHLOROETHANE		MG/KG						
1	.001000	.0080000	5	72	7	.005494	.008000	MAX DETECTED
2	.001000	.0730000	8	32	25	.007320	.073000	MAX DETECTED
3	.037000	34.0000000	3	15	20	.022453	34.000000	MAX DETECTED
					Average Exposure Concentration:		11.360333	
1,2-DICHLOROETHANE		MG/KG						
1			0	72	0	.005805	0.000000	NOT DETECTED
2			0	32	0	.008375	0.000000	NOT DETECTED
3	.004000	.0040000	1	15	7	.017974	.004000	MAX DETECTED
					Average Exposure Concentration:		.001333	

(1) Layer 1: 1 to 3 feet; Layer 2: 3 to 8 feet; Layer 3: 8 to 12 feet.

SUMMARY OF EXPOSURE CONCENTRATIONS IN SOIL BY LAYER
FUTURE LAND USE - SUB-AREAS A2, A3, AND A4

Soil Layer (1)	Minimum Detected Concentration	Maximum Detected Concentration	Number of Detects	Number of Values	Detection Frequency (%)	Geometric Mean	Layer Exposure Concentration	Exposure Concentration Comment
1,2-DICHLOROETHENE (TOTAL)		MG/KG						
1	.001000	.4700000	32	72	44	.007649	.470000	MAX DETECTED
2	.001000	.6400000	19	32	59	.018923	.500000	95% UCL
3	.002000	1.8000000	10	15	67	.041174	1.800000	MAX DETECTED
					Average Exposure Concentration:		.923333	
2-BUTANONE		MG/KG						
1			0	72	0	.005825	0.000000	NOT DETECTED
2			0	32	0	.008375	0.000000	NOT DETECTED
3	3500.000000	3500.0000000	1	15	7	.027930	3500.000000	MAX DETECTED
					Average Exposure Concentration:		1166.666667	
2-HEXANONE		MG/KG						
1			0	72	0	.005805	0.000000	NOT DETECTED
2			0	32	0	.008375	0.000000	NOT DETECTED
3	.002000	.0020000	1	15	7	.018939	.002000	MAX DETECTED
					Average Exposure Concentration:		.000667	
2-METHYLNAPHTHALENE		MG/KG						
1	.170000	3.4000000	3	23	13	.322435	3.400000	MAX DETECTED
2			0	10	0	.398656	0.000000	NOT DETECTED
3			0	11	0	.394177	0.000000	NOT DETECTED
					Average Exposure Concentration:		1.133333	
4,4'-DDD		MG/KG						
1	.004800	2.9000000	15	23	65	.028403	2.900000	MAX DETECTED
2	.004400	.0860000	2	10	20	.004080	.086000	MAX DETECTED
3	.021000	.1900000	4	11	36	.010009	.190000	MAX DETECTED
					Average Exposure Concentration:		1.058667	
4,4'-DDE		MG/KG						
1	.008500	1.9000000	17	23	74	.038846	1.900000	MAX DETECTED

(1) Layer 1: 1 to 3 feet; Layer 2: 3 to 8 feet; Layer 3: 8 to 12 feet.

SUMMARY OF EXPOSURE CONCENTRATIONS IN SOIL BY LAYER
FUTURE LAND USE - SUB-AREAS A2, A3, AND A4

Soil Layer (1)	Minimum Detected Concentration	Maximum Detected Concentration	Number of Detects	Number of Values	Detection Frequency (%)	Geometric Mean	Layer Exposure Concentration	Exposure Concentration Comment
4,4'-DDE		MG/KG						
2	.005300	.1100000	3	10	30	.004844	.110000	MAX DETECTED
3	.011000	.1800000	3	11	27	.007766	.180000	MAX DETECTED
					Average Exposure Concentration:		.730000	
4,4'-DDT		MG/KG						
1	.004500	1.4000000	18	23	78	.042288	1.400000	MAX DETECTED
2	.014000	.2300000	3	10	30	.005879	.230000	MAX DETECTED
3	.004200	.2700000	4	11	36	.008671	.270000	MAX DETECTED
					Average Exposure Concentration:		.633333	
4-METHYL-2-PENTANONE		MG/KG						
1			0	72	0	.005805	0.000000	NOT DETECTED
2			0	32	0	.008375	0.000000	NOT DETECTED
3	.001000	.0010000	1	15	7	.018084	.001000	MAX DETECTED
					Average Exposure Concentration:		.000333	
ACENAPHTHENE		MG/KG						
1	.079000	3.4000000	7	23	30	.306863	3.400000	MAX DETECTED
2			0	10	0	.398656	0.000000	NOT DETECTED
3			0	11	0	.394177	0.000000	NOT DETECTED
					Average Exposure Concentration:		1.133333	
ACENAPHTHYLENE		MG/KG						
1	.380000	2.6000000	2	23	9	.318366	2.600000	MAX DETECTED
2			0	10	0	.398656	0.000000	NOT DETECTED
3			0	11	0	.394177	0.000000	NOT DETECTED
					Average Exposure Concentration:		.866667	
ALDRIN		MG/KG						
1	.003100	.0031000	1	23	4	.002514	.003100	MAX DETECTED
2			0	10	0	.001652	0.000000	NOT DETECTED

(1) Layer 1: 1 to 3 feet; Layer 2: 3 to 8 feet; Layer 3: 8 to 12 feet.

