Third Quarterly Groundwater Level Measurements
Site-Wide Groundwater Investigation
Former Plum Brook Ordnance Works
Sandusky, Ohio

Submitted to:

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List of Acronyms

AA1	Acid Area 1
AA2	Acid Area 2
AA3	Acid Area 3
ABG	Additional Burning Ground
AR/COC	analysis request/chain of custody
BG8	G-8 Burning Ground
bgs	below ground surface
CLP	Contract Laboratory Program
COPC	chemical(s) of potential concern
D&M	Dames and Moore, Inc.
DCE	dichloroethylene
DERP	Defense Environmental Restoration Program
DI	deionized (water)
DNB	dinitrobenzene
DNT	dinitrotoluene
DO	dissolved oxygen
Eh	oxidation-reduction potential
EPA	U.S. Environmental Protection Agency
ft/day	feet per day
FUDS	Formerly Used Defense Site
GWI	groundwater investigation
H_2S	hydrogen sulfide
HI	hazard index
HSA	hollow-stem auger
IT	IT Corporation
ITEMS™	IT Environmental Management System™
µg/L	micrograms per liter
µm	micronmeter
mg/L	milligram per liter
MK	Morrison-Knudsen Ferguson Corporation
msl	mean sea level
NASA	National Aeronautics and Space Administration

List of Acronyms *(Continued)*

NGVD	National Geodetic Vertical Datum
nm	nanometer
PBOW	Plum Brook Ordnance Works
PBS	Plum Brook Station
PCB	polychlorinated biphenyl
PID	photoionization detector
PRRWP	Pentolite Road Red Water Ponds
PVC	polyvinyl chloride
QA	quality assurance
QAPP	quality assurance project plan
QC	quality control
RBC	risk-based concentration
SAP	sampling and analysis plan
SSAP	site-specific safety and analysis plan
SVOC	semivolatile organic compounds
TCA	trichloroethane
TCE	trichloroethene
TNB	trinitrobenzene
TNT	trinitrotoluene
TNTA	TNT Manufacturing Area A
TNTB	TNT Manufacturing Area B
TNTC	TNT Manufacturing Area C
TOC	total organic carbon
USACE	U.S. Army Corps of Engineers
VOC	volatile organic compounds
WARWP	West Area Red Water Ponds

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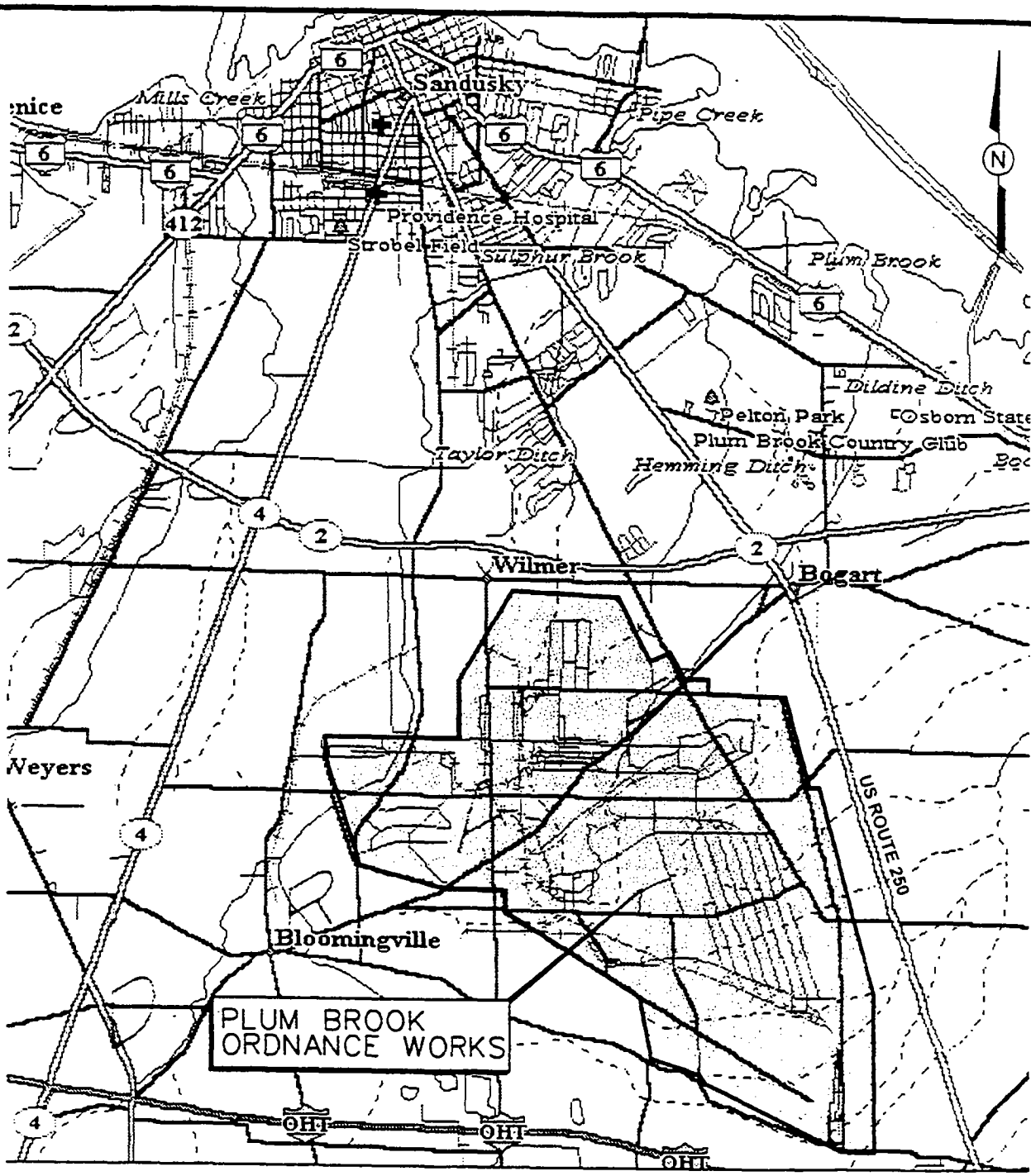
1.0 Introduction

IT Corporation (IT) conducted the third of four quarterly groundwater level measurement events of the overburden and bedrock water-bearing zones at the former Plum Brook Ordnance Works (PBOW) on February 24, 1998. From November 13 through 24, 1997, IT also conducted the first semiannual site-wide groundwater sampling event at the subject facility. PBOW is located in Sandusky, Erie County, Ohio (Figure 1-1). It is being investigated under the Defense Environmental Restoration Program (DERP) for Formerly Used Defense Site (FUDS) and is being managed and technically overseen by the Nashville District of the U.S. Army Corps of Engineers (USACE). This 9,000-acre facility was used for the manufacture of explosives during World War II. The site is currently owned by the National Aeronautics and Space Administration (NASA) and operated as the Plum Brook Station (PBS) by the NASA Lewis Research Center based in Cleveland, Ohio.

The third quarterly groundwater level measurement event was conducted as part of the ongoing site-wide groundwater investigation (GWI), as prescribed in the May 1997 site-specific sampling and analysis plan (SSAP) (Attachment VI) for the GWI (IT, 1997a), under contract to USACE, Nashville District.

The purpose of the quarterly groundwater level measurements is to provide temporal as well as spatial data for evaluating the groundwater flow regime in both overburden and bedrock water-bearing zones. The quarterly water level measurements help to determine the seasonal fluctuation of groundwater levels and the hydraulic connectivity between the two water-bearing zones in various areas of concern that have been identified at the facility (Figure 1-2). The third quarterly event included both existing wells that were measured during the second quarterly monitoring in November 1997 and new wells installed in October 1997.

The first semiannual groundwater sampling was conducted to acquire additional groundwater quality data on a site-wide basis that can be used to determine if there are hazardous substances present at the site at a concentration ~~in a manner~~ that constitutes unacceptable risk to human health and the environment and to aid in evaluation of contaminant fate and transport pathways. This groundwater sampling episode is believed to represent a relatively dry season with low groundwater levels, especially in the overburden water-bearing zone.



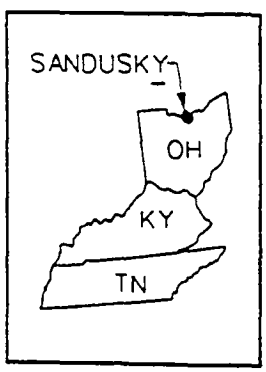


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FIGURE 1-1
VICINITY MAP

PLUM BROOK ORDNANCE WORKS
SANDUSKY, OHIO

INTERNATIONAL TECHNOLOGY CORPORATION

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DRAWN BY: D. BILLINGSLEY	DRAWN BY: RVANDERG	ENGR. CHCK. BY: D KESSLER	PROJ. MGR: M SPANGBERG
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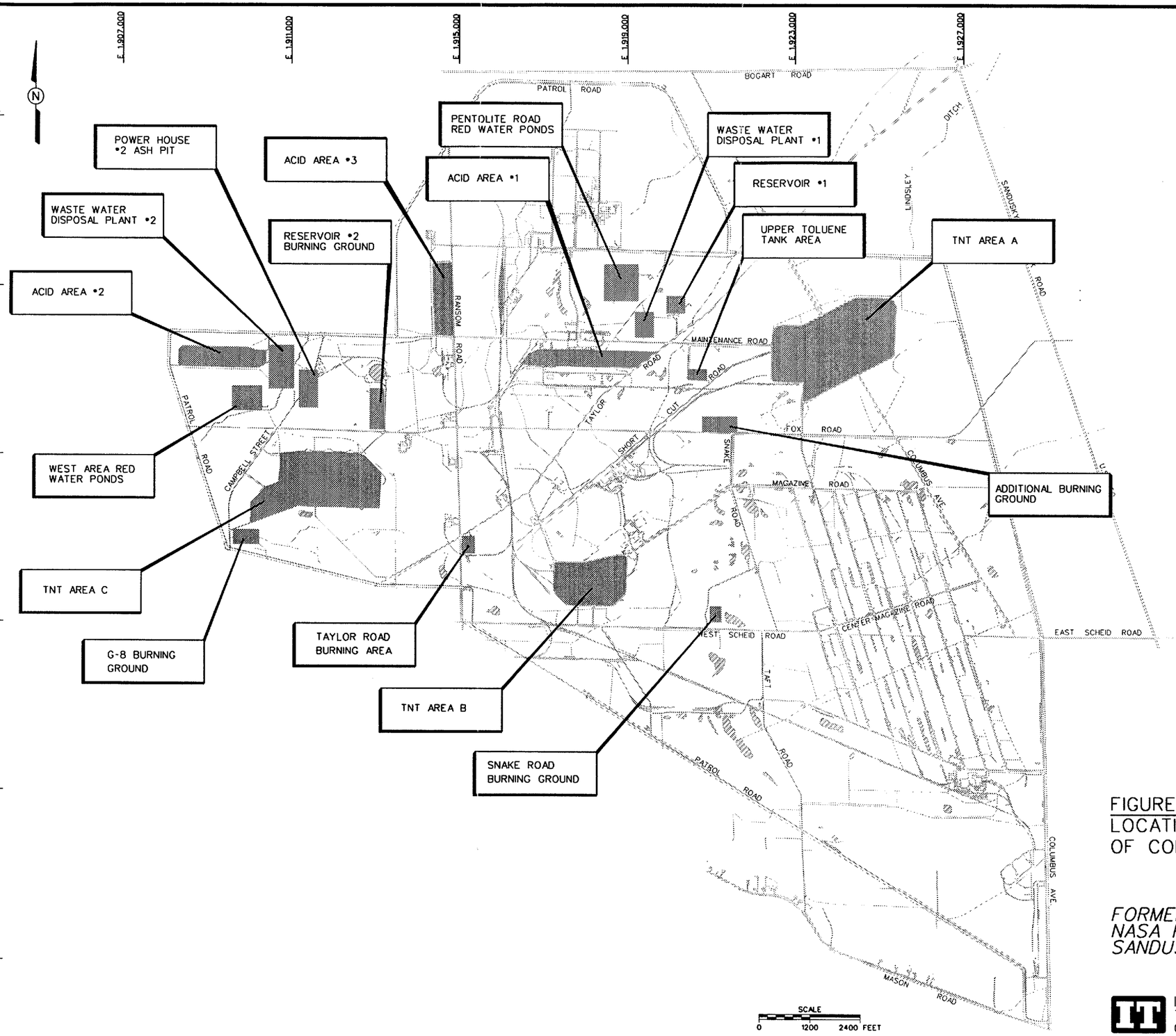

LEGEND:

- AREAS OF CONCERN
- BUILDINGS
- RAILROAD
- SURFACE WATER
- DITCH
- FENCE (PBOW BOUNDARY)

FIGURE 1-2
LOCATIONS OF AREA OF CONCERN

FORMER PLUM BROOK ORDNANCE WORKS
NASA PLUM BROOK STATION
SANDUSKY, OHIO

INTERNATIONAL TECHNOLOGY CORPORATION

STARTING DATE: 9/3/98	DATE LAST RE	DRAFT. CHCK. BY: D.HALL	INITIATOR: G.YU	DWG. NO.:
DRAWN BY: D.HALL	DRAWN BY:	ENGR. CHCK. BY: G.YU	PROJ. MGR.: SPANGBERG	PROJ. NO.: 771481

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This report presents:

- Results of the third quarterly water level measurement event
- Revisions to the report based on the technical comments on the second water level measurement event and the first semiannual groundwater sampling event
- Interpreted groundwater flow directions in both the overburden and bedrock water-bearing zones
- Groundwater level changes since the last quarterly measurement
- Recommendations for subsequent quarterly measurement and sampling events.

2.0 Field Activities

(AA2-GW-001)
one 4/2002

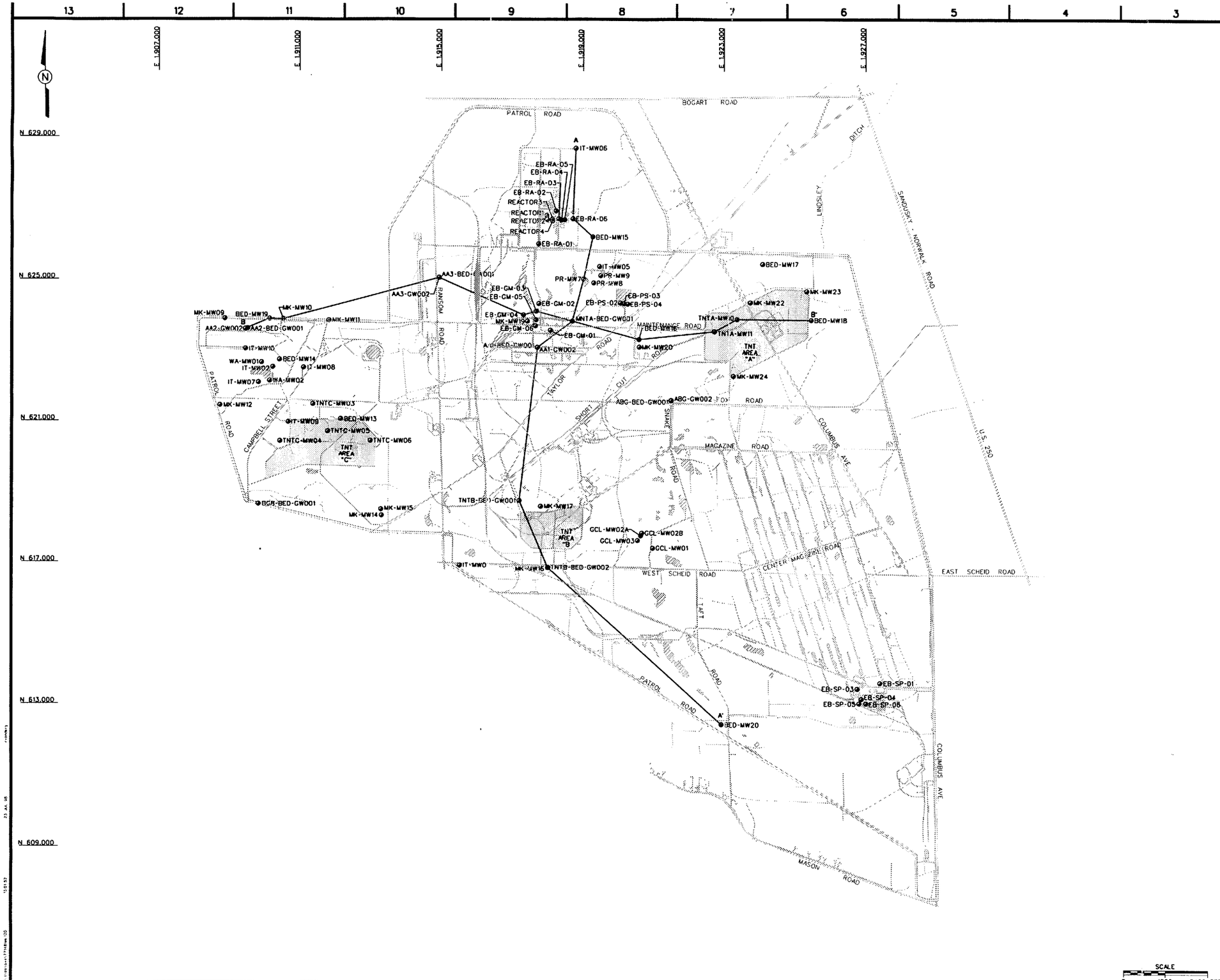
A total of 85 monitoring wells, including ~~two~~ temporary piezometers, ~~at~~ are located at the PBOW site. These wells were installed over the past 10 years by various contractors retained by either USACE or NASA for the purpose of environmental monitoring and site inspection. Of the 85 wells, 21 were installed in the bedrock water-bearing zone, 62 were placed in the overburden water-bearing zone, and 2 are temporary piezometers installed in the overburden water-bearing zone. Figure 2-1 presents locations of existing monitoring wells in relation to other PBOW site features.

2.1 Monitoring Well Installation

Three new overburden wells and eight bedrock wells were installed as part of the GWI. In addition, one piezometer was also installed in place of the monitoring well IT-AA2-GW-002 due to the borehole being dry at the time of well completion. One well cluster consisting of one overburden (piezometer at AA2) and one bedrock well was placed in each of three Acid Areas and in the Additional Burning Ground (ABG).

Monitoring wells were installed in accordance with guidelines specified in the USACE Engineering Manual EM-1110-1-4000 (USACE, 1994) and following procedures established in the site-wide sampling and analysis plan (SAP) (IT, 1996a). Specifically, monitoring wells were installed as described below.

A Dietrich D-50 truck mounted rotary drill rig was used to drill boreholes in the overburden soil for well installation. The boring was advanced by using 8.25-inch outside diameter (4.25-inch inside diameter) hollow-stem auger (HSA) to the depth of auger refusal. Soil core samples were collected continuously from the ground surface to the terminating depth using a 2-foot long and 2-inch diameter stainless steel split spoon. Soil core samples were visually examined by IT field geologist and documented on the boring logs (Appendix A). Well completion in each borehole was accomplished using 2-inch-diameter polyvinyl chloride (PVC) schedule 40 riser pipe and a 10-foot section of factory slot screen. Three discrete soil samples were collected from each borehole for geotechnical testing. At least one of the three geotechnical samples was collected from the depth interval in which well screen is to be placed to allow selection of proper size of filter materials. Soil samples were also scanned using an HNu for the presence of organic vapor. The terminating depths for the overburden well boreholes were all at the top of the bedrock with



LEGEND:

- ● ABG-BED-GW001 MONITORING WELL LOCATIONS
- BUILDINGS
- RAILROAD
- SURFACE WATER
- DITCH
- FENCE (PBOW BOUNDARY)
- A ——— A' GEOLOGICAL CROSS SECTION

NOTES:

1. SURVEY COORDINATES ARE NOT AVAILABLE FOR MONITORING WELLS PB-MW01, PB-MW02, PB-MW03, PB-MW04, AND REACTOR 5.

SCALE
0 1200 2400 FEET

NO	DATE	REVISION	BY	CHKD	DSGN ENGR	ENGR	PROJ MGR	APPR

STARTING DATE	INITIATOR	CHKD	DRAWN	CHKD	PROJECT MNGR
12/23/97	P. ELLIS	G. YU	VANDERGRIFT	E. TUMLIN	M. SPANGBERG

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SANDUSKY, OHIO

FIGURE 2-1
SITE WIDE MONITORING WELL AND CROSS SECTION LOCATION MAP

AREA	JOB NO.	DRAWING NO.	REV
SITEWIDE	771481	771481ES.120	

AA1-GW-002 at 22 feet below ground surface (bgs), AA2-GW-002 (piezometer) at 18.5 feet bgs, AA3-GW-002 at 16 feet bgs, and ABG-GW-002 at 6.75 feet bgs, respectively.

A rock core bit was used for well installation in the bedrock. The bedrock wells were installed as double-cased wells. Initially, 14-inch-diameter HSA were used to drill through the overburden materials and into the competent limestone bedrock. A 10-inch low carbon steel surface casing was placed into the borehole through the auger and was pressure grouted at the competent bedrock. The grout was allowed to cure for at least 48 hours. After the grout was completely cured and the overburden zone was completely sealed, the borehole was advanced using 8.25-inch outside diameter HSA through the center of the surface casing into the bedrock. Rock cores were visually examined for lithology description and were documented on the boring logs. Bedrock well completion in each borehole was accomplished using 2-inch-diameter PVC schedule 40 riser pipe and a 15-foot section of factory slot screen.

New monitoring well construction details are summarized in Table 2-1. Drilling logs and monitoring well construction diagrams are included in Appendix A and geotechnical testing results are included in Appendix B.

2.2 Monitoring Well Development

All newly constructed monitoring wells were developed after completion of well construction. Well development was performed by surging followed by either bailing or pumping, depending on well yield. A well development log was completed for each well to document well development procedures, field parameters, and other pertinent information. Photographs of development water and well development logs are included in Appendix C.

In addition to development of new monitoring wells, a total of 45 existing wells were purged or redeveloped prior to collecting groundwater samples for chemical analysis, following procedures specified in the SAP (IT, 1996a). Purging or redevelopment was performed to remove the stagnant water column inside the well casing and in the filter pack to allow collection of representative water samples. Purging or redevelopment was performed using a bailer or a submersible pump. During purging or redevelopment, field measurements of pH , oxidation-reduction potential (Eh), temperature, dissolved oxygen (DO), turbidity, and conductivity were collected periodically to monitor changes in water quality as purging processed (Table 2-2).

Table 2-1

New Monitoring Well Construction Details
Site-Wide Groundwater Investigation
Former Plum Brook Ordnance Works, Sandusky, Ohio

Well Identification	Well Depth (ft/bgs)	Date Installed	Casing Type (bgs)	Casing Diameter (in/bgs)	Borehole Diameter (in/bgs)	Screen Interval (ft/bgs)	Top of Filter Pack (ft/bgs)	TOC Elevation (ft/msl)	Northing (Y)	Easting (X)	Ground Elevation (ft/msl)	Well Location Description
Overburden Monitoring Wells												
AA1-GW-002	22	9/19/97	PVC (40)	2"	8.25"	6.75-21.75	6	640.85	623068.3	1917727.6	638.6	AA1 area, S of tracks, N of road
AA2-GW-002	18.5	9/22/97	PVC (40)	2"	8.25"	8.25-18.25	5.5	643.95	623589.1	1909481.3	641.5	N of road at AA2 area
AA3-GW-002	16.0	9/18/97	PVC (40)	2"	8.25"	5.75-15.75	3.0	636.11	625027.7	1914956.4	634.1	NE of Ransom/Maintenance Rd intersection.
ABG-GW-002	6.75	9/11/97	PVC (40)	2"	8.25"	2.50-6.50	2.0	661.06	621578.5	1921515.6	658.2	W of Snake/Fox Rd intersection
Bedrock Monitoring Wells												
AA1-BEDGW-001	65.0	9/24/97	Steel to 27', PVC (40) to 65'	10" to 27', 2" to 65'	14.25" to 27', 6" to 66'	49.75-64.75	45	641.04	623069.0	1917718.3	638.8	S of storage yd, N of RR tracks
AA2-BEDGW-001	43.0	10/2/97	Steel to 20', PVC (40) to 43'	10" to 20', 2" to 43'	14.25" to 20', 6" to 44'	27.75-42.75	23	644.06	623599.9	1909552.5	641.6	AA2 area in woods, 70' N of road
AA3-BEDGW-001	53.0	10/5/97	Steel to 28', PVC (40) to 53'	10" to 28', 2" to 53'	14.25" to 28', 6" to 54'	37.75-52.75	33.0	636.43	625036.6	1914957.3	634.1	NE of Ransom/Maintenance Rd intersection
ABG-BEDGW-001	21.0	9/10/97	Steel to 7', PVC (40) to 21'	10" to 7', 2" to 21'	14.25" to 7', 6" to 22'	10.75-20.75	9.0	660.59	621579.5	1921506.0	658.2	SW of Snake/Fox Rd intersection
BG8-BEDGW-001	20.0	9/20/97	Steel to 4', PVC (40) to 20'	10" to 4', 2" to 20'	14.25" to 4', 6" to 21'	4.75-19.75	4	676.56	618635.3	1909856.9	673.7	NW of Campbell/ Patrol Rd intersection
MNTA-BEDGW-001	64.0	9/22/97	Steel to 31', PVC (40) to 64'	10" to 31', 2" to 64'	14.25" to 31', 6" to 65'	48.75-63.75	44	638.40	623808.3	1918699.4	636.05	90 ft E of Bldg 7123, 15 ft west of ditch
TNTB-BEDGW-001	24.0	9/31/97	Steel to 9', PVC (40) to 24'	10" to 9', 2" to 24'	14.25" to 9', 6" to 25'	8.75-23.75	7.5	662.43	618737.5	1917218.0	659.8	48 ft S of Emergency B Rd
TNTB-BEDGW-002	24.2	9/24/97	Steel to 8', PVC (40) to 24.2'	10" to 8', 2" to 24.2'	14.25" to 8', 6" to 25.2'	13.95-23.95	11.2	673.35	616835.2	1918020.9	670.1	S of Scheid Rd, 40 ft E of MK-MW16

Elevations are with respect to North America Vertical Datum (NAVD), 1983.

bgs - Below ground surface.
ft - Feet.
in - Inches.
msl - Mean sea level.
PVC - Polyvinyl chloride.
TOC - Top of casing.

Table 2-2

Field Measurements of Groundwater Parameters
Second Quarter/First Semi-Annual Report
Former Plum Brook Ordnance Works, Sandusky, Ohio

Well Identification	Date	Conductivity (µmhos/cm)	pH	Eh (mV)	Temperatur (C°)	Turbidity (NTU)	Dissolved O (ppm)	HNu (ppm)
Overburden Wells								
GCL-MW01	11/20/97	0.837	6.37	0	12.7	289	0.48	0.2
GCL-MW02A	11/20/97	0.888	7.20	0	11.9	999	7.11	2
GCL-MW02B	11/20/97	0.933	6.82	-0.1	12.2	0	1.33	0.2
GCL-MW03	11/20/97	0.524	6.91	118.4	11.9	137	-20	0.2
IT-AA1-GW002	11/20/97	3.34	6.21	-263.8	13.0	628	3.59	0.2
IT-AA3-GW002	11/19/97	1.02	7.10	-189.6	12.1	999	4.56	0.2
IT-ABG-GW002	11/19/97	1.84	6.70	-15.2	9.5	>1000	10.89	0
IT-MW01	11/19/97	0.512	6.70	-58.2	9.6	1	10.57	0
IT-MW02	11/21/97	1.25	6.60	NM	11.3	0	11.54	0
IT-MW05	11/19/97	0.962	7.39	-81.9	11.7	78	-0.65	NM [a]
IT-MW06	11/19/97	0.815	7.10	1.7	11.2	40	1.68	NM
IT-MW08	11/19/97	1.90	7.45	-5.2	10.7	0	9.76	0
IT-MW09	11/21/97	2.10	6.76	121.5	13.8	256	7.32	NM
IT-MW10	11/13/97	1.18	6.78	-155.4	8.6	1	9.59	0
MK-MW09	11/16/97	0.602	6.96	152	10.0	2	8.84	0
MK-MW10	11/14/97	0.581	6.99	377	11.0	12	8.97	0
MK-MW11	11/18/97	0.785	6.80	71.5	10.8	300	8.03	0
MK-MW12	11/17/97	0.762	6.93	67.4	9.5	2	8.66	0
MK-MW14	11/16/97	0.946	6.53	-55.9	12.2	0	9.59	0
MK-MW15	11/16/97	0.556	6.81	-89.1	12.0	11	9.01	0
MK-MW16	11/21/97	NM	NM	NM	NM	NM	NM	NM
MK-MW17	11/21/97	NM	NM	NM	NM	NM	NM	NM
MK-MW19	11/16/97	1.14	7.11	38.5	11.7	223	9.74	NM
MK-MW20	11/16/97	3.07	7.31	-251.8	10.5	999	9.87	NM
MK-MW22	11/14/97	885	6.85	4.5	13.6	132	1.85	NM
MK-MW23	11/16/97	1.07	6.44	-55.5	14.0	602	0.01	0.2
MK-MW24	11/13/97	2340	6.83	-53.1	13.8	137	1.70	3
PR-MW07	11/17/97	16.0	7.06	81.1	11.3	999	9.50	NM

Table 2-2

Field Measurements of Groundwater Parameters
Second Quarter/First Semi-Annual Report
Former Plum Brook Ordnance Works, Sandusky, Ohio

Well Identification	Date	Conductivity (µmhos/cm)	pH	Eh (mV)	emperatur (C°)	Turbidity (NTU)	Dissolved O (ppm)	HNu (ppm)
Overburden Wells								
PR-MW08	11/17/97	43.1	7.07	88.5	8.4	999	4.25	NM
PR-MW09	11/17/97	7.12	7.05	797.6	10.9	170	19.99	NM
TNTA-MW10	11/18/97	1.18	7.29	-170.5	11.2	246	-0.38	NM
TNTA-MW11	11/18/97	1.54	6.49	-67.2	12.4	77	4.53	NM
TNTC-MW03	11/21/97	3.04	7.31	41.0	11.3	9	9.70	0
TNTC-MW04	11/20/97	2.24	6.58	109.6	12.0	22	10.27	NM
TNTC-MW05	11/21/97	1.52	6.97	22.9	10.0	25	11.45	0
TNTC-MW06	11/20/97	1.00	6.71	33.6	11.0	6	11.66	0
WA-MW01	11/21/97	0.96	7.08	4.3	10.0	0	11.65	0
WA-MW02	11/23/97	5.54	6.52	65.0	10.9	300	10.82	0
Bedrock Wells								
Reactor1	11/21/97	1.02	7.52	-266.8	11.8	90	9.89	0
Reactor2	11/21/97	0.445	8.14	-220.6	11.8	86	7.62	0
IT-AA1-BED-GW0	11/16/97	5.37	6.99	-340.1	8.7	-10	2.62	40
IT-AA2-BED-GW0	11/20/97	1.28	7.08	-160	8.7	>1000	6.31	9
IT-AA3-BED-GW0	11/19/97	2.93	6.82	-297.2	10.6	595	6.51	11
IT-BG8-BED-GW0	11/17/97	3.31	7.21	-245.3	10.5	321	6.83	0
IT-MNTA-BED-GW	11/20/97	9.50	6.78	-329.4	9.8	38	5.38	0
IT-TNTB-BED-GW	11/17/97	0.92	7.07	-190.4	9.8	99	4.48	1
IT-TNTB-BED-GW	11/16/97	1.20	7.58	-294.5	10.2	-10	3.75	0
BED-MW13	11/13/97	8.08	6.90	-317.9	9.6	284	4.93	8
BED-MW14	11/18/97	2.33	7.29	-85.3	8.7	269	4.66	2.5
BED-MW15	11/18/97	5.08	6.81	-298.3	8.9	71	3.17	20
BED-MW16	11/24/97	NM	NM	NM	NM	NM	NM	NM
BED-MW17	11/20/97	4.70	7.00	322.2	8.9	318	7.46	2
BED-MW18	11/19/97	22.3	7.40	-311.6	9.2	109	5.22	7
BED-MW19	11/14/97	1.30	6.91	-318.1	9.4	108	5.58	0
BED-MW20	11/17/97	48.5	6.74	-24.7	9.4	563	4.14	0

[a] NM denotes parameter was not measured due to instrument malfunction.
(µmhos/cm) - Micromhos per centimeter. NM - Not measured.
NTU - Nephelometric turbidity unit. ppm - Parts per million.

2.3 Hydraulic Conductivity Testing

Rising head slug tests were performed at each newly installed monitoring well to acquire information on the hydraulic conductivity of each water-bearing zone. A slug test was not conducted in the temporary piezometer (AA2-GW-002). Equipment used in the test included:

- Ten pounds per square inch pressure transducer equipped with an atmospheric pressure compensation tube
- HERMIT 1000C Environmental Data Logger
- Five-foot-long, 1.5-inch-diameter PVC slug.

The slug test was set up by lowering the pressure transducer below the static water level to a point above which the PVC slug could be fully immersed in the well water. The data logger allows water level changes to be recorded at desired time intervals. The rising test started by initializing the data logger and removing the slug from the well. The water level recovery versus elapsed time was recorded for later analysis. The test was considered complete when the water column above the pressure transducer had returned to 95 percent of the original level. Following the test, the data recorded by the data logger was recovered and stored on diskette. The raw data were inspected in the field for consistency and completeness. The slug test data were analyzed using the computer program Aquifer Test (Waterloo Hydrogeologic, 1995) to compute hydraulic conductivities of the water-bearing zone materials. The calculated hydraulic conductivities in the overburden water-bearing zone range from 0.739 feet per day (ft/day) to 212 ft/day with a geometric mean of 8.72 ft/day. The calculated hydraulic conductivities in the bedrock wells range from 0.0312 ft/day to 22.2 ft/day with a geometric mean of 0.35 ft/day.

It appears that no apparent pattern for the hydraulic conductivity distribution can be identified for various areas based on the limited data. The wide range of hydraulic conductivity values may also reflect the complexity of the water-bearing materials at the site. Table 2-3 summarizes the calculated hydraulic conductivity for each tested well. The hydraulic conductivity testing data are included in Appendix D, along with a description of the method used in the data analysis.

2.4 First and Second Quarterly Groundwater Level Measurements

The first and second quarterly water level measurements were conducted at PBOW on August 27, and November 12, 1997, respectively. The first quarterly event measured 73 monitoring wells that were known to exist, including 13 bedrock wells and 59 overburden well as well as one

Table 2-3

Summary of Hydraulic Conductivity Testing Results
Site-Wide Groundwater Investigation
Former Plum Brook Ordnance Works, Sandusky, Ohio

Well ID	Test Type	Hydraulic Conductivities K (ft/min)	Hydraulic Conductivities K (cm/sec)	Hydraulic Conductivities K (ft/day)
IT-AA1-GW-002	Rising	5.13E-04	2.61E-04	7.39E-01
IT-AA2-GW-002	Dry	----	----	----
IT-AA3-GW-002	Rising	2.94E-03	1.49E-03	4.23E+00
IT-ABG-GW-002	Rising	1.47E-01	7.47E-02	2.12E+02
Maximum (K)		*1.47E-01*	*7.47E-02*	*2.12E+02*
Minimum (K)		*5.13E-04*	*2.61E-04*	*7.39E-01*
Geometric Mean (K)		*6.05E-03*	*3.08E-03*	*8.72E+00*
IT-AA1-BEDGW-001	Rising	5.17E-05	2.63E-05	7.44E-02
IT-AA2-BEDGW-001	Rising	2.26E-05	1.15E-05	3.25E-02
IT-BG8-BEDGW-001	Rising	2.39E-04	1.21E-04	3.44E-01
IT-ABG-BEDGW-001	Rising	1.54E-02	7.83E-03	2.22E+01
IT-TNTB-BEDGW-001	Rising	4.07E-05	2.07E-05	5.86E-02
IT-TNTB-BEDGW-002	Rising	1.24E-02	6.30E-03	1.79E+01
IT-MNTA-BEDGW-001	Rising	2.17E-05	1.10E-05	3.12E-02
IT-AA3-BEDGW-001	Rising	2.58E-04	1.31E-04	3.72E-01
Maximum (K)		*1.54E-02*	*7.83E-03*	*2.22E+01*
Minimum (K)		*2.17E-05*	*1.10E-05*	*3.12E-02*
Geometric Mean (K)		*2.43E-04*	*1.24E-04*	*3.50E-01*

piezometer. The second quarterly event included 79 wells in total. Of them, 19 were bedrock wells (8 were new wells installed prior to the second quarterly monitoring) and 58 were overburden wells (3 were new) as well as two piezometers (one was new). The findings of these quarterly activities were summarized in previous quarterly reports submitted to the USACE-Nashville District (IT, 1997b; 1998).

2.5 Third Quarterly Groundwater Level Measurements

The third quarterly water level measurements were conducted with the same procedures as two previous events utilized. The field activities were executed in accordance with the site-wide SAP (IT, 1996a), site-wide quality assurance project plan (QAPP) (IT, 1996b), and the site-wide safety and health plan (IT, 1996c).

2.5.1 Monitoring Points and Data Collection

A total of 79 monitoring wells were included in the third quarterly measurement event. Of the 79 wells monitored, 19 are bedrock wells, 58 are overburden wells, and 2 are temporary piezometers. Prior to water level measurements, reconnaissance of these wells was conducted to determine the accessibility and condition of each well. This included locating wells that are in remote areas, clearing and flagging paths to wells, and identifying any potential health and safety hazards in the vicinity of the wells. Construction details of each existing well including well identification, well depth, well diameter, year of completion, and available survey coordinates as well as previously measured depth to water data were tabulated and provided to each field group. On February 24, 1998, field measurements of static water levels began at 8 a.m. and were completed at 3 p.m. No significant precipitation was recorded in the Sandusky area for at least 2 days before the water level measurements.

2.5.2 Water Level Measurement Procedures

Groundwater level measurements were made over a single 6-hour period to provide a snapshot of site conditions. The measurements were conducted following procedures set forth in the SAP (IT, 1996a) and as described below.

Upon opening the well cap, real-time air monitoring was conducted using a photo ionization detector (PID) for the overburden wells and a PID and a hydrogen sulfide (H_2S) detector for the bedrock wells. The purpose of the air monitoring was to protect field personnel from organic vapor and acid gas exposure and to document the quality of trapped air in each well for future monitoring and sampling use. Organic vapor had been detected continuously in several

overburden wells and H_2S was encountered in several bedrock wells during previous investigations (Dames and Moore [D&M], 1997; IT 1997b).

Water level indicators and oil/water interface probes were decontaminated before the first use, between each use, and after the final use in order to prevent possible cross-contamination per the procedures outlined in Section 4.2 of the site-wide QAPP (IT, 1996b). Field testing and monitoring equipment were inspected and calibrated as specified in Section 6.0 of the PBOW site-wide QAPP (IT, 1996b) and according to the manufacturers specifications. To further minimize the likelihood of cross contamination, water level measurement began with the least contaminated well and progressed in sequence to the most contaminated well as determined by the degree of known contaminant concentrations, being consistent with the second event.

The static water level in each well was measured using an electronic water level indicator or an oil/water interface probe to the nearest 0.01 foot.

Groundwater level data acquired during the third quarterly groundwater measurements are presented in Table 2-4 as elevations above mean sea level (msl), along with previous water level data. The elevation of the water level in a well was calculated by subtracting the depth to water table measurement made at the top of the inner casing from the top of casing elevation. All monitored wells have been surveyed and are referenced to the Ohio State Plane Coordinate System and the 1929 National Geodetic Vertical Datum (NGVD).

2.6 First Semiannual Groundwater Sampling

The first semiannual groundwater sampling was conducted from November 13 through 24, 1997, following the second quarterly water level measurement event. Primary groundwater samples were collected from 55 wells as listed in Table 2-5. Two piezometers (IT-MW07 and AA2-GW-002) were dry at the time of sampling and could not be sampled.

Prior to collecting groundwater samples, monitoring wells were purged to remove standing water in the well casing and screen including water stored in the filter pack voids. The three to five well volumes requiring removal from the wells were calculated based on the static water level and well construction data, assuming a 25 percent porosity of the filter material. Most bedrock wells had sufficient water to allow removal of three to five well volumes. However, several overburden wells were purged dry before the required water volumes could be removed. During purging, field measurements of pH, specific conductance, temperature, DO, turbidity, and Eh

Table 2-4

Third Quarterly Groundwater Level Measurement
Site-Wide Groundwater Investigation, Former Plum Brook Ordnance Works
Sandusky, Ohio

Well Identification	Coordinates (Ohio Plane)[a]		Top of Casing Elevation (ft msl)	Ground Elevation (ft msl)	Groundwater Elevation Measurements (feet above mean sea level (msl))					
	Easting x	Northing y			12/1994[b]	03/1995[c]	10/1996[d]	8/27/1997[e]	11/12/1997[f]	02/24/1998[g]
IT-AA1-BEDGW-001	1917718	623069	641.04	638.8	--[h]	--	--	--	610.52	610.54
IT-AA1-GW002	1917728	623068	640.85	638.6	--	--	--	--	634.63	637.80
IT-AA2-BEDGW-001	1909552	623600	644.06	641.60	--	--	--	--	630.95	632.48
IT-AA2-GW-002[i]	1909481	623589	643.95	641.50	--	--	--	--	dry[j]	dry
IT-AA3-BEDGW-001	1914957	625037	636.43	634.10	--	--	--	--	613.21	614.90
IT-AA3-GW-002	1914956	625028	636.11	634.10	--	--	--	--	629.81	632.23
IT-ABG-BEDGW-001	1921506	621580	660.59	658.20	--	--	--	--	654.50	657.04
IT-ABG-GW-002	1921516	621579	661.06	658.20	--	--	--	--	654.51	657.11
PB-BED-MW13	1912175	621044	648.27	645.49	607.85	619.29	621.79	620.47	620.87	599.80
PB-BED-MW14	1910457	622720	646.04	642.73	621.76	624.39	625.23	627.53	626.00	629.60
PB-BED-MW15	1919283	626179	631.64	628.76	603.54	598.91	610.22	601.69	610.19	611.30
PB-BED-MW16	1920594	623299	636.02	633.36	571.38	633.68	630.17	624.22	628.29	633.74
PB-BED-MW17	1924121	625417	629.97	627.02	602.57	602.90	602.76	603.49	601.90	603.12
PB-BED-MW18	1925483	623849	651.50	648.51	625.05	620.39	621.68	620.92	620.96	620.95
PB-BED-MW19	1910174	623869	643.07	640.19	621.07	623.52	622.92	623.22	622.20	624.07
PB-BED-MW20	1922952	612423	676.33	673.25	661.35	661.28	661.98	662.05	661.59	662.35
IT-BG8-BEDGW-001	1909857	618635	676.56	673.70	--	--	--	--	670.18	668.45
EB-GM-01	1918339	623563	640.45	637.70	--	--	--	632.22	631.16	633.10
EB-GM-02	1917822	624435	637.52	634.90	--	--	--	627.41	628.06	632.61
EB-GM-03	1917775	624131	638.90	636.20	--	--	--	633.00	631.52	633.09
EB-GM-04	1917442	624052	636.34	633.60	--	--	--	631.33	630.79	633.07
EB-GM-05	1917802	623872	639.70	637.00	--	--	--	634.02	632.13	633.90
EB-GM-06	1917799	623723	639.61	637.00	--	--	--	634.02	632.25	633.69
EB-PS-02	1920061	624344	638.53	635.70	--	--	--	632.83	632.66	633.72
EB-PS-03	1920187	624324	637.15	634.40	--	--	--	631.88	630.80	631.53
EB-PS-04	1920259	624298	637.87	635.30	--	--	--	629.45	628.87	630.57
EB-RA-01	1917783	625964	633.97	631.40	--	--	--	628.27	626.09	628.34
EB-RA-02	1918282	626944	633.95	631.30	--	--	--	626.66	625.43	627.43
EB-RA-03	1918346	626788	633.63	630.90	--	--	--	dry	dry	624.54
EB-RA-04	1918389	626731	633.54	630.70	--	--	--	626.33	623.18	626.42
EB-RA-05	1918492	626717	633.34	630.60	--	--	--	626.05	624.47	626.47

Table 2-4

Third Quarterly Groundwater Level Measurement
Site-Wide Groundwater Investigation, Former Plum Brook Ordnance Works
Sandusky, Ohio

Well Identification	Coordinates (Ohio Plane)[a]		Top of Casing Elevation (ft msl)	Ground Elevation (ft msl)	Groundwater Elevation Measurements (feet above mean sea level (msl))					
	Easting x	Northing y			12/1994[b]	03/1995[c]	10/1996[d]	8/27/1997[e]	11/12/1997[f]	02/24/1998[g]
EB-RA-06	1918750	626748	632.64	630.10	--	--	--	624.82	624.78	627.44
EB-SP-01	1927550	613598	655.07	652.30	--	--	--	650.36	647.52	649.53
EB-SP-03	1926836	613398	657.73	655.10	--	--	--	654.30	650.79	653.47
EB-SP-04	1926937	613162	658.02	655.25	--	--	--	652.55	649.84	653.81
EB-SP-05	1926897	613051	657.00	654.50	--	--	--	654.06	650.83	652.08
EB-SP-06	1927074	613056	658.25	655.40	--	--	--	653.48	650.15	651.21
GCL-MW01	1921255	617560	674.81	671.40	--	--	--	666.42	666.00	670.24
GCL-MW02A	1920961	617937	672.96	669.70	--	--	--	665.29	665.17	668.31
GCL-MW02B	1920984	617941	673.42	669.60	--	--	--	664.75	665.01	668.83
GCL-MW03	1920777	617641	672.57	669.55	--	--	--	665.52	665.96	668.37
IT-MW01	1915525	616901	678.19	674.50	--	--	--	672.79	671.19	673.53
IT-MW02	1910265	622512	639.60	636.37	627.32	633.75	629.33	631.51	629.50	633.92
IT-MW05	1919475	625346	634.99	631.59	620.19	629.62	623.36	625.11	624.22	630.57
IT-MW06	1918768	628642	631.70	628.50	--	--	--	624.63	622.49	627.69
IT-MW07[j]	1909862	622076	635.35	632.30	--	--	--	dry	dry	dry
IT-MW08	1911132	622498	633.48	630.60	--	--	619.96	625.26	622.44	630.57
IT-MW09	1910699	620956	647.77	645.40	--	--	dry	641.77	640.21	643.05
IT-MW10	1919485	623027	645.12	642.51	--	--	626.41	633.87	632.68	636.92
MK-MW09	1908872	623901	645.61	642.95	--	--	--	639.82	639.12	640.61
MK-MW10	1910564	623860	640.89	637.74	626.66	--	632.23	633.76	632.08	633.74
MK-MW11	1910564	623860	637.69	634.39	625.22	631.36	628.89	630.56	629.22	631.77
MK-MW12	1908764	621233	640.93	638.10	--	--	--	631.87	630.15	633.48
MK-MW14	1913325	618311	681.26	678.50	--	--	--	673.76	672.54	676.64
MK-MW15	1913304	618488	680.63	677.80	--	--	--	673.23	671.83	675.71
MK-MW16	1918011	616834	674.32	671.01	667.14	669.36	668.42	668.35	666.25	669.18
MK-MW17	1917813	618572	664.64	660.65	659.58	661.10	660.56	660.32	659.57	660.96
MK-MW19	1917535	623871	639.13	636.20	--	--	--	631.86	632.30	635.46
MK-MW20	1920539	622912	637.51	634.30	--	--	--	632.89	632.73	630.90
MK-MW22	1923776	624339	638.05	635.24	628.85	631.55	630.07	629.85	629.49	631.11
MK-MW23	1925354	624657	639.43	636.63	620.88	628.12	632.14	630.94	631.09	633.82
MK-MW24	1923302	622264	657.12	654.12	648.31	650.77	649.61	650.04	649.59	650.87

Table 2-4

Third Quarterly Groundwater Level Measurement
Site-Wide Groundwater Investigation, Former Plum Brook Ordnance Works
Sandusky, Ohio

Well Identification	Coordinates (Ohio Plane)[a]		Top of Casing Elevation (ft msl)	Ground Elevation (ft msl)	Groundwater Elevation Measurements (feet above mean sea level (msl))					
	Easting x	Northing y			12/1994[b]	03/1995[c]	10/1996[d]	8/27/1997[e]	11/12/1997[f]	02/24/1998[g]
IT-MNTA-BEDGW-001	1918699	623808	638.40	636.05	--	--	--	--	610.36	611.35
PB-PR-MW07	1919021	624996	633.99	631.18	626.32	631.65	629.64	628.64	628.61	631.78
PB-PR-MW08	1919309	624889	635.02	632.18	624.55	629.98	627.56	628.36	626.98	630.12
PB-PR-MW09	1919510	625092	633.70	630.38	622.92	630.12	626.57	627.20	625.53	630.34
REACTOR1	1917983	626774	630.51	630.45	--	--	--	614.80	608.45	597.26
REACTOR2	1918003	626661	631.05	631.00	614.71	601.89	--	615.28	626.24	602.52
REACTOR3	1918148	626685	631.21	631.10	--	--	--	616.28	609.04	593.76
PB-TNTA-MW10	1923399	623864	640.18	637.18	633.71	637.04	635.62	636.02	635.19	637.08
PB-TNTA-MW11	1922744	623518	640.50	637.54	630.50	632.82	633.56	635.01	635.02	635.72
IT-TNTB-BEDGW-001	1917218	618738	662.43	659.80	--	--	--	--	658.32	656.83
IT-TNTB-BEDGW-002	1918021	616835	673.35	670.10	--	--	--	--	666.44	670.46
PB-TNTC-MW03	1911391	621465	645.41	642.25	dry	639.20	635.01	637.34	635.82	641.61
PB-TNTC-MW04	1910470	620413	654.43	651.57	634.87	651.07	648.51	648.28	646.49	651.11
PB-TNTC-MW05	1911811	620692	651.81	648.75	628.01	647.62	643.28	646.19	645.89	648.79
PB-TNTC-MW06	1913006	620429	659.40	656.50	651.93	655.20	654.56	654.94	653.37	655.68
PB-WA-MW01	1909948	622641	644.43	642.00	--	--	--	630.43	627.96	640.34
PB-WA-MW02	1910176	622124	633.65	630.84	--	--	--	629.76	628.87	632.12

[a] Survey data are scaled to the Ohio State Plane Coordinate System (North Zone).
[b] Data from Dames & Moore, Sitewide Groundwater Investigation final Report (4/97).
[c] Data from Dames & Moore, Sitewide Groundwater Investigation Final Report (4/97).
[d] Data from IT corporation, Site-Wide Groundwater Investigation (9/97).
[e] Data from IT corporation, 1st quarterly water level measurement event report (10/97).
[f] Data from IT corporation, 2nd quarterly water level measurements and 1st semi-annual groundwater sampling event report (5/98).
[g] Data from IT corporation, 3rd quarterly water level measurement event report (this volume).
[h] Symbol denotes data are not available.
[I] Temporary piezometer.
[j] Well was dry at the time of the measurement.

Table 2-5

Summary of Primary Groundwater Samples Collected During the First Semi-Annual Site-Wide Groundwater Sampling Event Former Plum Brook Ordnance Works, Sandusky, Ohio

(Page 1 of 2)

Well Identification	Sample Identification	Sampling Date	Laboratory Reference Number
IT-AA1-BEDGW-001	PBOW97-IT-AA1-BEDGW-001-GW-5451	11/16/97	5450
IT-AA1-GW-002	PBOW97-IT-AA1-GW-002-GW-5490	11/20/97	5490
IT-AA2-BEDGW-001	PBOW97-IT-AA2-BEDGW-001-GW-5460	11/20/97	5460
IT-AA2-GW-002	DRY (PIEZOMETER)	--	--
IT-AA3-BEDGW-001	PBOW97-IT-AA3-BEDGW-001-GW-5470	11/19/97	5470
IT-AA3-GW-002	PBOW97-IT-AA3-GW-002-GW-5510	11/19/97	5510
IT-ABGGW-002	PBOW97-IT-ABG-GW-002-GW-5520	11/19/97	5520
IT-ABG-BEDGW-001	PBOW97-IT-ABG-BEDGW-001-GW-5480	11/13/97	5480
BED-MW13	PBOW97-PB-BED-MW13-GW-58990	11/13/97	5890
BED-MW14	PBOW97-PB-BED-MW14-GW-5900	11/18/97	5900
BED-MW15	PBOW97-PB-BED-MW15-GW-5910	11/18/97	5910
BED-MW16	PBOW97-PB-BED-MW16-GW-5920	11/24/97	5920
BED-MW17	PBOW97-PB-BED-MW17-GW-5930	11/20/97	5930
BED-MW18	PBOW97-PB-BED-MW-18-GW-5940	11/19/97	5940
BED-MW19	PBOW97-PB-BED-MW19-GW-5950	11/14/97	5950
BED-MW20	PBOW97-PB-BED-MW20-GW-5960	11/17/97	5960
IT-BG8-BEDGW-001	PBOW97-IT-BG8-BEDGW-001-GW-5410	11/17/97	5410
GCL-MW01	PBOW97-GCL-MW01-GW-5850	11/20/97	5850
GCL-MW02A	PBOW97-GCL-MW02A-GW-5860	11/20/97	5860
GCL-MW02B	PBOW97-GCL-MW02B-GW-5870	11/20/97	5870
GCL-MW03	PBOW97-GCL-MW03-GW-5880	11/20/97	5880
IT-MW01	PBOW97-IT-MW01-GW-5530	11/19/97	5530
IT-MW02	PBOW97-IT-MW02-GW-5540	11/21/97	5540
IT-MW05	PBOW97-IT-MW05-GW-5550	11/19/97	5550
IT-MW06	PBOW97-IT-MW06-GW-5560	11/19/97	5560
IT-MW07	DRY (PIEZOMETER)	--	--
IT-MW08	PBOW97-IT-MW08-GW-5580	11/19/97	5580
IT-MW09	PBOW97-IT-MW09-GW-5590	11/21/97	5590
IT-MW10	PBOW97-IT-MW10-GW-5600	11/14/97	5600
MK-MW09	PBOW97-MK-MW09-GW-5720	11/16/97	5720

Table 2-5

Summary of Primary Groundwater Samples Collected During the First Semi-Annual Site-Wide Groundwater Sampling Event Former Plum Brook Ordnance Works, Sandusky, Ohio

(Page 2 of 2)

Well Identification	Sample Identification	Sampling Date	Laboratory Reference Number
MK-MW10	PBOW97-MK-MW10-GW-5730	11/14/97	5730
MK-MW11	PBOW97-MK-MW11-GW-5740	11/18/97	5740
MK-MW12	PBOW97-MK-MW12-GW-5750	11/17/97	5750
MK-MW14	PBOW97-MK-MW14-GW-5760	11/16/97	5760
MK-MW15	PBOW97-MK-MW15-GW-5770	11/16/97	5770
MK-MW16	PBOW97-MK-MW16-GW-5780	11/21/97	5780
MK-MW17	PBOW97-MK-MW17-GW-5790	11/21/97	5790
MK-MW19	PBOW97-MK-MK19-GW-5800	11/16/97	5800
MK-MW20	PBOW97-MK-MW20-GW-5810	11/16/97	5810
MK-MW22	PBOW97-MK-MW22-GW-5820	11/14/97	5820
MK-MW23	PBOW97-MK-MW23-GW-5830	11/16/97	5830
MK-MW24	PBOW97-MK-MW24-GW-5840	11/13/97	5840
IT-MNTA-BED-GW001	PBOW97-IT-MNTA-BEDGW-001-5440	11/20/97	5440
PR-MW7	PBOW97-PB-PR-MW7-GW-5690	11/17/97	5690
PR-MW8	PBOW97-PB-PR-MW8-GW-5700	11/17/97	5700
PR-MW9	PBOW97-PB-PR-MW9-GW-5710	11/17/97	5710
REACTOR 1	PBOW97-REACTOR1-GW-5970	11/21/97	5970
REACTOR 2	DRY	--	--
REACTOR 3	DRY	--	--
TNTA-MW10	PBOW97-PB-TNTA-MW10-GW-5610	11/19/97	5610
TNTA-MW11	PBOW97-PB-TNTA-MW11-GW-5620	11/18/97	5620
IT-TNTB-BED-GW001	PBOW97-IT-TNTB-BEDGW-001-GW-5420	11/17/97	5420
IT-TNTB-BED-GW002	PBOW97-IT-TNTB-BEDGW-002-GW-5430	11/16/97	5430
TNTC-MW3	PBOW97-PB-TNTC-MW3-GW-5630	11/21/97	5630
TNTC-MW4	PBOW97-PB-TNTC-MW4-GW-5640	11/24/97	5640
TNTC-MW5	PBOW97--PB-TNTC-MW5-GW-5650	11/21/97	5650
TNTC-MW6	PBOW97-PB-TNTC-MW6-GW-5660	11/20/97	5660
WA-MW1	PBOW97-PB-WA-MW1-GW-5670	11/21/97	5670
WA-MW2	PBOW97-PB-WA-MW2-GW-5680	11/23/97	5680

were made and recorded. Purging was considered completed when the required volume was removed and field parameters were stabilized for three consecutive readings, following procedures stated in the site-wide QAPP (IT, 1996b). In the case of low yield wells, purging was ceased after the well was purged dry three times.

The majority of overburden wells were sampled by low-flow technique using a peristaltic pump equipped with disposable Tygon® tubing. Sampling tubing was discarded after each use to avoid possible cross-contamination. Dedicated Teflon® bailers fitted with a bottom-emptying device were used for collection of water samples from bedrock wells. Groundwater samples collected using the peristaltic pump were filtered in the field using in-line 0.45 micronmeter (µm) size filters for metal analysis. Samples collected by bailer for metal analysis were filtered using filtration apparatus through 0.45 µm filter paper at the site office as soon as possible following sample collection. All groundwater sample bottles were prelabeled and were placed in coolers packed with ice before being preserved and packed for shipment. Sample filtration, preservation, packing, and shipment were performed in accordance with Section 5.4 of the site-wide QAPP (IT, 1996b).

2.7 Land Survey

Survey of all 11 monitoring wells and one piezometer installed in October 1997 was conducted in November 1997 by a Ohio-registered professional land surveyor. A total of 35 existing monitoring wells were re-surveyed in February 1998 in order to bring the coordinates on these wells in line with other wells, and to collect top of casing data that were missing from most of these wells. At each well location, the horizontal coordinates (northing and easting) were surveyed in reference to the Ohio State Plane Coordinate system (north zone) while the elevation was surveyed at the ground surface and at the top of the inner casing to the closest 0.01 foot, referenced to the 1929 NGVD. The survey data were utilized to place newly installed monitoring wells and re-surveyed wells on the site map. The complete land survey data are included in Appendix E.

2.8 Decontamination Procedures

Decontamination of drill rig, downhole tools, and sampling equipment was performed in accordance with Section 4.4.3 of the SAP (IT, 1996a). Specifically, the drill rig, rods, drill bit, and augers were cleaned at the decontamination pad using high pressure hot water from a steam-cleaner before entering the drilling site, between sites, and after completion of the last borehole.

Other equipment, including the water level indicator, slug, and transducer were decontaminated by rinsing in sequence with soapy water, deionized (DI) water, methanol, and a final rinse with DI water, and air dry before each use. Submersible pumps were decontaminated by running approximately 5 gallons soapy water and 5 gallons DI water through the pump head and tubing. Equipment rinsate samples were collected and analyzed for the same parameters as the primary sample. The results of the equipment rinsate samples exhibited no detectable chemicals, confirming the effectiveness of the decontamination process.

3.0 Water Level Changes Since the Second Quarterly Monitoring

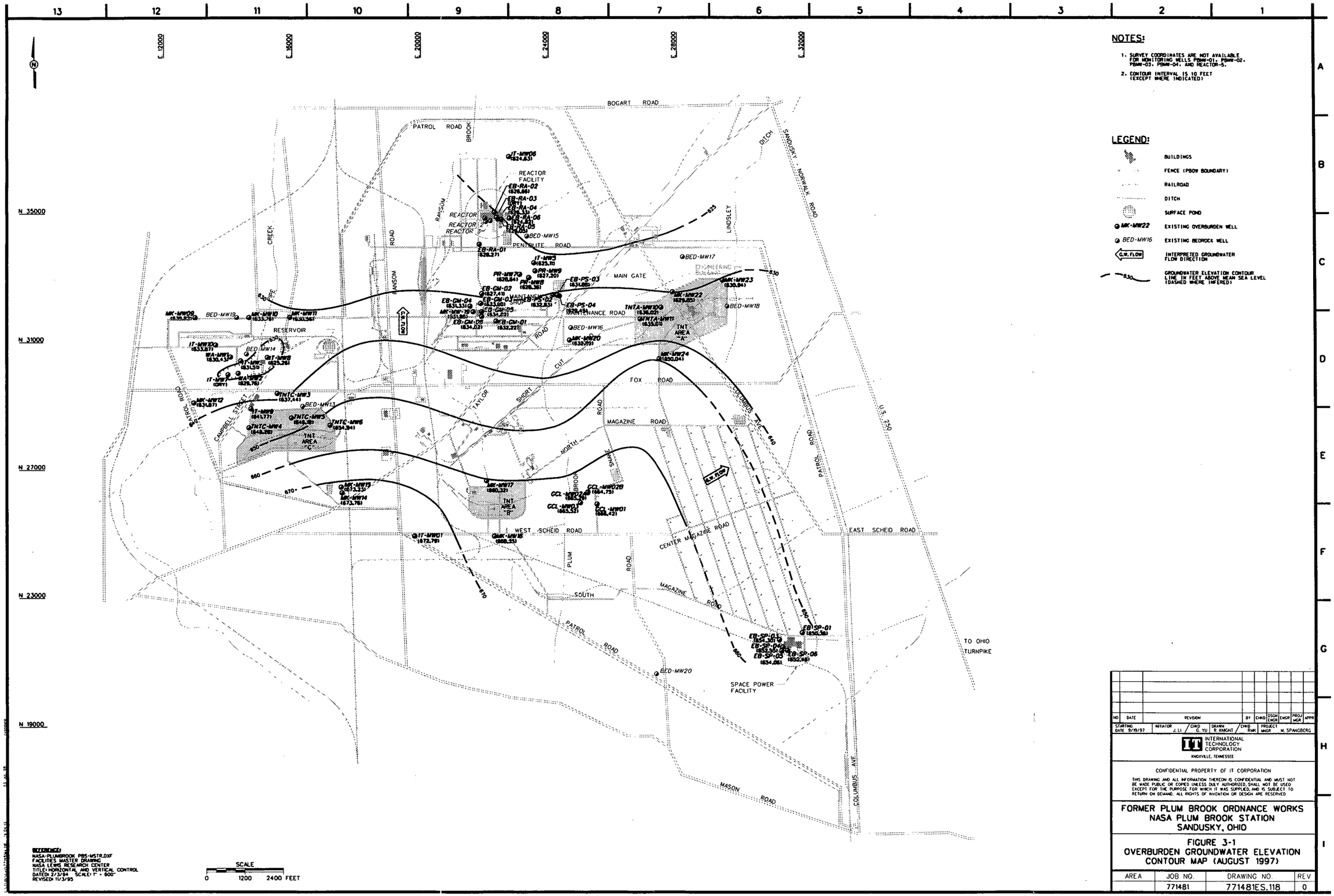
3.1 Water Level Change in the Overburden Water-Bearing Zone

With the exception of one overburden well, all overburden wells exhibited higher water levels than the last measurements taken in November 1997 (IT, 1998). The average rise in the overburden wells was 2.96 feet. The maximum rise of 12.38 feet occurred at PB-WA-MW01 located in the West Area Red Water Ponds area while the minimum change of 0.70 feet was observed at PB-TNTA-MW11 along the west edge of the Trinitrotoluene (TNT) Manufacturing Area A (TNTA) (Table 2-4). One well (MK-MW20) located in the vicinity of the Upper Toluene Tank area showed a 1.83-foot drop in the water level from the last measurement. The fact that all but one well exhibited elevated water levels since the last measurement in November 1997 reflects a relatively wet season contributing more recharge to the overburden water-bearing zone.

As discussed in the second quarterly report (IT, 1998), the majority of the overburden wells showed slightly lower water levels in comparison to the water levels measured on August 27, 1997 (IT, 1997b). The average decline in water level elevation in overburden wells is 1.25 feet. However, several wells showed higher water levels than the last measurements. There appears to be no apparent correlation between water level changes and the well locations, reflecting the heterogeneous nature of the overburden materials at the site. Figures 3-1 and 3-2 present the overburden groundwater elevation contour maps based on the first and second monitoring event data, respectively. The groundwater elevation contour map generated using the third quarterly monitoring data is presented in Figure 3-3. Comparison of Figures 3-1, 3-2, and 3-3 exhibits a similar contour pattern and flow pattern between all three measuring events, suggesting that groundwater flow directions in the overburden water-bearing zone at PBOW are relatively stable from season to season. The predominant groundwater flow directions in the overburden are to the north and northeast. Northern flow dominates in areas west of the Magazine Area with northeastern flow dominating in and east of the Magazine Area.

3.2 Water Level Change in the Bedrock Water-Bearing Zone

The third quarterly data indicate a complex water level fluctuation pattern commonly observed in a predominantly limestone water-bearing zone. Of the 19 bedrock wells measured, water levels rose in 12 wells while declining in 7 other wells. The maximum rise (5.45 feet) occurred in PB-BED-MW16 north of the Upper Toluene Tank area and the maximum water level drop


NOTES:
1. SURVEY COORDINATES ARE NOT AVAILABLE FOR MONITORING WELLS PBMW-01, PBMW-02, PBMW-03, PBMW-04, AND REACTOR-5.
2. CONTOUR INTERVAL IS 10 FEET (EXCEPT WHERE INDICATED)
LEGEND:
BUILDINGS
FENCE (PBOW BOUNDARY)
RAILROAD
DITCH
SURFACE POND
MK-MW22 EXISTING OVERBURDEN WELL
BED-MW16 EXISTING BEDROCK WELL
G.W. FLOW INTERPRETED GROUNDWATER FLOW DIRECTION
630 GROUNDWATER ELEVATION CONTOUR LINE IN FEET ABOVE MEAN SEA LEVEL (DASHED WHERE INFERED)
E 12000
E 16000
E 20000
E 24000
E 28000
E 32000
N 35000
N 31000
N 27000
N 23000
N 19000
BOGART ROAD
PATROL ROAD
BROOK
DITCH
SANDUSKY - NORWAK ROAD
REACTOR FACILITY
REACTOR 1
REACTOR 2
REACTOR 3
RANSOM
ROAD
PENTOLITE ROAD
LINDSLEY
MAIN GATE
MAINTENANCE ROAD
RESERVOIR
CREEK
TNT AREA "A"
TNT AREA "B"
TNT AREA "C"
FOX ROAD
MAGAZINE ROAD
TAYLOR
SHORT
CUT
NORTH
SNAKE
CAMPBELL STREET
SATORI ROAD
COLUMBUS AVE.
U.S. 250
WEST SCHEID ROAD
EAST SCHEID ROAD
CENTER MAGAZINE ROAD
PLUM
SOUTH
MASON ROAD
SPACE POWER FACILITY
TO OHIO TURNPIKE
G.W. FLOW
REFERENCE:
NASA-PLUMBROOK PBS-MSTR.DXF
FACILITIES MASTER DRAWING
NASA LEWIS RESEARCH CENTER
TITLE: HORIZONTAL AND VERTICAL CONTROL
DATED: 2/3/94 SCALE: 1" = 600'
REVISED: 11/3/95
SCALE
0 1200 2400 FEET
NO DATE REVISION BY CHKD DSGN ENGR ENGR PROJ MGR APPR
STARTING DATE 9/19/97 INITIATOR J. LI CHKD C. YU DRAWN R. KNIGHT CHKD RMK PROJECT MNGR M. SPANGBERG
INTERNATIONAL TECHNOLOGY CORPORATION
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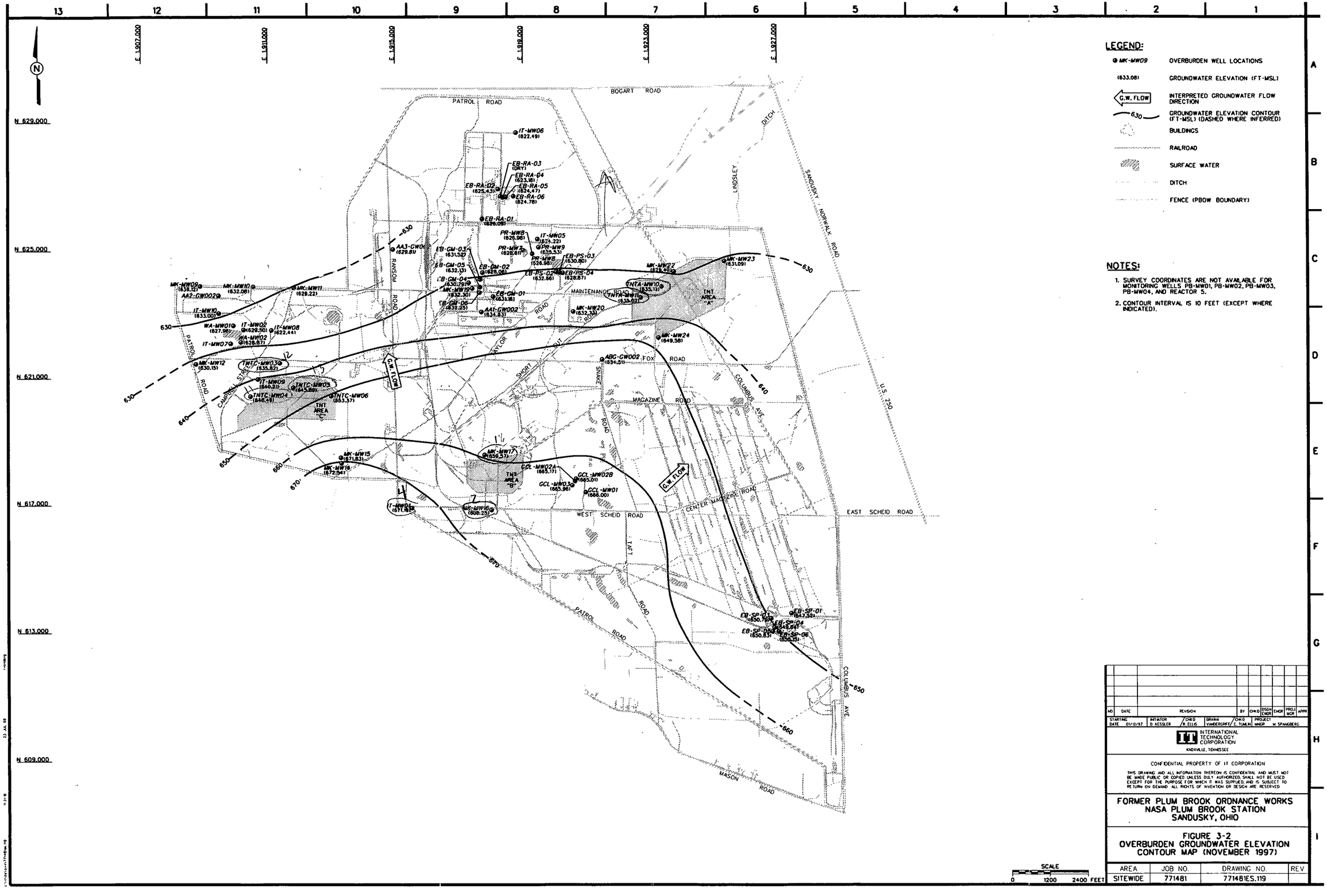
FORMER PLUM BROOK ORDNANCE WORKS
NASA PLUM BROOK STATION
SANDUSKY, OHIO
FIGURE 3-1
OVERBURDEN GROUNDWATER ELEVATION CONTOUR MAP (AUGUST 1997)
AREA
JOB NO. 771481
DRAWING NO. 771481ES.118
REV 0


LEGEND:
MK-MW09 OVERBURDEN WELL LOCATIONS
(633.08) GROUNDWATER ELEVATION (FT-MSL)
G.W. FLOW INTERPRETED GROUNDWATER FLOW DIRECTION
630 GROUNDWATER ELEVATION CONTOUR (FT-MSL) (DASHED WHERE INFERRED)
BUILDINGS
RAILROAD
SURFACE WATER
DITCH
FENCE (PBOW BOUNDARY)
NOTES:
1. SURVEY COORDINATES ARE NOT AVAILABLE FOR MONITORING WELLS PB-MW01, PB-MW02, PB-MW03, PB-MW04, AND REACTOR 5.
2. CONTOUR INTERVAL IS 10 FEET (EXCEPT WHERE INDICATED).
N
N 629,000
N 625,000
N 621,000
N 617,000
N 613,000
N 609,000
E 1,907,000
E 1,911,000
E 1,915,000
E 1,919,000
E 1,923,000
E 1,927,000
PATROL ROAD
BOGART ROAD
DITCH
LINDSLEY
SANDUSKY - NORWALK ROAD
RAMSOM ROAD
MAINTENANCE ROAD
TAYLOR ROAD
SHORT CUT
SNAKE ROAD
FOX ROAD
MAGAZINE ROAD
COLUMBUS AVE.
U.S. 250
CENTER MAGAZINE ROAD
WEST SCHEID ROAD
EAST SCHEID ROAD
TAFT ROAD
MASON ROAD
CAMPBELL STREET
TNT AREA "A"
TNT AREA "B"
TNT AREA "C"
G.W. FLOW
IT-MW06 (622.49)
EB-RA-03 (DRY)
EB-RA-04 (623.18)
EB-RA-05 (624.47)
EB-RA-06 (624.78)
EB-RA-02 (625.43)
EB-RA-01 (626.09)
PR-MW8 (626.98)
IT-MW05 (624.22)
PR-MW9 (625.53)
PR-MW7 (628.61)
PR-MW6 (626.96)
EB-PS-03 (630.90)
EB-PS-04 (628.87)
EB-PS-02 (632.66)
EB-GM-03 (631.52)
EB-GM-05 (632.13)
EB-GM-02 (628.06)
EB-GM-04 (630.79)
EB-GM-01 (631.18)
EB-PS-06 (633.25)
AA3-GW06 (629.80)
AA1-GW002 (634.63)
MK-MW22 (628.40)
MK-MW23 (631.09)
MK-MW20 (632.73)
MK-MW24 (649.58)
TNTA-MW10 (635.13)
TNTA-MW11 (635.69)
ABG-GW002 (634.51)
MK-MW08 (634.12)
MK-MW10 (632.08)
MK-MW11 (629.22)
AA2-GW002
IT-MW10 (633.00)
WA-MW01 (627.96)
IT-MW02 (629.50)
IT-MW08 (622.44)
WA-MW02 (628.87)
IT-MW07
MK-MW12 (630.15)
TNTC-MW03 (635.82)
IT-MW09 (640.21)
TNTC-MW05 (643.80)
TNTC-MW04 (646.49)
TNTC-MW06 (653.37)
MK-MW15 (671.83)
MK-MW16 (672.41)
MK-MW17 (659.57)
GCL-MW02A (665.17)
GCL-MW02B (665.01)
GCL-MW03 (665.96)
GCL-MW01 (666.00)
IT-MW04 (671.82)
MK-MW18 (668.25)
EB-SP-03 (650.76)
EB-SP-01 (647.58)
EB-SP-04 (643.64)
EB-SP-05 (650.83)
MK-SP-06 (650.25)
630
640
650
660
670
SCALE
0 1200 2400 FEET
NO DATE REVISION BY CHKD DSGN ENGR ENGR PROJ MGR APPR
STARTING DATE 01/12/97
INITIATOR D. KESSLER
CHKD R. ELLIS
DRAWN VANDERGRIFF
CHKD C. TUMLIN
PROJECT MNGR M. SPANGBERG
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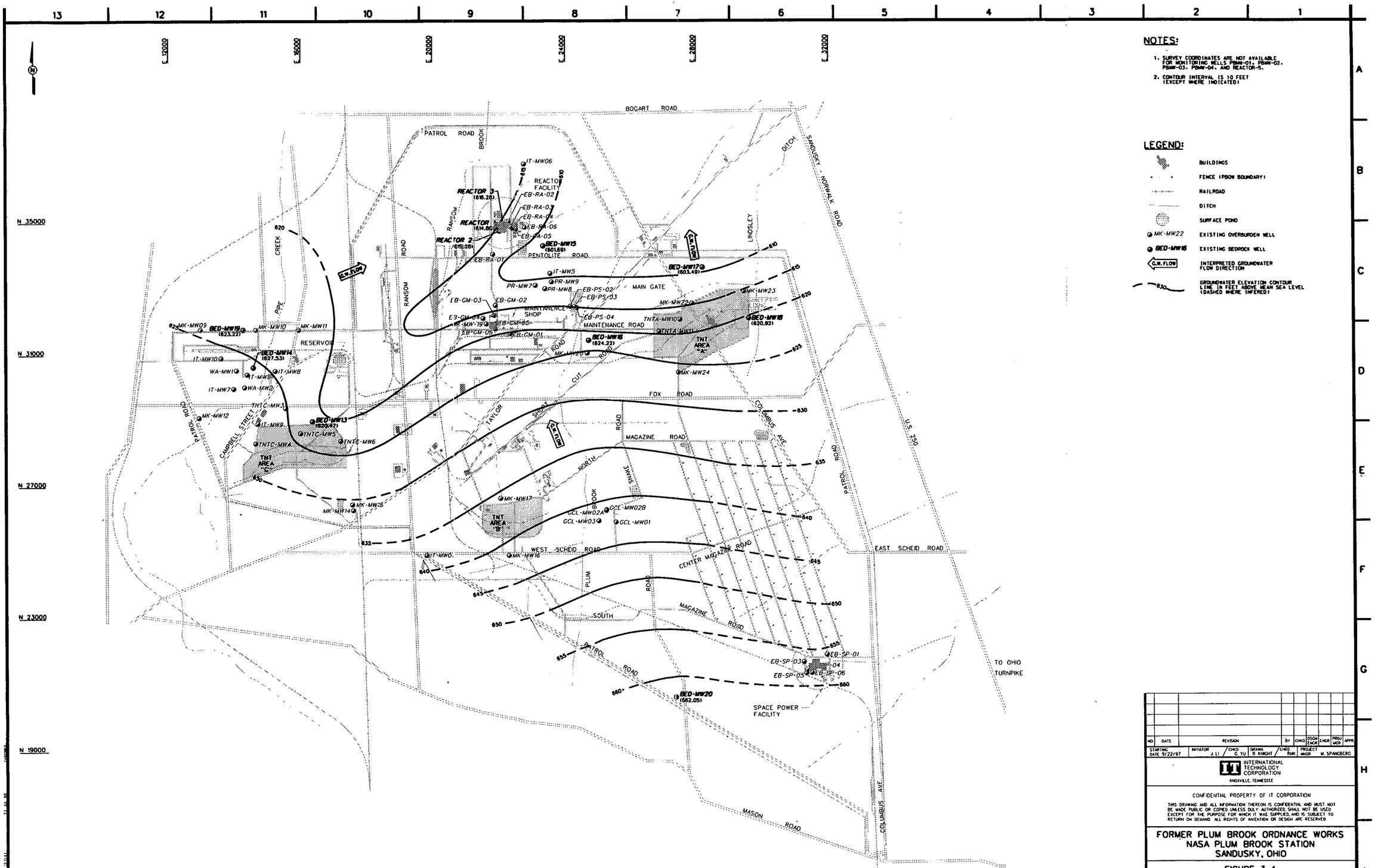
FORMER PLUM BROOK ORDNANCE WORKS
NASA PLUM BROOK STATION
SANDUSKY, OHIO
FIGURE 3-2
OVERBURDEN GROUNDWATER ELEVATION CONTOUR MAP (NOVEMBER 1997)
AREA SITEWIDE
JOB NO. 771481
DRAWING NO. 771481ES.119
REV

(23.72) was observed in Reactor 2. Two other reactor wells (Reactor 1 and 3) and one well (PB-BED-MW13) located immediately north of the TNT Manufacturing Area C (TNTC) exhibited erratic water level changes with water levels dropping 11.19 feet, 15.28 feet, and 21.07 feet, respectively. The average water level change in all bedrock wells measured since the second quarterly event was 2.62 feet. However, excluding the erratic water level fluctuation in three reactor wells and the PB-BED-MW13, the average change in water levels was calculated to be 1.44 feet, reflecting a overall rise in the majority of the bedrock wells since their last measurement. The erratic water level fluctuation observed in wells other than the Reactor wells is attributable to the extreme heterogeneous nature of the limestone bedrock, in which groundwater flows preferentially along solutionally enlarged fractures.

Similar fluctuations in water levels were also observed during the second quarterly measurement, the water level change since the first quarterly measurement ranged from +10.96 feet at Reactor 2 to -7.24 feet at Reactor 3, both close to the Reactor Building. Outside the Reactor Building Area, the maximum observed water level changes in bedrock wells were +8.50 feet in BED-MW15 and -1.59 feet in BED-MW17, respectively. Figures 3-4 and 3-5 show the bedrock groundwater elevations based on the August and November measurement data, respectively. Excluding the reactor wells, the average water level change from the first to the second quarter was 1.05 feet. Figure 3-6 presents groundwater elevation contours using the third quarterly measurement data. Comparison of Figures 3-5 and 3-6 exhibits a fairly similar contour and flow pattern, suggesting that groundwater flow directions in the bedrock water-bearing zone at PBOW are relatively stable. The groundwater elevation contour map for the first quarterly event (Figure 3-4) was constructed from less well data than either Figures 3-5 or 3-6. However, the general groundwater flow pattern was not noticeably different from that of the subsequent events. The predominant groundwater flow directions are north and northeast. Northern flow dominates in areas west of the Magazine Area with a prominent groundwater trough developed between TNTC and the Reactor facility. This trough may serve to focus groundwater and contaminant flow within the bedrock. Northeastern flow dominates in the Magazine Area and areas to the east of the Magazine Area.



NOTES:

1. SURVEY COORDINATES ARE NOT AVAILABLE FOR MONITORING WELLS PBMW-01, PBMW-02, PBMW-03, PBMW-04, AND REACTOR-5.
2. CONTOUR INTERVAL IS 10 FEET (EXCEPT WHERE INDICATED)

LEGEND:

- BUILDINGS
- FENCE (PBOW BOUNDARY)
- RAILROAD
- DITCH
- SURFACE POND
- MK-MW22 — EXISTING OVERBURDEN WELL
- BED-MW15 — EXISTING BEDROCK WELL
- G.W. FLOW — INTERPRETED GROUNDWATER FLOW DIRECTION
- 630 — GROUNDWATER ELEVATION CONTOUR LINE IN FEET ABOVE MEAN SEA LEVEL (DASHED WHERE INFERED)

REFERENCE:
NASA-PLUMBROOK PBS-MSTR.DXF
FACILITIES MASTER DRAWING
NASA LEWIS RESEARCH CENTER
TITLE: HORIZONTAL AND VERTICAL CONTROL
DATED: 2/3/94 SCALE: 1" = 600'
REVISED: 11/3/95

SCALE
0 1200 2400 FEET

NO	DATE	REVISION	BY	CHKD	DSGN ENGR	ENGR	PROJ MGR	APPR

STARTING DATE 9/22/97 | INITIATOR J. LI | CHKD G. YU | DRAWN R. KNIGHT | CHKD RVK | PROJECT MNGR M. SPANGBERG

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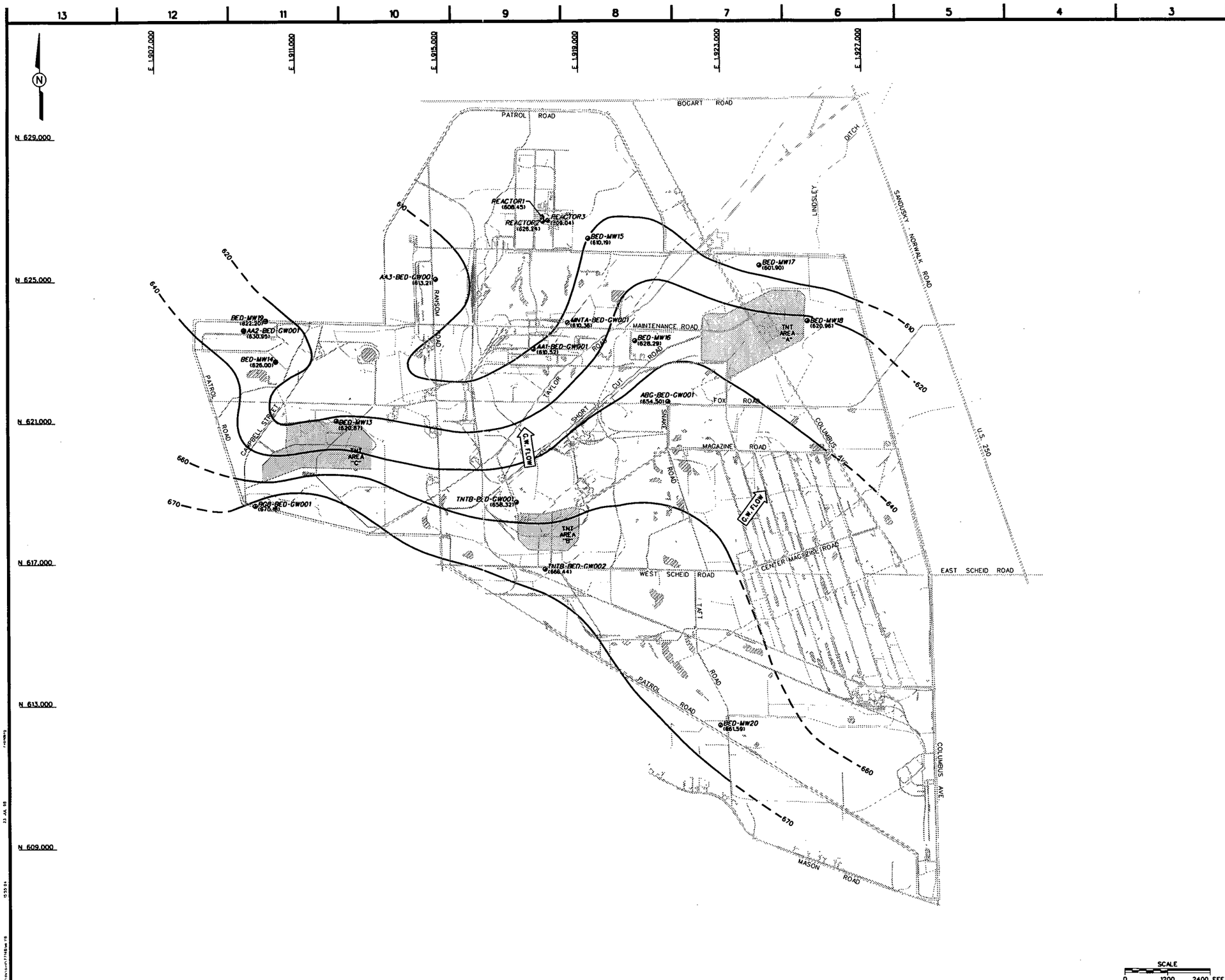
FIGURE 3-4
BEDROCK GROUNDWATER ELEVATION CONTOUR MAP (AUGUST 1997)

AREA	JOB NO.	DRAWING NO.	REV
	771481	771481ES.117	0



LEGEND:

BED-MW16	BEDROCK WELL LOCATIONS
(633.08)	GROUNDWATER ELEVATION (FT-MSL)
G.W. FLOW	INTERPRETED GROUNDWATER FLOW DIRECTION
630	GROUNDWATER ELEVATION CONTOUR (FT-MSL) (DASHED WHERE INFERRED)
	BUILDINGS
	RAILROAD
	SURFACE WATER
	DITCH
	FENCE (PBOW BOUNDARY)

NOTES:

1. SURVEY COORDINATES ARE NOT AVAILABLE FOR MONITORING WELLS PB-MW01, PB-MW02, PB-MW03, PB-MW04, AND REACTOR 5.
2. CONTOUR INTERVAL IS 10 FEET (EXCEPT WHERE INDICATED).

SCALE
0 1200 2400 FEET

NO	DATE	REVISION	BY	CHKD	DSGN ENGR	CNCR	PROJ MGR	APPR

STARTING DATE	INITIATOR	CHKD	DRAWN	CHKD	PROJECT MNGR
12/23/97	R. ELLIS	G. YU	VANDERCRAFT / C. TUMLIN		M. SPANGBERG

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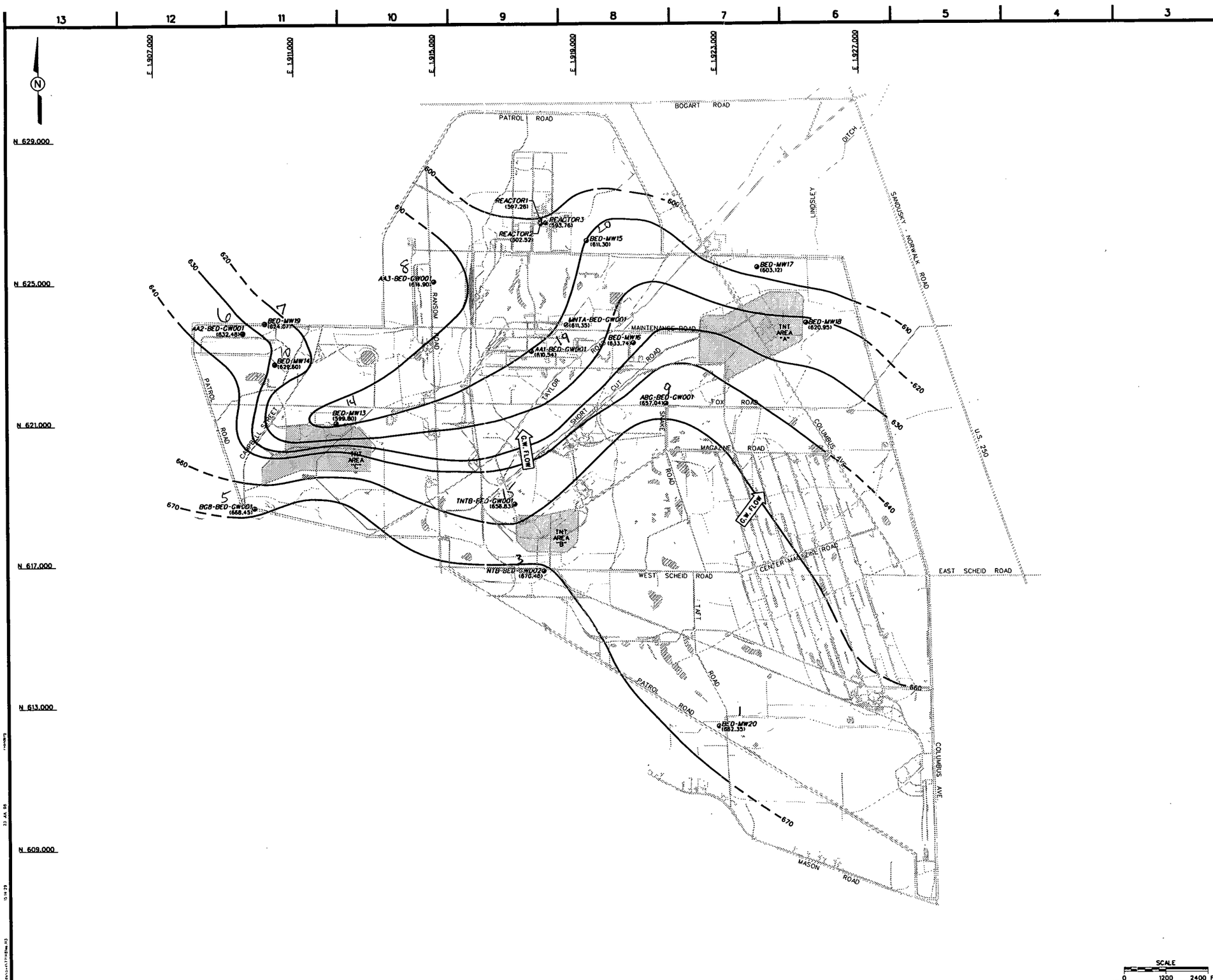
FIGURE 3-5
BEDROCK GROUNDWATER ELEVATION CONTOUR MAP (NOVEMBER 1997)

AREA	JOB NO.	DRAWING NO.	REV
SITEWIDE	771481	771481ES.116	



LEGEND:

BED-MW16	BEDROCK WELL LOCATIONS
(633.08)	GROUNDWATER ELEVATION (FT-MSL)
G.W. FLOW	INTERPRETED GROUNDWATER FLOW DIRECTION
630	GROUNDWATER ELEVATION CONTOUR (FT-MSL) (DASHED WHERE INFERRED)
	BUILDINGS
	RAILROAD
	SURFACE WATER
	DITCH
	FENCE (PBOW BOUNDARY)

NOTES:

1. SURVEY COORDINATES ARE NOT AVAILABLE FOR MONITORING WELLS PB-MW01, PB-MW02, PB-MW03, PB-MW04, AND REACTOR 5.
2. CONTOUR INTERVAL IS 10 FEET (EXCEPT WHERE INDICATED).

NO	DATE	REVISION	BY	CHKD	DSGN ENGR	ENGR	PROJ MGR	APPR

STARTING DATE	INITIATOR	CHKD	DRAWN	CHKD	PROJECT MNGR
6/09/98	R. ELLIS	G. TU	VANDERGRAFT	C. TUMLIN	M. SPANGBERG

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FIGURE 3-6
BEDROCK GROUNDWATER ELEVATION CONTOUR MAP (FEBRUARY 1998)

AREA	JOB NO.	DRAWING NO.	REV
SITEWIDE	771481	771481ES.113	

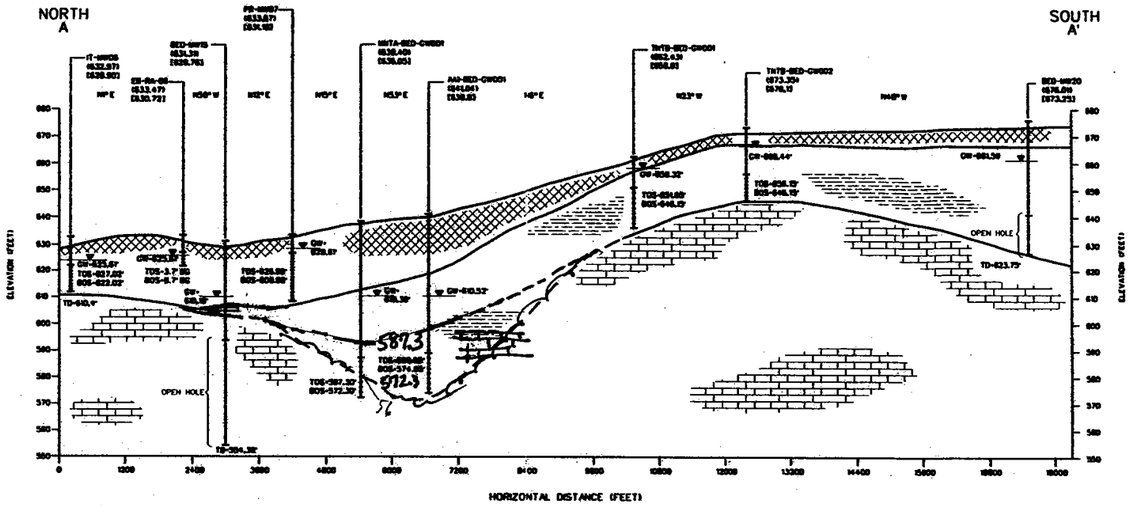
SCALE
0 1200 2400 FEET

4.0 Site-Wide Geology and Hydrogeology Characteristics

Figure 4-1 presents two geologic cross-sections constructed along a north-south transect (A-A') and a west-east transect (B-B') across much of the facility, based on available monitoring well boring logs. The purpose of these geologic cross sections is to show the thickness variations and spatial relationships between the water-bearing zones. The locations of these two cross-sections are presented in Figure 2-1.

Both cross sections reveal a rather variable thickness in the overburden materials. In much of the center and east portion of the facility, the Ohio Shale layer exists between the overburden unconsolidated materials and the underlying limestone bedrock. The shale layer pinches out in the western portion of the facility, leaving the overburden materials directly on top of the limestone bedrock. In places, the presence of the shale layer between the overburden and limestone bedrock appears to locally separate the two water-bearing zones. For example, during the second quarterly event, the well pair installed in Acid Area 1 (AA1) exhibited a groundwater elevation of 610.52 feet in the bedrock well (IT-AA1-BEDGW-001) and 634.63 feet in the overburden well (IT-AA1-GW002). Similar observations were also obtained in the third quarterly measurement for this well pair with the water level in the overburden well (IT-AA1-GW002) being 27.26 feet higher than that in the adjacent bedrock well (IT-AA1-BEDGW-001) The significant difference in water level elevations between the two wells only 10 feet apart seems to indicate little connection between the overburden and the underlying bedrock water-bearing zone in that location. However, in the ABG area, the well pair (IT-ABG-BEDGW-001 and IT-ABGGW-002) showed an almost identical water level elevation (Table 2-4) in both second and third quarterly events. Soil boring data indicate a shale layer between the overburden and the limestone in both locations. Therefore, the presence of a shale layer underneath the overburden material does not necessarily provide a hydraulic barrier between the two water-bearing zones. In the western part of the facility where the shale layer is generally absent, the overburden and bedrock water-bearing zones are hydraulically connected.

The reasons for the significant variations in water level elevation in some bedrock wells observed during this quarterly water level monitoring are not clear. It is possible, however, that some of these wells are located in areas of relatively high fracture density and are thus more easily fed by recharge water. In such locations, the two water-bearing zones are hydraulically connected. At PBOW, the groundwater flow regime in the bedrock water-bearing zone is controlled more by



CROSS SECTION A-A'

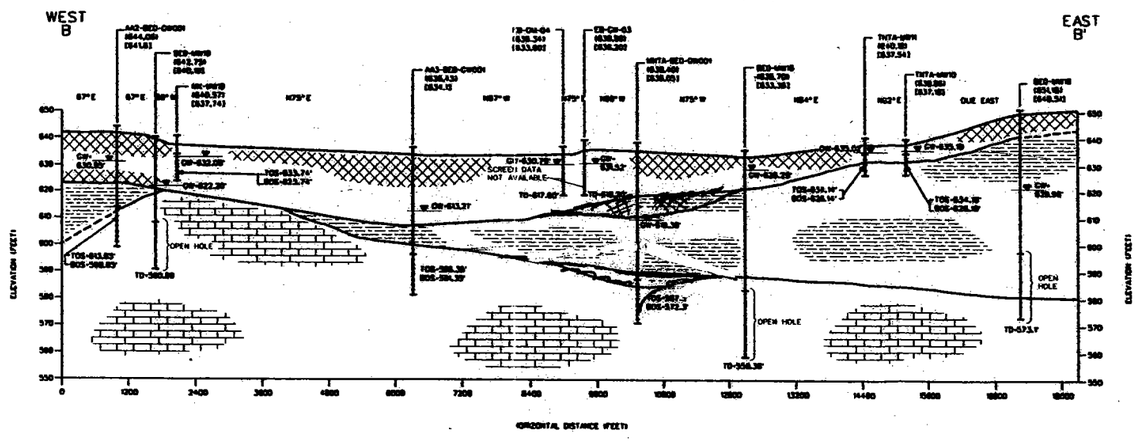
MNTA (LM)
2.7=25
4.8 44.2

Bed 16
2.7=25
1.3 12

BED 16 (LM)
2.7=25
4.8 44.2

Shale
2.7=25
2.6 24.8

AA1 (LM)
2.7=25
4.3 40



CROSS SECTION B-B'

LEGEND:

- OVERBURDEN
- SHALE
- LIMESTONE
- GW=610.52' — GROUNDWATER ELEVATION (NOVEMBER 12, 1997)
- BED-MW15 — WELL ID
- (631.31) — CASING ELEVATION
- [628.76] — GROUND SURFACE ELEVATION
- TD=579.26' — WELL BOTTOM ELEVATION
- TOS — TOP OF SCREEN
- BOS — BOTTOM OF SCREEN
- N15°E — BERING OF CROSS-SECTION SEGMENT

NOTES:

1. ALL ELEVATIONS ARE REFERENCED TO NORTH AMERICAN VERTICAL DATUM (1983).

HORIZONTAL SCALE:
0 1200 2400 FEET

VERTICAL SCALE:
0 25 50 FEET

NO.	DATE	REVISION	BY	CHKD	DSGN ENGR	ENGR	PROJ MGR	APPR

STARTING DATE 1/17/98 | INITIATOR R.ELLIS | CHKD C.YU | DRAWN D.HALL | CHKD E.TUALN | PROJECT MGR M.SPARGBURG

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FIGURE 4-1
GEOLOGICAL CROSS SECTIONS A-A' AND B-B'

AREA	JOB NO.	DRAWING NO.	REV
	771481	771481ES.009	

the hydraulic properties of the bedrock than by seasonal variations in the amount of available infiltration. On the other hand, the hydrogeological regime of the overburden water-bearing zone depends primarily on seasonal recharge. Subsequent water level measurements should be closely monitored in these wells.

5.0 Analytical Program

All groundwater samples for chemical analysis were analyzed by Quanterra Environmental Services. The analytical data packages were submitted by the laboratory to the IT data management group for input into the IT Environmental Management System™ (ITEMS™) database system in accordance with the QAPP (IT, 1996c). Data validation was performed by an independent third party contractor and the results are presented in Appendix E. The laboratory analytical data packages, including the data summary, hits summary, and risk-based concentration (RBC) comparison summary, are included in Appendix F.

5.1 Analytical Parameters and Methodologies

Chemical analyses for the GWI were performed in accordance with guidelines in the U.S. Environmental Protection Agency (EPA) document titled *Test Methods for Evaluating Solid Waste* (SW-846) (EPA, 1986). Methods used for analysis by the laboratory are shown in Table 5-1. All analytical data were reported in accordance with the EPA Level IV Contract Laboratory Program (CLP)-like data package and were in compliance with the EPA definitive data requirements. The regulatory compound/analyte list reported was the target compound list for organics and the target analyte list for inorganics as defined by the most recent CLP statement of work. These data packages have been reviewed for completeness, accuracy, and representativeness as prescribed in the QAPP (IT, 1996c). All analytical data presented in this report were validated and blank corrected. Data validation was performed by an independent subcontractor and the validation summary is presented in Appendix E. All samples were submitted to the laboratory accompanied by an analysis request/chain of custody (AR/COC) form. The AR portion of the form provides project specific analytical specifications and quality control (QC) instruction to the laboratories. A formal COC record was included as part of the document, ensuring documentation of custody for sample transportation, storage, and eventual disposition by the laboratory. Copies of all custody documentation are included in the data packages submitted.

The analytical data has been assessed with regard to the project specific objectives. All elements of data evaluation were compiled and used to determine the usability and overall applicability of the resulting data. Evaluation of the data using the specific data quality objectives established for the project resulted in the determination that the data set is valid and of sufficient quality to meet the objectives of the investigation. There were no significant problems observed that would adversely affect the application of the data or the success of the overall investigation.

Table 5-1

Summary of Analytical Methods for Groundwater Samples
First Semi-Annual Groundwater Sampling
Site-Wide Groundwater Investigation
Former Plum Brook Ordnance Works, Sandusky, Ohio

Parameter Name	Groundwater Analytical Method
TCL Volatile Organic Compounds	EPA SW-846 8260A
TCL Semivolatile Organic Compounds	EPA-SW846 3520B/8270B
Nitroaromatics	EPA SW-846 Modified 8330
Total and Dissolved TAL Metals	EPA SW-846 3010A/6010 7060A/7470A/7740
Polychlorinated Biphenyls	EPA SW-846 3520B/8081
Hardness	EPA 130.2
Alkalinity	EPA 310.1
Total Organic Carbons	EPA SW-9060
Total Dissolved Solids	EPA 160.1
Total Suspended Solids	EPA 160.2
Chloride	EPA 325.3
Cyanide (Total)	EPA SW-846 9010A/9012
Nitrate	EPA 352.1
Sulfate	EPA 375.3

Notes: TAL - Target Analyte List. Metals include Ag, Al, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, K, Mg, Mn, Na, Ni, Pb, Tl, V, Zn, As, Hg, and Se.
TCL - Target Compound List.
Analytical methods from December 1990, SW-846 - 3rd edition, September 1986 and subsequent revisions (Revision 1, December 1990, Update 1, July 1992, and Update 2, September 1994).

5.2 Blank Correction

The analytical data generated by the GWI were evaluated in regard to the results in associated field blanks, trip blanks, equipment rinsates, and laboratory method blanks. The method blank results reported with the analytical data were evaluated for high readings characteristic of background or process contamination. There were no significant concentrations detected in the designated blank samples that indicate any analytical process out of control or require further corrective action. During the blank correction process, any compound or analyte detected in both the sample and an associated blank is qualified if the sample concentration is less than five times (5x) the blank concentration for target compounds or ten times (10x) the blank concentration for common laboratory contaminants. Compounds considered to be common laboratory contaminants that fall under the 10x rule include methylene chloride, acetone, toluene, 2-butanone, and common phthalate esters. Typically, the sample quantitation limit is elevated to the concentration found in the sample. This evaluation process is often referred to as the "5x/10x rule". If a compound or analyte is found in a blank but not detected in the sample, no action is necessary. In instances where more than one blank is associated with a given sample, qualification is based upon a comparison with the associated blank having the highest concentration of a contaminant. During the blank correction process, only the "5x/10x rule" is applied and the analytical results are never corrected by subtracting any blank values; therefore, blank correction does not result in the alteration of any analytical data. The analytical data presented in this report were blank corrected as a function of the data validation process described above.

5.3 Screening Criteria

The analytical data obtained from the first semiannual groundwater event have been screened against RBCs derived from the published EPA Region 3 tables (EPA, 1997). RBCs are media-specific contaminant levels used to reduce the list of site-related chemicals carried through all the steps of the chemical of potential concern (COPC) selection and quantitative risk assessment. RBCs have been conservatively derived by assuming a residential receptor, applying high-end values for most of the exposure variables, and setting the target cancer risk at 10^{-6} and the target hazard index (HI) at 0.1. The cancer risk of 10^{-6} reflects the lower end of the target risk range as defined in the National Contingency Plan (EPA, 1990). The HI of 0.1 provides additional protection from noncancer effects arising from exposure to multiple chemicals. Chemicals present in environmental media at concentrations below the RBCs will not contribute significantly to total site risk.

RBCs were obtained preferentially from the EPA Region 3 tables compiled for this purpose (EPA, 1997). No attempt was made to develop RBCs for ubiquitous, nutritionally essential elements unlikely to be toxic at concentrations ordinarily found in environmental media and for which toxicity values are unavailable (i.e., calcium, magnesium, potassium, and sodium). RBCs used in the screening data are presented in Chapter 6.0 tables as well as in Appendix B.

RBCs for tap water were used to screen contaminants in groundwater, assuming that household use of groundwater results in the most restrictive contamination levels.

6.0 Analytical Results

A total of 44 existing and 11 new monitoring wells were sampled during the first semiannual groundwater sampling event at PBOW. Of these, 38 wells are screened to monitor the overburden water-bearing zone and 17 are screened in the bedrock water-bearing zone. Because the wells are located in various geographic locations representing individual areas of concern across the PBOW site, the discussion of analytical results is presented based on these locations:

- West Area Red Water Ponds (WARWP) Area
- Pentolite Road Red Water Ponds (PRRWP) Area
- TNTA
- TNT Manufacturing Area B (TNTB)
- TNTC
- Acids Areas and the Maintenance Shop Area
- Burning Ground Areas (G-8 Burning Ground [BG8], Additional Burning Ground [ABG], and Taylor Road Burning Ground)
- Upper Toluene Tank Area
- Other Areas (Reactor Building Area, Disposal Area No.3 , and BED-MW20).

All detected constituents in groundwater samples are summarized on various tables; those having concentrations above RBCs were highlighted. Detected chemical constituents with concentrations exceeding respective RBCs are also presented in figures. Note that the discussion of analytical results focuses on those constituents that were detected at concentrations exceeding the respective RBCs. Chemical constituents that were detected at concentrations below the respective RBCs are summarized in tables but are not discussed in detail.

Pesticides and polychlorinated biphenyls (PCB) were analyzed for in all primary samples and the concentrations were all below detection limits. However, elevated detection limits (50 micrograms per liter [µg/L]) were reported in PB-PR-MW7 and PB-PR-MW8 due to dilution.

Dilution was necessary due to matrix interference. The detection limit for pesticides and PCBs without dilution was 1.0 µg/L.

6.1 West Area Red Water Ponds

Five overburden wells and one bedrock well were sampled in the vicinity of the WARWP area:

- Overburden wells
  - IT-MW02, IT-MW08, IT-MW10, WA-MW01, WA-MW02
- Bedrock well
  - PB-BED-MW14 .

6.1.1 Overburden Wells

6.1.1.1 Volatile Organic Compounds

Of the five overburden wells sampled, IT-MW02, IT-MW08, and PB-WA-MW01 exhibited no detectable volatile organic compounds (VOC). IT-MW10 displayed an estimated concentration of carbon disulfide (0.17 µg/L) and PB-WA-MW02 contained total xylene at an estimated concentration of 0.17 µg/L; both were significantly below the RBCs (Table 6-1, Figure 6-1).

6.1.1.2 Semivolatile Organic Compounds

Of the five sampled overburden wells, IT-MW08 and PB-WA-MW02 showed no detectable levels of semivolatile organic compounds (SVOC). bis(2-Ethylhexyl)phthalate was present in IT-MW10 at an estimated concentration of 5.1 µg/L, slightly above the RBC of 4.8 µg/L. Di-n-octal phthalate was detected in PB-WA-MW01 at 2.7 µg/L which is below the RBC of 73 µg/L. Four SVOCs (nitroaromatics) were detected in IT-MW02 at levels exceeding their respective RBCs, including 2,4-dinitrotoluene (DNT) (43 µg/L), 2,6-DNT (7.1 µg/L), 2-nitroaniline (1.5 µg/L), and 4,6-dinitro-2-methylphenol (12 µg/L) (Table 6-2, Figure 6-1).

6.1.1.3 Nitroaromatic Compounds

Nitroaromatic compounds were present exclusively in the sample collected from IT-MW02 which is located immediately adjacent to the former red water pond. The detected compounds exceeding RBCs included 1,3-dinitrobenzene (DNB) (17 µg/L), 2,4-DNT (47 µg/L), and 2,6-DNT (7.8 µg/L). 1,3,5-trinitrobenzene (TNB) was also detected but at a concentration (14 µg/L) below the RBC (Table 6-3). The compounds 2,4-DNT and 2,6-DNT were also detected at

Table 6-1

Summary of Detected Volatile Organic Compounds
Overburden Monitoring Wells
Former Plum Brook Ordnance Works, Sandusky, Ohio

	Sample Location:	GCL-MW01	GCL-MW02A	GCL-MW02B	GCL-MW03	IT-AA1-GW002	IT-ABG-GW-002
	Sample Number:	5850	5860	5870	5880	5490	5520
	Sample Date:	20-Nov-97	20-Nov-97	20-Nov-97	20-Nov-97	20-Nov-97	19-Nov-97
	Units:	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
VOLATILES	RBC[a]	Result (VQ)[b]	Result (VQ)	Result (VQ)	Result (VQ)	Result (VQ)	Result (VQ)
1,1,1-TRICHLOROETHANE	160	nd[c]	nd	nd	nd	nd	nd
1,1-DICHLOROETHANE	81	nd	nd	nd	nd	nd	nd
1,1-DICHLOROETHENE	0.044	nd	nd	nd	nd	nd	nd
ACETONE	370	nd	nd	nd	nd	nd	nd
BENZENE	0.36	nd	nd	nd	nd	nd	0.53(J)
CARBON DISULFIDE	100	nd	0.64(J)	nd	nd	nd	0.24(J)
CHLOROBENZENE	3.9	nd	nd	nd	nd	nd	nd
CHLOROETHANE	3.6	nd	nd	nd	nd	nd	nd
CHLOROFORM	0.15	nd	nd	nd	nd	nd	nd
METHYLENE CHLORIDE	4.1	nd	nd	nd	nd	nd	nd
TOLUENE	75	nd	nd	nd	nd	nd	nd
TOTAL XYLENES	1200	nd	nd	nd	nd	nd	0.35(J)

	Sample Location:	IT-MW01	IT-MW02	IT-MW05	IT-MW06	IT-MW08	IT-MW09
	Sample Number:	5530	5540	5550	5560	5580	5590
	Sample Date:	19-Nov-97	21-Nov-97	19-Nov-97	19-Nov-97	19-Nov-97	23-Nov-97
	Units:	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
VOLATILES	RBC	Result (VQ)	Result (VQ)	Result (VQ)	Result (VQ)	Result (VQ)	Result (VQ)
1,1,1-TRICHLOROETHANE	160	nd	nd	nd	nd	nd	nd
1,1-DICHLOROETHANE	81	nd	nd	nd	nd	nd	nd
1,1-DICHLOROETHENE	0.044	nd	nd	nd	nd	nd	nd
ACETONE	370	nd	nd	22(J)	nd	nd	nd
BENZENE	0.36	nd	nd	nd	nd	nd	nd
CARBON DISULFIDE	100	nd	nd	0.21(J)	nd	nd	nd
CHLOROBENZENE	3.9	nd	nd	nd	nd	nd	0.17(J)
CHLOROETHANE	3.6	nd	nd	nd	nd	nd	nd
CHLOROFORM	0.15	nd	nd	nd	nd	nd	nd
METHYLENE CHLORIDE	4.1	nd	nd	nd	nd	nd	nd
TOLUENE	75	nd	nd	nd	0.2(J)	nd	nd
TOTAL XYLENES	1200	0.31(J)	nd	nd	nd	nd	nd

Table 6-1

Summary of Detected Volatile Organic Compounds
Overburden Monitoring Wells
Former Plum Brook Ordnance Works, Sandusky, Ohio

	Sample Location:	IT-MW10	MK-MW09	MK-MW11	MK-MW14	MK-MW15	MK-MW16
	Sample Number:	5600	5720	5740	5760	5770	5780
	Sample Date:	14-Nov-97	16-Nov-97	18-Nov-97	16-Nov-97	16-Nov-97	21-Nov-97
	Units:	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
VOLATILES	RBC	Result (VQ)	Result (VQ)	Result (VQ)	Result (VQ)	Result (VQ)	Result (VQ)
1,1,1-TRICHLOROETHANE	160	nd	nd	nd	nd	nd	nd
1,1-DICHLOROETHANE	81	nd	nd	nd	nd	nd	nd
1,1-DICHLOROETHENE	0.044	nd	nd	nd	nd	nd	nd
ACETONE	370	nd	nd	nd	nd	nd	nd
BENZENE	0.36	nd	nd	nd	nd	nd	nd
CARBON DISULFIDE	100	0.17(J)	nd	0.31(J)	0.32(J)	0.38(J)	nd
CHLOROBENZENE	3.9	nd	nd	nd	nd	nd	nd
CHLOROETHANE	3.6	nd	nd	nd	nd	nd	nd
CHLOROFORM	0.15	nd	nd	nd	nd	nd	nd
METHYLENE CHLORIDE	4.1	nd	nd	nd	nd	nd	nd
TOLUENE	75	nd	0.13(J)	nd	nd	nd	nd
TOTAL XYLENES	1200	nd	0.13(J)	nd	nd	nd	nd

	Sample Location:	MK-MW17	MK-MW19	MK-MW20	MK-MW23	PB-PR-MW7	PB-PR-MW8
	Sample Number:	5790	5800	5810	5830	5690	5700
	Sample Date:	21-Nov-97	16-Nov-97	16-Nov-97	16-Nov-97	17-Nov-97	17-Nov-97
	Units:	µg/L	µg/l	µg/l	µg/l	µg/l	µg/l
VOLATILES	RBC	Result (VQ)	Result (VQ)	Result (VQ)	Result (VQ)	Result (VQ)	Result (VQ)
1,1,1-TRICHLOROETHANE	160	nd	170	nd	nd	nd	nd
1,1-DICHLOROETHANE	81	nd	17	nd	nd	nd	nd
1,1-DICHLOROETHENE	0.044	nd	3.4	nd	nd	nd	nd
ACETONE	370	nd	nd	nd	68(J)	nd	nd
BENZENE	0.36	nd	nd	nd	nd	nd	nd
CARBON DISULFIDE	100	nd	nd	nd	0.37(J)	nd	nd
CHLOROBENZENE	3.9	nd	nd	nd	nd	nd	nd
CHLOROETHANE	3.6	nd	2.5	nd	nd	nd	nd
CHLOROFORM	0.15	nd	nd	71(J)	nd	nd	nd
METHYLENE CHLORIDE	4.1	nd	nd	nd	nd	nd	nd
TOLUENE	75	nd	6.1	13000	nd	nd	nd
TOTAL XYLENES	1200	nd	nd	100(J)	nd	nd	nd

Table 6-1

Summary of Detected Volatile Organic Compounds
Overburden Monitoring Wells
Former Plum Brook Ordnance Works, Sandusky, Ohio

Sample Location:		PB-PR-MW9	PB-TNTA-MW10	PB-TNTC-MW5	PB-TNTC-MW6	PB-WA-MW1	PB-WA-MW2
Sample Number:		5710	5610	5650	5660	5670	5680
Sample Date:		17-Nov-97	18-Nov-97	21-Nov-97	20-Nov-97	21-Nov-97	23-Nov-97
Units:		µg/L	µg/l	µg/l	µg/l	µg/l	µg/L
VOLATILES	RBC	Result (VQ)	Result (VQ)	Result (VQ)	Result (VQ)	Result (VQ)	Result (VQ)
1,1,1-TRICHLOROETHANE	160	nd	nd	nd	nd	nd	nd
1,1-DICHLOROETHANE	81	nd	nd	nd	nd	nd	nd
1,1-DICHLOROETHENE	0.044	nd	nd	nd	nd	nd	nd
ACETONE	370	nd	35(J)	nd	nd	nd	nd
BENZENE	0.36	nd	nd	nd	nd	nd	nd
CARBON DISULFIDE	100	nd	nd	nd	nd	nd	nd
CHLOROBENZENE	3.9	nd	nd	nd	nd	nd	nd
CHLOROETHANE	3.6	nd	nd	nd	nd	nd	nd
CHLOROFORM	0.15	nd	nd	nd	nd	nd	nd
METHYLENE CHLORIDE	4.1	nd	nd	nd	nd	nd	nd
TOLUENE	75	nd	nd	nd	nd	nd	nd
TOTAL XYLENES	1200	nd	nd	nd	nd	nd	0.17 (J)

[a]Risk-Based Concentrations (RBC), calculated from EPA Region 3 RBC table (1997).
[b]Analytical result with data validation qualifier in brackets; J denotes estimated result; shaded denotes detected concentration was above RBC.
[c]Not detected.
µg/L - Micrograms per liter.

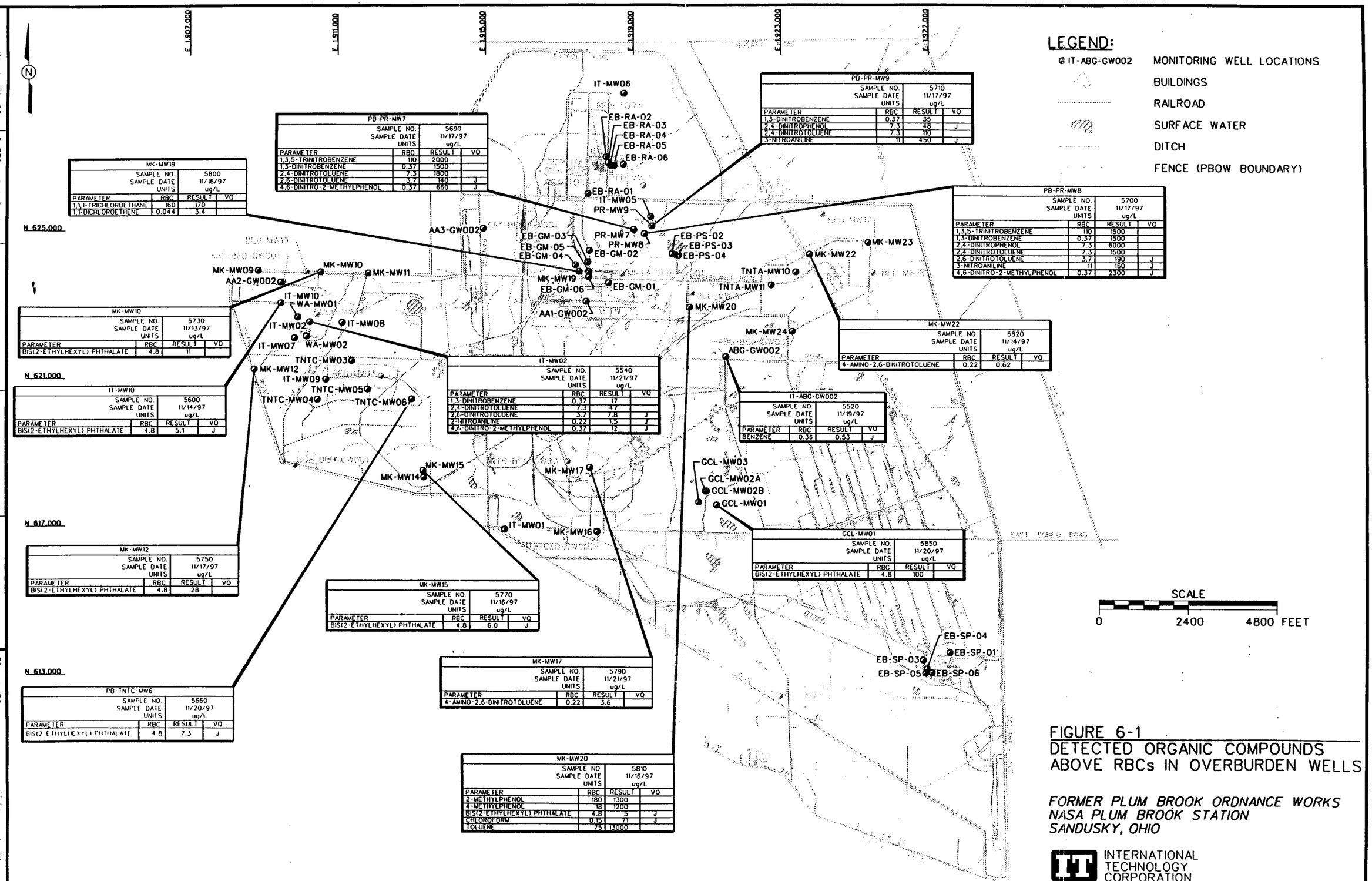
Table 6-2

Summary of Detected Semivolatile Organic Compounds
Overburden Monitoring Wells
Former Plum Brook Ordnance Works, Sandusky, Ohio

	Sample Location:	GCL-MW01	GCL-MW02B	IT-MW02	IT-MW10	MK-MW10	MK-MW12	MK-MW14	MK-MW15
	Sample Number:	5850	5870	5540	5600	5730	5750	5760	5770
	Sample Date:	20-Nov-97	20-Nov-97	21-Nov-97	14-Nov-97	13-Nov-97	17-Nov-97	16-Nov-97	16-Nov-97
	Units:	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
SEMIVOLATILES	RBC[a]	Result (VQ)[b]	Result (VQ)	Result (VQ)	Result (VQ)	Result (VQ)	Result (VQ)	Result (VQ)	Result (VQ)
2,4-DINITROPHENOL	7.3	nd[c]	nd	nd	nd	nd	nd	nd	nd
2,4-DINITROTOLUENE	7.3	nd	nd	43	nd	nd	nd	nd	nd
2,6-DINITROTOLUENE	3.7	nd	nd	7.1(J)	nd	nd	nd	nd	nd
2-METHYLPHENOL	180	nd	nd	nd	nd	nd	nd	nd	nd
2-NITROANILINE	0.22	nd	nd	1.5(J)	nd	nd	nd	nd	nd
3-NITROANILINE	11	nd	nd	nd	nd	nd	nd	nd	nd
4,6-DINITRO-2-METHYLPHENOL	0.37	nd	nd	12(J)	nd	nd	nd	nd	nd
4-METHYLPHENOL	18	nd	nd	nd	nd	nd	nd	nd	nd
BIS(2-ETHYLHEXYL)PHTHALATE	4.8	100	nd	nd	5.1(J)	11	28	1.7(J)	6.0(J)
DI-n-OCTYL PHTHALATE	73	nd	nd	nd	nd	nd	nd	nd	nd
DIETHYL PHTHALATE	2900	nd	2.7(J)	nd	nd	nd	nd	nd	nd
PHENOL	2200	nd	nd	nd	nd	nd	nd	nd	nd

	Sample Location:	MK-MW16	MK-MW20	MK-MW23	PB-PR-MW7	PB-PR-MW8	PB-PR-MW9	PB-TNTC-MW6	PB-WA-MW1
	Sample Number:	5780	5810	5830	5690	5700	5710	5660	5670
	Sample Date:	21-Nov-97	16-Nov-97	16-Nov-97	17-Nov-97	17-Nov-97	17-Nov-97	20-Nov-97	21-Nov-97
	Units:	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
SEMIVOLATILES	RBC	Result (VQ)	Result (VQ)	Result (VQ)	Result (VQ)	Result (VQ)	Result (VQ)	Result (VQ)	Result (VQ)
2,4-DINITROPHENOL	7.3	nd	nd	nd	nd	6000	48(J)	nd	nd
2,4-DINITROTOLUENE	7.3	nd	nd	nd	1800	1500	110	nd	nd
2,6-DINITROTOLUENE	3.7	nd	nd	nd	140(J)	190(J)	nd	nd	nd
2-METHYLPHENOL	180	nd	1300	nd	nd	nd	nd	nd	nd
2-NITROANILINE	0.22	nd	nd	nd	nd	nd	nd	nd	nd
3-NITROANILINE	11	nd	nd	nd	nd	160(J)	450(J)	nd	nd
4,6-DINITRO-2-METHYLPHENOL	0.37	nd	nd	nd	660(J)	2300(J)	nd	nd	nd
4-METHYLPHENOL	18	nd	1200	nd	nd	nd	nd	nd	nd
BIS(2-ETHYLHEXYL)PHTHALATE	4.8	2.4(J)	5(J)	nd	nd	nd	nd	7.3(J)	nd
DI-n-OCTYL PHTHALATE	73	nd	nd	9.3(J)	nd	nd	nd	nd	2.7(J)
DIETHYL PHTHALATE	2900	nd	nd	nd	nd	nd	nd	nd	nd
PHENOL	2200	nd	6.8(J)	nd	nd	nd	nd	nd	nd

[a]Risk-based concentrations (RBC), calculated from EPA Region 3 RBC table (1997).
[b]Analytical result with data validation qualifier in brackets; J denotes estimated result; shaded denotes detected concentration was above RBC.
[c]Not detected.
µg/L - Micrograms per liter.



MK-MW19			
SAMPLE NO.		5800	
SAMPLE DATE		11/16/97	
UNITS		ug/L	
PARAMETER	RBC	RESULT	VQ
1,1,1-TRICHLOROETHANE	160	170	
1,1-DICHLOROETHENE	0.044	3.4	

PB-PR-MW7			
SAMPLE NO.		5690	
SAMPLE DATE		11/17/97	
UNITS		ug/L	
PARAMETER	RBC	RESULT	VQ
1,3,5-TRINITROBENZENE	110	2000	
1,3-DINITROBENZENE	0.37	1500	
2,4-DINITROTOLUENE	7.3	1800	
2,6-DINITROTOLUENE	3.7	140	J
4,6-DINITRO-2-METHYLPHENOL	0.37	660	J

PB-PR-MW9			
SAMPLE NO.		5710	
SAMPLE DATE		11/17/97	
UNITS		ug/L	
PARAMETER	RBC	RESULT	VQ
1,3-DINITROBENZENE	0.37	35	
2,4-DINITROPHENOL	7.3	48	J
2,4-DINITROTOLUENE	7.3	110	
3-NITROANILINE	11	450	J

PB-PR-MW8			
SAMPLE NO.		5700	
SAMPLE DATE		11/17/97	
UNITS		ug/L	
PARAMETER	RBC	RESULT	VQ
1,3,5-TRINITROBENZENE	110	1500	
1,3-DINITROBENZENE	0.37	1500	
2,4-DINITROPHENOL	7.3	6000	
2,4-DINITROTOLUENE	7.3	1500	
2,6-DINITROTOLUENE	3.7	190	J
3-NITROANILINE	11	160	J
4,6-DINITRO-2-METHYLPHENOL	0.37	2300	J

MK-MW10			
SAMPLE NO.		5730	
SAMPLE DATE		11/13/97	
UNITS		ug/L	
PARAMETER	RBC	RESULT	VQ
BIS(2-ETHYLHEXYL) PHTHALATE	4.8	11	

IT-MW10			
SAMPLE NO.		5600	
SAMPLE DATE		11/14/97	
UNITS		ug/L	
PARAMETER	RBC	RESULT	VQ
BIS(2-ETHYLHEXYL) PHTHALATE	4.8	5.1	J

IT-MW02			
SAMPLE NO.		5540	
SAMPLE DATE		11/21/97	
UNITS		ug/L	
PARAMETER	RBC	RESULT	VQ
1,3-DINITROBENZENE	0.37	17	
2,4-DINITROTOLUENE	7.3	47	
2,6-DINITROTOLUENE	3.7	7.8	J
3-NITROANILINE	0.22	1.5	J
4,6-DINITRO-2-METHYLPHENOL	0.37	12	J

MK-MW22			
SAMPLE NO.		5820	
SAMPLE DATE		11/14/97	
UNITS		ug/L	
PARAMETER	RBC	RESULT	VQ
4-AMINO-2,6-DINITROTOLUENE	0.22	0.62	

IT-ABG-GW002			
SAMPLE NO.		5520	
SAMPLE DATE		11/19/97	
UNITS		ug/L	
PARAMETER	RBC	RESULT	VQ
BENZENE	0.36	0.53	J

GCL-MW01			
SAMPLE NO.		5850	
SAMPLE DATE		11/20/97	
UNITS		ug/L	
PARAMETER	RBC	RESULT	VQ
BIS(2-ETHYLHEXYL) PHTHALATE	4.8	100	

MK-MW12			
SAMPLE NO.		5750	
SAMPLE DATE		11/17/97	
UNITS		ug/L	
PARAMETER	RBC	RESULT	VQ
BIS(2-ETHYLHEXYL) PHTHALATE	4.8	28	

MK-MW15			
SAMPLE NO.		5770	
SAMPLE DATE		11/16/97	
UNITS		ug/L	
PARAMETER	RBC	RESULT	VQ
BIS(2-ETHYLHEXYL) PHTHALATE	4.8	6.0	J

MK-MW17			
SAMPLE NO.		5790	
SAMPLE DATE		11/21/97	
UNITS		ug/L	
PARAMETER	RBC	RESULT	VQ
4-AMINO-2,6-DINITROTOLUENE	0.22	3.6	

PB-TNTC-MW6			
SAMPLE NO.		5660	
SAMPLE DATE		11/20/97	
UNITS		ug/L	
PARAMETER	RBC	RESULT	VQ
BIS(2-ETHYLHEXYL) PHTHALATE	4.8	7.3	J

MK-MW20			
SAMPLE NO.		5810	
SAMPLE DATE		11/16/97	
UNITS		ug/L	
PARAMETER	RBC	RESULT	VQ
2-METHYLPHENOL	180	1300	
4-METHYLPHENOL	18	1200	
BIS(2-ETHYLHEXYL) PHTHALATE	4.8	5	J
CHLOROFORM	0.15	71	J
TOLUENE	75	13000	

FIGURE 6-1
DETECTED ORGANIC COMPOUNDS ABOVE RBCs IN OVERBURDEN WELLS

FORMER PLUM BROOK ORDNANCE WORKS
NASA PLUM BROOK STATION
SANDUSKY, OHIO

INTERNATIONAL TECHNOLOGY CORPORATION

DRAFT CHCK. BY: VANDERGRIFF | INITIATOR: G.YU | DWG NO
ENGR. CHCK. BY: G.YU | PROJ. MGR.: SPANGBERG | PROJ. NO.
STARTING DATE: 3/24/98 | DATE LAST
DRAWN BY: R. VANDERGRIFF | DRAWN BY:
08 APR 98 04:13

Table 6-3

Summary of Detected Nitroaromatic Compounds
Overburden Monitoring Wells
Former Plum Brook Ordnance Works, Sandusky, Ohio

	Sample Location:	**IT-MW02**	**MK-MW17**	**MK-MW22**	**PB-PR-MW7**	**PB-PR-MW8**	**PB-PR-MW9**
	Sample Number:	5540	5790	5820	5690	5700	5710
	Sample Date:	21-Nov-97	21-Nov-97	14-Nov-97	17-Nov-97	17-Nov-97	17-Nov-97
	Unit:	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EXPLOSIVES	RBC[a]	Result (VQ)[b]	Result (VQ)	Result (VQ)	Result (VQ)	Result (VQ)	Result (VQ)
1,3,5-TRINITROBENZENE	110	14	nd[c]	0.24	2000	1500	nd
1,3-DINITROBENZENE	0.37	17	nd	nd	1500	1500	35
2,4,6-TRINITROTOLUENE	2.2	nd	nd	0.74	nd	nd	nd
2,4-DINITROTOLUENE	7.3	47	nd	0.2	1200	1300	28
2,6-DINITROTOLUENE	3.7	7.8	nd	0.53	nd	nd	nd
4-AMINO-2,6-DINITROTOLUENE	0.22	nd	3.6	0.62	nd	nd	nd

[a]Risk-based concentrations (RBC), calculated from EPA Region 3 RBC table (1997).
[b]Analytical result with data validation qualifier in brackets; J denotes estimated result; shaded denotes detected concentration was above RBC.
[c]Not detected.
µg/L - Micrograms per liter.

comparable levels under the SVOC analysis at comparable levels (Section 6.1.1.2). Only the highest detected values for these two compounds are presented in Figure 6-1.

6.1.1.4 Inorganic Compounds and Cyanide

Both total and dissolved manganese were detected at concentrations exceeding the RBC of 0.073 milligrams per liter (mg/L) in all five samples. In addition, total iron (3.04 mg/L) exceeded the RBC of 1.1 mg/L in IT-MW10 and an estimated total aluminum concentration (3.72 mg/L) exceeded the RBC of 3.7 mg/L in PB-WA-MW02 (Table 6-4, Figure 6-2). Other metals detected at concentrations below the RBCs included chromium, copper, lead, nickel, selenium, and zinc.

Cyanide was only detected in PB-WA-MW02 at a concentration of 0.079 mg/L, slightly above the RBC of 0.037 mg/L (Table 6- 4, Figure 6-2).

6.1.2 Bedrock Wells

6.1.2.1 Volatile Organic Compounds

Five VOCs were detected in PB-BED-MW14 (Table 6-5), including benzene, carbon disulfide, ethyl benzene, toluene, and xylene. Of these, only benzene (1.1 µg/L) exceeded the RBC of 0.36 µg/L (Figure 6-3).

6.1.2.2 Semivolatile Organic Compounds

The concentrations of SVOCs were all below detection limits. However, elevated detection limits were reported due to matrix interference.

6.1.2.3 Nitroaromatic Compounds

The concentrations of nitroaromatic compounds were all below detection limits (Table 6-6). However, elevated detection limits were reported due to matrix interference.

6.1.2.4 Inorganic Compounds and Cyanide

Six metals (aluminum, chromium, iron, manganese, nickel, and zinc) were detected in both filtered and/or unfiltered groundwater samples from PB-BED-MW14 with concentrations below respective RBCs (Table 6-7).

Cyanide (total) was detected in PB-BED-MW14 at a concentration of 16 µg/L which is below the RBC value of 73 µg/L (Table 6-7).

Table 6-4

Summary of Detected Metals and Cyanide
Overburden Monitoring Wells
Former Plum Brook Ordnance Works, Sandusky, Ohio

		Sample Location:	GCL-MW01	GCL-MW02A	GCL-MW02B	GCL-MW03	IT-AA1-GW-002	IT-AA3-GW-002
		Sample Number:	5850	5860	5870	5880	5490	5510
		Sample Date:	20-Nov-97	20-Nov-97	20-Nov-97	20-Nov-97	20-Nov-97	19-Nov-97
		Units:	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
METALS		RBC[a]	Result(VQ)[b]	Result(VQ)	Result(VQ)	Result(VQ)	Result(VQ)	Result(VQ)
ALUMINUM		3.7	9.41(J)	0.878(J)	0.451(J)	2.39(J)	2.02(J)	11.6(J)
ALUMINUM	F[c]	3.7	nd[d]	nd	nd	nd	nd	nd
ARSENIC		0.000045	0.0363	nd	nd	0.0402	nd	0.0103
ARSENIC	F	0.000045	nd	nd	nd	nd	nd	nd
BARIUM		0.26	nd	nd	nd	nd	nd	nd
BARIUM	F	0.26	nd	nd	nd	nd	nd	nd
CHROMIUM		0.018	0.0449	0.0227	0.0119	nd	nd	0.0228
CHROMIUM	F	0.018	nd	nd	nd	nd	nd	nd
COBALT		0.22	nd	nd	nd	nd	nd	nd
COBALT	F	0.22	nd	nd	nd	nd	nd	nd
COPPER		13	0.048	nd	nd	nd	nd	0.0336
COPPER	F	13	nd	nd	nd	nd	nd	nd
IRON		1.1	76.6	3.13	3.75	26.3	32.9	27.3
IRON	F	1.1	4.35	0.806	1.13	0.892	14.4	nd
LEAD		0.015	0.0177	nd	nd	nd	nd	0.0166
LEAD	F	0.015	nd	nd	0.0032	nd	nd	nd
MANGANESE		0.073	0.432	0.434	0.475	0.493	5.41	0.816
MANGANESE	F	0.073	0.35	0.421	0.507	0.369	4.74	0.0788
MERCURY		0.0011	nd	nd	nd	nd	nd	nd
MERCURY	F	0.0011	nd	nd	nd	nd	nd	nd
NICKEL		0.073	0.0718	nd	nd	nd	nd	nd
NICKEL	F	0.073	nd	nd	nd	nd	nd	nd
SELENIUM		0.018	0.0204	nd	nd	nd	nd	nd
SELENIUM	F	0..018	nd	nd	nd	nd	nd	nd
VANADIUM		0.026	nd	nd	nd	nd	nd	nd
VANADIUM	F	0.026	nd	nd	nd	nd	nd	nd
ZINC		1.1	0.116	nd	nd	nd	0.0674	0.0999
ZINC	F	1.1	0.022(J)	nd	0.0237(J)	nd	nd	0.0499
CYANIDE (total)		0.073	nd	nd	nd	nd	nd	nd

Table 6-4

Summary of Detected Metals and Cyanide
Overburden Monitoring Wells
Former Plum Brook Ordnance Works, Sandusky, Ohio

		Sample Location:	IT-ABG-GW-002	IT-MW01	IT-MW02	IT-MW05	IT-MW06	IT-MW08
		Sample Number:	5520	5530	5540	5550	5560	5580
		Sample Date:	19-Nov-97	19-Nov-97	21-Nov-97	19-Nov-97	19-Nov-97	19-Nov-97
		Units:	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
METALS		RBC	Result(VQ)	Result(VQ)	Result(VQ)	Result(VQ)	Result(VQ)	Result(VQ)
ALUMINUM		3.7	34.5(J)	nd	nd	3.97(J)	nd	nd
ALUMINUM	F	3.7	nd	nd	nd	nd	nd	nd
ARSENIC		0.000045	0.0662	nd	nd	0.0115	nd	nd
ARSENIC	F	0.000045	nd	nd	nd	0.0125	nd	nd
BARIUM		0.26	0.314	nd	nd	nd	nd	nd
BARIUM	F	0.26	nd	nd	nd	nd	nd	nd
CHROMIUM		0.018	0.0698	nd	nd	0.0106	nd	nd
CHROMIUM	F	0.018	nd	nd	nd	nd	nd	nd
COBALT		0.22	0.0723	nd	nd	nd	nd	nd
COBALT	F	0.22	nd	nd	nd	nd	nd	nd
COPPER		13	0.243	nd	0.0626	nd	nd	nd
COPPER	F	13	nd	nd	0.0416	nd	nd	nd
IRON		1.1	103	1.32	nd	14.7	1.62	0.498
IRON	F	1.1	4.89	1.09	nd	3.05	nd	0.443
LEAD		0.015	0.1	nd	nd	0.0066	nd	nd
LEAD	F	0.015	nd	nd	nd	nd	nd	nd
MANGANESE		0.073	3.01	0.323	0.896	0.302	0.34	0.361
MANGANESE	F	0.073	2.5	0.331	0.877	0.114	nd	0.328
MERCURY		0.0011	nd	0.00045	nd	0.0003	0.0003	0.00024
MERCURY	F	0.0011	nd	nd	nd	nd	nd	nd
NICKEL		0.073	0.212	nd	nd	nd	nd	nd
NICKEL	F	0.073	nd	nd	nd	nd	nd	nd
SELENIUM		0.018	0.0082	nd	nd	nd	nd	nd
SELENIUM	F	0..018	nd	nd	nd	nd	nd	nd
VANADIUM		0.026	0.158	nd	nd	nd	nd	nd
VANADIUM	F	0.026	nd	nd	nd	nd	nd	nd
ZINC		1.1	0.836	0.0516	nd	0.0476	0.0474	0.0234
ZINC	F	1.1	nd	0.0469	0.0272(J)	nd	0.0276	0.0331
CYANIDE (total)		0.073	nd	nd	nd	nd	nd	nd

Table 6-4

Summary of Detected Metals and Cyanide
Overburden Monitoring Wells
Former Plum Brook Ordnance Works, Sandusky, Ohio

		Sample Location:	IT-MW09	IT-MW10	MK-MW09	MK-MW10	MK-MW11	MK-MW12
		Sample Number:	5590	5600	5720	5730	5740	5750
		Sample Date:	23-Nov-97	14-Nov-97	16-Nov-97	13-Nov-97	18-Nov-97	17-Nov-97
		Units:	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
METALS		RBC	Result(VQ)	Result(VQ)	Result(VQ)	Result(VQ)	Result(VQ)	Result(VQ)
ALUMINUM		3.7	1.2(J)	1.04	nd	1.14	5.08	0.31
ALUMINUM	F	3.7	nd	nd	nd	nd	nd	nd
ARSENIC		0.000045	nd	nd	nd	nd	nd	nd
ARSENIC	F	0.000045	nd	nd	nd	nd	nd	nd
BARIUM		0.26	nd	nd	nd	nd	nd	nd
BARIUM	F	0.26	nd	nd	nd	nd	nd	nd
CHROMIUM		0.018	0.0104	nd	nd	nd	0.0126	nd
CHROMIUM	F	0.018	nd	nd	nd	nd	nd	nd
COBALT		0.22	nd	nd	nd	nd	nd	nd
COBALT	F	0.22	nd	nd	nd	nd	nd	nd
COPPER		13	nd	nd	nd	nd	nd	nd
COPPER	F	13	nd	nd	nd	nd	nd	nd
IRON		1.1	3.37	3.04	0.493	2.08	12.3	0.83
IRON	F	1.1	0.282	nd	0.329	nd	nd	0.173
LEAD		0.015	nd	0.0045	0.0085	0.0035	0.0094	nd
LEAD	F	0.015	nd	nd	nd	nd	nd	nd
MANGANESE		0.073	0.249	1.67	nd	0.0909	0.344	1.13
MANGANESE	F	0.073	0.372	1.63	nd	0.0654	nd	1.06
MERCURY		0.0011	nd	nd	nd	nd	nd	nd
MERCURY	F	0.0011	nd	nd	nd	nd	nd	nd
NICKEL		0.073	nd	nd	nd	nd	nd	nd
NICKEL	F	0.073	nd	nd	nd	nd	nd	nd
SELENIUM		0.018	nd	nd	nd	nd	nd	nd
SELENIUM	F	0..018	nd	nd	nd	nd	nd	nd
VANADIUM		0.026	nd	nd	nd	nd	nd	nd
VANADIUM	F	0.026	nd	nd	nd	nd	nd	nd
ZINC		1.1	0.0272	nd	nd	0.0255	0.0435	0.0258
ZINC	F	1.1	0.0733(J)	nd	nd	nd	nd	nd
CYANIDE (total)		0.073	nd	nd	nd	nd	nd	nd

Table 6-4

Summary of Detected Metals and Cyanide
Overburden Monitoring Wells
Former Plum Brook Ordnance Works, Sandusky, Ohio

		Sample Location:	MK-MW14	MK-MW15	MK-MW16	MK-MW17	MK-MW19	MK-MW20
		Sample Number:	5760	5770	5780	5790	5800	5810
		Sample Date:	16-Nov-97	16-Nov-97	21-Nov-97	21-Nov-97	16-Nov-97	16-Nov-97
		Units:	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
METALS		RBC	Result(VQ)	Result(VQ)	Result(VQ)	Result(VQ)	Result(VQ)	Result(VQ)
ALUMINUM		3.7	0.52	0.292	4.99(J)	1.83(J)	nd	18.4
ALUMINUM	F	3.7	nd	nd	1.08	nd	nd	nd
ARSENIC		0.000045	nd	nd	nd	0.0126	nd	0.0158
ARSENIC	F	0.000045	nd	nd	nd	nd	nd	nd
BARIUM		0.26	nd	nd	nd	nd	nd	nd
BARIUM	F	0.26	nd	nd	nd	nd	nd	nd
CHROMIUM		0.018	nd	nd	nd	nd	nd	0.0427
CHROMIUM	F	0.018	nd	nd	nd	nd	nd	nd
COBALT		0.22	nd	nd	nd	0.0788	nd	nd
COBALT	F	0.22	nd	nd	nd	0.0729	nd	nd
COPPER		13	nd	nd	nd	nd	nd	0.0297
COPPER	F	13	nd	nd	nd	nd	nd	nd
IRON		1.1	19.3	12.7	19.8	44.3	0.239	46.7
IRON	F	1.1	22.9	12.7	2.41	34.1	0.385	0.716
LEAD		0.015	nd	0.0071	nd	nd	nd	0.0131
LEAD	F	0.015	nd	0.005	nd	nd	nd	nd
MANGANESE		0.073	0.37	0.608	6.97	1.41	0.0234	0.994
MANGANESE	F	0.073	0.449	0.617	6.9	1.26	0.0292	0.0653
MERCURY		0.0011	nd	nd	nd	nd	nd	nd
MERCURY	F	0.0011	0.00068	nd	nd	0.0003	nd	nd
NICKEL		0.073	nd	nd	0.0618	0.156	nd	0.114
NICKEL	F	0.073	nd	nd	0.0472	0.14	nd	nd
SELENIUM		0.018	nd	nd	0.005	0.0051	nd	nd
SELENIUM	F	0.018	nd	nd	0.005	nd	nd	nd
VANADIUM		0.026	nd	nd	nd	nd	nd	0.0597
VANADIUM	F	0.026	nd	nd	nd	nd	nd	nd
ZINC		1.1	0.0258	0.023	0.0755	0.137	nd	0.105
ZINC	F	1.1	nd	nd	0.0547(J)	0.0877(J)	nd	nd
CYANIDE (total)		0.073	nd	nd	nd	nd	nd	nd

Table 6-4

Summary of Detected Metals and Cyanide
Overburden Monitoring Wells
Former Plum Brook Ordnance Works, Sandusky, Ohio

		Sample Location:	MK-MW22	MK-MW23	MK-MW24	PB-PR-MW7	PB-PR-MW8	PB-PR-MW9
		Sample Number:	5820	5830	5840	5690	5700	5710
		Sample Date:	14-Nov-97	16-Nov-97	13-Nov-97	17-Nov-97	17-Nov-97	17-Nov-97
		Units:	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
METALS		RBC	Result(VQ)	Result(VQ)	Result(VQ)	Result(VQ)	Result(VQ)	Result(VQ)
ALUMINUM		3.7	7.79	27.3	6.62	8.96(J)	nd	nd
ALUMINUM	F	3.7	nd	nd	nd	nd	nd	nd
ARSENIC		0.000045	nd	0.0598	nd	nd	nd	nd
ARSENIC	F	0.000045	nd	0.0138	nd	nd	nd	nd
BARIUM		0.26	nd	nd	nd	nd	nd	nd
BARIUM	F	0.26	nd	nd	nd	nd	nd	nd
CHROMIUM		0.018	0.0166	0.0571	0.0252	nd	nd	nd
CHROMIUM	F	0.018	nd	nd	0.0142	nd	nd	nd
COBALT		0.22	nd	0.0508	nd	2.32	7.27	nd
COBALT	F	0.22	nd	nd	nd	2.33	6.77	nd
COPPER		13	nd	0.0473	nd	0.887	3.79	nd
COPPER	F	13	nd	nd	nd	0.911	3.39	nd
IRON		1.1	10.9	68.2	13.5	21.7	22	nd
IRON	F	1.1	nd	nd	2.92	1.36	12.2	nd
LEAD		0.015	0.0067	0.0298	0.0131	nd	nd	nd
LEAD	F	0.015	nd	nd	nd	nd	nd	nd
MANGANESE		0.073	0.185	1.37	0.788	17	34.1	1.9
MANGANESE	F	0.073	0.149	0.265	0.562	17	29.7	1.89
MERCURY		0.0011	nd	nd	nd	nd	nd	nd
MERCURY	F	0.0011	nd	nd	0.00076	nd	nd	nd
NICKEL		0.073	nd	0.125	nd	1.71	7.6	nd
NICKEL	F	0.073	nd	nd	nd	1.71	6.82	nd
SELENIUM		0.018	nd	nd	nd	nd	nd	nd
SELENIUM	F	0..018	nd	nd	nd	nd	nd	nd
VANADIUM		0.026	nd	0.0752	0.0609	nd	nd	nd
VANADIUM	F	0.026	nd	nd	0.053	nd	nd	nd
ZINC		1.1	0.0356	0.167	0.127	nd	nd	nd
ZINC	F	1.1	nd	nd	nd	nd	nd	nd
CYANIDE (total)		0.073	nd	nd	nd	0.12	0.24	0.036

Table 6-4

Summary of Detected Metals and Cyanide
Overburden Monitoring Wells
Former Plum Brook Ordnance Works, Sandusky, Ohio

		Sample Location:	PB-TNTA-MW10	PB-TNTA-MW11	PB-TNTC-MW3	PB-TNTC-MW4	PB-TNTC-MW5	PB-TNTC-MW6
		Sample Number:	5610	5620	5630	5640	5650	5660
		Sample Date:	18-Nov-97	18-Nov-97	21-Nov-97	24-Nov-97	21-Nov-97	20-Nov-97
		Units:	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
METALS		RBC	Result(VQ)	Result(VQ)	Result(VQ)	Result(VQ)	Result(VQ)	Result(VQ)
ALUMINUM		3.7	0.877(J)	3.17(J)	nd	3.82(J)	3.49(J)	0.496(J)
ALUMINUM	F	3.7	nd	nd	nd	0.432	nd	nd
ARSENIC		0.000045	0.0122	0.0105	nd	0.0215	0.0101	nd
ARSENIC	F	0.000045	nd	nd	nd	nd	nd	nd
BARIUM		0.26	0.373	nd	nd	nd	nd	nd
BARIUM	F	0.26	0.338	nd	nd	nd	nd	nd
CHROMIUM		0.018	nd	0.0156	nd	0.0252	0.0184	nd
CHROMIUM	F	0.018	nd	nd	nd	nd	nd	nd
COBALT		0.22	nd	nd	0.0675	nd	nd	nd
COBALT	F	0.22	nd	nd	nd	nd	nd	nd
COPPER		13	nd	nd	nd	nd	nd	nd
COPPER	F	13	nd	nd	nd	nd	nd	nd
IRON		1.1	18.2	13.3	0.805	17.4	13.9	2.46
IRON	F	1.1	7.61	nd	nd	0.403	nd	1.57
LEAD		0.015	nd	0.0104	nd	0.0145	0.0138	nd
LEAD	F	0.015	nd	nd	nd	0.011	0.0042	nd
MANGANESE		0.073	1.53	1.03	2.95	0.8	0.713	3.7
MANGANESE	F	0.073	1.44	0.865	2.9	1.12	0.522	4.02
MERCURY		0.0011	nd	nd	nd	nd	nd	nd
MERCURY	F	0.0011	nd	nd	nd	nd	nd	nd
NICKEL		0.073	nd	nd	0.12	0.0524	nd	nd
NICKEL	F	0.073	nd	nd	0.0771	0.0568	nd	nd
SELENIUM		0.018	nd	nd	nd	0.0072	nd	nd
SELENIUM	F	0..018	nd	nd	nd	0.0114	nd	nd
VANADIUM		0.026	nd	nd	nd	nd	nd	nd
VANADIUM	F	0.026	nd	nd	nd	nd	nd	nd
ZINC		1.1	0.027	0.0471	0.0345	0.0587	0.053	nd
ZINC	F	1.1	0.025	0.0454	0.0285(J)	0.052(J)	nd	nd
CYANIDE (total)		0.073	nd	nd	nd	nd	nd	nd

Table 6-4

Summary of Detected Metals and Cyanide
Overburden Monitoring Wells
Former Plum Brook Ordnance Works, Sandusky, Ohio

		Sample Location:	PB-WA-MW1	PB-WA-MW2
		Sample Number:	5670	5680
		Sample Date:	21-Nov-97	23-Nov-97
		Units:	mg/L	mg/L
METALS		RBC	Result(VQ)	Result(VQ)
ALUMINUM		3.7	2.71(J)	3.72(J)
ALUMINUM	F	3.7	nd	nd
ARSENIC		0.000045	nd	nd
ARSENIC	F	0.000045	nd	nd
BARIUM		0.26	nd	nd
BARIUM	F	0.26	nd	nd
CHROMIUM		0.018	nd	0.0128
CHROMIUM	F	0.018	nd	nd
COBALT		0.22	nd	0.142
COBALT	F	0.22	nd	nd
COPPER		13	nd	0.0702
COPPER	F	13	nd	nd
IRON		1.1	5.6	7.93
IRON	F	1.1	nd	nd
LEAD		0.015	nd	nd
LEAD	F	0.015	nd	nd
MANGANESE		0.073	0.235	1.66
MANGANESE	F	0.073	0.168	1.62
MERCURY		0.0011	nd	nd
MERCURY	F	0.0011	nd	nd
NICKEL		0.073	nd	0.228
NICKEL	F	0.073	nd	nd
SELENIUM		0.018	nd	0.0167
SELENIUM	F	0.018	nd	nd
VANADIUM		0.026	nd	nd
VANADIUM	F	0.026	nd	nd
ZINC		1.1	nd	0.0367
ZINC	F	1.1	nd	nd
CYANIDE (total)		0.073	nd	0.079

[a]Risk-based concentrations (RBC), calculated from EPA Region 3 RBC table (1997).
[b]Analytical result with data validation qualifier in brackets; J denotes estimated result; shaded denotes detected concentration was above RBC.
[c]Filtered sample.
[d]Not detected.
mg/L - Milligrams per liter.

