REMEDIAL INVESTIGATION REPORT

Areas 1, 1A, 2, and 5

UOP SITE

EAST RUTHERFORD, NEW JERSEY

MAY 1988

REVISION NO.1

VOLUME 2

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APPENDIX A

PHASE III FIELD INVESTIGATION

SUMMARY AND METHODOLOGY

Eight trenches were excavated in Area 5 between September 30 and October 2, 1986 using a backhoe. The trenching was performed by Terra Contracting, Inc. (Cranford, New Jersey) under the direction of a Geraghty & Miller, Inc. hydrogeologist. Between October 7 and 15, a total of 27 soil borings were drilled in Areas 1, 1A and 2, while two monitoring wells were installed in Area 1A. In Area 5, thirteen soil borings were drilled and three monitoring wells were installed between October 28 and November 3. The drilling was performed, using the hollow-stem auger method, by Empire Soils Investigations, Inc. (Highland Park, New Jersey) under the direction of a Geraghty & Miller, Inc. hydrogeologist. Field permeability tests (slug tests) were performed in eight new and existing monitoring wells between November 4 and 7. Finally, on December 2, water samples were collected from the new monitoring wells. Personnel from the New Jersey Department of Environmental Protection (NJDEP) were present during portions of the trenching, drilling and sampling.

Trenches

Trenches were excavated at eight locations in Area 5 to investigate magnetic anomalies identified by the March 1986 magnetometer survey performed by Geraghty & Miller, Inc. A detailed discussion of the trenching methodology and results is presented in Appendix B.

Soil Borings

In accordance with the NJDEP-approved site work plan, split-spoon soil samples were collected continuously to the water table. One sample from the unsaturated zone (0-2 feet below land surface) and the shallowest sample that could be obtained from the saturated zone were submitted to ERCO (Cambridge, Massachusetts) for the analyses indicated in the September 1986 Work Plan. In areas where the water table was encountered at a depth of one foot or less, only one sample (saturated) was submitted for analysis. Copies of the soil boring logs are included in Appendix C.

To prevent cross-contamination between samples, all sampling equipment was decontaminated in the field before each use in accordance with NJDEP protocols. The split-spoon core barrels and sample handling spatulas were first scrubbed in a solution of tap water and non-phosphate detergent. This was followed in sequence by:

- tap water rinse
- distilled/deionized water rinse
- 10% nitric acid rinse
- distilled/deionized water rinse
- acetone (pesticide grade) rinse
- total air dry
- distilled/deionized water rinse

The augers and all drill rods and tools were steam cleaned between holes to further reduce the potential for cross contamination.

As a quality assurance/quality control measure of the decontamination procedure, a field blank water sample was collected on each day that soil samples were obtained. Laboratory supplied organic-free water was poured over a decontaminated spatula and open split spoon and collected in sample containers for volatile organic analysis.

After each soil or water sample was collected it was stored in an ice-filled cooler. The samples were shipped to the laboratory following strict chain-of-custody protocols. A laboratory supplied trip blank sample was included with each shipment.

Monitoring Wells

The new monitoring wells (27I through 31I) consist of 15 feet of 2-inch diameter, 10-slot (0.010 inch) stainless steel screen threaded onto 2-inch diameter steel casing. In all cases, the screens were set at a depth of approximately 18 feet, resulting in the tops of the screens being about one foot above the water table. The screens were installed in this manner to accommodate seasonal fluctuations in the elevation of the water table.

A sand pack consisting of Jesse Morie #1 sand was placed in the annular space around the screens with the pack extending one foot above the top of each screen. The remaining open space above the sand was filled with a one-foot seal of granular bentonite and then grouted to land surface with concrete. Finally, an outer steel protective casing with locking cover was installed over each well and cemented in place.

Split-spoon soil samples were collected continuously to the water table during the drilling and at 5-foot intervals thereafter for lithologic identification. Copies of the well logs are included in Appendix C. To prevent cross contamination between samples and between boreholes all drilling and sampling equipment was subjected to the same decontamination procedures outlined above.

Field Permeability Tests

Field permeability tests (slug tests) were performed in Wells 3S, 3I, 6I, 13I, 19I, 23I, 24I and 27I to determine the hydraulic conductivity of shallow to intermediate depth deposits across Areas 1, 1A and 2. A detailed discussion of the testing methodology and results is presented in Appendix D.

Well Sampling

Wells 27I through 31I were sampled approximately four weeks after they were developed by pumping. Prior to sampling, five times the calculated volume of standing water was first evacuated from each well. This was accomplished with a small centrifugal pump. To prevent cross contamination, a new suction line was used in each well. The samples were then obtained with a dedicated, laboratory-cleaned Teflon bailer.

As a quality assurance/quality control measure, a replicate set of samples was collected from one of the wells in Area 5 (Well 29I). In addition, a field blank sample was made by pouring laboratory supplied organic-free water from a decontaminated bailer into sample containers for volatile organic analysis.

After each sample was collected, it was stored in an ice-filled cooler. The samples were shipped to ERCO following strict chain-of-custody protocols on the same day that they were collected for the analyses indicated in the September 1986 Work Plan. A laboratory supplied trip blank sample was included with the shipment.

APPENDIX B

Magnetometer Survey Report, Area 5 and Eastern Portion of Area 1A, July 1986

Report on Investigation of Magnetic Anomalies in Area 5, October 1986

MAGNETOMETER SURVEY

AREA 5 AND EASTERN PORTION OF AREA 1A

UOP SITE

EAST RUTHERFORD, NEW JERSEY

July 1986

Geraghty & Miller, Inc.
Ground-Water Consultants
125 East Bethpage Road
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MAGNETOMETER SURVEY

AREA 5 AND EASTERN PORTION OF AREA 1A

UOP SITE

EAST RUTHERFORD, NEW JERSEY

INTRODUCTION

As specified in the May 5, 1986 Work Plan for the UOP Site in East Rutherford, New Jersey, Geraghty & Miller, Inc. performed a magnetometer survey in Area 5 and, in addition, extended the survey into the eastern portion of Area 1A. The survey was designed to determine if buried ferromagnetic metal exists in the study area. The fundamental principles of magnetometer surveys and a description of the instrumentation used is included in Appendix A.

This report describes the methodology employed for the survey, provides a listing of all field data, interprets the data, and includes recommendations for field verification of the survey by means of test pits.

METHODOLOGY

Field Data Acquisition

During March 24-29, 1986, the magnetometer survey was completed in Area 5 and the eastern part of Area 1A, on the UOP property. The survey site encompassed an area of 635 ft x 640 ft which extended into a marshy area in the south and southeast sectors of the facility.

The Survey Grid

Before the magnetometer survey was initiated, a grid with 20-foot spacings was established to allow measurements to be taken at precise intervals. The grid is shown in Figure 1. The survey base line, running approximately north-south, was set up using a theodolite. It extends from Well 10I to the fence near the northern boundary of the UOP property. Points on the base line were marked with flagging and used as reference points when setting up the theodolite for the survey grid lines which were perpendicular to the base line, 20 ft apart, and extending to the east.

Each grid line was extended so that all of Area 5 was included in the magnetometer grid. On each line a marker flag was placed at 100-ft intervals as determined by measuring tape and oriented by theodolite. The flags designated both the line number and the distance from the base line. During the survey the measuring tape was used to mark the 20 foot intervals on each line. As shown on Figure 1, 15 grid lines were extended 60 ft westward into Area 1A.

Magnetometer Readings

The magnetometer readings were taken during a three day period. The magnetic readings were recorded manually on paper and in the memory of the magnetometer. The stored data were transferred into a computer in Geraghty & Miller, Inc. offices and printed (Appendix B). The listing includes the line number, day, time of the reading, the station number, X and Y coordinates (for graphing), and the magnetic intensity reading at each station. Lines were always run beginning at the zero line in the west and moving toward the eastern edge of the study area.

During the survey, surface physical characteristics were noted in the field log. Some of the surface features such as a drum or an old hot water tank could be expected to affect the magnetometer readings. Figure 1 shows the approximate locations of the surface observations.

Background Readings

Over the course of the three day survey, background readings were taken at two locations: Station 1 at the foot bridge south of Well 10I and Station 2 in Area 1A about 80 feet south of the Well 7 cluster. The data for these stations is included in Table B-1 (Appendix B). Based on surface characteristics, these two locations were expected to be suitable for recording changes in the earth's magnetic field during the study. The resulting base-station values can be used to correct the other magnetometer data. Whether variations in base-station values are actually used to correct the field data depends on the relative range of values. If the

magnetometer data in the areas of interest showed a substantially greater range of fluctuation than the base stations did, then correction for background fluctuations would not be necessary.

Data Reduction

Data stored in the magnetometer during the field survey was transferred to an AT&T 6300 computer for analysis. In order to generate a contour map of the data, X and Y coordinates were added to the raw data and included in Appendix B. The coordinates are referenced to a point near the northern end of the base line. The coordinate data and its associated magnetometer reading were then used to produce Figure 2, which is a magnetic anomaly contour map. A value of 55,400 gammas was used as the magnetic point of reference; readings within a narrow range around 55,400 gammas characterized much of the area. Values above 55,400 were considered high while values below 55,400 were considered low.

A contour interval of 200 gammas was used for Figure 2 because the change in gamma reading between many high and associated low anomalies was greater than 1,000 gammas. Using a smaller contour interval for this magnetometer survey generated a map too complex to interpret. Using a larger interval (for example, 500 or 1,000 gammas) produced a map that did not show enough detail. The high and low areas are highlighted by shading in Figure 2 for easier recognition and the magnetic gradient profiles along the direction of magnetic north were evaluated. The most intense anomalies are associated with the steepest gradients; the major anomalies are ranked from most intense (rank 1) to least intense (rank 10) as shown on Figure 2.

Sensitivity of the contour plot to diurnal fluctuations in the earth's magnetic field was tested by correcting the raw data with data from the two base stations that had been set up to measure the diurnal changes. Software from the manufacturer of the magnetometer was used for this purpose.

RESULTS AND INTERPRETATION

Magnetometer readings ranged from approximately 36,000 gammas in the vicinity of Well 10I to 58,000 gammas; the values were contoured in Figure 2 using a 200 gamma interval. The figure shows that magnetic anomalies were found in some areas. The anomalies followed the expected patterns, the most common being a magnetic high and an adjacent (associated) magnetic low in the direction of magnetic north.

The intensity of an anomaly can be described in terms of steepness of the magnetic gradient. The most intense anomalies were numbered in order of decreasing intensity in Figure 2.

Magnetic anomalies may result from above ground or below-ground features. Surface observations were recorded on Figure 1 and in some cases the features coincided with magnetic anomalies. This was particularly true in the southeastern portion of Area 5 where substantial amounts of construction debris containing metal is present.

The background variation during the three day study was approximately 250 gammas. Three contour maps were prepared: one with no correction, one corrected with background data from Station 1 and one corrected with background data from Station 2. There was little difference among the maps which means that the results of the survey were not sensitive to diurnal variations. The contour map without background correction has been used for this report.

RECOMMENDATIONS

The magnetic anomalies in the study area have been ranked in Figure 2 based on the magnetic gradient between the magnetic high and the associated magnetic low. The largest magnetic differences correspond to the areas with the highest probability of surface or subsurface ferromagnetic metal. UOP proposes to use earth moving equipment, especially a backhoe, to field verify the most intense magnetic anomalies in order of descending intensity with one exception. Anomaly 4 is coincident with the concrete slabs in Area 1A and will not be investigated because the anomaly is likely to be associated with the reinforcing steel bars in the pads. In addition, there is only a minimal chance that drums were buried in the narrow spaces between slabs.

A majority of the anomalies follow the most common pattern: a magnetic high and, adjacent to it in the direction of magnetic north, an associated magnetic low. Digging will be concentrated in the area between the magnetic high and the magnetic low which is the most likely location for buried metal. In the case of Anomaly 6, the magnetic low is to the west. In order to assure verification at this anomaly, digging will occur both toward the magnetic north and toward the west.

The verification will commence with the most intense anomaly (designated 1 in Figure 2) and will continue until six to eight of the most intense anomalies have been investigated. Additional anomalies will be investigated only if there is substantial subsurface metal of concern in the last several anomalies investigated.

Four of the magnetic anomalies (designated 1,2,3, and 7 on Figure 2) coincide with an area in the southeast portion of Area 5 where there are substantial amounts of construction debris. This surface feature, among others, is indicated in Figure 1. The metal, including reinforcing rods, can be expected to have contributed substantially if not completely to the anomalies. UOP proposes to push some of this debris aside to allow for a more detailed examination of the debris and to see whether containers with hazardous materials are present along with the construction materials. Then, subsurface test pits will be dug in order to determine whether subsurface materials have contributed to the magnetic anomalies.

We invite comments and questions arising from NJDEP review of this report and are prepared to begin field verification when we receive State approval to proceed. As with all field work performed under the May 28, 1986 consent order between UOP and the NJDEP, the State will be given two weeks notice before any field work commences.The results of the test-pit investigation will be described in a test-pit report as indicated in the site Work Plan.

Sincerely,

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APPENDIX A

PROTON PRECESSION MAGNETOMETER SURVEY

APPENDIX A

PROTON PRECESSION MAGNETOMETER SURVEY

Fundamental Principles

The earth's magnetic field resembles the field of a large bar magnet near its center or that due to a uniformly magnetized sphere. The origin of the field is not well understood, but thought to be due to currents in a fluid conductive core. The field, or flux, lines of the earth exhibit the usual pattern common to a small magnet where the field is vertical at the magnetic poles and horizontal at the magnetic equator. This description is idealized because the earth is not a homogeneous magnetized sphere and the earth's total field intensity is not symmetrical about the magnetic poles.

Irregularities in the earth's field are quite evident as the total magnetic field ranges from about 25,000 to 70,000 gammas. The gamma is defined as 10^{-5} oersted and is the most commonly used unit of field intensity for geophysical work. Distortions are caused by local variation in the magnetic composition of the earth, solar wind, diurnal fluctuations, and magnetic storms.

Magnetic anomalies in the earth's field result from two different kinds of magnetism, induced and remanent (permanent) magnetization. All substances acquire a certain magnetic intensity when subjected to a magnetizing force, such as that which exists in a magnetic field. This magnetization is lost when the substance is removed from the field. Such magnetism is said to be induced by the field. Some substances, such as iron, nickel, magnetite, and manganese ores exhibit a magnetic action even when

they are not subjected to an external magnetic field. This type of magnetization is referred to as permanent or remanent. Induced magnetization refers to the actions of the earth's field on an object wherein the earth's field is enhanced and the object itself acts as a magnet. The magnetization which occurs is directly proportional to the intensity of the earth's field and the ability of the material to enhance the local field.

During a magnetometer survey, the variations in the intensity of the magnetic field are measured. This is accomplished through the use of a proton precession magnetometer. A proton precession magnetometer utilizes the precession of spinning hydrogen protons to measure total magnetic intensity. The spinning protons behave as small spinning magnetic dipoles temporarily aligned or polarized by the application of a strong current going through the magnetometer's sensor coil. When the current is removed, the protons precess in response to the earth's magnetic field generating a signal directly proportional to the intensity of the total magnetic field and providing information on the orientation of the field.

The orientation of the field is important in terms of its polarizing effect on metallic bodies and the distribution of the magnetic anomaly. By developing information on the direction of the earth's field and the profile of the magnetic anomaly at a given point in time, it is possible to estimate the size, shape, and depth of buried metallic objects such as drums.

A metal drum behaves as a dipole in the earth's field with the negative induced pole in the south or up direction and the positive in the north or down direction. Vertical polarization is predominant and the anomalies due to the drums usually will exhibit positive regions associated with negative regions.

Any magnetic field associated with a buried source is superimposed on the ambient field. The resultant field observed at the surface is referred to as the total field. Its interpretation can be complex since it requires a reduction of the total field into individual components of ambient field and local magnetic features.

Instrumentation

The E G & G Geometrics Model G-856 Proton Precession Magnetometer is a high precision instrument that measures the total magnetic field to a resolution of 0.1 gamma. The operation of this unit is controlled by a microprocessor which features simple operation and a solid state memory that can store 1,000 separate readings, including time, date and sequential station number. The microprocessor allows adjustment of instrument operation to make it more reliable and accurate.

This model requires tuning to achieve the best signal strength for a given area. This procedure matches the circuit's response to the intensity of the actual field measurement. Once the unit is manually adjusted, the microprocessor internally fine tunes the magnetometer to achieve peak signal capacity.

APPENDIX B

LISTING OF MAGNETOMETER DATA

Table B-1 Background Readings, UOP Site, East Rutherford, New Jersey

	Station #1		Station #2	
Date	Time	Reading (Gammas)	Time	Reading (Gammas)
3/27/86	8:36:05	55481.8	8:46:35	55444.8
	13:16:46	55526.9	13:15:02	55407.7
	18:08:01	55561.4	18:06:01	55413.5
3/28/86	7:30:00	55576.3	7:32:00	55398.0
	12:50:00	55600.0	12:54:00	55392.0
	17:50:00	55545.0	17:56:00	55401.0
3/29/86	8:53:00	55568.2	8:50:00	55395.0
	11:34:00	55633.0	11:36:00	55401.3

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LINE	DAY	TIME	STATION	X	Y	MAG READ
10	86	85525	3	0	-30	55041.0
10	86	85656	4	20	-30	55169.9
10	86	85720	5	40	-30	55166.3
10	86	85740	6	60	-30	55215.6
10	86	858 0	7	80	-30	55220.2
10	86	85820	8	100	-30	55320.6
10	86	9 0 3	9	120	-30	55296.1
10	86	9 024	10	140	-30	55314.6
10	86	9 048	11	160	-30	55263.8
10	86	9 132	12	180	-30	55439.3
10	86	9 346	13	200	-30	55533.3
10	86	9 7 3	14	220	-30	55369.4
10	86	9 8 2	15	240	-30	55415.9
10	86	9 831	16	260	-30	55406.9
10	86	910 6	17	280	-30	55454.0
10	86	91032	18	300	-30	55352.9
10	86	91246	19	320	-30	55606.7
10	86	91343	20	310	-30	55455.1
10	86	91851	21	340	-30	55656.0
10	86	91919	22	360	-30	55536.0
10	86	91942	23	380	-30	55448.2
10	86	920 5	24	400	-30	55508.9
10	86	921 9	25	420	-30	55380.7
10	86	92130	26	440	-30	55400.7
10	86	92154	27	460	-30	55237.6
10	86	92231	28	480	-30	55458.3
10	86	92257	29	500	-30	55689.9
10	86	92430	30	520	-30	55591.8
10	86	92454	31	540	-30	55296.6
10	86	92533	32	560	-30	55465.8
10	86	926 5	33	550	-30	55292.8
10	86	92645	34	580	-30	55616.4
10	86	92832	35	600	-30	55385.6
15	86	93328	40	580	-40	55570.6
15	86	93356	41	600	-40	55396.8
5	86	93545	42	500	-20	55823.4
5	86	93612	43	520	-20	55713.3
5	86	93637	44	540	-20	55448.1
5	86	93721	45	560	-20	55313.9
5	86	93754	46	580	-20	55572.2
5	86	93824	47	600	-20	55442.6
5	86	93932	48	550	-20	55350.3
10	86	94915	50	620	-30	55344.1
10	86	94943	51	640	-30	55648.1
10	86	95011	52	660	-30	55455.7
10	86	95045	53	680	-30	55547.9
10	86	95229	54	700	-30	55416.7
10	86	95251	55	720	-30	55710.3
10	86	95324	56	730	-30	55705.9
10	86	95343	57	740	-30	55627.6
10	86	95416	58	750	-30	55703.5

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LINE	DAY	TIME	STATION	X	Y	MAG READ
10	86	95434	59	760	-30	55539.1
10	86	95532	60	780	-30	55514.2
34	86	10 446	61	300	-10	55340.7
34	86	10 915	62	320	-10	55394.0
34	86	101054	63	340	-10	55559.2
34	86	101220	64	360	-10	55568.1
34	86	101249	65	380	-10	55344.9
34	86	101310	66	400	-10	55383.2
34	86	101455	67	420	-10	55315.3
34	86	101644	68	440	-10	55376.1
34	86	101711	69	460	-10	55398.6
34	86	101731	70	480	-10	55434.1
34	86	101750	71	500	-10	55824.2
34	86	101850	72	490	-10	55254.0
34	86	102234	73	510	-10	55968.5
34	86	102258	74	505	-10	56085.8
34	86	102344	75	515	-10	55808.6
34	86	1024 8	76	520	-10	55718.6
34	86	102434	77	530	-10	55694.1
34	86	102454	78	540	-10	55560.3
34	86	102526	79	560	-10	55388.7
34	86	102545	80	580	-10	55555.1
34	86	1026 3	81	600	-10	55513.3
34	86	102733	82	620	-10	55521.6
34	86	102751	83	640	-10	55463.3
5	86	103412	84	490	-20	55531.1
5	86	103447	85	505	-20	55946.8
5	86	1035 7	86	510	-20	55926.9
5	86	103523	87	515	-20	55775.3
35	86	103947	88	500	0	55752.5
35	86	104032	89	490	0	55219.4
35	86	104048	90	480	0	55142.8
35	86	1041 5	91	470	0	55218.7
35	86	104140	92	505	0	55902.2
35	86	104157	93	510	0	55655.2
35	86	104215	94	515	0	55759.8
35	86	1043 9	95	520	[illegible]	55400.7
20	86	105633	96	0	-50	55168.7
20	86	105651	97	20	-50	55240.5
20	86	1057 8	98	40	-50	55280.1
20	86	105725	99	60	-50	55297.3
20	86	105742	100	80	-50	55304.4
20	86	105851	101	100	-50	55313.1
20	86	1059 8	102	120	-50	55327.9
20	86	105930	103	140	-50	55331.0
20	86	105958	104	160	-50	55362.8
20	86	11 020	105	180	-50	55348.2
20	86	11 120	106	200	-50	55298.1
20	86	11 417	107	220	-50	55331.5
20	86	11 438	108	240	-50	55374.6
20	86	11 459	109	260	-50	55576.5

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LINE	DAY	TIME	STATION	X	Y	MAG READ
20	86	11 521	110	280	-50	55414.3
20	86	11 546	111	300	-50	55433.6
20	86	11 734	112	320	-50	56188.9
20	86	11 813	113	340	-50	54233.5
20	86	1113 2	114	360	-50	55339.0
20	86	111345	115	380	-50	55435.3
20	86	1114 7	116	400	-50	55537.7
20	86	111629	117	420	-50	55437.4
20	86	111654	118	440	-50	55602.8
20	86	111714	119	460	-50	55800.6
20	86	111741	120	480	-50	55535.3
20	86	111757	121	490	-50	55727.7
20	86	1118 4	122	500	-50	55735.6
20	86	111935	123	520	-50	56022.2
20	86	112423	124	510	-50	56107.6
20	86	1126 0	125	530	-50	56015.4
20	86	112622	126	540	-50	55462.6
20	86	112653	127	550	-50	55681.1
20	86	113112	128	560	-50	55700.2
20	86	113141	129	580	-50	55628.1
20	86	113247	130	600	-50	55428.2
20	86	1133 6	131	620	-50	55343.7
20	86	113323	132	640	-50	55584.1
15	86	114049	133	480	-40	55427.3
15	86	114122	134	490	-40	55356.1
15	86	114141	135	501	-40	55677.3
15	86	1142 4	136	510	-40	56182.8
15	86	114230	137	521	-40	56040.7
15	86	114421	138	530	-40	56072.6
15	86	114443	139	541	-40	55547.5
15	86	114552	140	551	-40	55587.7
15	86	114624	141	561	-40	55646.1
25	86	114739	142	480	-60	55507.7
25	86	1148 5	143	490	-60	55341.1
25	86	114827	144	500	-60	55547.1
25	86	114859	145	510	-60	55862.0
25	86	114949	146	520	-60	55717.1
25	86	1150 8	147	530	-60	55742.1
25	86	115027	148	540	-60	55589.5
25	86	115048	149	550	-60	55661.8
30	86	132044	152	0	-70	55275.3
30	86	1321 1	153	20	-70	55297.6
30	86	132114	154	40	-70	55326.8
30	86	132128	155	60	-70	55338.4
30	86	132147	156	80	-70	55342.0
30	86	1322 0	157	100	-70	55357.3
30	86	132325	158	120	-70	55377.9
30	86	132358	159	140	-70	55343.7
30	86	132412	160	160	-70	55272.0
30	86	132427	161	180	-70	55383.4
30	86	132440	162	200	-70	55334.9

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LINE	DAY	TIME	STATION	X	Y	MAG READ
30	86	1327 1	163	220	-70	55503.6
30	86	132721	164	240	-70	55384.8
30	86	132743	165	260	-70	55434.6
30	86	1328 6	166	280	-70	55420.4
30	86	132820	167	300	-70	55486.6
30	86	132914	168	320	-70	55683.8
30	86	132945	169	340	-70	55636.8
30	86	1330 0	170	360	-70	55433.1
30	86	133019	171	380	-70	55416.7
30	86	133033	172	400	-70	55497.2
20	86	133337	173	310	-50	55614.1
20	86	133454	174	330	-50	56459.2
20	86	133611	175	350	-50	54460.3
20	86	133648	176	370	-50	55291.3
25	86	133836	177	300	-60	55432.8
25	86	1339 4	178	310	-60	55663.0
25	86	133922	179	320	-60	56121.7
25	86	133949	180	330	-60	55718.6
25	86	134017	181	340	-60	55807.9
25	86	134044	182	350	-60	55205.6
25	86	1341 6	183	360	-60	55321.8
25	86	134126	184	370	-60	55319.8
30	86	134431	185	420	-70	55469.8
30	86	134454	186	440	-70	55437.1
30	86	134510	187	460	-70	55603.1
30	86	134525	188	480	-70	55554.3
30	86	134548	189	500	-70	55479.9
30	86	134636	190	520	-70	55606.8
30	86	134657	191	540	-70	55434.3
30	86	134712	192	560	-70	55496.8
30	86	134726	193	580	-70	55482.3
30	86	134742	194	600	-70	55512.7
30	86	134917	195	620	-70	55457.0
30	86	134932	196	640	-70	55515.7
40	86	135537	197	0	-90	55360.5
40	86	135639	198	20	-90	55335.1
40	86	135655	199	40	-90	55371.4
40	86	1357 8	200	60	-90	55366.5
40	86	135721	201	80	-90	55358.2
40	86	135734	202	100	-90	55371.1
40	86	135840	203	110	-90	55371.9
40	86	135856	204	120	-90	55358.2
40	86	1359 9	205	140	-90	55318.9
40	86	135915	206	160	-90	55317.9
40	86	135937	207	180	-90	55390.0
40	86	14 633	208	220	-90	55374.0
40	86	14 646	209	240	-90	55454.5
40	86	14 7 7	210	260	-90	55416.7
40	86	14 725	211	280	-90	55346.5
40	86	14 740	212	300	-90	55576.7
40	86	14 825	213	320	-90	55507.2

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LINE	DAY	TIME	STATION	X	Y	MAG READ
40	86	14 843	214	340	-90	55578.3
40	86	14 9 3	215	360	-90	55594.4
40	86	14 916	216	380	-90	55471.5
40	86	14 928	217	400	-90	55521.2
40	86	141119	218	420	-90	55498.4
40	86	141132	219	440	-90	55585.9
40	86	141146	220	460	-90	55705.2
40	86	1412 0	221	480	-90	55592.1
40	86	141215	222	500	-90	55404.9
40	86	141310	223	520	-90	55516.4
40	86	141324	224	540	-90	55707.8
40	86	141341	225	560	-90	55427.8
40	86	141356	226	580	-90	55652.3
40	86	1414 8	227	600	-90	55467.3
40	86	1416 0	228	620	-90	55510.0
40	86	141642	229	640	-90	55605.3
50	86	142229	230	0	-110	55375.7
50	86	142247	231	20	-110	55307.5
50	86	1423 0	232	40	-110	55350.0
50	86	142324	233	60	-110	55380.0
50	86	142342	234	80	-110	55372.9
50	86	142356	235	100	-110	55334.2
50	86	142528	236	120	-110	55434.1
50	86	142555	237	140	-110	55504.7
50	86	142610	238	160	-110	55333.2
50	86	142623	239	180	-110	55369.7
50	86	142635	240	200	-110	55398.3
50	86	142856	241	220	-110	55435.0
50	86	142912	242	240	-110	55401.9
50	86	142929	243	260	-110	55429.4
50	86	142946	244	280	-110	55436.4
50	86	1430 2	245	300	-110	55505.7
50	86	143114	246	320	-110	55457.3
50	86	143138	247	340	-110	55521.3
50	86	143152	248	360	-110	55501.8
50	86	143210	249	380	-110	55492.8
50	86	143225	250	400	-110	55528.3
50	86	143424	251	420	-110	55612.8
50	86	143442	252	440	-110	55550.8
50	86	1435 0	253	460	-110	55503.2
50	86	143514	254	480	-110	55485.6
50	86	143528	255	500	-110	55420.8
50	86	143633	256	520	-110	55738.2
50	86	143657	257	540	-110	55520.4
50	86	143715	258	560	-110	55925.9
50	86	1438 5	259	550	-110	55614.6
50	86	143831	260	570	-110	55859.9
50	86	143854	261	580	-110	55771.2
50	86	143917	262	600	-110	55697.1
50	86	144220	263	620	-110	55473.3
50	86	144239	264	640	-110	55880.8

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LINE	DAY	TIME	STATION	X	Y	MAG READ
50	86	1443 2	265	650	-110	55895.6
60	86	1454 4	266	0	-130	55524.5
60	86	145417	267	20	-130	55379.6
60	86	145431	268	40	-130	55333.4
60	86	145443	269	60	-130	55388.5
60	86	145459	270	80	-130	55403.4
60	86	145529	271	100	-130	55469.2
60	86	145545	272	120	-130	55439.3
60	86	1456 2	273	140	-130	55500.1
60	86	145621	274	160	-130	55480.3
60	86	145740	275	200	-130	55516.5
60	86	15 118	276	220	-130	55446.1
60	86	15 139	277	240	-130	55438.8
60	86	15 155	278	260	-130	55395.1
60	86	15 218	279	280	-130	55487.8
60	86	15 241	280	300	-130	55513.1
60	86	15 345	281	320	-130	55540.1
60	86	15 446	282	340	-130	55447.4
60	86	15 5 2	283	360	-130	55484.8
60	86	15 518	284	380	-130	55383.4
60	86	15 536	285	400	-130	55513.6
60	86	15 645	286	420	-130	55604.0
60	86	15 7 4	287	440	-130	55553.7
60	86	15 735	288	460	-130	55588.2
60	86	15 8 0	289	480	-130	55618.2
60	86	15 815	290	500	-130	55487.4
60	86	15 849	291	520	-130	55481.0
60	86	15 9 4	292	540	-130	55637.5
60	86	15 926	293	560	-130	55550.8
60	86	151033	294	580	-130	55580.0
60	86	151048	295	600	-130	55554.1
60	86	1511 6	296	620	-130	55532.0
60	86	151252	297	640	-130	55496.3
70	86	1523 0	298	0	-150	55419.6
70	86	152313	299	20	-150	55162.2
70	86	152337	300	40	-150	55552.3
70	86	1528 3	301	60	-150	55595.7
70	86	152816	302	80	-150	55387.8
70	86	152831	303	100	-150	55336.9
70	86	152849	304	120	-150	55389.7
70	86	1529 4	305	140	-150	55380.0
70	86	152921	306	160	-150	55367.2
70	86	152937	307	180	-150	55433.0
70	86	152953	308	200	-150	55454.7
70	86	153537	309	220	-150	55501.2
70	86	153553	310	240	-150	55502.3
70	86	153617	311	260	-150	55539.2
70	86	153634	312	280	-150	55392.9
70	86	153653	313	300	-150	55524.9
70	86	153914	314	320	-150	55539.1
70	86	153934	315	340	-150	55522.0

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LINE	DAY	TIME	STATION	X	Y	MAG READ
70	86	153954	316	360	-150	55460.9
70	86	154014	317	380	-150	55417.5
70	86	154031	318	400	-150	55471.1
70	86	154254	319	420	-150	55551.6
70	86	154317	320	440	-150	55587.8
70	86	154334	321	460	-150	55492.2
70	86	154353	322	480	-150	55531.0
70	86	154734	323	500	-150	55523.9
70	86	154821	324	520	-150	55572.9
70	86	154840	325	540	-150	55836.3
70	86	154920	326	560	-150	55555.5
70	86	154937	327	580	-150	55676.4
70	86	1550 3	328	600	-150	55588.7
70	86	155019	329	620	-150	56086.6
70	86	155036	330	630	-150	56106.3
80	86	16 953	331	0	-170	55315.9
80	86	161013	332	20	-170	55375.9
80	86	161027	333	40	-170	55719.8
80	86	161042	334	60	-170	55983.2
80	86	1611 0	335	80	-170	55542.2
80	86	161121	336	100	-170	55380.0
80	86	161320	337	120	-170	55494.4
80	86	161341	338	140	-170	55398.6
80	86	161358	339	160	-170	55484.4
80	86	161414	340	180	-170	55429.3
80	86	161429	341	200	-170	55302.4
80	86	161952	342	220	-170	55411.9
80	86	162034	343	240	-170	55536.4
80	86	162521	344	260	-170	55561.7
80	86	162553	345	280	-170	55490.5
80	86	162629	346	290	-170	55967.3
80	86	162740	347	300	-170	55522.0
80	86	171853	348	320	-170	55427.0
80	86	171917	349	340	-170	55524.1
80	86	171945	350	360	-170	55390.0
80	86	1720 6	351	380	-170	55593.5
80	86	172035	352	400	-170	55549.4
80	86	172459	353	420	-170	55457.1
80	86	172521	354	440	-170	55412.5
80	86	172543	355	460	-170	55630.4
80	86	172557	356	480	-170	55479.6
80	86	172610	357	500	-170	55484.6
80	86	172630	358	520	-170	55519.8
80	86	172644	359	540	-170	55542.6
80	86	1727 5	360	560	-170	55401.3
80	86	173033	361	580	-170	55541.9
80	86	173046	362	610	-170	55679.0
80	86	173111	363	620	-170	55681.5
80	86	173127	364	640	-170	55463.9
90	86	173411	365	640	-190	55723.6
90	86	173439	366	620	-190	55531.6

