5120 Butler Pike
Plymouth Meeting
Pennsylvania 19462
215-825-3000
Fax 215-834-0234

Woodward-Clyde Consultants

July 18, 1991
85C2598-B

Purex Industries, Inc.
535 East Alondra Boulevard
Gardena, California 90248

Attention: Mr. Jeffrey M. Smith

RE: Report
Test Borings and Monitoring Well Installation
Mitchel Field Remedial Action Program
Garden City, New York

Dear Jeff:

Woodward-Clyde Consultants (WCC) is pleased to present this report regarding the assessment of soil remediation to date and the detection of free floating product in the Source Area at the Mitchel Field site in Garden City, New York. The work presented in this report was described in the WCC proposal dated April 2, 1991, in response to your letter dated March 22, 1991, and approved verbally on April 22, 1991.

FIELD WORK

The field work performed during this assessment included the following items: exploratory borings, soil and groundwater sampling, and monitoring well installation. A detailed description of the scope of work is included in the WCC Proposal dated April 2, 1991. Drilling was performed by Delta Well & Pump, Inc. of Ronkonkoma, New York. Soil chemistry analyses were performed by General Testing Corporation (GTC) of Rochester, New York. All work was performed in general accordance with existing New York State Department of Environmental Conservation (NYSDEC) and U.S. Environmental Protection Agency (USEPA) standards.

Exploratory Borings

Five exploratory borings (PW-1 and BP-1 through BP-4) were drilled between May 3 and 8, 1991, for the purpose of evaluating the effectiveness of the soil remediation to date. A monitoring well was installed at boring location PW-1. The borings and monitoring well were located on April 30, 1991 by WCC and a representative of the Nassau County

Department of Public Works (NCDPW). The NCDPW representative requested the location changes shown on Figure 1. The locations for the test borings were agreed by Purex, WCC, and the NCDPW to be representative of the most contaminated areas, based on the existing soil chemistry data. As shown on Figure 1, Borings PW-1, BP-1, and BP-4 are located in Recirculation Field No. 2 and Borings BP-2 and BP-3 are located in Recirculation Field No. 3.

All drilling activities were conducted under the direct supervision of a WCC engineer or geologist, who also acted as the site Health & Safety Officer. A geologist from the NCDPW was also present during drilling and soil sampling activities.

Air in the work zone was monitored with an HNu Photoionization Detector (HNu). A general background organic vapor level of about 2 ppm was detected before work began for each day. The drilling activities did not produce an increase in organic vapor concentrations above the action level, therefore, all work was performed at Level "D" protection. All drill cuttings from the exploratory borings were placed back in the borehole; this procedure was approved by the NCDPW representative on site prior to the start of drilling. Drill cuttings from the monitoring well were placed in two 55-gallon drums which are currently stored on-site.

Borings were advanced using 6-inch I.D. hollow-stem augers. Soil samples were obtained continuously to the top of groundwater, generally 20 feet below grade. Boring PW-1 was drilled to 10 feet below top of groundwater and was sampled at five-foot intervals below groundwater to the bottom of the screened interval. The depths for the borings and monitoring well boreholes are presented on Table 1. Borings logs for each location are included in Appendix A. The test boring and monitoring well elevations were established by WCC on May 29, 1991.

Obstructions encountered during drilling necessitated the offsetting of two borings. Boring BP-1 encountered a recirculation field lateral at a depth of five feet; no apparent damage of the lateral was observed. BP-1 was offset five feet to the south, which required additional concrete coring at the bus garage entrance. Boring BP-2 encountered a metal obstruction in the fill material at a depth of 6 feet and was offset 2.7 feet east, parallel to Commercial Ave.

Well Installation and Development

Monitoring Well PW-1 was installed on May 3, 1991 in the location shown on Figure 1 to investigate the presence of free floating product. Figure 2 shows the well construction details. The well consisted of a two-inch O.D. internally-threaded PVC riser pipe with a stainless steel screen. The screened interval extended 10 feet above and below the existing top of groundwater encountered during drilling. This screened interval was designed to allow for detection of free floating product in the groundwater pumping/recirculation field operation. The well screen size was 20-slot (0.02 inches). Gravel packing was Sand Pack #2, which is typically used in the glacial outwash. The gravel pack extended 3 feet above the top of the screen, followed by a bentonite seal, then cement grout was placed above the seal to 2 feet below the top of the riser pipe. Gravel pack was then placed to a point 4 inches below the top of the riser pipe to allow the flush mounted cap to drain.

On May 10, 1991, a water level was taken and the presence of free floating product was checked with an oil/water interface probe. The well was then developed. Five well volumes were bailed from the well using a stainless steel bailer. All development water (approximately 10 gallons) was placed in two 5-gallon containers and then the water was placed in a 55-gallon drum that contained floating product from recovery Well W-3. The development water was tested by Metcalf & Eddy Services; the results are presented below. The well was not developed to the point where clear water was being bailed from the well to minimize the amount of development water to be treated.

PW-1 was sampled on May 29, 1991. A water level was taken and the presence of free floating product was initially checked with an opaque teflon bailer and then checked with an oil/water interface probe. Five well volumes were bailed prior to sampling, then the bailed water was placed back in the well after sampling at the request of Metcalf & Eddy. The samples were cloudy with suspended sediments.

Sampling Procedures

Soil sampling procedures were generally as described in the Work Plan. Soil samples were taken continuously with the split spoon sampler, and jar head space analysis was performed with an HNu. The results of the Head Space analysis are presented on the boring logs (Appendix A). Soil samples for chemical analysis were selected on the basis of depth. A duplicate sample was not taken due to insufficient sample quantity.

Samples were placed in jars supplied by GTC and stored in coolers with ice. The samples were then shipped to GTC via Federal Express either the same day the samples were taken or the following day.

The groundwater samples taken were placed in 40-mL vials and stored in the sample refrigerator of the on site laboratory for testing.

Sample Analysis

All soil samples selected for laboratory testing were tested by GTC's Rochester, New York laboratory. Samples were tested for Hazardous Substance List (HSL) volatile organics (EPA Method 8240) and HSL Base/Neutrals (EPA Method 8270). Well development water and groundwater samples were tested by Metcalf & Eddy for Volatiles (EPA Method 624).

RESULTS AND DISCUSSION

Test Borings

The subsurface materials described in the borings were generally as follows: 4 to 10 feet of fill, overlying the glacial outwash sands and gravels, which extended to the depths of the borings. A gray clayey silt layer was encountered in Boring BP-4; Boring BP-3 went through the pea gravel of the recirculation field (BP-3) and did not encounter the clayey silt layer below the lateral.

Monitoring Well

Monitoring Well PW-1 water levels were as follows (Top of Casing Elevation = 78.0 feet):

Date	Depth from Top of Casing (feet)	Water Elevation (feet)
5/3/91	19.5	58.5
5/10/91	19.0	59.0
5/29/91	19.5	58.5
6/27/91	19.5	58.5

The presence of free floating product was initially checked prior to development on May 10, 1991 and prior to sampling on May 29, 1991. No free product was detected with either the opaque bailer or the oil/water interface probe prior to sampling or development.

Soil Chemistry

Table 2 presents a summary of analytical results for the soil samples. This table presents the compounds and concentrations found in each sample above the detection limits. The complete data report from GTC is included as Appendix B. Table 3 presents a comparison of the soil chemistry data from 1991 to data obtained during the 1983 Site Assessment. The analytical methods for the 1991 soil data were EPA Methods 8240 and 8270; the analytical methods used for the 1983 soil data were EPA Methods 624 and 625. The 1983 laboratory soil chemistry analyses were performed by Measurement Science of Garden City, New York. Analytical result reports from the 1983 data can be furnished if requested. EPA Methods 8240 and 8270 were developed for soil from Methods 624 and 625. The following paragraphs discuss the results for each location and compares 1991 data to the 1983 data.

Boring PW-1: The data presented for PW-1 in Table 2 show that three volatile organic compounds and five base neutral compounds were detected in S-1 and one base neutral compound was detected in S-2. However, the detection limit for each sample was high, due to the dilution of the sample. The dilution was done by GTC in order to protect their analytical equipment. WCC requested that the samples be retested at a lower dilution, but the GTC lab director stated that the dilutions used were the lowest that could be used with their equipment.

Table 3 presents the comparison of the data from PW-1 to Boring B-9, located approximately 25 feet to the southwest (Figure 1). The closest corresponding sample to PW-1, S-1, was Sample S-2 in B-9. Sample S-2 in B-9 was sampled 5 feet above Sample S-1 in PW-1, and the sample elevation of S-2 corresponds to the elevation of the recirculation field laterals. The comparison of these data is difficult, due to the difference in elevation.

The closest corresponding sample to PW-1, S-2, was Sample S-11 in B-9. The elevations for both samples are similar; however, the different detection limits for the volatile organics between samples makes a comparison of the volatile organic data difficult.

Only three base neutral compounds (naphthalene, di-n-butyl phthalate, and bis(2-ethylhexyl) phthalate) were detected in B-9, S-11, above the detection limit in PW-1, S-2. The base neutral compound data for PW-1, S-2, show lower values for three compounds.

Boring BP-1: The data presented in Table 2 for BP-1 show that one base neutral compound was detected in S-1 and one volatile organic compound in a low concentration in S-2. The detection limit for the BP-1 samples were low (2 μg/kg and 10 μg/kg for volatiles).

Table 3 presents the comparison of the data from BP-1 and Boring B-9, located approximately 15 feet to the north (Figure 1). The closest corresponding sample to BP-1, S-1, was Sample S-7 in B-9. Sample S-7 in B-9 was sampled 1 foot above Sample S-1 in BP-1. Comparison of the data show that both samples contained low levels of compounds, with only one base neutral (Bis(2-ethylhexyl)phthalate) detected in either sample. This compound was found in a higher concentration in the 1991 data than in the 1983 data.

The closest corresponding sample to BP-1, S-2, was Sample S-11 in B-9. The elevations for both samples are within one foot. The comparison on Table 3 indicates generally lower values in BP-1, S-2, for all compounds detected in B-9, S-11.

Boring BP-2: The data presented in Table 2 for BP-2 show that 1 volatile organic compound and one base neutral compound were detected in S-1 and two base neutral compounds were detected in S-2. The detection limit for volatile organics with the BP-2 samples were generally 500 μg/kg for S-1 and 250 μg/kg for S-2.

Table 3 presents the comparison of the data from BP-2 and Boring B-10, located approximately 5 feet to the west (Figure 1). The closest corresponding sample to BP-2, S-1, was Sample S-7 in B-10. Sample S-7 in B-10 was sampled 2 feet below Sample S-1 in BP-2. Sample BP-2, S-1, shows lower values for most compounds detected in B-10, S-7, with the exception of methylene chloride, which was not detected in the 1983 sample, but was detected in the 1991 sample. However, 1983 groundwater data from WCC Monitoring Well MW-5, located approximately 25 feet to the west of BP-2, detected methylene chloride at an average concentration of 10,000 μg/L.

Sample S-2 from BP-2 was compared to Sample S-11 from B-10. The data indicate lower values in BP-2, S-2, for all compounds detected in B-10, S-11.

Boring BP-3: The data presented in Table 2 for BP-3 show that 3 volatile organic compounds and one base neutral compound were detected in S-1 and one volatile organic compound and one base neutral compound were detected in S-2. The detection limit for volatiles with the BP-2 samples were generally 250 μg/kg for S-1 and S-2.

Table 3 presents a comparison of the data from BP-3 to Boring B-8, located approximately 55 feet to the west (Figure 1). The closest corresponding sample to BP-3, S-1, was Sample S-2 in B-8. Sample S-2 in B-8 was sampled 5 feet above Sample S-1 in BP-3, and the sample elevation of S-2 in B-8 corresponds to the elevation of the recirculation field laterals. The comparison of these data is difficult, due to the separation in location and the difference in elevation. However, the data for BP-3, S-1 generally show lower values for all compounds with the exception of tetrachloroethene and bis (2-ethylhexyl) phthalate.

Table 3 compares Sample S-2 from BP-3 to Sample S-11 from Boring B-8. This comparison is also difficult, due to the separation in location. However, the data for BP-3, S-2 show higher concentrations of tetrachloroethene and bis (2-ethylhexyl) phthalate when compared to B-8, S-11.

Boring BP-4: The data presented in Table 2 for BP-4 show that one volatile organic compound was detected in S-1 and three volatile organic compounds were detected in S-2. The detection limit for volatiles with the BP-2 samples were generally 10 μg/kg for S-1 and S-2.

Table 3 presents the comparison of the data from BP-4 to Boring B-8, located approximately 45 feet to the east (Figure 1). The closest corresponding sample to BP-4, S-1, was Sample S-2 in B-8. Sample S-2 in B-8 was sampled 4 feet above Sample S-1 in BP-3, and the sample elevation of S-2 in B-8 corresponds to the elevation of the recirculation field laterals. The comparison of these data is difficult, due to the separation in location and the difference in elevation. However, the comparison between BP-4 and B-8 generally shows lower concentrations for the BP-4 samples, when compared to the B-8 samples.

Table 3 compares Sample S-2 from BP-4 to Sample S-11 from Boring B-8. This comparison is also difficult, due to the separation in location. However, the comparison between BP-4 and B-8 generally shows lower concentrations for the BP-4 samples, when compared to the B-8 samples.

Soil Sampling Summary

The soil sampling analytical results from the five test borings drilled in May, 1991 indicate the presence of five volatile organic compounds and five base neutral compounds above the detection limits; the limits are as shown in Table 3 and Appendix B. Boring PW-1 soil sample data indicated the highest concentrations, and BP-1 soil sample data indicated the lowest concentrations. The compound that appeared in the most samples was Bis (2-ethylhexyl) phthalate.

The 1991 soil sample chemistry generally indicates substantially lower values when compared to the 1983 soil sample chemistry. Borings PW-1, BP-1, and BP-2 were located near 1983 WCC borings, while BP-3 and BP-4 were approximately 50 feet away from the nearest 1983 boring.

Remediation Criteria

The 1985 Consent Agreement for the Mitchel Field Remedial Action established two conditions for determining when recovery wells could be shut down: a "water condition" and a "zero-slope condition". There was no criteria established in the Consent Agreement for shutting down the recirculation fields based on soil remediation.

Figure 3 presents a graph of the source area and plume area average influent volatile organic compound concentration over time. This graph shows that there has been substantial reduction in the volatile organic compound concentration from the source area groundwater, inferring removal of volatile organic compounds from the source area soils. The concentration of volatile organic compounds (EPA Method 624) from October 1990 to April 1991 ranged from 4,030 μg/L to 6,456 μg/L, averaging 4,962 μg/L. The graph also indicates that neither of the above conditions have been met, due to the concentration of volatile organic compounds remaining and the slope of the source area influent concentration curve.

The NYSDEC currently establishes soil remediation goals on a case-by-case basis. Table 4 contains soil remediation goals previously established at other sites for some of the compounds listed on Table 3, when available. The NYSDEC considers four criteria when developing remediation goals:

- Human health criteria based on excess cancer risks for carcinogens.

- Human health criteria based on reference doses (RfDs) for systemic toxicants.

- Environmental concentrations which would be protective of groundwater quality, using water/soil partitioning.

- Laboratory detection limits.

The State of New Jersey Department of Environmental Protection (NJDEP) has set up clean up standards for property transfers (ECRA) for soil of 1,000 μg/kg for total volatiles and 10,000 μg/kg for base neutrals. The NJDEP has currently submitted draft soil and groundwater remediation standards for public comment. These standards contain individual compound concentration goals for different kinds of sites, soil types, and contamination depth (surface or subsurface). Table 4 contains the draft soil concentrations for subsurface sandy soil.

Comparison of the 1991 soil chemistry data with the guidelines listed on Table 4 indicate that data from both samples in Borings BP-1 and BP-4 are below the remediation criteria guidelines. The data from Borings PW-1, BP-2, and BP-3 show higher concentrations in some compounds: xylene (total) in PW-1, S-1, methylene chloride in BP-2, S-1, tetrachloroethene in both samples in BP-3, and bis (2-ethylhexyl) phthalate in BP-3, S-1 (NYSDEC guidelines only).

Groundwater Sampling

The groundwater samples were taken from Monitoring Well PW-1 and consist of the development water and the samples taken on May 29, 1991. The development water and water samples were tested by Metcalf & Eddy in the on-site laboratory. The development water contained 409 μg/L total volatiles and the groundwater sample contained 38.7 μg/L total volatiles. Groundwater testing results for the last two weeks in May 1991 from Recovery Well W-3, located approximately 10 feet south of PW-1, averaged 1,988 μg/L. However, Metcalf & Eddy has indicated that the analytical equipment used for the groundwater analyses was not functioning properly when the groundwater samples were analyzed. Therefore, the analytical results from PW-1 groundwater and development water should be considered questionable. Appendix C contains the analytical results from Metcalf & Eddy, which includes the PW-1 groundwater data followed by W-3 influent data for April 17, 1991 to June 1, 1991.

CONCLUSIONS

Five test borings were drilled in locations that have been considered the most contaminated areas with regard to soil. The five borings were drilled to groundwater, with two samples taken in each boring. The soil samples were analyzed for HSL volatile organic and base neutral compounds.

The 1991 soil chemistry analytical results were compared to existing 1983 data and indicated that compound concentrations in Recirculation Field Nos. 2 and 3 soils has generally decreased over time, with substantial reductions observed in most locations. The soil sample chemistry from Borings BP-1 and BP-4 indicated soil contaminant concentrations lower than the NYSDEC guidelines established for other sites listed on Table 4. However, concentrations of certain compounds for PW-1, BP-2 and BP-3 were higher than the NYSDEC guidelines established for other sites listed in Table 4.

Based on the results of the soil sampling and comparison to existing soil remediation guidelines, WCC concludes the following:

- The soil adjacent to PW-1, BP-2, and BP-3 be sampled and analyzed in September (4 months from initial sampling) to further investigate the potential general compliance with NYSDEC guidelines established for other sites listed on Table 4. This assumes continuous operation of the recirculation system between samples.

- If the next sampling event demonstrates that the sampled locations adjacent to PW-1, BP-2, and BP-3 have shown general compliance with the NYSDEC guidelines established for other sites listed on Table 4, then shutdown of the recirculation fields could be considered.

LIMITATIONS

All information, conclusions, and recommendations presented in this report are based on the information and data obtained from the 1983 Site Assessment, the five test borings and one monitoring well installed in May, 1991, and the analytical testing results from samples taken during the field work described in this report.

WCC appreciates the opportunity to be of continued service to Purex on this project. If you require additional assistance or information, please do not hesitate to call.