SUMMARY OF EXPOSURE CONCENTRATIONS IN SOIL BY LAYER
FUTURE LAND USE - SUB-AREAS A2, A3, AND A4

Soil Layer (1)	Minimum Detected Concentration	Maximum Detected Concentration	Number of Detects	Number of Values	Detection Frequency (%)	Geometric Mean	Layer Exposure Concentration	Exposure Concentration Comment
ALDRIN		MG/KG						
3			0	11	0	.002298	0.000000	NOT DETECTED
					Average Exposure Concentration:		.001033	
ALPHA-CHLORDANE		MG/KG						
1	.002800	.0360000	2	23	9	.002646	.036000	MAX DETECTED
2			0	10	0	.001652	0.000000	NOT DETECTED
3			0	11	0	.002298	0.000000	NOT DETECTED
					Average Exposure Concentration:		.012000	
ALUMINUM		MG/KG						
1	2270.000000	6260.0000000	23	23	100	3779.700300	4300.000000	95% UCL
2	1520.000000	6830.0000000	10	10	100	3951.695500	5900.000000	95% UCL
3	1060.000000	3740.0000000	11	11	100	1819.651000	2900.000000	95% UCL
					Average Exposure Concentration:		4366.666667	
ANTHRACENE		MG/KG						
1	.130000	15.0000000	12	23	52	.379593	1.300000	95% UCL
2			0	10	0	.398656	0.000000	NOT DETECTED
3	.660000	.6600000	1	11	9	.381305	.660000	MAX DETECTED
					Average Exposure Concentration:		.653333	
ANTIMONY		MG/KG						
1	2.300000	2.3000000	1	23	4	1.121900	2.300000	MAX DETECTED
2			0	10	0	1.236300	0.000000	NOT DETECTED
3	22.500000	22.5000000	1	11	9	1.386200	22.000000	MAX DETECTED
					Average Exposure Concentration:		8.100000	
ARSENIC		MG/KG						
1	1.300000	10.1000000	23	23	100	3.708400	5.200000	95% UCL
2	2.900000	8.3000000	7	10	70	2.187600	8.300000	MAX DETECTED
3	.910000	5.4000000	10	11	91	1.861500	4.800000	95% UCL

(1) Layer 1: 1 to 3 feet; Layer 2: 3 to 8 feet; Layer 3: 8 to 12 feet.

SUMMARY OF EXPOSURE CONCENTRATIONS IN SOIL BY LAYER
FUTURE LAND USE - SUB-AREAS A2, A3, AND A4

Soil Layer (1)	Minimum Detected Concentration	Maximum Detected Concentration	Number of Detects	Number of Values	Detection Frequency (%)	Geometric Mean	Layer Exposure Concentration	Exposure Concentration Comment
ARSENIC		MG/KG						
					Average Exposure Concentration:		6.100000	
BARIUM		MG/KG						
1	20.100000	306.0000000	23	23	100	75.263900	130.000000	95% UCL
2	29.400000	327.0000000	9	10	90	78.933000	330.000000	MAX DETECTED
3	17.500000	82.5000000	4	11	36	10.826500	82.000000	MAX DETECTED
					Average Exposure Concentration:		180.666667	
BENZENE		MG/KG						
1			0	72	0	.005805	0.000000	NOT DETECTED
2	.014000	.0140000	1	32	3	.008438	.014000	MAX DETECTED
3	.001000	.0010000	1	15	7	.018084	.001000	MAX DETECTED
					Average Exposure Concentration:		.005000	
BENZO(A)ANTHRACENE		MG/KG						
1	.130000	43.0000000	17	23	74	.748073	7.000000	95% UCL
2			0	10	0	.398656	0.000000	NOT DETECTED
3	2.100000	2.1000000	1	11	9	.423647	2.100000	MAX DETECTED
					Average Exposure Concentration:		3.033333	
BENZO(A)PYRENE		MG/KG						
1	.120000	41.0000000	16	23	70	.747773	7.000000	95% UCL
2			0	10	0	.398656	0.000000	NOT DETECTED
3	.073000	1.7000000	3	11	27	.371854	1.700000	MAX DETECTED
					Average Exposure Concentration:		2.900000	
BENZO(B)FLUORANTHENE		MG/KG						
1	.130000	46.0000000	17	23	74	.811594	7.800000	95% UCL
2			0	10	0	.398656	0.000000	NOT DETECTED
3	1.800000	1.8000000	1	11	9	.417715	1.800000	MAX DETECTED

(1) Layer 1: 1 to 3 feet; Layer 2: 3 to 8 feet; Layer 3: 8 to 12 feet.

Soil Layer (1)	Minimum Detected Concentration	Maximum Detected Concentration	Number of Detects	Number of Values	Detection Frequency (%)	Geometric Mean	Layer Exposure Concentration	Exposure Concentration Comment
BENZO(B)FLUORANTHENE		MG/KG						
					Average Exposure Concentration:		3.200000	
BENZO(G,H,I)PERYLENE		MG/KG						
1	.240000	34.0000000	14	23	61	.627096	4.600000	95% UCL
2			0	10	0	.398656	0.000000	NOT DETECTED
3	.320000	1.1000000	3	11	27	.458152	1.100000	MAX DETECTED
					Average Exposure Concentration:		1.900000	
BENZO(K)FLUORANTHENE		MG/KG						
1	.087000	29.0000000	17	23	74	.659578	5.500000	95% UCL
2			0	10	0	.398656	0.000000	NOT DETECTED
3	1.400000	1.4000000	1	11	9	.408299	1.400000	MAX DETECTED
					Average Exposure Concentration:		2.300000	
BIS(2-ETHYLHEXYL)PHTHALATE		MG/KG						
1			0	23	0	.324894	0.000000	NOT DETECTED
2	7.200000	7.2000000	1	10	10	.452008	7.200000	MAX DETECTED
3	1.300000	20.0000000	3	11	27	.499746	20.000000	MAX DETECTED
					Average Exposure Concentration:		9.066667	
CADMIUM		MG/KG						
1			0	23	0	.545500	0.000000	NOT DETECTED
2			0	10	0	.613800	0.000000	NOT DETECTED
3	2.700000	5.3000000	2	11	18	.740900	5.300000	MAX DETECTED
					Average Exposure Concentration:		1.766667	
CALCIUM		MG/KG						
1	3710.000000	24600.0000000	23	23	100	12527.731700	18000.000000	95% UCL
2	6010.000000	67400.0000000	10	10	100	20539.394400	54000.000000	95% UCL
3	17100.000000	39200.0000000	11	11	100	22907.049900	29000.000000	95% UCL

(1) Layer 1: 1 to 3 feet; Layer 2: 3 to 8 feet; Layer 3: 8 to 12 feet.

