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ACUREX Corporation

Energy & Environmental Division

Mr. Paul Bitter
U.S. Environmental Protection Agency
SHR-13
230 Dearborne Street
Chicago, IL 60404

March 4, 1985
Acurex ID#: 8412-016
Project: SAS 1141E

Subject: Results of GC/MS Analyses for Well 23, Fractions: Base, Fraction III, Neutral, Acid; SAS 1141E

Enclosed please find the results of the GC/MS analyses for Well 23, fractions. Sample extraction was performed by continuous liquid-liquid extraction according to procedures in EPA Method 625. The extract was concentrated to 10 mL using Kuderna-Danish evaporation and was split into two 5 mL aliquots. One aliquot was further concentrated to 1 mL using nitrogen blowdown. The other aliquot was diluted to 50 mL with methylene chloride and fractionated into acids, base, neutrals following the procedures in SAS 1141E Protocol. The GC/MS results of the whole extract have been submitted on February 28, 1985. Spiking level of the stable-labeled isotopes is 100 µg total or 13.51 µg/L of sample. Sample volume taken for extraction is 7.4 L. Figure 1 outlines sample extraction and fractionation scheme. The following is a list of deliverables:

1. DFTPP (form, plot, list format) for 2/13/85.

2. Solvent blank for 2/13/85 (RIC; diagnostic report; quantitation report)

3. GC/MS standard for 2/13/85 (RIC; RT diagnostic report; RP diagnostic report; RT quantitation report; RP quantitation report; calibration check forms)

4. Concentration data for 8412-016-1 -- Well 23, base fraction (data form; RIC; RT diagnostic report; RP diagnostic report, RT quantitation report; RP quantitation report; quantitation report for other compounds found in sample; spectra: enhanced, unenhanced, library display of 3 best fits (pages 001 through 111); peak areas.

5. Concentration data for 8412-016-1 -- Well 23, fraction III (data form; RIC; RT diagnostic report; RP diagnostic report, RT quantitation report; RP quantitation report; quantitation report for other compounds found in sample; spectra: enhanced, unenhanced, library display of 3 best fits (pages 450 through 500); peak areas.

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6. Concentration data for 8412-016-1 -- Well 23, neutral fraction (data form; Table 1; RIC; RT diagnostic report; RP diagnostic report, RT quantitation report; RP quantitation report; quantitation report for other compounds found in sample; spectra: enhanced, unenhanced, library display of 3 best fits (pages 001 through 358); peak areas.

7. Concentration data for 8412-016-1 -- Well 23, acid fraction (data form; Table 2; RIC; RT diagnostic report; RP diagnostic report, RT quantitation report; RP quantitation report; quantitation report for other compounds found in sample; spectra: enhanced, unenhanced, library display of 3 best fits (pages 001 through 200); peak areas.

Sincerely,

Viorica Lopez Avila

Viorica Lopez-Avila, Ph.D.
Technical Director

VLA/ats

Enclosures

cc: Dr. Brenda Kimble
Amphion Associates

Linda Haas Boynton
Sample Management Office

Data Audit Staff
EMSL - Las Vegas

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EPA Region V

These results were obtained using accepted laboratory practices; the liability of Acurex Corporation shall not exceed the amount paid for this report. In no event shall Acurex be liable for special or consequential damages.