Very truly yours,

David S. McLay
Assistant Project Engineer

Richard M. Coad, P.E.
Project Manager

cc: Frank S. Waller (WCC)
Lynn Penniman (WCC)
Michael J. Wierman (WCC)

Tables

TABLE 1
TEST BORING DATA SUMMARY
MITCHEL FIELD REMEDIAL ACTION
PUREX INDUSTRIES
GARDEN CITY, NEW YORK

Boring No.	Date Drilled	Completion Depth (ft)	First Sample Depth (ft)	Second Sample Depth (ft)
BP-1	5/8/91	22.7	14-16	20-22
BP-2	5/7/91	22.3	12-14	20-22
BP-3	5/7/91	20.7	10-12	16-18
BP-4	5/6/91	20.7	8-12	16-20
PW-1	5/3/91	32.7	10-14	22-24

TABLE 2
ANALYTICAL RESULTS FOR SOIL SAMPLES
MITCHEL FIELD REMEDIAL ACTION
PUREX INDUSTRIES
GARDEN CITY, NEW YORK

All Values in ug/kg

COMPOUND / Boring No.	PW-1		BP-1		BP-2		BP-3		BP-4	
Sample No.	S-1	S-2	S-1	S-2	S-1	S-2	S-1	S-2	S-1	S-2
HSL Volatile Organics										
Methylene Chloride	<250	<1250	<2	3.0	1740	<250	<250	<250	13.2	<10
Tetrachloroethene	<250	<1250	<2	<2	<500	<250	12300	7060	<10	<10
Toluene	<250	<1250	<2	<2	<500	<250	<250	<250	<10	68.0
Ethylbenzene	313	<1250	<2	<2	<500	<250	530	<250	<10	27.7
Total Xylene (o,m,p)	4440	<1250	<2	<2	<500	<250	354	<250	<10	203
HSL Base Neutrals										
1,2-Dichlorobenzene	552	<330	<330	<330	<330	<330	<330	<330	<330	<330
Naphthlene	719	<330	<330	<330	<330	<330	<330	<330	<330	<330
Di-n-butyl phthalate	394	<330	<330	<330	<330	<330	<330	<330	<330	<330
Bis(2-ethylhexyl) phthalate	2040	1150	520	<330	340	454	7940	657	<330	<330
2-Methyl naphthalene	429	<660	<660	<660	<660	436	<660	<660	<660	<660

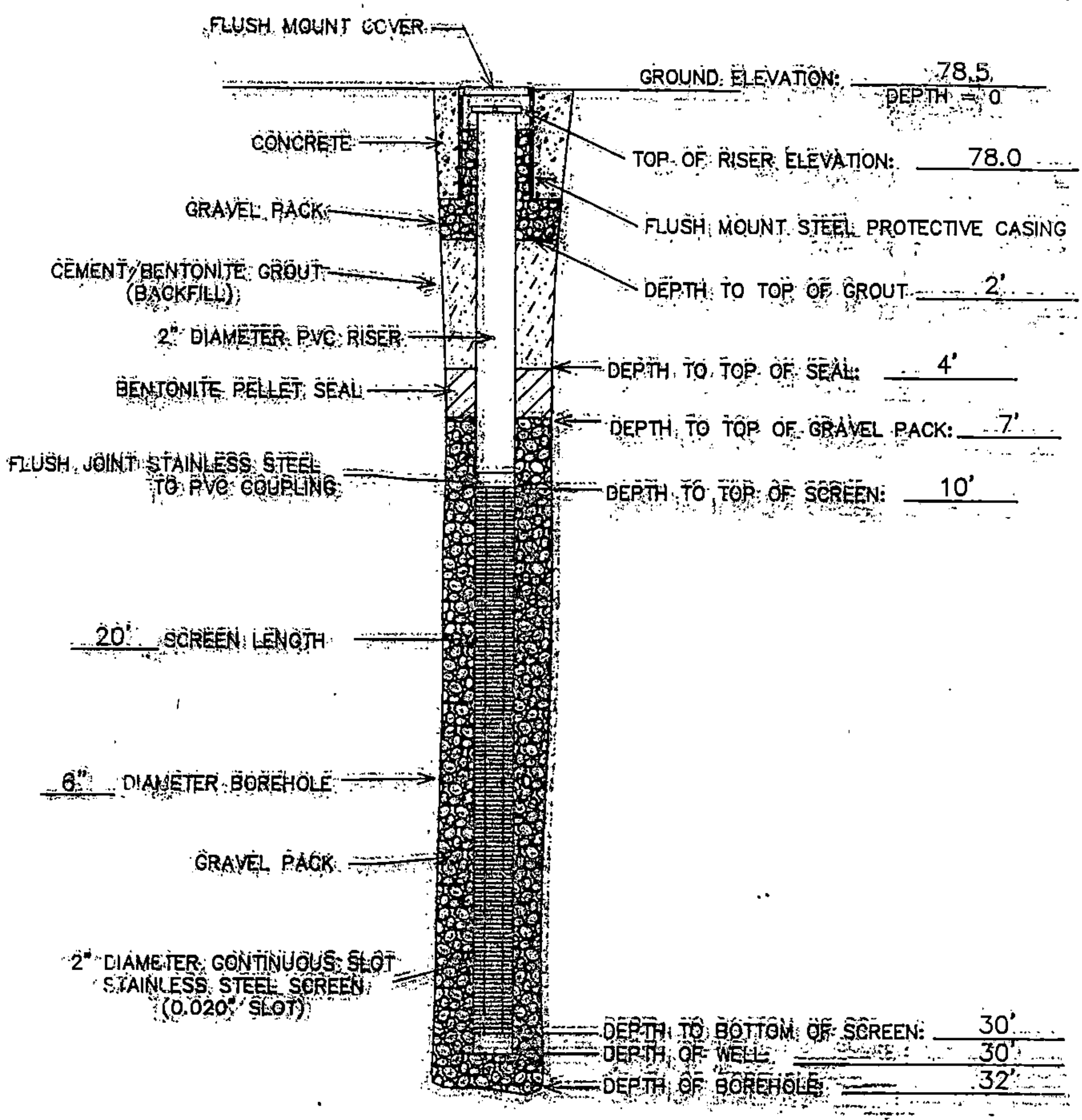
TABLE 3
COMPARISON OF 1991 AND 1983 ANALYTICAL RESULTS
MITCHEL FIELD REMEDIAL ACTION
PUREX INDUSTRIES
GARDEN CITY, NEW YORK

All Values in ug/kg

Boring No.:	PW-1	B-9	PW-1	B-9	BP-1	B-9
Sample No.:	S-1	S-2	S-2	S-11	S-1	S-7
Date Sampled:	5/3/91	6/23/83	5/3/91	6/23/83	5/8/91	6/23/83
Sample Elevation (feet):	68.5-64.5	75.0-73.0	56.5-54.5	57.0-55.0	67.2-65.2	65.0-63.0
COMPOUND						
HSL Volatile Organics						
Methylene Chloride	<250	<20	<1250	<20	<2	<20
1,1-Dichloroethane	<250	<20	<1250	<20	<2	<20
1,2-Dichloroethane	<250	<20	<1250	<20	<2	<20
Chloroform	<250	<20	<1250	<20	<2	<20
trans-1,2-Dichloroethylene	<250	<20	<1250	<20	<2	<20
Trichloroethene	<250	5100	<1250	<20	<2	<20
1,1,1-Trichloroethane	<250	2000	<1250	<20	<2	<20
Tetrachloroethene	<250	81400	<1250	27	<2	<20
Toluene	<250	14250	<1250	<20	<2	<20
Chlorobenzene	<250	1700	<1250	<20	<2	<20
Ethylbenzene	313	7050	<1250	<20	<2	<20
Total Xylene (o,m,p)	4440	10100	<1250	<20	<2	<20
2-butanone (MEK)	<1250	<20	<6250	<20	<10	<20
4-Methyl-2-pentanone (MIBK)	<1250	<20	<6250	<20	<10	<20
HSL Base Neutrals						
Anthracene	<330	447	<330	299	<330	<100
1,2-Dichlorobenzene	552	38000	<330	<100	<330	<100
1,3-Dichlorobenzene	<330	444	<330	<100	<330	<100
1,4-Dichlorobenzene	<330	5390	<330	<100	<330	<100
Phenanthrene	<330	447	<330	299	<330	<100
Naphthlene	719	2830	<330	1730	<330	<100
Di-n-butyl phthalate	394	4380	<330	1130	<330	<100
Butyl benzyl phthalate	<330	932	<330	<100	<330	<100
Bis(2-ethylhexyl) phthalate	2040	9060	1150	6050	520	150
Chrysene	<330	<100	<330	<100	<330	<100
2-Methyl naphthalene	429	NR	<660	NR	<660	NR

NR - Not Reported
All Concentrations reported on a wet weight basis.

Figures



Rev. No.	Date	Type of Revision	Checked by

REPORT OF MONITORING WELL PW-1
MITCHEL FIELD REMEDIAL ACTION
PUREX CORPORATION
GARDEN CITY, NEW YORK

Woodward-Clyde Consultants
Consulting Engineers, Geologists and Environmental Scientists

Job No.: [illegible]	Drawing No. [illegible]	Date: 07/02/91
Drawn by: D.E.G.	Checked by:	FIGURE 2
Scale: NOT TO SCALE		

Appendix A

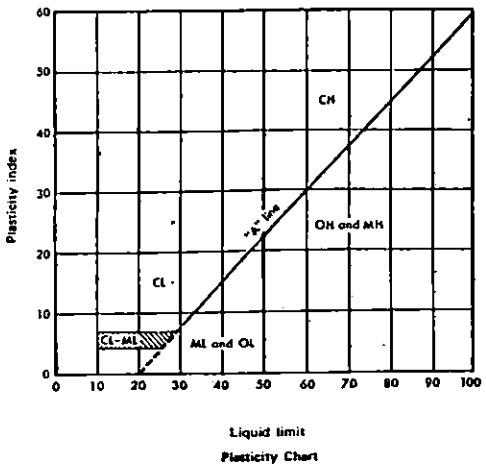
Major Divisions		Group symbols	Typical names	Laboratory classification criteria
Coarse-grained soils (More than half of material is larger than No. 200 sieve size)	Gravels (More than half of coarse fraction is larger than No. 4 sieve size) — Clean gravels (Little or no fines)	GW	Well graded gravels, gravel-sand mixture, little or no fines	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3
		GP	Poorly graded gravels, gravel-sand mixtures, little or no fines	Not meeting all gradation requirements for GW
	Gravels with fines (Appreciable amount of fines)	GM* d / u	Silty gravels, gravel-sand-silt mixtures	Atterberg limits below "A" line or P.I. less than 4
		GC	Clayey gravels, gravel-sand-clay mixtures	Atterberg limits above "A" line with P.I. greater than 7
	Sands (More than half of coarse fraction is smaller than No. 4 sieve size) — Clean sands (Little or no fines)	SW	Well-graded sands, gravelly sands, little or no fines	$C_u = \frac{D_{60}}{D_{10}}$ greater than 6; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3
		SP	Poorly graded sands, gravelly sands, little or no fines	Not meeting all gradation requirements for SW
	Sands with fines (Appreciable amount of fines)	SM* d / u	Silty sands, sand-silt mixtures	Atterberg limits below "A" line or P.I. less than 4
		SC	Clayey sands, sand-clay mixtures	Atterberg limits above "A" line with P.I. > than 7
Fine-grained soils (More than half of material is smaller than No. 200 sieve)	Silts and clays (Liquid limit less than 50)	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity	
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays	
		OL	Organic silts and organic silty clays of low plasticity	
	Silts and clays (Liquid limit greater than 50)	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts	
		CH	Inorganic clays of high plasticity, fat clays	
		OH	Organic clays of medium to high plasticity, organic silts	
	Highly organic soils	Pt	Peat and other highly organic soils	

Determine percentages of sand and gravel from grain-size curve. Depending on percentage of fines (fraction smaller than No. 200 sieve size), coarse-grained soils are classified as follows:

	GW, GP, SW, SP
Less than 5 per cent	GM, GC, SW, SC
More than 12 per cent	*Borderline* cases requiring dual symbols**
5 to 12 per cent	

Above "A" line with P.I. between 4 and 7 are *borderline* cases requiring use of dual symbols

Limits plotting in hatched zone with P.I. between 4 and 7 are *borderline* cases requiring use of dual symbols.



Plasticity Chart

Particle Size	Sieve Size	mm
Material	Silt or Clay	<0.074
	Sand Fine	0.074 To 0.42
	Sand Med.	0.42 To 2.00
	Sand Coarse	2.00 To 4.76
	Gravel Fine	#4 To 3/4 in. / 4.76 To 19.1
	Gravel Coarse	3/4 in. To 3 in. / 19.1 To 76.2
	Cobbles	3 In. To 12 In. / 76.2 To 304.8
	Boulders	12 In. To 36 In. / 304.8 To 914.4

KEY TO SOIL SYMBOLS AND TERMS

Terms used in this report for describing soils according to their texture or grain size distribution are in accordance with the Unified Soil Classification System, as described in Technical Memorandum No. 3-357, Waterways Experiment Station, March 1953

TERMS DESCRIBING CONSISTENCY OR CONDITION

COARSE GRAINED SOILS (major portion retained on No. 200 sieve): Includes (1) clean gravels and (2) silty or clayey gravels and sands. Condition is rated according to relative density[1] as determined by laboratory tests or standard penetration resistance tests.

Descriptive Term	Relative Density
Very loose	0 to 15%
Loose	15 to 35%
Medium dense	35 to 65%
Dense	65 to 85%
Very dense	85 to 100%

FINE GRAINED SOILS (major portion passing No. 200 sieve): Includes (1) inorganic and organic silts and clays, (2) gravelly, sandy, or silty clays, and (3) clayey silts. Consistency is rated according to shearing strength, as indicated by penetrometer readings or by unconfined compression tests.

Descriptive Term	Unconfined Compression Strength, tons/sq. ft.
Very soft	less than 0.25
Soft	0.25 to 0.50
Firm	0.50 to 1.00
Stiff	1.00 to 2.00
Very stiff	2.00 to 4.00
Hard	4.00 and higher

TEST AND SAMPLE IDENTIFICATION

15 — The number of blows (15) of a 140-pound hammer falling 30 inches used to drive a 2" O. D. split-barrel sampler for the last 12 inches of penetration.

50/2 — 50/2 – Number of blows (50) used to drive the split-barrel a certain number of inches (2).

P — Thin-wall tube sample.

P/250 — P250 – Thin-wall tube pushed hydraulically, using a certain pressure (250 psi) to push the last 6 inches.

C_1 — Denison or Pitcher-Type – core-barrel sample.

Ps — Piston sample.

A — Augar sample.

BX — Rock cored with BX core barrel, which obtains a 1-5/8" diameter core.

NX / 65 — NX – Rock cored with NX core barrel, which obtains a 2-1/8" diameter core.

65% – Percentage (65) of rock core recovered.

20 — 20% – Rock Quality Designation (RQD)[2]

VS — VS – Vane Shear Test.

Sample Recovered:

C – Consolidation and specific gravity tests.
D – Maximum & minimum density.
DS – Direct Shear test.
G – Specific gravity test.
K – Permeability test.
M – Mechanical (sieve or hydrometer) analysis.
T – Triaxial compression test
U – Unconfined compression test.
W – Unit weight & natural moisture content.
X – Special tests performed – see Laboratory test results.

Sample Not Recovered

Laboratory Test Performed

*Division of GM and SM groups into subdivisions of d and u are for roads and airfields only. Subdivision is based on Atterberg limits; suffix d used when L.L. is 28 or less and the P.I. is 6 or less; the suffix u used when L.L. is greater than 28.

**Borderline classifications, used for soils possessing characteristics of two groups, are designated by combinations of group symbols. For example: GW-GC, well-graded gravel-sand mixture with clay binder.

[2] $RQD = \frac{\sum \text{Core Segments} \geq 4 \text{ Inches}}{\text{Core Interval}} \times 100$ Where Segmentation Is Not Caused By Drilling Effects

[1] ASTM 2049-69

LOG of BORING No. BP-1

Sheet 1 of 1

DATE 5/8/91 SURFACE ELEVATION 79.2 LOCATION See Figure 1

DEPTH, ft.	SAMPLES	SAMPLING RESISTANCE	SAMPLE TYPE	DESCRIPTION	STRATUM ELEVATION	POCKET PENETROMETER	WATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	OTHER TESTS
0				8" Concrete	78.5					
		35	SS	Gray-black silty gravelly medium to fine sand	76.5					9
		22	SS	Brown silty coarse to fine sand						5
5		17	SS							4
		4	SS							3
		5	SS							3
10		2	SS		66.5					
		57	SS	Orange-brown gravelly coarse to fine sand						3
15		26	SS							3
		50	SS							2
		38	SS							2
20		42	SS							3
					56.5					
25										
30										
35										
40										

NOTES:
(1) Samples of the subsoils were recovered by means of a 2-inch O.D. split-barrel sampler driven 24 inches by a 140-pound hammer freely falling 30 inches (the Standard Penetration Test, ASTM D 1586).
(2) Soil samples for chemical analysis taken at the following depths: BP-1, S-1 taken from 14 - 16 feet; BP-1, S-2 taken from 20 - 22 feet.
(3) Values under "OTHER TESTS" are HNu readings from the head space of the sample jar in ppm. Background HNu - 2.5 ppm.

Completion Depth: 22.7 Ft.
Project No.: 85C2598-B
Project Name: Purex - Mitchel Field
Drilling Method: Hollow Stem Auger

Water Depth: 20.6 ft., After ____ hrs.
____ ft., After ____ hrs.
____ ft., After ____ hrs.
____ ft., After ____ hrs.