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LINE	DAY	TIME	STATION	X	Y	MAG READ
90	86	173923	367	600	-190	55537.4
90	86	173950	368	580	-190	55474.6
90	86	174013	369	560	-190	55459.2
90	86	174037	370	540	-190	55568.1
90	86	1741 2	371	520	-190	55552.2
90	86	174120	372	500	-190	55521.3
90	86	174531	373	480	-190	55494.8
90	86	174551	374	460	-190	55723.3
90	86	174629	375	440	-190	55609.7
90	86	174656	376	420	-190	55497.9
90	86	174733	377	400	-190	55340.0
90	86	1748 2	378	380	-190	55941.7
90	86	175025	379	360	-190	55551.8
90	86	175047	380	340	-190	55235.1
90	86	1751 4	381	320	-190	55473.7
90	86	175129	382	300	-190	55480.4
90	86	1758 4	383	280	-190	55374.7
90	86	175818	384	260	-190	55435.1
90	86	175833	385	240	-190	55416.4
90	86	175846	386	220	-190	55538.7
90	86	1759 0	387	200	-190	55506.5
90	86	175915	388	180	-190	55426.7
90	86	175927	389	160	-190	55456.2
90	86	175940	390	140	-190	55221.0
90	86	175952	391	120	-190	55338.6
90	86	18 0 4	392	100	-190	55467.9
90	86	18 017	393	80	-190	55551.8
90	86	18 029	394	60	-190	55516.9
90	86	18 051	395	40	-190	55589.9
90	86	18 1 3	396	20	-190	55269.6
90	86	18 114	397	0	-190	55355.1
100	87	73823	400	0	-210	55261.2
100	87	73844	401	20	-210	55403.8
100	87	73859	402	40	-210	55740.7
100	87	73917	403	60	-210	55433.8
100	87	73931	404	80	-210	55508.1
100	87	73945	405	100	-210	55240.2
100	87	74119	406	120	-210	54692.6
100	87	74139	407	140	-210	55591.1
100	87	742 3	408	160	-210	55336.0
100	87	74224	409	180	-210	55521.2
100	87	74238	410	200	-210	55447.2
100	87	74542	411	220	-210	55567.1
100	87	74559	412	240	-210	55606.6
100	87	74614	413	260	-210	55478.9
100	87	74634	414	280	-210	55397.6
100	87	74650	415	300	-210	55496.7
100	87	74816	416	320	-210	55395.8
100	87	74833	417	340	-210	55316.2
100	87	74854	418	360	-210	55570.9
100	87	74912	419	380	-210	55340.7

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LINE	DAY	TIME	STATION	X	Y	MAG READ
100	87	74945	420	400	-210	54837.4
100	87	8 021	421	420	-210	55235.9
100	87	8 051	422	440	-210	55390.4
100	87	8 1 9	423	460	-210	55522.4
100	87	8 123	424	480	-210	55495.6
100	87	8 140	425	500	-210	55558.4
100	87	8 2 0	426	520	-210	55510.1
100	87	8 216	427	540	-210	55565.6
100	87	8 233	428	560	-210	55622.4
100	87	8 814	429	580	-210	55413.7
100	87	8 9 2	430	600	-210	55746.4
100	87	8 945	431	620	-210	55400.3
100	87	81023	432	640	-210	55540.5
110	87	82031	433	0	-230	55420.8
110	87	82120	434	20	-230	55395.4
110	87	822 6	435	40	-230	55578.6
110	87	82221	436	60	-230	55739.1
110	87	82236	437	80	-230	55685.5
110	87	82249	438	100	-230	55347.3
110	87	82425	439	120	-230	55483.2
110	87	82441	440	140	-230	55690.4
110	87	82457	441	160	-230	55753.7
110	87	82513	442	180	-230	55731.4
110	87	82526	443	200	-230	55546.5
110	87	82728	444	220	-230	55450.8
110	87	82744	445	240	-230	55745.2
110	87	82759	446	260	-230	55529.0
110	87	82821	447	280	-230	55614.8
110	87	82835	448	300	-230	55671.8
110	87	82945	449	320	-230	55444.7
110	87	830 2	450	340	-230	55390.4
110	87	83024	451	360	-230	55347.5
110	87	83040	452	380	-230	55482.2
110	87	83054	453	400	-230	55974.0
110	87	83523	454	420	-230	55839.9
110	87	83610	455	440	-230	55625.5
110	87	83659	456	460	-230	55279.7
110	87	83832	457	480	-230	55357.3
110	87	83915	458	500	-230	55543.9
110	87	842 7	459	520	-230	55538.3
110	87	84225	460	540	-230	55563.0
110	87	84245	461	560	-230	55575.8
110	87	84311	462	580	-230	55611.5
110	87	844 7	463	600	-230	55463.0
120	87	856 4	464	0	-250	55389.5
120	87	85641	465	20	-250	55390.2
120	87	857 2	466	40	-250	55425.1
120	87	85718	467	60	-250	55248.8
120	87	85733	468	80	-250	55135.3
120	87	85747	469	100	-250	55193.2
120	87	85848	470	120	-250	55263.2

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LINE	DAY	TIME	STATION	X	Y	MAG READ
120	87	859 5	471	140	-250	55278.1
120	87	85921	472	160	-250	55344.1
120	87	85938	473	180	-250	55201.4
120	87	85951	474	200	-250	55376.8
120	87	9 226	475	220	-250	55414.2
120	87	9 243	476	240	-250	55446.5
120	87	9 257	477	260	-250	55442.8
120	87	9 313	478	280	-250	55715.9
120	87	9 328	479	300	-250	55568.0
120	87	9 432	480	320	-250	55425.9
120	87	9 458	481	340	-250	55449.4
120	87	9 518	482	360	-250	55395.1
120	87	9 532	483	380	-250	55313.2
120	87	9 549	484	400	-250	55010.7
120	87	91450	485	420	-250	55007.4
120	87	915 9	486	440	-250	55072.9
120	87	91529	487	460	-250	55306.7
120	87	91610	488	480	-250	55421.5
120	87	91715	489	500	-250	55488.5
120	87	91744	490	520	-250	55447.3
120	87	91810	491	540	-250	55472.8
120	87	91924	492	560	-250	55448.2
130	87	93435	493	0	-270	55326.6
130	87	93530	494	20	-270	55343.6
130	87	93547	495	40	-270	55237.9
130	87	936 4	496	60	-270	54962.0
130	87	93631	497	80	-270	55341.4
130	87	93648	498	100	-270	56094.2
130	87	94015	499	120	-270	55708.1
130	87	94030	500	140	-270	55381.4
130	87	94050	501	160	-270	55099.3
130	87	941 8	502	180	-270	55592.0
130	87	94132	503	200	-270	55050.4
130	87	94754	504	220	-270	55870.8
130	87	94810	505	240	-270	55339.2
130	87	94827	506	260	-270	55550.7
130	87	94843	507	280	-270	55436.2
130	87	94859	508	300	-270	55413.7
130	87	950 0	509	320	-270	55538.9
130	87	95017	510	340	-270	55368.6
130	87	95034	511	360	-270	55439.6
130	87	95053	512	380	-270	55331.2
130	87	951 8	513	400	-270	55279.6
130	87	95559	514	420	-270	56120.7
130	87	95617	515	440	-270	57315.6
130	87	95659	516	460	-270	55503.4
130	87	95735	517	480	-270	55426.4
130	87	958 9	518	500	-270	55434.2
140	87	1020 5	519	0	-290	55514.9
140	87	102029	520	20	-290	55510.0
140	87	102041	521	40	-290	55291.4

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LINE	DAY	TIME	STATION	X	Y	MAG READ
140	87	102055	522	60	-290	55084.5
140	87	102113	523	80	-290	55814.6
140	87	102134	524	100	-290	56219.1
140	87	102459	525	120	-290	56081.5
140	87	102512	526	140	-290	56313.3
140	87	102528	527	160	-290	56274.1
140	87	102542	528	180	-290	55798.8
140	87	102558	529	200	-290	55768.8
140	87	102937	530	220	-290	55878.5
140	87	102954	531	240	-290	55492.3
140	87	103014	532	260	-290	55541.5
140	87	103030	533	280	-290	55468.0
140	87	103044	534	300	-290	55399.4
140	87	103157	535	320	-290	55478.9
140	87	103211	536	340	-290	55434.0
140	87	103226	537	360	-290	55664.8
140	87	1033 0	538	380	-290	55535.6
140	87	103313	539	400	-290	55197.5
140	87	103714	540	420	-290	55524.4
140	87	103732	541	440	-290	56164.8
140	87	1038 3	542	460	-290	55479.1
140	87	103836	543	480	-290	55434.7
140	87	1039 2	544	500	-290	55437.6
150	87	105512	545	0	-310	55489.8
150	87	105525	546	20	-310	55622.8
150	87	105538	547	40	-310	55533.4
150	87	105555	548	60	-310	55458.7
150	87	105610	549	80	-310	55439.6
150	87	105623	550	100	-310	55505.3
150	87	105725	551	120	-310	55526.0
150	87	105740	552	140	-310	55608.5
150	87	105758	553	160	-310	55734.7
150	87	105819	554	180	-310	55863.3
150	87	105833	555	200	-310	55543.3
150	87	11 052	556	220	-310	56117.0
150	87	11 110	557	240	-310	55634.0
150	87	11 127	558	260	-310	55475.4
150	87	11 141	559	280	-310	55501.0
150	87	11 154	560	300	-310	55518.3
150	87	11 3 5	561	320	-310	55524.4
150	87	11 321	562	340	-310	55427.6
150	87	11 338	563	360	-310	55767.5
150	87	11 352	564	380	-310	55413.4
150	87	11 4 5	565	400	-310	55112.3
150	87	111029	566	420	-310	55333.7
150	87	111110	567	440	-310	56142.3
150	87	111153	568	460	-310	55391.4
150	87	111229	569	480	-310	55423.6
150	87	1113 3	570	500	-310	55442.5
160	87	125728	571	0	-330	55337.0
160	87	125742	572	20	-330	55399.6

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LINE	DAY	TIME	STATION	X	Y	MAG READ
160	87	125754	573	40	-330	55403.9
160	87	125811	574	60	-330	55348.3
160	87	125826	575	80	-330	55423.9
160	87	125843	576	100	-330	55610.3
160	87	13 041	577	120	-330	55541.8
160	87	13 1 3	578	140	-330	55525.3
160	87	13 115	579	160	-330	55633.8
160	87	13 129	580	180	-330	55549.8
160	87	13 142	581	200	-330	55464.7
160	87	13 410	582	220	-330	56213.3
160	87	13 428	583	240	-330	55614.6
160	87	13 442	584	260	-330	55246.1
160	87	13 457	585	280	-330	55524.9
160	87	13 510	586	300	-330	55512.7
160	87	13 637	587	320	-330	55538.3
160	87	13 655	588	340	-330	55670.8
160	87	13 7 7	589	360	-330	55456.4
160	87	13 718	590	380	-330	55380.9
160	87	13 734	591	400	-330	55331.2
160	87	13 813	592	420	-330	55242.9
160	87	13 836	593	440	-330	55763.9
160	87	13 921	594	460	-330	55401.7
170	87	131452	595	0	-350	55413.6
170	87	1318 6	596	20	-350	55352.8
170	87	131821	597	40	-350	55536.9
170	87	131836	598	60	-350	55443.4
170	87	131850	599	80	-350	55559.2
170	87	1319 3	600	100	-350	55601.2
170	87	132121	601	120	-350	55561.3
170	87	132135	602	140	-350	55466.7
170	87	132151	603	160	-350	55646.7
170	87	1322 5	604	180	-350	55631.2
170	87	132219	605	200	-350	55395.3
170	87	132425	606	220	-350	55876.5
170	87	132438	607	240	-350	55916.8
170	87	132451	608	260	-350	55674.4
170	87	1325 7	609	280	-350	55502.1
170	87	132533	610	300	-350	55520.5
170	87	132631	611	320	-350	55304.8
170	87	132646	612	340	-350	55353.3
170	87	1327 1	613	360	-350	55340.4
170	87	132715	614	380	-350	55543.9
170	87	132732	615	400	-350	55319.9
170	87	133120	616	420	-350	54595.6
170	87	133138	617	440	-350	55313.6
170	87	133222	618	460	-350	55483.1
170	87	133313	619	480	-350	55418.5
180	87	1346 4	620	0	-370	55180.9
180	87	134626	621	20	-370	55383.5
180	87	134640	622	40	-370	55541.6
180	87	134655	623	60	-370	55413.2

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LINE	DAY	TIME	STATION	X	Y	MAG READ
180	87	134733	624	80	-370	57799.5
180	87	134915	625	100	-370	55460.4
180	87	135255	626	120	-370	55522.4
180	87	1353 7	627	140	-370	55480.3
180	87	135319	628	160	-370	55478.1
180	87	135334	629	180	-370	55688.2
180	87	135348	630	200	-370	55563.6
180	87	135548	631	220	-370	55757.3
180	87	1356 2	632	240	-370	55655.9
180	87	135618	633	260	-370	55459.1
180	87	135631	634	280	-370	55373.6
180	87	135644	635	300	-370	56117.6
180	87	135929	636	320	-370	55538.0
180	87	135942	637	340	-370	55659.8
180	87	135959	638	360	-370	55639.0
180	87	14 015	639	380	-370	55762.8
180	87	14 033	640	400	-370	54885.9
180	87	14 4 7	641	420	-370	54064.8
180	87	14 427	642	440	-370	56441.4
180	87	14 453	643	460	-370	56083.8
180	87	14 6 1	644	480	-370	55515.2
190	87	141814	645	0	-390	55350.1
190	87	141832	646	20	-390	54909.6
190	87	141851	647	40	-390	55684.1
190	87	1419 8	648	60	-390	54472.3
190	87	141926	649	80	-390	55486.6
190	87	141939	650	100	-390	55540.1
190	87	142252	651	120	-390	55462.9
190	87	1423 8	652	140	-390	55535.7
190	87	142327	653	160	-390	55577.0
190	87	142342	654	180	-390	55660.7
190	87	142354	655	200	-390	55568.6
190	87	142632	656	220	-390	55580.3
190	87	142650	657	240	-390	55740.7
190	87	1427 3	658	260	-390	55555.6
190	87	142718	659	280	-390	55511.5
190	87	142732	660	300	-390	55656.2
190	87	142851	661	320	-390	55500.5
190	87	1429 5	662	340	-390	55630.7
190	87	142918	663	360	-390	55700.5
190	87	142936	664	380	-390	55351.0
190	87	142950	665	400	-390	54517.2
190	87	143326	666	420	-390	55246.0
190	87	143344	667	440	-390	57159.4
190	87	143425	668	460	-390	54964.6
190	87	143447	669	480	-390	55614.3
200	87	144647	670	0	-410	55360.9
200	87	144859	671	20	-410	55202.8
200	87	144916	672	40	-410	55917.0
200	87	144934	673	60	-410	55427.3
200	87	144948	674	80	-410	55559.3

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LINE	DAY	TIME	STATION	X	Y	MAG READ
200	87	1450 3	675	100	-410	55541.7
200	87	145114	676	120	-410	55631.8
200	87	145133	677	140	-410	55586.5
200	87	145146	678	160	-410	55581.9
200	87	1452 3	679	180	-410	55606.7
200	87	145327	680	200	-410	55585.9
200	87	145516	681	220	-410	55538.6
200	87	145530	682	240	-410	55578.5
200	87	145548	683	260	-410	55538.3
200	87	145611	684	280	-410	55519.1
200	87	145623	685	300	-410	55410.7
200	87	145730	686	320	-410	55318.3
200	87	145747	687	340	-410	55281.2
200	87	1458 7	688	360	-410	55434.4
200	87	145821	689	380	-410	55060.1
200	87	145839	690	400	-410	53452.4
200	87	15 152	691	420	-410	55656.9
200	87	15 218	692	440	-410	56831.6
200	87	15 312	693	460	-410	57159.5
200	87	15 336	694	480	-410	55611.6
210	87	151757	695	0	-430	55495.2
210	87	1518 9	696	20	-430	55898.6
210	87	151822	697	40	-430	56224.3
210	87	151835	698	60	-430	55536.0
210	87	151847	699	80	-430	55520.4
210	87	151858	700	100	-430	55568.7
210	87	152012	701	120	-430	55544.8
210	87	152035	702	140	-430	55575.4
210	87	152047	703	160	-430	55515.1
210	87	1521 0	704	180	-430	55514.4
210	87	152113	705	200	-430	55701.5
210	87	152328	706	220	-430	55527.1
210	87	152342	707	240	-430	55537.6
210	87	152441	708	260	-430	55548.2
210	87	152453	709	280	-430	55584.9
210	87	1525 5	710	300	-430	55614.7
210	87	152523	711	320	-430	55422.2
210	87	152535	712	340	-230	55709.9
210	87	152549	713	360	-430	55558.3
210	87	1526 1	714	380	-430	54940.5
210	87	152614	715	400	-430	53763.8
210	87	152748	716	420	-430	54862.8
210	87	1528 7	717	440	-430	56099.8
210	87	152834	718	460	-430	56755.9
210	87	152914	719	480	-430	55027.3
220	87	155248	720	0	-450	55725.4
220	87	1553 1	721	20	-450	55596.4
220	87	155321	722	40	-450	55563.9
220	87	155335	723	60	-450	55500.2
220	87	155346	724	80	-450	55515.8
220	87	155358	725	100	-450	55502.8

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LINE	DAY	TIME	STATION	X	Y	MAG READ
220	87	155414	726	120	-450	55655.9
220	87	155430	727	140	-450	55532.7
220	87	155444	728	160	-450	55528.4
220	87	155459	729	180	-450	55568.9
220	87	155514	730	200	-450	55515.2
220	87	16 020	731	220	-450	55473.3
220	87	16 033	732	240	-450	55507.3
220	87	16 045	733	260	-450	55672.4
220	87	16 1 2	734	280	-450	55550.8
220	87	16 116	735	300	-450	55369.5
220	87	16 128	736	320	-450	55338.7
220	87	16 146	737	340	-450	55098.7
220	87	16 159	738	360	-450	54177.5
220	87	16 212	739	380	-450	54206.1
220	87	16 224	740	400	-450	56043.6
220	87	16 449	741	420	-450	56445.7
220	87	16 5 7	742	440	-450	56572.9
220	87	16 522	743	460	-450	56056.1
220	87	16 534	744	470	-450	56379.1
230	87	1626 8	745	0	-470	55795.2
230	87	162628	746	20	-470	55516.6
230	87	162641	747	40	-470	55586.7
230	87	162656	748	60	-470	55594.3
230	87	1627 9	749	80	-470	55488.9
230	87	162720	750	100	-470	55668.6
230	87	162734	751	120	-470	55567.4
230	87	162747	752	140	-470	55593.5
230	87	1628 1	753	160	-470	55569.3
230	87	162816	754	180	-470	55509.7
230	87	162829	755	200	-470	55484.3
230	87	163116	756	220	-470	55483.1
230	87	163131	757	240	-470	55449.8
230	87	163148	758	260	-470	55444.7
230	87	1632 1	759	280	-470	55395.5
230	87	163217	760	300	-470	55368.0
230	87	163247	761	320	-470	54830.6
230	87	1633 2	762	340	-470	53512.1
230	87	163321	763	360	-470	54926.0
230	87	163339	764	380	-470	55880.3
230	87	163351	765	400	-470	55951.2
230	87	164549	766	420	-470	55943.7
230	87	164610	767	440	-470	55739.7
230	87	164631	768	460	-470	55713.8
230	87	164657	769	480	-470	55355.2
230	87	164837	770	500	-470	56124.4
230	87	165043	771	520	-470	55430.0
240	87	165920	772	0	-490	55717.4
240	87	165937	773	20	-490	55966.3
240	87	165951	774	40	-490	55517.7
240	87	17 0 7	775	60	-490	55610.6
240	87	17 035	776	80	-490	55603.6

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LINE	DAY	TIME	STATION	X	Y	MAG READ
240	87	17 051	777	100	-490	55548.4
240	87	17 1 7	778	120	-490	55511.1
240	87	17 132	779	140	-490	55601.3
240	87	17 151	780	160	-490	55486.2
240	87	17 2 6	781	180	-490	55519.0
240	87	17 219	782	200	-490	55502.9
240	87	17 439	783	220	-490	55363.5
240	87	17 453	784	240	-490	55400.5
240	87	17 5 8	785	260	-490	55262.3
240	87	17 522	786	280	-490	55271.6
240	87	17 535	787	300	-490	55281.4
240	87	17 559	788	320	-490	54343.9
240	87	17 616	789	340	-490	54012.8
240	87	17 635	790	360	-490	54957.7
240	87	17 652	791	380	-490	55161.4
240	87	17 7 5	792	400	-490	56904.1
240	87	17 916	793	420	-490	56594.0
240	87	17 945	794	440	-490	55782.0
240	87	1710 3	795	460	-490	56350.5
240	87	171018	796	480	-490	55690.1
240	87	171051	797	500	-490	56113.8
240	87	171238	798	540	-490	55527.6
240	87	171644	799	520	-490	57302.8
250	87	172152	800	0	-510	55395.1
250	87	1722 6	801	20	-510	55880.4
250	87	172225	802	40	-510	55440.4
250	87	172248	803	60	-510	55532.3
250	87	172310	804	80	-510	55548.3
250	87	172326	805	100	-510	55626.2
250	87	172344	806	120	-510	55536.0
250	87	172357	807	140	-510	55485.0
250	87	172410	808	160	-510	55529.1
250	87	172424	809	180	-510	55459.0
250	87	172436	810	200	-510	55489.3
250	87	173156	811	220	-510	55543.4
250	87	1732 9	812	240	-510	55255.8
250	87	173223	813	260	-510	55834.8
250	87	173240	814	280	-510	55736.6
250	87	173257	815	300	-510	57039.5
250	87	173315	816	320	-510	54519.3
250	87	173330	817	340	-510	54955.8
250	87	173347	818	360	-510	55994.9
250	87	1734 3	819	380	-510	56777.2
250	87	173418	820	400	-510	56777.2
250	87	173833	821	420	-510	56876.4
250	87	173854	822	440	-510	55411.1
250	87	173911	823	460	-510	56157.7
250	87	173928	824	480	-510	55120.5
250	87	173949	825	500	-510	58194.3
250	87	174145	826	540	-510	55682.8
260	88	85519	827	0	-530	55605.3

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LINE	DAY	TIME	STATION	X	Y	MAG READ
260	88	85540	828	20	-530	55459.3
260	88	856 2	829	40	-530	55424.0
260	88	85618	830	60	-530	55478.6
260	88	85632	831	80	-530	55485.3
260	88	85646	832	100	-530	55486.4
260	88	857 1	833	120	-530	55521.7
260	88	85717	834	140	-530	55510.1
260	88	85734	835	160	-530	55453.5
260	88	85750	836	180	-530	55484.4
260	88	858 4	837	200	-530	55376.9
260	88	9 221	838	220	-530	55680.7
260	88	9 238	839	240	-530	55477.0
260	88	9 257	840	260	-530	55271.9
260	88	9 320	841	280	-530	55687.7
260	88	9 4 1	842	300	-530	56199.3
260	88	9 527	843	320	-530	54992.0
260	88	9 552	844	340	-530	55345.3
260	88	9 618	845	360	-530	56310.8
260	88	9 639	846	380	-530	56242.3
260	88	9 656	847	400	-530	55867.6
260	88	91136	848	420	-530	56124.7
260	88	91157	849	440	-530	56245.5
260	88	91225	850	460	-530	56074.5
260	88	91328	851	480	-530	57199.5
260	88	91357	852	500	-530	55661.4
270	88	92357	853	0	-550	55454.6
270	88	92421	854	20	-550	55588.3
270	88	92437	855	40	-550	55357.0
270	88	92455	856	60	-550	55506.3
270	88	925 8	857	80	-550	55502.5
270	88	92520	858	100	-550	55523.0
270	88	92535	859	120	-550	55483.9
270	88	92549	860	140	-550	55520.1
270	88	926 4	861	160	-550	55475.6
270	88	92617	862	180	-550	55470.2
270	88	92628	863	200	-550	55467.6
270	88	93227	864	220	-550	55624.9
270	88	93258	865	240	-550	55632.5
270	88	93332	866	260	-550	55476.4
270	88	93355	867	280	-550	55365.6
270	88	93431	868	300	-550	55764.3
270	88	93513	869	320	-550	55630.6
270	88	93550	870	340	-550	55527.1
280	88	94417	871	0	-570	55394.9
280	88	94446	872	20	-570	55792.8
280	88	94515	873	40	-570	55625.5
280	88	94529	874	60	-570	55475.5
280	88	94545	875	80	-570	55456.0
280	88	94556	876	100	-570	55477.9
280	88	946 9	877	120	-570	55519.3
280	88	94622	878	140	-570	55663.5

LINE	DAY	TIME	STATION	X	Y	MAG READ
280	88	94634	879	160	-570	55462.1
280	88	94649	880	180	-570	55565.3
280	88	947 1	881	200	-570	55427.4
280	88	95221	882	220	-570	55511.2
280	88	95254	883	240	-570	55468.4
280	88	95314	884	260	-570	55464.7
280	88	95332	885	280	-570	55470.9
280	88	95353	886	300	-570	55330.3
290	88	10 318	887	0	-590	55418.1
290	88	10 333	888	20	-590	55147.9
290	88	10 349	889	40	-590	55933.0
290	88	10 4 7	890	60	-590	55676.1
290	88	10 419	891	80	-590	55588.0
290	88	10 433	892	100	-590	55592.9
290	88	10 450	893	120	-590	55434.9
290	88	10 5 9	894	140	-590	55532.3
290	88	10 521	895	160	-590	55590.3
290	88	10 537	896	180	-590	55472.8
290	88	10 550	897	200	-590	55631.2
290	88	10 858	898	220	-590	55480.9
290	88	10 925	899	240	-590	55471.9
290	88	10 939	900	260	-590	55462.6
300	88	1015 0	901	0	-610	55472.4
300	88	101513	902	20	-610	55294.1
300	88	101527	903	40	-610	55944.3
300	88	101544	904	60	-610	55487.6
300	88	101559	905	80	-610	55504.6
300	88	101610	906	100	-610	55465.8
300	88	101626	907	120	-610	55535.9
300	88	101643	908	140	-610	55538.7
300	88	101659	909	160	-610	55487.9
300	88	101715	910	180	-610	55510.5
300	88	101728	911	200	-610	55503.1
300	88	101743	912	220	-610	55488.9
310	88	102335	913	0	-630	55318.9
310	88	102349	914	20	-630	55533.8
310	88	1024 2	915	40	-630	55539.7
310	88	102413	916	60	-630	55590.0
310	88	102424	917	80	-630	55528.8
310	88	102435	918	100	-630	55471.9
310	88	102451	919	120	-630	55481.7
310	88	1025 4	920	140	-630	55505.9
310	88	102518	921	160	-630	55550.0
310	88	102531	922	180	-630	55490.8
320	88	103021	923	0	-650	12408.6
320	88	103059	924	20	-650	55531.7
320	88	103118	925	40	-650	55447.2
320	88	103132	926	60	-650	55690.5
320	88	103145	927	80	-650	55543.2
320	88	103156	928	100	-650	55487.7
320	88	1032 6	929	120	-650	55537.2

Geraghty & Miller, Inc.

LINE	DAY	TIME	STATION	X	Y	MAG READ
360	88	1059 3	930	-20	-370	55485.9
360	88	105918	931	-40	-370	56996.3
360	88	105933	932	-60	-370	55347.5
360	88	11 039	933	-20	-390	55444.6
360	88	11 052	934	-40	-390	56052.3
360	88	11 112	935	-60	-390	55584.5
360	88	11 211	936	-20	-410	55739.8
360	88	11 319	937	-40	-410	55088.1
360	88	11 337	938	-60	-410	56883.0
360	88	11 635	939	-20	-430	56167.2
360	88	11 651	940	-40	-430	55447.3
360	88	11 7 5	941	-60	-430	56113.2
360	88	11 853	942	-20	-450	55685.4
360	88	11 9 6	943	-40	-450	54959.9
360	88	11 920	944	-60	-450	55322.4
360	88	111041	945	-20	-470	55820.6
360	88	1111 1	946	-40	-470	56365.3
360	88	111117	947	-60	-470	54563.2
360	88	1115 4	948	-20	-490	56476.3
360	88	111525	949	-40	-490	54820.9
360	88	111541	950	-60	-490	55893.2
360	88	111745	951	-20	-510	57332.1
360	88	1118 6	952	-40	-510	55629.7
360	88	111822	953	-60	-510	55833.9
360	88	111937	954	-20	-530	55709.9
360	88	111949	955	-40	-530	55456.3
360	88	1120 3	956	-60	-530	55452.7
360	88	112216	957	-20	-550	55241.1
360	88	112228	958	-40	-550	55628.5
360	88	112243	959	-60	-550	58334.7
360	88	1124 2	960	-20	-570	55707.4
360	88	112414	961	-40	-570	55585.3
360	88	112429	96-	-60	-570	55657.9
360	88	112537	963	-20	-590	56080.8
360	88	1126 3	964	-40	-590	55757.5
360	88	112624	965	-60	-590	55890.1
360	88	112830	966	-20	-610	55787.3
360	88	112845	967	-40	-610	55589.4
360	88	112858	968	-60	-610	55730.7
360	88	1130 1	969	-20	-630	55736.1
360	88	113015	970	-40	-630	55627.9
360	88	113026	971	-60	-630	55703.5
360	88	113045	972	-20	-650	55616.6
360	88	113057	973	-40	-650	55579.1
360	88	1131 8	974	-60	-650	55623.0
				0	0	0.0

GERAGHTY
& MILLER, INC.
Ground-Water Consultants

October 9, 1986
G&M/NJDEP #3

VIA FEDERAL EXPRESS

Armando A. Arcenal
Environmental Engineer
New Jersey Department of
Environmental Protection
2 Babcock Place
West Orange, New Jersey 07052

Dear Mr. Arcenal:

Enclosed are seven copies of our report on the investigation of magnetic anomalies in Area 5 of the UOP East Rutherford, New Jersey site.

Sincerely,

GERAGHTY & MILLER, INC.

Robert A. Saar sm

Robert A. Saar, Ph.D.
Senior Scientist

Michael F. Wolfert sm

Michael F. Wolfert
Associate

RAS:MFW:sm
Encl.
N0695ER4

cc: Karl Youtsey (2 enclosures)
Michael Worthy (2 enclosures)
Chris Altamari (3 enclosures)

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INVESTIGATION OF MAGNETIC ANOMALIES

IN AREA 5

UOP SITE

EAST RUTHERFORD, NEW JERSEY

October 1986

Geraghty & Miller, Inc.
Ground-Water Consultants
125 East Bethpage Road
Plainview, New York 11803

Introduction

Between September 30 and October 2, 1986, eight trenches were excavated in Area 5 at the UOP site in East Rutherford, New Jersey. The trenching was carried out to determine the cause of the magnetic anomalies identified by the March 1986 magnetometer survey performed at the site by Geraghty & Miller, Inc.

Trenches were excavated in seven areas with prominent magnetic anomalies; an eighth trench was excavated at a location selected jointly by New Jersey Department of Environmental Protection (NJDEP) and Geraghty & Miller, Inc. personnel (Figure 1). It was not possible to excavate trenches at the sites of Anomalies 5 and 8 because the ground in the area would not support the weight of the backhoe. Anomaly 4 was not investigated because concrete slabs in the area are closely spaced and therefore it is unlikely to have been a disposal area. The anomaly is probably associated with reinforcing steel bars in the slabs.

Methodology

The trenches were excavated with a backhoe operated by Terra Contracting, Cranford, New Jersey; field observations were made and recorded by a Geraghty & Miller, Inc. field hydrogeologist. As each trench was excavated, the subsurface materials encountered were examined and logged. In ad-

dition, air quality was monitored using a portable photoionization detector (TIP). In all cases the trenches were advanced to the depth at which natural soils were reached.

Results

Table 1 lists the logs for each of the trenches. The excavations revealed that Area 5 is characterized by fill (from 1 to 8 ft thick) overlying a dense, peat-like layer of plant and root matter ("meadow mat"). The water table was approximately 5 ft or less below land surface. The large quantity of metal debris observed in trenches in Anomalies 1, 2, 3, 7, 9, and 10 appears to account for the magnetic anomalies identified in the magnetometer survey. In the trench at Anomaly 6, concrete slabs, which likely contain reinforcing steel bars, are probably responsible for the magnetic anomaly in that area.

A rusted, partly smashed, 55-gallon drum was found in Trench A in Area 7 along with numerous rusted lids and rusted, smashed fragments of approximately 10 to 12 drums. A few feet away, at the eastern end of Trench B (Area 7), a seep of water with an oily sheen was observed at a depth of about 4 feet.

A sulfur (swamp-like) odor was associated with the meadow mat at most locations, while an organic odor was detected in trenches at Anomalies 6, 7, and 10. The origin of

the organic odor, either naturally occurring or manmade, is unknown.

Recommendations

Area 5 is considered not to be contaminated based on the following data:

- The magnetometer survey was successful in locating and delineating areas of buried ferromagnetic material. Trench excavations revealed metallic objects that would create magnetic anomalies. Therefore, in regard to burial of drums, the use of the magnetometer to include/exclude areas for further study regarding possible contamination is valid.

- The magnetic anomalies identified during the magnetometer survey were determined through trench excavation to be caused predominantly by metallic construction debris. Only one intact drum approximately 1/3 full of solids (no liquid) was discovered during trenching; fragments of several additional drums were found. Observations of material beneath excavated drum and drum fragments did not indicate past releases of contaminants, that is, there were no unusual colors or stains.

- The Phase II results for Area 5 indicate that total priority pollutant organic compound concentrations in ground water ranged from none detected in Well 10I to 740 parts per billion in Well 25I with values for the remaining four wells in the area averaging 144 ppb. In contrast to these values, total priority pollutant organic compound concentrations were as high as 57,000 ppb in Well 17I (Area 2) and over 200,000 ppb in Well 13I (Area 2) with many other values above 1,000 ppb. A similar relationship exists between organic compound concentrations in soils in Area 5 versus soils in Areas 1, 1A, and 2.

The materials uncovered in Area 5 are substantially construction debris and not drums with hazardous constituents. The area is not considered contaminated and therefore, based on the requirements of the May 23, 1986 Administrative Consent Order, UOP proposes to install seven soil borings, that is, one boring per acre. Two of these borings will be converted into monitoring wells. Figure 1 shows the proposed locations of the soil borings and wells. These borings and wells will be sampled and analyzed as per the work plan.

The boring in Anomaly 5 will be converted to a well as it was not possible to excavate a trench there. Additionally, the boring downgradient of Anomaly 7 will be converted to a well to determine if the area around that anomaly has had any impact on ground-water quality.

Respectfully submitted,

GERAGHTY & MILLER, INC.

Robert A. Saar

Robert A. Saar, Ph.D.
Senior Scientist

Michael F. Wolfert

Michael F. Wolfert
Associate

Table 1. Geologic Logs of Trenches in Area 5,
UOP Site - East Rutherford, New Jersey.