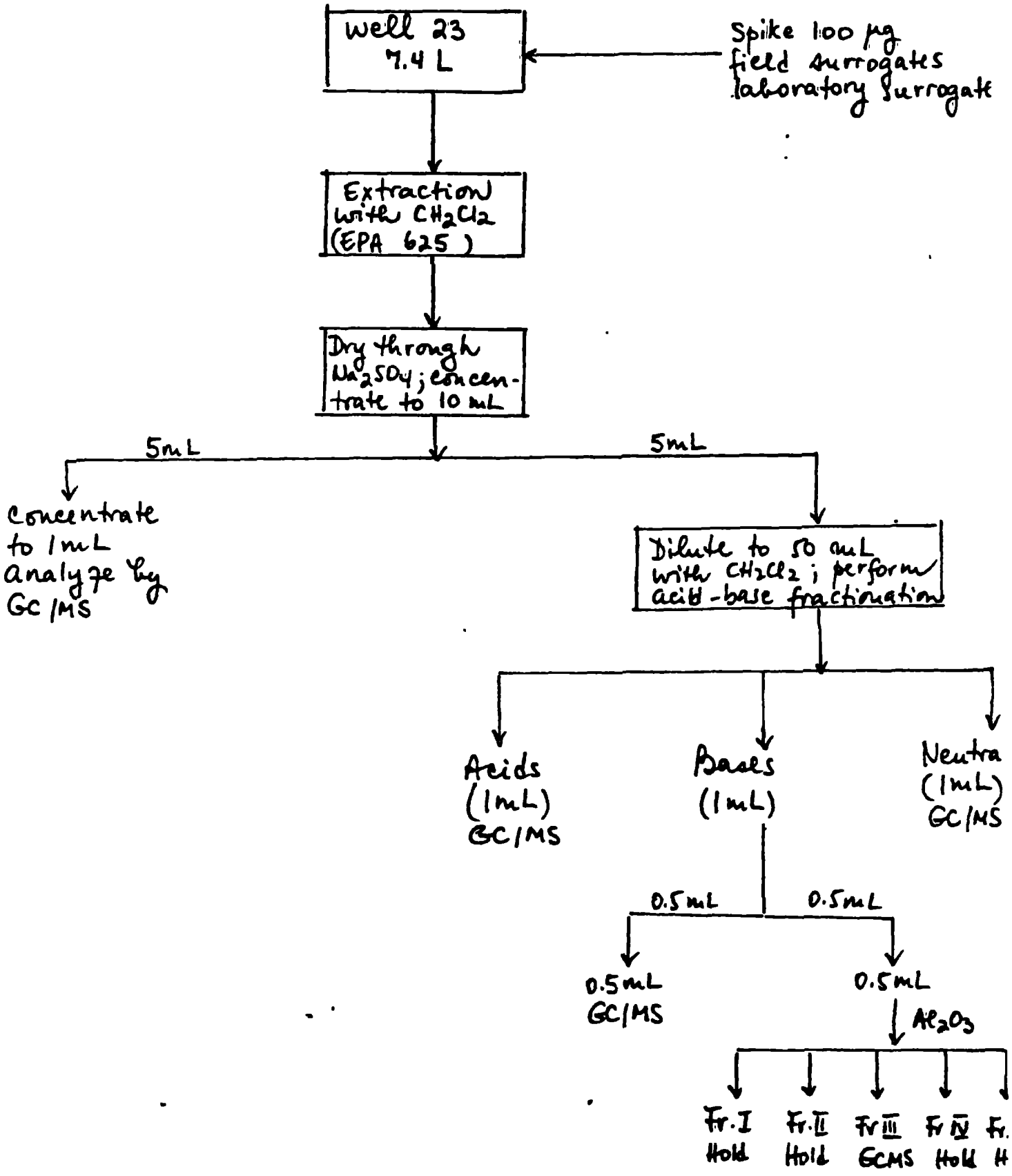

Figure 1: Extraction and fractionation scheme for GC MS analysis

TRAVELER # 8412-016-1 Base Fraction

PRIORITY POLLUTANT BNA'S	(1) Conc (ng/µL)	(1) conc (µg/L)	(2) conc ng/µL	(2) Conc (µg/L)
ACENAPHTHENE	0.52	0.14		
BENZIDINE	NA*			
1,2,4-TRICHLOROBENZENE				
HEXACHLOROBENZENE				
HEXACHLOROETHANE				
BIS(2-CHLOROETHYL)ETHER				
2-CHLORONAPHTHALENE				
2,4,6-TRICHLOROPHENOL				
P-CHLORO-M-CRESOL				
2-CHLOROPHENOL				
1,2-DICHLOROBENZENE				
1,3-DICHLOROBENZENE				
1,4-DICHLOROBENZENE				
3,3-DICHLOROBENZIDINE	NA*			
2,4-DICHLOROPHENOL				
2,4-DIMETHYLPHENOL				
2,4-DINITROTOLUENE				
2,6-DINITROTOLUENE				
1,2-DIPHENYLHYDRAZINE	NA			
FLUORANTHENE	0.17	0.05		
4-CHLOROPHENYL PHENYL ETHER				
4-BROMOPHENYL PHENYL ETHER				
BIS(2-CHLOROISOPROPYL) ETHER				
BIS(2-CHLOROETHOXY) METHANE				
HEXACHLOROBUTADIENE				
HEXACHLOROCYCLOPENTADIENE				
ISOPHORONE				
NAPHTHALENE				
NITROBENZENE				
2-NITROPHENOL				
4-NITROPHENOL				
2,4-DINITROPHENOL				
4,6-DINITRO-2-METHYLPHENOL				
N-NITROSODIMETHYL AMINE				
N-NITROSODIPHENYLAMINE				
N-NITROSODIPROPYLAMINE				
PENTACHLOROPHENOL				
PHENOL				
BIS(2-ETHYLHEXYL) PHTHALATE	8.3	2.24		