Soil Layer (1)	Minimum Detected Concentration	Maximum Detected Concentration	Number of Detects	Number of Values	Detection Frequency (%)	Geometric Mean	Layer Exposure Concentration	Exposure Concentration Comment
CALCIUM		MG/KG						
					Average Exposure Concentration:		33666.666667	
CARBAZOLE		MG/KG						
1	.087000	4.9000000	11	23	48	.330564	4.900000	MAX DETECTED
2			0	10	0	.398656	0.000000	NOT DETECTED
3			0	11	0	.394177	0.000000	NOT DETECTED
					Average Exposure Concentration:		1.633333	
CHROMIUM		MG/KG						
1	7.100000	22.6000000	23	23	100	12.573600	15.000000	95% UCL
2	5.700000	16.5000000	10	10	100	10.723100	14.000000	95% UCL
3	3.900000	49.6000000	11	11	100	8.686800	25.000000	95% UCL
					Average Exposure Concentration:		18.000000	
CHRYSENE		MG/KG						
1	.130000	43.0000000	17	23	74	.828818	7.900000	95% UCL
2			0	10	0	.398656	0.000000	NOT DETECTED
3	2.100000	2.1000000	1	11	9	.423647	2.100000	MAX DETECTED
					Average Exposure Concentration:		3.333333	
COBALT		MG/KG						
1			0	23	0	5.428700	0.000000	NOT DETECTED
2	34.500000	34.5000000	1	10	10	6.989400	34.000000	MAX DETECTED
3			0	11	0	5.328700	0.000000	NOT DETECTED
					Average Exposure Concentration:		11.333333	
COPPER		MG/KG						
1	7.100000	1900.0000000	23	23	100	62.240100	400.000000	95% UCL
2	5.200000	369.0000000	8	10	80	13.932200	350.000000	95% UCL
3	4.100000	676.0000000	6	11	55	11.978300	680.000000	MAX DETECTED

(1) Layer 1: 1 to 3 feet; Layer 2: 3 to 8 feet; Layer 3: 8 to 12 feet.

Soil Layer (1)	Minimum Detected Concentration	Maximum Detected Concentration	Number of Detects	Number of Values	Detection Frequency (%)	Geometric Mean	Layer Exposure Concentration	Exposure Concentration Comment
COPPER		MG/KG						
					Average Exposure Concentration:		476.666667	
CYANIDE, TOTAL		MG/KG						
1	4.300000	4.6000000	2	23	9	1.506500	4.600000	MAX DETECTED
2	5.400000	5.4000000	1	10	10	1.667500	5.400000	MAX DETECTED
3	5.300000	5.3000000	1	11	9	1.511200	5.300000	MAX DETECTED
					Average Exposure Concentration:		5.100000	
DELTA-BHC		MG/KG						
1			0	23	0	.002382	0.000000	NOT DETECTED
2	.025000	.0250000	1	10	10	.001801	.025000	MAX DETECTED
3	.002600	.0026000	1	11	9	.002531	.002600	MAX DETECTED
					Average Exposure Concentration:		.009200	
DIBENZ(A,H)ANTHRACENE		MG/KG						
1	.520000	7.7000000	4	23	17	.362455	7.700000	MAX DETECTED
2			0	10	0	.398656	0.000000	NOT DETECTED
3			0	11	0	.394177	0.000000	NOT DETECTED
					Average Exposure Concentration:		2.566667	
DIBENZOFURAN		MG/KG						
1	.055000	5.5000000	5	23	22	.294212	5.500000	MAX DETECTED
2			0	10	0	.398656	0.000000	NOT DETECTED
3			0	11	0	.394177	0.000000	NOT DETECTED
					Average Exposure Concentration:		1.833333	
DIELDRIN		MG/KG						
1	.004000	.0040000	2	23	9	.004961	.004000	MAX DETECTED
2			0	10	0	.003225	0.000000	NOT DETECTED
3	.043000	.0430000	1	11	9	.004811	.043000	MAX DETECTED

(1) Layer 1: 1 to 3 feet; Layer 2: 3 to 8 feet; Layer 3: 8 to 12 feet.

Soil Layer (1)	Minimum Detected Concentration	Maximum Detected Concentration	Number of Detects	Number of Values	Detection Frequency (%)	Geometric Mean	Layer Exposure Concentration	Exposure Concentration Comment
DIELDRIN		MG/KG						
					Average Exposure Concentration:		.015667	
ENDOSULFAN II		MG/KG						
1			0	23	0	.004611	0.000000	NOT DETECTED
2	.037000	.0370000	1	10	10	.003466	.037000	MAX DETECTED
3	.053000	.0530000	1	11	9	.004903	.053000	MAX DETECTED
					Average Exposure Concentration:		.030000	
ENDOSULFAN SULFATE		MG/KG						
1	.004800	.0150000	3	23	13	.005673	.015000	MAX DETECTED
2			0	10	0	.003225	0.000000	NOT DETECTED
3			0	11	0	.004445	0.000000	NOT DETECTED
					Average Exposure Concentration:		.005000	
ENDRIN		MG/KG						
1	.008700	.0140000	2	23	9	.005392	.014000	MAX DETECTED
2			0	10	0	.003225	0.000000	NOT DETECTED
3			0	11	0	.004445	0.000000	NOT DETECTED
					Average Exposure Concentration:		.004667	
ENDRIN ALDEHYDE		MG/KG						
1	.007100	.0071000	1	23	4	.004889	.007100	MAX DETECTED
2			0	10	0	.003225	0.000000	NOT DETECTED
3			0	11	0	.004445	0.000000	NOT DETECTED
					Average Exposure Concentration:		.002367	
ETHYLBENZENE		MG/KG						
1	.380000	.3800000	1	72	1	.006156	.380000	MAX DETECTED
2	.072000	.0720000	1	32	3	.009029	.072000	MAX DETECTED
3	.025000	140.0000000	3	15	20	.029256	140.000000	MAX DETECTED

(1) Layer 1: 1 to 3 feet; Layer 2: 3 to 8 feet; Layer 3: 8 to 12 feet.

Soil Layer (1)	Minimum Detected Concentration	Maximum Detected Concentration	Number of Detects	Number of Values	Detection Frequency (%)	Geometric Mean	Layer Exposure Concentration	Exposure Concentration Comment
ETHYLBENZENE		MG/KG						
					Average Exposure Concentration:		46.817333	
FLUORANTHENE		MG/KG						
1	.110000	160.0000000	19	23	83	1.411065	33.000000	95% UCL
2	.380000	.3800000	1	10	10	.372449	.380000	MAX DETECTED
3	.240000	4.4000000	3	11	27	.468389	4.400000	MAX DETECTED
					Average Exposure Concentration:		12.593333	
FLUORENE		MG/KG						
1	.110000	8.4000000	9	23	39	.305271	8.400000	MAX DETECTED
2			0	10	0	.398656	0.000000	NOT DETECTED
3			0	11	0	.394177	0.000000	NOT DETECTED
					Average Exposure Concentration:		2.800000	
GAMMA-CHLORDANE		MG/KG						
1	.003000	.0034000	2	23	9	.002654	.003400	MAX DETECTED
2			0	10	0	.001652	0.000000	NOT DETECTED
3			0	11	0	.002298	0.000000	NOT DETECTED
					Average Exposure Concentration:		.001133	
HEPTACHLOR EPOXIDE		MG/KG						
1	.002600	.0300000	2	23	9	.002623	.030000	MAX DETECTED
2			0	10	0	.001652	0.000000	NOT DETECTED
3			0	11	0	.002298	0.000000	NOT DETECTED
					Average Exposure Concentration:		.010000	
INDENO(1,2,3-CD)PYRENE		MG/KG						
1	.200000	28.0000000	14	23	61	.584350	3.900000	95% UCL
2			0	10	0	.398656	0.000000	NOT DETECTED
3	1.100000	1.1000000	1	11	9	.399455	1.100000	MAX DETECTED

(1) Layer 1: 1 to 3 feet; Layer 2: 3 to 8 feet; Layer 3: 8 to 12 feet.