Table 6-5

Summary of Detected Volatile Organic Compounds
Bedrock Monitoring Wells
Former Plum Brook Ordnance Works, Sandusky, Ohio

Sample Location:		IT-AA1-BEDGW-001	IT-AA2-BEDGW-001	IT-AA3-BEDGW-001	IT-ABG-BEDGW-01	IT-BG8-BEDGW-001	IT-MNTA-BEDGW-001
Sample Number:		5450	5460	5470	5480	5410	5440
Sample Date:		16-Nov-97	20-Nov-97	19-Nov-97	13-Nov-97	17-Nov-97	20-Nov-97
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
VOLATILES	RBC[a]	Result (VQ)[b]	Result (VQ)	Result (VQ)	Result (VQ)	Result (VQ)	Result (VQ)
ACETONE	370	nd[c]	nd	36(J)	nd	nd	nd
BENZENE	0.36	11(J)	33	nd	nd	nd	nd
CARBON DISULFIDE	100	29(J)	5.5(J)	4.2(J)	nd	0.65(J)	3.7(J)
CHLOROBENZENE	3.9	nd	21(J)	nd	nd	nd	nd
CHLOROFORM	0.15	nd	nd	nd	nd	nd	nd
ETHYL BENZENE	130	7.7(J)	23(J)	nd	nd	nd	nd
METHYLENE CHLORIDE	4.1	25(J)	7.4(J)	nd	nd	nd	nd
TOLUENE	75	18(J)	32	nd	nd	nd	nd
TOTAL XYLENES	1200	150	200	nd	nd	nd	8.2(J)
TRICHLOROETHENE	1.6	nd	nd	nd	0.25(J)	nd	nd

Sample Location:		IT-TNTB-BEDGW-001	IT-TNTB-BEDGW-002	PB-BED-MW13	PB-BED-MW14	PB-BED-MW15	PB-BED-MW16
Sample Number:		5420	5430	5890	5900	5910	5920
Sample Date:		17-Nov-97	16-Nov-97	13-Nov-97	18-Nov-97	18-Nov-97	24-Nov-97
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
VOLATILES	RBC	Result (VQ)	Result (VQ)	Result (VQ)	Result (VQ)	Result (VQ)	Result (VQ)
ACETONE	370	nd	nd	nd	nd	nd	nd
BENZENE	0.36	0.14(J)	0.91(J)	130	1.1	570	490
CARBON DISULFIDE	100	0.82(J)	6.4	5.8	1.3	nd	nd
CHLOROBENZENE	3.9	nd	nd	nd	nd	nd	nd
CHLOROFORM	0.15	nd	nd	nd	nd	8.4(J)	nd
ETHYL BENZENE	130	nd	0.85(J)	73	0.59(J)	130	130
METHYLENE CHLORIDE	4.1	nd	nd	nd	nd	31(J)	8.8(J)
TOLUENE	75	1.0(J)	nd	170	1.7	490	390
TOTAL XYLENES	1200	1.0(J)	12	520	3.9	920	1100
TRICHLOROETHENE	1.6	nd	nd	nd	nd	nd	nd

Table 6-5

Summary of Detected Volatile Organic Compounds
Bedrock Monitoring Wells
Former Plum Brook Ordnance Works, Sandusky, Ohio

Sample Location:		PB-BED-MW17	PB-BED-MW18	PB-BED-MW19	PB-BED-MW20	REACTOR1
Sample Number:		5930	5940	5950	5960	5970
Sample Date:		20-Nov-97	19-Nov-97	14-Nov-97	17-Nov-97	21-Nov-97
		µg/L	µg/L	µg/L	µg/L	µg/L
VOLATILES	RBC	Result (VQ)	Result (VQ)	Result (VQ)	Result(VQ)	Result(VQ)
ACETONE	370	nd	nd	68(J)	nd	nd
BENZENE	0.36	10(J)	11	11	0.93(J)	8.8(J)
CARBON DISULFIDE	100	40(J)	32	2	nd	nd
CHLOROBENZENE	3.9	nd	nd	nd	nd	nd
CHLOROFORM	0.15	nd	nd	nd	nd	nd
ETHYL BENZENE	130	79	32	5.1	0.15(J)	nd
METHYLENE CHLORIDE	4.1	18(J)	nd	nd	nd	14(J)
TOLUENE	75	140	21	8.9	nd	nd
TOTAL XYLENES	1200	360	170	38	2.6	4(J)
TRICHLOROETHENE	1.6	nd	nd	nd	nd	nd

[a]Risk-based concentrations (RBC), calculated from EPA Region 3 RBC table (1997).
[b]Analytical result with data validation qualifier in brackets; J denotes estimated result; shaded denotes detected concentration was above RBC.
[c]Not detected.
µg/L - Micrograms per liter.

Table 6-6

Summary of Detected Nitroaromatic Compounds
Bedrock Monitoring Wells
Former Plum Brook Ordnance Works, Sandusky, Ohio

	Sample Location:	PB-BED-MW17	PB-BED-MW18	PB-BED-MW19
	Sample Number:	5930	5940	5950
	Sample Date:	20-Nov-97	19-Nov-97	14-Nov-97
	Unit:	µg/L	µg/L	µg/L
NITROAROMATICS	RBC[a]	Result(VQ)[b]	Result(VQ)	Result(VQ)
1,3,5-TRINITROBENZENE	110	nd[c]	1.5	nd
1,3-DINITROBENZENE	0.37	nd	1	0.22
NITROBENZENE	0.34	0.34	2	0.32

[a]Risk-based concentrations (RBC), calculated from EPA Region 3 RBC table (1997).
[b]Analytical result with data validation qualifier in brackets; J denotes estimated result; shaded denotes detected concentration was above RBC.
[c]Not detected.
µg/L - Micrograms per liter.

Table 6-7

Summary of Detected Metals and Cyanide
Bedrock Monitoring Wells
Former Plum Brook Ordnance Works, Sandusky, Ohio

		Sample Location:	IT-AA1-BEDGW-001	IT-AA2-BEDGW-001	IT-AA3-BEDGW-001	IT-ABG-BEDGW-01	IT-BG8-BEDGW-001	IT-MNTA-BEDGW-001
		Sample Number:	5450	5460	5470	5480	5410	5440
		Sample Date:	16-Nov-97	20-Nov-97	19-Nov-97	13-Nov-97	17-Nov-97	20-Nov-97
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
METALS		RBC[a]	Result(VQ)	Result(VQ)	Result(VQ)	Result(VQ)	Result(VQ)	Result(VQ)
ALUMINUM		3.7	0.637	1.06(J)[b]	nd[c]	0.522	9.02	nd
ARSENIC		0.000045	0.0165	nd	nd	0.0117	0.0176	nd
BARIUM		0.26	1.06	0.22	nd	nd	0.52	0.424
BARIUM	F[d]	0.26	1.26	0.212	nd	nd	0.366	0.449
CHROMIUM		0.018	0.0127	nd	nd	nd	0.0182	nd
CHROMIUM	F	0.018	nd	nd	nd	nd	nd	nd
COPPER		13	0.0262	nd	nd	nd	0.0595	nd
IRON		1.1	1.92	5.24	0.168	8.89	22.6	6.4
IRON	F	1.1	nd	0.106	nd	7.26	0.563	0.298
LEAD		0.015	nd	nd	nd	0.0069	0.0263	nd
LEAD	F	0.015	nd	nd	nd	nd	nd	nd
MANGANESE		0.073	0.575	0.522	0.0746	0.912	2.24	0.849
MANGANESE	F	0.073	0.516	0.351	0.0576	0.99	1.3	0.899
MERCURY		0.0011	nd	nd	nd	0.0036	nd	nd
NICKEL		0.073	nd	nd	nd	nd	nd	nd
NICKEL	F	0.073	nd	nd	nd	nd	nd	nd
VANADIUM		0.026	nd	nd	nd	nd	nd	nd
VANADIUM	F	0.026	nd	nd	nd	nd	nd	nd
ZINC		1.1	0.0328	0.055	0.0292	0.0277	0.126	nd
ZINC	F	1.1	0.105	0.0662(J)	0.023	nd	nd	0.0248(J)
CYANIDE (total)		0.073	nd	nd	nd	nd	nd	nd

Table 6-7

Summary of Detected Metals and Cyanide
Bedrock Monitoring Wells
Former Plum Brook Ordnance Works, Sandusky, Ohio

		Sample Location:	IT-TNTB-BEDGW-001	IT-TNTB-BEDGW-002	PB-BED-MW13	PB-BED-MW14	PB-BED-MW15	PB-BED-MW16
		Sample Number:	5420	5430	5890	5900	5910	5920
		Sample Date:	17-Nov-97	16-Nov-97	13-Nov-97	18-Nov-97	18-Nov-97	24-Nov-97
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
METALS		RBC	Result(VQ)	Result(VQ)	Result(VQ)	Result(VQ)	Result(VQ)	Result(VQ)
ALUMINUM		3.7	0.654	0.317	nd	0.374(J)	nd	0.502(J)
ARSENIC		0.000045	nd	nd	nd	nd	nd	nd
BARIUM		0.26	nd	0.326	1.55	nd	0.605	0.463
BARIUM	F	0.26	nd	0.384	1.68	nd	0.555	0.389
CHROMIUM		0.018	nd	nd	nd	0.0102	nd	0.0244
CHROMIUM	F	0.018	nd	nd	nd	nd	nd	0.0136
COPPER		13	0.0339	nd	nd	nd	nd	nd
IRON		1.1	41.7	1.03	0.244	0.923	0.93	1.14
IRON	F	1.1	16.3	0.586	0.116	nd	nd	nd
LEAD		0.015	0.0039	0.0048	nd	nd	nd	nd
LEAD	F	0.015	nd	0.003	nd	nd	nd	nd
MANGANESE		0.073	0.677	0.0854	0.0174	0.054	0.0263	0.133
MANGANESE	F	0.073	0.694	0.071	nd	0.0291	nd	nd
MERCURY		0.0011	nd	nd	nd	nd	nd	nd
NICKEL		0.073	0.0421	nd	nd	0.0423	nd	nd
NICKEL	F	0.073	nd	nd	nd	0.0407	nd	nd
VANADIUM		0.026	nd	nd	nd	nd	nd	0.0647
VANADIUM	F	0.026	nd	nd	nd	nd	nd	0.0583
ZINC		1.1	0.0488	0.0739	0.0472	0.0398	0.0306	0.03
ZINC	F	1.1	nd	nd	0.0301	0.0324	0.0309	nd
CYANIDE (total)		0.073	nd	nd	nd	0.016	nd	nd

Table 6-7

Summary of Detected Metals and Cyanide
Bedrock Monitoring Wells
Former Plum Brook Ordnance Works, Sandusky, Ohio

		Sample Location:	PB-BED-MW17	PB-BED-MW18	PB-BED-MW19	PB-BED-MW20	REACTOR1
		Sample Number:	5930	5940	5950	5960	5970
		Sample Date:	20-Nov-97	19-Nov-97	14-Nov-97	17-Nov-97	21-Nov-97
			mg/L	mg/L	mg/L	mg/L	mg/L
METALS		RBC	Result(VQ)	Result(VQ)	Result(VQ)	Result(VQ)	Result(VQ)
ALUMINUM		3.7	nd	0.283(J)	nd	3.29	nd
ARSENIC		0.000045	nd	nd	nd	nd	nd
BARIUM		0.26	0.948	0.893	1.52	19	0.405
BARIUM	F	0.26	1.1	1.01	1.52	21	0.397
CHROMIUM		0.018	nd	nd	0.01	nd	0.0111
CHROMIUM	F	0.018	nd	nd	nd	nd	nd
COPPER		13	nd	nd	0.0617	0.0328	nd
IRON		1.1	1.58	0.476	0.376	13.2	8
IRON	F	1.1	nd	nd	nd	2.31	0.169
LEAD		0.015	nd	nd	0.0068	nd	0.0191
LEAD	F	0.015	nd	nd	nd	nd	0.0035
MANGANESE		0.073	0.124	0.0368	0.0304	0.18	0.198
MANGANESE	F	0.073	nd	0.0359	nd	0.162	0.144
MERCURY		0.0011	nd	0.001	nd	nd	nd
NICKEL		0.073	nd	nd	nd	nd	nd
NICKEL	F	0.073	nd	nd	nd	nd	nd
VANADIUM		0.026	nd	nd	nd	nd	nd
VANADIUM	F	0.026	nd	nd	nd	nd	nd
ZINC		1.1	0.0499	0.031	0.0623	0.0416	0.0697
ZINC	F	1.1	0.0333(J)	nd	0.0574	nd	0.0223(J)
CYANIDE (total)		0.073	0.32	nd	nd	nd	nd

[a]Risk-based concentrations (RBC), calculated from EPA Region 3 RBC table (1997).
[b]Analytical result with data validation qualifier in brackets; J denotes estimated result; shaded denotes detected concentration was above RBC.
[c]Not detected.
[d]Filtered sample.
mg/L - Milligrams per liter.

6.2 Pentolite Road Red Water Ponds

Four overburden wells and one bedrock well were sampled in the vicinity of the PRRWP. These wells are:

- Overburden wells
  - IT-MW05, PB-PR-MW07, PB-PR-MW08, PB-PR-MW09
- Bedrock well
  - PB-BED-MW15.

6.2.1 Overburden Wells

6.2.1.1 Volatile Organic Compounds

Three overburden wells, PR-MW07, -MW08, and -MW09, displayed no detectable VOCs in samples collected during this sampling event. Two VOCs (acetone and carbon disulfide) were detected in IT-MW05 with estimated concentrations below the RBCs (Table 6-7).

6.2.1.2 Semivolatile Organic Compounds

IT-MW05 exhibited no detectable SVOCs. However, up to five SVOCs were present in the water samples from PR-MW07, -MW08, and -MW09. Of them, 2,4-dinitrophenol was detected at an estimated concentration of 48 µg/L in PB-PR-MW09 and at 6,000 µg/L in PB-PR-MW08, both exceeding the RBC of 7.3 µg/L. The concentration of 2,4-DNT exceeded the RBC of 7.3 µg/L in all three wells at 1,800 µg/L in PB-PR-MW07, 1,500 µg/L in PB-PR-MW08, and 110 µg/L in PB-PR-MW09. 2,6-DNT was present in both PR-MW07 and PR-MW08 at concentrations of 140 and 190 µg/L, respectively, both above the RBC of 3.7 µg/L. Two other SVOCs were also detected at concentrations above the respective RBCs, including 3-nitroaniline (in PR-MW08 and -MW09) and 4,6-dinitro-2-methylphenol (in PR-MW07 and -MW08) as summarized in Table 6-6 and presented in Figure 6-3.

6.2.1.3 Nitroaromatic Compounds

During field sampling of the four overburden wells in the vicinity of the PRRWP area, purged well waters exhibited a red to reddish brown color. The color persisted after filtration through 0.45 nanometer (nm) membrane, indicating the coloration was not caused by suspended solids. The reddish colored water in these wells were also reported in previous investigations (D&M, 1997).

Of the four overburden wells sampled, three (PR-MW07, -MW08, and -MW09) exhibited elevated levels of nitroaromatic compounds exceeding the RBC criteria (Table 6-3, Figure 6-3). These nitroaromatic compounds included 1,3,5-TNB (excluding PR-MW09), 1,3-DNB, and 2,4-DNT. The detected concentrations ranged from 1,500 to 2,000 µg/L for 1,3,5-TNB, 35 to 1,500 µg/L for 1,3-DNB, and 28 to 1,300 µg/L for 2,4-DNT. The concentrations of detected nitroaromatics were consistently much lower in well PB-PR-MW09 than in PB-PR-MW07 and -MW08. It was noted that the nitroaromatic compound 2,4-DNT was also detected under the SVOC analysis with comparable results. However, 2,6-DNT, which was also detected in the SVOC analysis, was reported as nondetect under the nitroaromatic analysis.

Overburden well IT-MW05, located downgradient at less than 200 feet north of PB-PR-MW09, did not exhibit any detectable concentrations of nitroaromatics.

6.2.1.4 Inorganic Compounds and Cyanide

Each of the four overburden wells exhibited at least one metal (both total and dissolved) at a concentration exceeding the RBCs (Table 6-4, Figure 6-2). In IT-MW05, total aluminum (3.97 mg/L), arsenic (0.0115 mg/L), iron (14.7 mg/L), and manganese (0.302 mg/L) exceeded the RBCs. In the dissolved phase, arsenic (0.0125 mg/L), iron (3.05 mg/L), and manganese (0.114 mg/L) exceeded the RBCs in this well. Total and dissolved metals, including cobalt, iron, manganese, and nickel, exceeded the respective RBCs in both PB-PR-MW07 and -MW08. Total aluminum (8.96 mg/L) in PB-PR-MW07 also exceeded the RBC of 3.7 mg/L. In PB-PR-MW09, the only detected metal was manganese which exceeded the RBC of 0.073 in both total (1.9 mg/L) and dissolved (1.89 mg/L) phases.

Three wells, PR-MW07, -MW08, and -MW09, exhibited detectable cyanide. The cyanide concentrations ranged from 0.036 to 0.24 mg/L, exceeding the RBC in PB-PR-MW08 (0.24 mg/L) and PB-PR-MW07 (0.12 mg/L) as summarized in Table 6-4 and Figure 6-2. Cyanide also has been reported during previous investigations in these three wells (IT, 1997a). Cyanide was not detected in IT-MW05.

6.2.2 Bedrock Wells

6.2.2.1 Volatile Organic Compounds

PB-BED-MW15 exhibited levels of benzene, toluene, ethyl benzene, and methylene chloride that surpassed the RBC criteria (Table 6-5, Figure 6-3). Total xylene was also detected at a concen-

tration slightly below the RBC level. In addition, PB-BED-MW15 displayed chloroform at an estimated concentration of 8.4 µg/L, exceeding the RBC of 0.15 µg/L.

6.2.2.2 Semivolatile Organic Compounds

A total of ten SVOCs were detected in PB-BED-MW15 as shown in Table 6-8. However, only bis(2-ethylhexyl)phthalate (37 µg/L) exceeded the RBC of 4.8 µg/L.

6.2.2.3 Nitroaromatic Compounds

Nitroaromatic compounds were not detected in the bedrock well.

6.2.2.4 Inorganic Compounds and Cyanide

Four metals (barium, iron, manganese, and zinc) were present in the groundwater sample from PB-BED-MW15 (Table 6-7). Both total (0.605 mg/L) and dissolved (0.555 mg/L) barium exhibited concentrations above the RBC of 0.26 mg/L (Figure 6-4).

No detectable concentration of cyanide was detected during this sampling event (Table 6-7).

6.3 TNT Area A

Five overburden and two bedrock wells were sampled in the vicinity of TNTA. These wells are summarized as follows:

- Overburden wells
  - PB-TNTA-MW10, PB-TNTA-MW11, MK-MW22, MK-MW23, MK-MW24
- Bedrock wells
  - PB-BED-MW17, PB-BED-MW18.

6.3.1 Overburden Wells

6.3.1.1 Volatile Organic Compounds

VOCs were not detected at concentrations above RBCs in any of the five wells sampled in TNTA (Table 6-1). However, acetone was present in TNTA-MW10 and MK-MW23 at an estimated concentration of 35 and 68 µg/L, respectively. In addition, carbon disulfide was detected in MK-MW23 at an estimated concentration of 0.37 µg/L.

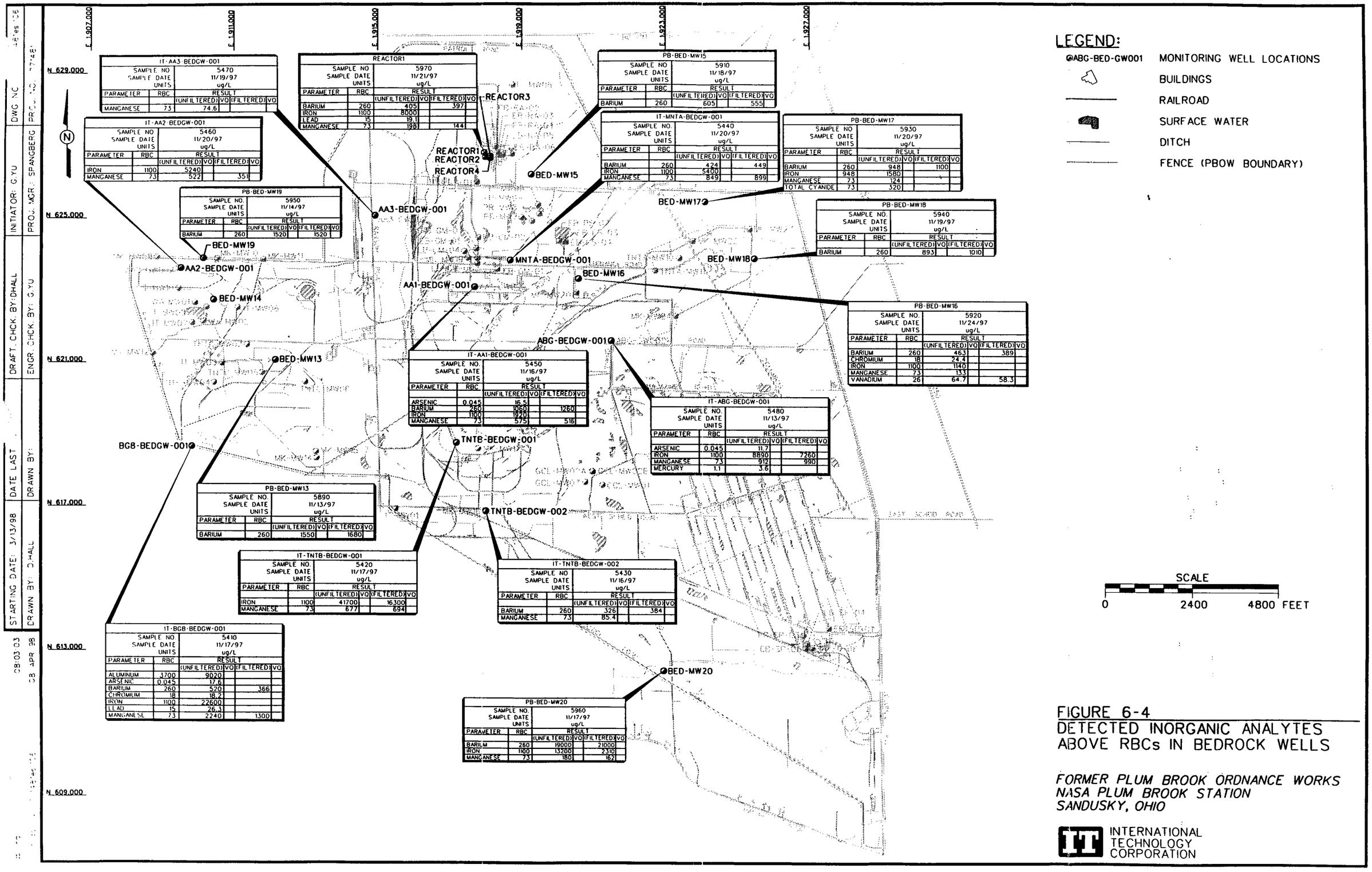
Table 6-8

Summary of Detected Semivolatile Organic Compounds
Bedrock Monitoring Wells
Former Plum Brook Ordnance Works, Sandusky, Ohio

Sample Location:		IT-AA1-BEDGW-001	IT-AA2-BEDGW-001	IT-AA3-BEDGW-001	IT-BG8-BEDGW-001	IT-MNTA-BEDGW-001	IT-TNTB-BEDGW-001	IT-TNTB-BEDGW-002
Sample Number:		5450	5460	5470	5410	5440	5420	5430
Sample Date:		16-Nov-97	20-Nov-97	19-Nov-97	17-Nov-97	20-Nov-97	17-Nov-97	16-Nov-97
Units:		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
SEMIVOLATILES	RBC[a]	Result(VQ)[b]	Result(VQ)	Result(VQ)	Result(VQ)	Result(VQ)	Result(VQ)	Result(VQ)
2,4-DIMETHYLPHENOL	73	nd[c]	1.3(J)	nd	nd	1.7(J)	nd	nd
2-METHYLNAPHTHALENE	150	28	1.3(J)	nd	nd	1.9(J)	nd	nd
2-METHYLPHENOL	180	nd	nd	nd	nd	nd	nd	nd
4-METHYLPHENOL	18	nd	nd	nd	nd	nd	nd	nd
BIS(2-ETHYLHEXYL)PHTHALATE	4.8	28	nd	5.8(J)	1.7(J)	3.9(J)	3.6(J)	3(J)
FLUORENE	150	nd	nd	nd	nd	nd	nd	nd
ISOPHORONE	71	2.9(J)	nd	nd	nd	nd	nd	nd
NAPHTHALENE	150	16	nd	nd	nd	2.3(J)	nd	nd
PHENANTHRENE	110	nd	nd	nd	nd	nd	nd	nd
PHENOL	2200	43	nd	3.1(J)	nd	17	nd	2.3(J)

Sample Location:		PB-BED-MW13	PB-BED-MW15	PB-BED-MW16	PB-BED-MW18	PB-BED-MW19	PB-BED-MW20	REACTOR1
Sample Number:		5890	5910	5920	5940	5950	5960	5970
Sample Date:		13-Nov-97	18-Nov-97	24-Nov-97	19-Nov-97	14-Nov-97	17-Nov-97	21-Nov-97
Units:		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
SEMIVOLATILES	RBC	Result(VQ)	Result(VQ)	Result(VQ)	Result(VQ)	Result(VQ)	Result(VQ)	Result(VQ)
2,4-DIMETHYLPHENOL	73	16	6.7(J)	nd	5.1(J)	nd	nd	nd
2-METHYLNAPHTHALENE	150	20	31	nd	2.2(J)	3.3(J)	1.1(J)	nd
2-METHYLPHENOL	180	4.1(J)	3.0(J)	nd	2.6(J)	nd	nd	nd
4-METHYLPHENOL	18	4.7(J)	3.9(J)	nd	2.8(J)	nd	nd	nd
BIS(2-ETHYLHEXYL)PHTHALATE	4.8	39	37	920(J)	3.5(J)	5.8(J)	nd	23(J)
FLUORENE	150	nd	1.7(J)	nd	nd	nd	nd	nd
ISOPHORONE	71	nd	4.2(J)	nd	nd	nd	nd	nd
NAPHTHALENE	150	15	22	nd	3.8(J)	2.1(J)	nd	nd
PHENANTHRENE	110	nd	2.2(J)	nd	nd	nd	nd	nd
PHENOL	2200	62	18	nd	21(J)	55	nd	nd

[a]Risk-based concentrations (RBC), calculated from EPA Region 3 RBC table (1997).
[b]Analytical result with data validation qualifier in brackets; J denotes estimated result; shaded denotes detected concentration was above RBC.
[c]Not detected.
µg/L - Micrograms per liter.



IT-AA3-BEDGW-001					
SAMPLE NO		5470			
SAMPLE DATE		11/19/97			
UNITS		ug/L			
PARAMETER	RBC	RESULT			
		(UNFILTERED)	VO	(FILTERED)	VO
MANGANESE	73	74.6			

IT-AA2-BEDGW-001					
SAMPLE NO		5460			
SAMPLE DATE		11/20/97			
UNITS		ug/L			
PARAMETER	RBC	RESULT			
		(UNFILTERED)	VO	(FILTERED)	VO
IRON	1100	5240			
MANGANESE	73	522		351	

PB-BED-MW19					
SAMPLE NO.		5950			
SAMPLE DATE		11/14/97			
UNITS		ug/L			
PARAMETER	RBC	RESULT			
		(UNFILTERED)	VO	(FILTERED)	VO
BARIUM	260	1520		1520	

REACTOR1					
SAMPLE NO		5970			
SAMPLE DATE		11/21/97			
UNITS		ug/L			
PARAMETER	RBC	RESULT			
		(UNFILTERED)	VO	(FILTERED)	VO
BARIUM	260	405		397	
IRON	1100	8000			
LEAD	15	19.1			
MANGANESE	73	198		144	

PB-BED-MW15					
SAMPLE NO		5910			
SAMPLE DATE		11/18/97			
UNITS		ug/L			
PARAMETER	RBC	RESULT			
		(UNFILTERED)	VO	(FILTERED)	VO
BARIUM	260	605		555	

IT-MNTA-BEDGW-001					
SAMPLE NO.		5440			
SAMPLE DATE		11/20/97			
UNITS		ug/L			
PARAMETER	RBC	RESULT			
		(UNFILTERED)	VO	(FILTERED)	VO
BARIUM	260	424		449	
IRON	1100	5400			
MANGANESE	73	849		899	

PB-BED-MW17					
SAMPLE NO		5930			
SAMPLE DATE		11/20/97			
UNITS		ug/L			
PARAMETER	RBC	RESULT			
		(UNFILTERED)	VO	(FILTERED)	VO
BARIUM	260	948		1100	
IRON	948	1580			
MANGANESE	73	124			
TOTAL CYANIDE	73	320			

PB-BED-MW18					
SAMPLE NO.		5940			
SAMPLE DATE		11/19/97			
UNITS		ug/L			
PARAMETER	RBC	RESULT			
		(UNFILTERED)	VO	(FILTERED)	VO
BARIUM	260	893		1010	

PB-BED-MW16					
SAMPLE NO.		5920			
SAMPLE DATE		11/24/97			
UNITS		ug/L			
PARAMETER	RBC	RESULT			
		(UNFILTERED)	VO	(FILTERED)	VO
BARIUM	260	463		389	
CHROMIUM	18	24.4			
IRON	1100	1140			
MANGANESE	73	133			
VANADIUM	26	64.7		58.3	

IT-AA1-BEDGW-001					
SAMPLE NO.		5450			
SAMPLE DATE		11/16/97			
UNITS		ug/L			
PARAMETER	RBC	RESULT			
		(UNFILTERED)	VO	(FILTERED)	VO
ARSENIC	0.045	16.5			
BARIUM	260	1060		1260	
IRON	1100	1820			
MANGANESE	73	575		516	

IT-ABG-BEDGW-001					
SAMPLE NO.		5480			
SAMPLE DATE		11/13/97			
UNITS		ug/L			
PARAMETER	RBC	RESULT			
		(UNFILTERED)	VO	(FILTERED)	VO
ARSENIC	0.045	11.7			
IRON	1100	8890		7260	
MANGANESE	73	912		990	
MERCURY	1.1	3.6			

PB-BED-MW13					
SAMPLE NO.		5890			
SAMPLE DATE		11/13/97			
UNITS		ug/L			
PARAMETER	RBC	RESULT			
		(UNFILTERED)	VO	(FILTERED)	VO
BARIUM	260	1550		1680	

IT-TNTB-BEDGW-001					
SAMPLE NO.		5420			
SAMPLE DATE		11/17/97			
UNITS		ug/L			
PARAMETER	RBC	RESULT			
		(UNFILTERED)	VO	(FILTERED)	VO
IRON	1100	41700		16300	
MANGANESE	73	677		694	

IT-TNTB-BEDGW-002					
SAMPLE NO		5430			
SAMPLE DATE		11/16/97			
UNITS		ug/L			
PARAMETER	RBC	RESULT			
		(UNFILTERED)	VO	(FILTERED)	VO
BARIUM	260	326		384	
MANGANESE	73	85.4			

IT-BG8-BEDGW-001					
SAMPLE NO		5410			
SAMPLE DATE		11/17/97			
UNITS		ug/L			
PARAMETER	RBC	RESULT			
		(UNFILTERED)	VO	(FILTERED)	VO
ALUMINUM	3700	9020			
ARSENIC	0.045	17.6			
BARIUM	260	520		366	
CHROMIUM	18	18.2			
IRON	1100	22600			
LEAD	15	26.3			
MANGANESE	73	2240		1300	

PB-BED-MW20					
SAMPLE NO.		5960			
SAMPLE DATE		11/17/97			
UNITS		ug/L			
PARAMETER	RBC	RESULT			
		(UNFILTERED)	VO	(FILTERED)	VO
BARIUM	260	19000		21000	
IRON	1100	13200		2310	
MANGANESE	73	180		162	

FIGURE 6-4
DETECTED INORGANIC ANALYTES ABOVE RBCs IN BEDROCK WELLS

FORMER PLUM BROOK ORDNANCE WORKS
NASA PLUM BROOK STATION
SANDUSKY, OHIO

INTERNATIONAL TECHNOLOGY CORPORATION

6.3.1.2 Semivolatile Organic Compounds

SVOCs were not detected at levels above the established RBCs in any of the five overburden wells sampled. One compound, di-n-octal phthalate was present in MK-MW23 at an estimated concentration of 9.3 µg/L, far below the RBC of 73 µg/L.

6.3.1.3 Nitroaromatic Compounds

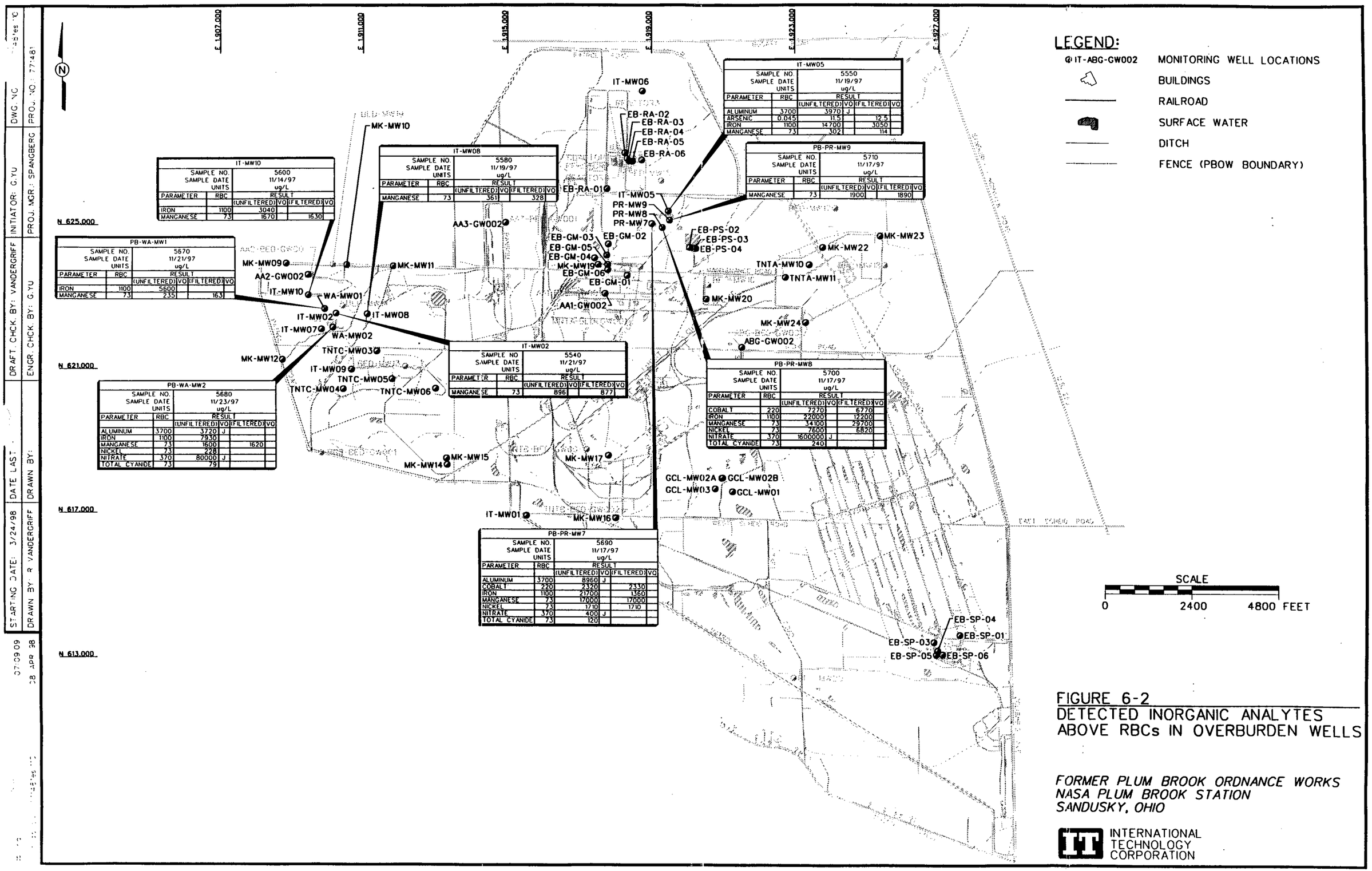
Five nitroaromatic compounds were present in the water sample from MK-MW22, of which only 4-amino-2,6-DNT (0.62 µg/L) exceeded the RBC of 0.22 µg/L (Table 6-3, Figure 6-1). Other detected compounds include 1,3,5-TNB (0.24 µg/L), 2,4,6-TNT (0.74 µg/L), 2,4-DNT (0.2 µg/L), and 2,6-DNT (0.53 µg/L). Nitroaromatic compounds were not detected in TNTA-MW10, TNTA-MW11, MK-MW23, or MK-MW24.

6.3.1.4 Inorganic Compounds and Cyanide

Each of the five sampled overburden wells exhibited detectable concentrations of metals during this sampling event (Table 6-4). Monitoring wells TNTA-MW10 and TNTA-MW11 displayed total concentrations of arsenic (0.0122 and 0.0105 mg/L, respectively), manganese (1.53 and 1.03 mg/L, respectively), and iron (18.2 and 13.3 mg/L, respectively) that exceeded the RBCs. Dissolved iron (7.61 mg/L, TNTA-MW10) and dissolved manganese (1.44 mg/L in TNTA-MW10 and 0.865 mg/L in TNTA-MW11) also exceeded the RBCs. In addition, both total and dissolved barium exceeded the RBC in TNTA-MW10 (Figure 6-5).

In MK-MW22, MK-MW23, and MK-MW24, the concentrations of total aluminum (7.79, 27.3, and 6.62 mg/L, respectively), iron (10.9, 68.2, 13.5 mg/L, respectively), and manganese (0.185, 1.37, and 0.788 mg/L, respectively) exceeded the RBCs. Dissolved manganese (0.149 mg/L) exceeded the RBC in MK-MW22. Dissolved arsenic (0.00138 mg/L), dissolved manganese (0.265 mg/L), total chromium (0.0571 mg/L), total lead (0.0298 mg/L), total nickel (0.125 mg/L), and total vanadium (0.0752 mg/L) exceeded the respective RBCs in MK-MW23. In MK-MW24, total chromium (0.0252 mg/L), dissolved iron (2.92 mg/L), dissolved manganese (0.562 mg/L), and vanadium (0.0609 mg/L for total and 0.053 mg/L for dissolved) exceeded the RBCs. Other metals that displayed detectable concentrations below RBCs included cobalt, copper, and zinc (Table 6-4).

Cyanide was not detected in any of the five overburden wells in this area.



IT-MW10					
SAMPLE NO.		5600			
SAMPLE DATE		11/14/97			
UNITS		ug/L			
PARAMETER	RBC	RESULT			
		(UNFILTERED)	VO	(FILTERED)	VO
IRON	1100	3040			
MANGANESE	73	1670		1630	

IT-MW08					
SAMPLE NO.		5580			
SAMPLE DATE		11/19/97			
UNITS		ug/L			
PARAMETER	RBC	RESULT			
		(UNFILTERED)	VO	(FILTERED)	VO
MANGANESE	73	361		328	

IT-MW05					
SAMPLE NO.		5550			
SAMPLE DATE		11/19/97			
UNITS		ug/L			
PARAMETER	RBC	RESULT			
		(UNFILTERED)	VO	(FILTERED)	VO
ALUMINUM	3700	3970	J		
ARSENIC	0.045	11.5		12.5	
IRON	1100	14700		3050	
MANGANESE	73	302		114	

PB-PR-MW9					
SAMPLE NO.		5710			
SAMPLE DATE		11/17/97			
UNITS		ug/L			
PARAMETER	RBC	RESULT			
		(UNFILTERED)	VO	(FILTERED)	VO
MANGANESE	73	1900		1890	

PB-WA-MW1					
SAMPLE NO.		5670			
SAMPLE DATE		11/21/97			
UNITS		ug/L			
PARAMETER	RBC	RESULT			
		(UNFILTERED)	VO	(FILTERED)	VO
IRON	1100	5600			
MANGANESE	73	235		163	

IT-MW02					
SAMPLE NO		5540			
SAMPLE DATE		11/21/97			
UNITS		ug/L			
PARAMETER	RBC	RESULT			
		(UNFILTERED)	VO	(FILTERED)	VO
MANGANESE	73	896		877	

PB-PR-MW8					
SAMPLE NO.		5700			
SAMPLE DATE		11/17/97			
UNITS		ug/L			
PARAMETER	RBC	RESULT			
		(UNFILTERED)	VO	(FILTERED)	VO
COBALT	220	7270		6770	
IRON	1100	22000		12200	
MANGANESE	73	34100		29700	
NICKEL	73	7600		6820	
NITRATE	370	1600000	J		
TOTAL CYANIDE	73	240			

PB-WA-MW2					
SAMPLE NO.		5680			
SAMPLE DATE		11/23/97			
UNITS		ug/L			
PARAMETER	RBC	RESULT			
		(UNFILTERED)	VO	(FILTERED)	VO
ALUMINUM	3700	3720	J		
IRON	1100	7930			
MANGANESE	73	1600		1620	
NICKEL	73	228			
NITRATE	370	80000	J		
TOTAL CYANIDE	73	79			

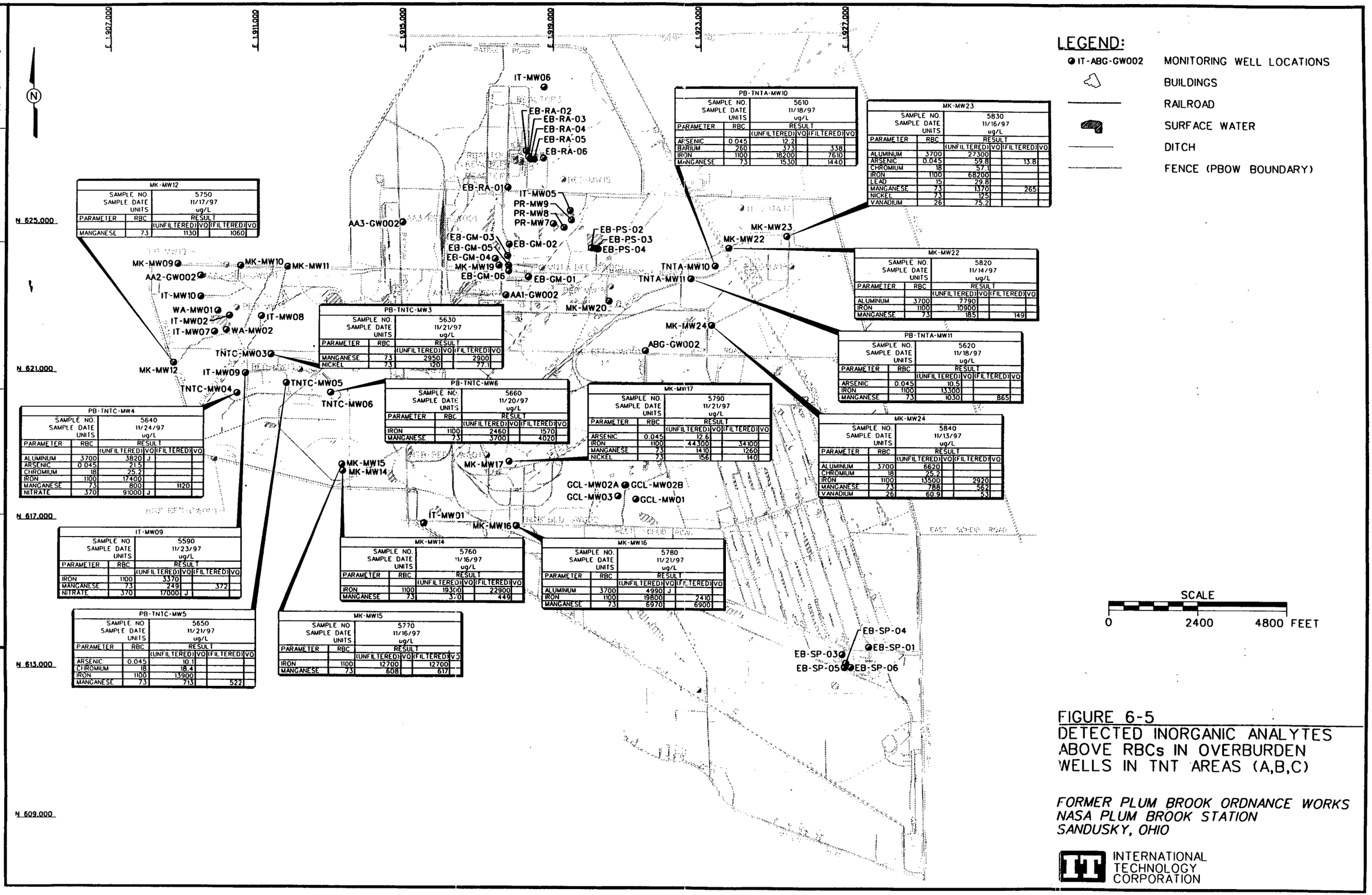
PB-PR-MW7					
SAMPLE NO.		5690			
SAMPLE DATE		11/17/97			
UNITS		ug/L			
PARAMETER	RBC	RESULT			
		(UNFILTERED)	VO	(FILTERED)	VO
ALUMINUM	3700	8960	J		
COBALT	220	2320		2330	
IRON	1100	21700		1360	
MANGANESE	73	17000		17000	
NICKEL	73	1710		1710	
NITRATE	370	400	J		
TOTAL CYANIDE	73	120			

FIGURE 6-2
DETECTED INORGANIC ANALYTES
ABOVE RBCs IN OVERBURDEN WELLS

FORMER PLUM BROOK ORDNANCE WORKS
NASA PLUM BROOK STATION
SANDUSKY, OHIO

INTERNATIONAL TECHNOLOGY CORPORATION

DRAFT. CHCK. BY: VANDERGRIFF | INITIATOR: G.YU | DWG. NO.
ENGR. CHCK. BY: G.YU | PROJ. MGR.: SPANGBERG | PROJ. NO.: 77-461
STARTING DATE: 3/24/98 | DATE LAST
DRAWN BY: R VANDERGRIFF | DRAWN BY:
07:09 09 28 APR 98



PB-TNTA-MW10					
SAMPLE NO.		5610			
SAMPLE DATE		11/18/97			
UNITS		ug/L			
PARAMETER	RBC	RESULT			
		(UNFILTERED)	VO	(FILTERED)	VO
ARSENIC	0.045	12.2			
BARIUM	260	373		338	
IRON	1100	18200		7610	
MANGANESE	73	1530		1440	

MK-MW23					
SAMPLE NO.		5830			
SAMPLE DATE		11/16/97			
UNITS		ug/L			
PARAMETER	RBC	RESULT			
		(UNFILTERED)	VO	(FILTERED)	VO
ALUMINUM	3700	27300			
ARSENIC	0.045	59.8		13.8	
CHROMIUM	18	57.1			
IRON	1100	68200			
LEAD	15	29.8			
MANGANESE	73	1370		265	
NICKEL	73	125			
VANADIUM	26	75.2			

MK-MW12					
SAMPLE NO.		5750			
SAMPLE DATE		11/17/97			
UNITS		ug/L			
PARAMETER	RBC	RESULT			
		(UNFILTERED)	VO	(FILTERED)	VO
MANGANESE	73	1130		1060	

MK-MW22					
SAMPLE NO.		5820			
SAMPLE DATE		11/14/97			
UNITS		ug/L			
PARAMETER	RBC	RESULT			
		(UNFILTERED)	VO	(FILTERED)	VO
ALUMINUM	3700	7790			
IRON	1100	10900			
MANGANESE	73	185		149	

PB-TNTC-MW3					
SAMPLE NO.		5630			
SAMPLE DATE		11/21/97			
UNITS		ug/L			
PARAMETER	RBC	RESULT			
		(UNFILTERED)	VO	(FILTERED)	VO
MANGANESE	73	2950		2900	
NICKEL	73	120		77.1	

PB-TNTA-MW11					
SAMPLE NO.		5620			
SAMPLE DATE		11/18/97			
UNITS		ug/L			
PARAMETER	RBC	RESULT			
		(UNFILTERED)	VO	(FILTERED)	VO
ARSENIC	0.045	10.5			
IRON	1100	13300			
MANGANESE	73	1030		865	

PB-TNTC-MW6					
SAMPLE NO.		5660			
SAMPLE DATE		11/20/97			
UNITS		ug/L			
PARAMETER	RBC	RESULT			
		(UNFILTERED)	VO	(FILTERED)	VO
IRON	1100	2460		1570	
MANGANESE	73	3700		4020	

MK-MW17					
SAMPLE NO.		5790			
SAMPLE DATE		11/21/97			
UNITS		ug/L			
PARAMETER	RBC	RESULT			
		(UNFILTERED)	VO	(FILTERED)	VO
ARSENIC	0.045	12.6			
IRON	1100	44300		34100	
MANGANESE	73	1410		1260	
NICKEL	73	156		140	

MK-MW24					
SAMPLE NO.		5840			
SAMPLE DATE		11/13/97			
UNITS		ug/L			
PARAMETER	RBC	RESULT			
		(UNFILTERED)	VO	(FILTERED)	VO
ALUMINUM	3700	6620			
CHROMIUM	18	25.2			
IRON	1100	13500		2920	
MANGANESE	73	788		562	
VANADIUM	26	60.9		53	

PB-TNTC-MW4					
SAMPLE NO.		5640			
SAMPLE DATE		11/24/97			
UNITS		ug/L			
PARAMETER	RBC	RESULT			
		(UNFILTERED)	VO	(FILTERED)	VO
ALUMINUM	3700	3820	J		
ARSENIC	0.045	21.5			
CHROMIUM	18	25.2			
IRON	1100	17400			
MANGANESE	73	800		1120	
NITRATE	370	91000	J		

IT-MW09					
SAMPLE NO		5590			
SAMPLE DATE		11/23/97			
UNITS		ug/L			
PARAMETER	RBC	RESULT			
		(UNFILTERED)	VO	(FILTERED)	VO
IRON	1100	3370			
MANGANESE	73	249		372	
NITRATE	370	17000	J		

MK-MW14					
SAMPLE NO.		5760			
SAMPLE DATE		11/16/97			
UNITS		ug/L			
PARAMETER	RBC	RESULT			
		(UNFILTERED)	VO	(FILTERED)	VO
IRON	1100	19300		22900	
MANGANESE	73	370		449	

MK-MW16					
SAMPLE NO.		5780			
SAMPLE DATE		11/21/97			
UNITS		ug/L			
PARAMETER	RBC	RESULT			
		(UNFILTERED)	VO	(FILTERED)	VO
ALUMINUM	3700	4990	J		
IRON	1100	19800		2410	
MANGANESE	73	6970		6900	

PB-TNTC-MW5					
SAMPLE NO		5650			
SAMPLE DATE		11/21/97			
UNITS		ug/L			
PARAMETER	RBC	RESULT			
		(UNFILTERED)	VO	(FILTERED)	VO
ARSENIC	0.045	10.1			
CHROMIUM	18	18.4			
IRON	1100	13900			
MANGANESE	73	713		522	

MK-MW15					
SAMPLE NO		5770			
SAMPLE DATE		11/16/97			
UNITS		ug/L			
PARAMETER	RBC	RESULT			
		(UNFILTERED)	VO	(FILTERED)	VO
IRON	1100	12700		12700	
MANGANESE	73	608		617	

FIGURE 6-5
DETECTED INORGANIC ANALYTES ABOVE RBCs IN OVERBURDEN WELLS IN TNT AREAS (A,B,C)

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NASA PLUM BROOK STATION
SANDUSKY, OHIO

INTERNATIONAL TECHNOLOGY CORPORATION

DRAFT. CHCK. BY: VANDERGRIFF | INITIATOR: G.YU | DWG. NO. | REVES 1.0
ENGR. CHCK. BY: G.YU | PROJ. MGR.: SPANGBERG | PROJ. NO. 07-4555
DRAWN BY: G.YU | DRAWN BY: R. VANDERGRIFF | DATE LAST | STARTING DATE: 3/24/98
07-4555 31 MAR 98

6.3.2 Bedrock Wells

6.3.2.1 Volatile Organic Compounds

VOCs, including benzene, toluene, ethyl benzene, and xylene (BTEX), were present in PB-BED-MW17 (six compounds) and PB-BED-MW18 (five compounds). Among these detections, benzene was detected at 10 µg/L (PB-BED-MW17) and 11 µg/L (PB-BED-MW18), both exceeding the RBC of 0.36 µg/L. Toluene (140 µg/L) and methylene chloride (18 µg/L) were present in PB-BED-MW17, above the respective RBCs (Table 6-5, Figure 6-3).

6.3.2.2 Semivolatile Organic Compounds

SVOCs were not present in either bedrock well at concentrations above RBCs.

6.3.2.3 Nitroaromatic Compounds

Three nitroaromatic compounds were detected in PB-BED-MW18 and one in PB-BED-MW17. The detected concentration for 1,3-dinitrobenzene in PB-BED-MW18 (1.0 µg/L) exceeded the RBC of 0.37 µg/L (Table 6-6, Figure 6-3). Nitrobenzene was detected in both wells at concentrations of 0.34 µg/L (PB-BED-MW17) and 2 µg/L (PB-BED-MW18), being equal to and above the RBC of 0.34 µg/L, respectively. 1,3,5-trinitrobenzene was only detected in PB-BED-MW18 at a concentration well below the RBC.

6.3.2.4 Inorganic Compounds and Cyanide

Total and dissolved barium was present in both PB-BED-MW17 and -MW18 at concentrations exceeding the RBC of 0.26 mg/L (Table 6-7, Figure 6-5). Their concentrations were 0.948 (total) and 1.1 mg/L (dissolved) in PB-BED-MW17 and 0.893 (total) and 1.01 mg/L (dissolved) in PB-BED-MW18. In addition, total copper (1.58 mg/L) and total manganese (0.124 mg/L), exceeded the RBC in PB-BED-MW17. Other detected metals at levels below the RBCs included aluminum, iron, and zinc (Table 6-7).

Cyanide, at a concentration of 0.32 mg/L, was detected in PB-BED-MW17, exceeding the RBC of 0.073 µg/L (Table 6-7, Figure 6-5). Cyanide was not found in PB-BED-MW18.

6.4 TNT Area B

Six wells were sampled in TNTB, including two new bedrock wells that were sampled for the first time. These wells are summarized as follows:

- Overburden wells
  - MK-MW14, MK-MW15, MK-MW16, MK-MW17

- Bedrock wells (new)
  - IT-TNTB-BEDGW-001, IT-TNTB- BEDGW-002.

6.4.1 Overburden Wells

6.4.1.1 Volatile Organic Compounds

Carbon disulfide was the only VOC detected in two of the overburden wells (MK-MW14 and MK-MW15) sampled in TNTB (Table 6-1). Both detections were below the RBC. Other wells displayed no detected VOCs during this sampling event.

6.4.1.2 Semivolatile Organic Compounds

bis(2-Ethylhexyl)phthalate was the only SVOC detected in more than one well sampled at TNTB. The estimated bis(2-ethylhexyl)phthalate concentration of 6.0 µg/L exceeded the RBC of 4.8 µg/L in MK-MW15 (Table 6-2, Figure 6-1) but was below the RBC in MK-MW14 and MK-MW16. SVOCs were not detected in MK-MW17.

6.4.1.3 Nitroaromatic Compounds

One nitroaromatic compound (4-amino-2,b-dinitrotoluene) was detected at a concentration of 3.6 µg/L at MK-MW17, exceeded the RBC of 0.22 µg/L.

6.4.1.4 Inorganic Compounds and Cyanide

Of the metals detected in the four overburden wells, iron and manganese in both total and dissolved phases exceeded respective RBCs in all wells as summarized in Table 6-4 and presented in Figure 6-5. The detected concentrations of total iron ranged from 12.7 mg/L (MK-MW15) to 44.3 mg/L (MK-MW17) and total manganese ranged from 0.37 mg/L (MK-MW14) to 6.97 mg/L (MK-MW16). The detections of dissolved iron ranged from 2.41 mg/L (MK-MW16) to 34.1 mg/L (MK-MW17) and dissolved manganese ranged from 0.449 mg/L (MK-MW14) to 6.9 mg/L (MK-MW16). In addition, total aluminum (4.99 mg/L) in MK-MW16, total arsenic (0.0126 mg/L), and nickel (0.156 mg/L total and 0.14 mg/L dissolved) in MK-MW17 exceeded the RBCs. Other metals with detected concentrations below the RBCs included cobalt, lead, selenium, and zinc.

The overburden wells sampled during this sampling event exhibited no detectable cyanide concentrations (Table 6-4).

6.4.2 Bedrock Wells

6.4.2.1 Volatile Organic Compounds

Benzene was the only detected VOC that exhibited a concentration (0.91 µg/L in IT-TNTB-BEDGW-002) above the RBC of 0.36 µg/L (Figure 6-3). Other VOCs present at concentrations below the RBCs include BTEX, carbon disulfide, and methylene chloride (Table 6-5).

6.4.2.2 Semivolatile Organic Compounds

Two SVOCs (bis[2-ethylhexyl]phthalate and phenol) were detected in the two wells (Table 6-8). However, the detected concentrations were all below the RBCs.

6.4.2.3 Nitroaromatic Compounds

Nitroaromatic compounds were not detected in either well.

6.4.2.4 Inorganic Compounds and Cyanide

Iron (total and dissolved) and manganese (total and dissolved) exhibited concentrations above the RBCs in IT-TNTB-BEDGW-001 (Figure 6-5). In IT-TNTB-BEDMW-002, total and dissolved barium as well as total manganese were detected at levels exceeding the RBCs. Other metals with detected concentrations included aluminum, copper, lead, nickel and zinc. However, their concentrations were all below the RBC criteria (Table 6-7).

Neither of the two bedrock wells displayed detected concentrations of cyanide (Table 6-7).

6.5 TNT Area C

Six overburden wells and one bedrock well were sampled in the TNTC area. These wells are summarized as follows:

- Overburden wells
  - PB-TNTC-MW03, PB-TNTC-MW04, PB-TNTC-MW05, PB-TNTC-MW06
  - MK-MW12, IT-MW09

- Bedrock well
  - PB-BED-MW13.

6.5.1 Overburden Wells

6.5.1.1 Volatile Organic Compounds

Of the six overburden wells sampled in the TNTC area, five (MK-MW12, PB-TNTC-MW03, PB-TNTC-MW04, PB-TNTC-MW-05, and PB-TNTC-MW06) exhibited no detected VOCs as summarized in Table 6-1. One VOC, chlorobenzene, was detected at an estimated concentration of 0.17 µg/L in IT-MW09, which is below the RBC of 3.9 µg/L.

6.5.1.2 Semivolatile Organic Compounds

One SVOC, bis(2-ethylhexyl)phthalate, was detected at an estimated concentration of 7.3 µg/L in PB-TNTC-MW06 and MK-MW12 (28 µg/L), exceeding the RBC of 4.8 µg/L (Figure 6-1). Other wells exhibited no detected SVOC concentrations as shown in Table 6-2.

6.5.1.3 Nitroaromatic Compounds

Overburden wells sampled in the TNTC area contained no detected nitroaromatic compounds.

6.5.1.4 Inorganic Compounds and Cyanide

Each of the six overburden wells sampled in the TNTC area exhibited at least one metal with concentrations above the RBCs (Table 6-4, Figure 6-5). Both total and dissolved manganese exceeded the RBC of 0.073 mg/L in each well; total concentrations ranged from 0.249 mg/L (IT-MW09) to 3.7 mg/L (PB-TNTC-MW06) and the dissolved concentrations ranged from 0.372 mg/L (IT-MW09) to 4.02 mg/L (PB-TNTC-MW06). Total aluminum (3.82 mg/L) only exceeded the RBC of 3.7 mg/L in PB-TNTC-MW04. Total arsenic and chromium both exceeded the RBCs in PB-TNTC-MW04 (0.0215 and 0.0252 mg/L respectively) and PB-TNTC-MW05 (0.0101 and 0.0184, respectively). Total iron exceeded the RBC (1.1 mg/L) in PB-TNTC-MW04, PB-TNTC-MW05, PB-TNTC-MW06, and IT-MW09 with concentrations of 17.4, 13.9, 2.46, and 3.37 mg/L, respectively. Dissolved iron (1.57 mg/L) also exceeded the RBC PB-TNTC-MW06. In addition, total and dissolved nickel at concentrations of 0.12 and 0.0771 mg/L, respectively, exceeded the RBC of 0.073 mg/L in PB-TNTC-MW03.

The following metals were also detected in at least one well: cobalt, lead, selenium, and zinc. However, their concentrations were all below the RBCs.

Cyanide was not detected in any of the six overburden wells sampled in the TNTC area.

6.5.2 Bedrock Wells

6.5.2.1 Volatile Organic Compounds

Benzene and toluene were detected above the RBCs in PB-BED-MW13 at concentrations of 130 µg/L (RBC is 0.36 µg/L) and 170 µg/L (RBC is 75 µg/L), respectively, as summarized in Table 6-5 and shown in Figure 6-3. Three other VOCs (carbon disulfide, ethyl benzene, and total xylene) were also present in this well with detected concentrations below the RBCs.

6.5.2.2 Semivolatile Organic Compounds

Seven SVOCs exhibited detectable concentrations in the groundwater sample from PB-BED-MW13 (Table 6-8). Of these, bis(2-ethylhexyl)phthalate was the only compound with a concentration (39 µg/L), exceeding the RBC (4.8 µg/L) (Figure 6-3).

6.5.2.3 Nitroaromatic Compounds

Nitroaromatic compounds were not detected in the bedrock well.

6.5.2.4 Inorganic Compounds and Cyanide

Four metals were detected present in the sample collected from PB-BED-MW13: barium, iron, manganese, and zinc. Of these, barium concentrations in both total (1.55 mg/L) and dissolved phases (1.68 mg/L) exceeded the RBC of 0.26 mg/L (Figure 6-4). Manganese, iron, and zinc were below the respective RBCs as summarized in Table 6-7.

Cyanide was not detected.

6.6 Acid Area 1

One overburden well and one bedrock well were installed in October 1997 in AA1 and were sampled for the first time. These wells are:

- Overburden well
  - IT-AA1-GW002
- Bedrock well
  - IT-AA1-BEDGW-001.

6.6.1 Overburden Wells

6.6.1.1 Volatile Organic Compounds

VOCs were not detected in IT-AA1-GW002 (Table 6-1).

6.6.1.2 Semivolatile Organic Compounds

SVOCs were not detected in IT-AA1-GW002.

6.6.1.3 Nitroaromatic Compounds

Nitroaromatic compounds were not detected in IT-AA1-GW002.

6.6.1.4 Inorganic Compounds and Cyanide

Of the four detected metals in IT-AA1-GW002, only total and dissolved iron (32.9 and 14.4 mg/L, respectively) and total and dissolved manganese (5.41 and 4.74 mg/L, respectively) exceeded RBCs (Figure 6-6). Aluminum and zinc were detected at concentrations below the RBCs (Table 6-4).

6.6.2 Bedrock Wells

6.6.2.1 Volatile Organic Compounds

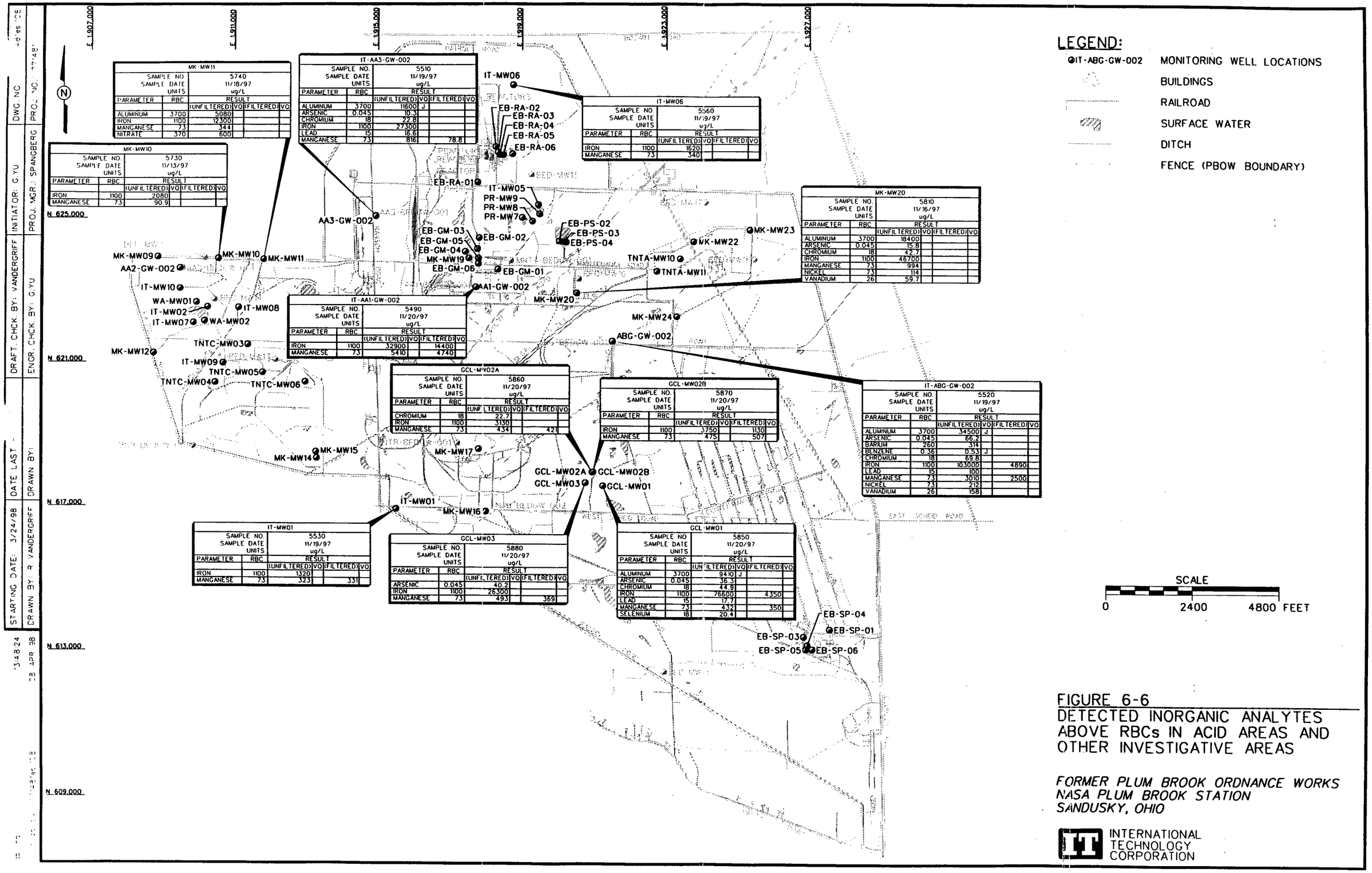
Six VOCs were detected in IT-AA1-BEDGW-001. The detected concentrations of methylene chloride (25 µg/L) and benzene (11 µg/L) exceeded the established RBCs (Table 6-5, Figure 6-3). Other detected VOCs (below RBCs) include BTEX compounds and carbon disulfide (Table 6-5).

6.6.2.2 Semivolatile Organic Compounds

Five SVOCs were present in this well as shown in Table 6-8. However, the only compound that exceeded the RBC was bis(2-ethylhexyl)phthalate (RBC = 4.8 µg/L) with a concentration of 28 µg/L (Figure 6-3).

6.6.2.3 Nitroaromatic Compounds

Nitroaromatic compounds were not detected in IT-AA1-BEDGW-001 during this sampling event.



MK-MW11				
SAMPLE NO.		5740		
SAMPLE DATE		11/18/97		
UNITS		ug/L		
PARAMETER	RBC	RESULT		
		(UNFILTERED)	VO	(FILTERED)	VO
ALUMINUM	3700	5080			
IRON	1100	12300			
MANGANESE	73	344			
NITRATE	370	600			

MK-MW10					
SAMPLE NO.		5730			
SAMPLE DATE		11/13/97			
UNITS		ug/L			
PARAMETER	RBC	RESULT			
		(UNFILTERED)	VO	(FILTERED)	VO
IRON	1100	2080			
MANGANESE	73	90.9			

IT-AA3-GW-002					
SAMPLE NO.		5510			
SAMPLE DATE		11/19/97			
UNITS		ug/L			
PARAMETER	RBC	RESULT			
		(UNFILTERED)	VO	(FILTERED)	VO
ALUMINUM	3700	11600	J		
ARSENIC	0.045	10.3			
CHROMIUM	18	22.8			
IRON	1100	27300			
LEAD	15	16.6			
MANGANESE	73	816		78.8	

IT-MW06					
SAMPLE NO.		5560			
SAMPLE DATE		11/19/97			
UNITS		ug/L			
PARAMETER	RBC	RESULT			
		(UNFILTERED)	VO	(FILTERED)	VO
IRON	1100	1620			
MANGANESE	73	340			

MK-MW20					
SAMPLE NO.		5810			
SAMPLE DATE		11/16/97			
UNITS		ug/L			
PARAMETER	RBC	RESULT			
		(UNFILTERED)	VO	(FILTERED)	VO
ALUMINUM	3700	18400			
ARSENIC	0.045	15.8			
CHROMIUM	18	42.7			
IRON	1100	46700			
MANGANESE	73	994			
NICKEL	73	114			
VANADIUM	26	59.7			

IT-AA1-GW-002					
SAMPLE NO.		5490			
SAMPLE DATE		11/20/97			
UNITS		ug/L			
PARAMETER	RBC	RESULT			
		(UNFILTERED)	VO	(FILTERED)	VO
IRON	1100	32900		14400	
MANGANESE	73	5410		4740	

GCL-MW02A					
SAMPLE NO.		5860			
SAMPLE DATE		11/20/97			
UNITS		ug/L			
PARAMETER	RBC	RESULT			
		(UNFILTERED)	VO	(FILTERED)	VO
CHROMIUM	18	22.7			
IRON	1100	3130			
MANGANESE	73	434		421	

GCL-MW02B					
SAMPLE NO.		5870			
SAMPLE DATE		11/20/97			
UNITS		ug/L			
PARAMETER	RBC	RESULT			
		(UNFILTERED)	VO	(FILTERED)	VO
IRON	1100	3750		1130	
MANGANESE	73	475		507	

IT-ABG-GW-002					
SAMPLE NO.		5520			
SAMPLE DATE		11/19/97			
UNITS		ug/L			
PARAMETER	RBC	RESULT			
		(UNFILTERED)	VO	(FILTERED)	VO
ALUMINUM	3700	34500	J		
ARSENIC	0.045	66.2			
BARIUM	260	314			
BENZENE	0.36	0.53	J		
CHROMIUM	18	69.8			
IRON	1100	103000		4890	
LEAD	15	100			
MANGANESE	73	3010		2500	
NICKEL	73	212			
VANADIUM	26	158			

IT-MW01					
SAMPLE NO.		5530			
SAMPLE DATE		11/19/97			
UNITS		ug/L			
PARAMETER	RBC	RESULT			
		(UNFILTERED)	VO	(FILTERED)	VO
IRON	1100	1320			
MANGANESE	73	323		331	

GCL-MW03					
SAMPLE NO.		5880			
SAMPLE DATE		11/20/97			
UNITS		ug/L			
PARAMETER	RBC	RESULT			
		(UNFILTERED)	VO	(FILTERED)	VO
ARSENIC	0.045	40.2			
IRON	1100	26300			
MANGANESE	73	493		369	

GCL-MW01					
SAMPLE NO.		5850			
SAMPLE DATE		11/20/97			
UNITS		ug/L			
PARAMETER	RBC	RESULT			
		(UNFILTERED)	VO	(FILTERED)	VO
ALUMINUM	3700	9410	J		
ARSENIC	0.045	36.3			
CHROMIUM	18	44.9			
IRON	1100	76600		4350	
LEAD	15	17.7			
MANGANESE	73	432		350	
SELENIUM	18	20.4			

FIGURE 6-6
DETECTED INORGANIC ANALYTES ABOVE RBCs IN ACID AREAS AND OTHER INVESTIGATIVE AREAS

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INTERNATIONAL TECHNOLOGY CORPORATION

6.6.2.4 Inorganic Compounds and Cyanide

Metals showing detected concentrations in IT-AA1-BEDGW-001 included aluminum, arsenic, barium, chromium, copper, iron, manganese, and zinc. Of these, total arsenic (0.0165 mg/L), barium (1.06 mg/L total and 1.26 mg/L dissolved), total iron (1.92 mg/L), and manganese (0.575 mg/L total and 0.516 mg/L dissolved) exceeded their respective RBCs as presented in Table 6-7.

Cyanide was not detected in IT-AA1-BEDGW-001 (Table 6-8).

6.7 Acid Area 2

Three overburden wells and two bedrock wells, including one newly installed well, were sampled in and around Acid Area 2. These wells are:

- Overburden wells
  - MK-MW09, MK-MW10, MW-MW11
- Bedrock wells
  - IT-AA2-BEDGW-001 (new), PB-BED-MW19.

A piezometer (AA2-GW002) was also installed in the overburden water-bearing zone, but was dry at the time of sampling.

6.7.1 Overburden Wells

6.7.1.1 Volatile Organic Compounds

VOCs were not detected in MK-MW10. One VOC (carbon disulfide) was detected in MK-MW11 and two (toluene and xylenes) were found in MK-MW09 at levels well below the respective RBCs (Table 6-1).

6.7.1.2 Semivolatile Organic Compounds

Only one SVOC was detected in MK-MW10; SVOCs were not detected in MK-MW09 or MW-MW11 during this sampling event. bis(2-Ethylhexyl)phthalate was detected in MK-MW10 at a concentration of 11 µg/L, exceeding the RBC of 4.8 µg/L (Table 6-2, Figure 6-1).

6.7.1.3 Nitroaromatic Compounds

Nitroaromatic compounds were not detected in any of the three wells during this sampling event.

6.7.1.4 Inorganic Compounds and Cyanide

Metals were not detected in MK-MW09 at levels above the RBCs. In MK-MW10 and MK-MW11, total iron (2.08 and 12.3 mg/L, respectively) and total manganese (0.0909 and 0.344 mg/L, respectively) were both detected at concentrations above the RBCs. In addition, total aluminum with a concentration of 5.8 mg/L was present in MK-MW11, exceeding the RBC of 3.7 mg/L (Table 6-4, Figure 6-6). Other metals detected below RBCs are chromium, lead, and zinc.

Cyanide was not detected in the three overburden wells in this area.

6.7.2 Bedrock Wells

6.7.2.1 Volatile Organic Compounds

Both bedrock wells displayed detected BTEX constituents, with benzene concentrations (11 µg/L in PB-BED-MW19 and 33 µg/L in the newly installed well IT-AA2-BEDGW-001) exceeding the RBC (Table 6-5, Figure 6-3). Other VOCs detected included chlorobenzene (21 µg/L) and methylene chloride (7.4 µg/L) in IT-AA2-BEDGW-001, which also exceeded the RBCs (Figure 6-3). Other compounds detected below RBCs include carbon disulfide, ethyl benzene, acetone, toluene, and xylene.

6.7.2.2 Semivolatile Organic Compounds

Two SVOCs (2,4-dimethylphenol and 2-methylnaphthalene) were detected in the sample from IT-AA2-BEDGW-001 at levels considerably below the established RBCs. In PB-BED-MW19, bis(2-ethylhexyl)phthalate was also detected at an estimated concentration of 5.8 µg/L, slightly above the RBC of 4.8 µg/L (Table 6-8, Figure 6-3). Other compounds detected in PB-BED-MW19 below RBCs are 2-methylnaphthalene, naphthalene, and phenol.

6.7.2.3 Nitroaromatic Compounds

Nitroaromatic compounds were detected in PB-BED-MW19 but were not detected in IT-AA2-BEDGW-001. The concentrations of 1,3-DNB and nitrobenzene in PB-BED-MW19 were 0.22 and 0.32 µg/L, respectively, both slightly below the RBCs (Table 6-6).

6.7.2.4 Inorganic Compounds and Cyanide

Total and dissolved barium, both at a concentration of 1.52 mg/L, exceeded the RBC (0.26 mg/L) in PB-BED-MW19. In the water sample from IT-AA2-BEDGW-001, total iron (5.24 mg/L) and total and dissolved manganese (0.522 and 0.351 mg/L, respectively) exceeded the RBCs (Table 6-7, Figure 6-6). Other detected metals in the wells below RBCs included aluminum, barium, copper, lead, and zinc as summarized in Table 6-7.

Cyanide was not detected in the two bedrock wells.

6.8 Acid Area 3 and Associated Area

Two overburden and one bedrock well were sampled in AA3. In addition, one bedrock well was sampled in the Maintenance Shop Area. These wells are:

- Overburden wells
  - IT-AA3-GW002 (new), MK-MW19
- Bedrock wells
  - IT-AA3-BED-GW001 (new), IT-MNTA-BED-GW001 (new).

6.8.1 Overburden Wells

6.8.1.1 Volatile Organic Compounds

VOCs were not detected in IT-AA3-GW002. However, five VOCs were present in MK-MW19, which is located east of the Maintenance Shop Area. Of the four detected VOCs, 1,1,1-trichloroethene (TCE) and 1,1-dichloroethene (DCE) were detected at concentrations of 170 and 3.4 µg/L, respectively, both exceeding the RBCs (Figure 6-1). 1,1-Dichloroethane, chloroethane, and toluene were also detected, but at concentrations below the RBCs (Table 6-1).

6.8.1.2 Semivolatile Organic Compounds

SVOCs were not detected in either overburden well sampled during this investigation.

6.8.1.3 Nitroaromatic Compounds

Neither well exhibited detectable nitroaromatic compounds in the samples collected during this sampling event.

6.8.1.4 Inorganic Compounds and Cyanide

Metals were not detected at concentrations exceeding the RBCs in MK-MW19. However, six metals with concentration above the RBCs were present in IT-AA3-GW002 (Table 6-4, Figure 6-6). These included total aluminum (11.6 mg/L), total arsenic (0.0103 mg/L), total chromium (0.0228 mg/L), total iron (27.3 mg/L), total lead (0.0166 mg/L), and total and dissolved manganese (0.816 and 0.0788 mg/L, respectively).

Neither well exhibited detected concentrations of cyanide.

6.8.2 Bedrock Wells

6.8.2.1 Volatile Organic Compounds

Neither well exhibited any VOC detections at levels above the RBCs as summarized in Table 6-5. However, acetone and carbon disulfide were detected in IT-AA3-BED-GW001, while carbon disulfide and total xylenes were present in IT-MNTA-BED-GW001.

6.8.2.2 Semivolatile Organic Compounds

One SVOC, bis(2-ethylhexyl)phthalate, was present in IT-AA3-BED-GW001 at an estimated concentration of 5.8 µg/L, exceeding the RBC of 4.8 µg/L (Table 6-8, Figure 6-3). Other SVOC detections in either well were below the RBCs, including 2,4-dimethylphenol, phenol, naphthalene, and 2-methylnaphthalene as summarized in Table 6-8.

6.8.2.3 Nitroaromatic Compounds

Nitroaromatic compounds were not detected in the two wells.

6.8.2.4 Inorganic Compounds and Cyanide

In IT-AA3-BED-GW001, total manganese was the only metal that exceeded the RBC at a detected concentration of 0.0746 mg/L (Table 6-7, Figure 6-4). Three metals were detected in IT-MNTA-BED-GW001 at levels above the RBCs, including total and dissolved barium (0.424 and 0.449 mg/L, respectively), total and dissolved manganese (0.849 and 0.899 mg/L, respectively), and total iron (6.4 mg/L).

Neither well exhibited detected concentrations of cyanide.

6.9 Burning Ground Areas

One overburden and one bedrock wells were sampled in the ABG area. One bedrock well was sampled from the G-8 Burning Ground and one overburden well was sampled from the vicinity of the former Taylor Road Burning Ground. These wells are:

- Overburden wells
  - IT-ABG- GW002, IT-MW01 (Taylor Road Burning Ground)

- Bedrock wells (new)
  - IT-ABG-BED-GW001, IT-BG8-BED-GW001.

6.9.1 Overburden Wells

6.9.1.1 Volatile Organic Compounds

Of the three VOCs detected in IT-ABG-GW002, benzene was present at an estimated concentration of 0.53 µg/L, slightly above the RBC of 0.36 µg/L (Table 6-1, Figure 6-1). Other VOCs found in this well (carbon disulfide and xylenes) were below the RBCs. Total xylene was also detected in IT-MW01 at an estimated concentration of 0.31 µg/L, below the RBC of 1,200 µg/L.

6.9.1.2 Semivolatile Organic Compounds

Neither well contained detected concentrations of SVOCs.

6.9.1.3 Nitroaromatic Compounds

Nitroaromatic compounds were not detected in the two wells.

6.9.1.4 Inorganic Compounds and Cyanide

In IT-MW01, located in the vicinity of the former Taylor Road Burning Ground, both total (0.323 mg/L) and dissolved manganese (0.331 mg/L) as well as total iron (1.32 mg/L) were detected at concentrations exceeding the RBCs. Eight metals were present in IT-ABG-GW001 with concentrations above the RBCs (Table 6-4, Figure 6-6). These metals included total aluminum (34.5 mg/L), total arsenic (0.0662 mg/L), total chromium (0.0698 mg/L), total and dissolved iron (103 and 4.89 mg/L, respectively), total lead (0.1 mg/L), total and dissolved manganese (3.01 and 2.5 mg/L, respectively), total nickel (0.212 mg/L), and total vanadium (0.158 mg/L). Other detected metals below RBCs include total barium, total cobalt, total copper, total mercury, total selenium, and total and dissolved zinc.

Cyanide was not detected in either well.

6.9.2 Bedrock Wells

6.9.2.1 Volatile Organic Compounds

Neither well exhibited VOCs at levels above the RBCs. However, TCE (0.25 µg/L) was detected in IT-ABG-BED-GW001 while carbon disulfide was found at 0.65 µg/L in IT-BG8-BED-GW001 (Table 6-5).

6.9.2.2 Semivolatile Organic Compounds

IT-ABG-BED-GW001 displayed no detectable SVOCs. bis(2-Ethylhexyl)phthalate was the only detected SVOC in IT-BG8-BED-GW001 with an estimated concentration of 1.7 µg/L, below the RBC of 4.8 µg/L (Table 6-8).

6.9.2.3 Nitroaromatic Compounds

Neither well contained detected nitroaromatic compounds during this sampling event.

6.9.2.4 Inorganic Compounds and Cyanide

A total of four metals were present in IT-ABG-BED-GW001 at levels exceeding the RBCs. Of these, total arsenic and total mercury were detected at concentrations of 0.0117 and 0.0036 mg/L, respectively, both exceeding the respective RBCs. Total and dissolved iron (8.89 and 7.26 mg/L, respectively) and total and dissolved manganese (0.912 and 0.99 mg/L, respectively) exceeded their respective RBCs as summarized in Table 6-7 and presented in Figure 6-4. In IT-BG8-BED-GW001, seven metals were present at concentrations above the RBCs. They included: aluminum (9.02 mg/L), arsenic (0.0176 mg/L), total and dissolved barium (0.52 and 0.366 mg/L, respectively), total chromium (0.0182 mg/L), total iron (22.6 mg/L), total lead (0.0263 mg/L), and total and dissolved manganese (2.24 and 1.3 mg/L, respectively). Zinc was also detected in the two wells; however, its concentration was below RBCs.

Cyanide was not detected in either of the bedrock wells.

6.10 Upper Toluene Tank Area

One overburden well (MK-MW20) and one bedrock well (PB-BED-MW16) were sampled in the vicinity of the former upper toluene tank area located south of Maintenance Road. Two 200,000-

gallon capacity aboveground storage tanks (No. 255 and 265) are still present and both were used by NASA for storage of fuel oil. According to the records review report (D&M, 1997), a fuel oil leak from Tank No. 265 used by NASA (NASA#8951) was observed in January 1989, which triggered contaminated soil and fuel sludge removal action by NASA. Groundwater contamination around the tanks was confirmed during previous investigations (Morrison-Knudsen Ferguson Corporation [MK], 1994; IT, 1997b).

6.10.1 Volatile Organic Compounds

Three VOCs were detected in MK-MW20. Of these, chloroform and toluene were detected at concentrations of 71 and 13,000 µg/L, respectively, both exceeding the RBCs (Table 6-1, Figure 6-1). Total xylenes were also detected but the concentration (100 µg/L) was below the RBC of 1,200 µg/L. In PB-BED-MW16, the detection of benzene (490 µg/L), ethyl benzene (130 µg/L), methylene chloride (8.8 µg/L), and toluene (390 µg/L) exceeded the respective RBCs (Table 6-5, Figure 6-3). Total xylenes were also present in PB-BED-MW16 at a concentration of 1,100 µg/L, slightly below the RBC of 1,200 µg/L. No other VOCs were detected in the two wells. Free petroleum product was observed at PB-BED-MW16 during the 1996 sampling event (IT, 1997a) and during the first quarterly monitoring event (IT, 1997b), but was not evident during this and the second sampling events.

6.10.2 Semivolatile Organic Compounds

Three SVOCs were present in MK-MW20 and one in PB-BED-MW16 at concentrations exceeding RBCs. The compounds 2-methylphenol (1,300 µg/L) and 4-methylphenol (1,200 µg/L) were detected in MK-MW20, exceeding the respective RBCs of 180 and 18 µg/L (Figure 6-1). bis(2-Ethylhexyl)phthalate was present in both MK-MW20 (5 µg/L, Figure 6-1) and PB-BED-MW16 (920 µg/L, Figure 6-3), and exceeded the RBC of 4.8 µg/L. Other SVOCs were not detected in either well.

6.10.3 Nitroaromatic Compounds

Neither well exhibited detectable nitroaromatic compounds.

6.10.4 Inorganic Compounds and Cyanide

Five metals were present in each well at levels above the RBCs. Total aluminum (18.4 mg/L), arsenic (0.0158 mg/L), chromium (0.0427 mg/L), iron (46.7 mg/L), and manganese (0.994) exceeded the RBCs in MK-MW20 (Table 6-4, Figure 6-6). However, in the dissolved phase, these metals were either not detected or at concentrations below the RBCs. In PB-BED-MW16,

total and dissolved barium (0.463 and 0.389 mg/L, respectively), total and dissolved vanadium (0.0647 and 0.0583 mg/L, respectively) exceeded the RBCs. In addition, total chromium (0.0244 mg/L), total iron (1.14 mg/L), and total manganese (0.133 mg/L) exceeded the RBCs in PB-BED-MW16 (Table 6-7, Figure 6-4). Other detected metals with concentrations below the RBCs included copper, lead, nickel, and zinc.

Cyanide was not detected in either of the two wells.

6.11 Other Areas

6.11.1 Reactor Building Area

One bedrock well (Reactor 1) west of the PBS Reactor Building and one overburden well (IT-MW06) located northeast of the Reactor Building were sampled. Two other wells (Reactor 2 and Reactor 3) were also attempted but were dry at the time of sampling.

6.11.1.1 Volatile Organic Compounds

Benzene and methylene chloride were detected in Reactor 1 at estimated concentrations of 8.8 and 14 µg/L, respectively, both exceeding the RBCs (Table 6-5, Figure 6-3). In addition, total xylene was also present in this bedrock well at an estimated concentration of 4 µg/L, while toluene was present in IT-MW06 at an estimated concentration of 0.2 µg/L (Table 6-1). Both of these VOC detections were below the respective RBCs. Other VOCs were not detected in either well.

6.11.1.2 Semivolatile Organic Compounds

SVOCs were not detected in IT-MW06, while one SVOC (bis(2-ethylhexyl)phthalate) was present in Reactor 1 at an estimated concentration of 23 µg/L, exceeding the RBC of 4.8 µg/L (Table 6-8, Figure 6-3).

6.11.1.3 Nitroaromatic Compounds

Neither well exhibited detected nitroaromatic compounds during this sampling event.

6.11.1.4 Inorganic Compounds and Cyanide

In IT-MW06, total iron (1.62 mg/L) and manganese (0.34 mg/L) were detected at concentrations exceeding the RBCs (Table 6-4, Figure 6-6). The groundwater sample from Reactor 1 exhibited both barium (0.405 mg/L total and 0.397 mg/L dissolved) and manganese (0.198 mg/L total and

0.144 mg/L dissolved) at concentrations above the RBCs (Table 6-7, Figure 6-3). In addition, total iron (8 mg/L) and lead (0.0191 mg/L) also exceeded the RBCs in Reactor 1. Other detected metals with concentrations below RBCs include chromium, mercury, and zinc.

Neither well exhibited cyanide during this sampling event.

6.11.2 PB-BED-MW20

Bedrock monitoring well PB-BED-MW20 was installed by D&M for use as a possible background well. Located near the intersection of Patrol Road and Taft Road in the text southwestern portion of the PBOW, this well is hydrogeologically upgradient of all other bedrock wells at the site.

6.11.2.1 Volatile Organic Compounds

Benzene, ethyl benzene, and total xylenes were detected in this bedrock well. Of the detected constituents, only benzene (0.93 µg/L) exceeded the RBC of 0.36 µg/L (Table 6-5, Figure 6-3).

6.11.2.2 Semivolatile Organic Compounds

One SVOC, 2-methylnaphthalene, was estimated at a concentration of 1.1 µg/L in the sample collected from this well. However, the detected concentration was well below the RBC of 30 µg/L (Table 6-8).

6.11.2.3 Nitroaromatic Compounds

Nitroaromatic compounds were not detected in PB-BED-MW20.

6.11.2.4 Inorganic Compounds and Cyanide

Three metals were detected in PB-BED-MW20 at levels above the RBCs (Table 6-7). Of them, total and dissolved barium (19 and 21 mg/L, respectively), iron (13.2 and 2.31 mg/L, respectively), and manganese (0.18 and 0.162 mg/L, respectively) exceeded the established RBCs (Figure 6-4). Other detected metals below RBCs included aluminum, copper, and zinc.

Cyanide was not detected in PB-BED-MW20.

6.11.3 Disposal Area No. 3 (GCL Series Wells)

Four GCL series wells (GCL-MW01, GCL-MW02A, GCL-MW02B, and GCL-MW03) were sampled. These wells were installed in March 1992 by H^+GCL, retained by NASA to conduct a

Phase I Site Characterization in Disposal Area No. 3 (H+GCL, 1992). The area is located adjacent to Snake Road and consists of a fire training pit and burning grounds reportedly used in the past by both the U.S. Army and NASA.

6.11.3.1 Volatile Organic Compounds

With the exception of low levels of carbon disulfide in GCL-MW02A, VOCs were not detected in any of the four GCL series wells sampled (Table 6-1). The estimated concentration of carbon disulfide in GCL-MW02A was 0.64 µg/L, which is well below the RBC of 100 µg/L.

6.11.3.2 Semivolatile Organic Compounds

GCL-MW01 exhibited bis(2-ethylhexyl)phthalate at a concentration of 100 µg/L, exceeding the RBC of 4.8 µg/L (Figure 6-1). In addition, diethyl phthalate was present in GCL-MW02B at an estimated concentration of 2.7 µg/L, which is below the RBC of 2,900 µg/L. Other SVOCs were not present at detectable concentrations in the GCL wells (Table 6-2).

6.11.3.3 Nitroaromatic Compounds

Nitroaromatic compounds were not detected in the GCL series wells during this sampling event.

6.11.3.4 Inorganic Compounds and Cyanide

Several metals were present in GCL wells at levels above the RBCs (Figure 6-6). In GCL-MW01, total aluminum (9.41 mg/L), arsenic (0.0363 mg/L), chromium (0.0449 mg/L), iron (76.6 mg/L), lead (0.0177 mg/L), manganese (0.423 mg/L), selenium (0.0204 mg/L) and dissolved iron (4.35 mg/L) and dissolved manganese (0.35 mg/L) exceeded their respective RBCs. In GCL-MW02A, total chromium (0.0227 mg/L), iron (3.1.3 mg/L), and both total and dissolved manganese (0.434 and 0.421 mg/L, respectively) exceeded the RBCs. Both total and dissolved iron (3.75 and 1.13 mg/L, respectively) and manganese (0.475 and 0.507 mg/L) exceeded RBCs in GCL-MW02B. Total arsenic (0.0402 mg/L) and iron (26.3 mg/L) as well as total and dissolved manganese (0.439 and 0.369 mg/L, respectively) exceeded the RBCs in GCL-MW03. Other detected metals included copper, lead, nickel, and zinc, but their detections were all below the RBCs (Table 6-4).

Cyanide was not detected in any of the GCL wells (Table 6-4).

6.12 Overview of Total Organic Carbon Concentrations

In addition to organic and inorganic compounds that were discussed in previous sections, total organic carbon (TOC) was also analyzed for in most groundwater samples. Groundwater samples collected from some wells were not analyzed for TOC because these wells could not produce sufficient water volume. TOC analytical results are summarized in Table 6-9 and are discussed separately below for overburden and bedrock water-bearing zones.

6.12.1 Overburden Water-Bearing Zone

A total of 37 overburden well samples were analyzed for TOC. Three overburden wells (PB-PR-MW07, -08, and -09) located in the PRRWP area contained significantly higher TOC than the remaining wells with detected concentrations at 2,700 mg/L, 14,000 mg/L, and 1,300 mg/L, respectively. Another elevated TOC concentration of 970 mg/L was detected in PB-WA-MW02, which is located along the southern edge of the WARWP area. IT-MW02, which is also located in WARWP area, had a TOC content of 41 mg/L. TOC concentrations in other wells ranged from a minimum of 1.4 mg/L (MK-MW10), located along the Patrol Road north of AA2 to 21 mg/L (MK-MW24) at the south end of TNTA. Excluding the five wells mentioned above that were detected to contain TOC at levels above 40 mg/L, the average TOC concentrations for the remaining 32 wells is 5.2 mg/L. It seems obvious that elevated TOC occurs in wells that are located in the vicinity of the former red water ponds. There appears to be some correlation between the color of the water sample and the TOC concentrations. The water samples with high TOC detections also exhibited deeper red color than the samples with less TOC concentrations. However, not all overburden wells near the red water ponds exhibited high TOC contents, suggesting the high TOC concentrations detected in some wells may not be solely attributable to their close proximity to the red water ponds.

6.12.2 Bedrock Water-Bearing Zone

The TOC concentrations in the bedrock wells ranged from less than 1.0 mg/L in PB-BED-MW20 to 16 mg/L in both IT-AA1-BEDGW-001 and PB-BED-MW19 with an average of 7.92 mg/L. The minimum TOC content was detected in Reactor 1 at 0.0025 mg/L while the maximum of 190 mg/L occurred in PB-BED-MW14, which is located close to the WARWP. In general, the TOC content in the bedrock wells is lower than that of the overburden wells. This is because the greater depths at which bedrock wells were installed would limit the exposure of groundwater to the atmosphere and to organic matter that are common in the near-surface environment. The relatively high average TOC content (7.92 mg/L) in the bedrock wells seems to suggest a close sitewide connection between the bedrock water-bearing zone and the surface environment.

Table 6-9

Summary of Total Organic Carbon Concentrations in Various Areas
Sitewide Groundwater Investigation
Former Plum Brook Ordnance Works, Sandusky, Ohio

Well Identification	Total Organic Carbon (mg/L)	Well Identification	Total Organic Carbon (mg/L)	Well Identification	Total Organic Carbon (mg/L)
IT-AA1-BEDGW-001	16	GCL-MW02A	4.5	MK-MW15	2.6
IT-AA2-BEDGW-001	7	GCL-MW02B	2.7	MK-MW16	2.5
IT-AA3-BEDGW-001	5.3J	GCL-MW03	4.2	MK-MW17	3.4
IT-ABG-BEDGW-001	3.8	IT-AA1-GW002	6.9	MK-MW19	2.9
IT-BG8-BEDGW-001	< 5.0	IT-AA3-GW002	4.5	MK-MW20	12
IT-MNTA-BEDGW-001	11	IT-ABG-GW002	13	MK-MW22	11
IT-TNTB-BEDGW-001	12	IT-MW01	8.6	MK-MW24	21
IT-TNTB-BEDGW-002	5	IT-MW02	41	PB-PR-MW7	2,700
PB-BED-MW13	9.6	IT-MW05	4.7	PB-PR-MW8	14,000
PB-BED-MW14	190	IT-MW06	3.8	PB-PR-MW9	1,300
PB-BED-MW15	11	IT-MW08	4.4	PB-TNTA-MW10	4.2
PB-BED-MW16	8.4	IT-MW09	2.9	PB-TNTA-MW11	4.5
PB-BED-MW17	1.2	IT-MW10	2.7	PB-TNTC-MW3	2.4
PB-BED-MW18	6.5	MK-MW09	1.5	PB-TNTC-MW4	2.6
PB-BED-MW19	16	MK-MW10	1.4	PB-TNTC-MW5	3
PB-BED-MW20	< 1.0	MK-MW11	3.1	PB-TNTC-MW6	10
REACTOR 1	0.0025	MK-MW12	2	PB-WA-MW1	2.1
GCL-MW01	5.4	MK-MW14	6.1	PB-WA-MW2	970

mg/L - Milligrams per liter.

7.0 Conclusions and Recommendations

This chapter presents conclusions and recommendations from the third quarterly water level monitoring and the first semiannual groundwater sampling at the former PBOW. The conclusions regarding site-wide groundwater flow conditions are based on the hydrogeology discussed in Chapter 4.0, while conclusions on groundwater contamination are based on the analytical results discussed in Chapter 6.0. Chemicals that were detected in well samples at concentrations exceeding RBCs are considered as COPC and are summarized in Table 7-1 for various investigative areas.

7.1 Conclusions

7.1.1 Groundwater Flow

Groundwater at PBOW exists in both overburden and bedrock water-bearing zones. In the overburden zone, groundwater flow exhibits strong seasonal dependence. Comparison of the groundwater elevations in overburden wells measured in November 1997 and February 1998 indicates an average rise of 2.96 feet compared to an average decline of 1.25 feet observed from August to November 1997. All but one overburden wells exhibited elevated water levels in the third quarterly event reflecting a relatively wet season in late fall through winter in the Sandusky area. As discussed in the Second Quarterly Groundwater Level Measurement Report (IT, 1998), the average drop in water level was 1.25 feet but 6 of the 54 existing overburden wells measured also showed slightly higher water levels (average +0.32 feet) than the previous measurements. The maximum water level changes were observed at EB-SP-03 (-3.51 feet) and at EB-GM-02 (+0.65 feet). The monitoring data from the three quarterly events seem to indicate that there is no apparent correlation between water level changes and the well locations. Water level fluctuations as observed in overburden wells are believed to be controlled primarily by season, but impact from other factors such as soil properties, vegetation, and local topography may also play a role.

As indicated in the three groundwater elevation contour maps (Figure 3-1, 3-2, and 3-3), the general groundwater flow direction in the overburden water-bearing zone is to the north in much of the central portion of the site, and to the northwest in western part of the site. In the southeastern portion of the facility, including the entire Magazine Area, the water in the overburden zone appears to flow in a northeast direction, consistent with observations from three quarterly

Table 7-1

Summary of Chemicals of Potential Concern in Various Investigative Areas
Former Plum Brook Ordnance Works, Sandusky Ohio

Area of Concern	Well	Water-Bearing Zone	Compounds	Concentration (mg/L)	RBC (mg/L)
West Area Red Water Ponds	IT-MW02	Overburden	2,4-dinitrotoluene	0.043	0.0073
	IT-MW02	Overburden	2,6-dinitrotoluene	0.0071 J	0.0037
	IT-MW02	Overburden	2-nitroaniline	0.0015 J	0.00022
	IT-MW02	Overburden	4,6-dinitro-2-methylphenol	0.012 J	0.00037
	IT-MW10	Overburden	bis(2-ethylhexyl)phthalate	0.0051 J	0.0048
	IT-MW02	Overburden	1,3-dinitrobenzene	0.017	0.00037
	IT-MW02	Overburden	manganese	0.896	0.073
	IT-MW08	Overburden	manganese	0.361	0.073
	IT-MW10	Overburden	iron	3.04	1.1
	IT-MW10	Overburden	manganese	1.67	0.073
	PB-WA-MW01	Overburden	iron	5.6	1.1
	PB-WA-MW01	Overburden	manganese	0.235	0.073
	PB-WA-MW02	Overburden	aluminum	3.72 J	3.7
	PB-WA-MW02	Overburden	iron	7.93	1.1
	PB-WA-MW02	Overburden	manganese	1.66	0.073
	PB-WA-MW02	Overburden	nickel	0.228	0.073
	PB-WA-MW02	Overburden	cyanide	0.079	0.073
	PB-BED-MW14	Bedrock	benzene	0.0011	0.00036
Pentolite Road Red Water Ponds	PB-PR-MW07	Overburden	2,6-dinitrotoluene	0.14 J	0.0037
	PB-PR-MW07	Overburden	4,6-dinitro-2-methylphenol	0.66 J	0.00037
	PB-PR-MW08	Overburden	2,4-dinitrophenol	6	0.0073
	PB-PR-MW08	Overburden	2,4-dinitrotoluene	1.5	0.0073
	PB-PR-MW08	Overburden	2,6-dinitrotoluene	0.19 J	0.0037
	PB-PR-MW08	Overburden	3-nitroaniline	0.16 J	0.011
	PB-PR-MW08	Overburden	4,6-dinitro-2-methylphenol	2.3 J	0.00037
	PB-PR-MW09	Overburden	2,4-dinitrophenol	0.048 J	0.0073
	PB-PR-MW09	Overburden	2,4-dinitrotoluene	0.11	0.0073
	PB-PR-MW09	Overburden	3-nitroaniline	0.45 J	0.011
	PB-PR-MW07	Overburden	1,3,5-trinitrobenzene	2	0.11
	PB-PR-MW07	Overburden	1,3-dinitrobenzene	1.5	0.00037
	PB-PR-MW08	Overburden	1,3,5-trinitrobenzene	1.5	0.11
	PB-PR-MW08	Overburden	1,3-dinitrobenzene	1.5	0.00037
	PB-PR-MW09	Overburden	1,3-dinitrobenzene	0.035	0.00037
	IT-MW05	Overburden	aluminum	3.97 J	3.7
	IT-MW05	Overburden	arsenic	0.0115	0.000045
	IT-MW05	Overburden	iron	14.7	1.1
	IT-MW05	Overburden	manganese	0.302	0.073
	PB-PR-MW07	Overburden	aluminum	8.96 J	3.7
	PB-PR-MW07	Overburden	cobalt	2.32	0.22
	PB-PR-MW07	Overburden	iron	21.7	1.1
	PB-PR-MW07	Overburden	manganese	17	0.073

Table 7-1

Summary of Chemicals of Potential Concern in Various Investigative Areas
Former Plum Brook Ordnance Works, Sandusky Ohio

Area of Concern	Well	Water-Bearing Zone	Compounds	Concentration (mg/L)	RBC (mg/L)
Pentolite Road Red Water Ponds (cont.)	PB-PR-MW07	Overburden	nickel	1.71	0.073
	PB-PR-MW07	Overburden	cyanide	0.12	0.073
	PB-PR-MW08	Overburden	cobalt	7.27	0.22
	PB-PR-MW08	Overburden	iron	22	1.1
	PB-PR-MW08	Overburden	manganese	34.1	0.073
	PB-PR-MW08	Overburden	nickel	7.6	0.073
	PB-PR-MW08	Overburden	cyanide	0.24	0.073
	PB-PR-MW09	Overburden	manganese	1.9	0.073
	PB-BED-MW15	Bedrock	benzene	0.57	0.00036
	PB-BED-MW15	Bedrock	chloroform	0.0084 J	0.00015
	PB-BED-MW15	Bedrock	ethylbenzene	0.13	0.13
	PB-BED-MW15	Bedrock	methylene chloride	0.031 J	0.0041
	PB-BED-MW15	Bedrock	toluene	0.49	0.075
	PB-BED-MW15	Bedrock	barium	0.605	0.26
	PB-BED-MW15	Bedrock	bis(2-ethylhexyl)phthalate	0.037	0.0048
TNT Area A	MK-MW22	Overburden	4-amino-2,6-dinitrotoluene	0.00062	0.00022
	MK-MW22	Overburden	aluminum	7.79	3.7
	MK-MW22	Overburden	iron	10.9	1.1
	MK-MW22	Overburden	manganese	0.185	0.073
	MK-MW23	Overburden	aluminum	27.3	3.7
	MK-MW23	Overburden	arsenic	0.0598	0.000045
	MK-MW23	Overburden	chromium	0.0571	0.018
	MK-MW23	Overburden	iron	68.2	1.1
	MK-MW23	Overburden	lead	0.0298	0.015
	MK-MW23	Overburden	manganese	1.37	0.073
	MK-MW23	Overburden	nickel	0.125	0.073
	MK-MW23	Overburden	vanadium	0.0752	0.025
	MK-MW24	Overburden	aluminum	6.62	3.7
	MK-MW24	Overburden	chromium	0.0252	0.018
	MK-MW24	Overburden	iron	13.5	1.1
	MK-MW24	Overburden	manganese	0.788	0.073
	MK-MW24	Overburden	vanadium	0.0609	0.025
	PB-TNTA-MW10	Overburden	arsenic	0.0122	0.000045
	PB-TNTA-MW10	Overburden	barium	0.373	0.26
	PB-TNTA-MW10	Overburden	iron	18.2	1.1
	PB-TNTA-MW10	Overburden	manganese	1.53	0.073
	PB-TNTA-MW11	Overburden	arsenic	0.0105	0.000045
	PB-TNTA-MW11	Overburden	iron	13.3	1.1
	PB-TNTA-MW11	Overburden	manganese	1.03	0.073
	PB-BED-MW17	Bedrock	benzene	0.01 J	0.00036
	PB-BED-MW17	Bedrock	methylene chloride	0.018 J	0.0041

Table 7-1

Summary of Chemicals of Potential Concern in Various Investigative Areas
Former Plum Brook Ordnance Works, Sandusky Ohio

Area of Concern	Well	Water-Bearing Zone	Compounds	Concentration (mg/L)	RBC (mg/L)
TNT Area A (Cont.)	PB-BED-MW17	Bedrock	toluene	0.14	0.075
	PB-BED-MW18	Bedrock	benzene	0.011	0.00036
	PB-BED-MW17	Bedrock	nitrobenzene	0.00034	0.00034
	PB-BED-MW18	Bedrock	1,3-dinitrobenzene	0.001	0.00037
	PB-BED-MW18	Bedrock	nitrobenzene	0.002	0.00034
	PB-BED-MW17	Bedrock	barium	0.948	0.26
	PB-BED-MW17	Bedrock	iron	1.58	1.1
	PB-BED-MW17	Bedrock	manganese	0.124	0.073
	PB-BED-MW17	Bedrock	cyanide	0.32	0.073
	PB-BED-MW18	Bedrock	barium	0.893	0.26
TNT Area B	MK-MW15	Overburden	bis(2-ethylhexyl)phthalate	0.006 J	0.0048
	MK-MW17	Overburden	4-amino-2,6-dinitrotoluene	0.0036	0.00022
	MK-MW14	Overburden	iron	19.3	1.1
	MK-MW14	Overburden	manganese	0.37	0.073
	MK-MW15	Overburden	iron	12.7	1.1
	MK-MW15	Overburden	manganese	0.608	0.073
	MK-MW16	Overburden	aluminum	4.99 J	3.7
	MK-MW16	Overburden	iron	19.8	1.1
	MK-MW16	Overburden	manganese	6.97	0.073
	MK-MW17	Overburden	arsenic	0.0126	0.000045
	MK-MW17	Overburden	iron	44.3	1.1
	MK-MW17	Overburden	manganese	1.41	0.073
	MK-MW17	Overburden	nickel	0.156	0.073
	IT-TNTB-BEDGW-002	Bedrock	benzene	0.00091 J	0.00036
	IT-TNTB-BEDGW-001	Bedrock	iron	41.7	1.1
	IT-TNTB-BEDGW-001	Bedrock	manganese	0.677	0.073
	IT-TNTB-BEDGW-002	Bedrock	barium	0.326	0.26
	IT-TNTB-BEDGW-002	Bedrock	manganese	0.677	0.073
TNT Area C	MK-MW12	Overburden	bis(2-ethylhexyl)phthalate	0.028 J	0.0048
	PB-TNTC-MW06	Overburden	bis(2-ethylhexyl)phthalate	0.0073 J	0.0048
	IT-MW09	Overburden	iron	3.37	1.1
	IT-MW09	Overburden	manganese	0.249	0.073
	MK-MW12	Overburden	manganese	1.13	0.073
	PB-TNTC-MW03	Overburden	manganese	2.95	0.073
	PB-TNTC-MW03	Overburden	nickel	0.12	0.073
	PB-TNTC-MW04	Overburden	aluminum	3.82 J	3.7
	PB-TNTC-MW04	Overburden	arsenic	0.0215	0.000045
	PB-TNTC-MW04	Overburden	chromium	0.0252	0.018
	PB-TNTC-MW04	Overburden	iron	17.4	1.1
	PB-TNTC-MW04	Overburden	manganese	0.8	0.073
	PB-TNTC-MW05	Overburden	arsenic	0.0101	0.000045

Table 7-1

Summary of Chemicals of Potential Concern in Various Investigative Areas
Former Plum Brook Ordnance Works, Sandusky Ohio

Area of Concern	Well	Water-Bearing Zone	Compounds	Concentration (mg/L)	RBC (mg/L)
TNT Area C (Cont.)	PB-TNTC-MW05	Overburden	chromium	0.0184	0.018
	PB-TNTC-MW05	Overburden	iron	13.9	1.1
	PB-TNTC-MW05	Overburden	manganese	0.713	0.073
	PB-TNTC-MW06	Overburden	iron	2.46	1.1
	PB-TNTC-MW06	Overburden	manganese	3.7	0.073
	PB-BED-MW13	Bedrock	benzene	0.13	0.00036
	PB-BED-MW13	Bedrock	toluene	0.17	0.075
	PB-BED-MW13	Bedrock	barium	1.55	0.26
	PB-BED-MW13	Bedrock	bis(2-ethylhexyl)phthalate	0.039	0.0048
Acid Area 1	IT-AA1-GW02	Shallow	iron	32.9	1.1
	IT-AA1-GW02	Shallow	manganese	5.41	0.073
	IT-AA1-BEDGW-001	Bedrock	benzene	0.011 J	0.00036
	IT-AA1-BEDGW-001	Bedrock	methylene chloride	0.025 J	0.0041
	IT-AA1-BEDGW-001	Bedrock	arsenic	0.0165	0.000045
	IT-AA1-BEDGW-001	Bedrock	barium	1.06	0.26
	IT-AA1-BEDGW-001	Bedrock	iron	1.92	1.1
	IT-AA1-BEDGW-001	Bedrock	manganese	0.575	0.073
	IT-AA1-BEDGW-001	Bedrock	bis(2-ethylhexyl)phthalate	0.028	0.0048
Acid Area 2	MK-MW10	Overburden	bis(2-ethylhexyl)phthalate	0.011	0.0048
	MK-MW10	Overburden	iron	2.08	1.1
	MK-MW10	Overburden	manganese	0.0909	0.073
	MK-MW11	Overburden	aluminum	5.08	3.7
	MK-MW11	Overburden	iron	12.3	1.1
	MK-MW11	Overburden	manganese	0.344	0.073
	IT-AA2-BEDGW-001	Bedrock	benzene	0.033	0.00036
	IT-AA2-BEDGW-001	Bedrock	chlorobenzene	0.021 J	0.0039
	IT-AA2-BEDGW-001	Bedrock	methylene chloride	0.0074 J	0.0041
	PB-BED-MW19	Bedrock	benzene	0.011	0.00036
	IT-AA2-BEDGW-001	Bedrock	iron	5.24	1.1
	IT-AA2-BEDGW-001	Bedrock	manganese	0.522	0.073
	PB-BED-MW19	Bedrock	barium	1.52	0.26
	PB-BED-MW19	Bedrock	bis(2-ethylhexyl)phthalate	0.0058 J	0.0048
Acid Area 3 & Maintenance Shop Area	MK-MW19	Overburden	1,1,1-trichloroethane	0.17	0.16
	MK-MW19	Overburden	1,1-dichloroethene	0.0034	0.000044
	IT-AA3-GW002	Overburden	aluminum	11.6 J	3.7
	IT-AA3-GW002	Overburden	arsenic	0.0103	0.000045
	IT-AA3-GW002	Overburden	chromium	0.0228	0.018
	IT-AA3-GW002	Overburden	iron	27.3	1.1
	IT-AA3-GW002	Overburden	lead	0.0166	0.015
	IT-AA3-GW002	Overburden	manganese	0.816	0.073
	IT-AA3-BEDGW-001	Bedrock	manganese	0.0746	0.073

Table 7-1

Summary of Chemicals of Potential Concern in Various Investigative Areas
Former Plum Brook Ordnance Works, Sandusky Ohio

Area of Concern	Well	Water-Bearing Zone	Compounds	Concentration (mg/L)	RBC (mg/L)
Acid Area 3 & Maintenance Shop Area (Cont.)	IT-MNTA-BEDGW-001	Bedrock	barium	0.424	0.26
	IT-MNTA-BEDGW-001	Bedrock	iron	6.4	1.1
	IT-MNTA-BEDGW-001	Bedrock	manganese	0.849	0.073
	IT-AA3-BEDGW-001	Bedrock	bis(2-ethylhexyl)phthalate	0.0058 J	0.0048
Burning Ground Areas	IT-AGB-GW002	Overburden	benzene	0.00053 J	0.00036
	IT-AGB-GW002	Overburden	aluminum	34.5 J	3.7
	IT-AGB-GW002	Overburden	arsenic	0.0662	0.000045
	IT-AGB-GW002	Overburden	chromium	0.0698	0.018
	IT-AGB-GW002	Overburden	iron	103	1.1
	IT-AGB-GW002	Overburden	lead	0.1	0.015
	IT-AGB-GW002	Overburden	manganese	3.01	0.073
	IT-AGB-GW002	Overburden	nickel	0.212	0.073
	IT-AGB-GW002	Overburden	vanadium	0.158	0.025
	IT-MW01	Overburden	iron	1.32	1.1
	IT-MW01	Overburden	manganese	0.323	0.073
	IT-AGB-BEDGW-01	Bedrock	arsenic	0.0117	0.000045
	IT-AGB-BEDGW-01	Bedrock	iron	8.89	1.1
	IT-AGB-BEDGW-01	Bedrock	manganese	0.912	0.073
	IT-AGB-BEDGW-01	Bedrock	mercury	0.0036	0.0011
	IT-BG8-BEDGW-001	Bedrock	aluminum	9.02	3.7
	IT-BG8-BEDGW-001	Bedrock	arsenic	0.0176	0.000045
	IT-BG8-BEDGW-001	Bedrock	barium	0.52	0.26
	IT-BG8-BEDGW-001	Bedrock	iron	22.6	1.1
	IT-BG8-BEDGW-001	Bedrock	chromium	0.0182	0.018
	IT-BG8-BEDGW-001	Bedrock	lead	0.0263	0.015
	IT-BG8-BEDGW-001	Bedrock	manganese	2.24	0.073
Upper Toluene Tank Area	MK-MW20	Overburden	chloroform	0.071 J	0.00015
	MK-MW20	Overburden	toluene	13	0.075
	MK-MW20	Overburden	2-methylphenol	1.3	0.18
	MK-MW20	Overburden	4-methylphenol	1.2	0.018
	MK-MW20	Overburden	bis(2-ethylhexyl)phthalate	0.005 J	0.0048
	MK-MW20	Overburden	aluminum	18.4	3.7
	MK-MW20	Overburden	arsenic	0.0158	0.000045
	MK-MW20	Overburden	chromium	0.0427	0.018
	MK-MW20	Overburden	iron	46.7	1.1
	MK-MW20	Overburden	manganese	0.994	0.073
	PB-BED-MW16	Bedrock	benzene	0.49	0.00036
	PB-BED-MW16	Bedrock	ethylbenzene	0.13	0.13
	PB-BED-MW16	Bedrock	methylene chloride	0.0088 J	0.0041
	PB-BED-MW16	Bedrock	toluene	0.39	0.075
	PB-BED-MW16	Bedrock	barium	0.463	0.26

Table 7-1

Summary of Chemicals of Potential Concern in Various Investigative Areas
Former Plum Brook Ordnance Works, Sandusky Ohio

Area of Concern	Well	Water-Bearing Zone	Compounds	Concentration (mg/L)	RBC (mg/L)
Upper Toluene Tank Area	PB-BED-MW16	Bedrock	chromium	0.0244	0.018
	PB-BED-MW16	Bedrock	iron	1.14	1.1
	PB-BED-MW16	Bedrock	manganese	0.133	0.073
	PB-BED-MW16	Bedrock	vanadium	0.0647	0.025
	PB-BED-MW16	Bedrock	bis(2-ethylhexyl)phthalate	0.92 J	0.0048
Reactor Building Areas	IT-MW06	Overburden	barium	1.62	0.26
	IT-MW06	Overburden	manganese	0.34	0.073
	PB-BED-MW20	Bedrock	benzene	0.00093 J	0.00036
	Reactor 1	Bedrock	benzene	0.0088 J	0.00036
	Reactor 1	Bedrock	methylene chloride	0.014 J	0.0041
	PB-BED-MW20	Bedrock	barium	19	0.26
	PB-BED-MW20	Bedrock	iron	13.2	1.1
	PB-BED-MW20	Bedrock	manganese	0.18	0.073
	Reactor 1	Bedrock	barium	0.405	0.26
	Reactor 1	Bedrock	iron	8	1.1
	Reactor 1	Bedrock	lead	0.0191	0.015
	Reactor 1	Bedrock	manganese	0.198	0.073
	Reactor 1	Bedrock	bis(2-ethylhexyl)phthalate	0.023 J	0.0048
Disposal Area No. 3	GCL-MW01	Overburden	bis(2-ethylhexyl)phthalate	0.1	0.0048
	GCL-MW01	Overburden	aluminum	9.41 J	3.7
	GCL-MW01	Overburden	arsenic	0.0363	0.000045
	GCL-MW01	Overburden	chromium	0.0449	0.018
	GCL-MW01	Overburden	iron	76.6	1.1
	GCL-MW01	Overburden	lead	0.0177	0.015
	GCL-MW01	Overburden	manganese	0.432	0.073
	GCL-MW01	Overburden	selenium	0.0204	0.018
	GCL-MW02A	Overburden	chromium	0.0227	0.018
	GCL-MW02A	Overburden	iron	3.13	1.1
	GCL-MW02A	Overburden	manganese	0.434	0.073
	GCL-MW02B	Overburden	iron	3.75	1.1
	GCL-MW02B	Overburden	manganese	0.475	0.073
	GCL-MW03	Overburden	arsenic	0.0402	0.000045
	GCL-MW03	Overburden	iron	26.3	1.1
	GCL-MW03	Overburden	manganese	0.493	0.073

mg/L - Milligrams per liter.

monitoring events. The overburden water-bearing zone is closely connected with the bedrock water-bearing zone in much of the facility. However, in places, where the Ohio Shale is present between the overburden and bedrock, hydraulic connection may be interrupted, such as in the AA1.

Seasonal dependence of water levels in the bedrock water-bearing zone are not as apparent as in the overburden zone because of the overlying deposits that control the amount and rate of infiltration reaching the bedrock zone. Excluding four wells that behaved erratically, the third quarterly measurement indicated an average water level rise of 1.44 feet in bedrock wells. Similar to the second event, three wells within the Reactor building area continued to fluctuate erratically with the maximum water level drop of 23.72 feet (Reactor 2). It appears that groundwater levels in the bedrock wells behave rather erratically in the area north of Pentolite Road. The reason for this is not yet fully understood. However, it can be speculated that the quarry operation north of PBOW will likely affect the groundwater flow pattern in the bedrock layer in the neighboring areas due to possible fracture generation (during blasting) and possible dewatering as part of normal mining operations. Groundwater flow patterns in the bedrock is, in general, similar to that in the overburden zone.

7.1.2 Groundwater Quality in Bedrock Water-Bearing Zone

The results of the first groundwater sampling event indicate five VOCs (mostly BTEX compounds), one SVOC (bis(2-ethylhexyl)phthalate), and nine metals as well as cyanide were detected in the bedrock water-bearing zone at concentrations above the RBCs. All detected chemicals (except cyanide) were reported in previous investigations.

bis(2-Ethylhexyl)phthalate was detected in seven of the seventeen sampled wells with the highest concentration of 920 µg/L in PB-BED-MW16.

At least one of the BTEX constituents was detected in 13 of the 17 bedrock wells sampled during this event. A total of 12 wells exhibited BTEX constituent(s) exceeding the RBCs. Among them, benzene was detected in 12 wells; ethyl benzene in 2 wells; and toluene in 4 wells. Total xylene was found in 14 wells, but their concentrations were below the RBC. Other VOCs exceeding RBCs include methylene chloride, which was detected in 6 wells; chlorobenzene in 4 wells, and chloroform in one well. PB-BED-MW15, PB-BED-MW16, and PB-BED-MW17 exhibited the most frequent detections with 5, 4, and 3 VOC compounds exceeding the RBCs, respectively. Three BTEX compounds were also detected in PB-BED-MW20, located

upgradient of all bedrock wells, with benzene at a concentration above the RBC. BTEX was also detected in this well during October - December 1994 sampling (D&M, 1997) but were not detected during the October 1996 site-wide GWI (IT, 1997a).

Three newly installed wells IT-AA2-BEDGW-001 (Acid Area 2), IT-AA1-BEDGW-001 (AA1), and IT-TNTB-BEDGW-002 (TNTB) contain three, two, and one VOCs, respectively, at levels above the RBCs. In addition, TCE was detected in IT-ABG-BEDGW-001 and will require further monitoring.

The bedrock water-bearing zone exhibited limited detections of nitroaromatic compounds (explosive residues). Three wells were found to contain nitroaromatic compounds at concentrations above the RBCs. 1,3-DNB was detected in PB-BED-MW18 and nitrobenzene was detected in both PB-BED-MW17 and PB-BED-MW18, all at levels above the RBCs. Both wells are located in the TNTA area, indicating impact from past site activities.

A total of nine metals were detected at least once in bedrock wells at concentrations above the RBCs. They include aluminum, arsenic, barium, chromium, iron, lead, manganese, mercury, and vanadium. Of them, manganese and iron are the most ubiquitous analytes detected, followed by barium and aluminum. However, the majority of the metals (aluminum, arsenic, chromium, iron, lead, and mercury) with detected concentrations above the RBCs were in the unfiltered samples, indicating that the RBC exceedances for these metals were due to suspended solids in groundwater. Among all sampled bedrock wells, IT-BG8-BEDGW-001 exhibits seven metals at concentrations exceeding the RBCs while PB-BED-MW14 contains no metal at levels above the RBCs.

Two bedrock wells (PB-BED-MW17 and PB-BED-MW14), one in each Red Water Pond area, contained cyanide. The cyanide concentration at PB-BED-MW17 also exceeded the RBC.

Based on the analytical results for the bedrock wells, it is evident that PB-BED-MW17, PB-BED-MW18, and PB-BED-MW19 have been impacted by nitroaromatic compounds by past site activities. Hydrocarbons and associated compounds continue to be present in most bedrock wells with the highest concentrations at PB-BED-MW15 and PB-BED-MW16, located downgradient from and in the vicinity of the former Toluene Farm Area. The detection of cyanide in both Red Water Pond areas suggests a possible connection to the past use of the two areas. Elevated metals concentrations are generally related to the suspended solid in the groundwater. However, barium and manganese were detected in both total and dissolved phases at concentrations

exceeding the RBCs in selective wells, thus warranting further evaluation. Except for the detection of cyanide in two bedrock wells, the findings for the chemicals in the bedrock water-bearing zone is very similar to that documented in previous reports (D&M, 1997; IT, 1997a). No apparent trend with respect to migration of a particular chemical or chemicals is apparent at this time.

7.1.3 Groundwater Quality in Overburden Water-Bearing Zone

The overburden water-bearing zone in general exhibits more detections of chemicals than the underlying bedrock zone. Chemicals in the overburden materials may be attributed to natural sources or to past site activities. In the overburden water-bearing zone, the residence time of those residual chemicals from past operations depends on various site conditions, including infiltration, retardation, natural attenuation, and possible chemical reactions. The fact that many residual chemicals, especially nitroaromatic compounds, still exist at elevated concentrations in the shallow groundwater after more than 50 years, seems to indicate that the downward migration of dissolved residual chemicals has been generally retarded. Metals were detected in all over-burden well samples with some at concentrations exceeding the RBCs. However, detection of metals in the shallow water does not necessarily indicate site-related contamination since water infiltrating through soils naturally contains trace levels of metals through dissolution. Therefore, it is unclear whether these RBC exceedances are due to past site activities or reflect the naturally occurring level since background concentrations have not been established for metals in groundwater at PBOW.

As reported in previous investigations, the overburden water-bearing zone in the two Red Water Pond areas exhibited the most frequent detections of all chemicals at concentrations exceeding the RBC criteria. Except for one detection in TNTA (PB-BED-MW17), all cyanide detections were also found in the Red Water Pond areas, indicating a possible connection between the dissolved cyanide in groundwater and the former use of these two areas.

7.1.3.1 West Area Red Water Ponds

RBC exceedances in the WARWP area are summarized as follows:

- IT-MW10. Iron (total) and manganese
- IT-MW08. Manganese

- IT-MW02. Manganese, 1,3-DNB, 2,4-DNT, 2,6-DNT, 2-nitroaniline, and 4,6-dinitro-2-methylphenol

- PB-WA-MW01. Iron (total) and manganese

- PB-WA-MW02. Aluminum (total), iron (total), manganese, nickel (total), and cyanide.

The analytical data indicate that IT-MW02, located immediately adjacent to the pond, has been impacted by nitroaromatic compounds, consistent with previous reports (D&M, 1997 and IT, 1997a). A total of six nitroaromatic compounds were detected at PB-WA-MW02 exceeding the RBCs during the groundwater sampling event in October 1996 (IT, 1997a). However, this well exhibited no detection of any nitroaromatic compounds during this sampling event, apparently due to the elevated detection limits to reduce matrix interference (see Appendix F for data validation summary). Of the metals exceeding the RBCs, only manganese was in both total and dissolved phases. Other metals exceeding the RBCs are associated with suspended solids in the water samples. Cyanide exceeded the RBC in PB-WA-MW02 only, which is located in a low spot off the pond. In addition, both IT-MW02 and PB-WA-MW02 exhibited high TOC contents.

It is evident that shallow groundwater in the immediate proximity of the pond is impacted by nitroaromatic compounds and possibly cyanide. The impact diminishes away from the pond. Dissolved manganese at concentrations above the RBC will require further evaluation.

7.1.3.2 Pentolite Road Red Water Ponds

RBC exceedances in PRRWP wells are summarized as follows:

- IT-MW05. Aluminum (total), arsenic, iron, and manganese

- PR-MW07. Aluminum (total), cobalt, iron, manganese, nickel, cyanide, 1,3,5-TNB, 1,3-DNB, 2,4-DNT, 2,6-DNT, and 4,6-dinitro-2-methylphenol

- PR-MW08. Cobalt, iron, manganese, nickel, cyanide, 1,3,5-TNB, 1,3-DNB, 2,4-dinitrophenol, 2,4-DNT, 2,6-DNT, and 4,6-dinitro-2-methylphenol

- PR-MW09. Manganese, 2,4-dinitrophenol, 2,4-DNT, and 3-nitroaniline.

VOCs were not detected at concentrations exceeding the RBCs in the four wells. However, nitroaromatic compounds exceeded the RBCs in PR-MW07, -MW08, and -MW09 under both

SVOC and nitroaromatic analyses. These three overburden wells had comparable nitroaromatic detections during previous investigations (D&M, 1997; IT, 1997a), indicating a persistent presence in shallow water. In addition, high concentrations of TOC were also detected in these three wells. Inorganic compounds exceeded the RBCs in each of the four overburden wells as summarized above.

In general, it is concluded that overburden water-bearing zone in the Pentolite Road Red Water Ponds area has been impacted by nitroaromatic compounds and cyanide. The impact is more pronounced than that observed at the WARWP area. Although a larger suite of dissolved inorganic compounds was detected in this area than in other areas of PBOW, further evaluation is necessary to determine whether they are attributable to site contamination.

7.1.3.3 TNT Area A

Five overburden wells were sampled in the vicinity of TNTA. None of the overburden wells exhibited concentrations of VOCs or SVOCs that exceeded the RBCs. MK-MW22 had detectable levels of nitroaromatic compounds, but only one compound exceeded the RBC. All of the overburden wells exhibited inorganic compounds at concentrations exceeding the RBCs. However, many are not in the dissolved phase. The RBC exceedances for each of the five wells are summarized below:

- TNTA-MW10. Arsenic (total), barium, iron, and manganese
- TNTA-MW11. Arsenic (total), iron (total), and manganese
- MK-MW22. Aluminum (total), iron (total), manganese, and 4-amino-2,6-DNT
- MK-MW23. Aluminum (total), arsenic, chromium (total), iron (total), lead (total), manganese, nickel (total), and vanadium (total)
- MK-MW24. Aluminum (total), chromium (total), iron, manganese, and vanadium

The analytical data as summarized above indicate that the overburden water-bearing zone in TNTA has been impacted by nitroaromatic compounds from past activities. However, the impact seems to be localized around MK-MW22.

BTEX was not detected in any of the overburden wells in TNTA while BTEX was detected at concentrations above the RBCs in the two bedrock wells in the same area (Section 7.1.2). This

seems to indicate that BTEX compounds in the bedrock wells in TNTA were not from the shallow overburden zone but rather from a source outside the area, possibly migrating through fracture or karst zones.

7.1.3.4 TNT Area B

Four overburden wells were sampled in the vicinity of TNTB. None of the wells exhibited detected VOCs at concentrations exceeding the RBCs. In fact, two wells (MK-MW16 and -MW17) had no detectable VOCs. One SVOC exceeded the RBC at MK-MW15 while one nitroaromatic compound exceeded the RBC at MK-MW16. Iron and manganese, both total and dissolved, exceeded the RBCs in all four wells. Arsenic and aluminum also exceeded the RBCs in selected wells, but their concentrations are attributable to suspended solids. The RBC exceedances for each of the four wells are summarized below:

- MK-MW14. Iron and manganese
- MK-MW15. Iron, manganese, and bis(2-ethylhexyl)phthalate
- MK-MW16. Aluminum (total), iron, and manganese
- MK-MW17. Arsenic (total), iron, manganese, and 4-amino-2,6-DNT.

The analytical data indicate that the overburden water-bearing zone in TNTB has been impacted by nitroaromatic compounds and SVOCs from past activities. However, the impact seems to be localized downgradient of TNTB. All wells also exhibited impact by iron and manganese in both total and dissolved phases. However, these concentrations need further evaluation to determined whether they are attributed to site contamination.

7.1.3.5 TNT Area C

Six overburden wells were sampled in the vicinity of TNTC. None of the wells exhibited detected VOCs or nitroaromatics at concentrations exceeding the RBCs. However, one SVOC exceeded the RBC at PB-TNTC-MW06 and PB-TNTC-MW12. Total and dissolved manganese exceeded the RBC in all six wells. Total and dissolved nickel exceeded the RBC at PB-TNTC-MW03, while total and dissolved iron exceeded the RBC at PB-TNTC-MW06. Other metals with concentrations exceeding the RBCs include aluminum, arsenic, and chromium, but their concentrations are attributable to suspended solids. The RBC exceedances in the TNTC area are summarized below:

- TNTC-MW03. Manganese and nickel

- TNTC-MW04. Aluminum (total), arsenic (total), chromium (total), iron (total), and manganese
- TNTC-MW05. Arsenic (total), chromium (total), iron (total), and manganese
- TNTC-MW06. Iron, manganese, and bis(2-ethylhexyl)phthalate
- MK-MW12. Manganese and bis(2-ethylhexyl)phthalate
- IT-MW09. Iron (total) and manganese.

The analytical dates indicate that the overburden water-bearing zone in TNTC area has been impacted by SVOC. However, the impact seems to be localized. All wells exhibited impact by manganese in both total and dissolved phases. Selected wells were also impacted by nickel, aluminum, chromium, and arsenic. The metal concentrations detected in TNTC area need further evaluation to determine whether they are attributable to site contamination.

7.1.3.6 Acid Area 1

Previous investigations have not been conducted in AA1. One newly installed overburden well (IT-AA1-GW-002) was sampled in this area. Only iron and manganese were detected at concentrations exceeding the RBCs. VOCs, SVOCs, and nitroaromatic compounds were not detected in this well.

The limited sampling data seems to indicate that the overburden water-bearing zone in AA1 has not been impacted by past site activities. The elevated iron and manganese concentrations in groundwater are also found in most of other areas of PBOW. As background concentrations have not been established for metals in groundwater at PBOW, it is unclear whether the metals detected at concentrations exceeding the RBCs are attributable to site contamination.

7.1.3.7 Acid Area 2

Three overburden wells were sampled in the vicinity of Acid Area 2. One newly installed piezometer did not produce enough water at the time of sampling and was not sampled. One SVOC was detected at a concentration above the RBC. No other SVOCs, VOCs, or nitroaromatic compounds were detected. Several metals exceeded the RBCs only in the unfiltered samples, indicating that suspended solids are the source of observed concentrations. The RBC exceedances detected at Acid Area 2 are listed below:

- MK-MW09. None
- MK-MW10. Iron (total), manganese (total), and bis(2-ethylhexyl)phthalate
- MW-MW11. Aluminum (total), iron (total), and manganese (total).

Based on the analytical results, it is possible that MK-MW10 has been impacted by bis(2-ethylhexyl)phthalate. However, further monitoring is needed to support this conclusion. Two wells also exhibited elevated metal concentrations exceeding the RBCs, but these levels are not necessarily attributable to site contamination as background levels have not been established.

7.1.3.8 Acid Area 3 and Associated Areas

Two overburden wells were sampled at AA3. IT-AA3-GW002 is located downgradient of AA3 and upgradient of the Maintenance Shop Area, which is associated with AA3. Only metals were detected in this well with manganese exceeding the RBC. Other metals exceeded the RBCs only in the unfiltered sample. No VOCs, SVOCs, or nitroaromatic compounds were detected in IT-AA3-GW002. However, 1,1,1-TCE and 1,1-DCE were both detected at MK-MW19 at concentrations exceeding the RBCs. Toluene and chloromethane were also detected at this well but at concentrations below the RBCs. MK-MW19 is located within the Maintenance Shop Area where several buildings are currently in use to support NASA PBS operations. At least 9 USTs were removed from this area in early 1990s and three of these USTs were reported to have been used for storage of solvents including acetone, TCE, and TCA (International Consultants, Inc. 1995). RBC exceedances in the two wells are:

- IT-AA3-GW002. Aluminum (total), arsenic (total), chromium (total), iron (total), lead (total), and manganese

- MK-MW19. 1,1,1-trichloroethane, 1,1-dichloroethene.

Based on the limited analytical results, it seems that AA3 has not been impacted by any organic compounds related to acid manufacturing. The elevated concentration of dissolved manganese and other metals will require further evaluation to determine if they are attributable to site contamination as background levels have not been established. MK-MW19 had elevated VOCs exceeding the RBCs. In fact, 1,1,1-trichloroethane and 1,1-dichloroethene were exclusively detected at MK-MW19, indicating a possible connection to past use of the Maintenance Shop Area. It is reported that benzene was previously detected in EB-GW-01 at a concentration of 58 µg/L (Ebasco, 1991). This well and several other wells installed during UST removal were not

sampled during this sampling event. It is evident that the overburden water-bearing zone in the Maintenance Shop Area has been impacted by organic compounds from past activities.

7.1.3.9 Burning Grounds

Additional Burning Ground. One overburden well (IT-ABG-GW-002) was installed and sampled in the ABG. Benzene was detected at a concentration exceeding the RBC while carbon disulfide and total xylene were detected at concentrations below the RBCs. No SVOCs or nitroaromatic compounds were detected at this well. Two dissolved metals (iron and manganese) exceeded the RBCs. Other metals exceeded the RBCs only in the unfiltered sample, indicating the suspended solids were the cause of the observed concentration. Based on the limited data, it appears that the overburden water-bearing zone in ABG has been impacted by hydrocarbons only.

Taylor Road Burning Ground. One overburden well was sampled in the area upgradient from the Taylor Road Burning Ground. Only manganese (dissolved and total) exceeded the RBC. Iron also exceeded the RBC in the unfiltered sample. Total xylene exhibited a detectable concentration but was well below the RBC. Other VOCs, SVOCs, and nitroaromatic compounds were not detected. The analytical data indicate that the shallow water in the vicinity of IT-MW01 has not been impacted by any organic compounds except xylene. However, the presence of xylene at the observed concentration is unlikely to pose any threat to human health or the environment. The elevated manganese (total and dissolved) will require further evaluation to determine if they are related to site contamination. Based on the location and limited water quality data, IT-MW01 may be considered a possible background well for dissolved metals in the overburden water-bearing zone.

G-8 Burning Ground. The overburden water-bearing zone is virtually missing in the BG8 Area due to very thin (less than 1 foot) soil cover on top of the bedrock. One bedrock well in the vicinity of the BG8 was sampled and the analytical results indicate concentration of dissolved manganese above the RBC. Several other metals exceeded the RBCs only in the unfiltered sample, indicating the suspended solids were the cause of the observed concentration. The well placed in BG8 area was intended to be used as a background well for the bedrock water-bearing zone because of its upgradient location relative to other bedrock wells. The analytical data presented seems to support the intended use of this well.

7.1.3.10 Upper Toluene Tank Area

One overburden well was sampled at the Upper Toluene Tank Area. The well (MK-MW20) is located less than 100 feet from the aboveground storage tank (NASA#8951), formerly used by DOD for toluene storage and later used by NASA for storage of heating oil. No dissolved metals were detected at concentrations above the RBCs, however, aluminum, arsenic, chromium, iron, and manganese exceeded the RBCs in the unfiltered sample. Organic compounds, including BTEX constituents were detected at concentrations exceeding the RBCs. The RBC exceedances at MK-MW20 are listed below:

- MK-MW20. Aluminum (total), arsenic (total), chromium (total), iron (total), manganese (total), chloroform, toluene, 2-methylphenol, bis(2-ethylhexyl)-phthalate, and 4-methylphenol.

The analytical results show that organic chemicals, especially BTEX constituents, have impacted the water quality in the overburden water-bearing zone in the vicinity of the former Upper Toluene Tank Area. The impact is believed to be the result of the reported heating oil leakage from the tank (NASA# 8951) as discussed in Section 6.10.

7.1.3.11 Disposal Area No. 3 (GCL Series Wells)

Four GLC series wells were sampled in the former Disposal Area No. 3. Only one SVOC was detected at concentration exceeding the RBC. In addition, carbon disulfide was detected in GCL-MW02A while diethyl phthalate was found at GCL-MW02B, both far below the RBCs. Manganese (total and dissolved) was the only metal detected in all wells at levels above the RBC. Other metals with concentrations exceeding the RBCs include aluminum, arsenic, chromium, iron, and selenium. Of these, aluminum, arsenic, chromium, and lead exceeded the RBCs only in unfiltered samples, indicating that suspended solids contribute to the observed metal concentrations. The RBC exceedances for each of the four wells are summarized below:

- GCL-MW01. Aluminum (total), arsenic (total), chromium (total), iron, lead (total), manganese, selenium (total), and bis(2-ethylhexyl)phthalate
- GCL-MW02A. Chromium (total), iron (total), an manganese
- GCL-MW02B. Iron and manganese
- GCL-MW03. Arsenic (total), iron (total), and manganese.

The analytical results summarized above exhibit no evidence that groundwater in the overburden material in the former Disposal Area No. 3 has been impacted by nitroaromatic compounds and other organic chemicals likely related to past site activities. The detection of bis(2-ethylhexyl)-phthalate was also reported in most other areas of PBOW. This compound will need further evaluation to determine its source. The elevated concentrations of dissolved manganese will require further evaluation to determine whether it is related to site contamination.

7.2 Recommendations

The following recommendations are made based on the conclusions regarding the various chemical constituents found in groundwater as presented in the previous sections:

- Site-wide groundwater background for metals should be established. IT will evaluate inorganic data obtained from this and other sampling events in the annual groundwater investigation report and present recommended background well(s). Metals detected at concentrations exceeding the RBCs will be re-evaluated against the background values to determine whether the elevated metals are naturally occurring or are related to past land use.

- The historical data for overburden well IT-MW01 should be collected and evaluated to determine if this well can be used as a background well for the dissolved metals in the overburden water-bearing zone.

- The subsequent quarterly water level measurement events should closely monitor water level changes in the bedrock wells in the vicinity of the Reactor Building. If erratic water level fluctuations persist, these two wells (Reactor 2 and Reactor 3) should be excluded from further monitoring.

8.0 References

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APPENDIX A

HTRW DRILL LOGS AND WELL CONSTRUCTION DIAGRAMS

Monitoring Well Construction Form (Overburden)

Project:	PBOW	Well Number:	IT-AA1-GW-007
Location:	Erie County, Sandusky Ohio	Site Location:	AA1 OU # —
Client:	Nashville USACE	Installation Date	9-19-97
Subcontractor:	Balasc Drilling	Northing:	623068.35
Driller:	Allen Dudley	Easting:	1917727.57
IT Field Representative:	Greg Buckner	IT Project Number:	771481

Protective Cover Elevation (ft): —

Top of Casing Elevation (ft):

Top of Casing Stickup (ft): 2.5

Land Surface Elevation (ft):

Approximate Diameter of Borehole (in): 8.25

Well Casing Diameter (in): 2

Depth to Water (ft):

During Drilling: 21.8

Date: 9-19-97

Post Development: 5.59 TOC

Date: 10-5-97

Top of Bentonite Seal (ft): 3

Top of Filter Pack (ft): 6

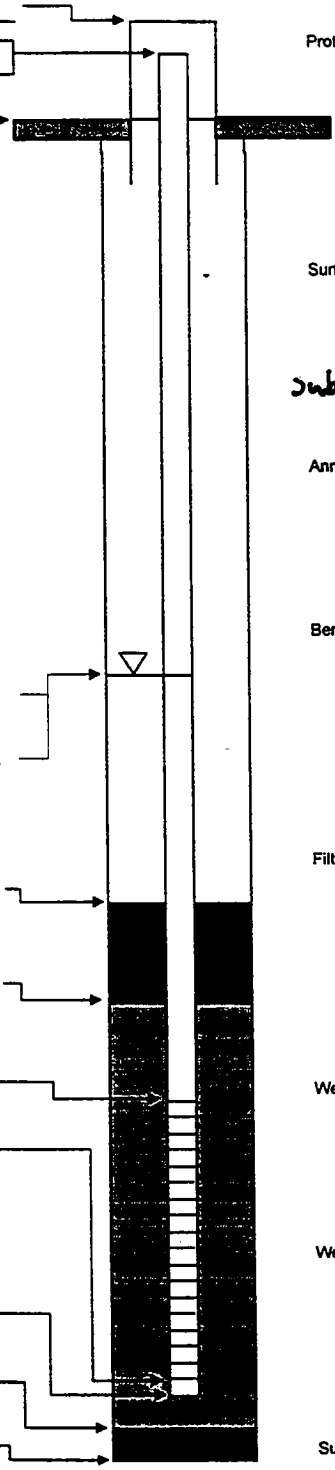
Top of Screen Interval (ft): 6.75

Bottom of Screen Interval (ft): 21.75

Bottom of Well (ft): 22

Bottom of Filter Pack (ft): 23

Bottom of Borehole (ft): 23



Protective Casing:

Type: Steel

Dimensions (in): 6

Length (ft): 7.5

Guard Post: 4 at 8'

Surface Pad:

Dimensions: 4'x4'x4'x4'

Type: Concrete

Subsurface Pad 6" of Gravel

Annular Space Seal:

Type: Bentonite-Cement Grout

Installation: Gravity Tremie (Pumped)

Bentonite Seal:

Manufacturer:

Type: (Pellets) Slurry

Installation: 6-in lifts One Section

(Gravity) Tremie Pumped

Hydration time (hrs): 48

Filter Pack Material:

Manufacturer:

Product Name:

Size: #5

Volume Added (ft³): 400 lb

Installation: Gravity (Tremie)

Well Casing:

Manufacturer: Johnson

Type: PVC

Diameter (in): 2

Well Screen Casing:

Manufacturer: Johnson

Type: Wire Wrap

Slot Size (in): 0.01

Slot Type: Continous Factory slot

Sump/End Cap: PVC

Backfill Material: —

Depths and heights are referenced to ground surface unless specified TOC.