(1) Internal standard calibration using phenanthrene-d_{10} as internal std

(2) Isotope dilution

BENZYL BUTYL PHTHALATE					
BI-N-BUTYL PHTHALATE	3.13	0.85			
BI-N-OCTYL PHTHALATE	0.16	0.04			
DIETHYL PHTHALATE					
DIMETHYL PHTHALATE					
BENZO(A)ANTHRACENE					
BENZO(A)PYRENE					
BENZO(B)FLUORANTHENE					
BENZO(K)FLUORANTHENE					
CHRYSENE					
ACENAPHTHYLENE	0.15	0.04			
ANTHRACENE	0.20	0.05			
BENZO(GHI)PERYLENE					
FLUORENE	0.43	0.12			
PHENANTHRENE	0.68	0.18			
DIBENZO(AH)ANTHRACENE					
INDENO(123-CD)PYRENE					
PYRENE	0.14	0.04			
NON-PRIORITY POLLUTANTS					
BENZOIC ACID					
2-METHYLPHENOL					
4-METHYLPHENOL					
2,4,5-TRICHLOROPHENOL					
2-METHYLNAPHTHALENE					
ANILINE					
BENZYL ALCOHOL					
4-CHLOROANILINE					
DIBENZOFURAN	0.39	0.11			
2-NITROANILINE					
3-NITROANILINE					
4-NITROANILINE					
4 Methyl-benzenamine	0.89	0.24			
2,3-Dihydro-1H-inden-1-one	0.85	0.23			
2-Methyl-quinoline	1.99	0.54			
DETECTION LIMIT					

	(1) mg/µL	(1) µg/L	(2) (mg/µL)	(2) µg/L
Carbazole				
4-Hydroxybiphenyl				
1-Naphthylamine				
Acridine	4.16	1.12	10.35	2 80
1,2,3-Trimethylbenzene				
Quinoline				
2,3,5-Trimethylphenol				
3-Methyl-cholanthrene				
7,12-Dimethylbenz(a)anthracene				
1-Naphthol				
2,3,4-Trichlorophenol				
2,3,4,5-Tetrachlorophenol				
4-Aminobiphenyl				
Thiophene	NA			
13H-Dibenzo(a,i)carbazole				

Field Surrogates [a]	Percent Recovery	
Acenaphthene-d_{10}		
Pyrene-D_{10}		
Perylene-d_{12}		
Naphthalene-d_8		
Phenol-d_5		
Carbazole-d_3	ND	--
Benzo(a)pyrene-d_{12}		
2-Naphthylamine-d_7		
Quinoline-d_7	22	44
Dibenzo(a,h)anthracene-d_{12}		
1,2-Benz(a)anthracene-d_{12}		

Laboratory Surrogatges [a]	Percent Recovery	
Naphthol-d_7		
Acridine-d_9	20	40
Pyridine-d_5	NA	
Chrysene-d_{12}		
Fluoranthene-d_{10}		
Benzo(e)pyrene-d_{12}		