Soil Layer (1)	Minimum Detected Concentration	Maximum Detected Concentration	Number of Detects	Number of Values	Detection Frequency (%)	Geometric Mean	Layer Exposure Concentration	Exposure Concentration Comment
INDENO(1,2,3-CD)PYRENE		MG/KG						
					Average Exposure Concentration:		1.666667	
IRON		MG/KG						
1	7100.000000	19200.0000000	23	23	100	11580.755600	13000.000000	95% UCL
2	4370.000000	275000.0000000	10	10	100	17634.279800	130000.000000	95% UCL
3	3330.000000	20000.0000000	11	11	100	6317.002000	13000.000000	95% UCL
					Average Exposure Concentration:		52000.000000	
LEAD		MG/KG						
1	3.600000	274.0000000	23	23	100	37.062300	160.000000	95% UCL
2	1.600000	80.1000000	10	10	100	8.712000	80.000000	MAX DETECTED
3	1.400000	453.0000000	11	11	100	5.429200	450.000000	MAX DETECTED
					Average Exposure Concentration:		230.000000	
MAGNESIUM		MG/KG						
1	1750.000000	11600.0000000	23	23	100	5205.130200	7600.000000	95% UCL
2	2070.000000	7580.0000000	10	10	100	3990.213400	6000.000000	95% UCL
3	3070.000000	20600.0000000	11	11	100	6229.180100	11000.000000	95% UCL
					Average Exposure Concentration:		8200.000000	
MANGANESE		MG/KG						
1	201.000000	2060.0000000	23	23	100	644.322900	1000.000000	95% UCL
2	185.000000	20700.0000000	10	10	100	1053.212200	21000.000000	MAX DETECTED
3	155.000000	913.0000000	11	11	100	363.325800	570.000000	95% UCL
					Average Exposure Concentration:		7523.333333	
MERCURY		MG/KG						
1	.120000	.1200000	1	23	4	.056400	.120000	MAX DETECTED
2			0	10	0	.061400	0.000000	NOT DETECTED
3	.140000	.1400000	1	11	9	.056400	.140000	MAX DETECTED

(1) Layer 1: 1 to 3 feet; Layer 2: 3 to 8 feet; Layer 3: 8 to 12 feet.

SUMMARY OF EXPOSURE CONCENTRATIONS IN SOIL BY LAYER
FUTURE LAND USE - SUB-AREAS A2, A3, AND A4

Soil Layer (1)	Minimum Detected Concentration	Maximum Detected Concentration	Number of Detects	Number of Values	Detection Frequency (%)	Geometric Mean	Layer Exposure Concentration	Exposure Concentration Comment
MERCURY		MG/KG						
					Average Exposure Concentration:		.086667	
NAPHTHALENE		MG/KG						
1	.950000	.9500000	1	23	4	.316366	.950000	MAX DETECTED
2			0	10	0	.398656	0.000000	NOT DETECTED
3	2.700000	2.7000000	1	11	9	.383984	2.700000	MAX DETECTED
					Average Exposure Concentration:		1.216667	
NICKEL		MG/KG						
1	8.600000	32.3000000	21	23	91	13.177400	18.000000	95% UCL
2	10.900000	18.7000000	7	10	70	10.068400	19.000000	MAX DETECTED
3	11.100000	70.2000000	5	11	45	10.019200	70.000000	MAX DETECTED
					Average Exposure Concentration:		35.666667	
PHENANTHRENE		MG/KG						
1	.130000	95.0000000	17	23	74	.959776	15.000000	95% UCL
2	.180000	.1800000	1	10	10	.345641	.180000	MAX DETECTED
3	.140000	2.7000000	3	11	27	.411949	2.700000	MAX DETECTED
					Average Exposure Concentration:		5.960000	
PHENOL		MG/KG						
1	1.300000	1.3000000	1	23	4	.343539	1.300000	MAX DETECTED
2			0	10	0	.398656	0.000000	NOT DETECTED
3	1.000000	1.1000000	2	11	18	.401296	1.100000	MAX DETECTED
					Average Exposure Concentration:		.800000	
POTASSIUM		MG/KG						
1	138.000000	452.0000000	16	23	70	170.085300	350.000000	95% UCL
2	146.000000	497.0000000	5	10	50	166.867500	500.000000	MAX DETECTED
3	143.000000	226.0000000	2	11	18	274.843000	230.000000	MAX DETECTED

(1) Layer 1: 1 to 3 feet; Layer 2: 3 to 8 feet; Layer 3: 8 to 12 feet.

Soil Layer (1)	Minimum Detected Concentration	Maximum Detected Concentration	Number of Detects	Number of Values	Detection Frequency (%)	Geometric Mean	Layer Exposure Concentration	Exposure Concentration Comment
POTASSIUM		MG/KG						
					Average Exposure Concentration:		360.000000	
PYRENE		MG/KG						
1	.120000	130.0000000	19	23	83	1.343186	31.000000	95% UCL
2	.320000	.3200000	1	10	10	.366098	.320000	MAX DETECTED
3	.080000	5.1000000	4	11	36	.457373	5.100000	MAX DETECTED
					Average Exposure Concentration:		12.140000	
SELENIUM		MG/KG						
1	.820000	1.3000000	2	23	9	.360500	1.300000	MAX DETECTED
2	2.000000	2.0000000	1	10	10	.418700	2.000000	MAX DETECTED
3			0	11	0	.319500	0.000000	NOT DETECTED
					Average Exposure Concentration:		1.100000	
SILVER		MG/KG						
1			0	23	0	1.086400	0.000000	NOT DETECTED
2	4.400000	4.4000000	1	10	10	1.341100	4.400000	MAX DETECTED
3	6.100000	11.8000000	2	11	18	1.533400	12.000000	MAX DETECTED
					Average Exposure Concentration:		5.466667	
SODIUM		MG/KG						
1	112.000000	189.0000000	3	23	13	61.301200	190.000000	MAX DETECTED
2			0	10	0	61.657800	0.000000	NOT DETECTED
3	122.000000	195.0000000	3	11	27	69.165300	200.000000	MAX DETECTED
					Average Exposure Concentration:		130.000000	
TETRACHLOROETHENE		MG/KG						
1	.000800	.0260000	11	72	15	.005122	.026000	MAX DETECTED
2	.000700	11.0000000	21	32	66	.013722	.640000	95% UCL
3	.001000	1200.0000000	8	15	53	.047584	1200.000000	MAX DETECTED

(1) Layer 1: 1 to 3 feet; Layer 2: 3 to 8 feet; Layer 3: 8 to 12 feet.