TRENCH IN MAGNETIC ANOMALY AREA 1
9/30/86 9:55 am - 12:50 pm
Sunny, breezy

0 - 3	ft	FILL:	broken bricks, cinder blocks and concrete blocks; metal wire, cable, pipes, rebar and assorted scrap metal; a few pieces of wood and rubber hoses; some silt, fine-medium sand and 1/8"-1/2" gravel; dry to moist
approx. 3	ft	WATER TABLE:	sheen observed on surface (probably from backhoe)
3 - 6	ft	FILL:	same as above; black; sulfur (swamp-like) odor; wet
6 - 8	ft	MEADOW MAT:	peat-like accumulation of plant and root debris; dense; dark brown to black; sulfur (swamp-like) odor; moist
8	ft	TOTAL DEPTH of trench	

OTHER OBSERVATIONS: some large (3-4 feet long) blocks of concrete

TRENCHES A and B IN MAGNETIC ANOMALY AREA 2
9/30/86 2:15 pm - 3:40 pm
Sunny, breezy

0 - 3	ft	FILL:	broken bricks, cinder blocks and concrete blocks; metal wire, pipes and assorted metal scrap; some rubber hoses and pieces of wood; some silt, fine-medium sand and gravel; dry to moist
approx. 3	ft	WATER TABLE:	sheen observed on surface in places (probably from backhoe)
3 - 5	ft	FILL:	same as above; black; sulfur (swamp-like) odor; wet
5 - 8	ft	MEADOW MAT:	peat-like accumulation of plant and root debris; dense; dark brown to black; sulfur (swamp-like) odor; moist

8 ft TOTAL DEPTH of trench

OTHER OBSERVATIONS: old motor (TIP reading = 42 ppm); radiator (heater) parts; rusted, smashed drum or tank (doesn't appear to be a waste container); large concrete block (4' x 2' x 2')

TRENCH IN MAGNETIC ANOMALY AREA 3
10/1/86 8:30 am - 9:10 am
Mostly sunny, breezy

Segment A - B

0 - 1 ft SWAMP DEPOSITS: Fragmites roots and other organic matter; silt, black; wet

approx. 1 ft WATER TABLE: sheen observed on surface in places (probably from backhoe)

1 - 3 ft CLAY, reddish-brown, and silt; some medium-coarse sand and rounded 1/8"-1/2" gravel; wet

3 - 8 ft MEADOW MAT: peat-like accumulation of plant and root debris; dense; dark brown to black; moist/wet; sulfur (swamp-like) odor

Segment B - C

0 - 3 ft FILL: broken bricks, cinder blocks and cement blocks; metal wire and pipes, rebar and assorted scrap metal; some pieces of rubber hoses and wood; some silt, medium-coarse sand and gravel; dry to moist

approx. 1 ft WATER TABLE: sheen observed on surface in places (probably from backhoe)

3 - 5 ft CLAY, reddish-brown, and silt; some medium-coarse sand and rounded 1/8"-1/2" gravel; wet

5 - 8 ft MEADOW MAT: peat-like accumulation of plant and root debris; dense; dark brown to black; moist/wet; sulfur (swamp-like) odor

8 ft TOTAL DEPTH of trench

TRENCH IN MAGNETIC ANOMALY AREA 6
10/1/86 11:05 am - 1:05 pm
Mostly sunny, breezy

0 - 0.1	ft	BROKEN ASPHALT
0.1 - 2	ft	FILL: silt, dark brown, and fine sand; some sub-angular 1/8"-1/2"gravel; trace gray clay; dense; dry to moist; organic odor
2 - 5	ft	FILL: silt, dark brown, and fine sand; some sub-angular 1/8"-1/2" gravel; trace gray clay; small broken pieces to large chunks (1-2') of reddish-orange brick-like material (old foundation?); assorted bottles and glass debris; some pieces of wood and miscellaneous trash; dry to moist; organic odor
approx. 5	ft	WATER TABLE: observed water seeping into trench at this depth; at midway point along trench water rushed in
5 - 6.5	ft	FILL: same as above; moist to wet; organic odor
6.5 - 8	ft	MEADOW MAT: peat-like accumulation of plant and root debris; dense; dark brown to black; moist; organic odor
8	ft	TOTAL DEPTH of trench

OTHER OBSERVATIONS: small "pocket" of grease at depth of 2' (TIP = 50 ppm); rotted container of gray clay-like substance (old paint?) at a depth of about 4' (TIP = 500-1,500 ppm)

TRENCH A IN MAGNETIC ANOMALY AREA 7
10/1/86 2:55 pm - 4:05 pm
Mostly sunny, breezy

<u>Segment A - B</u>

0 - 3	ft	FILL: silt, brown, and fine sand; some Fragmites and sub-angular 1/8"-1/2" gravel; plant roots; occasional bricks, pieces of wood and metal wire; moist

3 - 5 ft FILL: silt, dark-brown to black, and fine sand; some sub-angular 1/8"-1/2" gravel; some plant and root debris; occasional chunks of brick-like material, pieces of wood and metal wire; moist; organic odor

approx. 5 ft WATER TABLE: not apparent until some debris near B removed; then water rushed into trench

5 - 8 ft FILL: same as above; wet, organic odor

Segment B - C

0 - 3 ft FILL: silt, brown, and fine sand; some sub-angular 1/8"-1/2" gravel; Fragmites and other plant roots; some pieces of wood and chunks of brick-like material; some rusted drum lids and metal wire; moist

3 - 5 ft FILL: silt, dark brown to black, and fine sand; some sub-angular 1/8"-1/2" gravel; large quantity of wood debris and rusted drum lids; 10-12 rusted, smashed pieces of drum shells; 1 corroded, nearly intact drum (TIP = 800 ppm inside); some metal wire and plastic sheets or bags; moist; organic odor

approx. 5 ft WATER TABLE

5 - 7 ft FILL: same as above; wet; organic odor

7 - 8 ft MEADOW MAT: peat-like accumulation of plant and root debris; dark brown to black; dense; moist

8 ft TOTAL DEPTH of trench

TRENCH B IN MAGNETIC ANOMALY AREA 7
10/1/86 4:05 - 4:50 pm
Mostly sunny, breezy

Segment A - B

0 - 3 ft FILL: silt, brown and fine sand; some sub-angular 1/8"-1/2" gravel; Fragmites and other plant roots; moist

3 - 5 ft FILL: silt, dark brown to black, and fine sand; some sub-angular 1/8"-1/2" gravel; some plant and root debris; occasional wood debris and rusted drum lids; moist; organic odor

approx. 5 ft WATER TABLE

5 - 7 ft FILL: same as above; wet; organic odor

7 - 8 ft MEADOW MAT: peat-like accumulation of plant and root debris; dark brown to black; dense; moist

Segment B - C

0 - 3 ft FILL: silt, brown and fine sand; some sub-angular 1/8"-1/2" gravel; Fragmites and other plant roots; moist

3 - 5 ft FILL: silt, dark-brown to black, and fine sand; some sub-angular 1/8"-1/2" gravel; some wood debris and rusted drum lids; occasional rusted, smashed pieces of drum shells

approx. 5 ft WATER TABLE

5 - 7 ft FILL: same as above; wet; organic odor

7 - 8 ft MEADOW MAT: peat-like accumulation of plant and root debris; dark brown to black; moist

8 ft TOTAL DEPTH of trench

OTHER OBSERVATIONS: liquid with oily sheen observed to be seeping into trench at C at a depth of about 4'

TRENCH IN MAGNETIC ANOMALY AREA 9
10/2/86 10:00 am - 12:15 pm
Cloudy, light breeze

Segment A - B

0 ft WATER TABLE

0 - 4 ft FILL: broken concrete blocks, bricks and cinder blocks; metal rebar, pipes and assorted scrap metal

SWAMP DEPOSITS: Fragmites and other plant roots; silt, black, and fine sand; some sub-angular 1/8"-1/2" gravel; wet; sulfur (swamp-like) odor

4 - 6 ft MEADOW MAT: peat-like accumulation of plant and root debris; dark brown to black; dense, moist; strong sulfur (swamp-like) odor

Segment B - C

0 - 1-2 ft FILL: broken concrete blocks, bricks and cinder blocks; metal rebar, pipes and assorted metal; pieces of wood; medium-coarse sand, brown; some silt and sub-angular 1/8"-1" gravel and broken rock; dry/moist

approx.1- 2 ft WATER TABLE: sheen observed on surface in places (probably from backhoe)

1-2 - 5 ft FILL: same as above; wet

5 - 6 ft MEADOW MAT: peat-like accumulation of plant and root debris; dark brown to black; dense; wet to moist; strong sulfur (swamp-like) odor

Segment C - D

0 - 4 ft FILL: broken concrete blocks, bricks and cinder blocks; metal rebar, pipes and assorted metal scrap; pieces of wood; medium-coarse sand, light brown; some silt and sub-angular 1/8"-1" gravel and broken rock; dry to moist

approx. 4 ft WATER TABLE: sheen observed on surface in places (probably from backhoe)

4 - 6 ft FILL: same as above; wet

6 - 7 ft MEADOW MAT: peat-like accumulation of plant and root debris; dark brown to black; dense; wet/moist; strong sulfur (swamp-like) odor

7 ft TOTAL DEPTH of trench

OTHER OBSERVATIONS: several large pieces (2-3') of concrete and cinder blocks; 1 large hexagonal piece of concrete with a metal core (3' long)

TRENCH IN MAGNETIC ANOMALY AREA 10
10/2/86 1:10 pm - 3:25 pm
Cloudy, light breeze

0 - 3 ft FILL: silt, dark reddish-brown to black, and fine sand; some sub-angular 1/8"-1" gravel and broken rock; occasional broken bricks and cinder blocks; moist; organic odor

3 - 5 ft FILL: numerous pieces of wood, broken metal pipes and rubber hoses; some scrap metal, broken bricks and cinder blocks and miscellaneous trash; silt, dark brown to black, and fine sand; some sub-angular 1/8"-1" gravel and broken rock; moist; organic odor

approx. 5 ft WATER TABLE: iridescent, oily appearance, organic odor

5 - 6 ft FILL: same as above; wet; organic odor

6 - 7 ft MEADOW MAT: peat-like accumulation of plant and root debris; dark brown to black; dense; moist

7 ft TOTAL DEPTH of trench

OTHER OBSERVATIONS: 1949 pocket calendar card

SUPPLEMENTAL TRENCHES A & B
10/2/86 3:55 pm - 5:15 pm
Cloudy, light breeze

0 - 2 ft FILL: silt, dark brown, and fine sand; some sub-angular 1/8"-1" gravel; Fragmites and other plant roots; moist

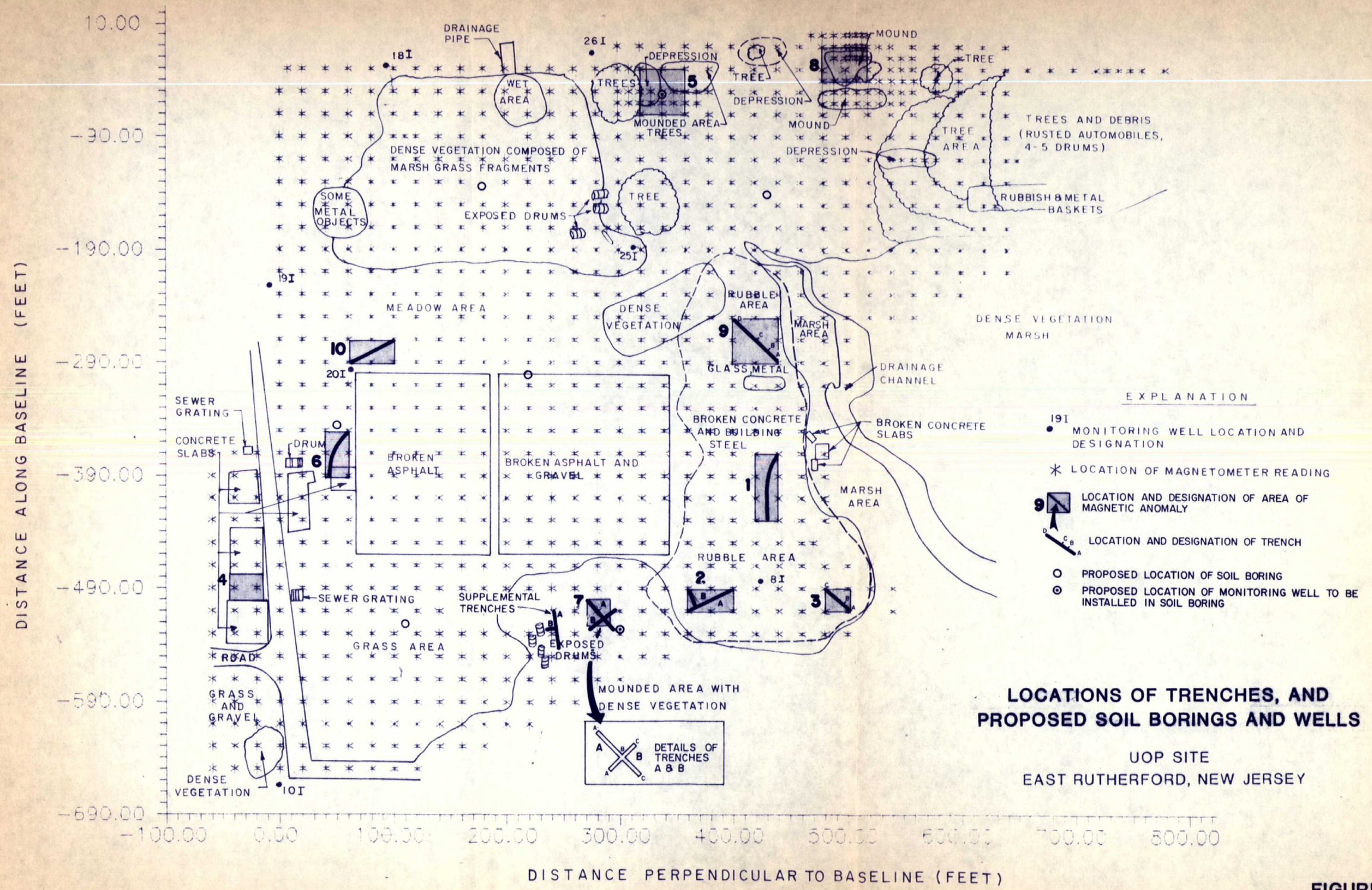
2 - 5 ft FILL: silt, dark brown, and fine sand; some sub-angular 1/8"-1" gravel; some large pieces (0.5-3') of a soft, white crystalline substance and plastic sheets or bags; occasional broken bricks and cinder blocks, large pieces of brick-like material and wood debris; mild manure-like odor

approx. 5 ft WATER TABLE

5 - 7	ft	FILL:	same as above; wet; mild manure-like odor
7 - 8	ft	MEADOW MAT:	peat-like accumulation of plant and root debris; dark brown to black; dense; moist
8	ft	TOTAL DEPTH of trench	

TIP is a photoionization detector for measuring total volatile organic compound concentrations in air.

ppm = parts per million



LOCATIONS OF TRENCHES, AND PROPOSED SOIL BORINGS AND WELLS

UOP SITE
EAST RUTHERFORD, NEW JERSEY

FIGURE 1

Appendix C. Geologic Logs of Soil Borings and Monitoring Wells, UOP Site, East Rutherford, New Jersey

Geologic Description	Depth (feet below land surface)	TIP Readings
Boring B1-1 10-9-86		
Geologist: Robert Graham (G&M)		
FILL: Silt, dk. brown, and f-med. sand; some ang. 1/8" - 1/2" gravel & broken rock; moist	0 - 2	0 - 9
FILL: Silt, red, and f. - med. sand; some sub-ang. siltstone fragments; moist		
FILL: Silt, dk. brownish-red, and f.-med. sand; some sub-ang. 1/8" - 1/4" gravel & broken rock; moist	2 - 4	0 - 1.5
FILL: Silt; black, some f.-med. sand & sub-ang. 1/8" - 1/2" gravel & broken rock; some rubber & porcelain debris; wet		
WATER TABLE	approx. 3	
MEADOW MAT (plant & root debris), dk. brown to black; dense; moist/wet	4 - 6	0 - 5
CLAY, dk. brown; dense; moist/wet		
B.O.B. (bottom of boring)	6	
Boring B1-2 10-8-86		
Geologist: Robert Graham (G&M)		
FILL: Sand, f.-med., dk brown to reddish-brown, and silt; some sub-ang. 1/8" - 1/2" gravel & broken rock fragments; trace roots; moist	0 - 2	---
FILL: Sand, med.-coarse, lt. to dk. brown, and reddish-brown silt; some sub-ang. 1/8"-1/4" gravel; 1/2" rusted bolt; wet		

Geologic Description	Depth (feet below land surface)	TIP Readings
Boring B1-2 (cont'd)		
WATER TABLE	approx. 2	
FILL: Sand, med.-coarse, reddish-brown, and silt; some sub-ang. 1/8" - 1/2" gravel & broken rock; some pieces of rubber & metal debris; wet	2 - 4	---
FILL: Silt, dk. brown to black; some f.-med. sand and sub-ang. 1/8" - 1/2" gravel & broken rock; some bits of wood & glass debris; wet		
B.O.B.	4	
Boring B1-3 10-8-86		
Geologist: Robert Graham (G&M)		
FILL: Sand, f.-med., reddish-brown to black, and silt; some sub-ang. 1/8" - 1/2" gravel & broken rock; moist	0 - 2	0 - 15
FILL: Sand, f.-med., reddish-brown to black, and silt; some ang. 1/8" - 1" gravel & broken rock; some wood & glass debris; moist	2 - 4	0 - 30
WATER TABLE	approx. 4	
FILL: Sand, med.-coarse, black, and silt; some ang. 1/8"-1" gravel & broken rock; some glass & wood debris; wet	4 - 6	0 - 69
MEADOW MAT (plant & root matter), dk. brown to black; dense; moist/wet		
B.O.B.	6	
Boring B1-4 10-8-86		
Geologist: Robert Graham (G&M)		
FILL: Silt, dk. brown, and f.-med. sand; some ang. 1/8" - 1" gravel, broken rock & brick fragments; some roots; moist	0 - 2	0 - 30

Geologic Description	Depth (feet below land surface)	TIP Readings
Boring B1-4 (cont'd)		
FILL: (Concrete debris?) Sand, med.-coarse, lt. gray, and silt; some ang. 1/8" - 1" gravel & broken rock; dry (piece of rebar sticking out of borehole)		
FILL: Silt, reddish-brown to dk. brown, and f.-med. sand; some ang. 1/8" - 1" gravel, broken rock & siltstone(?) fragments; moist		
NO RECOVERY	2 - 4	---
WATER TABLE	approx. 4	
FILL: Sand, f.-med., black, and silt; some ang. 1/8" - 1/2" gravel, broken rock & brick (?) fragments; wet	4 - 6	0 - 18
B.O.B.	6	
Boring B1-5 10-9-86		
Geologist: Robert Graham (G&M)		
FILL: Silt, reddish-brown, and f.-med. sand; some sub-ang. 1/8" - 1" gravel & broken rock; moist	0 - 2	0 - 6.5
FILL: Same as above; moist	2 - 4	0 - 2
FILL: Silt, reddish-brown, and f.-med. sand; some ang. 1/8" - 1" gravel & broken rock; moist	4 - 6	0 - 11
FILL: Silt, reddish brown, and f.-med. sand; some ang. 1/8" - 1" gravel & broken rock; moist/wet	6 - 8	0 - 7
FILL: Silt, black, and f. sand; some root matter; moist/wet		
FILL: Clay, olive green; moist		

Geologic Description	Depth (feet below land surface)	TIP Readings
Boring B1-5 (cont'd)		
WATER TABLE	approx. 7	
FILL: Silt, reddish-brown, and f.-med. sand; some ang. 1/8" - 1/2" gravel & broken rock; wet	8 - 10	0 - 4
FILL: Silt, black, and f.-med. sand; some sub-ang. 1/8" - 1/2" gravel & broken rock; wet		
FILL: Sand, f.-med., yellow-brown, and silt; wet		
B.O.B.	10	
Boring B1-6 10-9-86		
Geologist: Robert Graham (G&M)		
FILL: Sand, med.-coarse, dk. brown; some silt & ang. 1/8" - 1/2" gravel & broken rock; moist	0 - 2	0 - 19
FILL: Sand, f.-med., reddish-brown to yellow-brown, and silt; moist		
FILL: Silt, dk. reddish-brown; some ang. 1/8" - 1/2" broken rock; some glass & wood debris; moist/wet		
WATER TABLE	approx. 2	
FILL: Silt, reddish-brown to black, and f.-med. sand; some ang. 1/8" - 1" gravel & broken rock; wet	2 - 4	0 - 3
B.O.B.	4	
Boring B1-7 10-9-86		
Geologist: Robert Graham (G&M)		
FILL: Sand, f.-med., yellow-brown to reddish-brown, and silt; some sub-ang. 1/8" - 1" gravel & broken rock; moist	0 - 2	0 - 2.5

Geologic Description	Depth (feet below land surface)	TIP Readings
Boring B1-7 (cont'd)		
WATER TABLE	approx. 2	
FILL: Sand, f.-med., black, and ang. 1/8" - 1" gravel & broken rock; some silt; wet	2 - 4	
FILL: Same as above, reddish-black; wet		
B.O.B.	4	
Boring B1-8 10-9-86		
Geologist: Robert Graham (G&M)		
FILL: Silt, dk. brown, and f.-med. sand; some sub-ang. 1/8" - 1/2" gravel & broken rock; some pieces of wood debris & roots; moist	0 - 2	0 - 3.5
FILL: Silt, dk. reddish-brown, and f.-med. sand; some sub-ang. 1/8" - 1/2" gravel & broken rock; moist		
FILL: Silt, reddish-brown to black, and f.-med. sand; some 1/8" - 1" broken rock & siltstone (?) fragments; moist/wet	2 - 4	0 - 4.5
FILL: Grease-like substance, black; soft; some silt & f.-med. sand; wet		
WATER TABLE	approx. 2.5	
B.O.B.	4	
Boring B1-9 10-9-86		
Geologist: Robert Graham (G&M)		
FILL: Silt, dk. brown, and med.-coarse sand; some ang. 1/8" - 1/2" gravel & broken rock; some glass debris & roots; moist/wet	0 - 2	0 - 2.5

Geologic Description	Depth (feet below land surface)	TIP Readings
Boring B1-9 (cont'd)		
FILL: Silt, reddish-brown to black, and f.-med sand; some ang. 1/8" - 1/2" gravel & broken rock; wet		
WATER TABLE	approx. 0.5	
B.O.B.	2	
Boring B1A-1 10-10-86		
Geologist: Robert Graham (G&M)		
FILL: Silt, dk. reddish-brown, and f. sand; some sub-ang. 1/8" - 1/2" gravel & broken rock; some roots; moist	0 - 2	0 - 5.5
FILL: Sand, fine, brown, and silt; some med. sand & sub-ang. 1/8" - 1/2" gravel & broken rock; 0.3' layer of smashed concrete; moist		
WATER TABLE	approx. 2	
FILL: Pulverized rock fragments, gray, pink & black; wet	2 - 4	0 - 25
FILL: Silt, black, and f. sand; some sub-ang. 1/8" - 1/4" gravel & broken rock; wet		
B.O.B.	4	
Boring B1A-2 10-10-86		
Geologist: Robert Graham (G&M)		
FILL: Silt, dk. brown to black, and f.-med. sand; some sub-ang. 1/8" - 1.5" gravel & broken rock; moist; odor	0 - 2	0 - 55
WATER TABLE	approx. 2	

Geologic Description	Depth (feet below land surface)	TIP Readings
Boring B1A-2 (cont'd)		
FILL: Silt, black, and f.-med. sand; some sub-ang. 1/8" - 1/4" gravel & broken rock; moist/wet; odor	2 - 4	---
FILL: Silt, dk. brown to reddish-brown, and f.-med. sand; some coarse sand; trace sub-ang. 1/8" - 1" gravel & broken rock; wet; odor		
B.O.B.	4	
Boring B1A-3 10-10-86		
Geologist: Robert Graham (G&M)		
FILL: Silt, reddish-brown, and f.-med. sand; some sub-ang. 1/8" - 1" gravel & broken rock; some plant roots; some wood debris; moist	0 - 2	0 - 50 (peak = 200)
FILL: Sand, f.-med., brown to grayish-black; some paper & glass debris; moist/wet	2 - 4	0 - 17
WATER TABLE	approx. 3	
FILL: Silt, black, and f.-med. sand; some coarse sand; some glass & wood debris; some plant & root matter; wet	4 - 6	0 - 13
MEADOW MAT (plant & root matter) dk. brown to black; dense; moist/wet		
B.O.B.	6	
Boring B1A-4 10-10-86		
Geologist: Robert Graham (G&M)		
FILL: Silt, dk. brown to reddish-brown, and f.-med. sand; some clay & sub. ang. 1/8 - 1/2" gravel; some plant roots; moist	0 - 2	0 - 200

Geologic Description	Depth (feet below land surface)	TIP Readings
Boring B1A-4 (cont'd)		
FILL: Sand, f.-med., grayish-black, and silt; wet		
WATER TABLE	approx. 2	
FILL: Silt, dk. brown to black; some f.-med. sand; some glass, rubber & paper debris; wet	2 - 4	0 - 800
B.O.B.	4	
Boring B1A-5 10-10-86		
Geologist: Robert Graham (G&M)		
FILL: Silt, dk. brown to black, and f.-med. sand; some sub-ang. 1/8" - 1" gravel, broken rock & cement fragments; moist	0 - 2	0 - 80 (peak = 200)
FILL: Silt, dk. brown to black, and f.-med sand; wet		
WATER TABLE	approx. 1.5	
FILL: Silt, dk. brown to black, and f.-med. sand; wet	2 - 4	0 - 32
MEADOW MAT (plant & root matter), dk. brown to black; dense; some wood fragments; moist		
B.O.B.	4	
Boring B1A-6 10-10-86		
Geologist: Robert Graham (G&M)		
FILL: Silt, dk. brown to reddish-brown, and f.-med. sand; some sub-ang. 1/8" - 2" broken rock fragments; moist	0 - 2	0 - 5
WATER TABLE	approx. 2	

Geologic Description	Depth (feet below land surface)	TIP Readings
Boring B1A-6 (cont'd)		
NO RECOVERY	2 - 4	---
MEADOW MAT (plant & root matter), dk. brown to black; some silt; dense; wet (sheen on water); odor	4 - 6	0 - 28
B.O.B.	6	
Boring B1A-7 10-10-86		
Geologist: Robert Graham (G&M)		
FILL: Silt, dk. brownish-red, and f.-med. sand; some sub-ang. 1/8" - 1" gravel & broken rock; some roots; moist	0 - 2	0 - 13
FILL: Sand, fine, yellow-brown, and silt; moist		
FILL: Silt, dk. reddish-brown to black, and f. sand; dense; some sub-ang. 1/8" - 1" broken rock; moist		
FILL: Silt, dk. reddish-brown to black, and f. sand; dense; moist	2 - 4	0 - 3
WATER TABLE	approx. 4	
FILL: Silt, red to reddish-brown, and f.-med. sand; some sub-ang. 1/8" - 2" broken rock fragments; wet	4 - 6	0 - 2.5
CLAY, grayish-black, and silt; wet		
B.O.B.	6	
Boring B1A-8 10-10-86		
Geologist: Robert Graham (G&M)		
FILL: Silt, dk. brown, and f.-med. sand & ang. 1/8" - 1/2" broken rock fragments; some roots; moist	0 - 2	0 - 8

Geologic Description	Depth (feet below land surface)	TIP Readings
Boring B1A-8 (cont'd)		
FILL: Silt, dk. reddish-brown to black, and f.-med. sand; dense; some sub-ang. 1/8" - 1/4" gravel & broken rock; some wood debris; moist		
WATER TABLE	approx. 2	
MEADOW MAT (plant & root matter), dk. brown to black; dense; moist/wet	2 - 4	0 - 2.5
B.O.B.	4	
Boring B2-1 10-13-86		
Geologist: Larry Hogan (ERT)		
FILL: Sand, med.-coarse, brown, and black f. sand and silt; some gravel and red silt and brick fragments.	0 - 2	sharply negative
NO RECOVERY	2 - 4	---
WATER TABLE	approx. 4	
NO RECOVERY	4 - 6	---
SAND, f.-med, brown and gray/brown/rust mottled clay; wet	6 - 8	sharply negative
B.O.B.	8	
Boring B2-2 10-13-86		
Geologist: Larry Hogan (ERT)		
FILL: Sand, f.-coarse, gravel, silt and brick & cinder fragments; wet	0 - 2	5, then sharply negative
WATER TABLE	approx. 1	
SILT, brown; some sand; wet	2 - 4	18, then sharply negative
B.O.B.	4	

Geologic Description	Depth (feet below land surface)	TIP Readings
Boring B2-3 10-13-86		
Geologist: Larry Hogan (ERT)		
FILL: Silt, brown; some gravel and brick fragments; wet	0 - 2	10-20, then negative
WATER TABLE	land surface	
FILL: Sand, fine, brown and silt; wet	2 - 4	10-70
B.O.B.	4	
Boring B2-4 10-13-86		
Geologist: Larry Hogan (ERT)		
FILL: Sand, fine, brown and gravel; wet	0 - 2	60
WATER TABLE	land surface	
B.O.B.	2	
Boring B2-5 10-13-86		
Geologist: Larry Hogan (ERT)		
FILL: Silt, black, f. sand and gravel; oily; wet	0 - 2	50
WATER TABLE	approx. 0.25	
FILL: as above	2 - 4	50, then negative
B.O.B.	4	
Boring B2-6 10-13-86		
Geologist: Larry Hogan (ERT)		
FILL: Sand, fine, brown; wet	0 - 2	negative

Geologic Description	Depth (feet below land surface)	TIP Readings
Boring B2-6 (cont'd)		
WATER TABLE	approx. 0.5	
FILL: Sand, fine, brown and black oily silt; wet	2 - 4	20, then negative
B.O.B.	4	
Boring B2-7 10-13-86		
Geologist: Larry Hogan (ERT)		
FILL: Silt, red-brown and f. sand; some coarse sand; wet	0 - 2	---
WATER TABLE	approx. 1	
FILL: Silt, black and f. sand; some brick and cinder fragments; oily; wet	2 - 4	260
B.O.B.	4	
Boring B2-8 10-13-86		
Geologist: Larry Hogan (ERT)		
FILL: Silt, red	0 - 2	negative
WATER TABLE	approx. 2	
FILL: as above; wet	2 - 4	negative
B.O.B.	4	
Boring B2-9 10-13-86		
Geologist: Larry Hogan (ERT)		
FILL: Silt, brown, brick fragments, gravel and sand; oily; wet	0 - 2	100
WATER TABLE	land surface	
B.O.B.	2	

Geologic Description	Depth (feet below land surface)	TIP Readings
Boring B2-10 10-13-86		
Geologist: Larry Hogan (ERT)		
FILL: Silt, brown, gravel, and brick and rock fragments	0 - 2	10
WATER TABLE	approx. 1.5	
FILL: Silt, red and rock fragments; wet	2 - 4	negative
B.O.B.	4	
Boring B5-1 10-28-86		
Geologist: Robert Graham (G&M)		
FILL: Silt, brown, and f.-med sand; some sub-ang. coarse sand and 1/8" - 1/2" gravel & broken rock; moist	0 - 2	0 - 4
WATER TABLE	approx. 2	
FILL: Silt, dk. brown, and f.-med. sand; some smashed fragments of gray concrete (sand & rock fragments) near bottom; dense; wet	2 - 4	0 - 1
B.O.B.	4	
Boring B5-2 10-29-86		
Geologist: Robert Graham (G&M)		
FILL: Silt, dk. brown, and f.-med. sand; some sub-ang. 1/8" - 1/2" broken rock & brick fragments; some roots; moist	0 - 2	0 - 2
WATER TABLE	approx. 2	

Geologic Description	Depth (feet below land surface)	TIP Readings
Boring B5-2 (cont'd)		
PEAT (plant & root matter), dk. brown to black, and silt; dense; some ang. 1/8" - 1" rock fragments; wet	2 - 4	0 - 3
B.O.B.	4	
Boring B5-3 10-29-86		
Geologist: Robert Graham (G&M)		
FILL: Silt, dk. brown, and f.-med. sand; some roots; dense; moist	0 - 2	0 - 4 (peak = 20)
FILL: Silt, black, and f.-med. sand; some sub-ang. 1/8" - 1/2" gravel & brick fragments; moist/wet; odor		
WATER TABLE	approx. 2	
FILL: Silt, dk. brown to black; some f.-med. sand and sub-ang. 1/8" - 1" brick fragments; dense; wet; odor	2 - 4	0 - 5 (peak = 18)
CLAY, gray, and silt; dense; wet		
B.O.B.	4	65 (borehole)
Boring B5-4 10-29-86		
Geologist: Robert Graham (G&M)		
FILL: Silt, dk. brown to reddish-brown, and f.-med. sand; some roots; dense; some glass, brick & rock fragments; moist	0 - 2	0 - 3
FILL: Silt, lt. brown to reddish-brown, and f.-med. sand; dense; moist	2 - 4	0 - 4
WATER TABLE	approx. 4	

Geologic Description	Depth (feet below land surface)	TIP Readings
Boring B5-4 (cont'd)		
FILL: Silt, brown, and f.-med. sand; some sub-ang. coarse sand & 1/8" gravel; wet	4 - 6	0 - 5
B.O.B.	6	
Boring B5-5 10-29-86		
Geologist: Robert Graham (G&M)		
FILL: Silt, dk. brown, and f.-med sand; some sub-ang. 1/8" - 1/4" brick fragments & pieces of black ash or slag; some roots; moist	0 - 2	0 - 3
FILL: Silt, dk. brown to black, and f.-med. sand; some sub-ang. 1/8" - 1" gravel, brick fragments & pieces of black ash or slag; moist	2 - 4	10 - 15 (peak = 22)
WATER TABLE	approx. 4	
MEADOW MAT (plant & root matter), dk. brown to black, and silt; dense; wet; odor	4 - 6	0 - 10 (peak = 50)
B.O.B.	6	
Boring B5-6 10-29-86		
Geologist: Robert Graham (G&M)		
FILL: Silt, dk. brownish-red with lt. brown streaks, and f.-med. sand; trace sub-ang. 1/4" gravel; moist	0 - 2	5 - 10
WATER TABLE	approx. 2	
FILL: Silt, dk. brown, and f.-med. sand; trace coarse sand; dense; wet	2 - 4	5 - 8
MEADOW MAT (plant & root matter), dk. brown to black, and silt; dense; wet		
B.O.B.	4	

Geologic Description	Depth (feet below land surface)	TIP Readings
Boring B5-7 10-29-86		
Geologist: Robert Graham (G&M)		
FILL: Silt, dk. brown to black, and med.-coarse sand; some ang. 1/8" - 1/2" gravel and brick & concrete fragments; some roots; moist	0 - 2	6
WATER TABLE	approx. 2	
FILL: Concrete fragments, ang., 1/8" - 2"; some silt and sub-ang. 1/8" - 1" brick & broken rock fragments; trace plant matter (meadow mat?) at bottom; wet	2 - 4	6 - 7.5
B.O.B.	4	
Boring B5-8 10-30-86		
Geologist: Robert Graham (G&M)		
FILL: Silt, dk. brown to reddish-brown, and f.-med. sand; some sub-ang. 1/8" - 1/2" gravel, broken rock, cement, brick & glass fragments; some roots; moist	0 - 2	<1 (5)
FILL: Silt, dk. brown to reddish-brown, and f.-med. sand; some sub-ang. 1/8" - 1/4" gravel, brick & glass fragments; moist	2 - 4	<1
NO RECOVERY	4 - 6	---
WATER TABLE	approx. 6	
FILL: Silt, reddish-brown to black, and f.-med. sand; some coarse sand and sub-ang. 1/8" - 1" gravel & broken rock; wet	6 - 8	<1
B.O.B.	8	