Woodward-Clyde Consultants

LOG of BORING No. BP-4

Sheet 1 of 1

DATE 5/6/91 SURFACE ELEVATION 78.3 LOCATION See Figure 1

DEPTH, ft.	SAMPLES	SAMPLING RESISTANCE	SAMPLE TYPE	DESCRIPTION	STRATUM ELEVATION	POCKET PENETROMETER	WATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	OTHER TESTS
0				8" Concrete	77.6					
		39	SS	Gray-black silty coarse to fine sand						30
		10	SS		74.1					30
5		2	SS	Gray gravelly clayey silt						50
		30	SS		70.6					30
		47	SS	Tan to orange coarse to fine sand and gravel						12
10		41	SS							40
		26	SS							10
15		33	SS							30
		NR	SS							20
		NR	SS							
20					57.6					

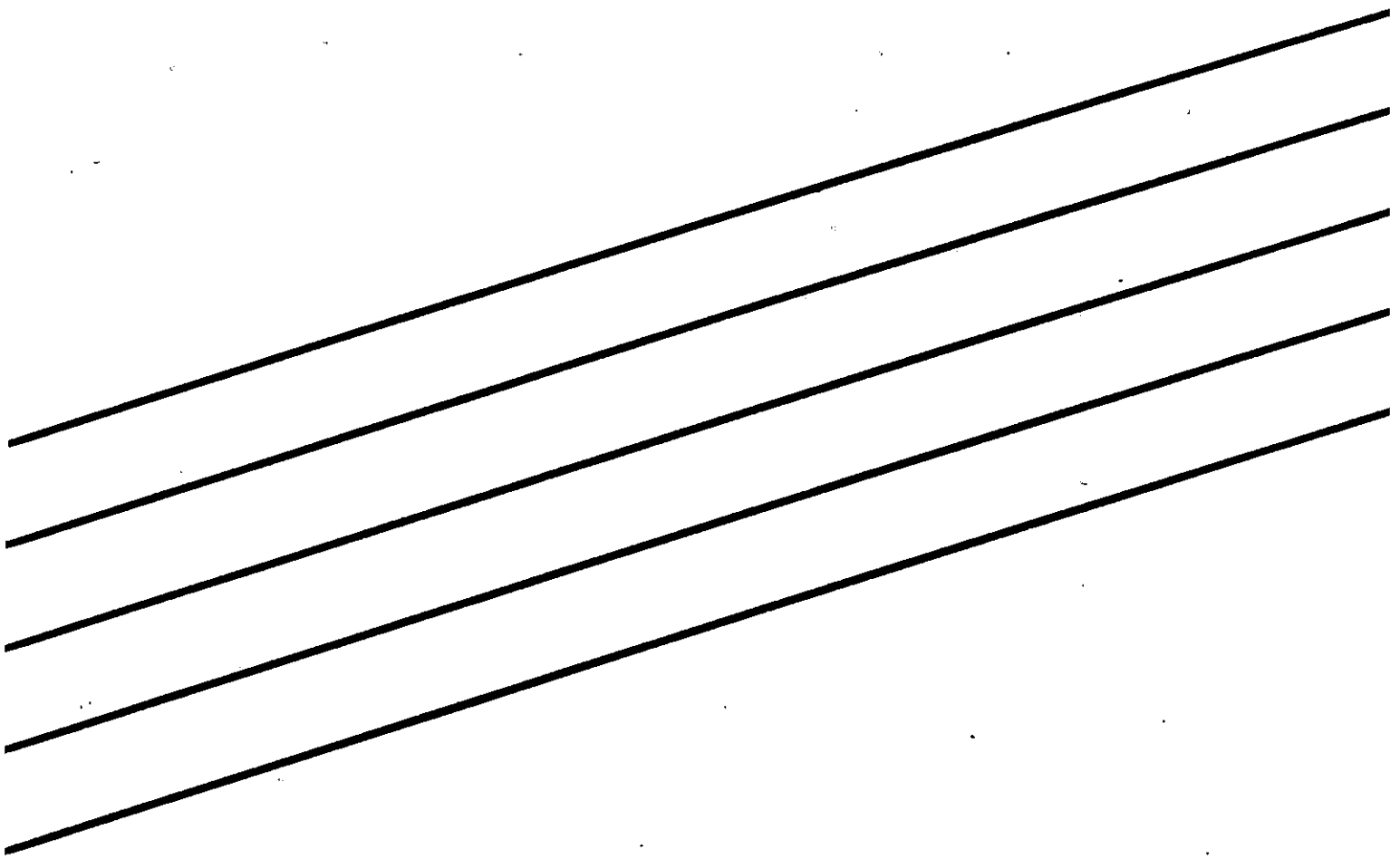
NOTES:
(1) Samples of the subsoils were recovered by means of a 2-inch O.D. split-barrel sampler driven 24 inches by a 140-pound hammer freely falling 30 inches (the Standard Penetration Test, ASTM D 1586).
(2) Soil samples for chemical analysis taken from the following depths: BP-4, S-1 taken from 8 - 12 feet; BP-4, S-2 taken from 16 - 20 feet.
(3) Values under "OTHER TESTS" are HNu readings from the head space of the sample jar in ppm. Background HNu - 2.0 ppm.
(4) NR - Not Recorded

25
30
35
40

Completion Depth: 20.7 Ft.
Project No.: 85C2598-B
Project Name: Purex - Mitchel Field
Drilling Method: Hollow Stem Auger

Water Depth: ≈20.0 ft., After _____ hrs.
_____ ft., After _____ hrs.
_____ ft., After _____ hrs.
_____ ft., After _____ hrs.

Appendix B



General Testing Corporation

General Testing Corporation

A Full Service Environmental Laboratory

June 5, 1991

Mr. Dave McLay
Woodward Clyde Consultants
5120 Butler Pike
Plymouth Meeting, Pennsylvania 19462

Re: Metcalf & Eddy Services

Dear Mr. McLay:

A total of 10 soil samples and 1 field blank were received at our laboratory through the period May 6 to May 9, 1991. All samples were received from the above referenced site.

The analyses requested were 8260 for volatiles and 8270 for semi-volatiles on all samples. However, we no longer perform the 8260 analysis, but instead use the 8240 analysis for volatiles. Detection limits, quality control and compound lists for the 8240 are consistent with the 8260. The 8270 analysis for the field blank was canceled due to insufficient sample volume.

Analytical data can be found in Section A, additional sections include: quality control data, analytical chronologies and field documentation. These can be found in Sections B-D respectively.

Please review this data package, if any questions arise contact me at (716)-454-3760. Thank you for allowing us to provide these services.

Sincerely,
GENERAL TESTING CORPORATION

Sue Lochner

Sue Lochner
Client Representative Manager

Enc.
A.WCC

cc: Mr. Jeff Smith
Purex Industries Inc.
535 East Alondra Blvd.
Gardena, California 90248

General Testing Corporation

DATA AND QUALITY CONTROL QUALIFIERS

U - Indicates compound was analyzed but was not observed at a quantifiable concentration.

J - Indicates an estimated value

J Qualifiers (used in conjunction with J and/or QC page or chronology)

S - Surrogate recoveries outside of control limits

St - Surrogate recoveries outside of control limits, analysis repeated, some results obtained, matrix interference suspected

r - Laboratory replicates outside of laboratory advisory limits

t - Matrix interference suspected

h - Holding time exceeded for analysis

p - EPA-approved protocol has been amended upon client request

M - Matrix spike and/or matrix spike duplicate outside control limits

Mt - same as M
ORGANIC PARAMETERS: Matrix interference suspected, Organic reference standard was acceptable.

INORGANIC PARAMETERS: Matrix interference suspected, Repeat analysis still unacceptable

Mr - INORGANICS PARAMETERS: Matrix interference suspected, repeat analysis not conducted due to holding time limitations

B - Indicates that the analyte was found in the associated laboratory or field blank

B Qualifiers (used in conjunction with B)

l - Contamination in lab or method blank

t - Contamination in trip blank

x - Contamination in two or more types of blanks (i.e. Lab or Method, Trip, Equipment,or Field Filtration Blank)

e - Contamination in equipment blank

f - Contamination in field filtration blank

d - Results multiplied by dilution factor

MISCELLANEOUS QC AND DATA QUALIFIERS

ND - Not Detectable

NS - No Sample

NA - Not Analyzed

*+ - No limits currently established

** - See Attached Data

I - Insufficient sample to re-analyze

D - Surrogate standard diluted out

R - Sample re-analyzed outside of holding time

UP - Unable to perform analysis due to sample matrix

V - Spiked recovery cannot be determined, sample value >4 times spike concentration

++ - Outside Laboratory acceptance limits (Blank, Spikes, Ref. Spikes)

RC - Results confirmed via repeat analysis

NC - Not Calculable

LE - Lab Error: No data available

t - Surrogate Matrix Interference

General Testing Corporation

Case Narrative: Woodward Clyde Consultants R91/1835
Method 8240

Soil samples were analyzed for target compound list volatile organics by EPA method 8240. Due to high levels of organics in samples 001 and 002, methanol extraction and subsequent dilutions of 1:125 and 1:625 were performed prior to analysis. These dilutions result in proportionally adjusted detection limits.

General Testing Corporation

GTC REPORT # R91/1835, 1856, 1914

REPORT INDEX

T0000

Appendix A

General Testing Corporation

GTC REPORT # R91/1835,1856,1914

SECTION A

ANALYTICAL DATA

Presented in this section is analytical data for the parameters requested. The following references concerning units and analytical methodology apply to the data herein.

Units:

Analytical Methodology Obtained From:

( ) Federal Register, 40 CFR Part 136, Guidelines Establishing Test Procedures for the analyses of Pollutants under the Clean Water Act, 10/26/84.

(X) SW-846, Test Methods for Evaluating Solid Waste, 3rd Edition, 9/86.

( ) Other:

General Testing Corporation

A Full Service Environmental Laborato

LABORATORY REPORT

Job No: R91/01835 Date: MAY 24 1991

Client:
Mr. Dave McLay
Woodward Clyde Consultants
5120 Butler Pike
Plymouth Meeting, PA 19462

Sample(s) Reference:
Metcalf+Eddy Services

Received : 05/06/91 P.O. #:

ANALYTICAL UNITS - ug/kg Wet Wt.

Sample:	-001	-002
Location:	PW-1 S-1	PW-1 S-2
Date Collected:	05/03/91	05/03/91
Time Collected:	09:45	10:30
Volatile Organics-GC/MS	**	**
Semivolatile Organics	**	**

Unless otherwise noted, analytical methodology has been obtained from references as cited in 40 CFR, parts #136 & #261.
NY ID# in Rochester: 10145
NJ ID# in Rochester: 73331
NJ ID# in Hackensack: 02317
NY ID# in Hackensack: 10801

**See attached data

Michael K. Peng
Laboratory Director

General Testing Corporation

A Full Service Environmental Laborato

LABORATORY REPORT

Job No: R91/01835 Date: MAY 24 1991

Client:
Mr. Dave McLay
Woodward Clyde Consultants
5120 Butler Pike
Plymouth Meeting, PA 19462

Sample(s) Reference
Metcalf+Eddy Services

Received : 05/06/91 P.O. #:

HSL VOLATILES BY EPA METHOD 8240* ANALYTICAL RESULTS - ug/kg Wet Wt.

Sample:	-001	-002
Location:	PW-1 S-1	PW-1 S-2
Date Collected:	05/03/91	05/03/91
Time Collected:	09:45	10:30
Date Analyzed:	05/08/91	05/08/91
Chloromethane	250 U	1250 U
Bromomethane	250 U	1250 U
Vinyl Chloride	250 U	1250 U
Chloroethane	250 U	1250 U
Methylene Chloride	250 U	1250 U
Acetone	2500 U	12,500 U
Carbon Disulfide	1250 U	6250 U
Trichlorofluoromethane	250 U	1250 U
Vinyl Acetate	1250 U	6250 U
1,1-Dichloroethene	250 U	1250 U
1,1-Dichloroethane	250 U	1250 U
trans-1,2-Dichloroethene	250 U	1250 U
cis-1,2-Dichloroethene	250 U	1250 U
Chloroform	250 U	1250 U
2-Butanone (MEK)	1250 U	6250 U
1,2-Dichloroethane	250 U	1250 U
1,1,1-Trichloroethane	250 U	1250 U
Carbon Tetrachloride	250 U	1250 U
Bromodichloromethane	250 U	1250 U
1,2-Dichloropropane	250 U	1250 U
1,3-Dichloropropene (Trans)	250 U	1250 U
Trichloroethene	250 U	1250 U
Dibromochloromethane	250 U	1250 U
1,1,2-Trichloroethane	250 U	1250 U
Benzene	250 U	1250 U
1,3-Dichloropropene(Cis)	250 U	1250 U
Bromoform	250 U	1250 U
4-Methyl-2-pentanone(MIBK)	1250 U	6250 U
2-Hexanone	1250 U	6250 U
Tetrachloroethene	250 U	1250 U
1,1,2,2-Tetrachloroethane	250 U	1250 U
Toluene	250 U	1250 U
Chlorobenzene	250 U	1250 U

General Testing Corporation

A Full Service Environmental Laboratc

LABORATORY REPORT

Job No: R91/01835 Date: MAY 24 1991

Client:
Mr. Dave McLay
Woodward Clyde Consultants
5120 Butler Pike
Plymouth Meeting, PA 19462

Sample(s) Reference
Metcalf+Eddy Services

Received : 05/06/91 P.O. #:

HSL VOLATILES BY EPA METHOD 8240* ANALYTICAL RESULTS - ug/kg Wet W

Sample:	-001	-002
Location:	PW-1 S-1	PW-1 S-2
Date Collected:	05/03/91	05/03/91
Time Collected:	09:45	10:30
Date Analyzed:	05/08/91	05/08/91
Ethylbenzene	313	1250 U
Styrene	250 U	1250 U
Total Xylene (o,m,p)	4440	1250 U
Surrogate Standard Recoveries		
1,2-Dichloroethane-d4	98%	93%
(Acceptance limits: 73-116%)		
Toluene d8	100%	90%
(Acceptance limits 80-114%)		
4-Bromofluorobenzene	111%	100%
(Acceptance limits 78-116%)		

Unless otherwise noted, analytical methodology has been obtained from references as cited in 40 CFR, parts #136 & #261.
NY ID# in Rochester: 10145
NJ ID# in Rochester: 73331
NJ ID# in Hackensack: 02317
NY ID# in Hackensack: 10801

Michael K. Peng
Laboratory Director

General Testing Corporation

A Full Service Environmental Laborato

LABORATORY REPORT

Job No: R91/01835 Date: MAY 24 1991

Client:
Mr. Dave McLay
Woodward Clyde Consultants
5120 Butler Pike
Plymouth Meeting, PA 19462

Sample(s) Reference
Metcalf+Eddy Services

Received : 05/06/91 P.O. #:

HSL BASE NEUTRALS BY EPA METHOD 8270* ANALYTICAL RESULTS - ug/kg Wet Wt.

Sample:	-001	-002
Location:	PW-1 S-1	PW-1 S-2
Date Collected:	05/03/91	05/03/91
Time Collected:	09:45	10:30
Date Extracted:	05/07/91	05/07/91
Date Analyzed:	05/17/91	05/17/91
N-Nitrosodimethylamine	330 U	330 U
Bis(2-chloroethyl) ether	330 U	330 U
1,3 Dichlorobenzene	330 U	330 U
1,4 Dichlorobenzene	330 U	330 U
1,2 Dichlorobenzene	552	330 U
bis(-2-chloroisopropyl)ether	330 U	330 U
N-Nitroso-Di-n-propylamine	330 U	330 U
Hexachloroethane	330 U	330 U
Nitrobenzene	330 U	330 U
Isophorone	330 U	330 U
bis(-2-chloroethoxy)methane	330 U	330 U
1,2,4-Trichlorobenzene	330 U	330 U
Naphthalene	719	330 U
Hexachlorobutadiene	330 U	330 U
Hexachlorocyclopentadiene	330 U	330 U
2-Chloronaphthalene	330 U	330 U
Dimethyl phthalate	330 U	330 U
Acenaphthylene	330 U	330 U
Acenaphthene	330 U	330 U
2,4-Dinitrotoluene	330 U	330 U
2,6-Dinitrotoluene	330 U	330 U
Diethyl phthalate	330 U	330 U
4-Chlorophenyl-phenyl-ether	330 U	330 U
Fluorene	330 U	330 U
1,2-Diphenylhydrazine	330 U	330 U
N-Nitrosodiphenylamine	330 U	330 U
4-Bromophenyl-phenylether	330 U	330 U
Hexachlorobenzene	330 U	330 U
Phenanthrene	330 U	330 U
Anthracene	330 U	330 U
Di-n-butyl phthalate	394	330 U
Benzidine	3300 U	3300 U
Fluoranthene	330 U	330 U
Pyrene	330 U	330 U
Butyl benzyl phthalate	330 U	330 U

00006

General Testing Corporation

A Full Service Environmental Laborator

LABORATORY REPORT

Job Number: R91/01835 Date: MAY 24 1991

Client:
Mr. Dave McLay
Woodward Clyde Consultants
5120 Butler Pike
Plymouth Meeting, PA 19462

Sample(s) Reference
Metcalf+Eddy Services

Received : 05/06/91 P.O. #:

HSL BASE NEUTRALS BY EPA METHOD 8270* ANALYTICAL RESULTS - ug/kg Wet Wt.

Sample:	-001	-002
Location:	PW-1 S-1	PW-1 S-2
Date Collected:	05/03/91	05/03/91
Time Collected:	09:45	10:30
Date Extracted:	05/07/91	05/07/91
Date Analyzed:	05/17/91	05/17/91
3,3'-Dichlorobenzidine	330 U	330 U
Benzo(a)anthracene	330 U	330 U
Bis(2-ethylhexyl)phthalate	2040	1150
Chrysene	330 U	330 U
Di-n-octyl phthalate	330 U	330 U
Benzo(b)Fluoranthene	330 U	330 U
Benzo(k)fluoranthene	330 U	330 U
Benzo(a)pyrene	330 U	330 U
Indeno(1,2,3-cd)pyrene	330 U	330 U
Dibenzo(a,h)anthracene	330 U	330 U
Benzo(g,h,i)perylene	330 U	330 U
Aniline	2600 U	2600 U
Benzyl Alcohol	1320 U	1320 U
4-Chloroaniline	660 U	660 U
2-Methyl Naphthalene	429	660 U
2-Nitroaniline	1320 U	1320 U
3-Nitroaniline	1320 U	1320 U
Dibenzofuran	660 U	660 U
4-Nitroaniline	3300 U	3300 U

Unless otherwise noted, analytical methodology has been obtained from references as cited in 40 CFR, parts #136 & #261.
NY ID# in Rochester: 10145
NJ ID# in Rochester: 73331
NJ ID# in Hackensack: 02317
NY ID# in Hackensack: 10801

00007 Michael K. Perry

Laboratory Director

General Testing Corporation

A Full Service Environmental Laborato

LABORATORY REPORT

Job No: R91/01835 Date: MAY 24 1991

Client:
Mr. Dave McLay
Woodward Clyde Consultants
5120 Butler Pike
Plymouth Meeting, PA 19462

Sample(s) Reference
Metcalf+Eddy Services

Received : 05/06/91 P.O. #:

SURROGATE RECOVERIES / EPA METHOD 8270* ANALYTICAL RESULTS - %

Sample:	-001	-002
Location:	PW-1 S-1	PW-1 S-2
Date Collected:	05/03/91	05/03/91
Time Collected:	09:45	10:30
BASE NEUTRALS		
Nitrobenzene-d5 (Acceptance Limits: 23-120%)	49%	58%
2-Fluorobiphenyl (Acceptance Limits: 30-115%)	64%	57%
Terphenyl-d14 (Acceptance Limits: 18-137%)	74%	62%

Unless otherwise noted, analytical methodology has been obtained from references as cited in 40 CFR, parts #136 & #261.
NY ID# in Rochester: 10145
NJ ID# in Rochester: 73331
NJ ID# in Hackensack: 02317
NY ID# in Hackensack: 10801

00008

Michael K. Perry
Laboratory Director

General Testing Corporation

A Full Service Environmental Laborato

LABORATORY REPORT

Job No: R91/01856 Date: MAY 22 1991

Client:
Mr. David McLay
Woodward Clyde Consultants
5120 Butler Pike
Plymouth Meeting, PA 19462

Sample(s) Reference:
Metcalf & Eddy Services

Received : 05/07/91 P.O. #:

ANALYTICAL UNITS - ug/kg Wet Wt.

Sample:	-001	-002
Location:	BP-4S1	BP-4S2
	BP-4	BP-4
Date Collected:	05/06/91	05/06/91
Time Collected:	08:30	10:00
Volatile Organics-GC/MS	**	**
Semivolatile Organics	**	**

Unless otherwise noted, analytical methodology has been obtained from references as cited in 40 CFR, parts #136 & #261.
NY ID# in Rochester: 10145
NJ ID# in Rochester: 73331
NJ ID# in Hackensack: 02317
NY ID# in Hackensack: 10801

**See attached data

Michael K. Pengo
Laboratory Director

General Testing Corporation

A Full Service Environmental Laborato

LABORATORY REPORT

Job No: R91/01856 Date: JUNE 5 1991

Client:
Mr. David McLay
Woodward Clyde Consultants
5120 Butler Pike
Plymouth Meeting, PA 19462

Sample(s) Reference
Metcalf & Eddy Services

Received : 05/07/91 P.O. #:

HSL VOLATILES BY EPA METHOD 8240* ANALYTICAL RESULTS - ug/kg Wet Wt.