Soil Layer (1)	Minimum Detected Concentration	Maximum Detected Concentration	Number of Detects	Number of Values	Detection Frequency (%)	Geometric Mean	Layer Exposure Concentration	Exposure Concentration Comment
TETRACHLOROETHENE		MG/KG						
					Average Exposure Concentration:		400.222000	
TOLUENE		MG/KG						
1	.010000	.0270000	3	72	4	.006074	.027000	MAX DETECTED
2	.017000	.0200000	2	32	6	.008961	.020000	MAX DETECTED
3	.058000	190.0000000	3	15	20	.031146	190.000000	MAX DETECTED
					Average Exposure Concentration:		63.349000	
TRICHLOROETHENE		MG/KG						
1	.000800	4.1000000	60	72	83	.015716	.100000	95% UCL
2	.001000	47.0000000	30	32	94	.075982	30.000000	95% UCL
3	.002000	120.0000000	15	15	100	.129503	120.000000	MAX DETECTED
					Average Exposure Concentration:		50.033333	
VANADIUM		MG/KG						
1	12.100000	26.1000000	21	23	91	15.470000	19.000000	95% UCL
2	13.800000	32.9000000	9	10	90	17.903600	29.000000	95% UCL
3	12.400000	23.4000000	5	11	45	9.352100	23.000000	MAX DETECTED
					Average Exposure Concentration:		23.666667	
XYLENE, TOTAL		MG/KG						
1	.550000	.5500000	1	72	1	.006189	.550000	MAX DETECTED
2	.230000	2.0000000	2	32	6	.010692	2.000000	MAX DETECTED
3	.017000	580.0000000	5	15	33	.038008	580.000000	MAX DETECTED
					Average Exposure Concentration:		194.183333	
ZINC		MG/KG						
1	14.100000	489.0000000	23	23	100	66.973700	160.000000	95% UCL
2	8.500000	105.0000000	10	10	100	30.426100	83.000000	95% UCL
3	6.200000	329.0000000	11	11	100	24.769200	330.000000	MAX DETECTED

(1) Layer 1: 1 to 3 feet; Layer 2: 3 to 8 feet; Layer 3: 8 to 12 feet.

SUMMARY OF EXPOSURE CONCENTRATIONS IN SOIL BY LAYER
FUTURE LAND USE - SUB-AREAS A2, A3, AND A4

Soil Layer (1)	Minimum Detected Concentration	Maximum Detected Concentration	Number of Detects	Number of Values	Detection Frequency (%)	Geometric Mean	Layer Exposure Concentration	Exposure Concentration Comment
ZINC		MG/KG						

Average Exposure Concentration: 191.000000

(1) Layer 1: 1 to 3 feet; Layer 2: 3 to 8 feet; Layer 3: 8 to 12 feet.

SUMMARY OF EXPOSURE CONCENTRATIONS IN SOIL BY LAYER
FUTURE LAND USE - AREA OUTSIDE OF A2, A3, AND A4

Soil Layer (1)	Minimum Detected Concentration	Maximum Detected Concentration	Number of Detects	Number of Values	Detection Frequency (%)	Geometric Mean	Layer Exposure Concentration	Exposure Concentration Comment
1,1,1-TRICHLOROETHANE		MG/KG						
1	.000800	.0008000	1	32	3	.005615	.000800	MAX DETECTED
2	.002000	.0020000	1	12	8	.006612	.002000	MAX DETECTED
3			0	14	0	.005670	0.000000	NOT DETECTED
					Average Exposure Concentration:		.000933	
1,1-DICHLOROETHANE		MG/KG						
1			0	32	0	.005964	0.000000	NOT DETECTED
2	.002000	.0020000	1	12	8	.006612	.002000	MAX DETECTED
3			0	14	0	.005670	0.000000	NOT DETECTED
					Average Exposure Concentration:		.000667	
1,2-DICHLOROETHENE (TOTAL)		MG/KG						
1	.002000	.0040000	2	32	6	.005721	.004000	MAX DETECTED
2	.120000	.1600000	2	12	17	.009804	.160000	MAX DETECTED
3			0	14	0	.005670	0.000000	NOT DETECTED
					Average Exposure Concentration:		.054667	
4,4'-DDD		MG/KG						
1	.011000	.1100000	9	21	43	.007497	.110000	MAX DETECTED
2	.180000	.1800000	1	9	11	.003492	.180000	MAX DETECTED
3	.007400	.0074000	1	10	10	.002077	.007400	MAX DETECTED
					Average Exposure Concentration:		.099133	
4,4'-DDE		MG/KG						
1	.006500	.7000000	13	21	62	.014168	.560000	95% UCL
2	.004800	.1600000	2	9	22	.003820	.160000	MAX DETECTED
3	.026000	.0260000	1	10	10	.002355	.026000	MAX DETECTED
					Average Exposure Concentration:		.248667	

(1) Layer 1: 1 to 3 feet; Layer 2: 3 to 8 feet; Layer 3: 8 to 12 feet.