Geologic Description	Depth (feet below land surface)	TIP Readings
Boring B5-9 10-30-86		
Geologist: Robert Graham (G&M)		
FILL: Silt, dk. brown, and f.-med. sand; some sub-ang. 1/16" - 1/4" brick fragments; some roots; 1" fragment of broken rock; moist	0 - 2	<1
NO RECOVERY	2 - 4	2 - 3 (spoon)
WATER TABLE	approx. 4	
NO RECOVERY	4 - 6	0 - 300 (peak = 1000) (borehole)
NO RECOVERY	6 - 8	20 - 40 (peak = 75) (spoon)
CLAY, gray with brown streaks; some silt and meadow mat; dense; moist/wet	8 -10	0 - 10
SAND, f.-med., brown; some silt and coarse sand; wet		
B.O.B.	10	
Boring B5-10 10-31-86		
Geologist: Robert Graham (G&M)		
FILL: Silt, dk. brown, and f.-med. sand; some sub-ang. 1/8" - 1/2" gravel, broken rock and a white crystalline substance; some roots; moist	0 - 2	0 - 7
FILL: Silt, dk. brown, and f.-med. sand; some coarse sand and sub-ang. 1/8" - 1/4" gravel & broken rock; some fragments of wood; wet	2 - 4	0 - 10 (peak = 20)
WATER TABLE	approx. 3	

Geologic Description	Depth (feet below land surface)	TIP Readings
Boring B5-10 (cont'd)		
FILL: Silt, dk. brown, and f.-med sand; some sub-rnd. 1/2" - 1" gravel; wet	4 - 6	0 - 10
MEADOW MAT (plant & root matter), dk. brown to black; some silt; dense; wet		
B.O.B.	6	
Boring B5-11 10-31-86		
Geologist: Robert Graham (G&M)		
FILL: Silt, dk. brown, and f.-med sand; some 1/8" - 1" glass fragments, pieces of rubber, wood & rusted metal; some roots; loose; moist	0 - 2	0 - 3
FILL: Silt, orange-brown, and f.-med. sand; some coarse sand and sub-ang. 1/8" - 1" gravel, broken rock, glass fragments & cinders; loose; moist	2 - 4	0 - 10
WATER TABLE	approx. 4	---
NO RECOVERY	4 - 6	
NO RECOVERY	6 - 8	0 - 13 (spoon)
NO RECOVERY	8 - 10	0 - 39 (spoon)
CLAY, orange-brown with gray streaks, and silt; dense; wet	10 - 12	0 - 7
CLAY, reddish-brown with gray streaks; some silt; very dense; moist/wet		
B.O.B.	12	

Geologic Description	Depth (feet below land surface)	TIP Readings
Boring B5-13 (cont'd)		
WATER TABLE	approx. 4	
NO RECOVERY	4 - 6	0 - 25 (spoon)
MEADOW MAT (plant & root matter), dk. brown to black, and silt; some wood debris; loose; wet	6 - 8	0 - 4
B.O.B.	8	
Well 27I 10-14-86		
Geologist: Robert Graham (G&M)		
FILL: Silt, dk. brownish-red, and f.-med sand; some sub-ang. 1/8" - 1" gravel & broken rock; some roots; moist	0 - 2	0 - 13
FILL: Sand, fine, yellow-brown, and silt; moist		
FILL: Silt, dk. reddish-brown to black, and f. sand; dense; some sub-ang. 1/8" - 1" broken rock; moist		
FILL: Silt, dk. reddish-brown to black, and f. sand; dense; moist	2 - 4	0 - 3
WATER TABLE	approx. 4	
SILT, reddish-brown, and f. sand; some med. sand & sub-ang. 1/8" - 1/4" gravel; somewhat dense; wet	4 - 60	0 - 2.5
MEADOW MAT (plant & root matter), dk. brown to black; some silt; dense; moist/wet		
CLAY, gray with some red & yellow streaks; some silt; dense; moist/wet	9 - 11	<1
CLAY, pale reddish-brown; some silt; trace thin lenses of f. sand; dense; plastic; moist/wet (sheen?)	14 - 16	<1

Geologic Description	Depth (feet below land surface)	TIP Readings
Well 27I (cont'd)		
CLAY, pale grayish-brown; some silt; trace thin lenses of f. sand; dense; plastic; moist/wet (sheen)	19 - 21	<1
T.D. (total depth)	21	
Well 28I 10-15-86		
Geologist: Robert Graham (G&M)		
FILL: Silt, dk. brown, and f.-med. sand & ang. 1/8" - 1/2" broken rock fragments; some roots; moist	0 - 2	0 - 8
FILL: Silt, dk. reddish-brown to black, and f.-med. sand; dense; some sub-ang. 1/8" - 1/4" gravel & broken rock; some wood debris; moist		
WATER TABLE	approx. 2	
MEADOW MAT (plant & root matter), dk. brown to black; dense; moist/wet	2 - 4	0 - 2.5
MEADOW MAT (plant & root matter), dk. brown to black; some silt; dense; moist/wet	4 - 6	<1
CLAY, gray; some silt; 0.3' lense of f.-med. sand; dense; wet	9 - 11	<1
CLAY, pale reddish-brown, and silt; trace thin lenses of yellow-brown f. sand; dense; wet	14 - 16	<1
CLAY, pale reddish-brown, and silt; dense; wet	18 - 20	<1
T.D.	20	

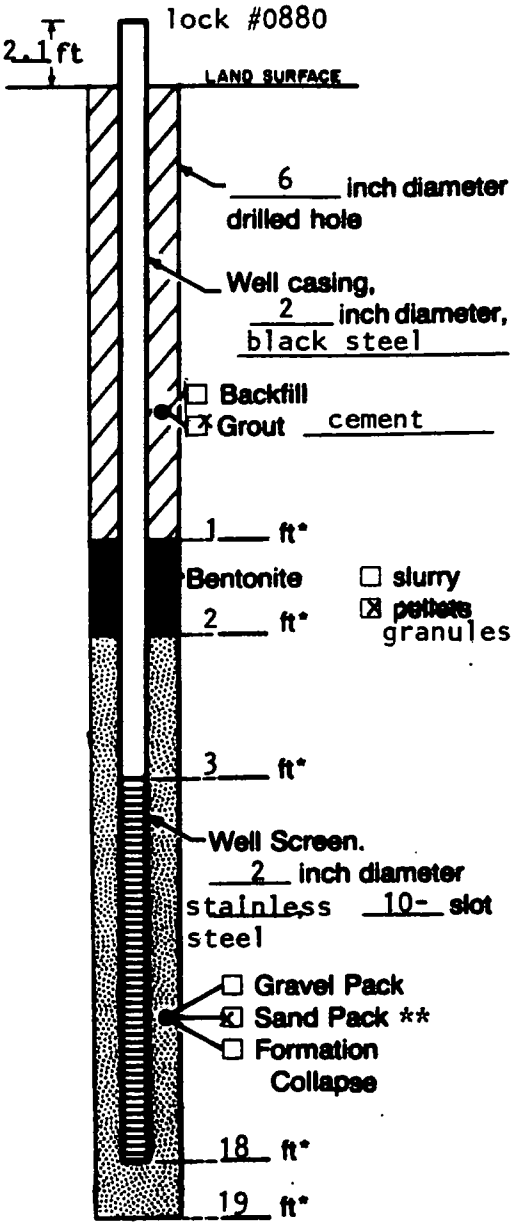
Geologic Description	Depth (feet below land surface)	TIP Readings
Well 29I 10-30-86		
Geologist: Robert Graham (G&M)		
FILL: Silt, dk. brown, and f.-med. sand; some sub-ang. 1/16" - 1/4" brick fragments; some roots; 1" fragment of broken rock; moist	0 - 2	<1
NO RECOVERY	2 - 4	2 - 3
WATER TABLE	approx. 4	
NO RECOVERY	4 - 6	0 - 300 (peak = 1000) (borehole)
NO RECOVERY	6 - 8	20 - 40 (peak = 75) (spoon)
CLAY, gray with brown streaks; some silt and meadow mat; dense; moist/wet	8 - 10	0 - 10
SAND, f.-med., brown; some silt and coarse sand; wet		
CLAY, brown to reddish-brown; some silt (varves); dense; moist/wet	14 - 16	0 - 3
CLAY, brown; some silt (varves); 0.1' lense of f.-med. sand & silt; dense; moist/wet	18 - 20	0 - 4.5
T.D.	20	
Well 30I 10-31-86		
Geologist: Robert Graham (G&M)		
FILL: Silt, dk. brown, and f.-med. sand; some 1/8" - 1" glass fragments, pieces of rubber, wood & rusted metal; some roots; loose; moist	0 - 2	0 - 3

Geologic Description	Depth (feet below land surface)	TIP Readings
Well 30I (cont'd)		
FILL: Silt, orange-brown, and f.-med. sand; some coarse sand and sub-ang. 1/8" - 1" gravel, broken rock, glass fragments & cinders; loose; moist	2 - 4	0 - 10
WATER TABLE	approx. 4	
NO RECOVERY	4 - 6	---
NO RECOVERY	6 - 8	0 - 13 (spoon)
NO RECOVERY	8 - 10	0 - 39 (spoon)
CLAY, orange-brown with gray streaks, and silt; dense; wet	10 - 12	0 - 7
CLAY, reddish-brown with gray streaks; some silt; very dense; moist/wet		
CLAY, reddish-brown; some thin silt & f. sand lenses (varves); dense; moist/wet	15 - 17	0 - 15
T.D.	17	
Well 31I 11-3-86		
Geologist: Robert Graham (G&M)		
FILL: Silt, brown, and plant & root matter; some sub-ang. to ang. 1/8" - 1" gravel, broken rock, glass, rusted metal debris, paper & cinders; very loose; moist	0 - 2	0 - 20 (peak = 31)
FILL: Silt, brown, and f.-med. sand; some coarse sand and sub-ang. to ang. 1/8" - 1/4" gravel, broken rock, glass, rusted metal debris & cinders; 0.3' piece of wood debris; very loose; moist	2 - 4	0 - 1.5

Geologic Description	Depth (feet below land surface)	TIP Readings
Well 31I (cont'd)		
WATER TABLE	approx. 4	
NO RECOVERY (rubber tires augered up)	4 - 6	0 - 30 (peak = 65) (spoon)
FILL: Silt, dk. brown to black, and f.-med. sand; some coarse sand and sub-ang. to ang. 1/8" - 1" glass, gravel, broken rock, wood debris, rubber & plastic; loose; wet	6 - 8	0 - 3.5
MEADOW MAT (plant & root matter), dk. brown to black; some silt; dense; wet		
CLAY, yellow-brown to reddish-brown with gray streaks; some silt; very dense; moist/wet	10 - 12	0 - 2
CLAY, reddish-brown, and silt (varves); dense; wet	15 - 17	0 - 2
T.D.	17	

GERAGHTY & MILLER, INC.
Ground-Water Consultants

WELL CONSTRUCTION LOG



Measuring Point is Top of Well Casing Unless Otherwise Noted.

*Depth Below Land Surface

** Jesse Morie #1

Project UOP/N0695ER4 Well 27I

Town/City East Rutherford

County Bergen State NJ

Permit No. _____

Land-Surface Elevation and Datum 5.60 feet above mean sea level ☒ surveyed ☐ estimated

Installation Date(s) 10-14-86

Drilling Method auger

Drilling Contractor Empire Soils Investigations, Inc.

Drilling Fluid None

Development Techniques(s) and Date(s)
11-3-86 & 11-4-86: pumped well with centrifugal pump

Fluid Loss During Drilling _____ gallons

Water Removed During Development 23 gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration 46 minutes ~~hours~~

Yield _____ gpm Date _____

Specific Capacity _____ gpm/ft

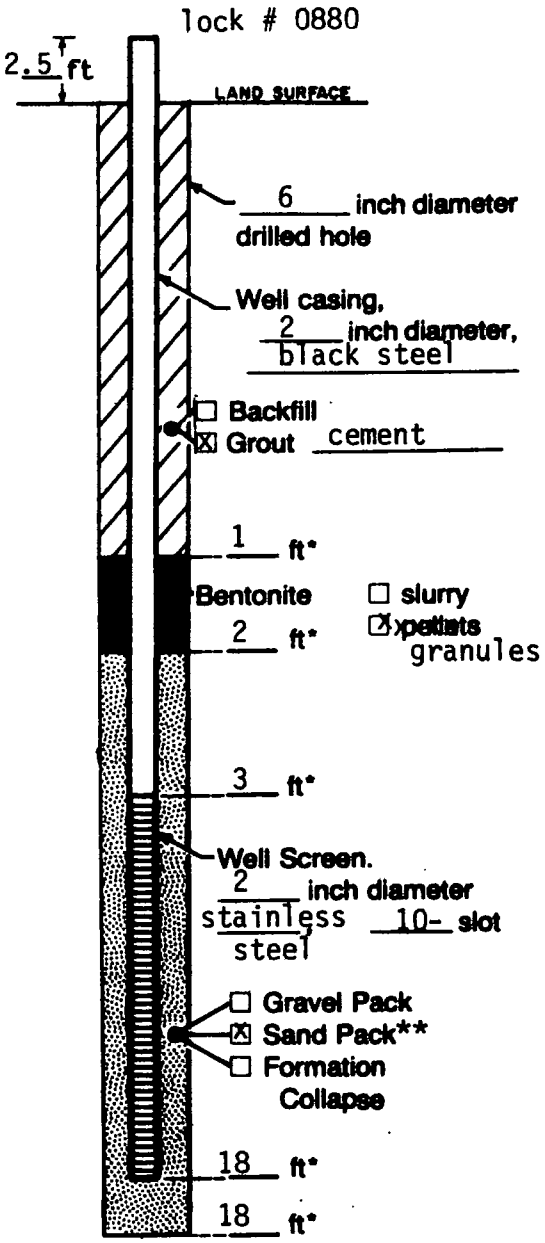
Well Purpose monitoring

Remarks _____

Prepared by Robert Graham

GERAGHTY & MILLER, INC.
Ground-Water Consultants

WELL CONSTRUCTION LOG



Measuring Point is Top of Well Casing Unless Otherwise Noted.

*Depth Below Land Surface
**Jesse Morie #1

Project UOP/N0695ER4 Well 28I
Town/City East Rutherford
County Bergen State NJ
Permit No. _____
Land-Surface Elevation and Datum 5.20 feet above mean sea level ☒ surveyed ☐ estimated
Installation Date(s) 10-15-86
Drilling Method auger
Drilling Contractor Empire Soils Investigations, Inc.
Drilling Fluid None

Development Techniques(s) and Date(s)
11-3-86 & 11-4-86: pumped well with centrifugal pump

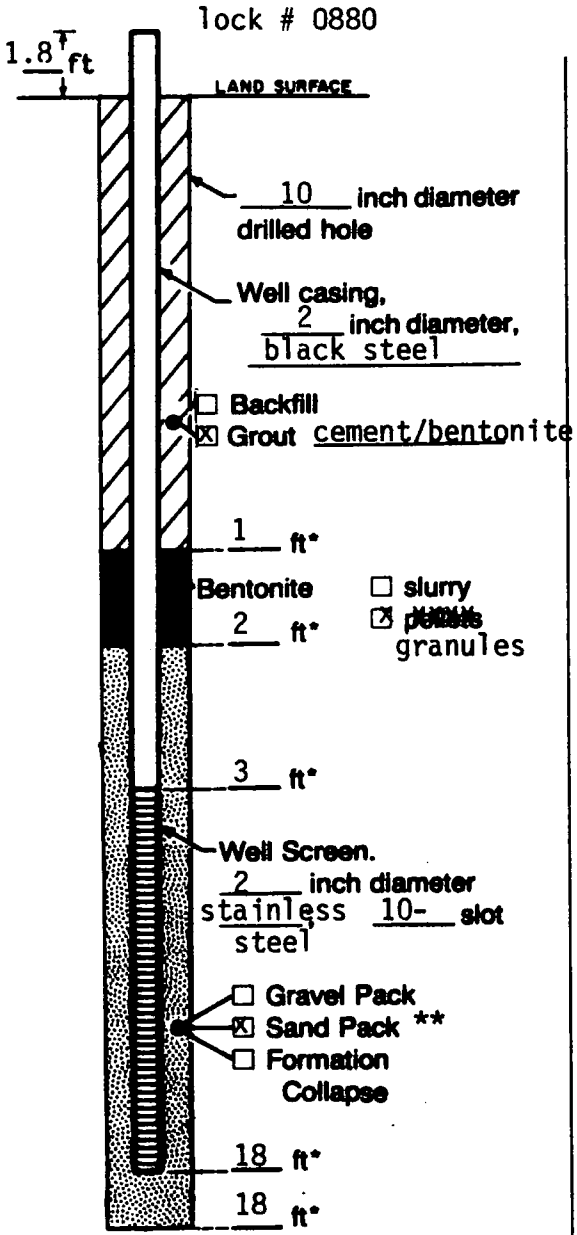
Fluid Loss During Drilling _____ gallons
Water Removed During Development 25 gallons
Static Depth to Water _____ feet below M.P.
Pumping Depth to Water _____ feet below M.P.
Pumping Duration 27 minutes ~~hours~~
Yield _____ gpm Date _____
Specific Capacity _____ gpm/ft
Well Purpose monitoring

Remarks _____

Prepared by Robert Graham

GERAGHTY & MILLER, INC.
Ground-Water Consultants

WELL CONSTRUCTION LOG



Measuring Point is Top of Well Casing Unless Otherwise Noted.

*Depth Below Land Surface

** Jesse Morie #1

Project UOP/N0695ER4 Well 29I

Town/City East Rutherford

County Bergen State NJ

Permit No. _____

Land-Surface Elevation and Datum 5.47 feet above mean sea level ☒ surveyed ☐ estimated

Installation Dates(s) 10-30-86

Drilling Method auger

Drilling Contractor Empire Soils Investigations, Inc.

Drilling Fluid None

Development Techniques(s) and Date(s)
11-4-86: pumped well with centrifugal pump

Fluid Loss During Drilling _____ gallons

Water Removed During Development 40 gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration 52 minutes ~~hours~~

Yield _____ gpm Date _____

Specific Capacity _____ gpm/ft

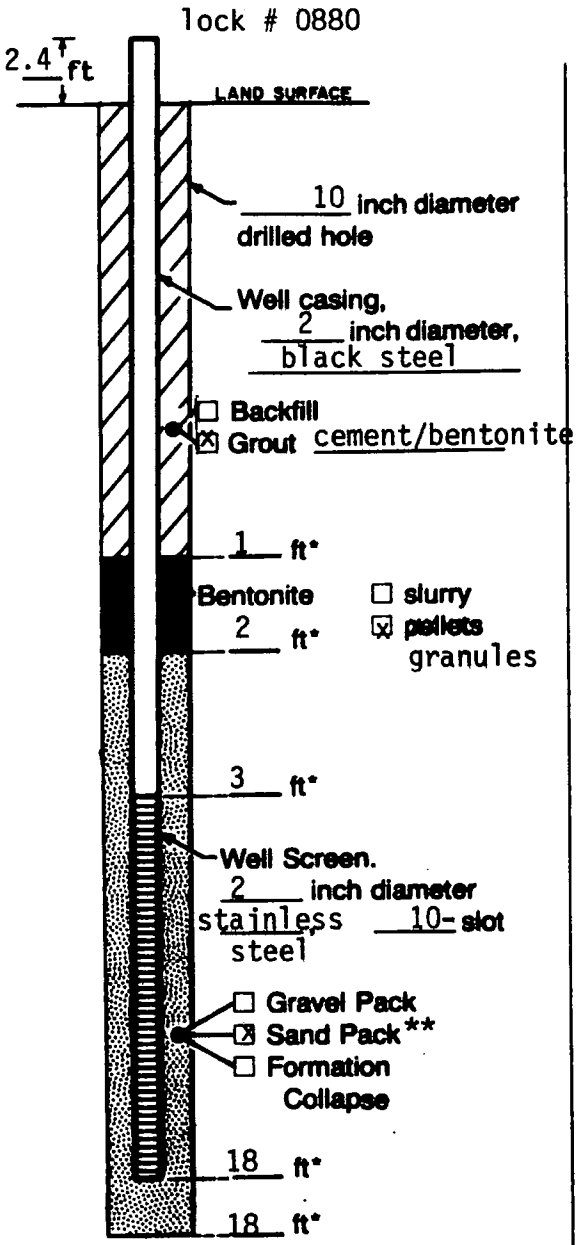
Well Purpose monitoring

Remarks _____

Prepared by Robert Graham

GERAGHTY & MILLER, INC.
Ground-Water Consultants

WELL CONSTRUCTION LOG



Measuring Point is Top of Well Casing Unless Otherwise Noted.

*Depth Below Land Surface

** Jesse Morie #1

Project UOP/N0695ER4 Well 30I

Town/City East Rutherford

County Bergen State NJ

Permit No. _____

Land-Surface Elevation and Datum 7.16 feet above mean sea level ☒ surveyed ☐ estimated

Installation Dates(s) 10-31-86

Drilling Method auger

Drilling Contractor Empire Soils Investigations, Inc.

Drilling Fluid None

Development Techniques(s) and Date(s)
11-4-86: pumped well with centrifugal pump

Fluid Loss During Drilling _____ gallons

Water Removed During Development 52 gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration 58 minutes hours

Yield _____ gpm Date _____

Specific Capacity _____ gpm/ft

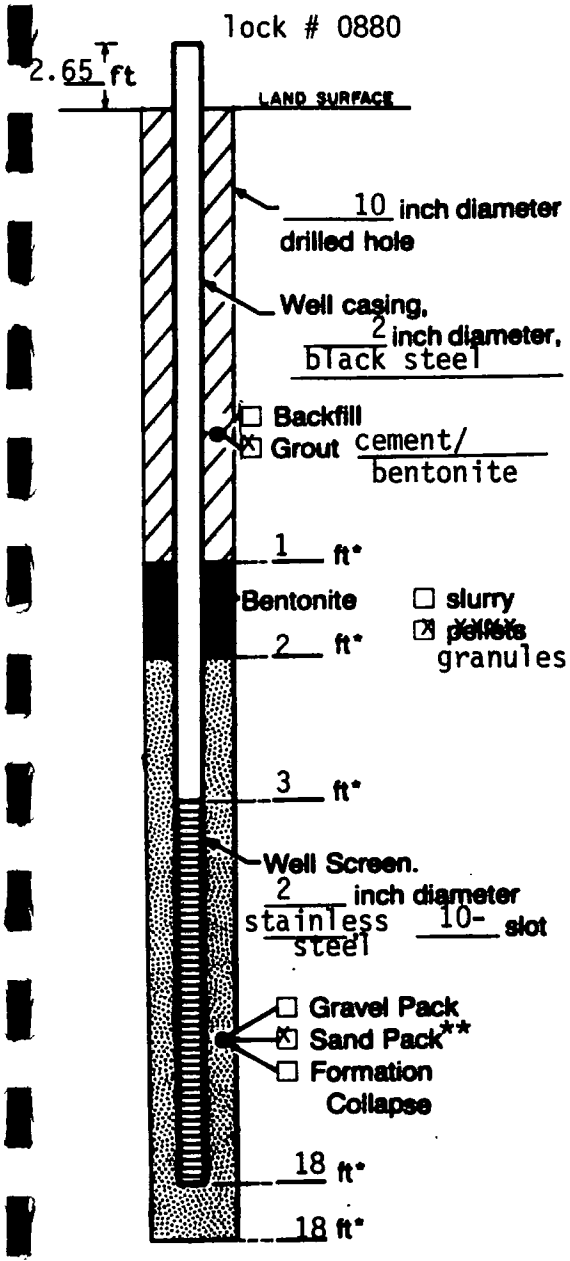
Well Purpose monitoring

Remarks _____

Prepared by Robert Graham

GERAGHTY & MILLER, INC.
Ground-Water Consultants

WELL CONSTRUCTION LOG



Measuring Point is Top of Well Casing Unless Otherwise Noted.

*Depth Below Land Surface
** Jesse Morie #1

Project UOP/N0695ER4 Well 31I
Town/City East Rutherford
County Bergen State NJ
Permit No.
Land-Surface Elevation and Datum 6.26 feet above mean sea level ☒ surveyed ☐ estimated
Installation Date(s) 11-3-86
Drilling Method auger
Drilling Contractor Empire Soils Investigations, Inc.
Drilling Fluid None

Development Techniques(s) and Date(s)
11-4-86: pumped well with centrifugal pump

Fluid Loss During Drilling _____ gallons
Water Removed During Development 48 gallons
Static Depth to Water _____ feet below M.P.
Pumping Depth to Water _____ feet below M.P.
Pumping Duration 60 minutes ~~hours~~
Yield _____ gpm Date _____
Specific Capacity _____ gpm/ft
Well Purpose monitoring

Remarks

Prepared by Robert Graham

APPENDIX D

FIELD PERMEABILITY TESTS

Introduction

Field permeability tests (slug tests) were performed by Geraghty & Miller, Inc. personnel during November 4-7, 1986 in eight monitoring wells located at the UOP site in East Rutherford, New Jersey. These slug tests were performed to determine the hydraulic conductivity (permeability) of sediments at shallow to intermediate depths across the site. As agreed upon with the New Jersey Department of Environmental Protection (NJDEP), the following wells were tested: 3S, 3I, 6I, 13I, 19I, 23I, 24I and 27I.

Methodology

The rate of rise of the water level in a well after a certain volume or "slug" of water is suddenly removed from the well was used to determine the hydraulic conductivity of the shallow unconsolidated material at the various well locations. The tests were conducted using a 3-ft long PVC bailer which displaced approximately 0.75 linear ft of water in a 2-inch diameter monitoring well. Water levels were measured with a 10 psi Pressure Transducer, and an In-Situ model 1000B Hermit Data Logger was used to record the data. The use of a centrifugal pump to remove a larger volume of

water was inappropriate for the slug-test method because pumping cannot remove water instantaneously.

Prior to the start of each test, the static water level in the well was measured. The pressure transducer was lowered into the well to a depth of approximately 10 ft below the static water level. The PVC bailer was then lowered into the well and placed approximately 1-2 ft below the static water level. The level of water in the well was allowed to equilibrate for approximately 20 minutes.

Each test began following the instantaneous drawdown of the water level through the rapid removal of the PVC bailer containing water (slug). The data logger began recording residual drawdown at logarithmically spaced intervals, with the most frequent measurements taken at the beginning of the test. Each test was allowed to run for approximately 10 to 15 minutes which was sufficient for the calculation of hydraulic conductivity.

Data were obtained from each well tested, with the exception of Well 13I, where the water level recovered too rapidly for the collection of meaningful data. The test was run again with the same results. Apparently, the screened portion of the well (top of screen is approximately 1 ft below land surface) is in hydraulic connection with the surface water that surrounds the well during high tide.

Because of this problem, a slug test was instead performed at nearby Well 23I with satisfactory results.

Results

Data collected in the field were transferred onto a floppy disk by In-Situ software and a personal computer. Data were analyzed to calculate hydraulic conductivities using the Bouwer and Rice method, "A Slug Test for Determining the Hydraulic Conductivity of Unconfined Aquifers with Completely or Partially Penetrating Wells" (Water Resources Research, 1976, Volume 2, pages 423-428). One aspect of this analytical procedure requires the determination of the best fit straight line to the data plot of water-level drawdown versus time. Frequently, two different straight line fits (slopes) were obtained from each set of water-level data (i.e., Wells 19I, 23I, 24I, 27I). In these cases, the steeper slope, which was obtained within the first few seconds of the test, represents the effect of the drainage of the sand pack on the recovery of the water level. After the water has drained from the sand pack, the continued recovery of the water level reflects inflow from the formation, which can then be used to determine the hydraulic conductivity. The raw data and numerical calculations are attached.

The hydraulic conductivity values that were determined are listed in Table 8. They indicate that shallow to

intermediate depth sediments across the site are characterized by low permeability, with values ranging from 0.0037 ft/day at Well 3S to 1.58 ft/day at Well 23I. The higher permeability measured at Well 23I is likely due to the location of the well in a former drainage channel which was backfilled with sediments more permeable than the natural site materials.

According to the "Ground Water Manual" (U.S. Dept. of Interior, 1981, p. 29), the range of calculated permeabilities corresponds to permeabilities of silt, clay and mixtures of sand, silt and clay. This relationship is confirmed by the geologic logs of the tested wells.

Values of ground-water velocity determined using the hydraulic conductivity data indicate that ground-water flow ranges from as little as 0.0002 ft/day in the area of Well 3S to 0.08 ft/day in the area of Well 23I (Table 8).

```
WELL  UOP3S(11/4/86)
   D =  126  feet
   H =  5.58  feet
   L =  3  feet
  rc =  .085  feet
  rw =  .25  feet
  re =  1.415003  feet
  yo =  .55  feet
  yt =  .53  feet
   t =  1800  seconds
   K =  4.295417E-08  feet/sec
   K =  2.776008E-02  gal/day/ft2
   K =  3.71124E-03  feet/day
   K =  1.309243E-06  cm/sec
```

SE1000B
Environmental Logger
11/06 10:35

Unit# 00000 Test# 4

INPUT 1: Level (F)

Reference	0.00
Scale factor	10.06
Offset	0.00

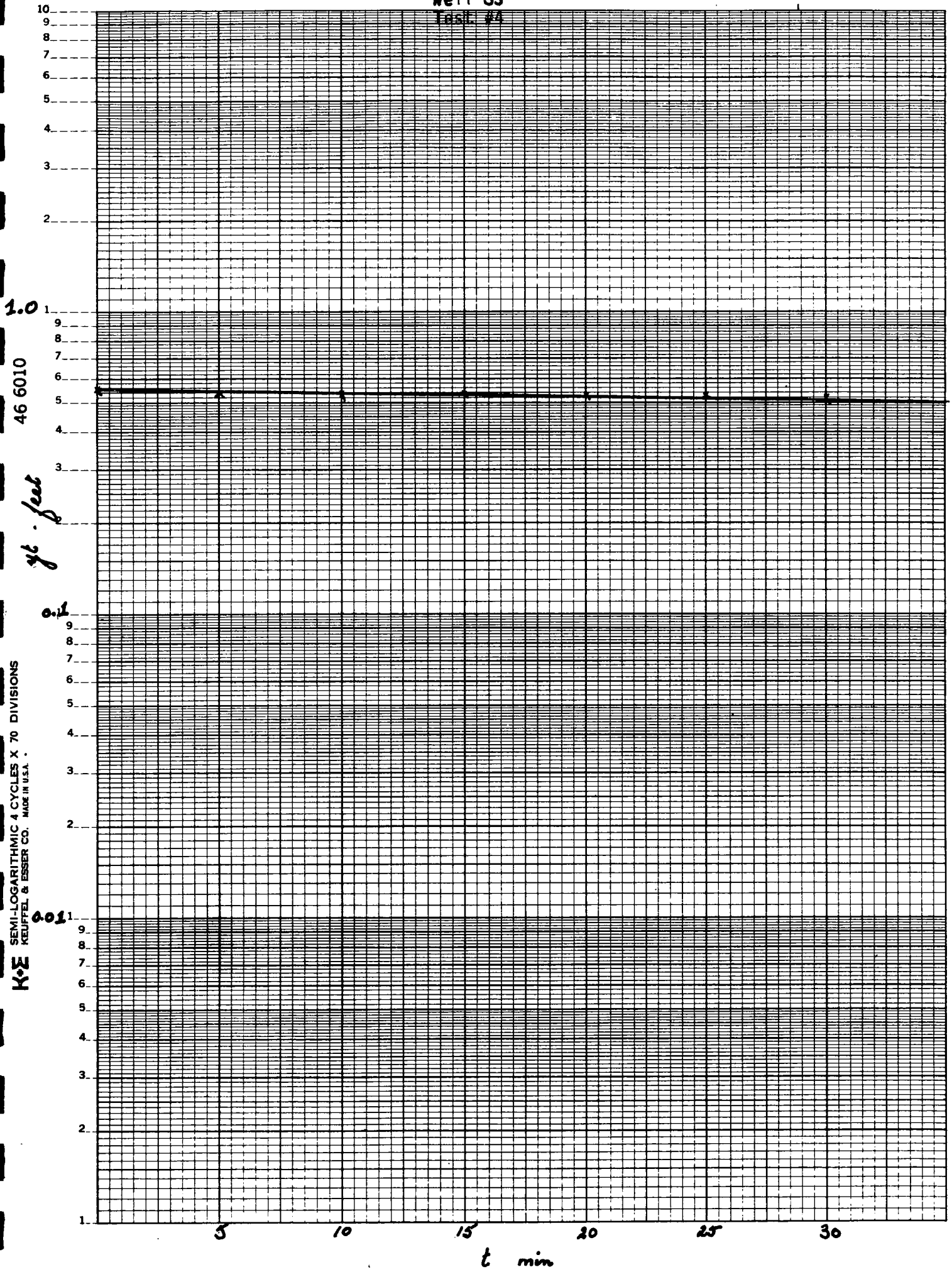
Step# 0 11/05 11:07

Elapsed Time	Value
0.0000	- 0.55
0.0033	- 0.55
0.0066	- 0.55
0.0099	- 0.55
0.0133	- 0.55
0.0166	- 0.55
0.0200	- 0.55
0.0233	- 0.55
0.0266	- 0.55
0.0300	- 0.55
0.0333	- 0.55
0.0500	- 0.55
0.0666	- 0.55
0.0833	- 0.55
0.1000	- 0.55
0.1166	- 0.55
0.1333	- 0.55
0.1500	- 0.55
0.1666	- 0.55
0.1833	- 0.55
0.2000	- 0.55
0.2166	- 0.55
0.2333	- 0.55
0.2500	- 0.55
0.2666	- 0.55
0.2833	- 0.55
0.3000	- 0.55
0.3166	- 0.55
0.3333	- 0.55
0.4167	- 0.55
0.5000	- 0.55
0.5833	- 0.55
0.6667	- 0.55
0.7500	- 0.55
0.8333	- 0.55
0.9167	- 0.55
1.0000	- 0.55

1.0833	-	0.55
1.1667	-	0.55
1.2500	-	0.55
1.3333	-	0.55
1.4166	-	0.55
1.5000	-	0.55
1.5833	-	0.55
1.6667	-	0.55
1.7500	-	0.55
1.8333	-	0.55
1.9167	-	0.55
2.0000	-	0.55
2.5000	-	0.55
3.0000	-	0.54
3.5000	-	0.54
4.0000	-	0.54
4.5000	-	0.54
5.0000	-	0.54
5.5000	-	0.55
6.0000	-	0.54
6.5000	-	0.54
7.0000	-	0.54
7.5000	-	0.55
8.0000	-	0.54
8.5000	-	0.54
9.0000	-	0.54
9.5000	-	0.54
10.0000	-	0.54
12.0000	-	0.54
14.0000	-	0.54
16.0000	-	0.53
18.0000	-	0.53
20.0000	-	0.53
22.0000	-	0.53
24.0000	-	0.53
26.0000	-	0.53
28.0000	-	0.52
30.0000	-	0.53

END

Well 3S
Test #4



```
WELL  UOP3I(11/4/86)
   D =  126  feet
   H =  14.24  feet
   L =  15  feet
  rc =  .085  feet
  rw =  .25  feet
  re =  3.287276  feet
  yo =  1.23  feet
  yt =  .77  feet
   t =  600  seconds
   K =  4.8436E-07  feet/sec
   K =  .3130283  gal/day/ft2
   K =  .0418487  feet/day
   K =  1.476329E-05  cm/sec
```