Sample:	-001	-002						
Location:	BP-4S1	BP-4S2						
	BP-4	BP-4						
Date Collected:	05/06/91	05/06/91						
Time Collected:	08:30	10:00						
Date Analyzed:	05/10/91	05/09/91						
Chloromethane	10 U	10 U						
Bromomethane	10 U	10 U						
Vinyl Chloride	10 U	10 U						
Chloroethane	10 U	10 U						
Methylene Chloride	13.2	10 U						
Acetone	100 U	100 U						
Carbon Disulfide	50 U	50 U						
Trichlorofluoromethane	10 U	10 U						
Vinyl Acetate	50 U	50 U						
1,1-Dichloroethene	10 U	10 U						
1,1-Dichloroethane	10 U	10 U						
trans-1,2-Dichloroethene	10 U	10 U						
cis-1,2-Dichloroethene	10 U	10 U						
Chloroform	10 U	10 U						
2-Butanone (MEK)	50 U	50 U						
1,2-Dichloroethane	10 U	10 U						
1,1,1-Trichloroethane	10 U	10 U						
Carbon Tetrachloride	10 U	10 U						
Bromodichloromethane	10 U	10 U						
1,2-Dichloropropane	10 U	10 U						
1,3-Dichloropropene (Trans)	10 U	10 U						
Trichloroethene	10 U	10 U						
Dibromochloromethane	10 U	10 U						
1,1,2-Trichloroethane	10 U	10 U						
Benzene	10 U	10 U						
1,3-Dichloropropene(Cis)	10 U	10 U						
Bromoform	10 U	10 U						
4-Methyl-2-pentanone(MIBK)	50 U	50 U						
2-Hexanone	50 U	50 U						
Tetrachloroethene	10 U	10 U						
1,1,2,2-Tetrachloroethane	10 U	10 U						
Toluene	10 U	68.0						
Chlorobenzene	10 U	10 U						

General Testing Corporation

A Full Service Environmental Laboratc

LABORATORY REPORT

Job No: R91/01856 Date: JUNE 5 1991

Client:
Mr. David McLay
Woodward Clyde Consultants
5120 Butler Pike
Plymouth Meeting, PA 19462

Sample(s) Reference
Metcalf & Eddy Services

Received : 05/07/91 P.O. #:

HSL VOLATILES BY EPA METHOD 8240* ANALYTICAL RESULTS - ug/kg Wet W

Sample:	-001	-002
Location:	BP-4S1	BP-4S2
	BP-4	BP-4
Date Collected:	05/06/91	05/06/91
Time Collected:	08:30	10:00
Date Analyzed:	05/10/91	05/09/91
Ethylbenzene	10 U	27.7
Styrene	10 U	10 U
Total Xylene (o,m,p)	10 U	20
Surrogate Standard Recoveries		
1,2-Dichloroethane-d4	99%	100%
(Acceptance limits: 73-116%)		
Toluene d8	85%	100%
(Acceptance limits 80-114%)		
4-Bromofluorobenzene	86%	102%
(Acceptance limits 78-116%)		

Unless otherwise noted, analytical methodology has been obtained from references as cited in 40 CFR, parts #136 & #261.
NY ID# in Rochester: 10145
NJ ID# in Rochester: 73331
NJ ID# in Hackensack: 02317
NY ID# in Hackensack: 10801

Michael K. Perry
Laboratory Director

General Testing Corporation

A Full Service Environmental Laborato

LABORATORY REPORT

Job No: R91/01856 Date: JUNE 5 1991

Client:
Mr. David McLay
Woodward Clyde Consultants
5120 Butler Pike
Plymouth Meeting, PA 19462

Sample(s) Reference
Metcalf & Eddy Services

Received : 05/07/91 P.O. #:

HSL BASE NEUTRALS BY EPA METHOD 8270* ANALYTICAL RESULTS - ug/kg Wet Wt.

Sample:	-001	-002
Location:	BP-4S1	BP-4S2
	BP-4	BP-4
Date Collected:	05/06/91	05/06/91
Time Collected:	08:30	10:00
Date Extracted:	05/08/91	05/08/91
Date Analyzed:	05/17/91	05/17/91
N-Nitrosodimethylamine	330 U	330 U
Bis(2-chloroethyl) ether	330 U	330 U
1,3 Dichlorobenzene	330 U	330 U
1,4 Dichlorobenzene	330 U	330 U
1,2 Dichlorobenzene	330 U	330 U
bis(-2-chloroisopropyl)ether	330 U	330 U
N-Nitroso-Di-n-propylamine	330 U	330 U
Hexachloroethane	330 U	330 U
Nitrobenzene	330 U	330 U
Isophorone	330 U	330 U
bis(-2-chloroethoxy)methane	330 U	330 U
1,2,4-Trichlorobenzene	330 U	330 U
Naphthalene	330 U	330 U
Hexachlorobutadiene	330 U	330 U
Hexachlorocyclopentadiene	330 U	330 U
2-Chloronaphthalene	330 U	330 U
Dimethyl phthalate	330 U	330 U
Acenaphthylene	330 U	330 U
Acenaphthene	330 U	330 U
2,4-Dinitrotoluene	330 U	330 U
2,6-Dinitrotoluene	330 U	330 U
Diethyl phthalate	330 U	330 U
4-Chlorophenyl-phenyl-ether	330 U	330 U
Fluorene	330 U	330 U
1,2-Diphenylhydrazine	330 U	330 U
N-Nitrosodiphenylamine	330 U	330 U
4-Bromophenyl-phenylether	330 U	330 U
Hexachlorobenzene	330 U	330 U
Phenanthrene	330 U	330 U
Anthracene	330 U	330 U
Di-n-butyl phthalate	330 U	330 U
Benzidine	3300 U	3300 U
Fluoranthene	330 U	330 U
Pyrene	330 U	330 U
Butyl benzyl phthalate	330 U	330 U

00012

General Testing Corporation

A Full Service Environmental Laborato

LABORATORY REPORT

Job Number: R91/01856 Date: JUNE 5 1991

Client:
Mr. David McLay
Woodward Clyde Consultants
5120 Butler Pike
Plymouth Meeting, PA 19462

Sample(s) Reference
Metcalf & Eddy Services

Received : 05/07/91 P.O. #:

HSL BASE NEUTRALS BY EPA METHOD 8270* ANALYTICAL RESULTS - ug/kg Wet Wt.

Sample:	-001	-002
Location:	BP-4S1	BP-4S2
	BP-4	BP-4
Date Collected:	05/06/91	05/06/91
Time Collected:	08:30	10:00
Date Extracted:	05/08/91	05/08/91
Date Analyzed:	05/17/91	05/17/91
3,3'-Dichlorobenzidine	330 U	330 U
Benzo(a)anthracene	330 U	330 U
Bis(2-ethylhexyl)phthalate	330 U	330 U
Chrysene	330 U	330 U
Di-n-octyl phthalate	330 U	330 U
Benzo(b)fluoranthene	330 U	330 U
Benzo(k)fluoranthene	330 U	330 U
Benzo(a)pyrene	330 U	330 U
Indeno(1,2,3-cd)pyrene	330 U	330 U
Dibenzo(a,h)anthracene	330 U	330 U
Benzo(g,h,i)perylene	330 U	330 U
Aniline	2600 U	2600 U
Benzyl Alcohol	1320 U	1320 U
4-Chloroaniline	660 U	660 U
2-Methyl Naphthalene	660 U	660 U
2-Nitroaniline	1320 U	1320 U
3-Nitroaniline	1320 U	1320 U
Dibenzofuran	660 U	660 U
4-Nitroaniline	3300 U	3300 U

Unless otherwise noted, analytical methodology has been obtained from references as cited in 40 CFR, parts #136 & #261.
NY ID# in Rochester: 10145
NJ ID# in Rochester: 73331
NJ ID# in Hackensack: 02317
NY ID# in Hackensack: 10801

Michael K. Perry
Laboratory Director

General Testing Corporation

A Full Service Environmental Laborat

LABORATORY REPORT

Job No: R91/01856 Date: JUNE 5 1991

Client:
Mr. David McLay
Woodward Clyde Consultants
5120 Butler Pike
Plymouth Meeting, PA 19462

Sample(s) Reference
Metcalf & Eddy Services

Received : 05/07/91 P.O. #:

SURROGATE RECOVERIES / EPA METHOD 8270* ANALYTICAL RESULTS - %

Sample:	-001	-002
Location:	BP-4S1	BP-4S2
	BP-4	BP-4
Date Collected:	05/06/91	05/06/91
Time Collected:	08:30	10:00
BASE NEUTRALS		
Nitrobenzene-d5 (Acceptance Limits: 23-120%)	53%	56%
2-Fluorobiphenyl (Acceptance Limits: 30-115%)	60%	66%
Terphenyl-d14 (Acceptance Limits: 18-137%)	67%	70%

Unless otherwise noted, analytical methodology has been obtained from references as cited in 40 CFR, parts #136 & #261.
NY ID# in Rochester: 10145
NJ ID# in Rochester: 73331
NJ ID# in Hackensack: 02317
NY ID# in Hackensack: 10801

Michael K. Perry
Laboratory Director

General Testing Corporation

A Full Service Environmental Laborato

LABORATORY REPORT

Job No: R91/01914 Date: JUNE 3 1991

Client:
Mr. Dave McLay
Woodward Clyde Consultants
5120 Butler Pike
Plymouth Meeting, PA 19462

Sample(s) Reference:
Metcalf & Eddy Services

Received : 05/09/91 P.O. #:

ANALYTICAL UNITS - ug/kg Wet Wt.

Sample:	-001	-002	-003	-004	-005	-006		
Location:	PB-1-S1	PB-1-S2	PB-2-S1	PB-6-S2	P3-3-S1	PB-3-S2		
Date Collected:	05/08/91	05/08/91	05/07/91	05/07/91	05/07/91	05/07/91		
Time Collected:	--	--	--	--	--	--		
Volatile Organics-GC/MS	**	**	**	**	**	**		
Semivolatile Organics	**	**	**	**	**	**		

Unless otherwise noted, analytical methodology has been obtained from references as cited in 40 CFR, parts #136 & #261.
NY ID# in Rochester: 10145
NJ ID# in Rochester: 73331
NJ ID# in Hackensack: 02317
NY ID# in Hackensack: 10801

** See attached data

Michael K. Peng
Laboratory Director

General Testing Corporation

A Full Service Environmental Laborato

LABORATORY REPORT

Job No: R91/01914 Date: JUNE 3 1991

Client:
Mr. Dave McLay
Woodward Clyde Consultants
5120 Butler Pike
Plymouth Meeting, PA 19462

Sample(s) Reference
Metcalf & Eddy Services

Received : 05/09/91 P.O. #:

HSL VOLATILES BY EPA METHOD 8240* ANALYTICAL RESULTS - ug/kg Wet Wt.

Sample:	-001	-002	-003	-004	-005	-006		
Location:	P8-1-S1	P8-1-S2	P8-2-S1	P8-6-S2	P3-3-S1	P8-3-S2		
Date Collected:	05/08/91	05/08/91	05/07/91	05/07/91	05/07/91	05/07/91		
Time Collected:	--	--	--	--	--	--		
Date Analyzed:	05/11/91	05/11/91	05/14/91	05/14/91	05/14/91	05/14/91		
Chloromethane	2 U	2 U	500 U	250 U	250 U	250 U		
Bromomethane	2 U	2 U	500 U	250 U	250 U	250 U		
Vinyl Chloride	2 U	2 U	500 U	250 U	250 U	250 U		
Chloroethane	2 U	2 U	500 U	250 U	250 U	250 U		
Methylene Chloride	2 U	3.00	1740	250 U	250 U	250 U		
Acetone	20 U	20 U	5000 U	2500 U	2500 U	2500 U		
Carbon Disulfide	10 U	10 U	2500 U	1250 U	1250 U	1250 U		
Trichlorofluoromethane	2 U	2 U	500 U	250 U	250 U	250 U		
Vinyl Acetate	10 U	10 U	2500 U	1250 U	1250 U	1250 U		
1,1-Dichloroethene	2 U	2 U	500 U	250 U	250 U	250 U		
1,1-Dichloroethane	2 U	2 U	500 U	250 U	250 U	250 U		
trans-1,2-Dichloroethene	2 U	2 U	500 U	250 U	250 U	250 U		
cis-1,2-Dichloroethene	2 U	2 U	500 U	250 U	250 U	250 U		
Chloroform	2 U	2 U	500 U	250 U	250 U	250 U		
2-Butanone (MEK)	10 U	10 U	2500 U	1250 U	1250 U	1250 U		
1,2-Dichloroethane	2 U	2 U	500 U	250 U	250 U	250 U		
1,1,1-Trichloroethane	2 U	2 U	500 U	250 U	250 U	250 U		
Carbon Tetrachloride	2 U	2 U	500 U	250 U	250 U	250 U		
Bromodichloromethane	2 U	2 U	500 U	250 U	250 U	250 U		
1,2-Dichloropropane	2 U	2 U	500 U	250 U	250 U	250 U		
1,3-Dichloropropene (Trans)	2 U	2 U	500 U	250 U	250 U	250 U		
Trichloroethene	2 U	2 U	500 U	250 U	250 U	250 U		
Dibromochloromethane	2 U	2 U	500 U	250 U	250 U	250 U		
1,1,2-Trichloroethane	2 U	2 U	500 U	250 U	250 U	250 U		
Benzene	2 U	2 U	500 U	250 U	250 U	250 U		
1,3-Dichloropropene(Cis)	2 U	2 U	500 U	250 U	250 U	250 U		
Bromoform	2 U	2 U	500 U	250 U	250 U	250 U		
4-Methyl-2-pentanone(MIBK)	10 U	10 U	2500 U	1250 U	1250 U	1250 U		
2-Hexanone	10 U	10 U	2500 U	1250 U	1250 U	1250 U		
Tetrachloroethene	2 U	2 U	500 U	250 U	12,300	7060		
1,1,2,2-Tetrachloroethane	2 U	2 U	500 U	250 U	250 U	250 U		
Toluene	2 U	2 U	500 U	250 U	250 U	250 U		
Chlorobenzene	2 U	2 U	500 U	250 U	250 U	250 U		

General Testing Corporation

A Full Service Environmental Laborato

LABORATORY REPORT

Job No: R91/01914 Date: JUNE 3 1991

Client:
Mr. Dave McLay
Woodward Clyde Consultants
5120 Butler Pike
Plymouth Meeting, PA 19462

Sample(s) Reference
Metcalf & Eddy Services

Received : 05/09/91 P.O. #:

HSL VOLATILES BY EPA METHOD 8240* ANALYTICAL RESULTS - ug/kg Wet W

Sample:	-001	-002	-003	-004	-005	-006		
Location:	PB-1-S1	PB-1-S2	PB-2-S1	PB-6-S2	P3-3-S1	PB-3-S2		
Date Collected:	05/08/91	05/08/91	05/07/91	05/07/91	05/07/91	05/07/91		
Time Collected:	--	--	--	--	--	--		
Date Analyzed:	05/11/91	05/11/91	05/14/91	05/14/91	05/14/91	05/14/91		
Ethylbenzene	2 U	2 U	500 U	250 U	530	250 U		
Styrene	2 U	2 U	500 U	250 U	250 U	250 U		
Total Xylene (o,m,p)	2 U	2 U	500 U	250 U	354	250 U		
Surrogate Standard Recoveries								
1,2-Dichloroethane-d4 (Acceptance limits: 73-116%)	98%	100%	110%	110%	110%	114%		
Toluene d8 (Acceptance limits 80-114%)	96%	97%	102%	100%	99%	104%		
4-Bromofluorobenzene (Acceptance limits 78-116%)	91%	94%	103%	100%	98%	112%		

Unless otherwise noted, analytical methodology has been obtained from references as cited in 40 CFR, parts #136 & #261.
NY ID# in Rochester: 10145
NJ ID# in Rochester: 73331
NJ ID# in Hackensack: 02317
NY ID# in Hackensack: 10801

Michael K. Perry
Laboratory Director

General Testing Corporation

A Full Service Environmental Laborator

LABORATORY REPORT

Job No: R91/01914 Date: JUNE 3 1991

Client:
Mr. Dave McLay
Woodward Clyde Consultants
5120 Butler Pike
Plymouth Meeting, PA 19462

Sample(s) Reference
Metcalf & Eddy Services

Received : 05/09/91 P.O. #:

HSL BASE NEUTRALS BY EPA METHOD 8270* ANALYTICAL RESULTS - ug/kg Wet Wt.

Sample:	-001	-002	-003	-004	-005	-006		
Location:	PB-1-S1	PB-1-S2	PB-2-S1	PB-6-S2	P3-3-S1	PB-3-S2		
Date Collected:	05/08/91	05/08/91	05/07/91	05/07/91	05/07/91	05/07/91		
Time Collected:	--	--	--	--	--	--		
Date Extracted:	05/13/91	05/13/91	05/13/91	05/13/91	05/13/91	05/13/91		
Date Analyzed:	05/21/91	05/21/91	05/21,23/91	05/21/91	05/21/91	05/22/91		
N-Nitrosodimethylamine	330 U	330 U	330 U	330 U	330 U	330 U		
Bis(2-chloroethyl) ether	330 U	330 U	330 U	330 U	330 U	330 U		
1,3 Dichlorobenzene	330 U	330 U	330 U	330 U	330 U	330 U		
1,4 Dichlorobenzene	330 U	330 U	330 U	330 U	330 U	330 U		
1,2 Dichlorobenzene	330 U	330 U	330 U	330 U	330 U	330 U		
bis(-2-chloroisopropyl)ether	330 U	330 U	330 U	330 U	330 U	330 U		
N-Nitroso-Di-n-propylamine	330 U	330 U	330 U	330 U	330 U	330 U		
Hexachloroethane	330 U	330 U	330 U	330 U	330 U	330 U		
Nitrobenzene	330 U	330 U	330 U	330 U	330 U	330 U		
Isophorone	330 U	330 U	330 U	330 U	330 U	330 U		
bis(-2-chloroethoxy)methane	330 U	330 U	330 U	330 U	330 U	330 U		
1,2,4-Trichlorobenzene	330 U	330 U	330 U	330 U	330 U	330 U		
Naphthalene	330 U	330 U	330 U	330 U	330 U	330 U		
Hexachlorobutadiene	330 U	330 U	330 U	330 U	330 U	330 U		
Hexachlorocyclopentadiene	330 U	330 U	330 U	330 U	330 U	330 U		
2-Chloronaphthalene	330 U	330 U	330 U	330 U	330 U	330 U		
Dimethyl phthalate	330 U	330 U	330 U	330 U	330 U	330 U		
Acenaphthylene	330 U	330 U	330 U	330 U	330 U	330 U		
Acenaphthene	330 U	330 U	330 U	330 U	330 U	330 U		
2,4-Dinitrotoluene	330 U	330 U	330 U	330 U	330 U	330 U		
2,6-Dinitrotoluene	330 U	330 U	330 U	330 U	330 U	330 U		
Diethyl phthalate	330 U	330 U	330 U	330 U	330 U	330 U		
4-Chlorophenyl-phenyl-ether	330 U	330 U	330 U	330 U	330 U	330 U		
Fluorene	330 U	330 U	330 U	330 U	330 U	330 U		
1,2-Diphenylhydrazine	330 U	330 U	330 U	330 U	330 U	330 U		
N-Nitrosodiphenylamine	330 U	330 U	330 U	330 U	330 U	330 U		
4-Bromophenyl-phenylether	330 U	330 U	330 U	330 U	330 U	330 U		
Hexachlorobenzene	330 U	330 U	330 U	330 U	330 U	330 U		
Phenanthrene	330 U	330 U	330 U	330 U	330 U	330 U		
Anthracene	330 U	330 U	330 U	330 U	330 U	330 U		
Di-n-butyl phthalate	330 U	330 U	330 U	330 U	330 U	330 U		
Benzidine	3300 U	3300 U	3300 U	3300 U	3300 U	3300 U		
Fluoranthene	330 U	330 U	330 U	330 U	330 U	330 U		
Pyrene	330 U	330 U	330 U	330 U	330 U	330 U		
Butyl benzyl phthalate	330 U	330 U	330 U	330 U	330 U	330 U		

General Testing Corporation

A Full Service Environmental Laborato

LABORATORY REPORT

Job Number: R91/01914 Date: JUNE 3 1991

Client:
Mr. Dave McLay
Woodward Clyde Consultants
5120 Butler Pike
Plymouth Meeting, PA 19462

Sample(s) Reference
Metcalf & Eddy Services

Received : 05/09/91 P.O. #:

HSL BASE NEUTRALS BY EPA METHOD 8270* ANALYTICAL RESULTS - ug/kg Wet Wt.