SUMMARY OF EXPOSURE CONCENTRATIONS IN SOIL BY LAYER
FUTURE LAND USE - AREA OUTSIDE OF A2, A3, AND A4

Soil Layer (1)	Minimum Detected Concentration	Maximum Detected Concentration	Number of Detects	Number of Values	Detection Frequency (%)	Geometric Mean	Layer Exposure Concentration	Exposure Concentration Comment
4,4'-DDT		MG/KG						
1	.003700	.9300000	13	21	62	.013600	.590000	95% UCL
2	.005400	.1600000	2	9	22	.003871	.160000	MAX DETECTED
3	.019000	.0190000	1	10	10	.002282	.019000	MAX DETECTED
					Average Exposure Concentration:		.256333	
ACENAPHTHENE		MG/KG						
1	.055000	.3800000	3	21	14	.215379	.380000	MAX DETECTED
2			0	9	0	.210587	0.000000	NOT DETECTED
3			0	10	0	.179289	0.000000	NOT DETECTED
					Average Exposure Concentration:		.126667	
ALPHA-CHLORDANE		MG/KG						
1	.004800	.0048000	1	21	5	.001454	.004800	MAX DETECTED
2			0	9	0	.001096	0.000000	NOT DETECTED
3			0	10	0	.000937	0.000000	NOT DETECTED
					Average Exposure Concentration:		.001600	
ALUMINUM		MG/KG						
1	2430.000000	5920.0000000	21	21	100	3940.646200	4500.000000	95% UCL
2	1790.000000	4940.0000000	9	9	100	3086.212800	4300.000000	95% UCL
3	1110.000000	3440.0000000	10	10	100	1857.896100	2500.000000	95% UCL
					Average Exposure Concentration:		3766.666667	
ANTHRACENE		MG/KG						
1	.085000	.8600000	5	21	24	.232107	.860000	MAX DETECTED
2	.089000	.0890000	1	9	11	.193562	.089000	MAX DETECTED
3	.120000	.1200000	1	10	10	.172656	.120000	MAX DETECTED
					Average Exposure Concentration:		.356333	
ANTIMONY		MG/KG						
1	2.300000	2.3000000	1	21	5	1.160300	2.300000	MAX DETECTED

(1) Layer 1: 1 to 3 feet; Layer 2: 3 to 8 feet; Layer 3: 8 to 12 feet.

SUMMARY OF EXPOSURE CONCENTRATIONS IN SOIL BY LAYER
FUTURE LAND USE - AREA OUTSIDE OF A2, A3, AND A4

Soil Layer (1)	Minimum Detected Concentration	Maximum Detected Concentration	Number of Detects	Number of Values	Detection Frequency (%)	Geometric Mean	Layer Exposure Concentration	Exposure Concentration Comment
ANTIMONY		MG/KG						
2			0	9	0	1.317600	0.000000	NOT DETECTED
3			0	10	0	1.091900	0.000000	NOT DETECTED
					Average Exposure Concentration:		.766667	
ARSENIC		MG/KG						
1	.970000	6.0000000	21	21	100	2.796600	3.600000	95% UCL
2	.700000	9.4000000	8	9	89	1.986600	9.400000	MAX DETECTED
3	.830000	4.4000000	8	10	80	1.118400	3.300000	95% UCL
					Average Exposure Concentration:		5.433333	
BARIUM		MG/KG						
1	37.400000	173.0000000	21	21	100	78.374600	100.000000	95% UCL
2	20.700000	197.0000000	9	9	100	46.632600	130.000000	95% UCL
3	19.000000	56.3000000	3	10	30	9.034900	56.000000	MAX DETECTED
					Average Exposure Concentration:		95.333333	
BENZO(A)ANTHRACENE		MG/KG						
1	.064000	3.3000000	8	21	38	.301147	3.300000	MAX DETECTED
2	.300000	.3000000	1	9	11	.221539	.300000	MAX DETECTED
3	.100000	.1000000	1	10	10	.169542	.100000	MAX DETECTED
					Average Exposure Concentration:		1.233333	
BENZO(A)PYRENE		MG/KG						
1	.120000	2.9000000	7	21	33	.317984	2.900000	MAX DETECTED
2	.270000	.2700000	1	9	11	.218962	.270000	MAX DETECTED
3	.140000	.1400000	1	10	10	.175335	.140000	MAX DETECTED
					Average Exposure Concentration:		1.103333	
BENZO(B)FLUORANTHENE		MG/KG						
1	.130000	3.4000000	8	21	38	.337242	3.400000	MAX DETECTED
2	.340000	.3400000	1	9	11	.224640	.340000	MAX DETECTED

(1) Layer 1: 1 to 3 feet; Layer 2: 3 to 8 feet; Layer 3: 8 to 12 feet.

SUMMARY OF EXPOSURE CONCENTRATIONS IN SOIL BY LAYER
FUTURE LAND USE - AREA OUTSIDE OF A2, A3, AND A4

Soil Layer (1)	Minimum Detected Concentration	Maximum Detected Concentration	Number of Detects	Number of Values	Detection Frequency (%)	Geometric Mean	Layer Exposure Concentration	Exposure Concentration Comment
BENZO(B)FLUORANTHENE		MG/KG						
3	.170000	.1700000	1	10	10	.178770	.170000	MAX DETECTED
					Average Exposure Concentration:		1.303333	
BENZO(G,H,I)PERYLENE		MG/KG						
1	.290000	2.0000000	5	21	24	.305882	2.000000	MAX DETECTED
2	.350000	.3500000	1	9	11	.227443	.350000	MAX DETECTED
3	.400000	.4000000	1	10	10	.194747	.400000	MAX DETECTED
					Average Exposure Concentration:		.916667	
BENZO(K)FLUORANTHENE		MG/KG						
1	.098000	2.0000000	7	21	33	.293977	2.000000	MAX DETECTED
2	.240000	.2400000	1	9	11	.216113	.240000	MAX DETECTED
3	.083000	.0830000	1	10	10	.166401	.083000	MAX DETECTED
					Average Exposure Concentration:		.774333	
CADMIUM		MG/KG						
1	2.300000	4.3000000	2	21	10	.659700	4.300000	MAX DETECTED
2			0	9	0	.672400	0.000000	NOT DETECTED
3			0	10	0	.538400	0.000000	NOT DETECTED
					Average Exposure Concentration:		1.433333	
CARBAZOLE		MG/KG						
1	.077000	.2500000	5	21	24	.202715	.250000	MAX DETECTED
2			0	9	0	.210587	0.000000	NOT DETECTED
3			0	10	0	.179289	0.000000	NOT DETECTED
					Average Exposure Concentration:		.083333	
CHROMIUM		MG/KG						
1	6.000000	43.2000000	21	21	100	10.745600	15.000000	95% UCL
2	4.000000	14.3000000	8	9	89	7.837300	13.000000	95% UCL
3	2.300000	11.0000000	10	10	100	4.790800	7.800000	95% UCL

(1) Layer 1: 1 to 3 feet; Layer 2: 3 to 8 feet; Layer 3: 8 to 12 feet.