Well 3I

SE1000B
Environmental Logger
11/06 10:33

Unit# 00000 Test# 5

INPUT 1: Level (F)

Reference	0.00
Scale factor	10.06
Offset	0.00

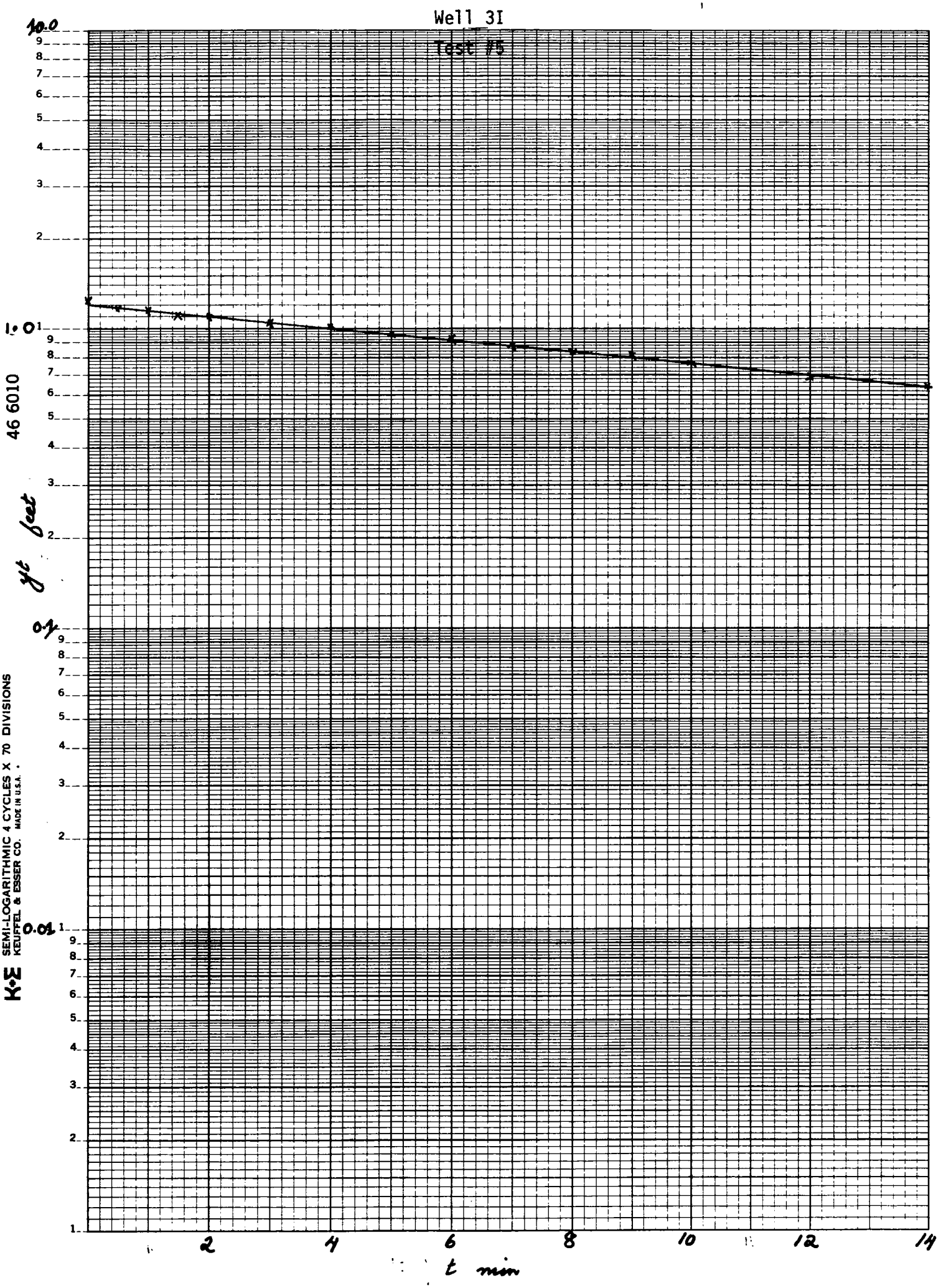
Step# 0 11/05 11:59

Elapsed Time	Value
0.0000	- 1.23
0.0033	- 1.23
0.0066	- 1.23
0.0099	- 1.23
0.0133	- 1.23
0.0166	- 1.23
0.0200	- 1.23
0.0233	- 1.23
0.0266	- 1.22
0.0300	- 1.22
0.0333	- 1.22
0.0500	- 1.22
0.0666	- 1.22
0.0833	- 1.22
0.1000	- 1.21
0.1166	- 1.21
0.1333	- 1.21
0.1500	- 1.21
0.1666	- 1.21
0.1833	- 1.20
0.2000	- 1.20
0.2166	- 1.20
0.2333	- 1.20
0.2500	- 1.20
0.2666	- 1.20
0.2833	- 1.20
0.3000	- 1.20
0.3166	- 1.20
0.3333	- 1.20
0.4167	- 1.18
0.5000	- 1.18
0.5833	- 1.18
0.6667	- 1.17
0.7500	- 1.17
0.8333	- 1.16
0.9167	- 1.15
1.0000	- 1.15

Well 3I

1.0833	-	1.15
1.1667	-	1.14
1.2500	-	1.14
1.3333	-	1.13
1.4166	-	1.13
1.5000	-	1.12
1.5833	-	1.12
1.6667	-	1.11
1.7500	-	1.11
1.8333	-	1.11
1.9167	-	1.10
2.0000	-	1.10
2.5000	-	1.08
3.0000	-	1.06
3.5000	-	1.03
4.0000	-	1.02
4.5000	-	0.99
5.0000	-	0.97
5.5000	-	0.95
6.0000	-	0.93
6.5000	-	0.91
7.0000	-	0.89
7.5000	-	0.87
8.0000	-	0.84
8.5000	-	0.83
9.0000	-	0.81
9.5000	-	0.79
10.0000	-	0.77
12.0000	-	0.69
14.0000	-	0.63
16.0000	-	0.58
18.0000	-	0.53
20.0000	-	0.48

END


Well 3I
Test #5
10.0
1.0
0.1
0.01
yt feet
2
4
6
8
10
12
14
t min
46 6010
K+E SEMI-LOGARITHMIC 4 CYCLES X 70 DIVISIONS
KEUFFEL & ESSER CO. MADE IN U.S.A.

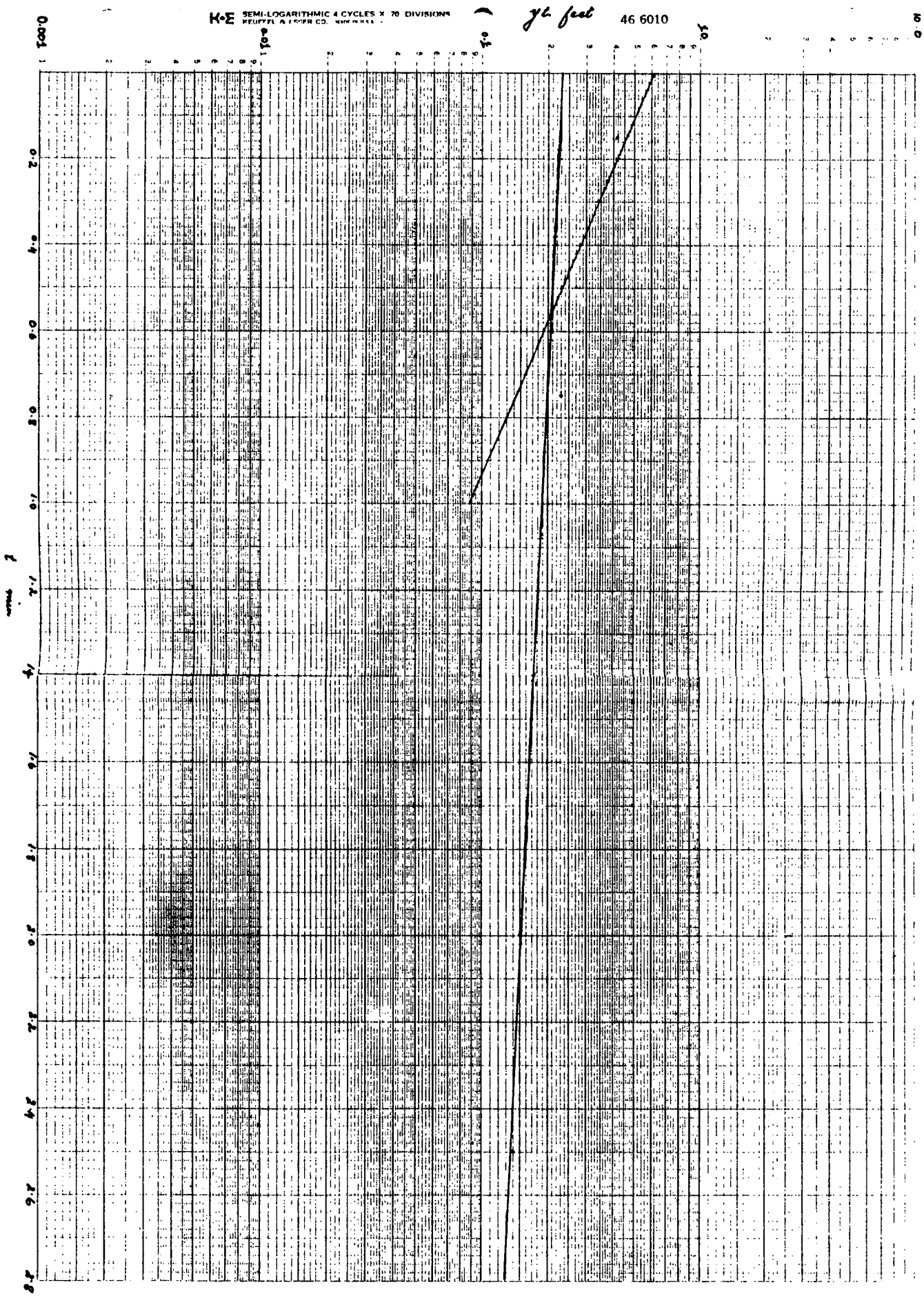
WELL UOP6I(11/4/86) HIGH VALUE

D	=	132	feet
H	=	15.46	feet
L	=	15	feet
rc	=	.085	feet
rw	=	.335	feet
re	=	3.876358	feet
yo	=	.62	feet
yt	=	9.000001E-02	feet
t	=	60	seconds
K	=	1.896733E-05	feet/sec
K	=	12.25805	gal/day/ft2
K	=	1.638777	feet/day
K	=	5.781242E-04	cm/sec

1.1667	- 0.19
1.2500	- 0.18
1.3333	- 0.18
1.4166	- 0.17
1.5000	- 0.17
1.5833	- 0.17
1.6667	- 0.16
1.7500	- 0.16
1.8333	- 0.15
1.9167	- 0.15
2.0000	- 0.15
2.5000	- 0.14
3.0000	- 0.13
3.5000	- 0.12
4.0000	- 0.12
4.5000	- 0.11
5.0000	- 0.11
5.5000	- 0.10
6.0000	- 0.10
6.5000	- 0.09
7.0000	- 0.09
7.5000	- 0.08
8.0000	- 0.08
8.5000	- 0.08
9.0000	- 0.07
9.5000	- 0.07
10.0000	- 0.07
12.0000	- 0.07
14.0000	- 0.06

END

Well 6I
Test #2



WELL UOP19I(11/4/86) HIGH VALUE

D	=	132	feet
H	=	15.01	feet
L	=	15	feet
rc	=	.085	feet
rw	=	.25	feet
re	=	3.354863	feet
yo	=	.8	feet
yt	=	.023	feet
t	=	30	seconds
K	=	7.39841E-05	feet/sec
K	=	47.81385	gal/day/ft2
K	=	6.392226	feet/day
K	=	2.255035E-03	cm/sec

WELL UOP19I(11/4/86) LOW VALUE

D	=	132	feet
H	=	15.01	feet
L	=	15	feet
rc	=	.085	feet
rw	=	.25	feet
re	=	3.354863	feet
yo	=	.2	feet
yt	=	.18	feet
t	=	60	seconds
K	=	1.098159E-06	feet/sec
K	=	.7097094	gal/day/ft2
K	=	9.488092E-02	feet/day
K	=	3.347188E-05	cm/sec

SE1000B
Environmental Logger
11/06 10:41

Unit# 00000 Test# 1

INPUT 1: Level (F)

Reference	0.00
Scale factor	10.06
Offset	0.00

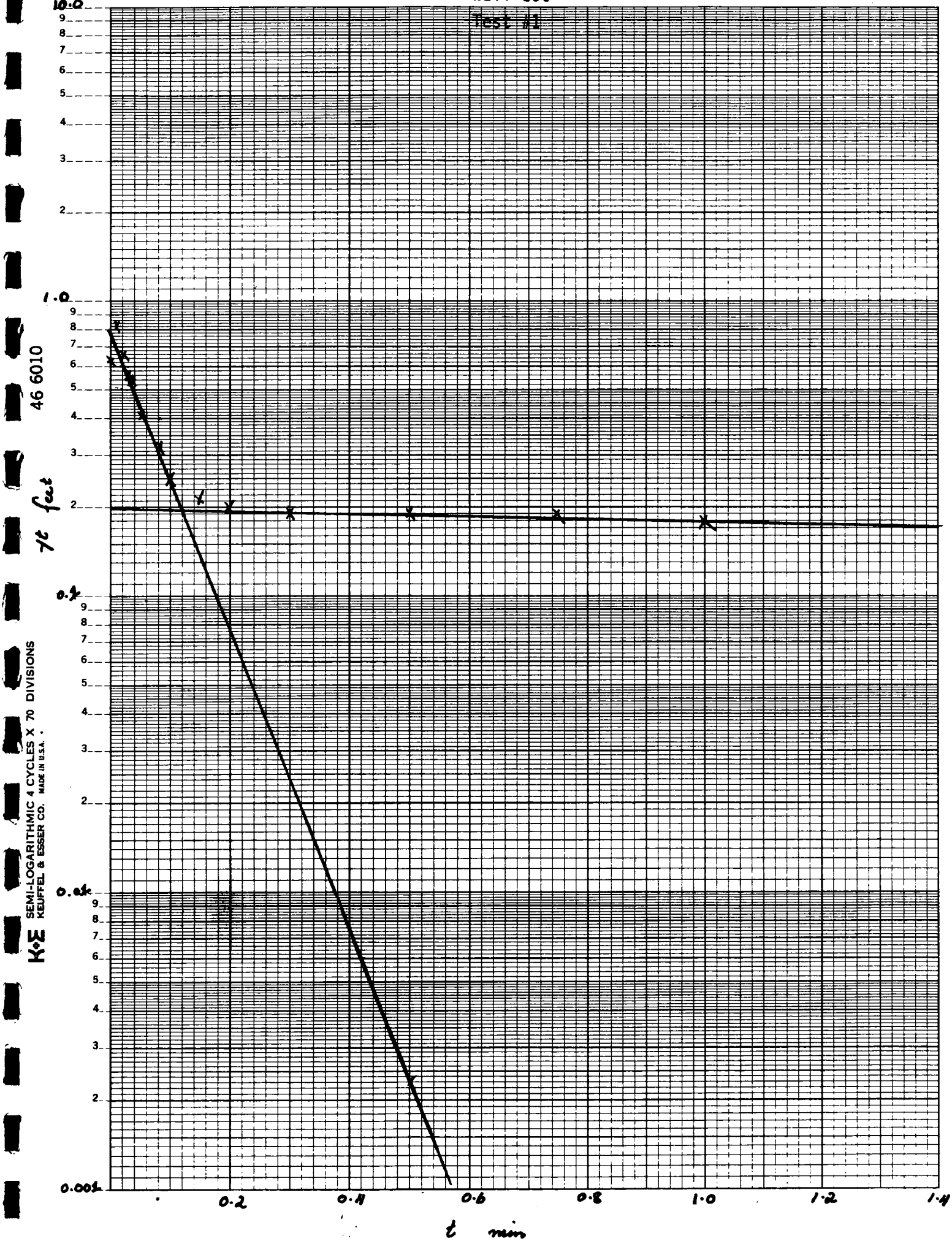
Step# 0 11/04 14:14

Elapsed Time	Value
0.0000	- 0.63
0.0033	- 0.70
0.0066	- 0.75
0.0099	- 0.82
0.0133	- 0.70
0.0166	- 0.69
0.0200	- 0.65
0.0233	- 0.61
0.0266	- 0.58
0.0300	- 0.55
0.0333	- 0.53
0.0500	- 0.41
0.0666	- 0.34
0.0833	- 0.29
0.1000	- 0.25
0.1166	- 0.23
0.1333	- 0.22
0.1500	- 0.21
0.1666	- 0.20
0.1833	- 0.20
0.2000	- 0.20
0.2166	- 0.20
0.2333	- 0.20
0.2500	- 0.20
0.2666	- 0.20
0.2833	- 0.20
0.3000	- 0.19
0.3166	- 0.19
0.3333	- 0.20
0.4167	- 0.19
0.5000	- 0.19
0.5833	- 0.19
0.6667	- 0.19
0.7500	- 0.19
0.8333	- 0.19
0.9167	- 0.19
1.0000	- 0.18

1.0833	-	0.18
1.1667	-	0.18
1.2500	-	0.18
1.3333	-	0.18
1.4166	-	0.18
1.5000	-	0.18
1.5833	-	0.18
1.6667	-	0.18
1.7500	-	0.18
1.8333	-	0.18
1.9167	-	0.18
2.0000	-	0.18
2.5000	-	0.18
3.0000	-	0.18
3.5000	-	0.18
4.0000	-	0.18
4.5000	-	0.17
5.0000	-	0.17
5.5000	-	0.17
6.0000	-	0.17
6.5000	-	0.17
7.0000	-	0.17
7.5000	-	0.17
8.0000	-	0.17
8.5000	-	0.16
9.0000	-	0.17
9.5000	-	0.16
10.0000	-	0.16
12.0000	-	0.16

END

Well 19I


Test #1
10.0
1.0
0.1
0.01
0.001
7t feet
0.2
0.4
0.6
0.8
1.0
1.2
1.4
t min
46 6010
K+E SEMI-LOGARITHMIC 4 CYCLES X 70 DIVISIONS
KEUFFEL & ESSER CO. MADE IN U.S.A.

WELL UOP23I(11/7/86)HIGH VALUE

D	=	132	feet
H	=	15.62	feet
L	=	15	feet
rc	=	.085	feet
rw	=	.25	feet
re	=	3.494969	feet
yo	=	.65	feet
yt	=	.36	feet
t	=	12	seconds
K	=	3.127794E-05	feet/sec
K	=	20.21406	gal/day/ft2
K	=	2.702414	feet/day
K	=	9.533515E-04	cm/sec

WELL UOP23I(11/7/86) LOW VALUE

D =	132	feet
H =	15.62	feet
L =	15	feet
rc =	.085	feet
rw =	.25	feet
re =	3.494969	feet
yo =	.48	feet
yt =	.34	feet
t =	12	seconds
K =	1.825431E-05	feet/sec
K =	11.79725	gal/day/ft2
K =	1.577173	feet/day
K =	5.563915E-04	cm/sec

SE1000B
Environmental Logger
11/07 14:41

Unit# 00000 Test# 0

INPUT 1: Level (F)

Reference	0.00
Scale factor	10.06
Offset	0.00

Step# 0 11/07 09:09

Elapsed Time	Value
0.0000	- 0.65
0.0033	- 0.65
0.0066	- 0.64
0.0099	- 0.63
0.0133	- 0.63
0.0166	- 0.62
0.0200	- 0.62
0.0233	- 0.61
0.0266	- 0.60
0.0300	- 0.59
0.0333	- 0.59
0.0500	- 0.56
0.0666	- 0.53
0.0833	- 0.50
0.1000	- 0.48
0.1166	- 0.45
0.1333	- 0.43
0.1500	- 0.41
0.1666	- 0.39
0.1833	- 0.38
0.2000	- 0.36
0.2166	- 0.35
0.2333	- 0.33
0.2500	- 0.32
0.2666	- 0.31
0.2833	- 0.30
0.3000	- 0.29
0.3166	- 0.27
0.3333	- 0.27
0.4167	- 0.22
0.5000	- 0.19
0.5833	- 0.16
0.6667	- 0.14
0.7500	- 0.13
0.8333	- 0.11
0.9167	- 0.09
1.0000	- 0.08

WELL UOP6I(11/4/86) LOW VALUE

D	=	132	feet
H	=	15.46	feet
L	=	15	feet
rc	=	.085	feet
rw	=	.335	feet
re	=	3.876358	feet
yo	=	.24	feet
yt	=	.14	feet
t	=	150	seconds
K	=	2.118922E-06	feet/sec
K	=	1.3694	gal/day/ft2
K	=	.1830749	feet/day
K	=	6.458475E-05	cm/sec

SE1000B
Environmental Logger
11/06 10:39

Unit# 00000 Test# 2

INPUT 1: Level (F)

Reference	0.00
Scale factor	10.06
Offset	0.00

Step# 0 11/04 14:55

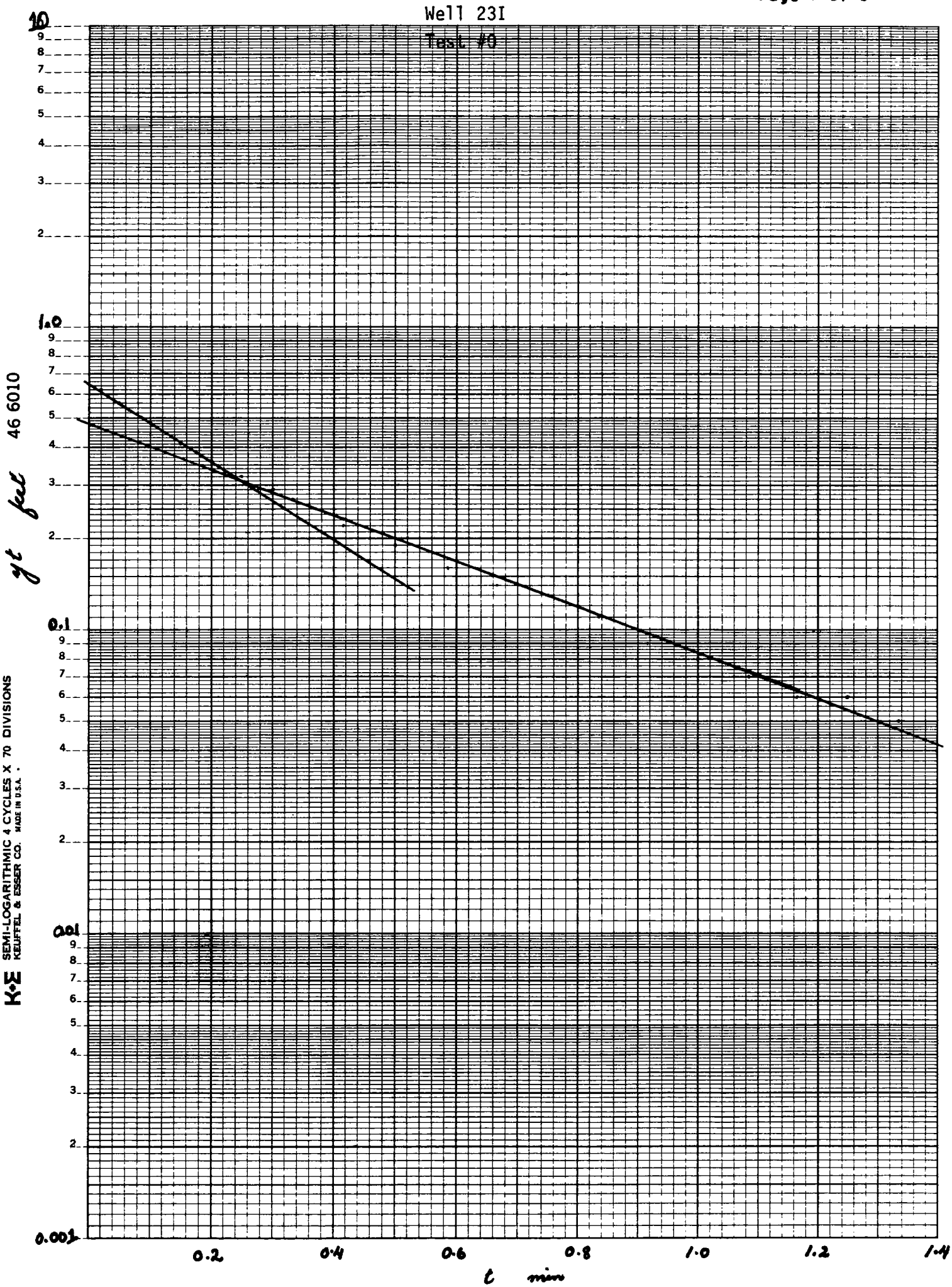
Elapsed Time	Value
0.0000	- 0.63
0.0033	- 0.63
0.0066	- 0.62
0.0099	- 0.61
0.0133	- 0.60
0.0166	- 0.60
0.0200	- 0.59
0.0233	- 0.59
0.0266	- 0.58
0.0300	- 0.57
0.0333	- 0.57
0.0500	- 0.55
0.0666	- 0.52
0.0833	- 0.50
0.1000	- 0.48
0.1166	- 0.46
0.1333	- 0.45
0.1500	- 0.43
0.1666	- 0.42
0.1833	- 0.41
0.2000	- 0.40
0.2166	- 0.39
0.2333	- 0.38
0.2500	- 0.37
0.2666	- 0.36
0.2833	- 0.35
0.3000	- 0.34
0.3166	- 0.34
0.3333	- 0.33
0.4167	- 0.30
0.5000	- 0.27
0.5833	- 0.26
0.6667	- 0.24
0.7500	- 0.23
0.8333	- 0.22
0.9167	- 0.21
1.0000	- 0.20
1.0833	- 0.20

1.0833	-	0.07
1.1667	-	0.06
1.2500	-	0.06
1.3333	-	0.05
1.4166	-	0.05
1.5000	-	0.04
1.5833	-	0.04
1.6667	-	0.03
1.7500	-	0.03
1.8333	-	0.02
1.9167	-	0.02
2.0000	-	0.02
2.5000	-	0.01
3.0000	-	0.00
3.5000	-	0.00
4.0000	-	0.00
4.5000	-	0.00
5.0000		0.00
5.5000	-	0.00
6.0000	-	0.00
6.5000	-	0.00
7.0000	-	0.00
7.5000	-	0.00
8.0000	-	0.00
8.5000	-	0.00
9.0000	-	0.00
9.5000		0.00
10.0000		0.00
12.0000	-	0.00
14.0000	-	0.00

END

Well 23I

Test #0



WELL UOP24I(11/4/86) HIGH VALUE

D	=	132	feet
H	=	14.16	feet
L	=	14.16	feet
rc	=	.085	feet
rw	=	.25	feet
re	=	3.124123	feet
yo	=	.58	feet
yt	=	.027	feet
t	=	30	seconds
K	=	6.587227E-05	feet/sec
K	=	42.57141	gal/day/ft2
K	=	5.691365	feet/day
K	=	2.007787E-03	cm/sec

WELL UOP24I(11/4/86) LOW VALUE

D	=	132	feet
H	=	14.16	feet
L	=	14.16	feet
rc	=	.085	feet
rw	=	.25	feet
re	=	3.124123	feet
yo	=	.13	feet
yt	=	.12	feet
t	=	60	seconds
K	=	8.595147E-07	feet/sec
K	=	.5554803	gal/day/ft2
K	=	7.426207E-02	feet/day
K	=	2.619801E-05	cm/sec

Well 24I

SE1000B
Environmental Logger
11/06 10:43

Unit# 00000 Test# 0

INPUT 1: Level (F)

Reference	0.00
Scale factor	10.06
Offset	0.00

Step# 0 11/04 12:12

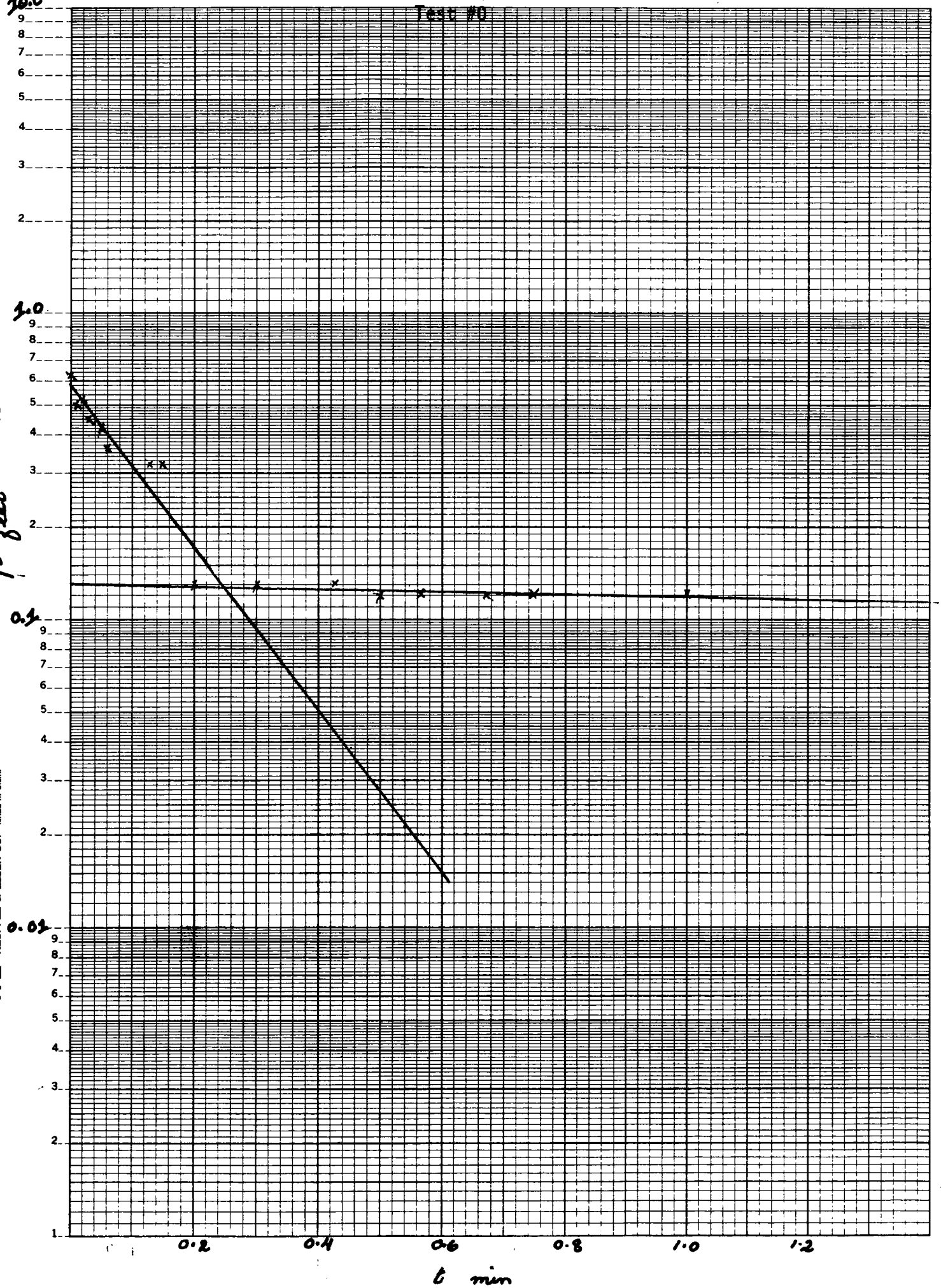
Elapsed Time	Value
0.0000	- 0.63
0.0033	- 0.62
0.0066	- 0.54
0.0099	- 0.50
0.0133	- 0.50
0.0166	- 0.53
0.0200	- 0.52
0.0233	- 0.49
0.0266	- 0.47
0.0300	- 0.45
0.0333	- 0.45
0.0500	- 0.42
0.0666	- 0.39
0.0833	- 0.38
0.1000	- 0.37
0.1166	- 0.35
0.1333	- 0.35
0.1500	- 0.34
0.1666	- 0.34
0.1833	- 0.16
0.2000	- 0.13
0.2166	- 0.14
0.2333	- 0.14
0.2500	- 0.13
0.2666	- 0.13
0.2833	- 0.13
0.3000	- 0.13
0.3166	- 0.13
0.3333	- 0.13
0.4167	- 0.13
0.5000	- 0.12
0.5833	- 0.12
0.6667	- 0.12
0.7500	- 0.12
0.8333	- 0.12
0.9167	- 0.12
1.0000	- 0.12
1.0833	- 0.12

Well 24I

1.1667	- 0.12
1.2500	- 0.12
1.3333	- 0.12
1.4166	- 0.12
1.5000	- 0.12
1.5833	- 0.12
1.6667	- 0.12
1.7500	- 0.12
1.8333	- 0.12
1.9167	- 0.12
2.0000	- 0.12
2.5000	- 0.12
3.0000	- 0.12
3.5000	- 0.12
4.0000	- 0.13
4.5000	- 0.13
5.0000	- 0.13
5.5000	- 0.13
6.0000	- 0.13
6.5000	- 0.13
7.0000	- 0.13
7.5000	- 0.14
8.0000	- 0.14
8.5000	- 0.14
9.0000	- 0.15
9.5000	- 0.15
10.0000	- 0.16
12.0000	- 0.17

END

Well 24I
Test #0



K+E SEMI-LOGARITHMIC 4 CYCLES X 70 DIVISIONS
KEUFFEL & ESSER CO. MADE IN U.S.A.
46 6010

```
WELL  UOP 27I 11/4/86 HIGH VALUE
   D =  132  feet
   H =  15.45  feet
   L =  15  feet
  rc =  .085  feet
  rw =  .25  feet
  re =  3.477526  feet
  yo =  .78  feet
  yt =  .51  feet
   t =  12  seconds
   K =  2.244876E-05  feet/sec
   K =  14.50801  gal/day/ft2
   K =  1.939573  feet/day
   K =  6.842384E-04  cm/sec

A>
```

```
WELL  UOP 27I 11/4/86 LOW VALUE
   D =  132  feet
   H =  15.45  feet
   L =  15  feet
  rc =  .085  feet
  rw =  .25  feet
  re =  3.477526  feet
  yo =  .59  feet
  yt =  .48  feet
   t =  60  seconds
   K =  2.180362E-06  feet/sec
   K =  1.409107  gal/day/ft2
   K =  .1883833  feet/day
   K =  6.645743E-05  cm/sec

A>
```

SE1000B
Environmental Logger
11/06 10:38

Unit# 00000 Test# 3

INPUT 1: Level (F)

Reference	0.00
Scale factor	10.06
Offset	0.00

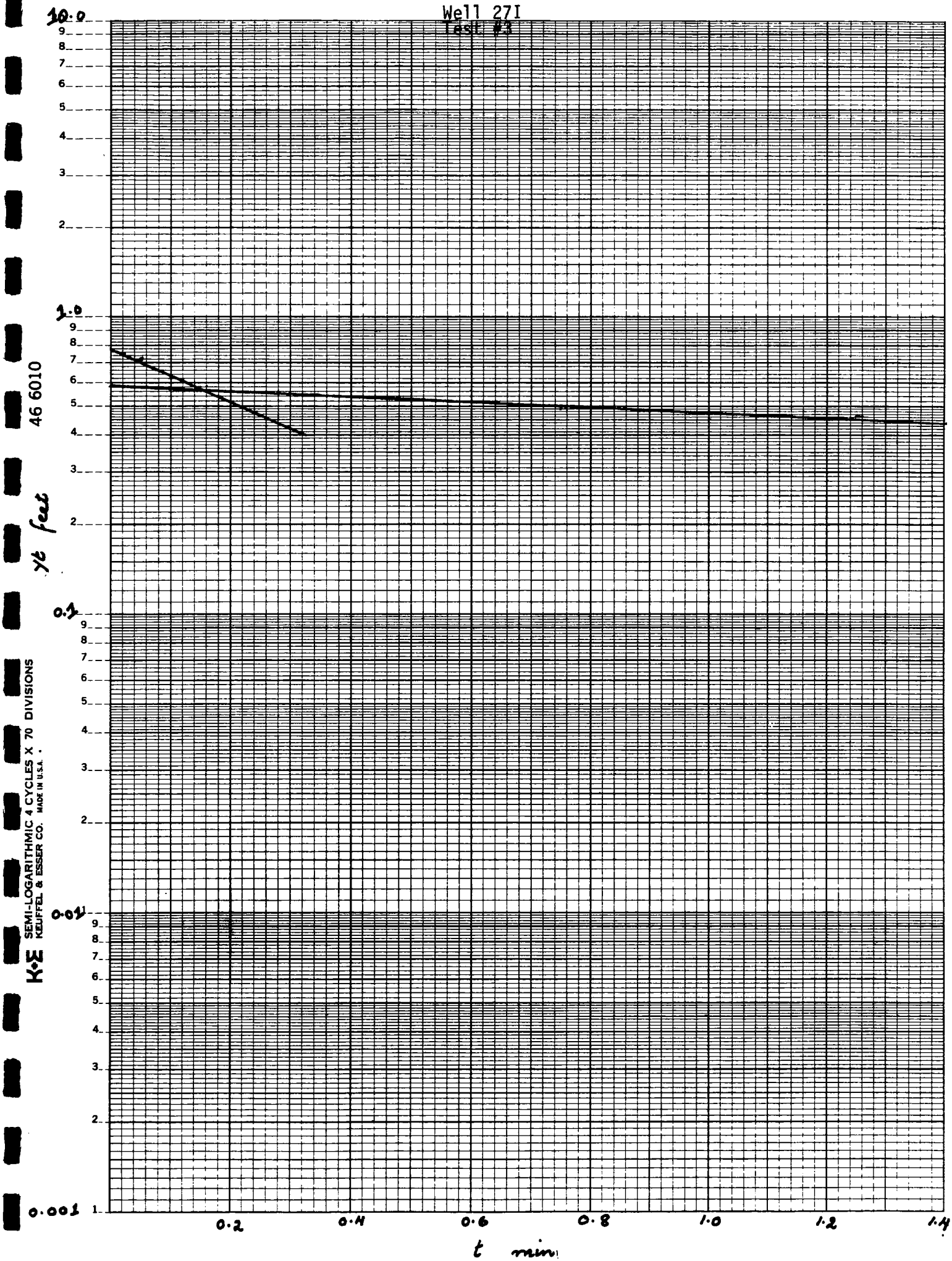
Step# 0 11/04 15:35

Elapsed Time	Value
0.0000	- 0.79
0.0033	- 0.75
0.0066	- 0.73
0.0099	- 0.75
0.0133	- 0.77
0.0166	- 0.77
0.0200	- 0.74
0.0233	- 0.71
0.0266	- 0.72
0.0300	- 0.73
0.0333	- 0.74
0.0500	- 0.72
0.0666	- 0.69
0.0833	- 0.67
0.1000	- 0.63
0.1166	- 0.62
0.1333	- 0.60
0.1500	- 0.58
0.1666	- 0.58
0.1833	- 0.57
0.2000	- 0.56
0.2166	- 0.56
0.2333	- 0.56
0.2500	- 0.56
0.2666	- 0.55
0.2833	- 0.55
0.3000	- 0.55
0.3166	- 0.55
0.3333	- 0.55
0.4167	- 0.54
0.5000	- 0.53
0.5833	- 0.51
0.6667	- 0.50
0.7500	- 0.49
0.8333	- 0.49
0.9167	- 0.48
1.0000	- 0.48
1.0833	- 0.48

1.1667	- 0.47
1.2500	- 0.46
1.3333	- 0.46
1.4166	- 0.45
1.5000	- 0.45
1.5833	- 0.45
1.6667	- 0.44
1.7500	- 0.44
1.8333	- 0.43
1.9167	- 0.43
2.0000	- 0.43
2.5000	- 0.41
3.0000	- 0.40
3.5000	- 0.39
4.0000	- 0.38
4.5000	- 0.37
5.0000	- 0.36
5.5000	- 0.35
6.0000	- 0.34
6.5000	- 0.34
7.0000	- 0.33
7.5000	- 0.32
8.0000	- 0.32
8.5000	- 0.31
9.0000	- 0.30
9.5000	- 0.30
10.0000	- 0.29
12.0000	- 0.27
14.0000	- 0.25
16.0000	- 0.20

END

Well 27I
Test #3



Geraghty & Miller, Inc.