NA - Not able to see by GC/MS

NA* - Not present in GC/MS standard

a/ Spike level of field and lab surrogates is 100mg

TRAVELER # 8412-016-1 Fraction III Well 23

PRIORITY POLLUTANT BNA'S	(1) conc. ng/µL	(1) µg/L	(2) conc ng/µL	(2) µg/L
ACENAPHTHENE				
BENZIDINE	NA*			
1,2,4-TRICHLOROBENZENE				
HEXACHLOROBENZENE				
HEXACHLOROETHANE				
BIS(2-CHLOROETHYL)ETHER				
2-CHLORONAPHTHALENE				
2,4,6-TRICHLOROPHENOL				
P-CHLORO-M-CRESOL				
2-CHLOROPHENOL				
1,2-DICHLOROBENZENE				
1,3-DICHLOROBENZENE				
1,4-DICHLOROBENZENE				
3,3-DICHLOROBENZIDINE	NA*			
2,4-DICHLOROPHENOL				
2,4-DIMETHYLPHENOL				
2,4-DINITROTOLUENE				
2,6-DINITROTOLUENE				
1,2-DIPHENYLHYDRAZINE	NA			
FLUORANTHENE				
4-CHLOROPHENYL PHENYL ETHER				
4-BROMOPHENYL PHENYL ETHER				
BIS(2-CHLOROISOPROPYL) ETHER				
BIS(2-CHLOROETHOXY) METHANE				
HEXACHLOROBUTADIENE				
HEXACHLOROCYCLOPENTADIENE				
ISOPHORONE				
NAPHTHALENE				
NITROBENZENE				
2-NITROPHENOL				
4-NITROPHENOL				
2,4-DINITROPHENOL				
4,6-DINITRO-2-METHYLPHENOL				
N-NITROSODIMETHYL AMINE				
N-NITROSODIPHENYLAMINE				
N-NITROSODIPROPYLAMINE				
PENTACHLOROPHENOL				
PHENOL				
BIS(2-ETHYLHEXYL) PHTHALATE	8	4.3		

(1) internal standard calibration with phenanthrene-d_{10}

440

BENZYL BUTYL PHTHALATE	3	1.6			
DI-N-BUTYL PHTHALATE					
DI-N-OCTYL PHTHALATE					
DIETHYL PHTHALATE					
DIMETHYL PHTHALATE					
BENZO(A)ANTHRACENE					
BENZO(A)PYRENE					
BENZO(B)FLUORANTHENE					
BENZO(K)FLUORANTHENE					
CHRYSENE					
ACENAPHTHYLENE					
ANTHRACENE					
BENZO(GHI)PERYLENE					
FLUORENE					
PHENANTHRENE					
DIBENZO(AH)ANTHRACENE					
INDENO(123-CD)PYRENE					
PYRENE					
NON-PRIORITY POLLUTANTS					
BENZOIC ACID					
2-METHYLPHENOL					
4-METHYLPHENOL					
2,4,5-TRICHLOROPHENOL					
2-METHYLNAPHTHALENE					
ANILINE					
BENZYL ALCOHOL					
4-CHLOROANILINE					
DIBENZOFURAN					
2-NITROANILINE					
3-NITROANILINE					
4-NITROANILINE					
Approximate DETECTION LIMIT	1 ng/µL	0.5 µg/L			

	(1) Conc ng/µL	(1) Conc (µg/L)	(2) Conc (ng/µL)	(2) Conc (µg/L)
Carbazole				
4-Hydroxybiphenyl				
1-Naphthylamine				
Acridine	2.86	1.55	4.56	2.46
1,2,3-Trimethylbenzene				
Quinoline				
2,3,5-Trimethylphenol				
3-Methyl-cholanthrene				
7,12-Dimethylbenz(a)anthracene				
1-Naphthol				
2,3,4-Trichlorophenol				
2,3,4,5-Tetrachlorophenol				
4-Aminobiphenyl				
Thiophene	NA			
13H-Dibenzo(a,i)carbazole				

Field Surrogates	Percent Recovery ng/µL	Percent Recovery %
Acenaphthene-d_{10}		
Pyrene-D_{10}		
Perylene-d_{12}		
Naphthalene-d_8		
Phenol-d_5		
Carbazole-d_3	ND	--
Benzo(a)pyrene-d_{12}		
2-Naphthylamine-d_7		
Quinoline-d_7	16	64
Dibenzo(a,h)anthracene-d_{12}		
1,2-Benz(a)anthracene-d_{12}		

Laboratory Surrogatges	Percent Recovery ng/µL	Percent Recovery %
Naphthol-d_7		
Acridine-d_9	16	64
Pyridine-d_5		
Chrysene-d_{12}		
Fluoranthene-d_{10}		
Benzo(e)pyrene-d_{12}		