All elevations are referenced to MSL (NAVD 88).

Pizometer

~~Monitoring Well~~ Construction Form (Overburden)

Project:	PBOW	Well Number:	IT-AA2-GW-002
Location:	Erie County, Sandusky Ohio	Site Location:	AA2 OU #
Client:	Nashville USACE	Installation Date	9-22-97
Subcontractor:	Bulasco Drilling	Northing:	623589.11
Driller:	Allen Drilling	Easting:	1909481.30
IT Field Representative:	Greg Buckner	IT Project Number:	771481

Protective Cover Elevation (ft):

Top of Casing Elevation (ft):

Top of Casing Stickup (ft): 2.5

Land Surface Elevation (ft):

Approximate Diameter of Borehole (in): 8.25

Well Casing Diameter (in): 2

Depth to Water (ft):
- During Drilling: No encountered
- Date: 9-22-97
- Post Development: NA TOC
- Date: NA

Top of Bentonite Seal (ft): 2.5

Top of Filter Pack (ft): 5.5

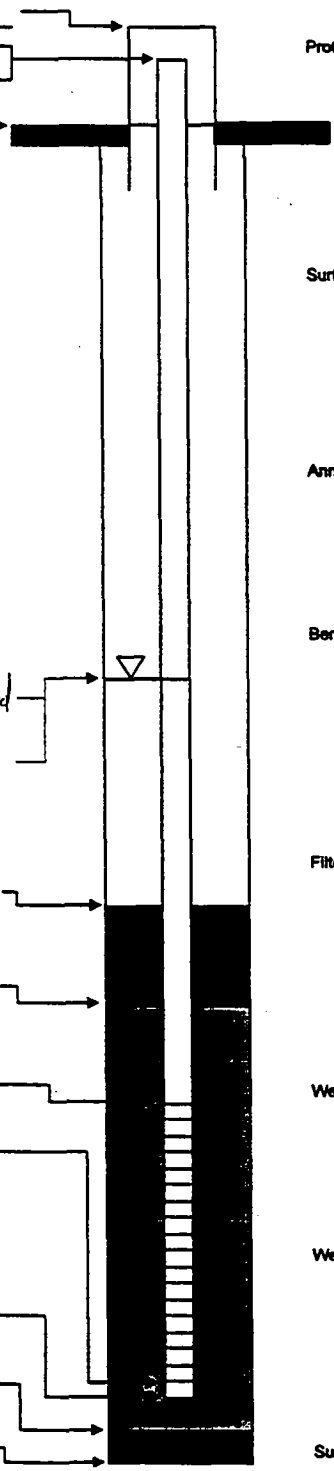
Top of Screen Interval (ft): 8.25

Bottom of Screen Interval (ft): 18.25

Bottom of Well (ft): 18.5

Bottom of Filter Pack (ft): 19.5

Bottom of Borehole (ft): 19.5



Protective Casing:
- Type: None
- Dimensions (in): NA
- Length (ft): NA
- Guard Post: NA

Surface Pad:
- Dimensions: ~~NA~~ None
- Type: ~~Concrete~~ NA

Annular Space Seal:
- Type: Bentonite-Cement Grout
- Installation: Gravity Tremie (Pumped)

Bentonite Seal:
- Manufacturer: 1/4 inch Pellets
- Type: (Pellets) Slurry
- Installation: 6-in lifts One Section
- Gravity Tremie Pumped
- Hydration time (hrs): 48 hr

Filter Pack Material:
- Manufacturer:
- Product Name:
- Size: #5
- Volume Added (ft³): 300 lb
- Installation: Gravity (Tremie)

Well Casing:
- Manufacturer: Johnson
- Type: PVC
- Diameter (in): 2

Well Screen Casing:
- Manufacturer: Johnson
- Type: Wire Wrap
- Slot Size (in): 0.010
- Slot Type: Continous Factory slot

Sump/End Cap: PVC

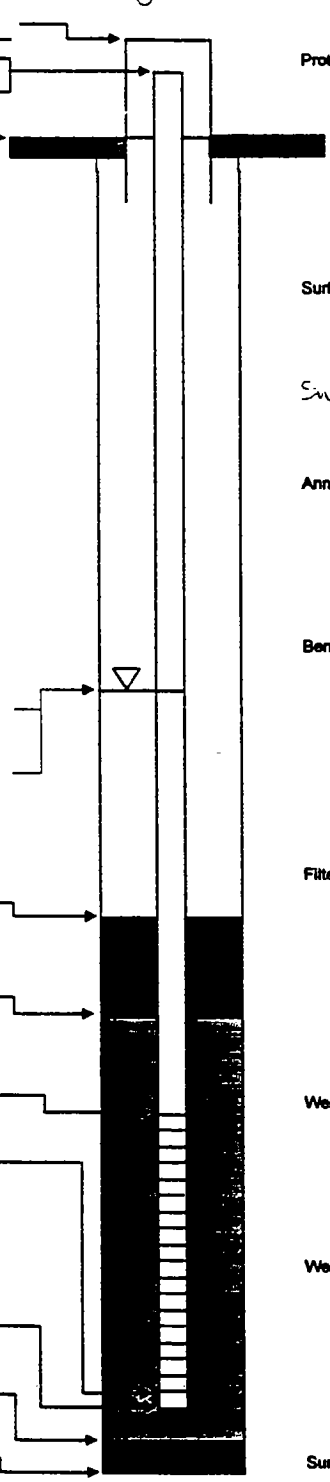
Backfill Material: —

Depths and heights are referenced to ground surface unless specified TOC.

All elevations are referenced to MSL (NAVD 88).

Monitoring Well Construction Form (Overburden)

Project:	PBOW	Well Number:	IT-AA3-GW-002
Location:	Erie County, Sandusky Ohio	Site Location:	AA3 OU #
Client:	Nashville USACE	Installation Date	9-18-97
Subcontractor:	Mosco Drilling	Northing:	625027.71
Driller:	Greg Conrad	Easting:	1914956.35
IT Field Representative:	Ed Kanevsky	IT Project Number:	771481



Protective Cover Elevation (ft):

Top of Casing Elevation (ft):

Top of Casing Stickup (ft): 2.5

Land Surface Elevation (ft):

Approximate Diameter of Borehole (in): 8.25

Well Casing Diameter (in): 2

Depth to Water (ft):

During Drilling: 28.0

Date: 9-18-97

Post Development: 5.75 TOC

Date: 10-4-97

Top of Bentonite Seal (ft): 1.5

Top of Filter Pack (ft): 3.0

Top of Screen Interval (ft): 5.75

Bottom of Screen Interval (ft): 15.75

Bottom of Well (ft): 16.0

Bottom of Filter Pack (ft): 17.0

Bottom of Borehole (ft): 17.0

Protective Casing:

Type: Steel

Dimensions (in): 6.0

Length (ft): 5.5

Guard Post: 8

Surface Pad:

Dimensions: 4'x4'x4'x4'

Type: Concrete

Subsurface Pad 6' of gravel

Annular Space Seal:

Type: Bentonite-Cement Grout

Installation: Gravity Tremie Pumped

Bentonite Seal:

Manufacturer: 1/4 inch Pellets

Type: Pellets Slurry

Installation: 6-in lifts One Section

Gravity Tremie Pumped

Hydration time (hrs): 48

Filter Pack Material:

Manufacturer:

Product Name:

Size: #5

Volume Added (ft³): 300 lb

Installation: Gravity Tremie

Well Casing:

Manufacturer: Johnson

Type: PVC

Diameter (in): 2

Well Screen Casing:

Manufacturer: Johnson

Type: Wire Wrap

Slot Size (in): 0.010

Slot Type: Continous Factory slot

Sump/End Cap: PVC

Backfill Material:

Depths and heights are referenced to ground surface unless specified TOC.

All elevations are referenced to MSL (NAVD 88).

Monitoring Well Construction Form (Overburden)

Project:	PBNW	Well Number:	IT-ABG-GW-002
Location:	Erie County, Sandusky Ohio	Site Location:	ABG OU #
Client:	Nashville, USACE	Installation Date	9-11-97
Subcontractor:	Belasco Drilling	Northing:	621578.51
Driller:	Greg Conard	Easting:	1921515.58
IT Field Representative:	Ed Kanevsky	IT Project Number:	771481

Protective Cover Elevation (ft):

Top of Casing Elevation (ft):

Top of Casing Stickup (ft): 2.5

Land Surface Elevation (ft): 0.0

Top of Sand

Approximate Diameter of Borehole (in): 8.25

Well Casing Diameter (in): 2.0 in

Depth to Water (ft):

During Drilling: 2.3

Date: 9-11-97

Post Development: 6.10 TOC

Date: 10-4-97

Top of Bentonite Seal (ft): 1.5

Top of Filter Pack (ft): 2.0

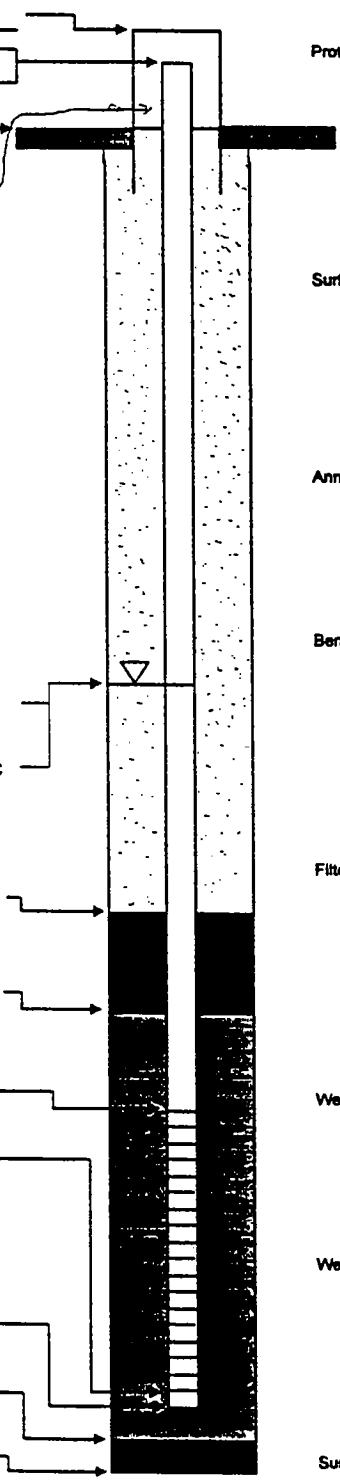
Top of Screen Interval (ft): 2.50

Bottom of Screen Interval (ft): 6.50

Bottom of Well (ft): 6.75

Bottom of Filter Pack (ft): 7.0

Bottom of Borehole (ft): 7.0



Protective Casing:

Type: Steel

Dimensions (in): 6.0

Length (ft): 5.0

Guard Post: 3.0

Surface Pad:

Dimensions: 4'x4'x4'x4'

Type: Concrete

Annular Space Seal:

Type: Bentonite-Cement Grout

Installation: Gravity Tremie (Pumped)

Bentonite Seal:

Manufacturer: 1/4 Pellets

Type: (Pellets) Slurry

Installation: 6-in lifts One Section

Gravity Tremie Pumped

Hydration time (hrs): 48hr

Filter Pack Material:

Manufacturer:

Product Name:

Size: #5

Volume Added (ft³): 50lb

Installation: Gravity (Tremie)

Well Casing:

Manufacturer: Johnson

Type: PVC

Diameter (in): 2.0

Well Screen Casing:

Manufacturer: Johnson

Type: Wire Wrap

Slot Size (in): 0.01

Slot Type: Continous Factory slot

Sump/End Cap: PVC

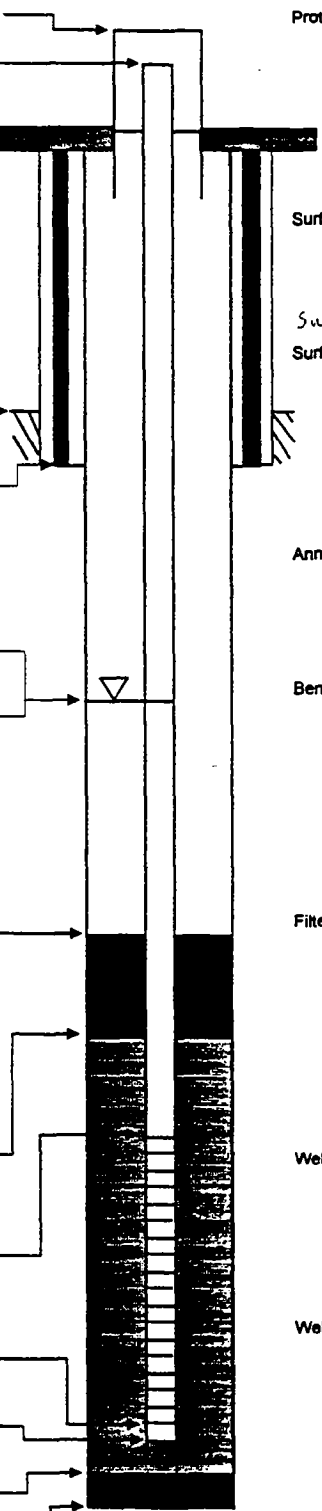
Backfill Material: —

Depths and heights are referenced to ground surface unless specified TOC.

All elevations are referenced to MSL (NAVD 88).

Monitoring Well Construction Form (Bedrock)

Project:	PBOW	Well Number:	ST-AH1-BEDROCK01
Location:	Erie County, Sandusky Ohio	Site Location:	AA 1 OU #
Client:	Nashville USACE	Installation Date	9-24-97
Subcontractor:	Bolasco Drilling	Northing:	623069.04
Driller:	Greg Cavanaugh	Easting:	1917718.26
IT Field Representative:	Ed Kanewsky / Greg Beckman	IT Project Number:	771481



Protective Cover Elevation (ft):

Top of Casing Elevation (ft):

Top of Casing Stickup (ft): 2.5

Land Surface Elevation (ft):

Approximate Diameter of Section 1 Borehole (in): 14.25

Diameter of Surface Casing (in): 10.0

Depth to Bedrock (ft): 23.1

Bottom of Surface Casing (ft): 27.0

Depth to Water (ft):

During Drilling: 55.0

Date: 9-22-97

Post Development: 30.41 TOC

Date: 10-5-97

Approximate Diameter of Section 2 Borehole (in): 6

Well Casing Diameter (in): 2

Top of Bentonite Seal (ft): 40.0

Top of Filter Pack (ft): 45.0

Top of Screen Interval (ft): 49.75

Bottom of Screen Interval (ft): 64.75

Bottom of Well (ft): 65.0

Bottom of Filter Pack (ft): 66.0

Bottom of Borehole (ft): 66.0

Protective Casing:

Type: Steel

Dimensions (in): 6

Length (ft): 4.5

Guard Post: 8

Surface Pad:

Dimensions: 4'x4'x4'x4'

Type: Concrete

Surface Pad Finishes at Grade

Surface Casing:

Type: Steel

Diameter (in): 10

Installation: Tremie Haliburton Cementing Plug Other Plug

Annular Space Seal:

Type: Bentonite-Cement Grout

Installation: Gravity Tremie Pumped

Bentonite Seal:

Manufacturer: 1/4 inch Pellets

Type: Pellets Slurry

Installation: 6-in lifts One Section Gravity Tremie Pumped

Hydration time (hrs): 48

Filter Pack Material:

Manufacturer:

Product Name:

Size: #5

Volume Added (ft^3): 4 bags

Installation: Gravity Tremie

Well Casing:

Manufacturer: Johnston

Type: PVC

Diameter (in): 2

Well Screen Casing:

Manufacturer: Johnson

Type: Wire Wrap

Slot Size (in): 0.010

Slot Type: Continous Factory slot

Sump/End Cap: PVC

Backfill Material: ——

Depths and heights are referenced to ground surface unless specified TOC.

All elevations are referenced to MSL (NAVD 88).

Monitoring Well Construction Form (Bedrock)

Project	PBOW	Well Number:	IT-AA2-PDCW-01
Location:	Erie County, Sandusky Ohio	Site Location:	AA2 OU #
Client:	Nashville USACE	Installation Date	10-2-97
Subcontractor:	Layesco Drilling	Northing:	623599.94
Driller:	Allen Dudley	Easting:	1909552.48
IT Field Representative:	Greg Buckner/Ed Kurwesky	IT Project Number:	771481

Protective Cover Elevation (ft):

Top of Casing Elevation (ft):

Top of Casing Stickup (ft): 2.5

Land Surface Elevation (ft):

Approximate Diameter of Section 1 Borehole (in): 14.25

Diameter of Surface Casing (in): 10.0

Depth to Bedrock (ft): 18.8

Bottom of Surface Casing (ft): 20.0

Very Hard Rock, Roller Cone required Not perv. very deep.

Depth to Water (ft):

During Drilling: ~34.0

Date: 10-2-97

Post Development: 12.48 TOC

Date: 10-5-97

Approximate Diameter of Section 2 Borehole (in): 6

Well Casing Diameter (in): 2

Top of Bentonite Seal (ft): 18

Top of Filter Pack (ft): 23

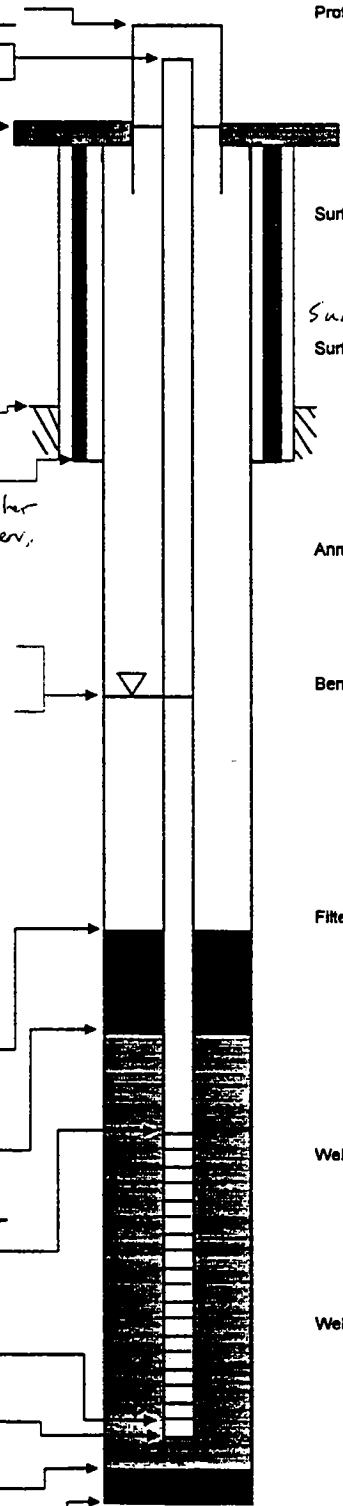
Top of Screen Interval (ft): 27.25

Bottom of Screen Interval (ft): 42.75

Bottom of Well (ft): 43.0

Bottom of Filter Pack (ft): 44.0

Bottom of Borehole (ft): 44.0



Protective Casing:

Type: steel

Dimensions (in): 6

Length (ft): 4.5

Guard Post: 8

Surface Pad:

Dimensions: 4'x4'x4'x4'

Type: Concrete

Subsurface Pad: 6" of Gravel

Surface Casing:

Type: steel

Diameter (in): 10

Installation: Tremie Haliburton Cementing Plug Other Plug

Annular Space Seal:

Type: Bentonite-Cement Grout

Installation: Gravity Tremie (Pumped)

Bentonite Seal:

Manufacturer: 1/4 inch Pellets

Type: (Pellets) Slurry

Installation: 6-in lifts One Section (Gravity) Tremie Pumped

Hydration time (hrs): 48hr

Filter Pack Material:

Manufacturer:

Product Name:

Size: #5

Volume Added (ft^3): 400lb

Installation: (Gravity) (Tremie)

Well Casing:

Manufacturer: Johnson

Type: PVC

Diameter (in): 2

Well Screen Casing:

Manufacturer: Johnson

Type: Wire Wrap

Slot Size (in): 0.010

Slot Type: Continous Factory slot

Sump/End Cap: PVC

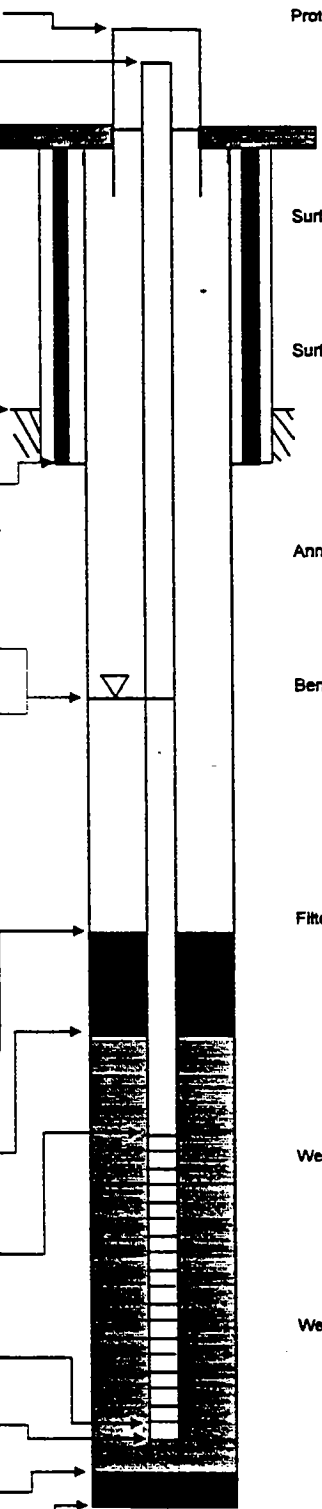
Backfill Material: —

Depths and heights are referenced to ground surface unless specified TOC.

All elevations are referenced to MSL (NAVD 88).

Monitoring Well Construction Form (Bedrock)

Project:	PBOW	Well Number:	IT-AA3-BEDGW-001
Location:	Erie County, Sandusky Ohio	Site Location:	AA3 OU #
Client:	Nashville USACE	Installation Date	10-5-97
Subcontractor:	Belasco Drilling	Northing:	625036.61
Driller:	Allen Dudley	Easting:	1914957.28
IT Field Representative:	Ed Kanevsky / Greg Smithner	IT Project Number:	771481



Protective Cover Elevation (ft):

Top of Casing Elevation (ft):

Top of Casing Stickup (ft): 2.5

Land Surface Elevation (ft):

Approximate Diameter of Section 1 Borehole (in): 14.25

Diameter of Surface Casing (in): 10.0

Depth to Bedrock (ft): 25.9

Bottom of Surface Casing (ft): 28.0

Very Hard Rock

Depth to Water (ft):

During Drilling: ~44.0

Date: 10-9-97

Post Development: 28.00 TOC

Date: 10-7-97

Approximate Diameter of Section 2 Borehole (in): 6.0

Well Casing Diameter (in): 2.0

Top of Bentonite Seal (ft): 28.0

Top of Filter Pack (ft): 33.0

Top of Screen Interval (ft): 37.75

Bottom of Screen Interval (ft): 52.75

Bottom of Well (ft): 53.00

Bottom of Filter Pack (ft) 54.00

Bottom of Borehole (ft): 54.00

Protective Casing:

Type: Steel

Dimensions (in): 6.0

Length (ft): 9.5

Guard Post: 8.0

Surface Pad:

Dimensions: 4'x4'x4'x4'

Type: Concrete

Surface Casing:

Type: Low Carbon Steel

Diameter (in): 10.0

Installation: (Tremie) Haliburton Cementing Plug Other Plug

Annular Space Seal:

Type: Bentonite-Cement Grout

Installation: Gravity Tremie (Pumped)

Bentonite Seal:

Manufacturer: 1/4 inch Pellets

Type: (Pellets) Slurry

Installation: 6-in lifts One Section Gravity Tremie Pumped

Hydration time (hrs): 48 hrs

Filter Pack Material:

Manufacturer:

Product Name:

Size: #5

Volume Added (ft^3): 400 lb

Installation: Gravity (Tremie)

Well Casing:

Manufacturer: Johnson

Type: PVC

Diameter (in): 2in

Well Screen Casing:

Manufacturer: Johnson

Type: Wire Wrap

Slot Size (in): 0.01

Slot Type: Continous Factory slot

Sump/End Cap: PVC

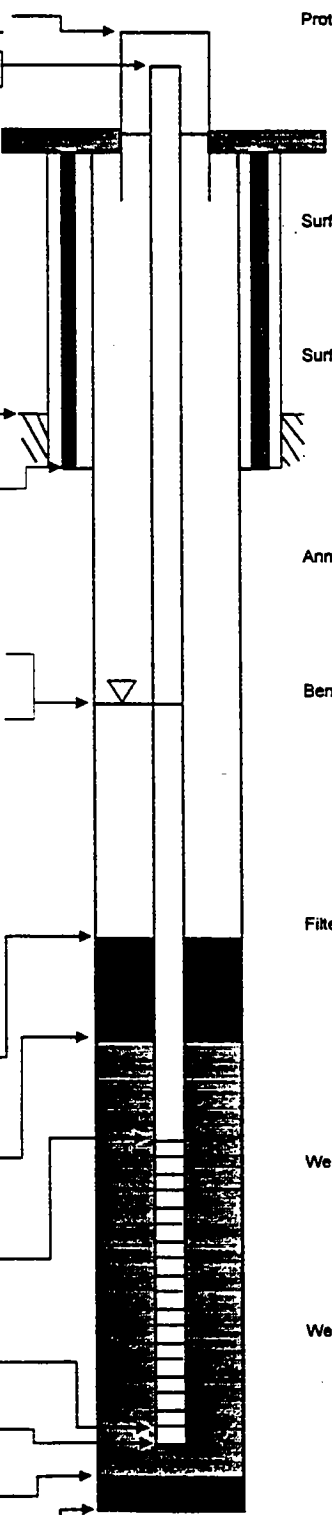
Backfill Material:

Depths and heights are referenced to ground surface unless specified TOC.

All elevations are referenced to MSL (NAVD 88).

Monitoring Well Construction Form (Bedrock)

Project:	PBOW	Well Number:	IT-BG-8-BEDGW-001
Location:	Erie County, Sandusky Ohio	Site Location:	BG-3 OU #
Client:	Nashville USACE	Installation Date	9/20/97
Subcontractor:	Bulasco Drilling	Northing:	621579.50
Driller:	Gier [illegible] Conard	Easting:	1921506.02
IT Field Representative:	D. Ed Kanowsky	IT Project Number:	771481



Protective Cover Elevation (ft):

Top of Casing Elevation (ft):

Top of Casing Stickup (ft): 2.5

Land Surface Elevation (ft):

Approximate Diameter of Section 1 Borehole (in): 14.25

Diameter of Surface Casing (in): 10

Depth to Bedrock (ft): 3.0

Bottom of Surface Casing (ft): 4.0

Depth to Water (ft):

During Drilling: ~7.0-8.0

Date: 9-19-97

Post Development: 5.51 TOC

Date: 10-4-97

Approximate Diameter of Section 2 Borehole (in): 6

Well Casing Diameter (in): 2in

Top of Bentonite Seal (ft): 2.0

Top of Filter Pack (ft): 4.0

Top of Screen Interval (ft): 4.75'

Bottom of Screen Interval (ft): 19.75'

Bottom of Well (ft): 20.0

Bottom of Filter Pack (ft): 21.0

Bottom of Borehole (ft): 21.0

Protective Casing:

Type: Steel

Dimensions (in): 6

Length (ft): 6

Guard Post: 6

Surface Pad:

Dimensions: 4'x4'x4'

Type: Concrete

Surface Casing:

Type: Steel

Diameter (in): 10

Installation: Tremie Haliburton Cementing Plug Other Plug

Annular Space Seal:

Type: Bentonite-Cement Grout

Installation: Gravity Tremie Pumped

Bentonite Seal:

Manufacturer: 1/4in Pellets

Type: Pellets Slurry

Installation: 6-in lifts One Section Gravity Tremie Pumped

Hydration time (hrs): 48

Filter Pack Material:

Manufacturer:

Product Name:

Size: #5

Volume Added (ft^3): 400 lb

Installation: Gravity Tremie

Well Casing:

Manufacturer: Johnson

Type: PVC

Diameter (in): 2

Well Screen Casing:

Manufacturer: Johnson

Type: Wire Wrap

Slot Size (in): 0.010

Slot Type: Continous Factory slot

Sump/End Cap: PVC

Backfill Material:

Depths and heights are referenced to ground surface unless specified TOC.

All elevations are referenced to MSL (NAVD 88).

Monitoring Well Construction Form (Bedrock)

Project:	PBOW	Well Number:	IT-MNTA-BEDGW-001
Location:	Erie County, Sandusky Ohio	Site Location:	PBOW OU #
Client:	Nashville USACE	Installation Date	9-22-97
Subcontractor:	Balasco Drilling	Northing:	623808.29
Driller:	Allen Dudley	Easting:	1918699.38
IT Field Representative:	Greg Buckner	IT Project Number:	771481

Protective Cover Elevation (ft): ~~3.0~~

Top of Casing Elevation (ft): 2.5

Top of Casing Stickup (ft): 3.0

Land Surface Elevation (ft):

Approximate Diameter of Section 1 Borehole (in): 14.25

Diameter of Surface Casing (ft): 10

Depth to Bedrock (ft): 24.8

Bottom of Surface Casing (ft): 31.0

Depth to Water (ft):

During Drilling: 55.2'

Date:

Post Development: 27.77 TOC

Date: 10-6-97

Approximate Diameter of Section 2 Borehole (in): 6

Well Casing Diameter (in): 2

Top of Bentonite Seal (ft): 29'

Top of Filter Pack (ft): 44

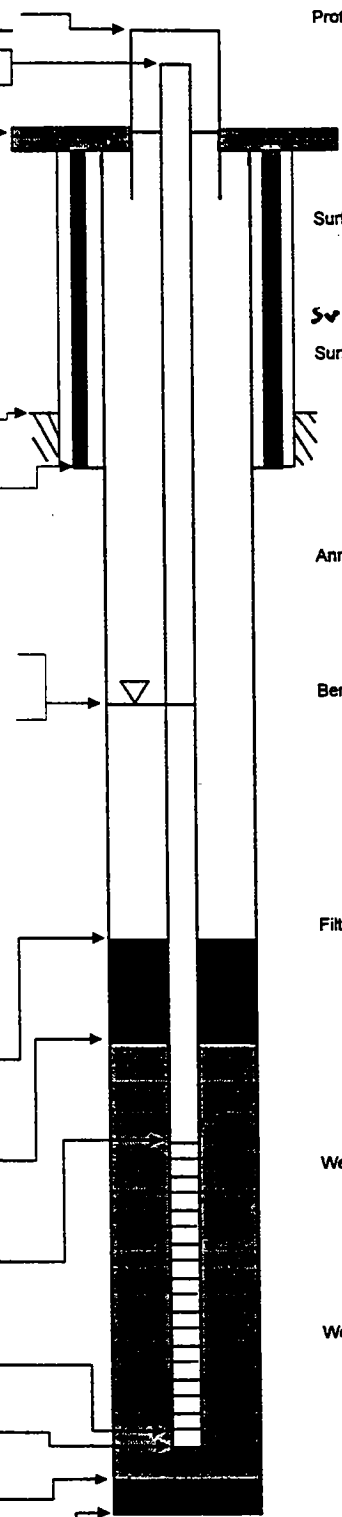
Top of Screen Interval (ft): 48.75

Bottom of Screen Interval (ft): 63.75

Bottom of Well (ft): 64

Bottom of Filter Pack (ft): 65

Bottom of Borehole (ft): 65



Protective Casing:

Type: steel

Dimensions (in): 6

Length (ft): 9.5

Guard Post: 4 at 8'

Surface Pad:

Dimensions: 4'x4'x4'x4'

Type: Concrete

Surface Pad Base 6 in of Gravel

Surface Casing:

Type: ~~PVC~~ Steel (per GD 12/23/97)

Diameter (in): 2

Installation: Tremie Haliburton Cementing Plug Other Plug

Annular Space Seal:

Type: Bentonite-Cement Grout

Installation: Gravity Tremie (Pumped)

Bentonite Seal:

Manufacturer:

Type: (Pellets) Slurry

Installation: 6-in lifts One Section (Gravity) Tremie Pumped

Hydration time (hrs): 48

Filter Pack Material:

Manufacturer:

Product Name: Filter Pack Sand

Size: #5

Volume Added (lbs): 400 lb

Installation: (Gravity) (Tremie)

Well Casing:

Manufacturer: Johnston

Type: PVC

Diameter (in): 2 in

Well Screen Casing:

Manufacturer: Johnston

Type: Wire Wrap

Slot Size (in): 0.010

Slot Type: Continous Factory slot

Sump/End Cap: PVC

Backfill Material:

Depths and heights are referenced to ground surface unless specified TOC.

All elevations are referenced to MSL (NAVD 88).

Monitoring Well Construction Form (Bedrock)

Project:	PBOW	Well Number:	IT-ABG-BEDGW-001
Location:	Erie County, Sandusky Ohio	Site Location:	ABG OU #
Client:	Nashville USACE	Installation Date	9-10-97
Subcontractor:	Belasco Drilling	Northing:	621579.50
Driller:	Gene Gerrard / Allen Dethery	Easting:	1921506.02
IT Field Representative:	Ed Konnevsky / Greg Bartner	IT Project Number:	771481

Protective Cover Elevation (ft):

Top of Casing Elevation (ft): 0

Top of Casing Stickup (ft): 2.5

Land Surface Elevation (ft):

Approximate Diameter of Section 1 Borehole (in): 14.25

Diameter of Surface Casing (in): 10.0

Depth to Bedrock (ft): 6.0

Bottom of Surface Casing (ft): 7.0

Very hard Rock 10" Roller Cone will not drill.

Depth to Water (ft):

During Drilling: 12.5

Date: 9-10-97

Post Development: 5.51 TOC

Date: 10-4-97

Approximate Diameter of Section 2 Borehole (in): 6.0

Well Casing Diameter (in): 2 in

Top of Bentonite Seal (ft): 6.0

Top of Filter Pack (ft): 9.0

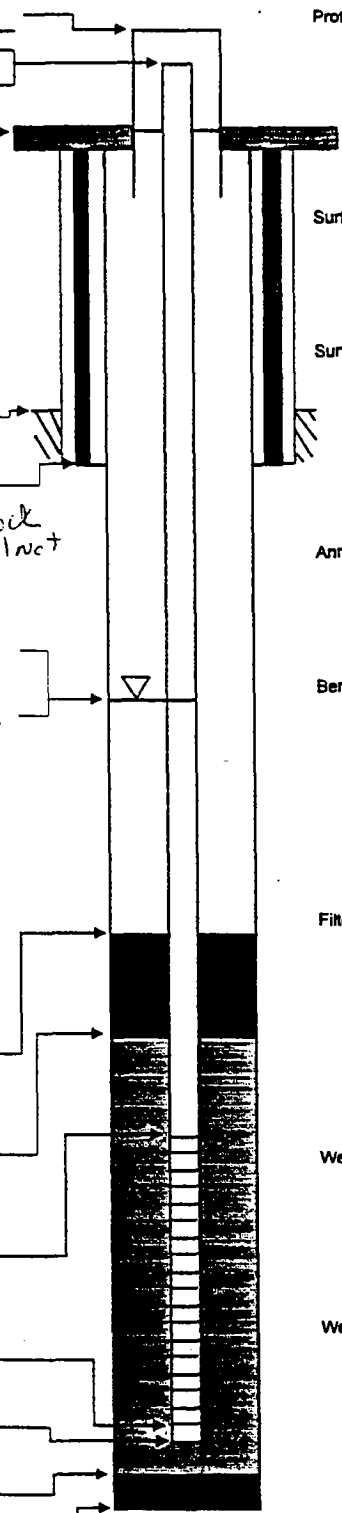
Top of Screen Interval (ft): 10.75

Bottom of Screen Interval (ft): 20.75

Bottom of Well (ft): 21.0

Bottom of Filter Pack (ft): 22.0

Bottom of Borehole (ft): 22.0



Protective Casing:

Type: Steel

Dimensions (in): 6.0

Length (ft): 9.5

Guard Post: 8.0

Surface Pad:

Dimensions: 4'x4'x4'x4'

Type: Concrete

Surface Casing:

Type: Low Carbon Steel

Diameter (in): 10.0

Installation: Tremie Haliburton Cementing Plug Other Plug

Annular Space Seal:

Type: Bentonite-Cement Grout

Installation: Gravity Tremie Pumped

Bentonite Seal:

Manufacturer: 1/4 inch Pellets

Type: Pellets Slurry

Installation: 6-in lifts One Section Gravity Tremie Pumped

Hydration time (hrs): 48 hrs

Filter Pack Material:

Manufacturer:

Product Name:

Size: #5

Volume Added (ft^3): 300 lb

Installation: Gravity Tremie

Well Casing:

Manufacturer: Johnson

Type: PVC

Diameter (in): 2 in

Well Screen Casing:

Manufacturer: Johnson

Type: Wire Wrap

Slot Size (in): 0.010

Slot Type: Continous Factory slot

Sump/End Cap: PVC

Backfill Material:

Depths and heights are referenced to ground surface unless specified TOC.

All elevations are referenced to MSL (NAVD 88).

Monitoring Well Construction Form (Bedrock)

Project:	PBOW	Well Number:	IT-INTB-DEDGW-001
Location:	Erie County, Sandusky Ohio	Site Location:	INTB OU #
Client:	Nashville USACE	Installation Date	9-31-97
Subcontractor:	Balasco Drilling	Northing:	618737.55
Driller:	Allen Dudley / Greg Conrad	Easting:	1917218.02
IT Field Representative:	Greg Buckner / Ed Kanevsky	IT Project Number:	771481

Protective Cover Elevation (ft):

Top of Casing Elevation (ft):

Top of Casing Stickup (ft): 2.5

Land Surface Elevation (ft):

Approximate Diameter of Section 1 Borehole (in): 14.25

Diameter of Surface Casing (in): 10.0

Depth to Bedrock (ft): 1.0 / 4.0 → To Competent Bedrock

Bottom of Surface Casing (ft): 9.0

Depth to Water (ft):

During Drilling: ~13.0

Date: 9-30-97

Post Development: 4.95 TOC

Date: 10-4-97

Approximate Diameter of Section 2 Borehole (in): 6.0

Well Casing Diameter (in): 2.0

Top of Bentonite Seal (ft): 4.5

Top of Filter Pack (ft): 7.5

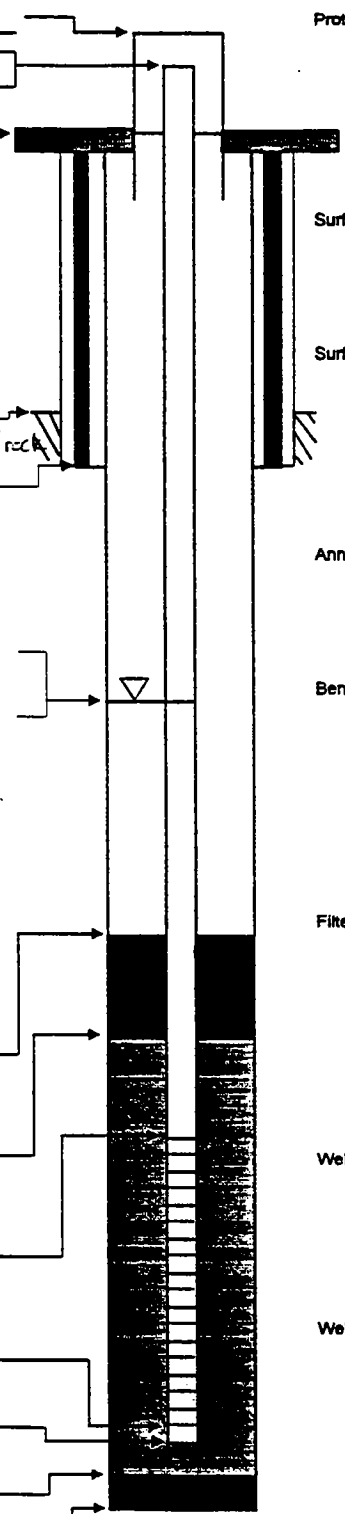
Top of Screen Interval (ft): 8.75

Bottom of Screen Interval (ft): 23.75

Bottom of Well (ft): 24.0

Bottom of Filter Pack (ft): 25.0

Bottom of Borehole (ft): 25.0



Protective Casing:

Type: Steel

Dimensions (in): 6.0

Length (ft): 9.5

Guard Post: 8

Surface Pad:

Dimensions: 4'x4'x4'x4'

Type: Concrete

Surface Casing:

Type: Low Carbon Steel

Diameter (in): 10

Installation: Tremie Haliburton Cementing Plug Other Plug

Annular Space Seal:

Type: Bentonite-Cement Grout

Installation: Gravity Tremie Pumped

Bentonite Seal:

Manufacturer: 1/4 inch Pellets

Type: Pellets Slurry

Installation: 6-in lifts One Section Gravity Tremie Pumped

Hydration time (hrs): 48 hrs

Filter Pack Material:

Manufacturer:

Product Name:

Size: #5

Volume Added (ft³): 300 lb

Installation: Gravity Tremie

Well Casing:

Manufacturer: Johnson

Type: PVC

Diameter (in): 2

Well Screen Casing:

Manufacturer: Johnson

Type: Wire Wrap

Slot Size (in): 0.010

Slot Type: Continous Factory slot

Sump/End Cap: PVC

Backfill Material:

Depths and heights are referenced to ground surface unless specified TOC.

All elevations are referenced to MSL (NAVD 88).

Monitoring Well Construction Form (Bedrock)

Project:	PBOW	Well Number:	IT-TNTB-BEDGW-002
Location:	Erie County, Sandusky Ohio	Site Location:	TNTB OU#
Client:	Nashville USACE	Installation Date	9-24-97
Subcontractor:	Belasco Drilling	Northing:	616835.18
Driller:	Allen Drilling & Geo	Easting:	1918020.88
IT Field Representative:	Greg Bredenn	IT Project Number:	771481

Protective Cover Elevation (ft):

Top of Casing Elevation (ft):

Top of Casing Stickup (ft): 2.5

Land Surface Elevation (ft):

Approximate Diameter of Section 1 Borehole (in): 14.25

Diameter of Surface Casing (in): 10.0

Depth to Bedrock (ft): 2.8

Bottom of Surface Casing (ft): 8.0

Depth to Water (ft):

During Drilling: ~11.0

Date: 9-24-97

Post Development: 6.50 TOC

Date: 10-4-97

Approximate Diameter of Section 2 Borehole (in): 6.0

Well Casing Diameter (in): 2.0

Top of Bentonite Seal (ft): 7.0

Top of Filter Pack (ft): 11.2

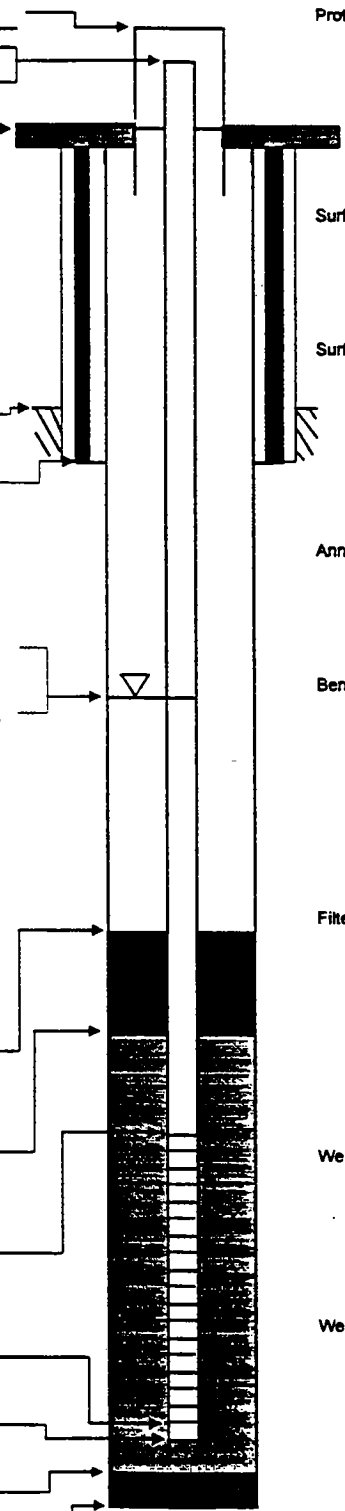
Top of Screen Interval (ft): 13.95

Bottom of Screen Interval (ft): 23.95

Bottom of Well (ft): 24.2

Bottom of Filter Pack (ft): 25.2

Bottom of Borehole (ft): 25.2



Protective Casing:

Type: Steel

Dimensions (in): 6.0

Length (ft): 9.5

Guard Post: 8.0

Surface Pad:

Dimensions: 4'x4'x4'x4'

Type: Concrete

Surface Casing:

Type: Low Carbon Steel

Diameter (in): 10.0

Installation: (Tremie) Haliburton Cementing Plug Other Plug

Annular Space Seal:

Type: Bentonite-Cement Grout

Installation: Gravity Tremie (Pumped)

Bentonite Seal:

Manufacturer: 1/4 inch Pellets

Type: (Pellets) Slurry

Installation: 6-in lifts One Section Gravity Tremie Pumped

Hydration time (hrs): 48hr

Filter Pack Material:

Manufacturer:

Product Name:

Size: #50

Volume Added (ft^3): 300 lb

Installation: Gravity (Tremie)

Well Casing:

Manufacturer: Johnson

Type: PVC

Diameter (in): 2in

Well Screen Casing:

Manufacturer: Johnson

Type: Wire Wrap

Slot Size (in): 0.01

Slot Type: Continous Factory slot

Sump/End Cap: PVC

Backfill Material: —

Depths and heights are referenced to ground surface unless specified TOC.

All elevations are referenced to MSL (NAVD 88).

HTRW DRILLING LOG

DISTRICT: USACE / Nashville		HOLE NUMBER: IT-AA1-GW-002
1. COMPANY NAME: IT Corp	2. DRILL SUBCONTRACTOR: Belasco Drilling	SHEET 1 OF SHEETS
3. PROJECT: AA1 / Plum Brook Ordnance Works	4. LOCATION: Sandusky, Ohio	
NAME OF DRILLER: Allen Dudley	6. MANUFACTURER'S DESIGNATION OF DRILL: Diedrich D 120	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: Diedrich D120 drill Rig. 3¼ O.D. HSA. 2" x 2" SS Split Spoon, 140 lb Hammer	8. HOLE LOCATION: See sketch	
	9. SURFACE ELEVATION: 642.00 (From Topo)	
	10. DATE STARTED: 9/19/97	11. DATE COMPLETED: 9/19/97
12. OVERBURDEN THICKNESS: 23.0'	15. DEPTH GROUNDWATER ENCOUNTERED: 21.5'	
13. DEPTH DRILLED INTO ROCK: none	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: 5.59 on 10-5-97	
14. TOTAL DEPTH OF HOLE: 23.0'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA	

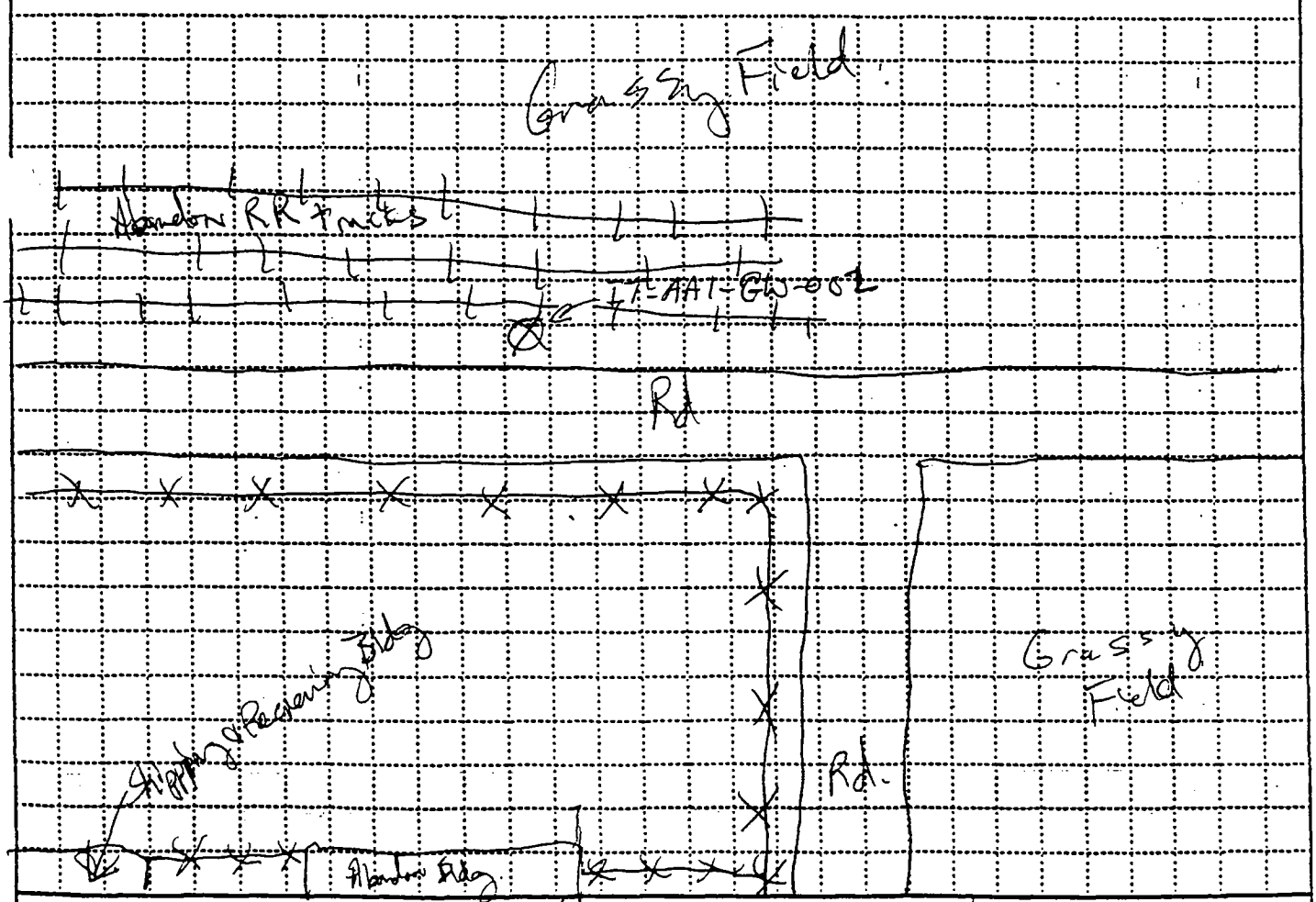
18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
3	X		NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
						NA %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
		X		Greg Buckner / [signature]

LOCATION SKETCH/COMMENTS

SCALE: Not to Scale



PROJECT	HOLE NO.
/ Plum Brook Ordnance Works	IT-AA1-GW-002

HTRW DRILLING LOG

HOLE NUMBER: IT-AA1-GW-002

PROJECT: Plum Brook Ordnance Works

INSPECTOR: G. Buckner

SHEET 2 OF 2 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	REMARKS (g)
		Grassy Surface 0.2'	HNU		Blow counts	Sample thru 4 1/4" I.D. HSA using 2'x2" s.s. split spoon.
		Gravel, br, Dry, Fill. 0.5'		3/4 (GB) 3/5	3/4 3/5	
		SAND, sdy (30%) Damp Grayish br v F grn lo	18.0 ppm			Raw 2.0' Rec 1.8' Loss 0.2' 15:30
1						
2		2.3 Becoming orangish br. 2.5'				Auger to 2.0' 2.0'
		SILT sdy (10%) Black (has burn odor) v F grn Dry to slightly Damp lo pl.	4.5 ppm	4/8 (GB) 8/9	4/8 8/9	Raw 2.0' Rec 1.7' Loss 0.3
3						
4		4.2' Becoming mottled Gray, orange brown. other remains the same. 5.1'				Auger to 4.0' 4.0'
5				2/3 (GB) 5/7	2/3 5/7	Raw 2.0' Rec 1.6' loss 0.4'
		Silt clay stiff to slightly stiff, moist (slightly Damp) mottled orangish br + Gray med pl, to high pl.	3.5 ppm			
6						Auger to 6.0' 6.0'
7		7.0'			2/3 3/4	Raw 2.0' Rec 1.8' loss 0.2'
		Silt sdy (30%) v F grn Damp (wet) lo pl. mottled br + gray.	3.0 ppm	Geotech Sample IT-AA1-GW-001 6'-8'		
8		8.0'				Auger to 8.0' 8.0' 15:00
		Silt clay (25-20%) sdy (30%) v F grn silt wet orangish br to gray med plasticity	2.0 ppm		2/4 5/8	Raw 2.0' Rec 1.9' loss 0.1'
9						
10						Auger to 10.0' 10.0'

PROJECT: AA1 / Plum Brook Ordnance Works

HOLE NO.: IT-AA1-GW-002

HTRW DRILLING LOG

HOLE NUMBER IT-AA1-GW-002

PROJECT AA1/Plum Brook Ordnance Works | INSPECTOR G. Buckner | SHEET 3 OF 3 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	~~SAMPLE TYPE~~ (f)	REMARKS (g)
		S.lt sdy (25%) wet (Damp) lo to st.f v F grn or	HNV		Blow Counts	
	11		3.0 ppm		4/6 12/12	Raw: 2.0', Rec: 1.8 Loss: 0.2
		11.5' decreasing Sand content (10%)				
	12					Auger to 12' 12.0'
		12.5'				15:10
		S.lt ~~slightly damp~~ Cl (40%) Gr Dry, mod to High Plasticity 12.8'			3/5	Raw 2.0', Rec 1.6', loss 0.4'
	13	clay, s.y (20%) grey sly Rdy Damp to Dry ~~Homogeneous~~ lo to h Plast sl-slthy stf	2.0 ppm		5/6	
						Auger to 14' 14'
	14			Geotech Sample ~~IT-AA1~~ IT-AA1-GW-001 14'-16'	3/4 7/8	15:18 Raw 2.0' Rec 1.9 Loss 0.1
	15		2.2 ppm			
	16	16.0'				Auger to 16.0' 16'
		Clay sdy v f grn (5%) Gray, sl-slthy Damp 16.5'			2/3 5/7	Raw 2.0' Rec 2.0' ~~Loss~~ 0.0'
	17	Clay, ~~sdy~~ ~~Hy~~ lo Pl. sl-slthy Damp to Dry Gray lo to h Pl. sl-slthy stf.	1.5 ppm			
						Auger to 18.0' 18'
	18				~~8~~/14 ~~11~~/14	Raw Rec Loss
	19		1.8 ppm			
	20					Auger to 20.0' 20'

PROJECT AA1/Plum Brook Ordnance Works | HOLE NO. IT-AA1-GW-002

HTRW DRILLING LOG

HOLE NUMBER: IT-AA1-GW-002

PROJECT: Plum Brook Ordnance Works

INSPECTOR: G. Buckner

SHEET 4 OF 4 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	REMARKS (g)
		Gravel / Silty (Coarse grained) Clay (45%) Gray Fine grain Silty Clay Damp to Damp Stiff	ppm 2.0	Geotech Sample IT-AA1-GW-001 20'-22' 16:00 -	Blow counts 30/21 20/58	16:00
	21	21.5 wet				
	22					Auger to 22.0'
			1.6 ppm		6/50/6 inches	
	23	23.6 Top of Bedrock (shale) 23.0' T.D of Hole				Auger Refusal 23.0'
						16:30 Begin well construction
	24					15' screen 22'-7' 1' sand 6' 3' Bentonite 3' bottom Protection Casing 5' 2.5' 7.5' stickup
	25					
	26					
	27					
	28					
	29					
	30					

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HTRW DRILLING LOG

DISTRICT: USACE / Nashville		HOLE NUMBER: IT-AA2-GW-002
1. COMPANY NAME: IT Corp	2. DRILL SUBCONTRACTOR: Belasco Drilling	SHEET 1 OF 3 SHEETS
3. PROJECT: AA2 / Plum Brook Ordnance Works	4. LOCATION: Sandusky, Ohio	
5. NAME OF DRILLER: Allen Dudley	6. MANUFACTURER'S DESIGNATION OF DRILL: Dierich D 120	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: Dierich D 120 (Drill Rig), 8 1/4 O.D. HSA, 2 x 2" SS. split Spoon, 140 lb Hammer	8. HOLE LOCATION: See sketch	
	9. SURFACE ELEVATION: 645.0 / (From Topo)	
	10. DATE STARTED: 9/22/97	11. DATE COMPLETED: 9/22/97
12. OVERBURDEN THICKNESS: 19.5'	15. DEPTH GROUNDWATER ENCOUNTERED: Not encountered	
13. DEPTH DRILLED INTO ROCK: none	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: No water Present	
14. TOTAL DEPTH OF HOLE: 19.5'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA	

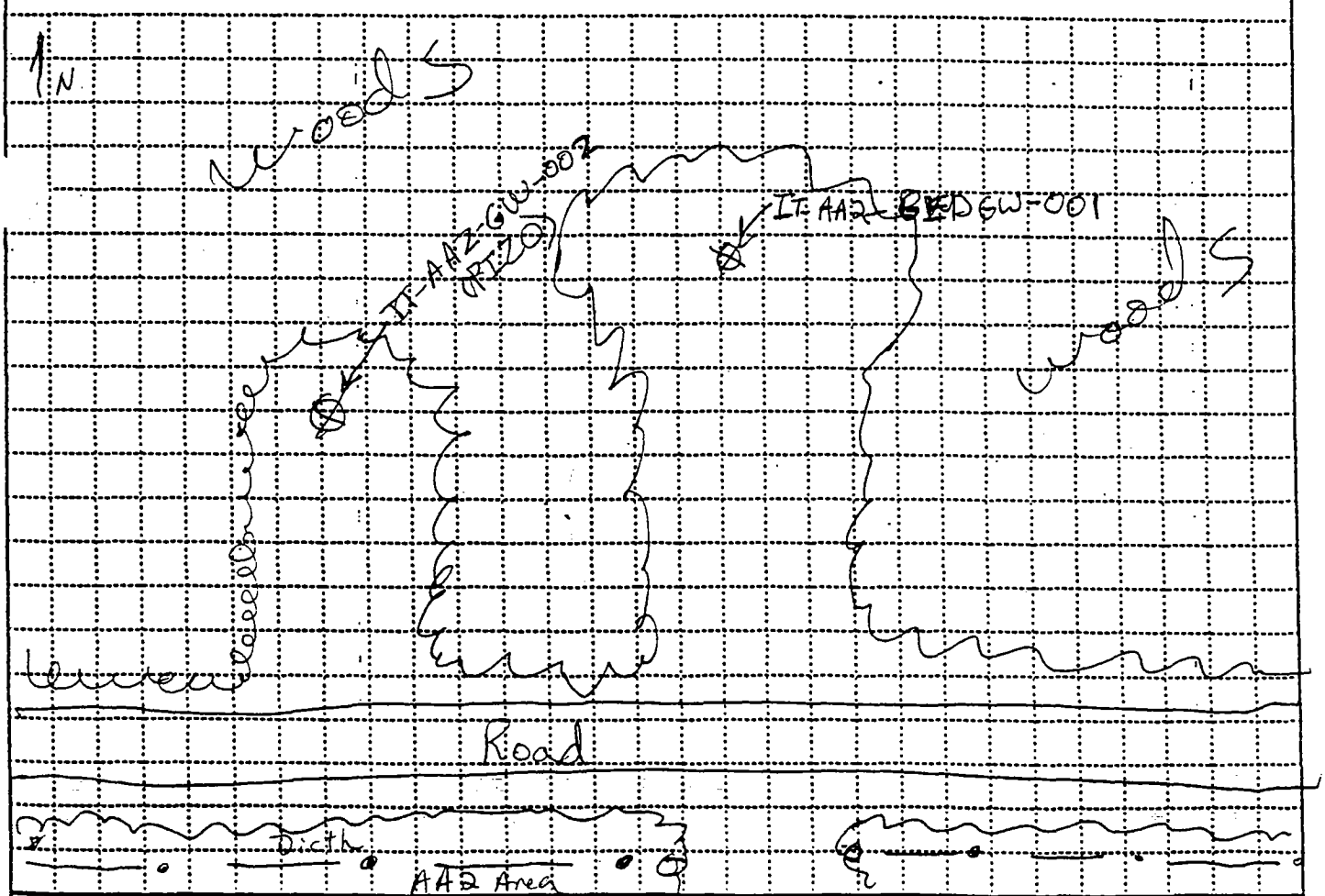
18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
3	X		NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
						NA%

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
Pizometer			Pizometer	Greg Buekner /

LOCATION SKETCH/COMMENTS

SCALE: Not to Scale



PROJECT	HOLE NO.
AA2 / Plum Brook Ordnance Works	IT-AA2-GW-002

HIRW DRILLING LOG

PROJECT: Plum Brook Ordnance Works/AA2 | INSPECTOR: G. Buckner | HOLE NUMBER: IT-AA2-GW-002 | SHEET 2 OF 2 SHEETS 3

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR COPE BOX NO. (e)	PENETRATION RESISTANCE (f)	REMARKS (g)
		Loose to Organics 0.1				
		Silt Sdy (20%) v F Gra. low Pl. ~~Pt~~ Soft/loose Fl.-> ~~Blue~~ Brn.	HNU	~~2/3~~	Blow Counts 2/3	Sample thru 4 1/4" ID HSA using 2'x2" SS split spoon 1350
644	1		12.0 ppm	~~5/7~~	5/7	Raw 2.0' Rec 1.2' Loss 0.8
643	2	2.2'				Auger to 2.0' 2.0'
		Silt br to yellowish br. (mottled) Stiff Dry low to med Pl.		~~5/9~~	5/9	Raw 2.0' Rec 1.3' Loss 0.7'
	3		6.0 ppm	~~12/12~~	12/12	
641	4	4.0' Becoming Mottle Orange to yellowish br. other remaining the same				Auger to 4.0' 4.0'
				~~6/9~~	6/9	Raw 2.0' Rec 0.8' Loss 1.2'
640	5		6.2 ppm	~~13/14~~	13/14	
	6			6.0'		Auger to 6.0' 6.0' 14:40
				~~3/4~~	3/4	Raw 2.0' Rec 1.7' Loss 0.3
638	7		4.0 ppm	~~5/7~~ Geotech Sample IT-AA2-GW-002 6'-8' 14:10	5/7	
	8			8.0'		Auger to 8.0' 8.0'
				~~3/5~~	3/5	Raw 2.0' Rec 2.0' Loss
	9		3.0 ppm	~~5/7~~	5/7	
635	10					Auger to 10.0' 10.0'

HIRW DRILLING LOG

HOLE NUMBER IT-AA2-GW-002

PROJECT Plum Brook Ordnance Works/AA2 | INSPECTOR G. Buckner | SHEET 3 OF 3 SHEETS

ELEV. (8)	DEPTH (10)	DESCRIPTION OF MATERIALS (16)	FIELD SCREENING RESULTS (19)	GEOTECH SAMPLE OR CORE BOX NO. (10)	ANALYTICAL SAMPLE NO. (19)	REMARKS (19)
635		Clay Silty (10%) gray Med Med to High Plasticity slightly Damp. Homogeneous	AMN	Geotech Sample	Blow counts	14:20
	11		2.0 ppm	IT-AA2-GW-002 10'-12' - 14:20	2/3 5/4	Raw 2.0', Rec 1.8' loss 0.2'
633	12					Auger to 12.0' 12.0'
		12.2 slight increase in silt content (25%) other Remain the same			2/3	
	13		1.5 ppm		3/5	Raw 2.0', Rec 1.8' loss 0.2'
	14					Auger to 14.0' 14.0'
630	15		1.2 ppm		1/2 3/3	Raw 2.0', Rec 1.7' loss 0.2'
629	16					Auger to 16.0' 16.0'
		16.4'				14:35
628	17	Clay Gravel (shale) (20%) med to fine grain Soft Slightly Damp to Damp Gray	1.8 ppm	Geotech Sample IIAA2-GW-002 14:35, 16'-18'	1/2 4/7	Raw 2.0' Rec 1.8' Loss 0.2'
627	18					Auger to 18.0' 18.0'
		18.3				14:40
626	19	Gravel (Fine to med grained shale) Clay Dry to slightly Damp. Stiff	0.8 ppm		5/10 50-5 inches	Raw 1.5' Rec 1.5' Loss 0.0'
		Spoon Refusal 19.5'				14:50
		19.5' T.D. of Hole.				
625	20					

PROJECT Plum Brook Ordnance Works / AA-2 | HOLE NO. IT-AA2-GW-002

HTRW DRILLING LOG

DISTRICT: USACE / Nashville		HOLE NUMBER: IT-AA3-GW-002
1. COMPANY NAME: IT Corp	2. DRILL SUBCONTRACTOR: Belasco Drilling	SHEET 1 OF 3 SHEETS
3. PROJECT: AA3 / Plum Brook Ordnance Works	4. LOCATION: Sandusky, Ohio	
5. NAME OF DRILLER: Allen Dudley / Greg Conard	6. MANUFACTURER'S DESIGNATION OF DRILL: Diedrich 50	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: Diedrich 50, 8.25" HSA, 2" x 2' SS. Split Spoon, 140 lb Hammer	8. HOLE LOCATION: See sketch	
	9. SURFACE ELEVATION: 635.0 (From Topo)	
	10. DATE STARTED: 9/18/97	11. DATE COMPLETED: 9/18/97
12. OVERBURDEN THICKNESS: unknown	15. DEPTH GROUNDWATER ENCOUNTERED: ~8.0	
13. DEPTH DRILLED INTO ROCK: None	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: 5.75 on 10/4/97	
14. TOTAL DEPTH OF HOLE: 17.0	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA	

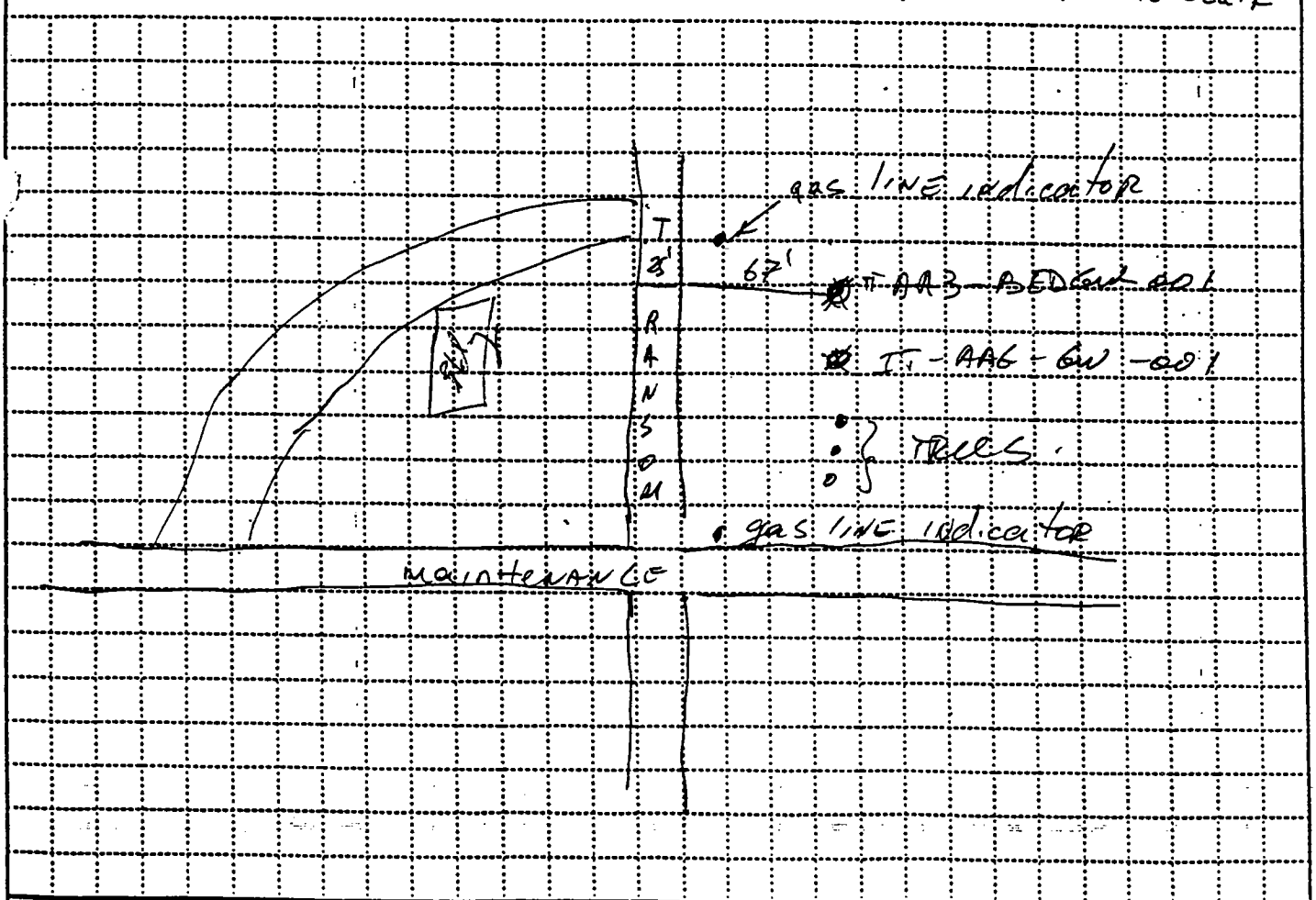
18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
3	X		NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
						NA %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
		X		Greg Buckner / Elkhumsky

LOCATION SKETCH/COMMENTS

SCALE: Not to Scale



PROJECT	HOLE NO.
AA3 / Plum Brook Ordnance Works	IT-AA3-GW-002

ENG FORM 5056-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG

PROJECT	INSPECTOR	HOLE NUMBER	SHEET
~~IT CORP~~ Plum Brook Ordnance	Ed Kanensky	IT-AA3-GW-002	1 of 3

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	REMARKS (g)
		Top soil	HNU	2		10% recovery
		Silty sand	ppm	6		
		Black		6		
	1	dry	Ø	8		
		Loose				
	2					
		Silty Clay	2 ppm	2		50% recovery
		Low plasticity		3		
		Medium dense		14		
		Brown				
	3	~~damp~~ slightly damp		13		
	4				4.0'	
		Clayey silt	4 ppm	2	Geotech sample	100% recover
		Medium ~~low~~ plasticity		3	Sample #	
		Loose		5	IT-AA3-GW-002	
	5	Yellowish brown		6	4'-6'	
		moist			9-13-97	
	6				6.0'	
		Clayey silt	2 ppm	2		
		Medium plasticity		3		
		Yellowish brown		1		
	7	Loose		4		
		moist				
	8				8.0'	
		Clayey silt	4 ppm	2	Geotech sample	50% recover
		Medium plasticity		2	Sample #	
		Some fine sand		4	IT-AA3-GW-002	water table
	9	Yellowish brown		5	8'-10'	at 10'
		Loose				
		Saturated				

HTRW DRILLING LOG

HOLE NUMBER: IT-AA3-GW-002

PROJECT:

INSPECTOR:

SHEET 3 OF 3 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	REMARKS (g)
		Silty sand	2 ppm	4		50% recovery
		Fine		4		
		Loose		4		
		Low plastisity		4		
	11	Yellowish Brown				
		wet				
	12				12'	
		Clayey silt		1		90% recovery
		Medium plastisity	10 ppm	1	Geotech sample	
		Grey		2	sample	
	13	Saturated		3	IT-AA3-GW-002 12'-14'	
	14				14'	
		Same as above	2 ppm	1		100% recovery
				2		
				3		
	15			4		
	16					
	17	BOH @ 17				
	18	BOH @ 18'				
	19					

PROJECT:

HOLE NO. IT-AA3-GW-002

HTRW DRILLING LOG

DISTRICT: USACE / Nashville		HOLE NUMBER: IT-AA1-BEDGW-001
1. COMPANY NAME: IT Corp	2. DRILL SUBCONTRACTOR: Belasco Drilling	SHEET 1 OF 8
3. PROJECT: AA1 / Plum Brook Ordnance Works	4. LOCATION: Sandusky, Ohio	
5. NAME OF DRILLER: Allen Dudley	6. MANUFACTURER'S DESIGNATION OF DRILL: Diedrich D 120	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: Diedrich D 120, Crawler; 12 1/4" ID HSA, 2 1/2" SS Split Spoon, 140 lb Hammer 11" Roller Cone Bit, 3" x 10" Core Barrel, 375 Ingersoll Rand Air Compressor	8. HOLE LOCATION: See sketch	
	9. SURFACE ELEVATION: 642.00 / (From Topo)	
	10. DATE STARTED: 9/8/97	11. DATE COMPLETED: 9/24/97
12. OVERBURDEN THICKNESS: 23.1	15. DEPTH GROUNDWATER ENCOUNTERED: 19.8' 1st encounter in Overburden / ~55 C	
13. DEPTH DRILLED INTO ROCK: 42.9	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: 30.41 on 10-5-97	
14. TOTAL DEPTH OF HOLE: 66.0	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA	

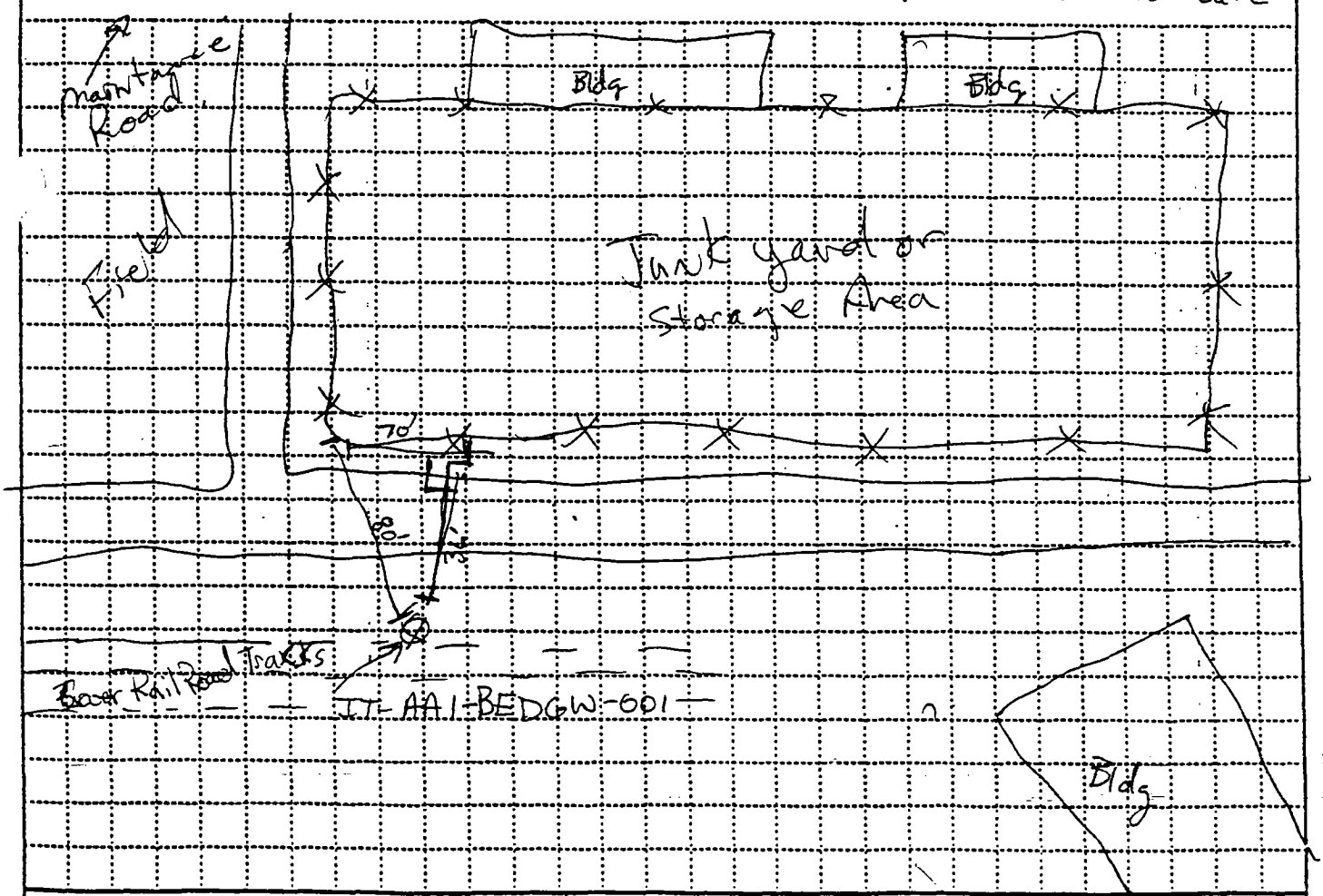
18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
2	X		

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
		X		Greg Buckner /

LOCATION SKETCH/COMMENTS

SCALE: Not to Scale



PROJECT		HOLE NO.
AA1	/ Plum Brook Ordnance Works	IT-AA1-BEDGW-001

ENG FORM 5056-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG

PROJECT	INSPECTOR	HOLE NUMBER	SHEET
AAI/Plum Brook Ordnance Works	G. Bickner	GW-001	2 OF 2 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	REMARKS (g)
		Grassy Surface 0.2'	Hau			16:35
		SAND Sdy (40%) Dark br. Very Fine grained Dry to slightly Damp. lo to V lo.			3/3	Sample Thru 4'/4 JD Augers, Using 2"x2' Split Spoon (SS)
	1		2.2 ppm		4/5	Ran: 2.0' Rec 1.0' Loss 1.0'
	2	2.0' Becoming Orange Brown				Auger to 2.0' 2.0'
		3.0'			5/7	Ran 2.0' Rec 1.6' SS 0.6
	3	SILT Sdy (15%) Very F grn Black low Pl. lo	2.0 ppm		7/8	Has a Burn smell.
	4	4.0 Becoming Brown				Auger to 4.0' 4.0'
					2/3	Ran 2.0' Rec 1.7 Loss 0.3
	5	5.2'	1.2 ppm		4/5	
		SILT Cly (40%) Slightly Damp mottled Orange br + gray Med Pl.				
	6					Auger to 6.0' 6.0'
		6.5' Decreasing Clay Content (10%)		~~Geotech Sample~~	2/2	Ran 2.0' Rec 1.2 Loss 0.8
	7		0.8 ppm		2/3	
	8	8.0'				Auger to 8.0' 8.0'
		Silt Sdy V F grn Orange Brown + gray lo Slight Damp to Damp Low to Non Pl. 9.0'			3/5	Ran 2.0' Rec 2.0' Loss 0.0
	9	Silt Cly (20%) Low Pl. Gr Med.	0.2 ppm		6/7	
	10					Auger to 10.0' 10.0'

PROJECT: AAI/Plum Brook Ordnance Works

HOLE NO.: IT-AAI-BEDGW-001

HTRW DRILLING LOG

HOLE NUMBER: GW-001

PROJECT: AA1/Plum Brook Ordnance Works

INSPECTOR: G. Buckner

SHEET 3 OF 3 SHEETS 8

ELEV. (10)	DEPTH (10)	DESCRIPTION OF MATERIALS (10)	FIELD SCREENING RESULTS (10)	GEOTECH SAMPLE OR CORE BOX NO. (10)	CHARACTERISTIC SAMPLE NO. (10)	REMARKS (10)
		SILT ~~Sty~~ Low Pl. V F Gra		Geotech Sample	Blow Counts	
			1.0 PPM	Sample # IT-AA1-BEDGW-001 10'-12' ~~1850~~ 1650	3/6 7/8	Raw 2.0' Rec 1.5 Loss 0.5
	11					
	12	12.2				Auger to 12.0' 12'
		Clay Sty G mod to High Pl. Homogeneous			2/3	Raw 2.0' Rec 2.0' loss 0.0'
	13		0.0 PPM		4/4	
	14					Auger to 14.0' 14.0'
			0.5 PPM		2/3 3/4	Raw 2.0' Rec 2.0' loss 0.0'
	15					
	16					Auger to 16.0' 16.0'
			0.0 PPM		3/3 5/5	Raw 2.0 Rec 2.0' loss 0.0'
	17					
	18			18.0		Auger to 18' 18.0'
		18.5'		Geotech Sample		
		Clay Gvl (slate) F gvl mod to High Pl.	0.0 PPM	Sample # IT-AA1-BEDGW-001 (8720) 19'-20'	2/2 4/8	Raw 2.0' Rec 2.0 loss 0.0
	19					
	20	19.8' Recovery MSF		20.0		

PROJECT: AA1/Plum Brook Ordnance Works

HOLE NO. IT-AA1-BEDGW-001

HTRW DRILLING LOG

PROJECT AAI/Plum Brook Ordnance Works	INSPECTOR G. Buckner	HOLE NUMBER GIC-001
		SHEET 4 OF SHEETS 8

ELEV. (10)	DEPTH (10)	DESCRIPTION OF MATERIALS (10)	FIELD SCREENING RESULTS (10)	GEOTECH SAMPLE OR CORE BOX NO. (10)	ANALYTICAL SAMPLE NO. (10)	REMARKS (10)
		SILT Gravel Dry to Slightly Damp. Stiff low Plasticity moist to wet	HNU		Blow Counts	
					6/8	Ran [redacted] 2.0' Rec 1.8' Loss 0.2'
	21		0.8 ppm		19/11	
		22.0'				Auger to 22.0' 22.0'
	22	Gravel Fine to Med.	0.5 ppm		5/38 50/inch	[redacted] [redacted] Ran [redacted] 1.1' Rec 1.1' Loss 0.0' 1740
	23	Spoon Refusal 23.1				
		Shale (siltstone) grey, slightly weathered slightly damp soft – moderately hard	ppm 0.0			Continued by Ed Ranewski 80% recovery ~~Start 0900~~ Finished 1000
	24					
	25					
	26					
	27					
	28					
	29					
	30					

HTRW DRILLING LOG

PROJECT	INSPECTOR	HOLE NUMBER
PLum Brook Ordnance Work	E. Kanwsky	GW-001
		SHEET 5 OF 8 SHEETS

ELEV. (ft)	DEPTH (ft)	DESCRIPTION OF MATERIALS (ft)	FIELD SCREENING RESULTS (ft)	GEOTECH SAMPLE OR CORE BOX NO. (ft)	ANALYTICAL SAMPLE NO. (ft)	REMARKS (ft)
	31	Shale (siltstone) weathered grey ~~[illegible]~~ damp soft- moderately hard	0 ppm			Start- 0900 Finished- 1000
	32					
	33					
	34					
	35	Shale (siltstone) slightly weathered grey soft- to moderately hard ~~[illegible]~~ wet Interbedded w/clay medium plasticity grey ~~[illegible]~~ wet	0 ppm			70% recovery St 1030 Finished 1200 ~~[illegible]~~ Sample stick to the core barrel Water Table @ 35'
	36					
	37					
	38					
	39					

PROJECT

HOLE NO. IT-AA1-BEDGW-001

HTRW DRILLING LOG

PROJECT	INSPECTOR	HOLE NUMBER
		SHEET 6 OF 6 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	REMARKS (g)
		Shale (siltstone) w/fossils slightly weathered moderately hard gray, dry				start 1500 stop 1800 100% recovery
	41					
	42					
	43					
	44					
	45					
	46					
	47	Shale (siltstone) slightly weathered moderately hard gray, dry				100% start 1510 Finished 1810 3 feet
	48					
	49					

PROJECT HOLE NO.

HTRW DRILLING LOG

HOLE NUMBER: AAI-BEDGW-001

PROJECT: Plum Brook Ordnance

INSPECTOR:

SHEET 7 OF 7 SHEETS 8

ELEV. (8)	DEPTH (9)	DESCRIPTION OF MATERIALS (10)	FIELD SCREENING RESULTS (11)	GEOTECH SAMPLE OR CORE BOX NO. (12)	ANALYTICAL SAMPLE NO. (13)	REMARKS (14)
		shale (siltstone) ~~grey~~ slightly weathered moderately hard				0910 - started 1210 - finished 100% recovery
	51	grey w/brown surface ~~clay~~ slightly damp petroleum odor				strong petroleum odor from 52' to 54'
	52					Rainbow thin on surface
	53	siltstone (sandstone) slightly wheathered moderately hard dry brownish grey				
	54					
	55	siltstone (sandstone slightly wheathered moderately hard ~~brown~~ - moist - wet petroleum odor brownish grey				
	56					
	57					
	58					
	59					

PROJECT

HOLE NO. IT-AAI-BEDGW-001

HTRW DRILLING LOG

HOLE NUMBER: AAI-BEDGW-001

PROJECT: Plum Brook Ordnance

INSPECTOR:

SHEET 2 OF 8 SHEETS

ELEV. (10)	DEPTH (10)	DESCRIPTION OF MATERIALS (10)	FIELD SCREENING RESULTS (10)	GEOTECH SAMPLE OR CORE BOX NO. (10)	ANALYTICAL SAMPLE NO. (10)	REMARKS (10)
		Siltstone (sandstone) slightly wheathered moderately hard brownish grey				1500 - stopt 1900 - finished 90% recovery petroleum odor WT - at 62'
	61	dry				
		Siltstone (sandstone) fossiliferous moderately wheathered				
	62	grey, moderately hard saturated				
		Siltstone (sandstone) fossiliferous				
	63	slightly wheathered moderately hard grey				
	64	saturated				
	65					
	66	BOH at 66'				
	67					
	68					
	69					

PROJECT

HOLE NO. IT-AAI-BEDGW-001

HTRW DRILLING LOG

DISTRICT: USACE / Nashville	IT AA2	HOLE NUMBER: IT-AA2-BEDGW-001
1. COMPANY NAME: IT Corp	2. DRILL SUBCONTRACTOR: Belasco Drilling	SHEET 1 OF SHEETS
3. PROJECT: AA2 / Plum Brook Ordnance Works	4. LOCATION: Sandusky, Ohio	
5. NAME OF DRILLER: Allen Dudley	6. MANUFACTURER'S DESIGNATION OF DRILL: Diedrich D-120	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: Diedrich D-120 (Drill Rig) 12 1/4 HSA ID, SS Split Spoon, 140lb Hammer, [illegible] Air Compressor	8. HOLE LOCATION: See sketch	
	9. SURFACE ELEVATION: 640.0 / (From Topo)	
	10. DATE STARTED: 9/6/97	11. DATE COMPLETED: 10/2/97
12. OVERBURDEN THICKNESS: 18.8'	15. DEPTH GROUNDWATER ENCOUNTERED: 34.0'	
13. DEPTH DRILLED INTO ROCK: 25.2'	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: 2.48 on 10-5-97	
14. TOTAL DEPTH OF HOLE: 44.0'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA	

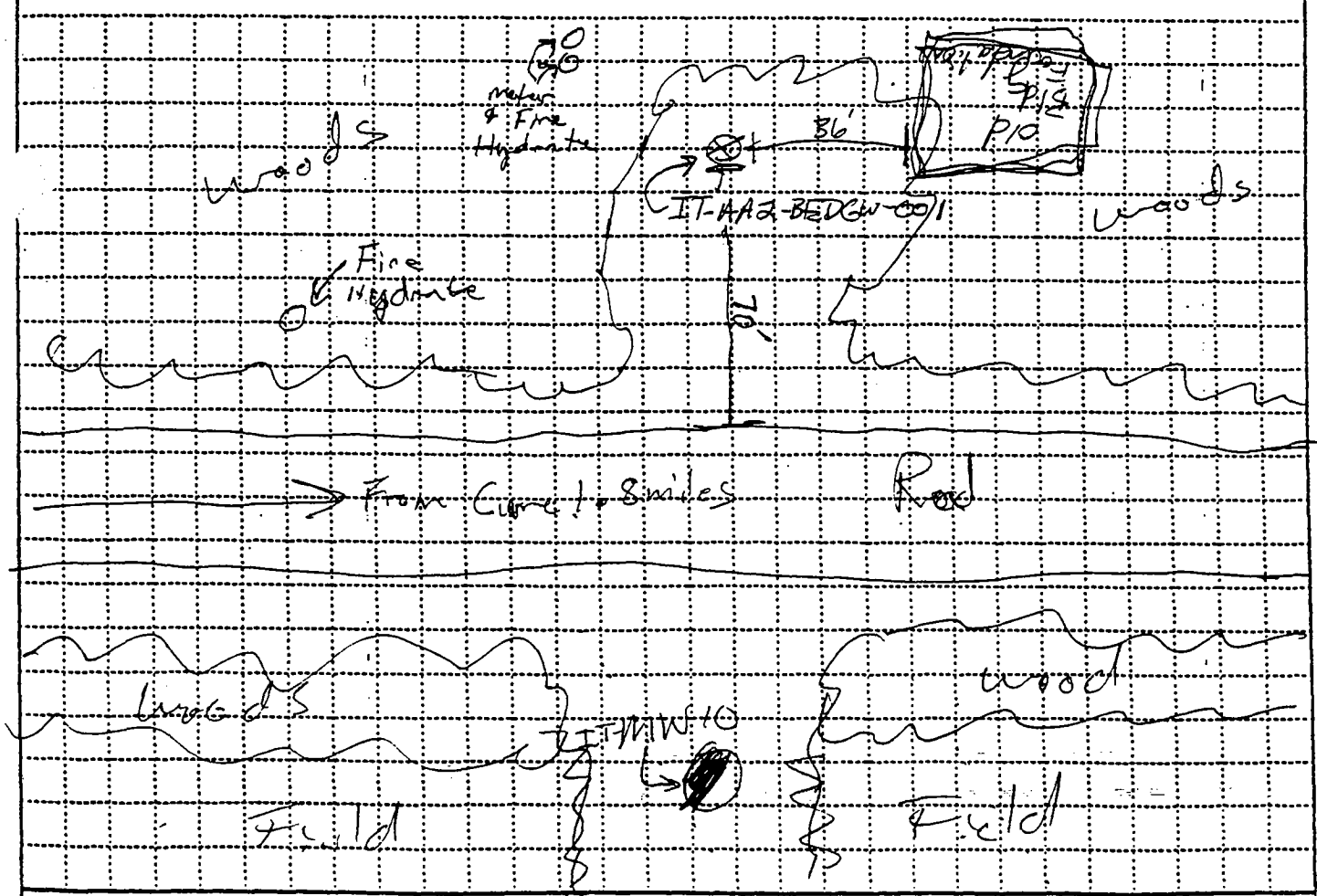
18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
2	X		1

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
		X		Greg Buckner / [signature]

LOCATION SKETCH/COMMENTS

SCALE: Not to Scale



PROJECT: / Plum Brook Ordnance Works

HOLE NO. IT-AA2-BEDGW-001

HTRW DRILLING LOG

HOLE NUMBER: GW-001

PROJECT: AA2 / Plum Brook Ordnance Works INSPECTOR: G. Duckner SHEET 2 OF 2 SHEETS

ELEV. (8)	DEPTH (D)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (F)	GEOTECH SAMPLE OR CORE BOX NO. (E)	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
		Leaves + organics 0.2'	HNU		Blow counts	Sample Thru 4 1/4 ID HSA, Using 2' x 2" SS split Spoon. 140 lb Hammer.
		Silt Sdy V F gra br + Orangish br Mottled 0.7 to low Pl. Becoming ~~Hard~~ stf. ML	6.0 ppm	-	2/9 9/10	RAN: 2.0' REC: 1.0' Loss: 1.0'
	1					
	2	2.2'				Auger to 2.0' 2.0'
		SILT Layering Present Mottled Brown + yellow br. Dry Sdy (Very Little) Dry lo Pl. med ML	0.0 ppm		6/6 9/8	RAN 2.0' REC 1.0' Loss 1.0'
	3					
	4	4.0' Becoming mottled + layered Orange br + gr				Auger to 4.0' 4.0'
	5	5.5' mst	4.6 ppm		5/6 7/10	Ran 2.0' Rec 1.8' Loss 0.2'
	6	6.0'				Auger to 6.0' 6.0'
		SILT Br Dry to mst lo Pl. med ML	1.0 ppm		5/13 11/9	Ran 2.0' Rec 2.0' Loss 0.0'
	7					
	8	7.8' Becoming mst to wet				Auger to 8.0' 8.0'
		8.5'			3/3	Ran 2.0'
		SILT ~~wet~~ 66 wet med Gr. 68 low ~~to med Pl~~ Pl.	2.2 ppm		2/3	Rec 2.0' Loss 0.0'
	9					
	10					Auger to 10' 10.0'

PROJECT: AA-2 / Plum Brook Ordnance Works HOLE NO. IT-AA2-BEDGW-001

HTRW DRILLING LOG

HOLE NUMBER GW-001

PROJECT AA2/Plum Brook Ordnance Works | INSPECTOR G. Buck | SHEET 3 OF 3 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	REMARKS (g)
		Silt Gr Homogeneous Wet to most low to med Plast. ML 12.2'	HNU 2.0 ppm	Geotech Sample Sample # IT-AA2-BEDGW-001 10'-12' 14:40	3/2 3/4	Ran 2.0' Rec 1.6' Loss 0.4' Auger to 12.0' 12.0'
		Silt Clay (30%) Firm Med Gray Damp med Pl. ML 13.5'	4.1 ppm		2/2 3/4	Ran 2.0' Rec 1.8' Loss 0.2' Auger to 14.0' 14'
		Silt Clay (30%) gravel (Shale) Fgra Gray Damp to most med Pl. 14.0' No gravel Present.	4.0 ppm		2/3 5/5	Ran 2.0' Rec 1.7' Loss 0.3 Auger to 16.0' 16'
		Clay Sily Gravel Present (Shale) Gr med to Dense Most to Dmp. 17.0' 18.8'	3.8 ppm 10.2 ppm	Geotech Sample Sample # IT-AA2-BEDGW-001-16'-18' (15:00)	3/4 8/10 8/50/4inch (1510)	Ran 2.0' Rec 1.6 Loss 0.4 Auger to 18' 18.0' Spoon Refusal at 18.8' 1 mes to na in the End of Spoon
		Spoon & Auger Refusal				

PROJECT AA2/Plum Brook Ordnance Works | HOLE NO. IT-AA2-BEDGW-001

HTRW DRILLING LOG

PROJECT	INSPECTOR	HOLE NUMBER
Plum Brook Ord. Ammunition Works	ED Kanevsky	SHEET 4 OF 4 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	REMARKS (g)
		Siltstone				start 1025
		slightly wheathered				Finished 1105
		dry				90% recovery
	21	grey				
		soft-to moderately hard				
	22					
	23					
	24					
	25					
	26					
	27					
	28					
	29					

PROJECT

HOLE NO. IT-AA2-BED Gw-001

HTRW DRILLING LOG

PROJECT	INSPECTOR	HOLE NUMBER
Pleasant Grove Ordnance	ED KANESKY	SHEET 5 OF 5 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	REMARKS (g)
		~~siltstone~~ Limestone moderately weathered moderately hard ~~no~~ damp				Start 1310 End 1400 100% recovery
	31	gray				
		~~siltstone~~ Limestone moderately weathered moderately hard moist gray				
	32					
	33					
	34	~~siltstone~~ Limestone moderately weathered moderately hard wet gray				
	35					
	36					
	37					
	38					
	39					

PROJECT

HOLE NO. ~~AA~~ IT-AA2-BED GW-001

HTRW DRILLING LOG

HOLE NUMBER

PROJECT: Plum Brook Ordnance Works

INSPECTOR: ED Kanevsky

SHEET 6 OF 6 SHEETS

ELEV. (0)	DEPTH (0)	DESCRIPTION OF MATERIALS (0)	FIELD SCREENING RESULTS (0)	GEOTECH SAMPLE OR CORE BOX NO. (0)	ANALYTICAL SAMPLE NO. (0)	REMARKS (0)
		Siltstone (Limestone?) Slightly weathered moderately hard moist grey				Start 1350 END 1530 100% recovery
	41					
	42					
	43	Limestone slightly weathered moist, grey moderately hard				
	44					
	45		BOH @ 45			
	46					
	47					
	48					
	49					

PROJECT

HOLE NO. PT-AAL-BEDGW-001

HTRW DRILLING LOG

DISTRICT: USACE / Nashville		HOLE NUMBER: IT-BG8-BEDGW-001
1. COMPANY NAME: IT Corp	2. DRILL SUBCONTRACTOR: Belasco Drilling	SHEET 1 OF 4 SHEETS
3. PROJECT: BG3 / Plum Brook Ordnance Works	4. LOCATION: Sandusky, Ohio	
5. NAME OF DRILLER: Allen Dudley	6. MANUFACTURER'S DESIGNATION OF DRILL: Diearich D-120	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: Diearich D-120 (Drill Rig) 12" ID HSA, 2" x 2" SS Split Spoon, 140 lb Hammer, Tooth Roller Cone bit, 2" x 10' Core Barrel, 825 Ingersoll Rand Air Compressor	8. HOLE LOCATION: See sketch	
	9. SURFACE ELEVATION: 690 (From Topo)	
	10. DATE STARTED: 9/4/97	11. DATE COMPLETED: 9/20/97
12. OVERBURDEN THICKNESS: ~~3.5'~~ 3.0'	15. DEPTH GROUNDWATER ENCOUNTERED: 9-10' GS'	
13. DEPTH DRILLED INTO ROCK: 18.0	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: 2.5' GS - 12 hours	
14. TOTAL DEPTH OF HOLE: 21.0	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA	

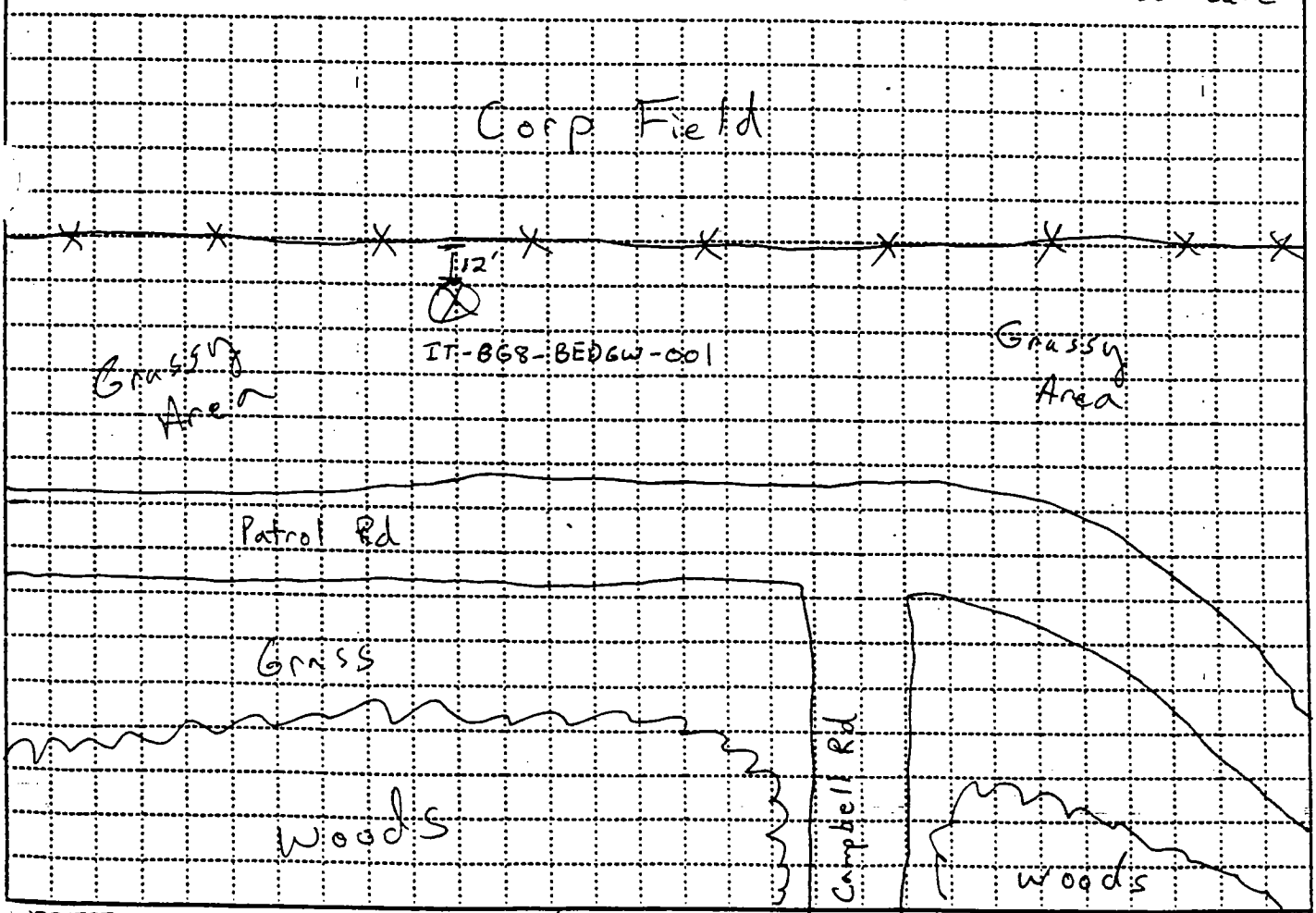
18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
1	X		1

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY %
NA						

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
		X		Greg Buckner / [signature]

LOCATION SKETCH/COMMENTS

SCALE: Not to Scale



PROJECT: BG3 / Plum Brook Ordnance Works | HOLE NO. IT-BG8-BEDGW-001

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG

HOLE NUMBER: MW001

PROJECT: Plum Brook Ordnance Work | INSPECTOR: G. Buckner | SHEET 2 OF 4 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	REMARKS (g)
690.0		Grassy Surface 0.2'	HNU		counts	Simple Thru 4 1/4" ID Augers using 2" ID ss split spoon.
		SILT sdy br mst F gra well sorted	2.0 ppm	0'-2' IT-B68-BEDGW-001 (0930)	2/2 2/5	Run 2.0 Rec 1.0 Lost 1.0
	1	1.5'				
688.5		Clay sdy br mst F gra well sorted lean				Auger to 2'
687.0	2		1.0 ppm		4/50/5.5"	
		3.0' Top of Weathered Rock				
	3	Auger Refusal 3.5'				
685.5						CONTINUED BY ED KANEVSKY 9/19/97
	4	Drill thru no core collected				Log from Cuttings because Rig cannot get core barrel
	5	~~[illegible]~~			~~[illegible]~~	rock is to shallow
		Shale w/ ~~Quart~~ mineral intrusions				
	6	according to cuttings				
	7	Shale (siltstone) slightly weathered grey moderately hard moist				Water @ 7'-8' Begin Casing
	8					
	9	Shale weathered grey moist				
		~~moist~~ Shale				
	10	SAND STONE				

PROJECT: Plum Brook Ordnance Works

HOLE NO. LT-B68-BEDGW-001

HTRW DRILLING LOG

HOLE NUMBER

PROJECT: Plum Brook Ordnance Work

INSPECTOR: ES Kanevsky

SHEET 3 OF 3 SHEETS 4

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	REMARKS (g)
		Slightly weathered gray, ~~[illegible]~~ moderately hard moist ~~[illegible]~~				5' recovery
	11					50% water table ?
	12	No recovery ~~core~~				coring was very fast
	13					
	14					coring was very fast
	15					
	16					
	17	Shale (siltstone) weathered, moderately hard grey wet				100% recovery
	18					
	19					

PROJECT: Plum Brook Ordnance Work

HOLE NO. IT-BG-8-BEDG-W-001

HTRW DRILLING LOG

HOLE NUMBER: BG8-B01

PROJECT: Plum Brook Ordnance Works

INSPECTOR: Ed Kanevsky

SHEET 4 OF 4 SHEETS

ELEV. (ft)	DEPTH (ft)	DESCRIPTION OF MATERIALS (ft)	FIELD SCREENING RESULTS (ft)	GEOTECH SAMPLE OR CORE BOX NO. (ft)	ANALYTICAL SAMPLE NO. (ft)	REMARKS (ft)
		Shale (siltstone) slightly weathered grey, moderately wet				
	21	BOH @ 21'				
	22					

PROJECT

HOLE NO. IT-BG8-BEDRW-001

HTRW DRILLING LOG

DISTRICT: USACE / Nashville	IT-MNTA-BED GW-001	HOLE NUMBER
1. COMPANY NAME: IT Corp	2. DRILL SUBCONTRACTOR: Belasco Drilling	SHEET 1 OF 8 SHEETS
3. PROJECT: MNTA / Plum Brook Ordnance Works	4. LOCATION: Sandusky, Ohio	
5. NAME OF DRILLER: Allen Dudley	6. MANUFACTURER'S DESIGNATION OF DRILL: Diedrich D-120	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: Diedrich D-120 (Drill Rig) 12.25" ID HSA, 2"x3" SS Split Spoon, 140 lb Hammer, 10 inch Roller Cone Bit, 10"x3" Core barrel, 825 Ingersol Rand Air Compressor	8. HOLE LOCATION: See sketch	
	9. SURFACE ELEVATION: 629.0 / (From Topo)	
	10. DATE STARTED: 9/5/97	11. DATE COMPLETED: 9/22/97
12. OVERBURDEN THICKNESS: 24.8'	15. DEPTH GROUNDWATER ENCOUNTERED: 1 overburden water (7.0') / 55.2'	
13. DEPTH DRILLED INTO ROCK: 39.0'	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: 27.77 10-6-97	
14. TOTAL DEPTH OF HOLE: 65.0'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA	

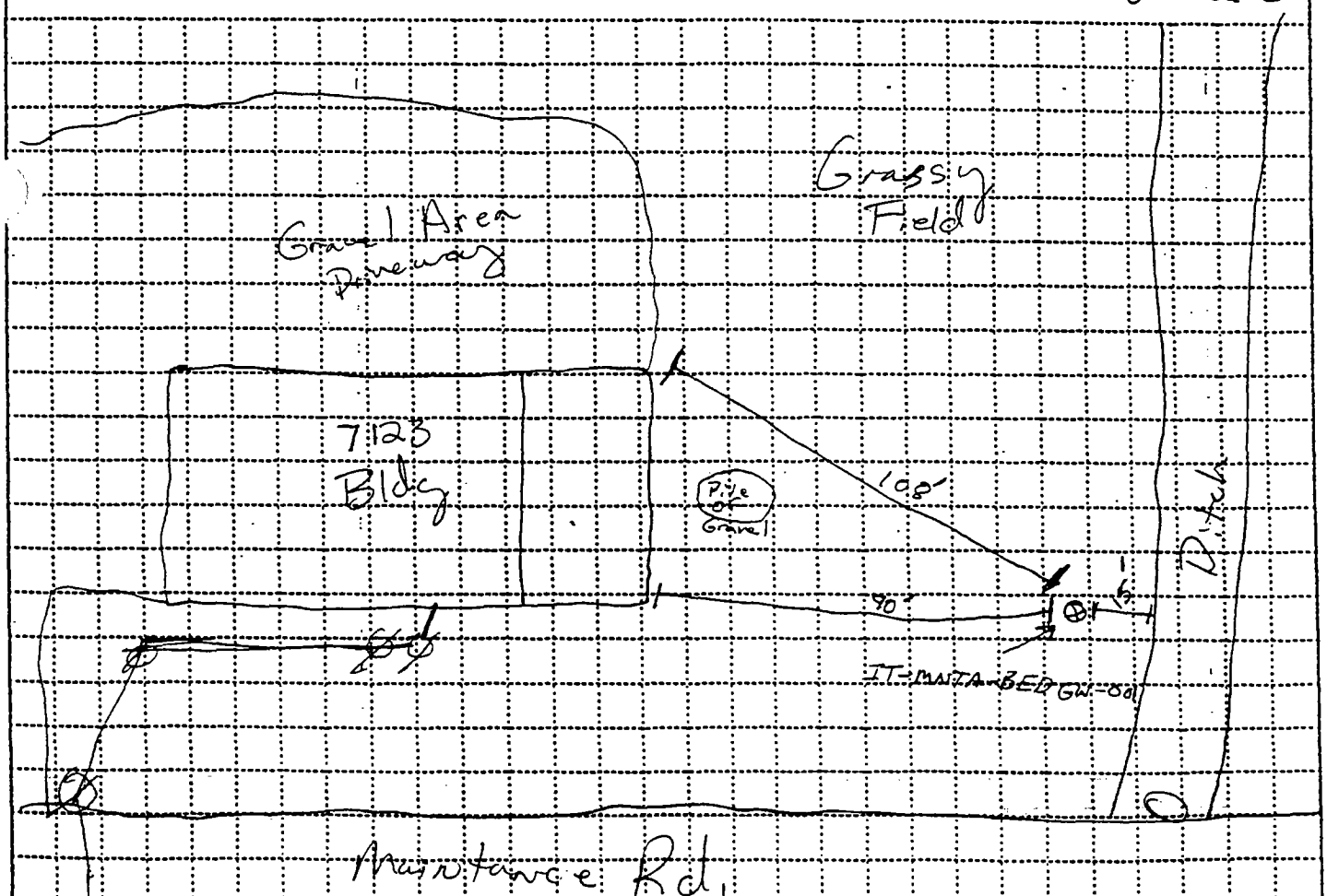
18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
2	X		2

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
		X		Greg Buckner / [signature]

LOCATION SKETCH/COMMENTS

SCALE: Not to Scale



PROJECT	HOLE NO.
MNTA / Plum Brook Ordnance Works	IT-MNTA-BED GW-001

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG

IT - MNTA - BEDGW-001

PROJECT	INSPECTOR	HOLE NUMBER	SHEET
MNTA/Plum Brook Ordnance Works	G. Buckner	BEDGW-001	2 OF 2 SHEETS 8

ELEV. (ft)	DEPTH (ft)	DESCRIPTION OF MATERIALS (ft)	FIELD SCREENING RESULTS (ft)	GEOTECH SAMPLE OR CORE BOX NO. (ft)	ANALYTICAL SAMPLE NO. (ft)	REMARKS (ft)
629.0		Grassy Surface 0.2'	HNU		Blow count	Sample thru 4 1/4 ID augers using 2" ID SS spoon (08:30)
		Silt br (Dark 10 YR) m st s+f ~~Hard~~ 0.6' Low pl loose 0.7'			3/5 7/8	
	1	mL	1.2 ppm			Raw 2.0' Rec 0.8' Loss 1.2'
						Auger to 2'
	2				4/7 9/8	Raw 2.0' Rec 1.4 Loss 0.6
	3	3.2'				
		Silt s+f br (orange ish) dry (and mottled gray) Low to med pl	9.0 ppm			
	4	mL 4.4'				Auger to 4'
		Silt sdy F gra mst to Dry well sorted			2/3 5/7	Raw 2.0' Rec 1.2' Loss 0.8'
	5	mL 5.2'				
		Clay s+f Dry med to High Pl lean mottled (Br, Gray + orange br) Homogeneous	6.8 ppm			
	6	CH				Auger to 6'
		6.5' wet			2/4 4/4	Raw 2.0' Rec 1.6 Loss 0.4
	7	7.0' saturated	9.0 ppm			
	8	8.2'				Auger to 8'
		Silt, wet, F gra, well sorted sdy to saturated. Br mL 8.3				
		Clay mst fat Br CH 8.8'			3/4 7/8	Raw 2.0' Rec 1.6' Loss 0.4'
	9	Silt, wet, F gra, well sorted sdy to saturated. mL 8.9	5.0 ppm			
		Clay mst fat Br CH				Auger to 10'
	10					

PROJECT: MNTA / Plum Brook Ordnance Works | HOLE NO. IT-MNTA-BEDGW-001

HTRW DRILLING LOG

HOLE NUMBER IT-MNTA-BEDGW-001

PROJECT MNTA / Plum Brook Ordnance Works | INSPECTOR G. Buckner | SHEET 3 OF 3 SHEETS

ELEV. (8)	DEPTH (D)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (F)	GEOTECH SAMPLE OR CORE BOX NO. (E)	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
		Clay Silty (10%) lean Stiff mst mottled (Gray, br, orangish br). med. pl. CL 11.8'	HNU 2.8 ppm		Blow Counts 3/6 9/10	Rec 2.0' Rec 2.0' Loss 0.0' Auger to 12'
	12	Clay Fat mst to wet Gray med to high pl. Stiff. Homogeneous		Geotech sample (0930) Sample # IT-MNTA-BEDGW-001 12'-14'	1/3 6/6	Rec 2.0' Rec 1.8' Loss 0.2' Auger to 14'
	13	CH	6.4 ppm			
	14				1/3 5/6	Rec 2.0' Rec 1.8' Loss 0.2' Auger to 16'
	15		9.0 ppm			
	16	16.4				
	17	Clay Shale fragments present Gray Very stiff. mst to wet Fat CL 18' Dry to moist	9.0 ppm		5/7 10/13	Rec 2.0' Rec 1.6' loss 0.4' Auger to 18'
	18	4-5-97 18.4		Geotech sample (0945) Sample # IT-MNTA-BEDGW-001 18'-20'	2/10 11/13	09:10 Rec 2.0' Rec 1.7' Loss 0.3' Auger to 20'
	19	Clay Shale fragments present Gray Very stiff. mst to wet. Fat. 19' Stiff	8.2 ppm			
	20					

PROJECT MNTA / Plum Brook Ordnance Works | HOLE NO. IT-MNTA-BEDGW-001

HTRW DRILLING LOG

HOLE NUMBER: IT-MNTA-BEDGW-001

PROJECT: MNTA / Plum Brook Ordnance Work

INSPECTOR: G. Buckner

SHEET 4 OF 4 SHEETS 8

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	REMARKS (g)
	21	Clay Shale Frag. Present Gray stf Dry to Mst med to high Plasticity Lean to Fat. CL 21.6'	9.6 ppm		7/14 19/24	Ran 2.0' Rec 2.0' Loss 0.0'
	22	Clay Sdy Shale + limestone Frag. Present Lean to Fat Dry to mst. F. Gray to V F Gray. well Sorted				Auger to 22.0'
	23	poor Rec. CL	1.8 ppm	GB ~~1/21~~ 9-5-97 ~~24/20~~	17/21 24/20	Ran 2.0' Rec 0.2' Loss 1.8
	24	24.8'				Auger to 24.0
	25	Shale, weathered Gray Thinly Bedded Dry. spoon Refusal 25.9'	2.2 ppm		6/12 50/5inch	Ran 2.0' Rec 1.2 Loss 0.8
	26	Shale weathered Gray Thinly Bedded. Dry.				Auger to 26.0 Because of spoon refusal we will discontinue samples we will try to auger into weathered shale.
	27					
	28	28' Augers are very hard to turn. (4 1/4 in) Bedrock becoming more competent.				~~28~~
	29					GB ~~We will work 2 more feet then stop~~
	30					Auger to 30' then weathered (Fissil) shale, Drill said it is starting to get hard.

HTRW DRILLING LOG

HOLE NUMBER: IT-MNTA-BED GW-001

PROJECT: MNTA / Plum Brook Ordnance Works

INSPECTOR: G. Brickner

SHEET 8 OF 5 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	REMARKS (g)
		Shale Gray Thinly Bedded Dry.				Logged from cuttings (10:50) Begin Pulling 4 1/4 inch Auger. Will Then Boring with 12 1/4 inch Augers. 11:20 Complete Pulling Augers Begin Boring with 12 1/4. 4 1/4 Auger Beginning to bang down. Must Begin complete Bedrock. Auger to 32.6'
	31					
	32	Shale slightly weathered (siltstone) moderately hard Grey dry				Logging continued by ED KANEVSKY start 1610 End 1705.
	33					
	34					
	35					
	36	Shale slightly-moderately weathered (siltstone) moderately hard Grey dry				
	37					
	38					
	39					
	40					

HTRW DRILLING LOG

HOLE NUMBER: IT-MNTA-BED GW 001

PROJECT: Plum Brook Ordinance Work

INSPECTOR: E Kanevsky

SHEET 8 OF 6 SHEETS

ELEV. (10)	DEPTH (10)	DESCRIPTION OF MATERIALS (10)	FIELD SCREENING RESULTS (9)	GEOTECH SAMPLE OR CORE BOX NO. (8)	ANALYTICAL SAMPLE NO. (9)	REMARKS (9)
		Shale? slightly weathered (siltstone) Hard				Start 0800 End 1330
		Grey ~~[illegible]~~				
	41	clay				
	42					
	43					
	44					
						Start 11 30 9/12/97
						100% recovery
	45					
	46	Shale, slightly weathered, moderately hard dry w/ some intrusion of quartz (mineral) sandstone				
	47					
	48					
	49					

HTRW DRILLING LOG

HOLE NUMBER: IT-MNTA-BEDGW-001

PROJECT: Plum Brook Ordinance Works | INSPECTOR: E. Kanevsky | SHEET 7 OF 7 SHEETS 8

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	REMARKS (g)
		Slate slightly weathered hard Grey, slightly damp w/ quartz? intrusions (mineral) sandstone		H_2S 7 ppm		H_2S - odor from 4 - 10 ppm at well head
	51					
	52					
	53	Shale slightly weathered sandstone hard				
	54	Grey clay ~~w/ quartz? intrusion (mineral)~~				
		Shale slightly weathered ~~Grey~~ Grey, moderately hard slightly damp				
	55					
		Shale slightly weathered w/ fossils Grey, moderately hard wet		H_2S 68 ppm		
	56					
	57	Surface of the core covered w/ black H_2S reaction ~~Rainbow~~ Rainbow sheen on the surface of the core				
	58					
	59					
	60					

PROJECT: P BOW | HOLE NO. IT-MNTA-BEDGW-001

HTRW DRILLING LOG

HOLE NUMBER: IT-MNTA-BEDGW-001

PROJECT: Plum Brook Ordnance Works

INSPECTOR: E. Kanovsky

SHEET 8 OF 8 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	REMARKS (g)
		Shale slightly weathered (siltstone) grey w/black surfaces (HCl reaction), moderately hard wet some fossiles				
	61					
	62	Strong petroleum odor				
	63					
	64	~~BOH @ 64'~~				
	65	65' BOH.				
	66					
	67					
	68					
	69					
	70					

PROJECT: PBOW

HOLE NO. IT-MNTA-BEDGW-001

HTRW DRILLING LOG

DISTRICT: USACE / Nashville		HOLE NUMBER: IT-AA3-BEDGW-001
1. COMPANY NAME: IT Corp	2. DRILL SUBCONTRACTOR: Belasco Drilling	SHEET 1 OF 7 SHEETS
3. PROJECT: AA3 / Plum Brook Ordnance Works	4. LOCATION: Sandusky, Ohio	
5. NAME OF DRILLER: Allen Dudley	6. MANUFACTURER'S DESIGNATION OF DRILL:	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: Failure D120 drilling; 7 1/4" ID HSA 2'x2' Split Spoon Sampler 140 lb hammer 18"/6" Roller Cone Bit 3" x 10' Core Barrel	8. HOLE LOCATION: See sketch	
	9. SURFACE ELEVATION: 635.0 (From Topo)	
	10. DATE STARTED: 9/6/97	11. DATE COMPLETED: 10-5-97
12. OVERBURDEN THICKNESS: 25.9'	15. DEPTH GROUNDWATER ENCOUNTERED: 11.0' (Overburden) / ~44.0 Bedrock	
13. DEPTH DRILLED INTO ROCK: 28.1	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: 20.00 on 10-7-97	
14. TOTAL DEPTH OF HOLE: 54.0	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA	

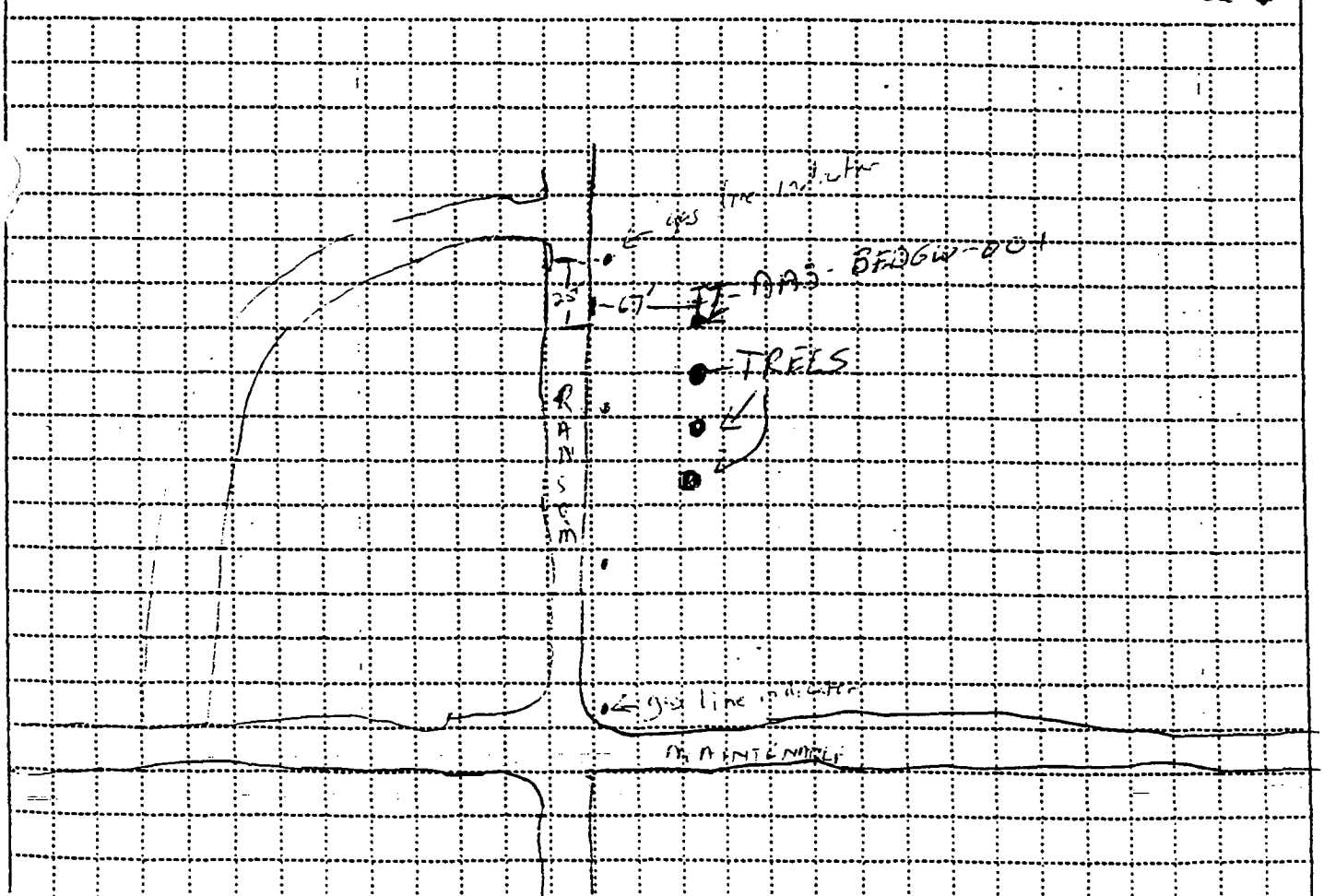
18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
2	X		1

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
						%

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
		X		Greg Buckner / Ed Kunevsky

LOCATION SKETCH/COMMENTS

SCALE: Not to Scale



PROJECT	HOLE NO.
AA2 / Plum Brook Ordnance Works	IT-AA3-BEDGW-001

ENG FORM 5056-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG

PROJECT: Plum Brook Ordnance Works
INSPECTOR: G. Buckner
HOLE NUMBER: GW-001
SHEET: 1 OF 2 SHEETS

ELEV. (ft)	DEPTH (ft)	DESCRIPTION OF MATERIALS (G)	FIELD SCREENING RESULTS (H)	GEOTECH SAMPLE OR CORE BOX NO. (I)	ANALYTICAL SAMPLE NO. (J)	REMARKS (K)
	634.9	Grassy Surface 0.25'	Hnu		Blow Count	Sample thru 4¼" ID augers using 2" ID split spoon. (07:50)
634.0	1	Silt br-dk sl dmp low plasticity ML	PID 26ppm		1/3 3/3	Run 2.0 Rec 1.0 Loss 1.0
	2					Auger to 2' 2.0
633.3		2.7'	PID		3/4	Run 2.0
631.9	3	Gravel (IS) Float wea dry, wht-gr, sd GW 3.1'	12 ppm		26/17	Rec 1.5 Loss 0.5
	4	Cly-Silt (80%) br (orangish) + gr sl dmp mottled, low plasticity ML				Auger to 4' 4.0
	5		PID 14ppm		3/3 3/5	Run 2.0 Rec 1.3 Loss 0.7
629.0	6	(cl ~35%) 6.0' Becoming more clayey				Auger to 6'
	7	ML	PID 22ppm		2/2 3/3	Run 2.0 Rec 1.5 Loss 0.5
627.0	8	(cl ~10%) 8.0 Decreasing cl content		8.0 Geotech Sample ~~IAB~~ Sample # IT-AA3-BED GW-001 8'-10'		Auger to 8' 8.0
626.0	9	ML	PID 8ppm		2/3 3/7	Run 2.0 Rec 2.0 Loss 0.0
	10			10.0		Auger to 10' 10.0

PROJECT: AA3 / Plum Brook Ordnance Works
HOLE NO.: IT-AA3-BEDOW-001

HTRW DRILLING LOG

PROJECT: AA3 \ Plum Brook Ordnance Works
INSPECTOR: G. Buckner
HOLE NUMBER: GW-020-1
SHEET 3 OF 3 SHEETS 2

ELEV. (ft)	DEPTH (ft)	DESCRIPTION OF MATERIALS (ft)	FIELD SCREENING RESULTS (ft)	GEOTECH SAMPLE OR CORE BOX NO. (ft)	ANALYTICAL SAMPLE NO. (ft)	REMARKS (ft)
624.9		Cly-silt (85%) gr, homogeneous mst cl ~ 15% soft ML 11.0 Saturated	PID 0 ppm	-	2/3 2/2	Run 2.0 Rec 2.0 Loss 0.0
	11					
	12					Auger to 12' 12.0
	13		PID 6 ppm		2/3 2/2	Run 2.0 Rec 1.9 Loss 0.1
	14					Auger to 14' 14.0
620.6		14.4 Cly-silt gr, med plasticity clay ~ 25% soft ML 15.9	PID 2 ppm		0/1 2/3	Run 2.0 Rec 1.7 Loss 0.3
	15					
619.1	16	Cly-silt ~ clay ~ 15% sl dmp soft gr, homogeneous ML			NA	Auger to 16' 16.0 Run 2.0 Rec 0.0 Loss 2.0 missed 2' of sampl
	17					
	18					Auger to 18' 18.0
	19		PID 0 ppm		2/2 2/3	Run 2.0 Rec. 2.0 Loss 0.0
	20					Auger to 20' 20.0

PROJECT: AA3 \ Plum Brook Ordnance Works
HOLE NO.: FT-AA3-DED6N-001

HTRW DRILLING LOG

PROJECT: PlumBrook Ordnance Works
INSPECTOR: G. Buckner
HOLE NUMBER: GW 001
SHEET 4 OF 4 SHEETS 7

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	REMARKS (g)
611.4		Cly-Silt, soft cl ~ 15% gr, homogeneous sl dmp 208 v soft	PID 0ppm		1/2 2/2	Run 2.0 Rec 2.0 Loss 0.0
	21					
	22			22.0		Auger to 22' 22.0
612.2		22.8		Geotech Sample ~~SAP~~ 2 sample # IT-AA3-BEDGW-001 22'-24'	3/3 3/10	Run 2.0 Rec 2.0 Loss 0.0
	23	Clay ~ (90%) Silt ~ (10%) stiff gr, homogeneous med plasticity CL 24.0	PID 2ppm			
611.0	24			24.0		Auger to 24' 24.0
		Clay med plasticity Very stiff CL sl dmp fine gravels (well rounded) present, s 25.5	PID 6ppm		3/23 26/50/5"	Run 1.9 Rec 1.9 Loss 0.1
609.5		Clay, med plasticity, v st, sl dmp, gr, fine + coarse gravels present CL 25.9				
609.1	26	Spoon refusal on bedrock				Auger to 26' 26.0 Auger refusal at 26', (0958) - Begin Pulling 4 1/4" ID augers -
	27	Shale moderately weathered soft - to moderately hard damp grey				Continue by ED KAWESKY
	28					

PROJECT: AA3 \ PlumBrook Ordnance Works
HOLE NO.: IT-AA3-BEDGW-001

HTRW DRILLING LOG

HOLE NUMBER: IT-AA3-BEDGW-001

PROJECT: Plum Brook Ordnance | INSPECTOR: ED Kanesky | SHEET 5 OF 7 SHEETS

ELEV. (ft)	DEPTH (ft)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (g)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	REMARKS (g)
		SHALE				
		Moderately wheathered				
		soft- to moderately hard				
	31	grey				
		damp				
	32					
	33					
		~~siltstone~~ Limestone				
		moderately wheathered				
		grey, moderately hard				
	34	moist				
		~~Siltstone~~ Limestone				
		slightly wheathered				
	35	soft- to moderately hard				
		grey				
		dry				
	36					
	37					
	38					
	39					

PROJECT: AA3 / Plum Brook Ordnance Works | HOLE NO. IT-AA3-BEDGW-001

HIRW DRILLING LOG

PROJECT: Plum Brook Ordnance
INSPECTOR: ED RANEVSKY
HOLE NUMBER: I-AA3-BEDGW-001
SHEET 6 OF 6 SHEETS 7

ELEV. (8)	DEPTH (9)	DESCRIPTION OF MATERIALS (10)	FIELD SCREENING RESULTS (11)	GEOTECH SAMPLE OR CORE BOX NO. (12)	ANALYTICAL SAMPLE NO. (13)	REMARKS (14)
		~~Siltstone~~ Limestone moderately weathered soft-to moderately hard grey dry				Start 1530. Finish 1720 100% Recovery
	41					
	42					
	43					
	44	~~Siltstone~~ Limestone slightly-moderately weathered soft-moderately hard grey wet				Start 0945 Finished 1000 100% recover
	45					
	46					
	47					
	48					
	49					

PROJECT: AA3 / Plum Brook Ordnance Works
HOLE NO. I-AA3-BEDGW-001

HTRW DRILLING LOG

PROJECT	INSPECTOR	HOLE NUMBER / SHEET
Plum Brook Ordnance Works	Ed Kanevisky	IT-AA3-BEDGW-001 / of 7 sheets

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	REMARKS (g)
		~~Siltstone~~ Limestone moderately weathered ~~too~~ soft to moderately hard grey wet				
	51					
	52					
	53					
	54	BOH @ 54				
	55					
	56					
	57					
	58					
	59					

PROJECT: AA3 / Plum Brook Ordnance Works

HOLE NO.: IT-AA3-BEDGW-001

HTRW DRILLING LOG

DISTRICT: USACE / Nashville		HOLE NUMBER: IT-ABG-GW-002
1. COMPANY NAME: IT Corp	2. DRILL SUBCONTRACTOR: Belasco Drilling	SHEET 1 OF 2 SHEETS
3. PROJECT: ABG / Plum Brook Ordnance Works	4. LOCATION: Sandusky, Ohio	
5. NAME OF DRILLER: Allen Dudley / Greg Conrad	6. MANUFACTURER'S DESIGNATION OF DRILL: Dietrich D-50	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: Dietrich D-50 Drill Rig; 4 1/4" ID HSA, 2" x 2' SS Split Spoon; 140 lb. Hammer	8. HOLE LOCATION: See sketch	
	9. SURFACE ELEVATION: 658.00 (From Topo)	
	10. DATE STARTED: 9/11/97	11. DATE COMPLETED: 9/11/97
12. OVERBURDEN THICKNESS: 6.0'	15. DEPTH GROUNDWATER ENCOUNTERED: 2.3'	
13. DEPTH DRILLED INTO ROCK: 1.0'	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	
14. TOTAL DEPTH OF HOLE: 7.0'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA	

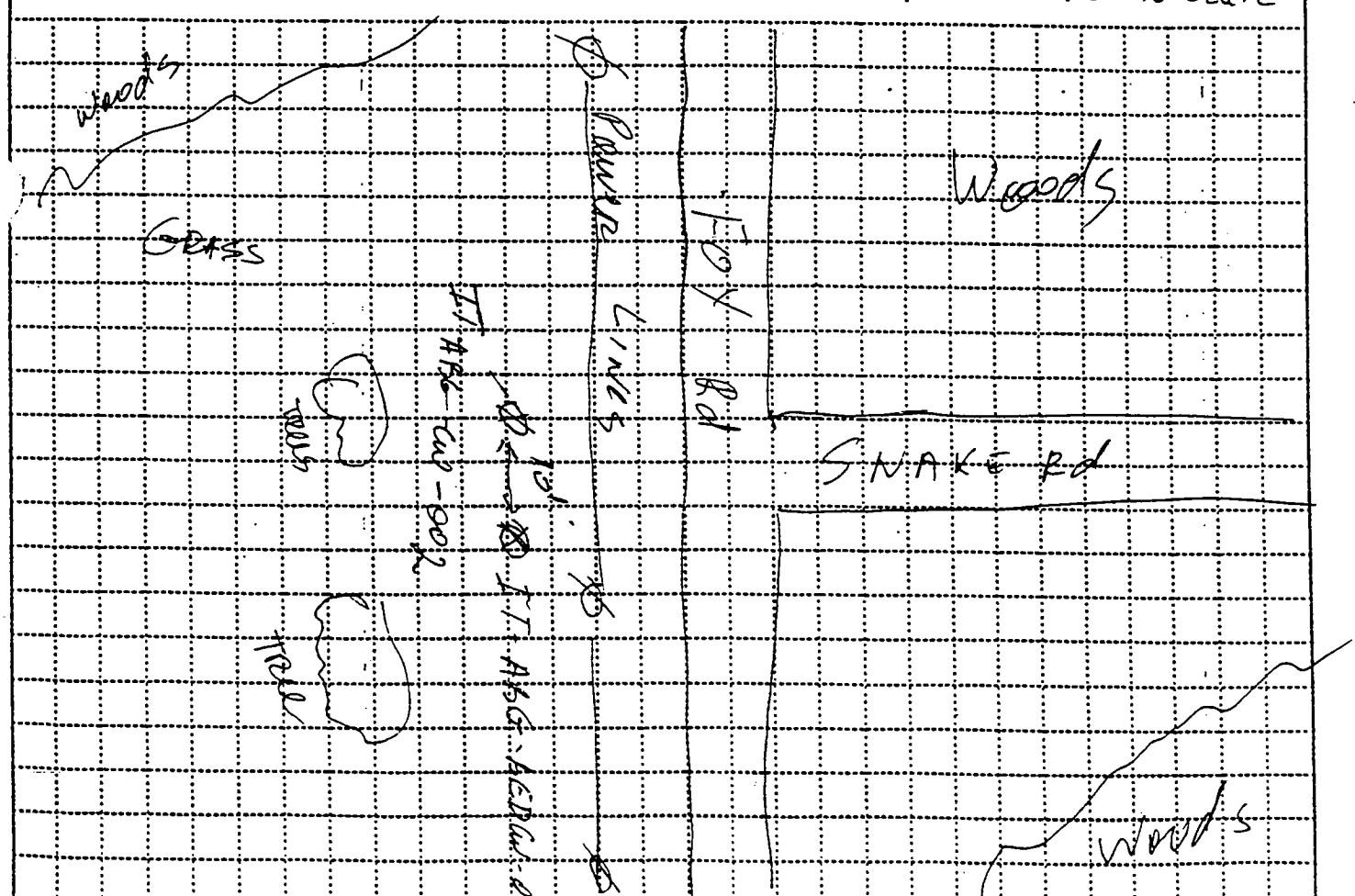
18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
2	X		NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
		X		~~Greg Buckner~~ / ED KAUFMAN

LOCATION SKETCH/COMMENTS

SCALE: Not to Scale



PROJECT	HOLE NO.
ABG / Plum Brook Ordnance Works	IT-ABG-GW-002

ENG FORM 5056-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG

HOLE NUMBER: IT-ABG-GW-002

PROJECT: Plum Brook Ordinance Work

INSPECTOR: ED RANKERSLY

SHEET 2 OF 2 SHEETS

ELEV. (m)	DEPTH (m)	DESCRIPTION OF MATERIALS (m)	FIELD SCREENING RESULTS (m)	GEOTECH SAMPLE OR CORE BOX NO. (m)	ANALYTICAL SAMPLE NO. (m)	REMARKS (m)
		Grass top soil 0.4	HNU	~~2~~ ~~5~~ ~~7~~ ~~10~~	2/5 7/10	2½"-2'-split spoon 80% recovery
657	1	sand, fine well sorted slightly damp Yellowish Brown Loose 2.0	Brick spread Q HNU 0.8 ppm	Geotech-Sample-Sample # IT-ABG-GW-002 0'-2' 2.0		
656	2	5" Black ash 2.3	HNU	~~11~~ ~~12~~ ~~20~~ ~~19~~	11/12 20/19	80% recovery
655	3	Silty sand fine ~~damp~~ damp Green well sorted dense 4.0	9.8 PPM	Geotech Sample Sample # IT-ABG-GW-002 2'-4' 4.0		
654	4	Silty sand, gray, moist LOOSE 2" - shale, gray, LOOSE 4.4	HNU	~~6~~	6/	4" recovery
653	5	No recovery 6.0	8.6 ppm	~~50/4~~	50/4 inches	
652	6	Shale				Auger to 7.0'
651	7	BOH @ 7"				

HTRW DRILLING LOG

DISTRICT: USACE / Nashville		HOLE NUMBER: IT-ABG-BEDGW-001
1. COMPANY NAME: IT Corp	2. DRILL SUBCONTRACTOR: Belasco Drilling	SHEET 1 OF 4 SHEETS
3. PROJECT: Plum Brook Ordnance Works	4. LOCATION: Sandusky, Ohio	
5. NAME OF DRILLER: Allen Dudley	6. MANUFACTURER'S DESIGNATION OF DRILL: Diedrich D-120	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: Diedrich D-120 (Drill Rig) 12" ID HSA 2x3" SS Spl.t spoon, 140 Hammer 11" & 6" follow Cone 6.4, 3 x 10' Core Barrel, 525 Ingersoll Rand Air Compressor	8. HOLE LOCATION: See sketch	
	9. SURFACE ELEVATION: 658.00 (From Topo)	
	10. DATE STARTED: 9/4/97	11. DATE COMPLETED: 9/10/97
12. OVERBURDEN THICKNESS: 6.0'	15. DEPTH GROUNDWATER ENCOUNTERED: 4.2 (overburden) / 12.5'	
13. DEPTH DRILLED INTO ROCK: 15.5	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: 5.51 on 10-4-97	
14. TOTAL DEPTH OF HOLE: 21.5	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA	

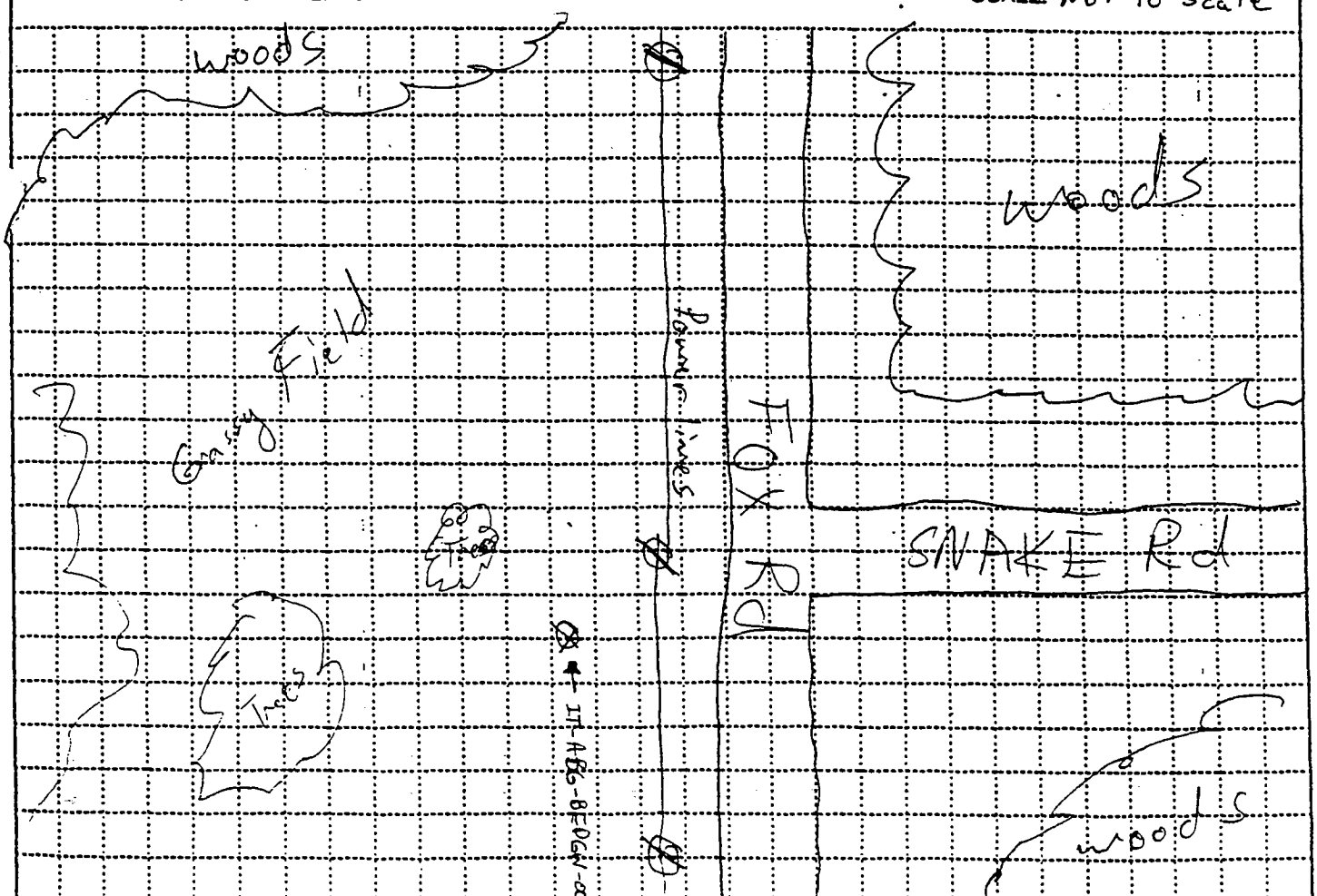
18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
2	X		1

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
		X		Greg Buckner / El Kanovsky

LOCATION SKETCH/COMMENTS

SCALE: Not to Scale



PROJECT	HOLE NO.
Plum Brook Ordnance Works	IT-ABG-BEDGW-001

HTRW DRILLING LOG

HOLE NUMBER: IT-ABG-BED GW-001

PROJECT: Plum Brook Ordnance Works

INSPECTOR:

SHEET 2 OF SHEETS 4

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	REMARKS (g)
658.0		Grassy Surface 0.2	HNU		Blow counts	Sample thru 1 1/4" ID augers, SS split spoon 2' X 2".
		SILT sdy Moist F-gra gr'l (shale) lo			3/5 9/10	
657.0	1	1.0'				
		SAND V F Gra mst well sorted yel Br. lo	9.0 ppm			Ran 2.0' Rec 1.8' Loss 0.2'
	2					Auger to 2'
		2.5'				Ash smells like Burned material.
655.5		Ash sdy Bl F gra Dry 2.4'		IT-ABG-BEDGW-001 2'-4' (1030)	6/9 17/20	Ran 2.0' Rec 1.4' loss 0.6'
655.1	3	SAND gr F gra well sorted mst lo	6.8 ppm			
	4	Saturated ~~wet~~ 4.2'				Auger to 4'
			5.5 ppm		6/10 50/4in	
	5			IT-ABG-BEDGW-001 4'-6' 10:35		Ran 2.0' Rec 0.9' Loss 1.1
		Spoon Refusal 6.0'				Auger to 6'
652.0	6	Shale Fissel (can auger into it) weathered				
		Auger Refusal 7.0'				
651.0	7	shale, slightly weathered slightly damp Grey	H_2S 0.ppm			ED RANEVSKY continued logging Water at 4' Rising Start 1540 End 1805 WL 6' from bottom
	8	HARD				
	9					

HTRW DRILLING LOG

HOLE NUMBER: ITABG-BEDW-001

PROJECT: Plumbrook Ordnance Works

INSPECTOR:

SHEET 4 OF 23 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	REMARKS (g)
						4'4 - cored W1 - 5' GS
	11					
		Shale slightly weathered DAMP Grey Hard	H_2S 0ppm			Start 0745 End 1130
	12					
		Shale highly weathered wet Gray Hard				
	13					
	14					
		Shale slightly weathered DAMP Brownish grey Hard				
	15					
	16					
	17					
	18					
	19					

PROJECT: Plum Brook Ordnance Works

HOLE NO. ITABG-BEDW-001

HTRW DRILLING LOG

HOLE NUMBER: IT-ABG-BEDGW-001

PROJECT: Plum Brook Ordinance Wks

INSPECTOR:

SHEET 4 OF 4 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	REMARKS (g)
	21					Could't recover 3' of bedrock 70% recovery WL-5'
	22	BOH at ~~[illegible]~~ 21.5				
	23					
	24					
	25					

PROJECT: Plum Brook Ordnance Works

HOLE NO. IT-ABG-BEDGW-001

HTRW DRILLING LOG

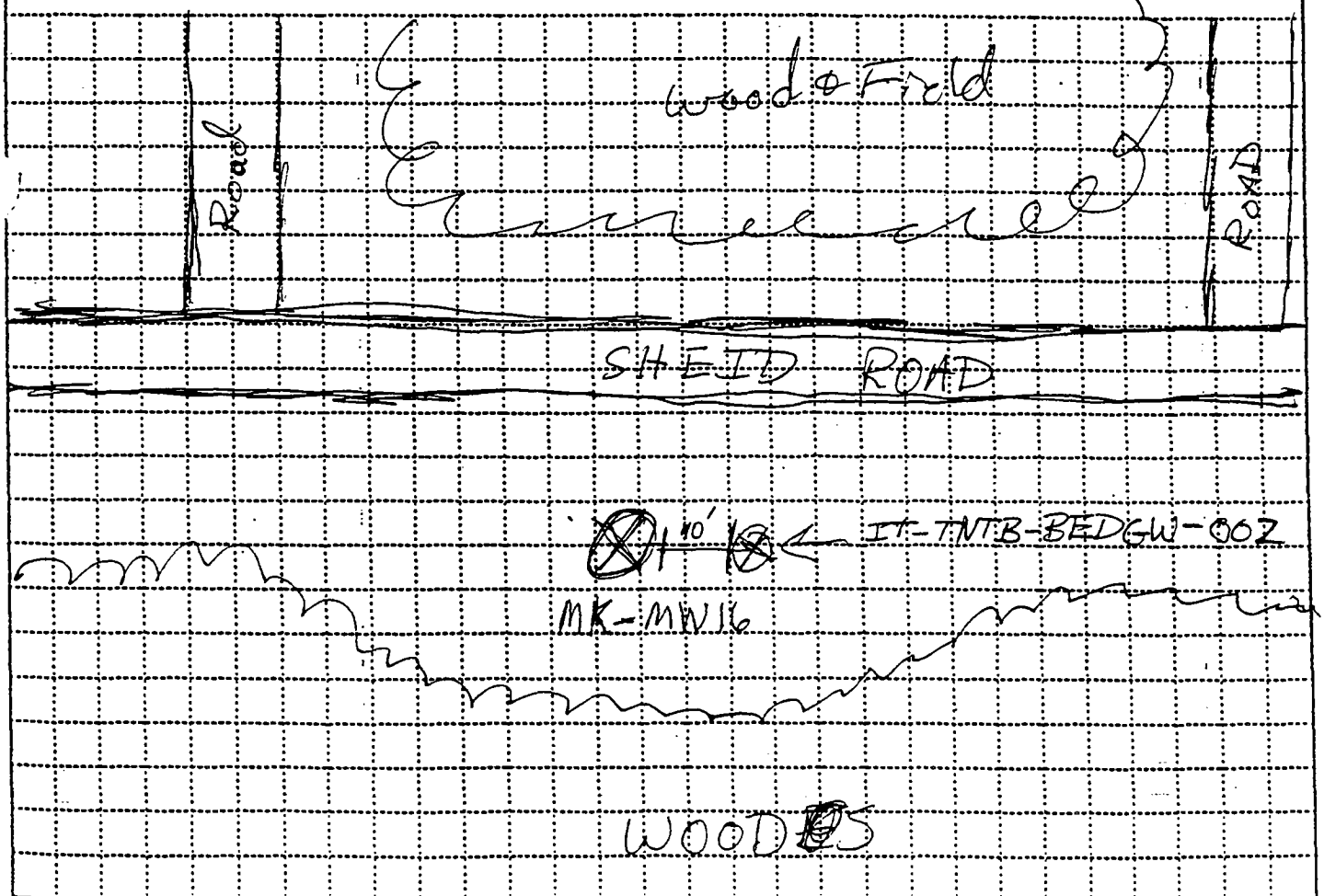
DISTRICT: USACE / Nashville		HOLE NUMBER: IT-TNTB-BEDGW-002
1. COMPANY NAME: IT Corp	2. DRILL SUBCONTRACTOR: Belasco Drilling	SHEET 1 OF 4 SHEETS
3. PROJECT: TNTB / Plum Brook Ordnance Works	4. LOCATION: Sandusky, Ohio	
5. NAME OF DRILLER: Allen Dudley	6. MANUFACTURER'S DESIGNATION OF DRILL: Diedrich D-120 &	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: Diedrich D-120 (Drill Rig) 12 1/4 inch ID HSA, 2"x2" OSS split spoon, 140 lb. hammer, 3"x10" Core barrel 16" & 6" roller cone bit, 825 Ingersoll Rand Air Compressor	8. HOLE LOCATION: See sketch	
	9. SURFACE ELEVATION: 670.0 (From Topo)	
	10. DATE STARTED: 9/5/97	11. DATE COMPLETED: 9/24/97
12. OVERBURDEN THICKNESS: ~~1.0~~ 2.8'	15. DEPTH GROUNDWATER ENCOUNTERED: ~11.0	
13. DEPTH DRILLED INTO ROCK: 22.4'	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: 6.50 on 11-4-97	
14. TOTAL DEPTH OF HOLE: 25.2	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA	

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
/	X		1

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
		X		Greg Buckner / [signature]

LOCATION SKETCH/COMMENTS — SCALE: Not to Scale



PROJECT: TNTB / Plum Brook Ordnance Works — HOLE NO. IT-TNTB-BEDGW-002

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG

HOLE NUMBER: IT-TNTB-BEDGW-002

PROJECT: TNTB / PlumBrook Ordnance Works

INSPECTOR: G. Buckner

SHEET 2 OF 2 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	GEOLOGICAL SAMPLE NO. (f)	REMARKS (g)
		~~SILT~~ Gravel. ~~gvl (shale)~~ sin br+gr (mottled) lo Dry GM 0.8'	HNU		Blow Count 4/7	Sample thru 4 1/4" ID auger using 2" ID SS split spoon
	1	SILT gvl (shale) br+gr (mottled) bdd Low Pl. ML 2.8'	30.0 ppm	2.0'	6/5	Raw 2.0' Rec 1.2' Loss 0.8' Auger to 2.0' 2.0'
	2			Geotech sample ~~sample~~ # IT-TNTB-BEDGW-002 2'-4' 9-5-97 4.0'	3/13 30/50 Min	
	3	shale wea dk gr bdd Spoon Refusal 3.9'	18.0 ppm			Raw 2.0' Rec 1.6' Loss 0.4' Auger to 4.0' 4.0'
	4	Shale Highly weathered Gray				use 12" roller cone bit to set 10' Casing 5' into bedrock. Logged from Cuttings
	5					
	6					
	7					
	8	8.0'		8.0'		8.0'
		Shale, MOD. weathered, gray		Box 1		Bottom of casing. Casing will not go any deeper. Shale is falling into hole. Shale is competent. 9-24-97 09:30 Begin Coring at IT-TNTB-BEDGW-002 - Begin at 8' using 13.5' core bbl and Air.
	9					
	10					

HTRW DRILLING LOG

HOLE NUMBER: IT-TNTB-BEDGW-002

PROJECT: Plum Brook Ordnance Works | INSPECTOR: G. Brewer | SHEET 3 OF 3 SHEETS 4

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	REMARKS (g)
						P-1 End 13:50 ← Lunch Start 10:50 Time ~~13:5~~ 2:40 Run ~~10.0~~ 8.0' Rec 8.0 Loss ~~2.0~~ 0.0' Air Pressure 140psi - 120psi WL - 14:00
	11	Shale, Stonewalthard, Pyrite nodules, gray mod. hard. wet/Saturated thinly Bedded.				
	12					
	13					
	14					
	15					
	16		Slight H_2S oder after pulling bowrel Could hear boiling in the hole. ~~Sly~~ Still 0 0ppm			P-2 End 16:35 Start 14:35 Time 2:00 Run = ~~10.0~~ 9.0' Rec - 8.0 Loss 1.0 Air Pressure 120psi W.L. 25.2'
	17					
	18					
		Spin				
	19					
	20					

HTRW DRILLING LOG

HOLE NUMBER: IT-TNTB-BEDGW-002

PROJECT: Plum Brook Ordnance Works/TNTB

INSPECTOR: G. Buckner

SHEET 4 OF 4 SHEETS

ELEV. (8)	DEPTH (D)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (F)	GEOTECH SAMPLE OR CORE BOX NO. (G)	ANALYTICAL SAMPLE NO. (H)	REMARKS (I)
		Shale, slightly weathered, pyrite nodules, gray mod. Hard, wet, thinly bedded				
	21					
	22					
	23		H_2S 0.0 ppm			
	24					
	25	Spin 25.0 Limestone, Hard, gray to light gray crystal.				
		25.2' Bottom of Hole				16:40 Begin Reaming hole with the 6" Roller cone bit.
	26					
	27					
	28					
	29					
	30					

HTRW DRILLING LOG

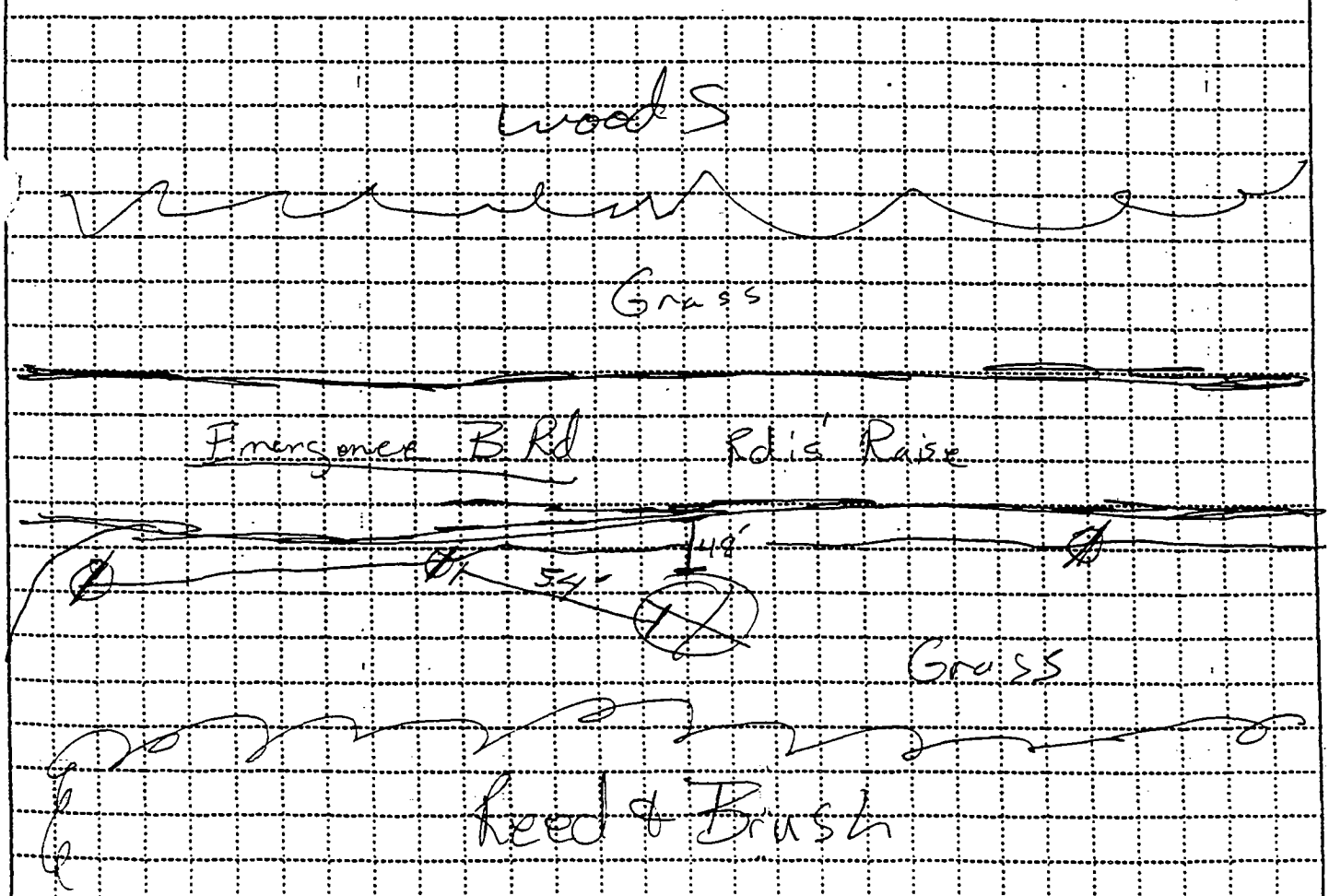
DISTRICT: USACE / Nashville		HOLE NUMBER: IT-TNTB-BEDGW-001
1. COMPANY NAME: IT Corp	2. DRILL SUBCONTRACTOR: Belasco Drilling	SHEET 1 OF SHEETS
3. PROJECT: TNTB / Plum Brook Ordnance Works	4. LOCATION: Sandusky, Ohio	
5. NAME OF DRILLER: Allen Dudley	6. MANUFACTURER'S DESIGNATION OF DRILL: Dicrich-D-120	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: Dicrich D-120 (Drill Rig); 8 1/4 in ID HSA, 2' x 20"; SS split Spoon 140lb Hammer, 10 inch Rolling Cutter Bit, 3" x 10' Core barrel, SZS Ingersoll Rand Air Compressor	8. HOLE LOCATION: See sketch	
	9. SURFACE ELEVATION: 646.0' (From Topo)	
	10. DATE STARTED: 9/6/97	11. DATE COMPLETED: 10/01/97
12. OVERBURDEN THICKNESS: ~1.0'	15. DEPTH GROUNDWATER ENCOUNTERED: Not encountered in over burden / ~13.0	
13. DEPTH DRILLED INTO ROCK: 24'	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: 4.95 on 10-4-97	
14. TOTAL DEPTH OF HOLE: 25'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA	

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
1	X		1

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
		X		Greg Buckner / Ed Kimmsky

LOCATION SKETCH/COMMENTS — SCALE: Not to Scale



PROJECT: TNTB / Plum Brook Ordnance Works — HOLE NO. IT-TNTB-BEDGW-001

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG

HOLE NUMBER: IT-TNTBEDGW-001

PROJECT: TNTB/Plum Brook Ordnance Works | INSPECTOR: G. Buchner | SHEET 2 OF 2 SHEETS 4

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	REMARKS (g)
		Grassy Surface 0.2	HNU	Geotech Sample	3bw Count	Sample Thru 4 1/4" HSA using 2'x2" S.S. Split Spoon. (1250)
		SILT Dark br, Dry, organics & Rootlets				
	1	SILT 0.5 grl. (shale Black), mottled Br-orange mottle, Dry, laminated Pl. 1.0'	ppm 19.0'	Sample IT-TNTB-BEDGW-001 0'-2'	3/3 7/41	Ran 2.0' Rec 1.7 Loss 0.3
		Shale (Black) Dry Thinly Bedded				Auger to 2' 2.0'
	2					Spoon Refusal
			450 ppm			Logs from Cuttings until we hit competent Bedrock.
	3				50/4.0	(1330) Pack up & demobilize
	4	Auger Refusal 4.5'				Use 10" Roller cone bit to set casing.
		Shale/silt stone (logged from cuttings				
	5					
	6					
	7					
	8					
	9	9.0' Shale/silt stone. Mod. Hard, Slightly Damp, Sl. weathered gray, as above.			P-1	Begin coring with 3" ID Core barrel, 10'. 9-25-97 End 15:30 Start 12:00 Time 3:30. (Core barrel is broken) Recov 0.5 50% Rec.
	10					

HTRW DRILLING LOG

IT-TNTB-

HOLE NUMBER BED GW-001

PROJECT Plum Brook Ordnance Works

INSPECTOR G. Buckner

SHEET 3 OF 4 SHEETS

ELEV. (ft)	DEPTH (ft)	DESCRIPTION OF MATERIALS (ft)	FIELD SCREENING RESULTS (ft)	GEOTECH SAMPLE OR CORE BOX NO. (ft)	ANALYTICAL SAMPLE NO. (ft)	REMARKS (ft)
		Shale, slightly weathered soft to moderate hard grey moist		P-2		Begin Coring at 10' using 2" 10' core barrel 0920 9-31-97
	11					W/ @ 11.5'
	12					End 1020 Start 09:20 Time Ran 8.5' Rec. loss: 1 Air Pressure: 120 PSI
	13	Shale, wheathered soft-moderate hard grey wet				
	14	Shale slightly weathered soft-moderate hard grey moist				
	15					
	16					
	17	Shale, wheathered soft to moderate hard grey wet				
	18					
	19					
	20					

HTRW DRILLING LOG

HOLE NUMBER: IT-TNTB-BED6W-001

PROJECT: Plum Brook Ordnance Works

INSPECTOR: B. Ranevsky

SHEET 4 OF 4 SHEETS

ELEV. (8)	DEPTH (9)	DESCRIPTION OF MATERIALS (10)	FIELD SCREENING RESULTS (11)	GEOTECH SAMPLE OR CORE BOX NO. (12)	ANALYTICAL SAMPLE NO. (13)	REMARKS (14)
		Shale wheathered to moderately wheathered soft to moderately hard	H_2S			End 1130
	21	grey	1 ppm at well head	-		80% recovery
		saturated	0 ppm			
	22					
	23					
	24					
	25					
		BOH @ 25'				

PROJECT: Plum Brook Ordnance Works

HOLE NO. IT-TNTB-BED6W-001

APPENDIX B

PHOTOGRAPHS AND WELL DEVELOPMENT LOGS

Well Development Log

Page 1 of 1

Project Number: 771481
Project Name: PBW
Form Completed by: B. Bunnt
Well Developed by/firm: IT

OU No:
Site No.:
Well No.: GCL-MW-02B
Date Started: 10-7-97

Monitoring Well Information

Development Method:
Development Equipment: Pump + Bail

Screen Height (ft):
Filter pack lenght (ft):
Casing Diameter (in): 4"

Begining Measurements
Depth to Water (ft): 7.92
Total depth of Well (ft): 12.60
WC = 4.68

Monitoring Well Purge Calculations

Volume of Water in Casing:
Gallons/foot = 0.041 x d^2, where casing diameter in inches = (0.041 x (4)^2) = .656 gal/ft.
Well Volume (gallons) = Water Column (ft) x Gal/ft = 4.68 ft x .656 gal/ft = 3.07 gallons

Volume of Water in Filter Pack: 100 - 16 = 84
Gallons/foot = 0.041 x (D^2 - d^2), where D is total borehole diameter in inches & d is casing diameter in inches = 0.041 x ((10)^2 - (4)^2) = 3.44 gal/ft.
Filter Pack Volume (gal) = (the less of the filter pack lenght or water column) x gal/ft x porosity (0.3) = (4.68)ft x (3.44) gal/ft x 0.3 = 4.83 gal

Purge Well Volume: Purge well Volume = Filter pack volume + Well Volume = 4.83 gal + 3.07 gal = 7.9 gal.