Sample:	-001	-002	-003	-004	-005	-006		
Location:	PB-1-S1	PB-1-S2	PB-2-S1	PB-6-S2	P3-3-S1	PB-3-S2		
Date Collected:	05/08/91	05/08/91	05/07/91	05/07/91	05/07/91	05/07/91		
Time Collected:	--	--	--	--	--	--		
Date Extracted:	05/13/91	05/13/91	05/13/91	05/13/91	05/13/91	05/13/91		
Date Analyzed:	05/21/91	05/21/91	05/21,23/91	05/21/91	05/21/91	05/22/91		
3,3'-Dichlorobenzidine	330 U	330 U	330 U	330 U	330 U	330 U		
Benzo(a)anthracene	330 U	330 U	330 U	330 U	330 U	330 U		
Bis(2-ethylhexyl)phthalate	520	330 U	340	454	7490	657		
Chrysene	330 U	330 U	330 U	330 U	330 U	330 U		
Di-n-octyl phthalate	330 U	330 U	330 U	330 U	330 U	330 U		
Benzo(b)Fluoranthene	330 U	330 U	330 U	330 U	330 U	330 U		
Benzo(k)fluoranthene	330 U	330 U	330 U	330 U	330 U	330 U		
Benzo(a)pyrene	330 U	330 U	330 U	330 U	330 U	330 U		
Indeno(1,2,3-cd)pyrene	330 U	330 U	330 U	330 U	330 U	330 U		
Dibenzo(a,h)anthracene	330 U	330 U	330 U	330 U	330 U	330 U		
Benzo(g,h,i)perylene	330 U	330 U	330 U	330 U	330 U	330 U		
Aniline	2600 U	2600 U	2600 U	2600 U	2600 U	2600 U		
Benzyl Alcohol	1320 U	1320 U	1320 U	1320 U	1320 U	1320 U		
4-Chloroaniline	660 U	660 U	660 U	660 U	660 U	660 U		
2-Methyl Naphthalene	660 U	660 U	660 U	436	660 U	660 U		
2-Nitroaniline	1320 U	1320 U	1320 U	1320 U	1320 U	1320 U		
3-Nitroaniline	1320 U	1320 U	1320 U	1320 U	1320 U	1320 U		
Dibenzofuran	660 U	660 U	660 U	660 U	660 U	660 U		
4-Nitroaniline	3300 U	3300 U	3300 U	3300 U	3300 U	3300 U		

Unless otherwise noted, analytical methodology has been obtained from references as cited in 40 CFR, parts #136 & #261.
NY ID# in Rochester: 10145
NJ ID# in Rochester: 73331
NJ ID# in Hackensack: 02317
NY ID# in Hackensack: 10801

Michael K. Peng

Laboratory Director

General Testing Corporation

A Full Service Environmental Laborato

LABORATORY REPORT

Job No: R91/01914 Date: JUNE 3 1991

Client:
Mr. Dave McLay
Woodward Clyde Consultants
5120 Butler Pike
Plymouth Meeting, PA 19462

Sample(s) Reference
Metcalf & Eddy Services

Received : 05/09/91 P.O. #:

SURROGATE RECOVERIES / EPA METHOD 8270* ANALYTICAL RESULTS - %

Sample:	-001	-002	-003	-004	-005	-006
Location:	PB-1-S1	PB-1-S2	PB-2-S1	PB-6-S2	P3-3-S1	PB-3-S2
Date Collected:	05/08/91	05/08/91	05/07/91	05/07/91	05/07/91	05/07/91
Time Collected:	--	--	--	--	--	--
ACIDS						
2-Fluorophenol (Acceptance Limits: 16-122%)	92%	85%	90%	91%	84%	85%
Phenol-d6 (Acceptance Limits: 30-100%)	76%	79%	81%	89%	84%	86%
2,4,6-TriBromophenol (Acceptance Limits: 24-143%)	109%	68%	90%	65%	66%	74%
BASE NEUTRALS						
Nitrobenzene-d5 (Acceptance Limits: 19-103%)	68%	61%	64%	65%	60%	67%
2-Fluorobiphenyl (Acceptance Limits: 26-119%)	135%++	84%	103%	78%	75%	78%
Terphenyl-d14 (Acceptance Limits: 18-142%)	126%	75%	129%	77%	87%	85%

Unless otherwise noted, analytical methodology has been obtained from references as cited in 40 CFR, parts #136 & #261.
NY ID# in Rochester: 10145
NJ ID# in Rochester: 73331
NJ ID# in Hackensack: 02317
NY ID# in Hackensack: 10801

Michael K. Perry

00020

Laboratory Director

General Testing Corporation

A Full Service Environmental Laborato

LABORATORY REPORT

Job No: R91/01914 Date: JUNE 3 1991

Client:
Mr. Dave McLay
Woodward Clyde Consultants
5120 Butler Pike
Plymouth Meeting, PA 19462

Sample(s) Reference:
Metcalf & Eddy Services

Received : 05/09/91 P.O. #:

ANALYTICAL UNITS - ug/l

Sample:	-007
Location:	Field Blank
Date Collected:	05/07/91
Time Collected:	--
Volatile Organics-GC/MS	**
Semivolatile Organics	

Unless otherwise noted, analytical methodology has been obtained from references as cited in 40 CFR, parts #136 & #261.
NY ID# in Rochester: 10145
NJ ID# in Rochester: 73331
NJ ID# in Hackensack: 02317
NY ID# in Hackensack: 10801

**See attached data

Michael K. Perry
Laboratory Director

General Testing Corporation

A Full Service Environmental Laborato

LABORATORY REPORT

Job No: R91/01914 Date: JUNE 3 1991

Client:
Mr. Dave McLay
Woodward Clyde Consultants
5120 Butler Pike
Plymouth Meeting, PA 19462

Sample(s) Reference
Metcalf & Eddy Services

Received : 05/09/91 P.O. #:

HSL VOLATILES BY EPA METHOD 8240* ANALYTICAL RESULTS - ug/l

Sample:	-007						
Location:	Field Blank						
Date Collected:	05/07/91						
Time Collected:	--						
Date Analyzed:	05/10/91						
Chloromethane	2 U						
Bromomethane	2 U						
Vinyl Chloride	2 U						
Chloroethane	2 U						
Methylene Chloride	2 U						
Acetone	20 U						
Carbon Disulfide	10 U						
Trichlorofluoromethane	2 U						
Vinyl Acetate	10 U						
1,1-Dichloroethene	2 U						
1,1-Dichloroethane	2 U						
trans-1,2-Dichloroethene	2 U						
cis-1,2-Dichloroethene	2 U						
Chloroform	2 U						
2-Butanone (MEK)	10 U						
1,2-Dichloroethane	2 U						
1,1,1-Trichloroethane	2 U						
Carbon Tetrachloride	2 U						
Bromodichloromethane	2 U						
1,2-Dichloropropane	2 U						
1,3-Dichloropropene (Trans)	2 U						
Trichloroethene	2 U						
Dibromochloromethane	2 U						
1,1,2-Trichloroethane	2 U						
Benzene	2 U						
1,3-Dichloropropene(Cis)	2 U						
Bromoform	2 U						
4-Methyl-2-pentanone(MIBK)	10 U						
2-Hexanone	10 U						
Tetrachloroethene	2 U						
1,1,2,2-Tetrachloroethane	2 U						
Toluene	2 U						
Chlorobenzene	2 U						

General Testing Corporation

A Full Service Environmental Laborato

LABORATORY REPORT

Job No: R91/01914 Date: JUNE 3 1991

Client:
Mr. Dave McLay
Woodward Clyde Consultants
5120 Butler Pike
Plymouth Meeting, PA 19462

Sample(s) Reference
Metcalf & Eddy Services

Received : 05/09/91 P.O. #:

HSL VOLATILES BY EPA METHOD 8240* ANALYTICAL RESULTS - ug/l

Sample:	-007						
Location:	Field Blank						
Date Collected:	05/07/91						
Time Collected:	--						
Date Analyzed:	05/10/91						
Ethylbenzene	2 U						
Styrene	2 U						
Total Xylene (o,m,p)	2 U						
Surrogate Standard Recoveries							
1,2-Dichloroethane-d4 (Acceptance limits: 75-119%)	110%						
Toluene d8 (Acceptance limits 85-110%)	106%						
4-Bromofluorobenzene (Acceptance limits 84-116%)	102%						

Unless otherwise noted, analytical methodology has been obtained from references as cited in 40.CFR, parts #136 & #261.
NY ID# in Rochester: 10145
NJ ID# in Rochester: 73331
NJ ID# in Hackensack: 02317
NY ID# in Hackensack: 10801

Michael K. Perry
Laboratory Director

Appendix

General Testing Corporation

GTC REPORT # R91/1835,1856,1914

SECTION B

LABORATORY QUALITY CONTROL

Presented in this section is Quality Control Associated with the data provided in Section A of this report.

Quality Control Explanations:

(1) RUN QUALITY CONTROL - Selected QC data from the analytical run in which your sample(s) were involved.

(2) JOB SPECIFIC QUALITY CONTROL - QC data specific to your set of samples.

(3) DUPLICATES - Replicate analyses of a given sample used to monitor precision. Relative Percent Difference is calculated as the difference divided by the average x 100.

(4) MATRIX SPIKES - Addition of a known amount of analyte to a sample. Recovery is calculated by subtracting original value attributable to the sample from the combined value. The difference is then divided by the amount added to calculate % recovery. Poor recoveries may indicate analytical interference due to the matrix of the sample. Any other samples of this matrix may also have been affected, high or low as indicated by the % recovery.

(5) LABORATORY CONTAMINANTS - Laboratory De-ionized water used to monitor for contamination during analysis.

(6) BLANK SPIKES - Same as item #4 but analyte is added to laboratory de-ionized water. This indicates the accuracy of analysis.

(7) REFERENCE CHECK SAMPLES - Samples from an outside source having a known concentration of analyte. Used as a measure of analytical accuracy.

When possible, all components of the above listed QC protocol are performed during an analytical run. The resulting data is compared to historical records when evaluating the quality of analytical runs. The data provided in your report has passed our Quality Assurance review.

Quality Control Notes:

General Testing Corporation

A Full Service Environmental Laborato

LABORATORY REPORT

Job No: R91/01835 Date: MAY 24 1991

Client:
Mr. Dave McLay
Woodward Clyde Consultants
5120 Butler Pike
Plymouth Meeting, PA 19462

Sample(s) Reference
Metcalf+Eddy Services

Received : 05/06/91 P.O. #:

HSL VOLATILES BY EPA METHOD 8240* ANALYTICAL RESULTS - ug/kg Wet Wt.

Sample:	-003	-004						
Location:	Lab Meth. Blank	Lab Meth. Blank						
Date Collected:	--	--						
Time Collected:	--	--						
Date Analyzed:	05/08/91	05/08/91						
Chloromethane	250 U	250 U						
Bromomethane	250 U	250 U						
Vinyl Chloride	250 U	250 U						
Chloroethane	250 U	250 U						
Methylene Chloride	250 U	250 U						
Acetone	2500 U	2500 U						
Carbon Disulfide	1250 U	1250 U						
Trichlorofluoromethane	250 U	250 U						
Vinyl Acetate	1250 U	1250 U						
1,1-Dichloroethene	250 U	250 U						
1,1-Dichloroethane	250 U	250 U						
trans-1,2-Dichloroethene	250 U	250 U						
cis-1,2-Dichloroethene	250 U	250 U						
Chloroform	250 U	250 U						
2-Butanone (MEK)	1250 U	1250 U						
1,2-Dichloroethane	250 U	250 U						
1,1,1-Trichloroethane	250 U	250 U						
Carbon Tetrachloride	250 U	250 U						
Bromodichloromethane	250 U	250 U						
1,2-Dichloropropane	250 U	250 U						
1,3-Dichloropropene (Trans)	250 U	250 U						
Trichloroethene	250 U	250 U						
Dibromochloromethane	250 U	250 U						
1,1,2-Trichloroethane	250 U	250 U						
Benzene	250 U	250 U						
1,3-Dichloropropene(Cis)	250 U	250 U						
Bromoform	250 U	250 U						
4-Methyl-2-pentanone(MIBK)	1250 U	1250 U						
2-Hexanone	1250 U	1250 U						
Tetrachloroethene	250 U	250 U						
1,1,2,2-Tetrachloroethane	250 U	250 U						
Toluene	250 U	250 U						
Chlorobenzene	250 U	250 U						

General Testing Corporation

A Full Service Environmental Laborato

LABORATORY REPORT

Job No: R91/01835 Date: MAY 24 1991

Client:
Mr. Dave McLay
Woodward Clyde Consultants
5120 Butler Pike
Plymouth Meeting, PA 19462

Sample(s) Reference
Metcalf+Eddy Services

Received : 05/06/91 P.O. #:

HSL VOLATILES BY EPA METHOD 8240* ANALYTICAL RESULTS - ug/kg Wet W

Sample:	-003	-004
Location:	Lab Meth. Blank	Lab Meth. Blank
Date Collected:	--	--
Time Collected:	--	--
Date Analyzed:	05/08/91	05/08/91
Ethylbenzene	250 U	250 U
Styrene	250 U	250 U
Total Xylene (o,m,p)	250 U	250 U
Surrogate Standard Recoveries		
1,2-Dichloroethane-d4 (Acceptance limits: 73-116%)	95%	105%
Toluene d8 (Acceptance limits 80-114%)	99%	96%
4-Bromofluorobenzene (Acceptance limits 78-116%)	94%	96%

Unless otherwise noted, analytical methodology has been obtained from references as cited in 40 CFR, parts #136 & #261.
NY ID# in Rochester: 10145
NJ ID# in Rochester: 73331
NJ ID# in Hackensack: 02317
NY ID# in Hackensack: 10801

Michael K. Perry
Laboratory Director

General Testing Corporation

A Full Service Environmental Laboratory

HSL VOLATILE ORGANICS - SOIL SAMPLE

SOIL VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: General Testing Corp.

Matrix Spike - Sample No. : R91/01835 -001

COMPOUND	SPIKE ADDED (ug/kg)	SAMPLE CONCENTRATION (ug/kg)	MS CONCENT. (ug/kg)	MS % REC #	QC LIMITS REC.
1,1-Dichloroethene	31,250	0	33,420	107%	D-234
Trichloroethene	31,250	0	30,210	97%	71-157
Benzene	31,250	0	30,840	98%	37-151
Toluene	31,250	0	32,900	105%	47-150
Chlorobenzene	31,250	0	31,740	102%	37-160

COMPOUND	SPIKE ADDED (ug/kg)	MSD CONCENT. (ug/kg)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC
1,1-Dichloroethene	31,250	32,780	105%	1.9%	30	D-23
Trichloroethene	31,250	31,040	99%	2.7%	30	71-15
Benzene	31,250	31,830	102%	3.2%	30	37-15
Toluene	31,250	32,770	105%	0.4%	30	47-15
Chlorobenzene	31,250	32,760	105%	3.2%	30	37-16

Columns to be used to flag recovery and RPD values with ++.
++ = Values outside of QC limits
MS QC Limits = EPA Acceptance Criteria
RPD Limits = Internal Acceptance Criteria

RPD: 0 out of 5 outside limits
Spike Recovery: 0 out of 10 outside limits

COMMENTS: _____

General Testing Corporation

A Full Service Environmental Laborato

LABORATORY REPORT

Job No: R91/01835 Date: MAY 24 1991

Client:
Mr. Dave McLay
Woodward Clyde Consultants
5120 Butler Pike
Plymouth Meeting, PA 19462

Sample(s) Reference
Metcalf+Eddy Services

Received : 05/06/91 P.O. #:

HSL BASE NEUTRALS BY EPA METHOD 8270* ANALYTICAL RESULTS - ug/kg Wet Wt.

Sample:	-003
Location:	Lab Meth. Blank
Date Collected:	--
Time Collected:	--
Date Extracted:	05/07/91
Date Analyzed:	05/17/91
N-Nitrosodimethylamine	330 U
Bis(2-chloroethyl) ether	330 U
1,3 Dichlorobenzene	330 U
1,4 Dichlorobenzene	330 U
1,2 Dichlorobenzene	330 U
bis(-2-chloroisopropyl)ether	330 U
N-Nitroso-Di-n-propylamine	330 U
Hexachloroethane	330 U
Nitrobenzene	330 U
Isophorone	330 U
bis(-2-chloroethoxy)methane	330 U
1,2,4-Trichlorobenzene	330 U
Naphthalene	330 U
Hexachlorobutadiene	330 U
Hexachlorocyclopentadiene	330 U
2-Chloronaphthalene	330 U
Dimethyl phthalate	330 U
Acenaphthylene	330 U
Acenaphthene	330 U
2,4-Dinitrotoluene	330 U
2,6-Dinitrotoluene	330 U
Diethyl phthalate	330 U
4-Chlorophenyl-phenyl-ether	330 U
Fluorene	330 U
1,2-Diphenylhydrazine	330 U
N-Nitrosodiphenylamine	330 U
4-Bromophenyl-phenylether	330 U
Hexachlorobenzene	330 U
Phenanthrene	330 U
Anthracene	330 U
Di-n-butyl phthalate	330 U
Benzidine	3300 U
Fluoranthene	330 U
Pyrene	330 U
Butyl benzyl phthalate	330 U

General Testing Corporation

A Full Service Environmental Laborato

LABORATORY REPORT

Job Number: R91/01835 Date: MAY 24 1991

Client:
Mr. Dave McLay
Woodward Clyde Consultants
5120 Butler Pike
Plymouth Meeting, PA 19462

Sample(s) Reference
Metcalf+Eddy Services

Received : 05/06/91 P.O. #:

HSL BASE NEUTRALS BY EPA METHOD 8270* ANALYTICAL RESULTS - ug/kg Wet Wt.