NA - Not able to see by GC/MS

NA* - not present in GC/MS standard

TRAVELER # 8412-016-1 Well 23; neutral fraction

PRIORITY POLLUTANT BNA'S	(1) Conc (ng/µL)	(1) Conc (µg/L)	(2) Conc (ng/µL)	(2) Conc (µg/L)
ACENAPHTHENE	127.1	34.4	190	51.4
BENZIDINE	NA*			
1,2,4-TRICHLOROBENZENE				
HEXACHLOROBENZENE				
HEXACHLOROETHANE				
BIS(2-CHLOROETHYL)ETHER				
2-CHLORONAPHTHALENE				
2,4,6-TRICHLOROPHENOL				
P-CHLORO-M-CRESOL				
2-CHLOROPHENOL				
1,2-DICHLOROBENZENE				
1,3-DICHLOROBENZENE				
1,4-DICHLOROBENZENE				
3,3-DICHLOROBENZIDINE	NA*			
2,4-DICHLOROPHENOL				
2,4-DIMETHYLPHENOL				
2,4-DINITROTOLUENE	4.1	1.1		
2,6-DINITROTOLUENE	21.0	5.7		
1,2-DIPHENYLHYDRAZINE	NA			
FLUORANTHENE	41.6	11.2	62	16.8
4-CHLOROPHENYL PHENYL ETHER				
4-BROMOPHENYL PHENYL ETHER				
BIS(2-CHLOROISOPROPYL) ETHER				
BIS(2-CHLOROETHOXY) METHANE				
HEXACHLOROBUTADIENE				
HEXACHLOROCYCLOPENTADIENE				
ISOPHORONE				
NAPHTHALENE	67.1	18.1	100	27.0
NITROBENZENE				
2-NITROPHENOL				
4-NITROPHENOL				
2,4-DINITROPHENOL				
4,6-DINITRO-2-METHYLPHENOL				
N-NITROSODIMETHYL AMINE				
N-NITROSODIPHENYLAMINE				
N-NITROSODIPROPYLAMINE				
PENTACHLOROPHENOL				
PHENOL				
BIS(2-ETHYLHEXYL) PHTHALATE	27.8	7.5		

(1) Internal standard calibration with phenanthrene-d_{10} as internal standard
(2) Isotope dilution

	(µg/L)	(µg/L)	(µg/L)	(µg/L)	
BENZYL BUTYL PHTHALATE	1.5	0.4			
DI-N-BUTYL PHTHALATE	1.9	0.5			
DI-N-OCTYL PHTHALATE	1.4	0.4			
DIETHYL PHTHALATE					
DIMETHYL PHTHALATE					
BENZO(A)ANTHRACENE	2.6	0.7			
BENZO(A)PYRENE					
BENZO(B)FLUORANTHENE	0.8	0.2			
BENZO(K)FLUORANTHENE					
CHRYSENE	1.6	0.4	2.2	0.6	
ACENAPHTHYLENE	47.1	12.7			
ANTHRACENE	23.9	6.5			
BENZO(GHI)PERYLENE					
FLUORENE	31.3	8.5			
PHENANTHRENE	116.5	31.5			
DIBENZO(AH)ANTHRACENE					
INDENO(123-CD)PYRENE					
PYRENE	1.5	0.4	15	4.1	
NON-PRIORITY POLLUTANTS					
BENZOIC ACID					
2-METHYLPHENOL					
4-METHYLPHENOL					
2,4,5-TRICHLOROPHENOL					
2-METHYLNAPHTHALENE	9.4	2.5			
ANILINE					
BENZYL ALCOHOL					
4-CHLOROANILINE					
DIBENZOFURAN	96	26.0			
2-NITROANILINE					
3-NITROANILINE					
4-NITROANILINE					
Approximate DETECTION LIMIT	0.1-0.5	0.03-0.1			

Carbazole		
4-Hydroxybiphenyl		
1-Naphthylamine		
Acridine		
1,2,3-Trimethylbenzene	39.6	10.70
Quinoline		
2,3,5-Trimethylphenol		
3-Methyl-cholanthrene		
7,12-Dimethylbenz(a)anthracene		
1-Naphthol		
2,3,4-Trichlorophenol		
2,3,4,5-Tetrachlorophenol		
4-Aminobiphenyl		
Thiophene	NA	
13H-Dibenzo(a,i)carbazole		