1 x Purge Well Volume	2 x Purge Well Volume	3 x Purge Well Volume	4 x Purge Well Volume	5 x Purge Well Volume
7.9	15.8	23.7	31.6	39.5

Development Record

Time (24 hrs)	Purge Volume (gal)	Water Level (ft) (TOC)	Turbidity (NTU)	Clarity (color)	Temp. (C)	pH (Std Units)	Conductivity (mS/cm)	Comments D.O.	Comments mV	Comments Method
1125 Initial	Initial	≈8.00	212	Semi-clear turbidity	18.7	7.36	.457	3.18	261.3	Pump
1133	8 gal	dried out well		"	18.1	7.47	.634			"
1153	12 +43	≈11'	>999	"	18.1	7.46	.639	5.34		Bailed
1340	15	"	>999	"	22.8	7.53	.637	4.22		pump
1510	32	10'	829	"	21.2	7.56	.596	4.69		Bailing
1750	47	10'	495		18.5	7.82	.628	5.38		pump

Borehole dia = 10"

Well Development Log

Project Number: 771481
Project Name: P130W
Form Completed by: B Bundt
Well Developed by/firm:

OU No:
Site No.:
Well No.: GCL MW03
Date Started: 10-9-97

Monitoring Well Information

Development Method:
Development Equipment: Mounted

Screen Height (ft):
Filter pack lenght (ft):
Casing Diameter (in): 4"

Begining Measurements
Depth to Water (ft): 6.33
Total depth of Well (ft): 11.33
WC = 5.0

Monitoring Well Purge Calculations

Volume of Water in Casing: Gallons/foot = 0.041 x d^2, where casing diameter in inches = (0.041 x (4)^2) = .656 gal/ft.
Well Volume (gallons) = Water Column (ft) x Gal/ft = 5 ft x .656 gal/ft = 3.28 gallons

Volume of Water in Filter Pack: 100 - 16 = 84
Gallons/foot = 0.041 x (D^2 - d^2), where D is total borehole diameter in inches & d is casing diameter in inches = 0.041 x ((10)^2 - (4)^2) = 3.44 gal/ft.
Filter Pack Volume (gal) = (the less of the filter pack lenght or water column) x gal/ft x porosity (0.3) = (5) ft x (3.44) gal/ft x, 0.3 = 5.16 gal

Purge Well Volume: Purge well Volume = Filter pack volume + Well Volume = 3.28 gal + 5.16 gal = 8.44 gal.

1 x Purge Well Volume	2 x Purge Well Volume	3 x Purge Well Volume	4 x Purge Well Volume	5 x Purge Well Volume
8.44	16.88	25.32	-	

Development Record

Time (24 hrs)	Purge Volume (gal)	Water Level (ft) (TOC)	Turbidity (NTU)	Clarity (color)	Temp. (C)	pH (Std Units)	Conductivity (mS/cm)	Comments D.O.
0930	INITIAL	7.00	279	Semi-clear	17.9	6.15	.333	5.25
0936	3	8.90						MAINTAINING ≈ 1/2-3/4 GPM
0944	5	9.00	286		19.1	6.88	.389	3.90 w/ STABLE DTW @ ≈ 9.00
1045	25	8.80	11		20.3	7.26	.388	2.33 " "

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Well Development Log

Project Number: 771481
Project Name: PBOW
Form Completed by: B. Bennett
Well Developed by/firm:

High H_2S
necessitating Air flow + compressor

OU No:
Site No.:
Well No.: IT-MNTA-BEDGW-001
Date Started: 10-6-97

Monitoring Well Information

Development Method: Bail 3 gals, then
Development Equipment: Grundfos pump

Screen Height (ft): 15'
Filter pack lenght (ft):
Casing Diameter (in): 2"

Begining Measurements
Depth to Water (ft): 27.77
Total depth of Well (ft): 65.00
WC = 37.23

Monitoring Well Purge Calculations

Volume of Water in Casing:

Gallons/foot = 0.041 x d^2, where casing diameter in inches = (0.041 x (2)^2) = .164 gal/ft.

Well Volume (gallons) = Water Column (ft) x Gal/ft = 37.23 ft x .164 gal/ft = 611 gallons

Volume of Water in Filter Pack:

Gallons/foot = 0.041 x (D^2 - d^2), where D is total borehole diameter in inches & d is casing diameter in inches = 0.041 x ((6)^2 - (2)^2) = 1.312 gal/ft.

Filter Pack Volume (gal) = (the less of the filter pack lenght or water column) x gal/ft x porosity (0.3) = (37.23)ft x (1.312) gal/ft x 0.3 = ~~29.31~~ 14.65 gal

Purge Well Volume: Purge well Volume = Filter pack volume + Well Volume = 14.65 gal + 6.11 gal = 20.76 gal.

1 x Purge Well Volume	2 x Purge Well Volume	3 x Purge Well Volume	4 x Purge Well Volume	5 x Purge Well Volume
20.76	41.52	62.28	83.04	103.80

Development Record

Time (24 hrs)	Purge Volume (gal)	Water Level (ft) (TOC)	Turbidity (NTU)	Clarity (color)	Temp. (C)	pH (Std Units)	Conductivity (mS/cm)	Comments D.O.	Comments MV	Comments
1510	initial	22.77	365	clear	15°	7.19	8.09	.34	-367.4	1 gpm
1540	10	≈ 50.00	365	Gassy, cloudy-clear	15.7	6.96	9.3	-.87	12.96	1.5 GPM
1550	20	≈ 51.60	257	H_2S smell-clear	16.3	6.95	8.51	-1.31	13.05	1.0 GPM
1600	30	≈ 52.40	155	"	15.3	6.96	8.43	3.32	13.05	
1610	40	≈ 52.70	78	"/clear	14.5	6.96	8.34	-.67	13.02	
1620	50	52.75	127	"	14.8	6.98	8.09	-.67	12.86	
1630	60	52.75	98	"	14.6	6.98	8.21	-.42	12.91	
1640	70	52.80	78	"	14.7	6.96	8.14	-.49	13.02	
1650	80	52.83	51	"	14.8	6.96	8.09	-.51	13.01	

Pumping @ 1.0-1.5 gpm

Trying to maintain 1 GPM flow = pumping the well

10 gals/10 min

Well Development Log

OU No:
Site No.:
Well No.: IT-MNTA-13EDGW-001
Date Started: 10-6-97

Development Record (continuation)

Time (24 hrs)	Purge Volume (gal)	Water Level (ft) (TOC)	Turbidity (NTU)	Clarity (color)	Temp. (C)	pH (Std Units)	Conductivity (mS/cm)	Comments D.O mV
1710	105	≈ 57.58'	210	clear	15.7	6.92	7.96	-1.50
~~1730~~								

Range and Average Discharge Rate:
Maximum Drawdown during Development: at gpm.
Disposition of Development Water: Drums Baker Tank Other
Number of Containers for Development Water:

Comments: Avg = 1 GPM ; Drawdown =

Final Measurements

Total depth of Well (ft): 65.0

Date Completed: 10-6-97

Hours Developed: 2

Well Development Log

Project Number: 771481
Project Name: PBOW
Form Completed by: B. BUNDT
Well Developed by/firm: FT

OU No:
Site No.:
Well No.: IT-ABG-BEDGW-001
Date Started: 10-4-97

Monitoring Well Information

Development Method: Bailer for 3gal to Surge
Development Equipment: Grundfos Pump

Screen Height (ft):
Filter pack lenght (ft):
Casing Diameter (in):

Begining Measurements
Depth to Water (ft): 7.68
Total depth of Well (ft): 23.35 in contrast to log
WC = 15.67

Monitoring Well Purge Calculations

Volume of Water in Casing:
Gallons/foot = 0.041 x d^2, where casing diameter in inches = (0.041 x (2 $)^2$) = .164 gal/ft.
Well Volume (gallons) = Water Column (ft) x Gal/ft = 15.67 ft x .164 gal/ft = 2.57 gallons

Volume of Water in Filter Pack:
Gallons/foot = 0.041 x (D^2 - d^2), where D is total borehole diameter in inches & d is casing diameter in inches = 0.041 x ((6 $)^2$ - (2 $)^2$) = 1.312 gal/ft.
Filter Pack Volume (gal) = (the less of the filter pack lenght or water column) x gal/ft x porosity (0.3) = (15.67)ft x (1.312) gal/ft x 0.3 = 6.17 gal

Purge Well Volume: Purge well Volume = Filter pack volume + Well Volume = 6.17 gal + 2.57 gal = 8.74 gal.

1 x Purge Well Volume	2 x Purge Well Volume	3 x Purge Well Volume	4 x Purge Well Volume	5 x Purge Well Volume
8.74	17.48	26.22	34.96	43.7

Development Record

Time (24 hrs)	Purge Volume (gal)	Water Level (ft) (TOC)	Turbidity (NTU)	Clarity (color)	Temp. (C)	pH (Std Units)	Conductivity (mS/cm)	Comments ~~D.O.~~ MV Pumping @ 2 GPM
1515	INITIAL	7.68	781	CLEARISH to gray	17.2°	7.57	.823	2.80
1525	5	6.42	428	"	19.3°	7.94	.797	2.64 207.6
1530	10	7.05	45	CLEAR	16.5°	7.58	.823	.83 -221.4
1535	20	7.06	30		16.1	7.50	.820	1.01 -210.2
1540	30	7.07	14		~~16.4~~ 16.4	7.46	.819	1.05 -170.8
1545	40	7.09	0		16.1	7.45	.815	1.48 ~~227.8~~ -171.7
1547	45	7.09	1		16.1	7.44	.816	2.68 -196.4

5 gal / 2 min
10/4
50/20

Well Development Log

Project Number: 771481
Project Name: PBGW
Form Completed by: B. BUNDT
Well Developed by/firm: IT

OU No:
Site No.:
Well No.: IT-TNTB-BEDGW-001
Date Started: 10-4-97

Monitoring Well Information

Development Method: Bail 3 gal via Bailer
Development Equipment: Grundfos Pump

Screen Height (ft): 15'
Filter pack lenght (ft):
Casing Diameter (in): 2"

Begining Measurements
Depth to Water (ft): 4.95
Total depth of Well (ft): 25.00
WC = 20.05

Monitoring Well Purge Calculations

Volume of Water in Casing:

Gallons/foot = 0.041 x d^2, where casing diameter in inches = (0.041 x (2)^2) = .164 gal/ft.

Well Volume (gallons) = Water Column (ft) x Gal/ft = 20.05 ft x .164 gal/ft = 3.29 gallons

Volume of Water in Filter Pack:

Gallons/foot = 0.041 x (D^2 - d^2), where D is total borehole diameter in inches & d is casing diameter in inches = 0.041 x ((6)^2 - (2)^2) = 1.312 gal/ft.

Filter Pack Volume (gal) = (the less of the filter pack lenght or water column) x gal/ft x porosity (0.3) = (20.05)ft x (1.312) gal/ft x 0.3 = 7.89 gal

26.306 x .3

Purge Well Volume: Purge well Volume = Filter pack volume + Well Volume = 7.89 gal + 3.29 gal = 11.18 gal.

1 x Purge Well Volume	2 x Purge Well Volume	3 x Purge Well Volume	4 x Purge Well Volume	5 x Purge Well Volume
11.18	22.36	33.54	44.72	55.9

Development Record

Time (24 hrs)	Purge Volume (gal)	Water Level (ft) (TOC)	Turbidity (NTU)	Clarity (color)	Temp. (C)	pH (Std Units)	Conductivity (mS/cm)	Comments D.O.	MV
1325	initial	4.95	>999	Cloudy-brey	16.5	7.73	3.49	2.12	-319.4 → Pumping @ 2.5 gpm Bailer = 3gal
1335	10	4.99	619	"	15.0	7.74	3.58	.79	-323.9 → Pumping
1340	20	5.10	238	"/clearing	14.7	7.85	3.39	.75	-323.8 - "
1345	30	5.17	279	Clearing	15.3	7.84	3.33	.91	-301.7
1350	40	5.27	297	Straw	15.3	7.87	3.27	.87	-242
1355	50	5.39	271	"	15.2	7.85	3.19	.78	-241.0
1400	60	5.41	232	"	15.8	7.83	3.16	.58	-245.5
1410	75	5.46	227	"	14.9	7.80	3.13	.90	-306.4
1415.	85	5.49	108	clearing	14.4	7.74	3.15	1.10	-307.6

5 gal/2 min
/4
50/2 U

Well Development Log

OU No:
Site No.:
Well No.: IF-INTB - BEDGW-001
Date Started: 10-4-97

Development Record (continuation)

Time (24 hrs)	Purge Volume (gal)	Water Level (ft) (TOC)	Turbidity (NTU)	Clarity (color)	Temp. (C)	pH (Std Units)	Conductivity (mS/cm)	Comments D.O. mV
1425	113	5.58	110	STABLE	14.4	7.68	3.22	.83 309.7 Clarity: Semi Cloudy/Grey
1430	116	5.59	72	CLEARING	14.4	7.64	3.31	.90

Range and Average Discharge Rate:
Maximum Drawdown during Development: 2.5 gpm.
Disposition of Development Water: Drums Baker Tank Other
Number of Containers for Development Water: 2 drums

Comments: NTU STABILIZING @ ≈ 100-200 NTU following purging of 5 well volumes

Final Measurements

Total depth of Well (ft): 25.00
Date Completed: 10-4-97
Hours Developed:

Well Development Log

Page / of /

Project Number:	771481	OU No:	
Project Name:	PIBOW	Site No.:	
Form Completed by:	B. Burnett	Well No.:	IT-TNTA-BEDGW-002
Well Developed by/firm:	B. Burnett + Greg Conrad / BEMCO	Date Started:	10-4-97

Development Method: Bailer used to surge then pumped

Development Equipment: Grundfos Pump + generator

Monitoring Well Information

Screen Height (ft): 10'

Filter pack lenght (ft):

Casing Diameter (in): 2"

Begining Measurements

Depth to Water (ft): 6.50

Total depth of Well (ft): 25.20

Water Col = 18.7

Monitoring Well Purge Calculations

Volume of Water in Casing:

Gallons/foot = 0.041 x d^2, where casing diameter in inches = (0.041 x (2)^2) = .164 gal/ft.

Well Volume (gallons) = Water Column (ft) x Gal/ft = 18.7 ft x .164 gal/ft = 3.07 gallons

Volume of Water in Filter Pack:

Gallons/foot = 0.041 x (D^2 - d^2), where D is total borehole diameter in inches & d is casing diameter in inches = 0.041 x ((6)^2 - (2)^2) = 1.312 gal/ft.

Filter Pack Volume (gal) = (the less of the filter pack lenght or water column) x gal/ft x porosity (0.3) = (18.7)ft x (1.312) gal/ft x 0.3 = 7.36 gal

Purge Well Volume: Purge well Volume = Filter pack volume + Well Volume = 7.36 gal + 3.07 gal = 10.43 gal.

1 x Purge Well Volume	2 x Purge Well Volume	3 x Purge Well Volume	4 x Purge Well Volume	5 x Purge Well Volume
10.43	20.86	31.29	41.72	52.15

Development Record

Time (24 hrs)	Purge Volume (gal)	Water Level (ft) (TOC)	Turbidity (NTU)	Clarity (color)	Temp. (C)	pH (Std Units)	Conductivity (mS/cm)	Comments D.O.	MV	Pump 2.5 GPM
1115	INITIAL	6.50	202	clear to gray	14.7	8.14	1.16	-.17	-407.9	1st 3 gal purged
1130	10	7.65	75	clear	14.2	8.06	1.17	-.37	-370.4	VIA Bailer
1135	20	7.90	30	clear	13.7	8.03	1.18	.22	-363.7	
1140	30	7.97	3	clear	13.3	8.12	1.17	.79	-352.7	
1145	40	7.99	0		13.2	8.07	1.17	.02	-348.6	
1150	50	8.01	2		13.4	8.07	1.17	.72	-352.2	
1155	60	8.02	1		13.3	8.08	1.17	.71	-351.7	

2.5 gpm
5 g/2 min
10 g/4 min
50 g/20 min

Bar
Screen = 15'
6" dia
2"
DTB = 22.21
DTW = 5.51
WC = 16.7

Well Development Log

Project Number:	771481	OU No:	
Project Name:	PBW	Site No.:	
Form Completed by:	B. Barnett	Well No.:	IT-BG8-BEDGW-001
Well Developed by/firm:	IT	Date Started:	10-4-97

Monitoring Well Information

Development Method:	pump	Screen Height (ft):	15'	Begining Measurements	
Development Equipment:	grundfos pump	Filter pack lenght (ft):		Depth to Water (ft):	5.51
		Casing Diameter (in):	2"	Total depth of Well (ft):	22.21
				WATER COL =	16.7

Monitoring Well Purge Calculations

Volume of Water in Casing: Gallons/foot = 0.041 x d^2, where casing diameter in inches = (0.041 x (2)^2) = .164 gal/ft.
Well Volume (gallons) = Water Column (ft) x Gal/ft = 16.7 ft x .164 gal/ft = 2.739 gallons

Volume of Water in Filter Pack: 36-4=32
Gallons/foot = 0.041 x (D^2 - d^2), where D is total borehole diameter in inches & d is casing diameter in inches = 0.041 x ((6)^2 - (2)^2) = 1.312 gal/ft.
Filter Pack Volume (gal) = (the less of the filter pack lenght or water column) x gal/ft x porosity (0.3) = (16.7)ft x (1.312) gal/ft x 0.3 = ~~6.573~~ 21.91 gal

Purge Well Volume: Purge well Volume = Filter pack volume + Well Volume = 6.573 gal + 2.739 gal = 9.312 gal.

1 x Purge Well Volume	2 x Purge Well Volume	3 x Purge Well Volume	4 x Purge Well Volume	5 x Purge Well Volume
9.312	18.624	27.936	37.248	46.56

Development Record

Time (24 hrs)	Purge Volume (gal)	Water Level (ft) (TOC)	Turbidity (NTU)	Clarity (color)	Temp. (C)	pH (Std Units)	Conductivity (mS/cm)	MV	Comments D.O. Pumping @ 2GPM
0945	INITIAL	8.00	>999	Silty Brown	15.2	7.49	3.19	-474.8	0.60
0950	10 gal	12.15	192	clear	13.8	7.56	3.19	-485.7	0.14
0955	20	12.15	191	clear	14.0	7.59	3.20	-456.1	0.50
1005	30	12.25	31	clear	13.4	7.60	3.22	-442.5	1.03
1010	40	12.26	99	clear	13.2	7.60	3.19	-438.2	1.14
1014	60	12.30	20	clear	13.0	7.61	3.18	-432.2	1.03

Well Development Log

Project Number:	771481	OU No:	
Project Name:	PIBOW	Site No.:	
Form Completed by:	B. Bundy	Well No.:	IT-A18-(13?)BW-002
Well Developed by/firm:	IT	Date Started:	10-4-97

Monitoring Well Information

Development Method:	Bailer	Screen Height (ft):	4'	Begining Measurements	
Development Equipment:	Bailer	Filter pack lenght (ft):		Depth to Water (ft):	6.10
		Casing Diameter (in):	2"	Total depth of Well (ft):	9.30
				WC = 3.2	

Monitoring Well Purge Calculations

Volume of Water In Casing: Gallons/foot = 0.041 x d^2, where casing diameter in inches = (0.041 x (2)^2) = .164 gal/ft.

Well Volume (gallons) = Water Column (ft) x Gal/ft = 3.2 ft x .164 gal/ft = .525 gallons

Volume of Water In Filter Pack:

Gallons/foot = 0.041 x (D^2 - d^2), where D is total borehole diameter in inches & d is casing diameter in inches = 0.041 x ((6)^2 - (2)^2) = 1.312 gal/ft.

Filter Pack Volume (gal) = (the less of the filter pack lenght or water column) x gal/ft x porosity (0.3) = (3.2)ft x (1.312) gal/ft x 0.3 = 1.260 gal = 1.26

Purge Well Volume: Purge well Volume = Filter pack volume + Well Volume = 1.26 gal + .525 gal = 1.78 gal.

1 x Purge Well Volume	2 x Purge Well Volume	3 x Purge Well Volume	4 x Purge Well Volume	5 x Purge Well Volume
1.78	3.57	5.1	7.12	8.9

Development Record

	Time (24 hrs)	Purge Volume (gal)	Water Level (ft) (TOC)	Turbidity (NTU)	Clarity (color)	Temp. (C)	pH (Std Units)	Conductivity (mS/cm)	Comments D.O	MV
10/4/97	1600	initial	6.10	>999	Dark Brown	17.1	7.14	1.72	.31	-198.1
	1620	3 1/2	6.33	624	"	17.7	7.49	1.80	.69	-197.2
10/5	0920	4	6.15	>999	"	16.4	6.90	1.94	3.16	-210.0
	0940	5 1/2	6.35	>999	Slightly Clearing	16.6	7.29	1.86	5.21	-179.9 less Sediment/sand 0.65
10/6	0830	9	6.33	>999		16.8	6.85	1.86	4.38	10.5

Ransom Rd

Well Development Log

Project Number: 771481
Project Name: TBN
Form Completed by: B. Burnett
Well Developed by/firm:

OU No:
Site No.:
Well No.: IT-AA3-BEDGW-001
Date Started: 10-7-97

Monitoring Well Information

Development Method:
Development Equipment: Eductor

Screen Height (ft): 15'
Filter pack lenght (ft):
Casing Diameter (in): 2"

Begining Measurements
Depth to Water (ft): 20.00
Total depth of Well (ft): 51.92
WC = 31.92

Monitoring Well Purge Calculations

Volume of Water in Casing: Gallons/foot = 0.041 x d^2, where casing diameter in inches = (0.041 x (2)^2) = .164 gal/ft.
Well Volume (gallons) = Water Column (ft) x Gal/ft = 31.92 ft x .164 gal/ft = 5.23 gallons

Volume of Water in Filter Pack:
Gallons/foot = 0.041 x (D^2 - d^2), where D is total borehole diameter in inches & d is casing diameter in inches = 0.041 x ((6)^2 - (2)^2) = 1.312 gal/ft.
Filter Pack Volume (gal) = (the less of the filter pack lenght or water column) x gal/ft x porosity (0.3) = (31.92)ft x (1.312) gal/ft x 0.3 = 12.56 gal

Purge Well Volume: Purge well Volume = Filter pack volume + Well Volume = 12.56 gal + 5.23 gal = 17.79 gal.

1 x Purge Well Volume	2 x Purge Well Volume	3 x Purge Well Volume	4 x Purge Well Volume	5 x Purge Well Volume
17.79	35.58	53.37	71.16	88.95

Development Record

	Time (24 hrs)	Purge Volume (gal)	Water Level (ft) (TOC)	Turbidity (NTU)	Clarity (color)	Temp. (C)	pH (Std Units)	Conductivity (mS/cm)	Comments D.O.	M.V.	
	0820	INITIAL	20.00	604	Semi-clear	15.1	7.28	3.07	.34	12.65	
	0830	5									
	1040	8									
	1300	10									
	1700	25	-	702	Black-gray + Clear	16.6	7.77	4.98	.69	12.64	dry
10-8-97	0830	29	=22	691	"	15.5	7.61	4.71	.52	N/A	dry
	0850	32	29'	>999	"	14.7	7.40	3.25	3.94		dry
	1130	35	21.45	977	"	15.6	7.61	3.24	~~5.69~~ 1.29		dry

H_2S TINT.

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~~Top of Casing to top of PVC~~ 6.47 water level from top of casing

Casing Height - 2' 3 5/8"

Well Development Log

Page 1 of 1

Project Number:	771491	OU No:	
Project Name:	PBOW	Site No.:	
Form Completed by:	GD.	Well No.:	IT-A43-GW-002
Well Developed by/firm:	IT Corp.	Date Started:	10-4-97

Monitoring Well Information

Development Method: Surge with Bailer & Pump.

Development Equipment: Bailer & Grundfos Pump

Screen Height (ft): 10'

Filter pack lenght (ft): 0014'

Casing Diameter (in): 2"

Begining Measurements

Depth to Water (ft): 5.75

Total depth of Well (ft): 18.01

Monitoring Well Purge Calculations

Volume of Water in Casing: Gallons/foot = 0.041 x d^2, where casing diameter in inches = (0.041 x (_____$)^2$) = _____ gal/ft.

Well Volume (gallons) = Water Column (ft) x Gal/ft = _____ ft x _____ gal/ft = _____ gallons

Volume of Water in Filter Pack:

Gallons/foot = 0.041 x (D^2 - d^2), where D is total borehole diameter in inches & d is casing diameter in inches = 0.041 x ((_____$)^2$ - (_____$)^2$) = _____ gal/ft.

Filter Pack Volume (gal) = (the less of the filter pack lenght or water column) x gal/ft x porosity (0.3) = (_____)ft x (_____) gal/ft x 0.3 = _____ gal

Purge Well Volume: Purge well Volume = Filter pack volume + Well Volume = _____ gal + _____ gal = 7.91 gal.

1 x Purge Well Volume	2 x Purge Well Volume	3 x Purge Well Volume	4 x Purge Well Volume	5 x Purge Well Volume
7.91	15.82	23.73	31.64	39.55

Development Record

Time (24 hrs)	Purge Volume (gal)	Water Level (ft) (TOC)	Turbidity (NTU)	~~Clarity~~ ~~Redox (color)~~	Temp. (C)	pH (Std Units)	Conductivity (mS/cm)	Comments
14:00	20	9.03	999		21.2	6.36	0.925	2.5 Gal/min Begin Develop. Started
1443	30		512		22.8	6.49	0.806	water is very silty will not take ~~measurement until clears up~~
1453	34		63		22.1	6.61	0.810	
1505	40		10		21.9	6.66	0.807	Purge Rate 0.5 gal/min
1510	43		10		21.9	6.75	0.805	
1515	48		10		21.9	6.77	0.808	

FROM: LAURAY COPIER SERVICE FAX: 205-852-0724 01-03-97 FRI 11:21 PAGE: 04

Well Development Log

Project Number: 771
Project Name: PBW
Form Completed by: B. Pendell
Well Developed by/firm:

OU No:
Site No.:
Well No.: IT-AA1-GW-002
Date Started: 10-5-97

Monitoring Well Information

Development Method: Bailer for 3 gal
Development Equipment: Mono Grundfos Pump

Screen Height (ft): 15'
Filter pack lenght (ft):
Casing Diameter (in): 2"

Begining Measurements
Depth to Water (ft): 5.59
Total depth of Well (ft): 24.61
WC = 19.02

Monitoring Well Purge Calculations

Volume of Water in Casing: Gallons/foot = 0.041 x d^2, where casing diameter in inches = (0.041 x (2 $)^2$) = .164 gal/ft.
Well Volume (gallons) = Water Column (ft) x Gal/ft = 19.02 ft x .164 gal/ft = 3.12 gallons

Volume of Water in Filter Pack:
Gallons/foot = 0.041 x (D^2 - d^2), where D is total borehole diameter in inches & d is casing diameter in inches = 0.041 x ((6 $)^2$ - (2 $)^2$) = 1.312 gal/ft.
Filter Pack Volume (gal) = (the less of the filter pack lenght or water column) x gal/ft x porosity (0.3) = (19.02)ft x (1.312) gal/ft x 0.3 = 7.486 gal

Purge Well Volume: Purge well Volume = Filter pack volume + Well Volume = 7.486 gal + 3.12 gal = 10.606 gal.

1 x Purge Well Volume	2 x Purge Well Volume	3 x Purge Well Volume	4 x Purge Well Volume	5 x Purge Well Volume
10.606	21.212	31.818	42.424	53.03

Development Record

Time (24 hrs)	Purge Volume (gal)	Water Level (ft) (TOC)	Turbidity (NTU)	Clarity (color)	Temp. (C)	pH (Std Units)	Conductivity (mS/cm)	Comments D.O.	MV
1015	initial	5.59	>999	Dark Brown/silty	14.6	6.87	3.41	2.76	-95.0
1035	10	13.00	>999	" "	15.6	6.74	3.67	1.78	-224.2
1107	12	12.00	>999	/clearing	22.7	7.18	3.87	6.13	-198.
1110	14	12.30	>999	" more clear	18.7	6.79	3.06	6.70	-171.1
1140	20	8.00	>999	"	26.9	7.05	3.69	5.48	-176.1
1510	23	6.79	>999	"	16.8	6.79	3.18	4.70	-100.4
1540	37	11.20	>999	Dark Brown/silty	16.9	6.96	3.21	4.69	-96.7
1620	46	13.20	>999	"	15.6	6.89	3.19	6.71	-97.8
1705	55	13.10	>999	clearing	15.7	6.90	3.32	6.03	-181.9

Pumping @ ≈ 1.5 gpm
- well = drying out / cut-off allow for recharge
- resumed @ 7.72 - Purge
- Continue bailing while purge in IT-AA1 PBGW #1
- Still Bailing
- " "
- completed 5 to W

top of water column 10/6 0950 after 14 hr recharge 5.68 391 clear clear after recharge of 1/2 gal 16.1 6.32 2.83 5.61 10.4 → Suspect → Last well = 10.5

bottom of water 0955 " — >999 Silty-Brown 15.9 6.43 3.07 6.53

6.72 7.98 7.46

Well Development Log

Project Number:
Project Name: CBM
Form Completed by: B. Bundt
Well Developed by/firm:

High H_2S

OU No:
Site No.:
Well No.: IT-AA1-13EDGW-001
Date Started: 10-5-97 SV

Monitoring Well Information

Development Method: Bailer = 3 gal. then
Development Equipment: Grundfos pump

Screen Height (ft): 15'
Filter pack lenght (ft):
Casing Diameter (in): 2"

Begining Measurements
Depth to Water (ft): 30.41
Total depth of Well (ft): 66
WC = 35.59

Monitoring Well Purge Calculations

Volume of Water In Casing: Gallons/foot = 0.041 x d^2, where casing diameter in inches = (0.041 x (2)^2) = .164 gal/ft.
Well Volume (gallons) = Water Column (ft) x Gal/ft = 35.59 ft x .164 gal/ft = 5.84 gallons

Volume of Water In Filter Pack:
Gallons/foot = 0.041 x (D^2 - d^2), where D is total borehole diameter in inches & d is casing diameter in inches = 0.041 x ((6)^2 - (2)^2) = 1.312 gal/ft.
Filter Pack Volume (gal) = (the less of the filter pack lenght or water column) x gal/ft x porosity (0.3) = (35.59)ft x (1.312) gal/ft x 0.3 = 14 gal

Purge Well Volume: Purge well Volume = Filter pack volume + Well Volume = 14 gal + 5.84 gal = 19.84 gal.

1 x Purge Well Volume	2 x Purge Well Volume	3 x Purge Well Volume	4 x Purge Well Volume	5 x Purge Well Volume
19.84	39.68	59.52	79.36	99.20

Development Record

Time (24 hrs)	Purge Volume (gal)	Water Level (ft) (TOC)	Turbidity (NTU)	Clarity (color)	Temp. (C)	pH (Std Units)	Conductivity (mS/cm)	Comments DO	MV	pumping @ 1 GPM
1100	Initial	30.41	565	Cleariish-Brown	13.7	7.25	3.94	.81	-534.1	
1205	10	34.32	>999	Grayish/Black to clear	16.1	7.09	6.50	.57	-355.4	
1220	20	42.8	>999	"	17.4°	6.95	7.83	.08	-362.2	- well dried up / allow recharge
1245	25	45.6	>999	"	16.8	6.87	7.86	.78	-363.2	- pumping @ 1/2 gpm
1455	31	38.5	>649	Cloudy Gaseous	18.1	6.81	7.41	.20	-361.2	- Free Product observed via SB K
1540	36	36.21	513	"	20.0	7.03	7.41	1.21	-369.1	
1620	40	35.19	598	"	16.7	6.99	7.33	.49	-361.7	
1710	45	35.25	473	clearing/"	16.5	6.90	7.39	-1.05	-352.9	
1730	50	—	—	—	—	—	—	—		

cont. p. 2

MON-MON. pumping @ ≈ 1gpm for ≈ 7 min before well dries out, then allow recharge for ≈ 20 min. } Each cycle yielding ≈ 5 gal
- will take WQ readings every other cycle.

Well Development Log

OU No:
Site No.:
Well No.: IT-AA1-BEDGW-001
Date Started: 10-6-97 MON.

By MON. MORN. 0930 water level recharge = 30.6'

Development Record (continuation)

Time (24 hrs)	Purge Volume (gal)	Water Level (ft) (TOC)	Turbidity (NTU)	Clarity (color)	Temp. (C)	pH (Std Units)	Conductivity (mS/cm)	Comments D.O.	M.V.
0940	55	≈ 33'	627	clear to grey-gassy	13.9	6.93	7.28	.91	-266.8 initially pumping @ 1.25 gpm
1015	60	—	—		—	—	—	—	—
1045	65	≈ 32'	591	"	15.5	6.92	7.32	(.91) → (10.4) → SUSPECT!	
1130	70	"	—	—	—	—	—		
1215	75	"	621	"	15.3	6.94	7.30	.95	
1300	80	"	744	"	18.1	7.16	6.10	.32	
1415	85	≈ 32	676	"	17.7	7.01	6.02	-1.45	/ FINAL: as per G. Bucklin/ Springer

Range and Average Discharge Rate:
Maximum Drawdown during Development: at gpm.
Disposition of Development Water: Drums Baker Tank Other
Number of Containers for Development Water:

Comments:

Final Measurements

Total depth of Well (ft): 66

Date Completed:

Hours Developed:

FROM: ECOLOGY COPIER SERVICE FAX: 206-85[illegible] 06-02-97 Fri 12:12 PAGE: 05

0815

Top Protective Casing 3.08

Well Development Log

Project Number:	771481	OU No:	PBOW
Project Name:	PBOW	Site No.:	AA2
Form Completed by:	Greg Buchman	Well No.:	IT-AA2-BEDGW-001
Well Developed by/firm:	IT Corp	Date Started:	10-5-97

Monitoring Well Information

Development Method: Surge with Bailer + Pump Grundfos 2"

Development Equipment:

Screen Height (ft):	15'	Begining Measurements	
Filter pack lenght (ft):	26'	Depth to Water (ft):	12.49'
Casing Diameter (in):	2"	Total depth of Well (ft):	45.74

Monitoring Well Purge Calculations

Volume of Water in Casing: Gallons/foot = 0.041 x d^2, where casing diameter in inches = (0.041 x (_____$)^2$) = _____ gal/ft.

Well Volume (gallons) = Water Column (ft) x Gal/ft = _____ ft x _____ gal/ft = _____ gallons

Volume of Water in Filter Pack:

Gallons/foot = 0.041 x (D^2 - d^2), where D is total borehole diameter in inches & d is casing diameter in inches = 0.041 x ((_____$)^2$- (_____$)^2$) = _____ gal/ft.

Filter Pack Volume (gal) = (the less of the filter pack lenght or water column) x gal/ft x porosity (0.3) = (_____)ft x (_____) gal/ft x 0.3 = _____ gal

Purge Well Volume: Purge well Volume = Filter pack volume + Well Volume = _____ gal + _____ gal = _____ gal.

1 x Purge Well Volume	2 x Purge Well Volume	3 x Purge Well Volume	4 x Purge Well Volume	5 x Purge Well Volume
16.2	32.4	48.6	64.8	81

Development Record

Time (24 hrs)	Purge Volume (gal)	Water Level (ft) (TOC)	Turbidity (NTU)	Clarity (color)	Temp. (C)	pH (Std Units)	Conductivity (mS/cm)	Comments D.O
0905	5 gal	31.2	568	Slightly Cloudy	15.4	7.25	0.96	5.0 / 09:23 Well Went Dry
09:23	well	went Dry.	14 gals. Pumped / will allow to recharge.					
09:40	Begin Purging well again			0944	Dry again		15 gal	Pumping out will allow to Recharge
12:45 (17.90 water level)								
12:54	15		466		16.3	7.40	1.54	0.0. 4.97
13:02	17		999		16.9	7.41	1.10	5.41
13:07	19		997		17.2	7.20	1.13	3.89
13:13	20		999		17.2	7.19	1.15	4.73
13:20	well went Dry. 22 gal.							

$34.2 [52.7 (2.5 \times 0.0) - 26.3 (2.0 \times 0.0)] + 26.3 \times 0.0 = 76.9$

$34.2 [52.7 (2.5 \times 0.0) - 26.3 (2.0 \times 0.0)] + 26.3 \times 0.0 = 76.9$

FROM: ELLIOTT COPIER SERVICE FAX: 205-852-0724 01-03-97 Fri 12:11 PAGE: 04

Well Development Log

OU No:
Site No.: AA2
Well No.: IT-AA2-RE DGW-001
Date Started: 10-5-97

Development Record (continuation)

Time (24 hrs)	Purge Volume (gal)	Water Level (ft) (TOC)	Turbidity (NTU)	Clarity (color)	Temp. (C)	pH (Std Units)	Conductivity (mS/cm)	Comments
15:10	21		999		17.5	7.46	1.08	DO-6.71, Redox/mv. 48.0
15:18	24		994		17.2	7.46	1.14	DO-7.09 " 136.6
18:00	35		999		17.2	7.45	1.09	5.56
10-6-97		Water = 16.69		will Purge again				
11:20	36		735		14.8	7.49	1.11	3.39 135.4
11:24	37		291		13.5	7.42	1.10	4.70 -25.3
11:26	38		999		13.8	7.35	1.14	3.33 -138.1
11:30	41	well went	Dry.					

USACE said well is developed

Range and Average Discharge Rate: ~~[illegible]~~ well went Dry
Maximum Drawdown during Development: at gpm.
Disposition of Development Water: Drums Baker Tank Other
Number of Containers for Development Water:

Comments: Well is clean in Top portion of well after it sets over night.

Final Measurements

Total depth of Well (ft): 45.74
Date Completed: 10-6-97
Hours Developed: 6hrs+

Well Development Log

Page 1 of 1

Project Number:	771481	OU No:	
Project Name:	PBW	Site No.:	
Form Completed by:	B. Benedit	Well No.:	EB-SP03
Well Developed by/firm:	IT	Date Started:	10-9-97

Monitoring Well Information

Development Method:	Bailer	Screen Height (ft):		Begining Measurements	
Development Equipment:		Filter pack lenght (ft):		Depth to Water (ft):	6.50
		Casing Diameter (in):	2"	Total depth of Well (ft):	11.90
				wc = 5.40	

Monitoring Well Purge Calculations

Volume of Water in Casing:

Gallons/foot = 0.041 x d^2, where casing diameter in inches = (0.041 x (2)^2) = .164 gal/ft.

Well Volume (gallons) = Water Column (ft) x Gal/ft = 5.4 ft x .164 gal/ft = .886 gallons

Volume of Water in Filter Pack:

Gallons/foot = 0.041 x (D^2 - d^2), where D is total borehole diameter in inches & d is casing diameter in inches = 0.041 x ((6)^2 - (2)^2) = 1.312 gal/ft.

Filter Pack Volume (gal) = (the less of the filter pack lenght or water column) x gal/ft x porosity (0.3) = (5.4)ft x (1.312) gal/ft x 0.3 = 2.13 gal

Purge Well Volume: Purge well Volume = Filter pack volume + Well Volume = .886 gal + 2.13 gal = 3.02 gal.

1 x Purge Well Volume	2 x Purge Well Volume	3 x Purge Well Volume	4 x Purge Well Volume	5 x Purge Well Volume
3.02	6.04	9.06	-	

Development Record

Time (24 hr)	Purge Volume (gal)	Water Level (ft) (TOC)	Turbidity (NTU)	Clarity (color)	Temp. (C)	pH (Std Units)	Conductivity (mS/cm)	Comments D.O.	
1220	INITIAL	6.5	394	RUSTY BROWN	19.4	6.3	2.81	3.51	Bailing
1230	4 1/2	10'	>999	"	~~19.8~~ 18.3	6.56	2.63	6.49	
1315	9	10'	>761	"	18.6	6.51	3.29	5.51	- dried out

Well Development Log

Project Number: 771481
Project Name: PBCW
Form Completed by: B. Burnett
Well Developed by/firm: IT Corp

OU No:
Site No.:
Well No.: IT MW01
Date Started: 10-7-97

Monitoring Well Information

Development Method: Bailer
Development Equipment:

Screen Height (ft):
Filter pack lenght (ft):
Casing Diameter (in): 2"

Begining Measurements
Depth to Water (ft): 6.79
Total depth of Well (ft): 11.75
4.96

Monitoring Well Purge Calculations

Volume of Water in Casing: Gallons/foot = 0.041 x d^2, where casing diameter in inches = (0.041 x (2)^2) = .164 gal/ft.
Well Volume (gallons) = Water Column (ft) x Gal/ft = 4.96 ft x .164 gal/ft = .814 gallons

Volume of Water in Filter Pack:
Gallons/foot = 0.041 x (D^2 - d^2), where D is total borehole diameter in inches & d is casing diameter in inches = 0.041 x ((6)^2 - (2)^2) = 1.312 gal/ft.
Filter Pack Volume (gal) = (the less of the filter pack lenght or water column) x gal/ft x porosity (0.3) = (4.96)ft x (1.312) gal/ft x 0.3 = 1.95 gal

Purge Well Volume: Purge well Volume = Filter pack volume + Well Volume = 1.95 gal + .814 gal = 2.76 gal.

1 x Purge Well Volume	2 x Purge Well Volume	3 x Purge Well Volume	4 x Purge Well Volume	5 x Purge Well Volume
2.76	5.52	8.29	11.05	13.8

Development Record

Time (24 hrs)	Purge Volume (gal)	Water Level (ft) (TOC)	Turbidity (NTU)	Clarity (color)	Temp. (C)	pH (Std Units)	Conductivity (mS/cm)	Comments D.O.	M.V	
0945	INITIAL	6.79	292	Silty Brown	16.0	8.10	.426	5.05	N/A	Bailing
100	2	10.00		"						
1020	3 1/2	≈ 10.50	848	"	16.6	7.47	.519	4.57		Bailed
1730	~~2 1/2~~ 6	10.48	710	"	16.9	7.37	.523	4.61		Bailed
0920	8	10.40	505	"	16.2	7.84	.426	4.93		

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Well Development Log

Project Number: 771 481
Project Name: PBOW
Form Completed by: B. Burnett
Well Developed by/firm: IT

OU No:
Site No.:
Well No.: IT MW09
Date Started: 10-8-97

Monitoring Well Information

Development Method:
Development Equipment: Bailer

Screen Height (ft):
Filter pack lenght (ft):
Casing Diameter (in): 2"

Begining Measurements
Depth to Water (ft): 6.75
Total depth of Well (ft): 15.00
WC = 8.25

Monitoring Well Purge Calculations

Volume of Water In Casing: Gallons/foot = 0.041 x d^2, where casing diameter in inches = (0.041 x (2)^2) = .164 gal/ft.
Well Volume (gallons) = Water Column (ft) x Gal/ft = 8.25 ft x .164 gal/ft = 1.353 gallons

Volume of Water in Filter Pack:
Gallons/foot = 0.041 x (D^2 - d^2), where D is total borehole diameter in inches & d is casing diameter in inches = 0.041 x ((6)^2 - (2)^2) = 1.312 gal/ft. 3.4
Filter Pack Volume (gal) = (the less of the filter pack lenght or water column) x gal/ft x porosity (0.3) = (8.25)ft x (1.312) gal/ft x 0.3 = 3.25 gal

Purge Well Volume: Purge well Volume = Filter pack volume + Well Volume = 3.25 gal + 1.35 gal = 4.6 gal.

1 x Purge Well Volume	2 x Purge Well Volume	3 x Purge Well Volume	4 x Purge Well Volume	5 x Purge Well Volume
4.6	8.12	13.8	-	

Development Record

Time (24 hrs)	Purge Volume (gal)	Water Level (ft) (TOC)	Turbidity (NTU)	Clarity (color)	Temp. (C)	pH (Std Units)	Conductivity (mS/cm)	Comments D.O.	Comments BAILING
1820	INITIAL	6.75	430	Brown Silty	17.7	7.44	2.23	2.93	
1835	5 + 3 = 8	12.5	7999	"	16.0	7.39	2.88	4.30	
10/9 0830	9+1 = 10	12.4	7999	"	14.6	7.43	2.87	5.56 → 4.80	

Just .435 on 10-8 to 0820 on 10-9, well did not recharge, at all!!

Well Development Log

Project Number: 771481
Project Name: PIBOW
Form Completed by: B. Brandt
Well Developed by/firm: IT

OU No:
Site No.:
Well No.: MW-MW-12
Date Started: 10-8-97

Monitoring Well Information

Development Method:
Development Equipment: Bail

Screen Height (ft):
Filter pack lenght (ft):
Casing Diameter (in): 2"

Begining Measurements
Depth to Water (ft): 10.29
Total depth of Well (ft): 15.05
WC = 4.76

Monitoring Well Purge Calculations

Volume of Water in Casing: Gallons/foot = 0.041 x d^2, where casing diameter in inches = (0.041 x (2)^2) = .164 gal/ft.
Well Volume (gallons) = Water Column (ft) x Gal/ft = 4.76 ft x .164 gal/ft = .78 gallons

Volume of Water in Filter Pack:
Gallons/foot = 0.041 x (D^2 - d^2), where D is total borehole diameter in inches & d is casing diameter in inches = 0.041 x ((6)^2 - (2)^2) = 1.312 gal/ft.
Filter Pack Volume (gal) = (the less of the filter pack lenght or water column) x gal/ft x porosity (0.3) = (4.76)ft x (1.312) gal/ft x 0.3 = ~~6.25~~ gal 1.87

Purge Well Volume: Purge well Volume = Filter pack volume + Well Volume = ~~6.25~~ 1.87 gal + .78 gal = ~~7.03~~ 2.65 gal.

1 x Purge Well Volume	2 x Purge Well Volume	3 x Purge Well Volume	4 x Purge Well Volume	5 x Purge Well Volume
2.65 ~~7.03~~	5.3 ~~14.06~~	7.95 ~~21.09~~	-	

dried 3X

Development Record

Time (24 hrs)	Purge Volume (gal)	Water Level (ft) (TOC)	Turbidity (NTU)	Clarity (color)	Temp. (C)	pH (Std Units)	Conductivity (mS/cm)	Comments D.O.	MV
0945	within	10.29	165	CLEAR	15.6	7.47	.810	2.02	
1000	3 gal	dry							
1745		/10.55	220		19.7	7.49	.797	2.22	Bailed Dry

Well Development Log

Project Number: 771481
Project Name: PIBW
Form Completed by: B. Bundt
Well Developed by/firm: IT

OU No:
Site No.:
Well No.: MW-W09
Date Started: 10-8-97

Monitoring Well Information

Development Method:
Development Equipment: Pump-generator

Screen Height (ft):
Filter pack lenght (ft):
Casing Diameter (in): 2"

Begining Measurements
Depth to Water (ft): 6.43
Total depth of Well (ft): 17.00
WC = 10.57

Monitoring Well Purge Calculations

Volume of Water in Casing: Gallons/foot = 0.041 x d^2, where casing diameter in inches = (0.041 x (2)^2) = .164 gal/ft.
Well Volume (gallons) = Water Column (ft) x Gal/ft = 10.57 ft x .164 gal/ft = 1.73 gallons

Volume of Water in Filter Pack:
Gallons/foot = 0.041 x (D^2 - d^2), where D is total borehole diameter in inches & d is casing diameter in inches = 0.041 x ((6)^2-(2)^2) = 1.312 gal/ft.
Filter Pack Volume (gal) = (the less of the filter pack lenght or water column) x gal/ft x porosity (0.3) = (~~4.16~~ 10.57)ft x (1.312) gal/ft x 0.3 = 4.16 gal ~~3.54~~ 4.16

Purge Well Volume: Purge well Volume = Filter pack volume + Well Volume = 4.16 gal + 1.73 gal = 5.89 gal.

1 x Purge Well Volume	2 x Purge Well Volume	3 x Purge Well Volume	4 x Purge Well Volume	5 x Purge Well Volume
5.89	11.78	17.67	-	

Development Record

Time (24 hrs)	Purge Volume (gal)	Water Level (ft) (TOC)	Turbidity (NTU)	Clarity (color)	Temp. (C)	pH (Std Units)	Conductivity (mS/cm)	Comments D.O.	RATE
1015	initial	6.43	20	Silty-semi clear	16.5	8.10	.617	1.86	
1025	2	8.30	255	clear	16.6	7.72	.595	5.09	.25 GPM
1045	8	8.75	20	"	19.5	7.66	.606	5.76	"
1110	16	8.90	11	"	19.4	7.51	.600	5.89	

Well Development Log

Project Number: 771481
Project Name: PBOW
Form Completed by: B. Bundy
Well Developed by/firm: IT

OU No:
Site No.:
Well No.: MK-MW-14
Date Started: 10-8-97

Monitoring Well Information

Development Method:
Development Equipment: Bailer

Screen Height (ft):
Filter pack lenght (ft):
Casing Diameter (in): 2"

Begining Measurements
Depth to Water (ft): 8.40
Total depth of Well (ft): 12.00

WC = 3.6

Monitoring Well Purge Calculations

Volume of Water in Casing: Gallons/foot = 0.041 x d^2, where casing diameter in inches = (0.041 x (2)^2) = .164 gal/ft.
Well Volume (gallons) = Water Column (ft) x Gal/ft = 3.6 ft x .164 gal/ft = .59 gallons

Volume of Water in Filter Pack:
Gallons/foot = 0.041 x (D^2 - d^2), where D is total borehole diameter in inches & d is casing diameter in inches = 0.041 x ((6)^2 - (2)^2) = 1.312 gal/ft.
Filter Pack Volume (gal) = (the less of the filter pack lenght or water column) x gal/ft x porosity (0.3) = (3.6)ft x (1.312) gal/ft x 0.3 = 1.42 gal

Purge Well Volume: Purge well Volume = Filter pack volume + Well Volume = 1.42 gal + .59 gal = 2 gal.

1 x Purge Well Volume	2 x Purge Well Volume	3 x Purge Well Volume	4 x Purge Well Volume	5 x Purge Well Volume
2	4	6	-	

Development Record

Time (24 hrs)	Purge Volume (gal)	Water Level (ft) (TOC)	Turbidity (NTU)	Clarity (color)	Temp. (C)	pH (Std Units)	Conductivity (mS/cm)	Comments D.O.	
1500	initial	8.40	458	clear	17.6	7.06	.328	2.31	Top of water Column
1510	4	10.50	>999	mud brown	16.1	6.73	.894	3.78	Bottom of " "
1515	6	10.50	7999	"	16.2	6.75	.791	3.89	" " " "

Well Development Log

Project Number: 771481
Project Name: PBOW
Form Completed by: B. Bundt
Well Developed by/firm:

OU No:
Site No.:
Well No.: MK MW-15
Date Started: 10-8-97

Monitoring Well Information

Development Method:
Development Equipment: Bailer

Screen Height (ft):
Filter pack lenght (ft):
Casing Diameter (in): 2"

Begining Measurements
Depth to Water (ft): 8.55
Total depth of Well (ft): 11.55
WC=3'

Monitoring Well Purge Calculations

Volume of Water in Casing:

Gallons/foot = 0.041 x d^2, where casing diameter in inches = (0.041 x (2)^2) = .164 gal/ft.

Well Volume (gallons) = Water Column (ft) x Gal/ft = 3 ft x .164 gal/ft = .492 gallons

Volume of Water in Filter Pack:

Gallons/foot = 0.041 x (D^2 - d^2), where D is total borehole diameter in inches & d is casing diameter in inches = 0.041 x ((6)^2 - (2)^2) = 1.312 gal/ft.

Filter Pack Volume (gal) = (the less of the filter pack lenght or water column) x gal/ft x porosity (0.3) = (3)ft x (1.312) gal/ft x 0.3 = 1.18 gal

Purge Well Volume:

Purge well Volume = Filter pack volume + Well Volume = .492 gal + 1.18 gal = 1.67 gal.

1 x Purge Well Volume	2 x Purge Well Volume	3 x Purge Well Volume	4 x Purge Well Volume	5 x Purge Well Volume
1.67	3.35	[illegible]02	-	

Development Record

Time (24 hrs)	Purge Volume (gal)	Water Level (ft) (TOC)	Turbidity (NTU)	Clarity (color)	Temp. (C)	pH (Std Units)	Conductivity (mS/cm)	Comments D.O.
1430	initial	9.00	969	Rusty Brown	~~22.2~~/24	8.43	.273	3.62
1450	4	≈10.5	>999	to Dark Brown	17.2	7.90	.125	4.51
1457	6	≈10.5	>999	"	17.1	7.91	.165	4.61

well maintained a 1' recharge level throughout duration of Bailing.

Well Development Log

Page 1 of 1

Project Number: 771481
Project Name: CBW
Form Completed by: B Brunelt
Well Developed by/firm: IT

OU No:
Site No.:
Well No.: MK-MW-19
Date Started: 10-8-97

Monitoring Well Information

Development Method:
Development Equipment: Pump + Bail

Screen Height (ft):
Filter pack lenght (ft):
Casing Diameter (in): 2"

Begining Measurements
Depth to Water (ft): 6.10
Total depth of Well (ft): 16.22
WC = 10.12

Monitoring Well Purge Calculations

Volume of Water in Casing:
Gallons/foot = 0.041 x d^2, where casing diameter in inches = (0.041 x (2)^2) = .164 gal/ft.
Well Volume (gallons) = Water Column (ft) x Gal/ft = 10.12 ft x .164 gal/ft = 1.66 gallons

Volume of Water in Filter Pack:
Gallons/foot = 0.041 x (D^2 - d^2), where D is total borehole diameter in inches & d is casing diameter in inches = 0.041 x ((6)^2 - (2)^2) = 1.312 gal/ft.
Filter Pack Volume (gal) = (the less of the filter pack lenght or water column) x gal/ft x porosity (0.3) = (10.12)ft x (1.312) gal/ft x 0.3 = 3.98 gal

Purge Well Volume: Purge well Volume = Filter pack volume + Well Volume = 3.98 gal + 1.66 gal = 5.64 gal.

1 x Purge Well Volume	2 x Purge Well Volume	3 x Purge Well Volume	4 x Purge Well Volume	5 x Purge Well Volume
5.64	11.28	16.92	-	

Development Record

Time (24 hrs)	Purge Volume (gal)	Water Level (ft) (TOC)	Turbidity (NTU)	Clarity (color)	Temp. (C)	pH (Std Units)	Conductivity (mS/cm)	Comments D.O.	Comments Rate
1540	initial	6.10	985	Brown silty	23.6	8.37	.357	7.44	.75 / GPM
1550	8	13.40	>999	clearer "	19	7.67	.917	4.55	
1555	9	dry		"				10	
1630	16	dry	>999	clearer	20.5	7.82	.881	10.64	

22

Well Development Log

Project Number: 771481
Project Name: PBW
Form Completed by: B. Bennett
Well Developed by/firm: IT

OU No:
Site No.:
Well No.: MK MW 20
Date Started: 10-8-97

Monitoring Well Information

Development Method:
Development Equipment: Grundfos

Screen Height (ft):
Filter pack lenght (ft):
Casing Diameter (in): 2"

Begining Measurements
Depth to Water (ft): 4.13
Total depth of Well (ft): 22.70
WC = 18.57

Monitoring Well Purge Calculations

Volume of Water in Casing:
Gallons/foot = 0.041 x d^2, where casing diameter in inches = (0.041 x (2)^2) = .164 gal/ft.
Well Volume (gallons) = Water Column (ft) x Gal/ft = 18.57 ft x .164 gal/ft = 3.05 gallons

Volume of Water in Filter Pack:
Gallons/foot = 0.041 x (D^2 - d^2), where D is total borehole diameter in inches & d is casing diameter in inches = 0.041 x ((6)^2 - (2)^2) = 1.312 gal/ft.
Filter Pack Volume (gal) = (the less of the filter pack lenght or water column) x gal/ft x porosity (0.3) = (18.57)ft x (1.312) gal/ft x 0.3 = 7.31 gal

Purge Well Volume: Purge well Volume = Filter pack volume + Well Volume = 7.31 gal + 3.05 gal = 10.36 gal.

1 x Purge Well Volume	2 x Purge Well Volume	3 x Purge Well Volume	4 x Purge Well Volume	5 x Purge Well Volume
10.36	20.72	31.08	-	

Development Record

Time (24 hrs)	Purge Volume (gal)	Water Level (ft) (TOC)	Turbidity (NTU)	Clarity (color)	Temp. (C)	pH (Std Units)	Conductivity (mS/cm)	Comments D.O.
1150	INITIAL	4.13		Grey-Black Turbid → clear				
1202	5	11.00	347	↓	19.2	7.42	2.27	~~6.61~~ 4.21 dried out
1330	* 10→12	17.00	682		22.1	7.81	2.72	3.91 dried out
1710	15	21.00	>999	"	21.1	7.67	2.54	4.19 Bailed by hand; dried out.

well dried out, @ 22' - after 1½ hrs of recharge - recharged ≈ 1.5' @ 1330 DTW of 17.00. 2 gals pumped = dry well.

FROM: ECONOMY COPIER SERVICE FAX: 205-852-0724 Oct-03-97 Fri 12:11 PAGE: 04

Calibration
pH .99
Cond 4.45
Turbo
D.O 9.87

TEMP 20.3

(0.02) 56 [(0.26)(14) - (0.02)(11.56).25]
0.23 3.64 0.23

Well Development Log

Project Number:	771481	OU No:	
Project Name:	Plum Brook Ordnance Works	Site No.:	RA
Form Completed by:	Greg Brethen	Well No.:	EB-RA-01
Well Developed by/firm:	I.T. Corp.	Date Started:	10-9-97

Monitoring Well Information

Development Method:	Pump (Grundfos)	Screen Height (ft):	10	Begining Measurements	
Development Equipment:	2" Grundfos Pump	Filter pack lenght (ft):	14	Depth to Water (ft):	7.40
		Casing Diameter (in):	8.25	Total depth of Well (ft):	18.96

2" well. Stainless Steel.

Monitoring Well Purge Calculations

Volume of Water in Casing: Gallons/foot = 0.041 x d^2, where casing diameter in inches = (0.041 x (_____$)^2$) = _____ gal/ft.
Well Volume (gallons) = Water Column (ft) x Gal/ft = _____ ft x _____ gal/ft = _____ gallons

Volume of Water in Filter Pack:
Gallons/foot = 0.041 x (D^2 - d^2), where D is total borehole diameter in inches & d is casing diameter in inches = 0.041 x ((_____$)^2$- (_____$)^2$) = _____ gal/ft.
Filter Pack Volume (gal) = (the less of the filter pack lenght or water column) x gal/ft x porosity (0.3) = (_____)ft x (_____) gal/ft x 0.3 = _____ gal

Purge Well Volume: Purge well Volume = Filter pack volume + Well Volume = _____ gal + _____ gal = _____ gal.

1 x Purge Well Volume	2 x Purge Well Volume	3 x Purge Well Volume	4 x Purge Well Volume	5 x Purge Well Volume
8.2	16.2	24.3		

Development Record

Time (24 hrs)	Purge Volume (gal)	Water Level (ft) (TOC)	Turbidity (NTU)	Clarity (color)	Temp. (C)	pH (Std Units)	Conductivity (mS/cm)	Comments
13:00	2		3	Clear	19.8	6.86	0.967	D.O - 0.97
13:05	5	well went Dry.						~~3.85~~
13:30	6		999		22.8	7.14	0.966	D.O - 2.95
13:33	7		125		21.6	7.12	0.988	D.O - 4.54
13:40	10		296		22.2	7.07	0.985	D.O - 3.08
13:50	14		75		23.3	7.05	0.988	D.O. - 4.07
14:08	19		10		24.1	7.07	0.891	D.O 3.44
14:22	25		0		24.0	7.8	0.896	D.O 4.21

FROM: ELLIOTT LUPIER SERVICE FAX: 205-822-3724 OCT-03-97 Fri 12:11 PAGE: 04

APPENDIX C

GEOTECHNICAL TESTING DATA

H. C. NUTTING COMPANY
EMPLOYEE OWNED
GEOTECHNICAL, ENVIRONMENTAL AND TESTING ENGINEERS
SINCE 1921

CENTRAL OHIO REGION
GAHANNA COMMERCE CENTER
790 MORRISON ROAD
COLUMBUS, OHIO 43230-6642
(614) 863-3113

November 12, 1997
W.O. 60364.002

Mr. Alan Belasco
Belasco Drilling Services, Inc.
1519 Alum Creek Drive
Columbus, Ohio 43209

RE: Results of Laboratory Testing
NASA - Plum Brook Station
Sandusky, Ohio

Dear Mr. Belasco:

Enclosed herewith are results of the laboratory testing requested for the referenced project. This testing was performed in accordance with our unit rate proposal dated June 23, 1997, and per Belasco Drilling Services, Inc. authorizations of scope as defined by Mr. Alan Belasco. We have also included Table I - "Classification Test Data", which summarizes pertinent data regarding water content, Atterberg limits, sieve and hydrometer and USCS classification.

We believe this completes all of the testing requested per the work request noted above. Please feel free to call if there are any questions regarding this information, or if additional testing is required.

We appreciate this opportunity to provide our services to you. Thank you for your consideration.

Respectfully yours,
H. C. Nutting Company

Gregory C. Butcher, P.E.
Columbus Operations Manager

GCB/ljh

H. C. Nutting Company
790 Morrison Road
Columbus, Ohio 43230

10/30/97smo

Belasco Drilling Services Inc.
NASA - Plum Brook Station
Sandusky, OH
HCN W.O. # 60364.002

TABLE I

CLASSIFICATION TEST DATA

Boring No.	Sample No.	Depth (Ft.)	Mechanical Analysis				Moisture Content (%)	Atterberg Limits			U.S.C.S Classification
			% Gravel	% Sand	% Silt	% Clay		Liquid Limit (%)	Plastic Limit (%)	Plasticity Index	
IT-AA1-BEDGW-001	1	10-12	0	7	72	21	21.1	25	20	5	CL-ML
"	2	18-20	0	14	44	42	32.6	26	19	7	CL-ML
IT-AA2-GW-002	1	6-8	0	2	62	36	24.3	31	22	9	CL
"	2	10-12	0	2	48	50	25.7	31	21	10	CL
"	3	16-18	0	17	34	49	27.8	30	18	12	CL
IT-MNTA-BEDGW-001	1	12-14	0	1	34	65	27.6	37	24	13	CL
"	2	18-20	1	39	29	31	9.1	27	19	8	CL
IT-AA3-BEDGW-001	1	8-10	0	3	60	37	23.4	27	19	8	CL
"	2	22-24	4	30	35	31	15.7	24	17	7	CL-ML
IT-TNTB-BEDGW-001	1	0-2	6	30	27	37	37.0	46	31	15	ML
IT-TNTB-BEDGW-002	1	2-4	3	25	32	40	27.2	45	25	19	CL

H. C. Nutting Company
790 Morrison Road
Columbus, Ohio 43230

10/30/97smo

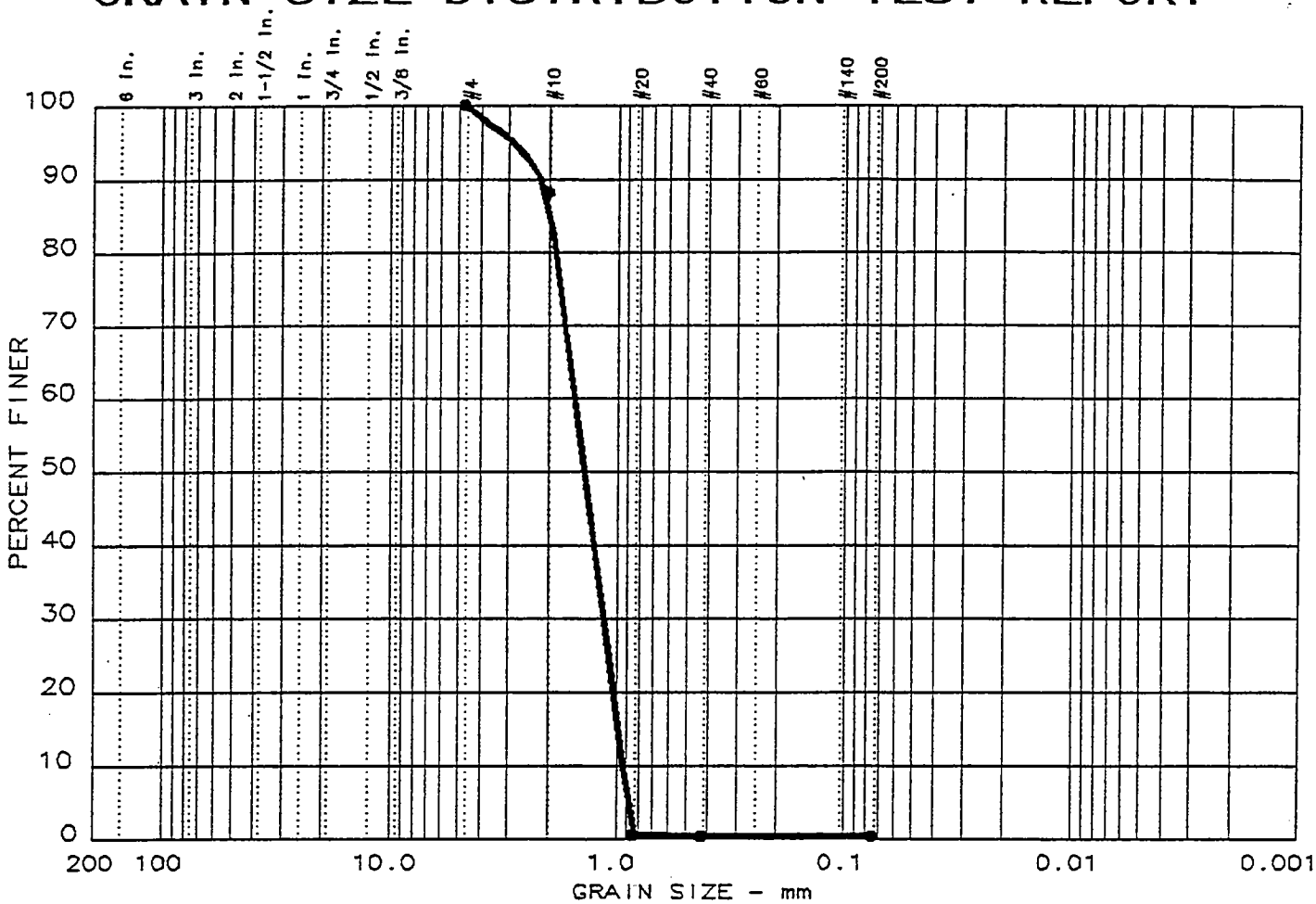
Belasco Drilling Services Inc.
NASA - Plum Brook Station
Sandusky, OH
HCN W.O. # 60364.002

TABLE I

CLASSIFICATION TEST DATA

Boring No.	Sample No.	Depth (Ft.)	Mechanical Analysis				Moisture Content (%)	Atterberg Limits			U.S.C.S Classification
			% Gravel	% Sand	% Silt	% Clay		Liquid Limit (%)	Plastic Limit (%)	Plasticity Index	
IT-SCREEN SAMPLE	1	FILTER PACK SAND	0	100	- 0 -		0.11				SP
IT-AAI-GW-002	1	6-8	0	8	57	35	28.7	33	20	13	CL
"	2	14-16	0	2	55	43	23.0	27	20	7	CL-ML
"	3	20-22	0	18	56	26	14.7	NP	NP	NP	ML
IT-AB6-GW-002	1	0-2	0	78	17	5	16.0	NP	NP	NP	SM
"	2	2-4	0	79	15	6	20.6	NP	NP	NP	SM
IT-AA3-GW-002	1	4-6	0	16	51	33	21.5	36	20	16	CL
"	2	8-10	0	3	61	36	27.0	29	22	7	CL-ML
"	3	12-14	0	1	60	40	24.7	25	20	5	CL-ML
IT-AB6-BEDGW-001	1	2-4	1	68	20	11	27.9	NP	NP	NP	SM
"	2	4-6	0	82	14	4	20.9	NP	NP	NP	SM
IT-AA2-BEDGW-001	1	10-12	0	82	14	4	22.4	26	18	8	CL
"	2	16-18	0	23	32	45	17.3	29	19	10	CL
IT-BG8-BEDGW-001	1	0-2	0	67	14	19	21.7	26	24	4	SM

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75 mm	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	0.0	99.6	0.4	

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.94	1.52	1.38	1.132	0.9784	0.9311	0.91	1.6

MATERIAL DESCRIPTION	USCS	AASHTO
● POORLY GRADED SAND	SP	

Project No.: 60364.002
Project: NASA - Plum Brook Station
● Location: Boring:IT Screen Sample Sample:1 *

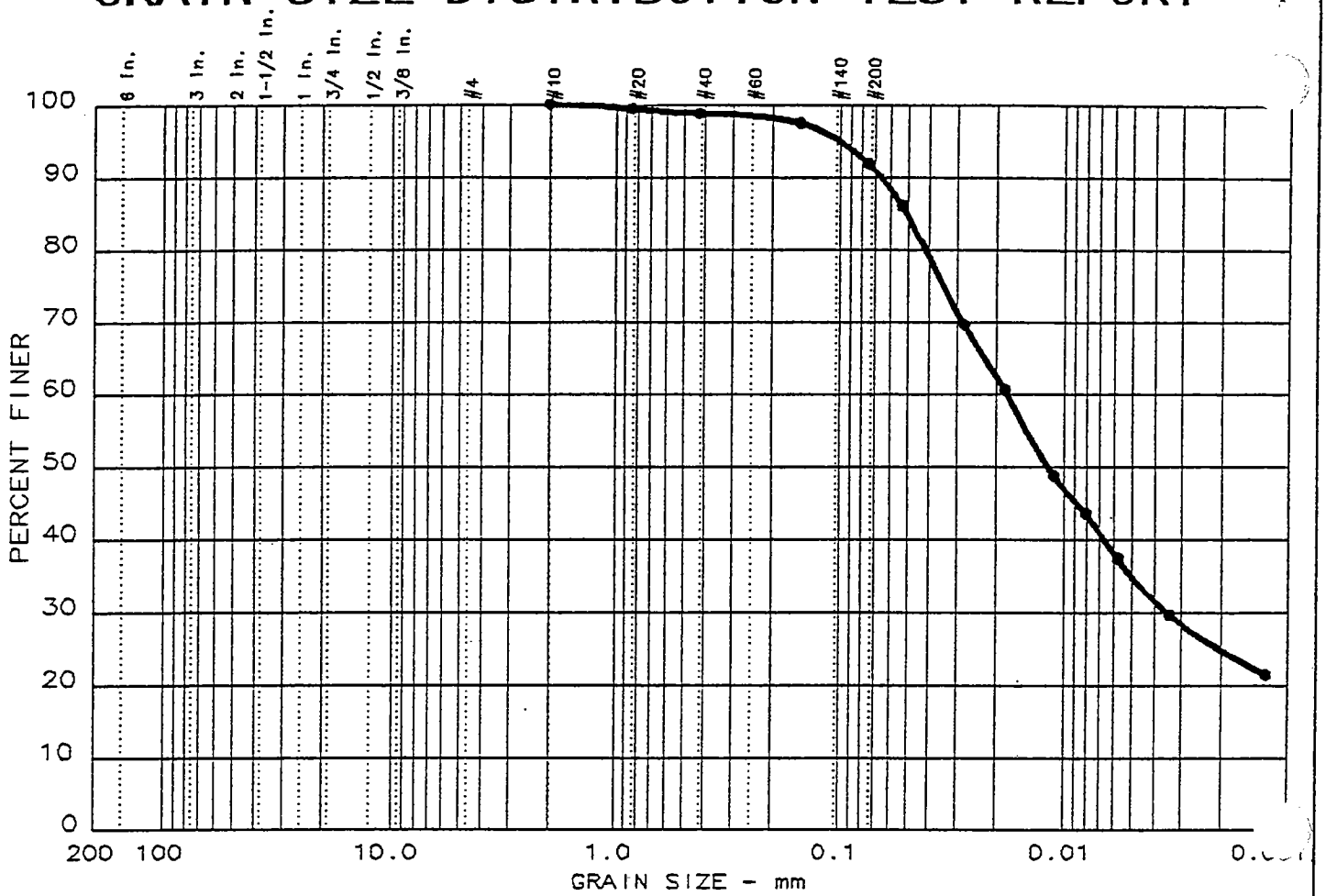
Date: 11/3/97

Remarks:
Client: Belasco Drilling Services Inc.
* Depth:Filter Pack Sand
Lab No. 8641

GRAIN SIZE DISTRIBUTION TEST REPORT
H. C. NUTTING COMPANY

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75 mm	% GRAVEL	% SAND	% SILT	% CLAY
●	2	0.0	0.0	8.1	57.0	34.9

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	33	13	0.05	0.02	0.01	0.003				

MATERIAL DESCRIPTION	USCS	AASHTO
● LEAN CLAY	CL	

Project No.: 60364.002
Project: NASA - Plum Brook Station
● Location: Boring:IT-AAI-GW-002 Depth:6-8' */

Date: 11/3/97

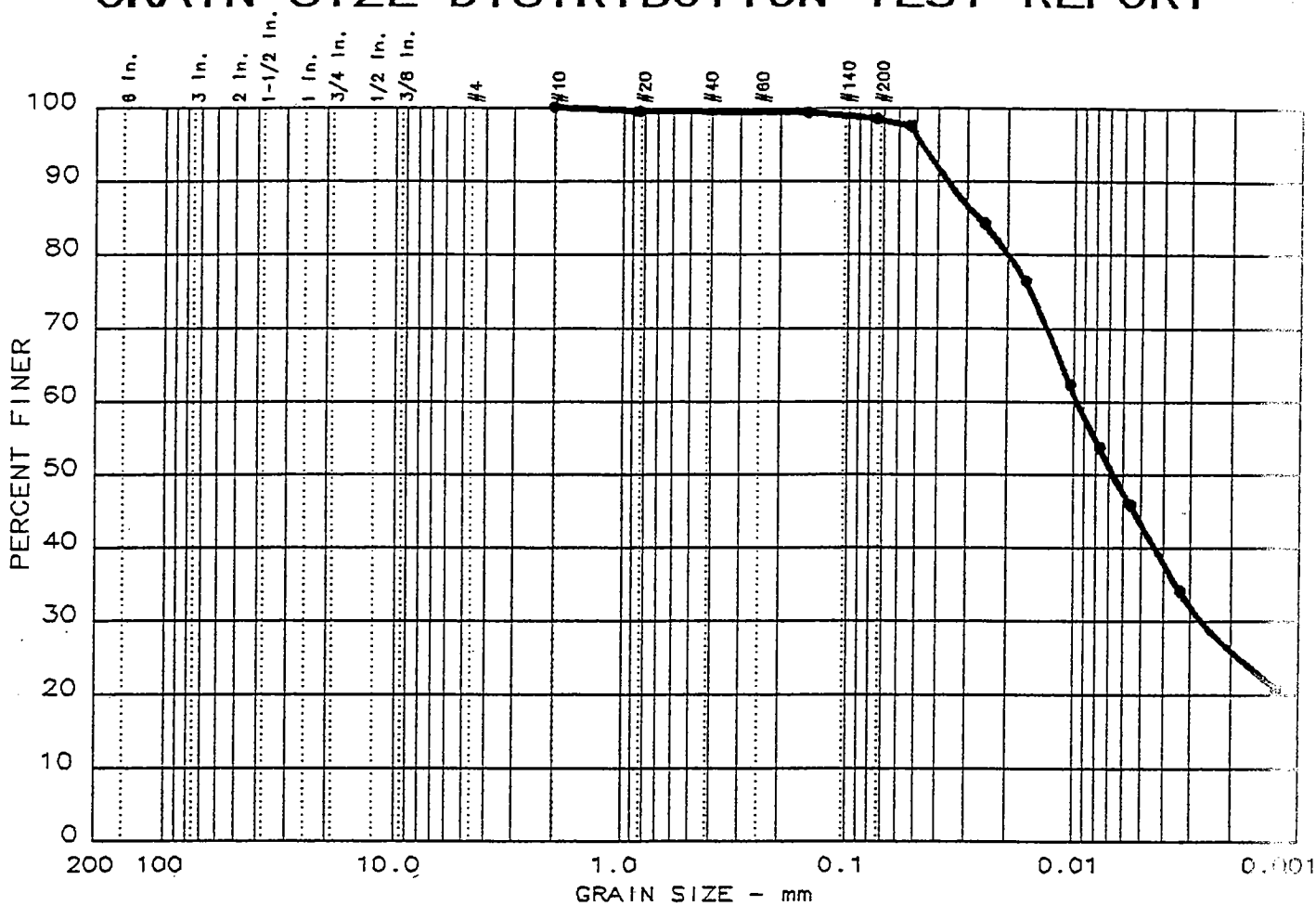
GRAIN SIZE DISTRIBUTION TEST REPORT

H. C. NUTTING COMPANY

Remarks:
Client: Belasco Drilling Services Inc.
*/ Sample: 1
Lab No. 8642

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	3	0.0	0.0	1.6	55.1	43.3

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	27	7	0.03		0.01	0.003				

MATERIAL DESCRIPTION	USCS	AASHTO
● SILTY CLAY	CL-ML	

Project No.: 60364.002
Project: NASA - Plum Brook Station
● Location: Boring: IT-AAI-GW-002 Depth: 14-16'*/

Date: 11/3/97

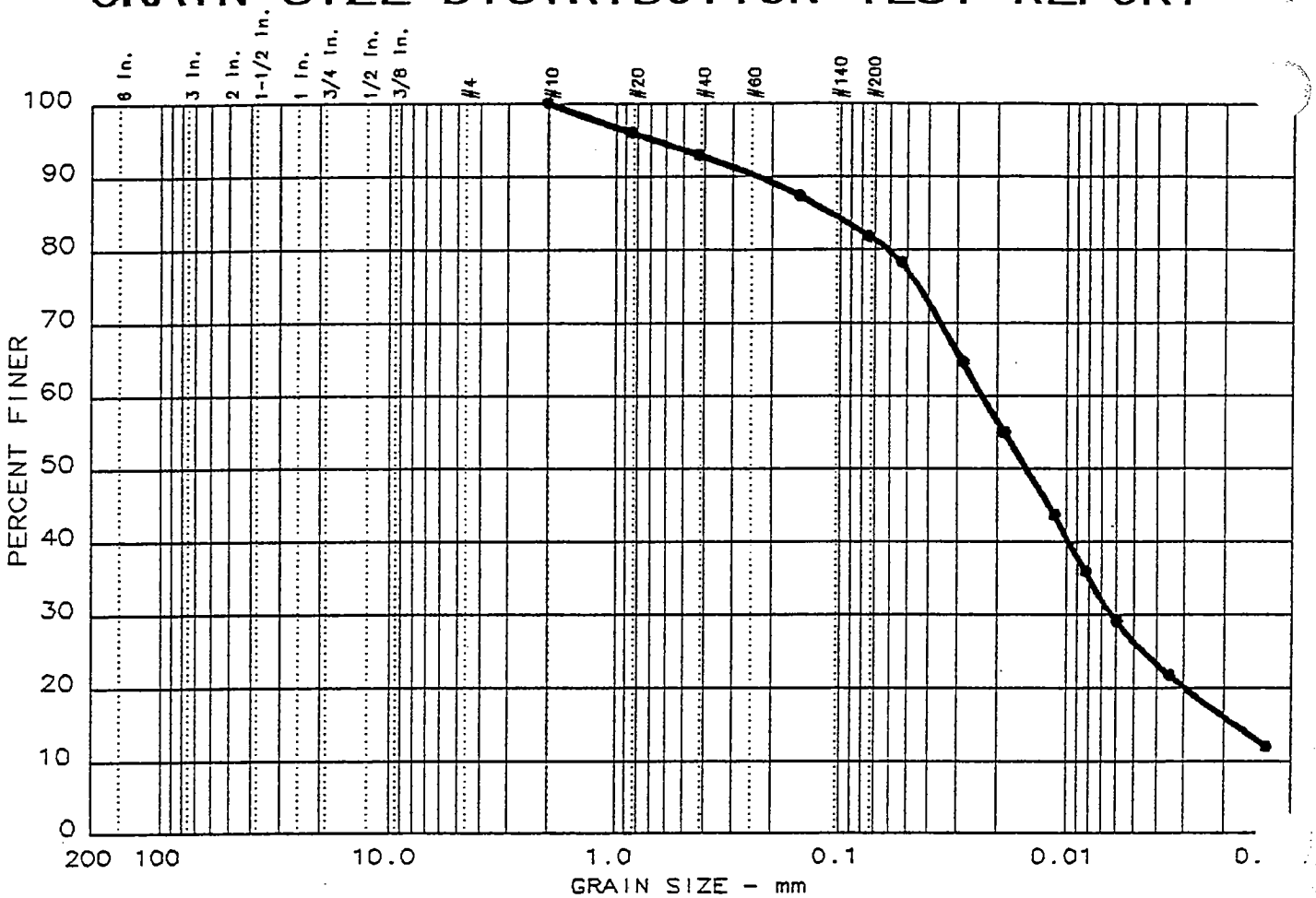
Remarks:
Client: Belasco Drilling Services Inc.
*/ Sample: 2
Lab No. 8643

GRAIN SIZE DISTRIBUTION TEST REPORT

H. C. NUTTING COMPANY

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	4	0.0	0.0	18.2	55.5	26.3

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	NP	NP	0.11	0.02	0.01	0.006	0.0018			

MATERIAL DESCRIPTION	USCS	AASHTO
● SILT WITH SAND	ML	

Project No.: 60364.002
Project: NASA - Plum Brook Station
● Location: Boring:IT-AAI-GW-002 Depth:20-22' */

Date: 11/3/97

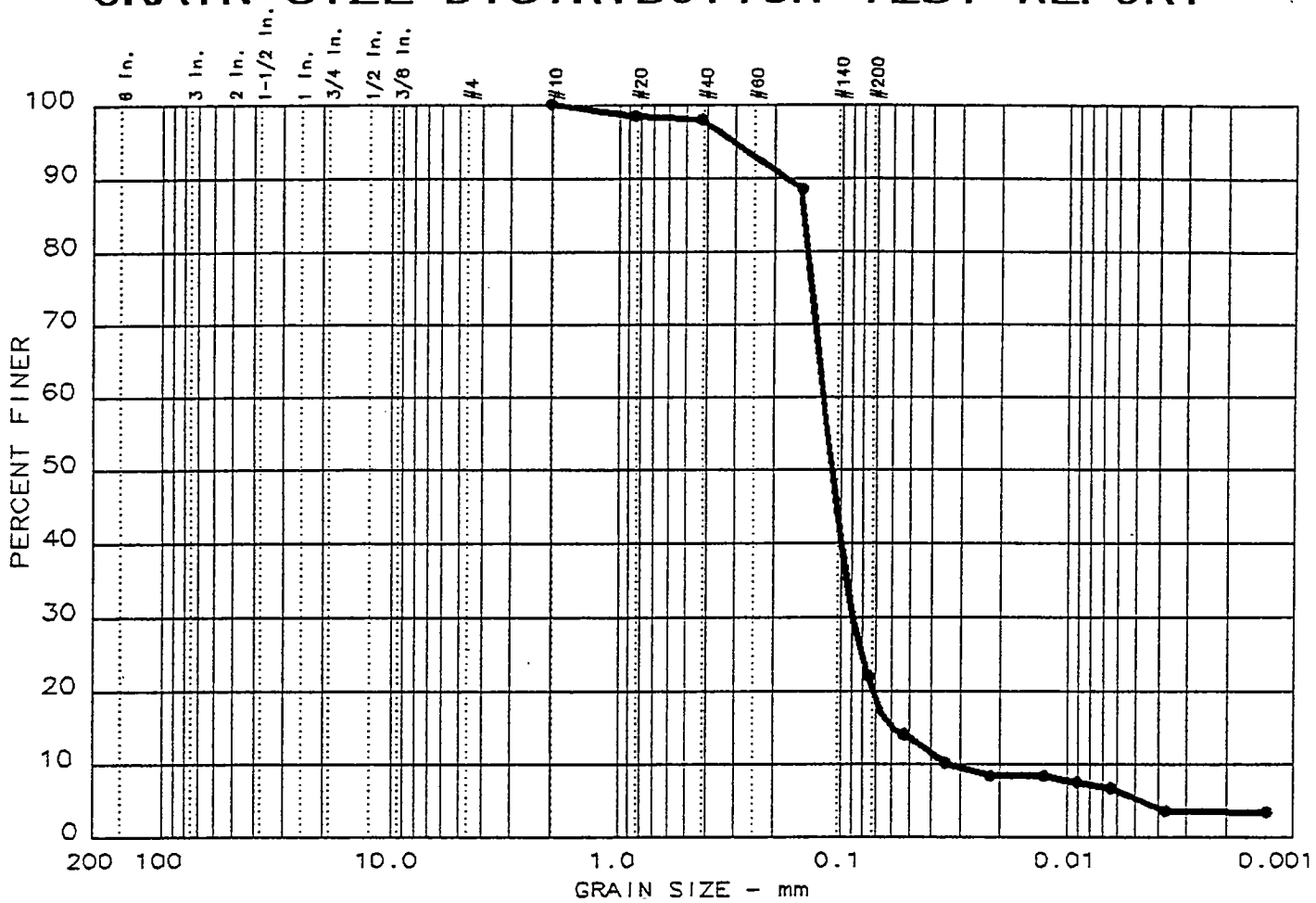
Remarks:
Client: Belasco Drilling Services Inc.
*/ Sample: 3
Lab No. 8644

GRAIN SIZE DISTRIBUTION TEST REPORT

H. C. NUTTING COMPANY

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	5	0.0	0.0	78.1	16.6	5.3

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	NP	NP	0.15	0.12	0.11	0.088	0.0588	0.0331	1.96	3.6

MATERIAL DESCRIPTION	USCS	AASHTO
● SILTY SAND	SM	

Project No.: 60364.002
Project: NASA - Plum Brook Station
● Location: Boring: IT-AB6-GW-002 Depth: 0-2' */

Date: 11/3/97

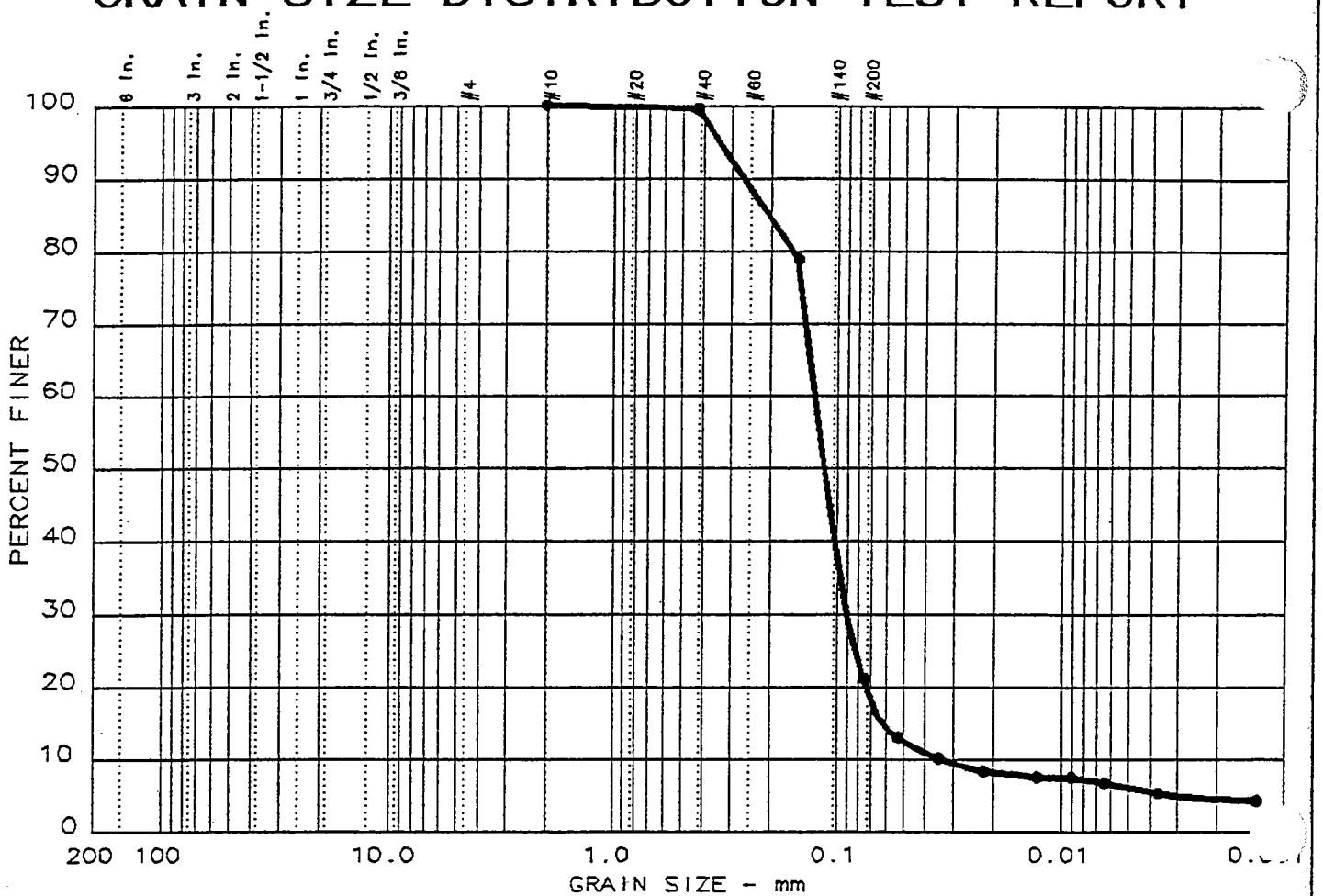
Remarks:
Client: Belasco Drilling Services Inc.
*/ Sample: 1
Lab No. 8645

GRAIN SIZE DISTRIBUTION TEST REPORT

H. C. NUTTING COMPANY

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	6	0.0	0.0	78.9	15.0	6.1

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	NP	NP	0.20	0.13	0.11	0.090	0.0619	0.0337	1.89	3.7

MATERIAL DESCRIPTION	USCS	AASHTO
● SILTY SAND	SM	

Project No.: 60364.002
Project: NASA - Plum Brook Station
● Location: Boring: IT-AB6-GW-002 Depth: 2-4' */

Date: 11/3/97

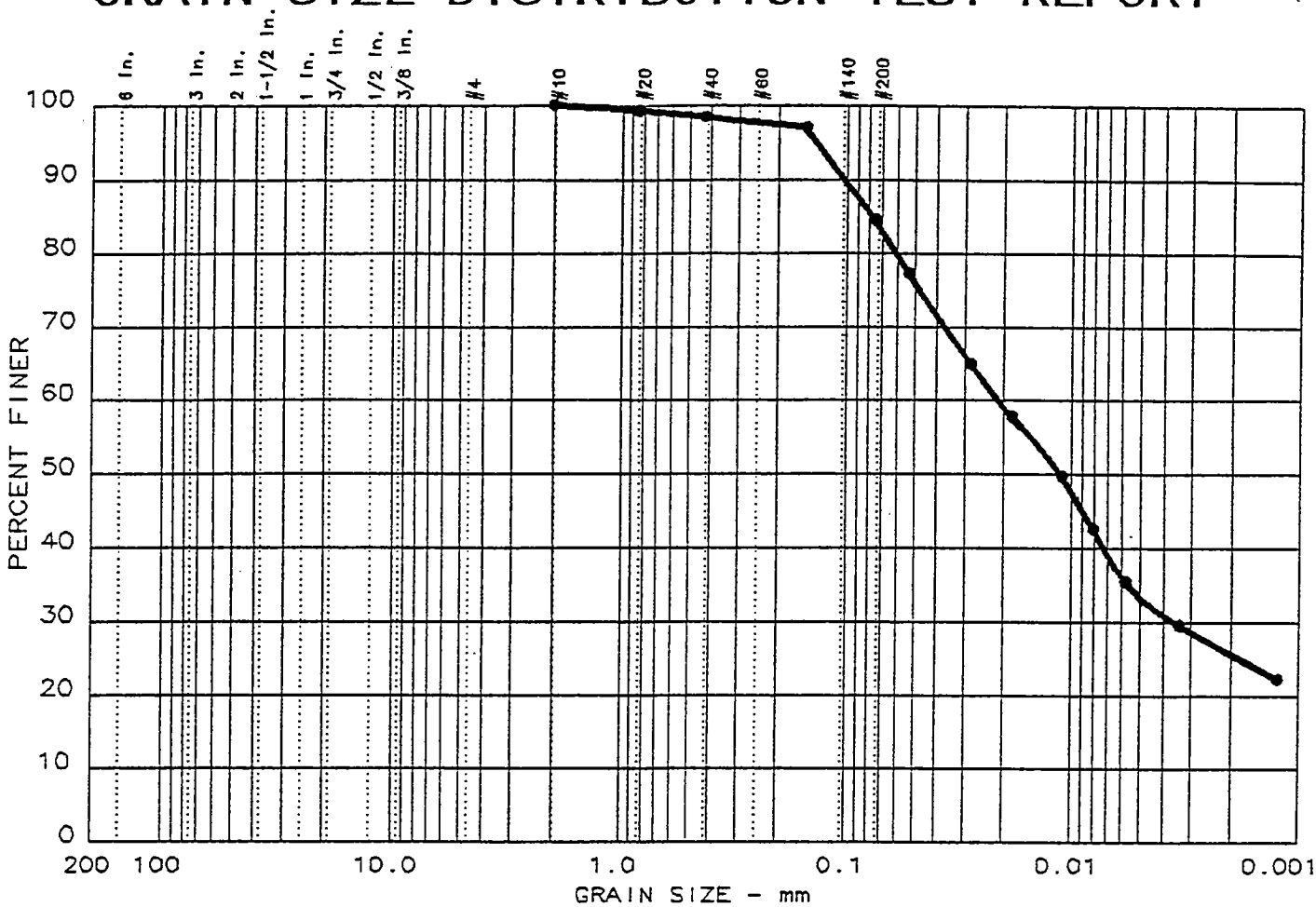
Remarks:
Client: Belasco Drilling Services Inc.
*/ Sample: 2
Lab No. 8646

GRAIN SIZE DISTRIBUTION TEST REPORT

H. C. NUTTING COMPANY

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75 mm	% GRAVEL	% SAND	% SILT	% CLAY
●	7	0.0	0.0	15.5	51.2	33.3

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	36	16	0.08	0.02	0.01	0.004				

MATERIAL DESCRIPTION	USCS	AASHTO
● LEAN CLAY WITH SAND	CL	

Project No.: 60364.002
Project: NASA - Plum Brook Station
● Location: Boring: IT-AA3-GW-002 Depth: 4-6' */

Date: 11/3/97

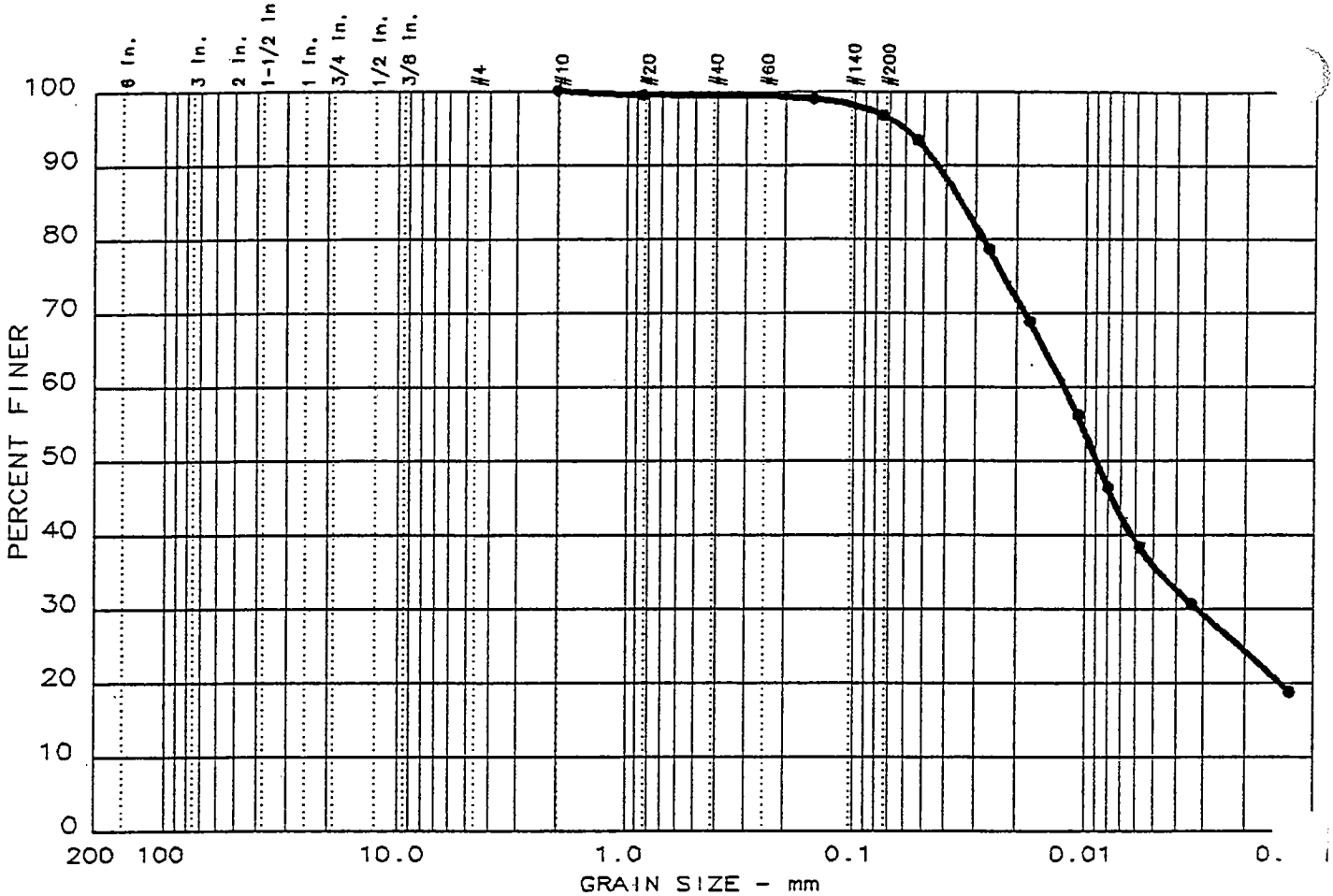
Remarks:
Client: Belasco Drilling Services Inc.
*/ Sample: 1
Lab No. 8647

GRAIN SIZE DISTRIBUTION TEST REPORT

H. C. NUTTING COMPANY

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75 mm	% GRAVEL	% SAND	% SILT	% CLAY
●	8	0.0	0.0	3.3	60.9	35.8

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	29	7	0.03	0.01	0.01	0.003				

MATERIAL DESCRIPTION	USCS	AASHTO
● SILTY CLAY	CL-ML	

Project No.: 60364.002
Project: NASA - Plum Brook Station
● Location: Boring: IT-AA3-GW-002 Depth: 8-10' */

Date: 11/3/97

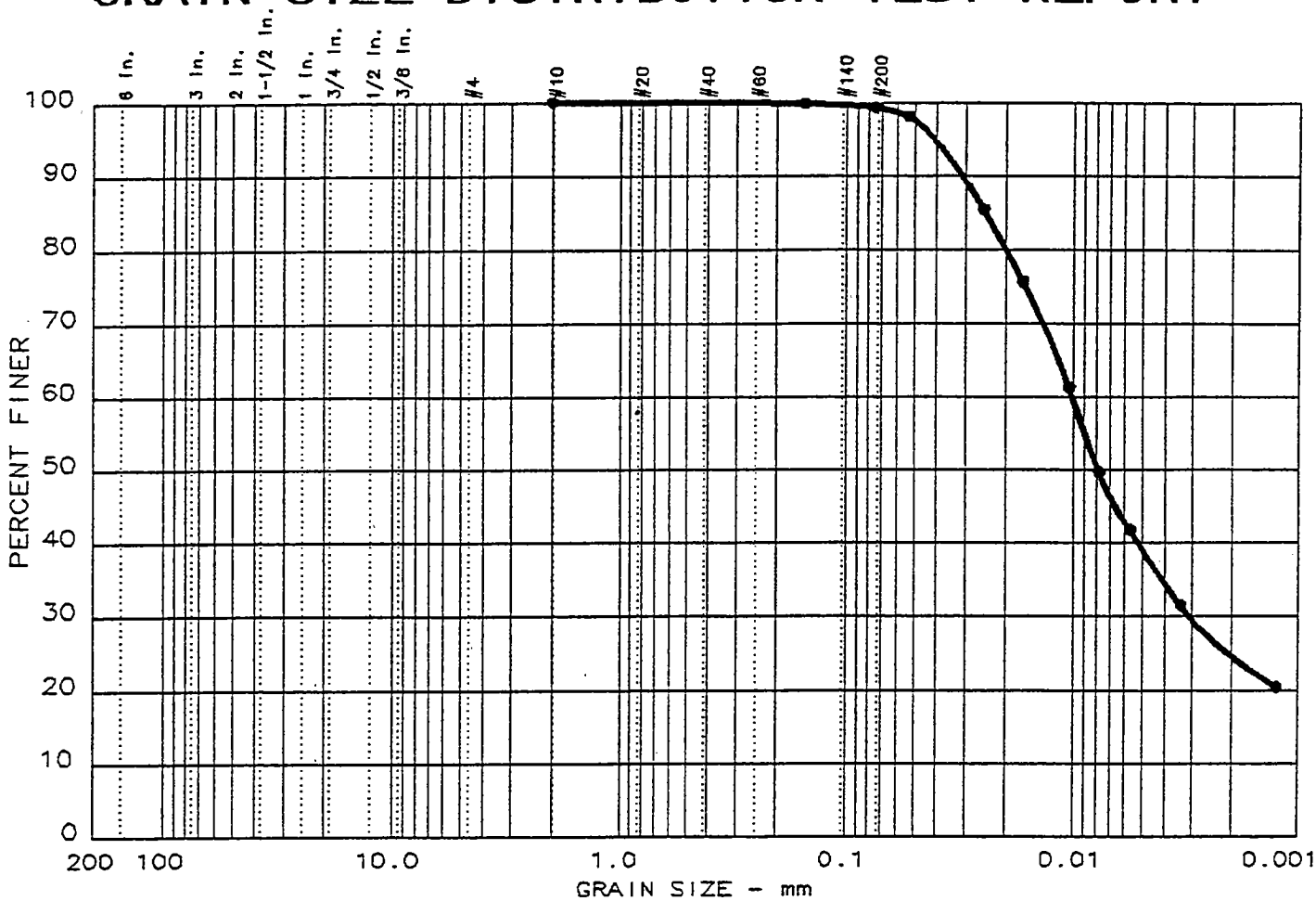
Remarks:
Client: Belasco Drilling Services Inc.
*/ Sample: 2
Lab No. 8648

GRAIN SIZE DISTRIBUTION TEST REPORT

H. C. NUTTING COMPANY

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	9	0.0	0.0	0.7	60.2	39.1

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	25	5	0.02	0.01	0.01	0.003				

MATERIAL DESCRIPTION	USCS	AASHTO
● SILTY CLAY	CL-ML	

Project No.: 60364.002
Project: NASA - Plum Brook Station
● Location: Boring:IT-AA3-GW-002 Depth:12-14' */

Date: 11/3/97

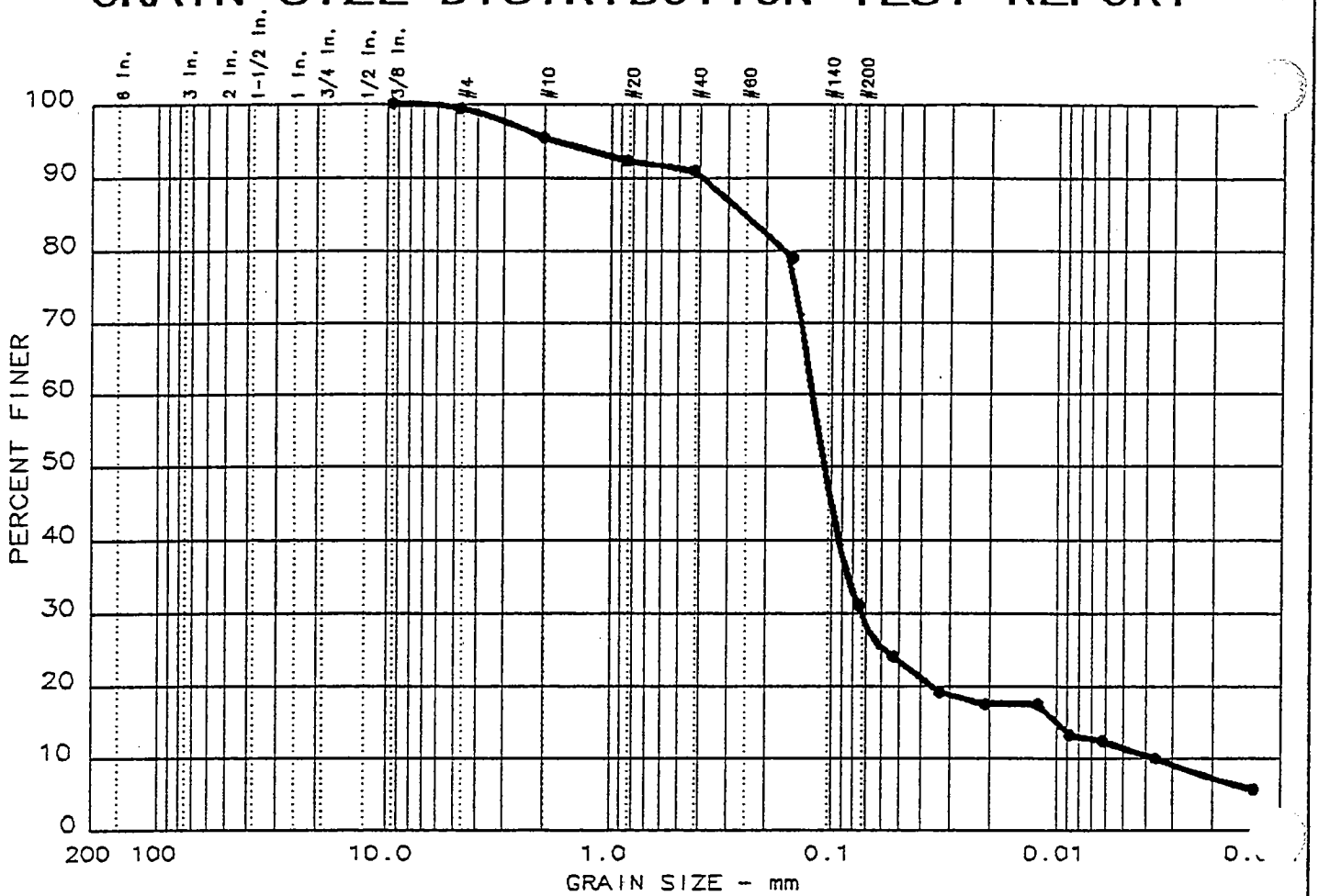
Remarks:
Client: Belasco Drilling Services Inc.
*/ Sample: 3
Lab No. 8649

GRAIN SIZE DISTRIBUTION TEST REPORT

H. C. NUTTING COMPANY

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	10	0.0	0.7	68.3	19.6	11.4

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	NP	NP	0.25	0.12	0.11	0.073	0.0100	0.0036	12.30	33.9

MATERIAL DESCRIPTION	USCS	AASHTO
● SILTY SAND	SM	

Project No.: 60364.002
Project: NASA - Plum Brook Station
● Location: Boring: IT-AB6-BEDGW-001 Depth: 2-4'*/

Date: 11/3/97

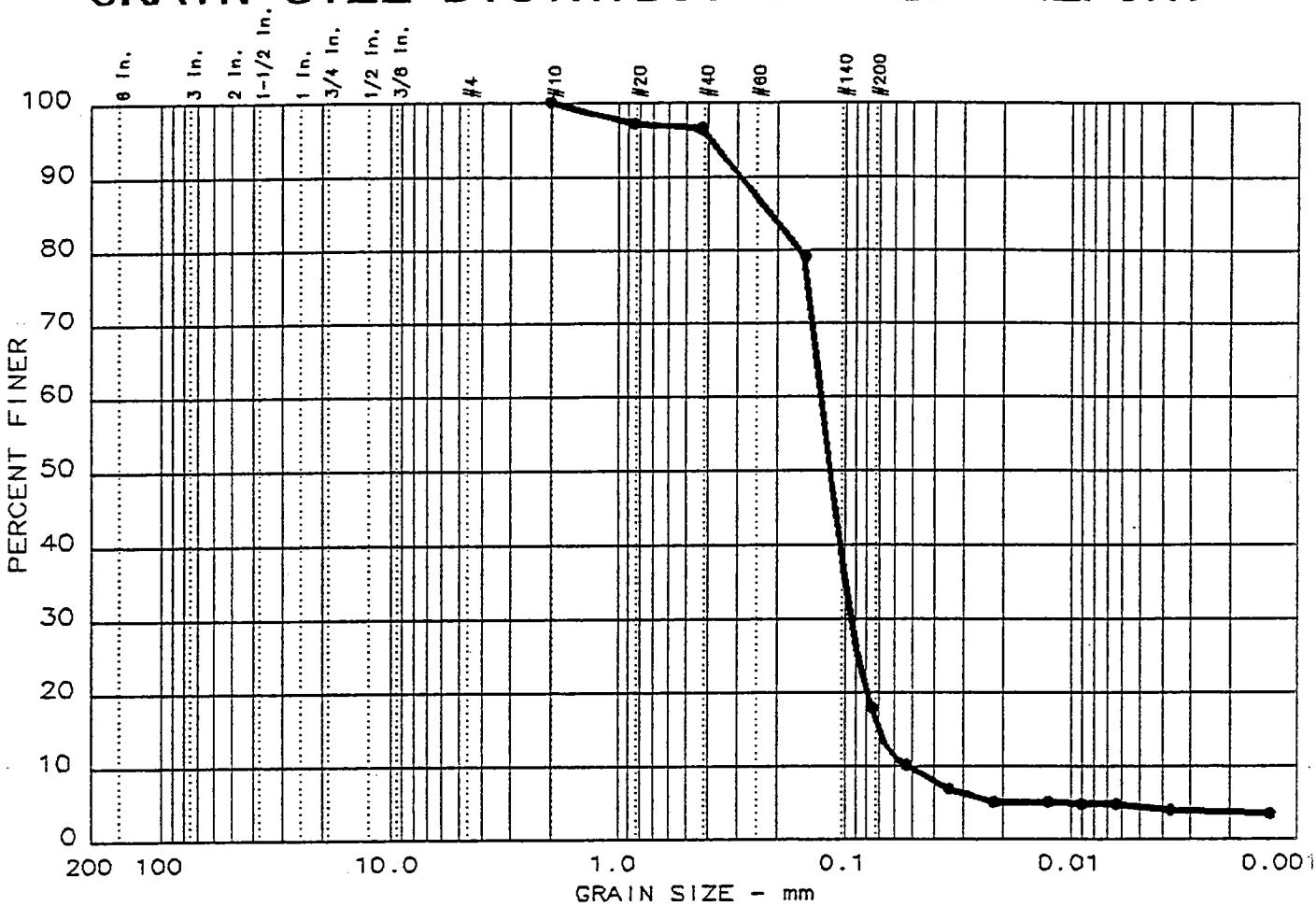
Remarks:
Client: Belasco Drilling Services Inc.
*/ Sample: 1
Lab No. 8650

GRAIN SIZE DISTRIBUTION TEST REPORT

H. C. NUTTING COMPANY

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75 mm	% GRAVEL	% SAND	% SILT	% CLAY
●	11	0.0	0.0	82.1	13.5	4.4

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	NP	NP	0.21	0.13	0.12	0.093	0.0701	0.0519	1.32	2.4

MATERIAL DESCRIPTION	USCS	AASHTO
● SILTY SAND	SM	

Project No.: 60364.002
Project: NASA - Plum Brook Station
● Location: Boring: IT-AB6-BEDGW-D01 Depth: 4-6'*/

Date: 11/3/97

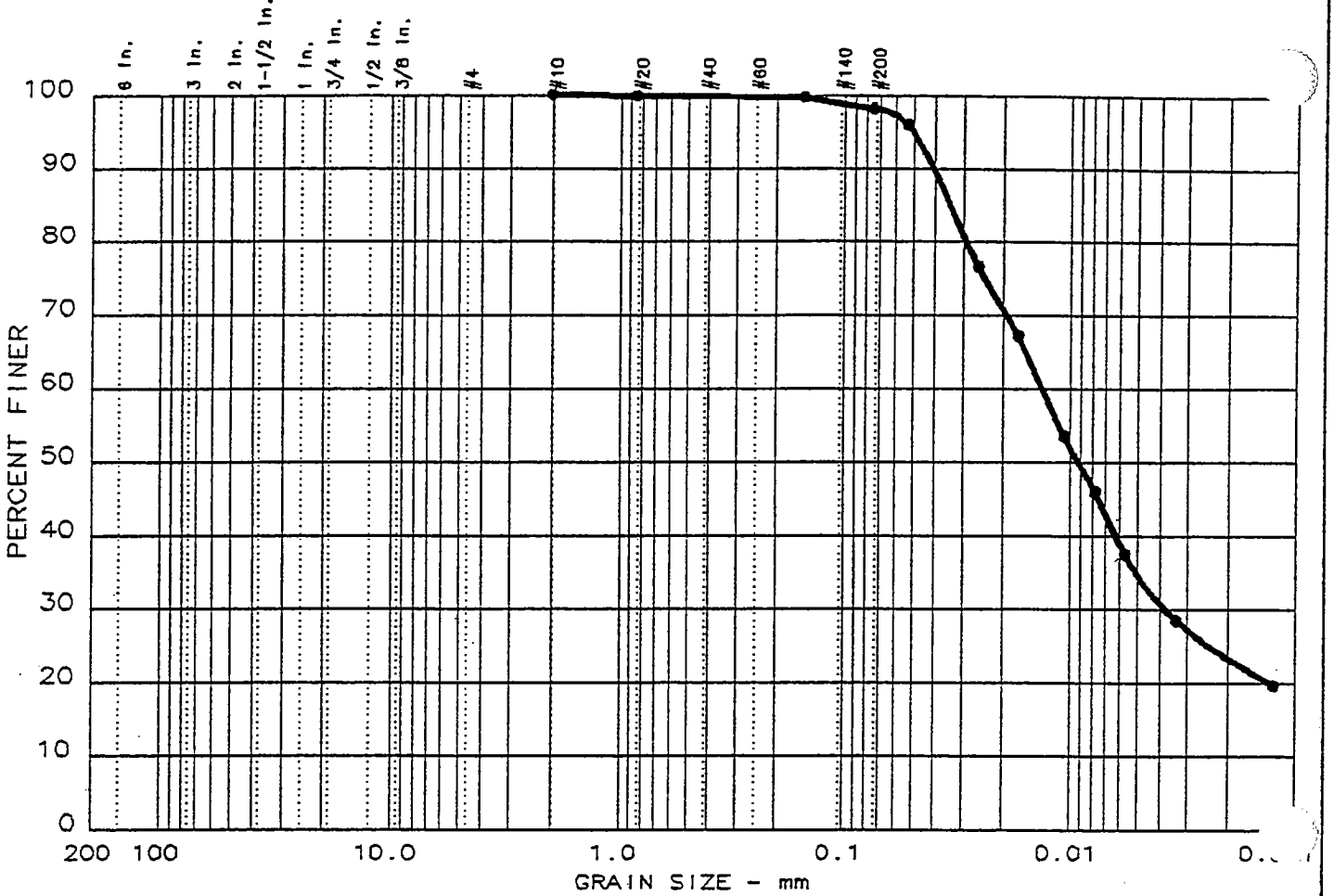
Remarks:
Client: Belasco Drilling Services Inc.
*/ Sample: 2
Lab No. 8651

GRAIN SIZE DISTRIBUTION TEST REPORT

H. C. NUTTING COMPANY

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75 mm	% GRAVEL	% SAND	% SILT	% CLAY
●	2	0.0	0.0	1.9	63.5	34.6

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	26	8	0.03	0.01	0.01	0.004				

MATERIAL DESCRIPTION	USCS	AASHTO
● LEAN CLAY	CL	

Project No.: 60364.002
Project: NASA - Plum Brook Station
● Location: Boring: IT-AA2-BEDGW-001 Sample: 1 *

Date: 11/3/97

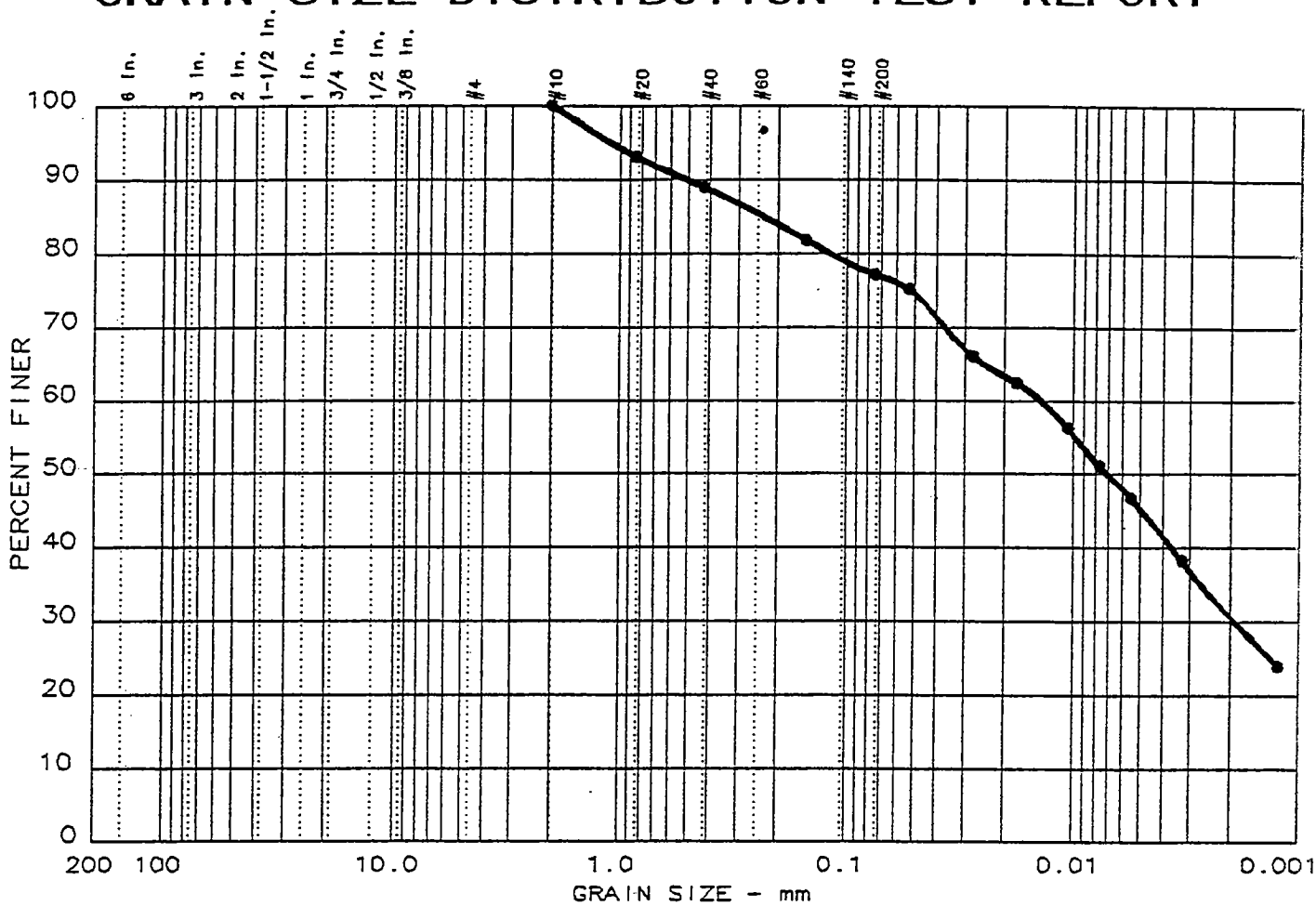
GRAIN SIZE DISTRIBUTION TEST REPORT

H. C. NUTTING COMPANY

Remarks:
Client: Belasco Drilling Services Inc.
* Depth: 10-12'
Lab No. 8652

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	3	0.0	0.0	22.9	31.7	45.4

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	29	10	0.23	0.01	0.01	0.002				

MATERIAL DESCRIPTION	USCS	AASHTO
● LEAN CLAY WITH SAND	CL	

Project No.: 60364.002
Project: NASA - Plum Brook Station
● Location: Boring: IT-AA2-BEDGW-001 Sample: 2 *

Date: 11/3/97

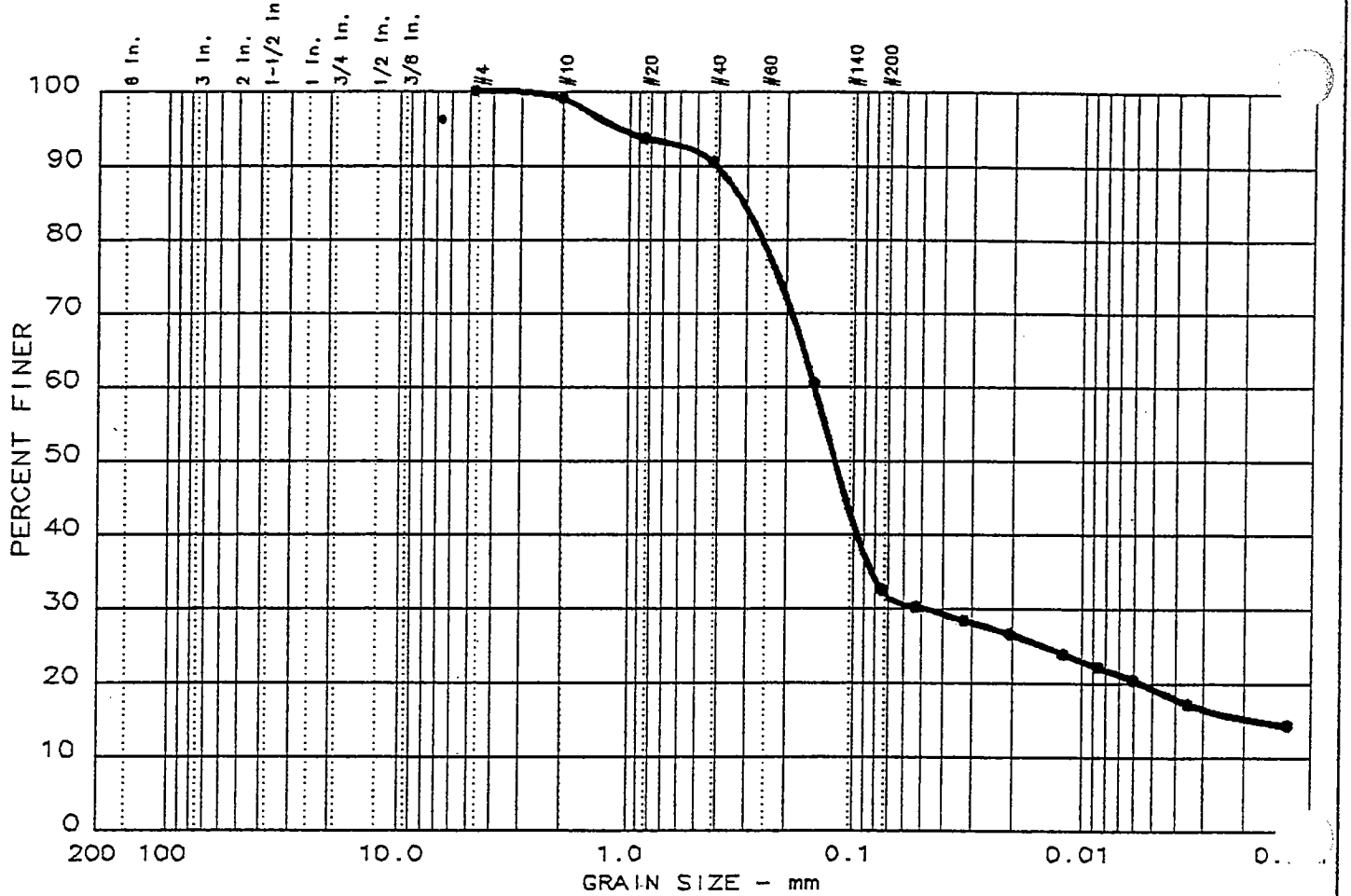
Remarks:
Client: Belasco Drilling Services Inc.
* Depth: 16-18'
Lab No. 8653

GRAIN SIZE DISTRIBUTION TEST REPORT

H. C. NUTTING COMPANY

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	0.0	67.4	13.3	19.3

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	26	4	0.31	0.15	0.12	0.047	0.0018			

MATERIAL DESCRIPTION	USCS	AASHTO
● SILTY SAND	SM	

Project No.: 60364.002
Project: NASA - Plum Brook Station
● Location: Boring: IT-BG8-BEDGW-001 Sample: 1 *

Date: 11/6/97

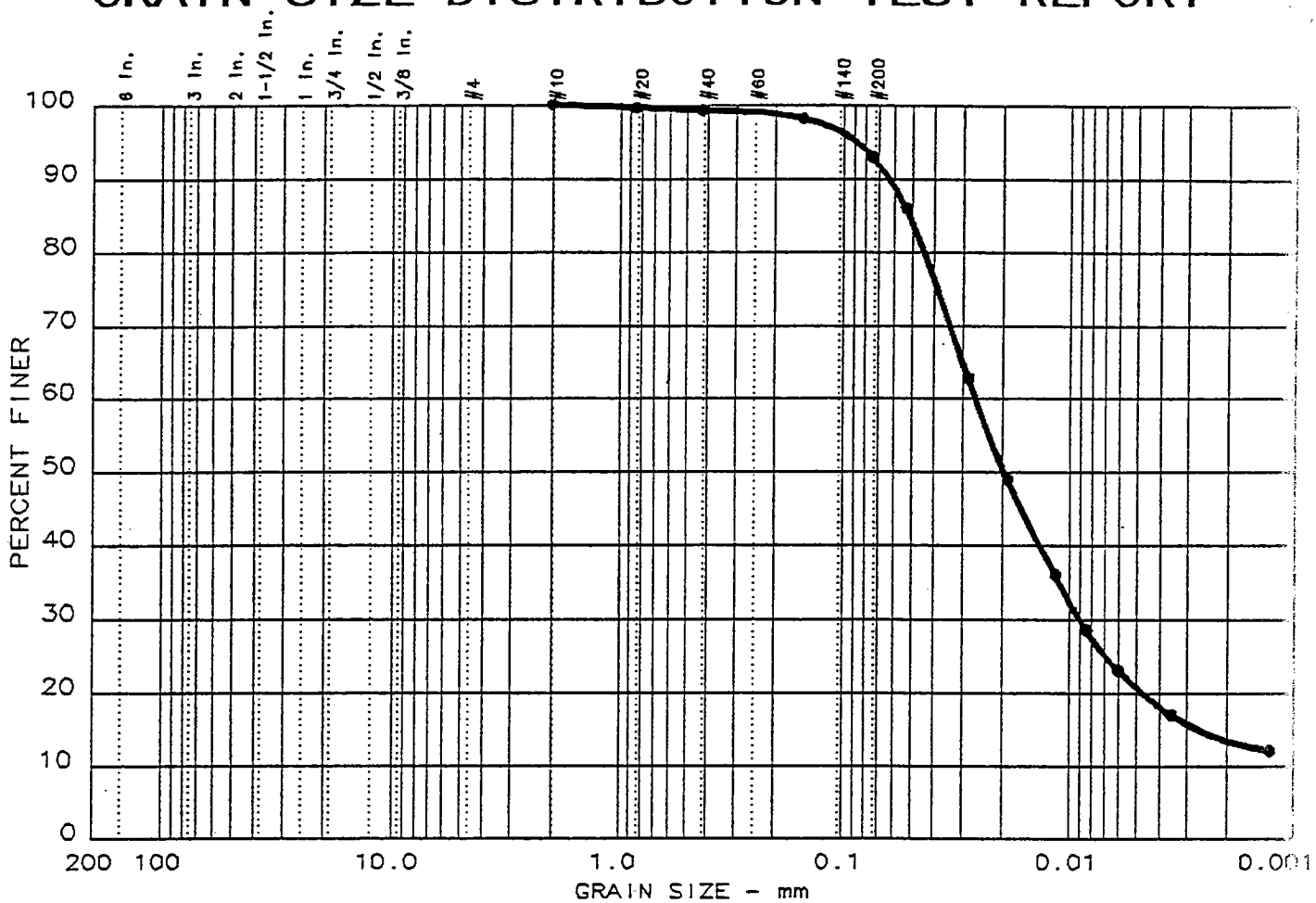
Remarks:
Client: Belasco Drilling Services Inc.
Depth: 0-2'
Lab No. 8654

GRAIN SIZE DISTRIBUTION TEST REPORT

H. C. NUTTING COMPANY

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75 mm	% GRAVEL	% SAND	% SILT	% CLAY
●	4	0.0	0.0	6.9	72.4	20.7

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	25	5	0.05	0.03	0.02	0.009	0.0027			

MATERIAL DESCRIPTION	USCS	AASHTO
● SILTY CLAY	CL-ML	

Project No.: 60364.002
Project: NASA - Plum Brook Station
● Location: Boring: IT-AA1-BEDGW-001 Sample: 1 *

Date: 11/3/97

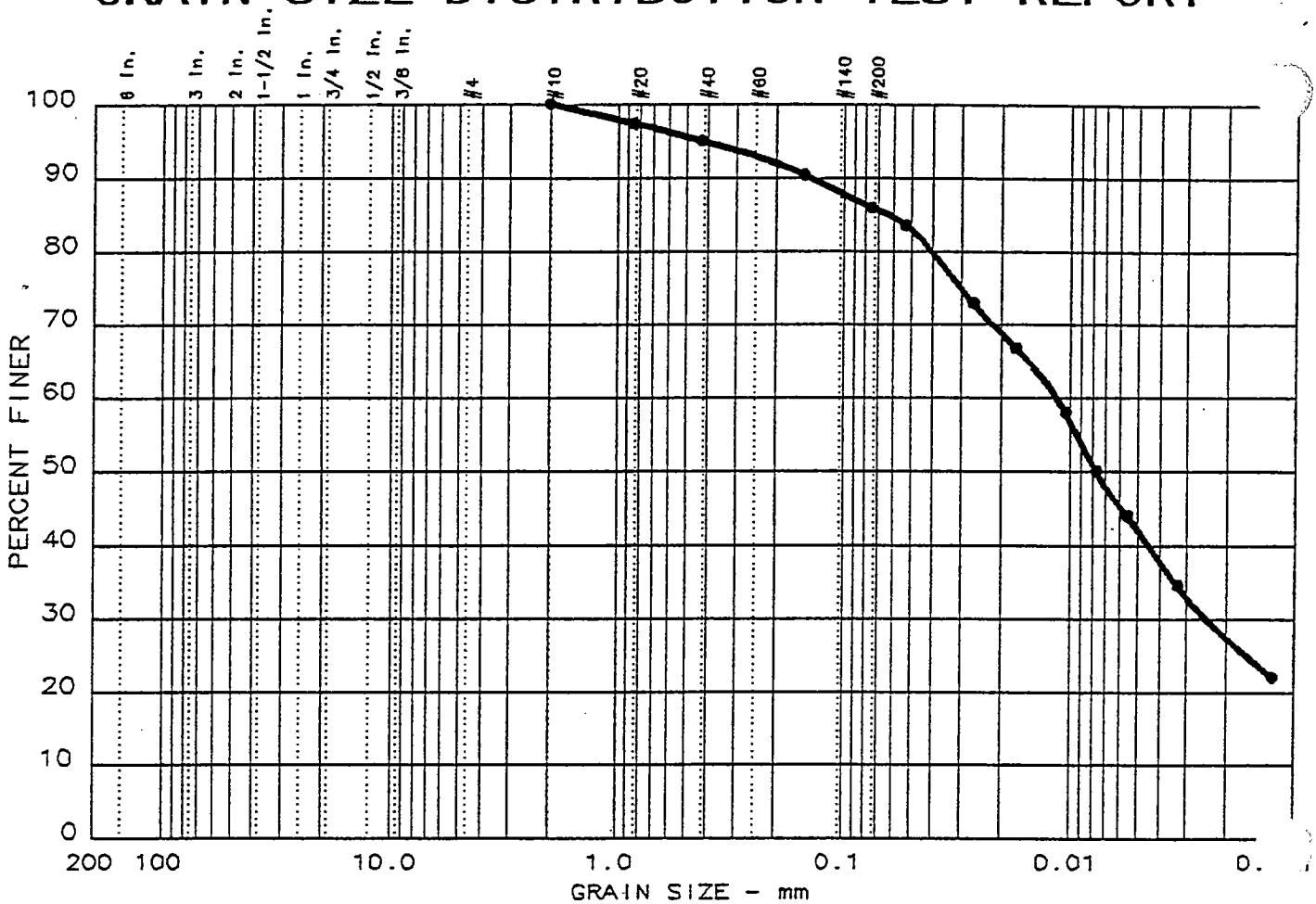
Remarks:
Client: Belasco Drilling Services Inc.
* Depth: 10-12'
Lab No. 8655

GRAIN SIZE DISTRIBUTION TEST REPORT

H. C. NUTTING COMPANY

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	5	0.0	0.0	14.1	43.7	42.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	26	7	0.06	0.01	0.01	0.002				

MATERIAL DESCRIPTION	USCS	AASHTO
● SILTY CLAY	CL-ML	

Project No.: 60364.002
Project: NASA - Plum Brook Station
● Location: Boring: IT-AA1-BEDGW-001 Sample:2 *