SUMMARY OF EXPOSURE CONCENTRATIONS IN SOIL BY LAYER
FUTURE LAND USE - AREA OUTSIDE OF A2, A3, AND A4

Soil Layer (1)	Minimum Detected Concentration	Maximum Detected Concentration	Number of Detects	Number of Values	Detection Frequency (%)	Geometric Mean	Layer Exposure Concentration	Exposure Concentration Comment
CHROMIUM		MG/KG						
					Average Exposure Concentration:		11.933333	
CHRYSENE		MG/KG						
1	.068000	3.4000000	8	21	38	.321533	3.400000	MAX DETECTED
2	.380000	.3800000	1	9	11	.227443	.380000	MAX DETECTED
3	.140000	.1400000	1	10	10	.175335	.140000	MAX DETECTED
					Average Exposure Concentration:		1.306667	
COBALT		MG/KG						
1	11.000000	11.0000000	1	21	5	5.770200	11.000000	MAX DETECTED
2			0	9	0	6.632600	0.000000	NOT DETECTED
3			0	10	0	5.433000	0.000000	NOT DETECTED
					Average Exposure Concentration:		3.666667	
COPPER		MG/KG						
1	6.700000	937.0000000	21	21	100	26.151300	120.000000	95% UCL
2	4.500000	43.1000000	6	9	67	7.498500	29.000000	95% UCL
3	5.600000	14.5000000	8	10	80	5.962000	12.000000	95% UCL
					Average Exposure Concentration:		53.666667	
DIBENZ(A,H)ANTHRACENE		MG/KG						
1	.310000	.3100000	1	21	5	.236536	.310000	MAX DETECTED
2			0	9	0	.210587	0.000000	NOT DETECTED
3			0	10	0	.179289	0.000000	NOT DETECTED
					Average Exposure Concentration:		.103333	
DIBENZOFURAN		MG/KG						
1	.050000	.1600000	2	21	10	.208513	.160000	MAX DETECTED
2			0	9	0	.210587	0.000000	NOT DETECTED
3			0	10	0	.179289	0.000000	NOT DETECTED

(1) Layer 1: 1 to 3 feet; Layer 2: 3 to 8 feet; Layer 3: 8 to 12 feet.

Soil Layer (1)	Minimum Detected Concentration	Maximum Detected Concentration	Number of Detects	Number of Values	Detection Frequency (%)	Geometric Mean	Layer Exposure Concentration	Exposure Concentration Comment
DIBENZOFURAN		MG/KG						
					Average Exposure Concentration:		.053333	
DIELDRIN		MG/KG						
1	.016000	.0160000	1	21	5	.002877	.016000	MAX DETECTED
2			0	9	0	.002106	0.000000	NOT DETECTED
3			0	10	0	.001793	0.000000	NOT DETECTED
					Average Exposure Concentration:		.005333	
ENDOSULFAN SULFATE		MG/KG						
1			0	21	0	.002593	0.000000	NOT DETECTED
2	.007700	.0077000	1	9	11	.002460	.007700	MAX DETECTED
3			0	10	0	.001793	0.000000	NOT DETECTED
					Average Exposure Concentration:		.002567	
ENDRIN		MG/KG						
1	.005100	.0150000	2	21	10	.003014	.015000	MAX DETECTED
2	.004700	.0047000	1	9	11	.002329	.004700	MAX DETECTED
3	.005300	.0053000	1	10	10	.002003	.005300	MAX DETECTED
					Average Exposure Concentration:		.008333	
ENDRIN ALDEHYDE		MG/KG						
1	.005800	.0058000	1	21	5	.002734	.005800	MAX DETECTED
2	.005900	.0059000	1	9	11	.002388	.005900	MAX DETECTED
3			0	10	0	.001793	0.000000	NOT DETECTED
					Average Exposure Concentration:		.003900	
ETHYLBENZENE		MG/KG						
1	.003000	.0030000	1	32	3	.005852	.003000	MAX DETECTED
2			0	12	0	.007246	0.000000	NOT DETECTED
3			0	14	0	.005670	0.000000	NOT DETECTED

(1) Layer 1: 1 to 3 feet; Layer 2: 3 to 8 feet; Layer 3: 8 to 12 feet.

SUMMARY OF EXPOSURE CONCENTRATIONS IN SOIL BY LAYER
FUTURE LAND USE - AREA OUTSIDE OF A2, A3, AND A4

Soil Layer (1)	Minimum Detected Concentration	Maximum Detected Concentration	Number of Detects	Number of Values	Detection Frequency (%)	Geometric Mean	Layer Exposure Concentration	Exposure Concentration Comment
ETHYLBENZENE		MG/KG						
					Average Exposure Concentration:		.001000	
FLUORANTHENE		MG/KG						
1	.086000	7.6000000	11	21	52	.372412	1.700000	95% UCL
2	.200000	.7700000	2	9	22	.222939	.770000	MAX DETECTED
3	.260000	.2600000	1	10	10	.186532	.260000	MAX DETECTED
					Average Exposure Concentration:		.910000	
FLUORENE		MG/KG						
1	.051000	.3900000	3	21	14	.214391	.390000	MAX DETECTED
2			0	9	0	.210587	0.000000	NOT DETECTED
3			0	10	0	.179289	0.000000	NOT DETECTED
					Average Exposure Concentration:		.130000	
GAMMA-CHLORDANE		MG/KG						
1			0	21	0	.001343	0.000000	NOT DETECTED
2			0	9	0	.001096	0.000000	NOT DETECTED
3	.001800	.0018000	1	10	10	.001004	.001800	MAX DETECTED
					Average Exposure Concentration:		.000600	
INDENO(1,2,3-CD)PYRENE		MG/KG						
1	.300000	1.8000000	5	21	24	.301539	1.800000	MAX DETECTED
2			0	9	0	.210587	0.000000	NOT DETECTED
3			0	10	0	.179289	0.000000	NOT DETECTED
					Average Exposure Concentration:		.600000	
IRON		MG/KG						
1	5870.000000	30100.0000000	21	21	100	11204.827600	15000.000000	95% UCL
2	3730.000000	11100.0000000	9	9	100	7037.441800	10000.000000	95% UCL
3	3330.000000	9980.0000000	10	10	100	4942.863000	6900.000000	95% UCL

(1) Layer 1: 1 to 3 feet; Layer 2: 3 to 8 feet; Layer 3: 8 to 12 feet.