Field Surrogates	Percent Recovery	
	ng/ml	%
Acenaphthene-d_{10}	33.6	67
Pyrene-D_{10}	5.0	10
Perylene-d_{12}	42.0	84
Naphthalene-d_8	33.6	67
Phenol-d_5	a	
Carbazole-d_3	a	
Benzo(a)pyrene-d_{12}	31.9	64
2-Naphthylamine-d_7	NS	--
Quinoline-d_7	a	
Dibenzo(a,h)anthracene-d_{12}	22.0	44
1,2-Benz(a)anthracene-d_{12}	NS	--

Laboratory Surrogatges	Percent Recovery	
Naphthol-d_7	a	
Acridine-d_9	a	
Pyridine-d_5	NA	--
Chrysene-d_{12}	35.8	72
Fluoranthene-d_{10}	33.3	67
Benzo(e)pyrene-d_{12}	38.9	78

NA - Not able to see by GC/MS

NA+ - not present in GCMS Standard

NS - not Spiked

a/ compound not expected to be found in this fraction

Table 1. Compounds Identified in Well 23, Neutral Fraction

Scan Number	Compound Identification	Approximate Concentration (μg/L)
303	Dimethyl-thiophene	0.20
327	Xylene	P
387	C_3-Alkylbenzene	0.75
435	Trichloropropene	0.77
480	C_3-Alkylbenzene	3.18
499	C_3-Alkylbenzene	1.78
524	C_3-Alkylbenzene	1.45
537	Methyl-ethenylbenzene	0.47
566	C_3-Alkylbenzene	7.64
570	Benzofuran	4.08
639	C_3-Alkylbenzene	3.24
645	C_4-Alkylbenzene	P
649	Methyl-ethenylbenzene	1.00
666	Dihydro-indene	18.44
683	Alcohol (C_8 ?)	P
689, 693	Indene	17.76
716	C_4-Alkylbenzene	0.10
727	C_4-Alkylbenzene	0.28
734	C_4-Alkylbenzene	0.39
785	C_4-Alkylbenzene	P
787	C_4-Alkylbenzene	1.23
798	Dihydro-methyl-indene	3.37

P - Present but not quantitated.

Table 1. Compounds Identified in Well 23, Neutral Fraction (Continued)

Scan Number	Compound Identification	Approximate Concentration (μg/L)
804	C_4-Alkylbenzene	P
830, 834, 841	Phenyl-propenal or Ethenyl-benzaldehyde	2.52[a]
846, 858	or Methyl-benzofuran	2.23[b] ; 1.46[c] ; 0.80[d]
876	C_4-Alkylbenzene	1.02
886	C_4-Alkylbenzene	1.26
927	Methyl-propenylbenzene or Dihydro-methyl-indene	3.34
952, 956	Dihydro-methyl-indene	8.02
967	Tetrahydro-cycloprop(a)indene	7.98
1029	Naphthalene	19.31 ;*
1046	Dibenzothiophene	4.15
1072	Dihydro-dimethyl-indene	P
1113	Phenyl-butenone or Dimethyl-benzofuran	1.36
1202	Dimethyl-indene	0.38
1249	Dihydro-indenone	5.62
1258	Methyl-benzothiophene	6.05
1272	2-Methyl-naphthalene	1.74 ;*
1309	1-Methyl-naphthalene	33.20
1455	Biphenyl	13.57
1484	C_2-Alkyl-naphthalene	2.46
1500	C_2-Alkyl-naphthalene	9.37
1533	C_2-Alkyl-naphthalene	17.96
1568	C_2-Alkyl-naphthalene	7.06

P - Present but not quantitated.
[a] Quantitation of peak at scan 830.
[b] Quantitation of peak at scan 841.
[c] Quantitation of peak at scan 846.
[d] Quantitation of peak at scan 858.
* Quantitation also given on the [illegible]

Table 1. Compounds Identified in Well 23, Neutral Fraction
(Continued)