Date: 11/3/97

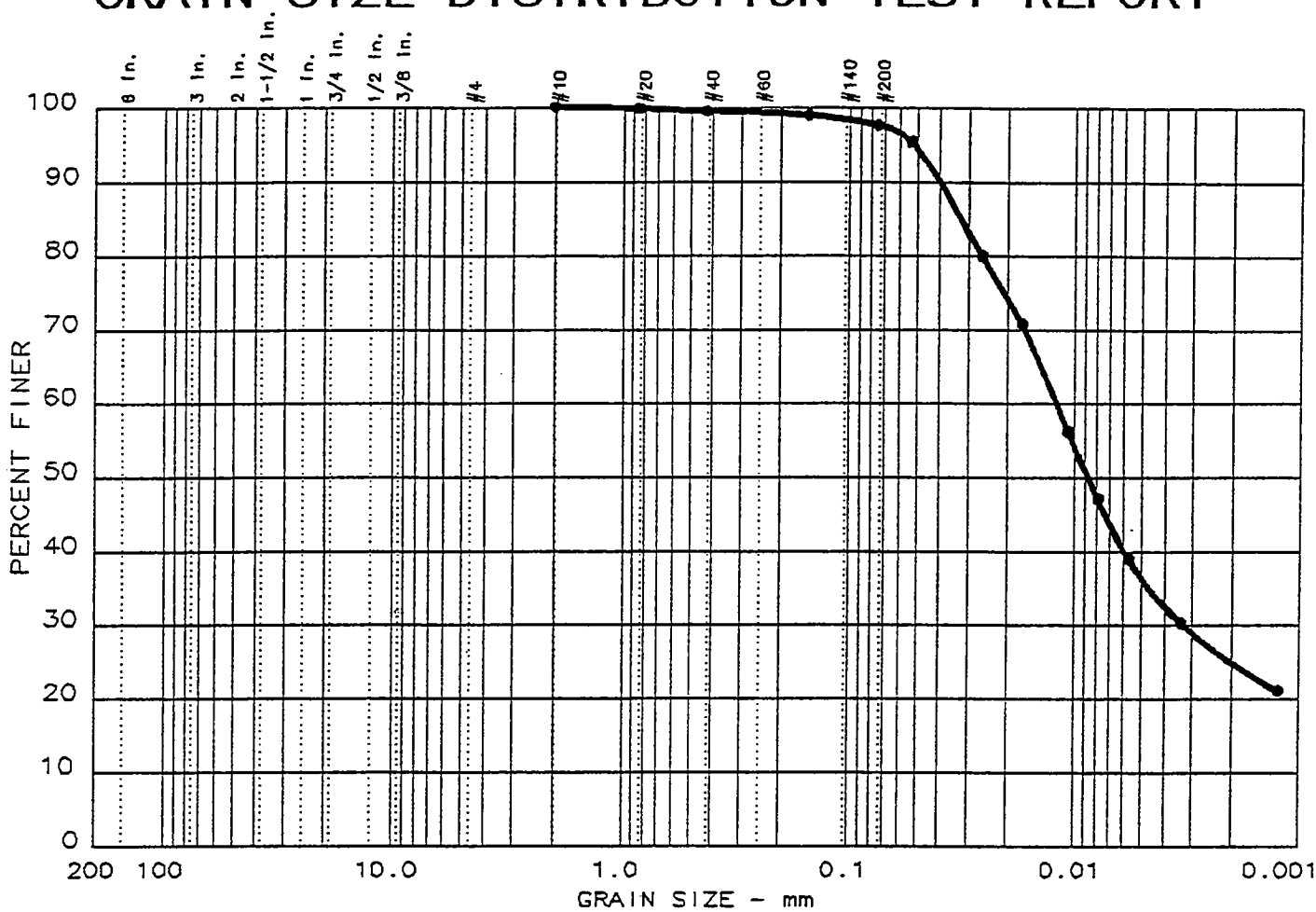
Remarks:
Client: Belasco Drilling Services Inc.
* Depth: 18-20'
Lab No. 8656

GRAIN SIZE DISTRIBUTION TEST REPORT

H. C. NUTTING COMPANY

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	2	0.0	0.0	2.4	61.3	36.3

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	31	9	0.03	0.01	0.01	0.003				

MATERIAL DESCRIPTION	USCS	AASHTO
● LEAN CLAY	CL	

Project No.: 60364.002
Project: NASA - Plum Brook Station
● Location: Boring: IT-AA2GW-D02 Sample: 1 *

Date: 11/4/97

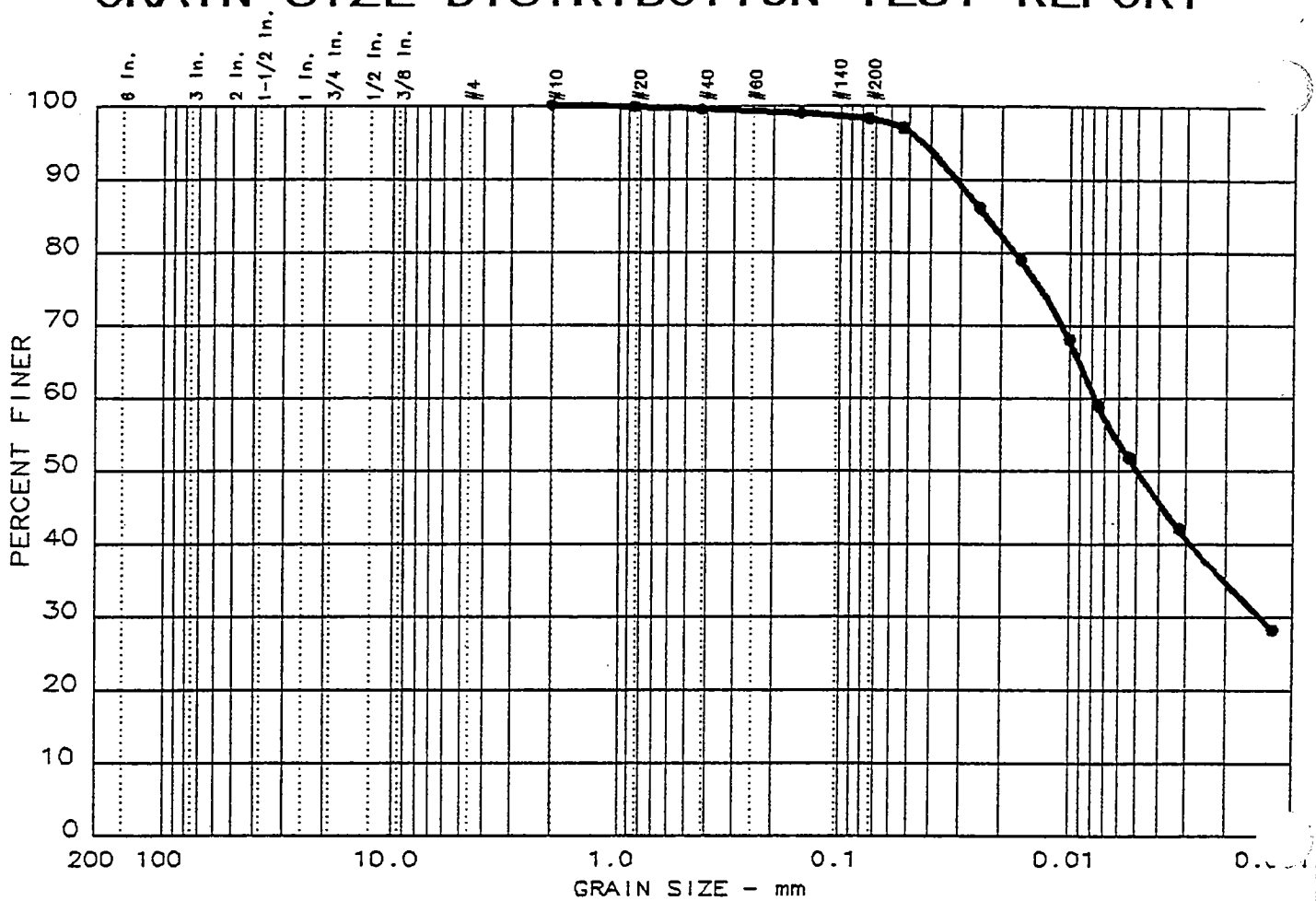
GRAIN SIZE DISTRIBUTION TEST REPORT

H. C. NUTTING COMPANY

Remarks:
Client: Belasco Drilling Services Inc.
* Depth: 6-8'
Lab No. 8657

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	6	0.0	0.0	1.8	48.0	50.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	31	10	0.02		0.00	0.001				

MATERIAL DESCRIPTION	USCS	AASHTO
● LEAN CLAY	CL	

Project No.: 60364.002
Project: NASA - Plum Brook Station
● Location: Boring: IT-AA2-BEDGW-002 Sample: 2 *

Date: 11/3/97

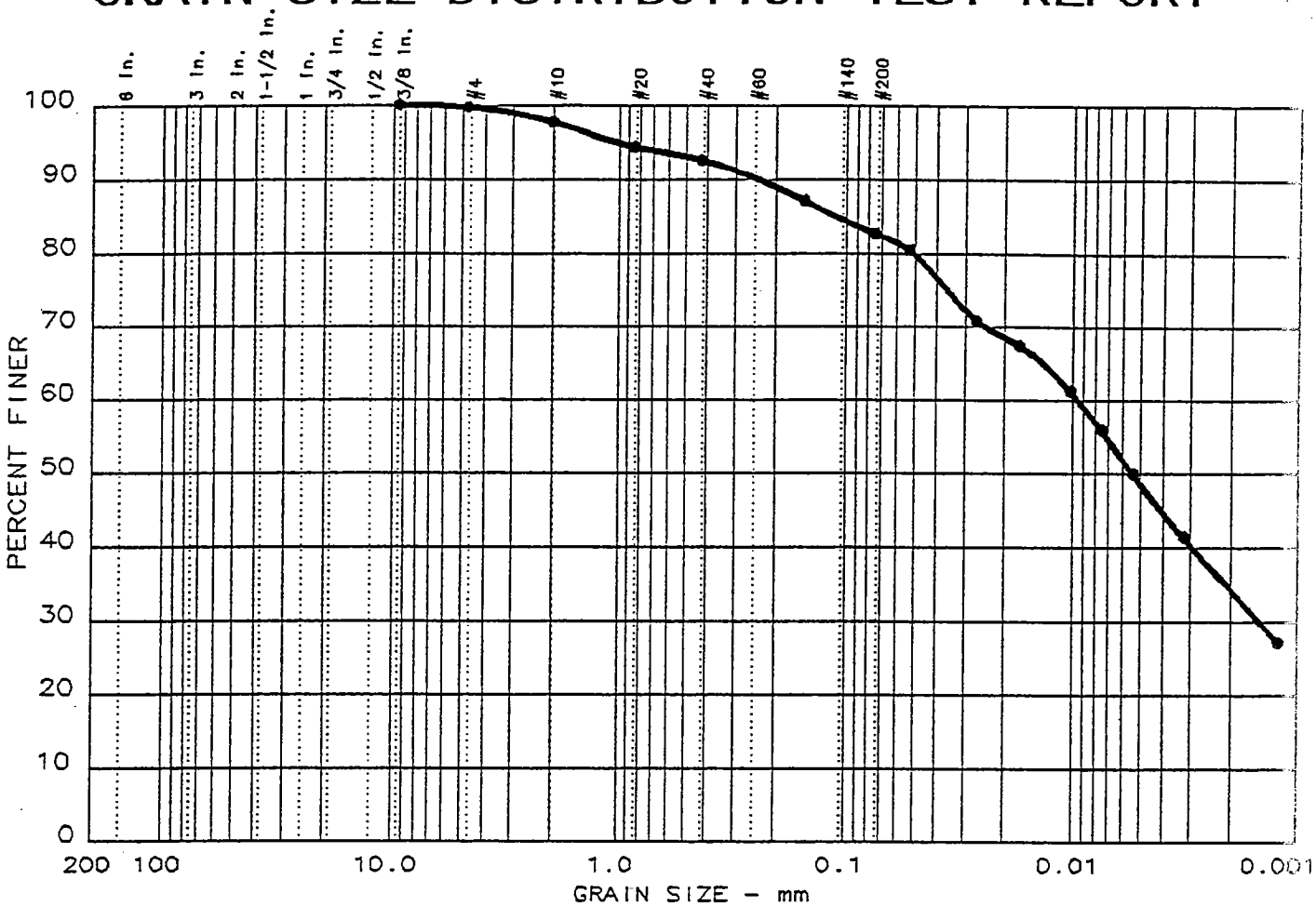
Remarks:
Client: Belasco Drilling Services Inc.
* Depth: 10-12'
Lab No. 8658

GRAIN SIZE DISTRIBUTION TEST REPORT

H. C. NUTTING COMPANY

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	3	0.0	0.3	17.1	34.1	48.5

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	30	12	0.11		0.01	0.001				

MATERIAL DESCRIPTION	USCS	AASHTO
● LEAN CLAY WITH SAND	CL	

Project No.: 60364.002
Project: NASA - Plum Brook Station
● Location: Boring: IT-AA2GW-002 Sample: 3 *

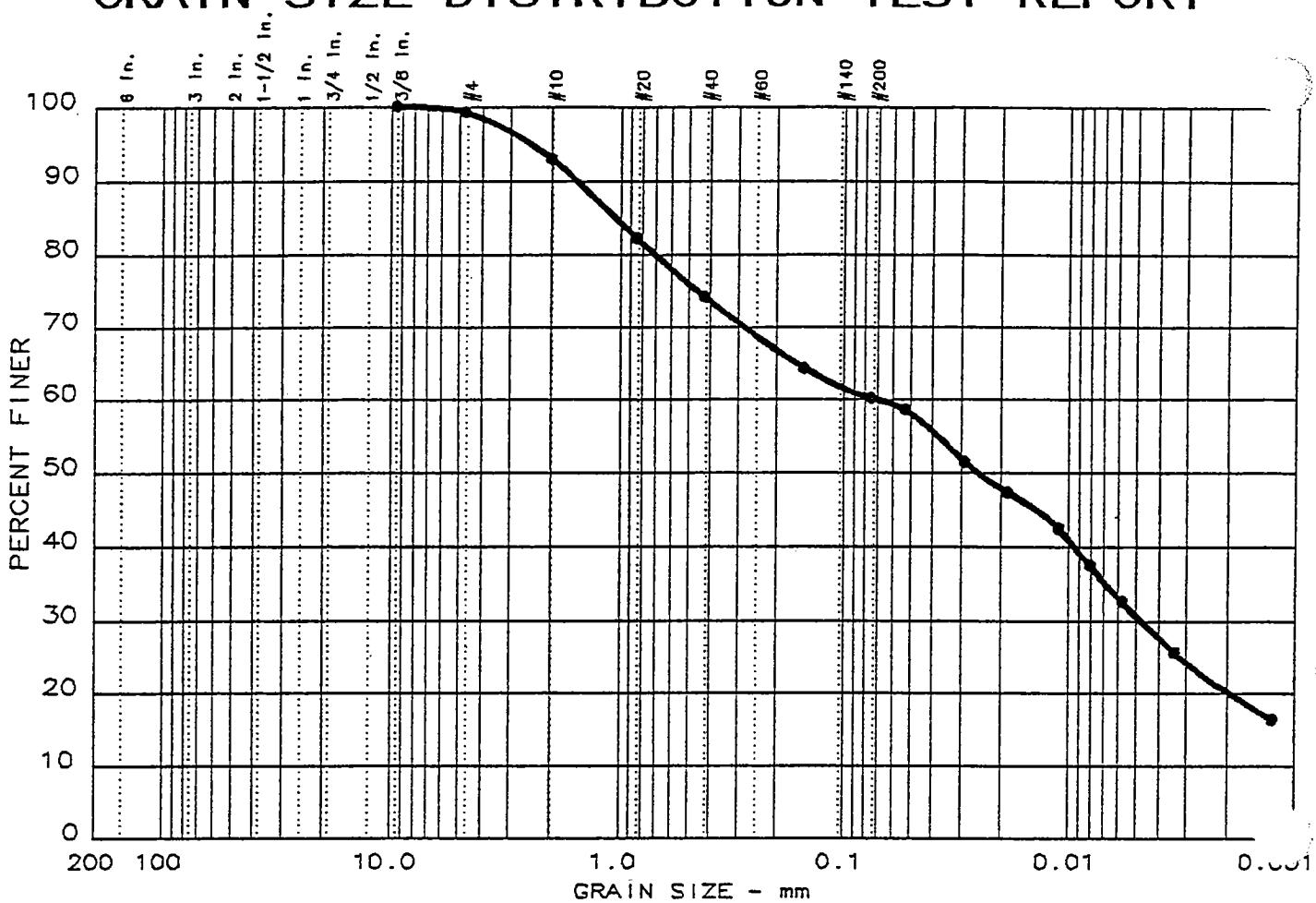
Date: 11/4/97

Remarks:
Client: Belasco Drilling Services Inc.
* Depth: 16-18'
Lab No. 8659

GRAIN SIZE DISTRIBUTION TEST REPORT
H. C. NUTTING COMPANY

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	4	0.0	0.7	39.2	29.4	30.7

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	27	8	1.05	0.07	0.03	0.005				

MATERIAL DESCRIPTION	USCS	AASHTO
● SANDY LEAN CLAY	CL	

Project No.: 60364.002
Project: NASA - Plum Brook Station
● Location: Boring: IT-MNTA-BEDG2-001 Sample: 23 *

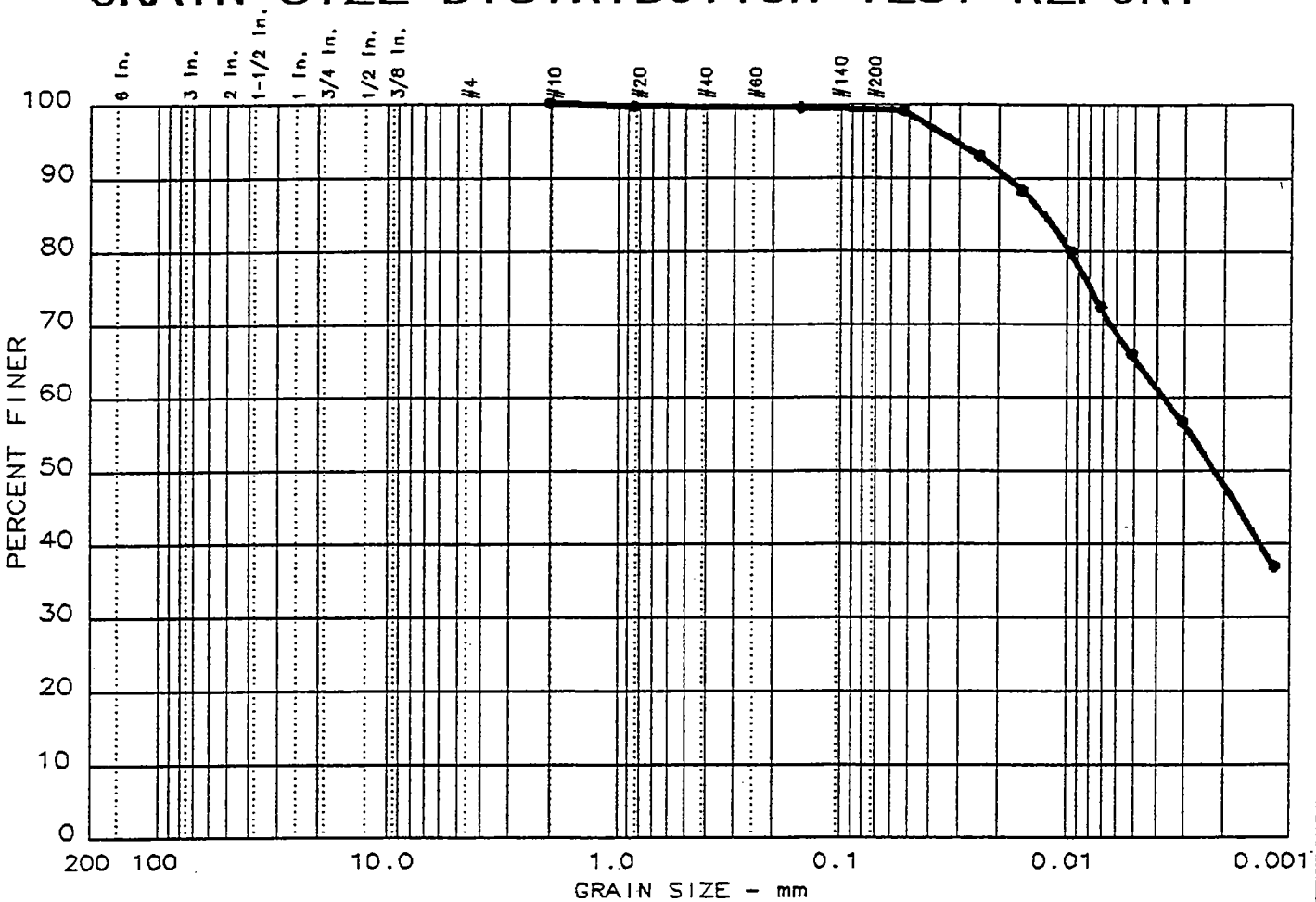
Date: 11/4/97

Remarks:
Client: Belasco Drilling Services Inc.
* Depth: 18-20'
Lab No. 8661

GRAIN SIZE DISTRIBUTION TEST REPORT
H. C. NUTTING COMPANY

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75 mm	% GRAVEL	% SAND	% SILT	% CLAY
●	2	0.0	0.0	0.8	33.9	65.3

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	37	13	0.01		0.00					

MATERIAL DESCRIPTION	USCS	AASHTO
● LEAN CLAY	CL	

Project No.: 60364.002
Project: NASA - Plum Brook Station
● Location: Boring: IT-MNTA-BEDGW-001 Sample: 1 *

Date: 11/6/97

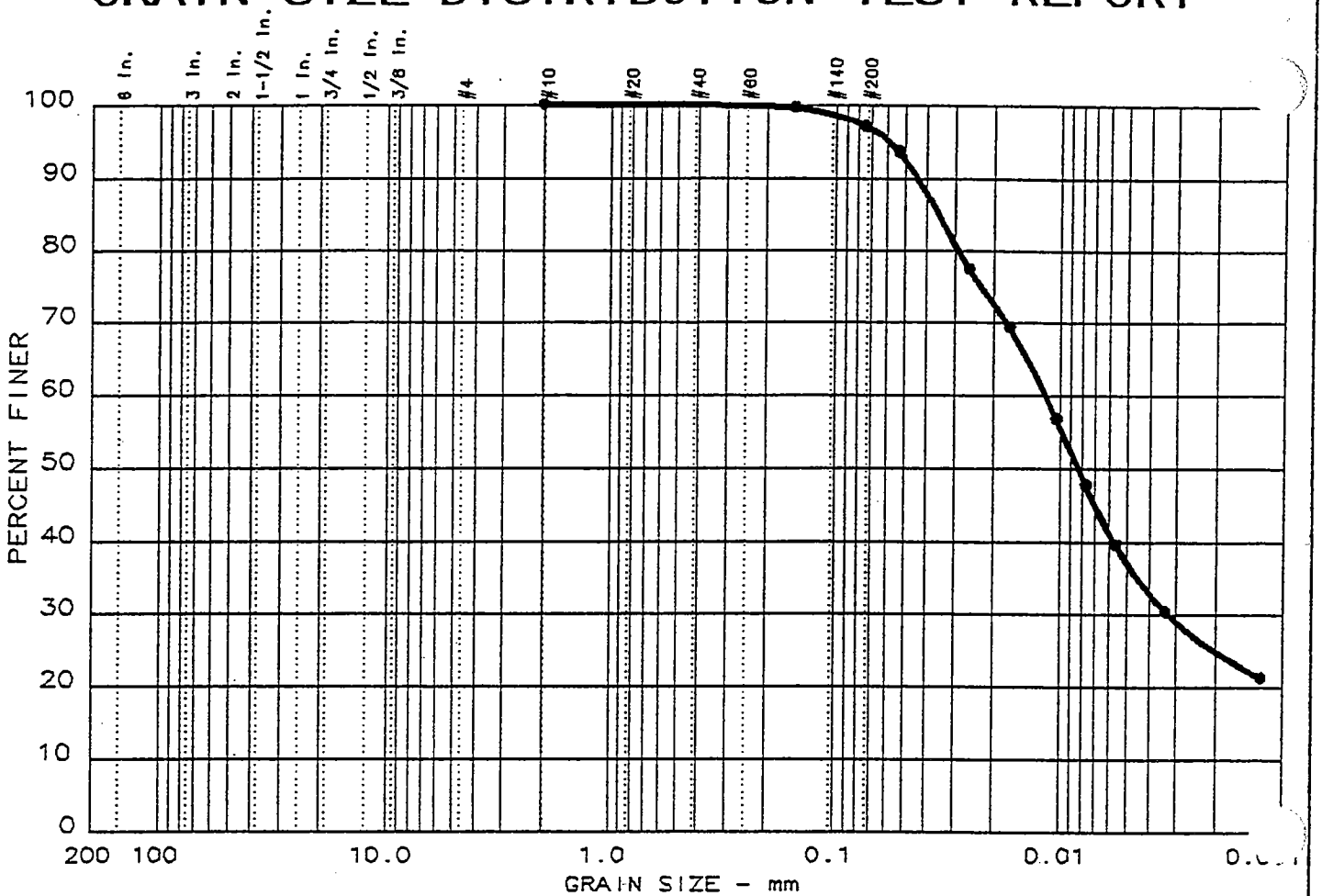
Remarks:
Client: Belasco Drilling Services Inc.
* Depth: 12-14'
Lab No. 8660

GRAIN SIZE DISTRIBUTION TEST REPORT

H. C. NUTTING COMPANY

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	3	0.0	0.0	2.9	59.9	37.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	27	8	0.04	0.01	0.01	0.003				

MATERIAL DESCRIPTION	USCS	AASHTO
● LEAN CLAY	CL	

Project No.: 60364.002
Project: NASA - Plum Brook Station
● Location: Boring: IT-AA3-BEDGW-001 Sample: 1 *

Date: 11/6/97

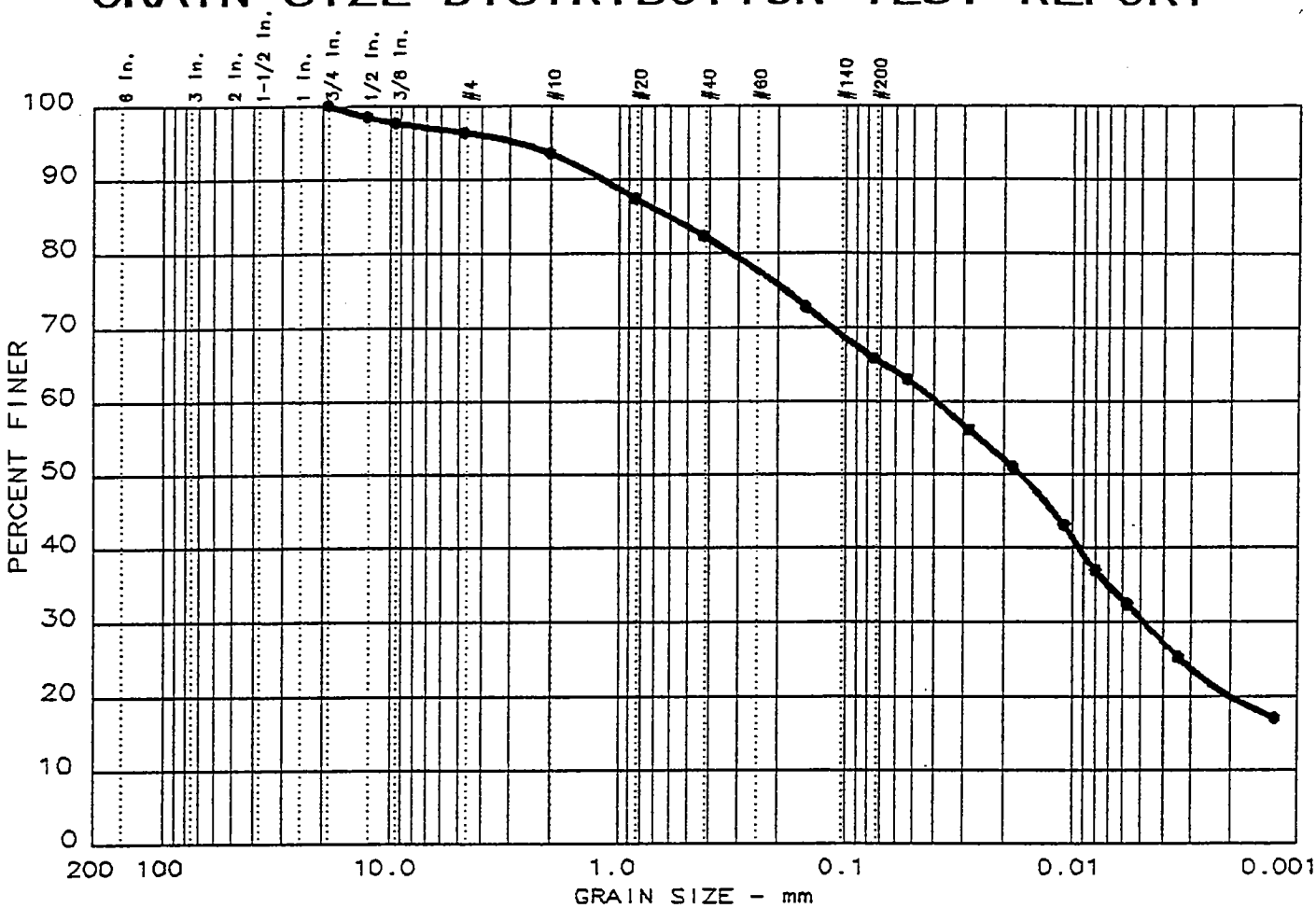
Remarks:
Client: Belasco Drilling Services Inc.
* Depth: 8-10'
Lab No. 8662

GRAIN SIZE DISTRIBUTION TEST REPORT

H. C. NUTTING COMPANY

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	4	0.0	3.6	30.6	35.2	30.6

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	24	7	0.62	0.04	0.02	0.005				

MATERIAL DESCRIPTION	USCS	AASHTO
● SANDY SILTY CLAY	CL-ML	

Project No.: 60364.002
Project: NASA - Plum Brook Station
● Location: Boring:IT-AA3-BEDGW-001 Sample:2 *

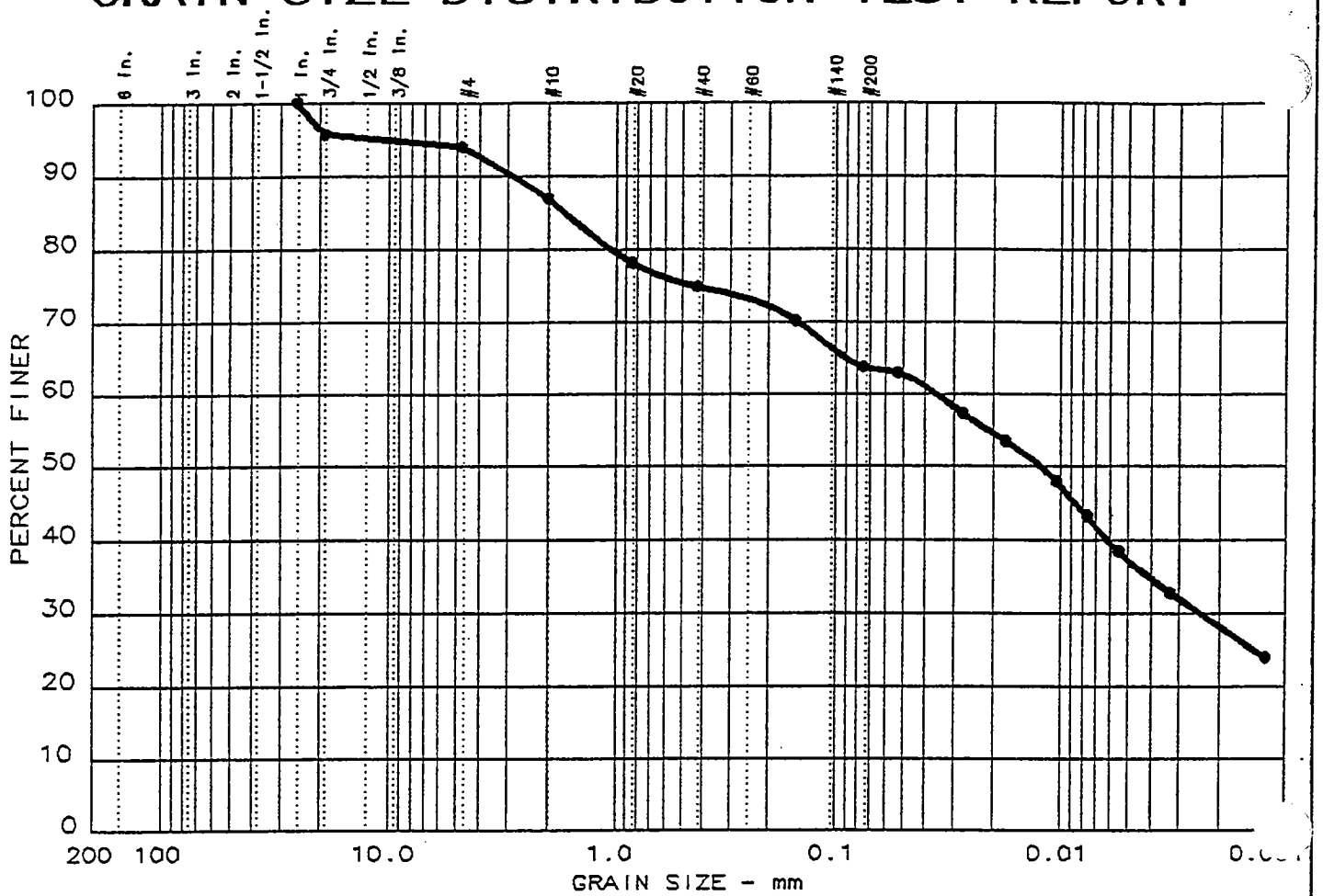
Date: 11/6/97

Remarks:
Client: Belasco Drilling Services Inc.
* Depth: 22-24'
Lab No. 8663

GRAIN SIZE DISTRIBUTION TEST REPORT
H. C. NUTTING COMPANY

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	5	0.0	6.0	30.4	26.5	37.1

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	46	15	1.68	0.04	0.01	0.002				

MATERIAL DESCRIPTION	USCS	AASHTO
● SANDY SILT	ML	

Project No.: 60364.002
Project: NASA - Plum Brook Station
● Location: Boring: IT-TNTB-BEDGW-001 Sample: 1 *

Date: 11/6/97

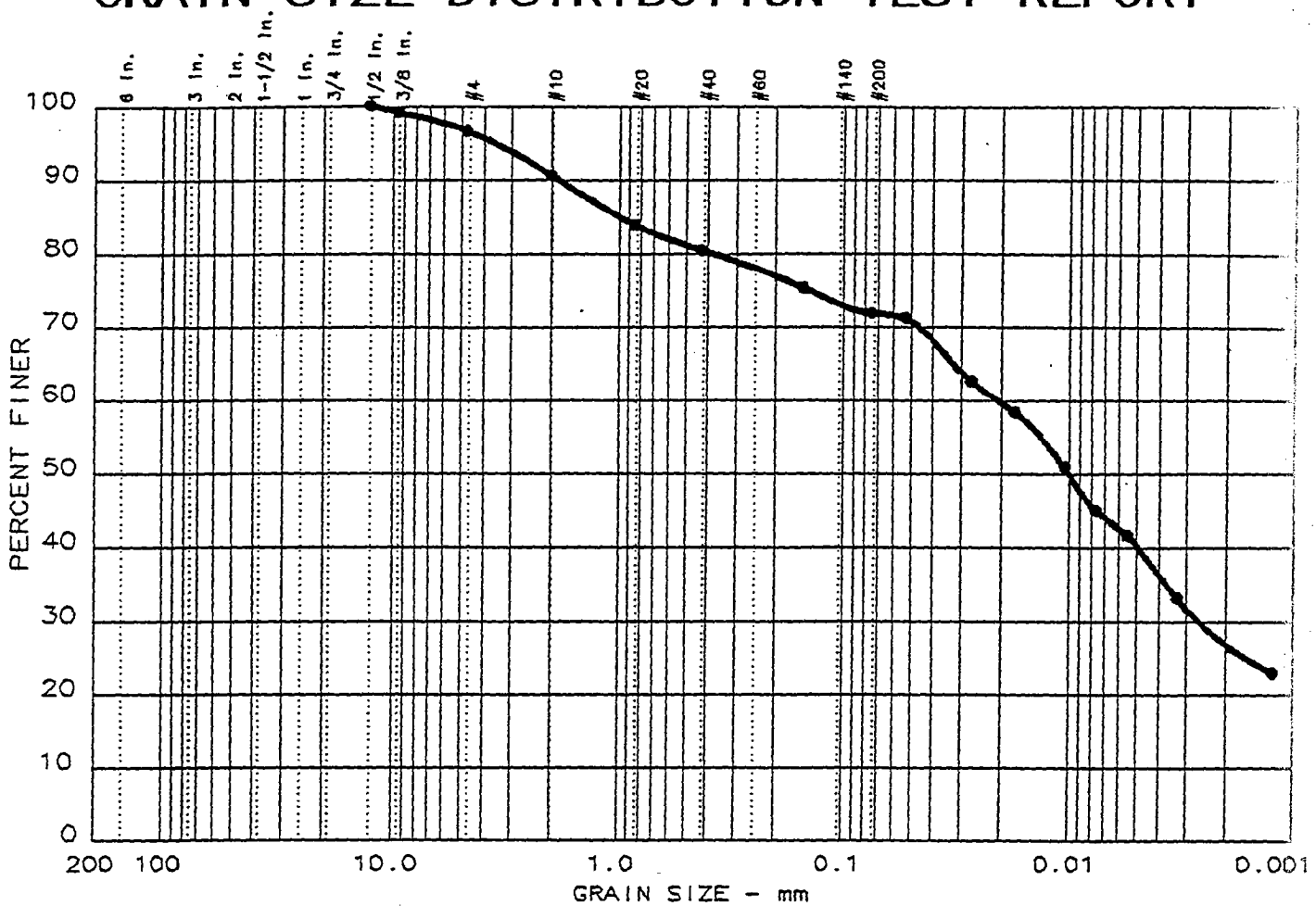
Remarks:
Client: Belasco Drilling Services Inc.
* Depth: 0-2'
Lab No. 8664

GRAIN SIZE DISTRIBUTION TEST REPORT

H. C. NUTTING COMPANY

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	6	0.0	3.4	24.8	31.6	40.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	45	19	0.99	0.02	0.01	0.003				

MATERIAL DESCRIPTION	USCS	AASHTO
● CLAY WITH SAND	CL	

Project No.: 60364.002
Project: NASA - Plum Brook Station
● Location: Boring: IT-TNTB-BEDGW-002 Sample: 1 *

ate: 11/6/97

Remarks:
Client: Belasco Drilling Services Inc.
* Depth: 2-4'
Lab No. 8665

GRAIN SIZE DISTRIBUTION TEST REPORT
H. C. NUTTING COMPANY

Figure No. _____

APPENDIX D

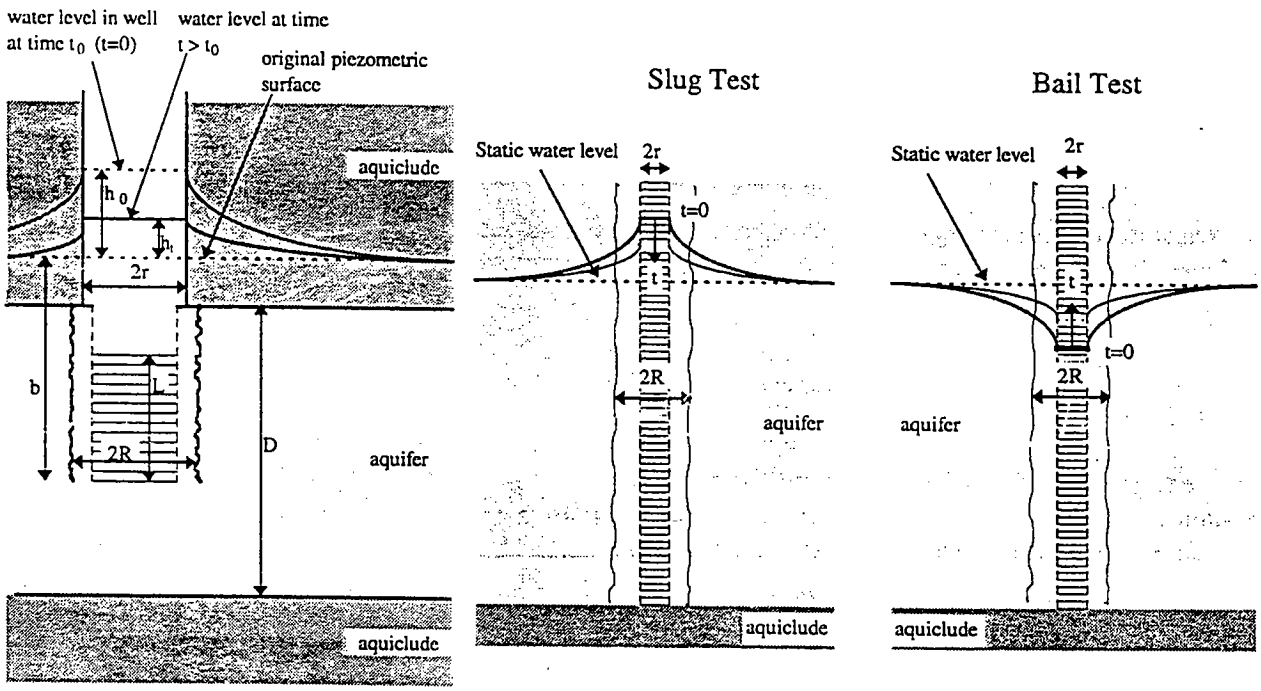
HYDRAULIC CONDUCTIVITY TESTING DATA

Equations and Assumptions used in Evaluating the Hydraulic Conductivity Testing Data
Site-Wide Groundwater Investigation
Former Plum Brook Ordnance Works
Sandusky, Ohio

Bouwer & Rice Equation for Slug Test Analysis

The Bouwer and Rice (1976) slug test is designed to estimate the hydraulic conductivity of the aquifer material surrounding the screen of a piezometer or a well. In a slug test, a solid "slug" is lowered into the piezometer instantaneously raising the water level in the casing (commonly known as falling head test). The test can also be conducted in the opposite manner by instantaneously removing a "slug" or volume of water (known as bail test).

The analytical solution is appropriate for the conditions shown in the following figures.



Bouwer and Rice (1976) developed an equation for hydraulic conductivity as follows:

$$K = \{[r^2 \ln(R_{cont}/R)]/2L\} \times (1/t) \times \ln(h_t/h_0)$$

where:

- r = well radius (or r_{eff} if water level change is within the screened interval)
- R= radius measured from center of well to undisturbed aquifer material
- R_{cont} = contributing radial distance over which the difference in head, h_0, is dissipated in the aquifer
- L = the length of the screen
- b = height of stagnant water column in the well
- D = saturated thickness of aquifer
- h_t = displacement as a function of time
- h_0 = initial displacement

Since the contributing radius of aquifer is seldom known before test is completed, Bouwer and Rice developed some empirical curves to account for this radius by three coefficients (A, B,C) which are all functions of the ratio of L/R. Coefficients A and B are used for partially penetrating wells whereas coefficient C is used for fully penetrating wells.

The data are plotted with time on a logarithmic x-axis and h_t / h_0 on a linear y-axis.

The effective well radius, r, should be specified as the radius of the well unless the water level falls within the screened portion of the aquifer during the slug test.

In this case, the effective radius may be calculated as follows:

$$r_{eff} = [r^2(1-n)+nR^2]^{1/2}$$

where: n is the porosity of the filter material.

In cases where the water level drops within the screened interval, the plot of H/H_0 vs. t will often produce a plot which seems to have an initial slope and a smaller slope at later time. In this case the fit should be obtained for the second straight line portion (Bouwer, 1989) because the initial slope only represents the effect of the filter pack materials.

Assumptions in the application of the Bouwer and rice equation are:

- unconfined aquifer of "apparently" infinite extent
- homogeneous, isotropic aquifer of uniform thickness
- water table is horizontal prior to the test
- instantaneous change in head
- well losses are negligible
- fully or partially penetrating well
- the well storage is not negligible, thus it is taken into account
- the flow to the well is in a steady state.

The data that are required for the Bouwer& Rice solution are:

- drawdown/recovery vs. Time data at a pumping well
- observation beginning from time zero onward (the value recorded at t=0 is used as the initial displacement value, H_0, by ***AquiferTest*** and thus it must be a non-zero value).

References:

Bouwer, H. And R.C.Rice. 1976. A slug test for determining hydraulic conductivity of unconfined aquifers with completely or partially penetrating wells. Water resource Research, Vol.12, No.3, pp.423-428

Bouwer, H. 1989. The Bouwer and rice Slug Test - An Update. Ground Water Vol. 27, No.3, June 1989.

Table
Summary of Monitoring Well Geometry Data
Plum Brook Ordnace Work
Erie County, Sandusky, Ohio

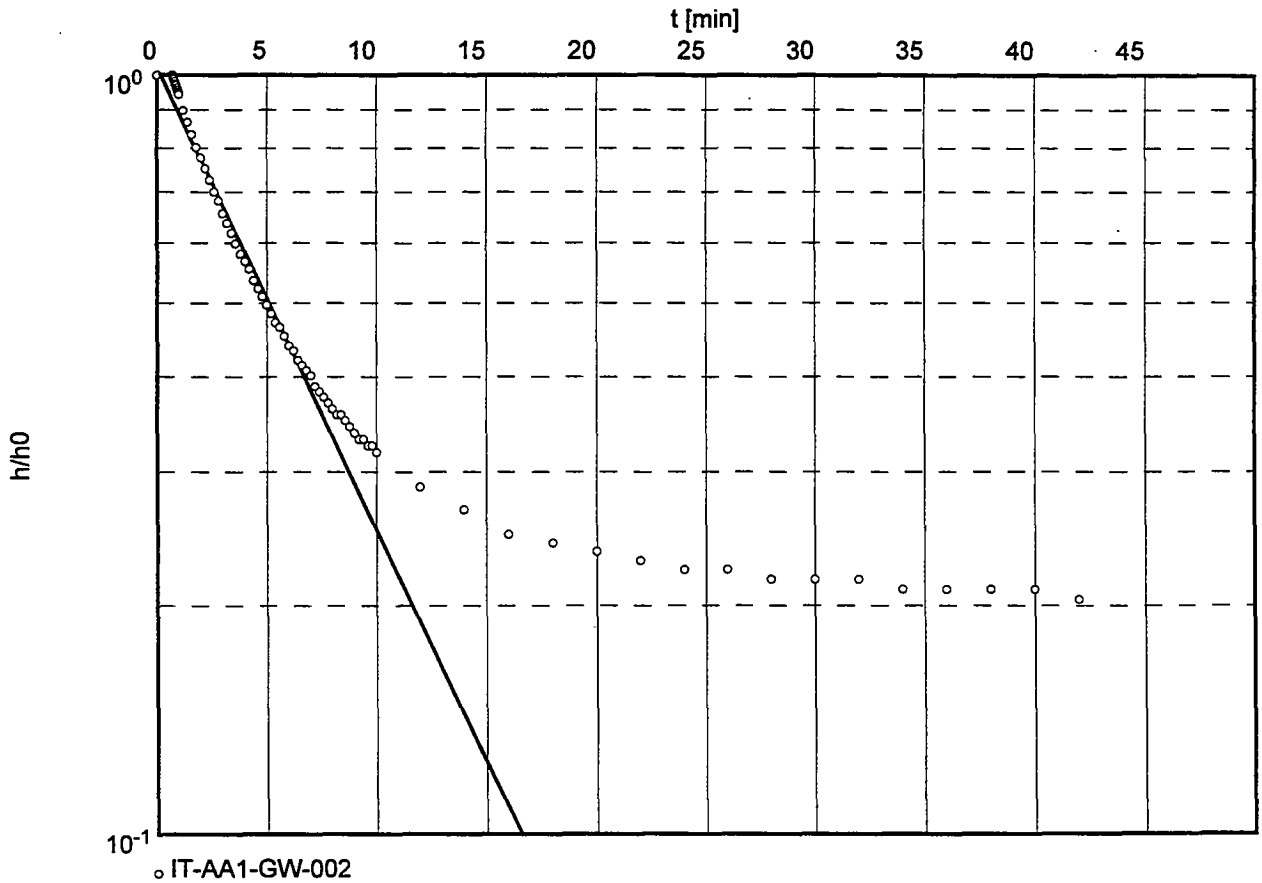
Well ID	Water Level (TOC) (ft)	Total Depth (TOC) (ft)	D (ft)	r_c (ft)	r_w (ft)	r_c^* (ft)	L_e (ft)	L_w (ft)	Y_0 (ft)
IT-AA1-GW-002	5.72	27.85	22.13	0.083	0.34	----	15	22.13	1.568
IT-AA2-GW-002	Dry	18.5	----	0.083	0.34	----	10	0	----
IT-AA3-GW-002	6.78	18.02	11.24	0.083	0.34	----	10	11.24	1.866
IT-ABG-GW-002	6.41	9.58	3.17	0.083	0.34	0.2	4	3.17	0.666
IT-AA1-BEDGW-001	30.18	66.00	35.82	0.083	0.25	----	15	35.82	1.662
IT-AA2-BEDGW-001	13.90	45.30	31.4	0.083	0.25	----	15	31.4	3.681
IT-BG8-BEDGW-001	5.88	22.52	16.64	0.083	0.25	----	15	16.64	2.012
IT-ABG-BEDGW-001	5.94	23.59	17.65	0.083	0.25	----	10	17.65	5.379
IT-TNTB-BEDGW-001	4.16	26.89	22.73	0.083	0.25	----	15	22.73	5.978
IT-TNTB-BEDGW-002	6.80	26.48	19.68	0.083	0.25	----	10	19.68	5.404
IT-MNTA-BEDGW-001	27.86	66.00	38.14	0.083	0.25	----	15	38.14	7.859
IT-AA3-BEDGW-001	21.49	52.30	30.81	0.083	0.25	----	15	30.81	10.903

Note :

- D ---- Aquifer saturated thickness (assumed)
- r_c ---- Radius of well casing
- r_c^* ---- Effective radius of well casing when $L_e \geq L_w$. Water level fluctuations occurred in the screened section of the well. Modify r to account for filter pack storage according to: $r_c^* = [\, r_c^2 + \Phi\,(r_w^2 - r_c^2)\,]^{1/2}$
- r_w ---- Radius of boring
- L_e ---- Length of saturated well screen
- L_w ---- Static height of water in well
- y_0 ---- Initial change in water level
- Φ ---- Porosity of filter pack (Assumed to be 25 percent. Porosities of unconsolidated sand range from 25 to 50 percent [Freeze and Cherry, 1979])

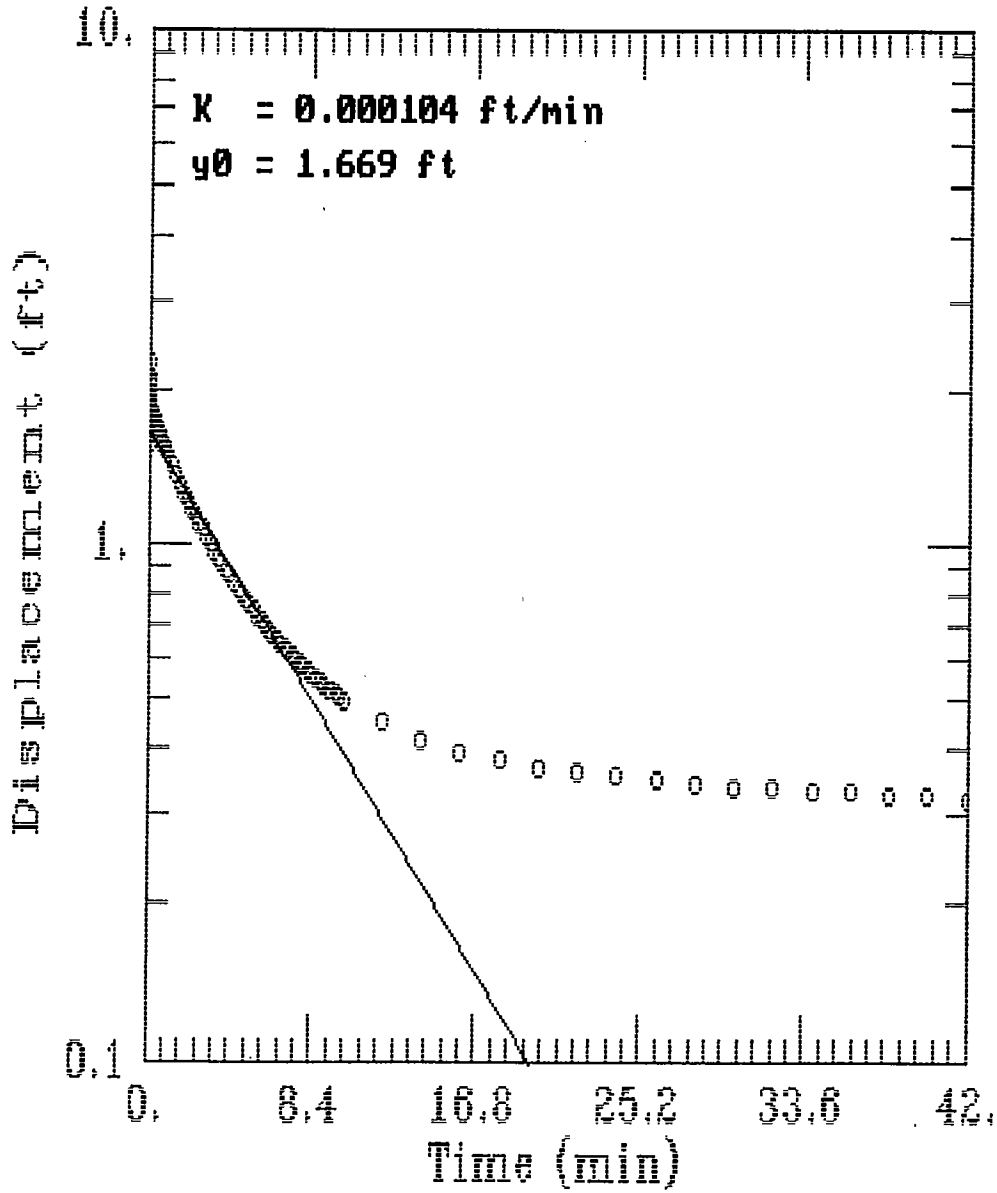
Waterloo Hydrogeologic 180 Columbia St. W. Waterloo,Ontario,Canada ph.(519)746-1798	slug/bail test analysis BOUWER-RICE's method	Date: 14.10.1997 Page 1 Project: PBOW Evaluated by: Jane Li

Slug Test No. 0	Test conducted on: 10/10/97
IT-AA1-GW-002	



Hydraulic conductivity [ft/min]: 5.13×10^{-4}

PBOW IT-AA1-GW-002 Rising Test



AQTESOLV

GERAGHTY & MILLER, INC.

Modeling Group

SE100	0C
Environment	al Logger
10/10 1	2:48
Unit# 00000	Test 0
Setups:	INPUT 1
---	---
Type	Level (F)
Mode	TOC
I.D.	1
Reference	20
Linearity	0
Scale factor	10
Offset	-0.06
Delay mSEC	50
Step 0 10/07	9:57:04
Elapsed Time	INPUT 1
---	---
0	21.568
0.0033	21.795
0.0066	22.07
0.01	22.25
0.0133	22.117
0.0166	21.852
0.02	21.66
0.0233	21.622
0.0266	21.751
0.03	21.969
0.0333	22.076
0.0366	22.045
0.04	21.893
0.0433	21.729
0.0466	21.669
0.05	21.748
0.0533	21.877
0.0566	21.969
0.06	21.959
0.0633	21.862
0.0666	21.751
0.07	21.707
0.0733	21.751
0.0766	21.84
0.08	21.906
0.0833	21.906

0.0866	21.843
0.09	21.767
0.0933	21.732
0.0966	21.754
0.1	21.811
0.1033	21.858
0.1066	21.862
0.11	21.824
0.1133	21.773
0.1166	21.742
0.12	21.754
0.1233	21.789
0.1266	21.824
0.13	21.827
0.1333	21.805
0.1366	21.77
0.14	21.748
0.1433	21.751
0.1466	21.776
0.15	21.798
0.1533	21.802
0.1566	21.789
0.16	21.764
0.1633	21.748
0.1666	21.748
0.17	21.764
0.1733	21.78
0.1766	21.783
0.18	21.773
0.1833	21.757
0.1866	21.745
0.19	21.745
0.1933	21.754
0.1966	21.764
0.2	21.764
0.2033	21.757
0.2066	21.748
0.21	21.742
0.2133	21.739
0.2166	21.745
0.22	21.748
0.2233	21.751
0.2266	21.745
0.23	21.739
0.2333	21.735
0.2366	21.732
0.24	21.735
0.2433	21.739
0.2466	21.739

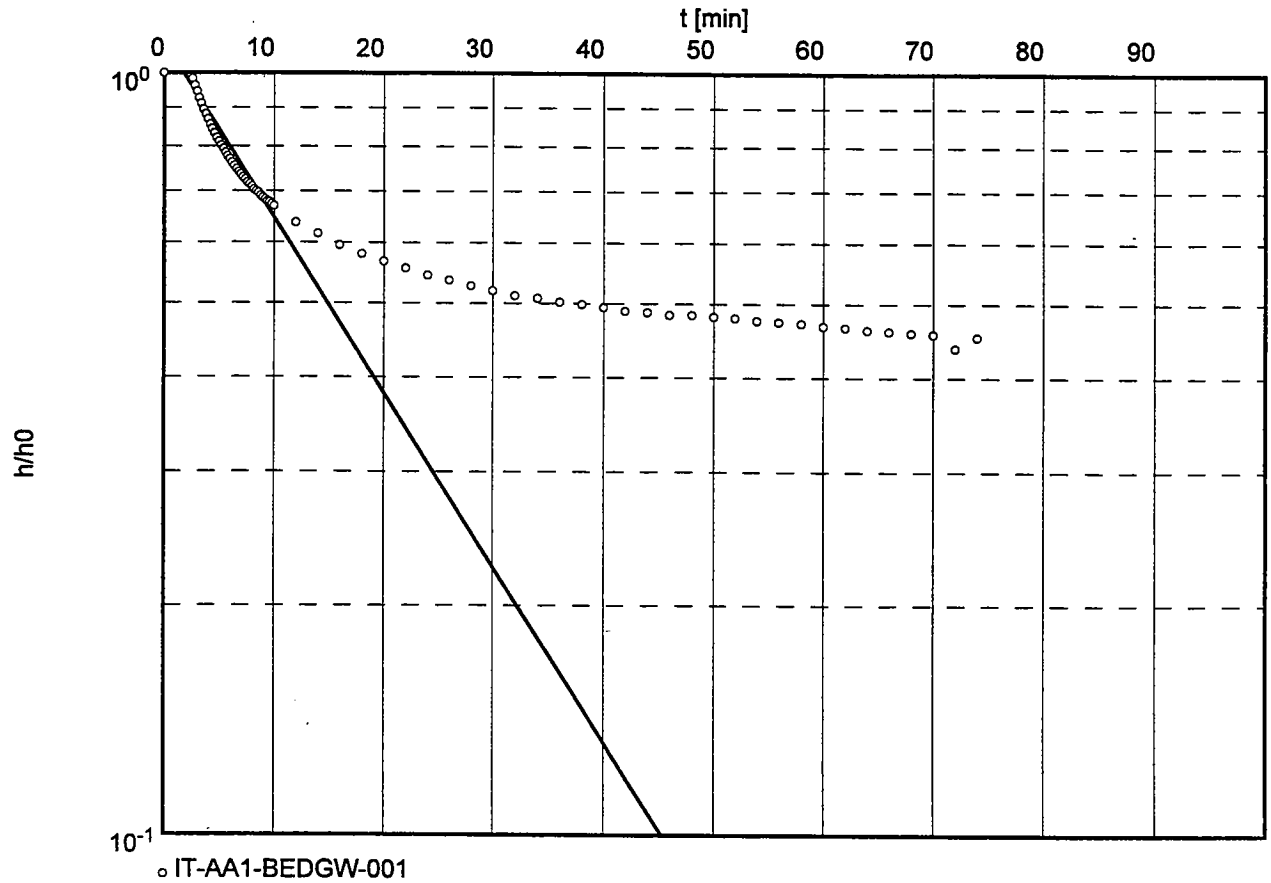
0.25	21.735
0.2533	21.729
0.2566	21.726
0.26	21.726
0.2633	21.726
0.2666	21.729
0.27	21.726
0.2733	21.726
0.2766	21.723
0.28	21.716
0.2833	21.716
0.2866	21.716
0.29	21.72
0.2933	21.72
0.2966	21.716
0.3	21.713
0.3033	21.71
0.3066	21.707
0.31	21.71
0.3133	21.71
0.3166	21.71
0.32	21.707
0.3233	21.704
0.3266	21.701
0.33	21.701
0.3333	21.701
0.35	21.694
0.3666	21.688
0.3833	21.682
0.4	21.675
0.4166	21.669
0.4333	21.663
0.45	21.656
0.4666	21.653
0.4833	21.647
0.5	21.638
0.5166	21.631
0.5333	21.628
0.55	21.622
0.5666	21.615
0.5833	21.609
0.6	21.606
0.6166	21.6
0.6333	21.593
0.65	21.587
0.6666	21.584
0.6833	21.578
0.7	21.571
0.7166	21.568

0.7333	21.562
0.75	21.555
0.7666	21.552
0.7833	21.546
0.8	21.543
0.8166	21.537
0.8333	21.53
0.85	21.527
0.8666	21.521
0.8833	21.518
0.9	21.511
0.9166	21.508
0.9333	21.502
0.95	21.496
0.9666	21.492
0.9833	21.486
1	21.483
1.2	21.407
1.4	21.357
1.6	21.309
1.8	21.262
2	21.218
2.2	21.177
2.4	21.139
2.6	21.101
2.8	21.066
3	21.035
3.2	21.003
3.4	20.972
3.6	20.943
3.8	20.915
4	20.89
4.2	20.867
4.4	20.842
4.6	20.82
4.8	20.801
5	20.779
5.2	20.76
5.4	20.744
5.6	20.725
5.8	20.71
6	20.694
6.2	20.678
6.4	20.665
6.6	20.653
6.8	20.64
7	20.628
7.2	20.615
7.4	20.605

7.6	20.593
7.8	20.583
8	20.574
8.2	20.565
8.4	20.555
8.6	20.549
8.8	20.539
9	20.533
9.2	20.523
9.4	20.517
9.6	20.511
9.8	20.505
10	20.498
12	20.451
14	20.419
16	20.394
18	20.381
20	20.369
22	20.363
24	20.353
26	20.35
28	20.344
30	20.34
32	20.337
34	20.334
36	20.331
38	20.328
40	20.328
42	20.321

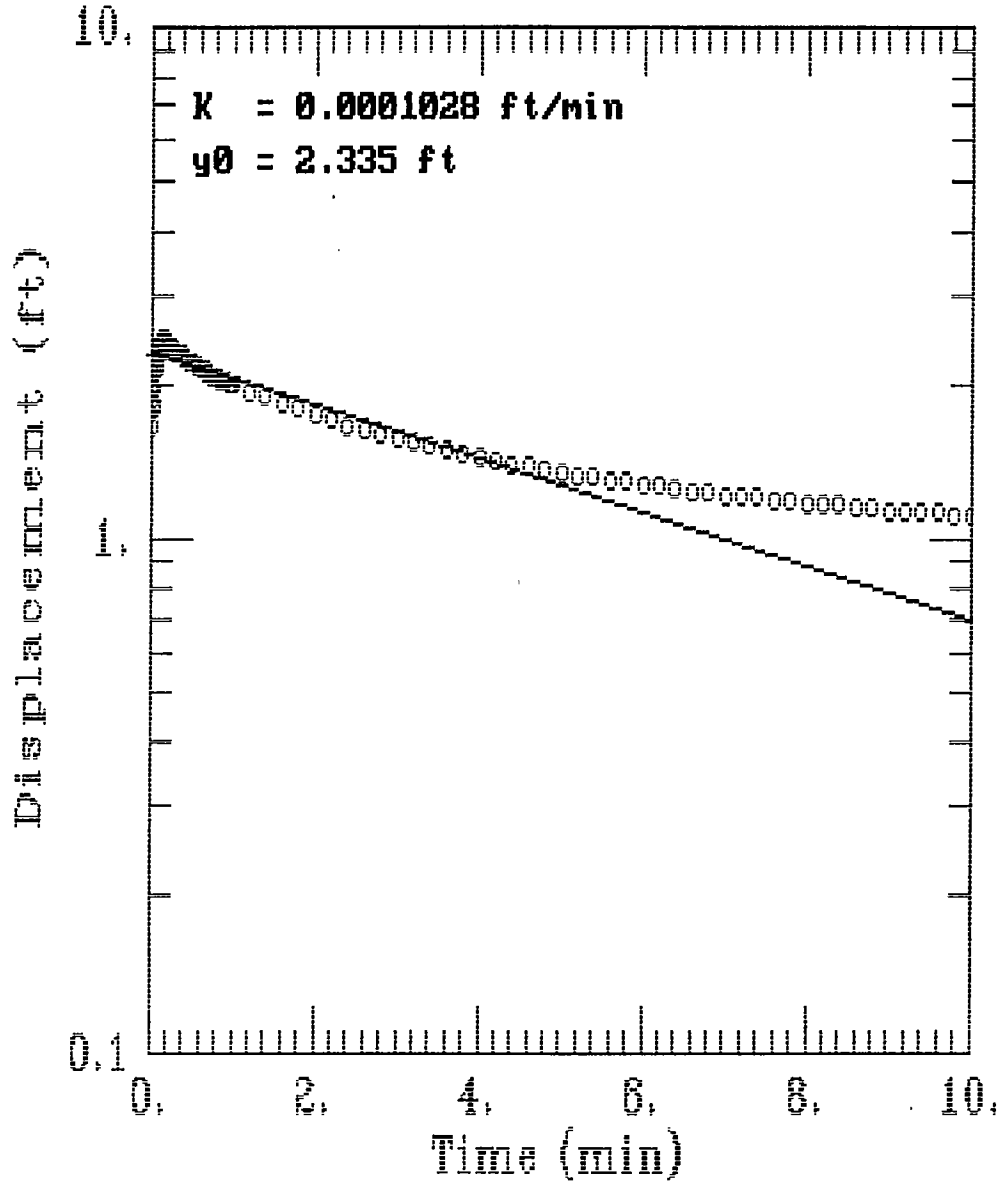
Waterloo Hydrogeologic 180 Columbia St. W. Waterloo,Ontario,Canada ph.(519)746-1798	slug/bail test analysis BOUWER-RICE's method	Date: 16.10.1997	Page 1
		Project: PBOW	
		Evaluated by: Jane Li	

Slug Test No. 1	Test conducted on: 10/7/97
IT-AA1-BEDGW-001	



Hydraulic conductivity [ft/min]: 5.17×10^{-5}

PBOW-IT-AA1-BEDGW-001 Rising Test



AQTESOLV

GERAGHTY & MILLER, INC.

Modeling Group

SE100 0C
Environment al Logger
10/10 1 2:51

Unit# 00000 Test 1

Setups:	INPUT 1
Type	Level (F)
Mode	TOC
I.D.	1
Reference	48
Linearity	0.01
Scale factor	10
Offset	-0.07
Delay mSEC	50

Step 0 10/07 12:46:08

Elapsed Time	INPUT 1
0	49.662
0.0033	49.937
0.0066	50.177
0.01	50.313
0.0133	50.357
0.0166	50.373
0.02	50.269
0.0233	50.143
0.0266	49.997
0.03	49.877
0.0333	49.814
0.0366	49.846
0.04	49.959
0.0433	50.114
0.0466	50.196
0.05	50.272
0.0533	50.285
0.0566	50.345
0.06	50.335
0.0633	50.361
0.0666	50.32
0.07	50.272
0.0733	50.231
0.0766	50.203
0.08	50.18
0.0833	50.136

0.0866	50.2
0.09	50.225
0.0933	50.225
0.0966	50.282
0.1	50.354
0.1033	50.395
0.1066	50.386
0.11	50.405
0.1133	50.392
0.1166	50.357
0.12	50.361
0.1233	50.364
0.1266	50.37
0.13	50.37
0.1333	50.386
0.1366	50.392
0.14	50.408
0.1433	50.414
0.1466	50.43
0.15	50.443
0.1533	50.452
0.1566	50.459
0.16	50.456
0.1633	50.446
0.1666	50.449
0.17	50.43
0.1733	50.418
0.1766	50.414
0.18	50.405
0.1833	50.395
0.1866	50.395
0.19	50.399
0.1933	50.395
0.1966	50.395
0.2	50.389
0.2033	50.386
0.2066	50.399
0.21	50.373
0.2133	50.37
0.2166	50.377
0.22	50.354
0.2233	50.351
0.2266	50.351
0.23	50.351
0.2333	50.351
0.2366	50.351
0.24	50.364
0.2433	50.37
0.2466	50.351

0.25	50.354
0.2533	50.361
0.2566	50.342
0.26	50.357
0.2633	50.348
0.2666	50.351
0.27	50.332
0.2733	50.339
0.2766	50.339
0.28	50.335
0.2833	50.339
0.2866	50.326
0.29	50.329
0.2933	50.326
0.2966	50.326
0.3	50.326
0.3033	50.31
0.3066	50.307
0.31	50.32
0.3133	50.316
0.3166	50.297
0.32	50.301
0.3233	50.301
0.3266	50.294
0.33	50.297
0.3333	50.294
0.35	50.31
0.3666	50.307
0.3833	50.282
0.4	50.269
0.4166	50.247
0.4333	50.244
0.45	50.234
0.4666	50.225
0.4833	50.209
0.5	50.203
0.5166	50.209
0.5333	50.2
0.55	50.177
0.5666	50.174
0.5833	50.168
0.6	50.162
0.6166	50.149
0.6333	50.136
0.65	50.127
0.6666	50.13
0.6833	50.114
0.7	50.111
0.7166	50.102

0.7333	50.089
0.75	50.079
0.7666	50.076
0.7833	50.076
0.8	50.057
0.8166	50.064
0.8333	50.048
0.85	50.048
0.8666	50.045
0.8833	50.032
0.9	50.026
0.9166	50.023
0.9333	50.019
0.95	50.016
0.9666	50.007
0.9833	50.007
1	49.997
1.2	49.947
1.4	49.899
1.6	49.846
1.8	49.798
2	49.751
2.2	49.71
2.4	49.669
2.6	49.634
2.8	49.599
3	49.571
3.2	49.539
3.4	49.514
3.6	49.488
3.8	49.466
4	49.444
4.2	49.422
4.4	49.403
4.6	49.384
4.8	49.365
5	49.349
5.2	49.333
5.4	49.321
5.6	49.305
5.8	49.292
6	49.28
6.2	49.267
6.4	49.254
6.6	49.242
6.8	49.232
7	49.223
7.2	49.213
7.4	49.204

7.6	49.194
7.8	49.188
8	49.179
8.2	49.169
8.4	49.163
8.6	49.157
8.8	49.147
9	49.141
9.2	49.134
9.4	49.128
9.6	49.125
9.8	49.119
10	49.112
12	49.059
14	49.024
16	48.989
18	48.964
20	48.942
22	48.923
24	48.904
26	48.891
28	48.875
30	48.863
32	48.85
34	48.844
36	48.834
38	48.828
40	48.821
42	48.812
44	48.809
46	48.803
48	48.803
50	48.799
52	48.796
54	48.79
56	48.787
58	48.783
60	48.777
62	48.774
64	48.768
66	48.765
68	48.761
70	48.758
72	48.727
74	48.752

SE100 0C
Environment al Logger
10/10 1 2:54

Unit# 00000 Test 2

Setups:	INPUT 1
Type	Level (F)
Mode	TOC
I.D.	1
Reference	30
Linearity	0.01
Scale factor	10
Offset	-0.07
Delay mSEC	50

Step 0 10/07 15:58:18

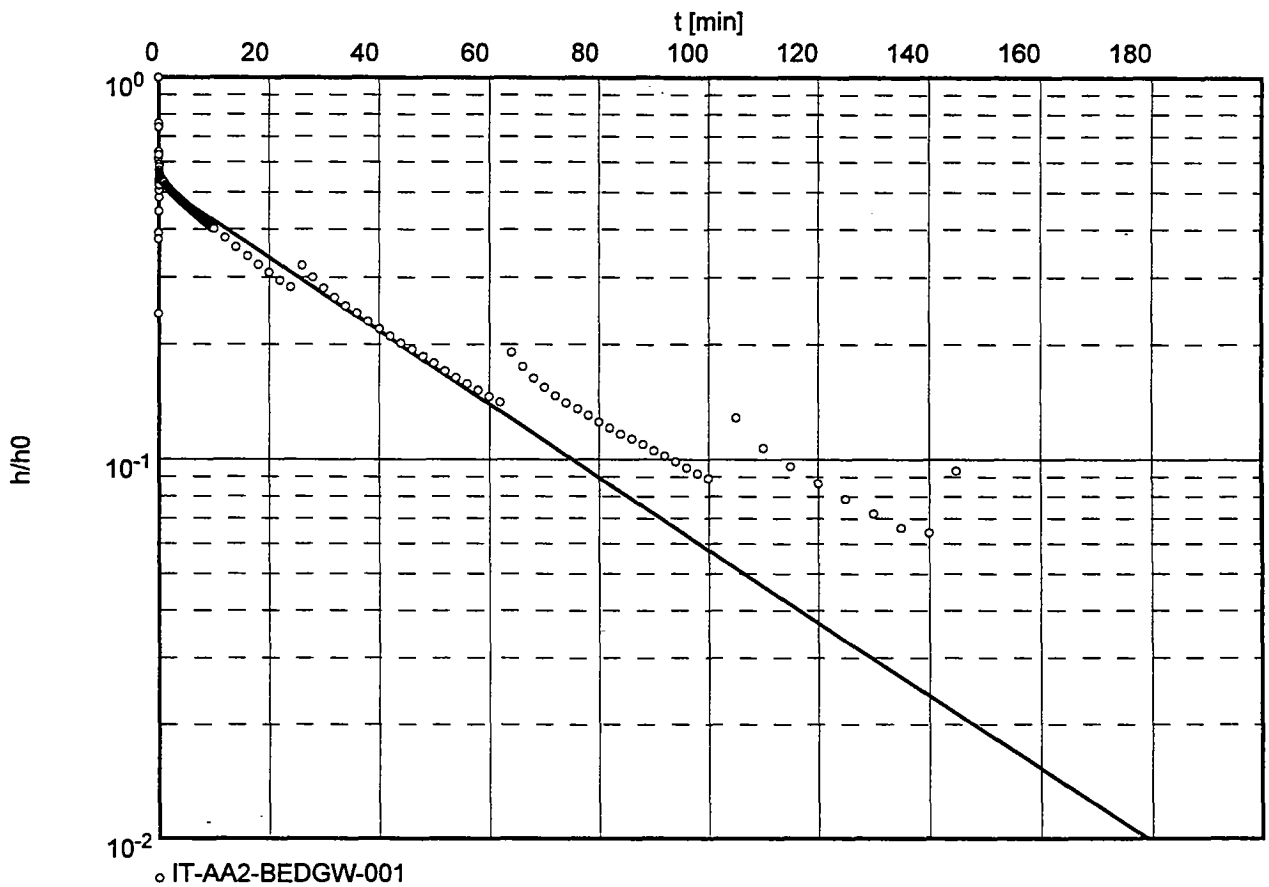
Elapsed Time	INPUT 1
0	31.144
0.0033	31.144
0.0066	31.144
0.01	31.144
0.0133	31.144
0.0166	31.147
0.02	31.144
0.0233	31.144
0.0266	31.144
0.03	31.144
0.0333	31.144
0.0366	31.144
0.04	31.147
0.0433	31.144
0.0466	31.144
0.05	31.144
0.0533	31.144
0.0566	31.147
0.06	31.147
0.0633	31.147
0.0666	31.147
0.07	31.147
0.0733	31.147
0.0766	31.147
0.08	31.147
0.0833	31.147

0.0866	31.147
0.09	31.147
0.0933	31.147
0.0966	31.147
0.1	31.147
0.1033	31.147
0.1066	31.147
0.11	31.147
0.1133	31.147
0.1166	31.147
0.12	31.147
0.1233	31.147
0.1266	31.15
0.13	31.147
0.1333	31.15
0.1366	31.15
0.14	31.15
0.1433	31.15
0.1466	31.15
0.15	31.15
0.1533	31.15
0.1566	31.15
0.16	31.15
0.1633	31.15
0.1666	31.15
0.17	31.15
0.1733	31.15
0.1766	31.15
0.18	31.153
0.1833	31.153
0.1866	31.153
0.19	31.153
0.1933	31.153
0.1966	31.16
0.2	31.16
0.2033	31.125
0.2066	31.156
0.21	31.15
0.2133	31.188
0.2166	31.156
0.22	31.077
0.2233	31.16
0.2266	31.103
0.23	31.191
0.2333	31.166
0.2366	31.175
0.24	31.16
0.2433	31.147
0.2466	31.144

0.25	31.147
0.2533	31.153
0.2566	31.16
0.26	31.16
0.2633	31.16
0.2666	31.156
0.27	31.153
0.2733	31.153
0.2766	31.153
0.28	31.156
0.2833	31.156
0.2866	31.16
0.29	31.16
0.2933	31.156
0.2966	31.156
0.3	31.156
0.3033	31.156
0.3066	31.156
0.31	31.156
0.3133	31.156
0.3166	31.16
0.32	31.16
0.3233	31.16
0.3266	31.16
0.33	31.16
0.3333	31.16
0.35	31.156
0.3666	31.156
0.3833	31.096
0.4	31.156
0.4166	31.163
0.4333	31.156
0.45	31.156
0.4666	31.156
0.4833	31.156
0.5	31.16

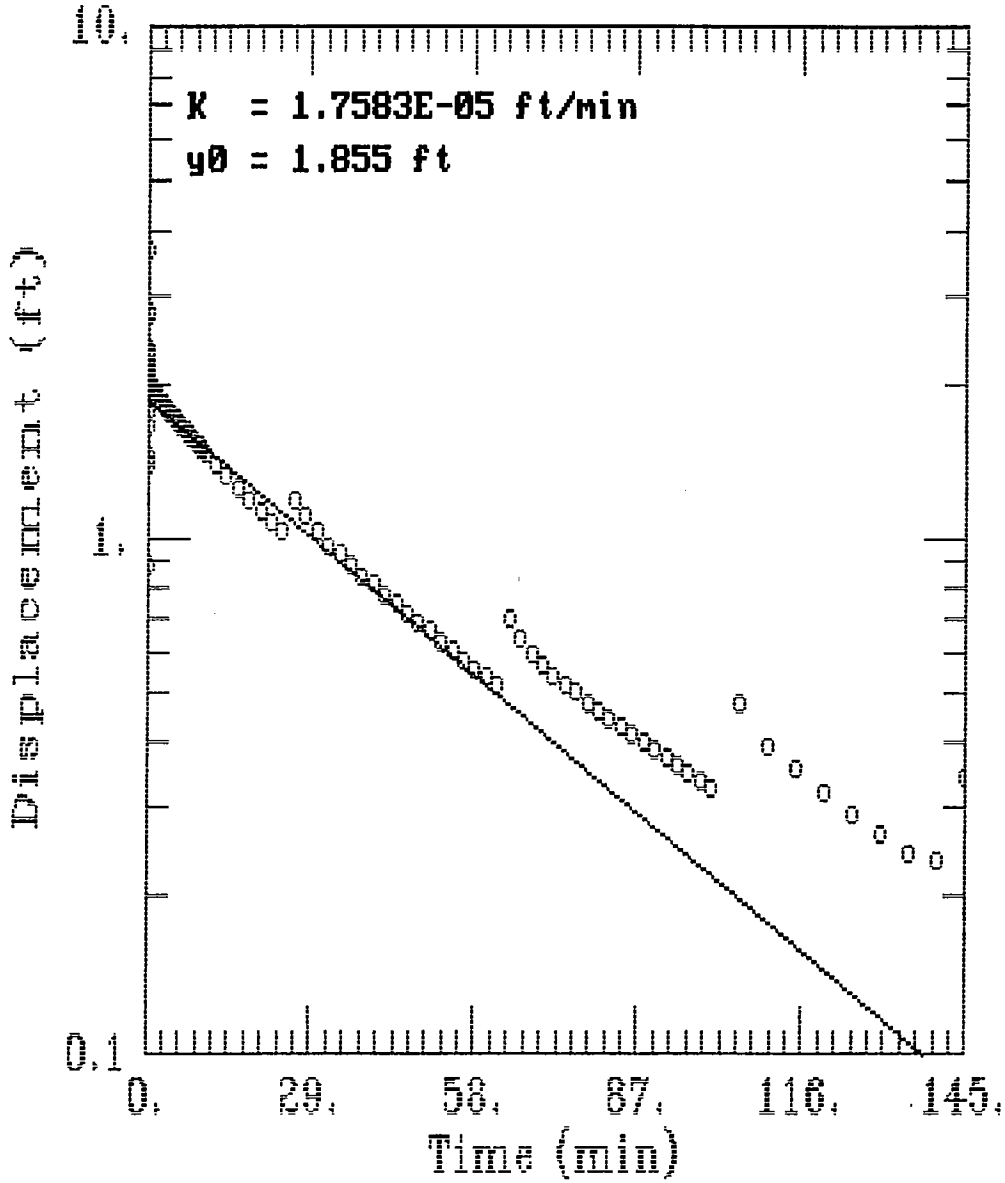
Waterloo Hydrogeologic 180 Columbia St. W. Waterloo,Ontario,Canada ph.(519)746-1798	slug/bail test analysis BOUWER-RICE's method	Date: 16.10.1997	Page 1
		Project: PBOW	
		Evaluated by: J.Li	

Slug Test No. 3	Test conducted on: 10/7/97
IT-AA2-BEDGW-001	



Hydraulic conductivity [ft/min]: 2.26×10^{-5}

PBOW IT-AA2-BEDGW-001 Rising Test



AQTESOLV

GERAGHTY & MILLER, INC.

Modeling Group

SE100	0C
Environment	al Logger
10/10 1	2:56

Unit# 00000	Test 3

Setups:	INPUT 1
Type	Level (F)
Mode	TOC
I.D.	1
Reference	30
Linearity	0.01
Scale factor	10
Offset	-0.07
Delay mSEC	50

Step 0 10/07 16:01:11

Elapsed Time	INPUT 1
0	33.681
0.0033	32.752
0.0066	31.441
0.01	30.884
0.0133	31.387
0.0166	32.253
0.02	32.787
0.0233	32.727
0.0266	32.262
0.03	31.785
0.0333	31.643
0.0366	31.858
0.04	32.174
0.0433	32.348
0.0466	32.307
0.05	32.117
0.0533	31.959
0.0566	31.921
0.06	31.991
0.0633	32.12
0.0666	32.177
0.07	32.142
0.0733	32.073
0.0766	32.006
0.08	32.003
0.0833	32.047

0.0866	32.089
0.09	32.101
0.0933	32.079
0.0966	32.047
0.1	32.025
0.1033	32.028
0.1066	32.044
0.11	32.06
0.1133	32.063
0.1166	32.054
0.12	32.038
0.1233	32.032
0.1266	32.035
0.13	32.041
0.1333	32.047
0.1366	32.044
0.14	32.041
0.1433	32.035
0.1466	32.032
0.15	32.035
0.1533	32.035
0.1566	32.038
0.16	32.038
0.1633	32.035
0.1666	32.032
0.17	32.028
0.1733	32.032
0.1766	32.032
0.18	32.032
0.1833	32.032
0.1866	32.032
0.19	32.028
0.1933	32.025
0.1966	32.025
0.2	32.028
0.2033	32.028
0.2066	32.028
0.21	32.025
0.2133	32.025
0.2166	32.025
0.22	32.022
0.2233	32.022
0.2266	32.025
0.23	32.022
0.2333	32.022
0.2366	32.022
0.24	32.022
0.2433	32.022
0.2466	32.022

0.25	32.022
0.2533	32.022
0.2566	32.022
0.26	32.019
0.2633	32.019
0.2666	32.019
0.27	32.019
0.2733	32.019
0.2766	32.019
0.28	32.019
0.2833	32.019
0.2866	32.019
0.29	32.019
0.2933	32.019
0.2966	32.019
0.3	32.016
0.3033	32.016
0.3066	32.016
0.31	32.016
0.3133	32.016
0.3166	32.016
0.32	32.016
0.3233	32.016
0.3266	32.016
0.33	32.016
0.3333	32.016
0.35	32.013
0.3666	32.006
0.3833	32.006
0.4	32.006
0.4166	32.003
0.4333	32
0.45	32
0.4666	31.997
0.4833	31.997
0.5	31.994
0.5166	31.994
0.5333	31.991
0.55	31.991
0.5666	31.987
0.5833	31.987
0.6	31.984
0.6166	31.984
0.6333	31.981
0.65	31.981
0.6666	31.978
0.6833	31.978
0.7	31.975
0.7166	31.975

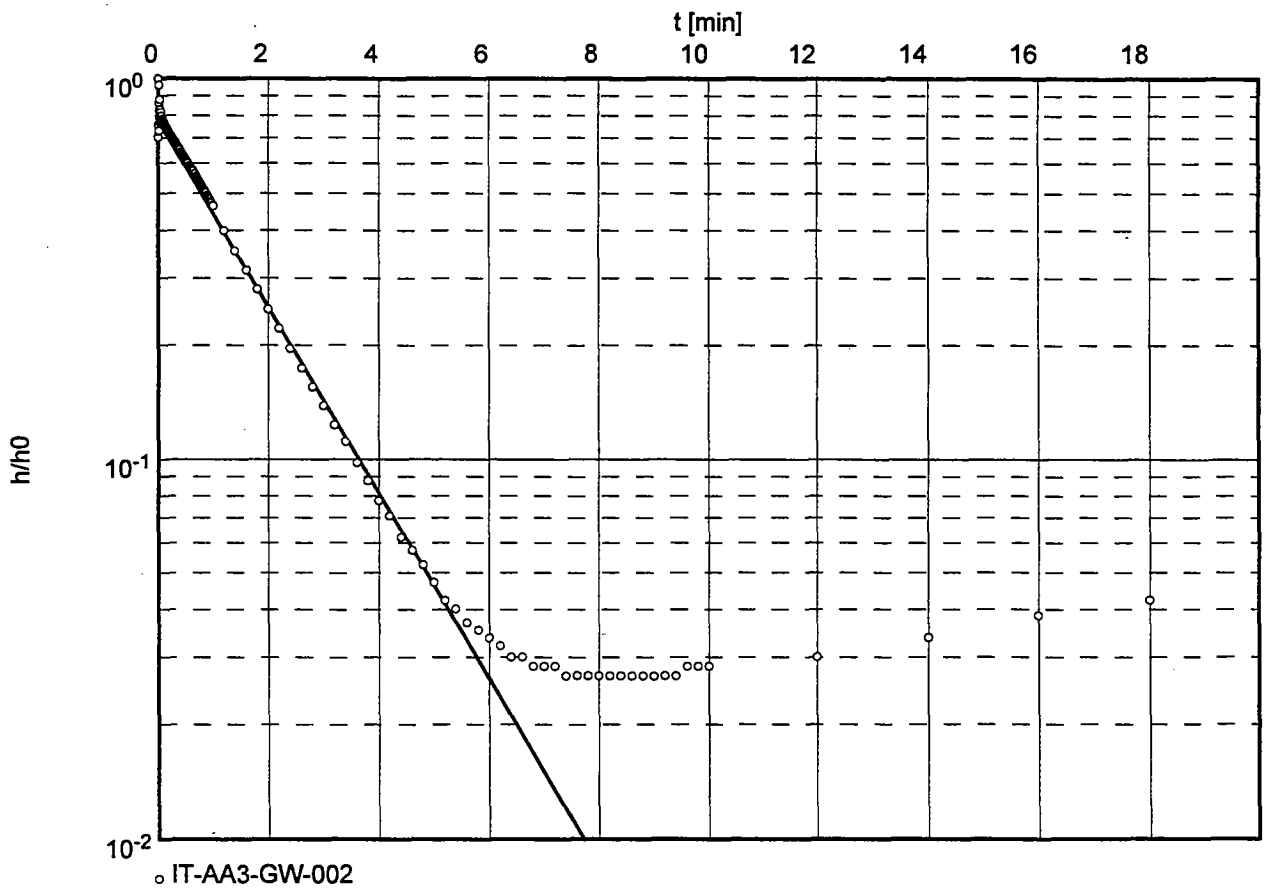
0.7333	31.975
0.75	31.972
0.7666	31.972
0.7833	31.968
0.8	31.968
0.8166	31.968
0.8333	31.965
0.85	31.965
0.8666	31.962
0.8833	31.962
0.9	31.962
0.9166	31.959
0.9333	31.959
0.95	31.956
0.9666	31.956
0.9833	31.956
1	31.953
1.2	31.93
1.4	31.918
1.6	31.902
1.8	31.889
2	31.874
2.2	31.861
2.4	31.848
2.6	31.836
2.8	31.823
3	31.814
3.2	31.801
3.4	31.788
3.6	31.779
3.8	31.766
4	31.757
4.2	31.747
4.4	31.735
4.6	31.725
4.8	31.716
5	31.703
5.2	31.693
5.4	31.684
5.6	31.675
5.8	31.665
6	31.656
6.2	31.646
6.4	31.637
6.6	31.627
6.8	31.618
7	31.608
7.2	31.599
7.4	31.589

7.6	31.58
7.8	31.57
8	31.561
8.2	31.554
8.4	31.545
8.6	31.536
8.8	31.526
9	31.516
9.2	31.51
9.4	31.501
9.6	31.491
9.8	31.485
10	31.475
12	31.4
14	31.324
16	31.254
18	31.191
20	31.137
22	31.083
24	31.039
26	31.185
28	31.103
30	31.033
32	30.976
34	30.929
36	30.888
38	30.846
40	30.809
42	30.774
44	30.742
46	30.714
48	30.685
50	30.657
52	30.628
54	30.603
56	30.581
58	30.559
60	30.537
62	30.521
64	30.701
66	30.644
68	30.6
70	30.568
72	30.54
74	30.518
76	30.499
78	30.48
80	30.461
82	30.445

84	30.429
86	30.417
88	30.404
90	30.388
92	30.376
94	30.363
96	30.35
98	30.338
100	30.328
105	30.474
110	30.395
115	30.353
120	30.319
125	30.29
130	30.265
135	30.243
140	30.236
145	30.344

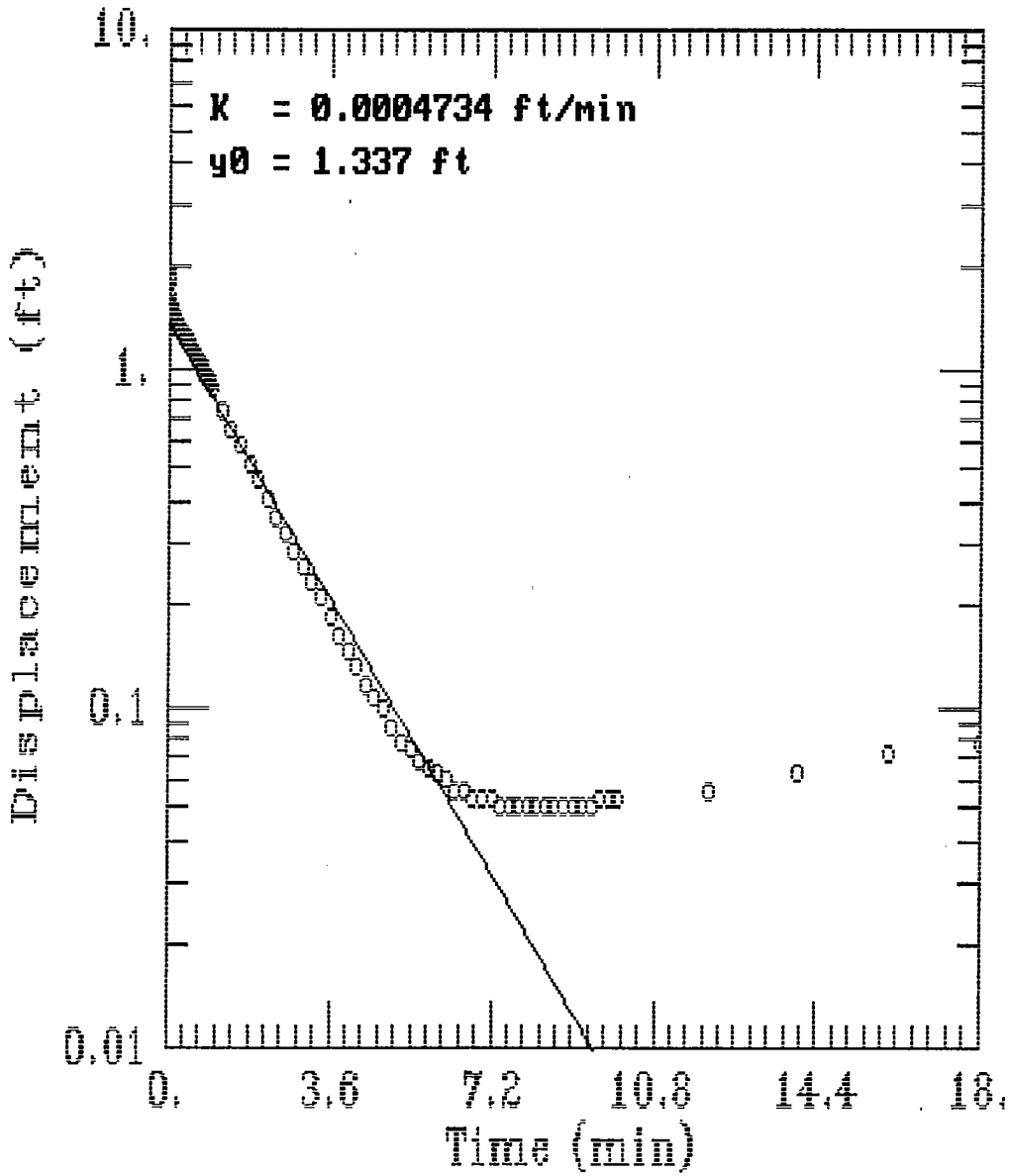
Waterloo Hydrogeologic 180 Columbia St. W. Waterloo,Ontario,Canada ph.(519)746-1798	slug/bail test analysis BOUWER-RICE's method	Date: 16.10.1997	Page 1
		Project: PBOW	
		Evaluated by: J.Li	

Slug Test No. 4	Test conducted on: 10/8/97
IT-AA3-GW-002	



Hydraulic conductivity [ft/min]: 2.94×10^{-3}

PBOW-IT-AA3-GW-002 Rising Test



AQTESOLV

GERAGHTY & MILLER, INC.

Modeling Group

SE100 0C
Environment al Logger
10/10 1 2:59

Unit# 00000 Test 4

Setups:	INPUT 1
Type	Level (F)
Mode	TOC
I.D.	1
Reference	17.5
Linearity	0.01
Scale factor	10
Offset	-0.07
Delay mSEC	50

Step 0 10/08 9:43:52

Elapsed Time	INPUT 1
0	19.366
0.0033	19.42
0.0066	18.81
0.01	18.912
0.0133	19.294
0.0166	19.111
0.02	18.864
0.0233	19.038
0.0266	19.145
0.03	18.987
0.0333	18.937
0.0366	19.051
0.04	19.047
0.0433	18.959
0.0466	18.972
0.05	19.022
0.0533	18.99
0.0566	18.956
0.06	18.978
0.0633	18.987
0.0666	18.962
0.07	18.949
0.0733	18.965
0.0766	18.962
0.08	18.943
0.0833	18.943

0.0866	18.949
0.09	18.94
0.0933	18.93
0.0966	18.93
0.1	18.934
0.1033	18.924
0.1066	18.921
0.11	18.921
0.1133	18.918
0.1166	18.912
0.12	18.912
0.1233	18.908
0.1266	18.902
0.13	18.902
0.1333	18.899
0.1366	18.896
0.14	18.893
0.1433	18.889
0.1466	18.886
0.15	18.883
0.1533	18.88
0.1566	18.877
0.16	18.877
0.1633	18.874
0.1666	18.87
0.17	18.867
0.1733	18.864
0.1766	18.861
0.18	18.861
0.1833	18.858
0.1866	18.855
0.19	18.852
0.1933	18.848
0.1966	18.848
0.2	18.845
0.2033	18.842
0.2066	18.839
0.21	18.839
0.2133	18.836
0.2166	18.833
0.22	18.829
0.2233	18.829
0.2266	18.826
0.23	18.823
0.2333	18.82
0.2366	18.82
0.24	18.817
0.2433	18.814
0.2466	18.814

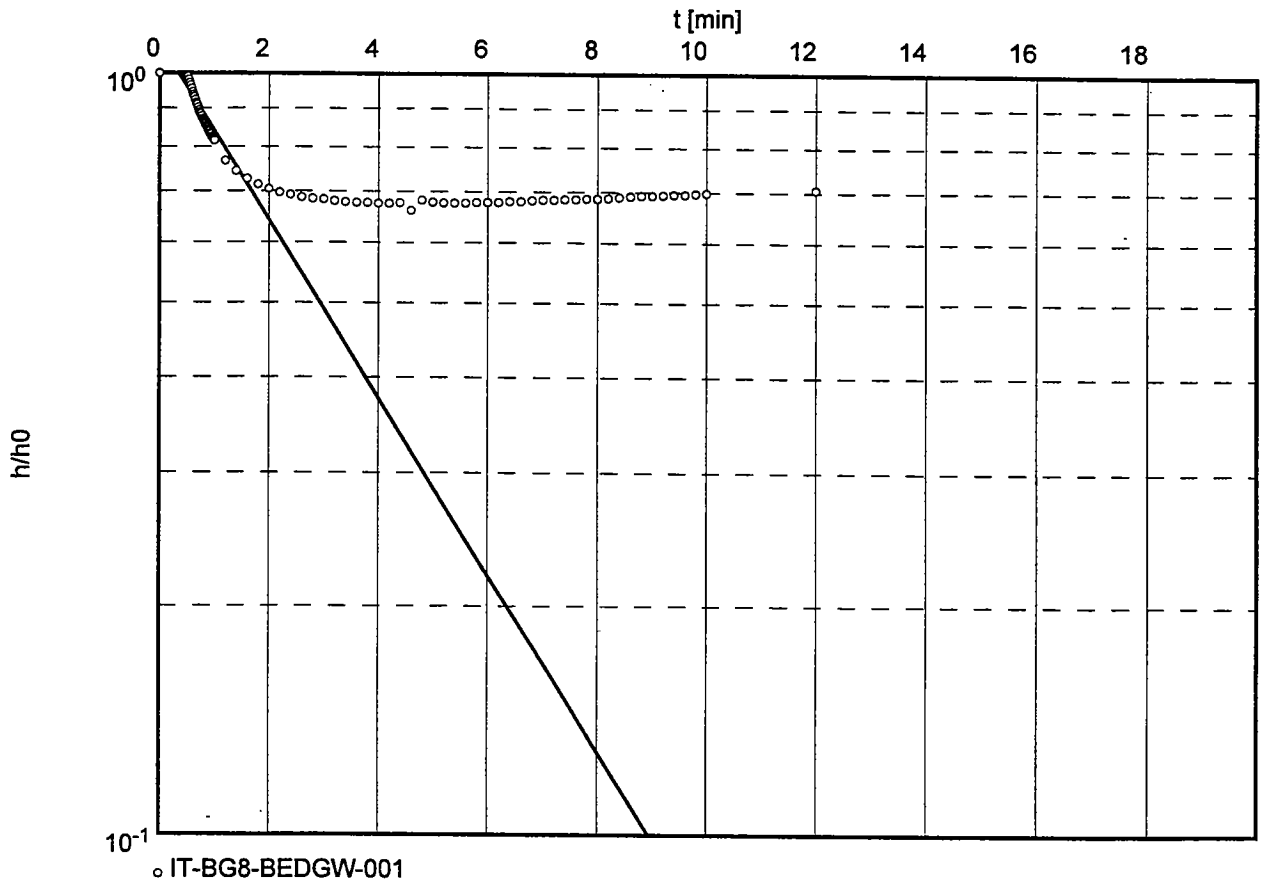
0.25	18.81
0.2533	18.807
0.2566	18.804
0.26	18.804
0.2633	18.801
0.2666	18.798
0.27	18.798
0.2733	18.795
0.2766	18.792
0.28	18.792
0.2833	18.788
0.2866	18.785
0.29	18.785
0.2933	18.782
0.2966	18.779
0.3	18.779
0.3033	18.776
0.3066	18.773
0.31	18.773
0.3133	18.769
0.3166	18.766
0.32	18.766
0.3233	18.763
0.3266	18.76
0.33	18.76
0.3333	18.757
0.35	18.744
0.3666	18.735
0.3833	18.722
0.4	18.713
0.4166	18.7
0.4333	18.69
0.45	18.678
0.4666	18.668
0.4833	18.659
0.5	18.646
0.5166	18.637
0.5333	18.627
0.55	18.618
0.5666	18.605
0.5833	18.596
0.6	18.586
0.6166	18.577
0.6333	18.567
0.65	18.555
0.6666	18.548
0.6833	18.536
0.7	18.526
0.7166	18.517

0.7333	18.507
0.75	18.498
0.7666	18.488
0.7833	18.479
0.8	18.469
0.8166	18.46
0.8333	18.454
0.85	18.444
0.8666	18.435
0.8833	18.425
0.9	18.416
0.9166	18.406
0.9333	18.4
0.95	18.39
0.9666	18.381
0.9833	18.371
1	18.365
1.2	18.245
1.4	18.16
1.6	18.087
1.8	18.024
2	17.964
2.2	17.913
2.4	17.866
2.6	17.825
2.8	17.79
3	17.759
3.2	17.73
3.4	17.708
3.6	17.683
3.8	17.664
4	17.645
4.2	17.632
4.4	17.616
4.6	17.607
4.8	17.598
5	17.588
5.2	17.579
5.4	17.575
5.6	17.569
5.8	17.566
6	17.563
6.2	17.56
6.4	17.556
6.6	17.556
6.8	17.553
7	17.553
7.2	17.553
7.4	17.55

7.6	17.55
7.8	17.55
8	17.55
8.2	17.55
8.4	17.55
8.6	17.55
8.8	17.55
9	17.55
9.2	17.55
9.4	17.55
9.6	17.553
9.8	17.553
10	17.553
12	17.556
14	17.563
16	17.572
18	17.579

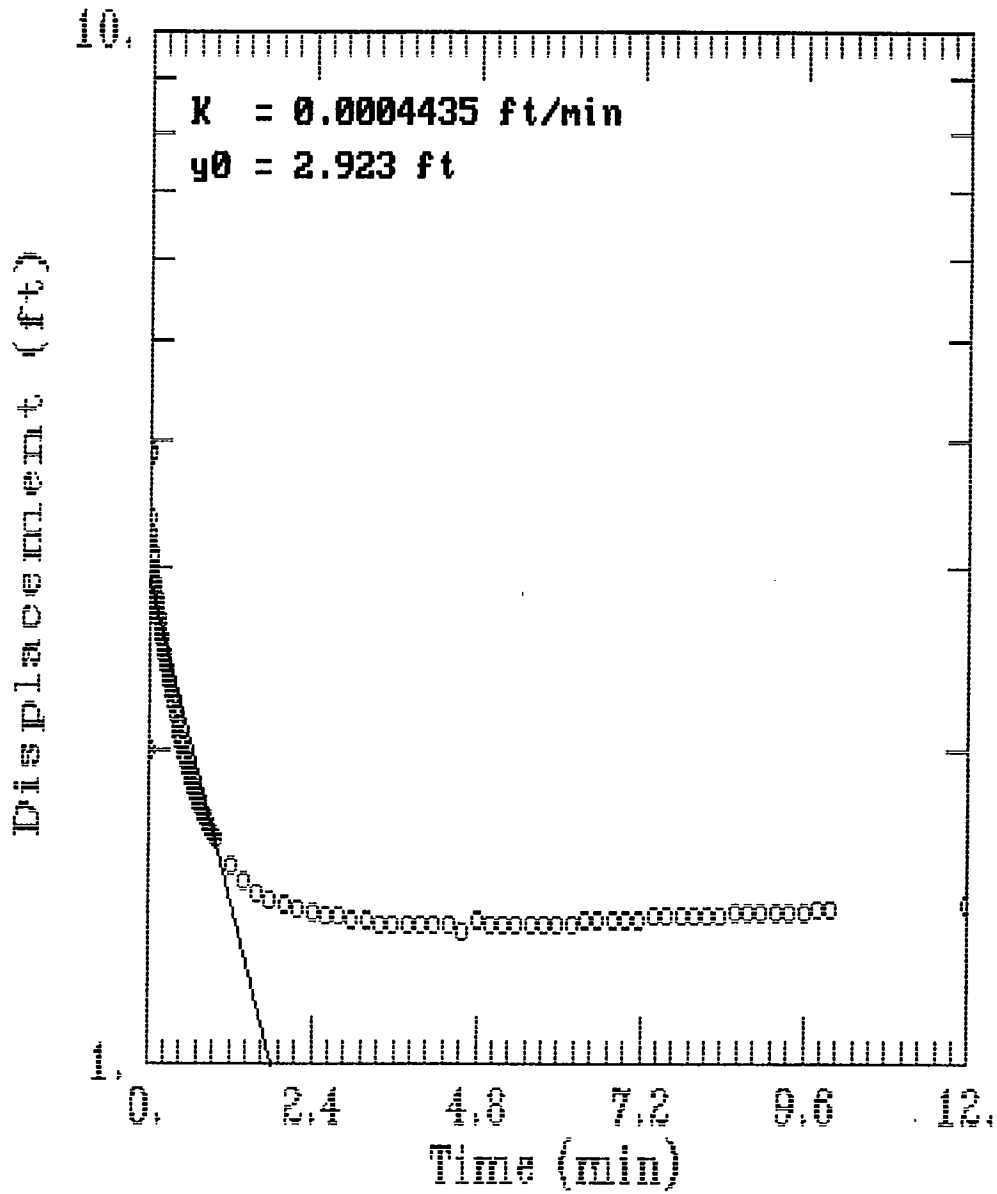
Waterloo Hydrogeologic 180 Columbia St. W. Waterloo,Ontario,Canada ph.(519)746-1798	slug/bail test analysis BOUWER-RICE's method	Date: 16.10.1997	Page 1
		Project: PBOW	
		Evaluated by: J.Li	

Slug Test No. 5	Test conducted on: 10/8/97
IT-BG8-BEDGW-001	



Hydraulic conductivity [ft/min]: 2.39×10^{-4}

PBOW IT-BG8-BEDGW-001 Rising Test



AQTESOLV

GERAGHTY & MILLER, INC.

Modeling Group

= "MSJOB 36"

SE100	0C
Environment	al Logger
10/10 1	3:01

Unit# 00000	Test 5

Setups:	INPUT 1
Type	Level (F)
Mode	TOC
I.D.	1
Reference	20
Linearity	0.01
Scale factor	10
Offset	-0.07
Delay mSEC	50

Step 0 10/08	10:50:19

Elapsed Time	INPUT 1
0	22.012
0.0033	22.928
0.0066	23.91
0.01	23.85
0.0133	23.219
0.0166	22.767
0.02	22.925
0.0233	23.256
0.0266	23.361
0.03	23.171
0.0333	22.978
0.0366	22.966
0.04	23.064
0.0433	23.117
0.0466	23.076
0.05	23.001
0.0533	22.963
0.0566	22.975
0.06	22.994
0.0633	22.991
0.0666	22.956
0.07	22.928
0.0733	22.928
0.0766	22.915
0.08	22.912
0.0833	22.906

0.0866	22.874
0.09	22.865
0.0933	22.846
0.0966	22.852
0.1	22.84
0.1033	22.817
0.1066	22.817
0.11	22.802
0.1133	22.798
0.1166	22.786
0.12	22.776
0.1233	22.764
0.1266	22.754
0.13	22.742
0.1333	22.729
0.1366	22.723
0.14	22.713
0.1433	22.704
0.1466	22.691
0.15	22.682
0.1533	22.672
0.1566	22.663
0.16	22.653
0.1633	22.644
0.1666	22.634
0.17	22.625
0.1733	22.615
0.1766	22.606
0.18	22.599
0.1833	22.59
0.1866	22.581
0.19	22.571
0.1933	22.565
0.1966	22.555
0.2	22.546
0.2033	22.539
0.2066	22.53
0.21	22.524
0.2133	22.514
0.2166	22.508
0.22	22.498
0.2233	22.492
0.2266	22.483
0.23	22.476
0.2333	22.47
0.2366	22.464
0.24	22.454
0.2433	22.448
0.2466	22.442

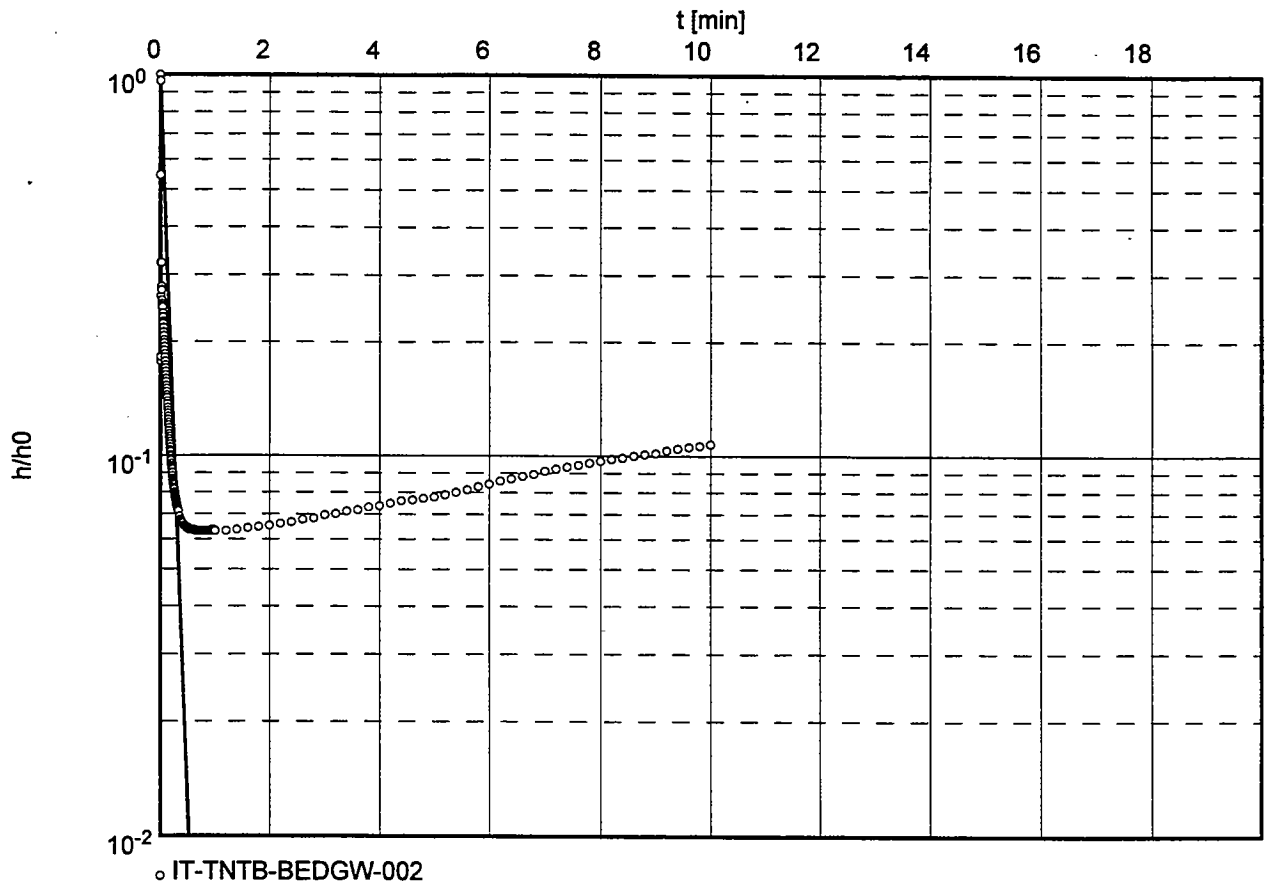
0.25	22.432
0.2533	22.426
0.2566	22.419
0.26	22.413
0.2633	22.407
0.2666	22.4
0.27	22.394
0.2733	22.388
0.2766	22.382
0.28	22.375
0.2833	22.366
0.2866	22.363
0.29	22.356
0.2933	22.35
0.2966	22.344
0.3	22.337
0.3033	22.331
0.3066	22.325
0.31	22.322
0.3133	22.315
0.3166	22.309
0.32	22.303
0.3233	22.296
0.3266	22.29
0.33	22.284
0.3333	22.28
0.35	22.246
0.3666	22.214
0.3833	22.186
0.4	22.157
0.4166	22.132
0.4333	22.107
0.45	22.081
0.4666	22.059
0.4833	22.037
0.5	22.015
0.5166	21.993
0.5333	21.974
0.55	21.955
0.5666	21.939
0.5833	21.92
0.6	21.901
0.6166	21.886
0.6333	21.873
0.65	21.857
0.6666	21.841
0.6833	21.829
0.7	21.813
0.7166	21.8

0.7333	21.788
0.75	21.778
0.7666	21.766
0.7833	21.753
0.8	21.743
0.8166	21.734
0.8333	21.724
0.85	21.715
0.8666	21.706
0.8833	21.696
0.9	21.687
0.9166	21.677
0.9333	21.671
0.95	21.661
0.9666	21.655
0.9833	21.649
1	21.642
1.2	21.544
1.4	21.497
1.6	21.462
1.8	21.437
2	21.418
2.2	21.402
2.4	21.393
2.6	21.383
2.8	21.377
3	21.374
3.2	21.368
3.4	21.364
3.6	21.361
3.8	21.361
4	21.358
4.2	21.358
4.4	21.361
4.6	21.33
4.8	21.371
5	21.364
5.2	21.361
5.4	21.361
5.6	21.361
5.8	21.364
6	21.364
6.2	21.364
6.4	21.368
6.6	21.368
6.8	21.371
7	21.374
7.2	21.374
7.4	21.377

7.6	21.377
7.8	21.38
8	21.38
8.2	21.383
8.4	21.386
8.6	21.39
8.8	21.393
9	21.393
9.2	21.396
9.4	21.399
9.6	21.399
9.8	21.402
10	21.405
12	21.421

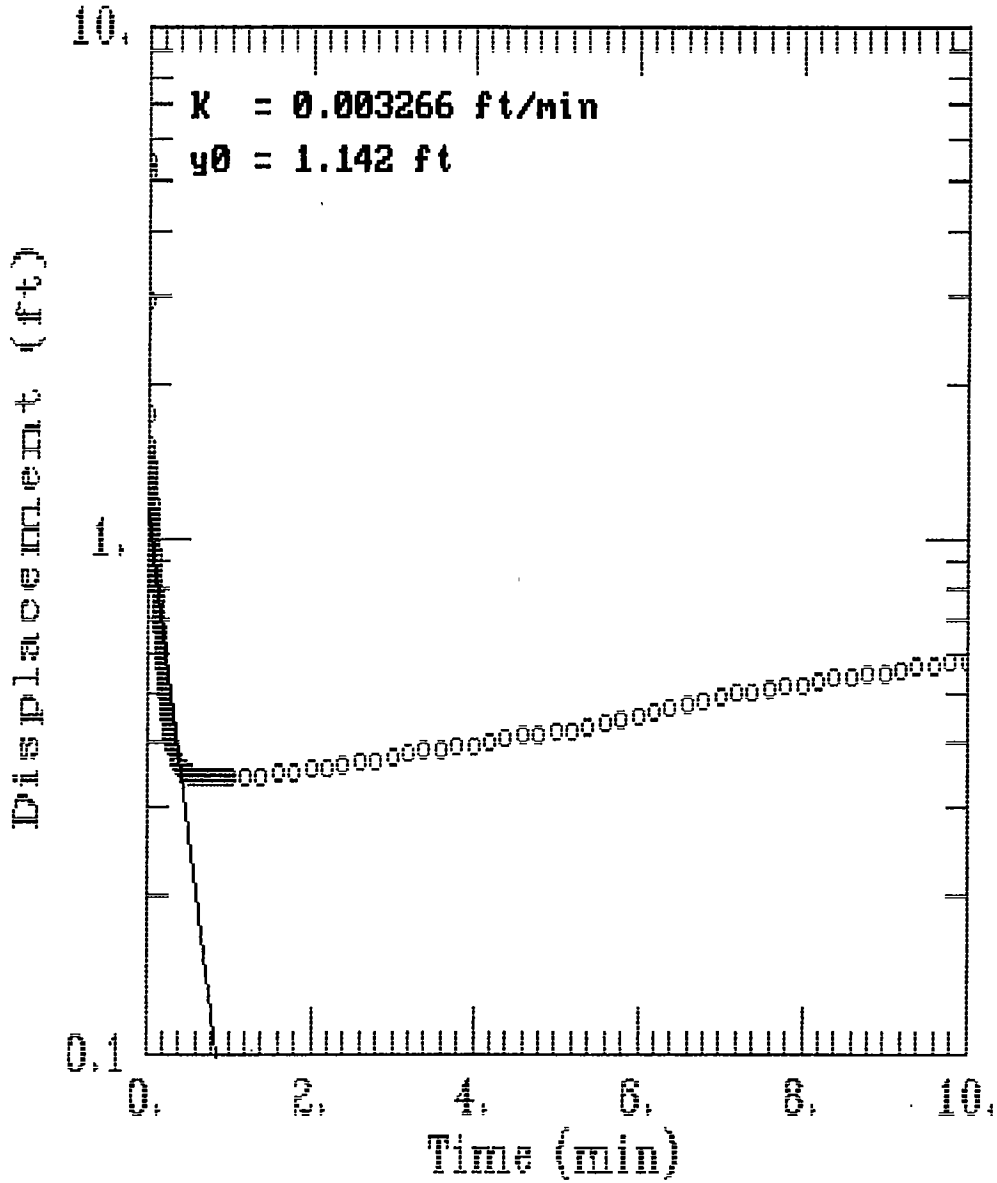
Waterloo Hydrogeologic 180 Columbia St. W. Waterloo,Ontario,Canada ph.(519)746-1798	slug/bail test analysis BOUWER-RICE's method	Date: 16.10.1997	Page 1
		Project: PBOW	
		Evaluated by: J.Li	

Slug Test No. 6	Test conducted on: 10/8/97
IT-TNTB-BEDGW-002	



Hydraulic conductivity [ft/min]: 1.24×10^{-2}

PBOW IT-TNTB-BEDGW-002 Rising Test



AQTESOLV

GERAGHTY & MILLER, INC.

Modeling Group

SE100	0C
Environment	al Logger
10/10 1	3:06

Unit# 00000	Test 6

Setups:	INPUT 1
Type	Level (F)
Mode	TOC
I.D.	1
Reference	20
Linearity	0.01
Scale factor	10
Offset	-0.07
Delay mSEC	50

Step 0 10/08	11:44:57

Elapsed Time	INPUT 1
0	25.404
0.0033	25.208
0.0066	22.95
0.01	20.96
0.0133	20.985
0.0166	21.424
0.02	21.74
0.0233	21.74
0.0266	21.507
0.03	21.475
0.0333	21.386
0.0366	21.326
0.04	21.358
0.0433	21.339
0.0466	21.33
0.05	21.282
0.0533	21.254
0.0566	21.219
0.06	21.203
0.0633	21.175
0.0666	21.143
0.07	21.118
0.0733	21.09
0.0766	21.071
0.08	21.048
0.0833	21.023

0.0866	21.001
0.09	20.982
0.0933	20.957
0.0966	20.935
0.1	20.919
0.1033	20.9
0.1066	20.881
0.11	20.862
0.1133	20.846
0.1166	20.827
0.12	20.812
0.1233	20.796
0.1266	20.78
0.13	20.767
0.1333	20.752
0.1366	20.739
0.14	20.723
0.1433	20.71
0.1466	20.698
0.15	20.685
0.1533	20.673
0.1566	20.66
0.16	20.65
0.1633	20.638
0.1666	20.628
0.17	20.616
0.1733	20.606
0.1766	20.597
0.18	20.587
0.1833	20.578
0.1866	20.568
0.19	20.559
0.1933	20.552
0.1966	20.543
0.2	20.537
0.2033	20.53
0.2066	20.524
0.21	20.515
0.2133	20.508
0.2166	20.502
0.22	20.496
0.2233	20.489
0.2266	20.486
0.23	20.477
0.2333	20.47
0.2366	20.467
0.24	20.464
0.2433	20.458
0.2466	20.455

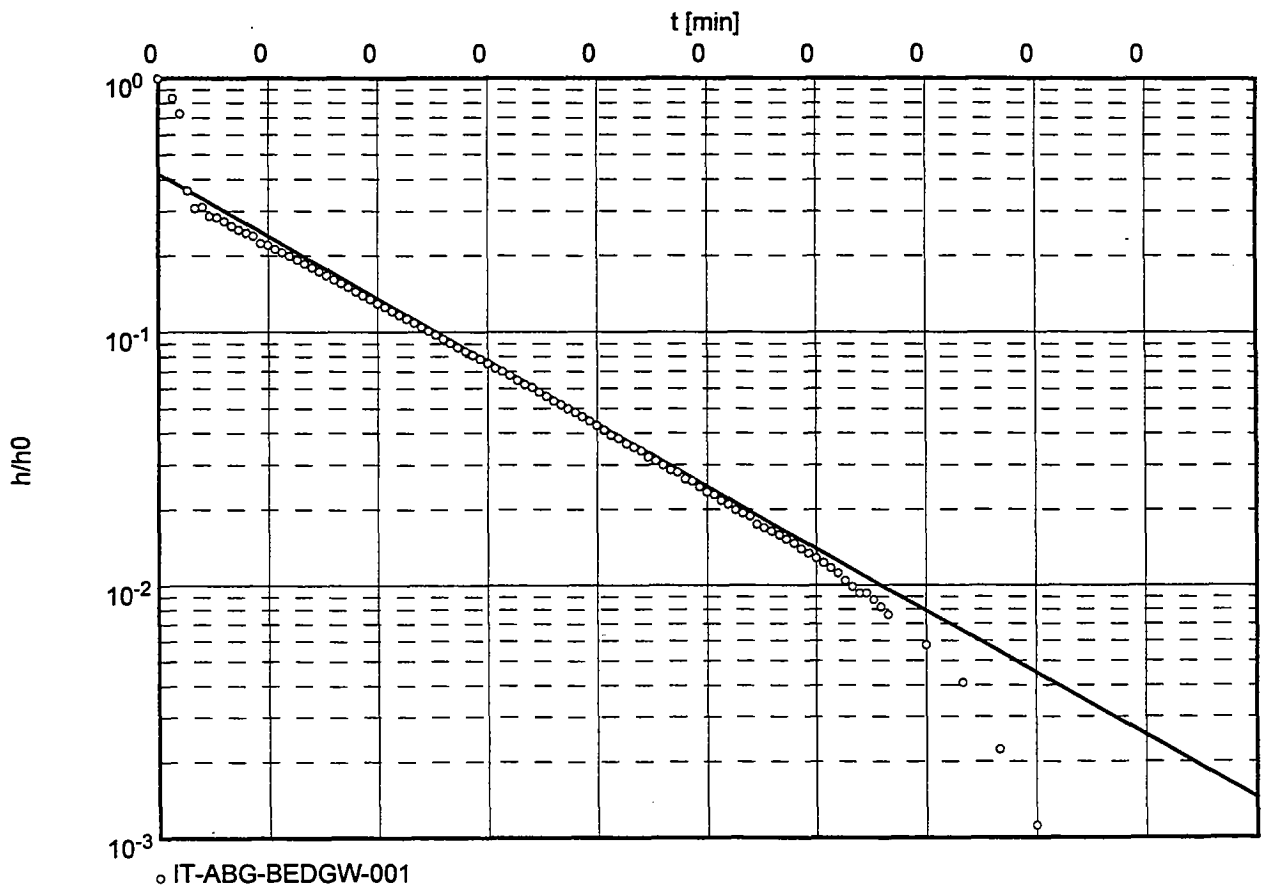
0.25	20.451
0.2533	20.445
0.2566	20.442
0.26	20.439
0.2633	20.432
0.2666	20.429
0.27	20.426
0.2733	20.423
0.2766	20.42
0.28	20.417
0.2833	20.417
0.2866	20.413
0.29	20.41
0.2933	20.407
0.2966	20.404
0.3	20.404
0.3033	20.401
0.3066	20.398
0.31	20.395
0.3133	20.395
0.3166	20.391
0.32	20.391
0.3233	20.388
0.3266	20.388
0.33	20.385
0.3333	20.385
0.35	20.372
0.3666	20.366
0.3833	20.363
0.4	20.36
0.4166	20.357
0.4333	20.353
0.45	20.353
0.4666	20.35
0.4833	20.347
0.5	20.347
0.5166	20.347
0.5333	20.344
0.55	20.344
0.5666	20.344
0.5833	20.344
0.6	20.344
0.6166	20.344
0.6333	20.341
0.65	20.341
0.6666	20.341
0.6833	20.341
0.7	20.341
0.7166	20.341

0.7333	20.341
0.75	20.341
0.7666	20.341
0.7833	20.341
0.8	20.341
0.8166	20.341
0.8333	20.341
0.85	20.341
0.8666	20.341
0.8833	20.341
0.9	20.341
0.9166	20.341
0.9333	20.341
0.95	20.344
0.9666	20.344
0.9833	20.341
1	20.341
1.2	20.341
1.4	20.344
1.6	20.347
1.8	20.35
2	20.353
2.2	20.357
2.4	20.36
2.6	20.366
2.8	20.369
3	20.376
3.2	20.379
3.4	20.385
3.6	20.388
3.8	20.395
4	20.398
4.2	20.404
4.4	20.41
4.6	20.413
4.8	20.417
5	20.42
5.2	20.426
5.4	20.432
5.6	20.439
5.8	20.448
6	20.455
6.2	20.464
6.4	20.47
6.6	20.477
6.8	20.483
7	20.492
7.2	20.499
7.4	20.505

7.6	20.511
7.8	20.518
8	20.524
8.2	20.53
8.4	20.534
8.6	20.54
8.8	20.546
9	20.549
9.2	20.559
9.4	20.565
9.6	20.571
9.8	20.575
10	20.581

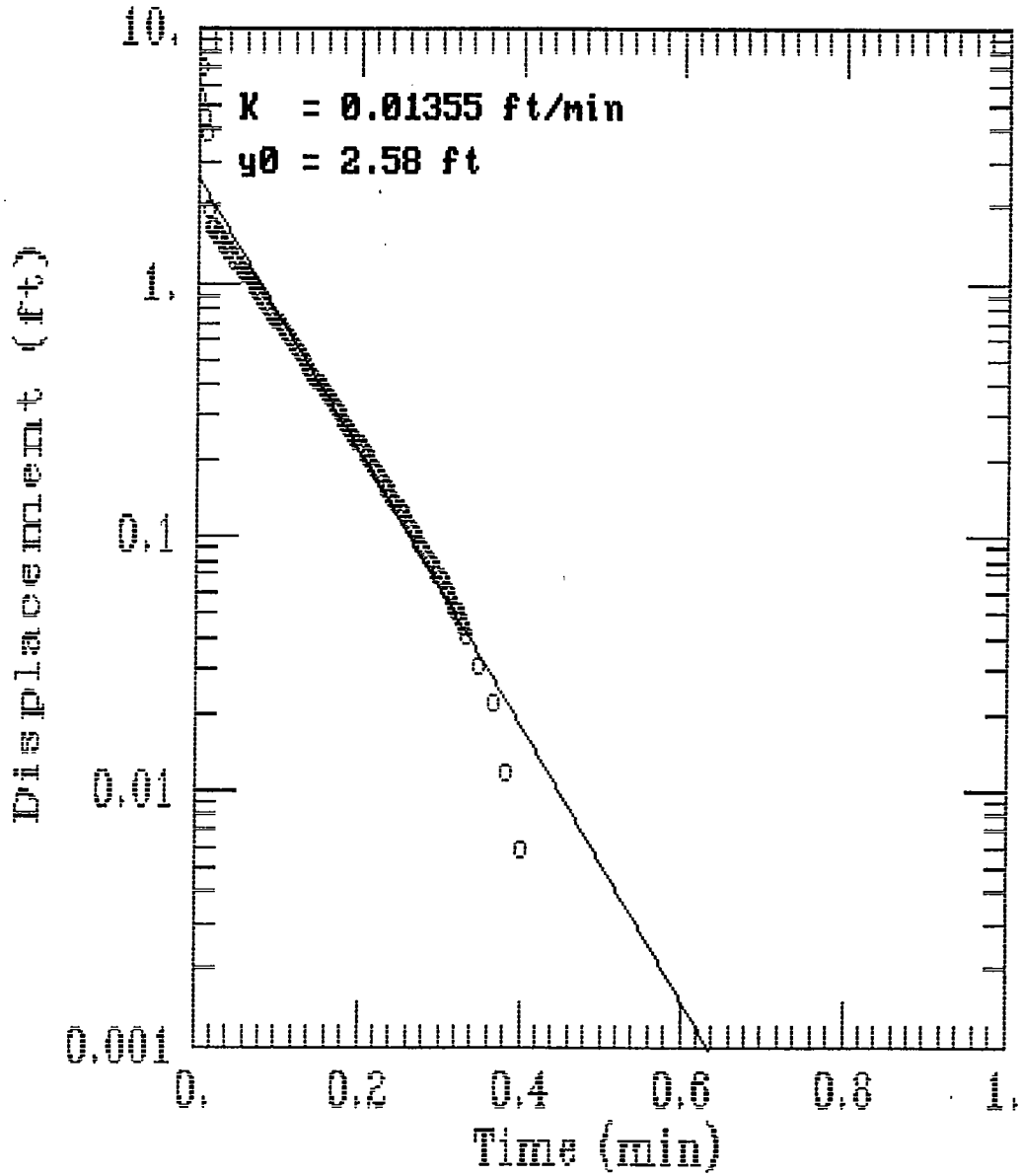
Waterloo Hydrogeologic 180 Columbia St. W. Waterloo,Ontario,Canada ph.(519)746-1798	slug/bail test analysis BOUWER-RICE's method	Date: 16.10.1997 Page 1 Project: PBOW Evaluated by: J.Li

Slug Test No. 7	Test conducted on: 10/8/97
IT-ABG-BEDGW-001	



Hydraulic conductivity [ft/min]: 1.54×10^{-2}

PBOW IT-ABG-BEDGW-001 Rising Test



AQTESOLV

GERAGHTY & MILLER, INC.

Modeling Group

SE100	0C
Environment	al Logger
10/10 1	3:08

Unit# 00000	Test 7

Setups:	INPUT 1
---	---
Type	Level (F)
Mode	TOC
I.D.	1
Reference	20
Linearity	0.01
Scale factor	10
Offset	-0.07
Delay mSEC	50

Step 0 10/08	13:21:00

Elapsed Time	INPUT 1
---	---
0	25.379
0.0033	26.958
0.0066	24.488
0.01	23.91
0.0133	21.942
0.0166	21.655
0.02	21.677
0.0233	21.538
0.0266	21.522
0.03	21.469
0.0333	21.405
0.0366	21.361
0.04	21.323
0.0433	21.285
0.0466	21.203
0.05	21.184
0.0533	21.14
0.0566	21.108
0.06	21.074
0.0633	21.036
0.0666	21.001
0.07	20.966
0.0733	20.932
0.0766	20.9
0.08	20.865
0.0833	20.837

0.0866	20.808
0.09	20.777
0.0933	20.751
0.0966	20.726
0.1	20.698
0.1033	20.676
0.1066	20.65
0.11	20.628
0.1133	20.606
0.1166	20.584
0.12	20.562
0.1233	20.543
0.1266	20.524
0.13	20.505
0.1333	20.486
0.1366	20.467
0.14	20.451
0.1433	20.436
0.1466	20.42
0.15	20.404
0.1533	20.388
0.1566	20.376
0.16	20.363
0.1633	20.347
0.1666	20.334
0.17	20.325
0.1733	20.312
0.1766	20.3
0.18	20.287
0.1833	20.278
0.1866	20.268
0.19	20.259
0.1933	20.249
0.1966	20.24
0.2	20.23
0.2033	20.221
0.2066	20.211
0.21	20.205
0.2133	20.195
0.2166	20.189
0.22	20.183
0.2233	20.173
0.2266	20.167
0.23	20.161
0.2333	20.154
0.2366	20.151
0.24	20.142
0.2433	20.139
0.2466	20.132

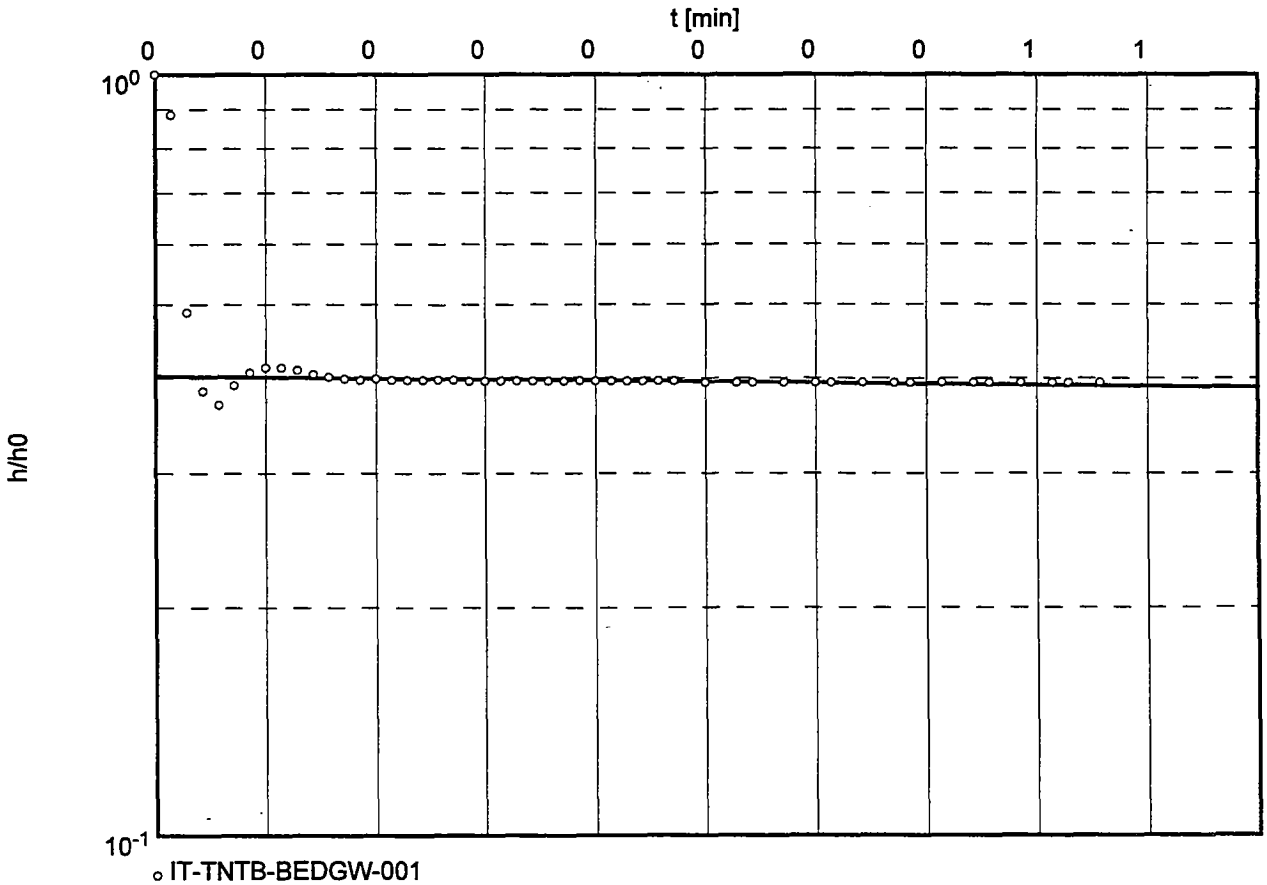
0.25	20.126
0.2533	20.123
0.2566	20.117
0.26	20.113
0.2633	20.107
0.2666	20.104
0.27	20.101
0.2733	20.094
0.2766	20.091
0.28	20.088
0.2833	20.085
0.2866	20.082
0.29	20.079
0.2933	20.075
0.2966	20.072
0.3	20.069
0.3033	20.066
0.3066	20.063
0.31	20.06
0.3133	20.056
0.3166	20.053
0.32	20.05
0.3233	20.05
0.3266	20.047
0.33	20.044
0.3333	20.041
0.35	20.031
0.3666	20.022
0.3833	20.012
0.4	20.006
0.4166	20
0.4333	19.996
0.45	19.99
0.4666	19.984
0.4833	19.981
0.5	19.977
0.5166	19.974
0.5333	19.968
0.55	19.965
0.5666	19.962
0.5833	19.959
0.6	19.952
0.6166	19.949
0.6333	19.946
0.65	19.94
0.6666	19.936
0.6833	19.93
0.7	19.924
0.7166	19.921

0.7333	19.917
0.75	19.911
0.7666	19.908
0.7833	19.905
0.8	19.902
0.8166	19.899
0.8333	19.902
0.85	19.917
0.8666	19.908
0.8833	19.902
0.9	19.899
0.9166	19.895
0.9333	19.892
0.95	19.892
0.9666	19.886
0.9833	19.883
1	19.88
1.2	19.854
1.4	19.845
1.6	19.845
1.8	19.845
2	19.848
2.2	19.842
2.4	19.842
2.6	19.848
2.8	19.854
3	19.861
3.2	19.845
3.4	19.851
3.6	19.861
3.8	19.87
4	19.88
4.2	19.886
4.4	19.889
4.6	19.889
4.8	19.892
5	19.902
5.2	19.902
5.4	19.917
5.6	19.895
5.8	19.895
6	19.895
6.2	19.892
6.4	19.892
6.6	19.886
6.8	19.876
7	19.857
7.2	19.81
7.4	19.699

7.6	19.662
7.8	19.662
8	19.674
8.2	19.658
8.4	19.658
8.6	19.665
8.8	19.668
9	19.668
9.2	19.665
9.4	19.668
9.6	19.671
9.8	19.665
10	19.652
12	19.387
14	19.336
16	19.352
18	19.137
20	19.248

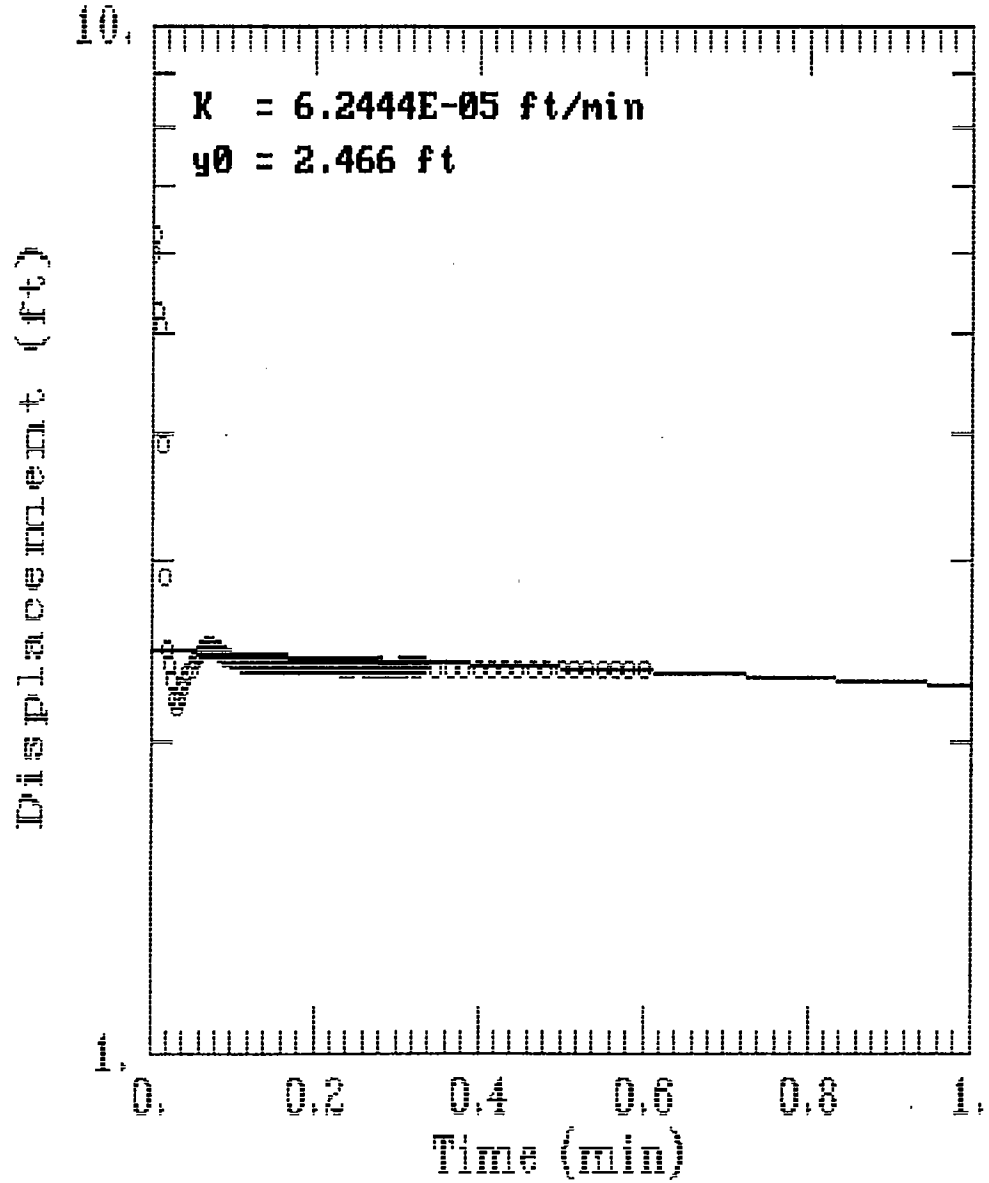
Waterloo Hydrogeologic 180 Columbia St. W. Waterloo,Ontario,Canada ph.(519)746-1798	slug/bail test analysis BOUWER-RICE's method	Date: 16.10.1997	Page 1
		Project: PBOW	
		Evaluated by: J.Li	

Slug Test No. 8	Test conducted on: 10/8/97
IT-TNTB-BEDGW-001	



Hydraulic conductivity [ft/min]: 4.07×10^{-5}

PBOW IT-TNTB-BEDGW-001 Rising Test



AQTESOLV

GERAGHTY & MILLER, INC.