Sample:	-003						
Location:	Lab Meth. Blank						
Date Collected:	--						
Time Collected:	--						
Date Extracted:	05/07/91						
Date Analyzed:	05/17/91						
3,3'-Dichlorobenzidine	330 U						
Benzo(a)anthracene	330 U						
Bis(2-ethylhexyl)phthalate	330 U						
Chrysene	330 U						
Di-n-octyl phthalate	330 U						
Benzo(b)fluoranthene	330 U						
Benzo(k)fluoranthene	330 U						
Benzo(a)pyrene	330 U						
Indeno(1,2,3-cd)pyrene	330 U						
Dibenzo(a,h)anthracene	330 U						
Benzo(g,h,i)perylene	330 U						
Aniline	2600 U						
Benzyl Alcohol	1320 U						
4-Chloroaniline	660 U						
2-Methyl Naphthalene	660 U						
2-Nitroaniline	1320 U						
3-Nitroaniline	1320 U						
Dibenzofuran	660 U						
4-Nitroaniline	3300 U						

Unless otherwise noted, analytical methodology has been obtained from references as cited in 40 CFR, parts #136 & #261.
NY ID# in Rochester: 10145
NJ ID# in Rochester: 73331
NJ ID# in Hackensack: 02317
NY ID# in Hackensack: 10801

00029 Michael K. Penny

Laboratory Director

General Testing Corporation

A Full Service Environmental Laborato

LABORATORY REPORT

Job No: R91/01835 Date: MAY 24 1991

Client:
Mr. Dave McLay
Woodward Clyde Consultants
5120 Butler Pike
Plymouth Meeting, PA 19462

Sample(s) Reference
Metcalf+Eddy Services

Received : 05/06/91 P.O. #:

SURROGATE RECOVERIES / EPA METHOD 8270* ANALYTICAL RESULTS - %

Sample:	-003
Location:	Lab Meth. Blank
Date Collected:	--
Time Collected:	--
BASE NEUTRALS	
Nitrobenzene-d5	43%
(Acceptance Limits: 23-120%)	
2-Fluorobiphenyl	65%
(Acceptance Limits: 30-115%)	
Terphenyl-d14	69%
(Acceptance Limits: 18-137%)	

Unless otherwise noted, analytical methodology has been obtained from references as cited in 40 CFR, parts #136 & #261.
NY ID# in Rochester: 10145
NJ ID# in Rochester: 73331
NJ ID# in Hackensack: 02317
NY ID#, in Hackensack: 10801

Michael K. Perry
Laboratory Director

General Testing Corporation

A Full Service Environmental Laboratory

SEMI-VOLATILE - SOIL SAMPLE

SOIL BASE/NEUTRAL MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: General Testing Corp.

Matrix Spike - Sample No. : R91/01835 -001

COMPOUND	SPIKE ADDED (ug/kg)	SAMPLE CONCENT. (ug/kg)	MS CONCENT. (ug/kg)	MS % REC #	QC LIMIT REC.
1,4 Dichlorobenzene	6747	0.0	3920	58%	20-12
N-Nitroso-Di-n-propylamine	6414	0.0	4250	66%	D-23
1,2,4-Trichlorobenzene	6727	0.0	3966	59%	44-14
Acenaphthene	6687	0.0	3810	57%	47-14
2,4-Dinitrotoluene	6673	0.0	4170	62%	39-13
Pyrene	6793	0.0	4200	62%	52-11

COMPOUND	SPIKE ADDED (ug/kg)	MSD CONCENT. (ug/kg)	MSD % REC #	% RPD #	QC LIMIT RPD	QC LIMIT REC
1,4 Dichlorobenzene	6747	3870	57%	1.3%	30	20-1
N-Nitrsodi-n-propylamine	6414	3710	58%	14%	30	D-2
1,2,4-Trichlorobenzene	6727	3690	55%	7.1%	30	44-1
Acenaphthene	6687	3590	54%	6.0%	30	47-1
2,4-Dinitrotoluene	6673	3840	58%	8.2%	30	39-1
Pyrene	6793	4210	62%	0.2%	30	52-1

- Columns to be used to flag recovery and RPD values with ++.
++ - Values outside of QC limits
MS QC Limits = EPA Acceptance Criteria
RPD Limits = Internal Acceptance Criteria

RPD: 0 out of 6 outside limits
Spike Recovery: 0 out of 12 outside limits

COMMENTS: _____

General Testing Corporation

A Full Service Environmental Laborato

LABORATORY REPORT

Client:
Mr. Dave McLay
Woodward Clyde Consultants
5120 Butler Pike
Plymouth Meeting, PA 19462

Job No: R91/01835

Date: 24 MAY , 199

BASE NEUTRALS BY EPA METHOD 8270	REFERENCE CHECK TRUE VALUE	% RECOVERY	ACCEPTANCE LIMITS (%)
Date Extracted: 05/07/91			
Date Analyzed: 05/17/91			
1,4 Dichlorobenzene	6747	54%	20 - 124
N-Nitroso-Di-n-propylamine	6414	50%	D - 230
1,2,4-Trichlorobenzene	6727	53%	44 - 142
Acenaphthene	6687	52%	47 - 145
2,4-Dinitrotoluene	6673	53%	39 - 139
Pyrene	6793	60%	

General Testing Corporation

A Full Service Environmental Laboratc

LABORATORY REPORT

Job No: R91/01856 Date: JUNE 5 1991

Client:
Mr. David McLay
Woodward Clyde Consultants
5120 Butler Pike
Plymouth Meeting, PA 19462

Sample(s) Reference
Metcalf & Eddy Services

Received : 05/07/91 P.O. #:

HSL VOLATILES BY EPA METHOD 8240* ANALYTICAL RESULTS - ug/kg Wet Wt.

Sample:	-003	-004
Location:	Lab Meth. Blank	Lab Meth. Blank
Date Collected:	--	--
Time Collected:	--	--
Date Analyzed:	05/09/91	05/10/91
Chloromethane	2 U	2 U
Bromomethane	2 U	2 U
Vinyl Chloride	2 U	2 U
Chloroethane	2 U	2 U
Methylene Chloride	2 U	2 U
Acetone	20 U	20 U
Carbon Disulfide	10 U	10 U
Trichlorofluoromethane	2 U	2 U
Vinyl Acetate	10 U	10 U
1,1-Dichloroethene	2 U	2 U
1,1-Dichloroethane	2 U	2 U
trans-1,2-Dichloroethene	2 U	2 U
cis-1,2-Dichloroethene	2 U	2 U
Chloroform	2 U	2 U
2-Butanone (MEK)	10 U	10 U
1,2-Dichloroethane	2 U	2 U
1,1,1-Trichloroethane	2 U	2 U
Carbon Tetrachloride	2 U	2 U
Bromodichloromethane	2 U	2 U
1,2-Dichloropropane	2 U	2 U
1,3-Dichloropropene (Trans)	2 U	2 U
Trichloroethene	2 U	2 U
Dibromochloromethane	2 U	2 U
1,1,2-Trichloroethane	2 U	2 U
Benzene	2 U	2 U
1,3-Dichloropropene(Cis)	2 U	2 U
Bromoform	2 U	2 U
4-Methyl-2-pentanone(MIBK)	10 U	10 U
2-Hexanone	10 U	10 U
Tetrachloroethene	2 U	2 U
1,1,2,2-Tetrachloroethane	2 U	2 U
Toluene	2 U	2 U
Chlorobenzene	2 U	2 U

General Testing Corporation

A Full Service Environmental Laboratc

LABORATORY REPORT

Job No: R91/01856 Date: JUNE 5 1991

Client:
Mr. David McLay
Woodward Clyde Consultants
5120 Butler Pike
Plymouth Meeting, PA 19462

Sample(s) Reference
Metcalf & Eddy Services

Received : 05/07/91 P.O. #:

HSL VOLATILES BY EPA METHOD 8240* ANALYTICAL RESULTS - ug/kg Wet W

Sample:	-003	-004
Location:	Lab Meth. Blank	Lab Meth. Blank
Date Collected:	--	--
Time Collected:	--	--
Date Analyzed:	05/09/91	05/10/91
Ethylbenzene	2 U	2 U
Styrene	2 U	2 U
Total Xylene (o,m,p)	2 U	2 U
Surrogate Standard Recoveries		
1,2-Dichloroethane-d4 (Acceptance limits: 73-116%)	95%	107%
Toluene d8 (Acceptance limits 80-114%)	94%	99%
4-Bromofluorobenzene (Acceptance limits 78-116%)	91%	96%

Unless otherwise noted, analytical methodology has been obtained from references as cited in 40 CFR, parts #136 & #261.

NY ID# in Rochester: 10145
NJ ID# in Rochester: 73331
NJ ID# in Hackensack: 02317
NY ID# in Hackensack: 10801

Michael K. Perry

Laboratory Director

General Testing Corporation

A Full Service Environmental Laboratc

LABORATORY REPORT

Job No: R91/01856 Date: JUNE 5 1991

Client:
Mr. David McLay
Woodward Clyde Consultants
5120 Butler Pike
Plymouth Meeting, PA 19462

Sample(s) Reference
Metcalf & Eddy Services

Received : 05/07/91 P.O. #:

HSL BASE NEUTRALS BY EPA METHOD 8270* ANALYTICAL RESULTS - ug/kg Wet Wt.

Sample:	-003							
Location:	Lab Meth. Blank							
Date Collected:	--							
Time Collected:	--							
Date Extracted:	05/08/91							
Date Analyzed:	05/17/91							
N-Nitrosodimethylamine	330 U							
Bis(2-chloroethyl) ether	330 U							
1,3 Dichlorobenzene	330 U							
1,4 Dichlorobenzene	330 U							
1,2 Dichlorobenzene	330 U							
bis(-2-chloroisopropyl)ether	330 U							
N-Nitroso-Di-n-propylamine	330 U							
Hexachloroethane	330 U							
Nitrobenzene	330 U							
Isophorone	330 U							
bis(-2-chloroethoxy)methane	330 U							
1,2,4-Trichlorobenzene	330 U							
Naphthalene	330 U							
Hexachlorobutadiene	330 U							
Hexachlorocyclopentadiene	330 U							
2-Chloronaphthalene	330 U							
Dimethyl phthalate	330 U							
Acenaphthylene	330 U							
Acenaphthene	330 U							
2,4-Dinitrotoluene	330 U							
2,6-Dinitrotoluene	330 U							
Diethyl phthalate	330 U							
4-Chlorophenyl-phenyl-ether	330 U							
Fluorene	330 U							
1,2-Diphenylhydrazine	330 U							
N-Nitrosodiphenylamine	330 U							
4-Bromophenyl-phenylether	330 U							
Hexachlorobenzene	330 U							
Phenanthrene	330 U							
Anthracene	330 U							
Di-n-butyl phthalate	330 U							
Benzidine	3300 U							
Fluoranthene	330 U							
Pyrene	330 U							
Butyl benzyl phthalate	330 U							

General Testing Corporation

A Full Service Environmental Laborato

LABORATORY REPORT

Job Number: R91/01856 Date: JUNE 5 1991

Client:
Mr. David McLay
Woodward Clyde Consultants
5120 Butler Pike
Plymouth Meeting, PA 19462

Sample(s) Reference
Metcalf & Eddy Services

Received : 05/07/91 P.O. #:

HSL BASE NEUTRALS BY EPA METHOD 8270* ANALYTICAL RESULTS - ug/kg Wet Wt.

Sample:	-003
Location:	Lab Meth. Blank
Date Collected:	--
Time Collected:	--
Date Extracted:	05/08/91
Date Analyzed:	05/17/91
3,3'-Dichlorobenzidine	330 U
Benzo(a)anthracene	330 U
Bis(2-ethylhexyl)phthalate	330 U
Chrysene	330 U
Di-n-octyl phthalate	330 U
Benzo(b)Fluoranthene	330 U
Benzo(k)fluoranthene	330 U
Benzo(a)pyrene	330 U
Indeno(1,2,3-cd)pyrene	330 U
Dibenzo(a,h)anthracene	330 U
Benzo(g,h,i)perylene	330 U
Aniline	2600 U
Benzyl Alcohol	1320 U
4-Chloroaniline	660 U
2-Methyl Naphthalene	660 U
2-Nitroaniline	1320 U
3-Nitroaniline	1320 U
Dibenzofuran	660 U
4-Nitroaniline	3300 U

Unless otherwise noted, analytical methodology has been obtained from references as cited in 40 CFR, parts #136 & #261.
NY ID# in Rochester: 10145
NJ ID# in Rochester: 73331
NJ ID# in Hackensack: 02317
NY ID# in Hackensack: 10801

00036

Michael K. Perry
Laboratory Director

General Testing Corporation

A Full Service Environmental Laborato

LABORATORY REPORT

Job No: R91/01856 Date: JUNE 5 1991

Client:
Mr. David McLay
Woodward Clyde Consultants
5120 Butler Pike
Plymouth Meeting, PA 19462

Sample(s) Reference
Metcalf & Eddy Services

Received : 05/07/91 P.O. #:

SURROGATE RECOVERIES / EPA METHOD 8270* ANALYTICAL RESULTS - %

Sample:	-003							
Location:	Lab Meth. Blank							
Date Collected:	--							
Time Collected:	--							
BASE NEUTRALS								
Nitrobenzene-d5 (Acceptance Limits: 23-120%)	49%							
2-Fluorobiphenyl (Acceptance Limits: 30-115%)	66%							
Terphenyl-d14 (Acceptance Limits: 18-137%)	70%							

Unless otherwise noted, analytical methodology has been obtained from references as cited in 40 CFR, parts #136 & #261.
NY ID# in Rochester: 10145
NJ ID# in Rochester: 73331
NJ ID# in Hackensack: 02317
NY ID# in Hackensack: 10801

Michael K. Perry
Laboratory Director

General Testing Corporation

A Full Service Environmental Laborato

LABORATORY REPORT

Job No: R91/01914 Date: JUNE 3 1991

Client:
Mr. Dave McLay
Woodward Clyde Consultants
5120 Butler Pike
Plymouth Meeting, PA 19462

Sample(s) Reference
Metcalf & Eddy Services

Received : 05/09/91 P.O. #:

HSL VOLATILES BY EPA METHOD 8240* ANALYTICAL RESULTS - ug/kg Wet Wt.

Sample:	-008	-009						
Location:	Lab Meth. Blank	Lab Meth. Blank						
Date Collected:	--	--						
Time Collected:	--	--						
Date Analyzed:	05/10/91	05/14/91						
Chloromethane	2 U	250 U						
Bromomethane	2 U	250 U						
Vinyl Chloride	2 U	250 U						
Chloroethane	2 U	250 U						
Methylene Chloride	2 U	250 U						
Acetone	20 U	2500 U						
Carbon Disulfide	10 U	1250 U						
Trichlorofluoromethane	2 U	250 U						
Vinyl Acetate	10 U	1250 U						
1,1-Dichloroethene	2 U	250 U						
1,1-Dichloroethane	2 U	250 U						
trans-1,2-Dichloroethene	2 U	250 U						
cis-1,2-Dichloroethene	2 U	250 U						
Chloroform	2 U	250 U						
2-Butanone (MEK)	10 U	1250 U						
1,2-Dichloroethane	2 U	250 U						
1,1,1-Trichloroethane	2 U	250 U						
Carbon Tetrachloride	2 U	250 U						
Bromodichloromethane	2 U	250 U						
1,2-Dichloropropane	2 U	250 U						
1,3-Dichloropropene (Trans)	2 U	250 U						
Trichloroethene	2 U	250 U						
Dibromochloromethane	2 U	250 U						
1,1,2-Trichloroethane	2 U	250 U						
Benzene	2 U	250 U						
1,3-Dichloropropene(Cis)	2 U	250 U						
Bromoform	2 U	250 U						
4-Methyl-2-pentanone(MIBK)	10 U	1250 U						
2-Hexanone	10 U	1250 U						
Tetrachloroethene	2 U	250 U						
1,1,2,2-Tetrachloroethane	2 U	250 U						
Toluene	2 U	250 U						
Chlorobenzene	2 U	250 U						

General Testing Corporation

A Full Service Environmental Laboratc

LABORATORY REPORT

Job No: R91/01914 Date: JUNE 3 1991

Client:
Mr. Dave McLay
Woodward Clyde Consultants
5120 Butler Pike
Plymouth Meeting, PA 19462

Sample(s) Reference
Metcalf & Eddy Services

Received : 05/09/91 P.O. #:

HSL VOLATILES BY EPA METHOD 8240* ANALYTICAL RESULTS - ug/kg Wet W

Sample:	-008	-009
Location:	Lab Meth. Blank	Lab Meth. Blank
Date Collected:	--	--
Time Collected:	--	--
Date Analyzed:	05/10/91	05/14/91
Ethylbenzene	2 U	250 U
Styrene	2 U	250 U
Total Xylene (o,m,p)	2 U	250 U
Surrogate Standard Recoveries		
1,2-Dichloroethane-d4 (Acceptance limits: 73-116%)	107%	109%
Toluene d8 (Acceptance limits 80-114%)	99%	101%
4-Bromofluorobenzene (Acceptance limits 78-116%)	96%	102%

Unless otherwise noted, analytical methodology has been obtained from references as cited in 40 CFR, parts #136 & #261.

NY ID# in Rochester: 10145
NJ ID# in Rochester: 73331
NJ ID# in Hackensack: 02317
NY ID# in Hackensack: 10801

Michael K. Perry
Laboratory Director

General Testing Corporation

A Full Service Environmental Laborat

LABORATORY REPORT

Job No: R91/01914 Date: JUNE 3 1991

Client:
Mr. Dave McLay
Woodward Clyde Consultants
5120 Butler Pike
Plymouth Meeting, PA 19462

Sample(s) Reference
Metcalf & Eddy Services

Received : 05/09/91 P.O. #:

HSL BASE NEUTRALS BY EPA METHOD 8270* ANALYTICAL RESULTS - ug/kg Wet Wt.