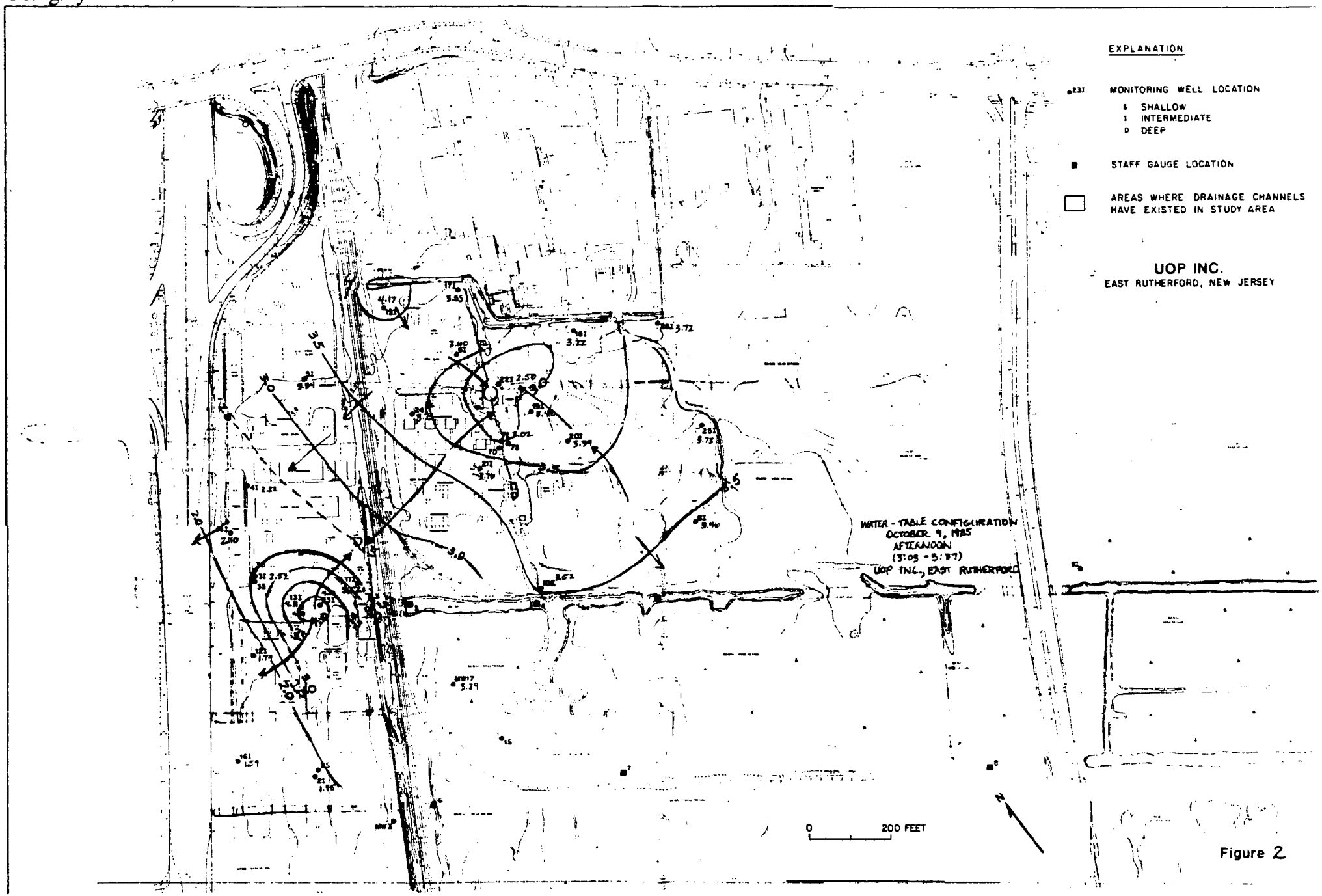


Figure 2

APPENDIX E

Water-Level Data and Maps
Morning and afternoon readings,
October 9, 1985

GERAGHTY & MILLER, INC.
Ground-Water Consultants

August 8, 1986

Armando A. Arcenal
Principal Environmental Engineer
Metro Bureau of Regional Enforcement
Division of Water Resources
2 Babcock Place
West Orange, New Jersey 07052

Re: Influence of tides on the water-table configuration
UOP Site, East Rutherford, New Jersey

Dear Mr. Arcenal:

During our July 31, 1986 meeting in West Orange, we offered to send information which addresses the issue of tidal effects on the water table at the UOP East Rutherford site. For your use, we have enclosed seven sets of the following:

1. A narrative which includes the data aquisition methodology and data interpretation

2. Complete data tables

3. A water-table map based on the "morning" readings

4. A water-table map based on the "afternoon" readings.

Please let us know if you have any questions about this information.

Sincerely,

GERAGHTY & MILLER, INC.

Robert A. Saar, Ph. D.
Senior Scientist

Michael F. Wolfert
Associate

RAS:MFW:sm
Encl.

cc: K. Youtsey, UOP

N0695ER4

125 East Bethpage Road • Plainview, New York 11803 • (516) 249-7600
Cable: WATER • Telecopy: (516) 249-7610

Water-Level Readings

October 9, 1985

UOP Site

East Rutherford, New Jersey

On October 9, 1985, Geraghty & Miller, Inc. field geologist Susan Pohanka took two complete rounds of ground-water levels at the UOP site in East Rutherford, New Jersey. In addition to these two rounds, two additional measurements (for a total of four readings) were taken at wells close to the major tidal channels (Wells 7S, 7I, 7D, and 10I). The surface-water level at Staff Gauge 3 was read ten times during the day. Ground-water measurements and the times are listed in Table 1; the gauge measurements are listed in Table 2.

The first round of water-level measurements, designated "morning," are mapped in Figure 1 and the second round of water-level measurements, designated "afternoon," are mapped in Figure 2. As shown in Table 2, it was low tide during the morning; the tide came in during the three hour period after 2 pm.

The morning and afternoon water-table maps are virtually identical, which demonstrates that the daily tides have no substantive effect on the water-table configuration or ground-water flow under the site.

Table 1. Water-Level Data for Monitoring Wells, UOP Site East Rutherford, New Jersey, October 9, 1985

Well No.	Time	Tape Held (ft)	Tape Wet (ft)	Depth to Water (ft)	Elevation of the top of the casing (ft above msl)	Ground-Water Elevation (ft above msl)
2S	1:22 PM	5.0	1.46	3.54	6.78	3.24
	5:06 PM	5.0	1.47	3.53		3.25
2I	1:24 PM	7.0	1.63	5.37	7.31	1.94
	5:09 PM	7.0	1.64	5.36		1.95
3S	1:03 PM	6.0	1.63	4.37	6.61	2.24
	4:40 PM	6.0	1.63	4.37		2.24
3I	1:01 PM	6.0	1.60	4.40	6.89	2.49
	4:42 PM	6.0	1.63	4.37		2.52
3D	12:59 PM	7.5	1.43	6.07	6.62	0.55
	4:45 PM	7.5	1.51	5.99		0.63
4I	12:50 PM	7.0	1.63	5.37	7.58	2.21
	4:34 PM	7.0	1.64	5.36		2.22
5I	12:45 PM	4.5	0.98	3.52	6.88	3.36
	4:29 PM	4.5	0.96	3.54		3.34
6I	12:20 PM	5.0	1.00	4.00	7.54	3.54
	3:59 PM	5.0	1.06	3.94		3.60
7S	11:09 AM	6.0	1.61	4.39	7.41	3.02
	1:38 PM	6.0	1.60	4.40		3.01
	2:58 PM	6.0	1.60	4.40		3.01
	5:34 PM	6.0	1.47	4.53		2.88
7I	11:06 AM	6.0	1.37	4.63	7.55	2.92
	1:39 PM	6.0	1.42	4.58		2.97
	2:59 PM	6.0	1.44	4.56		2.99
	5:34 PM	6.0	1.47	4.53		3.02
7D	11:03 AM	10.0	1.63	8.37	7.97	-0.40
	1.41 PM	10.0	1.64	8.36		-0.39
	3:00 PM	10.0	1.66	8.34		-0.37
	5:37 PM	10.0	1.72	8.28		-0.31
8I	11:47 PM	6.0	0.95	5.05	8.52	3.47
	3.24 PM	6.0	0.94	5.06		3.46

Table 1. Water-Level Data for Monitoring Wells, UOP Site East Rutherford, New Jersey, October 9, 1985.

Well No.	Time	Tape Held (ft)	Tape Wet (ft)	Depth to Water (ft)	Elevation of the top of the casing (ft above msl)	Ground-Water Elevation (ft above msl)
10I	11:19 AM	6.0	1.74	4.26	7.76	3.50
	1:52 PM	6.0	1.70	4.30		3.46
	3:09 PM	6.0	1.71	4.29		3.47
	5:30 PM	6.0	1.76	4.24		3.52
11I	1:06 PM	6.0	1.68	4.32	6.60	2.28
	4:48 PM	6.0	1.92	4.08		2.52
12I	1:19 PM	7.0	1.20	5.80	7.51	1.71
	5:02 PM	7.0	1.23	5.77		1.74
13I	1:12 PM	4.0	1.53	2.47	6.56	4.09
	4:52 PM	4.0	1.55	2.45		4.11
14I	12:53 PM	7.0	1.59	5.41	7.45	2.04
	4:37 PM	7.0	1.65	5.35		2.10
15I	12:40 PM	2.5	1.08	1.42	5.58	4.16
	3:54 PM	2.5	1.09	1.41		4.17
16I	1:28 PM	7.0	1.11	5.89	7.49	1.60
	5:12 PM	7.0	1.10	5.90		1.59
17I	12:37 PM	5.0	0.99	4.01	7.56	3.55
	3:48 PM	5.0	0.99	4.01		3.55
18I	12:04 PM	5.0	1.60	3.40	6.59	3.19
	3:43 PM	5.0	1.63	3.37		3.22
19I	12:09 PM	6.0	1.37	4.63	8.09	3.46
	4:09 PM	6.0	1.39	4.61		3.48
20I	12:12 PM	6.0	1.41	4.59	7.94	3.35
	4:12 PM	6.0	1.45	4.55		3.39
21I	11:14 AM	6.0	1.31	4.69	8.35	3.66
	3:03 PM	6.0	1.41	4.59		3.76
22I	12:16 PM	6.0	1.09	4.91	7.09	2.18
	4:05 PM	6.0	1.41	4.59		2.50

Table 1. Water-Level Data for Monitoring Wells, UOP Site East Rutherford, New Jersey, October 9, 1985.

Well No.	Time	Tape Held (ft)	Tape Wet (ft)	Depth to Water (ft)	Elevation of the top of the casing (ft above msl)	Ground-Water Elevation (ft above msl)
23I	1:14 PM	4.0	1.83	2.17	6.28	4.11
	4:55 PM	4.0	1.82	2.18		4.10
24I	12:32 PM	4.5	1.10	3.40	7.13	3.73
	4:25 PM	4.5	1.10	3.40		3.73
25I	11:55 AM	5.0	1.78	3.22	6.95	3.73
	3:31 PM	5.0	1.78	3.22		3.73
26I	12:00 PM	6.0	1.44	4.56	8.30	3.74
	3:38 PM	6.0	1.42	4.58		3.72
MW-17	11:28 AM	3.5	0.97	2.53	5.85	3.32
	3:15 PM	3.5	0.94	2.56		3.29

Table 2. Water-Level Data for Tidal Gauge 3 UOP Site, East Rutherford, New Jersey, October 9, 1985.

Gauge 3	Time	Staff-Gauge Reading (height of water, ft)	Staff-Gauge Elevation (ft relative to mean sea level)	Surface-Water Elevation (ft relative to mean sea level)
	8:54 AM	1.40	-1.29	0.11
	10:11 AM	1.24		-0.05
	11:24 AM	1.22		-0.07
	12:24 PM	1.22		-0.07
	1:00 PM	1.20		-0.09
	1:45 PM	1.20		-0.09
	2:32 PM	2.28		0.99
	3:12 PM	3.08		1.79
	4:18 PM	4.00		2.71
	5:22 PM	4.38		3.09

Geraghty & Miller, Inc.

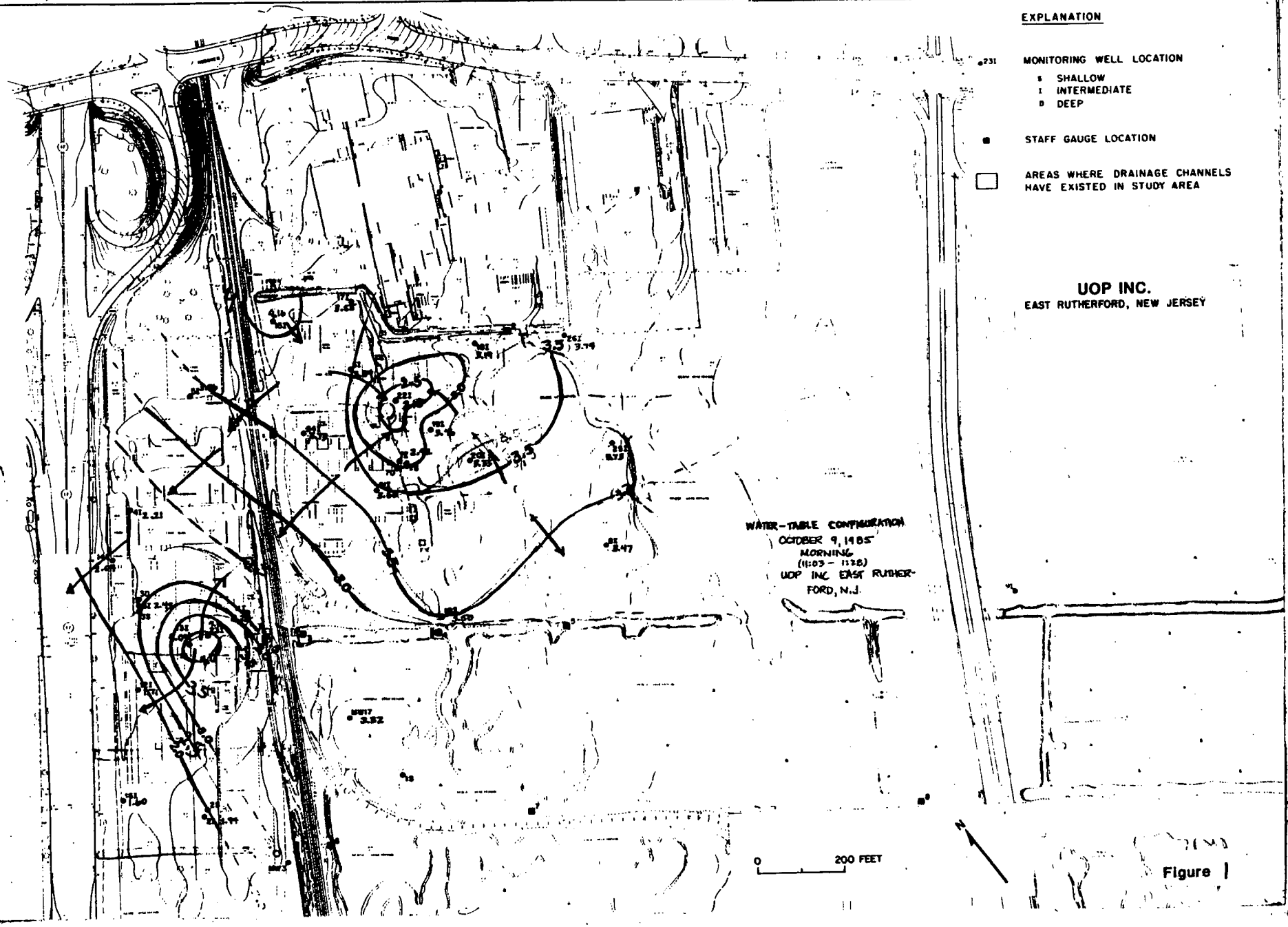


Figure 1

APPENDIX F

Results of Extra-Peak Searches
Soil and Ground-Water Samples
Areas 1, 1A, 2, and 5
OCTOBER-DECEMBER 1986

Laboratory Sheets provided by ERCO
Cambridge, Massachusetts

Case No: Geraghty & Miller

well 24-1

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

	CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1.	127-18-4	tetrachloroethene	BNA	304	940
2.	108-90-7	chlorobenzene	BNA	357	1400
3.	100-41-4	ethyl benzene	BNA	382	5000
4.		dimethyl ~~isomer~~ benzene ~~isomer~~	BNA	401	16,000
5		dimethyl ~~isomer~~ benzene isomer	BNA	428	7500
6	79-34-5	1,1,2,2-tetrachloroethane	BNA	454	2700
7	103-65-1	propyl benzene	BNA	502	930
8		ethyl methyl benzene isomer	BNA	514	3900
9		trimethyl benzene isomer	BNA	522	1400
10.		ethyl methyl benzene isomer	BNA	534	920
11.		trimethyl benzene isomer	BNA	553	5700
12.		trimethyl benzene isomer	BNA	583	1200
13		methyl propyl benzene isomer	BNA	616	900
14.		ethyl dimethyl benzene isomer	BNA	645	700
15.		ethyl dimethyl benzene isomer	BNA	652	1600
16.		$C_{10}H_{12}$ isomer	BNA	718	1300
17.				~~818~~	~~3200~~ NC
18.		unknown	BNA	847	3300
19.		unknown	BNA	1030	3100
20.		unknown	BNA	1039	2800
21.		unknown	BNA	1049	3700
22.		~~Unknown~~ Alkoxy substituted benzene	BNA	1150	12,000
23.		biphenyl acetic acid isomer	BNA	1334	3800
24.		biphenyl acetic acid isomer	BNA	1355	1500
25.		biphenyl acetic acid isomer	BNA	1372	1200
26.					
27.		ethyl dimethyl benzene isomer	BNA	624	690
28.		m-dichlorobenzene	VOA	1421	71
29.		o-dichlorobenzene	VOA	1464	2000
30.		p-dichlorobenzene	VOA	1486	280

Laboratory Name Eeco/ A Division of Enseco

Case No: geraghty & Miller

Sample Number: Well 28-I

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1. 108-90-7	chlorobenzene	BNA	358	1200
2. 96-43-5	2-chlorothiophene	BNA	371	97
3. 100-41-4	ethyl benzene	BNA	379	74
4.	C_9H_{12} isomer	BNA	463	120
5	unknown	BNA	506	46
6	unknown	BNA	632	57
7	C_9H_8O isomer	BNA	674	65
8	unknown	BNA	723	1700
9	unknown	BNA	768	79
10.	unknown	BNA	775	68
11.	unknown	BNA	807	88
12.	dimethylethyl phenol isomer	BNA	836	110
13	unknown	BNA	840	52
14.	dimethylethyl phenol isomer	BNA	862	4200
15. 7403-42-1	4-methyl-4-phenyl-2-pentanone	BNA	897	58
16.	unknown	BNA	1020	89
17.	unknown	BNA	1035	150
18. 126-73-8	phosphoric acid tributyl ester	BNA	1149	7500
19.	alkoxy substituted benzene	BNA	1155	3300
20.	unknown	BNA	1170	55
21.	unknown	BNA	1255	47
22.	unknown	BNA	1300	360
23. 127-63-9	1,1'-sulfonylbisbenzene	BNA	1333	290
24. 100-63-0	phenyl hydrazine	BNA	1353	42
25.	$C_{13}H_{12}O_2$ isomer	BNA	1361	47
26.	m-Dichlorobenzene	VOA	1424	13
27.	o-Dichlorobenzene	VOA	1471	3.3
28.	p-Dichlorobenzene	VOA	1496	44
29.				
30.				

Laboratory Name Erco/A Division of Enseco

Case No. Garaghty and Miller

Sample Number

Well 29-I

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1.	alkoxy substituted benzene	BNA	1141	9.6
2.	unknown aliphatic	BNA	1334	17
3. 57-10-3	hexadecanoic acid	BNA	1345	8.0
4. 5208,504	4-Carene	VOA	1026	5.5
5	unknown C_9H_{10}	VOA	1494	3.2
6				
7				
8				
9				
10.				
11.				
12.				
13				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				

Laboratory Name ERCO / A Division of Enseco

Case No. Geraghty & Miller

Sample Number: Well 40-I

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1.	unknown	BNA	712	120
2.	unknown	BNA	758	32
3.	unknown	BNA	864	17
4.	methyl napthalene isomer	BNA	868	32
5.	dimethyl napthalene isomer	BNA	962	17
6. 127-63-9	1,1'-sulfonylbis benzene	BNA	1332	180
7.	unknown	BNA	1364	16
8.	~~unknown~~	~~BNA~~	~~1488~~	~~48~~ ABS
9. 5208504	4-carene	VOA	1029	5.9
10. 91203	Napthalene	VOA	1501	12
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				

Laboratory Name: Eco/A Division of Enviro

Case No: Geraghty & Miller

Sample Number: Well 30-I

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1.	unknown silicon containing compound	BNA	339	10
2.	dimethylbenzene isomer	BNA	392	9
3.	Sulfur (S6)	BNA	1026	11
4. 10544-50-0	Sulfur (S8)	BNA	1403	57
5. —	no volatile unknown compounds	VOA	—	—
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Laboratory Name Erco / A Division of Enseco

Case No. Geraghty & Miller

Sample Number: Well 31-I

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1.	unknown silicon containing compound	BNA	344	10
2.	~~unknown~~ Sulfur (S6)	BNA	1026	13
3.	~~unknown~~ Sulfur (S7)	BNA	1239	10
4. 10544-50-0	Sulfur (S8)	BNA	1404	120
5	no unknowns	VOA	—	—
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Case No: Geraghty & Miller

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Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1.	Unknown silicon containing compound	BNA	339	42
2.	no unknowns	VOA	—	—
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Laboratory Name: Finseco

Case No: Grim

Sample Number: B1-10-2'

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1.	no unknowns found	LCA		

Laboratory Name: ENSECO

Case No: Geoughty & Miller

Sample Number: B1-1 4-6'

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1. 1075383	1-(1,1-dimethylethyl)-3-methyl-benzene	VOA	1449	380
2.				
3.	O-DICHLOROBENZENE	VOA	1665	200
4.				

Laboratory Name: ENSECO

Case No:

Sample Number: B1-2 0-2'

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1.	no unknowns found	VOA		

Laboratory Name: ENSECO

Case No:

Sample Number: B1-2 2-4'

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1. 95498	1-chloro-2-methyl-benzene	VOA	1405	540
2. 106434	1-chloro-4-methyl-benzene	VOA	1501	450
3.				
4.	O-DICHLOROBENZENE	VOA	1561	72

Laboratory Name: ENSECO

Case No:

Sample Number: B1-3 0-2'

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1. 254273	3-Benzodioxin 4H	VOA	1037	20
2. —	unknown	VOA	1401	22
3. 87683	1,3-Butadiene, 1,1,2,3,4,4-hexachloro-	VOA	1426	25
4.				
5.	O-DICHLOROBENZENE	VOA	1556	110

Laboratory Name: ENSECO

Case No:

Sample Number: B1-3 4-6'

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1. 27138212	(1,1-dimethylethyl) methyl-benzene	VOA	1449	34000

Laboratory Name: ENSECO

Case No:

Sample Number: B1-4 0-2'

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1. 1075383	1-(1,1-dimethylethyl)-3-methyl-benzene	VOA	1226	~~1,000~~ 1,100
2. 98066	(1,1-dimethylethyl)-benzene	VOA	1396	900
3. 2049958	(1,1-dimethylpropyl)-benzene	VOA	1774	150

Laboratory Name: ENSECO

Case No:

Sample Number: B1-4 4-6'

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1. 98066	(1,1-dimethylethyl)-benzene	VOA	1396	3600

Laboratory Name: ENSECO

Case No:

Sample Number: B1-5 0-2'

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1. 1075383	1-(1,1-dimethylethyl)-3-methyl-benzene	VOA	1228	830

Laboratory Name Ensell

Case No: G&M

Sample Number: B1-5 8-10'

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1.	no unknowns found	VOA		

Laboratory Name ENSELD

Case No:

Sample Number: B1-6 0-2'

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1.	no unknowns found	VOA		

Laboratory Name Ensell

Case No: G&M

Sample Number: B1-6 2-4'

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1.	no unknowns found	VOA		
2.				
3.	m-dichlorobenzene	VOA	1514	7.3
4.				
5.	p-dichlorobenzene	VOA	1594	15

Laboratory Name: ENSECO

Case No:

Sample Number: B1-7 0-2'

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1. 109999	tetrahydro furan	VOA	458	44

Laboratory Name: [illegible]

Case No: G&M

Sample Number: B-7 2-4'

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1.	no unknowns found	VOA		

Laboratory Name: ENSECO

Case No:

Sample Number: B1-8 0-2'

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1.	no unknowns found	VOA		

Laboratory Name Ensecc

Case No. G&M

Sample Number B1-8 2-4'

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1.	no unknowns found	VOA		

Laboratory Name Ensecc

Case No. G&M

Sample Number B1-9 0-2'

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1.	no volatile unknowns found	VOA		

Laboratory Name ERLO/ A DIVISION OF EMELO

Case No GERAGHTY AND HILLER

Sample Number BIA-10-21

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1.	C_9H_{20} isomer	BNA	305	1000
2.	$C_8H_{10}O$ isomer (methylmethoxybenzene)	BNA	496	1500
3.	$C_{11}H_{16}$ isomer	BNA	575	32 000
4.	$C_{13}H_{28}$ isomer	BNA	773	1200
5	$C_{15}H_{24}$ isomer	BNA	801	860
6.	$C_{15}H_{24}$ isomer	BNA	843	1600
7 629-59-4	Tetradecane	BNA	857	1500
8	Unknown	BNA	888	4100
9.	C5-2-hydroxybenzoic acid ester	BNA	961	8400
10.	C5-2-hydroxybenzoic acid ester	BNA	991	6700
11.	Unknown substituted alkoxybenzene	BNA	1050	97 000
12.	$C_{15}H_{17}N$ isomer	BNA	1066	2800
13.	Unknown	BNA	1074	1000
14.	$C_{10}H_{15}NS$ isomer	BNA	1161	1000
15.	Unknown	BNA	1201	1500
16.	Unknown aliphatic	BNA	1248	3700
17. 57-10-3	Hexadecanoic acid	BNA	1254	830
18.	Unknown aliphatic	BNA	1361	1200
19.	Hexadecene isomer	BNA	1417	1700
20.	Unknown	BNA	1491	1500
21.	Unknown	BNA	1636	760
22.	Unknown aliphatic	BNA	1659	1500
23.	Unknown	BNA	1733-1763	8100
24.	Unknown	BNA	1824	2000
25.	Unknown	BNA	2174	1400
26.	No unknowns	VOA	—	—
27.				
28.				
29.				
30.				

Laboratory Name ERWI A DIVISION OF ENSEW

Case No GERAGHTY AND MILLER

Sample Number
BIA-1 2-4'

(38601) REEXTRACT

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1. 108-88-3	methylbenzene	BNA	334	890
2. 108-21-4	Acetic acid 1-methylethylester	BNA	407	9900
3. 123-42-2	4-hydroxy-4-methyl-2-pentanone *	BNA	441	150 000
4.	Unknown	BNA	514	1500
5	C_1-Benzene, 1-(1,1-dimethylethyl) isomer	BNA	706	24000
6. 124-07-2	Octanoic acid	BNA	807	5700
7	methylbenzoic acid isomer	BNA	889	1900
8	Substituted benzene	BNA	985	1200
9.	Unknown substituted alkoxybenzene	BNA	1192-1196	77 000
10. 544-63-8	Tetradecanoic acid	BNA	1264	1100
11.	Sulfur (S7)	BNA	1307	1400
12.	Unknown	BNA	1350	11 000
13 57-10-3	Hexadecanoic acid	BNA	1392-1398	6600
14. 10544-50-0	Sulfur (S8)	BNA	1460-1467	22 000
15.	Unknown	BNA	1507	2100
16.	Unknown aliphatic	BNA	1517	2100
17.	Unknown aliphatic	BNA	1555	1400
18.	Hexadecene isomer	BNA	1566	1700
19.	Hexadecene isomer	BNA	1573	1300
20.	Unknown	BNA	1646	1000
21.	Unknown	BNA	1651	1100
22.	Unknown	BNA	1930	820
23.	Unknown hydrocarbon	BNA	1856	760
24.	Unknown	BNA	1904	820
25.	Unknown	BNA	1912	1000
26.	Unknown hydrocarbon	BNA	1923	2000
27.	UNKNOWN	VOA	1025	110
28.				
29.				
30.				

* possible aldol condensation product

Laboratory Name ERCO / A DIVISION OF ENSECO

Case No GERAGHTY AND MILLER

Sample Number
BIA-2 0-21

Organics Analysis Data Sheet
(Page 4, -1)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1.	C_1- methoxybenzene isomer	BNA	496	350,000
2.	Unknown	BNA	520	89,000
3.	$C_{11}H_{16}$ isomer	BNA	579	2,600,000
4.	$C_{12}H_{18}O$ isomer	BNA	734	66,000
5.	$(C_4H_8)_n$ isomer	BNA	739	100,000
6.	Unknown	BNA	767	53,000
7.	$C_{15}H_{24}$ isomer	BNA	802	110,000
8.	$C_{15}H_{24}$ isomer	BNA	837	31,000
9.	$C_{15}H_{24}$ isomer	BNA	847	310,000
10.	$C_{12}H_{10}O$ isomer	BNA	856	55000
11.	$C_{15}H_{24}$ isomer	BNA	880	120,000
12.	Unknown	BNA	893	1,400,000
13.	$C_{12}H_{16}O_3$ isomer	BNA	964	2,800,000
14.	$C_{12}H_{16}O_3$ isomer	BNA	985	
15.	$C_{12}H_{16}O_3$ isomer	BNA	999	2,200,000
16.	$C_{10}H_{11}O_2Cl$ isomer	BNA	1016	110,000
17. NL	~~$C_{14}H_{14}O$ isomer~~	~~BNA~~	~~1025~~	
18.	Unknown substituted alkoxybenzene	BNA	1085-1070	10,000,000
19.	Unknown	BNA	1076	66000
20.	Unknown	BNA	1082	110,000
21.	$C_{14}H_{12}O$ isomer	BNA	1105	45000
22.	$C_{18}H_{22}O_2$ isomer	BNA	1155	63000
23.	$C_{14}H_{18}O_2$ isomer	BNA	1164	45000
24.	Unknown	BNA	1202	40000
25.	$C_{14}H_{12}O_2$ isomer, possibly [1,1'-bisphenyl]-4-acetic acid	BNA	1248	44000
26.		~~BNA~~	~~1483~~	
27.	$C_{14}H_{14}O$ isomer	BNA	1483	70,000
28.				
29.				
30.				