Modeling Group

SE100	0C
Environment	al Logger
10/10 1	3:11

Unit# 00000	Test 8

Setups:	INPUT 1
Type	Level (F)
Mode	TOC
I.D.	1
Reference	45
Linearity	0.01
Scale factor	10
Offset	-0.07
Delay mSEC	50

Step 0 10/08	14:20:52

Elapsed Time	INPUT 1
0	50.978
0.0033	51.253
0.0066	50.287
0.01	50.113
0.0133	48.887
0.0166	47.917
0.02	47.455
0.0233	47.389
0.0266	47.297
0.03	47.199
0.0333	47.168
0.0366	47.209
0.04	47.259
0.0433	47.3
0.0466	47.342
0.05	47.37
0.0533	47.405
0.0566	47.433
0.06	47.443
0.0633	47.462
0.0666	47.474
0.07	47.477
0.0733	47.477
0.0766	47.471
0.08	47.468
0.0833	47.462

0.0866	47.449
0.09	47.436
0.0933	47.427
0.0966	47.417
0.1	47.411
0.1033	47.402
0.1066	47.395
0.11	47.392
0.1133	47.389
0.1166	47.389
0.12	47.386
0.1233	47.383
0.1266	47.383
0.13	47.383
0.1333	47.383
0.1366	47.386
0.14	47.383
0.1433	47.383
0.1466	47.383
0.15	47.383
0.1533	47.383
0.1566	47.383
0.16	47.38
0.1633	47.38
0.1666	47.376
0.17	47.376
0.1733	47.376
0.1766	47.376
0.18	47.376
0.1833	47.376
0.1866	47.376
0.19	47.373
0.1933	47.373
0.1966	47.373
0.2	47.376
0.2033	47.376
0.2066	47.373
0.21	47.373
0.2133	47.376
0.2166	47.373
0.22	47.373
0.2233	47.373
0.2266	47.373
0.23	47.373
0.2333	47.373
0.2366	47.37
0.24	47.373
0.2433	47.373
0.2466	47.37

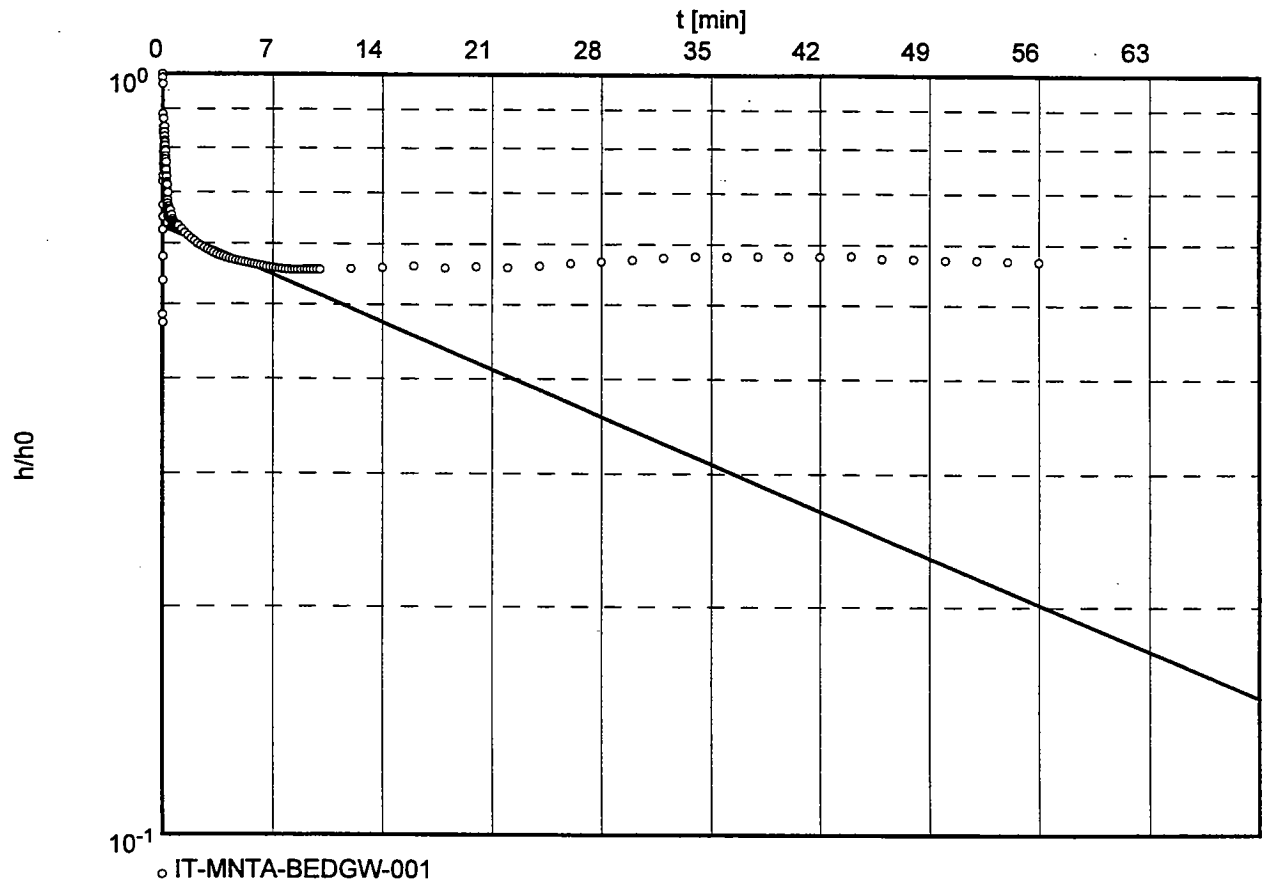
0.25	47.373
0.2533	47.373
0.2566	47.373
0.26	47.373
0.2633	47.37
0.2666	47.37
0.27	47.373
0.2733	47.37
0.2766	47.37
0.28	47.373
0.2833	47.37
0.2866	47.37
0.29	47.37
0.2933	47.37
0.2966	47.37
0.3	47.37
0.3033	47.37
0.3066	47.373
0.31	47.37
0.3133	47.373
0.3166	47.373
0.32	47.373
0.3233	47.37
0.3266	47.37
0.33	47.373
0.3333	47.373
0.35	47.36
0.3666	47.357
0.3833	47.357
0.4	47.357
0.4166	47.357
0.4333	47.357
0.45	47.357
0.4666	47.357
0.4833	47.357
0.5	47.357
0.5166	47.357
0.5333	47.357
0.55	47.357
0.5666	47.357
0.5833	47.357
0.6	47.357
0.6166	47.36
0.6333	47.36
0.65	47.36
0.6666	47.36
0.6833	47.36
0.7	47.364
0.7166	47.364

0.7333	47.364
0.75	47.364
0.7666	47.367
0.7833	47.367
0.8	47.367
0.8166	47.367
0.8333	47.37
0.85	47.37
0.8666	47.37
0.8833	47.373
0.9	47.373
0.9166	47.373
0.9333	47.373
0.95	47.376
0.9666	47.376
0.9833	47.376
1	47.376
1.2	47.367
1.4	47.367
1.6	47.367
1.8	47.367
2	47.367
2.2	47.37
2.4	47.37
2.6	47.373
2.8	47.373
3	47.376
3.2	47.38
3.4	47.383
3.6	47.386
3.8	47.389
4	47.392
4.2	47.395
4.4	47.398
4.6	47.402
4.8	47.405
5	47.408
5.2	47.411
5.4	47.452
5.6	47.421
5.8	47.424
6	47.424
6.2	47.427
6.4	47.43
6.6	47.43
6.8	47.433
7	47.436
7.2	47.439
7.4	47.443

7.6	47.446
7.8	47.449
8	47.452
8.2	47.455
8.4	47.458
8.6	47.458
8.8	47.462
9	47.465
9.2	47.468
9.4	47.471
9.6	47.471
9.8	47.474
10	47.474
12	47.465
14	47.458
16	47.455
18	47.443
20	47.452
22	47.458
24	47.458
26	47.455
28	47.449
30	47.452
32	47.481
34	47.506
36	47.537
38	47.56

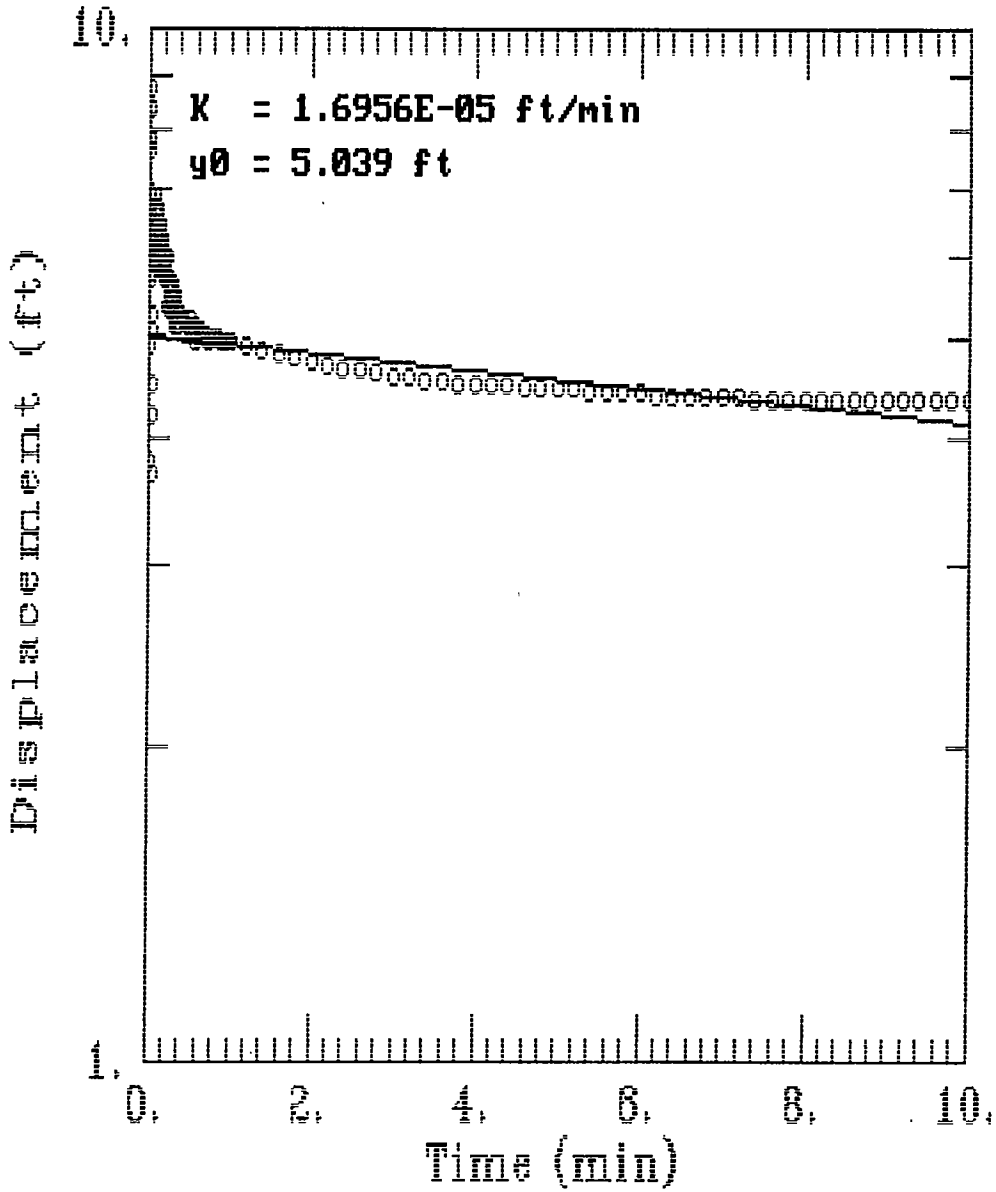
Waterloo Hydrogeologic 180 Columbia St. W. Waterloo,Ontario,Canada ph.(519)746-1798	slug/bail test analysis BOUWER-RICE's method	Date: 16.10.1997	Page 1
		Project: PBOW	
		Evaluated by: J.Li	

Slug Test No. 9	Test conducted on: 10/8/97
IT-MNTA-BEDGW-001	



Hydraulic conductivity [ft/min]: 2.17×10^{-5}

PBOW IT-MNTA-BEDGW-001 Rising Test



SE100	0C
Environment	al Logger
10/10 1	3:13

Unit# 00000	Test 9

Setups:	INPUT 1
Type	Level (F)
Mode	TOC
I.D.	1
Reference	9.4
Linearity	0.01
Scale factor	10
Offset	-0.07
Delay mSEC	50

Step 0 10/08 16:01:08

Elapsed Time	INPUT 1
0	-1.541
0.0033	-0.605
0.0066	-1.623
0.01	-1.098
0.0133	-0.988
0.0166	-1.775
0.02	-2.441
0.0233	-3.715
0.0266	-4.49
0.03	-5.596
0.0333	-5.688
0.0366	-5.182
0.04	-4.872
0.0433	-4.297
0.0466	-4.107
0.05	-3.623
0.0533	-3.197
0.0566	-3.428
0.06	-2.84
0.0633	-2.704
0.0666	-2.536
0.07	-2.786
0.0733	-3.077
0.0766	-3.156
0.08	-3.349
0.0833	-3.349

0.0866	-3.506
0.09	-3.374
0.0933	-3.342
0.0966	-3.326
0.1	-3.276
0.1033	-3.108
0.1066	-2.783
0.11	-2.89
0.1133	-2.704
0.1166	-2.966
0.12	-2.811
0.1233	-2.991
0.1266	-2.893
0.13	-2.976
0.1333	-3.096
0.1366	-3.01
0.14	-3.017
0.1433	-3.067
0.1466	-3.074
0.15	-3.203
0.1533	-3.26
0.1566	-3.156
0.16	-3.194
0.1633	-3.355
0.1666	-3.219
0.17	-3.339
0.1733	-3.535
0.1766	-3.304
0.18	-3.181
0.1833	-3.317
0.1866	-3.276
0.19	-3.323
0.1933	-3.336
0.1966	-3.459
0.2	-3.478
0.2033	-3.579
0.2066	-3.598
0.21	-3.687
0.2133	-3.693
0.2166	-3.522
0.22	-3.383
0.2233	-3.674
0.2266	-3.769
0.23	-3.737
0.2333	-3.74
0.2366	-3.737
0.24	-3.639
0.2433	-3.75
0.2466	-4.025

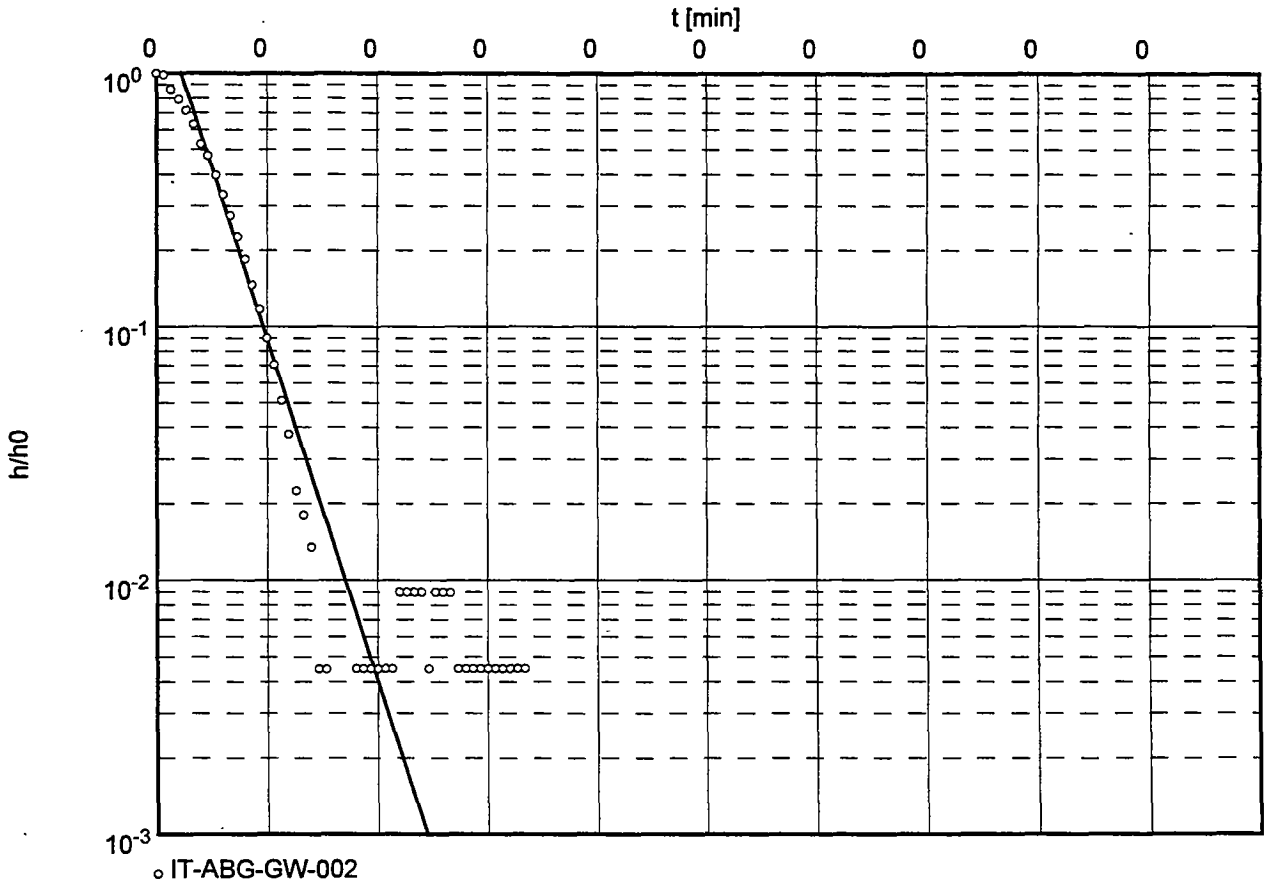
0.25	-3.734
0.2533	-3.74
0.2566	-3.769
0.26	-3.981
0.2633	-4.085
0.2666	-3.962
0.27	-4.003
0.2733	-3.949
0.2766	-3.959
0.28	-4.063
0.2833	-3.823
0.2866	-3.775
0.29	-4.063
0.2933	-3.952
0.2966	-4.142
0.3	-4.145
0.3033	-4.126
0.3066	-4.063
0.31	-4.031
0.3133	-4.101
0.3166	-4.053
0.32	-3.911
0.3233	-4.205
0.3266	-4.031
0.33	-4.281
0.3333	-4.082
0.35	-4.129
0.3666	-4.237
0.3833	-4.129
0.4	-4.309
0.4166	-4.167
0.4333	-4.192
0.45	-4.208
0.4666	-4.331
0.4833	-4.271
0.5	-4.192
0.5166	-4.341
0.5333	-4.341
0.55	-4.297
0.5666	-4.268
0.5833	-4.43
0.6	-4.347
0.6166	-4.392
0.6333	-4.325
0.65	-4.357
0.6666	-4.373
0.6833	-4.382
0.7	-4.376
0.7166	-4.369

0.7333	-4.423
0.75	-4.395
0.7666	-4.414
0.7833	-4.407
0.8	-4.414
0.8166	-4.414
0.8333	-4.414
0.85	-4.41
0.8666	-4.414
0.8833	-4.417
0.9	-4.42
0.9166	-4.417
0.9333	-4.417
0.95	-4.42
0.9666	-4.42
0.9833	-4.42
1	-4.426
1.2	-4.48
1.4	-4.531
1.6	-4.575
1.8	-4.616
2	-4.651
2.2	-4.689
2.4	-4.72
2.6	-4.746
2.8	-4.771
3	-4.796
3.2	-4.815
3.4	-4.837
3.6	-4.856
3.8	-4.869
4	-4.881
4.2	-4.894
4.4	-4.904
4.6	-4.916
4.8	-4.926
5	-4.935
5.2	-4.945
5.4	-4.951
5.6	-4.96
5.8	-4.97
6	-4.98
6.2	-4.986
6.4	-4.992
6.6	-5.002
6.8	-5.008
7	-5.011
7.2	-5.021
7.4	-5.024

7.6	-5.03
7.8	-5.036
8	-5.04
8.2	-5.043
8.4	-5.043
8.6	-5.043
8.8	-5.043
9	-5.04
9.2	-5.036
9.4	-5.036
9.6	-5.036
9.8	-5.04
10	-5.04
12	-5.027
14	-5.008
16	-4.989
18	-5.011
20	-4.995
22	-5.008
24	-4.986
26	-4.951
28	-4.926
30	-4.907
32	-4.875
34	-4.856
36	-4.856
38	-4.85
40	-4.85
42	-4.853
44	-4.844
46	-4.878
48	-4.885
50	-4.894
52	-4.894
54	-4.91
56	-4.919

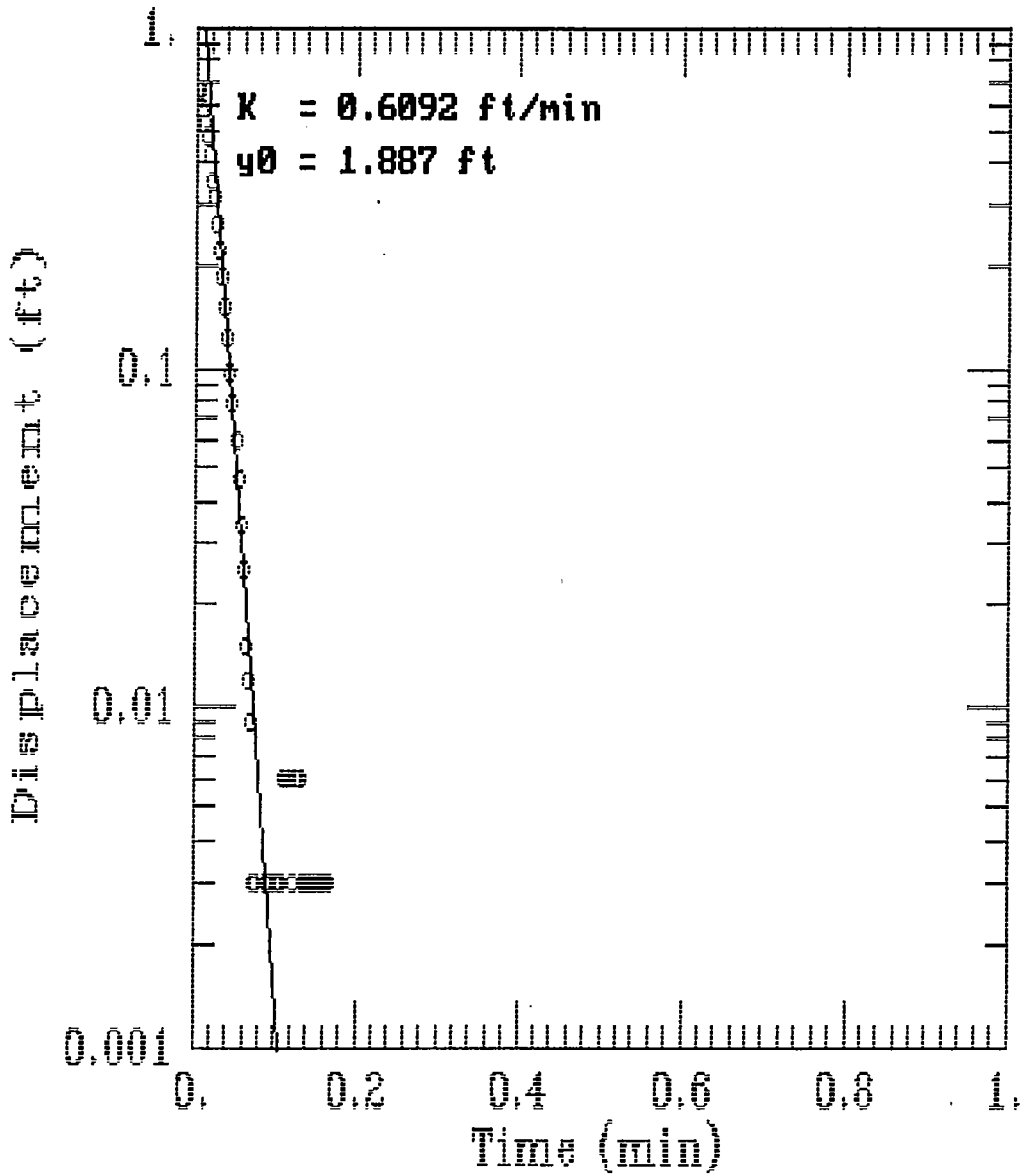
Waterloo Hydrogeologic 180 Columbia St. W. Waterloo,Ontario,Canada ph.(519)746-1798	slug/bail test analysis BOUWER-RICE's method	Date: 16.10.1997 Page 1 Project: PBOW Evaluated by: J.Li

Slug Test No. 10	Test conducted on: 10/8/97
IT-ABG-GW-002	



Hydraulic conductivity [ft/min]: 1.47×10^{-1}

PBOW IT-ABG-BEDGW-002



AQTESOLV

GERAGHTY & MILLER, INC.

Modeling Group

SE100 0C
Environment al Logger
10/10 1 3:16

Unit# 00000 Test 10

Setups:	INPUT 1
Type	Level (F)
Mode	TOC
I.D.	1
Reference	9.4
Linearity	0.01
Scale factor	10
Offset	-0.07
Delay mSEC	50

Step 0 10/08 17:23:13

Elapsed Time	INPUT 1
0	10.066
0.0033	10.056
0.0066	9.974
0.01	9.927
0.0133	9.876
0.0166	9.819
0.02	9.75
0.0233	9.715
0.0266	9.665
0.03	9.621
0.0333	9.583
0.0366	9.551
0.04	9.523
0.0433	9.497
0.0466	9.478
0.05	9.46
0.0533	9.447
0.0566	9.434
0.06	9.425
0.0633	9.415
0.0666	9.412
0.07	9.409
0.0733	9.403
0.0766	9.403
0.08	9.4
0.0833	9.4

0.0866	9.4
0.09	9.403
0.0933	9.403
0.0966	9.403
0.1	9.403
0.1033	9.403
0.1066	9.403
0.11	9.406
0.1133	9.406
0.1166	9.406
0.12	9.406
0.1233	9.403
0.1266	9.406
0.13	9.406
0.1333	9.406
0.1366	9.403
0.14	9.403
0.1433	9.403
0.1466	9.403
0.15	9.403
0.1533	9.403
0.1566	9.403
0.16	9.403
0.1633	9.403
0.1666	9.403
0.17	9.4
0.1733	9.4
0.1766	9.4
0.18	9.4
0.1833	9.4
0.1866	9.4
0.19	9.4
0.1933	9.4
0.1966	9.4
0.2	9.4
0.2033	9.4
0.2066	9.4
0.21	9.4
0.2133	9.4
0.2166	9.4
0.22	9.4
0.2233	9.4
0.2266	9.4
0.23	9.4
0.2333	9.4
0.2366	9.4
0.24	9.4
0.2433	9.4
0.2466	9.4

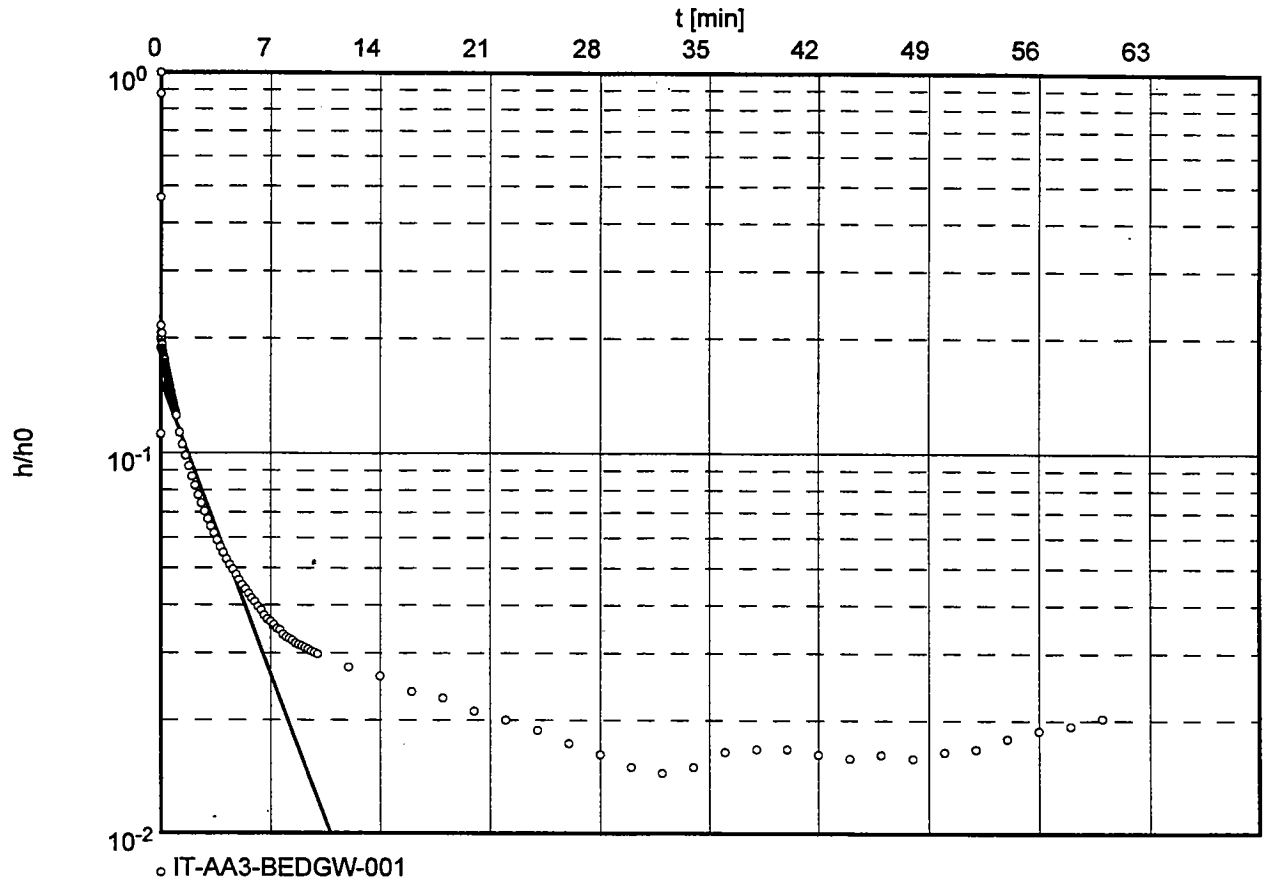
0.25	9.4
0.2533	9.4
0.2566	9.4
0.26	9.4
0.2633	9.4
0.2666	9.4
0.27	9.4
0.2733	9.4
0.2766	9.4
0.28	9.4
0.2833	9.4
0.2866	9.4
0.29	9.4
0.2933	9.4
0.2966	9.4
0.3	9.4
0.3033	9.4
0.3066	9.4
0.31	9.4
0.3133	9.4
0.3166	9.4
0.32	9.4
0.3233	9.4
0.3266	9.4
0.33	9.4
0.3333	9.4
0.35	9.4
0.3666	9.406
0.3833	9.409
0.4	9.409
0.4166	9.412
0.4333	9.412
0.45	9.415
0.4666	9.415
0.4833	9.415
0.5	9.415
0.5166	9.415
0.5333	9.415
0.55	9.415
0.5666	9.415
0.5833	9.415
0.6	9.415
0.6166	9.415
0.6333	9.415
0.65	9.415
0.6666	9.412
0.6833	9.412
0.7	9.412
0.7166	9.412

0.7333	9.412
0.75	9.412
0.7666	9.412
0.7833	9.412
0.8	9.412
0.8166	9.412
0.8333	9.409
0.85	9.409
0.8666	9.409
0.8833	9.409
0.9	9.409
0.9166	9.409
0.9333	9.409
0.95	9.409
0.9666	9.409
0.9833	9.409
1	9.409
1.2	9.403
1.4	9.396
1.6	9.39
1.8	9.384
2	9.377
2.2	9.374
2.4	9.371
2.6	9.368
2.8	9.368
3	9.365
3.2	9.365
3.4	9.362
3.6	9.362
3.8	9.365
4	9.352
4.2	9.352
4.4	9.352
4.6	9.349
4.8	9.349
5	9.346
5.2	9.346
5.4	9.346
5.6	9.346
5.8	9.346
6	9.343
6.2	9.343
6.4	9.343
6.6	9.34
6.8	9.346
7	9.349
7.2	9.349
7.4	9.346

7.6	9.346
7.8	9.343
8	9.343
8.2	9.343
8.4	9.34
8.6	9.34
8.8	9.34
9	9.34
9.2	9.336
9.4	9.336
9.6	9.336
9.8	9.336
10	9.333
12	9.311
14	9.302
16	9.286
18	9.276
20	9.261
22	9.242
24	9.223
26	9.204
28	9.194
30	9.191
32	9.185
34	9.175
36	9.169
38	9.16
40	9.15
42	9.131
44	9.122
46	9.109
48	9.096
50	9.087
52	9.065
54	9.049
56	9.033
58	9.021
60	9.005
62	8.992

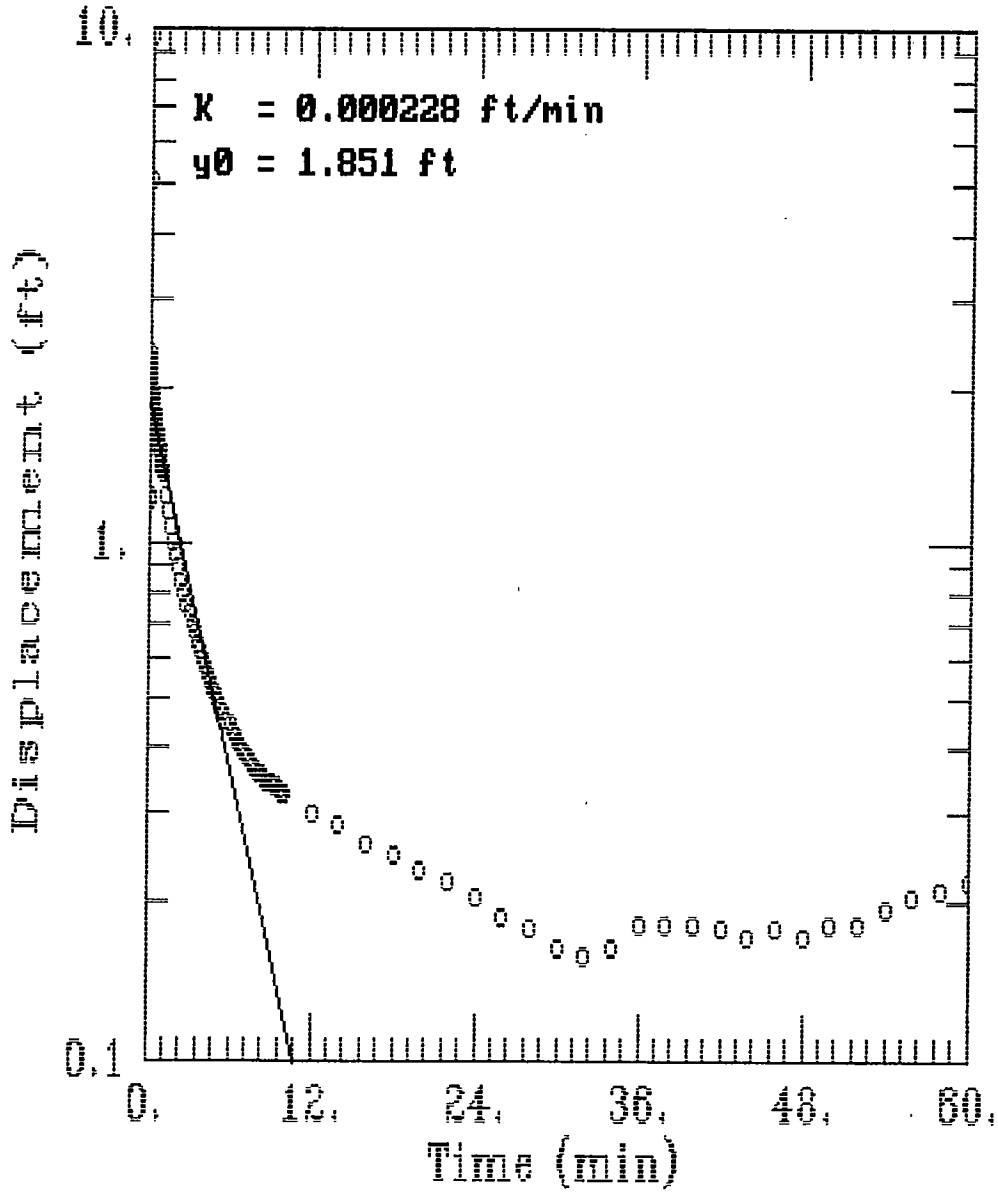
Waterloo Hydrogeologic 180 Columbia St. W. Waterloo,Ontario,Canada ph.(519)746-1798	slug/bail test analysis BOUWER-RICE's method	Date: 16.10.1997	Page 1
		Project: PBOW	
		Evaluated by: J.Li	

Slug Test No. 11	Test conducted on: 10/8/97
IT-AA3-BEDGW-001	



Hydraulic conductivity [ft/min]: 2.58×10^{-4}

PBOW IT-AA3-BEDGW-001 Rising Test



AQTESOLV

GERAGHTY & MILLER, INC.

Modeling Group

SE100 0C
Environment al Logger
10/10 1 3:19

Unit# 00000 Test 11

Setups: INPUT 1

Type	Level (F)
Mode	TOC
I.D.	1
Reference	37
Linearity	0.01
Scale factor	10
Offset	-0.07
Delay mSEC	50

Step 0 10/09 8:29:43

Elapsed Time	INPUT 1
0	47.903
0.0033	46.567
0.0066	42.099
0.01	38.219
0.0133	38.226
0.0166	39.243
0.02	39.35
0.0233	39.063
0.0266	39.053
0.03	39.17
0.0333	39.221
0.0366	39.164
0.04	39.154
0.0433	39.186
0.0466	39.205
0.05	39.177
0.0533	39.158
0.0566	39.164
0.06	39.173
0.0633	39.126
0.0666	39.151
0.07	39.196
0.0733	39.243
0.0766	39.053
0.08	39.098
0.0833	39.117

0.0866	39.094
0.09	39.041
0.0933	39.063
0.0966	39.091
0.1	39.05
0.1033	39.034
0.1066	39.044
0.11	39.038
0.1133	39.034
0.1166	39.028
0.12	39.028
0.1233	39.015
0.1266	39.009
0.13	39.015
0.1333	39.012
0.1366	39.009
0.14	39.003
0.1433	39.003
0.1466	38.996
0.15	38.996
0.1533	38.99
0.1566	38.984
0.16	38.981
0.1633	38.974
0.1666	38.974
0.17	38.968
0.1733	38.974
0.1766	38.962
0.18	38.952
0.1833	38.955
0.1866	38.962
0.19	38.959
0.1933	38.952
0.1966	38.949
0.2	38.946
0.2033	38.943
0.2066	38.943
0.21	38.946
0.2133	38.933
0.2166	38.927
0.22	38.927
0.2233	38.93
0.2266	38.905
0.23	38.924
0.2333	38.914
0.2366	38.917
0.24	38.921
0.2433	38.892
0.2466	38.917

0.25	38.902
0.2533	38.899
0.2566	38.861
0.26	38.851
0.2633	38.905
0.2666	38.88
0.27	38.873
0.2733	38.88
0.2766	38.873
0.28	38.873
0.2833	38.864
0.2866	38.857
0.29	38.857
0.2933	38.857
0.2966	38.845
0.3	38.851
0.3033	38.848
0.3066	38.839
0.31	38.848
0.3133	38.839
0.3166	38.832
0.32	38.839
0.3233	38.829
0.3266	38.826
0.33	38.826
0.3333	38.823
0.35	38.807
0.3666	38.791
0.3833	38.778
0.4	38.763
0.4166	38.75
0.4333	38.737
0.45	38.725
0.4666	38.709
0.4833	38.696
0.5	38.684
0.5166	38.671
0.5333	38.658
0.55	38.649
0.5666	38.636
0.5833	38.624
0.6	38.611
0.6166	38.602
0.6333	38.589
0.65	38.579
0.6666	38.567
0.6833	38.554
0.7	38.545
0.7166	38.532

0.7333	38.523
0.75	38.513
0.7666	38.5
0.7833	38.491
0.8	38.481
0.8166	38.472
0.8333	38.459
0.85	38.45
0.8666	38.44
0.8833	38.431
0.9	38.421
0.9166	38.412
0.9333	38.403
0.95	38.393
0.9666	38.387
0.9833	38.377
1	38.368
1.2	38.235
1.4	38.15
1.6	38.074
1.8	38.007
2	37.947
2.2	37.897
2.4	37.846
2.6	37.805
2.8	37.767
3	37.733
3.2	37.701
3.4	37.673
3.6	37.644
3.8	37.619
4	37.597
4.2	37.575
4.4	37.556
4.6	37.54
4.8	37.524
5	37.508
5.2	37.492
5.4	37.48
5.6	37.467
5.8	37.455
6	37.445
6.2	37.432
6.4	37.423
6.6	37.41
6.8	37.401
7	37.395
7.2	37.388
7.4	37.379

7.6	37.376
7.8	37.366
8	37.36
8.2	37.357
8.4	37.353
8.6	37.347
8.8	37.344
9	37.341
9.2	37.338
9.4	37.335
9.6	37.331
9.8	37.328
10	37.325
12	37.3
14	37.284
16	37.259
18	37.249
20	37.23
22	37.218
24	37.205
26	37.189
28	37.177
30	37.164
32	37.158
34	37.164
36	37.18
38	37.183
40	37.183
42	37.177
44	37.173
46	37.177
48	37.173
50	37.18
52	37.183
54	37.195
56	37.205
58	37.211
60	37.221

APPENDIX E

LAND SURVEY DATA

Land Survey Data for New Monitoring Wells
Site-Wide Groundwater Investigation
Former Plum Brook Ordnance Works
Sandusky, Ohio

Well ID	Y	X	Ground Elevation (feet)	Top of Casing Elevation (feet)
IT-AA1-GW-002	623068.35	1917727.57	638.60	640.85
IT-AA1-BEDGW-001	623069.04	1917718.26	638.80	641.04
IT-AA2-GW-002	623589.11	1909481.30	641.50	643.95
IT-AA2-BEDGW-001	623599.94	1909552.48	641.60	644.06
IT-AA3-GW-002	625027.71	1914956.35	634.10	636.11
IT-AA3-BEDGW-001	625036.61	1914957.28	634.10	636.43
IT-ABG-GW-002	621578.51	1921515.58	658.20	661.06
IT-ABG-BEDGW-001	621579.50	1921506.02	658.20	660.59
IT-TNTA-BEDGW-001	623808.29	1918699.38	636.05	638.40
IT-BG8-BEDGW-001	618635.28	1909856.87	673.70	676.56
IT-TNTB-BEDGW-001	618737.55	1917218.02	659.80	662.43
IT-TNTB-BEDGW-002	616835.18	1918020.88	670.10	673.35

Note: Survey values were scaled to the Ohio State Plane Coordinate System (North Zone).
Vertical datum is NGVD 1929.

Land Survey Data of 35 Existing Monitoring Wells
Site-Wide Groundwater Investigation
Former Plum Brook Ordnance Works
Sandusky, Ohio

Well ID	Y	X	Ground Elevation (feet)	Top of Casing Elevation (feet)
EB-GM-01	623563.215	1918338.625	637.700	640.450
EB-GM-02	624435.112	1917822.470	634.900	637.520
EB-GM-03	624130.765	1917775.154	636.200	638.900
EB-GM-04	624052.048	1917441.495	633.600	636.340
EB-GM-05	623871.542	1917802.134	637.000	639.700
EB-GM-06	623723.314	1917799.169	637.000	639.610
EB-PS-02	624343.951	1920061.236	635.700	638.530
EB-PS-03	624323.698	1920186.918	634.400	637.150
EB-PS-04	624298.302	1920259.217	635.300	637.870
EB-RA-01	625963.641	1917783.365	631.400	633.970
EB-RA-02	626944.348	1918281.944	631.300	633.950
EB-RA-03	626788.304	1918346.186	630.900	633.630
EB-RA-04	626730.526	1918389.466	630.700	633.540
EB-RA-05	626717.470	1918491.581	630.600	633.340
EB-RA-06	626748.047	1918749.548	630.100	632.640
EB-SP-01	613598.448	1927549.988	652.300	655.070
EB-SP-03	613397.744	1926835.797	655.100	657.730
EB-SP-04	613161.741	1926936.786	655.250	658.020
EB-SP-05	613050.710	1926896.790	654.500	657.000
EB-SP-06	613055.655	1927073.522	655.400	658.250
GCL-MW-01	617559.743	1921255.401	671.400	674.810
GCL-MW-02A	617937.096	1920960.532	669.700	672.960
GCL-MW-02B	617940.838	1920983.807	669.600	673.420
GCL-MW-03	617640.608	1920776.792	669.550	672.570
IT-MW01	616900.738	1915525.461	674.500	678.190
IT-MW06	628642.323	1918767.674	628.500	631.700
MK-MW09	623900.555	1908872.118	642.950	645.610
MK-MW12	621233.056	1908763.800	638.100	640.930
MK-MW14	618310.640	1913325.155	678.500	681.260
MK-MW15	618487.557	1913304.311	677.800	680.630
MK-MW19	623870.997	1917534.913	636.200	639.130
MK-MW20	622911.715	1920539.143	634.300	637.510
REACTOR 1	626773.262	1917983.440	630.450	630.510
REACTOR 2	626660.608	1918003.172	631.000	631.050
REACTOR 3	626684.798	1918148.199	631.100	631.210

APPENDIX F

DATA VALIDATION SUMMARY

E & I Technologies, Inc.

January 27, 1998

Kim Napier
IT Corp. Inc.
312 Directors Drive
Knoxville, TN 37923

Re: Plum Brook Ordnance Data Validation

Dear Kim:

Enclosed are the validation results for the November sampling of the Plum Brook Ordnance Works. I have included the sample count certification and summary report for your review. Please call if you have any questions (910) 842-4478.

Sincerely,

Tom

Tom Kitchings

109 Northshore Drive, Suite 400
Knoxville, TN 37919

(423) 450-5156
Fax: (423) 450-9104

E & T Technologies, Inc.

Plum Brook Ordnance Works
Data Validation Summary
January, 1998

Data collected during November, 1998, were 100% validated at Level III according to the EPA National Functional Guidelines for data review.

Volatiles: Acetone, 2-butanone and 2-hexanone were qualified in all samples from SDGs PB-010, PB-011, PB-012 and PB-014 on the basis of low relative response factors (RRFs) in both the initial and continuing calibrations. Detected compounds were qualified as estimated, "J", and nondetected values were rejected "R". Analytes exceeded the calibration range in one sample from each of the SDGs. The values from the original sample were rejected while the results from the dilution reanalysis were accepted.

Methylene chloride was found in the method, trip and field blanks associated with 37 samples across the four SDG's. The compound's values were raised to the detection limit and qualified as nondetected "U". The same is true for toluene and xylene in 6 samples in SDG PB-011 and for carbon disulfide in 2 samples from SDG PB-014.

Carbon disulfide and acetone from 2 samples in SDG PB-011 required "J" qualifiers due to the RPD from the field duplicates exceeding the QC limits.

Semivolatiles: A number of compounds in the four SDGs had percent differences greater than 25%, but less than 50% for the continuing calibration verification, but no qualifiers were required since all values were nondetects.

Three samples from SDG PB-011 had low area counts for the perylene internal standard. The associated compounds were qualified as estimated nondetect, "UJ". One sample in SDG PB-011 had compounds that exceeded the calibration range, resulting in a dilution reanalysis. The original compound values were rejected in favor of the dilution results.

Two low surrogate recoveries in a sample from SDG PB-012 required a reanalysis. The reanalysis results were qualified as "J/UJ" as appropriate.

Explosives: Matrix interference required elevated detection limits in some samples, but no qualifiers were required.

Pesticides/PCBs: No qualifiers were required, data acceptable as presented.

109 Northshore Drive, Suite 400
Knoxville, TN 37919

(423) 450-5156
Fax: (423) 450-9104

Metals: The metals data were acceptable as reviewed and qualified, and no data required rejection. Several samples required qualification due to poor results in associated QC samples, or contamination in associated blank samples.

All four metal SDGs (PB010, PB011, PB013, and PB014) contain samples which required qualification due to contamination in associated laboratory calibration and/or field QC blank samples. Analytes requiring qualification include: aluminum, calcium, copper, iron, lead, magnesium, sodium, and zinc.

Laboratory duplicate results were acceptable for all SDGs, but laboratory matrix spike QC results for calcium in SDGs PB010 and PB011, and aluminum in SDG PB012, were below acceptable limits, resulting in several samples being qualified. In addition, matrix spike recoveries for aluminum, calcium, and sodium in were above acceptable limits in SDG PB014, resulting in qualifications for several samples. ICP serial dilution results in SDG PB014 were also outside of acceptable limits for zinc in the dissolved QC sample and aluminum in the total metals sample, resulting in associated samples being qualified.

Several analytes in SDGs PB010, PB011, and PB012, including aluminum, arsenic, chromium, copper, lead, mercury, potassium, and zinc, were detected in one of the field duplicate pair samples, and not detected in the other field duplicate sample. In addition, relative percent differences between duplicate pairs were above acceptable limits for aluminum, iron, lead, manganese, and zinc in SDG PB011, and manganese, mercury and zinc in SDG PB012. No qualifications were required based on this information. No field duplicate samples were included in SDG PB014.

Wet Chemistry/Cyanide: The cyanide data were of acceptable quality as reviewed. No qualification was required.

One sample in SDG PB010 and three samples in SDG PB013 were qualified as nondetect "U" for chloride due to contamination in associated laboratory calibration blank samples.

Four samples in SDG PB011, eighteen samples in SDG PB013, and twelve samples in SDG 15 were qualified as estimated ("J" for detects, "UJ" for nondetects) for nitrate due to analysis outside of acceptable holding times.

In SDG PB015, one sample was qualified for total organic carbon and one sample was qualified for total dissolved solids and total suspended solids due to analysis outside of acceptable holding time (7 days).

No field QC samples (blanks or duplicates) were included for the samples reviewed.

APPENDIX G

CHEMICAL ANALYTICAL DATA

Quanterra Environmental Services

Quanterra Incorporated
5815 Middlebrook Pike
Knoxville, Tennessee 37921

423 588-6401 Telephone
423 584-4315 Fax

ANALYTICAL REPORT

PROJECT NO. 771481

PBOW-Groundwater Investigation
SDG #: PB010

Kim Napier

IT Corporation - Knoxville

QUANTERRA INCORPORATED

John D. Reynolds
Project Manager

December 22, 1997

PROJECT NARRATIVE

All holding times and QC criteria were met with the following exceptions:

Semivolatiles

Surrogate recoveries for sample 5890 were outside control limits. However, after consultation with Kim Napier of IT Corporation, the results were flagged as estimated and released without further investigation.

Continuing calibration standard component Di-n-octylphthalate was just above percent drift criteria. However, as this analyte was not detected in the associated samples, the sample data is unaffected.

Explosives

The matrix spike duplicate recoveries for sample 5730 were acceptable for all analytes except 1,3,5-trinitrobenzene and 1,3-dinitrobenzene. The laboratory control sample showed acceptable results indicating that the analysis was in control. The matrix spike/matrix spike duplicate results are, therefore, attributed to matrix effects.

Metals

The matrix spike recoveries for sample 5730 and the batch matrix spike were outside control limits for some analytes. However, the laboratory control samples showed acceptable results indicating that the analysis was in control. The matrix spike results are, therefore, attributed to matrix effects. The affected analytes are flagged appropriately on the matrix spike report.

COMMENTS:

Volatiles

The concentrations of several compounds in samples 5890 exceeded the calibration level of the instrument. The samples were analyzed at appropriate dilutions to bring the concentrations of the compounds into the instrument calibration range. The results for both analyses are reported in order to provide the lowest possible reporting limits. In addition, surrogate recoveries for this sample were outside control limits. Since the analysis of this sample at a dilution showed acceptable surrogate recoveries, the results are attributed to sample matrix effects.

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PROJECT NARRATIVE

COMMENTS:

Volatiles

Sample 5430 was reported with elevated reporting limits for all analytes due to the presence of non-target compounds. Based on screening results, a dilution was necessary prior to analysis, and the reporting limits were adjusted accordingly.

PCBs

Samples 5890, 5950, and 5430 were reported with elevated reporting limits for Aroclor 1221 due to matrix interferences. The reporting limits have been adjusted accordingly.

Explosives

The following samples were reported with elevated reporting limits for one or more compounds due to chromatographic interferences: 5430, 5501, 5760, 5761, 5770, 5804, 5890.

Quanterra Environmental Services

Quanterra Incorporated
5815 Middlebrook Pike
Knoxville, Tennessee 37921

423 588-6401 Telephone
423 584-4315 Fax

ANALYTICAL REPORT

PROJECT NO. 771481

PBOW-Groundwater Investigation
SDG #: PB011

Kim Napier

IT Corporation - Knoxville

QUANTERRA INCORPORATED

John D. Reynolds
Project Manager

January 8, 1998

PROJECT NARRATIVE

All holding times and QC criteria were met with the following exceptions:

Volatiles

The concentration of 1,1,1-trichloroethane in sample 5800 exceeded the calibration level of the instrument. The sample was analyzed at a dilution to bring the concentration of the compound into the instrument calibration range. The reporting limits have been adjusted accordingly. In addition, the client-assigned matrix spike of this sample had recovery for toluene outside control limits. However, since recoveries for the LCS were acceptable, the data is not adversely affected.

Semivolatiles

Perylene-d12 recoveries were low in samples 5451, 5710, 5700 and 5701. These samples matrix exhibited extremely destructive effects on the instruments column, even though they were run at substantial dilutions. After consultation with IT Corporation, it was decided that in order to maintain instrument integrity, these samples would not be re-analyzed. It should be noted, however, that initial runs for samples 5700 and 5701 outside tune time (12/11/97) showed similar results for perylene-d12 recovery (these chromatograms are included with the reports for the final data). Because of this, matrix can be tentatively cited as the cause of the low recoveries for this internal standard. Additionally, in all cases, no targets were seen that reference perylene-d12.

*Please note that the dilution for sample 5451 did no contain analytes above 20% of the calibration range, and the screening chromatogram has been provided.

Metals

The matrix spike/matrix spike duplicate recoveries for sample 5800F were outside control limits for some analytes. However, the laboratory control sample showed acceptable results indicating that the analysis was in control. The matrix spike/matrix spike duplicate results are, therefore, attributed to matrix effects. The affected analytes are flagged appropriately on the matrix spike/matrix spike duplicate report.

Wet Chemistry

Sample 5700 was analyzed for nitrate outside of holding time criteria due to severe matrix interferences, which destroyed the analytical column.

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PROJECT NARRATIVE

COMMENTS:

Volatiles

Samples 5810, 5451, 5450, 5910, and 5701were reported with elevated reporting limits for all analytes. Based on screening results, dilutions were necessary prior to analysis; the reporting limits were adjusted accordingly.

Samples 5700 and 5710 were reported with elevated reporting limits for all analytes due to the difficult sample matrix, excessive foaming. Dilutions were necessary prior to analysis, and the reporting limits were adjusted accordingly.

Semivolatiles

The concentration of 2-methylphenol and 4-methylphenol in sample 5810 exceeded the calibration level of the instrument. The sample was analyzed at a dilution to bring the concentration of the compounds into the instrument's calibration range. The results for both analyses are reported in order to provide the lowest possible reporting limits.

Pesticides/PCBs

Samples 5450, 5451, 5700 and 5701 were reported with elevated reporting limits for all analytes due to sample matrix interferences.

Explosives

The following samples were reported with elevated reporting limits for one or more compounds due to chromatographic interferences: 5450, 5451, 5700, 5701, 5810, 5910, LOT H012.

Quanterra Environmental Services

Quanterra Incorporated
5815 Middlebrook Pike
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ANALYTICAL REPORT

PROJECT NO. 771481

PBOW-Groundwater Investigation
SDG #: PB012

Kim Napier

IT Corporation - Knoxville

QUANTERRA INCORPORATED

John D. Reynolds
Project Manager

January 7, 1998

PROJECT NARRATIVE

All holding times and QC criteria were met with the following exceptions:

Volatiles

The matrix spike/matrix spike duplicate relative percent difference for sample 5550-REG were acceptable for all analytes except 1,1-dichloroethene. However, the laboratory control sample showed acceptable results indicating that the analysis was in control.

Semivolatiles

Sample 5900 was reported with elevated reporting limits for all analytes due to the difficult sample matrix. A dilution was necessary prior to analysis, and the reporting limits were adjusted accordingly. (*Please note that the dilution did not contain analytes above 20% of the calibration, and the screening chromatogram has been provided).

Surrogate recoveries for sample 5940 were outside control limits. The sample was re-analyzed and the surrogate recoveries were also outside control limits. These results indicate that the surrogate results are due to matrix effects.

Sample 5690 was reported with elevated reporting limits for all analytes due to the difficult sample matrix. A dilution was necessary prior to analysis, and the reporting limits were adjusted accordingly. In addition, internal standard perylene-d12 was outside control limits. In order to maintain instrument integrity, no re-analysis was performed. The screening results showed similar results for this internal standard, which has been provided.

Pesticides/PCBs

The matrix spike/matrix spike duplicate recoveries and/or RPDs for sample 5550-REG were acceptable for all analytes except Aroclor-1260. The laboratory control sample showed acceptable results indicating that the analysis was in control. The matrix spike/matrix spike duplicate results are, therefore, attributed to matrix effects.

Explosives

The matrix spike recoveries for sample 5550-REG were acceptable for all analytes except RDX. The laboratory control sample showed acceptable results indicating that the analysis was in control. The matrix spike/matrix spike duplicate results are, therefore, attributed to matrix effects.

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PROJECT NARRATIVE

Metals

The matrix spike/matrix spike duplicate recoveries for samples 5550-REGF and 5550-REG were outside control limits for some analytes. However, the laboratory control samples showed acceptable results indicating that the analysis was in control. The matrix spike/matrix spike duplicate results are, therefore, attributed to matrix effects. The affected analytes are flagged appropriately on the matrix spike/matrix spike duplicate report.

COMMENTS:

Volatiles

Sample 5940 was reported with elevated reporting limits for all analytes. Based on screening results, dilutions were necessary prior to analysis; the reporting limits were adjusted accordingly.

Samples 5690 and 5470 were reported with elevated reporting limits for all analytes due to the difficult sample matrix, excessive foaming. A dilution was necessary prior to analysis, and the reporting limits were adjusted accordingly.

Pesticides/PCBs

Sample 5690 was reported with elevated reporting limits for all analytes due to sample matrix interferences.

Sample 5940 was reported with elevated reporting limits for Aroclor 1221 due to sample matrix interferences.

Explosives

The following samples were reported with elevated reporting limits for one or more analytes due to sample matrix interferences: 5470, 5490, 5550-REG, 5940,5900. The affected analytes are flagged on the sample report.

Quanterra Environmental Services

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ANALYTICAL REPORT

PROJECT NO. 771481

PBOW-Groundwater Investigation
SDG #: PB013

Kim Napier

IT Corporation - Knoxville

QUANTERRA INCORPORATED

John D. Reynolds
Project Manager

January 6, 1998

PROJECT NARRATIVE

All holding times and QC criteria were met with the following exceptions:

Nitrate

Due to severe matrix problems, the following samples were analyzed outside of holding time criteria, which was due to instrument damage from these samples: 5620, 5610, 5580, 5560, 5550-REG, 5530, 5940, 5470, 5660, 5860, 5520, 5510, 5490, 5460, and 5440. The analyses of these samples resulted in high concentrations of this analyte and no further analyses were attempted.

TOC

The following samples were originally analyzed within holding time criteria: 5470, 5660, 5860, 5520, 5510, 5490, 5460, 5440, 5930, and 5870. However, due to instrument problems, the remaining triplicate analyses and/or dilutions were performed outside of this criteria.

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Quanterra Environmental Services

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ANALYTICAL REPORT

PROJECT NO. 771481

PBOW-Groundwater Investigation
SDG #: PB014

Kim Napier

IT Corporation - Knoxville

QUANTERRA INCORPORATED

John D. Reynolds
Project Manager

January 8, 1998

PROJECT NARRATIVE

All holding times and QC criteria were met with the following exceptions:

Volatiles

The percent RPD for chlorobenzene and 1,1-dichloroethene in the LCS/LCSD (CECPL102 and CECPL103), were found outside laboratory control limits. However, all samples run against these spikes were found to be free of the analytes in question with the exception of 5590 and 5460, which had levels below reporting limits.

Pesticides/PCBs

The laboratory control sample results were outside control limits for Aroclor 1016. However, the laboratory control sample duplicate recoveries were acceptable, indicating that the problem was confined to the laboratory control sample. Thus, the validity of the sample results is not adversely affected.

Explosives

The batch matrix spike/matrix spike duplicate had recoveries which were acceptable for all analytes except 2,4-DNT. The laboratory control sample showed acceptable results indicating that the analysis was in control. The batch matrix spike/matrix spike duplicate results are, therefore, attributed to matrix effects.

Metals

The serial dilution of samples 5460 and 5460F were outside control limits due to physical or chemical matrix interferences.

The batch matrix spike/matrix spike duplicate recoveries for sample 5460 were outside control limits for some analytes. However, the laboratory control sample showed acceptable results indicating that the analysis was in control. The batch matrix spike/matrix spike duplicate results are, therefore, attributed to matrix effects. In addition, results outside of limits do not necessarily reflect poor method performance due to high analyte concentrations in the sample relative to the spike level. The affected analytes are flagged appropriately on the matrix spike/matrix spike duplicate report.

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Quanterra
Environmental Services

PROJECT NARRATIVE

COMMENTS:

Volatiles

Samples 5440,5970, 5460, 5930, and 5920 were reported with elevated reporting limits for all analytes. Based on screening results, dilutions were necessary prior to analysis; the reporting limits were adjusted accordingly.

Semivolatiles

Sample 5920, 5680, 5970, and 5930, were reported with elevated reporting limits for all analytes due to the difficult sample matrix and screening results. A dilution was necessary prior to analysis, and the reporting limits were adjusted accordingly.

Explosives

The following samples were reported with elevated reporting limits for one or more analytes due to sample matrix interferences: 5460, 5680, 5790, 5920, 5930, 5970.

Quanterra Environmental Services

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Knoxville, Tennessee 37921

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ANALYTICAL REPORT

PROJECT NO. 771481

PBOW-Groundwater Investigation
SDG #: PB015

Kim Napier

IT Corporation - Knoxville

QUANTERRA INCORPORATED

John D. Reynolds
Project Manager

January 9, 1998

Quanterra
Environmental Services

PROJECT NARRATIVE

All holding times and QC criteria were met with the following exceptions:

Wet Chemistry

Nitrate analysis for sample 5970 was canceled by Kim Napier of IT Corporation. The TDS and TSS analyses for this sample were analyzed outside of holding time per client request.

Samples 5790, 5850, and 5780 were analyzed for TDS and TSS outside of holding time due to laboratory error.

The batch matrix spike/matrix spike recoveries and/or RPDs for Chloride and Sulfate analyses were outside control limits. However, the associated laboratory control samples showed acceptable results indicating that the analyses were in control. The results are, therefore, attributed to matrix effects.

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Curtis & Tompkins, Ltd.

Laboratory Numbers: 131462
Client: IT Corporation
Location: Plumbrook Ordanance Works
Project #: 771481

Sampled Date:11/18-19/97
Received Date: 11/20/97

CASE NARRATIVE

This hardcopy data package contains sample and QC results for three water samples which were received from the site referenced above on November 20, 1997. The samples were received cold and intact.

Volatiles (EPA 8260): No analytical problems were encountered.

Semi-volatiles (EPA 8270): A high spike recovery was observed for 4-nitrophenol in the blank spike (CT#QC59374). This should not affect the quality of the data as the recovery was below 100% and the samples were all non-detect. No other analytical problems were encountered.

PCBs (EPA 8080): High response was observed for Aroclor 1016 in the continuing calibration verifications which were analyzed on November 24-25, 1997. This should not affect the quality of the data as this Aroclor was not detected in the samples. No other analytical problems were encountered.

Metals (EPA 6010A/7470): Relative percent differences (%RPDs) outside QC limits was observed for aluminum in batch 37797 and for potassium in batch 37796. Low recovery was observed for silver in the matrix spike of 5562 (CT#131462-001) in batch 37796. The spike recoveries for calcium in batch 37796 and for calcium and iron in batch 37797 are considered not meaningful (NM) as the sample concentrations are four times greater than the spiked levels. No analytical problems were encountered.

Nitroaromatics and Nitramines (EPA 8330): Two samples were subcontracted to Quanterra Environmental Services for analysis.

Quanterra
Environmental Services

CASE NARRATIVE

QUANTERRA INCORPORATED PROJECT NUMBER 096226

There were no anomalies associated with this report.

Curtis & Tompkins, Ltd.

Laboratory Numbers: 131460
Client: IT Corporation
Location: Plumbrook Ordanance Works
Project #: 771481

Sampled Date:11/16-17/97
Received Date: 11/18/97

CASE NARRATIVE

This hardcopy data package contains sample and QC results for four water samples which were received from the site referenced above on November 18, 1997. The samples were received cold and intact.

Volatiles (EPA 8260): Sample 5763 (CT#131460-002) had a detected result for methylene chloride at 7.4 ug/L. The associated method blank (CT#QC59343) had a detected value below the reporting limit of 2.2 ug/L. No other analytical problems were encountered.

Semi-volatiles (EPA 8270): Sample 5452 (CT#131460-004) was diluted due to high levels of non-target compounds. A high spike recovery was observed for 4-nitrophenol in the blank spike (CT#QC59374). This should not affect the quality of the data as the recovery was below 100% and the samples were all non-detect. 2,4-dinitrophenol, di-n-butylphthalate, bis(2-ethylhexyl)phthalate, and di-n-octylphthalate did not meet %RSD or correlation coefficient criteria in the initial calibration for BNA1. Benzyl alcohol, indeno(1,2,3-cd)pyrene, dibenz(a,h)anthracene, and benzo(g,h,i)perylene met minimum response criteria but did not meet the %D criteria in the continuing calibration verification which was analyzed on BNA1 on November 25, 1997. This should not affect the quality of the data as only sample 5452 (CT#131460-004) was analyzed on this instrument and none of these compounds were detected. No other analytical problems were encountered.

PCBs (EPA 8080): A low surrogate recovery was observed for decachlorobiphenyl for 5412 (CT#131460-003). This outlier should not affect the quality of the data as the surrogate recovery for TCMX was within QC limits. High response was observed for Aroclor 1016 in the continuing calibration verifications which were analyzed on November 24-25, 1997. This should not affect the quality of the data as this Aroclor was not detected in the samples. No other analytical problems were encountered.

Metals (EPA 6010A/7470): Relative percent differences (%RPDs) outside QC limits was observed for aluminum in batch 37797 and for potassium in batch 37796. Low recovery was observed for silver in the matrix spike of 5562 (CT#131462-001). The spike recoveries for calcium in batch 37796 and for calcium and iron in batch 37797 are considered not meaningful (NM) as the sample

Quanterra
Environmental Services

CASE NARRATIVE

QUANTERRA INCORPORATED PROJECT NUMBER 096224

Please note that due to time lost in transit, your samples were extracted outside of the holding time. The holding time expired on 11/23/97 and 11/24/97. The extraction was performed on 11/25/97.

Samples "5412" and "5452" had no quantitatable surrogate recovery. This was confirmed by reinjection on both the analytical and confirmation columns.

Curtis & Tompkins, Ltd.

Laboratory Numbers: 131461
Client: IT Corporation
Location: Plumbrook Ordanance Works
Project #: 771481

Sampled Date: 11/17/97
Received Date: 11/19/97

CASE NARRATIVE

This hardcopy data package contains sample and QC results for two water samples which were received from the site referenced above on November 17, 1997. The samples were received cold and intact.

Volatiles (EPA 8260): Sample 5702 (CT#131461-001) was diluted due to the dark nature of the matrix. When it was analyzed with no dilution it caused the mass spectrometer to shut off. No other analytical problems were encountered.

Semi-volatiles (EPA 8270): Sample 5702 (CT#131461-001) was diluted due to high levels of non-target compounds causing the surrogates to be diluted out. A high spike recovery was observed for 4-nitrophenol in the blank spike (CT#QC59374). This should not affect the quality of the data as the recovery was below 100% and the sample was non-detect for this compound. No other analytical problems were encountered.

PCBs (EPA 8080): Sample 5702 (CT#131461-001) had a high surrogate recovery for TCMX due to interference with non-target compounds and low surrogate recovery for decachlorobiphenyl. High response was observed for Aroclor 1016 in the continuing calibration verifications which were analyzed on November 24-27, 1997. This should not affect the quality of the data as this Aroclor was not detected in the samples. No other analytical problems were encountered.

Metals (EPA 6010A/7470): Relative percent differences (%RPDs) outside QC limits was observed for aluminum in batch 37797 and for potassium in batch 37796. Low recovery was observed for silver in the matrix spike of 5562 (CT#131462-001) in batch 37796. The spike recoveries for calcium in batch 37796 and for calcium and iron in batch 37797 are considered not meaningful (NM) as the sample concentrations are four times greater than the spiked levels. No other analytical problems were encountered.

Nitroaromatics and Nitramines (EPA 8330): One sample was subcontracted to Quanterra Environmental Services for analysis.

Quanterra
Environmental Services

CASE NARRATIVE

QUANTERRA INCORPORATED PROJECT NUMBER 096225

Please note that due to time lost in transit, your sample was extracted outside of the holding time. The holding time expired on 11/24/97. The extraction was performed on 11/25/97.

Your sample had no quantitatable surrogate recovery due to required dilution. This was confirmed by reinjection on both the analytical and confirmation columns.

PLUMBROOK
Overburden Wells
Data Summary

Report Date: 03/12/98

Sample Location:			GCL-MW01		GCL-MW02A		GCL-MW02B		GCL-MW03		IT-AA1-GW-002	
Sample No:			5850		5860		5870		5880		5490	
Sample Date:			20-NOV-97		20-NOV-97		20-NOV-97		20-NOV-97		20-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,1,1-TRICHLOROETHANE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,1,2,2-TETRACHLOROETHANE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,1,2-TRICHLOROETHANE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,1-DICHLOROETHANE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,1-DICHLOROETHENE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,2-DICHLOROETHANE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,2-DICHLOROETHENE (TOTAL)		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,2-DICHLOROPROPANE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
2-BUTANONE		UG/L	5.0	R	5.0	R	5.0	R	5.0	R	5.0	R
2-HEXANONE		UG/L	5.0	R	5.0	R	5.0	R	5.0	R	5.0	R
4-METHYL-2-PENTANONE		UG/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
ACETONE		UG/L	10	R	10	R	10	R	10	R	10	R
BENZENE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
BROMODICHLOROMETHANE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
BROMOFORM		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
BROMOMETHANE		UG/L	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
CARBON DISULFIDE		UG/L	1.0	U	0.64	J	1.0	U	1.0	U	1.0	U
CARBON TETRACHLORIDE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
CHLOROBENZENE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
CHLOROETHANE		UG/L	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
CHLOROFORM		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
CHLOROMETHANE		UG/L	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
CIS-1,3-DICHLOROPROPENE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
DIBROMOCHLOROMETHANE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
ETHYLBENZENE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
METHYLENE CHLORIDE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
STYRENE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
TETRACHLOROETHENE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
TOLUENE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U

PLUMBROOK
Overburden Wells
Data Summary

Report Date: 03/12/98

Sample Location:			IT-AA3-GW-002		IT-ABG-GW-002		IT-MW01		IT-MW02		IT-MW05	
Sample No:			5510		5520		5530		5540		5550	
Sample Date:			19-NOV-97		19-NOV-97		19-NOV-97		21-NOV-97		19-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,1,1-TRICHLOROETHANE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,1,2,2-TETRACHLOROETHANE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,1,2-TRICHLOROETHANE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,1-DICHLOROETHANE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,1-DICHLOROETHENE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,2-DICHLOROETHANE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,2-DICHLOROETHENE (TOTAL)		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,2-DICHLOROPROPANE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
2-BUTANONE		UG/L	5.0	R	5.0	R	5.0	R	5.0	R	5.0	R
2-HEXANONE		UG/L	5.0	R	5.0	R	5.0	R	5.0	R	5.0	R
4-METHYL-2-PENTANONE		UG/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
ACETONE		UG/L	10	R	10	R	10	R	10	R	22	J
BENZENE		UG/L	1.0	U	0.53	J	1.0	U	1.0	U	1.0	U
BROMODICHLOROMETHANE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
BROMOFORM		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
BROMOMETHANE		UG/L	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
CARBON DISULFIDE		UG/L	1.0	U	0.24	J	1.0	U	1.0	U	0.21	J
CARBON TETRACHLORIDE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
CHLOROBENZENE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
CHLOROETHANE		UG/L	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
CHLOROFORM		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
CHLOROMETHANE		UG/L	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
CIS-1,3-DICHLOROPROPENE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
DIBROMOCHLOROMETHANE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
ETHYLBENZENE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
METHYLENE CHLORIDE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
STYRENE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
TETRACHLOROETHENE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
TOLUENE		UG/L	1.0	U		U	1.0	U	1.0	U	1	U

PLUMBROOK
Overburden Wells
Data Summary

Report Date: 03/12/98

Sample Location:			IT-MW06		IT-MW08		IT-MW09		IT-MW10		MK-MW09	
Sample No:			5560		5580		5590		5600		5720	
Sample Date:			19-NOV-97		19-NOV-97		23-NOV-97		14-NOV-97		16-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,1,1-TRICHLOROETHANE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,1,2,2-TETRACHLOROETHANE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,1,2-TRICHLOROETHANE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,1-DICHLOROETHANE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,1-DICHLOROETHENE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,2-DICHLOROETHANE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,2-DICHLOROETHENE (TOTAL)		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,2-DICHLOROPROPANE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
2-BUTANONE		UG/L	5.0	R	5.0	R	5.0	R	5.0	R	5.0	R
2-HEXANONE		UG/L	5.0	R	5.0	R	5.0	R	5.0	R	5.0	R
4-METHYL-2-PENTANONE		UG/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
ACETONE		UG/L	10	R	10	R	10	R	10	R	10	R
BENZENE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
BROMODICHLOROMETHANE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
BROMOFORM		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
BROMOMETHANE		UG/L	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
CARBON DISULFIDE		UG/L	1.0	U	1.0	U	1.0	U	0.17	J	1.0	U
CARBON TETRACHLORIDE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
CHLOROBENZENE		UG/L	1.0	U	1.0	U	0.17	J	1.0	U	1.0	U
CHLOROETHANE		UG/L	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
CHLOROFORM		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
CHLOROMETHANE		UG/L	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
CIS-1,3-DICHLOROPROPENE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
DIBROMOCHLOROMETHANE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
ETHYLBENZENE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
METHYLENE CHLORIDE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
STYRENE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
TETRACHLOROETHENE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
TOLUENE		UG/L	0.20	J	1.0	U	1.0	U	1.0	U	0.13	J

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Sample Location:			MK-MW10		MK-MW11		MK-MW12		MK-MW14		MK-MW15	
Sample No:			5730		5740		5750		5760		5770	
Sample Date:			13-NOV-97		18-NOV-97		17-NOV-97		16-NOV-97		16-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,1,1-TRICHLOROETHANE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,1,2,2-TETRACHLOROETHANE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,1,2-TRICHLOROETHANE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,1-DICHLOROETHANE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,1-DICHLOROETHENE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,2-DICHLOROETHANE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,2-DICHLOROETHENE (TOTAL)		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,2-DICHLOROPROPANE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
2-BUTANONE		UG/L	5.0	R	5.0	R	5.0	R	5.0	R	5.0	R
2-HEXANONE		UG/L	5.0	R	5.0	R	5.0	R	5.0	R	5.0	R
4-METHYL-2-PENTANONE		UG/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
ACETONE		UG/L	10	R	10	R	10	R	10	R	10	R
BENZENE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
BROMODICHLOROMETHANE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
BROMOFORM		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
BROMOMETHANE		UG/L	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
CARBON DISULFIDE		UG/L	1.0	U	0.31	J	1.0	U	0.32	J	0.38	J
CARBON TETRACHLORIDE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
CHLOROBENZENE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
CHLOROETHANE		UG/L	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
CHLOROFORM		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
CHLOROMETHANE		UG/L	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
CIS-1,3-DICHLOROPROPENE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
DIBROMOCHLOROMETHANE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
ETHYLBENZENE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
METHYLENE CHLORIDE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
STYRENE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
TETRACHLOROETHENE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
TOLUENE		UG/L	1.0	U		U	1.0	U	1.0	U	1	U

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Sample Location:			MK-MW16		MK-MW17		MK-MW19		MK-MW20		MK-MW22	
Sample No:			5780		5790		5800		5810		5820	
Sample Date:			21-NOV-97		21-NOV-97		16-NOV-97		16-NOV-97		14-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,1,1-TRICHLOROETHANE		UG/L	1.0	U	1.0	U	170		500	U	1.0	U
1,1,2,2-TETRACHLOROETHANE		UG/L	1.0	U	1.0	U	1.0	U	500	U	1.0	U
1,1,2-TRICHLOROETHANE		UG/L	1.0	U	1.0	U	1.0	U	500	U	1.0	U
1,1-DICHLOROETHANE		UG/L	1.0	U	1.0	U	17		500	U	1.0	U
1,1-DICHLOROETHENE		UG/L	1.0	U	1.0	U	3.4		500	U	1.0	U
1,2-DICHLOROETHANE		UG/L	1.0	U	1.0	U	1.0	U	500	U	1.0	U
1,2-DICHLOROETHENE (TOTAL)		UG/L	1.0	U	1.0	U	1.0	U	500	U	1.0	U
1,2-DICHLOROPROPANE		UG/L	1.0	U	1.0	U	1.0	U	500	U	1.0	U
2-BUTANONE		UG/L	5.0	R	5.0	R	5.0	R	2500	R	5.0	R
2-HEXANONE		UG/L	5.0	R	5.0	R	5.0	R	2500	R	5.0	R
4-METHYL-2-PENTANONE		UG/L	5.0	U	5.0	U	5.0	U	2500	U	5.0	U
ACETONE		UG/L	10	R	10	R	10	R	5000	R	10	R
BENZENE		UG/L	1.0	U	1.0	U	1.0	U	500	U	1.0	U
BROMODICHLOROMETHANE		UG/L	1.0	U	1.0	U	1.0	U	500	U	1.0	U
BROMOFORM		UG/L	1.0	U	1.0	U	1.0	U	500	U	1.0	U
BROMOMETHANE		UG/L	2.0	U	2.0	U	2.0	U	1000	U	2.0	U
CARBON DISULFIDE		UG/L	1.0	U	1.0	U	1.0	U	500	U	1.0	U
CARBON TETRACHLORIDE		UG/L	1.0	U	1.0	U	1.0	U	500	U	1.0	U
CHLOROBENZENE		UG/L	1.0	U	1.0	U	1.0	U	500	U	1.0	U
CHLOROETHANE		UG/L	2.0	U	2.0	U	2.5		1000	U	2.0	U
CHLOROFORM		UG/L	1.0	U	1.0	U	1.0	U	71	J	1.0	U
CHLOROMETHANE		UG/L	2.0	U	2.0	U	2.0	U	1000	U	2.0	U
CIS-1,3-DICHLOROPROPENE		UG/L	1.0	U	1.0	U	1.0	U	500	U	1.0	U
DIBROMOCHLOROMETHANE		UG/L	1.0	U	1.0	U	1.0	U	500	U	1.0	U
ETHYLBENZENE		UG/L	1.0	U	1.0	U	1.0	U	500	U	1.0	U
METHYLENE CHLORIDE		UG/L	1.0	U	1.0	U	1.0	U	500	U	1.0	U
STYRENE		UG/L	1.0	U	1.0	U	1.0	U	500	U	1.0	U
TETRACHLOROETHENE		UG/L	1.0	U	1.0	U	1.0	U	500	U	1.0	U
TOLUENE		UG/L	1.0	U	1.0	U	6.1		13000		1.0	U

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Sample Location:			MK-MW23		MK-MW24		PB-PR-MW7		PB-PR-MW8		PB-PR-MW9	
Sample No:			5830		5840		5690		5700		5710	
Sample Date:			16-NOV-97		13-NOV-97		17-NOV-97		17-NOV-97		17-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,1,1-TRICHLOROETHANE		UG/L	1.0	U	1.0	U	5.0	U	5.0	U	2.0	U
1,1,2,2-TETRACHLOROETHANE		UG/L	1.0	U	1.0	U	5.0	U	5.0	U	2.0	U
1,1,2-TRICHLOROETHANE		UG/L	1.0	U	1.0	U	5.0	U	5.0	U	2.0	U
1,1-DICHLOROETHANE		UG/L	1.0	U	1.0	U	5.0	U	5.0	U	2.0	U
1,1-DICHLOROETHENE		UG/L	1.0	U	1.0	U	5.0	U	5.0	U	2.0	U
1,2-DICHLOROETHANE		UG/L	1.0	U	1.0	U	5.0	U	5.0	U	2.0	U
1,2-DICHLOROETHENE (TOTAL)		UG/L	1.0	U	1.0	U	5.0	U	5.0	U	2.0	U
1,2-DICHLOROPROPANE		UG/L	1.0	U	1.0	U	5.0	U	5.0	U	2.0	U
2-BUTANONE		UG/L	5.0	R	5.0	R	25	R	25	R	10	R
2-HEXANONE		UG/L	5.0	R	5.0	R	25	R	25	R	10	R
4-METHYL-2-PENTANONE		UG/L	5.0	U	5.0	U	25	U	25	U	10	U
ACETONE		UG/L	68	J	10	R	50	R	50	R	20	R
BENZENE		UG/L	1.0	U	1.0	U	5.0	U	5.0	U	2.0	U
BROMODICHLOROMETHANE		UG/L	1.0	U	1.0	U	5.0	U	5.0	U	2.0	U
BROMOFORM		UG/L	1.0	U	1.0	U	5.0	U	5.0	U	2.0	U
BROMOMETHANE		UG/L	2.0	U	2.0	U	10	U	10	U	4.0	U
CARBON DISULFIDE		UG/L	0.37	J	1.0	U	5.0	U	5.0	U	2.0	U
CARBON TETRACHLORIDE		UG/L	1.0	U	1.0	U	5.0	U	5.0	U	2.0	U
CHLOROBENZENE		UG/L	1.0	U	1.0	U	5.0	U	5.0	U	2.0	U
CHLOROETHANE		UG/L	2.0	U	2.0	U	10	U	10	U	4.0	U
CHLOROFORM		UG/L	1.0	U	1.0	U	5.0	U	5.0	U	2.0	U
CHLOROMETHANE		UG/L	2.0	U	2.0	U	10	U	10	U	4.0	U
CIS-1,3-DICHLOROPROPENE		UG/L	1.0	U	1.0	U	5.0	U	5.0	U	2.0	U
DIBROMOCHLOROMETHANE		UG/L	1.0	U	1.0	U	5.0	U	5.0	U	2.0	U
ETHYLBENZENE		UG/L	1.0	U	1.0	U	5.0	U	5.0	U	2.0	U
METHYLENE CHLORIDE		UG/L	1.0	U	1.0	U	5.0	U	5.7	U	2.0	U
STYRENE		UG/L	1.0	U	1.0	U	5.0	U	5.0	U	2.0	U
TETRACHLOROETHENE		UG/L	1.0	U	1.0	U	5.0	U	5.0	U	2.0	U
TOLUENE		UG/L	1.0	U		U	5.0	U	5.0	U	2	U

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Sample Location:			PB-TNTA-MW10		PB-TNTA-MW11		PB-TNTC-MW3		PB-TNTC-MW4		PB-TNTC-MW5	
Sample No:			5610		5620		5630		5640		5650	
Sample Date:			18-NOV-97		18-NOV-97		21-NOV-97		24-NOV-97		21-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,1,1-TRICHLOROETHANE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,1,2,2-TETRACHLOROETHANE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,1,2-TRICHLOROETHANE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,1-DICHLOROETHANE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,1-DICHLOROETHENE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,2-DICHLOROETHANE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,2-DICHLOROETHENE (TOTAL)		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,2-DICHLOROPROPANE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
2-BUTANONE		UG/L	5.0	R	5.0	R	5.0	R	5.0	R	5.0	R
2-HEXANONE		UG/L	5.0	R	5.0	R	5.0	R	5.0	R	5.0	R
4-METHYL-2-PENTANONE		UG/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
ACETONE		UG/L	35	J	10	R	10	R	10	R	10	R
BENZENE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
BROMODICHLOROMETHANE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
BROMOFORM		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
BROMOMETHANE		UG/L	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
CARBON DISULFIDE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
CARBON TETRACHLORIDE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
CHLOROBENZENE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
CHLOROETHANE		UG/L	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
CHLOROFORM		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
CHLOROMETHANE		UG/L	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
CIS-1,3-DICHLOROPROPENE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
DIBROMOCHLOROMETHANE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
ETHYLBENZENE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
METHYLENE CHLORIDE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
STYRENE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
TETRACHLOROETHENE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
TOLUENE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U

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Sample Location:			PB-TNTC-MW6		PB-WA-MW1		PB-WA-MW2	
Sample No:			5660		5670		5680	
Sample Date:			20-NOV-97		21-NOV-97		23-NOV-97	
Depth			0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,1,1-TRICHLOROETHANE		UG/L	1.0	U	1.0	U	1.0	U
1,1,2,2-TETRACHLOROETHANE		UG/L	1.0	U	1.0	U	1.0	U
1,1,2-TRICHLOROETHANE		UG/L	1.0	U	1.0	U	1.0	U
1,1-DICHLOROETHANE		UG/L	1.0	U	1.0	U	1.0	U
1,1-DICHLOROETHENE		UG/L	1.0	U	1.0	U	1.0	U
1,2-DICHLOROETHANE		UG/L	1.0	U	1.0	U	1.0	U
1,2-DICHLOROETHENE (TOTAL)		UG/L	1.0	U	1.0	U	1.0	U
1,2-DICHLOROPROPANE		UG/L	1.0	U	1.0	U	1.0	U
2-BUTANONE		UG/L	5.0	R	5.0	R	5.0	R
2-HEXANONE		UG/L	5.0	R	5.0	R	5.0	R
4-METHYL-2-PENTANONE		UG/L	5.0	U	5.0	U	5.0	U
ACETONE		UG/L	10	R	10	R	10	R
BENZENE		UG/L	1.0	U	1.0	U	1.0	U
BROMODICHLOROMETHANE		UG/L	1.0	U	1.0	U	1.0	U
BROMOFORM		UG/L	1.0	U	1.0	U	1.0	U
BROMOMETHANE		UG/L	2.0	U	2.0	U	2.0	U
CARBON DISULFIDE		UG/L	1.0	U	1.0	U	1.0	U
CARBON TETRACHLORIDE		UG/L	1.0	U	1.0	U	1.0	U
CHLOROBENZENE		UG/L	1.0	U	1.0	U	1.0	U
CHLOROETHANE		UG/L	2.0	U	2.0	U	2.0	U
CHLOROFORM		UG/L	1.0	U	1.0	U	1.0	U
CHLOROMETHANE		UG/L	2.0	U	2.0	U	2.0	U
CIS-1,3-DICHLOROPROPENE		UG/L	1.0	U	1.0	U	1.0	U
DIBROMOCHLOROMETHANE		UG/L	1.0	U	1.0	U	1.0	U
ETHYLBENZENE		UG/L	1.0	U	1.0	U	1.0	U
METHYLENE CHLORIDE		UG/L	1.0	U	1.0	U	1.0	U
STYRENE		UG/L	1.0	U	1.0	U	1.0	U
TETRACHLOROETHENE		UG/L	1.0	U	1.0	U	1.0	U
TOLUENE		UG/L	1.0	U		U	1.0	U

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Sample Location:			GCL-MW01		GCL-MW02A		GCL-MW02B		GCL-MW03		IT-AA1-GW-002	
Sample No:			5850		5860		5870		5880		5490	
Sample Date:			20-NOV-97		20-NOV-97		20-NOV-97		20-NOV-97		20-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TRANS-1,3-DICHLOROPROPENE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
TRICHLOROETHENE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
VINYL CHLORIDE		UG/L	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
XYLENES (TOTAL)		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U

PLUMBROOK
Overburden Wells
Data Summary

Report Date: 03/12/98

Sample Location:			IT-AA3-GW-002		IT-ABG-GW-002		IT-MW01		IT-MW02		IT-MW05	
Sample No:			5510		5520		5530		5540		5550	
Sample Date:			19-NOV-97		19-NOV-97		19-NOV-97		21-NOV-97		19-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TRANS-1,3-DICHLOROPROPENE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
TRICHLOROETHENE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
VINYL CHLORIDE		UG/L	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
XYLENES (TOTAL)		UG/L	1.0	U	0.35	J	0.31	J	1.0	U	1.0	U

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Sample Location:			IT-MW06		IT-MW08		IT-MW09		IT-MW10		MK-MW09	
Sample No:			5560		5580		5590		5600		5720	
Sample Date:			19-NOV-97		19-NOV-97		23-NOV-97		14-NOV-97		16-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TRANS-1,3-DICHLOROPROPENE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
TRICHLOROETHENE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
VINYL CHLORIDE		UG/L	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
XYLENES (TOTAL)		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	0.13	J

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Data Summary

Report Date: 03/12/98

Sample Location:			MK-MW10		MK-MW11		MK-MW12		MK-MW14		MK-MW15	
Sample No:			5730		5740		5750		5760		5770	
Sample Date:			13-NOV-97		18-NOV-97		17-NOV-97		16-NOV-97		16-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TRANS-1,3-DICHLOROPROPENE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
TRICHLOROETHENE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
VINYL CHLORIDE		UG/L	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
XYLENES (TOTAL)		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U

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Sample Location:			MK-MW16		MK-MW17		MK-MW19		MK-MW20		MK-MW22	
Sample No:			5780		5790		5800		5810		5820	
Sample Date:			21-NOV-97		21-NOV-97		16-NOV-97		16-NOV-97		14-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TRANS-1,3-DICHLOROPROPENE		UG/L	1.0	U	1.0	U	1.0	U	500	U	1.0	U
TRICHLOROETHENE		UG/L	1.0	U	1.0	U	1.0	U	500	U	1.0	U
VINYL CHLORIDE		UG/L	2.0	U	2.0	U	2.0	U	1000	U	2.0	U
XYLENES (TOTAL)		UG/L	1.0	U	1.0	U	1.0	U	100	J	1.0	U

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Sample Location:			MK-MW23		MK-MW24		PB-PR-MW7		PB-PR-MW8		PB-PR-MW9	
Sample No:			5830		5840		5690		5700		5710	
Sample Date:			16-NOV-97		13-NOV-97		17-NOV-97		17-NOV-97		17-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TRANS-1,3-DICHLOROPROPENE		UG/L	1.0	U	1.0	U	5.0	U	5.0	U	2.0	U
TRICHLOROETHENE		UG/L	1.0	U	1.0	U	5.0	U	5.0	U	2.0	U
VINYL CHLORIDE		UG/L	2.0	U	2.0	U	10	U	10	U	4.0	U
XYLENES (TOTAL)		UG/L	1.0	U	1.0	U	5.0	U	5.0	U	2.0	U

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Sample Location:			PB-TNTA-MW10		PB-TNTA-MW11		PB-TNTC-MW3		PB-TNTC-MW4		PB-TNTC-MW5	
Sample No:			5610		5620		5630		5640		5650	
Sample Date:			18-NOV-97		18-NOV-97		21-NOV-97		24-NOV-97		21-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TRANS-1,3-DICHLOROPROPENE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
TRICHLOROETHENE		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
VINYL CHLORIDE		UG/L	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
XYLENES (TOTAL)		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U

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Sample Location:			PB-TNTC-MW6		PB-WA-MW1		PB-WA-MW2	
Sample No:			5660		5670		5680	
Sample Date:			20-NOV-97		21-NOV-97		23-NOV-97	
Depth			0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TRANS-1,3-DICHLOROPROPENE		UG/L	1.0	U	1.0	U	1.0	U
TRICHLOROETHENE		UG/L	1.0	U	1.0	U	1.0	U
VINYL CHLORIDE		UG/L	2.0	U	2.0	U	2.0	U
XYLENES (TOTAL)		UG/L	1.0	U	1.0	U	0.17	J

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Sample Location:			GCL-MW01		GCL-MW02A		GCL-MW02B		GCL-MW03		IT-AA1-GW-002	
Sample No:			5850		5860		5870		5880		5490	
Sample Date:			20-NOV-97		20-NOV-97		20-NOV-97		20-NOV-97		20-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:TOC-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL ORGANIC CARBON		MG/L	5.4		4.5		2.7		4.2		6.9	

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Sample Location:			IT-AA3-GW-002		IT-ABG-GW-002		IT-MW01		IT-MW02		IT-MW05	
Sample No:			5510		5520		5530		5540		5550	
Sample Date:			19-NOV-97		19-NOV-97		19-NOV-97		21-NOV-97		19-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:TOC-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL ORGANIC CARBON		MG/L	4.5		13		8.6		41		4.7	

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Sample Location:			IT-MW06		IT-MW08		IT-MW09		IT-MW10		MK-MW09	
Sample No:			5560		5580		5590		5600		5720	
Sample Date:			19-NOV-97		19-NOV-97		23-NOV-97		14-NOV-97		16-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:TOC-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL ORGANIC CARBON		MG/L	3.8		4.4		2.9		2.7		1.5	

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Sample Location:			MK-MW10		MK-MW11		MK-MW12		MK-MW14		MK-MW15	
Sample No:			5730		5740		5750		5760		5770	
Sample Date:			13-NOV-97		18-NOV-97		17-NOV-97		16-NOV-97		16-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:TOC-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL ORGANIC CARBON		MG/L	1.4		3.1		2.0		6.1		2.6	

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Sample Location:			MK-MW16		MK-MW17		MK-MW19		MK-MW20		MK-MW22	
Sample No:			5780		5790		5800		5810		5820	
Sample Date:			21-NOV-97		21-NOV-97		16-NOV-97		16-NOV-97		14-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:TOC-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL ORGANIC CARBON		MG/L	2.5		3.4		2.9		12		11	

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Sample Location:			MK-MW24		PB-PR-MW7		PB-PR-MW8		PB-PR-MW9		PB-TNTA-MW10	
Sample No:			5840		5690		5700		5710		5610	
Sample Date:			13-NOV-97		17-NOV-97		17-NOV-97		17-NOV-97		18-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:TOC-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL ORGANIC CARBON		MG/L	21		2700		14000		1300		4.2	

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Sample Location:			PB-TNTA-MW11		PB-TNTC-MW3		PB-TNTC-MW4		PB-TNTC-MW5		PB-TNTC-MW6	
Sample No:			5620		5630		5640		5650		5660	
Sample Date:			18-NOV-97		21-NOV-97		24-NOV-97		21-NOV-97		20-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:TOC-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL ORGANIC CARBON		MG/L	4.5		2.4		2.6		3.0		10	

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Sample Location:			PB-WA-MW1		PB-WA-MW2	
Sample No:			5670		5680	
Sample Date:			21-NOV-97		23-NOV-97	
Depth			0-0		0-0	
WELLS-W:TOC-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr
TOTAL ORGANIC CARBON		MG/L	2.1		970	

Sample Location:			GCL-MW01		GCL-MW02A		GCL-MW02B		GCL-MW03		IT-AA1-GW-002	
Sample No:			5850		5860		5870		5880		5490	
Sample Date:			20-NOV-97		20-NOV-97		20-NOV-97		20-NOV-97		20-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,2,4-TRICHLOROBENZENE		UG/L	15	U	10	U	10	U	10	U	10	U
1,2-DICHLOROBENZENE		UG/L	15	U	10	U	10	U	10	U	10	U
1,3-DICHLOROBENZENE		UG/L	15	U	10	U	10	U	10	U	10	U
1,4-DICHLOROBENZENE		UG/L	15	U	10	U	10	U	10	U	10	U
2,2'-OXYBIS(1-CHLOROPROPANE)		UG/L	15	U	10	U	10	U	10	U	10	U
2,4,5-TRICHLOROPHENOL		UG/L	15	U	10	U	10	U	10	U	10	U
2,4,6-TRICHLOROPHENOL		UG/L	15	U	10	U	10	U	10	U	10	U
2,4-DICHLOROPHENOL		UG/L	15	U	10	U	10	U	10	U	10	U
2,4-DIMETHYLPHENOL		UG/L	15	U	10	U	10	U	10	U	10	U
2,4-DINITROPHENOL		UG/L	73	U	50	U	50	U	50	U	50	U
2,4-DINITROTOLUENE		UG/L	15	U	10	U	10	U	10	U	10	U
2,6-DINITROTOLUENE		UG/L	15	U	10	U	10	U	10	U	10	U
2-CHLORONAPHTHALENE		UG/L	15	U	10	U	10	U	10	U	10	U
2-CHLOROPHENOL		UG/L	15	U	10	U	10	U	10	U	10	U
2-METHYLNAPHTHALENE		UG/L	15	U	10	U	10	U	10	U	10	U
2-METHYLPHENOL		UG/L	15	U	10	U	10	U	10	U	10	U
2-NITROANILINE		UG/L	73	U	50	U	50	U	50	U	50	U
2-NITROPHENOL		UG/L	15	U	10	U	10	U	10	U	10	U
3,3'-DICHLOROBENZIDINE		UG/L	73	U	50	U	50	U	50	U	50	U
3-NITROANILINE		UG/L	73	U	50	U	50	U	50	U	50	U
4,6-DINITRO-2-METHYLPHENOL		UG/L	73	U	50	U	50	U	50	U	50	U
4-BROMOPHENYL PHENYL ETHER		UG/L	15	U	10	U	10	U	10	U	10	U
4-CHLORO-3-METHYLPHENOL		UG/L	15	U	10	U	10	U	10	U	10	U
4-CHLOROANILINE		UG/L	15	U	10	U	10	U	10	U	10	U
4-CHLOROPHENYL PHENYL ETHER		UG/L	15	U	10	U	10	U	10	U	10	U
4-METHYLPHENOL		UG/L	15	U	10	U	10	U	10	U	10	U
4-NITROANILINE		UG/L	73	U	50	U	50	U	50	U	50	U
4-NITROPHENOL		UG/L	73	U	50	U	50	U	50	U	50	U
ACENAPHTHENE		UG/L	15	U	10	U	10	U	10	U	10	U

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Sample Location:			IT-AA3-GW-002		IT-ABG-GW-002		IT-MW01		IT-MW02		IT-MW05	
Sample No:			5510		5520		5530		5540		5550	
Sample Date:			19-NOV-97		19-NOV-97		19-NOV-97		21-NOV-97		19-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,2,4-TRICHLOROBENZENE		UG/L	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
1,3-DICHLOROBENZENE		UG/L	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
2,2'-OXYBIS(1-CHLOROPROPANE)		UG/L	10	U	10	U	10	U	10	U	10	U
2,4,5-TRICHLOROPHENOL		UG/L	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
2,4-DICHLOROPHENOL		UG/L	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
2,4-DINITROPHENOL		UG/L	50	U	50	U	50	U	50	U	50	U
2,4-DINITROTOLUENE		UG/L	10	U	10	U	10	U	43		10	U
2,6-DINITROTOLUENE		UG/L	10	U	10	U	10	U	7.1	J	10	U
2-CHLORONAPHTHALENE		UG/L	10	U	10	U	10	U	10	U	10	U
2-CHLOROPHENOL		UG/L	10	U	10	U	10	U	10	U	10	U
2-METHYLNAPHTHALENE		UG/L	10	U	10	U	10	U	10	U	10	U
2-METHYLPHENOL		UG/L	10	U	10	U	10	U	10	U	10	U
2-NITROANILINE		UG/L	50	U	50	U	50	U	1.5	J	50	U
2-NITROPHENOL		UG/L	10	U	10	U	10	U	10	U	10	U
3,3'-DICHLOROBENZIDINE		UG/L	50	U	50	U	50	U	50	U	50	U
3-NITROANILINE		UG/L	50	U	50	U	50	U	50	U	50	U
4,6-DINITRO-2-METHYLPHENOL		UG/L	50	U	50	U	50	U	12	J	50	U
4-BROMOPHENYL PHENYL ETHER		UG/L	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
4-CHLOROANILINE		UG/L	10	U	10	U	10	U	10	U	10	U
4-CHLOROPHENYL PHENYL ETHER		UG/L	10	U	10	U	10	U	10	U	10	U
4-METHYLPHENOL		UG/L	10	U	10	U	10	U	10	U	10	U
4-NITROANILINE		UG/L	50	U	50	U	50	U	50	U	50	U
4-NITROPHENOL		UG/L	50	U	50	U	50	U	50	U	50	U
ACENAPHTHENE		UG/L	10	U		U	10	U	10	U	1	U

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Sample Location:			IT-MW06		IT-MW08		IT-MW09		IT-MW10		MK-MW09	
Sample No:			5560		5580		5590		5600		5720	
Sample Date:			19-NOV-97		19-NOV-97		23-NOV-97		14-NOV-97		16-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,2,4-TRICHLOROBENZENE		UG/L	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
1,3-DICHLOROBENZENE		UG/L	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
2,2'-OXYBIS(1-CHLOROPROPANE)		UG/L	10	U	10	U	10	U	10	U	10	U
2,4,5-TRICHLOROPHENOL		UG/L	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
2,4-DICHLOROPHENOL		UG/L	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
2,4-DINITROPHENOL		UG/L	50	U	50	U	50	U	50	U	50	U
2,4-DINITROTOLUENE		UG/L	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
2-CHLORONAPHTHALENE		UG/L	10	U	10	U	10	U	10	U	10	U
2-CHLOROPHENOL		UG/L	10	U	10	U	10	U	10	U	10	U
2-METHYLNAPHTHALENE		UG/L	10	U	10	U	10	U	10	U	10	U
2-METHYLPHENOL		UG/L	10	U	10	U	10	U	10	U	10	U
2-NITROANILINE		UG/L	50	U	50	U	50	U	50	U	50	U
2-NITROPHENOL		UG/L	10	U	10	U	10	U	10	U	10	U
3,3'-DICHLOROBENZIDINE		UG/L	50	U	50	U	50	U	50	U	50	U
3-NITROANILINE		UG/L	50	U	50	U	50	U	50	U	50	U
4,6-DINITRO-2-METHYLPHENOL		UG/L	50	U	50	U	50	U	50	U	50	U
4-BROMOPHENYL PHENYL ETHER		UG/L	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
4-CHLOROANILINE		UG/L	10	U	10	U	10	U	10	U	10	U
4-CHLOROPHENYL PHENYL ETHER		UG/L	10	U	10	U	10	U	10	U	10	U
4-METHYLPHENOL		UG/L	10	U	10	U	10	U	10	U	10	U
4-NITROANILINE		UG/L	50	U	50	U	50	U	50	U	50	U
4-NITROPHENOL		UG/L	50	U	50	U	50	U	50	U	50	U
ACENAPHTHENE		UG/L	10	U	10	U	10	U	10	U	10	U

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Sample Location:			MK-MW10		MK-MW11		MK-MW12		MK-MW14		MK-MW15	
Sample No:			5730		5740		5750		5760		5770	
Sample Date:			13-NOV-97		18-NOV-97		17-NOV-97		16-NOV-97		16-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,2,4-TRICHLOROBENZENE		UG/L	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
1,3-DICHLOROBENZENE		UG/L	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
2,2'-OXYBIS(1-CHLOROPROPANE)		UG/L	10	U	10	U	10	U	10	U	10	U
2,4,5-TRICHLOROPHENOL		UG/L	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
2,4-DICHLOROPHENOL		UG/L	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
2,4-DINITROPHENOL		UG/L	50	U	50	U	50	U	50	U	50	U
2,4-DINITROTOLUENE		UG/L	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
2-CHLORONAPHTHALENE		UG/L	10	U	10	U	10	U	10	U	10	U
2-CHLOROPHENOL		UG/L	10	U	10	U	10	U	10	U	10	U
2-METHYLNAPHTHALENE		UG/L	10	U	10	U	10	U	10	U	10	U
2-METHYLPHENOL		UG/L	10	U	10	U	10	U	10	U	10	U
2-NITROANILINE		UG/L	50	U	50	U	50	U	50	U	50	U
2-NITROPHENOL		UG/L	10	U	10	U	10	U	10	U	10	U
3,3'-DICHLOROBENZIDINE		UG/L	50	U	50	U	50	U	50	U	50	U
3-NITROANILINE		UG/L	50	U	50	U	50	U	50	U	50	U
4,6-DINITRO-2-METHYLPHENOL		UG/L	50	U	50	U	50	U	50	U	50	U
4-BROMOPHENYL PHENYL ETHER		UG/L	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
4-CHLOROANILINE		UG/L	10	U	10	U	10	U	10	U	10	U
4-CHLOROPHENYL PHENYL ETHER		UG/L	10	U	10	U	10	U	10	U	10	U
4-METHYLPHENOL		UG/L	10	U	10	U	10	U	10	U	10	U
4-NITROANILINE		UG/L	50	U	50	U	50	U	50	U	50	U
4-NITROPHENOL		UG/L	50	U	50	U	50	U	50	U	50	U
ACENAPHTHENE		UG/L	10	U		U	10	U	10	U	1	U

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Sample Location:			MK-MW16		MK-MW17		MK-MW19		MK-MW20		MK-MW22	
Sample No:			5780		5790		5800		5810		5820	
Sample Date:			21-NOV-97		21-NOV-97		16-NOV-97		16-NOV-97		14-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,2,4-TRICHLOROBENZENE		UG/L	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
1,3-DICHLOROBENZENE		UG/L	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
2,2'-OXYBIS(1-CHLOROPROPANE)		UG/L	10	U	10	U	10	U	10	U	10	U
2,4,5-TRICHLOROPHENOL		UG/L	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
2,4-DICHLOROPHENOL		UG/L	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
2,4-DINITROPHENOL		UG/L	50	U	50	U	50	U	50	U	50	U
2,4-DINITROTOLUENE		UG/L	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
2-CHLORONAPHTHALENE		UG/L	10	U	10	U	10	U	10	U	10	U
2-CHLOROPHENOL		UG/L	10	U	10	U	10	U	10	U	10	U
2-METHYLNAPHTHALENE		UG/L	10	U	10	U	10	U	10	U	10	U
2-METHYLPHENOL		UG/L	10	U	10	U	10	U	1300		10	U
2-NITROANILINE		UG/L	50	U	50	U	50	U	50	U	50	U
2-NITROPHENOL		UG/L	10	U	10	U	10	U	10	U	10	U
3,3'-DICHLOROBENZIDINE		UG/L	50	U	50	U	50	U	50	U	50	U
3-NITROANILINE		UG/L	50	U	50	U	50	U	50	U	50	U
4,6-DINITRO-2-METHYLPHENOL		UG/L	50	U	50	U	50	U	50	U	50	U
4-BROMOPHENYL PHENYL ETHER		UG/L	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
4-CHLOROANILINE		UG/L	10	U	10	U	10	U	10	U	10	U
4-CHLOROPHENYL PHENYL ETHER		UG/L	10	U	10	U	10	U	10	U	10	U
4-METHYLPHENOL		UG/L	10	U	10	U	10	U	1200		10	U
4-NITROANILINE		UG/L	50	U	50	U	50	U	50	U	50	U
4-NITROPHENOL		UG/L	50	U	50	U	50	U	50	U	50	U
ACENAPHTHENE		UG/L	10	U	10	U	10	U	10	U	10	U

Sample Location:			MK-MW23		MK-MW24		PB-PR-MW7		PB-PR-MW8		PB-PR-MW9	
Sample No:			5830		5840		5690		5700		5710	
Sample Date:			16-NOV-97		13-NOV-97		17-NOV-97		17-NOV-97		17-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,2,4-TRICHLOROBENZENE		UG/L	10	U	10	U	1000	U	1000	U	100	U
1,2-DICHLOROBENZENE		UG/L	10	U	10	U	1000	U	1000	U	100	U
1,3-DICHLOROBENZENE		UG/L	10	U	10	U	1000	U	1000	U	100	U
1,4-DICHLOROBENZENE		UG/L	10	U	10	U	1000	U	1000	U	100	U
2,2'-OXYBIS(1-CHLOROPROPANE)		UG/L	10	U	10	U	1000	U	1000	U	100	U
2,4,5-TRICHLOROPHENOL		UG/L	10	U	10	U	1000	U	1000	U	100	U
2,4,6-TRICHLOROPHENOL		UG/L	10	U	10	U	1000	U	1000	U	100	U
2,4-DICHLOROPHENOL		UG/L	10	U	10	U	1000	U	1000	U	100	U
2,4-DIMETHYLPHENOL		UG/L	10	U	10	U	1000	U	1000	U	100	U
2,4-DINITROPHENOL		UG/L	50	U	50	U	5000	U	6000		48	J
2,4-DINITROTOLUENE		UG/L	10	U	10	U	1800		1500		110	
2,6-DINITROTOLUENE		UG/L	10	U	10	U	140	J	190	J	100	U
2-CHLORONAPHTHALENE		UG/L	10	U	10	U	1000	U	1000	U	100	U
2-CHLOROPHENOL		UG/L	10	U	10	U	1000	U	1000	U	100	U
2-METHYLNAPHTHALENE		UG/L	10	U	10	U	1000	U	1000	U	100	U
2-METHYLPHENOL		UG/L	10	U	10	U	1000	U	1000	U	100	U
2-NITROANILINE		UG/L	50	U	50	U	5000	U	5000	U	500	U
2-NITROPHENOL		UG/L	10	U	10	U	1000	U	1000	U	100	U
3,3'-DICHLOROBENZIDINE		UG/L	50	U	50	U	5000	U	5000	U	500	U
3-NITROANILINE		UG/L	50	U	50	U	5000	U	160	J	450	J
4,6-DINITRO-2-METHYLPHENOL		UG/L	50	U	50	U	660	J	2300	J	500	U
4-BROMOPHENYL PHENYL ETHER		UG/L	10	U	10	U	1000	U	1000	U	100	U
4-CHLORO-3-METHYLPHENOL		UG/L	10	U	10	U	1000	U	1000	U	100	U
4-CHLOROANILINE		UG/L	10	U	10	U	1000	U	1000	U	100	U
4-CHLOROPHENYL PHENYL ETHER		UG/L	10	U	10	U	1000	U	1000	U	100	U
4-METHYLPHENOL		UG/L	10	U	10	U	1000	U	1000	U	100	U
4-NITROANILINE		UG/L	50	U	50	U	5000	U	5000	U	500	U
4-NITROPHENOL		UG/L	50	U	50	U	5000	U	5000	U	500	U
ACENAPHTHENE		UG/L	10	U		U	1000	U	1000	U	1	U

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Sample Location:			PB-TNTA-MW10		PB-TNTA-MW11		PB-TNTC-MW3		PB-TNTC-MW4		PB-TNTC-MW5	
Sample No:			5610		5620		5630		5640		5650	
Sample Date:			18-NOV-97		18-NOV-97		21-NOV-97		24-NOV-97		21-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,2,4-TRICHLOROBENZENE		UG/L	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
1,3-DICHLOROBENZENE		UG/L	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
2,2'-OXYBIS(1-CHLOROPROPANE)		UG/L	10	U	10	U	10	U	10	U	10	U
2,4,5-TRICHLOROPHENOL		UG/L	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
2,4-DICHLOROPHENOL		UG/L	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
2,4-DINITROPHENOL		UG/L	50	U	50	U	50	U	50	U	50	U
2,4-DINITROTOLUENE		UG/L	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
2-CHLORONAPHTHALENE		UG/L	10	U	10	U	10	U	10	U	10	U
2-CHLOROPHENOL		UG/L	10	U	10	U	10	U	10	U	10	U
2-METHYLNAPHTHALENE		UG/L	10	U	10	U	10	U	10	U	10	U
2-METHYLPHENOL		UG/L	10	U	10	U	10	U	10	U	10	U
2-NITROANILINE		UG/L	50	U	50	U	50	U	50	U	50	U
2-NITROPHENOL		UG/L	10	U	10	U	10	U	10	U	10	U
3,3'-DICHLOROBENZIDINE		UG/L	50	U	50	U	50	U	50	U	50	U
3-NITROANILINE		UG/L	50	U	50	U	50	U	50	U	50	U
4,6-DINITRO-2-METHYLPHENOL		UG/L	50	U	50	U	50	U	50	U	50	U
4-BROMOPHENYL PHENYL ETHER		UG/L	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
4-CHLOROANILINE		UG/L	10	U	10	U	10	U	10	U	10	U
4-CHLOROPHENYL PHENYL ETHER		UG/L	10	U	10	U	10	U	10	U	10	U
4-METHYLPHENOL		UG/L	10	U	10	U	10	U	10	U	10	U
4-NITROANILINE		UG/L	50	U	50	U	50	U	50	U	50	U
4-NITROPHENOL		UG/L	50	U	50	U	50	U	50	U	50	U
ACENAPHTHENE		UG/L	10	U	10	U	10	U	10	U	10	U

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Sample Location:			PB-TNTC-MW6		PB-WA-MW1		PB-WA-MW2	
Sample No:			5660		5670		5680	
Sample Date:			20-NOV-97		21-NOV-97		23-NOV-97	
Depth			0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,2,4-TRICHLOROBENZENE		UG/L	10	U	10	U	1000	U
1,2-DICHLOROBENZENE		UG/L	10	U	10	U	1000	U
1,3-DICHLOROBENZENE		UG/L	10	U	10	U	1000	U
1,4-DICHLOROBENZENE		UG/L	10	U	10	U	1000	U
2,2'-OXYBIS(1-CHLOROPROPANE)		UG/L	10	U	10	U	1000	U
2,4,5-TRICHLOROPHENOL		UG/L	10	U	10	U	1000	U
2,4,6-TRICHLOROPHENOL		UG/L	10	U	10	U	1000	U
2,4-DICHLOROPHENOL		UG/L	10	U	10	U	1000	U
2,4-DIMETHYLPHENOL		UG/L	10	U	10	U	1000	U
2,4-DINITROPHENOL		UG/L	50	U	50	U	5000	U
2,4-DINITROTOLUENE		UG/L	10	U	10	U	1000	U
2,6-DINITROTOLUENE		UG/L	10	U	10	U	1000	U
2-CHLORONAPHTHALENE		UG/L	10	U	10	U	1000	U
2-CHLOROPHENOL		UG/L	10	U	10	U	1000	U
2-METHYLNAPHTHALENE		UG/L	10	U	10	U	1000	U
2-METHYLPHENOL		UG/L	10	U	10	U	1000	U
2-NITROANILINE		UG/L	50	U	50	U	5000	U
2-NITROPHENOL		UG/L	10	U	10	U	1000	U
3,3'-DICHLOROBENZIDINE		UG/L	50	U	50	U	5000	U
3-NITROANILINE		UG/L	50	U	50	U	5000	U
4,6-DINITRO-2-METHYLPHENOL		UG/L	50	U	50	U	5000	U
4-BROMOPHENYL PHENYL ETHER		UG/L	10	U	10	U	1000	U
4-CHLORO-3-METHYLPHENOL		UG/L	10	U	10	U	1000	U
4-CHLOROANILINE		UG/L	10	U	10	U	1000	U
4-CHLOROPHENYL PHENYL ETHER		UG/L	10	U	10	U	1000	U
4-METHYLPHENOL		UG/L	10	U	10	U	1000	U
4-NITROANILINE		UG/L	50	U	50	U	5000	U
4-NITROPHENOL		UG/L	50	U	50	U	5000	U
ACENAPHTHENE		UG/L	10	U		U	1000	U

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Sample Location:			GCL-MW01		GCL-MW02A		GCL-MW02B		GCL-MW03		IT-AA1-GW-002	
Sample No:			5850		5860		5870		5880		5490	
Sample Date:			20-NOV-97		20-NOV-97		20-NOV-97		20-NOV-97		20-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
ACENAPHTHYLENE		UG/L	15	U	10	U	10	U	10	U	10	U
ANTHRACENE		UG/L	15	U	10	U	10	U	10	U	10	U
BENZO(A)ANTHRACENE		UG/L	15	U	10	U	10	U	10	U	10	U
BENZO(A)PYRENE		UG/L	15	U	10	U	10	U	10	U	10	U
BENZO(B)FLUORANTHENE		UG/L	15	U	10	U	10	U	10	U	10	U
BENZO(GHI)PERYLENE		UG/L	15	U	10	U	10	U	10	U	10	U
BENZO(K)FLUORANTHENE		UG/L	15	U	10	U	10	U	10	U	10	U
BIS(2-CHLOROETHOXY)METHANE		UG/L	15	U	10	U	10	U	10	U	10	U
BIS(2-CHLOROETHYL) ETHER		UG/L	15	U	10	U	10	U	10	U	10	U
BIS(2-ETHYLHEXYL) PHTHALATE		UG/L	100		10	U	10	U	10	U	10	U
BUTYL BENZYL PHTHALATE		UG/L	15	U	10	U	10	U	10	U	10	U
CARBAZOLE		UG/L	15	U	10	U	10	U	10	U	10	U
CHRYSENE		UG/L	15	U	10	U	10	U	10	U	10	U
DI-N-BUTYL PHTHALATE		UG/L	15	U	10	U	10	U	10	U	10	U
DI-N-OCTYL PHTHALATE		UG/L	15	U	10	U	10	U	10	U	10	U
DIBENZ(A,H)ANTHRACENE		UG/L	15	U	10	U	10	U	10	U	10	U
DIBENZOFURAN		UG/L	15	U	10	U	10	U	10	U	10	U
DIETHYL PHTHALATE		UG/L	15	U	10	U	2.7	J	10	U	10	U
DIMETHYL PHTHALATE		UG/L	15	U	10	U	10	U	10	U	10	U
FLUORANTHENE		UG/L	15	U	10	U	10	U	10	U	10	U
FLUORENE		UG/L	15	U	10	U	10	U	10	U	10	U
HEXACHLOROBENZENE		UG/L	15	U	10	U	10	U	10	U	10	U
HEXACHLOROBUTADIENE		UG/L	15	U	10	U	10	U	10	U	10	U
HEXACHLOROCYCLOPENTADIENE		UG/L	73	U	50	U	50	U	50	U	50	U
HEXACHLOROETHANE		UG/L	15	U	10	U	10	U	10	U	10	U
INDENO(1,2,3-CD)PYRENE		UG/L	15	U	10	U	10	U	10	U	10	U
ISOPHORONE		UG/L	15	U	10	U	10	U	10	U	10	U
N-NITROSODI-N-PROPYLAMINE		UG/L	15	U	10	U	10	U	10	U	10	U
N-NITROSODIPHENYLAMINE		UG/L	15	U	10	U	10	U	10	U	10	U

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Sample Location:			IT-AA3-GW-002		IT-ABG-GW-002		IT-MW01		IT-MW02		IT-MW05	
Sample No:			5510		5520		5530		5540		5550	
Sample Date:			19-NOV-97		19-NOV-97		19-NOV-97		21-NOV-97		19-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
ACENAPHTHYLENE		UG/L	10	U	10	U	10	U	10	U	10	U
ANTHRACENE		UG/L	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
BENZO(A)PYRENE		UG/L	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
BENZO(GHI)PERYLENE		UG/L	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
BIS(2-CHLOROETHOXY)METHANE		UG/L	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
BIS(2-ETHYLHEXYL) PHTHALATE		UG/L	10	U	10	U	10	U	10	U	10	U
BUTYL BENZYL PHTHALATE		UG/L	10	U	10	U	10	U	10	U	10	U
CARBAZOLE		UG/L	10	U	10	U	10	U	10	U	10	U
CHRYSENE		UG/L	10	U	10	U	10	U	10	U	10	U
DI-N-BUTYL PHTHALATE		UG/L	10	U	10	U	10	U	10	U	10	U
DI-N-OCTYL PHTHALATE		UG/L	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
DIBENZOFURAN		UG/L	10	U	10	U	10	U	10	U	10	U
DIETHYL PHTHALATE		UG/L	10	U	10	U	10	U	10	U	10	U
DIMETHYL PHTHALATE		UG/L	10	U	10	U	10	U	10	U	10	U
FLUORANTHENE		UG/L	10	U	10	U	10	U	10	U	10	U
FLUORENE		UG/L	10	U	10	U	10	U	10	U	10	U
HEXACHLOROBENZENE		UG/L	10	U	10	U	10	U	10	U	10	U
HEXACHLOROBUTADIENE		UG/L	10	U	10	U	10	U	10	U	10	U
HEXACHLOROCYCLOPENTADIENE		UG/L	50	U	50	U	50	U	50	U	50	U
HEXACHLOROETHANE		UG/L	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
ISOPHORONE		UG/L	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
N-NITROSODIPHI AMINE		UG/L	10	U		U	10	U	10	U	1	U

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Sample Location:			IT-MW06		IT-MW08		IT-MW09		IT-MW10		MK-MW09	
Sample No:			5560		5580		5590		5600		5720	
Sample Date:			19-NOV-97		19-NOV-97		23-NOV-97		14-NOV-97		16-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
ACENAPHTHYLENE		UG/L	10	U	10	U	10	U	10	U	10	U
ANTHRACENE		UG/L	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
BENZO(A)PYRENE		UG/L	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
BENZO(GHI)PERYLENE		UG/L	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
BIS(2-CHLOROETHOXY)METHANE		UG/L	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
BIS(2-ETHYLHEXYL) PHTHALATE		UG/L	10	U	10	U	10	U	5.1	J	10	U
BUTYL BENZYL PHTHALATE		UG/L	10	U	10	U	10	U	10	U	10	U
CARBAZOLE		UG/L	10	U	10	U	10	U	10	U	10	U
CHRYSENE		UG/L	10	U	10	U	10	U	10	U	10	U
DI-N-BUTYL PHTHALATE		UG/L	10	U	10	U	10	U	10	U	10	U
DI-N-OCTYL PHTHALATE		UG/L	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
DIBENZOFURAN		UG/L	10	U	10	U	10	U	10	U	10	U
DIETHYL PHTHALATE		UG/L	10	U	10	U	10	U	10	U	10	U
DIMETHYL PHTHALATE		UG/L	10	U	10	U	10	U	10	U	10	U
FLUORANTHENE		UG/L	10	U	10	U	10	U	10	U	10	U
FLUORENE		UG/L	10	U	10	U	10	U	10	U	10	U
HEXACHLOROBENZENE		UG/L	10	U	10	U	10	U	10	U	10	U
HEXACHLOROBUTADIENE		UG/L	10	U	10	U	10	U	10	U	10	U
HEXACHLOROCYCLOPENTADIENE		UG/L	50	U	50	U	50	U	50	U	50	U
HEXACHLOROETHANE		UG/L	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
ISOPHORONE		UG/L	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
N-NITROSODIPHENYLAMINE		UG/L	10	U	10	U	10	U	10	U	10	U

Sample Location:			MK-MW10		MK-MW11		MK-MW12		MK-MW14		MK-MW15	
Sample No:			5730		5740		5750		5760		5770	
Sample Date:			13-NOV-97		18-NOV-97		17-NOV-97		16-NOV-97		16-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
ACENAPHTHYLENE		UG/L	10	U	10	U	10	U	10	U	10	U
ANTHRACENE		UG/L	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
BENZO(A)PYRENE		UG/L	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
BENZO(GHI)PERYLENE		UG/L	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
BIS(2-CHLOROETHOXY)METHANE		UG/L	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
BIS(2-ETHYLHEXYL) PHTHALATE		UG/L	11		10	U	28		1.7	J	6.0	J
BUTYL BENZYL PHTHALATE		UG/L	10	U	10	U	10	U	10	U	10	U
CARBAZOLE		UG/L	10	U	10	U	10	U	10	U	10	U
CHRYSENE		UG/L	10	U	10	U	10	U	10	U	10	U
DI-N-BUTYL PHTHALATE		UG/L	10	U	10	U	10	U	10	U	10	U
DI-N-OCTYL PHTHALATE		UG/L	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
DIBENZOFURAN		UG/L	10	U	10	U	10	U	10	U	10	U
DIETHYL PHTHALATE		UG/L	10	U	10	U	10	U	10	U	10	U
DIMETHYL PHTHALATE		UG/L	10	U	10	U	10	U	10	U	10	U
FLUORANTHENE		UG/L	10	U	10	U	10	U	10	U	10	U
FLUORENE		UG/L	10	U	10	U	10	U	10	U	10	U
HEXACHLOROBENZENE		UG/L	10	U	10	U	10	U	10	U	10	U
HEXACHLOROBUTADIENE		UG/L	10	U	10	U	10	U	10	U	10	U
HEXACHLOROCYCLOPENTADIENE		UG/L	50	U	50	U	50	U	50	U	50	U
HEXACHLOROETHANE		UG/L	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
ISOPHORONE		UG/L	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
N-NITROSODIPH AMINE		UG/L	10	U		U	10	U	10	U	1	U

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Sample Location:			MK-MW16		MK-MW17		MK-MW19		MK-MW20		MK-MW22	
Sample No:			5780		5790		5800		5810		5820	
Sample Date:			21-NOV-97		21-NOV-97		16-NOV-97		16-NOV-97		14-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
ACENAPHTHYLENE		UG/L	10	U	10	U	10	U	10	U	10	U
ANTHRACENE		UG/L	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
BENZO(A)PYRENE		UG/L	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
BENZO(GHI)PERYLENE		UG/L	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
BIS(2-CHLOROETHOXY)METHANE		UG/L	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
BIS(2-ETHYLHEXYL) PHTHALATE		UG/L	2.4	J	10	U	10	U	5.0	J	10	U
BUTYL BENZYL PHTHALATE		UG/L	10	U	10	U	10	U	10	U	10	U
CARBAZOLE		UG/L	10	U	10	U	10	U	10	U	10	U
CHRYSENE		UG/L	10	U	10	U	10	U	10	U	10	U
DI-N-BUTYL PHTHALATE		UG/L	10	U	10	U	10	U	10	U	10	U
DI-N-OCTYL PHTHALATE		UG/L	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
DIBENZOFURAN		UG/L	10	U	10	U	10	U	10	U	10	U
DIETHYL PHTHALATE		UG/L	10	U	10	U	10	U	10	U	10	U
DIMETHYL PHTHALATE		UG/L	10	U	10	U	10	U	10	U	10	U
FLUORANTHENE		UG/L	10	U	10	U	10	U	10	U	10	U
FLUORENE		UG/L	10	U	10	U	10	U	10	U	10	U
HEXACHLOROBENZENE		UG/L	10	U	10	U	10	U	10	U	10	U
HEXACHLOROBUTADIENE		UG/L	10	U	10	U	10	U	10	U	10	U
HEXACHLOROCYCLOPENTADIENE		UG/L	50	U	50	U	50	U	50	U	50	U
HEXACHLOROETHANE		UG/L	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
ISOPHORONE		UG/L	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
N-NITROSODIPHENYLAMINE		UG/L	10	U	10	U	10	U	10	U	10	U

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Sample Location:			MK-MW23		MK-MW24		PB-PR-MW7		PB-PR-MW8		PB-PR-MW9	
Sample No:			5830		5840		5690		5700		5710	
Sample Date:			16-NOV-97		13-NOV-97		17-NOV-97		17-NOV-97		17-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
ACENAPHTHYLENE		UG/L	10	U	10	U	1000	U	1000	U	100	U
ANTHRACENE		UG/L	10	U	10	U	1000	U	1000	U	100	U
BENZO(A)ANTHRACENE		UG/L	10	U	10	U	1000	U	1000	U	100	U
BENZO(A)PYRENE		UG/L	10	U	10	U	1000	UJ	1000	UJ	100	UJ
BENZO(B)FLUORANTHENE		UG/L	10	U	10	U	1000	UJ	1000	UJ	100	UJ
BENZO(GHI)PERYLENE		UG/L	10	U	10	U	1000	UJ	1000	UJ	100	UJ
BENZO(K)FLUORANTHENE		UG/L	10	U	10	U	1000	UJ	1000	UJ	100	UJ
BIS(2-CHLOROETHOXY)METHANE		UG/L	10	U	10	U	1000	U	1000	U	100	U
BIS(2-CHLOROETHYL) ETHER		UG/L	10	U	10	U	1000	U	1000	U	100	U
BIS(2-ETHYLHEXYL) PHTHALATE		UG/L	10	U	10	U	1000	U	1000	U	100	U
BUTYL BENZYL PHTHALATE		UG/L	10	U	10	U	1000	U	1000	U	100	U
CARBAZOLE		UG/L	10	U	10	U	1000	U	1000	U	100	U
CHRYSENE		UG/L	10	U	10	U	1000	U	1000	U	100	U
DI-N-BUTYL PHTHALATE		UG/L	10	U	10	U	1000	U	1000	U	100	U
DI-N-OCTYL PHTHALATE		UG/L	9.3	J	10	U	1000	UJ	1000	UJ	100	UJ
DIBENZ(A,H)ANTHRACENE		UG/L	10	U	10	U	1000	UJ	1000	UJ	100	UJ
DIBENZOFURAN		UG/L	10	U	10	U	1000	U	1000	U	100	U
DIETHYL PHTHALATE		UG/L	10	U	10	U	1000	U	1000	U	100	U
DIMETHYL PHTHALATE		UG/L	10	U	10	U	1000	U	1000	U	100	U
FLUORANTHENE		UG/L	10	U	10	U	1000	U	1000	U	100	U
FLUORENE		UG/L	10	U	10	U	1000	U	1000	U	100	U
HEXACHLOROBENZENE		UG/L	10	U	10	U	1000	U	1000	U	100	U
HEXACHLOROBUTADIENE		UG/L	10	U	10	U	1000	U	1000	U	100	U
HEXACHLOROCYCLOPENTADIENE		UG/L	50	U	50	U	5000	U	5000	U	500	U
HEXACHLOROETHANE		UG/L	10	U	10	U	1000	U	1000	U	100	U
INDENO(1,2,3-CD)PYRENE		UG/L	10	U	10	U	1000	UJ	1000	UJ	100	UJ
ISOPHORONE		UG/L	10	U	10	U	1000	U	1000	U	100	U
N-NITROSODI-N-PROPYLAMINE		UG/L	10	U	10	U	1000	U	1000	U	100	U
N-NITROSODIPH[illegible]AMINE		UG/L	10	U	[illegible]	U	1000	U	1000	U	[illegible]	U

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Sample Location:			PB-TNTA-MW10		PB-TNTA-MW11		PB-TNTC-MW3		PB-TNTC-MW4		PB-TNTC-MW5	
Sample No:			5610		5620		5630		5640		5650	
Sample Date:			18-NOV-97		18-NOV-97		21-NOV-97		24-NOV-97		21-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
ACENAPHTHYLENE		UG/L	10	U	10	U	10	U	10	U	10	U
ANTHRACENE		UG/L	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
BENZO(A)PYRENE		UG/L	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
BENZO(GHI)PERYLENE		UG/L	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
BIS(2-CHLOROETHOXY)METHANE		UG/L	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
BIS(2-ETHYLHEXYL) PHTHALATE		UG/L	10	U	10	U	10	U	10	U	10	U
BUTYL BENZYL PHTHALATE		UG/L	10	U	10	U	10	U	10	U	10	U
CARBAZOLE		UG/L	10	U	10	U	10	U	10	U	10	U
CHRYSENE		UG/L	10	U	10	U	10	U	10	U	10	U
DI-N-BUTYL PHTHALATE		UG/L	10	U	10	U	10	U	10	U	10	U
DI-N-OCTYL PHTHALATE		UG/L	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
DIBENZOFURAN		UG/L	10	U	10	U	10	U	10	U	10	U
DIETHYL PHTHALATE		UG/L	10	U	10	U	10	U	10	U	10	U
DIMETHYL PHTHALATE		UG/L	10	U	10	U	10	U	10	U	10	U
FLUORANTHENE		UG/L	10	U	10	U	10	U	10	U	10	U
FLUORENE		UG/L	10	U	10	U	10	U	10	U	10	U
HEXACHLOROBENZENE		UG/L	10	U	10	U	10	U	10	U	10	U
HEXACHLOROBUTADIENE		UG/L	10	U	10	U	10	U	10	U	10	U
HEXACHLOROCYCLOPENTADIENE		UG/L	50	U	50	U	50	U	50	U	50	U
HEXACHLOROETHANE		UG/L	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
ISOPHORONE		UG/L	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
N-NITROSODIPHENYLAMINE		UG/L	10	U	10	U	10	U	10	U	10	U

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Sample Location:			PB-TNTC-MW6		PB-WA-MW1		PB-WA-MW2	
Sample No:			5660		5670		5680	
Sample Date:			20-NOV-97		21-NOV-97		23-NOV-97	
Depth			0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
ACENAPHTHYLENE		UG/L	10	U	10	U	1000	U
ANTHRACENE		UG/L	10	U	10	U	1000	U
BENZO(A)ANTHRACENE		UG/L	10	U	10	U	1000	U
BENZO(A)PYRENE		UG/L	10	U	10	U	1000	U
BENZO(B)FLUORANTHENE		UG/L	10	U	10	U	1000	U
BENZO(GHI)PERYLENE		UG/L	10	U	10	U	1000	U
BENZO(K)FLUORANTHENE		UG/L	10	U	10	U	1000	U
BIS(2-CHLOROETHOXY)METHANE		UG/L	10	U	10	U	1000	U
BIS(2-CHLOROETHYL) ETHER		UG/L	10	U	10	U	1000	U
BIS(2-ETHYLHEXYL) PHTHALATE		UG/L	7.3	J	10	U	1000	U
BUTYL BENZYL PHTHALATE		UG/L	10	U	10	U	1000	U
CARBAZOLE		UG/L	10	U	10	U	1000	U
CHRYSENE		UG/L	10	U	10	U	1000	U
DI-N-BUTYL PHTHALATE		UG/L	10	U	10	U	1000	U
DI-N-OCTYL PHTHALATE		UG/L	10	U	2.7	J	1000	U
DIBENZ(A,H)ANTHRACENE		UG/L	10	U	10	U	1000	U
DIBENZOFURAN		UG/L	10	U	10	U	1000	U
DIETHYL PHTHALATE		UG/L	10	U	10	U	1000	U
DIMETHYL PHTHALATE		UG/L	10	U	10	U	1000	U
FLUORANTHENE		UG/L	10	U	10	U	1000	U
FLUORENE		UG/L	10	U	10	U	1000	U
HEXACHLOROBENZENE		UG/L	10	U	10	U	1000	U
HEXACHLOROBUTADIENE		UG/L	10	U	10	U	1000	U
HEXACHLOROCYCLOPENTADIENE		UG/L	50	U	50	U	5000	U
HEXACHLOROETHANE		UG/L	10	U	10	U	1000	U
INDENO(1,2,3-CD)PYRENE		UG/L	10	U	10	U	1000	U
ISOPHORONE		UG/L	10	U	10	U	1000	U
N-NITROSODI-N-PROPYLAMINE		UG/L	10	U	10	U	1000	U
N-NITROSODIPHE[illegible]AMINE		UG/L	10	U		U	1000	U

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Sample Location:			GCL-MW01		GCL-MW02A		GCL-MW02B		GCL-MW03		IT-AA1-GW-002	
Sample No:			5850		5860		5870		5880		5490	
Sample Date:			20-NOV-97		20-NOV-97		20-NOV-97		20-NOV-97		20-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
NAPHTHALENE		UG/L	15	U	10	U	10	U	10	U	10	U
NITROBENZENE		UG/L	15	U	10	U	10	U	10	U	10	U
PENTACHLOROPHENOL		UG/L	73	U	50	U	50	U	50	U	50	U
PHENANTHRENE		UG/L	15	U	10	U	10	U	10	U	10	U
PHENOL		UG/L	15	U	10	U	10	U	10	U	10	U
PYRENE		UG/L	15	U	10	U	10	U	10	U	10	U

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Sample Location:			IT-AA3-GW-002		IT-ABG-GW-002		IT-MW01		IT-MW02		IT-MW05	
Sample No:			5510		5520		5530		5540		5550	
Sample Date:			19-NOV-97		19-NOV-97		19-NOV-97		21-NOV-97		19-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
NAPHTHALENE		UG/L	10	U	10	U	10	U	10	U	10	U
NITROBENZENE		UG/L	10	U	10	U	10	U	10	U	10	U
PENTACHLOROPHENOL		UG/L	50	U	50	U	50	U	50	U	50	U
PHENANTHRENE		UG/L	10	U	10	U	10	U	10	U	10	U
PHENOL		UG/L	10	U	10	U	10	U	10	U	10	U
PYRENE		UG/L	10	U	10	U	10	U	10	U	10	U

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Sample Location:			IT-MW06		IT-MW08		IT-MW09		IT-MW10		MK-MW09	
Sample No:			5560		5580		5590		5600		5720	
Sample Date:			19-NOV-97		19-NOV-97		23-NOV-97		14-NOV-97		16-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
NAPHTHALENE		UG/L	10	U	10	U	10	U	10	U	10	U
NITROBENZENE		UG/L	10	U	10	U	10	U	10	U	10	U
PENTACHLOROPHENOL		UG/L	50	U	50	U	50	U	50	U	50	U
PHENANTHRENE		UG/L	10	U	10	U	10	U	10	U	10	U
PHENOL		UG/L	10	U	10	U	10	U	10	U	10	U
PYRENE		UG/L	10	U	10	U	10	U	10	U	10	U

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Sample Location:			MK-MW10		MK-MW11		MK-MW12		MK-MW14		MK-MW15	
Sample No:			5730		5740		5750		5760		5770	
Sample Date:			13-NOV-97		18-NOV-97		17-NOV-97		16-NOV-97		16-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
NAPHTHALENE		UG/L	10	U	10	U	10	U	10	U	10	U
NITROBENZENE		UG/L	10	U	10	U	10	U	10	U	10	U
PENTACHLOROPHENOL		UG/L	50	U	50	U	50	U	50	U	50	U
PHENANTHRENE		UG/L	10	U	10	U	10	U	10	U	10	U
PHENOL		UG/L	10	U	10	U	10	U	10	U	10	U
PYRENE		UG/L	10	U	10	U	10	U	10	U	10	U

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Sample Location:			MK-MW16		MK-MW17		MK-MW19		MK-MW20		MK-MW22	
Sample No:			5780		5790		5800		5810		5820	
Sample Date:			21-NOV-97		21-NOV-97		16-NOV-97		16-NOV-97		14-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
NAPHTHALENE		UG/L	10	U	10	U	10	U	10	U	10	U
NITROBENZENE		UG/L	10	U	10	U	10	U	10	U	10	U
PENTACHLOROPHENOL		UG/L	50	U	50	U	50	U	50	U	50	U
PHENANTHRENE		UG/L	10	U	10	U	10	U	10	U	10	U
PHENOL		UG/L	10	U	10	U	10	U	6.8	J	10	U
PYRENE		UG/L	10	U	10	U	10	U	10	U	10	U

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Sample Location:			MK-MW23		MK-MW24		PB-PR-MW7		PB-PR-MW8		PB-PR-MW9	
Sample No:			5830		5840		5690		5700		5710	
Sample Date:			16-NOV-97		13-NOV-97		17-NOV-97		17-NOV-97		17-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
NAPHTHALENE		UG/L	10	U	10	U	1000	U	1000	U	100	U
NITROBENZENE		UG/L	10	U	10	U	1000	U	1000	U	100	U
PENTACHLOROPHENOL		UG/L	50	U	50	U	5000	U	5000	U	500	U
PHENANTHRENE		UG/L	10	U	10	U	1000	U	1000	U	100	U
PHENOL		UG/L	10	U	10	U	1000	U	1000	U	100	U
PYRENE		UG/L	10	U	10	U	1000	U	1000	U	100	U

Sample Location:			PB-TNTA-MW10		PB-TNTA-MW11		PB-TNTC-MW3		PB-TNTC-MW4		PB-TNTC-MW5	
Sample No:			5610		5620		5630		5640		5650	
Sample Date:			18-NOV-97		18-NOV-97		21-NOV-97		24-NOV-97		21-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
NAPHTHALENE		UG/L	10	U	10	U	10	U	10	U	10	U
NITROBENZENE		UG/L	10	U	10	U	10	U	10	U	10	U
PENTACHLOROPHENOL		UG/L	50	U	50	U	50	U	50	U	50	U
PHENANTHRENE		UG/L	10	U	10	U	10	U	10	U	10	U
PHENOL		UG/L	10	U	10	U	10	U	10	U	10	U
PYRENE		UG/L	10	U	10	U	10	U	10	U	10	U

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Sample Location:			PB-TNTC-MW6		PB-WA-MW1		PB-WA-MW2	
Sample No:			5660		5670		5680	
Sample Date:			20-NOV-97		21-NOV-97		23-NOV-97	
Depth			0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
NAPHTHALENE		UG/L	10	U	10	U	1000	U
NITROBENZENE		UG/L	10	U	10	U	1000	U
PENTACHLOROPHENOL		UG/L	50	U	50	U	5000	U
PHENANTHRENE		UG/L	10	U	10	U	1000	U
PHENOL		UG/L	10	U	10	U	1000	U
PYRENE		UG/L	10	U	10	U	1000	U

Sample Location:			GCL-MW01		GCL-MW02A		GCL-MW02B		GCL-MW03		IT-AA1-GW-002	
Sample No:			5850		5860		5870		5880		5490	
Sample Date:			20-NOV-97		20-NOV-97		20-NOV-97		20-NOV-97		20-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:PEST/PCB-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
AROCLOR 1016		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
AROCLOR 1221		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
AROCLOR 1232		UG/L	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
AROCLOR 1248		UG/L	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
AROCLOR 1260		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U

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Sample Location:			IT-AA3-GW-002		IT-ABG-GW-002		IT-MW01		IT-MW02		IT-MW05	
Sample No:			5510		5520		5530		5540		5550	
Sample Date:			19-NOV-97		19-NOV-97		19-NOV-97		21-NOV-97		19-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:PEST/PCB-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
AROCLOR 1016		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
AROCLOR 1221		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
AROCLOR 1232		UG/L	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
AROCLOR 1248		UG/L	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
AROCLOR 1260		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U

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Sample Location:			IT-MW06		IT-MW08		IT-MW09		IT-MW10		MK-MW09	
Sample No:			5560		5580		5590		5600		5720	
Sample Date:			19-NOV-97		19-NOV-97		23-NOV-97		14-NOV-97		16-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:PEST/PCB-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
AROCLOR 1016		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
AROCLOR 1221		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
AROCLOR 1232		UG/L	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
AROCLOR 1248		UG/L	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
AROCLOR 1260		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U

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Sample Location:			MK-MW10		MK-MW11		MK-MW12		MK-MW14		MK-MW15	
Sample No:			5730		5740		5750		5760		5770	
Sample Date:			13-NOV-97		18-NOV-97		17-NOV-97		16-NOV-97		16-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:PEST/PCB-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
AROCLOR 1016		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
AROCLOR 1221		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
AROCLOR 1232		UG/L	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
AROCLOR 1248		UG/L	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
AROCLOR 1260		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U

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Sample Location:			MK-MW16		MK-MW17		MK-MW19		MK-MW20		MK-MW22	
Sample No:			5780		5790		5800		5810		5820	
Sample Date:			21-NOV-97		21-NOV-97		16-NOV-97		16-NOV-97		14-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:PEST/PCB-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
AROCLOR 1016		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
AROCLOR 1221		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
AROCLOR 1232		UG/L	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
AROCLOR 1248		UG/L	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
AROCLOR 1260		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U

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Sample Location:			MK-MW24		PB-PR-MW7		PB-PR-MW8		PB-PR-MW9		PB-TNTA-MW10	
Sample No:			5840		5690		5700		5710		5610	
Sample Date:			13-NOV-97		17-NOV-97		17-NOV-97		17-NOV-97		18-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:PEST/PCB-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
AROCLOR 1016		UG/L	1.0	U	50	U	50	U	1.0	U	1.0	U
AROCLOR 1221		UG/L	1.0	U	50	U	50	U	1.0	U	1.0	U
AROCLOR 1232		UG/L	1.0	U	50	U	50	U	1.0	U	1.0	U
AROCLOR 1242		UG/L	1.0	U	50	U	50	U	1.0	U	1.0	U
AROCLOR 1248		UG/L	1.0	U	50	U	50	U	1.0	U	1.0	U
AROCLOR 1254		UG/L	1.0	U	50	U	50	U	1.0	U	1.0	U
AROCLOR 1260		UG/L	1.0	U	50	U	50	U	1.0	U	1.0	U

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Sample Location:			PB-TNTA-MW11		PB-TNTC-MW3		PB-TNTC-MW4		PB-TNTC-MW5		PB-TNTC-MW6	
Sample No:			5620		5630		5640		5650		5660	
Sample Date:			18-NOV-97		21-NOV-97		24-NOV-97		21-NOV-97		20-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:PEST/PCB-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
AROCLOR 1016		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
AROCLOR 1221		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
AROCLOR 1232		UG/L	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
AROCLOR 1248		UG/L	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
AROCLOR 1260		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U

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Sample Location:			PB-WA-MW1		PB-WA-MW2	
Sample No:			5670		5680	
Sample Date:			21-NOV-97		23-NOV-97	
Depth			0-0		0-0	
WELLS-W:PEST/PCB-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr
AROCLOR 1016		UG/L	1.0	U	1.0	U
AROCLOR 1221		UG/L	1.0	U	1.0	U
AROCLOR 1232		UG/L	1.0	U	1.0	U
AROCLOR 1242		UG/L	1.0	U	1.0	U
AROCLOR 1248		UG/L	1.0	U	1.0	U
AROCLOR 1254		UG/L	1.0	U	1.0	U
AROCLOR 1260		UG/L	1.0	U	1.0	U

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Overburden Wells
Data Summary

Report Date: 03/12/98

Sample Location:			GCL-MW01		GCL-MW02A		GCL-MW02B		GCL-MW03		IT-AA1-GW-002	
Sample No:			5850		5860		5870		5880		5490	
Sample Date:			20-NOV-97		20-NOV-97		20-NOV-97		20-NOV-97		20-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
ALUMINUM		MG/L	9.41	J	.878	J	.451	J	2.39	J	2.02	J
ALUMINUM	Y	MG/L	.2	U	.2	U	.2	U	.2	U	.2	U
ANTIMONY		MG/L	.06	U	.06	U	.06	U	.06	U	.06	U
ANTIMONY	Y	MG/L	.06	U	.06	U	.06	U	.06	U	.06	U
ARSENIC		MG/L	.0363		.01	U	.01	U	.0402		.02	U
ARSENIC	Y	MG/L	.01	U	.01	U	.01	U	.01	U	.02	U
BARIUM		MG/L	.2	U	.2	U	.2	U	.2	U	.2	U
BARIUM	Y	MG/L	.2	U	.2	U	.2	U	.2	U	.2	U
BERYLLIUM		MG/L	.005	U	.005	U	.005	U	.005	U	.005	U
BERYLLIUM	Y	MG/L	.005	U	.005	U	.005	U	.005	U	.005	U
CADMIUM		MG/L	.005	U	.005	U	.005	U	.005	U	.005	U
CADMIUM	Y	MG/L	.005	U	.005	U	.005	U	.005	U	.005	U
CALCIUM		MG/L	75.5	J	95.2		101	J	70.7	J	601	
CALCIUM	Y	MG/L	75.4		94.4		111		64.1		549	
CHROMIUM		MG/L	.0449		.0227		.0119		.01	U	.01	U
CHROMIUM	Y	MG/L	.01	U	.01	U	.01	U	.01	U	.01	U
COBALT		MG/L	.05	U	.05	U	.05	U	.05	U	.05	U
COBALT	Y	MG/L	.05	U	.05	U	.05	U	.05	U	.05	U
COPPER		MG/L	.048		.025	U	.025	U	.025	U	.025	U
COPPER	Y	MG/L	.025	U	.025	U	.025	U	.025	U	.025	U
IRON		MG/L	76.6		3.13		3.75		26.3		32.9	
IRON	Y	MG/L	4.35		.806		1.13		.892		14.4	
LEAD		MG/L	.0177		.003	U	.003	U	.003	U	.006	U
LEAD	Y	MG/L	.003	U	.003	U	.0032		.003	U	.006	U
MAGNESIUM		MG/L	31.5		19.3		23		20		199	
MAGNESIUM	Y	MG/L	30		19.2		24.9		17.8		305	
MANGANESE		MG/L	.432		.434		.475		.493		5.41	
MANGANESE	Y	MG/L	.35		.421		.507		.369		4.74	
MERCURY		MG/L	.0002	U	.0002	U	.0002	U	.0002	U	.0002	U

PLUMBROOK
Overburden Wells
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Sample Location:			IT-AA3-GW-002		IT-ABG-GW-002		IT-MW01		IT-MW02		IT-MW05	
Sample No:			5510		5520		5530		5540		5550	
Sample Date:			19-NOV-97		19-NOV-97		19-NOV-97		21-NOV-97		19-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
ALUMINUM		MG/L	11.6	J	34.5	J	.2	U	.2	UJ	3.97	J
ALUMINUM	Y	MG/L	.2	U	.2	U	.2	U	.2	U	.2	U
ANTIMONY		MG/L	.06	U	.06	U	.06	U	.06	U	.06	U
ANTIMONY	Y	MG/L	.06	U	.06	U	.06	U	.06	U	.06	U
ARSENIC		MG/L	.0103		.0662		.01	U	.01	U	.0115	
ARSENIC	Y	MG/L	.01	U	.01	U	.01	U	.01	U	.0125	
BARIUM		MG/L	.2	U	.314		.2	U	.2	U	.2	U
BARIUM	Y	MG/L	.2	U	.2	U	.2	U	.2	U	.2	U
BERYLLIUM		MG/L	.005	U	.005	U	.005	U	.005	U	.005	U
BERYLLIUM	Y	MG/L	.005	U	.005	U	.005	U	.005	U	.005	U
CADMIUM		MG/L	.005	U	.005	U	.005	U	.005	U	.005	U
CADMIUM	Y	MG/L	.005	U	.005	U	.005	U	.005	U	.005	U
CALCIUM		MG/L	205		491		46.4		150	J	116	
CALCIUM	Y	MG/L	131		393		44.9		147		99.5	
CHROMIUM		MG/L	.0228		.0698		.01	U	.01	U	.0106	
CHROMIUM	Y	MG/L	.01	U	.01	U	.01	U	.01	U	.01	U
COBALT		MG/L	.05	U	.0723		.05	U	.05	U	.05	U
COBALT	Y	MG/L	.05	U	.05	U	.05	U	.05	U	.05	U
COPPER		MG/L	.0336		.243		.025	U	.0626		.025	U
COPPER	Y	MG/L	.025	U	.025	U	.025	U	.0416		.025	U
IRON		MG/L	27.3		103		1.32		.1	U	14.7	
IRON	Y	MG/L	.1	U	4.89		1.09		.1	U	3.05	
LEAD		MG/L	.0166		.1		.003	U	.003	U	.0066	
LEAD	Y	MG/L	.003	U	.003	U	.003	U	.003	U	.003	U
MAGNESIUM		MG/L	52.1		113		17.5		70.5		38.4	
MAGNESIUM	Y	MG/L	29.3		85.3		17		68		36.5	
MANGANESE		MG/L	.816		3.01		.323		.896		.302	
MANGANESE	Y	MG/L	.0788		2.5		.331		.877		.114	
MERCURY		MG/L	.0002	U	2	U	.00045		.0002	U	[illegible]	

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Sample Location:			IT-MW06		IT-MW08		IT-MW09		IT-MW10		MK-MW09	
Sample No:			5560		5580		5590		5600		5720	
Sample Date:			19-NOV-97		19-NOV-97		23-NOV-97		14-NOV-97		16-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
ALUMINUM		MG/L	.2	U	.2	U	1.2	J	1.04		.282	U
ALUMINUM	Y	MG/L	.2	U	.2	U	.2	U	.2	U	.2	U
ANTIMONY		MG/L	.06	U	.06	U	.06	U	.06	U	.06	U
ANTIMONY	Y	MG/L	.06	U	.06	U	.06	U	.06	U	.06	U
ARSENIC		MG/L	.01	U	.01	U	.01	U	.01	U	.01	U
ARSENIC	Y	MG/L	.01	U	.01	U	.01	U	.01	U	.01	U
BARIUM		MG/L	.2	U	.2	U	.2	U	.2	U	.2	U
BARIUM	Y	MG/L	.2	U	.2	U	.2	U	.2	U	.2	U
BERYLLIUM		MG/L	.005	U	.005	U	.005	U	.005	U	.005	U
BERYLLIUM	Y	MG/L	.005	U	.005	U	.005	U	.005	U	.005	U
CADMIUM		MG/L	.005	U	.005	U	.005	U	.005	U	.005	U
CADMIUM	Y	MG/L	.005	U	.005	U	.005	U	.005	U	.005	U
CALCIUM		MG/L	142		342		426	J	183	J	103	
CALCIUM	Y	MG/L	128		345		402		188		106	J
CHROMIUM		MG/L	.01	U	.01	U	.0104		.01	U	.01	U
CHROMIUM	Y	MG/L	.01	U	.01	U	.01	U	.01	U	.01	U
COBALT		MG/L	.05	U	.05	U	.05	U	.05	U	.05	U
COBALT	Y	MG/L	.05	U	.05	U	.05	U	.05	U	.05	U
COPPER		MG/L	.025	U	.025	U	.025	U	.025	U	.025	U
COPPER	Y	MG/L	.025	U	.025	U	.025	U	.025	U	.025	U
IRON		MG/L	1.62		.498		3.37		3.04		.493	
IRON	Y	MG/L	.1	U	.443		.282		.1	U	.329	
LEAD		MG/L	.003	U	.003	U	.0047	U	.0045		.0085	
LEAD	Y	MG/L	.003	U	.003	U	.003	U	.003	U	.003	U
MAGNESIUM		MG/L	23.5		136		253		83.7		27.6	
MAGNESIUM	Y	MG/L	21.4		139		246		86.3		28.1	
MANGANESE		MG/L	.34		.361		.249		1.67		.015	U
MANGANESE	Y	MG/L	.015	U	.328		.372		1.63		.015	U
MERCURY		MG/L	.0003		.00024		.0002	U	.0002	U	.0002	U

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Sample Location:			MK-MW10		MK-MW11		MK-MW12		MK-MW14		MK-MW15	
Sample No:			5730		5740		5750		5760		5770	
Sample Date:			13-NOV-97		18-NOV-97		17-NOV-97		16-NOV-97		16-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
ALUMINUM		MG/L	1.14		5.08		.31		.52		.292	
ALUMINUM	Y	MG/L	.2	U	.2	U	.2	U	.2	U	.2	U
ANTIMONY		MG/L	.06	U	.06	U	.06	U	.06	U	.06	U
ANTIMONY	Y	MG/L	.06	U	.06	U	.06	U	.06	U	.06	U
ARSENIC		MG/L	.01	U	.01	U	.01	U	.01	U	.01	U
ARSENIC	Y	MG/L	.01	U	.01	U	.01	U	.01	U	.01	U
BARIUM		MG/L	.2	U	.2	U	.2	U	.2	U	.2	U
BARIUM	Y	MG/L	.2	U	.2	U	.2	U	.2	U	.2	U
BERYLLIUM		MG/L	.005	U	.005	U	.005	U	.005	U	.005	U
BERYLLIUM	Y	MG/L	.005	U	.005	U	.005	U	.005	U	.005	U
CADMIUM		MG/L	.005	U	.005	U	.005	U	.005	U	.005	U
CADMIUM	Y	MG/L	.005	U	.005	U	.005	U	.005	U	.005	U
CALCIUM		MG/L	99.2	J	161		133		172	J	114	J
CALCIUM	Y	MG/L	96.7		142	J	131	J	216		118	
CHROMIUM		MG/L	.01	U	.0126		.01	U	.01	U	.01	U
CHROMIUM	Y	MG/L	.01	U	.01	U	.01	U	.01	U	.01	U
COBALT		MG/L	.05	U	.05	U	.05	U	.05	U	.05	U
COBALT	Y	MG/L	.05	U	.05	U	.05	U	.05	U	.05	U
COPPER		MG/L	.025	U	.025	U	.025	U	.025	U	.025	U
COPPER	Y	MG/L	.025	U	.025	U	.025	U	.025	U	.025	U
IRON		MG/L	2.08		12.3		.83		19.3		12.7	
IRON	Y	MG/L	.1	U	.1	U	.173		22.9		12.7	
LEAD		MG/L	.0035		.0094		.003	U	.003	U	.0071	
LEAD	Y	MG/L	.003	U	.003	U	.003	U	.003	U	.005	
MAGNESIUM		MG/L	27.6		39.4		21.9		26.5		17.6	
MAGNESIUM	Y	MG/L	26.2		33.3		21.6		32.3		17.8	
MANGANESE		MG/L	.0909		.344		1.13		.37		.608	
MANGANESE	Y	MG/L	.0654		.015	U	1.06		.449		.617	
MERCURY		MG/L	.0002	U		U	.0002	U	.0002	U	.0[illegible]	U