Sample:	-008
Location:	Lab Meth. Blank
Date Collected:	--
Time Collected:	--
Date Extracted:	05/13/91
Date Analyzed:	05/21/91
N-Nitrosodimethylamine	330 U
Bis(2-chloroethyl) ether	330 U
1,3 Dichlorobenzene	330 U
1,4 Dichlorobenzene	330 U
1,2 Dichlorobenzene	330 U
bis(-2-chloroisopropyl)ether	330 U
N-Nitroso-Di-n-propylamine	330 U
Hexachloroethane	330 U
Nitrobenzene	330 U
Isophorone	330 U
bis(-2-chloroethoxy)methane	330 U
1,2,4-Trichlorobenzene	330 U
Naphthalene	330 U
Hexachlorobutadiene	330 U
Hexachlorocyclopentadiene	330 U
2-Chloronaphthalene	330 U
Dimethyl phthalate	330 U
Acenaphthylene	330 U
Acenaphthene	330 U
2,4-Dinitrotoluene	330 U
2,6-Dinitrotoluene	330 U
Diethyl phthalate	330 U
4-Chlorophenyl-phenyl-ether	330 U
Fluorene	330 U
1,2-Diphenylhydrazine	330 U
N-Nitrosodiphenylamine	330 U
4-Bromophenyl-phenylether	330 U
Hexachlorobenzene	330 U
Phenanthrene	330 U
Anthracene	330 U
Di-n-butyl phthalate	330 U
Benzidine	3300 U
Fluoranthene	330 U
Pyrene	330 U
Butyl benzyl phthalate	330 U

General Testing Corporation

A Full Service Environmental Laboratc

LABORATORY REPORT

Job Number: R91/01914 Date: JUNE 3 1991

Client:
Mr. Dave McLay
Woodward Clyde Consultants
5120 Butler Pike
Plymouth Meeting, PA 19462

Sample(s) Reference
Metcalf & Eddy Services

Received : 05/09/91 P.O. #:

HSL BASE NEUTRALS BY EPA METHOD 8270* ANALYTICAL RESULTS - ug/kg Wet Wt.

Sample:	-008
Location:	Lab Meth. Blank
Date Collected:	--
Time Collected:	--
Date Extracted:	05/13/91
Date Analyzed:	05/21/91
3,3'-Dichlorobenzidine	330 U
Benzo(a)anthracene	330 U
Bis(2-ethylhexyl)phthalate	330 U
Chrysene	330 U
Di-n-octyl phthalate	330 U
Benzo(b)Fluoranthene	330 U
Benzo(k)fluoranthene	330 U
Benzo(a)pyrene	330 U
Indeno(1,2,3-cd)pyrene	330 U
Dibenzo(a,h)anthracene	330 U
Benzo(g,h,i)perylene	330 U
Aniline	2600 U
Benzyl Alcohol	1320 U
4-Chloroaniline	660 U
2-Methyl Naphthalene	660 U
2-Nitroaniline	1320 U
3-Nitroaniline	1320 U
Dibenzofuran	660 U
4-Nitroaniline	3300 U

Unless otherwise noted, analytical methodology has been obtained from references as cited in 40 CFR, parts #136 & #261.
NY ID# in Rochester: 10145
NJ ID# in Rochester: 73331
NJ ID# in Hackensack: 02317
NY ID# in Hackensack: 10801

Michael K. Perry
Laboratory Director

General Testing Corporation

A Full Service Environmental Laborat

LABORATORY REPORT

Job No: R91/01914 Date: JUNE 3 1991

Client:
Mr. Dave McLay
Woodward Clyde Consultants
5120 Butler Pike
Plymouth Meeting, PA 19462

Sample(s) Reference
Metcalf & Eddy Services

Received : 05/09/91 P.O. #:

SURROGATE RECOVERIES / EPA METHOD 8270* ANALYTICAL RESULTS - %

Sample:	-008
Location:	Lab Meth. Blank
Date Collected:	--
Time Collected:	--
ACIDS	
2-Fluorophenol (Acceptance Limits: 16-122%)	94%
Phenol-d6 (Acceptance Limits: 30-100%)	90%
2,4,6-TriBromophenol (Acceptance Limits: 24-143%)	86%
BASE NEUTRALS	
Nitrobenzene-d5 (Acceptance Limits: 19-103%)	66%
2-Fluorobiphenyl (Acceptance Limits: 26-119%)	98%
Terphenyl-d14 (Acceptance Limits: 18-142%)	94%

Unless otherwise noted, analytical methodology has been obtained from references as cited in 40 CFR, parts #136 & #261.
NY ID# in Rochester: 10145
NJ ID# in Rochester: 73331
NJ ID# in Hackensack: 02317
NY ID# in Hackensack: 10801

Michael K. Perry
Laboratory Director

General Testing Corporation

A Full Service Environmental Laborato

LABORATORY REPORT

Job No: R91/01914 Date: JUNE 3 1991

Client:
Mr. Dave McLay
Woodward Clyde Consultants
5120 Butler Pike
Plymouth Meeting, PA 19462

Sample(s) Reference
Metcalf & Eddy Services

Received : 05/09/91 P.O. #:

HSL VOLATILES BY EPA METHOD 8240* ANALYTICAL RESULTS - ug/l

Sample:	-010
Location:	Lab Meth. Blank
Date Collected:	--
Time Collected:	--
Date Analyzed:	05/10/91
Chloromethane	2 U
Bromomethane	2 U
Vinyl Chloride	2 U
Chloroethane	2 U
Methylene Chloride	2 U
Acetone	20 U
Carbon Disulfide	10 U
Trichlorofluoromethane	2 U
Vinyl Acetate	10 U
1,1-Dichloroethene	2 U
1,1-Dichloroethane	2 U
trans-1,2-Dichloroethene	2 U
cis-1,2-Dichloroethene	2 U
Chloroform	2 U
2-Butanone (MEK)	10 U
1,2-Dichloroethane	2 U
1,1,1-Trichloroethane	2 U
Carbon Tetrachloride	2 U
Bromodichloromethane	2 U
1,2-Dichloropropane	2 U
1,3-Dichloropropene (Trans)	2 U
Trichloroethene	2 U
Dibromochloromethane	2 U
1,1,2-Trichloroethane	2 U
Benzene	2 U
1,3-Dichloropropene(Cis)	2 U
Bromoform	2 U
4-Methyl-2-pentanone(MIBK)	10 U
2-Hexanone	10 U
Tetrachloroethene	2 U
1,1,2,2-Tetrachloroethane	2 U
Toluene	2 U
Chlorobenzene	2 U

General Testing Corporation

A Full Service Environmental Laborato

LABORATORY REPORT

Job No: R91/01914 Date: JUNE 3 1991

Client:
Mr. Dave McLay
Woodward Clyde Consultants
5120 Butler Pike
Plymouth Meeting, PA 19462

Sample(s) Reference
Metcalf & Eddy Services

Received : 05/09/91 P.O. #:

HSL VOLATILES BY EPA METHOD 8240* ANALYTICAL RESULTS - ug/l

Sample:	-010
Location:	Lab Meth. Blank
Date Collected:	--
Time Collected:	--
Date Analyzed:	05/10/91
Ethylbenzene	2 U
Styrene	2 U
Total Xylene (o,m,p)	2 U
Surrogate Standard Recoveries	
1,2-Dichloroethane-d4 (Acceptance limits: 75-119%)	105%
Toluene d8 (Acceptance limits 85-110%)	104%
4-Bromofluorobenzene (Acceptance limits 84-116%)	102%

Unless otherwise noted, analytical methodology has been obtained from references as cited in 40 CFR, parts #136 & #261.

NY ID# in Rochester: 10145
NJ ID# in Rochester: 73331
NJ ID# in Hackensack: 02317
NY ID# in Hackensack: 10801

Michael K Peng
Laboratory Director

Appendix C

General Testing Corporation

GTC REPORT # R91/1835,1856,1914

SECTION C

ANALYTICAL CHRONOLOGY

Presented in this section is a Laboratory Chronology listing the dates of all preparations and analyses performed on the samples covered in this report. Holding times, (maximum times in which to analyze a sample) are derived from the referenced methodology.

Chronology Notes:

General Testing Corporation

A Full Service Environmental Laborato

LABORATORY REPORT

Job No. R91/01835 Date MAY 24 1991

Client:

Woodward Clyde Consultants

Sample(s) Reference

Metcalf+Eddy Services

Date Received: 05/06/91

Date Sample Taken: 05/03/91

LABORATORY CHRONICLE
DATE ANALYZED

Sample: / Location:	-001 PW-1 S-1	-002 PW-1 S-2
Volatile Organics-GC/MS	05/08/91	05/08/91
Semivolatile Organics	05/17/91	05/17/91

General Testing Corporation

A Full Service Environmental Laborato

LABORATORY REPORT

Job No. R91/01856 Date MAY 22 1991

Client:

Woodward Clyde Consultants

Sample(s) Reference

Metcalf & Eddy Services

Date Received: 05/07/91

Date Sample Taken: 05/06/91

LABORATORY CHRONICLE
DATE ANALYZED

Sample: / Location:	-001 BP-4S1 BP-4	-002 BP-4S2 BP-4							
Volatile Organics-GC/MS	05/10/91	05/08/91							
Semivolatile Organics	05/17/91	05/17/91							

General Testing Corporation

A Full Service Environmental Laborato

LABORATORY REPORT

Job No. R91/01914 Date JUNE 3 1991

Client:

Woodward Clyde Consultants

Sample(s) Reference

Metcalf & Eddy Services

Date Received: 05/09/91

Date Sample Taken: 05/07-08/91

LABORATORY CHRONICLE
DATE ANALYZED

Sample: / Location:	-001 PB-1-S1	-002 PB-1-S2	-003 PB-2-S1	-004 PB-6-S2	-005 P3-3-S1	-006 PB-3-S2			
Volatile Organics-GC/MS	05/11/91	05/11/91	05/14/91	05/14/91	05/14/91	05/14/91			
Semivolatile Organics	05/21/91	05/21/91	05/21, 23/91	05/21/91	05/21/91	05/22/91			

General Testing Corporation

A Full Service Environmental Laborato

LABORATORY REPORT

Job No. R91/01914 Date JUNE 3 1991

Client:

Woodward Clyde Consultants

Sample(s) Reference

Metcalf & Eddy Services

Date Received: 05/09/91

Date Sample Taken: 05/07-08/9

LABORATORY CHRONICLE
DATE ANALYZED

Sample: / Location:	-007 Field Blank								
Volatile Organics-GC/MS	05/10/91								
Semivolatile Organics									

Appendix D

General Testing Corporation

GTC REPORT # R91/1835,1856,1914

SECTION D

FIELD DOCUMENTATION

Presented in this section is all support documentation requested.

Documentation Provided:

(X) Chain of Custody Forms

( ) Analytical Request Forms

( ) Shipping Receipts

( ) Laboratory Receipt Log

( ) Other:

GENERAL TESTING CORPORATION/CHAIN-OF-CUSTODY RECORD

710 Exchange Street, Rochester, NY 14608 | 85 Trinity Place, Hackensack, NJ 07601 | 435 Lawrence Bell Drive, Amherst, NY 14221-7077

GTC Job No. R91/1835
Client Project No. 8.5C2598-A

Sample Origination & Shipping Information

Collection Site Mitchel Field Remedial Action
Address 650 Commercial Ave (Street) Garden City (City) NY (State) 11530 (Zip)
Collector David S. McLay (Print) — David S. McLay (Signature)

Bottles Prepared by GTC-INC
Bottles Shipped to Client via Fed Ex
Samples Shipped via Fed Ex
Rec'd by Client
Seal/Shipping #
Seal/Shipping #

Sample(s) Relinquished by David S. McLay

	Received by:	Date/Time
1. Sign	1. Sign	/ /
for	for	
2. Sign	2. Sign	/ /
for	for	
3. Sign	3. Sign	/ /
for	for	

Sample(s) Received in Laboratory by _____ 5/6/91 @ 09:3

	Client I.D.# / Lab#	Sample Location / Date/Time	★	Analyte or Analyte Group(s) Required (see below for additional)	Sample Prep Preserved Y	Sample Prep Preserved N	Sample Prep Filtered Y	Sample Prep Filtered N	Bottle Set(s) (see below)
1	PW1 S-1 / 1	PW1 / 05/03/91 9:45 am	S	8260-TCL		X		X	3 4oz. glass
				8270-TCL		X		X	1 pint glass
2	PW1S-2 / 2	PW-1 / 05/03/91 10:30 am	S	8260-TCL		X		X	3 4oz glass
				8270-TCL		X		X	
3		/ / :							
4		/ / :							
5		/ / :							

Use Bottle No. for indicating type bottles used in each bottle set and fill in box with # of bottles used for each type.

Bottle No.	1	2	3	4	5	6	7	8	9	10
Bottle Type	40 ml Vial	Pint Glass	Qt. Glass	4 oz. Plastic	8 oz. Plastic	16 oz. Plastic	Qt. Pl.	Gal. Pl.	Steril. Pl.	4 oz Glass
# of each		1								6

Additional Analytes 00051

Shaded area for Lab use only; bottom copy for client; maximum of 5 samples per page.

★ Source Codes: Monitoring Well (W), Soil (S), Treatment Plant (T), Drinking Water (D), Leachate (L), Hazardous Was
River or Stream (R), Pond (P), Industrial Discharge (I), _____ (X).

GENERAL TESTING CORPORATION/CHAIN-OF-CUSTODY RECORD

710 Exchange Street, Rochester, NY 14608 | 85 Trinity Place, Hackensack, NJ 07601 | 435 Lawrence Bell Drive, Amherst, NY 14221-7077

GTC Job No. R91/1185-E
Client Project No. 35C2598-A

Sample Origination & Shipping Information

Collection Site: Mitchel Field Remediation Action
Address: 650 Commercial Ave, Garden City, N.Y. 11530 (Street / City / State / Zip)
Collector: David S. McKay (Print) ... Al Fittenger (for D. McKay) (Signature)

Bottles Prepared by ... Rec'd by
Bottles Shipped to Client via ... Seal/Shipping #
Samples Shipped via ... Seal/Shipping #

Sample(s) Relinquished by: Alan Fittenger	Received by:	Date/Time
1. Sign	1. Sign	/ /
for	for	:
2. Sign	2. Sign	/ /
for	for	:
3. Sign	3. Sign	/ /
for	for	:

Sample(s) Received in Laboratory by Tom Hastings 5/7/91 @ 09:

	Client I.D.# / Lab#	Sample Location / Date/Time	*	Analyte or Analyte Group(s) Required (see below for additional)	Sample Prep Preserved Y	Sample Prep Preserved N	Sample Prep Filtered Y	Sample Prep Filtered N	Bottle Set(s) (see below)
1	BP-451	BP-4 08:30		8260-TCL		X		X	3-4oz glass
	R91/1185-001	5/6/91 :		8270-TCL		X		X	jars (1pt/ea)
2	BP-452	BP-4 10:00		8260-TCL		X		X	3-4oz glass
	R91/1185-002	5/6/91 :		8270-TCL		X		X	jars (1pt/ea)
3		/ / :							
4		/ / :							
5		/ / :							

Use Bottle No. for indicating type bottles used in each bottle set and fill in box with # of bottles used for each type.

Bottle No.	1	2	3	4	5	6	7	8	9	10
Bottle Type	40 ml Vial	Pint Glass	Qt. Glass	4 oz. Plastic	8 oz. Plastic	16 oz. Plastic	Qt. Pl.	Gal. Pl.	Steril. Pl.	4 oz
# of each		1								6

Additional Analytes: Method 8260 was changed to 8240 upon receipt in the laboratory - SL 6/5/91

Shaded area for Lab use only; bottom copy for client; maximum of 5 samples per page.

* Source Codes: Monitoring Well (W), Soil (S), Treatment Plant (T), Drinking Water (D), Leachate (L), Hazardous Waste, River or Stream (R), Pond (P), Industrial Discharge (I), 00052 (X).

GENERAL TESTING CORPORATION/CHAIN-OF-CUSTODY RECORD

710 Exchange Street, Rochester, NY 14608 | 85 Trinity Place, Hackensack, NJ 07601 | 435 Lawrence Bell Drive, Amherst, NY 14221-7077

GTC Job No.
Client Project No. 85C2598-A

Sample Origination & Shipping Information

Collection Site Mitchel Field Remediation Action
Address 650 Commercial Ave. (Street) Garden City (City) NY (State) 11530 (Zip)
Collector Alan Pittenger (Print) Alan Pittenger (Signature)

Bottles Prepared by GTC KB 5/10 — Rec'd by
Bottles Shipped to Client via — Seal/Shipping #
Samples Shipped via FedEx KB 5/10 — Seal/Shipping #

Sample(s) Relinquished by: Alan Pittenger — Received by: — Date/Time

1. Sign	1. Sign	/ /
for	for	:
2. Sign	2. Sign	/ /
for	for	:
3. Sign	3. Sign	/ /
for	for	:

Sample(s) Received in Laboratory by [signature] 5/9/91 @ 09:

	Client I.D.# / Lab#	Sample Location / Date/Time	★	Analyte or Analyte Group(s) Required (see below for additional)	Sample Prep Preserved Y	Sample Prep Preserved N	Sample Prep Filtered Y	Sample Prep Filtered N	Bottle Set(s) (see below)
1 001	PB-1-S1 / Lab# 8	PB-1 / 05/08/91 : AM	S	8260-TCL		X		X	3-40z glass
				8270-TCL		X		X	1
2 002	PB-1-S2 / Lab# 9	PB-1 / 05/08/91 : AM	S	8260-TCL		X		X	11
				8270-TCL		X		X	
3 003	PB-2-S1 / Lab# 5	PB-2 / 05/07/91 : AM	S	8260-TCL		X		X	11
				8270-TCL		X		X	
4 004	PB-6-S2 / Lab# 6	PB-2 / 05/07/91 : AM	S	8260-TCL		X		X	11
				8270-TCL		X		X	
5 005	PB-3-S1 / Lab# 7	PB-3 / 05/07/91 : PM	S	8260-TCL		X		X	11
				8270-TCL		X		X	

Use Bottle No. for indicating type bottles used in each bottle set and fill in box with # of bottles used for each type.

Bottle No.	1	2	3	4	5	6	7	8	9	10
Bottle Type	40 ml Vial	Pint Glass	Qt. Glass	4 oz. Plastic	8 oz. Plastic	16 oz. Plastic	Qt. Pl.	Gal. Pl.	Steril. Pl.	
# of each										

Additional Analytes: Method 8260 was changed to 8240 upon receipt in the laboratory. SC 6/5/91

Shaded area for Lab use only; bottom copy for client; maximum of 5 samples per page.

★ Source Codes: Monitoring Well (W), Soil (S), Treatment Plant (T), Drinking Water (D), Leachate (L), Hazardous Was. River or Stream (R), Pond (P), Industrial Discharge (I), _____ (X), ...