Laboratory Name: ENSECO

Case No:

Sample Number: B1A-2 0-2'

Organics Analysis Data Sheet
(Page 4) -2

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1. 95498	1-chloro-2-methyl-benzene	VOA	1404	5000
2. 108418	1-chloro-3-methyl-benzene	VOA	1502	1400
3. 124118	1-Nonene	VOA	1547	4300
4. 578585	1-methoxy-2-methyl-benzene	VOA	1690	1400
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Laboratory Name ERM/ A DIVISION OF ENIECO

Case No Geraghty and Miller

Sample Number B1A2 2'-4'

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1.	C_2- benzene isomer	BNA	305	52,000
2.	C_9H_{18} isomer	BNA	343	82,000
3. 79-34-5	Tetrachloroethane	BNA	365	290,000
4. 104-93-8	Benzene, 1-methoxy-4-methyl	BNA	504	2,300,000
5	Unknown	BNA	519	110,000
6.	C_5- benzene isomer	BNA	578	1,500,000
7 140-11-4	Acetic acid, phenylmethyl ester	BNA	649	300,000
8	Dodecene isomer	BNA	676	85,000
9.	Chlorobenzoic acid, methylester isomer	BNA	733	140,000
10. 621-27-2	3-propylphenol	BNA	740	150,000
11. 2437-56-1	1-Tridecene	BNA	767	180,000
12.	$C_{10}H_{10}O_2$ isomer	BNA	804	150,000
13	$C_{10}H_{10}O_2$ isomer	BNA	836	80,000
14.	Tetradecene isomer	BNA	851	160,000
15. ~~101-84-8~~	~~Benzene, 1,1'-oxybis-~~	~~BNA~~	~~855~~	—
16.	Unknown	BNA	890	500,000
17.	Pentadecene isomer	BNA	931	140,000
18.	Bis(1,1-dimethylethyl)-phenol isomer	BNA	949	170,000
19.	2-hydroxy-benzoic acid C_5-isomer	BNA	964	800,000
20.	2-hydroxy benzoic acid, C_5-isomer	BNA	996	1,300,000
21.	Unknown substituted alkoxy benzene	BNA	1039	130,000
22.	Unknown substituted alkoxy benzene	BNA	1067	9,000,000
23. 120-51-4	Benzoic acid, phenylmethylester isomer	BNA	1126	90,000
24.	Substituted benzene	BNA	1155	78,000
25.	Substituted benzene	BNA	1199	140,000
26.	dichlorobenzoic acid methylester isomer	BNA	865	140,000
27. 98511	1-(1,1-dimethylethyl)-4-methyl-benzene	VOA	760	6,100,000
28. 111660	1-octene	VOA	1127	29,000
29. 98-06-6	(1,1-dimethylethyl)-benzene	VOA	1396	8,300
30. 693652	3,4,5-trimethyl-1-Hexene	VOA	1534	33,000

FVL

Laboratory Name ERCO/A DIVISION OF ENSECO

Case No GERAGHTY & MILLER

Sample Number
BIA-3 0-21

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)	
1. 108-21-4	Acetic acid, 1-methylethylester	BNA	389	~~580~~	6600
2. 123-42-2	4-hydroxy-4-methyl-2-pentanone *	BNA	427	~~9700~~	110,00
3.	$C_{10}H_{20}$ isomer	BNA	595	~~860~~	9,800
4.	$C_{11}H_{22}$ isomer	BNA	704	~~2700~~	31,000
5.	$C_{12}H_{26}$ isomer	BNA	776	~~470~~	5,300
6.	Unknown	BNA	768	~~380~~	4300
7.	$C_{12}H_{24}$ isomer	BNA	805	~~5000~~	57,00
8. 112-40-3	Dodecane	BNA	812	~~1900~~	22,000
9.	$C_{13}H_{28}$ isomer	BNA	825	~~680~~	7,700
10.	$C_{13}H_{28}$ isomer	BNA	860	~~480~~	5,400
11.	$C_{13}H_{28}$ isomer	BNA	870	~~550~~	6,200
12.	$C_{13}H_{28}$ isomer	BNA	877	~~680~~	7,700
13.	Unknown hydrocarbon	BNA	898	~~5600~~	64,00
14.	Unknown hydrocarbon	BNA	985	~~8200~~	93,000
15.	Unknown aliphatic	BNA	1066	~~6800~~	77,00
16.	Hexadecene isomer	BNA	1142	~~2700~~	31,000
17.	Unknown substituted alkoxybenzene	BNA	1192	~~1200~~	14,00
18.	Unknown aliphatic	BNA	1216	~~2600~~	30,000
19.	Branched hydrocarbon	BNA	1225	~~460~~	5200
20.	Unknown	BNA	1230	~~510~~	5800
21.	octadecene isomer	BNA	1352	~~1600~~	18000
22.	Unknown alkene	BNA	1415	~~1200~~	14000
23.	Unknown alkene	BNA	1476	~~540~~	6100
24.	Unknown chlorinated compound	BNA	1685	~~460~~	5200
25.	Octadecene isomer + ~~unknown~~ internal stand. d10-phenanthrene	BNA	1286	25000	
26.	Unknown hydrocarbon	BNA	1593	5200	
27.	M-Dichlorobenzene	VOA	1513	6800	
28.	O-Dichlorobenzene	VOA	1537	2200	
29.	P-Dichlorobenzene	VOA	1588	1900	
30.					

* possible aldol condensation product

AVL

Laboratory Name Erco/A Division of Enseco

Case No Geraghty & Miller

Sample Number BIA-3 4-6'

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1. 123-42-2	4-hydroxy-4-methyl-2-pentanone *	BNA	304	46,000
2.	dimethyl benzene isomer	BNA	311	100,000
3.	dimethyl benzene isomer	BNA	339	20,000
4.	unknown	BNA	367	4000
5	unknown	BNA	627	5300
6	unknown hydrocarbon	BNA	675	3600
7.	unknown	BNA	683	3300
8	chlorophenol isomer	BNA	688	4700
9.	unknown	BNA	765	16,000
10.	unknown	BNA	773	6500
11.	unknown hydrocarbon	BNA	850	3900
12.	unknown	BNA	921	13,000
13.	unknown	BNA	929	5900
14.	unknown - substituted alkoxy benzene	BNA	1046	46,000
15. 57-10-3	hexadecanoic acid	BNA	1254	3600
16. 10544-50-0	sulfur, mol. (S8)	BNA	1292	86,000
17.	unknown hydrocarbon	BNA	1445	3300
18.	unknown hydrocarbon	BNA	1497	3200
19.	unknown	BNA	1548	4100
20.	unknown	BNA	1643	5000
21.	unknown	BNA	1662	3600
22.	unknown hydrocarbon	BNA	1672	5600
23.	unknown	BNA	1732	4500
24.	unknown	BNA	1765	3300
25.	$C_{30}H_{48}O$ isomer	BNA	1961	4700
26.	unknown	BNA	2016	19,000
27. —	No unknowns found	VOA	—	—
28.				
29.				
30.				

* possible aldol condensation product

Laboratory Name ERCO/A DIVISION OF ENSCO

Case No Beraghty & Miller

Sample Number
B1A-4 0-2'

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1.	C_2 benzene isomer	BNA	304	6900
2.	$C_{11}H_{22}$ isomer	BNA	577	3200
3.	unknown branched hydrocarbon	BNA	587	16,000
4.	unknown	BNA	614	8300
5.	unknown	BNA	641	11,000
6.	$C_{12}H_{26}$ isomer	BNA	650	7200
7.	unknown	BNA	669	4400
8.	$C_{12}H_{24}$ isomer	BNA	676	7800
9.	$C_{12}H_{26}$ isomer	BNA	684	50,000
10.	$C_{13}H_{28}$ isomer	BNA	697	13,000
11.	unknown	BNA	732	9300
12.	unknown	BNA	742	10,000
13.	$C_{14}H_{30}$ isomer	BNA	750	12,000
14.	unknown hydrocarbon	BNA	766	12,000
15.	$C_{13}H_{28}$ isomer	BNA	774	41,000
16.	unknown	BNA	784	3700
17.	unknown	BNA	789	4900
18.	$C_{14}H_{28}$ isomer	BNA	850	7000
19.	$C_{14}H_{30}$ isomer	BNA	857	4300
20.	unknown hydrocarbon	BNA	930	3000
21. 10544-50-0	sulfur, mol. (S8)	BNA	1288	16,000
22. 67026-22-3	benzene, 1-[2-[2-(2-chloroethoxy)ethoxy]ethoxy]-4-(1,33-ethanedyl)	BNA	1527	8100
23.	unknown	BNA	1548	4800
24.	unknown	BNA	1596	3200
25.	unknown	BNA	1643	3400
26.	unknown	BNA	1675	3800
27.	M-Dichlorobenzene	VOA	1512	15,000
28.	O-Dichlorobenzene	VOA	1587	550,000
29.	P-Dichlorobenzene	VOA	1584	63,000
30.				

7/85
BB/PB

Laboratory Name ERCO / A DIVISION OF ENSECO

Case No YERAGHTY & MILLER

Sample Number B1A.4 9-41

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

	CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1.		C_9 benzene isomer	BNA	330	41,000
2.		$C_{11}H_{24}$ isomer	BNA	583	120,000
3.		Unknown	BNA	610	26,000
4.		Unknown aliphatic	BNA	635	42,000
5.		Unknown hydrocarbon	BNA	642	27,000
6.		$C_{12}H_{26}$ isomer	BNA	646	52,000
7.		Unknown	BNA	666	39,000
8.		$C_{12}H_{24}$ isomer	BNA	672	57,000
9.		$C_{13}H_{28}$ isomer	BNA	681	330,000
10.		$C_{13}H_{28}$ isomer	BNA	693	95,000
11.		Unknown aliphatic	BNA	728	52,000
12.		Unknown aliphatic	BNA	734	28,000
13.		Unknown aliphatic	BNA	738	34,000
14.		Unknown branched hydrocarbon	BNA	746	76,000
15.		Octadecene isomer	BNA	762	80,000
16.		$C_{13}H_{28}$ isomer	BNA	770	260,000
17.		Tetradecene isomer	BNA	847	43,000
18.	57-10-3	Hexadecanoic acid	BNA	1251	67,000
19.		Unknown aliphatic	BNA	1494	25,000
20.		Unknown chlorinated compound	BNA	1523	44,000
21.		Unknown aliphatic	BNA	1545	45,000
22.		Unknown aliphatic	BNA	1593	30,000
23.		Unknown aliphatic	BNA	1640	34,000
24.		Unknown aliphatic	BNA	1672	38,000
25.		Unknown hydrocarbon	BNA	1729	25,000
26.			~~BNA~~		
27.		M-Dichlorobenzene	VOA	1517	17,000
28.		O-Dichlorobenzene	VOA	1561	310,000
29.		P-Dichlorobenzene	VOA	1583	89,000
30.					

AWL

Laboratory Name ERVO/A DIVISION OF ENSECO

Case No GERAGHTY AND MILLER

Sample Number
B1A-5 0-21

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

	CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1.	108-88-3	methylbenzene	BNA	313	7700
2.	123-42-2	4-hydroxy-4-methyl-2-pentanone*	BNA	418	130,000
3.		C_2-benzene isomer	BNA	444	18,000
4.		C_1-chlorobenzene isomer	BNA	546	31,000
5		C_1-chlorobenzene isomer	BNA	553	12,000
6		C_1-benzene, 1-(1,1-dimethylethyl) isomer	BNA	715	820,000
7		C_1-dichlorobenzene isomer	BNA	735	27,000
8		C_1-dichlorobenzene isomer	BNA	765	10,000
9.	112-40-3	Dodecane	BNA	811	7700
10.		Unknown	BNA	904	6700
11.		Unknown	BNA	909	9400
12.		Substituted benzene	BNA	982	5000
13.	103-29-7	Benzene, 1,1'-(1,2-ethanediyl) bis-	BNA	1048	11000
14.		C_5-hydroxybenzoic acid	BNA	1141	7700
15.		Unknown substituted alkoxybenzene	BNA	1235	3,000,000
16.	127-63-9	Benzene, 1,1'-sulfonyl bis	BNA	1385	17,000
17.		$C_{14}H_{12}O_2$ isomer	BNA	1396	13,000
18.	10544-50-0	Sulfur, mol. (S8)	BNA	1463	22,000
19.		Unknown	BNA	1472	14,000
20.		Substituted benzene	BNA	1563	5700
21.	620-40-6	Benzenemethanamine, N,N-bis(phenylmethyl)	BNA	1603	5100
22.		Unknown	BNA	1648	36,000
23.		Unknown	BNA	1652	34,000
24.		Unknown	BNA	1705	10,000
25.		Unknown	BNA	1769	4900
26.		Unknown	BNA	2104	5000
27.			BNA		
28.	95498	1-chloro-2-methyl-benzene	VOA	1404	12,000
29.	108418	1-chloro-3 methyl-benzene	VOA	1499	5300
30.	—	O-Dichlorobenzene	VOA	1560	3600

* possible aldol condensation product

AVL

Laboratory Name Erco/ A DIVISION OF ENSECO

Case No Geraghty & Miller

Sample Number
B1A-5 2-4

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1.	dimethyl benzene isomer	BNA	331	2100
2. 123-42-2	4-hydroxy-4-methyl-2-pentanone *	BNA	380	14,000
3.	$C_{11}H_{16}$ isomer	BNA	569	4600
4.	unknown substituted alkoxy benzene	BNA	1053	560,000
5 14676-52-9	[1,1'-biphenyl]-2-acetic acid	BNA	1205	5100
6.	$C_{14}H_{12}O_2$ isomer	BNA	1288	2800
7 57-10-3	hexadecanoic acid coeluting with unknown	BNA	1252	4600
8 10544-50-0	sulfur, mol. (SB)	BNA	1284	9900
9.	$C_{18}H_{22}$ isomer	BNA	1328	4700
10. 629-97-0	docosane	BNA	1388	6700
11.	$C_{19}H_{18}$ isomer	BNA	1395	12,000
12.	$C_{23}H_{48}$	BNA	1443	13,000
13 646-31-1	tetracosane	BNA	1495	17,000
14. 629-99-2	pentacosane	BNA	1546	20,000
15.	unknown phthalate	BNA	1553	11,000
16.	unknown hydrocarbon	BNA	1576	4000
17. 630-01-3	hexacosane	BNA	1594	20,000
18. 593-49-7	heptacosane	BNA	1641	16,000
19.	$C_{28}H_{58}$	BNA	1686	13,000
20.	$C_{29}H_{60}$	BNA	1730	12,000
21.	$C_{30}H_{62}$	BNA	1772	8900
22.	unknown	BNA	1803	3000
23.	$C_{31}H_{64}$	BNA	1823	7700
24.	unknown hydrocarbon	BNA	1883	4800
25.	unknown	BNA	1956	3000
26.	unknown	BNA	2017	3500
27.	M-Dichlorobenzene	VOA	1512	190
28.	O-Dichlorobenzene	VOA	1528	1600
29.	P-Dichlorobenzene	VOA	1591	720
30.				

* possible aldol condensation product

Laboratory Name [illegible]

Case No: Geraghty & Miller

Sample Number: BIA-6 0-2'

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1.	unknown	BNA	307	4000
2. 108-21-4	Acetic acid, 1-methylethyl ester	BNA	321	9100
3. 123-42-2	4-hydroxy-4-methyl-2-pentanone *	BNA	356	330,000
4.	$C_{11}H_{16}$ isomer	BNA	627	2200
5. 98-73-7	benzoic acid, 4-(1,1-dimethylethyl)-	BNA	1010-1018	36,000
6.	unknown substituted alkoxy benzene	BNA	1111	9900
7.	unknown	BNA	1134-1148	18,000
8.	$C_{14}H_{18}O_2$ isomer	BNA	1236-1240	21,000
9. 127-63-9	benzene, 1,1'-sulfonylbis-	BNA	1297	6100
10.	unknown	BNA	1309	2700
11.	$C_{14}H_{12}O_2$ isomer	BNA	1316	2600
12. 10544-50-0	sulfur, mol. (S8)	BNA	1359-1365	9600
13.	unknown	BNA	1399-1405	87,000
14.	unknown	BNA	1481	2400
15.	unknown	BNA	1437	1800
16.	$C_{18}H_{18}$ isomer	BNA	1476	2400
17.	unknown	BNA	1502	4000
18.	unknown	BNA	1508	16,000
19.	unknown	BNA	1621	3000
20.	unknown	BNA	1658	3000
21.	unknown	BNA	1662	3600
22.	unknown	BNA	1725	5700
23.	unknown	BNA	1769	5400
24.	unknown	BNA	1847	1400
25.	unknown	BNA	1961	1700
26.	unknown	BNA	2049	2800
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* possible aldol condensation product

Laboratory Name ENSECO

Case No. Q & M.

Sample Number BIA-60-2

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1.	UNKNOWN	VOA	1022	18
2.	UNKNOWN	VOA	1193	12
3. 98066	BENZENE, 1,1-DIMETHYLETHYL	VOA	1290	84
4.				
5.	O-DICHLOROBENZENE	VOA	1425	3.6
6.	P-DICHLOROBENZENE	VOA	1449	1.9
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Laboratory Name Erco/A Division of ENSECO

Case No: Geraghty : Miller

Sample Number
61A-6 4-6'

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

	CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1.		unknown	BNA	334	31,000
2.	123-42-2	4-hydroxy-4-methyl-2-pentanone *	BNA	345	800,000
3.		C_8H_{10} isomer	BNA	361	28,000
4.		unknown	BNA	432	17,000
5		$C_{10}H_{14}$ isomer	BNA	519	53,000
6		$C_{11}H_{16}$ isomer	BNA	629	460,000
7		$C_{12}H_{24}$ isomer	BNA	730	22,000
8		$C_{14}H_{32}$ isomer	BNA	788	11,000
9.		unknown branched hydrocarbon	BNA	805	9000
10.		$C_{10}H_{14}O$ isomer	BNA	823	32,000
11.		C_4H_{12} isomer	BNA	830	8400
12.		$C_{15}H_{24}$ isomer	BNA	858	13,000
13.		unknown	BNA	906	26,000
14.		$C_{12}H_{10}O$ isomer	BNA	914	8,000
15.		$C_{13}H_{12}$ isomer	BNA	939	19,000
16.		$C_{11}H_{14}O_2$ isomer	BNA	999	140,000
17.		unknown substituted alkoxy benzene	BNA	1110	120,000
18.		unknown	BNA	1135	51,000
19.		unknown	BNA	1141	60,000
20.	127-63-9	benzene, 1,1'-sulfonylbis-	BNA	1295	23,000
21.	10544-50-0	sulfur, mol. (S8)	BNA	1364	63,000
22.		unknown	BNA	1401	24,000
23.		unknown hydrocarbon	BNA	1623	11,000
24.		unknown branched hydrocarbon	BNA	1721	11,000
25.		unknown	BNA	1767	29,000
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* possible aldol condensation product

Laboratory Name SNBECO

Case No Geraghty & Miller

Sample Number B1A-6 4-6'

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1.	unknown	VOA	1074	~~16000~~ 548
2. 98066	(1,1-dimethylethyl)-benzene	VOA	1397	8800
3. 106434	1-chloro-4-methyl-benzene	VOA	1500	390
4.				
5.	M-DICHLOROBENZENE	VOA	1514	12
6.	O-DICHLOROBENZENE	VOA	1562	490
7.	P-DICHLOROBENZENE	VOA	1591	130
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Laboratory Name Ercol A DIVISION OF ENSECO

Case No Geraghty & Miller

Sample Number
B1A-7 0-2

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1. 108-21-4	Acetic acid, 1-methylethyl ester	BNA	308	7000
2. 123-42-2	4-hydroxy-4-methyl-2-pentanone *	BNA	349	210,000
3.	unknown branched hydrocarbon	BNA	640	11,000
4.	unknown	BNA	657	2800
5	unknown alcohol	BNA	668	3100
6	unknown alcohol	BNA	695	9100
7	unknown	BNA	705	12,000
8	unknown	BNA	725	7100
9	$C_{13}H_{28}$ isomer	BNA	740	63,000
10.	$C_{13}H_{28}$ isomer	BNA	753	19,000
11.	unknown	BNA	758	7800
12.	unknown	BNA	765	3600
13	unknown	BNA	777	4500
14.	unknown	BNA	788	18,000
15.	unknown	BNA	794	9,000
16.	unknown	BNA	798	8700
17.	unknown branched hydrocarbon	BNA	804	27,000
18.	$C_{13}H_{28}$ isomer	BNA	832	71,000
19.	unknown	BNA	839	7300
20.	unknown	BNA	846	9200
21.	unknown	BNA	874	5800
22. 629-59-4	tetradecane	BNA	915	4400
23. 10544-50-0	sulfur, mol. (S8)	BNA	1359-1365	13,000
24.	unknown	BNA	1541	3000
25. 67025-22-3	benzene, 1-[2-[2-(2-chloroethoxy)ethoxy]ethoxy]-4-(1,1,3,3-tetramethyl-	BNA	1601-1636	78,000
26.	unknown	BNA	1782	3000
27. 598-96-9	3,4,4-trimethyl-2-Pentene	VOA	883	87
28.	unknown	VOA	924	48
29.	O-Dichlorobenzene	VOA	1559	35
30.				

*possible aldol condensation product

Laboratory Name ERCO/A DIVISION of ENSECO

Case No Geraghty & Miller

Sample Number
B1A-7 4-6'

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1.	unknown	BNA	334	790
2. 123-42-2	4-hydroxy-4-methyl-2-pentanone*		361-370	150,000
3.	unknown		428	360
4.	unknown		435	270
5.	unknown		789	200
6.	unknown		1072	320
7. 10544-50-0	sulfur, mol. (S8)		1363	840
8.	unknown		1405	280
9.	unknown branched hydrocarbon		1518	220
10.	unknown phthalate		1629	280
11.	unknown phthalate		1634	650
12.	unknown		1673	170
13.	unknown hydrocarbon		1754	320
14.	unknown		1762	340
15.	unknown		1767	260
16.	unknown		1881	280
17.	unknown		2043	770
18.	$C_{30}H_{48}O$ isomer		2160	850
19.	unknown		2241	490
20.	unknown		2329	240
21.	unknown		2356	170
22. 109-99-9	Furan, tetrahydro-	VOA	443	63
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* possible aldol condensation product

7/85
BB/PD

Laboratory Name ERW/ A DIVISION OF ENSECO

Case No

Sample Number
BIA-8 0-21

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1.	C_9H_{20} isomer	BNA	305	570
2.	C_9H_{20} isomer	BNA	315	~~300~~ 330
3.	~~4-1~~ Unknown	BNA	371	250
4.	Trichlorobenzene isomer	BNA	684	1200
5 6012-97-1	Tetrachlorothiophene	BNA	731	1100
6.	1,1-dimethylethyl phenol isomer	BNA	766	380
7	Tetrachlorobenzene isomer	BNA	789	510
8	Tetrachlorobenzene isomer	BNA	829	820
9.	Unknown aliphatic	BNA	841	220
10.	Unknown aliphatic	BNA	846	300
11.	Unknown aliphatic	BNA	867	810
12.	Sulfur (S6)	BNA	919	230
13	Bis (1,1-dimethylethyl) phenol isomer	BNA	942	450
14.	Unknown substituted alkoxy benzene	BNA	1042	420
15. 10544-50-0	Sulfur (mol) S8	BNA	1288	11,000
16.	Unknown	BNA	1329	470
17.	Unknown	BNA	1479	260
18.	Unknown hydrocarbon	BNA	1495	230
19.	Unknown hydrocarbon	BNA	1545	290
20.	Unknown aliphatic	BNA	1594	300
21.	Unknown aliphatic	BNA	1641	380
22.	Unknown hydrocarbon	BNA	1686	530
23.	Unknown aliphatic	BNA	1730	370
24.	Unknown aliphatic	BNA	1758	250
25.	Unknown aliphatic	BNA	1773	280
26.	Unknown	BNA	1864	1600
27.	m-Dichlorobenzene	VOA	1378	85
28.	o-Dichlorobenzene	VOA	1416	90
29.	p-Dichlorobenzene	VOA	1440	57
30.				

* possible aldol condensation product

7/85
AW

Laboratory Name Ero/A Division of Enseco

Case No Geraghty & Miller

Sample Number 81A-8 2-4'

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1. 123-42-2	4-hydroxy-4-methyl-2-pentanone *	BNA	304-316	750,000
2.	unknown	BNA	377	18,000
3.	$C_7H_8ON_2$ isomer	BNA	626	48,000
4.	$C_8H_{18}O$ isomer	BNA	667	31,000
5	bimethylethyl phenol isomer ($C_{10}H_{14}O$)	BNA	765	31,000
6	unknown substituted alkoxy benzene	BNA	1042	130,000
7. 57-10-3	hexadecanoic acid	BNA	1251	19,000
8 10544-50-0	sulfur, mol. (S8)	BNA	1281-1285	220,000
9.	unknown aliphatic	BNA	1297	5800
10.	$C_{18}H_{22}$ isomer	BNA	1328	23,000
11.	$C_{18}H_{18}$ isomer	BNA	1396	58,000
12.	unknown aliphatic	BNA	1456	16,000
13.	unknown aliphatic aldehyde	BNA	1510	95,000
14.	unknown aliphatic	BNA	1552	170,000
15.	unknown aliphatic aldehyde	BNA	1609	27,000
16.	heptacosane	BNA	1641	16,000
17.	unknown aliphatic	BNA	1654	81,000
18.	unknown aliphatic	BNA	1699	39,000
19.	Nonacosane	BNA	1730	28,000
20.	unknown aliphatic	BNA	1744	17,000
21.	unknown aliphatic	BNA	1749	38,000
22.	unknown hydrocarbon	BNA	1824	34,000
23.	unknown aliphatic	BNA	1862	25000
24.	unknown aliphatic	BNA	1925	29,000
25.	unknown aliphatic	BNA	1958	22,000
26.	unknown aliphatic	BNA	2012	28,000
27.	unknown with A molecular weight of 114	VOA	880	69
28.	Unknown	VOA	1096	78
29.				
30.				

* possible aldol condensation product

Laboratory Name Enseco

Case No ERT

Sample Number
B_2-25-2 2'-4'

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1. 624646	C_4H_8 ISOMER	VOA	749 ~~19.84~~	22
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Laboratory Name Enseco

Case No ERT

Sample Number
B2-5 S-2 2-4'

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	~~RT~~ or Scan Number	Estimated Concentration (ug/l or ug/kg)
1. 763882	1,4-Hexadiene - METHYL	UOA	851 ~~2544~~	300
2. 108418	Benzene, 1-chloro - METHYL.	UOA	~~3863~~ 1499	460
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Laboratory Name Enseco

Case No ERT

Sample Number
B2-7 S-1 0-2'

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1. 95498	Benzene, 1-chloro-2-methyl-	UOA	~~32.44~~ 1297	70
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Laboratory Name ENSECO

Case No

Sample Number
B2-7 S-2 2-4 1

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1. 29548025	2,5,5-trimethyl-1,3,6-heptatriene	VOA	1052	620
2. 95499	1-chloro-2-methyl-benzene	VOA	1400	5200
3. 106434	1-chloro-4-methyl-benzene	VOA	1495	1400
4. —	unknown	VOA	1706	310
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Laboratory Name Ensecco

Case No ERT

Sample Number B2-9 S-1 0-2'

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1. 95498	Benzene, 1-chloro-2-methyl-	UOA	~~3317~~ 1298	22
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Laboratory Name Erie / A Division of Energy

Case No Geraghty & Miller

Sample Number B5-1 0-2'

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1. 108-88-3	Methyl benzene (Toluene)	BNA	304	510
2.	C_7H_{14} isomer	BNA	346	600
3.	C_9H_{20} isomer	BNA	390	4100
4. 123-42-2	4 Hydroxy 4 Methyl 2 Pentanone *	BNA	422	36000
5.	$C_9H_{18}O_2$ isomer	BNA	496	630
6.	unknown siloxane	BNA	590	650
7.	unknown siloxane	BNA	752	590
8.	unknown siloxane	BNA	910	480
9.	unknown siloxane	BNA	1053	540
10.	Sulfur (S6)	BNA	1061	950
11.	$C_{15}H_{24}$ isomer	BNA	1080	890
12.	unknown aliphatic	BNA	1130	460
13.	$C_{19}H_{40}$ isomer	BNA	1208	1300
14.	unknown aliphtic	BNA	1279	760
15.	unknown aliphtic	BNA	1374	1000
16.	unknown aliphatic	BNA	1379	380
17. 10544-50-0	Sulfur (S8)	BNA	1447	12000
18.	~~unknown aliphatic~~	BNA	1643 to	
19.	unresolved complex mixture		2381	
20.	no unknowns	VOA	—	—
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* Possible Aldol Condensation Product

AT

Laboratory Name ERW/ A DIVISION OF ENSECO

Case No Geraghty & Miller

Sample Number BS-1 2-4'

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1. 108-88-3	Methylbenzene (toluene)	BNA	313	540
2. 108-21-4	Acetic acid 1-methylethylester	BNA	384	2900
3.	C_9H_{20} isomer	BNA	394	770
4. 123-42-2	4-hydroxy-4-methyl-2-pentanone	BNA	418	35000
5	Unknown	BNA	496	490
6	Sulfur (S8)	BNA	1080-1096	1400
7	$C_{14}H_{14}$ isomer and unknown	BNA	1249	1000
8	methylphenanthrene isomer	BNA	1348	1500
9	methylphenanthrene isomer	BNA	1358	630
10.	$C_{15}H_{10}$ isomer	BNA	1363	1900
11.	Unknown	BNA	1379	440
12.	$C_{16}H_{12}$ isomer	BNA	1396	690
13 10544-50-0	Sulfur (S8)	BNA	1444	15000
14.	Unknown aromatic - $C_{16}H_{16}$ isomer	BNA	1476	630
15.	Unknown	BNA	1510	710
16.	Methylpyrene isomer ($C_{17}H_{12}$)	BNA	1543	2500
17.	Methylpyrene isomer ($C_{17}H_{12}$)	BNA	1553	2200
18.	Methylpyrene isomer	BNA	1558	820
19.	Unknown aromatic ($C_{17}H_{14}$ isomer)	BNA	1562	660
20.	Methylpyrene isomer ($C_{17}H_{12}$)	BNA	1571	770
21.	$C_{16}H_{10}S$ isomer	BNA	1637	1000
22.	$C_{18}H_{12}$ isomer	BNA	1643	1200
23.	Unknown	BNA	1717	640
24.	$C_{19}H_{14}$ isomer (methylchrysene)	BNA	1740	2400
25.	$C_{20}H_{18}$ isomer	BNA	1847	8400
26. —	NO unknowns	VOA	—	—
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Laboratory Name ERCO/A DIVISION OF ENSECO

Case No. Geraghty & Miller

Sample Number
B5-2 0-2'

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1. 108-21-4	Acetic acid, 1-methyl ethyl ester	BNA	370	5700
2. 123-42-2	4-hydroxy-4-methyl-2-pentanone *	BNA	406	93000
3.	unknown	BNA	1008	5200
4.	$C_{12}H_{18}O$ isomer or $C_{11}H_{14}O_2$ isomer	BNA	1078	65,000
5.	$C_{16}H_{26}$ isomer (alkyl substituted phenol)	BNA	1201	5600
6.	$C_{17}H_{22}O_2$ isomer	BNA	1288	68,000
7.	$C_{17}H_{22}O_2$ isomer	BNA	1326	15,000
8.	trichlorobiphenyl isomer	BNA	1332	9700
9.	unknown aromatic	BNA	1372	23,000
10.	tetrachloro biphenyl isomer	BNA	1378	22,000
11.	phenyl naphthalene ($C_{16}H_{12}$) isomer	BNA	1397	18,000
12.	tetrachlorobiphenyl isomer	BNA	1404	26,000
13.	tetra-chloro biphenyl isomer	BNA	1420	10,000
14.	tetra-chloro biphenyl isomer	BNA	1449	6000
15.	tetra-chloro biphenyl isomer	BNA	1458	12,000
16.	unknown	BNA	1466	21,000
17.	tetra-chloro biphenyl isomer	BNA	1479	8800
18.	penta-chloro biphenyl isomer	BNA	1512	6600
19.	unknown chlorinated compound	BNA	1570	53,000
20. 620-40-6	N,N-bis(phenylmethyl) benzene methamine	BNA	1586	8500
21.	$C_{15}H_{24}$ isomer	BNA	1635	7300
22.	unknown	BNA	1730	12,000
23.	phosphoric acid, tris(methylphenyl) ester	BNA	1740	58,000
24.	unknown hexachloro compound	BNA	1752	22,000
25.	unknown hexachloro compound	BNA	1787	34,000
26.	unknown	BNA	1848	8200
27. 87-68-3	Hexachloro-Butadiene	VOA	1317	7.6
28. 95-50-1	o-dichlorobenzene	VOA	1437	39
29.				
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* possible aldol condensation product

Laboratory Name [illegible]

Case No Geraghty & Miller

Sample Number B5-2 2-4'

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

	CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1.	141-79-7	4-Methyl-3-Pentene-2-one *	BNA	347	~~11,000~~ 1000
2.	108-21-4	Acetic Acid 1-Methyl ethyl ester	BNA	383	~~2500~~ 11,000
3.		C_9H_{20} isomer	BNA	390	~~40,000~~ 2500
4.	123-42-2	4 Hydroxy 4methyl 2 Pentanone *	BNA	417	140,000
5		$C_8H_{14}O_3$ isomer	BNA	496	1900
6		Dimethyl ethyl benzoic acid isomer	BNA	1070	26,000
7		Dimethylethyl-Methyl Phenol isomer	BNA	1199	2000
8		$C_{13}H_{22}O_2$ isomer	BNA	1285	2000
9.	57-10-3	Hexadecanoic Acid	BNA	1379	2300
10.	10544-50-0	Sulfur (S8)	BNA	1442	6500
11.		unknown aliphatic	BNA	1646	4800
12.		unknown	BNA	1928	~~2300~~ 2300
13		unknown aliphatic	BNA	1783	9200
14.		$C_{15}H_{26}$ isomer	BNA	2109	3500
15.		unresolved complex mixture	BNA	1800-10	—
16.		~~C_9H_{14} isomer~~	1	2000	—
17.		C_9H_{14} isomer	VOA	736	890
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* possible aldol condensation product

Laboratory Name EECO/ A DIVISION OF ENSECO

Case No: Geraghty & Miller

Sample Number
B5-3 0-2'