SUMMARY OF EXPOSURE CONCENTRATIONS IN SOIL BY LAYER
FUTURE LAND USE - AREA OUTSIDE OF A2, A3, AND A4

Soil Layer (1)	Minimum Detected Concentration	Maximum Detected Concentration	Number of Detects	Number of Values	Detection Frequency (%)	Geometric Mean	Layer Exposure Concentration	Exposure Concentration Comment
IRON		MG/KG						
					Average Exposure Concentration:		10633.333333	
LEAD		MG/KG						
1	4.100000	373.0000000	21	21	100	14.572000	68.000000	95% UCL
2	1.900000	37.0000000	8	9	89	4.846700	31.000000	95% UCL
3	1.000000	7.4000000	10	10	100	2.272800	4.800000	95% UCL
					Average Exposure Concentration:		34.600000	
MAGNESIUM		MG/KG						
1	1150.000000	15000.0000000	21	21	100	3338.243300	6300.000000	95% UCL
2	720.000000	7230.0000000	9	9	100	2666.174600	6800.000000	95% UCL
3	703.000000	8100.0000000	10	10	100	2347.250700	6500.000000	95% UCL
					Average Exposure Concentration:		6533.333333	
MANGANESE		MG/KG						
1	168.000000	1960.0000000	21	21	100	617.698200	1000.000000	95% UCL
2	87.200000	1560.0000000	9	9	100	355.455500	1600.000000	MAX DETECTED
3	29.700000	562.0000000	10	10	100	130.634100	390.000000	95% UCL
					Average Exposure Concentration:		996.666667	
NICKEL		MG/KG						
1	9.100000	40.7000000	17	21	81	10.974800	17.000000	95% UCL
2	9.600000	17.2000000	4	9	44	8.014900	17.000000	MAX DETECTED
3	14.100000	14.1000000	1	10	10	4.917500	14.000000	MAX DETECTED
					Average Exposure Concentration:		16.000000	
PHENANTHRENE		MG/KG						
1	.170000	3.1000000	7	21	33	.319801	3.100000	MAX DETECTED
2	.440000	.4400000	1	9	11	.231181	.440000	MAX DETECTED
3	.150000	.1500000	1	10	10	.176549	.150000	MAX DETECTED

(1) Layer 1: 1 to 3 feet; Layer 2: 3 to 8 feet; Layer 3: 8 to 12 feet.

SUMMARY OF EXPOSURE CONCENTRATIONS IN SOIL BY LAYER
FUTURE LAND USE - AREA OUTSIDE OF A2, A3, AND A4

Soil Layer (1)	Minimum Detected Concentration	Maximum Detected Concentration	Number of Detects	Number of Values	Detection Frequency (%)	Geometric Mean	Layer Exposure Concentration	Exposure Concentration Comment
PHENANTHRENE		MG/KG						
					Average Exposure Concentration:		1.230000	
POTASSIUM		MG/KG						
1	157.000000	1090.0000000	15	21	71	322.531200	520.000000	95% UCL
2	264.000000	465.0000000	3	9	33	210.418800	460.000000	MAX DETECTED
3	152.000000	269.0000000	2	10	20	170.136300	270.000000	MAX DETECTED
					Average Exposure Concentration:		416.666667	
PYRENE		MG/KG						
1	.079000	6.6000000	11	21	52	.361152	1.600000	95% UCL
2	.190000	.6400000	2	9	22	.217174	.640000	MAX DETECTED
3	.300000	.3000000	1	10	10	.189218	.300000	MAX DETECTED
					Average Exposure Concentration:		.846667	
SELENIUM		MG/KG						
1			0	21	0	.335400	0.000000	NOT DETECTED
2	1.300000	1.3000000	1	9	11	.446800	1.300000	MAX DETECTED
3			0	10	0	.326000	0.000000	NOT DETECTED
					Average Exposure Concentration:		.433333	
SODIUM		MG/KG						
1	129.000000	921.0000000	6	21	29	81.932800	920.000000	MAX DETECTED
2	111.000000	536.0000000	2	9	22	81.426400	540.000000	MAX DETECTED
3	107.000000	107.0000000	1	10	10	58.451700	110.000000	MAX DETECTED
					Average Exposure Concentration:		523.333333	
TETRACHLOROETHENE		MG/KG						
1	.001000	.0020000	4	32	13	.005115	.002000	MAX DETECTED
2	.002000	.0100000	2	12	17	.006950	.010000	MAX DETECTED
3	.003000	.0110000	2	14	14	.005637	.011000	MAX DETECTED

(1) Layer 1: 1 to 3 feet; Layer 2: 3 to 8 feet; Layer 3: 8 to 12 feet.

SUMMARY OF EXPOSURE CONCENTRATIONS IN SOIL BY LAYER
FUTURE LAND USE - AREA OUTSIDE OF A2, A3, AND A4

Soil Layer (1)	Minimum Detected Concentration	Maximum Detected Concentration	Number of Detects	Number of Values	Detection Frequency (%)	Geometric Mean	Layer Exposure Concentration	Exposure Concentration Comment
TETRACHLOROETHENE		MG/KG						
					Average Exposure Concentration:		.007667	
TRICHLOROETHENE		MG/KG						
1	.000700	.0310000	7	32	22	.005995	.031000	MAX DETECTED
2	.002000	.0630000	4	12	33	.008943	.063000	MAX DETECTED
3	.000600	.0460000	4	14	29	.004670	.046000	MAX DETECTED
					Average Exposure Concentration:		.046667	
VANADIUM		MG/KG						
1	10.800000	21.4000000	19	21	90	14.770000	19.000000	95% UCL
2	11.400000	20.7000000	6	9	67	13.391200	20.000000	95% UCL
3	10.700000	24.6000000	6	10	60	9.469700	16.000000	95% UCL
					Average Exposure Concentration:		18.333333	
XYLENE, TOTAL		MG/KG						
1	.005000	.0050000	1	32	3	.005946	.005000	MAX DETECTED
2			0	12	0	.007246	0.000000	NOT DETECTED
3			0	14	0	.005670	0.000000	NOT DETECTED
					Average Exposure Concentration:		.001667	
ZINC		MG/KG						
1	12.400000	325.0000000	21	21	100	40.589100	84.000000	95% UCL
2	6.600000	49.6000000	8	9	89	17.025300	37.000000	95% UCL
3	7.300000	30.5000000	10	10	100	12.137500	18.000000	95% UCL
					Average Exposure Concentration:		46.333333	

(1) Layer 1: 1 to 3 feet; Layer 2: 3 to 8 feet; Layer 3: 8 to 12 feet.