Scan Number	Compound Identification	Approximate Concentration (μg/L)
1581	Acenaphthylene	*
1653	Acenaphthene	37.89
1709, 1712	Dibenzofuran	22.31
1800	C_3-Alkyl-naphthalene	2.05
1831, 1834	Fluorene	32.75
1860	Propenyl-naphthalene or methyl-biphenyl	3.51
1875	Propenyl-naphthalene or methyl-biphenyl	2.02
1901, 1923	$C_{13}H_{10}$ (biphenyl carboxaldehyde or methyl-dibenzofuran)	4.75e; 4.94f
2057	Methyl-fluorene	1.86
2160	Phenanthrene	*
2217	Aliphatic compound (alcohol ?)	15.43
2326	Alkene	25.59
2343	Methyl-phenanthrene	P
2357	Alcohol	P
2478	Alkene	P
2650	Alkene	P
2654	Alkene	P
2657	Alcohol	83.42
2660, 2663	Pyrene + Pyrene-d_{10}	*
2666	Alkene	19.68

P - Present but not quantitated.
* Quantitation also given on the data form for neutral fraction.
e Quantitaiton of peak at scan 1901.
f Quantitaiton of peak at scan 1923.

Table 1. Compounds Identified in Well 23, Neutral Fraction (Continued)

Scan Number	Compound Identification	Approximate Concentration (μg/L)
2688	Fatty acid ester	18.14
2696	Fatty acid ester	6.01
2713	Long chain aldehyde	3.65
2719	Fatty acid ester	3.77
2742	Fatty acid ester	22.33
2759	Alkene	5.94
2794	Methyl-pyrene	0.71
2799	$C_{12}H_9N_3$ or $C_{13}H_9ON$	P
2817	Methyl-pyrene	6.02
2895	Alkene	21.69
2929	Alcohol	2.72
3073	Azelate	P
3194	Alkane	P
3252	Bis(2-ethylhexyl)phthalate	*
3312	Alkane	P

P - Present but not quantitated.

* - Quantitation given on the data form for neutral fraction.

PRIORITY POLLUTANT BNA'S	(1) conc (ng/µL)	(1) conc (µg/L)	(2) conc (ng/µL)	(2) conc (ng/L)
ACENAPHTHENE	2.82	0.76		
BENZIDINE	NA*			
1,2,4-TRICHLOROBENZENE				
HEXACHLOROBENZENE				
HEXACHLOROETHANE				
BIS(2-CHLOROETHYL)ETHER				
2-CHLORONAPHTHALENE				
2,4,6-TRICHLOROPHENOL				
P-CHLORO-M-CRESOL				
2-CHLOROPHENOL				
1,2-DICHLOROBENZENE				
1,3-DICHLOROBENZENE				
1,4-DICHLOROBENZENE				
3,3-DICHLOROBENZIDINE	NA*			
2,4-DICHLOROPHENOL				
2,4-DIMETHYLPHENOL				
2,4-DINITROTOLUENE				
2,6-DINITROTOLUENE				
1,2-DIPHENYLHYDRAZINE	NA			
FLUORANTHENE	2.30	0.62		
4-CHLOROPHENYL PHENYL ETHER				
4-BROMOPHENYL PHENYL ETHER				
BIS(2-CHLOROISOPROPYL) ETHER				
BIS(2-CHLOROETHOXY) METHANE				
HEXACHLOROBUTADIENE				
HEXACHLOROCYCLOPENTADIENE				
ISOPHORONE				
NAPHTHALENE				
NITROBENZENE				
2-NITROPHENOL				
4-NITROPHENOL				
2,4-DINITROPHENOL				
4,6-DINITRO-2-METHYLPHENOL				
N-NITROSODIMETHYL AMINE				
N-NITROSODIPHENYLAMINE				
N-NITROSODIPROPYLAMINE				
PENTACHLOROPHENOL				
PHENOL	4.72	1.28	8.31	2.25
BIS(2-ETHYLHEXYL) PHTHALATE	11.71	3.16		