Page 2 of 2

GENERAL TESTING CORPORATION/CHAIN-OF-CUSTODY RECORD

710 Exchange Street, Rochester, NY 14608 | 85 Trinity Place, Hackensack, NJ 07601 | 435 Lawrence Bell Drive, Amherst, NY 14221-7077

GTC Job No. R91/1914
Client Project No. 85C2598-A

Sample Origination & Shipping Information

Collection Site: Mitchel Field Remediation Action
Address: 650 Commercial Ave. (Street) Garden City (City), NY (State) 11530 (Zip)
Collector: Alan Pittenger (Print) Alan Pittenger (Signature)

Bottles Prepared by: GTC-INC
Bottles Shipped to Client via: Fed Ex
Samples Shipped via:
Rec'd by: Client
Seal/Shipping #
Seal/Shipping #

Sample(s) Relinquished by: Alan Pittenger

Relinquished by	Received by	Date/Time
1. Sign	1. Sign	/ /
for	for	:
2. Sign	2. Sign	/ /
for	for	:
3. Sign	3. Sign	/ /
for	for	:

Sample(s) Received in Laboratory by [signature] 5/9/91 @ 09:

	Client I.D.# / Lab#	Sample Location / Date/Time	*	Analyte or Analyte Group(s) Required (see below for additional)	Preserved Y	Preserved N	Filtered Y	Filtered N	Bottle Set(s) (see below)
1	PB-3-52	PB-3	S	8260-TCL		X		X	11
	Lab#13	05/07/91 : PM		8270-TCL		X		X	
2	Field Blanks		(W) Bg	8260-TCL		X		X	≈40ml
		05/07/91 : AM		~~8270-TCL~~		X		X	Vials
3				[illegible] container [illegible] 5/1/91 ~~incl 8270~~					
		/ / :							
4									
		/ / :							
5									
		/ / :							

Use Bottle No. for indicating type bottles used in each bottle set and fill in box with # of bottles used for each type.

Bottle No.	1	2	3	4	5	6	7	8	9	10
Bottle Type	40 ml Vial	Pint Glass	Qt. Glass	4 oz. Plastic	8 oz. Plastic	16 oz. Plastic	Qt. Pl.	Gal. Pl.	Steril. Pl.	4 oz glass
# of each	2									18

Additional Analytes: Method 8260 was changed to 8240 upon receipt in the laboratory [illegible]

Shaded area for Lab use only; bottom copy for client; maximum of 5 samples per page.

* Source Codes: Monitoring Well (W), Soil (S), Treatment Plant (T), Drinking Water (D), Leachate (L), Hazardous Was[te] River or Stream (R), Pond (P), Industrial Discharge (I), 00054 (X).

Appendix C

METCALF & EDDY
VOLATILE ORGANIC ANALYSIS DATA

Project ID	445	Data File	F2277
Date Sampled	05/29/91	Lab ID #	MF2277
Time Sampled	1245	Matrix	Water
Sample ID	PW-1	DATE ANALYZED	06/09/91

COMPOUND	UG/L	MDL
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	10
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	2.7 J	5
1,1-Dichloroethane	ND	5
1,2-Dichloroethene (total)	28	5
Chloroform	2.2 J	5
Freon 113	ND	5
1,2-Dichloroethane	ND	5
1,1,1-Trichloroethane	ND	5
Carbon tetrachloride	ND	5
Bromodichloromethane	ND	5
1,2-Dichloropropane	ND	5
trans-1,3-Dichloropropene	ND	5
cis-1,3-Dichloropropene	ND	5
Trichloroethene	1.6 J	5
Benzene	ND	5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND	5
2-Chloroethylvinylether	ND	5
Bromoform	ND	5
Tetrachloroethene	4.2 J	5
1,1,2,2-Tetrachloroethane	ND	5
Toluene	ND	5
Chlorobenzene	ND	5
Ethylbenzene	ND	5
Xylene (total)	ND	5
1,3-Dichlorobenzene	ND	10
1,2-Dichlorobenzene	ND	10
1,4-Dichlorobenzene	ND	10
Total Volatile Organics	38.7	

SURROGATE COMPOUNDS	% RECOVERY	LIMITS	STATUS
1,2-Dichloroethane-d4	101	76 - 114	OK
Toluene-d8	97.4	88 - 110	OK
Bromofluorobenzene	91.5	86 - 115	OK

(J) Indicates detected below MDL
(B) Indicates also present in blank
(ND) Indicates compound not detected

L. Amezcua
ANALYST

METCALF & EDDY
VOLATILE ORGANIC ANALYSIS DATA

Project ID	465	Data File	>F2097
Date Sampled	05/10/91	Lab ID #	MF2097
Time Sampled	1200	Matrix	Water
Sample ID	PW-1	DATE ANALYZED	05/15/91

COMPOUND	UG/L	MDL
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	10
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	3.8 J	5
1,1-Dichloroethane	ND	5
1,2-Dichloroethene (total)	320	5
Chloroform	13	5
Freon 113	ND	5
1,2-Dichloroethane	ND	5
1,1,1-Trichloroethane	8.8	5
Carbon tetrachloride	ND	5
Bromodichloromethane	ND	5
1,2-Dichloropropane	ND	5
trans-1,3-Dichloropropene	ND	5
cis-1,3-Dichloropropene	ND	5
Trichloroethene	15	5
Benzene	ND	5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND	5
2-Chloroethylvinylether	ND	5
Bromoform	ND	5
Tetrachloroethene	15	5
1,1,2,2-Tetrachloroethane	ND	5
Toluene	9.2	5
Chlorobenzene	ND	5
Ethylbenzene	2.3 J	5
Xylene (total)	16	5
1,3-Dichlorobenzene	ND	10
1,2-Dichlorobenzene	6.6 J	10
1,4-Dichlorobenzene	ND	10
Total Volatile Organics	409.7	

SURROGATE COMPOUNDS	% RECOVERY	LIMITS	STATUS
1,2-Dichloroethene-d4	95.7	76 - 114	OK
Toluene-d8	101	88 - 110	OK
Bromofluorobenzene	99.7	86 - 115	OK

(J) Indicates detected below MDL
(B) Indicates also present in blank
(ND) Indicates compound not detected

L. Anagnostis
ANALYST

METCALF & EDDY
VOLATILE ORGANIC ANALYSIS DATA

Project ID	465	Data File	JF1812
Date Sampled	06/10/91	Lab ID #	MF1812
Time Sampled	1100	Matrix	Water
Sample ID	W-3	DATE ANALYZED	06/11/91

COMPOUND	UG/L	MDL
Chloromethane	ND	50
Bromomethane	ND	50
Vinyl chloride	ND	50
Chloroethene	ND	50
Methylene chloride	ND	50
Trichlorofluoromethane	ND	25
1,1-Dichloroethene	39	25
1,1-Dichloroethane	ND	25
1,2-Dichloroethene (total)	1400	25
Chloroform	11 J	25
Freon 113	50	25
1,2-Dichloroethane	ND	25
1,1,1-Trichloroethane	220	25
Carbon tetrachloride	31	25
Bromodichloromethane	ND	25
1,2-Dichloropropane	ND	25
trans-1,3-Dichloropropene	ND	25
cis-1,3-Dichloropropene	ND	25
Trichloroethene	670	25
Benzene	ND	25
Dibromochloromethane	ND	25
1,1,2-Trichloroethane	ND	25
2-Chloroethylvinylether	ND	25
Bromoform	ND	25
Tetrachloroethene	1700	25
1,1,2,2-Tetrachloroethane	ND	25
Toluene	360	25
Chlorobenzene	55	25
Ethylbenzene	400	25
Xylene (total)	640	25
1,3-Dichlorobenzene	ND	50
1,2-Dichlorobenzene	350	50
1,4-Dichlorobenzene	ND	50
Total Volatile Organics	7922.0	

SURROGATE COMPOUNDS	% RECOVERY	LIMITS	STATUS
1,2-Dichloroethane-d4	93.5	76 - 114	OK
Toluene-d8	90.0	88 - 110	OK
Bromofluorobenzene	89.2	86 - 115	OK

(J) Indicates detected below MDL
(B) Indicates also present in blank
(ND) Indicates compound not detected

METCALF & EDDY
VOLATILE ORGANIC ANALYSIS DATA

Project ID	465	Data File	>F1856
Date Sampled	04/16/91	Lab ID #	MF1856
Time Sampled	1300	Matrix	Water
Sample ID	W-3	DATE ANALYZED	04/17/91

COMPOUND	UG/L	MDL
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	10
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	34	5
1,1-Dichloroethene	ND	5
1,2-Dichloroethene (total)	3400	5
Chloroform	12	5
Freon 113	46	5
1,2-Dichloroethane	ND	5
1,1,1-Trichloroethane	200	5
Carbon tetrachloride	3.0 J	5
Bromodichloromethane	ND	5
1,2-Dichloropropane	ND	5
trans-1,3-Dichloropropene	ND	5
cis-1,3-Dichloropropene	ND	5
Trichloroethene	750	5
Benzene	ND	5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND	5
2-Chloroethylvinylether	ND	5
Bromoform	ND	5
Tetrachloroethene	1900	5
1,1,2,2-Tetrachloroethane	ND	5
Toluene	360	5
Chlorobenzene	42	5
Ethylbenzene	530	5
Xylene (total)	860	5
1,3-Dichlorobenzene	ND	10
1,2-Dichlorobenzene	530	10
1,4-Dichlorobenzene	ND	10
Total Volatile Organics	8667.0	

SURROGATE COMPOUNDS	% RECOVERY	LIMITS	STATUS
1,2-Dichloroethane-d4	89.2	76 - 114	OK
Toluene-d8	91.0	88 - 110	OK
Bromofluorobenzene	91.9	86 - 115	OK

(J) Indicates detected below MDL
(B) Indicates also present in blank
(ND) Indicates compound not detected

L. Anagnostis
ANALYST

METCALF & EDDY
VOLATILE ORGANIC ANALYSIS DATA

Project ID	465	Data File	5F1910
Date Sampled	04/23/91	Lab ID #	5F1910
Time Sampled	1100	Matrix	Water
Sample ID	E-3	DATE ANALYZED	04/23/91

COMPOUND	UG/L	MDL
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	5
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	69	5
1,1-Dichloroethane	ND	5
1,2-Dichloroethene (total)	3700	5
Chloroform	12	5
Freon 113	46	5
1,2-Dichloroethane	ND	5
1,1,1-Trichloroethane	140	5
Carbon tetrachloride	2.3 J	5
Bromodichloromethane	ND	5
1,2-Dichloropropane	ND	5
trans-1,3-Dichloropropene	ND	5
cis-1,3-Dichloropropene	ND	5
Trichloroethene	550	5
Benzene	ND	5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND	5
2-Chloroethyl vinyl ether	ND	5
Bromoform	ND	5
Tetrachloroethene	1400	5
1,1,2,2-Tetrachloroethane	ND	5
Toluene	370	5
Chlorobenzene	53	5
Ethylbenzene	390	5
Xylene (total)	630	5
1,3-Dichlorobenzene	ND	10
1,2-Dichlorobenzene	390	10
1,4-Dichlorobenzene	ND	10

Total Volatile Organics 7771.3

SURROGATE COMPOUNDS	% RECOVERY	LIMITS	STATUS
1,2-Dichloroethane-d4	95.2	76 - 114	OK
Toluene-d8	93.0	88 - 110	OK
Bromofluorobenzene	98.6	86 - 115	OK

(J) Indicates detected below MDL
(B) Indicates also present in blank
(ND) Indicates compound not detected

L. Amegashitsi

METCALF & EDDY
VOLATILE ORGANIC ANALYSIS DATA

Project ID	465	Data File	>F1980
Date Sampled	04/30/91	Lab ID #	MF1980
Time Sampled	1200	Matrix	Water
Sample ID	M-3	DATE ANALYZED	05/01/91

COMPOUND	UG/L	MDL
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	10
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	45	5
1,1-Dichloroethane	40	5
1,2-Dichloroethene (total)	7900	5
Chloroform	13	5
Freon 113	47	5
1,2-Dichloroethane	ND	5
1,1,1-Trichloroethane	220	5
Carbon tetrachloride	32	5
Bromodichloromethane	ND	5
1,2-Dichloropropane	ND	5
trans-1,3-Dichloropropene	ND	5
cis-1,3-Dichloropropene	ND	5
Trichloroethene	540	5
Benzene	ND	5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND	5
2-Chloroethylvinylether	ND	5
Bromoform	ND	5
Tetrachloroethene	1400	5
1,1,2,2-Tetrachloroethane	ND	5
Toluene	400	5
Chlorobenzene	71	5
Ethylbenzene	360	5
Xylene (total)	600	5
1,3-Dichlorobenzene	ND	10
1,2-Dichlorobenzene	360	10
1,4-Dichlorobenzene	380	10
Total Volatile Organics	8366.0	

SURROGATE COMPOUNDS	% RECOVERY	LIMITS	STATUS
1,2-Dichloroethane-d4	95.2	76 - 114	OK
Toluene-d8	96.8	88 - 110	OK
Bromofluorobenzene	96.3	86 - 115	OK

(J) Indicates detected below MDL
(B) Indicates also present in blank
(ND) Indicates compound not detected

METCALF & EDDY
VOLATILE ORGANIC ANALYSIS DATA

Project ID	465	Data File	JF2055
Date Sampled	05/07/91	Lab ID #	MF2055
Time Sampled	1200	Matrix	Water
Sample ID	W-3	DATE ANALYZED	05/13/91

COMPOUND	UG/L	MDL
Chloromethane	ND	10
Bromoethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	10
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	51	5
1,1-Dichloroethane	ND	5
1,2-Dichloroethene (total)	4300	5
Chloroform	13	5
Freon 113	54	5
1,2-Dichloroethane	ND	5
1,1,1-Trichloroethane	250	5
Carbon tetrachloride	7.5 J	5
Bromodichloromethane	ND	5
1,2-Dichloropropane	ND	5
trans-1,3-Dichloropropene	ND	5
cis-1,3-Dichloropropene	ND	5
Trichloroethene	620	5
Benzene	ND	5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND	5
2-Chloroethylvinylether	ND	5
Bromoform	ND	5
Tetrachloroethene	1500	5
1,1,2,2-Tetrachloroethane	ND	5
Toluene	520	5
Chlorobenzene	69	5
Ethylbenzene	470	5
Xylene (total)	690	5
1,3-Dichlorobenzene	ND	10
1,2-Dichlorobenzene	400	10
1,4-Dichlorobenzene	360	10
Total Volatile Organics	9906.5	

SURROGATE COMPOUNDS	% RECOVERY	LIMITS	STATUS
1,2-Dichloroethane-d4	93.2	76 - 114	OK
Toluene-d8	95.0	88 - 110	OK
Bromofluorobenzene	97.8	86 - 115	OK

(J) Indicates detected below MDL
(B) Indicates also present in blank
(ND) Indicates compound not detected

L. Amegaglio

METCALF & EDDY
VOLATILE ORGANIC ANALYSIS DATA

Project ID	465	Data File	>F2089
Date Sampled	05/14/91	Lab ID #	MF2089
Time Sampled	1100	Matrix	Water
Sample ID	W-3	DATE ANALYZED	05/15/91

COMPOUND	UG/L	MDL
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	10
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	61	5
1,1-Dichloroethane	ND	5
1,2-Dichloroethene (total)	4500	5
Chloroform	20	5
Freon 113	47	5
1,2-Dichloroethane	ND	5
1,1,1-Trichloroethane	210	5
Carbon tetrachloride	27	5
Bromodichloromethane	ND	5
1,2-Dichloropropane	ND	5
trans-1,3-Dichloropropene	ND	5
cis-1,3-Dichloropropene	ND	5
Trichloroethene	530	5
Benzene	ND	5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND	5
2-Chloroethylvinylether	ND	5
Bromoform	ND	5
Tetrachloroethene	1300	5
1,1,2,2-Tetrachloroethane	ND	5
Toluene	420	5
Chlorobenzene	71	5
Ethylbenzene	500	5
Xylene (total)	640	5
1,3-Dichlorobenzene	190	10
1,2-Dichlorobenzene	180	10
1,4-Dichlorobenzene	ND	10
Total Volatile Organics	8696.0	

SURROGATE COMPOUNDS	% RECOVERY	LIMITS	STATUS
1,2-Dichloroethane-d4	96.4	76 - 114	OK
Toluene-d8	99.3	88 - 110	OK
Bromofluorobenzene	97.2	86 - 115	OK

(J) Indicates detected below MDL
(B) Indicates also present in blank
(ND) Indicates compound not detected

L. Hunyadi

ANALYST

METCALF & EDDY
VOLATILE ORGANIC ANALYSIS DATA

Project ID	465	Data File	>F2222
Date Sampled	05/23/91	Lab ID #	MF2222
Time Sampled	1100	Matrix	Water
Sample ID	W-3	DATE ANALYZED	06/01/91

COMPOUND	UG/L	MDL
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	10
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	18	5
1,1-Dichloroethane	ND	5
1,2-Dichloroethene (total)	910	5
Chloroform	3.5 J	5
Freon 113	9.4	5
1,2-Dichloroethane	ND	5
1,1,1-Trichloroethane	40	5
Carbon tetrachloride	4.2 J	5
Bromodichloromethane	ND	5
1,2-Dichloropropane	ND	5
trans-1,3-Dichloropropene	ND	5
cis-1,3-Dichloropropene	ND	5
Trichloroethene	110	5
Benzene	ND	5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND	5
2-Chloroethylvinylether	ND	5
Bromoform	ND	5
Tetrachloroethene	300	5
1,1,2,2-Tetrachloroethane	5.2	5
Toluene	85	5
Chlorobenzene	10	5
Ethylbenzene	75	5
Xylene (total)	230	5
1,3-Dichlorobenzene	62	10
1,2-Dichlorobenzene	63	10
1,4-Dichlorobenzene	64	10
Total Volatile Organics	1989.4	

SURROGATE COMPOUNDS	% RECOVERY	LIMITS	STATUS
1,2-Dichloroethane-d4	93.8	76 - 114	OK
Toluene-d8	95.3	88 - 110	OK
Bromofluorobenzene	95.2	86 - 115	OK

(J) Indicates detected below MDL
(B) Indicates also present in blank
(ND) Indicates compound not detected

L. Amegashitsi
ANALYST

METCALF & EDDY
VOLATILE ORGANIC ANALYSIS DATA

Project ID.	465	Data File	>F2229
Date Sampled	05/28/91	Lab ID #	MF2229
Time Sampled	1300	Matrix	Water
Sample ID	M-3	DATE ANALYZED	06/01/91

COMPOUND	UG/L	MDL
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	10
Trichlorofluoromethane	ND.	5
1,1-Dichloroethene	19	5
1,1-Dichloroethane	ND	5
1,2-Dichloroethene (total)	990	5
Chloroform	ND	5
Freon 113	10	5
1,2-Dichloroethane	ND	5
1,1,1-Trichloroethane	38	5
Carbon tetrachloride	4.9 J	5
Bromodichloromethane	ND	5
1,2-Dichloropropane	ND	5
trans-1,3-Dichloropropene	ND	5
cis-1,3-Dichloropropene	ND	5
Trichloroethene	100	5
Benzene	ND	5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND	5
2-Chloroethylvinylether	ND	5
Bromoform	ND	5
Tetrachloroethene	310	5
1,1,2,2-Tetrachloroethane	4.7 J	5
Toluene	90	5
Chlorobenzene	11	5
Ethylbenzene	77	5
Xylene (total)	120	5
1,3-Dichlorobenzene	70	10
1,2-Dichlorobenzene	71	10
1,4-Dichlorobenzene	71	10
Total Volatile Organics	1986.6	

SURROGATE COMPOUNDS	% RECOVERY	LIMITS	STATUS
1,2-Dichloroethane-d4	96.3	76 - 114	OK
Toluene-d8	96.3	88 - 110	OK
Bromofluorobenzene	93.4	86 - 115	OK

(J) Indicates detected below MDL
(B) Indicates also present in blank
(ND) Indicates compound not detected