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Sample Location:			MK-MW16		MK-MW17		MK-MW19		MK-MW20		MK-MW22	
Sample No:			5780		5790		5800		5810		5820	
Sample Date:			21-NOV-97		21-NOV-97		16-NOV-97		16-NOV-97		14-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
ALUMINUM		MG/L	4.99	J	1.83	J	.2	U	18.4		7.79	
ALUMINUM	Y	MG/L	1.08		.2	U	.2	U	.2	U	.2	U
ANTIMONY		MG/L	.06	U	.06	U	.06	U	.06	U	.06	U
ANTIMONY	Y	MG/L	.06	U	.06	U	.06	U	.06	U	.06	U
ARSENIC		MG/L	.01	U	.0126		.01	U	.0158		.01	U
ARSENIC	Y	MG/L	.01	U	.01	U	.01	U	.01	U	.01	U
BARIUM		MG/L	.2	U	.2	U	.2	U	.2	U	.2	U
BARIUM	Y	MG/L	.2	U	.2	U	.2	U	.2	U	.2	U
BERYLLIUM		MG/L	.005	U	.005	U	.005	U	.005	U	.005	U
BERYLLIUM	Y	MG/L	.005	U	.005	U	.005	U	.005	U	.005	U
CADMIUM		MG/L	.005	U	.005	U	.005	U	.005	U	.005	U
CADMIUM	Y	MG/L	.005	U	.005	U	.005	U	.005	U	.005	U
CALCIUM		MG/L	146	J	127	J	158		240		118	J
CALCIUM	Y	MG/L	147		114		176	J	167	J	127	
CHROMIUM		MG/L	.01	U	.01	U	.01	U	.0427		.0166	
CHROMIUM	Y	MG/L	.01	U	.01	U	.01	U	.01	U	.01	U
COBALT		MG/L	.05	U	.0788		.05	U	.05	U	.05	U
COBALT	Y	MG/L	.05	U	.0729		.05	U	.05	U	.05	U
COPPER		MG/L	.025	U	.025	U	.025	U	.0297		.025	U
COPPER	Y	MG/L	.025	U	.025	U	.025	U	.025	U	.025	U
IRON		MG/L	19.8		44.3		.239		46.7		10.9	
IRON	Y	MG/L	2.41		34.1		.385		.716		.1	U
LEAD		MG/L	.008	U	.0044	U	.003	U	.0131		.0067	
LEAD	Y	MG/L	.003	U	.003	U	.003	U	.003	U	.003	U
MAGNESIUM		MG/L	53.8		29.9		34.9		96.2		17.5	
MAGNESIUM	Y	MG/L	52.3		26.3		38.3		108		17.9	
MANGANESE		MG/L	6.97		1.41		.0234		.994		.185	
MANGANESE	Y	MG/L	6.9		1.26		.0292		.0653		.149	
MERCURY		MG/L	.0002	U	.0002	U	.0002	U	.0002	U	.0002	U

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Sample Location:			MK-MW23		MK-MW24		PB-PR-MW7		PB-PR-MW8		PB-PR-MW9	
Sample No:			5830		5840		5690		5700		5710	
Sample Date:			16-NOV-97		13-NOV-97		17-NOV-97		17-NOV-97		17-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
ALUMINUM		MG/L	27.3		6.62		8.96	J	20	U	20	U
ALUMINUM	Y	MG/L	.2	U	.2	U	2	U	20	U	20	U
ANTIMONY		MG/L	.06	U	.06	U	.6	U	6	U	6	U
ANTIMONY	Y	MG/L	.06	U	.06	U	.6	U	6	U	6	U
ARSENIC		MG/L	.0598		.01	U	.1	U	1	U	1	U
ARSENIC	Y	MG/L	.0138		.01	U	.1	U	1	U	1	U
BARIUM		MG/L	.2	U	.2	U	2	U	20	U	20	U
BARIUM	Y	MG/L	.2	U	.2	U	2	U	20	U	20	U
BERYLLIUM		MG/L	.005	U	.005	U	.05	U	.5	U	.5	U
BERYLLIUM	Y	MG/L	.005	U	.005	U	.05	U	.5	U	.5	U
CADMIUM		MG/L	.005	U	.005	U	.05	U	.5	U	.5	U
CADMIUM	Y	MG/L	.005	U	.005	U	.05	U	.5	U	.5	U
CALCIUM		MG/L	236		641	J	625		749		500	U
CALCIUM	Y	MG/L	140	J	984		582		753	J	500	U
CHROMIUM		MG/L	.0571		.0252		.1	U	1	U	1	U
CHROMIUM	Y	MG/L	.01	U	.0142		.1	U	1	U	1	U
COBALT		MG/L	.0508		.05	U	2.32		7.27		5	U
COBALT	Y	MG/L	.05	U	.05	U	2.33		6.77		5	U
COPPER		MG/L	.0473		.025	U	.887		3.79		2.5	U
COPPER	Y	MG/L	.025	U	.025	U	.911		3.39		2.5	U
IRON		MG/L	68.2		13.5		21.7		22		10	U
IRON	Y	MG/L	.139	U	2.92		1.36		12.2		10	U
LEAD		MG/L	.0298		.0131		.03	U	.3	U	.3	U
LEAD	Y	MG/L	.003	U	.003	U	.03	U	.3	U	.3	U
MAGNESIUM		MG/L	61.4		47.4		189		541		500	U
MAGNESIUM	Y	MG/L	49.9		41.3		184		500	U	500	U
MANGANESE		MG/L	1.37		.788		17		34.1		1.9	
MANGANESE	Y	MG/L	.265		.562		17		29.7		1.89	
MERCURY		MG/L	.0002	U	[illegible]	U	.0002	U	.001	U	.[illegible]	U

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Overburden Wells
Data Summary

Report Date: 03/12/98

Sample Location:			PB-TNTA-MW10		PB-TNTA-MW11		PB-TNTC-MW3		PB-TNTC-MW4		PB-TNTC-MW5	
Sample No:			5610		5620		5630		5640		5650	
Sample Date:			18-NOV-97		18-NOV-97		21-NOV-97		24-NOV-97		21-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
ALUMINUM		MG/L	.877	J	3.17	J	.2	UJ	3.82	J	3.49	J
ALUMINUM	Y	MG/L	.2	U	.2	U	.2	U	.432		.2	U
ANTIMONY		MG/L	.06	U	.06	U	.06	U	.06	U	.06	U
ANTIMONY	Y	MG/L	.06	U	.06	U	.06	U	.06	U	.06	U
ARSENIC		MG/L	.0122		.0105		.01	U	.0215		.0101	
ARSENIC	Y	MG/L	.01	U	.01	U	.01	U	.01	U	.01	U
BARIUM		MG/L	.373		.2	U	.2	U	.2	U	.2	U
BARIUM	Y	MG/L	.338		.2	U	.2	U	.2	U	.2	U
BERYLLIUM		MG/L	.005	U	.005	U	.005	U	.005	U	.005	U
BERYLLIUM	Y	MG/L	.005	U	.005	U	.005	U	.005	U	.005	U
CADMIUM		MG/L	.005	U	.005	U	.005	U	.005	U	.005	U
CADMIUM	Y	MG/L	.005	U	.005	U	.005	U	.005	U	.005	U
CALCIUM		MG/L	186		180		566	J	285	J	146	J
CALCIUM	Y	MG/L	191		167		529		386		138	
CHROMIUM		MG/L	.01	U	.0156		.01	U	.0252		.0184	
CHROMIUM	Y	MG/L	.01	U	.01	U	.01	U	.01	U	.01	U
COBALT		MG/L	.05	U	.05	U	.0675		.05	U	.05	U
COBALT	Y	MG/L	.05	U	.05	U	.05	U	.05	U	.05	U
COPPER		MG/L	.025	U	.025	U	.025	U	.025	U	.025	U
COPPER	Y	MG/L	.025	U	.025	U	.025	U	.025	U	.025	U
IRON		MG/L	18.2		13.3		.805		17.4		13.9	
IRON	Y	MG/L	7.61		.1	U	.132	U	.403		.1	U
LEAD		MG/L	.003	U	.0104		.003	U	.0145		.0138	
LEAD	Y	MG/L	.003	U	.003	U	.003	U	.011		.0042	
MAGNESIUM		MG/L	52.9		63		215		145		55.9	
MAGNESIUM	Y	MG/L	54.8		62.9		204		181		54.6	
MANGANESE		MG/L	1.53		1.03		2.95		.8		.713	
MANGANESE	Y	MG/L	1.44		.865		2.9		1.12		.522	
MERCURY		MG/L	.0002	U	.0002	U	.0002	U	.0002	U	.0002	U

PLUMBROOK
Overburden Wells
Data Summary

Report Date: 03/12/98

Sample Location:			PB-TNTC-MW6		PB-WA-MW1		PB-WA-MW2	
Sample No:			5660		5670		5680	
Sample Date:			20-NOV-97		21-NOV-97		23-NOV-97	
Depth			0-0		0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
ALUMINUM		MG/L	.496	J	2.71	J	3.72	J
ALUMINUM	Y	MG/L	.2	U	.2	U	2	U
ANTIMONY		MG/L	.06	U	.06	U	.06	U
ANTIMONY	Y	MG/L	.06	U	.06	U	.6	U
ARSENIC		MG/L	.01	U	.01	U	.03	U
ARSENIC	Y	MG/L	.01	U	.01	U	.1	U
BARIUM		MG/L	.2	U	.2	U	.2	U
BARIUM	Y	MG/L	.2	U	.2	U	2	U
BERYLLIUM		MG/L	.005	U	.005	U	.005	U
BERYLLIUM	Y	MG/L	.005	U	.005	U	.05	U
CADMIUM		MG/L	.005	U	.005	U	.005	U
CADMIUM	Y	MG/L	.005	U	.005	U	.05	U
CALCIUM		MG/L	223		150	J	497	J
CALCIUM	Y	MG/L	243		136		472	
CHROMIUM		MG/L	.01	U	.01	U	.0128	
CHROMIUM	Y	MG/L	.01	U	.01	U	.1	U
COBALT		MG/L	.05	U	.05	U	.142	
COBALT	Y	MG/L	.05	U	.05	U	.5	U
COPPER		MG/L	.025	U	.025	U	.0702	
COPPER	Y	MG/L	.025	U	.025	U	.25	U
IRON		MG/L	2.46		5.6		7.93	
IRON	Y	MG/L	1.57		.15	U	1	U
LEAD		MG/L	.003	U	.0047	U	.0097	U
LEAD	Y	MG/L	.003	U	.003	U	.03	U
MAGNESIUM		MG/L	15.6		58.1		181	
MAGNESIUM	Y	MG/L	17.5		54.6		170	
MANGANESE		MG/L	3.7		.235		1.66	
MANGANESE	Y	MG/L	4.02		.163		1.62	
MERCURY		MG/L	.0002	U		U	.0002	U

PLUMBROOK
Overburden Wells
Data Summary

Report Date: 03/12/98

Sample Location:			GCL-MW01		GCL-MW02A		GCL-MW02B		GCL-MW03		IT-AA1-GW-002	
Sample No:			5850		5860		5870		5880		5490	
Sample Date:			20-NOV-97		20-NOV-97		20-NOV-97		20-NOV-97		20-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
MERCURY	Y	MG/L	.0002	U	.0002	U	.0002	U	.0002	U	.0002	U
NICKEL		MG/L	.0718		.04	U	.04	U	.04	U	.04	U
NICKEL	Y	MG/L	.04	U	.04	U	.04	U	.04	U	.04	U
POTASSIUM		MG/L	5	U	5	U	5	U	5	U	5	U
POTASSIUM	Y	MG/L	5	U	5	U	5	U	5	U	6.71	
SELENIUM		MG/L	.0204		.005	U	.005	U	.005	U	.01	U
SELENIUM	Y	MG/L	.005	U	.005	U	.005	U	.005	U	.01	U
SILVER		MG/L	.01	U	.01	U	.01	U	.01	U	.01	U
SILVER	Y	MG/L	.01	U	.01	U	.01	U	.01	U	.01	U
SODIUM		MG/L	8.35	J	16.2		9.23	J	5.51	J	21.4	
SODIUM	Y	MG/L	8.55		16.4		9.59		5.1		39.6	
THALLIUM		MG/L	.01	U	.01	U	.01	U	.01	U	.02	U
THALLIUM	Y	MG/L	.01	U	.01	U	.01	U	.01	U	.02	U
VANADIUM		MG/L	.05	U	.05	U	.05	U	.05	U	.05	U
VANADIUM	Y	MG/L	.05	U	.05	U	.05	U	.05	U	.05	U
ZINC		MG/L	.116		.02	U	.02	U	.04	U	.0674	
ZINC	Y	MG/L	.022	J	.0306	U	.0237	J	.02	UJ	.0335	U

PLUMBROOK
Overburden Wells
Data Summary

Report Date: 03/12/98

Sample Location:			IT-AA3-GW-002		IT-ABG-GW-002		IT-MW01		IT-MW02		IT-MW05	
Sample No:			5510		5520		5530		5540		5550	
Sample Date:			19-NOV-97		19-NOV-97		19-NOV-97		21-NOV-97		19-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
MERCURY	Y	MG/L	.0002	U	.0002	U	.0002	U	.0002	U	.0002	U
NICKEL		MG/L	.04	U	.212		.04	U	.04	U	.04	U
NICKEL	Y	MG/L	.04	U	.04	U	.04	U	.04	U	.04	U
POTASSIUM		MG/L	5	U	11.8		6.16		5	U	5	U
POTASSIUM	Y	MG/L	5	U	5.22		6.18		5	U	5	U
SELENIUM		MG/L	.005	U	.0082		.005	U	.005	U	.005	U
SELENIUM	Y	MG/L	.005	U	.005	U	.005	U	.005	U	.005	U
SILVER		MG/L	.01	U	.01	U	.01	U	.01	U	.01	U
SILVER	Y	MG/L	.01	U	.01	U	.01	U	.01	U	.01	U
SODIUM		MG/L	7.8		18.3		22.8		250	J	18.1	
SODIUM	Y	MG/L	7.18		20.4		22.2		244		19.1	
THALLIUM		MG/L	.01	U	.01	U	.01	U	.01	U	.01	U
THALLIUM	Y	MG/L	.01	U	.01	U	.01	U	.01	U	.01	U
VANADIUM		MG/L	.05	U	.158		.05	U	.05	U	.05	U
VANADIUM	Y	MG/L	.05	U	.05	U	.05	U	.05	U	.05	U
ZINC		MG/L	.0999		.836		.0516		.02	U	.0476	
ZINC	Y	MG/L	.0499		.02	U	.0469		.0272	J	.02	U

PLUMBROOK
Overburden Wells
Data Summary

Report Date: 03/12/98

Sample Location:			IT-MW06		IT-MW08		IT-MW09		IT-MW10		MK-MW09	
Sample No:			5560		5580		5590		5600		5720	
Sample Date:			19-NOV-97		19-NOV-97		23-NOV-97		14-NOV-97		16-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
MERCURY	Y	MG/L	.0002	U	.0002	U	.0002	U	.0002	U	.0002	U
NICKEL		MG/L	.04	U	.04	U	.04	U	.04	U	.04	U
NICKEL	Y	MG/L	.04	U	.04	U	.04	U	.04	U	.04	U
POTASSIUM		MG/L	5	U	14.9		25.6		5	U	5	U
POTASSIUM	Y	MG/L	5	U	15.3		26.5		5	U	5	U
SELENIUM		MG/L	.005	U	.005	U	.005	U	.005	U	.005	U
SELENIUM	Y	MG/L	.005	U	.005	U	.005	U	.005	U	.005	U
SILVER		MG/L	.01	U	.01	U	.01	U	.01	U	.01	U
SILVER	Y	MG/L	.01	U	.01	U	.01	U	.01	U	.01	U
SODIUM		MG/L	5	U	18.9		146	J	48.2		6.29	
SODIUM	Y	MG/L	5	U	19.5		144		50.2		6.47	
THALLIUM		MG/L	.01	U	.01	U	.01	U	.01	U	.01	U
THALLIUM	Y	MG/L	.01	U	.01	U	.01	U	.01	U	.01	U
VANADIUM		MG/L	.05	U	.05	U	.05	U	.05	U	.05	U
VANADIUM	Y	MG/L	.05	U	.05	U	.05	U	.05	U	.05	U
ZINC		MG/L	.0474		.0234		.0272		.02	U	.02	U
ZINC	Y	MG/L	.0276		.0331		.0733	J	.02	U	.02	U

PLUMBROOK
Overburden Wells
Data Summary

Report Date: 03/12/98

Sample Location:			MK-MW16		MK-MW17		MK-MW19		MK-MW20		MK-MW22	
Sample No:			5780		5790		5800		5810		5820	
Sample Date:			21-NOV-97		21-NOV-97		16-NOV-97		16-NOV-97		14-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
MERCURY	Y	MG/L	.0002	U	.0003		.0002	U	.0002	U	.0002	U
NICKEL		MG/L	.0618		.156		.04	U	.114		.04	U
NICKEL	Y	MG/L	.0472		.14		.04	U	.04	U	.04	U
POTASSIUM		MG/L	5.46		5	U	5	U	33.8		5	U
POTASSIUM	Y	MG/L	5	U	5	U	5	U	40.6		5	U
SELENIUM		MG/L	.005		.0051		.005	U	.005	U	.005	U
SELENIUM	Y	MG/L	.005		.005	U	.005	U	.005	U	.005	U
SILVER		MG/L	.01	U	.01	U	.01	U	.01	U	.01	U
SILVER	Y	MG/L	.01	U	.01	U	.01	U	.01	U	.01	U
SODIUM		MG/L	6.56	J	6.09	J	11.2		223		7.1	
SODIUM	Y	MG/L	6.47		5.17		12.2		296		8.36	
THALLIUM		MG/L	.01	U	.01	U	.01	U	.01	U	.01	U
THALLIUM	Y	MG/L	.01	U	.01	U	.01	U	.01	U	.01	U
VANADIUM		MG/L	.05	U	.05	U	.05	U	.0597		.05	U
VANADIUM	Y	MG/L	.05	U	.05	U	.05	U	.05	U	.05	U
ZINC		MG/L	.0755		.137		.02	U	.105		.0356	
ZINC	Y	MG/L	.0547	J	.0877	J	.02	U	.02	U	.02	U

PLUMBROOK
Overburden Wells
Data Summary

Report Date: 03/12/98

Sample Location:			PB-TNTA-MW10		PB-TNTA-MW11		PB-TNTC-MW3		PB-TNTC-MW4		PB-TNTC-MW5	
Sample No:			5610		5620		5630		5640		5650	
Sample Date:			18-NOV-97		18-NOV-97		21-NOV-97		24-NOV-97		21-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
MERCURY	Y	MG/L	.0002	U	.0002	U	.0002	U	.0002	U	.0002	U
NICKEL		MG/L	.04	U	.04	U	.12		.0524		.04	U
NICKEL	Y	MG/L	.04	U	.04	U	.0771		.0568		.04	U
POTASSIUM		MG/L	5	U	17.4		26.7		28.2		15.4	
POTASSIUM	Y	MG/L	5	U	17.8		25.8		34.5		14.7	
SELENIUM		MG/L	.005	U	.005	U	.005	U	.0072		.005	U
SELENIUM	Y	MG/L	.005	U	.005	U	.005	U	.0114		.005	U
SILVER		MG/L	.01	U	.01	U	.01	U	.01	U	.01	U
SILVER	Y	MG/L	.01	U	.01	U	.01	U	.01	U	.01	U
SODIUM		MG/L	39.3		91.4		86.1	J	79.7	J	161	J
SODIUM	Y	MG/L	41		96.5		79.4		94.9		163	
THALLIUM		MG/L	.01	U	.01	U	.01	U	.01	U	.01	U
THALLIUM	Y	MG/L	.01	U	.01	U	.01	U	.01	U	.01	U
VANADIUM		MG/L	.05	U	.05	U	.05	U	.05	U	.05	U
VANADIUM	Y	MG/L	.05	U	.05	U	.05	U	.05	U	.05	U
ZINC		MG/L	.027		.0471		.0345		.0587		.053	
ZINC	Y	MG/L	.025		.0454		.0285	J	.052	J	.02	UJ

PLUMBROOK
Overburden Wells
Data Summary

Report Date: 03/12/98

Sample Location:			PB-TNTC-MW6		PB-WA-MW1		PB-WA-MW2	
Sample No:			5660		5670		5680	
Sample Date:			20-NOV-97		21-NOV-97		23-NOV-97	
Depth			0-0		0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
MERCURY	Y	MG/L	.0002	U	.0002	U	.0002	U
NICKEL		MG/L	.04	U	.04	U	.228	
NICKEL	Y	MG/L	.04	U	.04	U	.4	U
POTASSIUM		MG/L	12.2		5	U	28	
POTASSIUM	Y	MG/L	14.3		5	U	50	U
SELENIUM		MG/L	.005	U	.005	U	.0167	
SELENIUM	Y	MG/L	.005	U	.005	U	.05	U
SILVER		MG/L	.01	U	.01	U	.01	U
SILVER	Y	MG/L	.01	U	.01	U	.1	U
SODIUM		MG/L	17.6		14.3	J	1010	J
SODIUM	Y	MG/L	21.3		13.8		1030	
THALLIUM		MG/L	.01	U	.01	U	.03	U
THALLIUM	Y	MG/L	.01	U	.01	U	.1	U
VANADIUM		MG/L	.05	U	.05	U	.05	U
VANADIUM	Y	MG/L	.05	U	.05	U	.5	U
ZINC		MG/L	.02	U	.0325	U	.0367	
ZINC	Y	MG/L	.02	U	.02	UJ	.2	UJ

PLUMBROOK
Overburden Wells
Data Summary

Report Date: 03/12/98

Sample Location:			GCL-MW01		GCL-MW02A		GCL-MW02B		GCL-MW03		IT-AA1-GW-002	
Sample No:			5850		5860		5870		5880		5490	
Sample Date:			20-NOV-97		20-NOV-97		20-NOV-97		20-NOV-97		20-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:EXPLOSIVES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,3,5-TRINITROBENZENE		UG/L	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
1,3-DINITROBENZENE		UG/L	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
2,4,6-TRINITROTOLUENE		UG/L	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
2,4-DINITROTOLUENE		UG/L	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
2,6-DINITROTOLUENE		UG/L	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
2-NITROTOLUENE		UG/L	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
3-NITROTOLUENE		UG/L	0.20	U	0.20	U	0.20	U	0.20	U	1.2	U
4-AMINO-2,6-DINITROTOLUENE		UG/L	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
HMX		UG/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
NITROBENZENE		UG/L	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
RDX		UG/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
TETRYL		UG/L	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U

PLUMBROOK
Overburden Wells
Data Summary

Report Date: 03/12/98

Sample Location:			IT-AA3-GW-002		IT-ABG-GW-002		IT-MW01		IT-MW02		IT-MW05	
Sample No:			5510		5520		5530		5540		5550	
Sample Date:			19-NOV-97		19-NOV-97		19-NOV-97		21-NOV-97		19-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:EXPLOSIVES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,3,5-TRINITROBENZENE		UG/L	0.20	U	0.20	U	0.20	U	14		0.20	U
1,3-DINITROBENZENE		UG/L	0.20	U	0.20	U	0.20	U	17		0.20	U
2,4,6-TRINITROTOLUENE		UG/L	0.20	U	0.20	U	0.20	U	4.0	U	0.20	U
2,4-DINITROTOLUENE		UG/L	0.20	U	0.20	U	0.20	U	47		0.20	U
2,6-DINITROTOLUENE		UG/L	0.20	U	0.20	U	0.20	U	7.8		0.20	U
2-NITROTOLUENE		UG/L	0.20	U	0.20	U	0.20	U	4.0	U	0.20	U
3-NITROTOLUENE		UG/L	0.20	U	0.20	U	0.20	U	4.0	U	0.45	U
4-AMINO-2,6-DINITROTOLUENE		UG/L	0.20	U	0.20	U	0.20	U	4.0	U	0.20	U
HMX		UG/L	0.50	U	0.50	U	0.50	U	10	U	0.50	U
NITROBENZENE		UG/L	0.20	U	0.20	U	0.20	U	4.0	U	0.20	U
RDX		UG/L	0.50	U	0.50	U	0.50	U	10	U	0.50	U
TETRYL		UG/L	0.20	U	0.20	U	0.20	U	4.0	U	0.20	U

PLUMBROOK
Overburden Wells
Data Summary

Report Date: 03/12/98

Sample Location:			IT-MW06		IT-MW08		IT-MW09		IT-MW10		MK-MW09	
Sample No:			5560		5580		5590		5600		5720	
Sample Date:			19-NOV-97		19-NOV-97		23-NOV-97		14-NOV-97		16-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:EXPLOSIVES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,3,5-TRINITROBENZENE		UG/L	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
1,3-DINITROBENZENE		UG/L	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
2,4,6-TRINITROTOLUENE		UG/L	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
2,4-DINITROTOLUENE		UG/L	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
2,6-DINITROTOLUENE		UG/L	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
2-NITROTOLUENE		UG/L	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
3-NITROTOLUENE		UG/L	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
4-AMINO-2,6-DINITROTOLUENE		UG/L	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
HMX		UG/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
NITROBENZENE		UG/L	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
RDX		UG/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
TETRYL		UG/L	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U

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Sample Location:			MK-MW10		MK-MW11		MK-MW12		MK-MW14		MK-MW15	
Sample No:			5730		5740		5750		5760		5770	
Sample Date:			13-NOV-97		18-NOV-97		17-NOV-97		16-NOV-97		16-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:EXPLOSIVES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,3,5-TRINITROBENZENE		UG/L	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
1,3-DINITROBENZENE		UG/L	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
2,4,6-TRINITROTOLUENE		UG/L	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
2,4-DINITROTOLUENE		UG/L	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
2,6-DINITROTOLUENE		UG/L	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
2-NITROTOLUENE		UG/L	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
3-NITROTOLUENE		UG/L	0.20	U	0.20	U	0.20	U	0.99	U	0.68	U
4-AMINO-2,6-DINITROTOLUENE		UG/L	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
HMX		UG/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
NITROBENZENE		UG/L	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
RDX		UG/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
TETRYL		UG/L	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U

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Sample Location:			MK-MW16		MK-MW17		MK-MW19		MK-MW20		MK-MW22	
Sample No:			5780		5790		5800		5810		5820	
Sample Date:			21-NOV-97		21-NOV-97		16-NOV-97		16-NOV-97		14-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:EXPLOSIVES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,3,5-TRINITROBENZENE		UG/L	0.20	U	2.0	U	0.20	U	13	U	0.24	
1,3-DINITROBENZENE		UG/L	0.20	U	2.0	U	0.20	U	36	U	0.20	U
2,4,6-TRINITROTOLUENE		UG/L	0.20	U	2.0	U	0.20	U	4.0	U	0.74	
2,4-DINITROTOLUENE		UG/L	0.20	U	2.0	U	0.20	U	4.0	U	0.20	
2,6-DINITROTOLUENE		UG/L	0.20	U	2.0	U	0.20	U	4.0	U	0.53	
2-NITROTOLUENE		UG/L	0.20	U	2.0	U	0.20	U	4.0	U	0.20	U
3-NITROTOLUENE		UG/L	0.20	U	2.6	U	0.20	U	4.0	U	0.20	U
4-AMINO-2,6-DINITROTOLUENE		UG/L	0.20	U	3.6		0.20	U	4.0	U	0.62	
HMX		UG/L	0.50	U	5.0	U	0.50	U	10	U	0.50	U
NITROBENZENE		UG/L	0.20	U	2.0	U	0.20	U	5.6	U	0.20	U
RDX		UG/L	0.50	U	5.0	U	0.50	U	10	U	0.50	U
TETRYL		UG/L	0.20	U	2.0	U	0.20	U	4.0	U	0.20	U

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Sample Location:			MK-MW23		MK-MW24		PB-PR-MW7		PB-PR-MW8		PB-PR-MW9	
Sample No:			5830		5840		5690		5700		5710	
Sample Date:			16-NOV-97		13-NOV-97		17-NOV-97		17-NOV-97		17-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:EXPLOSIVES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,3,5-TRINITROBENZENE		UG/L	0.20	U	1.0	U	2000		1500		10	U
1,3-DINITROBENZENE		UG/L	0.20	U	1.0	U	1500		1500		35	
2,4,6-TRINITROTOLUENE		UG/L	0.20	U	1.0	U	100	U	100	U	10	U
2,4-DINITROTOLUENE		UG/L	0.20	U	1.0	U	1200		1300		28	
2,6-DINITROTOLUENE		UG/L	0.20	U	1.0	U	100	U	100	U	10	U
2-NITROTOLUENE		UG/L	0.20	U	1.0	U	100	U	100	U	10	U
3-NITROTOLUENE		UG/L	0.20	U	1.0	U	100	U	100	U	10	U
4-AMINO-2,6-DINITROTOLUENE		UG/L	0.20	U	1.0	U	100	U	100	U	10	U
HMX		UG/L	0.50	U	2.5	U	250	U	250	U	25	U
NITROBENZENE		UG/L	0.20	U	1.0	U	100	U	100	U	10	U
RDX		UG/L	0.50	U	2.5	U	250	U	500	U	25	U
TETRYL		UG/L	0.20	U	1.0	U	100	U	100	U	10	U

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Sample Location:			PB-TNTA-MW10		PB-TNTA-MW11		PB-TNTC-MW3		PB-TNTC-MW4		PB-TNTC-MW5	
Sample No:			5610		5620		5630		5640		5650	
Sample Date:			18-NOV-97		18-NOV-97		21-NOV-97		24-NOV-97		21-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:EXPLOSIVES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,3,5-TRINITROBENZENE		UG/L	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
1,3-DINITROBENZENE		UG/L	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
2,4,6-TRINITROTOLUENE		UG/L	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
2,4-DINITROTOLUENE		UG/L	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
2,6-DINITROTOLUENE		UG/L	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
2-NITROTOLUENE		UG/L	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
3-NITROTOLUENE		UG/L	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
4-AMINO-2,6-DINITROTOLUENE		UG/L	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
HMX		UG/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
NITROBENZENE		UG/L	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
RDX		UG/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
TETRYL		UG/L	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U

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Sample Location:			PB-TNTC-MW6		PB-WA-MW1		PB-WA-MW2	
Sample No:			5660		5670		5680	
Sample Date:			20-NOV-97		21-NOV-97		23-NOV-97	
Depth			0-0		0-0		0-0	
WELLS-W:EXPLOSIVES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,3,5-TRINITROBENZENE		UG/L	0.20	U	0.20	U	6.8	U
1,3-DINITROBENZENE		UG/L	0.20	U	0.20	U	7.4	U
2,4,6-TRINITROTOLUENE		UG/L	0.20	U	0.20	U	2.0	U
2,4-DINITROTOLUENE		UG/L	0.20	U	0.20	U	5.5	U
2,6-DINITROTOLUENE		UG/L	0.20	U	0.20	U	2.0	U
2-NITROTOLUENE		UG/L	0.20	U	0.20	U	2.0	U
3-NITROTOLUENE		UG/L	0.20	U	0.20	U	2.0	U
4-AMINO-2,6-DINITROTOLUENE		UG/L	0.20	U	0.20	U	2.0	U
HMX		UG/L	0.50	U	0.50	U	5.0	U
NITROBENZENE		UG/L	0.20	U	0.20	U	2.0	U
RDX		UG/L	0.50	U	0.50	U	5.0	U
TETRYL		UG/L	0.20	U	0.20	U	4.6	U

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Sample Location:			GCL-MW01		GCL-MW02A		GCL-MW02B		GCL-MW03		IT-AA1-GW-002	
Sample No:			5850		5860		5870		5880		5490	
Sample Date:			20-NOV-97		20-NOV-97		20-NOV-97		20-NOV-97		20-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:CYANIDE-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL CYANIDE		MG/L	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U

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Sample Location:			IT-AA3-GW-002		IT-ABG-GW-002		IT-MW01		IT-MW02		IT-MW05	
Sample No:			5510		5520		5530		5540		5550	
Sample Date:			19-NOV-97		19-NOV-97		19-NOV-97		21-NOV-97		19-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:CYANIDE-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL CYANIDE		MG/L	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U

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Sample Location:			IT-MW06		IT-MW08		IT-MW09		IT-MW10		MK-MW09	
Sample No:			5560		5580		5590		5600		5720	
Sample Date:			19-NOV-97		19-NOV-97		23-NOV-97		14-NOV-97		16-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:CYANIDE-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL CYANIDE		MG/L	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U

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Sample Location:			MK-MW10		MK-MW11		MK-MW12		MK-MW14		MK-MW15	
Sample No:			5730		5740		5750		5760		5770	
Sample Date:			13-NOV-97		18-NOV-97		17-NOV-97		16-NOV-97		16-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:CYANIDE-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL CYANIDE		MG/L	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U

Sample Location:			MK-MW16		I W17		MK-MW19		MK-MW20		MK-' '2	
Sample No:			5780		5		5800		5810		582	
Sample Date:			21-NOV-97		21-NOV-97		16-NOV-97		16-NOV-97		14-N. .-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:CYANIDE-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL CYANIDE		MG/L	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U

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Sample Location:			PB-TNTA-MW11		PB-TNTC-MW3		PB-TNTC-MW4		PB-TNTC-MW5		PB-TNTC-MW6	
Sample No:			5620		5630		5640		5650		5660	
Sample Date:			18-NOV-97		21-NOV-97		24-NOV-97		21-NOV-97		20-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:CYANIDE-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL CYANIDE		MG/L	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U

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Sample Location:			PB-WA-MW1		PB-WA-MW2	
Sample No:			5670		5680	
Sample Date:			21-NOV-97		23-NOV-97	
Depth			0-0		0-0	
WELLS-W:CYANIDE-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr
TOTAL CYANIDE		MG/L	0.010	U	0.079	

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Sample Location:			GCL-MW01		GCL-MW02A		GCL-MW02B		GCL-MW03		IT-AA1-GW-002	
Sample No:			5850		5860		5870		5880		5490	
Sample Date:			20-NOV-97		20-NOV-97		20-NOV-97		20-NOV-97		20-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,1,1-TRICHLOROETHANE		UG/L										
1,1,2,2-TETRACHLOROETHANE		UG/L										
1,1,2-TRICHLOROETHANE		UG/L										
1,1-DICHLOROETHANE		UG/L										
1,1-DICHLOROETHENE		UG/L										
1,2-DICHLOROETHANE		UG/L										
1,2-DICHLOROETHENE (TOTAL)		UG/L										
1,2-DICHLOROPROPANE		UG/L										
2-BUTANONE		UG/L										
2-HEXANONE		UG/L										
4-METHYL-2-PENTANONE		UG/L										
ACETONE		UG/L										
BENZENE		UG/L										
BROMODICHLOROMETHANE		UG/L										
BROMOFORM		UG/L										
BROMOMETHANE		UG/L										
CARBON DISULFIDE		UG/L			0.64	J						
CARBON TETRACHLORIDE		UG/L										
CHLOROBENZENE		UG/L										
CHLOROETHANE		UG/L										
CHLOROFORM		UG/L										
CHLOROMETHANE		UG/L										
CIS-1,3-DICHLOROPROPENE		UG/L										
DIBROMOCHLOROMETHANE		UG/L										
ETHYLBENZENE		UG/L										
METHYLENE CHLORIDE		UG/L	1.0	U			1.0	U	1.0	U	1.0	U
STYRENE		UG/L										
TETRACHLOROETHENE		UG/L										
TOLUENE		UG/L										

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Sample Location:			IT-AA3-GW-002		IT-ABG-GW-002		IT-MW01		IT-MW02		IT-MW05	
Sample No:			5510		5520		5530		5540		5550	
Sample Date:			19-NOV-97		19-NOV-97		19-NOV-97		21-NOV-97		19-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,1,1-TRICHLOROETHANE		UG/L										
1,1,2,2-TETRACHLOROETHANE		UG/L										
1,1,2-TRICHLOROETHANE		UG/L										
1,1-DICHLOROETHANE		UG/L										
1,1-DICHLOROETHENE		UG/L										
1,2-DICHLOROETHANE		UG/L										
1,2-DICHLOROETHENE (TOTAL)		UG/L										
1,2-DICHLOROPROPANE		UG/L										
2-BUTANONE		UG/L										
2-HEXANONE		UG/L										
4-METHYL-2-PENTANONE		UG/L										
ACETONE		UG/L									22	J
BENZENE		UG/L			0.53	J						
BROMODICHLOROMETHANE		UG/L										
BROMOFORM		UG/L										
BROMOMETHANE		UG/L										
CARBON DISULFIDE		UG/L			0.24	J					0.21	J
CARBON TETRACHLORIDE		UG/L										
CHLOROBENZENE		UG/L										
CHLOROETHANE		UG/L										
CHLOROFORM		UG/L										
CHLOROMETHANE		UG/L										
CIS-1,3-DICHLOROPROPENE		UG/L										
DIBROMOCHLOROMETHANE		UG/L										
ETHYLBENZENE		UG/L										
METHYLENE CHLORIDE		UG/L					1.0	U	1.0	U	1.0	U
STYRENE		UG/L										
TETRACHLOROETHENE		UG/L										
TOLUENE		UG/L										

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Sample Location:			IT-MW06		IT-MW08		IT-MW09		IT-MW10		MK-MW09	
Sample No:			5560		5580		5590		5600		5720	
Sample Date:			19-NOV-97		19-NOV-97		23-NOV-97		14-NOV-97		16-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,1,1-TRICHLOROETHANE		UG/L										
1,1,2,2-TETRACHLOROETHANE		UG/L										
1,1,2-TRICHLOROETHANE		UG/L										
1,1-DICHLOROETHANE		UG/L										
1,1-DICHLOROETHENE		UG/L										
1,2-DICHLOROETHANE		UG/L										
1,2-DICHLOROETHENE (TOTAL)		UG/L										
1,2-DICHLOROPROPANE		UG/L										
2-BUTANONE		UG/L										
2-HEXANONE		UG/L										
4-METHYL-2-PENTANONE		UG/L										
ACETONE		UG/L										
BENZENE		UG/L										
BROMODICHLOROMETHANE		UG/L										
BROMOFORM		UG/L										
BROMOMETHANE		UG/L										
CARBON DISULFIDE		UG/L							0.17	J		
CARBON TETRACHLORIDE		UG/L										
CHLOROBENZENE		UG/L					0.17	J				
CHLOROETHANE		UG/L										
CHLOROFORM		UG/L										
CHLOROMETHANE		UG/L										
CIS-1,3-DICHLOROPROPENE		UG/L										
DIBROMOCHLOROMETHANE		UG/L										
ETHYLBENZENE		UG/L										
METHYLENE CHLORIDE		UG/L									1.0	U
STYRENE		UG/L										
TETRACHLOROETHENE		UG/L										
TOLUENE		UG/L	0.20	J							0.13	J

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Sample Location:			MK-MW10		MK-MW11		MK-MW12		MK-MW14		MK-MW15	
Sample No:			5730		5740		5750		5760		5770	
Sample Date:			13-NOV-97		18-NOV-97		17-NOV-97		16-NOV-97		16-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,1,1-TRICHLOROETHANE		UG/L										
1,1,2,2-TETRACHLOROETHANE		UG/L										
1,1,2-TRICHLOROETHANE		UG/L										
1,1-DICHLOROETHANE		UG/L										
1,1-DICHLOROETHENE		UG/L										
1,2-DICHLOROETHANE		UG/L										
1,2-DICHLOROETHENE (TOTAL)		UG/L										
1,2-DICHLOROPROPANE		UG/L										
2-BUTANONE		UG/L										
2-HEXANONE		UG/L										
4-METHYL-2-PENTANONE		UG/L										
ACETONE		UG/L										
BENZENE		UG/L										
BROMODICHLOROMETHANE		UG/L										
BROMOFORM		UG/L										
BROMOMETHANE		UG/L										
CARBON DISULFIDE		UG/L			0.31	J			0.32	J	0.38	J
CARBON TETRACHLORIDE		UG/L										
CHLOROBENZENE		UG/L										
CHLOROETHANE		UG/L										
CHLOROFORM		UG/L										
CHLOROMETHANE		UG/L										
CIS-1,3-DICHLOROPROPENE		UG/L										
DIBROMOCHLOROMETHANE		UG/L										
ETHYLBENZENE		UG/L										
METHYLENE CHLORIDE		UG/L			1.0	U			1.0	U	1.0	U
STYRENE		UG/L										
TETRACHLOROETHENE		UG/L										
TOLUENE		UG/L										

PLUMBROOK
OverburdenWells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			MK-MW16		MK-MW17		MK-MW19		MK-MW20		MK-MW22	
Sample No:			5780		5790		5800		5810		5820	
Sample Date:			21-NOV-97		21-NOV-97		16-NOV-97		16-NOV-97		14-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,1,1-TRICHLOROETHANE		UG/L					170					
1,1,2,2-TETRACHLOROETHANE		UG/L										
1,1,2-TRICHLOROETHANE		UG/L										
1,1-DICHLOROETHANE		UG/L					17					
1,1-DICHLOROETHENE		UG/L					3.4					
1,2-DICHLOROETHANE		UG/L										
1,2-DICHLOROETHENE (TOTAL)		UG/L										
1,2-DICHLOROPROPANE		UG/L										
2-BUTANONE		UG/L										
2-HEXANONE		UG/L										
4-METHYL-2-PENTANONE		UG/L										
ACETONE		UG/L										
BENZENE		UG/L										
BROMODICHLOROMETHANE		UG/L										
BROMOFORM		UG/L										
BROMOMETHANE		UG/L										
CARBON DISULFIDE		UG/L										
CARBON TETRACHLORIDE		UG/L										
CHLOROBENZENE		UG/L										
CHLOROETHANE		UG/L					2.5					
CHLOROFORM		UG/L							71	J		
CHLOROMETHANE		UG/L										
CIS-1,3-DICHLOROPROPENE		UG/L										
DIBROMOCHLOROMETHANE		UG/L										
ETHYLBENZENE		UG/L										
METHYLENE CHLORIDE		UG/L	1.0	U	1.0	U						
STYRENE		UG/L										
TETRACHLOROETHENE		UG/L										
TOLUENE		UG/L					6.1		13000			

PLUMBROOK
OverburdenWells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			MK-MW23		MK-MW24		PB-PR-MW7		PB-PR-MW8		PB-PR-MW9	
Sample No:			5830		5840		5690		5700		5710	
Sample Date:			16-NOV-97		13-NOV-97		17-NOV-97		17-NOV-97		17-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,1,1-TRICHLOROETHANE		UG/L										
1,1,2,2-TETRACHLOROETHANE		UG/L										
1,1,2-TRICHLOROETHANE		UG/L										
1,1-DICHLOROETHANE		UG/L										
1,1-DICHLOROETHENE		UG/L										
1,2-DICHLOROETHANE		UG/L										
1,2-DICHLOROETHENE (TOTAL)		UG/L										
1,2-DICHLOROPROPANE		UG/L										
2-BUTANONE		UG/L										
2-HEXANONE		UG/L										
4-METHYL-2-PENTANONE		UG/L										
ACETONE		UG/L	68	J								
BENZENE		UG/L										
BROMODICHLOROMETHANE		UG/L										
BROMOFORM		UG/L										
BROMOMETHANE		UG/L										
CARBON DISULFIDE		UG/L	0.37	J								
CARBON TETRACHLORIDE		UG/L										
CHLOROBENZENE		UG/L										
CHLOROETHANE		UG/L										
CHLOROFORM		UG/L										
CHLOROMETHANE		UG/L										
CIS-1,3-DICHLOROPROPENE		UG/L										
DIBROMOCHLOROMETHANE		UG/L										
ETHYLBENZENE		UG/L										
METHYLENE CHLORIDE		UG/L	1.0	U			5.0	U	5.7	U	2.0	U
STYRENE		UG/L										
TETRACHLOROETHENE		UG/L										
TOLUENE		UG/L										

PLUMBROOK
OverburdenWells
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Report Date: 03/12/98

Sample Location:			PB-TNTA-MW10		PB-TNTA-MW11		PB-TNTC-MW3		PB-TNTC-MW4		PB-TNTC-MW5	
Sample No:			5610		5620		5630		5640		5650	
Sample Date:			18-NOV-97		18-NOV-97		21-NOV-97		24-NOV-97		21-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,1,1-TRICHLOROETHANE		UG/L										
1,1,2,2-TETRACHLOROETHANE		UG/L										
1,1,2-TRICHLOROETHANE		UG/L										
1,1-DICHLOROETHANE		UG/L										
1,1-DICHLOROETHENE		UG/L										
1,2-DICHLOROETHANE		UG/L										
1,2-DICHLOROETHENE (TOTAL)		UG/L										
1,2-DICHLOROPROPANE		UG/L										
2-BUTANONE		UG/L										
2-HEXANONE		UG/L										
4-METHYL-2-PENTANONE		UG/L										
ACETONE		UG/L	35	J								
BENZENE		UG/L										
BROMODICHLOROMETHANE		UG/L										
BROMOFORM		UG/L										
BROMOMETHANE		UG/L										
CARBON DISULFIDE		UG/L									1.0	U
CARBON TETRACHLORIDE		UG/L										
CHLOROBENZENE		UG/L										
CHLOROETHANE		UG/L										
CHLOROFORM		UG/L										
CHLOROMETHANE		UG/L										
CIS-1,3-DICHLOROPROPENE		UG/L										
DIBROMOCHLOROMETHANE		UG/L										
ETHYLBENZENE		UG/L										
METHYLENE CHLORIDE		UG/L									1.0	U
STYRENE		UG/L										
TETRACHLOROETHENE		UG/L										
TOLUENE		UG/L										

PLUMBROOK
OverburdenWells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			PB-TNTC-MW6		PB-WA-MW1		PB-WA-MW2	
Sample No:			5660		5670		5680	
Sample Date:			20-NOV-97		21-NOV-97		23-NOV-97	
Depth			0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,1,1-TRICHLOROETHANE		UG/L						
1,1,2,2-TETRACHLOROETHANE		UG/L						
1,1,2-TRICHLOROETHANE		UG/L						
1,1-DICHLOROETHANE		UG/L						
1,1-DICHLOROETHENE		UG/L						
1,2-DICHLOROETHANE		UG/L						
1,2-DICHLOROETHENE (TOTAL)		UG/L						
1,2-DICHLOROPROPANE		UG/L						
2-BUTANONE		UG/L						
2-HEXANONE		UG/L						
4-METHYL-2-PENTANONE		UG/L						
ACETONE		UG/L						
BENZENE		UG/L						
BROMODICHLOROMETHANE		UG/L						
BROMOFORM		UG/L						
BROMOMETHANE		UG/L						
CARBON DISULFIDE		UG/L			1.0	U		
CARBON TETRACHLORIDE		UG/L						
CHLOROBENZENE		UG/L						
CHLOROETHANE		UG/L						
CHLOROFORM		UG/L						
CHLOROMETHANE		UG/L						
CIS-1,3-DICHLOROPROPENE		UG/L						
DIBROMOCHLOROMETHANE		UG/L						
ETHYLBENZENE		UG/L						
METHYLENE CHLORIDE		UG/L	1.0	U	1.0	U		
STYRENE		UG/L						
TETRACHLOROETHENE		UG/L						
TOLUENE		UG/L						

PLUMBROOK
OverburdenWells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			GCL-MW01		GCL-MW02A		GCL-MW02B		GCL-MW03		IT-AA1-GW-002	
Sample No:			5850		5860		5870		5880		5490	
Sample Date:			20-NOV-97		20-NOV-97		20-NOV-97		20-NOV-97		20-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TRANS-1,3-DICHLOROPROPENE		UG/L										
TRICHLOROETHENE		UG/L										
VINYL CHLORIDE		UG/L										
XYLENES (TOTAL)		UG/L										

PLUMBROOK
OverburdenWells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			IT-AA3-GW-002		IT-ABG-GW-002		IT-MW01		IT-MW02		IT-MW05	
Sample No:			5510		5520		5530		5540		5550	
Sample Date:			19-NOV-97		19-NOV-97		19-NOV-97		21-NOV-97		19-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TRANS-1,3-DICHLOROPROPENE		UG/L										
TRICHLOROETHENE		UG/L										
VINYL CHLORIDE		UG/L										
XYLENES (TOTAL)		UG/L			0.35	J	0.31	J				

PLUMBROOK
OverburdenWells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			IT-MW06		IT-MW08		IT-MW09		IT-MW10		MK-MW09	
Sample No:			5560		5580		5590		5600		5720	
Sample Date:			19-NOV-97		19-NOV-97		23-NOV-97		14-NOV-97		16-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TRANS-1,3-DICHLOROPROPENE		UG/L										
TRICHLOROETHENE		UG/L										
VINYL CHLORIDE		UG/L										
XYLENES (TOTAL)		UG/L									0.13	J

PLUMBROOK
OverburdenWells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			MK-MW10		MK-MW11		MK-MW12		MK-MW14		MK-MW15	
Sample No:			5730		5740		5750		5760		5770	
Sample Date:			13-NOV-97		18-NOV-97		17-NOV-97		16-NOV-97		16-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TRANS-1,3-DICHLOROPROPENE		UG/L										
TRICHLOROETHENE		UG/L										
VINYL CHLORIDE		UG/L										
XYLENES (TOTAL)		UG/L										

PLUMBROOK
OverburdenWells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			MK-MW16		MK-MW17		MK-MW19		MK-MW20		MK-MW22	
Sample No:			5780		5790		5800		5810		5820	
Sample Date:			21-NOV-97		21-NOV-97		16-NOV-97		16-NOV-97		14-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TRANS-1,3-DICHLOROPROPENE		UG/L										
TRICHLOROETHENE		UG/L										
VINYL CHLORIDE		UG/L										
XYLENES (TOTAL)		UG/L							100	J		

PLUMBROOK
OverburdenWells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			MK-MW23		MK-MW24		PB-PR-MW7		PB-PR-MW8		PB-PR-MW9	
Sample No:			5830		5840		5690		5700		5710	
Sample Date:			16-NOV-97		13-NOV-97		17-NOV-97		17-NOV-97		17-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TRANS-1,3-DICHLOROPROPENE		UG/L										
TRICHLOROETHENE		UG/L										
VINYL CHLORIDE		UG/L										
XYLENES (TOTAL)		UG/L										

PLUMBROOK
OverburdenWells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			PB-TNTA-MW10		PB-TNTA-MW11		PB-TNTC-MW3		PB-TNTC-MW4		PB-TNTC-MW5	
Sample No:			5610		5620		5630		5640		5650	
Sample Date:			18-NOV-97		18-NOV-97		21-NOV-97		24-NOV-97		21-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TRANS-1,3-DICHLOROPROPENE		UG/L										
TRICHLOROETHENE		UG/L										
VINYL CHLORIDE		UG/L										
XYLENES (TOTAL)		UG/L										

PLUMBROOK
OverburdenWells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			PB-TNTC-MW6		PB-WA-MW1		PB-WA-MW2	
Sample No:			5660		5670		5680	
Sample Date:			20-NOV-97		21-NOV-97		23-NOV-97	
Depth			0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TRANS-1,3-DICHLOROPROPENE		UG/L						
TRICHLOROETHENE		UG/L						
VINYL CHLORIDE		UG/L						
XYLENES (TOTAL)		UG/L					0.17	J

PLUMBROOK
OverburdenWells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			GCL-MW01		GCL-MW02A		GCL-MW02B		GCL-MW03		IT-AA1-GW-002	
Sample No:			5850		5860		5870		5880		5490	
Sample Date:			20-NOV-97		20-NOV-97		20-NOV-97		20-NOV-97		20-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:TOC-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL ORGANIC CARBON		MG/L	5.4		4.5		2.7		4.2		6.9	

PLUMBROOK
OverburdenWells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			IT-AA3-GW-002		IT-ABG-GW-002		IT-MW01		IT-MW02		IT-MW05	
Sample No:			5510		5520		5530		5540		5550	
Sample Date:			19-NOV-97		19-NOV-97		19-NOV-97		21-NOV-97		19-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:TOC-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL ORGANIC CARBON		MG/L	4.5		13		8.6		41		4.7	

PLUMBROOK
OverburdenWells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			IT-MW06		IT-MW08		IT-MW09		IT-MW10		MK-MW09	
Sample No:			5560		5580		5590		5600		5720	
Sample Date:			19-NOV-97		19-NOV-97		23-NOV-97		14-NOV-97		16-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:TOC-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL ORGANIC CARBON		MG/L	3.8		4.4		2.9		2.7		1.5	

PLUMBROOK
OverburdenWells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			MK-MW10		MK-MW11		MK-MW12		MK-MW14		MK-MW15	
Sample No:			5730		5740		5750		5760		5770	
Sample Date:			13-NOV-97		18-NOV-97		17-NOV-97		16-NOV-97		16-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:TOC-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL ORGANIC CARBON		MG/L	1.4		3.1		2.0		6.1		2.6	

PLUMBROOK
OverburdenWells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			MK-MW16		MK-MW17		MK-MW19		MK-MW20		MK-MW22	
Sample No:			5780		5790		5800		5810		5820	
Sample Date:			21-NOV-97		21-NOV-97		16-NOV-97		16-NOV-97		14-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:TOC-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL ORGANIC CARBON		MG/L	2.5		3.4		2.9		12		11	

PLUMBROOK
OverburdenWells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			MK-MW24		PB-PR-MW7		PB-PR-MW8		PB-PR-MW9		PB-TNTA-MW10	
Sample No:			5840		5690		5700		5710		5610	
Sample Date:			13-NOV-97		17-NOV-97		17-NOV-97		17-NOV-97		18-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:TOC-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL ORGANIC CARBON		MG/L	21		2700		14000		1300		4.2	

PLUMBROOK
OverburdenWells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			PB-TNTA-MW11		PB-TNTC-MW3		PB-TNTC-MW4		PB-TNTC-MW5		PB-TNTC-MW6	
Sample No:			5620		5630		5640		5650		5660	
Sample Date:			18-NOV-97		21-NOV-97		24-NOV-97		21-NOV-97		20-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:TOC-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL ORGANIC CARBON		MG/L	4.5		2.4		2.6		3.0		10	

PLUMBROOK
OverburdenWells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			PB-WA-MW1		PB-WA-MW2	
Sample No:			5670		5680	
Sample Date:			21-NOV-97		23-NOV-97	
Depth			0-0		0-0	
WELLS-W:TOC-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr
TOTAL ORGANIC CARBON		MG/L	2.1		970	

PLUMBROOK
OverburdenWells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			GCL-MW01		GCL-MW02A		GCL-MW02B		GCL-MW03		IT-AA1-GW-002	
Sample No:			5850		5860		5870		5880		5490	
Sample Date:			20-NOV-97		20-NOV-97		20-NOV-97		20-NOV-97		20-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,2,4-TRICHLOROBENZENE		UG/L										
1,2-DICHLOROBENZENE		UG/L										
1,3-DICHLOROBENZENE		UG/L										
1,4-DICHLOROBENZENE		UG/L										
2,2'-OXYBIS(1-CHLOROPROPANE)		UG/L										
2,4,5-TRICHLOROPHENOL		UG/L										
2,4,6-TRICHLOROPHENOL		UG/L										
2,4-DICHLOROPHENOL		UG/L										
2,4-DIMETHYLPHENOL		UG/L										
2,4-DINITROPHENOL		UG/L										
2,4-DINITROTOLUENE		UG/L										
2,6-DINITROTOLUENE		UG/L										
2-CHLORONAPHTHALENE		UG/L										
2-CHLOROPHENOL		UG/L										
2-METHYLNAPHTHALENE		UG/L										
2-METHYLPHENOL		UG/L										
2-NITROANILINE		UG/L										
2-NITROPHENOL		UG/L										
3,3'-DICHLOROBENZIDINE		UG/L										
3-NITROANILINE		UG/L										
4,6-DINITRO-2-METHYLPHENOL		UG/L										
4-BROMOPHENYL PHENYL ETHER		UG/L										
4-CHLORO-3-METHYLPHENOL		UG/L										
4-CHLOROANILINE		UG/L										
4-CHLOROPHENYL PHENYL ETHER		UG/L										
4-METHYLPHENOL		UG/L										
4-NITROANILINE		UG/L										
4-NITROPHENOL		UG/L										
ACENAPHTHENE		UG/L										

PLUMBROOK
OverburdenWells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			IT-AA3-GW-002		IT-ABG-GW-002		IT-MW01		IT-MW02		IT-MW05	
Sample No:			5510		5520		5530		5540		5550	
Sample Date:			19-NOV-97		19-NOV-97		19-NOV-97		21-NOV-97		19-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,2,4-TRICHLOROBENZENE		UG/L										
1,2-DICHLOROBENZENE		UG/L										
1,3-DICHLOROBENZENE		UG/L										
1,4-DICHLOROBENZENE		UG/L										
2,2'-OXYBIS(1-CHLOROPROPANE)		UG/L										
2,4,5-TRICHLOROPHENOL		UG/L										
2,4,6-TRICHLOROPHENOL		UG/L										
2,4-DICHLOROPHENOL		UG/L										
2,4-DIMETHYLPHENOL		UG/L										
2,4-DINITROPHENOL		UG/L										
2,4-DINITROTOLUENE		UG/L							43			
2,6-DINITROTOLUENE		UG/L							7.1	J		
2-CHLORONAPHTHALENE		UG/L										
2-CHLOROPHENOL		UG/L										
2-METHYLNAPHTHALENE		UG/L										
2-METHYLPHENOL		UG/L										
2-NITROANILINE		UG/L							1.5	J		
2-NITROPHENOL		UG/L										
3,3'-DICHLOROBENZIDINE		UG/L										
3-NITROANILINE		UG/L										
4,6-DINITRO-2-METHYLPHENOL		UG/L							12	J		
4-BROMOPHENYL PHENYL ETHER		UG/L										
4-CHLORO-3-METHYLPHENOL		UG/L										
4-CHLOROANILINE		UG/L										
4-CHLOROPHENYL PHENYL ETHER		UG/L										
4-METHYLPHENOL		UG/L										
4-NITROANILINE		UG/L										
4-NITROPHENOL		UG/L										
ACENAPHTHEN		UG/L										

PLUMBROOK
OverburdenWells
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Report Date: 03/12/98

Sample Location:			IT-MW06		IT-MW08		IT-MW09		IT-MW10		MK-MW09	
Sample No:			5560		5580		5590		5600		5720	
Sample Date:			19-NOV-97		19-NOV-97		23-NOV-97		14-NOV-97		16-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,2,4-TRICHLOROBENZENE		UG/L										
1,2-DICHLOROBENZENE		UG/L										
1,3-DICHLOROBENZENE		UG/L										
1,4-DICHLOROBENZENE		UG/L										
2,2'-OXYBIS(1-CHLOROPROPANE)		UG/L										
2,4,5-TRICHLOROPHENOL		UG/L										
2,4,6-TRICHLOROPHENOL		UG/L										
2,4-DICHLOROPHENOL		UG/L										
2,4-DIMETHYLPHENOL		UG/L										
2,4-DINITROPHENOL		UG/L										
2,4-DINITROTOLUENE		UG/L										
2,6-DINITROTOLUENE		UG/L										
2-CHLORONAPHTHALENE		UG/L										
2-CHLOROPHENOL		UG/L										
2-METHYLNAPHTHALENE		UG/L										
2-METHYLPHENOL		UG/L										
2-NITROANILINE		UG/L										
2-NITROPHENOL		UG/L										
3,3'-DICHLOROBENZIDINE		UG/L										
3-NITROANILINE		UG/L										
4,6-DINITRO-2-METHYLPHENOL		UG/L										
4-BROMOPHENYL PHENYL ETHER		UG/L										
4-CHLORO-3-METHYLPHENOL		UG/L										
4-CHLOROANILINE		UG/L										
4-CHLOROPHENYL PHENYL ETHER		UG/L										
4-METHYLPHENOL		UG/L										
4-NITROANILINE		UG/L										
4-NITROPHENOL		UG/L										
ACENAPHTHENE		UG/L										

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Report Date: 03/12/98

Sample Location:			MK-MW10		MK-MW11		MK-MW12		MK-MW14		MK-MW15	
Sample No:			5730		5740		5750		5760		5770	
Sample Date:			13-NOV-97		18-NOV-97		17-NOV-97		16-NOV-97		16-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,2,4-TRICHLOROBENZENE		UG/L										
1,2-DICHLOROBENZENE		UG/L										
1,3-DICHLOROBENZENE		UG/L										
1,4-DICHLOROBENZENE		UG/L										
2,2'-OXYBIS(1-CHLOROPROPANE)		UG/L										
2,4,5-TRICHLOROPHENOL		UG/L										
2,4,6-TRICHLOROPHENOL		UG/L										
2,4-DICHLOROPHENOL		UG/L										
2,4-DIMETHYLPHENOL		UG/L										
2,4-DINITROPHENOL		UG/L										
2,4-DINITROTOLUENE		UG/L										
2,6-DINITROTOLUENE		UG/L										
2-CHLORONAPHTHALENE		UG/L										
2-CHLOROPHENOL		UG/L										
2-METHYLNAPHTHALENE		UG/L										
2-METHYLPHENOL		UG/L										
2-NITROANILINE		UG/L										
2-NITROPHENOL		UG/L										
3,3'-DICHLOROBENZIDINE		UG/L										
3-NITROANILINE		UG/L										
4,6-DINITRO-2-METHYLPHENOL		UG/L										
4-BROMOPHENYL PHENYL ETHER		UG/L										
4-CHLORO-3-METHYLPHENOL		UG/L										
4-CHLOROANILINE		UG/L										
4-CHLOROPHENYL PHENYL ETHER		UG/L										
4-METHYLPHENOL		UG/L										
4-NITROANILINE		UG/L										
4-NITROPHENOL		UG/L										
ACENAPHTHENE		UG/L										

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Report Date: 03/12/98

Sample Location:			MK-MW16		MK-MW17		MK-MW19		MK-MW20		MK-MW22	
Sample No:			5780		5790		5800		5810		5820	
Sample Date:			21-NOV-97		21-NOV-97		16-NOV-97		16-NOV-97		14-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,2,4-TRICHLOROBENZENE		UG/L										
1,2-DICHLOROBENZENE		UG/L										
1,3-DICHLOROBENZENE		UG/L										
1,4-DICHLOROBENZENE		UG/L										
2,2'-OXYBIS(1-CHLOROPROPANE)		UG/L										
2,4,5-TRICHLOROPHENOL		UG/L										
2,4,6-TRICHLOROPHENOL		UG/L										
2,4-DICHLOROPHENOL		UG/L										
2,4-DIMETHYLPHENOL		UG/L										
2,4-DINITROPHENOL		UG/L										
2,4-DINITROTOLUENE		UG/L										
2,6-DINITROTOLUENE		UG/L										
2-CHLORONAPHTHALENE		UG/L										
2-CHLOROPHENOL		UG/L										
2-METHYLNAPHTHALENE		UG/L										
2-METHYLPHENOL		UG/L							1300			
2-NITROANILINE		UG/L										
2-NITROPHENOL		UG/L										
3,3'-DICHLOROBENZIDINE		UG/L										
3-NITROANILINE		UG/L										
4,6-DINITRO-2-METHYLPHENOL		UG/L										
4-BROMOPHENYL PHENYL ETHER		UG/L										
4-CHLORO-3-METHYLPHENOL		UG/L										
4-CHLOROANILINE		UG/L										
4-CHLOROPHENYL PHENYL ETHER		UG/L										
4-METHYLPHENOL		UG/L							1200			
4-NITROANILINE		UG/L										
4-NITROPHENOL		UG/L										
ACENAPHTHENE		UG/L										

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OverburdenWells
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Report Date: 03/12/98

Sample Location:			MK-MW23		MK-MW24		PB-PR-MW7		PB-PR-MW8		PB-PR-MW9	
Sample No:			5830		5840		5690		5700		5710	
Sample Date:			16-NOV-97		13-NOV-97		17-NOV-97		17-NOV-97		17-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,2,4-TRICHLOROBENZENE		UG/L										
1,2-DICHLOROBENZENE		UG/L										
1,3-DICHLOROBENZENE		UG/L										
1,4-DICHLOROBENZENE		UG/L										
2,2'-OXYBIS(1-CHLOROPROPANE)		UG/L										
2,4,5-TRICHLOROPHENOL		UG/L										
2,4,6-TRICHLOROPHENOL		UG/L										
2,4-DICHLOROPHENOL		UG/L										
2,4-DIMETHYLPHENOL		UG/L										
2,4-DINITROPHENOL		UG/L							6000		48	J
2,4-DINITROTOLUENE		UG/L					1800		1500		110	
2,6-DINITROTOLUENE		UG/L					140	J	190	J		
2-CHLORONAPHTHALENE		UG/L										
2-CHLOROPHENOL		UG/L										
2-METHYLNAPHTHALENE		UG/L										
2-METHYLPHENOL		UG/L										
2-NITROANILINE		UG/L										
2-NITROPHENOL		UG/L										
3,3'-DICHLOROBENZIDINE		UG/L										
3-NITROANILINE		UG/L							160	J	450	J
4,6-DINITRO-2-METHYLPHENOL		UG/L					660	J	2300	J		
4-BROMOPHENYL PHENYL ETHER		UG/L										
4-CHLORO-3-METHYLPHENOL		UG/L										
4-CHLOROANILINE		UG/L										
4-CHLOROPHENYL PHENYL ETHER		UG/L										
4-METHYLPHENOL		UG/L										
4-NITROANILINE		UG/L										
4-NITROPHENOL		UG/L										
ACENAPHTHENE		UG/L										

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OverburdenWells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			PB-TNTA-MW10		PB-TNTA-MW11		PB-TNTC-MW3		PB-TNTC-MW4		PB-TNTC-MW5	
Sample No:			5610		5620		5630		5640		5650	
Sample Date:			18-NOV-97		18-NOV-97		21-NOV-97		24-NOV-97		21-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,2,4-TRICHLOROBENZENE		UG/L										
1,2-DICHLOROBENZENE		UG/L										
1,3-DICHLOROBENZENE		UG/L										
1,4-DICHLOROBENZENE		UG/L										
2,2'-OXYBIS(1-CHLOROPROPANE)		UG/L										
2,4,5-TRICHLOROPHENOL		UG/L										
2,4,6-TRICHLOROPHENOL		UG/L										
2,4-DICHLOROPHENOL		UG/L										
2,4-DIMETHYLPHENOL		UG/L										
2,4-DINITROPHENOL		UG/L										
2,4-DINITROTOLUENE		UG/L										
2,6-DINITROTOLUENE		UG/L										
2-CHLORONAPHTHALENE		UG/L										
2-CHLOROPHENOL		UG/L										
2-METHYLNAPHTHALENE		UG/L										
2-METHYLPHENOL		UG/L										
2-NITROANILINE		UG/L										
2-NITROPHENOL		UG/L										
3,3'-DICHLOROBENZIDINE		UG/L										
3-NITROANILINE		UG/L										
4,6-DINITRO-2-METHYLPHENOL		UG/L										
4-BROMOPHENYL PHENYL ETHER		UG/L										
4-CHLORO-3-METHYLPHENOL		UG/L										
4-CHLOROANILINE		UG/L										
4-CHLOROPHENYL PHENYL ETHER		UG/L										
4-METHYLPHENOL		UG/L										
4-NITROANILINE		UG/L										
4-NITROPHENOL		UG/L										
ACENAPHTHENE		UG/L										

PLUMBROOK
OverburdenWells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			PB-TNTC-MW6		PB-WA-MW1		PB-WA-MW2	
Sample No:			5660		5670		5680	
Sample Date:			20-NOV-97		21-NOV-97		23-NOV-97	
Depth			0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,2,4-TRICHLOROBENZENE		UG/L						
1,2-DICHLOROBENZENE		UG/L						
1,3-DICHLOROBENZENE		UG/L						
1,4-DICHLOROBENZENE		UG/L						
2,2'-OXYBIS(1-CHLOROPROPANE)		UG/L						
2,4,5-TRICHLOROPHENOL		UG/L						
2,4,6-TRICHLOROPHENOL		UG/L						
2,4-DICHLOROPHENOL		UG/L						
2,4-DIMETHYLPHENOL		UG/L						
2,4-DINITROPHENOL		UG/L						
2,4-DINITROTOLUENE		UG/L						
2,6-DINITROTOLUENE		UG/L						
2-CHLORONAPHTHALENE		UG/L						
2-CHLOROPHENOL		UG/L						
2-METHYLNAPHTHALENE		UG/L						
2-METHYLPHENOL		UG/L						
2-NITROANILINE		UG/L						
2-NITROPHENOL		UG/L						
3,3'-DICHLOROBENZIDINE		UG/L						
3-NITROANILINE		UG/L						
4,6-DINITRO-2-METHYLPHENOL		UG/L						
4-BROMOPHENYL PHENYL ETHER		UG/L						
4-CHLORO-3-METHYLPHENOL		UG/L						
4-CHLOROANILINE		UG/L						
4-CHLOROPHENYL PHENYL ETHER		UG/L						
4-METHYLPHENOL		UG/L						
4-NITROANILINE		UG/L						
4-NITROPHENOL		UG/L						
ACENAPHTHENE		UG/L						

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Report Date: 03/12/98

Sample Location:			GCL-MW01		GCL-MW02A		GCL-MW02B		GCL-MW03		IT-AA1-GW-002	
Sample No:			5850		5860		5870		5880		5490	
Sample Date:			20-NOV-97		20-NOV-97		20-NOV-97		20-NOV-97		20-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
ACENAPHTHYLENE		UG/L										
ANTHRACENE		UG/L										
BENZO(A)ANTHRACENE		UG/L										
BENZO(A)PYRENE		UG/L										
BENZO(B)FLUORANTHENE		UG/L										
BENZO(GHI)PERYLENE		UG/L										
BENZO(K)FLUORANTHENE		UG/L										
BIS(2-CHLOROETHOXY)METHANE		UG/L										
BIS(2-CHLOROETHYL) ETHER		UG/L										
BIS(2-ETHYLHEXYL) PHTHALATE		UG/L	100									
BUTYL BENZYL PHTHALATE		UG/L										
CARBAZOLE		UG/L										
CHRYSENE		UG/L										
DI-N-BUTYL PHTHALATE		UG/L										
DI-N-OCTYL PHTHALATE		UG/L										
DIBENZ(A,H)ANTHRACENE		UG/L										
DIBENZOFURAN		UG/L										
DIETHYL PHTHALATE		UG/L					2.7	J				
DIMETHYL PHTHALATE		UG/L										
FLUORANTHENE		UG/L										
FLUORENE		UG/L										
HEXACHLOROBENZENE		UG/L										
HEXACHLOROBUTADIENE		UG/L										
HEXACHLOROCYCLOPENTADIENE		UG/L										
HEXACHLOROETHANE		UG/L										
INDENO(1,2,3-CD)PYRENE		UG/L										
ISOPHORONE		UG/L										
N-NITROSODI-N-PROPYLAMINE		UG/L										
N-NITROSODIPHENYLAMINE		UG/L										

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Report Date: 03/12/98

Sample Location:			IT-AA3-GW-002		IT-ABG-GW-002		IT-MW01		IT-MW02		IT-MW05	
Sample No:			5510		5520		5530		5540		5550	
Sample Date:			19-NOV-97		19-NOV-97		19-NOV-97		21-NOV-97		19-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
ACENAPHTHYLENE		UG/L										
ANTHRACENE		UG/L										
BENZO(A)ANTHRACENE		UG/L										
BENZO(A)PYRENE		UG/L										
BENZO(B)FLUORANTHENE		UG/L										
BENZO(GHI)PERYLENE		UG/L										
BENZO(K)FLUORANTHENE		UG/L										
BIS(2-CHLOROETHOXY)METHANE		UG/L										
BIS(2-CHLOROETHYL) ETHER		UG/L										
BIS(2-ETHYLHEXYL) PHTHALATE		UG/L										
BUTYL BENZYL PHTHALATE		UG/L										
CARBAZOLE		UG/L										
CHRYSENE		UG/L										
DI-N-BUTYL PHTHALATE		UG/L										
DI-N-OCTYL PHTHALATE		UG/L										
DIBENZ(A,H)ANTHRACENE		UG/L										
DIBENZOFURAN		UG/L										
DIETHYL PHTHALATE		UG/L										
DIMETHYL PHTHALATE		UG/L										
FLUORANTHENE		UG/L										
FLUORENE		UG/L										
HEXACHLOROBENZENE		UG/L										
HEXACHLOROBUTADIENE		UG/L										
HEXACHLOROCYCLOPENTADIENE		UG/L										
HEXACHLOROETHANE		UG/L										
INDENO(1,2,3-CD)PYRENE		UG/L										
ISOPHORONE		UG/L										
N-NITROSODI-N-PROPYLAMINE		UG/L										
N-NITROSODIPH AMINE		UG/L										

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Report Date: 03/12/98

Sample Location:			IT-MW06		IT-MW08		IT-MW09		IT-MW10		MK-MW09	
Sample No:			5560		5580		5590		5600		5720	
Sample Date:			19-NOV-97		19-NOV-97		23-NOV-97		14-NOV-97		16-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
ACENAPHTHYLENE		UG/L										
ANTHRACENE		UG/L										
BENZO(A)ANTHRACENE		UG/L										
BENZO(A)PYRENE		UG/L										
BENZO(B)FLUORANTHENE		UG/L										
BENZO(GHI)PERYLENE		UG/L										
BENZO(K)FLUORANTHENE		UG/L										
BIS(2-CHLOROETHOXY)METHANE		UG/L										
BIS(2-CHLOROETHYL) ETHER		UG/L										
BIS(2-ETHYLHEXYL) PHTHALATE		UG/L							5.1	J		
BUTYL BENZYL PHTHALATE		UG/L										
CARBAZOLE		UG/L										
CHRYSENE		UG/L										
DI-N-BUTYL PHTHALATE		UG/L										
DI-N-OCTYL PHTHALATE		UG/L										
DIBENZ(A,H)ANTHRACENE		UG/L										
DIBENZOFURAN		UG/L										
DIETHYL PHTHALATE		UG/L										
DIMETHYL PHTHALATE		UG/L										
FLUORANTHENE		UG/L										
FLUORENE		UG/L										
HEXACHLOROBENZENE		UG/L										
HEXACHLOROBUTADIENE		UG/L										
HEXACHLOROCYCLOPENTADIENE		UG/L										
HEXACHLOROETHANE		UG/L										
INDENO(1,2,3-CD)PYRENE		UG/L										
ISOPHORONE		UG/L										
N-NITROSODI-N-PROPYLAMINE		UG/L										
N-NITROSODIPHENYLAMINE		UG/L										

PLUMBROOK
OverburdenWells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			MK-MW10		MK-MW11		MK-MW12		MK-MW14		MK-MW15	
Sample No:			5730		5740		5750		5760		5770	
Sample Date:			13-NOV-97		18-NOV-97		17-NOV-97		16-NOV-97		16-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
ACENAPHTHYLENE		UG/L										
ANTHRACENE		UG/L										
BENZO(A)ANTHRACENE		UG/L										
BENZO(A)PYRENE		UG/L										
BENZO(B)FLUORANTHENE		UG/L										
BENZO(GHI)PERYLENE		UG/L										
BENZO(K)FLUORANTHENE		UG/L										
BIS(2-CHLOROETHOXY)METHANE		UG/L										
BIS(2-CHLOROETHYL) ETHER		UG/L										
BIS(2-ETHYLHEXYL) PHTHALATE		UG/L	11				28		1.7	J	6.0	J
BUTYL BENZYL PHTHALATE		UG/L										
CARBAZOLE		UG/L										
CHRYSENE		UG/L										
DI-N-BUTYL PHTHALATE		UG/L										
DI-N-OCTYL PHTHALATE		UG/L										
DIBENZ(A,H)ANTHRACENE		UG/L										
DIBENZOFURAN		UG/L										
DIETHYL PHTHALATE		UG/L										
DIMETHYL PHTHALATE		UG/L										
FLUORANTHENE		UG/L										
FLUORENE		UG/L										
HEXACHLOROBENZENE		UG/L										
HEXACHLOROBUTADIENE		UG/L										
HEXACHLOROCYCLOPENTADIENE		UG/L										
HEXACHLOROETHANE		UG/L										
INDENO(1,2,3-CD)PYRENE		UG/L										
ISOPHORONE		UG/L										
N-NITROSODI-N-PROPYLAMINE		UG/L										
N-NITROSODIPH[illegible]AMINE		UG/L										

PLUMBROOK
OverburdenWells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			MK-MW23		MK-MW24		PB-PR-MW7		PB-PR-MW8		PB-PR-MW9	
Sample No:			5830		5840		5690		5700		5710	
Sample Date:			16-NOV-97		13-NOV-97		17-NOV-97		17-NOV-97		17-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
ACENAPHTHYLENE		UG/L										
ANTHRACENE		UG/L										
BENZO(A)ANTHRACENE		UG/L										
BENZO(A)PYRENE		UG/L										
BENZO(B)FLUORANTHENE		UG/L										
BENZO(GHI)PERYLENE		UG/L										
BENZO(K)FLUORANTHENE		UG/L										
BIS(2-CHLOROETHOXY)METHANE		UG/L										
BIS(2-CHLOROETHYL) ETHER		UG/L										
BIS(2-ETHYLHEXYL) PHTHALATE		UG/L										
BUTYL BENZYL PHTHALATE		UG/L										
CARBAZOLE		UG/L										
CHRYSENE		UG/L										
DI-N-BUTYL PHTHALATE		UG/L										
DI-N-OCTYL PHTHALATE		UG/L	9.3	J								
DIBENZ(A,H)ANTHRACENE		UG/L										
DIBENZOFURAN		UG/L										
DIETHYL PHTHALATE		UG/L										
DIMETHYL PHTHALATE		UG/L										
FLUORANTHENE		UG/L										
FLUORENE		UG/L										
HEXACHLOROBENZENE		UG/L										
HEXACHLOROBUTADIENE		UG/L										
HEXACHLOROCYCLOPENTADIENE		UG/L										
HEXACHLOROETHANE		UG/L										
INDENO(1,2,3-CD)PYRENE		UG/L										
ISOPHORONE		UG/L										
N-NITROSODI-N-PROPYLAMINE		UG/L										
N-NITROSODIPHENYLAMINE		UG/L										

PLUMBROOK
OverburdenWells
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Report Date: 03/12/98

Sample Location:			PB-TNTA-MW10		PB-TNTA-MW11		PB-TNTC-MW3		PB-TNTC-MW4		PB-TNTC-MW5	
Sample No:			5610		5620		5630		5640		5650	
Sample Date:			18-NOV-97		18-NOV-97		21-NOV-97		24-NOV-97		21-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
ACENAPHTHYLENE		UG/L										
ANTHRACENE		UG/L										
BENZO(A)ANTHRACENE		UG/L										
BENZO(A)PYRENE		UG/L										
BENZO(B)FLUORANTHENE		UG/L										
BENZO(GHI)PERYLENE		UG/L										
BENZO(K)FLUORANTHENE		UG/L										
BIS(2-CHLOROETHOXY)METHANE		UG/L										
BIS(2-CHLOROETHYL) ETHER		UG/L										
BIS(2-ETHYLHEXYL) PHTHALATE		UG/L										
BUTYL BENZYL PHTHALATE		UG/L										
CARBAZOLE		UG/L										
CHRYSENE		UG/L										
DI-N-BUTYL PHTHALATE		UG/L										
DI-N-OCTYL PHTHALATE		UG/L										
DIBENZ(A,H)ANTHRACENE		UG/L										
DIBENZOFURAN		UG/L										
DIETHYL PHTHALATE		UG/L										
DIMETHYL PHTHALATE		UG/L										
FLUORANTHENE		UG/L										
FLUORENE		UG/L										
HEXACHLOROBENZENE		UG/L										
HEXACHLOROBUTADIENE		UG/L										
HEXACHLOROCYCLOPENTADIENE		UG/L										
HEXACHLOROETHANE		UG/L										
INDENO(1,2,3-CD)PYRENE		UG/L										
ISOPHORONE		UG/L										
N-NITROSODI-N-PROPYLAMINE		UG/L										
N-NITROSODIPHENYLAMINE		UG/L										

PLUMBROOK
OverburdenWells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			GCL-MW01		GCL-MW02A		GCL-MW02B		GCL-MW03		IT-AA1-GW-002	
Sample No:			5850		5860		5870		5880		5490	
Sample Date:			20-NOV-97		20-NOV-97		20-NOV-97		20-NOV-97		20-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
NAPHTHALENE		UG/L										
NITROBENZENE		UG/L										
PENTACHLOROPHENOL		UG/L										
PHENANTHRENE		UG/L										
PHENOL		UG/L										
PYRENE		UG/L										

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OverburdenWells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			IT-AA3-GW-002		IT-ABG-GW-002		IT-MW01		IT-MW02		IT-MW05	
Sample No:			5510		5520		5530		5540		5550	
Sample Date:			19-NOV-97		19-NOV-97		19-NOV-97		21-NOV-97		19-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
NAPHTHALENE		UG/L										
NITROBENZENE		UG/L										
PENTACHLOROPHENOL		UG/L										
PHENANTHRENE		UG/L										
PHENOL		UG/L										
PYRENE		UG/L										

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OverburdenWells
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Report Date: 03/12/98

Sample Location:			IT-MW06		IT-MW08		IT-MW09		IT-MW10		MK-MW09	
Sample No:			5560		5580		5590		5600		5720	
Sample Date:			19-NOV-97		19-NOV-97		23-NOV-97		14-NOV-97		16-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
NAPHTHALENE		UG/L										
NITROBENZENE		UG/L										
PENTACHLOROPHENOL		UG/L										
PHENANTHRENE		UG/L										
PHENOL		UG/L										
PYRENE		UG/L										

PLUMBROOK
OverburdenWells
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Report Date: 03/12/98

Sample Location:			MK-MW10		MK-MW11		MK-MW12		MK-MW14		MK-MW15	
Sample No:			5730		5740		5750		5760		5770	
Sample Date:			13-NOV-97		18-NOV-97		17-NOV-97		16-NOV-97		16-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
NAPHTHALENE		UG/L										
NITROBENZENE		UG/L										
PENTACHLOROPHENOL		UG/L										
PHENANTHRENE		UG/L										
PHENOL		UG/L										
PYRENE		UG/L										

PLUMBROOK
OverburdenWells
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Report Date: 03/12/98

Sample Location:			MK-MW16		MK-MW17		MK-MW19		MK-MW20		MK-MW22	
Sample No:			5780		5790		5800		5810		5820	
Sample Date:			21-NOV-97		21-NOV-97		16-NOV-97		16-NOV-97		14-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
NAPHTHALENE		UG/L										
NITROBENZENE		UG/L										
PENTACHLOROPHENOL		UG/L										
PHENANTHRENE		UG/L										
PHENOL		UG/L							6.8	J		
PYRENE		UG/L										

PLUMBROOK
OverburdenWells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			MK-MW23		MK-MW24		PB-PR-MW7		PB-PR-MW8		PB-PR-MW9	
Sample No:			5830		5840		5690		5700		5710	
Sample Date:			16-NOV-97		13-NOV-97		17-NOV-97		17-NOV-97		17-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
NAPHTHALENE		UG/L										
NITROBENZENE		UG/L										
PENTACHLOROPHENOL		UG/L										
PHENANTHRENE		UG/L										
PHENOL		UG/L										
PYRENE		UG/L										

PLUMBROOK
OverburdenWells
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Report Date: 03/12/98

Sample Location:			PB-TNTA-MW10		PB-TNTA-MW11		PB-TNTC-MW3		PB-TNTC-MW4		PB-TNTC-MW5	
Sample No:			5610		5620		5630		5640		5650	
Sample Date:			18-NOV-97		18-NOV-97		21-NOV-97		24-NOV-97		21-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
NAPHTHALENE		UG/L										
NITROBENZENE		UG/L										
PENTACHLOROPHENOL		UG/L										
PHENANTHRENE		UG/L										
PHENOL		UG/L										
PYRENE		UG/L										

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OverburdenWells
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Report Date: 03/12/98

Sample Location:			PB-TNTC-MW6		PB-WA-MW1		PB-WA-MW2	
Sample No:			5660		5670		5680	
Sample Date:			20-NOV-97		21-NOV-97		23-NOV-97	
Depth			0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
NAPHTHALENE		UG/L						
NITROBENZENE		UG/L						
PENTACHLOROPHENOL		UG/L						
PHENANTHRENE		UG/L						
PHENOL		UG/L						
PYRENE		UG/L						

Sample Location:			GCL-MW01		GCL-MW02A		GCL-MW02B		GCL-MW03		IT-AA1-GW-002	
Sample No:			5850		5860		5870		5880		5490	
Sample Date:			20-NOV-97		20-NOV-97		20-NOV-97		20-NOV-97		20-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:PEST/PCB-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
AROCLOR 1016		UG/L										
AROCLOR 1221		UG/L										
AROCLOR 1232		UG/L										
AROCLOR 1242		UG/L										
AROCLOR 1248		UG/L										
AROCLOR 1254		UG/L										
AROCLOR 1260		UG/L										

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Report Date: 03/12/98

Sample Location:			IT-MW06		IT-MW08		IT-MW09		IT-MW10		MK-MW09	
Sample No:			5560		5580		5590		5600		5720	
Sample Date:			19-NOV-97		19-NOV-97		23-NOV-97		14-NOV-97		16-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:PEST/PCB-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
AROCLOR 1016		UG/L										
AROCLOR 1221		UG/L										
AROCLOR 1232		UG/L										
AROCLOR 1242		UG/L										
AROCLOR 1248		UG/L										
AROCLOR 1254		UG/L										
AROCLOR 1260		UG/L										

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OverburdenWells
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Report Date: 03/12/98

Sample Location:			MK-MW16		MK-MW17		MK-MW19		MK-MW20		MK-MW22	
Sample No:			5780		5790		5800		5810		5820	
Sample Date:			21-NOV-97		21-NOV-97		16-NOV-97		16-NOV-97		14-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:PEST/PCB-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
AROCLOR 1016		UG/L										
AROCLOR 1221		UG/L										
AROCLOR 1232		UG/L										
AROCLOR 1242		UG/L										
AROCLOR 1248		UG/L										
AROCLOR 1254		UG/L										
AROCLOR 1260		UG/L										

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Report Date: 03/12/98

Sample Location:			MK-MW24		PB-PR-MW7		PB-PR-MW8		PB-PR-MW9		PB-TNTA-MW10	
Sample No:			5840		5690		5700		5710		5610	
Sample Date:			13-NOV-97		17-NOV-97		17-NOV-97		17-NOV-97		18-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:PEST/PCB-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
AROCLOR 1016		UG/L										
AROCLOR 1221		UG/L										
AROCLOR 1232		UG/L										
AROCLOR 1242		UG/L										
AROCLOR 1248		UG/L										
AROCLOR 1254		UG/L										
AROCLOR 1260		UG/L										

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Sample Location:			PB-TNTA-MW11		PB-TNTC-MW3		PB-TNTC-MW4		PB-TNTC-MW5		PB-TNTC-MW6	
Sample No:			5620		5630		5640		5650		5660	
Sample Date:			18-NOV-97		21-NOV-97		24-NOV-97		21-NOV-97		20-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:PEST/PCB-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
AROCLOR 1016		UG/L										
AROCLOR 1221		UG/L										
AROCLOR 1232		UG/L										
AROCLOR 1242		UG/L										
AROCLOR 1248		UG/L										
AROCLOR 1254		UG/L										
AROCLOR 1260		UG/L										

Sample Location:			PB-WA-MW1		PB-WA-MW2	
Sample No:			5670		5680	
Sample Date:			21-NOV-97		23-NOV-97	
Depth			0-0		0-0	
WELLS-W:PEST/PCB-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr
AROCLOR 1016		UG/L				
AROCLOR 1221		UG/L				
AROCLOR 1232		UG/L				
AROCLOR 1242		UG/L				
AROCLOR 1248		UG/L				
AROCLOR 1254		UG/L				
AROCLOR 1260		UG/L				
MANGANESE	Y	MG/L	.35	[illegible]	.507	.369
MERCURY		MG/L				

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Report Date: 03/12/98

Sample Location:			IT-AA3-GW-002		IT-ABG-GW-002		IT-MW01		IT-MW02		IT-MW05	
Sample No:			5510		5520		5530		5540		5550	
Sample Date:			19-NOV-97		19-NOV-97		19-NOV-97		21-NOV-97		19-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
ALUMINUM		MG/L	11.6	J	34.5	J					3.97	J
ALUMINUM	Y	MG/L										
ANTIMONY		MG/L										
ANTIMONY	Y	MG/L										
ARSENIC		MG/L	.0103		.0662						.0115	
ARSENIC	Y	MG/L									.0125	
BARIUM		MG/L			.314							
BARIUM	Y	MG/L										
BERYLLIUM		MG/L										
BERYLLIUM	Y	MG/L										
CADMIUM		MG/L										
CADMIUM	Y	MG/L										
CALCIUM		MG/L	205		491		46.4		150	J	116	
CALCIUM	Y	MG/L	131		393		44.9		147		99.5	
CHROMIUM		MG/L	.0228		.0698						.0106	
CHROMIUM	Y	MG/L										
COBALT		MG/L			.0723							
COBALT	Y	MG/L										
COPPER		MG/L	.0336		.243				.0626			
COPPER	Y	MG/L							.0416			
IRON		MG/L	27.3		103		1.32				14.7	
IRON	Y	MG/L			4.89		1.09				3.05	
LEAD		MG/L	.0166		.1						.0066	
LEAD	Y	MG/L										
MAGNESIUM		MG/L	52.1		113		17.5		70.5		38.4	
MAGNESIUM	Y	MG/L	29.3		85.3		17		68		36.5	
MANGANESE		MG/L	.816		3.01		.323		.896		.302	
MANGANESE	Y	MG/L	.0788		2.5		.331		.877		.114	
MERCURY		MG/L					.00045				.0003	

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Hits Data Summary

Report Date: 03/12/98

Sample Location:			IT-MW06		IT-MW08		IT-MW09		IT-MW10		MK-MW09	
Sample No:			5560		5580		5590		5600		5720	
Sample Date:			19-NOV-97		19-NOV-97		23-NOV-97		14-NOV-97		16-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
ALUMINUM		MG/L					1.2	J	1.04		.282	U
ALUMINUM	Y	MG/L										
ANTIMONY		MG/L										
ANTIMONY	Y	MG/L										
ARSENIC		MG/L										
ARSENIC	Y	MG/L										
BARIUM		MG/L										
BARIUM	Y	MG/L										
BERYLLIUM		MG/L										
BERYLLIUM	Y	MG/L										
CADMIUM		MG/L										
CADMIUM	Y	MG/L										
CALCIUM		MG/L	142		342		426	J	183	J	103	
CALCIUM	Y	MG/L	128		345		402		188		106	J
CHROMIUM		MG/L					.0104					
CHROMIUM	Y	MG/L										
COBALT		MG/L										
COBALT	Y	MG/L										
COPPER		MG/L										
COPPER	Y	MG/L										
IRON		MG/L	1.62		.498		3.37		3.04		.493	
IRON	Y	MG/L			.443		.282				.329	
LEAD		MG/L					.0047	U	.0045		.0085	
LEAD	Y	MG/L										
MAGNESIUM		MG/L	23.5		136		253		83.7		27.6	
MAGNESIUM	Y	MG/L	21.4		139		246		86.3		28.1	
MANGANESE		MG/L	.34		.361		.249		1.67			
MANGANESE	Y	MG/L			[illegible]		.372		1.63			
MERCURY		MG/L	.0003		[illegible]							

PLUMBROOK
OverburdenWells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			MK-MW10		MK-MW11		MK-MW12		MK-MW14		MK-MW15	
Sample No:			5730		5740		5750		5760		5770	
Sample Date:			13-NOV-97		18-NOV-97		17-NOV-97		16-NOV-97		16-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
ALUMINUM		MG/L	1.14		5.08		.31		.52		.292	
ALUMINUM	Y	MG/L										
ANTIMONY		MG/L										
ANTIMONY	Y	MG/L										
ARSENIC		MG/L										
ARSENIC	Y	MG/L										
BARIUM		MG/L										
BARIUM	Y	MG/L										
BERYLLIUM		MG/L										
BERYLLIUM	Y	MG/L										
CADMIUM		MG/L										
CADMIUM	Y	MG/L										
CALCIUM		MG/L	99.2	J	161		133		172	J	114	J
CALCIUM	Y	MG/L	96.7		142	J	131	J	216		118	
CHROMIUM		MG/L			.0126							
CHROMIUM	Y	MG/L										
COBALT		MG/L										
COBALT	Y	MG/L										
COPPER		MG/L										
COPPER	Y	MG/L										
IRON		MG/L	2.08		12.3		.83		19.3		12.7	
IRON	Y	MG/L					.173		22.9		12.7	
LEAD		MG/L	.0035		.0094						.0071	
LEAD	Y	MG/L									.005	
MAGNESIUM		MG/L	27.6		39.4		21.9		26.5		17.6	
MAGNESIUM	Y	MG/L	26.2		33.3		21.6		32.3		17.8	
MANGANESE		MG/L	.0909		.344		1.13		.37		.608	
MANGANESE	Y	MG/L	.0654				1.06		.449		.617	
MERCURY		MG/L										

PLUMBROOK
OverburdenWells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			MK-MW16		MK-MW17		MK-MW19		MK-MW20		MK-MW22	
Sample No:			5780		5790		5800		5810		5820	
Sample Date:			21-NOV-97		21-NOV-97		16-NOV-97		16-NOV-97		14-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
ALUMINUM		MG/L	4.99	J	1.83	J			18.4		7.79	
ALUMINUM	Y	MG/L	1.08									
ANTIMONY		MG/L										
ANTIMONY	Y	MG/L										
ARSENIC		MG/L			.0126				.0158			
ARSENIC	Y	MG/L										
BARIUM		MG/L										
BARIUM	Y	MG/L										
BERYLLIUM		MG/L										
BERYLLIUM	Y	MG/L										
CADMIUM		MG/L										
CADMIUM	Y	MG/L										
CALCIUM		MG/L	146	J	127	J	158		240		118	J
CALCIUM	Y	MG/L	147		114		176	J	167	J	127	
CHROMIUM		MG/L							.0427		.0166	
CHROMIUM	Y	MG/L										
COBALT		MG/L			.0788							
COBALT	Y	MG/L			.0729							
COPPER		MG/L							.0297			
COPPER	Y	MG/L										
IRON		MG/L	19.8		44.3		.239		46.7		10.9	
IRON	Y	MG/L	2.41		34.1		.385		.716			
LEAD		MG/L	.008	U	.0044	U			.0131		.0067	
LEAD	Y	MG/L										
MAGNESIUM		MG/L	53.8		29.9		34.9		96.2		17.5	
MAGNESIUM	Y	MG/L	52.3		26.3		38.3		108		17.9	
MANGANESE		MG/L	6.97		1.41		.0234		.994		.185	
MANGANESE	Y	MG/L	6.9		1.26		.0292		.0653		.149	
MERCURY		MG/L										

PLUMBROOK
OverburdenWells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			PB-TNTA-MW10		PB-TNTA-MW11		PB-TNTC-MW3		PB-TNTC-MW4		PB-TNTC-MW5	
Sample No:			5610		5620		5630		5640		5650	
Sample Date:			18-NOV-97		18-NOV-97		21-NOV-97		24-NOV-97		21-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
ALUMINUM		MG/L	.877	J	3.17	J			3.82	J	3.49	J
ALUMINUM	Y	MG/L							.432			
ANTIMONY		MG/L										
ANTIMONY	Y	MG/L										
ARSENIC		MG/L	.0122		.0105				.0215		.0101	
ARSENIC	Y	MG/L										
BARIUM		MG/L	.373									
BARIUM	Y	MG/L	.338									
BERYLLIUM		MG/L										
BERYLLIUM	Y	MG/L										
CADMIUM		MG/L										
CADMIUM	Y	MG/L										
CALCIUM		MG/L	186		180		566	J	285	J	146	J
CALCIUM	Y	MG/L	191		167		529		386		138	
CHROMIUM		MG/L			.0156				.0252		.0184	
CHROMIUM	Y	MG/L										
COBALT		MG/L					.0675					
COBALT	Y	MG/L										
COPPER		MG/L										
COPPER	Y	MG/L										
IRON		MG/L	18.2		13.3		.805		17.4		13.9	
IRON	Y	MG/L	7.61				.132	U	.403			
LEAD		MG/L			.0104				.0145		.0138	
LEAD	Y	MG/L							.011		.0042	
MAGNESIUM		MG/L	52.9		63		215		145		55.9	
MAGNESIUM	Y	MG/L	54.8		62.9		204		181		54.6	
MANGANESE		MG/L	1.53		1.03		2.95		.8		.713	
MANGANESE	Y	MG/L	1.44		.865		2.9		1.12		.522	
MERCURY		MG/L										

PLUMBROOK
OverburdenWells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			PB-TNTC-MW6		PB-WA-MW1		PB-WA-MW2	
Sample No:			5660		5670		5680	
Sample Date:			20-NOV-97		21-NOV-97		23-NOV-97	
Depth			0-0		0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
ALUMINUM		MG/L	.496	J	2.71	J	3.72	J
ALUMINUM	Y	MG/L						
ANTIMONY		MG/L						
ANTIMONY	Y	MG/L						
ARSENIC		MG/L						
ARSENIC	Y	MG/L						
BARIUM		MG/L						
BARIUM	Y	MG/L						
BERYLLIUM		MG/L						
BERYLLIUM	Y	MG/L						
CADMIUM		MG/L						
CADMIUM	Y	MG/L						
CALCIUM		MG/L	223		150	J	497	J
CALCIUM	Y	MG/L	243		136		472	
CHROMIUM		MG/L					.0128	
CHROMIUM	Y	MG/L						
COBALT		MG/L					.142	
COBALT	Y	MG/L						
COPPER		MG/L					.0702	
COPPER	Y	MG/L						
IRON		MG/L	2.46		5.6		7.93	
IRON	Y	MG/L	1.57		.15	U		
LEAD		MG/L			.0047	U	.0097	U
LEAD	Y	MG/L						
MAGNESIUM		MG/L	15.6		58.1		181	
MAGNESIUM	Y	MG/L	17.5		54.6		170	
MANGANESE		MG/L	3.7		.235		1.66	
MANGANESE	Y	MG/L	4.02		[illegible]		1.62	
MERCURY		MG/L						

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OverburdenWells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			GCL-MW01		GCL-MW02A		GCL-MW02B		GCL-MW03		IT-AA1-GW-002	
Sample No:			5850		5860		5870		5880		5490	
Sample Date:			20-NOV-97		20-NOV-97		20-NOV-97		20-NOV-97		20-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
MERCURY	Y	MG/L										
NICKEL		MG/L	.0718									
NICKEL	Y	MG/L										
POTASSIUM		MG/L										
POTASSIUM	Y	MG/L									6.71	
SELENIUM		MG/L	.0204									
SELENIUM	Y	MG/L										
SILVER		MG/L										
SILVER	Y	MG/L										
SODIUM		MG/L	8.35	J	16.2		9.23	J	5.51	J	21.4	
SODIUM	Y	MG/L	8.55		16.4		9.59		5.1		39.6	
THALLIUM		MG/L										
THALLIUM	Y	MG/L										
VANADIUM		MG/L										
VANADIUM	Y	MG/L										
ZINC		MG/L	.116						.04	U	.0674	
ZINC	Y	MG/L	.022	J	.0306	U	.0237	J			.0335	U

PLUMBROOK
OverburdenWells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			IT-AA3-GW-002		IT-ABG-GW-002		IT-MW01		IT-MW02		IT-MW05	
Sample No:			5510		5520		5530		5540		5550	
Sample Date:			19-NOV-97		19-NOV-97		19-NOV-97		21-NOV-97		19-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
MERCURY	Y	MG/L										
NICKEL		MG/L			.212							
NICKEL	Y	MG/L										
POTASSIUM		MG/L			11.8		6.16					
POTASSIUM	Y	MG/L			5.22		6.18					
SELENIUM		MG/L			.0082							
SELENIUM	Y	MG/L										
SILVER		MG/L										
SILVER	Y	MG/L										
SODIUM		MG/L	7.8		18.3		22.8		250	J	18.1	
SODIUM	Y	MG/L	7.18		20.4		22.2		244		19.1	
THALLIUM		MG/L										
THALLIUM	Y	MG/L										
VANADIUM		MG/L			.158							
VANADIUM	Y	MG/L										
ZINC		MG/L	.0999		.836		.0516				.0476	
ZINC	Y	MG/L	.0499				.0469		.0272	J		

Sample Location:			IT-MW06		IT-MW08		IT-MW09		IT-MW10		MK-MW09	
Sample No:			5560		5580		5590		5600		5720	
Sample Date:			19-NOV-97		19-NOV-97		23-NOV-97		14-NOV-97		16-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
MERCURY	Y	MG/L										
NICKEL		MG/L										
NICKEL	Y	MG/L										
POTASSIUM		MG/L			14.9		25.6					
POTASSIUM	Y	MG/L			15.3		26.5					
SELENIUM		MG/L										
SELENIUM	Y	MG/L										
SILVER		MG/L										
SILVER	Y	MG/L										
SODIUM		MG/L			18.9		146	J	48.2		6.29	
SODIUM	Y	MG/L			19.5		144		50.2		6.47	
THALLIUM		MG/L										
THALLIUM	Y	MG/L										
VANADIUM		MG/L										
VANADIUM	Y	MG/L										
ZINC		MG/L	.0474		.0234		.0272					
ZINC	Y	MG/L	.0276		.0331		.0733	J				

PLUMBROOK
OverburdenWells
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Report Date: 03/12/98

Sample Location:			MK-MW16		MK-MW17		MK-MW19		MK-MW20		MK-MW22	
Sample No:			5780		5790		5800		5810		5820	
Sample Date:			21-NOV-97		21-NOV-97		16-NOV-97		16-NOV-97		14-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
MERCURY	Y	MG/L			.0003							
NICKEL		MG/L	.0618		.156				.114			
NICKEL	Y	MG/L	.0472		.14							
POTASSIUM		MG/L	5.46						33.8			
POTASSIUM	Y	MG/L							40.6			
SELENIUM		MG/L	.005		.0051							
SELENIUM	Y	MG/L	.005									
SILVER		MG/L										
SILVER	Y	MG/L										
SODIUM		MG/L	6.56	J	6.09	J	11.2		223		7.1	
SODIUM	Y	MG/L	6.47		5.17		12.2		296		8.36	
THALLIUM		MG/L										
THALLIUM	Y	MG/L										
VANADIUM		MG/L							.0597			
VANADIUM	Y	MG/L										
ZINC		MG/L	.0755		.137				.105		.0356	
ZINC	Y	MG/L	.0547	J	.0877	J						

Sample Location:			MK-MW23		MK-MW24		PB-PR-MW7		PB-PR-MW8		PB-PR-MW9	
Sample No:			5830		5840		5690		5700		5710	
Sample Date:			16-NOV-97		13-NOV-97		17-NOV-97		17-NOV-97		17-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
MERCURY	Y	MG/L			.00076							
NICKEL		MG/L	.125				1.71		7.6			
NICKEL	Y	MG/L					1.71		6.82			
POTASSIUM		MG/L	14.4		5.64							
POTASSIUM	Y	MG/L	8.54									
SELENIUM		MG/L										
SELENIUM	Y	MG/L										
SILVER		MG/L										
SILVER	Y	MG/L										
SODIUM		MG/L	60.2		8.13		3540		10800		1360	
SODIUM	Y	MG/L	68.5		8.25		3850		9230		1450	
THALLIUM		MG/L										
THALLIUM	Y	MG/L										
VANADIUM		MG/L	.0752		.0609							
VANADIUM	Y	MG/L			.053							
ZINC		MG/L	.167		.127							
ZINC	Y	MG/L										

PLUMBROOK
OverburdenWells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			PB-TNTC-MW6		PB-WA-MW1		PB-WA-MW2	
Sample No:			5660		5670		5680	
Sample Date:			20-NOV-97		21-NOV-97		23-NOV-97	
Depth			0-0		0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
MERCURY	Y	MG/L						
NICKEL		MG/L					.228	
NICKEL	Y	MG/L						
POTASSIUM		MG/L	12.2				28	
POTASSIUM	Y	MG/L	14.3					
SELENIUM		MG/L					.0167	
SELENIUM	Y	MG/L						
SILVER		MG/L						
SILVER	Y	MG/L						
SODIUM		MG/L	17.6		14.3	J	1010	J
SODIUM	Y	MG/L	21.3		13.8		1030	
THALLIUM		MG/L						
THALLIUM	Y	MG/L						
VANADIUM		MG/L						
VANADIUM	Y	MG/L						
ZINC		MG/L			.0325	U	.0367	
ZINC	Y	MG/L						

PLUMBROOK
OverburdenWells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			GCL-MW01		GCL-MW02A		GCL-MW02B		GCL-MW03		IT-AA1-GW-002	
Sample No:			5850		5860		5870		5880		5490	
Sample Date:			20-NOV-97		20-NOV-97		20-NOV-97		20-NOV-97		20-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:EXPLOSIVES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,3,5-TRINITROBENZENE		UG/L										
1,3-DINITROBENZENE		UG/L										
2,4,6-TRINITROTOLUENE		UG/L										
2,4-DINITROTOLUENE		UG/L										
2,6-DINITROTOLUENE		UG/L										
2-NITROTOLUENE		UG/L										
3-NITROTOLUENE		UG/L										
4-AMINO-2,6-DINITROTOLUENE		UG/L										
HMX		UG/L										
NITROBENZENE		UG/L										
RDX		UG/L										
TETRYL		UG/L										

PLUMBROOK
OverburdenWells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			IT-AA3-GW-002		IT-ABG-GW-002		IT-MW01		IT-MW02		IT-MW05	
Sample No:			5510		5520		5530		5540		5550	
Sample Date:			19-NOV-97		19-NOV-97		19-NOV-97		21-NOV-97		19-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:EXPLOSIVES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,3,5-TRINITROBENZENE		UG/L							14			
1,3-DINITROBENZENE		UG/L							17			
2,4,6-TRINITROTOLUENE		UG/L										
2,4-DINITROTOLUENE		UG/L							47			
2,6-DINITROTOLUENE		UG/L							7.8			
2-NITROTOLUENE		UG/L										
3-NITROTOLUENE		UG/L										
4-AMINO-2,6-DINITROTOLUENE		UG/L										
HMX		UG/L										
NITROBENZENE		UG/L										
RDX		UG/L										
TETRYL		UG/L										

PLUMBROOK

OverburdenWells

Hits Data Summary

Report Date: 03/12/98

Sample Location:			IT-MW06		IT-MW08		IT-MW09		IT-MW10		MK-MW09	
Sample No:			5560		5580		5590		5600		5720	
Sample Date:			19-NOV-97		19-NOV-97		23-NOV-97		14-NOV-97		16-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:EXPLOSIVES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,3,5-TRINITROBENZENE		UG/L										
1,3-DINITROBENZENE		UG/L										
2,4,6-TRINITROTOLUENE		UG/L										
2,4-DINITROTOLUENE		UG/L										
2,6-DINITROTOLUENE		UG/L										
2-NITROTOLUENE		UG/L										
3-NITROTOLUENE		UG/L										
4-AMINO-2,6-DINITROTOLUENE		UG/L										
HMX		UG/L										
NITROBENZENE		UG/L										
RDX		UG/L										
TETRYL		UG/L										

PLUMBROOK
OverburdenWells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			MK-MW10		MK-MW11		MK-MW12		MK-MW14		MK-MW15	
Sample No:			5730		5740		5750		5760		5770	
Sample Date:			13-NOV-97		18-NOV-97		17-NOV-97		16-NOV-97		16-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:EXPLOSIVES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,3,5-TRINITROBENZENE		UG/L										
1,3-DINITROBENZENE		UG/L										
2,4,6-TRINITROTOLUENE		UG/L										
2,4-DINITROTOLUENE		UG/L										
2,6-DINITROTOLUENE		UG/L										
2-NITROTOLUENE		UG/L										
3-NITROTOLUENE		UG/L										
4-AMINO-2,6-DINITROTOLUENE		UG/L										
HMX		UG/L										
NITROBENZENE		UG/L										
RDX		UG/L										
TETRYL		UG/L										

PLUMBROOK
OverburdenWells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			MK-MW16		MK-MW17		MK-MW19		MK-MW20		MK-MW22	
Sample No:			5780		5790		5800		5810		5820	
Sample Date:			21-NOV-97		21-NOV-97		16-NOV-97		16-NOV-97		14-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:EXPLOSIVES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,3,5-TRINITROBENZENE		UG/L									0.24	
1,3-DINITROBENZENE		UG/L										
2,4,6-TRINITROTOLUENE		UG/L									0.74	
2,4-DINITROTOLUENE		UG/L									0.20	
2,6-DINITROTOLUENE		UG/L									0.53	
2-NITROTOLUENE		UG/L										
3-NITROTOLUENE		UG/L										
4-AMINO-2,6-DINITROTOLUENE		UG/L			3.6						0.62	
HMX		UG/L										
NITROBENZENE		UG/L										
RDX		UG/L										
TETRYL		UG/L										

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OverburdenWells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			MK-MW23		MK-MW24		PB-PR-MW7		PB-PR-MW8		PB-PR-MW9	
Sample No:			5830		5840		5690		5700		5710	
Sample Date:			16-NOV-97		13-NOV-97		17-NOV-97		17-NOV-97		17-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:EXPLOSIVES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,3,5-TRINITROBENZENE		UG/L					2000		1500			
1,3-DINITROBENZENE		UG/L					1500		1500		35	
2,4,6-TRINITROTOLUENE		UG/L										
2,4-DINITROTOLUENE		UG/L					1200		1300		28	
2,6-DINITROTOLUENE		UG/L										
2-NITROTOLUENE		UG/L										
3-NITROTOLUENE		UG/L										
4-AMINO-2,6-DINITROTOLUENE		UG/L										
HMX		UG/L										
NITROBENZENE		UG/L										
RDX		UG/L										
TETRYL		UG/L										

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OverburdenWells
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Sample Location:			PB-TNTA-MW10		PB-TNTA-MW11		PB-TNTC-MW3		PB-TNTC-MW4		PB-TNTC-MW5	
Sample No:			5610		5620		5630		5640		5650	
Sample Date:			18-NOV-97		18-NOV-97		21-NOV-97		24-NOV-97		21-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:EXPLOSIVES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,3,5-TRINITROBENZENE		UG/L										
1,3-DINITROBENZENE		UG/L										
2,4,6-TRINITROTOLUENE		UG/L										
2,4-DINITROTOLUENE		UG/L										
2,6-DINITROTOLUENE		UG/L										
2-NITROTOLUENE		UG/L										
3-NITROTOLUENE		UG/L										
4-AMINO-2,6-DINITROTOLUENE		UG/L										
HMX		UG/L										
NITROBENZENE		UG/L										
RDX		UG/L										
TETRYL		UG/L										

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OverburdenWells
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Report Date: 03/12/98

Sample Location:			PB-TNTC-MW6		PB-WA-MW1		PB-WA-MW2	
Sample No:			5660		5670		5680	
Sample Date:			20-NOV-97		21-NOV-97		23-NOV-97	
Depth			0-0		0-0		0-0	
WELLS-W:EXPLOSIVES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,3,5-TRINITROBENZENE		UG/L						
1,3-DINITROBENZENE		UG/L						
2,4,6-TRINITROTOLUENE		UG/L						
2,4-DINITROTOLUENE		UG/L						
2,6-DINITROTOLUENE		UG/L						
2-NITROTOLUENE		UG/L						
3-NITROTOLUENE		UG/L						
4-AMINO-2,6-DINITROTOLUENE		UG/L						
HMX		UG/L						
NITROBENZENE		UG/L						
RDX		UG/L						
TETRYL		UG/L						

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OverburdenWells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			GCL-MW01		GCL-MW02A		GCL-MW02B		GCL-MW03		IT-AA1-GW-002	
Sample No:			5850		5860		5870		5880		5490	
Sample Date:			20-NOV-97		20-NOV-97		20-NOV-97		20-NOV-97		20-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:CYANIDE-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL CYANIDE		MG/L										

PLUMBROOK
OverburdenWells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			IT-AA3-GW-002		IT-ABG-GW-002		IT-MW01		IT-MW02		IT-MW05	
Sample No:			5510		5520		5530		5540		5550	
Sample Date:			19-NOV-97		19-NOV-97		19-NOV-97		21-NOV-97		19-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:CYANIDE-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL CYANIDE		MG/L										

PLUMBROOK

OverburdenWells

Hits Data Summary

Report Date: 03/12/98

Sample Location:			MK-MW16		MK-MW17		MK-MW19		MK-MW20		MK-MW22	
Sample No:			5780		5790		5800		5810		5820	
Sample Date:			21-NOV-97		21-NOV-97		16-NOV-97		16-NOV-97		14-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:CYANIDE-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL CYANIDE		MG/L										

PLUMBROOK
OverburdenWells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			MK-MW24		PB-PR-MW7		PB-PR-MW8		PB-PR-MW9		PB-TNTA-MW10	
Sample No:			5840		5690		5700		5710		5610	
Sample Date:			13-NOV-97		17-NOV-97		17-NOV-97		17-NOV-97		18-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:CYANIDE-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL CYANIDE		MG/L			0.12		0.24		0.036			

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OverburdenWells
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Sample Location:			IT-MW06		IT-MW08		IT-MW09		IT-MW10		MK-MW09	
Sample No:			5560		5580		5590		5600		5720	
Sample Date:			19-NOV-97		19-NOV-97		23-NOV-97		14-NOV-97		16-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:CYANIDE-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL CYANIDE		MG/L										

Sample Location:			IT-MW06		IT-MW08		IT-MW09		IT-MW10		MK-MW09	
Sample No:			5560		5580		5590		5600		5720	
Sample Date:			19-NOV-97		19-NOV-97		23-NOV-97		14-NOV-97		16-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:CYANIDE-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL CYANIDE		MG/L										

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OverburdenWells
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Report Date: 03/12/98

Sample Location:			PB-TNTA-MW11		PB-TNTC-MW3		PB-TNTC-MW4		PB-TNTC-MW5		PB-TNTC-MW6	
Sample No:			5620		5630		5640		5650		5660	
Sample Date:			18-NOV-97		21-NOV-97		24-NOV-97		21-NOV-97		20-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:CYANIDE-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL CYANIDE		MG/L										

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OverburdenWells
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Sample Location:			PB-WA-MW1		PB-WA-MW2	
Sample No:			5670		5680	
Sample Date:			21-NOV-97		23-NOV-97	
Depth			0-0		0-0	
WELLS-W:CYANIDE-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr
TOTAL CYANIDE		MG/L			0.079	

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Overburden Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				GCL-MW01		GCL-MW02A		GCL-MW02B	
Sample No:				5850		5860		5870	
Sample Date:				20-NOV-97		20-NOV-97		20-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,1,1-TRICHLOROETHANE		UG/L	160						
1,1-DICHLOROETHENE		UG/L	0.044						
BENZENE		UG/L	0.36						
CHLOROFORM		UG/L	0.15						
TOLUENE		UG/L	75						

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Overburden Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				GCL-MW03		IT-AA1-GW-002		IT-AA3-GW-002	
Sample No:				5880		5490		5510	
Sample Date:				20-NOV-97		20-NOV-97		19-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,1,1-TRICHLOROETHANE		UG/L	160						
1,1-DICHLOROETHENE		UG/L	0.044						
BENZENE		UG/L	0.36						
CHLOROFORM		UG/L	0.15						
TOLUENE		UG/L	75						

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Overburden Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				IT-ABG-GW-002		IT-MW01		IT-MW02	
Sample No:				5520		5530		5540	
Sample Date:				19-NOV-97		19-NOV-97		21-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,1,1-TRICHLOROETHANE		UG/L	160						
1,1-DICHLOROETHENE		UG/L	0.044						
BENZENE		UG/L	0.36	0.53	J				
CHLOROFORM		UG/L	0.15						
TOLUENE		UG/L	75						

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Overburden Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				IT-MW05		IT-MW06		IT-MW08	
Sample No:				5550		5560		5580	
Sample Date:				19-NOV-97		19-NOV-97		19-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,1,1-TRICHLOROETHANE		UG/L	160						
1,1-DICHLOROETHENE		UG/L	0.044						
BENZENE		UG/L	0.36						
CHLOROFORM		UG/L	0.15						
TOLUENE		UG/L	75						

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Overburden Wells

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Risk-Based Comparison Hits Summary

Sample Location:				IT-MW09		IT-MW10		MK-MW09	
Sample No:				5590		5600		5720	
Sample Date:				23-NOV-97		14-NOV-97		16-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,1,1-TRICHLOROETHANE		UG/L	160						
1,1-DICHLOROETHENE		UG/L	0.044						
BENZENE		UG/L	0.36						
CHLOROFORM		UG/L	0.15						
TOLUENE		UG/L	75						

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Overburden Wells

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Risk-Based Comparison Hits Summary

Sample Location:				MK-MW10		MK-MW11		MK-MW12	
Sample No:				5730		5740		5750	
Sample Date:				13-NOV-97		18-NOV-97		17-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,1,1-TRICHLOROETHANE		UG/L	160						
1,1-DICHLOROETHENE		UG/L	0.044						
BENZENE		UG/L	0.36						
CHLOROFORM		UG/L	0.15						
TOLUENE		UG/L	75						

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Overburden Wells

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Risk-Based Comparison Hits Summary

Sample Location:				MK-MW14		MK-MW15		MK-MW16	
Sample No:				5760		5770		5780	
Sample Date:				16-NOV-97		16-NOV-97		21-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,1,1-TRICHLOROETHANE		UG/L	160						
1,1-DICHLOROETHENE		UG/L	0.044						
BENZENE		UG/L	0.36						
CHLOROFORM		UG/L	0.15						
TOLUENE		UG/L	75						

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Overburden Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				MK-MW17		MK-MW19		MK-MW20	
Sample No:				5790		5800		5810	
Sample Date:				21-NOV-97		16-NOV-97		16-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,1,1-TRICHLOROETHANE		UG/L	160			170			
1,1-DICHLOROETHENE		UG/L	0.044			3.4			
BENZENE		UG/L	0.36						
CHLOROFORM		UG/L	0.15					71	J
TOLUENE		UG/L	75					13000	

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Overburden Wells

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Risk-Based Comparison Hits Summary

Sample Location:				MK-MW22		MK-MW23		MK-MW24	
Sample No:				5820		5830		5840	
Sample Date:				14-NOV-97		16-NOV-97		13-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,1,1-TRICHLOROETHANE		UG/L	160						
1,1-DICHLOROETHENE		UG/L	0.044						
BENZENE		UG/L	0.36						
CHLOROFORM		UG/L	0.15						
TOLUENE		UG/L	75						

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Overburden Wells

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Risk-Based Comparison Hits Summary

Sample Location:				PB-PR-MW7		PB-PR-MW8		PB-PR-MW9	
Sample No:				5690		5700		5710	
Sample Date:				17-NOV-97		17-NOV-97		17-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,1,1-TRICHLOROETHANE		UG/L	160						
1,1-DICHLOROETHENE		UG/L	0.044						
BENZENE		UG/L	0.36						
CHLOROFORM		UG/L	0.15						
TOLUENE		UG/L	75						

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Overburden Wells

Risk-Based Comparison Hits Summary

Report Date: 03/12/98

Sample Location:				PB-TNTA-MW10		PB-TNTA-MW11		PB-TNTC-MW3	
Sample No:				5610		5620		5630	
Sample Date:				18-NOV-97		18-NOV-97		21-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,1,1-TRICHLOROETHANE		UG/L	160						
1,1-DICHLOROETHENE		UG/L	0.044						
BENZENE		UG/L	0.36						
CHLOROFORM		UG/L	0.15						
TOLUENE		UG/L	75						

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Overburden Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				PB-TNTC-MW4		PB-TNTC-MW5		PB-TNTC-MW6	
Sample No:				5640		5650		5660	
Sample Date:				24-NOV-97		21-NOV-97		20-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,1,1-TRICHLOROETHANE		UG/L	160						
1,1-DICHLOROETHENE		UG/L	0.044						
BENZENE		UG/L	0.36						
CHLOROFORM		UG/L	0.15						
TOLUENE		UG/L	75						

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Overburden Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				PB-WA-MW1		PB-WA-MW2	
Sample No:				5670		5680	
Sample Date:				21-NOV-97		23-NOV-97	
Depth				0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr
1,1,1-TRICHLOROETHANE		UG/L	160				
1,1-DICHLOROETHENE		UG/L	0.044				
BENZENE		UG/L	0.36				
CHLOROFORM		UG/L	0.15				
TOLUENE		UG/L	75				

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Overburden Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				GCL-MW01		GCL-MW02A		GCL-MW02B	
Sample No:				5850		5860		5870	
Sample Date:				20-NOV-97		20-NOV-97		20-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:TOC-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL ORGANIC CARBON		UG/L		5400		4500		2700	

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Overburden Wells

Risk-Based Comparison Hits Summary

Sample Location:				GCL-MW03		IT-AA1-GW-002		IT-AA3-GW-002	
Sample No:				5880		5490		5510	
Sample Date:				20-NOV-97		20-NOV-97		19-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:TOC-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL ORGANIC CARBON		UG/L		4200		6900		4500	

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Overburden Wells

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Risk-Based Comparison Hits Summary

Sample Location:				IT-ABG-GW-002		IT-MW01		IT-MW02	
Sample No:				5520		5530		5540	
Sample Date:				19-NOV-97		19-NOV-97		21-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:TOC-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL ORGANIC CARBON		UG/L		13000		8600		41000	

PLUMBROOK

Overburden Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				IT-MW05		IT-MW06		IT-MW08	
Sample No:				5550		5560		5580	
Sample Date:				19-NOV-97		19-NOV-97		19-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:TOC-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL ORGANIC CARBON		UG/L		4700		3800		4400	

PLUMBROOK

Overburden Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				IT-MW09		IT-MW10		MK-MW09	
Sample No:				5590		5600		5720	
Sample Date:				23-NOV-97		14-NOV-97		16-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:TOC-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL ORGANIC CARBON		UG/L		2900		2700		1500	

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Overburden Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				MK-MW10		MK-MW11		MK-MW12	
Sample No:				5730		5740		5750	
Sample Date:				13-NOV-97		18-NOV-97		17-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:TOC-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL ORGANIC CARBON		UG/L		1400		3100		2000	

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Overburden Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				MK-MW14		MK-MW15		MK-MW16	
Sample No:				5760		5770		5780	
Sample Date:				16-NOV-97		16-NOV-97		21-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:TOC-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL ORGANIC CARBON		UG/L		6100		2600		2500	

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Overburden Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				MK-MW17		MK-MW19		MK-MW20	
Sample No:				5790		5800		5810	
Sample Date:				21-NOV-97		16-NOV-97		16-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:TOC-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL ORGANIC CARBON		UG/L		3400		2900		12000	

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Overburden Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				MK-MW22		MK-MW24		PB-PR-MW7	
Sample No:				5820		5840		5690	
Sample Date:				14-NOV-97		13-NOV-97		17-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:TOC-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL ORGANIC CARBON		UG/L		11000		21000		2700000	

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Overburden Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				PB-PR-MW8		PB-PR-MW9		PB-TNTA-MW10	
Sample No:				5700		5710		5610	
Sample Date:				17-NOV-97		17-NOV-97		18-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:TOC-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL ORGANIC CARBON		UG/L		14000000		1300000		4200	

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Overburden Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				PB-TNTA-MW11		PB-TNTC-MW3		PB-TNTC-MW4	
Sample No:				5620		5630		5640	
Sample Date:				18-NOV-97		21-NOV-97		24-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:TOC-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL ORGANIC CARBON		UG/L		4500		2400		2600	

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Overburden Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				PB-TNTC-MW5		PB-TNTC-MW6		PB-WA-MW1	
Sample No:				5650		5660		5670	
Sample Date:				21-NOV-97		20-NOV-97		21-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:TOC-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL ORGANIC CARBON		UG/L		3000		10000		2100	

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Overburden Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				PB-WA-MW2	
Sample No:				5680	
Sample Date:				23-NOV-97	
Depth				0-0	
WELLS-W:TOC-W	Fltr	Units	Screening Levels	Result	Val Qlfr
TOTAL ORGANIC CARBON		UG/L		970000	

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Overburden Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				GCL-MW01		GCL-MW02A		GCL-MW02B	
Sample No:				5850		5860		5870	
Sample Date:				20-NOV-97		20-NOV-97		20-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
2,4-DINITROPHENOL		UG/L	7.3						
2,4-DINITROTOLUENE		UG/L	7.3						
2,6-DINITROTOLUENE		UG/L	3.7						
2-METHYLPHENOL		UG/L	180						
2-NITROANILINE		UG/L	0.220						
3-NITROANILINE		UG/L	11						
4,6-DINITRO-2-METHYLPHENOL		UG/L	0.37						
4-METHYLPHENOL		UG/L	18						
BIS(2-ETHYLHEXYL) PHTHALATE		UG/L	4.8	100					

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Overburden Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				GCL-MW03		IT-AA1-GW-002		IT-AA3-GW-002	
Sample No:				5880		5490		5510	
Sample Date:				20-NOV-97		20-NOV-97		19-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
2,4-DINITROPHENOL		UG/L	7.3						
2,4-DINITROTOLUENE		UG/L	7.3						
2,6-DINITROTOLUENE		UG/L	3.7						
2-METHYLPHENOL		UG/L	180						
2-NITROANILINE		UG/L	0.220						
3-NITROANILINE		UG/L	11						
4,6-DINITRO-2-METHYLPHENOL		UG/L	0.37						
4-METHYLPHENOL		UG/L	18						
BIS(2-ETHYLHEXYL) PHTHALATE		UG/L	4.8						

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Overburden Wells

Risk-Based Comparison Hits Summary

Sample Location:				IT-ABG-GW-002		IT-MW01		IT-MW02	
Sample No:				5520		5530		5540	
Sample Date:				19-NOV-97		19-NOV-97		21-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
2,4-DINITROPHENOL		UG/L	7.3						
2,4-DINITROTOLUENE		UG/L	7.3					43	
2,6-DINITROTOLUENE		UG/L	3.7					7.1	J
2-METHYLPHENOL		UG/L	180						
2-NITROANILINE		UG/L	0.220					1.5	J
3-NITROANILINE		UG/L	11						
4,6-DINITRO-2-METHYLPHENOL		UG/L	0.37					12	J
4-METHYLPHENOL		UG/L	18						
BIS(2-ETHYLHEXYL) PHTHALATE		UG/L	4.8						

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Overburden Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				IT-MW05		IT-MW06		IT-MW08	
Sample No:				5550		5560		5580	
Sample Date:				19-NOV-97		19-NOV-97		19-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
2,4-DINITROPHENOL		UG/L	7.3						
2,4-DINITROTOLUENE		UG/L	7.3						
2,6-DINITROTOLUENE		UG/L	3.7						
2-METHYLPHENOL		UG/L	180						
2-NITROANILINE		UG/L	0.220						
3-NITROANILINE		UG/L	11						
4,6-DINITRO-2-METHYLPHENOL		UG/L	0.37						
4-METHYLPHENOL		UG/L	18						
BIS(2-ETHYLHEXYL) PHTHALATE		UG/L	4.8						

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Overburden Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				IT-MW09		IT-MW10		MK-MW09	
Sample No:				5590		5600		5720	
Sample Date:				23-NOV-97		14-NOV-97		16-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
2,4-DINITROPHENOL		UG/L	7.3						
2,4-DINITROTOLUENE		UG/L	7.3						
2,6-DINITROTOLUENE		UG/L	3.7						
2-METHYLPHENOL		UG/L	180						
2-NITROANILINE		UG/L	0.220						
3-NITROANILINE		UG/L	11						
4,6-DINITRO-2-METHYLPHENOL		UG/L	0.37						
4-METHYLPHENOL		UG/L	18						
BIS(2-ETHYLHEXYL) PHTHALATE		UG/L	4.8			5.1	J		

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Overburden Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				MK-MW14		MK-MW15		MK-MW16	
Sample No:				5760		5770		5780	
Sample Date:				16-NOV-97		16-NOV-97		21-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
2,4-DINITROPHENOL		UG/L	7.3						
2,4-DINITROTOLUENE		UG/L	7.3						
2,6-DINITROTOLUENE		UG/L	3.7						
2-METHYLPHENOL		UG/L	180						
2-NITROANILINE		UG/L	0.220						
3-NITROANILINE		UG/L	11						
4,6-DINITRO-2-METHYLPHENOL		UG/L	0.37						
4-METHYLPHENOL		UG/L	18						
BIS(2-ETHYLHEXYL) PHTHALATE		UG/L	4.8			6.0	J		

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Overburden Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				MK-MW10		MK-MW11		MK-MW12	
Sample No:				5730		5740		5750	
Sample Date:				13-NOV-97		18-NOV-97		17-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
2,4-DINITROPHENOL		UG/L	7.3						
2,4-DINITROTOLUENE		UG/L	7.3						
2,6-DINITROTOLUENE		UG/L	3.7						
2-METHYLPHENOL		UG/L	180						
2-NITROANILINE		UG/L	0.220						
3-NITROANILINE		UG/L	11						
4,6-DINITRO-2-METHYLPHENOL		UG/L	0.37						
4-METHYLPHENOL		UG/L	18						
BIS(2-ETHYLHEXYL) PHTHALATE		UG/L	4.8	11				28	

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Overburden Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				MK-MW17		MK-MW19		MK-MW20	
Sample No:				5790		5800		5810	
Sample Date:				21-NOV-97		16-NOV-97		16-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
2,4-DINITROPHENOL		UG/L	7.3						
2,4-DINITROTOLUENE		UG/L	7.3						
2,6-DINITROTOLUENE		UG/L	3.7						
2-METHYLPHENOL		UG/L	180					1300	
2-NITROANILINE		UG/L	0.220						
3-NITROANILINE		UG/L	11						
4,6-DINITRO-2-METHYLPHENOL		UG/L	0.37						
4-METHYLPHENOL		UG/L	18					1200	
BIS(2-ETHYLHEXYL) PHTHALATE		UG/L	4.8					5.0	J

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Overburden Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				MK-MW22		MK-MW23		MK-MW24	
Sample No:				5820		5830		5840	
Sample Date:				14-NOV-97		16-NOV-97		13-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
2,4-DINITROPHENOL		UG/L	7.3						
2,4-DINITROTOLUENE		UG/L	7.3						
2,6-DINITROTOLUENE		UG/L	3.7						
2-METHYLPHENOL		UG/L	180						
2-NITROANILINE		UG/L	0.220						
3-NITROANILINE		UG/L	11						
4,6-DINITRO-2-METHYLPHENOL		UG/L	0.37						
4-METHYLPHENOL		UG/L	18						
BIS(2-ETHYLHEXYL) PHTHALATE		UG/L	4.8						

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Overburden Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				PB-PR-MW7		PB-PR-MW8		PB-PR-MW9	
Sample No:				5690		5700		5710	
Sample Date:				17-NOV-97		17-NOV-97		17-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
2,4-DINITROPHENOL		UG/L	7.3			6000		48	J
2,4-DINITROTOLUENE		UG/L	7.3	1800		1500		110	
2,6-DINITROTOLUENE		UG/L	3.7	140	J	190	J		
2-METHYLPHENOL		UG/L	180						
2-NITROANILINE		UG/L	0.220						
3-NITROANILINE		UG/L	11			160	J	450	J
4,6-DINITRO-2-METHYLPHENOL		UG/L	0.37	660	J	2300	J		
4-METHYLPHENOL		UG/L	18						
BIS(2-ETHYLHEXYL) PHTHALATE		UG/L	4.8						

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Overburden Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				PB-TNTA-MW10		PB-TNTA-MW11		PB-TNTC-MW3	
Sample No:				5610		5620		5630	
Sample Date:				18-NOV-97		18-NOV-97		21-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
2,4-DINITROPHENOL		UG/L	7.3						
2,4-DINITROTOLUENE		UG/L	7.3						
2,6-DINITROTOLUENE		UG/L	3.7						
2-METHYLPHENOL		UG/L	180						
2-NITROANILINE		UG/L	0.220						
3-NITROANILINE		UG/L	11						
4,6-DINITRO-2-METHYLPHENOL		UG/L	0.37						
4-METHYLPHENOL		UG/L	18						
BIS(2-ETHYLHEXYL) PHTHALATE		UG/L	4.8						

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Overburden Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				PB-TNTC-MW4		PB-TNTC-MW5		PB-TNTC-MW6	
Sample No:				5640		5650		5660	
Sample Date:				24-NOV-97		21-NOV-97		20-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
2,4-DINITROPHENOL		UG/L	7.3						
2,4-DINITROTOLUENE		UG/L	7.3						
2,6-DINITROTOLUENE		UG/L	3.7						
2-METHYLPHENOL		UG/L	180						
2-NITROANILINE		UG/L	0.220						
3-NITROANILINE		UG/L	11						
4,6-DINITRO-2-METHYLPHENOL		UG/L	0.37						
4-METHYLPHENOL		UG/L	18						
BIS(2-ETHYLHEXYL) PHTHALATE		UG/L	4.8					7.3	J

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Overburden Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				PB-WA-MW1		PB-WA-MW2	
Sample No:				5670		5680	
Sample Date:				21-NOV-97		23-NOV-97	
Depth				0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr
2,4-DINITROPHENOL		UG/L	7.3				
2,4-DINITROTOLUENE		UG/L	7.3				
2,6-DINITROTOLUENE		UG/L	3.7				
2-METHYLPHENOL		UG/L	180				
2-NITROANILINE		UG/L	0.220				
3-NITROANILINE		UG/L	11				
4,6-DINITRO-2-METHYLPHENOL		UG/L	0.37				
4-METHYLPHENOL		UG/L	18				
BIS(2-ETHYLHEXYL) PHTHALATE		UG/L	4.8				

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Overburden Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				GCL-MW01		GCL-MW02A		GCL-MW02B	
Sample No:				5850		5860		5870	
Sample Date:				20-NOV-97		20-NOV-97		20-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
ALUMINUM		UG/L	3700	9410	J				
ARSENIC		UG/L	.045	36.3					
ARSENIC	Y	UG/L	.045						
BARIUM		UG/L	260						
BARIUM	Y	UG/L	260						
CALCIUM		UG/L		75500	J	95200		101000	J
CALCIUM	Y	UG/L		75400		94400		111000	
CHROMIUM		UG/L	18	44.9		22.7			
COBALT		UG/L	220						
COBALT	Y	UG/L	220						
IRON		UG/L	1100	76600		3130		3750	
IRON	Y	UG/L	1100	4350				1130	
LEAD		UG/L	15	17.7					
MAGNESIUM		UG/L		31500		19300		23000	
MAGNESIUM	Y	UG/L		30000		19200		24900	
MANGANESE		UG/L	73	432		434		475	
MANGANESE	Y	UG/L	73	350		421		507	
NICKEL		UG/L	73						
NICKEL	Y	UG/L	73						
POTASSIUM		UG/L							
POTASSIUM	Y	UG/L							
SELENIUM		UG/L	18	20.4					
SODIUM		UG/L		8350	J	16200		9230	J
SODIUM	Y	UG/L		8550		16400		9590	
VANADIUM		UG/L	26						
VANADIUM	Y	UG/L	26						

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Overburden Wells

Risk-Based Comparison Hits Summary

Sample Location:				GCL-MW03		IT-AA1-GW-002		IT-AA3-GW-002	
Sample No:				5880		5490		5510	
Sample Date:				20-NOV-97		20-NOV-97		19-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
ALUMINUM		UG/L	3700					11600	J
ARSENIC		UG/L	.045	40.2				10.3	
ARSENIC	Y	UG/L	.045						
BARIUM		UG/L	260						
BARIUM	Y	UG/L	260						
CALCIUM		UG/L		70700	J	601000		205000	
CALCIUM	Y	UG/L		64100		549000		131000	
CHROMIUM		UG/L	18					22.8	
COBALT		UG/L	220						
COBALT	Y	UG/L	220						
IRON		UG/L	1100	26300		32900		27300	
IRON	Y	UG/L	1100			14400			
LEAD		UG/L	15					16.6	
MAGNESIUM		UG/L		20000		199000		52100	
MAGNESIUM	Y	UG/L		17800		305000		29300	
MANGANESE		UG/L	73	493		5410		816	
MANGANESE	Y	UG/L	73	369		4740		78.8	
NICKEL		UG/L	73						
NICKEL	Y	UG/L	73						
POTASSIUM		UG/L							
POTASSIUM	Y	UG/L				6710			
SELENIUM		UG/L	18						
SODIUM		UG/L		5510	J	21400		7800	
SODIUM	Y	UG/L		5100		39600		7180	
VANADIUM		UG/L	26						
VANADIUM	Y	UG/L	26						

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Overburden Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				IT-ABG-GW-002		IT-MW01		IT-MW02	
Sample No:				5520		5530		5540	
Sample Date:				19-NOV-97		19-NOV-97		21-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
ALUMINUM		UG/L	3700	34500	J				
ARSENIC		UG/L	.045	66.2					
ARSENIC	Y	UG/L	.045						
BARIUM		UG/L	260	314					
BARIUM	Y	UG/L	260						
CALCIUM		UG/L		491000		46400		150000	J
CALCIUM	Y	UG/L		393000		44900		147000	
CHROMIUM		UG/L	18	69.8					
COBALT		UG/L	220						
COBALT	Y	UG/L	220						
IRON		UG/L	1100	103000		1320			
IRON	Y	UG/L	1100	4890					
LEAD		UG/L	15	100					
MAGNESIUM		UG/L		113000		17500		70500	
MAGNESIUM	Y	UG/L		85300		17000		68000	
MANGANESE		UG/L	73	3010		323		896	
MANGANESE	Y	UG/L	73	2500		331		877	
NICKEL		UG/L	73	212					
NICKEL	Y	UG/L	73						
POTASSIUM		UG/L		11800		6160			
POTASSIUM	Y	UG/L		5220		6180			
SELENIUM		UG/L	18						
SODIUM		UG/L		18300		22800		250000	J
SODIUM	Y	UG/L		20400		22200		244000	
VANADIUM		UG/L	26	158					
VANADIUM	Y	UG/L	26						

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Overburden Wells

Risk-Based Comparison Hits Summary

Sample Location:				IT-MW05		IT-MW06		IT-MW08	
Sample No:				5550		5560		5580	
Sample Date:				19-NOV-97		19-NOV-97		19-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
ALUMINUM		UG/L	3700	3970	J				
ARSENIC		UG/L	.045	11.5					
ARSENIC	Y	UG/L	.045	12.5					
BARIUM		UG/L	260						
BARIUM	Y	UG/L	260						
CALCIUM		UG/L		116000		142000		342000	
CALCIUM	Y	UG/L		99500		128000		345000	
CHROMIUM		UG/L	18						
COBALT		UG/L	220						
COBALT	Y	UG/L	220						
IRON		UG/L	1100	14700		1620			
IRON	Y	UG/L	1100	3050					
LEAD		UG/L	15						
MAGNESIUM		UG/L		38400		23500		136000	
MAGNESIUM	Y	UG/L		36500		21400		139000	
MANGANESE		UG/L	73	302		340		361	
MANGANESE	Y	UG/L	73	114				328	
NICKEL		UG/L	73						
NICKEL	Y	UG/L	73						
POTASSIUM		UG/L						14900	
POTASSIUM	Y	UG/L						15300	
SELENIUM		UG/L	18						
SODIUM		UG/L		18100				18900	
SODIUM	Y	UG/L		19100				19500	
VANADIUM		UG/L	26						
VANADIUM	Y	UG/L	26						

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Overburden Wells

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Risk-Based Comparison Hits Summary

Sample Location:				IT-MW09		IT-MW10		MK-MW09	
Sample No:				5590		5600		5720	
Sample Date:				23-NOV-97		14-NOV-97		16-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
ALUMINUM		UG/L	3700						
ARSENIC		UG/L	.045						
ARSENIC	Y	UG/L	.045						
BARIUM		UG/L	260						
BARIUM	Y	UG/L	260						
CALCIUM		UG/L		426000	J	183000	J	103000	
CALCIUM	Y	UG/L		402000		188000		106000	J
CHROMIUM		UG/L	18						
COBALT		UG/L	220						
COBALT	Y	UG/L	220						
IRON		UG/L	1100	3370		3040			
IRON	Y	UG/L	1100						
LEAD		UG/L	15						
MAGNESIUM		UG/L		253000		83700		27600	
MAGNESIUM	Y	UG/L		246000		86300		28100	
MANGANESE		UG/L	73	249		1670			
MANGANESE	Y	UG/L	73	372		1630			
NICKEL		UG/L	73						
NICKEL	Y	UG/L	73						
POTASSIUM		UG/L		25600					
POTASSIUM	Y	UG/L		26500					
SELENIUM		UG/L	18						
SODIUM		UG/L		146000	J	48200		6290	
SODIUM	Y	UG/L		144000		50200		6470	
VANADIUM		UG/L	26						
VANADIUM	Y	UG/L	26						

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Risk-Based Comparison Hits Summary

Sample Location:				MK-MW10		MK-MW11		MK-MW12	
Sample No:				5730		5740		5750	
Sample Date:				13-NOV-97		18-NOV-97		17-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
ALUMINUM		UG/L	3700			5080			
ARSENIC		UG/L	.045						
ARSENIC	Y	UG/L	.045						
BARIUM		UG/L	260						
BARIUM	Y	UG/L	260						
CALCIUM		UG/L		99200	J	161000		133000	
CALCIUM	Y	UG/L		96700		142000	J	131000	J
CHROMIUM		UG/L	18						
COBALT		UG/L	220						
COBALT	Y	UG/L	220						
IRON		UG/L	1100	2080		12300			
IRON	Y	UG/L	1100						
LEAD		UG/L	15						
MAGNESIUM		UG/L		27600		39400		21900	
MAGNESIUM	Y	UG/L		26200		33300		21600	
MANGANESE		UG/L	73	90.9		344		1130	
MANGANESE	Y	UG/L	73					1060	
NICKEL		UG/L	73						
NICKEL	Y	UG/L	73						
POTASSIUM		UG/L							
POTASSIUM	Y	UG/L							
SELENIUM		UG/L	18						
SODIUM		UG/L				8430			
SODIUM	Y	UG/L				7950			
VANADIUM		UG/L	26						
VANADIUM	Y	UG/L	26						

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Risk-Based Comparison Hits Summary

Sample Location:				MK-MW14		MK-MW15		MK-MW16	
Sample No:				5760		5770		5780	
Sample Date:				16-NOV-97		16-NOV-97		21-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
ALUMINUM		UG/L	3700					4990	J
ARSENIC		UG/L	.045						
ARSENIC	Y	UG/L	.045						
BARIUM		UG/L	260						
BARIUM	Y	UG/L	260						
CALCIUM		UG/L		172000	J	114000	J	146000	J
CALCIUM	Y	UG/L		216000		118000		147000	
CHROMIUM		UG/L	18						
COBALT		UG/L	220						
COBALT	Y	UG/L	220						
IRON		UG/L	1100	19300		12700		19800	
IRON	Y	UG/L	1100	22900		12700		2410	
LEAD		UG/L	15						
MAGNESIUM		UG/L		26500		17600		53800	
MAGNESIUM	Y	UG/L		32300		17800		52300	
MANGANESE		UG/L	73	370		608		6970	
MANGANESE	Y	UG/L	73	449		617		6900	
NICKEL		UG/L	73						
NICKEL	Y	UG/L	73						
POTASSIUM		UG/L						5460	
POTASSIUM	Y	UG/L							
SELENIUM		UG/L	18						
SODIUM		UG/L		5960				6560	J
SODIUM	Y	UG/L		7130				6470	
VANADIUM		UG/L	26						
VANADIUM	Y	UG/L	26						

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Overburden Wells

Risk-Based Comparison Hits Summary

Report Date: 03/12/98

Sample Location:				MK-MW17		MK-MW19		MK-MW20	
Sample No:				5790		5800		5810	
Sample Date:				21-NOV-97		16-NOV-97		16-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
ALUMINUM		UG/L	3700					18400	
ARSENIC		UG/L	.045	12.6				15.8	
ARSENIC	Y	UG/L	.045						
BARIUM		UG/L	260						
BARIUM	Y	UG/L	260						
CALCIUM		UG/L		127000	J	158000		240000	
CALCIUM	Y	UG/L		114000		176000	J	167000	J
CHROMIUM		UG/L	18					42.7	
COBALT		UG/L	220						
COBALT	Y	UG/L	220						
IRON		UG/L	1100	44300				46700	
IRON	Y	UG/L	1100	34100					
LEAD		UG/L	15						
MAGNESIUM		UG/L		29900		34900		96200	
MAGNESIUM	Y	UG/L		26300		38300		108000	
MANGANESE		UG/L	73	1410				994	
MANGANESE	Y	UG/L	73	1260					
NICKEL		UG/L	73	156				114	
NICKEL	Y	UG/L	73	140					
POTASSIUM		UG/L						33800	
POTASSIUM	Y	UG/L						40600	
SELENIUM		UG/L	18						
SODIUM		UG/L		6090	J	11200		223000	
SODIUM	Y	UG/L		5170		12200		296000	
VANADIUM		UG/L	26					59.7	
VANADIUM	Y	UG/L	26						

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Risk-Based Comparison Hits Summary

Sample Location:				MK-MW22		MK-MW23		MK-MW24	
Sample No:				5820		5830		5840	
Sample Date:				14-NOV-97		16-NOV-97		13-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
ALUMINUM		UG/L	3700	7790		27300		6620	
ARSENIC		UG/L	.045			59.8			
ARSENIC	Y	UG/L	.045			13.8			
BARIUM		UG/L	260						
BARIUM	Y	UG/L	260						
CALCIUM		UG/L		118000	J	236000		641000	J
CALCIUM	Y	UG/L		127000		140000	J	984000	
CHROMIUM		UG/L	18			57.1		25.2	
COBALT		UG/L	220						
COBALT	Y	UG/L	220						
IRON		UG/L	1100	10900		68200		13500	
IRON	Y	UG/L	1100					2920	
LEAD		UG/L	15			29.8			
MAGNESIUM		UG/L		17500		61400		47400	
MAGNESIUM	Y	UG/L		17900		49900		41300	
MANGANESE		UG/L	73	185		1370		788	
MANGANESE	Y	UG/L	73	149		265		562	
NICKEL		UG/L	73			125			
NICKEL	Y	UG/L	73						
POTASSIUM		UG/L				14400		5640	
POTASSIUM	Y	UG/L				8540			
SELENIUM		UG/L	18						
SODIUM		UG/L		7100		60200		8130	
SODIUM	Y	UG/L		8360		68500		8250	
VANADIUM		UG/L	26			75.2		60.9	
VANADIUM	Y	UG/L	26					53.0	

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Risk-Based Comparison Hits Summary

Sample Location:				PB-PR-MW7		PB-PR-MW8		PB-PR-MW9	
Sample No:				5690		5700		5710	
Sample Date:				17-NOV-97		17-NOV-97		17-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
ALUMINUM		UG/L	3700	8960	J				
ARSENIC		UG/L	.045						
ARSENIC	Y	UG/L	.045						
BARIUM		UG/L	260						
BARIUM	Y	UG/L	260						
CALCIUM		UG/L		625000		749000			
CALCIUM	Y	UG/L		582000		753000	J		
CHROMIUM		UG/L	18						
COBALT		UG/L	220	2320		7270			
COBALT	Y	UG/L	220	2330		6770			
IRON		UG/L	1100	21700		22000			
IRON	Y	UG/L	1100	1360		12200			
LEAD		UG/L	15						
MAGNESIUM		UG/L		189000		541000			
MAGNESIUM	Y	UG/L		184000					
MANGANESE		UG/L	73	17000		34100		1900	
MANGANESE	Y	UG/L	73	17000		29700		1890	
NICKEL		UG/L	73	1710		7600			
NICKEL	Y	UG/L	73	1710		6820			
POTASSIUM		UG/L							
POTASSIUM	Y	UG/L							
SELENIUM		UG/L	18						
SODIUM		UG/L		3540000		10800000		1360000	
SODIUM	Y	UG/L		3850000		9230000		1450000	
VANADIUM		UG/L	26						
VANADIUM	Y	UG/L	26						

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Risk-Based Comparison Hits Summary

Sample Location:				PB-TNTA-MW10		PB-TNTA-MW11		PB-TNTC-MW3	
Sample No:				5610		5620		5630	
Sample Date:				18-NOV-97		18-NOV-97		21-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
ALUMINUM		UG/L	3700						
ARSENIC		UG/L	.045	12.2		10.5			
ARSENIC	Y	UG/L	.045						
BARIUM		UG/L	260	373					
BARIUM	Y	UG/L	260	338					
CALCIUM		UG/L		186000		180000		566000	J
CALCIUM	Y	UG/L		191000		167000		529000	
CHROMIUM		UG/L	18						
COBALT		UG/L	220						
COBALT	Y	UG/L	220						
IRON		UG/L	1100	18200		13300			
IRON	Y	UG/L	1100	7610					
LEAD		UG/L	15						
MAGNESIUM		UG/L		52900		63000		215000	
MAGNESIUM	Y	UG/L		54800		62900		204000	
MANGANESE		UG/L	73	1530		1030		2950	
MANGANESE	Y	UG/L	73	1440		865		2900	
NICKEL		UG/L	73					120	
NICKEL	Y	UG/L	73					77.1	
POTASSIUM		UG/L				17400		26700	
POTASSIUM	Y	UG/L				17800		25800	
SELENIUM		UG/L	18						
SODIUM		UG/L		39300		91400		86100	J
SODIUM	Y	UG/L		41000		96500		79400	
VANADIUM		UG/L	26						
VANADIUM	Y	UG/L	26						