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1. 123-42-2	4 hydroxy-4-methyl-2-pentanone *	BNA	402	29,000
2.	$C_{11}H_{16}O$ isomer	BNA	945	2900
3.	$C_{14}H_{22}$ isomer	BNA	1018	2900
4.	$C_{11}H_{14}O_2$ or $C_{12}H_{18}O$ isomer	BNA	1065	12,000
5	Bis(dimethylethyl) phenol isomer	BNA	1135	11,000
6.	Alkoxy substituted benzene	BNA	1175	4500
7	$C_{12}H_{18}$ isomer coeluting with $C_{15}H_{24}O$ isomer	BNA	1198	6000
8	Alkyl substituted phenol ($C_{15}H_{24}O$) isomer	BNA	1205	7700
9.	unknown	BNA	1246	3200
10.	unknown	BNA	1280	56000
11.	unknown	BNA	1287	9100
12.	Alkyl substituted silane	BNA	1309	3100
13	unknown	BNA	1356	5900
14.	unknown	BNA	1370	4500
15.	unknown	BNA	1431	2500
16.	unknown	BNA	1465	2900
17.	unknown chlorine containing compound	BNA	1511	2500
18.	unknown	BNA	1568	3400
19.	$C_{17}H_{12}$ isomer	BNA	1673	28,000
20.	unknown	BNA	1724	2600
21.	unknown hexachloro compound	BNA	1753	29,000
22.	unknown hexachloro compound	BNA	1785	13,000
23.	unknown and benzo(b,k) fluoranthene	BNA	1843	3400
24.	unknown aromatic	BNA	1879	3700
25.	unknown	BNA	1941	3000
26. 95-50-1	o-dichlorobenzene	VOA	1447	1900
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* possible aldol condensation product

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AT/AD

Laboratory Name ERCO / A DIVISION OF ENSECO

Case No Geraghty & Miller

Sample Number
B5-3 2-4'

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1. 108-21-4	Acetic acid, 1-methyl ethyl ester	BNA	330	8100
2. 108-90-7	chlorobenzene (and 4-hydroxy 4-methyl 2-pentanone*)	BNA	361	21,000
3. 123-42-2	4-hydroxy-4-methyl-2-pentanone*	BNA	371	90,000
4.	$C_{10}H_{14}O$ isomer	BNA	727	2500
5	dimethyl ethyl phenol isomer	BNA	850	8500
6.	dimethyl ethyl phenol isomer	BNA	874	150,000
7	Bis(1,1-dimethyl ethyl) phenol isomer	BNA	1055	91,000
8	Bis(1,1-dimethyl ethyl) phenol isomer	BNA	1061	16,000
9.	unknown aromatic	BNA	1066	3400
10.	Tetramethyl butyl phenol isomer	BNA	1127	24,000
11.	Alkoxy substituted benzene	BNA	1161	36,000
12.	Tetramethyl butyl phenol isomer	BNA	1168	8600
13	unknown	BNA	1187	3000
14.	$C_{18}H_{20}$ isomer	BNA	1211	3400
15. 10544-50-0	sulfur mol. (S8)	BNA	1420	14,000
16.	unknown phthalate	BNA	1550	4200
17.	unknown	BNA	1569	5900
18.	unknown	BNA	1607	5300
19.	phosphoric acid, alkyl ester isomer	BNA	1668	120,000
20.	unknown phthalate	BNA	1780	5100
21.	unknown phthalate	BNA	1788	14,000
22.	unknown phthalate	BNA	1793	18,000
23.	unknown phthalate ($C_{28}H_{46}O_4$)	BNA	1903	40,000
24.	unknown phthalate ($C_{28}H_{46}O_4$)	BNA	1916	24,000
25.	unknown phthalate	BNA	1928	18,000
26.	unknown phthalate	BNA	1936	16,000
27.	unknown phthalate	BNA	1949	14,000
28.	m-Dichlorobenzene	VOA	1404	960
29.	o-Dichlorobenzene	VOA	1447	6200
30.	p-Dichlorobenzene	VOA	1468	3500

* possible aldol condensation product

Actual concentration

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AT | PD

Laboratory Name EPCO / A Division of ENSCO

Case No: Geraghty & Miller

Sample Number: B5-4 0-2'

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

	CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1.	108-21-4	Acetic Acid, 1-Methylethyl ester	BNA	325	7100
2.	123-42-2	4 Hydroxy 4 Methyl 2 Pentanone *	BNA	367	74000
3.		Hydroxy Methoxy benzaldehyde isomer	BNA	960	13000
4.		Methoxy - Propenyl phenol isomer	BNA	1002	9400
5		~~Unknown aliphatic~~	~~BNA~~	~~1053~~	—
6		$C_{15}H_{32}$ isomer	BNA	1065	29000
7		unknown	BNA	1108	6600
8		unknown aliphatic	BNA	1131	6500
9		Alkoxy Substituted benzene	BNA	1159	8900
10.		$C_{15}H_{18}$ isomer	BNA	1180	11,000
11.		unknown aliphatic	BNA	1310	6500
12.		$C_{15}H_{20}O$ isomer	BNA	1337	5900
13		unknown	BNA	1388	13000
14.		unknown	BNA	1405	12000
15.		unknown	BNA	1417	14000
16.		unknown	BNA	1626	9200
17.		$C_{19}H_{20}O_2$ isomer	BNA	1682	12000
18.		~~$C_{15}H_{14}O_3$ isomer~~ unknown	BNA	1710	8300
19.		Unknown aliphatic	BNA	1726	5100
20.		unknown	BNA	1795	14000
21.		unknown	BNA	1752	7300
22.		unknown	BNA	1770	12000
23.		unknown aliphatic	BNA	1784	16000
24.		$C_{20}H_{32}O_2$ isomer	BNA	1810	24000
25.		unknown aliphatic	BNA	1910	15000
26.		Chlorinated unknown	BNA	2065	15000
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* ~~4 Hydroxy 4~~
Possible Aldol condensation Product

Sample Number
BS-4 0-2'

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1.	$C_{10}H_{10}$ isomer	VOA	1224	19
2.	unknown	VOA	1327	23
3. 95-50-1	o-dichlorobenzene	VOA	1449	75
4.	$C_{10}H_{20}$ isomer	VOA	1657	31
5.	unknown	VOA	1770	53
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Laboratory Name EECO / A Division of EUSECO

Case No Geraghty & Miller

Sample Number ES-4 4-6'

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1. 108-21-4	Acetic Acid 1-Methylethyl ester	BNA	328	14000
2.	C_9H_{20} isomer	BNA	352	3100
3. 123-42-2	4 Hydroxy 4 Methyl 2 Pentanone *	BNA	370	170 000
4.	$C_{11}H_{24}$ isomer	BNA	593	2600
5.	$C_{10}H_{16}O$ isomer	BNA	719	2900
6.	$C_{11}H_{14}O_2$ isomer	BNA	1035	6000
7. 10544-50-0	Sulfur (S_8)	BNA	1407-19	18000
8.	Unknown aliphatic	BNA	1450	5900
9.	$C_{18}H_{22}$ isomer	BNA	1455	3000
10.	Unknown aliphatic	BNA	1509	18000
11.	Tetramethyl Phenanthrene isomer	BNA	1525	5900
12.	Unknown Aliphatic	BNA	1565	28000
13.	Unknown Aliphatic	BNA	1620	38000
14.	Unknown Aliphatic	BNA	1672	34000
15.	Unknown Aliphatic	BNA	1703	2800
16.	Unknown Aliphatic	BNA	1752	~~27000~~ 3900
17.	Unknown aliphatic	BNA	1771	27000
18.	Unknown aliphatic	BNA	1803	3000
19.	Unknown aliphatic	BNA	1825	18000
20.	Unknown hydrocarbon	BNA	1966	8800
21.	~~Unknown aliphatic~~	~~BNA~~	~~2059~~	~~7700~~
22.	Unknown	BNA	2099	2900
23.	Unknown	BNA	2226	2400
24.	Unknown	BNA	2343	3200
25.	Unknown	BNA	2359	7600
26.	Unknown aliphatic	BNA	1788	27000
27.	Unknown aliphatic	BNA	2059	7700
28. —	No unknowns	VOA	—	—
29.				
30.				

* Possible Aldol Condensation Product

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Form 1, Part B

Laboratory Name Ercol A Division of Ensco

Case No Geraghty & Miller

Sample Number B5-5 0-2'

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1. 108-21-4	Acetic Acid 1-Methylethyl ester	BNA	342	13000
2. 123-42-2	4 Hydroxy 4 Methyl 2 Pentanone *	BNA	382	230,000
3.	Unknown	BNA	463	2400
4.	$C_{15}H_{24}$ isomer (Tris methylethyl benzene)	BNA	901	3200
5	$C_{15}H_{24}$ isomer (Tris methylethyl benzene)	BNA	946	33000
6	$C_{15}H_{24}$ isomer	BNA	964	4200
7	$C_{15}H_{24}$ isomer	BNA	982	8600
8	Unknown	BNA	988	2200
9	Unknown	BNA	999	3800
10.	$C_{11}H_{14}O_2$ isomer	BNA	1052	15,000
11.	$C_{15}H_{24}$ isomer	BNA	1063	6700
12.	Unknown aliphatic	BNA	1142	4200
13	Alkoxy substituted benzene	BNA	1156	4000
14.	$C_{15}H_{24}O$ isomer	BNA	1192	140000
15.	$C_{17}H_{22}O_2$ isomer	BNA	1270	7100
16.	Unknown	BNA	1301	3300
17.	Unknown	BNA	1310	4200
18. 127-63-9	1,1'-Sulfonyl bis benzene ~~isomer~~ *	BNA	1330-1410	740,000
19.	Unknown	BNA	1455	20000
20.	Unknown	BNA	1560	12000
21.	~~$C_{15}H_{24}$ isomer~~ Unknown	BNA	1672	4000
22.	Unknown aliphatic	BNA	1768	3000
23.	Unknown aliphatic	BNA	1899	2500
24.	Unknown	BNA	1925	5100
25.	~~$C_{15}H_{10}O_2$ isomer~~ Unknown	BNA	2058	5800
26.	Unknown aliphatic	BNA	2167	1600
27.	No unknowns	VOA	—	—
28.				
29.				
30.				

* Possible Aldol condensation Product

Laboratory Name ERCO A DIVISION OF ENSERO

Case No Geraghty & Miller

Sample Number
B5-5 4-6'

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

	CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1.		unknown	BNA	353	20000
2.	123-42-2	4-hydroxy-4-methyl 2-pentanone *	BNA	363-398	1,300,000
3.		unknown	BNA	469	14,000
4.		unknown	BNA	1038	46,000
5.		unknown	BNA	1045	21,000
6.		unknown	BNA	1139	14,000
7.		$C_{15}H_{24}O$ isomer	BNA	1178	18,000
8.		$C_{15}H_{24}O$ isomer	BNA	1186	23 000
9.	127-63-9	1,1'-sulfonylbis benzene	BNA	1337-1345	20,000
10.	10544-50-0	sulfur mol (S8)	BNA	1410-1420	67,000
11.		unknown	BNA	1629 - 1635	~~$~~ 22,000 PD
12.			BNA	1668	21,000
13.		unknown aliphatic	BNA	1672	12,000
14.		$C_{23}H_{46}$ isomer	BNA	1677	16,000
15.		unknown aliphatic	BNA	1772	25,000
16.		unknown aliphatic	BNA	1778	19,000
17.		unknown aliphatic	BNA	2085	14,000
18.		unknown	BNA	2097	11,000
19.		unknown	BNA	2318	11,000
20.		unknown	BNA	2346	39,000
21.		unknown	BNA	2361	60,000
22.		unknown	VOA	422	14
23.		unknown	VOA	1438	380
24.	95-50-1	O-Dichlorobenzene			
25.					
26.					
27.					
28.					
29.					
30.					

* possible aldol condensation product

Laboratory Name ERCO / A Division of ENSCO

Case No Geraghty & Miller

Sample Number B5-6 0-2'

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

	CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1.	141-79-7	4 Methyl - 3 Pentene - 2 one *	BNA	315	950
2.	108-21-4	Acetic Acid 1-Methylethyl ester	BNA	350	3900
3.		C_9H_{20} isomer	BNA	368	740
4.	123-42-2	4 Hydroxy 4 Methyl 2 Pentanone *	BNA	390	54,000
5.		C_9H_{20} isomer	BNA	396	610
6.		$C_6H_{10}O$ isomer	BNA	469	630
7.		Methyl Phenanthrene isomer	BNA	1331	710
8.		$C_{15}H_{10}$ isomer	BNA	1345	1000
9.	10544-50-0	Sulfur (S_8)	BNA	1421	830
10.		Methyl Pyrene isomer	BNA	1527	1000
11.		Methyl Pyrene isomer	BNA	1537	810
12.		Unknown Aliphatic	BNA	1570	570
13.		$C_{16}H_{10}O$ isomer	BNA	1621	460
14.		unknown aromatic	BNA	1628	540
15.		unknown aliphatic	BNA	1672	730
16.		$C_{18}H_{12}$ isomer	BNA	1676	880
17.		unknown	BNA	1692	450
18.		Methyl Chrysene isomer	BNA	1726	900
19.		~~Methyl Chrysene isomer~~ unknown aromatic PD	BNA	1745	930
20.		unknown aliphatic	BNA	1774	2000
21.		~~$C_{22}H_{12}$ isomer~~	~~BNA~~	~~1827~~	~~3900~~ PD
22.		Unknown aliphatic	BNA	2073	1300
23.		$C_{22}H_{12}$ isomer	BNA	2208	440
24.		unknown aliphatic	BNA	2340	910
25.		unknown aliphatic	BNA	2353	440
26.		unknown aliphatic	BNA	2371	650
27.	95-50-1	O-Dichlorobenzene	VOA	1557	88
28.					
29.					
30.					

* Possible Aldol Condensation Product

Laboratory Name ERCO / A Division of FMC Corp

Case No Geraghty & Miller

Sample Number B5-6 2-4'

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1. 141-79-7	4-Methyl-3-Pentene-2-ONE *	BNA	316	680
2. 108-21-4	Acetic Acid, 1-Methylethyl ester	BNA	347	3500
3.	C_9H_{20} isomer	BNA	368	780
4. 123-42-2	4 Hydroxy 4 Methyl 2 Pentanone *	BNA	387	50,000
5.	$C_{10}H_{16}$ isomer	BNA	538	860
6.	Sulfur (S_8)	BNA	1040	740
7. 10544-50-0	Sulfur (S_8)	BNA	1419-1423	7200
8.	$C_{17}H_{12}$ (Methyl Pyrene) isomer	BNA	1526	550
9.	$C_{17}H_{12}$ (Methyl Pyrene) isomer	BNA	1554	540
10.	Unknown aromatic	BNA	1652	940
11.	Unknown aliphatic	BNA	1671	680
12.	$C_{18}H_{12}$ isomer (aromatic)	BNA	1675	660
13. 1330-78-5	Phosphoric Acid, Tris(Methylphenyl) ester isomer	BNA	1725	910
14.	$C_{19}H_{20}O$ isomer	BNA	1744	1900
15.	$C_{19}H_{20}O$ isomer AND UNKNOWN	BNA	1754	530
16.	Unknown aliphatic	BNA	1773	1900
17.	Benzo (e) Pyrene	BNA	1971	1600
18.	Unknown Aliphatic	BNA	2072	650
19.	Unknown Aliphatic	BNA	2339	1500
20.	$C_{29}H_{50}O$ isomer	BNA	2352	2300
21.	Unknown aliphatic	BNA	2360	2000
22.				
23.	C_9H_{20} isomer	BNA	396	600
24.	Methyl Phenanthrene AND $C_{15}H_{10}$ isomer	BNA	1345	550
25.	Tetrachloro biphenyl isomer	BNA	1367	470
26.	$C_9H_{16}O_2$ isomer	BNA	468	560
27.	No unknowns	VOA	—	—
28.				
29.				
30.				

* Possible Aldol Condensation Product

Laboratory Name Ecco/A Division of Enseco

Case No Geraghty & Miller

Sample Number BS-7 0-2'

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1. 123 42 2	4 Hydroxy 4Methyl-2-Pentanone*	BNA	373	40,000
2.	Nonene (C_9H_{18})	BNA	439	6000
3. 119-61-9	Benzophenone	BNA	1144	11,000
4.	$C_{17}H_{22}O_2$ isomer	BNA	1274	13000
5	Trichloro biphenyl isomer	BNA	1317	8600
6.	Methyl Phenanthrene/Anthracene isomer	BNA	1332	9800
7	Methyl Phenanthrene/Anthracene isomer	BNA	1336	4700
8	$C_{15}H_{10}$ isomer	BNA	1347	16,000
9.	Tetrachloro biphenyl isomer	BNA	1364	13000
10.	Tetrachloro biphenyl isomer	BNA	1369	11000
11.	Tetrachloro biphenyl isomer	BNA	1390	16000
12.	Tetrachloro biphenyl isomer	BNA	1404	8300
13	$C_{20}H_{32}$ isomer	BNA	1456	8300
14.	Unknown Aliphatic	BNA	~~1405~~ 1495	8200
15.	$C_{20}H_{18}$ isomer	BNA	1514	10,000
16.	$C_{17}H_{12}$ (Methyl Pyrene) isomer	BNA	1529	8300
17.	Pentachloro biphenyl isomer	BNA	1550	6600
18.	Unknown Aliphatic	BNA	1578	5700
19.	Unknown Aliphatic	BNA	1631	27,000
20.	$C_{17}H_{10}O$ isomer	BNA	1642	5700
21.	$C_{19}H_{14}$ (Methyl Chrysene) isomer	BNA	1695	5500
22.	$C_{19}H_{14}$ (Methyl Chrysene) isomer	BNA	1727	6600
23.	$C_{19}H_{14}$ (Methyl Chrysene) isomer	BNA	1740	8800
24.	Unknown aliphatic	BNA	1775	6700
25. 56-49-5	3-Methyl Cholanthrene	BNA	1867	7100
26. 192-97-2	Benzoic Pyrene	BNA	1877	16,000
27.	No unknowns	VOA	—	—
28.				
29.				
30.				

*Possible Aldol Condensation Product

Laboratory Name ERCO / A Division of EUSECO

Case No Geraghty & Miller

Sample Number BS-7 2-4'

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1. 108-21-4	Acetic Acid 1-Methylethyl ester	BNA	339	9300
2. 123-42-2	4 Hydroxy 4 methyl 2 Pentanone *	BNA	381	150,000
3. 119-61-9	Benzophenone	BNA	1143	18,000
4. 132-65-0	Dibenzothiophene	BNA	1233	3100
5.	$C_{17}H_{22}O_2$ isomer	BNA	1271	9400
6.	unknown nitrogen containing cmpd (carbazole)	BNA	1289	5200
7.	C_1 anthracene / phenanthrene ($C_{15}H_{22}$)	BNA	1333	10,000
8.	unknown aromatic ($C_{15}H_{10}$ isomer)	BNA	1345	12,000
9.	$C_{16}H_{12}$ isomer	BNA	1379	3800
10.	unknown oxygen containing cmpd (carbazole)	BNA	1387	8200
11. 10544-50-0	Sulfur (S8)	BNA	1420	15,000
12.	$C_{16}H_{10}$ isomer	BNA	1461	5500
13.	$C_{16}H_{10}$ isomer	BNA	1467	16,000
14.	$C_{17}H_{12}$ isomer	BNA	1527	6500
15.	$C_{17}H_{12}$ isomer	BNA	1537	5400
16.	$C_{16}H_{10}S$ isomer	BNA	1620	3700
17.	$C_{18}H_{10}$ isomer	BNA	1627	5700
18.	$C_{18}H_{10}$ isomer	BNA	1654	4200
19.	$C_{18}H_{12}$ isomer	BNA	1677	4600
20.	$C_{19}H_{14}$ isomer	BNA	1693	3100
21.	$C_{19}H_{14}$ isomer	BNA	1725	3600
22.	unknown	BNA	1745	4400
23.	$C_{20}H_{12}$ isomer	BNA	1845	3800
24.	$C_{20}H_{12}$ isomer	BNA	1877	11,000
25.	$C_{20}H_{12}$ isomer	BNA	1902	4100
26.				
27.	unknown	BNA	1865	3000
28.	No unknowns	VOA	—	—
29.				
30.				

* Possible Aldol Condensation Product.

Laboratory Name ERCO/A DIVISION OF ENSECO

Case No GERAGTHY & MILLER

Sample Number
B5-8 0-2'

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

	CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1.	108-21-4	Acetic acid, 1-methylethyl ester	BNA	331	8800
2.	123-42-2	4-hydroxy-4-methyl-2-pentanone *	BNA	374	110 000
3.		$C_{13}H_9N$ (ACRIDINE) isomer	BNA	1266	2700
4.		$C_{17}H_{22}O_2$ isomer	BNA	1272	2800
5	86-74-8	Carbazole	BNA	1290	3500
6		Unknown	BNA	1318	1900
7		1,1'-sulfonylbis + C_1 phenanthrene isomer	BNA	1329	1400
8		1,1'-sulfonylbis + C_1-phenanthrene isomer	BNA	1334	1500
9.		1,1'-sulfonylbis benzene	BNA	1338-1350	35000
10.	10544-50-0	Sulfur	BNA	1421	1600
11.		methylpyrene isomer	BNA	1526	1400
12.		methylpyrene isomer	BNA	1536	1300
13		Unknown aliphatic	BNA	1606	2600
14.		$C_{17}H_{14}O$ isomer	BNA	1621	1500
15.		Unknown aliphatic	BNA	1638	1600
16.		$C_{18}H_{12}$ isomer	BNA	1675	1300
17.		Unknown aliphatic	BNA	1772	1900
18.		Benzo(e) pyrene	BNA	1872	2100
19.		Unknown sulfur cont. compound	BNA	2105	8000
20.		Unknown	BNA	2210	1800
21.		methylchrysene isomer	BNA	1725	1000
22.		Unknown	BNA	1741	1400
23.		NO unknowns	VOA	—	—
24.					
25.					
26.					
27.					
28.					
29.					
30.					

* possible aldol condensation product

Laboratory Name: FBRO / A Division of ENSECO

Case No: Geraghty & Miller

Sample Number: B5-8 6-8'

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

	CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1.	108-21-4	Acetic Acid, 1-Methylethyl ester	BNA	324	13,000
2.	123-42-2	4 Hydroxy 4 methyl 2 Pentanone *	BNA	370	160,000
3.		C_9H_{20} isomer	BNA	379	1400
4.		C_9H_{20} isomer	BNA	391	930
5		unknown aliphatic	BNA	402	780
6		unknown	BNA	458	1700
7		$C_7H_{12}O$ isomer	BNA	502	790
8	100-52-2	Benzaldehyde	BNA	511	1100
9.		unknown	BNA	763	1100
10.	AN✓	~~Methyl biphenyl isomer~~ $C_{13}H_{12}$ isomer	BNA	984	1100
11.		Sulfur (S_6)	BNA	1036	1700
12.		Bis(dimethylethyl)phenol isomer	BNA	1048	1200
13		unknown hydrocarbon	BNA	1115	590
14.		Phosphoric Acid ~~Tributyl~~ ester	BNA	~~1146~~ 1154	8500
15.		unknown aliphatic	BNA	1268	1400
16.		$C_{16}H_{12}$ isomer	BNA	1302	1500
17.		unknown	BNA	1316	12000
18.		1'1' sulfonylbis benzene	BNA	1348	40,000
19.	0544-50-0	Sulfur (S_8)	BNA	1421	43 000
20.		$C_{17}H_{12}$ (Methyl Pyrene) isomer	BNA	1523	670
21.		$C_{17}H_{12}$ (Methyl Pyrene) isomer	BNA	1533	780
22.		unknown ~~aliphatic~~ A	BNA	1602	1500
23.		unknown	BNA	1710	7500
24.		unknown	BNA	1722	1100
25.		unknown	BNA	1741	610
26.		unknown	BNA	2096	3900
27.		No unknowns	VOA	—	—
28.					
29.					
30.					

* possibly aldol condensation product

Laboratory Name Erco / A Division of Fusco

Case No Geraglitx & Miller

Sample Number B5-9-02'

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1. 141-79-7	4 Methyl - 3-Pentene-2-one *	BNA	306	1700
2. 108-21-4	Acetic Acid, 1-Methyl ethyl ester	BNA	351	9000
3.	C_9H_{20} isomer	BNA	360	1200
4. 123-42-2	4 Hydroxy 4 Methyl 2 Pentanone *	BNA	385-9	120,000
5	C_9H_{20} isomer	BNA	401	770
6 79-34-5	1,1,2,2, Tetrachloroethane	BNA	461	1000
7	Unknown	BNA	468	1500
8	$C_9H_{18}O$ isomer	BNA	565	770
9	Unknown	BNA	1333	970
10.	Unknown	BNA	1346	1300
11. 57-10-3	Hexadecanoic Acid	BNA	1369	2100
12. 10544-50-0	Sulfur (S8)	BNA	1421	~~660~~ 660
13.	Unknown aliphatic	BNA	1451	1300
14.	$C_{17}H_{12}$ (Methyl Pyrene) isomer	BNA	1527	670
15.	$C_{15}H_{12}N_2$ isomer	BNA	1558	890
16.	Unknown aliphatic	BNA	1569	930
17.	~~Octadecene isomer~~ Unknown hydrocarbon	BNA	1672	2500
18.	Unknown aliphatic	BNA	1676	1400
19.	Unknown aliphatic	BNA	1726	1100
20.	Unknown hydrocarbon	BNA	1774	7200
21.	Unknown aliphatic	BNA	1851	640
22. 192-97-2	Benzo(e) Pyrene	BNA	1874	1200
23.	Unknown aliphatic	BNA	2071	3300
24.	Unknown aliphatic	BNA	2270	900
25.	Unknown aliphatic	BNA	2337	1300
26.	$C_{29}H_{50}O$ isomer	BNA	2353	2000
27.	Unknown aliphatic	BNA	2369	2700
28.	No unknowns	VOA	—	—
29.				
30.				

* Possible Aldol Condensation Product

Laboratory Name ERCO/A DIVISION OF ENSECO

Case No. Geraghty & Miller

Sample Number
85-9 8-10'

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1. 108-21-4	Acetic acid, 1-methylethyl ester	BNA	354	9000
2. 123-42-2	4-hydroxy-4-methyl-2pentanone *	BNA	393	120,000
3.	$C_{10}H_{16}$ isomer	BNA	490	8100
4.	$C_{10}H_{16}$ isomer	BNA	604	12,000
5	unknown	BNA	726	3000
6. 90-12-0	1-methyl naphthalene	BNA	883	2700
7	Dimethyl naphthalene isomer	BNA	965	1900
8	Dimethyl naphthalene isomer	BNA	978	3400
9.	$C_{13}H_{12}$ isomer	BNA	1120	1900
10.	methyl phenanthrene/anthracene isomer	BNA	1331	3100
11.	methyl phenanthrene/anthracene isomer	BNA	1347	3100
12.	phenylethenyl phenol isomer	BNA	1421	2700
13	$C_{17}H_{12}$ isomer and unknown	BNA	1537	3600
14.	unknown	BNA	1564	2100
15.	phenylmethyl benzoic acid methyl ester	BNA	1575	1800
16.	unknown	BNA	1586	2600
17.	methyl chrysene isomer	BNA	1725	1700
18.	$C_{10}H_{16}$ isomer	VOA	1054	21
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* possible aldol condensation product

7 85
AT/PD

Laboratory Name [illegible] / A Division of [illegible]

Case No: Geraghty & Miller

Sample Number: B5-10 0-2'

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1. 123-42-2	4 Hydroxy 4 Methyl 2 Pentanone *	BNA	395	87 000
2.	UNKNOWN substituted alkoxy benzene	BNA	1170	3900
3. 127-63-9	1,1' Sulfonylbis benzene	BNA	1350	950 000
4.	UNKNOWN	BNA	1466	5000
5	UNKNOWN	BNA	1569	4700
6	UNKNOWN	BNA	1635	4000
7	UNKNOWN	BNA	2123	56 000
8	UNKNOWN	BNA	2208	4900
9. —	No Unknowns found	VOA	—	—

Laboratory Name [illegible] / A Division of [illegible]

Case No: Geraghty & Miller

Sample Number: B5-10 4-6'

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1. 123-42-2	4 Hydroxy 4 Methyl 2 Pentanone *	BNA	392	45000
2. 127-63-9	1,1'-Sulfonyl bis - benzene	BNA	1366	26000
3. 10544-50-0	Sulfur (S8)	BNA	1441	13000
4.	O-dichlorobenzene	VOA	1438	120
5	P-dichlorobenzene	VOA	1467	24

*Possible Aldol Condensation Product

Laboratory Name Ecco / A Division of FNSCO

Case No. Geraghty & Miller

Sample Number
B5-11 0-2'

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1. 108-21-4	1-Methylethyl acetate	BNA	366	2700
2. 123-42-2	4 Hydroxy 4 Methyl 2 Pentanone *	BNA	400	49,000
3.	C_8H_{18} isomer	BNA	453	3500
4. 127-63-9	1,1'-Sulfonylbis benzene	BNA	1367	2500
5. 57-10-3	Hexadecanoic Acid	BNA	1380	6400
6. 10544-50-0	Sulfur (S_8)	BNA	1442	1400
7.	Unknown Aliphatic	BNA	1488	3400
8.	$C_{20}H_{28}O_2$ isomer	BNA	1666	10,000
9.	unknown aliphatic	BNA	1787	2000
10.	unknown aliphatic	BNA	1722	1400
11.	unresolved complex mixture	BNA	1577 ✓	
12.			2381	
13. —	No unknowns found	VOA	—	—
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* possible aldol condensation product

Laboratory Name Ecco/A Division of Enseco

Case No. Geraghty & Miller

Sample Number
B5-11 10-12'

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1.	trichloroethane isomer	BNA	306	330
2.	unknown	BNA	331	190
3. 141-79-7	3-penten-2-one, 4-methyl *	BNA	342	420
4. 108-21-4	Acetic acid, 1-methylethyl ester	BNA	380	3700
5	C_9H_{20} isomer	BNA	386	730
6. 123-42-2	4-hydroxy-4-methyl-2-pentanone *	BNA	416	39,000
7	C_9H_{20} isomer	BNA	424	350
8	C_9H_{20} isomer	BNA	434	290
9.	unknown	BNA	493	510
10.	$C_7H_{12}O$ isomer	BNA	537	270
11.	unknown	BNA	1062	320
12.	~~unknown~~ Sulfur (S_6)	BNA	1274	230
13 57-10-3	hexadecanoic acid	BNA	1378	230
14. 10544-50-0	sulfur mol. (S8)	BNA	1444	4600
15.	unknown	BNA	1857	200
16.	No unknowns found	VOA	—	—
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* possible aldol condensation product

Laboratory Name: Erco / A Division of Enseco

Case No: Geraghty & Miller

Sample Number: B5-12 0-21

(40143)

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1. 108-21-4	* ~~unknown~~ Acetic acid, 1-methyl ethyl ester	BNA	327	12,000
2.	unknown	BNA	343	2100
3.	C_9H_{20} isomer	BNA	352	2900
4. 123-42-2	4-hydroxy-4-methyl-2-pentanone *	BNA	370	270,000
5	C_9H_{20} isomer	BNA	381	2400
6	C_9H_{20} isomer	BNA	393	1200
7 57-10-3	hexadecanoic acid	BNA	1361	3100
8	unknown	BNA	1470	2200
9 57-11-4	octadecanoic acid	BNA	1484	1400
10.	unknown	BNA	1717	2000
11.	unknown	BNA	1743	1300
12.	unknown	BNA	1747	1800
13	unknown	BNA	1766	4900
14.	unknown and benzo(j)fluoranthene	BNA	1819	2000
15.	unknown and benzo(e)pyrene	BNA	PD ~~1840~~ 1861	1300
16.	unknown	BNA	~~2015~~ 2051	1600
17.	None	VOA	— PD	—
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* possible aldol condensation product.

Laboratory Name Ecol A Division of Fussco

Case No: Geraghty & Miller

Sample Number: 85-12 6-8'

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1. 141-79-7	4-methyl-2 penten-2-ene *	BNA	304	8600
2.	unknown	BNA	312	1400
3. 108-21-4	Acetic acid, 1-methylethyl ester	BNA	337	9600
4.	unknown	BNA	349	1100
5	C_9H_{20} isomer	BNA	357	2700
6	4-hydroxy-4-methyl-2-pentanone *	BNA	379	290,000
7	C_9H_{20} isomer	BNA	386	1900
8	C_9H_{20} isomer	BNA	397	1400
9	C_9H_{20} isomer	BNA	407	1400
10.	unknown	BNA	1032	3100
11.	$C_{12}H_{10}O_2S$ isomer	BNA	1340	2000
12.	unknown	BNA	1382	6000
13	unknown	BNA	1405	3800
14. 10544-50-0	sulfur, mol. (S8)	BNA	1415-1419	48,000
15.	$C_{18}H_{22}$ isomer	BNA	1451	2600
16.	$C_{18}H_{18}$ isomer	BNA	1522	6200
17.	unknown	BNA	1712	12,000
18.	unknown	BNA	1736	4000
19.	unknown phthalate	BNA	1743	2700
20.	unknown	BNA	1747	4900
21. 593-49-7	heptacosane	BNA	1767	3800
22.	unresolved complex mixture	BNA	1350-2400	
23.	hexane	VOA	734	9.5
24.	Unknown	VOA	1014	9.0
25.				
26.				
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*possible aldol condensation product

7 85
GB/PD

Laboratory Name Erco / A Division of Enseco
Case No: Geraghty & Miller

Sample Number: B5-13 0-2

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

	CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1.		C_9H_{20} isomer	BNA	357	1300
2	123-42-2	4-hydroxy-4-methyl-2-pentanone *	BNA	374	150,000
3.		C_9H_{20} isomer	BNA	386	1200
4.	57-10-3	hexadecanoic acid	BNA	1362	3400
5		unknown	BNA	1468	1900
6		unresolved complex mixture	BNA	1170c - 2400	
7	110543	hexane	VOA	734	11

Laboratory Name Erco / A Division of Enseco
Case No: Geraghty & Miller

Sample Number: B5-13 6-8'
(40140)

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

	CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1.	108-21-4	Acetic acid, 1-methylethyl ester	BNA	247	16,000
2.		C_9H_{20}	BNA	362	4800
3.	123-42-2	4-hydroxy-4-methyl-2-pentanone *	BNA	386	490,000
4.		C_9H_{20} isomer	BNA	390	3900
5		C_9H_{20} isomer	BNA	401	2300
6		unknown	BNA	457	2500
7		unknown	BNA	1033	4400
8	57-10-3	hexadecanoic acid	BNA	1364	12,000
9	10544-50-0	sulfur mol. (S_8)	BNA	1405-1415	86,000
10.		$C_{18}H_{24}$ isomer	BNA	1452	8500
11.		$C_{18}H_{18}$ isomer	BNA	1523	9100
12.		$C_{28}H_{48}$ isomer	BNA	1563	5400
13	646-31-1	Tetracosane	BNA	1617	6700
14.	629-99-2	Pentacosane	BNA	1669	9700
15.		unresolved complex mixture	BNA	1500-2400	
16.		NO unknowns	VOA	—	—

* possible aldol condensation product