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Overburden Wells

Risk-Based Comparison Hits Summary

Sample Location:				PB-TNTC-MW4		PB-TNTC-MW5		PB-TNTC-MW6	
Sample No:				5640		5650		5660	
Sample Date:				24-NOV-97		21-NOV-97		20-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
ALUMINUM		UG/L	3700	3820	J				
ARSENIC		UG/L	.045	21.5		10.1			
ARSENIC	Y	UG/L	.045						
BARIUM		UG/L	260						
BARIUM	Y	UG/L	260						
CALCIUM		UG/L		285000	J	146000	J	223000	
CALCIUM	Y	UG/L		386000		138000		243000	
CHROMIUM		UG/L	18	25.2		18.4			
COBALT		UG/L	220						
COBALT	Y	UG/L	220						
IRON		UG/L	1100	17400		13900		2460	
IRON	Y	UG/L	1100					1570	
LEAD		UG/L	15						
MAGNESIUM		UG/L		145000		55900		15600	
MAGNESIUM	Y	UG/L		181000		54600		17500	
MANGANESE		UG/L	73	800		713		3700	
MANGANESE	Y	UG/L	73	1120		522		4020	
NICKEL		UG/L	73						
NICKEL	Y	UG/L	73						
POTASSIUM		UG/L		28200		15400		12200	
POTASSIUM	Y	UG/L		34500		14700		14300	
SELENIUM		UG/L	18						
SODIUM		UG/L		79700	J	161000	J	17600	
SODIUM	Y	UG/L		94900		163000		21300	
VANADIUM		UG/L	26						
VANADIUM	Y	UG/L	26						

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Risk-Based Comparison Hits Summary

Sample Location:				PB-WA-MW1		PB-WA-MW2	
Sample No:				5670		5680	
Sample Date:				21-NOV-97		23-NOV-97	
Depth				0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr
ALUMINUM		UG/L	3700			3720	J
ARSENIC		UG/L	.045				
ARSENIC	Y	UG/L	.045				
BARIUM		UG/L	260				
BARIUM	Y	UG/L	260				
CALCIUM		UG/L		150000	J	497000	J
CALCIUM	Y	UG/L		136000		472000	
CHROMIUM		UG/L	18				
COBALT		UG/L	220				
COBALT	Y	UG/L	220				
IRON		UG/L	1100	5600		7930	
IRON	Y	UG/L	1100				
LEAD		UG/L	15				
MAGNESIUM		UG/L		58100		181000	
MAGNESIUM	Y	UG/L		54600		170000	
MANGANESE		UG/L	73	235		1660	
MANGANESE	Y	UG/L	73	163		1620	
NICKEL		UG/L	73			228	
NICKEL	Y	UG/L	73				
POTASSIUM		UG/L				28000	
POTASSIUM	Y	UG/L					
SELENIUM		UG/L	18				
SODIUM		UG/L		14300	J	1010000	J
SODIUM	Y	UG/L		13800		1030000	
VANADIUM		UG/L	26				
VANADIUM	Y	UG/L	26				

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Overburden Wells

Risk-Based Comparison Hits Summary

Sample Location:				GCL-MW01		GCL-MW02A		GCL-MW02B	
Sample No:				5850		5860		5870	
Sample Date:				20-NOV-97		20-NOV-97		20-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:EXPLOSIVES-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,3,5-TRINITROBENZENE		UG/L	110						
1,3-DINITROBENZENE		UG/L	0.37						
2,4-DINITROTOLUENE		UG/L	7.3						
2,6-DINITROTOLUENE		UG/L	3.7						
4-AMINO-2,6-DINITROTOLUENE		UG/L	0.22						

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Risk-Based Comparison Hits Summary

Sample Location:				GCL-MW03		IT-AA1-GW-002		IT-AA3-GW-002	
Sample No:				5880		5490		5510	
Sample Date:				20-NOV-97		20-NOV-97		19-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:EXPLOSIVES-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,3,5-TRINITROBENZENE		UG/L	110						
1,3-DINITROBENZENE		UG/L	0.37						
2,4-DINITROTOLUENE		UG/L	7.3						
2,6-DINITROTOLUENE		UG/L	3.7						
4-AMINO-2,6-DINITROTOLUENE		UG/L	0.22						

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Risk-Based Comparison Hits Summary

Sample Location:				IT-ABG-GW-002		IT-MW01		IT-MW02	
Sample No:				5520		5530		5540	
Sample Date:				19-NOV-97		19-NOV-97		21-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:EXPLOSIVES-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,3,5-TRINITROBENZENE		UG/L	110						
1,3-DINITROBENZENE		UG/L	0.37					17	
2,4-DINITROTOLUENE		UG/L	7.3					47	
2,6-DINITROTOLUENE		UG/L	3.7					7.8	
4-AMINO-2,6-DINITROTOLUENE		UG/L	0.22						

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Risk-Based Comparison Hits Summary

Sample Location:				IT-MW05		IT-MW06		IT-MW08	
Sample No:				5550		5560		5580	
Sample Date:				19-NOV-97		19-NOV-97		19-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:EXPLOSIVES-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,3,5-TRINITROBENZENE		UG/L	110						
1,3-DINITROBENZENE		UG/L	0.37						
2,4-DINITROTOLUENE		UG/L	7.3						
2,6-DINITROTOLUENE		UG/L	3.7						
4-AMINO-2,6-DINITROTOLUENE		UG/L	0.22						

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Overburden Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				IT-MW09		IT-MW10		MK-MW09	
Sample No:				5590		5600		5720	
Sample Date:				23-NOV-97		14-NOV-97		16-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:EXPLOSIVES-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,3,5-TRINITROBENZENE		UG/L	110						
1,3-DINITROBENZENE		UG/L	0.37						
2,4-DINITROTOLUENE		UG/L	7.3						
2,6-DINITROTOLUENE		UG/L	3.7						
4-AMINO-2,6-DINITROTOLUENE		UG/L	0.22						

PLUMBROOK

Overburden Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				MK-MW10		MK-MW11		MK-MW12	
Sample No:				5730		5740		5750	
Sample Date:				13-NOV-97		18-NOV-97		17-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:EXPLOSIVES-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,3,5-TRINITROBENZENE		UG/L	110						
1,3-DINITROBENZENE		UG/L	0.37						
2,4-DINITROTOLUENE		UG/L	7.3						
2,6-DINITROTOLUENE		UG/L	3.7						
4-AMINO-2,6-DINITROTOLUENE		UG/L	0.22						

PLUMBROOK

Overburden Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				MK-MW14		MK-MW15		MK-MW16	
Sample No:				5760		5770		5780	
Sample Date:				16-NOV-97		16-NOV-97		21-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:EXPLOSIVES-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,3,5-TRINITROBENZENE		UG/L	110						
1,3-DINITROBENZENE		UG/L	0.37						
2,4-DINITROTOLUENE		UG/L	7.3						
2,6-DINITROTOLUENE		UG/L	3.7						
4-AMINO-2,6-DINITROTOLUENE		UG/L	0.22						

PLUMBROOK

Overburden Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				MK-MW17		MK-MW19		MK-MW20	
Sample No:				5790		5800		5810	
Sample Date:				21-NOV-97		16-NOV-97		16-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:EXPLOSIVES-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,3,5-TRINITROBENZENE		UG/L	110						
1,3-DINITROBENZENE		UG/L	0.37						
2,4-DINITROTOLUENE		UG/L	7.3						
2,6-DINITROTOLUENE		UG/L	3.7						
4-AMINO-2,6-DINITROTOLUENE		UG/L	0.22	3.6					

PLUMBROOK

Overburden Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				MK-MW22		MK-MW23		MK-MW24	
Sample No:				5820		5830		5840	
Sample Date:				14-NOV-97		16-NOV-97		13-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:EXPLOSIVES-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,3,5-TRINITROBENZENE		UG/L	110						
1,3-DINITROBENZENE		UG/L	0.37						
2,4-DINITROTOLUENE		UG/L	7.3						
2,6-DINITROTOLUENE		UG/L	3.7						
4-AMINO-2,6-DINITROTOLUENE		UG/L	0.22	0.62					

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Overburden Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				PB-PR-MW7		PB-PR-MW8		PB-PR-MW9	
Sample No:				5690		5700		5710	
Sample Date:				17-NOV-97		17-NOV-97		17-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:EXPLOSIVES-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,3,5-TRINITROBENZENE		UG/L	110	2000		1500			
1,3-DINITROBENZENE		UG/L	0.37	1500		1500		35	
2,4-DINITROTOLUENE		UG/L	7.3	1200		1300		28	
2,6-DINITROTOLUENE		UG/L	3.7						
4-AMINO-2,6-DINITROTOLUENE		UG/L	0.22						

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Overburden Wells

Risk-Based Comparison Hits Summary

Report Date: 03/12/98

Sample Location:				PB-TNTA-MW10		PB-TNTA-MW11		PB-TNTC-MW3	
Sample No:				5610		5620		5630	
Sample Date:				18-NOV-97		18-NOV-97		21-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:EXPLOSIVES-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,3,5-TRINITROBENZENE		UG/L	110						
1,3-DINITROBENZENE		UG/L	0.37						
2,4-DINITROTOLUENE		UG/L	7.3						
2,6-DINITROTOLUENE		UG/L	3.7						
4-AMINO-2,6-DINITROTOLUENE		UG/L	0.22						

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Overburden Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				PB-TNTC-MW4		PB-TNTC-MW5		PB-TNTC-MW6	
Sample No:				5640		5650		5660	
Sample Date:				24-NOV-97		21-NOV-97		20-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:EXPLOSIVES-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,3,5-TRINITROBENZENE		UG/L	110						
1,3-DINITROBENZENE		UG/L	0.37						
2,4-DINITROTOLUENE		UG/L	7.3						
2,6-DINITROTOLUENE		UG/L	3.7						
4-AMINO-2,6-DINITROTOLUENE		UG/L	0.22						

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Overburden Wells

Risk-Based Comparison Hits Summary

Sample Location:				PB-WA-MW1		PB-WA-MW2	
Sample No:				5670		5680	
Sample Date:				21-NOV-97		23-NOV-97	
Depth				0-0		0-0	
WELLS-W:EXPLOSIVES-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr
1,3,5-TRINITROBENZENE		UG/L	110				
1,3-DINITROBENZENE		UG/L	0 37				
2,4-DINITROTOLUENE		UG/L	7.3				
2,6-DINITROTOLUENE		UG/L	3 7				
4-AMINO-2,6-DINITROTOLUENE		UG/L	0.22				

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Overburden Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				GCL-MW01		GCL-MW02A		GCL-MW02B	
Sample No:				5850		5860		5870	
Sample Date:				20-NOV-97		20-NOV-97		20-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:CYANIDE-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result.	Val Qlfr
TOTAL CYANIDE		UG/L	73						

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Overburden Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				GCL-MW03		IT-AA1-GW-002		IT-AA3-GW-002	
Sample No:				5880		5490		5510	
Sample Date:				20-NOV-97		20-NOV-97		19-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:CYANIDE-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL CYANIDE		UG/L	73						

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Overburden Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				IT-ABG-GW-002		IT-MW01		IT-MW02	
Sample No:				5520		5530		5540	
Sample Date:				19-NOV-97		19-NOV-97		21-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:CYANIDE-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL CYANIDE		UG/L	73						

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Overburden Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				IT-MW05		IT-MW06		IT-MW08	
Sample No:				5550		5560		5580	
Sample Date:				19-NOV-97		19-NOV-97		19-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:CYANIDE-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL CYANIDE		UG/L	73						

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Overburden Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				IT-MW09		IT-MW10		MK-MW09	
Sample No:				5590		5600		5720	
Sample Date:				23-NOV-97		14-NOV-97		16-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:CYANIDE-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL CYANIDE		UG/L	73						

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Overburden Wells

Risk-Based Comparison Hits Summary

Report Date: 03/12/98

Sample Location:				MK-MW10		MK-MW11		MK-MW12	
Sample No:				5730		5740		5750	
Sample Date:				13-NOV-97		18-NOV-97		17-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:CYANIDE-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL CYANIDE		UG/L	73						

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Overburden Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				MK-MW14		MK-MW15		MK-MW16	
Sample No:				5760		5770		5780	
Sample Date:				16-NOV-97		16-NOV-97		21-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:CYANIDE-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL CYANIDE		UG/L	73						

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Overburden Wells

Risk-Based Comparison Hits Summary

Sample Location:				MK-MW17		MK-MW19		MK-MW20	
Sample No:				5790		5800		5810	
Sample Date:				21-NOV-97		16-NOV-97		16-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:CYANIDE-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL CYANIDE		UG/L	73						

PLUMBROOK

Overburden Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				MK-MW22		MK-MW24		PB-PR-MW7	
Sample No:				5820		5840		5690	
Sample Date:				14-NOV-97		13-NOV-97		17-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:CYANIDE-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL CYANIDE		UG/L	73					120	

PLUMBROOK

Overburden Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				PB-PR-MW8		PB-PR-MW9		PB-TNTA-MW10	
Sample No:				5700		5710		5610	
Sample Date:				17-NOV-97		17-NOV-97		18-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:CYANIDE-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL CYANIDE		UG/L	73	240					

PLUMBROOK

Overburden Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				PB-TNTA-MW11		PB-TNTC-MW3		PB-TNTC-MW4	
Sample No:				5620		5630		5640	
Sample Date:				18-NOV-97		21-NOV-97		24-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:CYANIDE-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL CYANIDE		UG/L	73						

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Overburden Wells

Risk-Based Comparison Hits Summary

Report Date: 03/12/98

Sample Location:				PB-TNTC-MW5		PB-TNTC-MW6		PB-WA-MW1	
Sample No:				5650		5660		5670	
Sample Date:				21-NOV-97		20-NOV-97		21-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:CYANIDE-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL CYANIDE		UG/L	73						

PLUMBROOK

Overburden Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				PB-WA-MW2	
Sample No:				5680	
Sample Date:				23-NOV-97	
Depth				0-0	
WELLS-W:CYANIDE-W	Fltr	Units	Screening Levels	Result	Val Qlfr
TOTAL CYANIDE		UG/L	73	79	

PLUMBROOK
Bedrock Wells
Data Summary

Report Date: 03/12/98

Sample Location:			IT-AA1-BEDGW-001		IT-AA2-BEDGW-001		IT-AA3-BEDGW-001		IT-ABG-BEDGW-01		IT-BG8-BEDGW-001	
Sample No:			5450		5460		5470		5480		5410	
Sample Date:			16-NOV-97		20-NOV-97		19-NOV-97		13-NOV-97		17-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,1,1-TRICHLOROETHANE		UG/L	25	U	25	U	5.0	U	1.0	U	1.0	U
1,1,2,2-TETRACHLOROETHANE		UG/L	25	U	25	U	5.0	U	1.0	U	1.0	U
1,1,2-TRICHLOROETHANE		UG/L	25	U	25	U	5.0	U	1.0	U	1.0	U
1,1-DICHLOROETHANE		UG/L	25	U	25	U	5.0	U	1.0	U	1.0	U
1,1-DICHLOROETHENE		UG/L	25	U	25	U	5.0	U	1.0	U	1.0	U
1,2-DICHLOROETHANE		UG/L	25	U	25	U	5.0	U	1.0	U	1.0	U
1,2-DICHLOROETHENE (TOTAL)		UG/L	25	U	25	U	5.0	U	1.0	U	1.0	U
1,2-DICHLOROPROPANE		UG/L	25	U	25	U	5.0	U	1.0	U	1.0	U
2-BUTANONE		UG/L	120	R	120	U	25	R	5.0	R	5.0	R
2-HEXANONE		UG/L	120	R	120	U	25	R	5.0	R	5.0	R
4-METHYL-2-PENTANONE		UG/L	120	U	120	U	25	U	5.0	U	5.0	U
ACETONE		UG/L	250	R	250	U	36	J	10	R	10	R
BENZENE		UG/L	11	J	33		5.0	U	1.0	U	1.0	U
BROMODICHLOROMETHANE		UG/L	25	U	25	U	5.0	U	1.0	U	1.0	U
BROMOFORM		UG/L	25	U	25	U	5.0	U	1.0	U	1.0	U
BROMOMETHANE		UG/L	50	U	50	U	10	U	2.0	U	2.0	U
CARBON DISULFIDE		UG/L	29	J	5.5	J	4.2	J	1.0	U	0.65	J
CARBON TETRACHLORIDE		UG/L	25	U	25	U	5.0	U	1.0	U	1.0	U
CHLOROBENZENE		UG/L	25	U	21	J	5.0	U	1.0	U	1.0	U
CHLOROETHANE		UG/L	50	U	50	U	10	U	2.0	U	2.0	U
CHLOROFORM		UG/L	25	U	25	U	5.0	U	1.0	U	1.0	U
CHLOROMETHANE		UG/L	50	U	50	U	10	U	2.0	U	2.0	U
CIS-1,3-DICHLOROPROPENE		UG/L	25	U	25	U	5.0	U	1.0	U	1.0	U
DIBROMOCHLOROMETHANE		UG/L	25	U	25	U	5.0	U	1.0	U	1.0	U
ETHYLBENZENE		UG/L	7.7	J	23	J	5.0	U	1.0	U	1.0	U
METHYLENE CHLORIDE		UG/L	25	J	7.4	J	5.0	U	1.0	U	1.0	U
STYRENE		UG/L	25	U	25	U	5.0	U	1.0	U	1.0	U
TETRACHLOROETHENE		UG/L	25	U	25	U	5.0	U	1.0	U	1.0	U
TOLUENE		UG/L	18	J	32		5.0	U	1.0	U	1.0	U

PLUMBROOK
Bedrock Wells
Data Summary

Report Date: 03/12/98

Sample Location:			IT-MNTA-BEDGW-001		IT-TNTB-BEDGW-001		IT-TNTB-BEDGW-002		PB-BED-MW13		PB-BED-MW14	
Sample No:			5440		5420		5430		5890		5900	
Sample Date:			20-NOV-97		17-NOV-97		16-NOV-97		13-NOV-97		18-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,1,1-TRICHLOROETHANE		UG/L	10	U	1.0	U	5.0	U	1.0	U	1.0	U
1,1,2,2-TETRACHLOROETHANE		UG/L	10	U	1.0	U	5.0	U	1.0	U	1.0	U
1,1,2-TRICHLOROETHANE		UG/L	10	U	1.0	U	5.0	U	1.0	U	1.0	U
1,1-DICHLOROETHANE		UG/L	10	U	1.0	U	5.0	U	1.0	U	1.0	U
1,1-DICHLOROETHENE		UG/L	10	U	1.0	U	5.0	U	1.0	U	1.0	U
1,2-DICHLOROETHANE		UG/L	10	U	1.0	U	5.0	U	1.0	U	1.0	U
1,2-DICHLOROETHENE (TOTAL)		UG/L	10	U	1.0	U	5.0	U	1.0	U	1.0	U
1,2-DICHLOROPROPANE		UG/L	10	U	1.0	U	5.0	U	1.0	U	1.0	U
2-BUTANONE		UG/L	50	R	5.0	R	25	R	5.0	R	5.0	R
2-HEXANONE		UG/L	50	R	5.0	R	25	R	5.0	R	5.0	R
4-METHYL-2-PENTANONE		UG/L	50	U	5.0	U	25	U	5.0	U	5.0	U
ACETONE		UG/L	100	R	10	R	50	R	10	R	10	R
BENZENE		UG/L	10	U	0.14	J	0.91	J	130		1.1	
BROMODICHLOROMETHANE		UG/L	10	U	1.0	U	5.0	U	1.0	U	1.0	U
BROMOFORM		UG/L	10	U	1.0	U	5.0	U	1.0	U	1.0	U
BROMOMETHANE		UG/L	20	U	2.0	U	10	U	2.0	U	2.0	U
CARBON DISULFIDE		UG/L	3.7	J	0.82	J	6.4		5.8		1.3	
CARBON TETRACHLORIDE		UG/L	10	U	1.0	U	5.0	U	1.0	U	1.0	U
CHLOROBENZENE		UG/L	10	U	1.0	U	5.0	U	1.0	U	1.0	U
CHLOROETHANE		UG/L	20	U	2.0	U	10	U	2.0	U	2.0	U
CHLOROFORM		UG/L	10	U	1.0	U	5.0	U	1.0	U	1.0	U
CHLOROMETHANE		UG/L	20	U	2.0	U	10	U	2.0	U	2.0	U
CIS-1,3-DICHLOROPROPENE		UG/L	10	U	1.0	U	5.0	U	1.0	U	1.0	U
DIBROMOCHLOROMETHANE		UG/L	10	U	1.0	U	5.0	U	1.0	U	1.0	U
ETHYLBENZENE		UG/L	10	U	1.0	U	0.85	J	73		0.59	J
METHYLENE CHLORIDE		UG/L	1.0	U	1.0	U	5.0	U	1.0	U	1.0	U
STYRENE		UG/L	10	U	1.0	U	5.0	U	1.0	U	1.0	U
TETRACHLOROETHENE		UG/L	10	U	1.0	U	5.0	U	1.0	U	1.0	U
TOLUENE		UG/L	10	U		U	5.0	U	170		1	

PLUMBROOK
Bedrock Wells
Data Summary

Report Date: 03/12/98

Sample Location:			PB-BED-MW15		PB-BED-MW16		PB-BED-MW17		PB-BED-MW18		PB-BED-MW19	
Sample No:			5910		5920		5930		5940		5950	
Sample Date:			18-NOV-97		24-NOV-97		20-NOV-97		19-NOV-97		14-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,1,1-TRICHLOROETHANE		UG/L	50	U	25	U	50	U	5.0	U	1.0	U
1,1,2,2-TETRACHLOROETHANE		UG/L	50	U	25	U	50	U	5.0	U	1.0	U
1,1,2-TRICHLOROETHANE		UG/L	50	U	25	U	50	U	5.0	U	1.0	U
1,1-DICHLOROETHANE		UG/L	50	U	25	U	50	U	5.0	U	1.0	U
1,1-DICHLOROETHENE		UG/L	50	U	25	U	50	U	5.0	U	1.0	U
1,2-DICHLOROETHANE		UG/L	50	U	25	U	50	U	5.0	U	1.0	U
1,2-DICHLOROETHENE (TOTAL)		UG/L	50	U	25	U	50	U	5.0	U	1.0	U
1,2-DICHLOROPROPANE		UG/L	50	U	25	U	50	U	5.0	U	1.0	U
2-BUTANONE		UG/L	250	R	120	R	250	R	25	R	5.0	R
2-HEXANONE		UG/L	250	R	120	R	250	R	25	R	5.0	R
4-METHYL-2-PENTANONE		UG/L	250	U	120	U	250	U	25	U	5.0	U
ACETONE		UG/L	500	R	250	R	500	R	50	R	68	J
BENZENE		UG/L	570		490		10	J	11		11	
BROMODICHLOROMETHANE		UG/L	50	U	25	U	50	U	5.0	U	1.0	U
BROMOFORM		UG/L	50	U	25	U	50	U	5.0	U	1.0	U
BROMOMETHANE		UG/L	100	U	50	U	100	U	10	U	2.0	U
CARBON DISULFIDE		UG/L	50	U	25	U	40	J	32		2.0	
CARBON TETRACHLORIDE		UG/L	50	U	25	U	50	U	5.0	U	1.0	U
CHLOROBENZENE		UG/L	50	U	25	U	50	U	5.0	U	1.0	U
CHLOROETHANE		UG/L	100	U	50	U	100	U	10	U	2.0	U
CHLOROFORM		UG/L	8.4	J	25	U	50	U	5.0	U	1.0	U
CHLOROMETHANE		UG/L	100	U	50	U	100	U	10	U	2.0	U
CIS-1,3-DICHLOROPROPENE		UG/L	50	U	25	U	50	U	5.0	U	1.0	U
DIBROMOCHLOROMETHANE		UG/L	50	U	25	U	50	U	5.0	U	1.0	U
ETHYLBENZENE		UG/L	130		130		79		32		5.1	
METHYLENE CHLORIDE		UG/L	31	J	8.8	J	18	J	5.0	U	1.0	U
STYRENE		UG/L	50	U	25	U	50	U	5.0	U	1.0	U
TETRACHLOROETHENE		UG/L	50	U	25	U	50	U	5.0	U	1.0	U
TOLUENE		UG/L	490		390		140		21		8.9	

PLUMBROOK
Bedrock Wells
Data Summary

Report Date: 03/12/98

Sample Location:			PB-BED-MW20		REACTOR1	
Sample No:			5960		5970	
Sample Date:			17-NOV-97		21-NOV-97	
Depth			0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr
1,1,1-TRICHLOROETHANE		UG/L	1.0	U	25	U
1,1,2,2-TETRACHLOROETHANE		UG/L	1.0	U	25	U
1,1,2-TRICHLOROETHANE		UG/L	1.0	U	25	U
1,1-DICHLOROETHANE		UG/L	1.0	U	25	U
1,1-DICHLOROETHENE		UG/L	1.0	U	25	U
1,2-DICHLOROETHANE		UG/L	1.0	U	25	U
1,2-DICHLOROETHENE (TOTAL)		UG/L	1.0	U	25	U
1,2-DICHLOROPROPANE		UG/L	1.0	U	25	U
2-BUTANONE		UG/L	5.0	R	120	R
2-HEXANONE		UG/L	5.0	R	120	R
4-METHYL-2-PENTANONE		UG/L	5.0	U	120	U
ACETONE		UG/L	10	R	250	R
BENZENE		UG/L	0.93	J	8.8	J
BROMODICHLOROMETHANE		UG/L	1.0	U	25	U
BROMOFORM		UG/L	1.0	U	25	U
BROMOMETHANE		UG/L	2.0	U	50	U
CARBON DISULFIDE		UG/L	1.0	U	25	U
CARBON TETRACHLORIDE		UG/L	1.0	U	25	U
CHLOROBENZENE		UG/L	1.0	U	25	U
CHLOROETHANE		UG/L	2.0	U	50	U
CHLOROFORM		UG/L	1.0	U	25	U
CHLOROMETHANE		UG/L	2.0	U	50	U
CIS-1,3-DICHLOROPROPENE		UG/L	1.0	U	25	U
DIBROMOCHLOROMETHANE		UG/L	1.0	U	25	U
ETHYLBENZENE		UG/L	0.15	J	25	U
METHYLENE CHLORIDE		UG/L	1.0	U	14	J
STYRENE		UG/L	1.0	U	25	U
TETRACHLOROETHENE		UG/L	1.0	U	25	U
TOLUENE		UG/L	1.0	U		U

PLUMBROOK
Bedrock Wells
Data Summary

Report Date: 03/12/98

Sample Location:			IT-AA1-BEDGW-001		IT-AA2-BEDGW-001		IT-AA3-BEDGW-001		IT-ABG-BEDGW-01		IT-BG8-BEDGW-001	
Sample No:			5450		5460		5470		5480		5410	
Sample Date:			16-NOV-97		20-NOV-97		19-NOV-97		13-NOV-97		17-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TRANS-1,3-DICHLOROPROPENE		UG/L	25	U	25	U	5.0	U	1.0	U	1.0	U
TRICHLOROETHENE		UG/L	25	U	25	U	5.0	U	0.25	J	1.0	U
VINYL CHLORIDE		UG/L	50	U	50	U	10	U	2.0	U	2.0	U
XYLENES (TOTAL)		UG/L	150		200		5.0	U	1.0	U	1.0	U

PLUMBROOK
Bedrock Wells
Data Summary

Report Date: 03/12/98

Sample Location:			IT-MNTA-BEDGW-001		IT-TNTB-BEDGW-001		IT-TNTB-BEDGW-002		PB-BED-MW13		PB-BED-MW14	
Sample No:			5440		5420		5430		5890		5900	
Sample Date:			20-NOV-97		17-NOV-97		16-NOV-97		13-NOV-97		18-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TRANS-1,3-DICHLOROPROPENE		UG/L	10	U	1.0	U	5.0	U	1.0	U	1.0	U
TRICHLOROETHENE		UG/L	10	U	1.0	U	5.0	U	1.0	U	1.0	U
VINYL CHLORIDE		UG/L	20	U	2.0	U	10	U	2.0	U	2.0	U
XYLENES (TOTAL)		UG/L	8.2	J	1.0	U	12		520		3.9	

PLUMBROOK
Bedrock Wells
Data Summary

Report Date: 03/12/98

Sample Location:			PB-BED-MW15		PB-BED-MW16		PB-BED-MW17		PB-BED-MW18		PB-BED-MW19	
Sample No:			5910		5920		5930		5940		5950	
Sample Date:			18-NOV-97		24-NOV-97		20-NOV-97		19-NOV-97		14-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TRANS-1,3-DICHLOROPROPENE		UG/L	50	U	25	U	50	U	5.0	U	1.0	U
TRICHLOROETHENE		UG/L	50	U	25	U	50	U	5.0	U	1.0	U
VINYL CHLORIDE		UG/L	100	U	50	U	100	U	10	U	2.0	U
XYLENES (TOTAL)		UG/L	920		1100		360		170		38	

PLUMBROOK
Bedrock Wells
Data Summary

Report Date: 03/12/98

Sample Location:			PB-BED-MW20		REACTOR1	
Sample No:			5960		5970	
Sample Date:			17-NOV-97		21-NOV-97	
Depth			0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr
TRANS-1,3-DICHLOROPROPENE		UG/L	1.0	U	25	U
TRICHLOROETHENE		UG/L	1.0	U	25	U
VINYL CHLORIDE		UG/L	2.0	U	50	U
XYLENES (TOTAL)		UG/L	2.6		4.0	J

PLUMbROOK
Bedrock Wells
Data Summary

Report Date: 03/12/98

Sample Location:			IT-AA1-BEDGW-001		IT-AA2-BEDGW-001		IT-AA3-BEDGW-001		IT-ABG-BEDGW-01		IT-BG8-BEDGW-001	
Sample No:			5450		5460		5470		5480		5410	
Sample Date:			16-NOV-97		20-NOV-97		19-NOV-97		13-NOV-97		17-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:TOC-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL ORGANIC CARBON		MG/L	16		7.4		5.3	J	3.8		5.0	U

PLUMBROOK
Bedrock Wells
Data Summary

Report Date: 03/12/98

Sample Location:			IT-MNTA-BEDGW-001		IT-TNTB-BEDGW-001		IT-TNTB-BEDGW-002		PB-BED-MW13		PB-BED-MW14	
Sample No:			5440		5420		5430		5890		5900	
Sample Date:			20-NOV-97		17-NOV-97		16-NOV-97		13-NOV-97		18-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:TOC-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL ORGANIC CARBON		MG/L	11		12		5.0		9.6		190	

PLUMBROOK
Bedrock Wells
Data Summary

Report Date: 03/12/98

Sample Location:			PB-BED-MW15		PB-BED-MW16		PB-BED-MW17		PB-BED-MW18		PB-BED-MW19	
Sample No:			5910		5920		5930		5940		5950	
Sample Date:			18-NOV-97		24-NOV-97		20-NOV-97		19-NOV-97		14-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:TOC-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL ORGANIC CARBON		MG/L	11		8.4		1.2		6.5		16	

PLUMBROOK
Bedrock Wells
Data Summary

Report Date: 03/12/98

Sample Location:			PB-BED-MW20		REACTOR1	
Sample No:			5960		5970	
Sample Date:			17-NOV-97		21-NOV-97	
Depth			0-0		0-0	
WELLS-W:TOC-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr
TOTAL ORGANIC CARBON		MG/L	1.0	U	.0025	

PLUMBROOK
Bedrock Wells
Data Summary

Report Date: 03/12/98

Sample Location:			IT-AA1-BEDGW-001		IT-AA2-BEDGW-001		IT-AA3-BEDGW-001		IT-ABG-BEDGW-01		IT-BG8-BEDGW-001	
Sample No:			5450		5460		5470		5480		5410	
Sample Date:			16-NOV-97		20-NOV-97		19-NOV-97		13-NOV-97		17-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,2,4-TRICHLOROBENZENE		UG/L	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
1,3-DICHLOROBENZENE		UG/L	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
2,2'-OXYBIS(1-CHLOROPROPANE)		UG/L	10	U	10	U	10	U	10	U	10	U
2,4,5-TRICHLOROPHENOL		UG/L	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
2,4-DICHLOROPHENOL		UG/L	10	U	10	U	10	U	10	U	10	U
2,4-DIMETHYLPHENOL		UG/L	10	U	1.3	J	10	U	10	U	10	U
2,4-DINITROPHENOL		UG/L	50	U	50	U	50	U	50	U	50	U
2,4-DINITROTOLUENE		UG/L	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
2-CHLORONAPHTHALENE		UG/L	10	U	10	U	10	U	10	U	10	U
2-CHLOROPHENOL		UG/L	10	U	10	U	10	U	10	U	10	U
2-METHYLNAPHTHALENE		UG/L	28		1.3	J	10	U	10	U	10	U
2-METHYLPHENOL		UG/L	10	U	10	U	10	U	10	U	10	U
2-NITROANILINE		UG/L	50	U	50	U	50	U	50	U	50	U
2-NITROPHENOL		UG/L	10	U	10	U	10	U	10	U	10	U
3,3'-DICHLOROBENZIDINE		UG/L	50	U	50	U	50	U	50	U	50	U
3-NITROANILINE		UG/L	50	U	50	U	50	U	50	U	50	U
4,6-DINITRO-2-METHYLPHENOL		UG/L	50	U	50	U	50	U	50	U	50	U
4-BROMOPHENYL PHENYL ETHER		UG/L	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
4-CHLOROANILINE		UG/L	10	U	10	U	10	U	10	U	10	U
4-CHLOROPHENYL PHENYL ETHER		UG/L	10	U	10	U	10	U	10	U	10	U
4-METHYLPHENOL		UG/L	10	U	10	U	10	U	10	U	10	U
4-NITROANILINE		UG/L	50	U	50	U	50	U	50	U	50	U
4-NITROPHENOL		UG/L	50	U	50	U	50	U	50	U	50	U
ACENAPHTHENE		UG/L	10	U	10	U	10	U	10	U	10	U

Sample Location:			IT-MNTA-BEDGW-001		IT-TNTB-BEDGW-001		IT-TNTB-BEDGW-002		PB-BED-MW13		PB-BED-MW14	
Sample No:			5440		5420		5430		5890		5900	
Sample Date:			20-NOV-97		17-NOV-97		16-NOV-97		13-NOV-97		18-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,2,4-TRICHLOROBENZENE		UG/L	10	U	10	U	10	U	10	U	1000	U
1,2-DICHLOROBENZENE		UG/L	10	U	10	U	10	U	10	U	1000	U
1,3-DICHLOROBENZENE		UG/L	10	U	10	U	10	U	10	U	1000	U
1,4-DICHLOROBENZENE		UG/L	10	U	10	U	10	U	10	U	1000	U
2,2'-OXYBIS(1-CHLOROPROPANE)		UG/L	10	U	10	U	10	U	10	U	1000	U
2,4,5-TRICHLOROPHENOL		UG/L	10	U	10	U	10	U	10	U	1000	U
2,4,6-TRICHLOROPHENOL		UG/L	10	U	10	U	10	U	10	U	1000	U
2,4-DICHLOROPHENOL		UG/L	10	U	10	U	10	U	10	U	1000	U
2,4-DIMETHYLPHENOL		UG/L	1.7	J	10	U	10	U	16		1000	U
2,4-DINITROPHENOL		UG/L	50	U	50	U	50	U	50	U	5000	U
2,4-DINITROTOLUENE		UG/L	10	U	10	U	10	U	10	U	1000	U
2,6-DINITROTOLUENE		UG/L	10	U	10	U	10	U	10	U	1000	U
2-CHLORONAPHTHALENE		UG/L	10	U	10	U	10	U	10	U	1000	U
2-CHLOROPHENOL		UG/L	10	U	10	U	10	U	10	U	1000	U
2-METHYLNAPHTHALENE		UG/L	1.9	J	10	U	10	U	20		1000	U
2-METHYLPHENOL		UG/L	10	U	10	U	10	U	4.1	J	1000	U
2-NITROANILINE		UG/L	50	U	50	U	50	U	50	U	5000	U
2-NITROPHENOL		UG/L	10	U	10	U	10	U	10	U	1000	U
3,3'-DICHLOROBENZIDINE		UG/L	50	U	50	U	50	U	50	U	5000	U
3-NITROANILINE		UG/L	50	U	50	U	50	U	50	U	5000	U
4,6-DINITRO-2-METHYLPHENOL		UG/L	50	U	50	U	50	U	50	U	5000	U
4-BROMOPHENYL PHENYL ETHER		UG/L	10	U	10	U	10	U	10	U	1000	U
4-CHLORO-3-METHYLPHENOL		UG/L	10	U	10	U	10	U	10	U	1000	U
4-CHLOROANILINE		UG/L	10	U	10	U	10	U	10	U	1000	U
4-CHLOROPHENYL PHENYL ETHER		UG/L	10	U	10	U	10	U	10	U	1000	U
4-METHYLPHENOL		UG/L	10	U	10	U	10	U	4.7	J	1000	U
4-NITROANILINE		UG/L	50	U	50	U	50	U	50	U	5000	U
4-NITROPHENOL		UG/L	50	U	50	U	50	U	50	U	5000	U
ACENAPHTHENE		UG/L	10	U		U	10	U	10	U		U

Sample Location:			PB-BED-MW15		PB-BED-MW16		PB-BED-MW17		PB-BED-MW18		PB-BED-MW19	
Sample No:			5910		5920		5930		5940		5950	
Sample Date:			18-NOV-97		24-NOV-97		20-NOV-97		19-NOV-97		14-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,2,4-TRICHLOROBENZENE		UG/L	10	U	2000	U	100	U	10	UJ	10	U
1,2-DICHLOROBENZENE		UG/L	10	U	2000	U	100	U	10	UJ	10	U
1,3-DICHLOROBENZENE		UG/L	10	U	2000	U	100	U	10	UJ	10	U
1,4-DICHLOROBENZENE		UG/L	10	U	2000	U	100	U	10	UJ	10	U
2,2'-OXYBIS(1-CHLOROPROPANE)		UG/L	10	U	2000	U	100	U	10	UJ	10	U
2,4,5-TRICHLOROPHENOL		UG/L	10	U	2000	U	100	U	10	UJ	10	U
2,4,6-TRICHLOROPHENOL		UG/L	10	U	2000	U	100	U	10	UJ	10	U
2,4-DICHLOROPHENOL		UG/L	10	U	2000	U	100	U	10	UJ	10	U
2,4-DIMETHYLPHENOL		UG/L	6.7	J	2000	U	100	U	5.1	J	10	U
2,4-DINITROPHENOL		UG/L	50	U	10000	U	500	U	50	UJ	50	U
2,4-DINITROTOLUENE		UG/L	10	U	2000	U	100	U	10	UJ	10	U
2,6-DINITROTOLUENE		UG/L	10	U	2000	U	100	U	10	UJ	10	U
2-CHLORONAPHTHALENE		UG/L	10	U	2000	U	100	U	10	UJ	10	U
2-CHLOROPHENOL		UG/L	10	U	2000	U	100	U	10	UJ	10	U
2-METHYLNAPHTHALENE		UG/L	31		2000	U	100	U	2.2	J	3.3	J
2-METHYLPHENOL		UG/L	3.0	J	2000	U	100	U	2.6	J	10	U
2-NITROANILINE		UG/L	50	U	10000	U	500	U	50	UJ	50	U
2-NITROPHENOL		UG/L	10	U	2000	U	100	U	10	UJ	10	U
3,3'-DICHLOROBENZIDINE		UG/L	50	U	10000	U	500	U	50	UJ	50	U
3-NITROANILINE		UG/L	50	U	10000	U	500	U	50	UJ	50	U
4,6-DINITRO-2-METHYLPHENOL		UG/L	50	U	10000	U	500	U	50	UJ	50	U
4-BROMOPHENYL PHENYL ETHER		UG/L	10	U	2000	U	100	U	10	UJ	10	U
4-CHLORO-3-METHYLPHENOL		UG/L	10	U	2000	U	100	U	10	UJ	10	U
4-CHLOROANILINE		UG/L	10	U	2000	U	100	U	10	UJ	10	U
4-CHLOROPHENYL PHENYL ETHER		UG/L	10	U	2000	U	100	U	10	UJ	10	U
4-METHYLPHENOL		UG/L	3.9	J	2000	U	100	U	2.8	J	10	U
4-NITROANILINE		UG/L	50	U	10000	U	500	U	50	UJ	50	U
4-NITROPHENOL		UG/L	50	U	10000	U	500	U	50	UJ	50	U
ACENAPHTHENE		UG/L	10	U	2000	U	100	U	10	UJ	10	U

Sample Location:			PB-BED-MW20		REACTOR I	
Sample No:			5960		5970	
Sample Date:			17-NOV-97		21-NOV-97	
Depth			0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr
1,2,4-TRICHLOROBENZENE		UG/L	10	U	100	U
1,2-DICHLOROBENZENE		UG/L	10	U	100	U
1,3-DICHLOROBENZENE		UG/L	10	U	100	U
1,4-DICHLOROBENZENE		UG/L	10	U	100	U
2,2'-OXYBIS(1-CHLOROPROPANE)		UG/L	10	U	100	U
2,4,5-TRICHLOROPHENOL		UG/L	10	U	100	U
2,4,6-TRICHLOROPHENOL		UG/L	10	U	100	U
2,4-DICHLOROPHENOL		UG/L	10	U	100	U
2,4-DIMETHYLPHENOL		UG/L	10	U	100	U
2,4-DINITROPHENOL		UG/L	50	U	500	U
2,4-DINITROTOLUENE		UG/L	10	U	100	U
2,6-DINITROTOLUENE		UG/L	10	U	100	U
2-CHLORONAPHTHALENE		UG/L	10	U	100	U
2-CHLOROPHENOL		UG/L	10	U	100	U
2-METHYLNAPHTHALENE		UG/L	1.1	J	100	U
2-METHYLPHENOL		UG/L	10	U	100	U
2-NITROANILINE		UG/L	50	U	500	U
2-NITROPHENOL		UG/L	10	U	100	U
3,3'-DICHLOROBENZIDINE		UG/L	50	U	500	U
3-NITROANILINE		UG/L	50	U	500	U
4,6-DINITRO-2-METHYLPHENOL		UG/L	50	U	500	U
4-BROMOPHENYL PHENYL ETHER		UG/L	10	U	100	U
4-CHLORO-3-METHYLPHENOL		UG/L	10	U	100	U
4-CHLOROANILINE		UG/L	10	U	100	U
4-CHLOROPHENYL PHENYL ETHER		UG/L	10	U	100	U
4-METHYLPHENOL		UG/L	10	U	100	U
4-NITROANILINE		UG/L	50	U	500	U
4-NITROPHENOL		UG/L	50	U	500	U
ACENAPHTHENE		UG/L	10	U		U

Sample Location:			IT-AA1-BEDGW-001		IT-AA2-BEDGW-001		IT-AA3-BEDGW-001		IT-ABG-BEDGW-01		IT-BG8-BEDGW-001	
Sample No:			5450		5460		5470		5480		5410	
Sample Date:			16-NOV-97		20-NOV-97		19-NOV-97		13-NOV-97		17-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
ACENAPHTHYLENE		UG/L	10	U	10	U	10	U	10	U	10	U
ANTHRACENE		UG/L	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
BENZO(A)PYRENE		UG/L	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
BENZO(GHI)PERYLENE		UG/L	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
BIS(2-CHLOROETHOXY)METHANE		UG/L	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
BIS(2-ETHYLHEXYL) PHTHALATE		UG/L	28		10	U	5.8	J	10	U	1.7	J
BUTYL BENZYL PHTHALATE		UG/L	10	U	10	U	10	U	10	U	10	U
CARBAZOLE		UG/L	10	U	10	U	10	U	10	U	10	U
CHRYSENE		UG/L	10	U	10	U	10	U	10	U	10	U
DI-N-BUTYL PHTHALATE		UG/L	10	U	10	U	10	U	10	U	10	U
DI-N-OCTYL PHTHALATE		UG/L	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
DIBENZOFURAN		UG/L	10	U	10	U	10	U	10	U	10	U
DIETHYL PHTHALATE		UG/L	10	U	10	U	10	U	10	U	10	U
DIMETHYL PHTHALATE		UG/L	10	U	10	U	10	U	10	U	10	U
FLUORANTHENE		UG/L	10	U	10	U	10	U	10	U	10	U
FLUORENE		UG/L	10	U	10	U	10	U	10	U	10	U
HEXACHLOROBENZENE		UG/L	10	U	10	U	10	U	10	U	10	U
HEXACHLOROBUTADIENE		UG/L	10	U	10	U	10	U	10	U	10	U
HEXACHLOROCYCLOPENTADIENE		UG/L	50	U	50	U	50	U	50	U	50	U
HEXACHLOROETHANE		UG/L	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
ISOPHORONE		UG/L	2.9	J	10	U	10	U	10	U	10	U
N-NITROSODI-N-PROPYLAMINE		UG/L	10	U	10	U	10	U	10	U	10	U
N-NITROSODIPHENYLAMINE		UG/L	10	U	10	U	10	U	10	U	10	U

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Sample Location:			IT-MNTA-BEDGW-001		IT-TNTB-BEDGW-001		IT-TNTB-BEDGW-002		PB-BED-MW13		PB-BED-MW14	
Sample No:			5440		5420		5430		5890		5900	
Sample Date:			20-NOV-97		17-NOV-97		16-NOV-97		13-NOV-97		18-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
ACENAPHTHYLENE		UG/L	10	U	10	U	10	U	10	U	1000	U
ANTHRACENE		UG/L	10	U	10	U	10	U	10	U	1000	U
BENZO(A)ANTHRACENE		UG/L	10	U	10	U	10	U	10	U	1000	U
BENZO(A)PYRENE		UG/L	10	U	10	U	10	U	10	U	1000	U
BENZO(B)FLUORANTHENE		UG/L	10	U	10	U	10	U	10	U	1000	U
BENZO(GHI)PERYLENE		UG/L	10	U	10	U	10	U	10	U	1000	U
BENZO(K)FLUORANTHENE		UG/L	10	U	10	U	10	U	10	U	1000	U
BIS(2-CHLOROETHOXY)METHANE		UG/L	10	U	10	U	10	U	10	U	1000	U
BIS(2-CHLOROETHYL) ETHER		UG/L	10	U	10	U	10	U	10	U	1000	U
BIS(2-ETHYLHEXYL) PHTHALATE		UG/L	3.9	J	3.6	J	3.0	J	39		1000	U
BUTYL BENZYL PHTHALATE		UG/L	10	U	10	U	10	U	10	U	1000	U
CARBAZOLE		UG/L	10	U	10	U	10	U	10	U	1000	U
CHRYSENE		UG/L	10	U	10	U	10	U	10	U	1000	U
DI-N-BUTYL PHTHALATE		UG/L	10	U	10	U	10	U	10	U	1000	U
DI-N-OCTYL PHTHALATE		UG/L	10	U	10	U	10	U	10	U	1000	U
DIBENZ(A,H)ANTHRACENE		UG/L	10	U	10	U	10	U	10	U	1000	U
DIBENZOFURAN		UG/L	10	U	10	U	10	U	10	U	1000	U
DIETHYL PHTHALATE		UG/L	10	U	10	U	10	U	10	U	1000	U
DIMETHYL PHTHALATE		UG/L	10	U	10	U	10	U	10	U	1000	U
FLUORANTHENE		UG/L	10	U	10	U	10	U	10	U	1000	U
FLUORENE		UG/L	10	U	10	U	10	U	10	U	1000	U
HEXACHLOROBENZENE		UG/L	10	U	10	U	10	U	10	U	1000	U
HEXACHLOROBUTADIENE		UG/L	10	U	10	U	10	U	10	U	1000	U
HEXACHLOROCYCLOPENTADIENE		UG/L	50	U	50	U	50	U	50	U	5000	U
HEXACHLOROETHANE		UG/L	10	U	10	U	10	U	10	U	1000	U
INDENO(1,2,3-CD)PYRENE		UG/L	10	U	10	U	10	U	10	U	1000	U
ISOPHORONE		UG/L	10	U	10	U	10	U	10	U	1000	U
N-NITROSODI-N-PROPYLAMINE		UG/L	10	U	10	U	10	U	10	U	1000	U
N-NITROSODIPHEN[illegible] AMINE		UG/L	10	U	[illegible]	U	10	U	10	U	10[illegible]	U

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Sample Location:			PB-BED-MW15		PB-BED-MW16		PB-BED-MW17		PB-BED-MW18		PB-BED-MW19	
Sample No:			5910		5920		5930		5940		5950	
Sample Date:			18-NOV-97		24-NOV-97		20-NOV-97		19-NOV-97		14-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
ACENAPHTHYLENE		UG/L	10	U	2000	U	100	U	10	UJ	10	U
ANTHRACENE		UG/L	10	U	2000	U	100	U	10	UJ	10	U
BENZO(A)ANTHRACENE		UG/L	10	U	2000	U	100	U	10	UJ	10	U
BENZO(A)PYRENE		UG/L	10	U	2000	U	100	U	10	UJ	10	U
BENZO(B)FLUORANTHENE		UG/L	10	U	2000	U	100	U	10	UJ	10	U
BENZO(GHI)PERYLENE		UG/L	10	U	2000	U	100	U	10	UJ	10	U
BENZO(K)FLUORANTHENE		UG/L	10	U	2000	U	100	U	10	UJ	10	U
BIS(2-CHLOROETHOXY)METHANE		UG/L	10	U	2000	U	100	U	10	UJ	10	U
BIS(2-CHLOROETHYL) ETHER		UG/L	10	U	2000	U	100	U	10	UJ	10	U
BIS(2-ETHYLHEXYL) PHTHALATE		UG/L	37		920	J	100	U	3.5	J	5.8	J
BUTYL BENZYL PHTHALATE		UG/L	10	U	2000	U	100	U	10	UJ	10	U
CARBAZOLE		UG/L	10	U	2000	U	100	U	10	UJ	10	U
CHRYSENE		UG/L	10	U	2000	U	100	U	10	UJ	10	U
DI-N-BUTYL PHTHALATE		UG/L	10	U	2000	U	100	U	10	UJ	10	U
DI-N-OCTYL PHTHALATE		UG/L	10	U	2000	U	100	U	10	UJ	10	U
DIBENZ(A,H)ANTHRACENE		UG/L	10	U	2000	U	100	U	10	UJ	10	U
DIBENZOFURAN		UG/L	10	U	2000	U	100	U	10	UJ	10	U
DIETHYL PHTHALATE		UG/L	10	U	2000	U	100	U	10	UJ	10	U
DIMETHYL PHTHALATE		UG/L	10	U	2000	U	100	U	10	UJ	10	U
FLUORANTHENE		UG/L	10	U	2000	U	100	U	10	UJ	10	U
FLUORENE		UG/L	1.7	J	2000	U	100	U	10	UJ	10	U
HEXACHLOROBENZENE		UG/L	10	U	2000	U	100	U	10	UJ	10	U
HEXACHLOROBUTADIENE		UG/L	10	U	2000	U	100	U	10	UJ	10	U
HEXACHLOROCYCLOPENTADIENE		UG/L	50	U	10000	U	500	U	50	UJ	50	U
HEXACHLOROETHANE		UG/L	10	U	2000	U	100	U	10	UJ	10	U
INDENO(1,2,3-CD)PYRENE		UG/L	10	U	2000	U	100	U	10	UJ	10	U
ISOPHORONE		UG/L	4.2	J	2000	U	100	U	10	UJ	10	U
N-NITROSODI-N-PROPYLAMINE		UG/L	10	U	2000	U	100	U	10	UJ	10	U
N-NITROSODIPHENYLAMINE		UG/L	10	U	2000	U	100	U	10	UJ	10	U

Sample Location:			PB-BED-MW20		REACTOR1	
Sample No:			5960		5970	
Sample Date:			17-NOV-97		21-NOV-97	
Depth			0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr
ACENAPHTHYLENE		UG/L	10	U	100	U
ANTHRACENE		UG/L	10	U	100	U
BENZO(A)ANTHRACENE		UG/L	10	U	100	U
BENZO(A)PYRENE		UG/L	10	U	100	U
BENZO(B)FLUORANTHENE		UG/L	10	U	100	U
BENZO(GHI)PERYLENE		UG/L	10	U	100	U
BENZO(K)FLUORANTHENE		UG/L	10	U	100	U
BIS(2-CHLOROETHOXY)METHANE		UG/L	10	U	100	U
BIS(2-CHLOROETHYL) ETHER		UG/L	10	U	100	U
BIS(2-ETHYLHEXYL) PHTHALATE		UG/L	10	U	23	J
BUTYL BENZYL PHTHALATE		UG/L	10	U	100	U
CARBAZOLE		UG/L	10	U	100	U
CHRYSENE		UG/L	10	U	100	U
DI-N-BUTYL PHTHALATE		UG/L	10	U	100	U
DI-N-OCTYL PHTHALATE		UG/L	10	U	100	U
DIBENZ(A,H)ANTHRACENE		UG/L	10	U	100	U
DIBENZOFURAN		UG/L	10	U	100	U
DIETHYL PHTHALATE		UG/L	10	U	100	U
DIMETHYL PHTHALATE		UG/L	10	U	100	U
FLUORANTHENE		UG/L	10	U	100	U
FLUORENE		UG/L	10	U	100	U
HEXACHLOROBENZENE		UG/L	10	U	100	U
HEXACHLOROBUTADIENE		UG/L	10	U	100	U
HEXACHLOROCYCLOPENTADIENE		UG/L	50	U	500	U
HEXACHLOROETHANE		UG/L	10	U	100	U
INDENO(1,2,3-CD)PYRENE		UG/L	10	U	100	U
ISOPHORONE		UG/L	10	U	100	U
N-NITROSODI-N-PROPYLAMINE		UG/L	10	U	100	U
N-NITROSODIPHE[illegible]AMINE		UG/L	10	U		U

Sample Location:			IT-AA1-BEDGW-001		IT-AA2-BEDGW-001		IT-AA3-BEDGW-001		IT-ABG-BEDGW-01		IT-BG8-BEDGW-001	
Sample No:			5450		5460		5470		5480		5410	
Sample Date:			16-NOV-97		20-NOV-97		19-NOV-97		13-NOV-97		17-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
NAPHTHALENE		UG/L	16		10	U	10	U	10	U	10	U
NITROBENZENE		UG/L	10	U	10	U	10	U	10	U	10	U
PENTACHLOROPHENOL		UG/L	50	U	50	U	50	U	50	U	50	U
PHENANTHRENE		UG/L	10	U	10	U	10	U	10	U	10	U
PHENOL		UG/L	43		10	U	3.1	J	10	U	10	U
PYRENE		UG/L	10	U	10	U	10	U	10	U	10	U

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Sample Location:			IT-MNTA-BEDGW-001		IT-TNTB-BEDGW-001		IT-TNTB-BEDGW-002		PB-BED-MW13		PB-BED-MW14	
Sample No:			5440		5420		5430		5890		5900	
Sample Date:			20-NOV-97		17-NOV-97		16-NOV-97		13-NOV-97		18-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
NAPHTHALENE		UG/L	2.3	J	10	U	10	U	15		1000	U
NITROBENZENE		UG/L	10	U	10	U	10	U	10	U	1000	U
PENTACHLOROPHENOL		UG/L	50	U	50	U	50	U	50	U	5000	U
PHENANTHRENE		UG/L	10	U	10	U	10	U	10	U	1000	U
PHENOL		UG/L	17		10	U	2.3	J	62		1000	U
PYRENE		UG/L	10	U	10	U	10	U	10	U	1000	U

Sample Location:			PB-BED-MW15		PB-BED-MW16		PB-BED-MW17		PB-BED-MW18		PB-BED-MW19	
Sample No:			5910		5920		5930		5940		5950	
Sample Date:			18-NOV-97		24-NOV-97		20-NOV-97		19-NOV-97		14-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
NAPHTHALENE		UG/L	22		2000	U	100	U	3.8	J	2.1	J
NITROBENZENE		UG/L	10	U	2000	U	100	U	10	UJ	10	U
PENTACHLOROPHENOL		UG/L	50	U	10000	U	500	U	50	UJ	50	U
PHENANTHRENE		UG/L	2.2	J	2000	U	100	U	10	UJ	10	U
PHENOL		UG/L	18		2000	U	100	U	21	J	55	
PYRENE		UG/L	10	U	2000	U	100	U	10	UJ	10	U

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Sample Location:			PB-BED-MW20		REACTOR1	
Sample No:			5960		5970	
Sample Date:			17-NOV-97		21-NOV-97	
Depth			0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr
NAPHTHALENE		UG/L	10	U	100	U
NITROBENZENE		UG/L	10	U	100	U
PENTACHLOROPHENOL		UG/L	50	U	500	U
PHENANTHRENE		UG/L	10	U	100	U
PHENOL		UG/L	10	U	100	U
PYRENE		UG/L	10	U	100	U

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Sample Location:			IT-AA1-BEDGW-001		IT-AA2-BEDGW-001		IT-AA3-BEDGW-001		IT-ABG-BEDGW-01		IT-BG8-BEDGW-001	
Sample No:			5450		5460		5470		5480		5410	
Sample Date:			16-NOV-97		20-NOV-97		19-NOV-97		13-NOV-97		17-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:PEST/PCB-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
AROCLOR 1016		UG/L	10	U	1.0	U	1.0	U	1.0	U	1.0	U
AROCLOR 1221		UG/L	10	U	1.0	U	1.0	U	1.0	U	1.0	U
AROCLOR 1232		UG/L	10	U	1.0	U	1.0	U	1.0	U	1.0	U
AROCLOR 1242		UG/L	10	U	1.0	U	1.0	U	1.0	U	1.0	U
AROCLOR 1248		UG/L	10	U	1.0	U	1.0	U	1.0	U	1.0	U
AROCLOR 1254		UG/L	10	U	1.0	U	1.0	U	1.0	U	1.0	U
AROCLOR 1260		UG/L	10	U	1.0	U	1.0	U	1.0	U	1.0	U

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Sample Location:			IT-MNTA-BEDGW-001		IT-TNTB-BEDGW-001		IT-TNTB-BEDGW-002		PB-BED-MW13		PB-BED-MW14	
Sample No:			5440		5420		5430		5890		5900	
Sample Date:			20-NOV-97		17-NOV-97		16-NOV-97		13-NOV-97		18-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:PEST/PCB-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
AROCLOR 1016		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
AROCLOR 1221		UG/L	1.0	U	1.0	U	10	U	10	U	1.0	U
AROCLOR 1232		UG/L	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
AROCLOR 1248		UG/L	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
AROCLOR 1260		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U

Sample Location:			PB-BED-MW15		PB-BED-MW16		PB-BED-MW17		PB-BED-MW18		PB-BED-MW19	
Sample No:			5910		5920		5930		5940		5950	
Sample Date:			18-NOV-97		24-NOV-97		20-NOV-97		19-NOV-97		14-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:PEST/PCB-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
AROCLOR 1016		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
AROCLOR 1221		UG/L	1.0	U	1.0	U	1.0	U	10	U	10	U
AROCLOR 1232		UG/L	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
AROCLOR 1248		UG/L	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
AROCLOR 1260		UG/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U

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Sample Location:			PB-BED-MW20		REACTOR1	
Sample No:			5960		5970	
Sample Date:			17-NOV-97		21-NOV-97	
Depth			0-0		0-0	
WELLS-W:PEST/PCB-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr
AROCLOR 1016		UG/L	1.0	U	1.0	U
AROCLOR 1221		UG/L	1.0	U	1.0	U
AROCLOR 1232		UG/L	1.0	U	1.0	U
AROCLOR 1242		UG/L	1.0	U	1.0	U
AROCLOR 1248		UG/L	1.0	U	1.0	U
AROCLOR 1254		UG/L	1.0	U	1.0	U
AROCLOR 1260		UG/L	1.0	U	1.0	U

Sample Location:			IT-AA1-BEDGW-001		IT-AA2-BEDGW-001		IT-AA3-BEDGW-001		IT-ABG-BEDGW-01		IT-BG8-BEDGW-001	
Sample No:			5450		5460		5470		5480		5410	
Sample Date:			16-NOV-97		20-NOV-97		19-NOV-97		13-NOV-97		17-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
ALUMINUM		MG/L	.637		1.06	J	.2	U	.522		9.02	
ALUMINUM	Y	MG/L	.2	U	.2	U	.2	U	.2	U	.2	U
ANTIMONY		MG/L	.06	U	.06	U	.06	U	.06	U	.06	U
ANTIMONY	Y	MG/L	.06	U	.06	U	.06	U	.06	U	.06	U
ARSENIC		MG/L	.0165		.01	U	.01	U	.0117		.0176	
ARSENIC	Y	MG/L	.03	U	.01	U	.01	U	.01	U	.01	U
BARIUM		MG/L	1.06		.22		.2	U	.2	U	.52	
BARIUM	Y	MG/L	1.26		.212		.2	U	.2	U	.366	
BERYLLIUM		MG/L	.005	U	.005	U	.005	U	.005	U	.005	U
BERYLLIUM	Y	MG/L	.005	U	.005	U	.005	U	.005	U	.005	U
CADMIUM		MG/L	.005	U	.005	U	.005	U	.005	U	.005	U
CADMIUM	Y	MG/L	.005	U	.005	U	.005	U	.005	U	.005	U
CALCIUM		MG/L	302		186	J	189		176	J	161	
CALCIUM	Y	MG/L	305	J	88.6		160		179		121	J
CHROMIUM		MG/L	.0127		.01	U	.01	U	.01	U	.0182	
CHROMIUM	Y	MG/L	.01	U	.01	U	.01	U	.01	U	.01	U
COBALT		MG/L	.05	U	.05	U	.05	U	.05	U	.05	U
COBALT	Y	MG/L	.05	U	.05	U	.05	U	.05	U	.05	U
COPPER		MG/L	.0262		.025	U	.025	U	.025	U	.0595	
COPPER	Y	MG/L	.025	U	.025	U	.025	U	.025	U	.025	U
IRON		MG/L	1.92		5.24		.168		8.89		22.6	
IRON	Y	MG/L	.137	U	.106		.1	U	7.26		.563	
LEAD		MG/L	.003	U	.0065	U	.003	U	.0069		.0263	
LEAD	Y	MG/L	.009	U	.003	U	.003	U	.003	U	.003	U
MAGNESIUM		MG/L	218		56.9		108		34.3		79.5	
MAGNESIUM	Y	MG/L	237		54.8		96.3		34.9		72.4	
MANGANESE		MG/L	.575		.522		.0746		.912		2.24	
MANGANESE	Y	MG/L	.516		.351		.0576		.99		1.3	
MERCURY		MG/L	.0002	U	.0002	U	.0002	U	.0036		.0002	U

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Sample Location:			IT-MNTA-BEDGW-001		IT-TNTB-BEDGW-001		IT-TNTB-BEDGW-002		PB-BED-MW13		PB-BED-MW14	
Sample No:			5440		5420		5430		5890		5900	
Sample Date:			20-NOV-97		17-NOV-97		16-NOV-97		13-NOV-97		18-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
ALUMINUM		MG/L	.249	UJ	.654		.317		.2	U	.374	J
ALUMINUM	Y	MG/L	.2	U	.2	U	.2	U	.2	U	.2	U
ANTIMONY		MG/L	.06	U	.06	U	.06	U	.06	U	.06	U
ANTIMONY	Y	MG/L	.06	U	.06	U	.06	U	.06	U	.06	U
ARSENIC		MG/L	.05	U	.01	U	.01	U	.01	U	.01	U
ARSENIC	Y	MG/L	.05	U	.01	U	.01	U	.01	U	.01	U
BARIUM		MG/L	.424		.2	U	.326		1.55		.2	U
BARIUM	Y	MG/L	.449		.2	U	.384		1.68		.2	U
BERYLLIUM		MG/L	.005	U	.005	U	.005	U	.005	U	.005	U
BERYLLIUM	Y	MG/L	.005	U	.005	U	.005	U	.005	U	.005	U
CADMIUM		MG/L	.005	U	.005	U	.005	U	.005	U	.005	U
CADMIUM	Y	MG/L	.005	U	.005	U	.005	U	.005	U	.005	U
CALCIUM		MG/L	336	J	105		114	J	248	J	152	
CALCIUM	Y	MG/L	358		116	J	130		270		120	
CHROMIUM		MG/L	.01	U	.01	U	.01	U	.01	U	.0102	
CHROMIUM	Y	MG/L	.01	U	.01	U	.01	U	.01	U	.01	U
COBALT		MG/L	.05	U	.05	U	.05	U	.05	U	.05	U
COBALT	Y	MG/L	.05	U	.05	U	.05	U	.05	U	.05	U
COPPER		MG/L	.025	U	.0339		.025	U	.025	U	.025	U
COPPER	Y	MG/L	.025	U	.025	U	.025	U	.025	U	.025	U
IRON		MG/L	6.4		41.7		1.03		.244		.923	
IRON	Y	MG/L	.298		16.3		.586		.116		.1	U
LEAD		MG/L	.015	U	.0039		.0048		.003	U	.003	U
LEAD	Y	MG/L	.015	U	.003	U	.003		.003	U	.003	U
MAGNESIUM		MG/L	235		22.8		43.8		180		70.7	
MAGNESIUM	Y	MG/L	254		25.6		51.1		200		82.5	
MANGANESE		MG/L	.849		.677		.0854		.0174		.054	
MANGANESE	Y	MG/L	.899		.694		.071		.015	U	.0291	
MERCURY		MG/L	.0002	U	[illegible]	U	.0002	U	.0002	U	.0[illegible]	U

Sample Location:			PB-BED-MW15		PB-BED-MW16		PB-BED-MW17		PB-BED-MW18		PB-BED-MW19	
Sample No:			5910		5920		5930		5940		5950	
Sample Date:			18-NOV-97		24-NOV-97		20-NOV-97		19-NOV-97		14-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
ALUMINUM		MG/L	.2	U	.502	J	.396	UJ	.283	J	.2	U
ALUMINUM	Y	MG/L	.2	U	.2	U	.2	U	.2	U	.2	U
ANTIMONY		MG/L	.06	U	.06	U	.06	U	.06	U	.06	U
ANTIMONY	Y	MG/L	.06	U	.06	U	.06	U	.06	U	.06	U
ARSENIC		MG/L	.01	U	.03	U	.01	U	.2	U	.01	U
ARSENIC	Y	MG/L	.02	U	.03	U	.01	U	.2	U	.01	U
BARIUM		MG/L	.605		.463		.948		.893		1.52	
BARIUM	Y	MG/L	.555		.389		1.1		1.01		1.52	
BERYLLIUM		MG/L	.005	U	.005	U	.005	U	.005	U	.005	U
BERYLLIUM	Y	MG/L	.005	U	.005	U	.005	U	.005	U	.005	U
CADMIUM		MG/L	.005	U	.005	U	.005	U	.005	U	.005	U
CADMIUM	Y	MG/L	.005	U	.005	U	.005	U	.005	U	.005	U
CALCIUM		MG/L	280		875	J	318	J	809		255	J
CALCIUM	Y	MG/L	245	J	915		263		1010		220	
CHROMIUM		MG/L	.01	U	.0244		.01	U	.01	U	.01	
CHROMIUM	Y	MG/L	.01	U	.0136		.01	U	.01	U	.01	U
COBALT		MG/L	.05	U	.05	U	.05	U	.05	U	.05	U
COBALT	Y	MG/L	.05	U	.05	U	.05	U	.05	U	.05	U
COPPER		MG/L	.025	U	.025	U	.025	U	.025	U	.0617	
COPPER	Y	MG/L	.025	U	.025	U	.025	U	.025	U	.025	U
IRON		MG/L	.93		1.14		1.58		.476		.376	
IRON	Y	MG/L	.1	U	.1	U	.1	U	.1	U	.1	U
LEAD		MG/L	.003	U	.009	U	.003	U	.06	U	.0068	
LEAD	Y	MG/L	.006	U	.009	U	.003	U	.06	U	.003	U
MAGNESIUM		MG/L	177		6.19		187		384		57.2	
MAGNESIUM	Y	MG/L	182		5	U	213		572		65.1	
MANGANESE		MG/L	.0263		.133		.124		.0368		.0304	
MANGANESE	Y	MG/L	.015	U	.015	U	.015	U	.0359		.015	U
MERCURY		MG/L	.0002	U	.0002	U	.0002	U	.001		.0002	U

Sample Location:			PB-BED-MW20		REACTOR1	
Sample No:			5960		5970	
Sample Date:			17-NOV-97		21-NOV-97	
Depth			0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr
ALUMINUM		MG/L	3.29		.287	UJ
ALUMINUM	Y	MG/L	.2	U	.2	U
ANTIMONY		MG/L	.06	U	.06	U
ANTIMONY	Y	MG/L	.06	U	.06	U
ARSENIC		MG/L	.1	U	.01	U
ARSENIC	Y	MG/L	.2	U	.01	U
BARIUM		MG/L	19		.405	
BARIUM	Y	MG/L	21		.397	
BERYLLIUM		MG/L	.005	U	.005	U
BERYLLIUM	Y	MG/L	.005	U	.005	U
CADMIUM		MG/L	.005	U	.005	U
CADMIUM	Y	MG/L	.005	U	.005	U
CALCIUM		MG/L	2140		131	J
CALCIUM	Y	MG/L	2570	J	128	
CHROMIUM		MG/L	.01	U	.0111	
CHROMIUM	Y	MG/L	.01	U	.01	U
COBALT		MG/L	.05	U	.05	U
COBALT	Y	MG/L	.05	U	.05	U
COPPER		MG/L	.0328		.025	U
COPPER	Y	MG/L	.025	U	.025	U
IRON		MG/L	13.2		8	
IRON	Y	MG/L	2.31		.169	
LEAD		MG/L	.03	U	.0191	
LEAD	Y	MG/L	.06	U	.0035	
MAGNESIUM		MG/L	920		54	
MAGNESIUM	Y	MG/L	1090		54.2	
MANGANESE		MG/L	.18		.198	
MANGANESE	Y	MG/L	.162		.144	
MERCURY		MG/L	.0002	U	[illegible]2	U

Sample Location:			IT-AA1-BEDGW-001		IT-AA2-BEDGW-001		IT-AA3-BEDGW-001		IT-ABG-BEDGW-01		IT-BG8-BEDGW-001	
Sample No:			5450		5460		5470		5480		5410	
Sample Date:			16-NOV-97		20-NOV-97		19-NOV-97		13-NOV-97		17-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
MERCURY	Y	MG/L	.0002	U	.0002	U	.0002	U	.0002	U	.0002	U
NICKEL		MG/L	.04	U	.04	U	.04	U	.04	U	.04	U
NICKEL	Y	MG/L	.04	U	.04	U	.04	U	.04	U	.04	U
POTASSIUM		MG/L	38.5		29.1		49.6		5	U	32.9	
POTASSIUM	Y	MG/L	42.4		30		44.7		5	U	32	
SELENIUM		MG/L	.005	U	.005	U	.005	U	.005	U	.005	U
SELENIUM	Y	MG/L	.015	U	.005	U	.005	U	.005	U	.005	U
SILVER		MG/L	.01	U	.01	U	.01	U	.01	U	.01	U
SILVER	Y	MG/L	.01	U	.01	U	.01	U	.01	U	.01	U
SODIUM		MG/L	582		99.1	J	368		5.07		399	
SODIUM	Y	MG/L	644		104		331		5		398	
THALLIUM		MG/L	.01	U	.01	U	.01	U	.01	U	.01	U
THALLIUM	Y	MG/L	.03	U	.01	U	.01	U	.01	U	.01	U
VANADIUM		MG/L	.05	U	.05	U	.05	U	.05	U	.05	U
VANADIUM	Y	MG/L	.05	U	.05	U	.05	U	.05	U	.05	U
ZINC		MG/L	.0328		.055		.0292		.0277		.126	
ZINC	Y	MG/L	.105		.0662	J	.023		.02	U	.02	U

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Sample Location:			IT-MNTA-BEDGW-001		IT-TNTB-BEDGW-001		IT-TNTB-BEDGW-002		PB-BED-MW13		PB-BED-MW14	
Sample No:			5440		5420		5430		5890		5900	
Sample Date:			20-NOV-97		17-NOV-97		16-NOV-97		13-NOV-97		18-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
MERCURY	Y	MG/L	.0002	U	.0002	U	.0002	U	.0002	U	.0002	U
NICKEL		MG/L	.04	U	.0421		.04	U	.04	U	.0423	
NICKEL	Y	MG/L	.04	U	.04	U	.04	U	.04	U	.0407	
POTASSIUM		MG/L	58.8		7.24		10.4		101		44.7	
POTASSIUM	Y	MG/L	63.5		8.13		10.7		110		40.5	
SELENIUM		MG/L	.025	U	.005	U	.005	U	.005	U	.005	U
SELENIUM	Y	MG/L	.025	U	.005	U	.005	U	.005	U	.005	U
SILVER		MG/L	.01	U	.01	U	.01	U	.01	U	.01	U
SILVER	Y	MG/L	.01	U	.01	U	.01	U	.01	U	.01	U
SODIUM		MG/L	1140	J	34.9		127		1330		311	
SODIUM	Y	MG/L	1190		36.1		153		1510		360	
THALLIUM		MG/L	.05	U	.01	U	.01	U	.01	U	.01	U
THALLIUM	Y	MG/L	.05	U	.01	U	.01	U	.01	U	.01	U
VANADIUM		MG/L	.05	U	.05	U	.05	U	.05	U	.05	U
VANADIUM	Y	MG/L	.05	U	.05	U	.05	U	.05	U	.05	U
ZINC		MG/L	.0344	U	.0488		.0739		.0472		.0398	
ZINC	Y	MG/L	.0248	J	.02	U	.02	U	.0301		.0324	

Sample Location:			PB-BED-MW15		PB-BED-MW16		PB-BED-MW17		PB-BED-MW18		PB-BED-MW19	
Sample No:			5910		5920		5930		5940		5950	
Sample Date:			18-NOV-97		24-NOV-97		20-NOV-97		19-NOV-97		14-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
MERCURY	Y	MG/L	.0002	U	.0002	U	.0002	U	.0002	U	.0002	U
NICKEL		MG/L	.04	U	.04	U	.04	U	.04	U	.04	U
NICKEL	Y	MG/L	.04	U	.04	U	.04	U	.04	U	.04	U
POTASSIUM		MG/L	58.8		26.4		38.5		148		49.5	
POTASSIUM	Y	MG/L	61.1		24.9		45.4		172		46.2	
SELENIUM		MG/L	.005	U	.015	U	.005	U	.1	U	.005	U
SELENIUM	Y	MG/L	.01	U	.015	U	.005	U	.1	U	.005	U
SILVER		MG/L	.01	U	.01	U	.01	U	.01	U	.01	U
SILVER	Y	MG/L	.01	U	.01	U	.01	U	.01	U	.01	U
SODIUM		MG/L	559		73.2	J	355	j	2190		120	
SODIUM	Y	MG/L	582		68.6		419		3010		125	
THALLIUM		MG/L	.01	U	.03	U	.01	U	.2	U	.01	U
THALLIUM	Y	MG/L	.02	U	.03	U	.01	U	.2	U	.01	U
VANADIUM		MG/L	.05	U	.0647		.05	U	.05	U	.05	U
VANADIUM	Y	MG/L	.05	U	.0583		.05	U	.05	U	.05	U
ZINC		MG/L	.0306		.03		.0499		.031		.0623	
ZINC	Y	MG/L	.0309		.02	UJ	.0333	J	.02	U	.0574	

Sample Location:			PB-BED-MW20		REACTOR1	
Sample No:			5960		5970	
Sample Date:			17-NOV-97		21-NOV-97	
Depth			0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr
MERCURY	Y	MG/L	.0002	U	.0002	U
NICKEL		MG/L	.04	U	.04	U
NICKEL	Y	MG/L	.04	U	.04	U
POTASSIUM		MG/L	92.3		9.21	
POTASSIUM	Y	MG/L	103		9.18	
SELENIUM		MG/L	.05	U	.005	U
SELENIUM	Y	MG/L	.1	U	.005	U
SILVER		MG/L	.01	U	.01	U
SILVER	Y	MG/L	.01	U	.01	U
SODIUM		MG/L	7660		42	J
SODIUM	Y	MG/L	9110		42.8	
THALLIUM		MG/L	.1	U	.01	U
THALLIUM	Y	MG/L	.2	U	.01	U
VANADIUM		MG/L	.05	U	.05	U
VANADIUM	Y	MG/L	.05	U	.05	U
ZINC		MG/L	.0416		.0697	
ZINC	Y	MG/L	.02	U	.0223	J

Sample Location:			IT-AA1-BEDGW-001		IT-AA2-BEDGW-001		IT-AA3-BEDGW-001		IT-ABG-BEDGW-01		IT-BG8-BEDGW-001	
Sample No:			5450		5460		5470		5480		5410	
Sample Date:			16-NOV-97		20-NOV-97		19-NOV-97		13-NOV-97		17-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:EXPLOSIVES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,3,5-TRINITROBENZENE		UG/L	0.40	U	0.20	U	0.20	U	0.20	U	0.20	U
1,3-DINITROBENZENE		UG/L	0.40	U	0.20	U	0.20	U	0.20	U	0.20	U
2,4,6-TRINITROTOLUENE		UG/L	0.40	U	0.20	U	0.20	U	0.20	U	0.20	U
2,4-DINITROTOLUENE		UG/L	0.40	U	0.20	U	0.20	U	0.20	U	0.20	U
2,6-DINITROTOLUENE		UG/L	0.40	U	0.20	U	0.20	U	0.20	U	0.20	U
2-NITROTOLUENE		UG/L	0.53	U	0.31	U	0.20	U	0.20	U	0.20	U
3-NITROTOLUENE		UG/L	0.40	U	0.20	U	0.31	U	0.20	U	0.20	U
4-AMINO-2,6-DINITROTOLUENE		UG/L	0.40	U	0.20	U	0.20	U	0.20	U	0.20	U
HMX		UG/L	1.0	U	0.50	U	0.50	U	0.50	U	0.50	U
NITROBENZENE		UG/L	0.40	U	0.20	U	0.20	U	0.20	U	0.20	U
RDX		UG/L	1.0	U	0.50	U	0.50	U	0.50	U	0.50	U
TETRYL		UG/L	0.40	U	0.20	U	0.20	U	0.20	U	0.20	U

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Sample Location:			IT-MNTA-BEDGW-001		IT-TNTB-BEDGW-001		IT-TNTB-BEDGW-002		PB-BED-MW13		PB-BED-MW14	
Sample No:			5440		5420		5430		5890		5900	
Sample Date:			20-NOV-97		17-NOV-97		16-NOV-97		13-NOV-97		18-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:EXPLOSIVES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,3,5-TRINITROBENZENE		UG/L	0.20	U	0.20	U	0.20	U	2.0	U	2.0	U
1,3-DINITROBENZENE		UG/L	0.20	U	0.20	U	0.20	U	2.0	U	2.0	U
2,4,6-TRINITROTOLUENE		UG/L	0.20	U	0.20	U	0.20	U	2.0	U	2.0	U
2,4-DINITROTOLUENE		UG/L	0.20	U	0.20	U	0.20	U	2.0	U	2.0	U
2,6-DINITROTOLUENE		UG/L	0.20	U	0.20	U	0.20	U	2.0	U	2.0	U
2-NITROTOLUENE		UG/L	0.20	U	0.20	U	0.20	U	2.0	U	2.0	U
3-NITROTOLUENE		UG/L	0.20	U	0.20	U	0.33	U	2.0	U	2.0	U
4-AMINO-2,6-DINITROTOLUENE		UG/L	0.20	U	0.20	U	0.20	U	2.0	U	2.0	U
HMX		UG/L	0.50	U	0.50	U	0.50	U	5.0	U	5.0	U
NITROBENZENE		UG/L	0.20	U	0.20	U	0.20	U	3.8	U	2.0	U
RDX		UG/L	0.50	U	0.50	U	0.50	U	5.0	U	5.0	U
TETRYL		UG/L	0.20	U	0.20	U	0.20	U	2.0	U	2.0	U

Sample Location:			PB-BED-MW15		PB-BED-MW16		PB-BED-MW17		PB-BED-MW18		PB-BED-MW19	
Sample No:			5910		5920		5930		5940		5950	
Sample Date:			18-NOV-97		24-NOV-97		20-NOV-97		19-NOV-97		14-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:EXPLOSIVES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,3,5-TRINITROBENZENE		UG/L	2.0	U	1.0	U	0.20	U	1.5		0.20	U
1,3-DINITROBENZENE		UG/L	2.0	U	1.0	U	0.20	U	1.0		0.22	
2,4,6-TRINITROTOLUENE		UG/L	2.0	U	1.0	U	0.20	U	0.20	U	0.20	U
2,4-DINITROTOLUENE		UG/L	2.0	U	1.0	U	0.22	U	0.89	U	0.20	U
2,6-DINITROTOLUENE		UG/L	2.0	U	1.0	U	0.20	U	0.20	U	0.20	U
2-NITROTOLUENE		UG/L	2.0	U	1.0	U	0.31	U	0.44	U	0.20	U
3-NITROTOLUENE		UG/L	2.0	U	1.0	U	2.2	U	0.21	U	0.20	U
4-AMINO-2,6-DINITROTOLUENE		UG/L	2.0	U	1.0	U	0.20	U	0.20	U	0.20	U
HMX		UG/L	5.0	U	2.5	U	0.50	U	0.50	U	0.50	U
NITROBENZENE		UG/L	2.0	U	1.0	U	0.34		2.0		0.32	
RDX		UG/L	5.0	U	2.5	U	0.50	U	0.50	U	0.50	U
TETRYL		UG/L	2.0	U	1.0	U	0.20	U	0.20	U	0.20	U

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Sample Location:			PB-BED-MW20		REACTOR1	
Sample No:			5960		5970	
Sample Date:			17-NOV-97		21-NOV-97	
Depth			0-0		0-0	
WELLS-W:EXPLOSIVES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr
1,3,5-TRINITROBENZENE		UG/L	0.20	U	0.23	U
1,3-DINITROBENZENE		UG/L	0.20	U	0.20	U
2,4,6-TRINITROTOLUENE		UG/L	0.20	U	0.20	U
2,4-DINITROTOLUENE		UG/L	0.20	U	0.20	U
2,6-DINITROTOLUENE		UG/L	0.20	U	0.20	U
2-NITROTOLUENE		UG/L	0.20	U	0.27	U
3-NITROTOLUENE		UG/L	0.20	U	0.20	U
4-AMINO-2,6-DINITROTOLUENE		UG/L	0.20	U	0.20	U
HMX		UG/L	0.50	U	0.50	U
NITROBENZENE		UG/L	0.20	U	0.20	U
RDX		UG/L	0.50	U	0.50	U
TETRYL		UG/L	0.20	U	0.20	U

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Sample Location:			PB-BED-MW15		PB-BED-MW16		PB-BED-MW17		PB-BED-MW18		PB-BED-MW19	
Sample No:			5910		5920		5930		5940		5950	
Sample Date:			18-NOV-97		24-NOV-97		20-NOV-97		19-NOV-97		14-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:CYANIDE-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL CYANIDE		MG/L	0.010	U	0.010	U	0.32		0.010	U	0.010	U

Sample Location:			PB-BED-MW20		REACTOR1	
Sample No:			5960		5970	
Sample Date:			17-NOV-97		21-NOV-97	
Depth			0-0		0-0	
WELLS-W:CYANIDE-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr
TOTAL CYANIDE		MG/L	0.010	U	0.010	U

Sample Location:			IT-AA1-BEDGW-001		IT-AA2-BEDGW-001		IT-AA3-BEDGW-001		IT-ABG-BEDGW-01		IT-BG8-BEDGW-001	
Sample No:			5450		5460		5470		5480		5410	
Sample Date:			16-NOV-97		20-NOV-97		19-NOV-97		13-NOV-97		17-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:CYANIDE-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL CYANIDE		MG/L	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U

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Sample Location:			IT-MNTA-BEDGW-001		IT-TNTB-BEDGW-001		IT-TNTB-BEDGW-002		PB-BED-MW13		PB-BED-MW14	
Sample No:			5440		5420		5430		5890		5900	
Sample Date:			20-NOV-97		17-NOV-97		16-NOV-97		13-NOV-97		18-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:CYANIDE-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL CYANIDE		MG/L	0.010	U	0.010	U	0.010	U	0.010	U	0.016	

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Sample Location:			IT-AA1-BEDGW-001		IT-AA2-BEDGW-001		IT-AA3-BEDGW-001		IT-ABG-BEDGW-01		IT-BG8-BEDGW-001	
Sample No:			5450		5460		5470		5480		5410	
Sample Date:			16-NOV-97		20-NOV-97		19-NOV-97		13-NOV-97		17-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,1,1-TRICHLOROETHANE		UG/L										
1,1,2,2-TETRACHLOROETHANE		UG/L										
1,1,2-TRICHLOROETHANE		UG/L										
1,1-DICHLOROETHANE		UG/L										
1,1-DICHLOROETHENE		UG/L										
1,2-DICHLOROETHANE		UG/L										
1,2-DICHLOROETHENE (TOTAL)		UG/L										
1,2-DICHLOROPROPANE		UG/L										
2-BUTANONE		UG/L										
2-HEXANONE		UG/L										
4-METHYL-2-PENTANONE		UG/L										
ACETONE		UG/L					36	J				
BENZENE		UG/L	11	J	33							
BROMODICHLOROMETHANE		UG/L										
BROMOFORM		UG/L										
BROMOMETHANE		UG/L										
CARBON DISULFIDE		UG/L	29	J	5.5	J	4.2	J			0.65	J
CARBON TETRACHLORIDE		UG/L										
CHLOROBENZENE		UG/L			21	J						
CHLOROETHANE		UG/L										
CHLOROFORM		UG/L										
CHLOROMETHANE		UG/L										
CIS-1,3-DICHLOROPROPENE		UG/L										
DIBROMOCHLOROMETHANE		UG/L										
ETHYLBENZENE		UG/L	7.7	J	23	J						
METHYLENE CHLORIDE		UG/L	25	J	7.4	J	5.0	U			1.0	U
STYRENE		UG/L										
TETRACHLOROETHENE		UG/L										
TOLUENE		UG/L	18	J	32							

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Sample Location:			IT-MNTA-BEDGW-001		IT-TNTB-BEDGW-001		IT-TNTB-BEDGW-002		PB-BED-MW13		PB-BED-MW14	
Sample No:			5440		5420		5430		5890		5900	
Sample Date:			20-NOV-97		17-NOV-97		16-NOV-97		13-NOV-97		18-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,1,1-TRICHLOROETHANE		UG/L										
1,1,2,2-TETRACHLOROETHANE		UG/L										
1,1,2-TRICHLOROETHANE		UG/L										
1,1-DICHLOROETHANE		UG/L										
1,1-DICHLOROETHENE		UG/L										
1,2-DICHLOROETHANE		UG/L										
1,2-DICHLOROETHENE (TOTAL)		UG/L										
1,2-DICHLOROPROPANE		UG/L										
2-BUTANONE		UG/L										
2-HEXANONE		UG/L										
4-METHYL-2-PENTANONE		UG/L										
ACETONE		UG/L										
BENZENE		UG/L			0.14	J	0.91	J	130		1.1	
BROMODICHLOROMETHANE		UG/L										
BROMOFORM		UG/L										
BROMOMETHANE		UG/L										
CARBON DISULFIDE		UG/L	3.7	J	0.82	J	6.4		5.8		1.3	
CARBON TETRACHLORIDE		UG/L										
CHLOROBENZENE		UG/L										
CHLOROETHANE		UG/L										
CHLOROFORM		UG/L										
CHLOROMETHANE		UG/L										
CIS-1,3-DICHLOROPROPENE		UG/L										
DIBROMOCHLOROMETHANE		UG/L										
ETHYLBENZENE		UG/L					0.85	J	73		0.59	J
METHYLENE CHLORIDE		UG/L	1.0	U			5.0	U				
STYRENE		UG/L										
TETRACHLOROETHENE		UG/L										
TOLUENE		UG/L				U			170		1	

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Sample Location:			PB-BED-MW15		PB-BED-MW16		PB-BED-MW17		PB-BED-MW18		PB-BED-MW19	
Sample No:			5910		5920		5930		5940		5950	
Sample Date:			18-NOV-97		24-NOV-97		20-NOV-97		19-NOV-97		14-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,1,1-TRICHLOROETHANE		UG/L										
1,1,2,2-TETRACHLOROETHANE		UG/L										
1,1,2-TRICHLOROETHANE		UG/L										
1,1-DICHLOROETHANE		UG/L										
1,1-DICHLOROETHENE		UG/L										
1,2-DICHLOROETHANE		UG/L										
1,2-DICHLOROETHENE (TOTAL)		UG/L										
1,2-DICHLOROPROPANE		UG/L										
2-BUTANONE		UG/L										
2-HEXANONE		UG/L										
4-METHYL-2-PENTANONE		UG/L										
ACETONE		UG/L									68	J
BENZENE		UG/L	570		490		10	J	11		11	
BROMODICHLOROMETHANE		UG/L										
BROMOFORM		UG/L										
BROMOMETHANE		UG/L										
CARBON DISULFIDE		UG/L					40	J	32		2.0	
CARBON TETRACHLORIDE		UG/L										
CHLOROBENZENE		UG/L										
CHLOROETHANE		UG/L										
CHLOROFORM		UG/L	8.4	J								
CHLOROMETHANE		UG/L										
CIS-1,3-DICHLOROPROPENE		UG/L										
DIBROMOCHLOROMETHANE		UG/L										
ETHYLBENZENE		UG/L	130		130		79		32		5.1	
METHYLENE CHLORIDE		UG/L	31	J	8.8	J	18	J				
STYRENE		UG/L										
TETRACHLOROETHENE		UG/L										
TOLUENE		UG/L	490		390		140		21		8.9	

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Sample Location:			PB-BED-MW20		REACTOR1	
Sample No:			5960		5970	
Sample Date:			17-NOV-97		21-NOV-97	
Depth			0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr
1,1,1-TRICHLOROETHANE		UG/L				
1,1,2,2-TETRACHLOROETHANE		UG/L				
1,1,2-TRICHLOROETHANE		UG/L				
1,1-DICHLOROETHANE		UG/L				
1,1-DICHLOROETHENE		UG/L				
1,2-DICHLOROETHANE		UG/L				
1,2-DICHLOROETHENE (TOTAL)		UG/L				
1,2-DICHLOROPROPANE		UG/L				
2-BUTANONE		UG/L				
2-HEXANONE		UG/L				
4-METHYL-2-PENTANONE		UG/L				
ACETONE		UG/L				
BENZENE		UG/L	0.93	J	8.8	J
BROMODICHLOROMETHANE		UG/L				
BROMOFORM		UG/L				
BROMOMETHANE		UG/L				
CARBON DISULFIDE		UG/L				
CARBON TETRACHLORIDE		UG/L				
CHLOROBENZENE		UG/L				
CHLOROETHANE		UG/L				
CHLOROFORM		UG/L				
CHLOROMETHANE		UG/L				
CIS-1,3-DICHLOROPROPENE		UG/L				
DIBROMOCHLOROMETHANE		UG/L				
ETHYLBENZENE		UG/L	0.15	J		
METHYLENE CHLORIDE		UG/L	1.0	U	14	J
STYRENE		UG/L				
TETRACHLOROETHENE		UG/L				
TOLUENE		UG/L	1.0	U		

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Sample Location:			IT-AA1-BEDGW-001		IT-AA2-BEDGW-001		IT-AA3-BEDGW-001		IT-ABG-BEDGW-01		IT-BG8-BEDGW-001	
Sample No:			5450		5460		5470		5480		5410	
Sample Date:			16-NOV-97		20-NOV-97		19-NOV-97		13-NOV-97		17-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TRANS-1,3-DICHLOROPROPENE		UG/L										
TRICHLOROETHENE		UG/L							0.25	J		
VINYL CHLORIDE		UG/L										
XYLENES (TOTAL)		UG/L	150		200						1.0	U

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Sample Location:			IT-MNTA-BEDGW-001		IT-TNTB-BEDGW-001		IT-TNTB-BEDGW-002		PB-BED-MW13		PB-BED-MW14	
Sample No:			5440		5420		5430		5890		5900	
Sample Date:			20-NOV-97		17-NOV-97		16-NOV-97		13-NOV-97		18-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TRANS-1,3-DICHLOROPROPENE		UG/L										
TRICHLOROETHENE		UG/L										
VINYL CHLORIDE		UG/L										
XYLENES (TOTAL)		UG/L	8.2	J	1.0	U	12		520		3.9	

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Sample Location:			PB-BED-MW15		PB-BED-MW16		PB-BED-MW17		PB-BED-MW18		PB-BED-MW19	
Sample No:			5910		5920		5930		5940		5950	
Sample Date:			18-NOV-97		24-NOV-97		20-NOV-97		19-NOV-97		14-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TRANS-1,3-DICHLOROPROPENE		UG/L										
TRICHLOROETHENE		UG/L										
VINYL CHLORIDE		UG/L										
XYLENES (TOTAL)		UG/L	920		1100		360		170		38	

PLUMBROOK
Bedrock Wells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			PB-BED-MW20		REACTOR1	
Sample No:			5960		5970	
Sample Date:			17-NOV-97		21-NOV-97	
Depth			0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr
TRANS-1,3-DICHLOROPROPENE		UG/L				
TRICHLOROETHENE		UG/L				
VINYL CHLORIDE		UG/L				
XYLENES (TOTAL)		UG/L	2.6		4.0	J

PLUMBROOK

Bedrock Wells

Hits Data Summary

Report Date: 03/12/98

Sample Location:			IT-AA1-BEDGW-001		IT-AA2-BEDGW-001		IT-AA3-BEDGW-001		IT-ABG-BEDGW-01		IT-BG8-BEDGW-001	
Sample No:			5450		5460		5470		5480		5410	
Sample Date:			16-NOV-97		20-NOV-97		19-NOV-97		13-NOV-97		17-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:TOC-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL ORGANIC CARBON		MG/L	16		7.4		5.3	J	3.8			

PLUMBROOK
Bedrock Wells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			IT-MNTA-BEDGW-001		IT-TNTB-BEDGW-001		IT-TNTB-BEDGW-002		PB-BED-MW13		PB-BED-MW14	
Sample No:			5440		5420		5430		5890		5900	
Sample Date:			20-NOV-97		17-NOV-97		16-NOV-97		13-NOV-97		18-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:TOC-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL ORGANIC CARBON		MG/L	11		12		5.0		9.6		190	

PLUMBROOK
Bedrock Wells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			PB-BED-MW15		PB-BED-MW16		PB-BED-MW17		PB-BED-MW18		PB-BED-MW19	
Sample No:			5910		5920		5930		5940		5950	
Sample Date:			18-NOV-97		24-NOV-97		20-NOV-97		19-NOV-97		14-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:TOC-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL ORGANIC CARBON		MG/L	11		8.4		1.2		6.5		16	

PLUMBROOK
Bedrock Wells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			PB-BED-MW20		REACTOR1	
Sample No:			5960		5970	
Sample Date:			17-NOV-97		21-NOV-97	
Depth			0-0		0-0	
WELLS-W:TOC-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr
TOTAL ORGANIC CARBON		MG/L			.0025	

PLUMBROOK
Bedrock Wells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			IT-AA1-BEDGW-001		IT-AA2-BEDGW-001		IT-AA3-BEDGW-001		IT-ABG-BEDGW-01		IT-BG8-BEDGW-001	
Sample No:			5450		5460		5470		5480		5410	
Sample Date:			16-NOV-97		20-NOV-97		19-NOV-97		13-NOV-97		17-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,2,4-TRICHLOROBENZENE		UG/L										
1,2-DICHLOROBENZENE		UG/L										
1,3-DICHLOROBENZENE		UG/L										
1,4-DICHLOROBENZENE		UG/L										
2,2'-OXYBIS(1-CHLOROPROPANE)		UG/L										
2,4,5-TRICHLOROPHENOL		UG/L										
2,4,6-TRICHLOROPHENOL		UG/L										
2,4-DICHLOROPHENOL		UG/L										
2,4-DIMETHYLPHENOL		UG/L			1.3	J						
2,4-DINITROPHENOL		UG/L										
2,4-DINITROTOLUENE		UG/L										
2,6-DINITROTOLUENE		UG/L										
2-CHLORONAPHTHALENE		UG/L										
2-CHLOROPHENOL		UG/L										
2-METHYLNAPHTHALENE		UG/L	28		1.3	J						
2-METHYLPHENOL		UG/L										
2-NITROANILINE		UG/L										
2-NITROPHENOL		UG/L										
3,3'-DICHLOROBENZIDINE		UG/L										
3-NITROANILINE		UG/L										
4,6-DINITRO-2-METHYLPHENOL		UG/L										
4-BROMOPHENYL PHENYL ETHER		UG/L										
4-CHLORO-3-METHYLPHENOL		UG/L										
4-CHLOROANILINE		UG/L										
4-CHLOROPHENYL PHENYL ETHER		UG/L										
4-METHYLPHENOL		UG/L										
4-NITROANILINE		UG/L										
4-NITROPHENOL		UG/L										
ACENAPHTHENE		UG/L										

PLUMBROOK
Bedrock Wells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			IT-MNTA-BEDGW-001		IT-TNTB-BEDGW-001		IT-TNTB-BEDGW-002		PB-BED-MW13		PB-BED-MW14	
Sample No:			5440		5420		5430		5890		5900	
Sample Date:			20-NOV-97		17-NOV-97		16-NOV-97		13-NOV-97		18-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,2,4-TRICHLOROBENZENE		UG/L										
1,2-DICHLOROBENZENE		UG/L										
1,3-DICHLOROBENZENE		UG/L										
1,4-DICHLOROBENZENE		UG/L										
2,2'-OXYBIS(1-CHLOROPROPANE)		UG/L										
2,4,5-TRICHLOROPHENOL		UG/L										
2,4,6-TRICHLOROPHENOL		UG/L										
2,4-DICHLOROPHENOL		UG/L										
2,4-DIMETHYLPHENOL		UG/L	1.7	J					16			
2,4-DINITROPHENOL		UG/L										
2,4-DINITROTOLUENE		UG/L										
2,6-DINITROTOLUENE		UG/L										
2-CHLORONAPHTHALENE		UG/L										
2-CHLOROPHENOL		UG/L										
2-METHYLNAPHTHALENE		UG/L	1.9	J					20			
2-METHYLPHENOL		UG/L							4.1	J		
2-NITROANILINE		UG/L										
2-NITROPHENOL		UG/L										
3,3'-DICHLOROBENZIDINE		UG/L										
3-NITROANILINE		UG/L										
4,6-DINITRO-2-METHYLPHENOL		UG/L										
4-BROMOPHENYL PHENYL ETHER		UG/L										
4-CHLORO-3-METHYLPHENOL		UG/L										
4-CHLOROANILINE		UG/L										
4-CHLOROPHENYL PHENYL ETHER		UG/L										
4-METHYLPHENOL		UG/L							4.7	J		
4-NITROANILINE		UG/L										
4-NITROPHENOL		UG/L										
ACENAPHTHENE		UG/L										

PLUMBROOK
Bedrock Wells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			PB-BED-MW15		PB-BED-MW16		PB-BED-MW17		PB-BED-MW18		PB-BED-MW19	
Sample No:			5910		5920		5930		5940		5950	
Sample Date:			18-NOV-97		24-NOV-97		20-NOV-97		19-NOV-97		14-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,2,4-TRICHLOROBENZENE		UG/L										
1,2-DICHLOROBENZENE		UG/L										
1,3-DICHLOROBENZENE		UG/L										
1,4-DICHLOROBENZENE		UG/L										
2,2'-OXYBIS(1-CHLOROPROPANE)		UG/L										
2,4,5-TRICHLOROPHENOL		UG/L										
2,4,6-TRICHLOROPHENOL		UG/L										
2,4-DICHLOROPHENOL		UG/L										
2,4-DIMETHYLPHENOL		UG/L	6.7	J					5.1	J		
2,4-DINITROPHENOL		UG/L										
2,4-DINITROTOLUENE		UG/L										
2,6-DINITROTOLUENE		UG/L										
2-CHLORONAPHTHALENE		UG/L										
2-CHLOROPHENOL		UG/L										
2-METHYLNAPHTHALENE		UG/L	31						2.2	J	3.3	J
2-METHYLPHENOL		UG/L	3.0	J					2.6	J		
2-NITROANILINE		UG/L										
2-NITROPHENOL		UG/L										
3,3'-DICHLOROBENZIDINE		UG/L										
3-NITROANILINE		UG/L										
4,6-DINITRO-2-METHYLPHENOL		UG/L										
4-BROMOPHENYL PHENYL ETHER		UG/L										
4-CHLORO-3-METHYLPHENOL		UG/L										
4-CHLOROANILINE		UG/L										
4-CHLOROPHENYL PHENYL ETHER		UG/L										
4-METHYLPHENOL		UG/L	3.9	J					2.8	J		
4-NITROANILINE		UG/L										
4-NITROPHENOL		UG/L										
ACENAPHTHENE		UG/L										

PLUMBROOK
Bedrock Wells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			PB-BED-MW20		REACTOR1	
Sample No:			5960		5970	
Sample Date:			17-NOV-97		21-NOV-97	
Depth			0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr
1,2,4-TRICHLOROBENZENE		UG/L				
1,2-DICHLOROBENZENE		UG/L				
1,3-DICHLOROBENZENE		UG/L				
1,4-DICHLOROBENZENE		UG/L				
2,2'-OXYBIS(1-CHLOROPROPANE)		UG/L				
2,4,5-TRICHLOROPHENOL		UG/L				
2,4,6-TRICHLOROPHENOL		UG/L				
2,4-DICHLOROPHENOL		UG/L				
2,4-DIMETHYLPHENOL		UG/L				
2,4-DINITROPHENOL		UG/L				
2,4-DINITROTOLUENE		UG/L				
2,6-DINITROTOLUENE		UG/L				
2-CHLORONAPHTHALENE		UG/L				
2-CHLOROPHENOL		UG/L				
2-METHYLNAPHTHALENE		UG/L	1.1	J		
2-METHYLPHENOL		UG/L				
2-NITROANILINE		UG/L				
2-NITROPHENOL		UG/L				
3,3'-DICHLOROBENZIDINE		UG/L				
3-NITROANILINE		UG/L				
4,6-DINITRO-2-METHYLPHENOL		UG/L				
4-BROMOPHENYL PHENYL ETHER		UG/L				
4-CHLORO-3-METHYLPHENOL		UG/L				
4-CHLOROANILINE		UG/L				
4-CHLOROPHENYL PHENYL ETHER		UG/L				
4-METHYLPHENOL		UG/L				
4-NITROANILINE		UG/L				
4-NITROPHENOL		UG/L				
ACENAPHTHENE		UG/L				

PLUMBROOK
Bedrock Wells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			IT-AA1-BEDGW-001		IT-AA2-BEDGW-001		IT-AA3-BEDGW-001		IT-ABG-BEDGW-01		IT-BG8-BEDGW-001	
Sample No:			5450		5460		5470		5480		5410	
Sample Date:			16-NOV-97		20-NOV-97		19-NOV-97		13-NOV-97		17-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
ACENAPHTHYLENE		UG/L										
ANTHRACENE		UG/L										
BENZO(A)ANTHRACENE		UG/L										
BENZO(A)PYRENE		UG/L										
BENZO(B)FLUORANTHENE		UG/L										
BENZO(GHI)PERYLENE		UG/L										
BENZO(K)FLUORANTHENE		UG/L										
BIS(2-CHLOROETHOXY)METHANE		UG/L										
BIS(2-CHLOROETHYL) ETHER		UG/L										
BIS(2-ETHYLHEXYL) PHTHALATE		UG/L	28				5.8	J			1.7	J
BUTYL BENZYL PHTHALATE		UG/L										
CARBAZOLE		UG/L										
CHRYSENE		UG/L										
DI-N-BUTYL PHTHALATE		UG/L										
DI-N-OCTYL PHTHALATE		UG/L										
DIBENZ(A,H)ANTHRACENE		UG/L										
DIBENZOFURAN		UG/L										
DIETHYL PHTHALATE		UG/L										
DIMETHYL PHTHALATE		UG/L										
FLUORANTHENE		UG/L										
FLUORENE		UG/L										
HEXACHLOROBENZENE		UG/L										
HEXACHLOROBUTADIENE		UG/L										
HEXACHLOROCYCLOPENTADIENE		UG/L										
HEXACHLOROETHANE		UG/L										
INDENO(1,2,3-CD)PYRENE		UG/L										
ISOPHORONE		UG/L	2.9	J								
N-NITROSODI-N-PROPYLAMINE		UG/L										
N-NITROSODIPHENYLAMINE		UG/L										

PLUMBROOK
Bedrock Wells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			IT-MNTA-BEDGW-001		IT-TNTB-BEDGW-001		IT-TNTB-BEDGW-002		PB-BED-MW13		PB-BED-MW14	
Sample No:			5440		5420		5430		5890		5900	
Sample Date:			20-NOV-97		17-NOV-97		16-NOV-97		13-NOV-97		18-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
ACENAPHTHYLENE		UG/L										
ANTHRACENE		UG/L										
BENZO(A)ANTHRACENE		UG/L										
BENZO(A)PYRENE		UG/L										
BENZO(B)FLUORANTHENE		UG/L										
BENZO(GHI)PERYLENE		UG/L										
BENZO(K)FLUORANTHENE		UG/L										
BIS(2-CHLOROETHOXY)METHANE		UG/L										
BIS(2-CHLOROETHYL) ETHER		UG/L										
BIS(2-ETHYLHEXYL) PHTHALATE		UG/L	3.9	J	3.6	J	3.0	J	39			
BUTYL BENZYL PHTHALATE		UG/L										
CARBAZOLE		UG/L										
CHRYSENE		UG/L										
DI-N-BUTYL PHTHALATE		UG/L										
DI-N-OCTYL PHTHALATE		UG/L										
DIBENZ(A,H)ANTHRACENE		UG/L										
DIBENZOFURAN		UG/L										
DIETHYL PHTHALATE		UG/L										
DIMETHYL PHTHALATE		UG/L										
FLUORANTHENE		UG/L										
FLUORENE		UG/L										
HEXACHLOROBENZENE		UG/L										
HEXACHLOROBUTADIENE		UG/L										
HEXACHLOROCYCLOPENTADIENE		UG/L										
HEXACHLOROETHANE		UG/L										
INDENO(1,2,3-CD)PYRENE		UG/L										
ISOPHORONE		UG/L										
N-NITROSODI-N-PROPYLAMINE		UG/L										
N-NITROSODIPHENYLAMINE		UG/L										

PLUMBROOK
Bedrock Wells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			PB-BED-MW15		PB-BED-MW16		PB-BED-MW17		PB-BED-MW18		PB-BED-MW19	
Sample No:			5910		5920		5930		5940		5950	
Sample Date:			18-NOV-97		24-NOV-97		20-NOV-97		19-NOV-97		14-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
ACENAPHTHYLENE		UG/L										
ANTHRACENE		UG/L										
BENZO(A)ANTHRACENE		UG/L										
BENZO(A)PYRENE		UG/L										
BENZO(B)FLUORANTHENE		UG/L										
BENZO(GHI)PERYLENE		UG/L										
BENZO(K)FLUORANTHENE		UG/L										
BIS(2-CHLOROETHOXY)METHANE		UG/L										
BIS(2-CHLOROETHYL) ETHER		UG/L										
BIS(2-ETHYLHEXYL) PHTHALATE		UG/L	37		920	J			3.5	J	5.8	J
BUTYL BENZYL PHTHALATE		UG/L										
CARBAZOLE		UG/L										
CHRYSENE		UG/L										
DI-N-BUTYL PHTHALATE		UG/L										
DI-N-OCTYL PHTHALATE		UG/L										
DIBENZ(A,H)ANTHRACENE		UG/L										
DIBENZOFURAN		UG/L										
DIETHYL PHTHALATE		UG/L										
DIMETHYL PHTHALATE		UG/L										
FLUORANTHENE		UG/L										
FLUORENE		UG/L	1.7	J								
HEXACHLOROBENZENE		UG/L										
HEXACHLOROBUTADIENE		UG/L										
HEXACHLOROCYCLOPENTADIENE		UG/L										
HEXACHLOROETHANE		UG/L										
INDENO(1,2,3-CD)PYRENE		UG/L										
ISOPHORONE		UG/L	4.2	J								
N-NITROSODI-N-PROPYLAMINE		UG/L										
N-NITROSODIPHENYLAMINE		UG/L										

PLUMBROOK
Bedrock Wells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			PB-BED-MW20		REACTOR1	
Sample No:			5960		5970	
Sample Date:			17-NOV-97		21-NOV-97	
Depth			0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr
ACENAPHTHYLENE		UG/L				
ANTHRACENE		UG/L				
BENZO(A)ANTHRACENE		UG/L				
BENZO(A)PYRENE		UG/L				
BENZO(B)FLUORANTHENE		UG/L				
BENZO(GHI)PERYLENE		UG/L				
BENZO(K)FLUORANTHENE		UG/L				
BIS(2-CHLOROETHOXY)METHANE		UG/L				
BIS(2-CHLOROETHYL) ETHER		UG/L				
BIS(2-ETHYLHEXYL) PHTHALATE		UG/L			23	J
BUTYL BENZYL PHTHALATE		UG/L				
CARBAZOLE		UG/L				
CHRYSENE		UG/L				
DI-N-BUTYL PHTHALATE		UG/L				
DI-N-OCTYL PHTHALATE		UG/L				
DIBENZ(A,H)ANTHRACENE		UG/L				
DIBENZOFURAN		UG/L				
DIETHYL PHTHALATE		UG/L				
DIMETHYL PHTHALATE		UG/L				
FLUORANTHENE		UG/L				
FLUORENE		UG/L				
HEXACHLOROBENZENE		UG/L				
HEXACHLOROBUTADIENE		UG/L				
HEXACHLOROCYCLOPENTADIENE		UG/L				
HEXACHLOROETHANE		UG/L				
INDENO(1,2,3-CD)PYRENE		UG/L				
ISOPHORONE		UG/L				
N-NITROSODI-N-PROPYLAMINE		UG/L				
N-NITROSODIPHE[illegible]AMINE		UG/L				

PLUMBROOK
Bedrock Wells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			IT-AA1-BEDGW-001		IT-AA2-BEDGW-001		IT-AA3-BEDGW-001		IT-ABG-BEDGW-01		IT-BG8-BEDGW-001	
Sample No:			5450		5460		5470		5480		5410	
Sample Date:			16-NOV-97		20-NOV-97		19-NOV-97		13-NOV-97		17-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
NAPHTHALENE		UG/L	16									
NITROBENZENE		UG/L										
PENTACHLOROPHENOL		UG/L										
PHENANTHRENE		UG/L										
PHENOL		UG/L	43				3.1	J				
PYRENE		UG/L										

PLUMBROOK
Bedrock Wells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			IT-MNTA-BEDGW-001		IT-TNTB-BEDGW-001		IT-TNTB-BEDGW-002		PB-BED-MW13		PB-BED-MW14	
Sample No:			5440		5420		5430		5890		5900	
Sample Date:			20-NOV-97		17-NOV-97		16-NOV-97		13-NOV-97		18-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
NAPHTHALENE		UG/L	2.3	J					15			
NITROBENZENE		UG/L										
PENTACHLOROPHENOL		UG/L										
PHENANTHRENE		UG/L										
PHENOL		UG/L	17				2.3	J	62			
PYRENE		UG/L										

PLUMBROOK
Bedrock Wells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			PB-BED-MW15		PB-BED-MW16		PB-BED-MW17		PB-BED-MW18		PB-BED-MW19	
Sample No:			5910		5920		5930		5940		5950	
Sample Date:			18-NOV-97		24-NOV-97		20-NOV-97		19-NOV-97		14-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
NAPHTHALENE		UG/L	22						3.8	J	2.1	J
NITROBENZENE		UG/L										
PENTACHLOROPHENOL		UG/L										
PHENANTHRENE		UG/L	2.2	J								
PHENOL		UG/L	18						21	J	55	
PYRENE		UG/L										

PLUMBROOK
Bedrock Wells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			PB-BED-MW20		REACTOR1	
Sample No:			5960		5970	
Sample Date:			17-NOV-97		21-NOV-97	
Depth			0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr
NAPHTHALENE		UG/L				
NITROBENZENE		UG/L				
PENTACHLOROPHENOL		UG/L				
PHENANTHRENE		UG/L				
PHENOL		UG/L				
PYRENE		UG/L				

PLUMBROOK
Bedrock Wells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			IT-AA1-BEDGW-001		IT-AA2-BEDGW-001		IT-AA3-BEDGW-001		IT-ABG-BEDGW-01		IT-BG8-BEDGW-001	
Sample No:			5450		5460		5470		5480		5410	
Sample Date:			16-NOV-97		20-NOV-97		19-NOV-97		13-NOV-97		17-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:PEST/PCB-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
AROCLOR 1016		UG/L										
AROCLOR 1221		UG/L										
AROCLOR 1232		UG/L										
AROCLOR 1242		UG/L										
AROCLOR 1248		UG/L										
AROCLOR 1254		UG/L										
AROCLOR 1260		UG/L										

PLUMBROOK
Bedrock Wells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			IT-MNTA-BEDGW-001		IT-TNTB-BEDGW-001		IT-TNTB-BEDGW-002		PB-BED-MW13		PB-BED-MW14	
Sample No:			5440		5420		5430		5890		5900	
Sample Date:			20-NOV-97		17-NOV-97		16-NOV-97		13-NOV-97		18-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:PEST/PCB-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
AROCLOR 1016		UG/L										
AROCLOR 1221		UG/L										
AROCLOR 1232		UG/L										
AROCLOR 1242		UG/L										
AROCLOR 1248		UG/L										
AROCLOR 1254		UG/L										
AROCLOR 1260		UG/L										

PLUMBROOK
Bedrock Wells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			PB-BED-MW15		PB-BED-MW16		PB-BED-MW17		PB-BED-MW18		PB-BED-MW19	
Sample No:			5910		5920		5930		5940		5950	
Sample Date:			18-NOV-97		24-NOV-97		20-NOV-97		19-NOV-97		14-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:PEST/PCB-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
AROCLOR 1016		UG/L										
AROCLOR 1221		UG/L										
AROCLOR 1232		UG/L										
AROCLOR 1242		UG/L										
AROCLOR 1248		UG/L										
AROCLOR 1254		UG/L										
AROCLOR 1260		UG/L										

PLUMBROOK
Bedrock Wells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			PB-BED-MW20		REACTOR1	
Sample No:			5960		5970	
Sample Date:			17-NOV-97		21-NOV-97	
Depth			0-0		0-0	
WELLS-W:PEST/PCB-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr
AROCLOR 1016		UG/L				
AROCLOR 1221		UG/L				
AROCLOR 1232		UG/L				
AROCLOR 1242		UG/L				
AROCLOR 1248		UG/L				
AROCLOR 1254		UG/L				
AROCLOR 1260		UG/L				

PLUMBROOK
Bedrock Wells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			IT-AA1-BEDGW-001		IT-AA2-BEDGW-001		IT-AA3-BEDGW-001		IT-ABG-BEDGW-01		IT-BG8-BEDGW-001	
Sample No:			5450		5460		5470		5480		5410	
Sample Date:			16-NOV-97		20-NOV-97		19-NOV-97		13-NOV-97		17-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
ALUMINUM		MG/L	.637		1.06	J			.522		9.02	
ALUMINUM	Y	MG/L										
ANTIMONY		MG/L										
ANTIMONY	Y	MG/L										
ARSENIC		MG/L	.0165						.0117		.0176	
ARSENIC	Y	MG/L										
BARIUM		MG/L	1.06		.22						.52	
BARIUM	Y	MG/L	1.26		.212						.366	
BERYLLIUM		MG/L										
BERYLLIUM	Y	MG/L										
CADMIUM		MG/L										
CADMIUM	Y	MG/L										
CALCIUM		MG/L	302		186	J	189		176	J	161	
CALCIUM	Y	MG/L	305	J	88.6		160		179		121	J
CHROMIUM		MG/L	.0127								.0182	
CHROMIUM	Y	MG/L										
COBALT		MG/L										
COBALT	Y	MG/L										
COPPER		MG/L	.0262								.0595	
COPPER	Y	MG/L										
IRON		MG/L	1.92		5.24		.168		8.89		22.6	
IRON	Y	MG/L	.137	U	.106				7.26		.563	
LEAD		MG/L			.0065	U			.0069		.0263	
LEAD	Y	MG/L										
MAGNESIUM		MG/L	218		56.9		108		34.3		79.5	
MAGNESIUM	Y	MG/L	237		54.8		96.3		34.9		72.4	
MANGANESE		MG/L	.575		.522		.0746		.912		2.24	
MANGANESE	Y	MG/L	.516		.351		.0576		.99		1.3	
MERCURY		MG/L							.0036			

PLUMBROOK
Bedrock Wells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			IT-MNTA-BEDGW-001		IT-TNTB-BEDGW-001		IT-TNTB-BEDGW-002		PB-BED-MW13		PB-BED-MW14	
Sample No:			5440		5420		5430		5890		5900	
Sample Date:			20-NOV-97		17-NOV-97		16-NOV-97		13-NOV-97		18-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
ALUMINUM		MG/L	.249	UJ	.654		.317				.374	J
ALUMINUM	Y	MG/L										
ANTIMONY		MG/L										
ANTIMONY	Y	MG/L										
ARSENIC		MG/L										
ARSENIC	Y	MG/L										
BARIUM		MG/L	.424				.326		1.55			
BARIUM	Y	MG/L	.449				.384		1.68			
BERYLLIUM		MG/L										
BERYLLIUM	Y	MG/L										
CADMIUM		MG/L										
CADMIUM	Y	MG/L										
CALCIUM		MG/L	336	J	105		114	J	248	J	152	
CALCIUM	Y	MG/L	358		116	J	130		270		120	
CHROMIUM		MG/L									.0102	
CHROMIUM	Y	MG/L										
COBALT		MG/L										
COBALT	Y	MG/L										
COPPER		MG/L			.0339							
COPPER	Y	MG/L										
IRON		MG/L	6.4		41.7		1.03		.244		.923	
IRON	Y	MG/L	.298		16.3		.586		.116			
LEAD		MG/L			.0039		.0048					
LEAD	Y	MG/L					.003					
MAGNESIUM		MG/L	235		22.8		43.8		180		70.7	
MAGNESIUM	Y	MG/L	254		25.6		51.1		200		82.5	
MANGANESE		MG/L	.849		.677		.0854		.0174		.054	
MANGANESE	Y	MG/L	.899		.694		.071				.029	
MERCURY		MG/L										

PLUMBROOK
Bedrock Wells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			PB-BED-MW15		PB-BED-MW16		PB-BED-MW17		PB-BED-MW18		PB-BED-MW19	
Sample No:			5910		5920		5930		5940		5950	
Sample Date:			18-NOV-97		24-NOV-97		20-NOV-97		19-NOV-97		14-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
ALUMINUM		MG/L			.502	J	.396	UJ	.283	J		
ALUMINUM	Y	MG/L										
ANTIMONY		MG/L										
ANTIMONY	Y	MG/L										
ARSENIC		MG/L										
ARSENIC	Y	MG/L										
BARIUM		MG/L	.605		.463		.948		.893		1.52	
BARIUM	Y	MG/L	.555		.389		1.1		1.01		1.52	
BERYLLIUM		MG/L										
BERYLLIUM	Y	MG/L										
CADMIUM		MG/L										
CADMIUM	Y	MG/L										
CALCIUM		MG/L	280		875	J	318	J	809		255	J
CALCIUM	Y	MG/L	245	J	915		263		1010		220	
CHROMIUM		MG/L			.0244						.01	
CHROMIUM	Y	MG/L			.0136							
COBALT		MG/L										
COBALT	Y	MG/L										
COPPER		MG/L									.0617	
COPPER	Y	MG/L										
IRON		MG/L	.93		1.14		1.58		.476		.376	
IRON	Y	MG/L										
LEAD		MG/L									.0068	
LEAD	Y	MG/L										
MAGNESIUM		MG/L	177		6.19		187		384		57.2	
MAGNESIUM	Y	MG/L	182				213		572		65.1	
MANGANESE		MG/L	.0263		.133		.124		.0368		.0304	
MANGANESE	Y	MG/L							.0359			
MERCURY		MG/L							.001			

PLUMBROOK
Bedrock Wells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			PB-BED-MW20		REACTOR1	
Sample No:			5960		5970	
Sample Date:			17-NOV-97		21-NOV-97	
Depth			0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr
ALUMINUM		MG/L	3.29		.287	UJ
ALUMINUM	Y	MG/L				
ANTIMONY		MG/L				
ANTIMONY	Y	MG/L				
ARSENIC		MG/L				
ARSENIC	Y	MG/L				
BARIUM		MG/L	19		.405	
BARIUM	Y	MG/L	21		.397	
BERYLLIUM		MG/L				
BERYLLIUM	Y	MG/L				
CADMIUM		MG/L				
CADMIUM	Y	MG/L				
CALCIUM		MG/L	2140		131	J
CALCIUM	Y	MG/L	2570	J	128	
CHROMIUM		MG/L			.0111	
CHROMIUM	Y	MG/L				
COBALT		MG/L				
COBALT	Y	MG/L				
COPPER		MG/L	.0328			
COPPER	Y	MG/L				
IRON		MG/L	13.2		8	
IRON	Y	MG/L	2.31		.169	
LEAD		MG/L			.0191	
LEAD	Y	MG/L			.0035	
MAGNESIUM		MG/L	920		54	
MAGNESIUM	Y	MG/L	1090		54.2	
MANGANESE		MG/L	.18		.198	
MANGANESE	Y	MG/L	.162		.144	
MERCURY		MG/L				

PLUMBROOK
Bedrock Wells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			IT-AA1-BEDGW-001		IT-AA2-BEDGW-001		IT-AA3-BEDGW-001		IT-ABG-BEDGW-01		IT-BG8-BEDGW-001	
Sample No:			5450		5460		5470		5480		5410	
Sample Date:			16-NOV-97		20-NOV-97		19-NOV-97		13-NOV-97		17-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
MERCURY	Y	MG/L										
NICKEL		MG/L										
NICKEL	Y	MG/L										
POTASSIUM		MG/L	38.5		29.1		49.6				32.9	
POTASSIUM	Y	MG/L	42.4		30		44.7				32	
SELENIUM		MG/L										
SELENIUM	Y	MG/L										
SILVER		MG/L										
SILVER	Y	MG/L										
SODIUM		MG/L	582		99.1	J	368		5.07		399	
SODIUM	Y	MG/L	644		104		331		5		398	
THALLIUM		MG/L										
THALLIUM	Y	MG/L										
VANADIUM		MG/L										
VANADIUM	Y	MG/L										
ZINC		MG/L	.0328		.055		.0292		.0277		.126	
ZINC	Y	MG/L	.105		.0662	J	.023					

PLUMBROOK
Bedrock Wells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			IT-MNTA-BEDGW-001		IT-TNTB-BEDGW-001		IT-TNTB-BEDGW-002		PB-BED-MW13		PB-BED-MW14	
Sample No:			5440		5420		5430		5890		5900	
Sample Date:			20-NOV-97		17-NOV-97		16-NOV-97		13-NOV-97		18-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
MERCURY	Y	MG/L										
NICKEL		MG/L			.0421						.0423	
NICKEL	Y	MG/L									.0407	
POTASSIUM		MG/L	58.8		7.24		10.4		101		44.7	
POTASSIUM	Y	MG/L	63.5		8.13		10.7		110		40.5	
SELENIUM		MG/L										
SELENIUM	Y	MG/L										
SILVER		MG/L										
SILVER	Y	MG/L										
SODIUM		MG/L	1140	J	34.9		127		1330		311	
SODIUM	Y	MG/L	1190		36.1		153		1510		360	
THALLIUM		MG/L										
THALLIUM	Y	MG/L										
VANADIUM		MG/L										
VANADIUM	Y	MG/L										
ZINC		MG/L	.0344	U	.0488		.0739		.0472		.0398	
ZINC	Y	MG/L	.0248	J					.0301		.0324	

PLUMBROOK
Bedrock Wells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			PB-BED-MW15		PB-BED-MW16		PB-BED-MW17		PB-BED-MW18		PB-BED-MW19	
Sample No:			5910		5920		5930		5940		5950	
Sample Date:			18-NOV-97		24-NOV-97		20-NOV-97		19-NOV-97		14-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
MERCURY	Y	MG/L										
NICKEL		MG/L										
NICKEL	Y	MG/L										
POTASSIUM		MG/L	58.8		26.4		38.5		148		49.5	
POTASSIUM	Y	MG/L	61.1		24.9		45.4		172		46.2	
SELENIUM		MG/L										
SELENIUM	Y	MG/L										
SILVER		MG/L										
SILVER	Y	MG/L										
SODIUM		MG/L	559		73.2	J	355	j	2190		120	
SODIUM	Y	MG/L	582		68.6		419		3010		125	
THALLIUM		MG/L										
THALLIUM	Y	MG/L										
VANADIUM		MG/L			.0647							
VANADIUM	Y	MG/L			.0583							
ZINC		MG/L	.0306		.03		.0499		.031		.0623	
ZINC	Y	MG/L	.0309				.0333	J			.0574	

PLUMBROOK
Bedrock Wells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			PB-BED-MW20		REACTOR1	
Sample No:			5960		5970	
Sample Date:			17-NOV-97		21-NOV-97	
Depth			0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr
MERCURY	Y	MG/L				
NICKEL		MG/L				
NICKEL	Y	MG/L				
POTASSIUM		MG/L	92.3		9.21	
POTASSIUM	Y	MG/L	103		9.18	
SELENIUM		MG/L				
SELENIUM	Y	MG/L				
SILVER		MG/L				
SILVER	Y	MG/L				
SODIUM		MG/L	7660		42	J
SODIUM	Y	MG/L	9110		42.8	
THALLIUM		MG/L				
THALLIUM	Y	MG/L				
VANADIUM		MG/L				
VANADIUM	Y	MG/L				
ZINC		MG/L	.0416		.0697	
ZINC	Y	MG/L			.0223	J

PLUMBROOK
Bedrock Wells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			IT-AA1-BEDGW-001		IT-AA2-BEDGW-001		IT-AA3-BEDGW-001		IT-ABG-BEDGW-01		IT-BG8-BEDGW-001	
Sample No:			5450		5460		5470		5480		5410	
Sample Date:			16-NOV-97		20-NOV-97		19-NOV-97		13-NOV-97		17-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:EXPLOSIVES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,3,5-TRINITROBENZENE		UG/L										
1,3-DINITROBENZENE		UG/L										
2,4,6-TRINITROTOLUENE		UG/L										
2,4-DINITROTOLUENE		UG/L										
2,6-DINITROTOLUENE		UG/L										
2-NITROTOLUENE		UG/L										
3-NITROTOLUENE		UG/L										
4-AMINO-2,6-DINITROTOLUENE		UG/L										
HMX		UG/L										
NITROBENZENE		UG/L										
RDX		UG/L										
TETRYL		UG/L										

PLUMBROOK
Bedrock Wells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			IT-MNTA-BEDGW-001		IT-TNTB-BEDGW-001		IT-TNTB-BEDGW-002		PB-BED-MW13		PB-BED-MW14	
Sample No:			5440		5420		5430		5890		5900	
Sample Date:			20-NOV-97		17-NOV-97		16-NOV-97		13-NOV-97		18-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:EXPLOSIVES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,3,5-TRINITROBENZENE		UG/L										
1,3-DINITROBENZENE		UG/L										
2,4,6-TRINITROTOLUENE		UG/L										
2,4-DINITROTOLUENE		UG/L										
2,6-DINITROTOLUENE		UG/L										
2-NITROTOLUENE		UG/L										
3-NITROTOLUENE		UG/L										
4-AMINO-2,6-DINITROTOLUENE		UG/L										
HMX		UG/L										
NITROBENZENE		UG/L										
RDX		UG/L										
TETRYL		UG/L										

PLUMBROOK
Bedrock Wells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			PB-BED-MW15		PB-BED-MW16		PB-BED-MW17		PB-BED-MW18		PB-BED-MW19	
Sample No:			5910		5920		5930		5940		5950	
Sample Date:			18-NOV-97		24-NOV-97		20-NOV-97		19-NOV-97		14-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:EXPLOSIVES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,3,5-TRINITROBENZENE		UG/L							1.5			
1,3-DINITROBENZENE		UG/L							1.0		0.22	
2,4,6-TRINITROTOLUENE		UG/L										
2,4-DINITROTOLUENE		UG/L										
2,6-DINITROTOLUENE		UG/L										
2-NITROTOLUENE		UG/L										
3-NITROTOLUENE		UG/L										
4-AMINO-2,6-DINITROTOLUENE		UG/L										
HMX		UG/L										
NITROBENZENE		UG/L					0.34		2.0		0.32	
RDX		UG/L										
TETRYL		UG/L										

PLUMBROOK
Bedrock Wells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			PB-BED-MW20		REACTOR1	
Sample No:			5960		5970	
Sample Date:			17-NOV-97		21-NOV-97	
Depth			0-0		0-0	
WELLS-W:EXPLOSIVES-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr
1,3,5-TRINITROBENZENE		UG/L				
1,3-DINITROBENZENE		UG/L				
2,4,6-TRINITROTOLUENE		UG/L				
2,4-DINITROTOLUENE		UG/L				
2,6-DINITROTOLUENE		UG/L				
2-NITROTOLUENE		UG/L				
3-NITROTOLUENE		UG/L				
4-AMINO-2,6-DINITROTOLUENE		UG/L				
HMX		UG/L				
NITROBENZENE		UG/L				
RDX		UG/L				
TETRYL		UG/L				

PLUMBROOK
Bedrock Wells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			PB-BED-MW15		PB-BED-MW16		PB-BED-MW17		PB-BED-MW18		PB-BED-MW19	
Sample No:			5910		5920		5930		5940		5950	
Sample Date:			18-NOV-97		24-NOV-97		20-NOV-97		19-NOV-97		14-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:CYANIDE-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL CYANIDE		MG/L					0.32					

PLUMBROOK
Bedrock Wells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			PB-BED-MW20		REACTOR1	
Sample No:			5960		5970	
Sample Date:			17-NOV-97		21-NOV-97	
Depth			0-0		0-0	
WELLS-W:CYANIDE-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr
TOTAL CYANIDE		MG/L				

PLUMBROOK
Bedrock Wells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			IT-AA1-BEDGW-001		IT-AA2-BEDGW-001		IT-AA3-BEDGW-001		IT-ABG-BEDGW-01		IT-BG8-BEDGW-001	
Sample No:			5450		5460		5470		5480		5410	
Sample Date:			16-NOV-97		20-NOV-97		19-NOV-97		13-NOV-97		17-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:CYANIDE-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL CYANIDE		MG/L										

PLUMBROOK
Bedrock Wells
Hits Data Summary

Report Date: 03/12/98

Sample Location:			IT-MNTA-BEDGW-001		IT-TNTB-BEDGW-001		IT-TNTB-BEDGW-002		PB-BED-MW13		PB-BED-MW14	
Sample No:			5440		5420		5430		5890		5900	
Sample Date:			20-NOV-97		17-NOV-97		16-NOV-97		13-NOV-97		18-NOV-97	
Depth			0-0		0-0		0-0		0-0		0-0	
WELLS-W:CYANIDE-W	Fltr	Units	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL CYANIDE		MG/L									0.016	

PLUMBROOK

Bedrock Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				IT-AA1-BEDGW-001		IT-AA2-BEDGW-001		IT-AA3-BEDGW-001	
Sample No:				5450		5460		5470	
Sample Date:				16-NOV-97		20-NOV-97		19-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
BENZENE		UG/L	0.36	11	J	33			
CHLOROBENZENE		UG/L	3.9			21	J		
CHLOROFORM		UG/L	0.15						
METHYLENE CHLORIDE		UG/L	4.1	25	J	7.4	J		
TOLUENE		UG/L	75						

PLUMBROOK

Bedrock Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				IT-ABG-BEDGW-01		IT-BG8-BEDGW-001		IT-MNTA-BEDGW-001	
Sample No:				5480		5410		5440	
Sample Date:				13-NOV-97		17-NOV-97		20-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
BENZENE		UG/L	0.36						
CHLOROBENZENE		UG/L	3.9						
CHLOROFORM		UG/L	0.15						
METHYLENE CHLORIDE		UG/L	4.1						
TOLUENE		UG/L	75						

PLUMBROOK

Bedrock Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				IT-TNTB-BEDGW-001		IT-TNTB-BEDGW-002		PB-BED-MW13	
Sample No:				5420		5430		5890	
Sample Date:				17-NOV-97		16-NOV-97		13-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
BENZENE		UG/L	0.36			0.91	J	130	
CHLOROBENZENE		UG/L	3.9						
CHLOROFORM		UG/L	0.15						
METHYLENE CHLORIDE		UG/L	4.1						
TOLUENE		UG/L	75					170	

PLUMBROOK

Bedrock Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				PB-BED-MW14		PB-BED-MW15		PB-BED-MW16	
Sample No:				5900		5910		5920	
Sample Date:				18-NOV-97		18-NOV-97		24-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
BENZENE		UG/L	0.36	1.1		570		490	
CHLOROBENZENE		UG/L	3.9						
CHLOROFORM		UG/L	0.15			8.4	J		
METHYLENE CHLORIDE		UG/L	4.1			31	J	8.8	J
TOLUENE		UG/L	75			490		390	

PLUMBROOK

Bedrock Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				PB-BED-MW17		PB-BED-MW18		PB-BED-MW19	
Sample No:				5930		5940		5950	
Sample Date:				20-NOV-97		19-NOV-97		14-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
BENZENE		UG/L	0.36	10	J	11		11	
CHLOROBENZENE		UG/L	3.9						
CHLOROFORM		UG/L	0.15						
METHYLENE CHLORIDE		UG/L	4.1	18	J				
TOLUENE		UG/L	75	140					

PLUMBROOK

Bedrock Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				PB-BED-MW20		REACTOR1	
Sample No:				5960		5970	
Sample Date:				17-NOV-97		21-NOV-97	
Depth				0-0		0-0	
WELLS-W:VOLATILES-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr
BENZENE		UG/L	0.36	0.93	J	8.8	J
CHLOROBENZENE		UG/L	3.9				
CHLOROFORM		UG/L	0.15				
METHYLENE CHLORIDE		UG/L	4.1			14	J
TOLUENE		UG/L	75				

PLUMBROOK

Bedrock Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				IT-AA1-BEDGW-001		IT-AA2-BEDGW-001		IT-AA3-BEDGW-001	
Sample No:				5450		5460		5470	
Sample Date:				16-NOV-97		20-NOV-97		19-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:TOC-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL ORGANIC CARBON		UG/L		16000		7400		5300	J

PLUMBROOK

Bedrock Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				IT-ABG-BEDGW-01		IT-BG8-BEDGW-001		IT-MNTA-BEDGW-001	
Sample No:				5480		5410		5440	
Sample Date:				13-NOV-97		17-NOV-97		20-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:TOC-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL ORGANIC CARBON		UG/L		3800				11000	

PLUMBROOK

Bedrock Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				IT-TNTB-BEDGW-001		IT-TNTB-BEDGW-002		PB-BED-MW13	
Sample No:				5420		5430		5890	
Sample Date:				17-NOV-97		16-NOV-97		13-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:TOC-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL ORGANIC CARBON		UG/L		12000		5000		9600	

PLUMBROOK

Bedrock Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				PB-BED-MW14		PB-BED-MW15		PB-BED-MW16	
Sample No:				5900		5910		5920	
Sample Date:				18-NOV-97		18-NOV-97		24-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:TOC-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL ORGANIC CARBON		UG/L		190000		11000		8400	

PLUMBROOK

Bedrock Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				PB-BED-MW17		PB-BED-MW18		PB-BED-MW19	
Sample No:				5930		5940		5950	
Sample Date:				20-NOV-97		19-NOV-97		14-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:TOC-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL ORGANIC CARBON		UG/L		1200		6500		16000	

PLUMBROOK

Bedrock Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				PB-BED-MW20		REACTOR1	
Sample No:				5960		5970	
Sample Date:				17-NOV-97		21-NOV-97	
Depth				0-0		0-0	
WELLS-W:TOC-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr
TOTAL ORGANIC CARBON		UG/L				2.5	

PLUMBROOK

Bedrock Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				IT-AA1-BEDGW-001		IT-AA2-BEDGW-001		IT-AA3-BEDGW-001	
Sample No:				5450		5460		5470	
Sample Date:				16-NOV-97		20-NOV-97		19-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
BIS(2-ETHYLHEXYL) PHTHALATE		UG/L	4.8	28				5.8	J

PLUMBROOK

Bedrock Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				IT-ABG-BEDGW-01		IT-BG8-BEDGW-001		IT-MNTA-BEDGW-001	
Sample No:				5480		5410		5440	
Sample Date:				13-NOV-97		17-NOV-97		20-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
BIS(2-ETHYLHEXYL) PHTHALATE		UG/L	4.8						

PLUMBROOK

Bedrock Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				IT-TNTB-BEDGW-001		IT-TNTB-BEDGW-002		PB-BED-MW13	
Sample No:				5420		5430		5890	
Sample Date:				17-NOV-97		16-NOV-97		13-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
BIS(2-ETHYLHEXYL) PHTHALATE		UG/L	4.8					39	

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Bedrock Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				PB-BED-MW14		PB-BED-MW15		PB-BED-MW16	
Sample No:				5900		5910		5920	
Sample Date:				18-NOV-97		18-NOV-97		24-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
BIS(2-ETHYLHEXYL) PHTHALATE		UG/L	4.8			37		920	J

PLUMBROOK

Bedrock Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				PB-BED-MW17		PB-BED-MW18		PB-BED-MW19	
Sample No:				5930		5940		5950	
Sample Date:				20-NOV-97		19-NOV-97		14-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
BIS(2-ETHYLHEXYL) PHTHALATE		UG/L	4.8					5.8	J

PLUMBROOK

Bedrock Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:					PB-BED-MW20		REACTOR1	
Sample No:					5960		5970	
Sample Date:					17-NOV-97		21-NOV-97	
Depth					0-0		0-0	
WELLS-W:SEMIVOLATILES-W	Fltr	Units	Screening	Levels	Result	Val Qlfr	Result	Val Qlfr
BIS(2-ETHYLHEXYL) PHTHALATE		UG/L	4.8				23	J

PLUMBROOK

Bedrock Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				IT-AA1-BEDGW-001		IT-AA2-BEDGW-001		IT-AA3-BEDGW-001	
Sample No:				5450		5460		5470	
Sample Date:				16-NOV-97		20-NOV-97		19-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
ALUMINUM		UG/L	3700						
ARSENIC		UG/L	.045	16.5					
BARIUM		UG/L	260	1060					
BARIUM	Y	UG/L	260	1260					
CALCIUM		UG/L		302000		186000	J	189000	
CALCIUM	Y	UG/L		305000	J	88600		160000	
CHROMIUM		UG/L	18						
IRON		UG/L	1100	1920		5240			
IRON	Y	UG/L	1100						
LEAD		UG/L	15						
MAGNESIUM		UG/L		218000		56900		108000	
MAGNESIUM	Y	UG/L		237000		54800		96300	
MANGANESE		UG/L	73	575		522		74.6	
MANGANESE	Y	UG/L	73	516		351			
MERCURY		UG/L	1.1						
POTASSIUM		UG/L		38500		29100		49600	
POTASSIUM	Y	UG/L		42400		30000		44700	
SODIUM		UG/L		582000		99100	J	368000	
SODIUM	Y	UG/L		644000		104000		331000	
VANADIUM		UG/L	26						
VANADIUM	Y	UG/L	26						

PLUMBROOK

Bedrock Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				IT-ABG-BEDGW-01		IT-BG8-BEDGW-001		IT-MNTA-BEDGW-001	
Sample No:				5480		5410		5440	
Sample Date:				13-NOV-97		17-NOV-97		20-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
ALUMINUM		UG/L	3700			9020			
ARSENIC		UG/L	.045	11.7		17.6			
BARIUM		UG/L	260			520		424	
BARIUM	Y	UG/L	260			366		449	
CALCIUM		UG/L		176000	J	161000		336000	J
CALCIUM	Y	UG/L		179000		121000	J	358000	
CHROMIUM		UG/L	18			18.2			
IRON		UG/L	1100	8890		22600		6400	
IRON	Y	UG/L	1100	7260					
LEAD		UG/L	15			26.3			
MAGNESIUM		UG/L		34300		79500		235000	
MAGNESIUM	Y	UG/L		34900		72400		254000	
MANGANESE		UG/L	73	912		2240		849	
MANGANESE	Y	UG/L	73	990		1300		899	
MERCURY		UG/L	1.1	3.6					
POTASSIUM		UG/L				32900		58800	
POTASSIUM	Y	UG/L				32000		63500	
SODIUM		UG/L		5070		399000		1140000	J
SODIUM	Y	UG/L		5000		398000		1190000	
VANADIUM		UG/L	26						
VANADIUM	Y	UG/L	26						

PLUMBROOK

Bedrock Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				IT-TNTB-BEDGW-001		IT-TNTB-BEDGW-002		PB-BED-MW13	
Sample No:				5420		5430		5890	
Sample Date:				17-NOV-97		16-NOV-97		13-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
ALUMINUM		UG/L	3700						
ARSENIC		UG/L	.045						
BARIUM		UG/L	260			326		1550	
BARIUM	Y	UG/L	260			384		1680	
CALCIUM		UG/L		105000		114000	J	248000	J
CALCIUM	Y	UG/L		116000	J	130000		270000	
CHROMIUM		UG/L	18						
IRON		UG/L	1100	41700					
IRON	Y	UG/L	1100	16300					
LEAD		UG/L	15						
MAGNESIUM		UG/L		22800		43800		180000	
MAGNESIUM	Y	UG/L		25600		51100		200000	
MANGANESE		UG/L	73	677		85.4			
MANGANESE	Y	UG/L	73	694					
MERCURY		UG/L	1.1						
POTASSIUM		UG/L		7240		10400		101000	
POTASSIUM	Y	UG/L		8130		10700		110000	
SODIUM		UG/L		34900		127000		1330000	
SODIUM	Y	UG/L		36100		153000		1510000	
VANADIUM		UG/L	26						
VANADIUM	Y	UG/L	26						

PLUMBROOK

Bedrock Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				PB-BED-MW14		PB-BED-MW15		PB-BED-MW16	
Sample No:				5900		5910		5920	
Sample Date:				18-NOV-97		18-NOV-97		24-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
ALUMINUM		UG/L	3700						
ARSENIC		UG/L	.045						
BARIUM		UG/L	260			605		463	
BARIUM	Y	UG/L	260			555		389	
CALCIUM		UG/L		152000		280000		875000	J
CALCIUM	Y	UG/L		120000		245000	J	915000	
CHROMIUM		UG/L	18					24.4	
IRON		UG/L	1100					1140	
IRON	Y	UG/L	1100						
LEAD		UG/L	15						
MAGNESIUM		UG/L		70700		177000		6190	
MAGNESIUM	Y	UG/L		82500		182000			
MANGANESE		UG/L	73					133	
MANGANESE	Y	UG/L	73						
MERCURY		UG/L	1.1						
POTASSIUM		UG/L		44700		58800		26400	
POTASSIUM	Y	UG/L		40500		61100		24900	
SODIUM		UG/L		311000		559000		73200	J
SODIUM	Y	UG/L		360000		582000		68600	
VANADIUM		UG/L	26					64.7	
VANADIUM	Y	UG/L	26					58.3	

PLUMBROOK

Bedrock Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				PB-BED-MW17		PB-BED-MW18		PB-BED-MW19	
Sample No:				5930		5940		5950	
Sample Date:				20-NOV-97		19-NOV-97		14-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
ALUMINUM		UG/L	3700						
ARSENIC		UG/L	.045						
BARIUM		UG/L	260	948		893		1520	
BARIUM	Y	UG/L	260	1100		1010		1520	
CALCIUM		UG/L		318000	J	809000		255000	J
CALCIUM	Y	UG/L		263000		1010000		220000	
CHROMIUM		UG/L	18						
IRON		UG/L	1100	1580					
IRON	Y	UG/L	1100						
LEAD		UG/L	15						
MAGNESIUM		UG/L		187000		384000		57200	
MAGNESIUM	Y	UG/L		213000		572000		65100	
MANGANESE		UG/L	73	124					
MANGANESE	Y	UG/L	73						
MERCURY		UG/L	1.1						
POTASSIUM		UG/L		38500		148000		49500	
POTASSIUM	Y	UG/L		45400		172000		46200	
SODIUM		UG/L		355000	j	2190000		120000	
SODIUM	Y	UG/L		419000		3010000		125000	
VANADIUM		UG/L	26						
VANADIUM	Y	UG/L	26						

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Bedrock Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				PB-BED-MW20		REACTOR1	
Sample No:				5960		5970	
Sample Date:				17-NOV-97		21-NOV-97	
Depth				0-0		0-0	
WELLS-W:METALS-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr
ALUMINUM		UG/L	3700				
ARSENIC		UG/L	.045				
BARIUM		UG/L	260	19000		405	
BARIUM	Y	UG/L	260	21000		397	
CALCIUM		UG/L		2140000		131000	J
CALCIUM	Y	UG/L		2570000	J	128000	
CHROMIUM		UG/L	18				
IRON		UG/L	1100	13200		8000	
IRON	Y	UG/L	1100	2310			
LEAD		UG/L	15			19.1	
MAGNESIUM		UG/L		920000		54000	
MAGNESIUM	Y	UG/L		1090000		54200	
MANGANESE		UG/L	73	180		198	
MANGANESE	Y	UG/L	73	162		144	
MERCURY		UG/L	1.1				
POTASSIUM		UG/L		92300		9210	
POTASSIUM	Y	UG/L		103000		9180	
SODIUM		UG/L		7660000		42000	J
SODIUM	Y	UG/L		9110000		42800	
VANADIUM		UG/L	26				
VANADIUM	Y	UG/L	26				

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Bedrock Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				IT-AA1-BEDGW-001		IT-AA2-BEDGW-001		IT-AA3-BEDGW-001	
Sample No:				5450		5460		5470	
Sample Date:				16-NOV-97		20-NOV-97		19-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:EXPLOSIVES-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,3-DINITROBENZENE		UG/L	0.37						
NITROBENZENE		UG/L	0.34						

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Bedrock Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				IT-ABG-BEDGW-01		IT-BG8-BEDGW-001		IT-MNTA-BEDGW-001	
Sample No:				5480		5410		5440	
Sample Date:				13-NOV-97		17-NOV-97		20-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:EXPLOSIVES-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,3-DINITROBENZENE		UG/L	0.37						
NITROBENZENE		UG/L	0.34						

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Bedrock Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				IT-TNTB-BEDGW-001		IT-TNTB-BEDGW-002		PB-BED-MW13	
Sample No:				5420		5430		5890	
Sample Date:				17-NOV-97		16-NOV-97		13-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:EXPLOSIVES-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,3-DINITROBENZENE		UG/L	0.37						
NITROBENZENE		UG/L	0.34						

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Bedrock Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				PB-BED-MW14		PB-BED-MW15		PB-BED-MW16	
Sample No:				5900		5910		5920	
Sample Date:				18-NOV-97		18-NOV-97		24-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:EXPLOSIVES-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,3-DINITROBENZENE		UG/L	0.37						
NITROBENZENE		UG/L	0.34						

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Bedrock Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				PB-BED-MW17		PB-BED-MW18		PB-BED-MW19	
Sample No:				5930		5940		5950	
Sample Date:				20-NOV-97		19-NOV-97		14-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:EXPLOSIVES-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
1,3-DINITROBENZENE		UG/L	0.37			1.0			
NITROBENZENE		UG/L	0.34			2.0			

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Bedrock Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				PB-BED-MW20		REACTOR1	
Sample No:				5960		5970	
Sample Date:				17-NOV-97		21-NOV-97	
Depth				0-0		0-0	
WELLS-W:EXPLOSIVES-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr
1,3-DINITROBENZENE		UG/L	0.37				
NITROBENZENE		UG/L	0.34				

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Bedrock Wells

Risk-Based Comparison Hits Summary

Report Date: 03/12/98

Sample Location:				IT-AA1-BEDGW-001		IT-AA2-BEDGW-001		IT-AA3-BEDGW-001	
Sample No:				5450		5460		5470	
Sample Date:				16-NOV-97		20-NOV-97		19-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:CYANIDE-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL CYANIDE		UG/L	73						

PLUMBROOK

Bedrock Wells

Risk-Based Comparison Hits Summary

Sample Location:				IT-ABG-BEDGW-01		IT-BG8-BEDGW-001		IT-MNTA-BEDGW-001	
Sample No:				5480		5410		5440	
Sample Date:				13-NOV-97		17-NOV-97		20-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:CYANIDE-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL CYANIDE		UG/L	73						

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Bedrock Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				IT-TNTB-BEDGW-001		IT-TNTB-BEDGW-002		PB-BED-MW13	
Sample No:				5420		5430		5890	
Sample Date:				17-NOV-97		16-NOV-97		13-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:CYANIDE-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL CYANIDE		UG/L	73						

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Bedrock Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				PB-BED-MW14		PB-BED-MW15		PB-BED-MW16	
Sample No:				5900		5910		5920	
Sample Date:				18-NOV-97		18-NOV-97		24-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:CYANIDE-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL CYANIDE		UG/L	73						

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Bedrock Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				PB-BED-MW17		PB-BED-MW18		PB-BED-MW19	
Sample No:				5930		5940		5950	
Sample Date:				20-NOV-97		19-NOV-97		14-NOV-97	
Depth				0-0		0-0		0-0	
WELLS-W:CYANIDE-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr	Result	Val Qlfr
TOTAL CYANIDE		UG/L	73	320					

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Bedrock Wells

Report Date: 03/12/98

Risk-Based Comparison Hits Summary

Sample Location:				PB-BED-MW20		REACTOR1	
Sample No:				5960		5970	
Sample Date:				17-NOV-97		21-NOV-97	
Depth				0-0		0-0	
WELLS-W:CYANIDE-W	Fltr	Units	Screening Levels	Result	Val Qlfr	Result	Val Qlfr
TOTAL CYANIDE		UG/L	73				