(1) Internal Standard calibration with phenanthrene-d_{10} as internal standa

(2) Isotope dilution

	(1)	(1)	(2)	(2)
BENZYL BUTYL PHTHALATE	0.80	0.22		
DI-N-BUTYL PHTHALATE	3.52	0.95		
DI-N-OCTYL PHTHALATE	0.27	0.07		
DIETHYL PHTHALATE				
DIMETHYL PHTHALATE				
BENZO(A)ANTHRACENE				
BENZO(A)PYRENE				
BENZO(B)FLUORANTHENE				
BENZO(K)FLUORANTHENE				
CHRYSENE				
ACENAPHTHYLENE	0.76	0.21		
ANTHRACENE	0.96	0.26		
BENZO(GHI)PERYLENE				
FLUORENE	2.86	0.77		
PHENANTHRENE	5.94	1.61		
DIBENZO(AH)ANTHRACENE				
INDENO(123-CD)PYRENE				
PYRENE	1.74	0.47		
NON-PRIORITY POLLUTANTS				
BENZOIC ACID				
2-METHYLPHENOL	3.39	0.92		
4-METHYLPHENOL	1.85	0.50		
2,4,5-TRICHLOROPHENOL				
2-METHYLNAPHTHALENE				
ANILINE				
BENZYL ALCOHOL				
4-CHLOROANILINE				
DIBENZOFURAN	2.26	0.61		
2-NITROANILINE				
3-NITROANILINE				
4-NITROANILINE				
DETECTION LIMIT				

	(1) conc ng/μL	(1) conc (μg/L)	(2) conc (ng/μL)	(2) conc (μg/L)
Carbazole	4.48	1.21		
4-Hydroxybiphenyl	12.64	3.42		
1-Naphthylamine				
Acridine				
1,2,3-Trimethylbenzene				
Quinoline				
2,3,5-Trimethylphenol	18.90	5.11		
3-Methyl-cholanthrene				
7,12-Dimethylbenz(a)anthracene				
1-Naphthol	13.97	3.78	46.40	12.54
2,3,4-Trichlorophenol				
2,3,4,5-Tetrachlorophenol				
4-Aminobiphenyl				
Thiophene	NA			
13H-Dibenzo(a,i)carbazole				

Field Surrogates [a]	Percent Recovery	
Acenaphthene-d_{10}		
Pyrene-D_{10}		
Perylene-d_{12}		
Naphthalene-d_8		
Phenol-d_5	28.4	57
Carbazole-d_3		
Benzo(a)pyrene-d_{12}		
2-Naphthylamine-d_7		
Quinoline-d_7		
Dibenzo(a,h)anthracene-d_{12}		
1,2-Benz(a)anthracene-d_{12}	NS	

Laboratory Surrogates [a]	Percent Recovery	
Naphthol-d_7	15	30
Acridine-d_9		
Pyridine-d_5	NA	
Chrysene-d_{12}		
Fluoranthene-d_{10}		
Benzo(e)pyrene-d_{12}		

a/ Only the recovery of the acid compounds, expected to be found in this fraction are given.

NA - Not able to see by GC/MS

NS - not spiked

NA* - not present in GC/MS Standard

Table 2. Compounds Identified in Well 23, Acid Fraction

Scan Number	Compound Identification	Approximate Concentration (μg/L)
581	Phenol + Phenol-d_5	a
343	Butoxy-ethanol	0.16
674	Hydroxy-benzaldehyde	0.55
757	Methyl-phenol	0.47
765	2-Methyl-phenol	0.28
817	4-Methyl-phenol	a
853	Dimethyl-phenol	0.31
858	Dimethyl-phenol	0.82
862	Dimethyl-phenol	0.78
977	Dimethyl-phenol	P
1030	Dimethyl-phenol	1.48
1085	C_3-Alkyl-phenol	0.66
1234	C_3-Alkyl-phenol + Dihydro-indenone	3.64
1563	Acenaphthylene	a
1633	Acenaphthylene	a
2177	Fatty acid	1.06
2197	Alkane	2.12
2304	Alkene	5.64
2338	Alcohol	8.50
2451	Alcohol or long chain aldehyde	5.37
2455	Di-n-butyl-phthalate + fatty acid methyl ester	a

[a] See data form for Well 23, acid fraction.

P - Present but not quantitated.

Table 2. Compounds Identified in Well 23, Acid Fraction (Continued)

Scan Number	Compound Identification	Approximate Concentration (μg/L)
2462	Butyl-2-methylpropyl-phthalate	0.44
2481	Fatty acid	2.90
2610	Alkene (?)	128
2616	Alkene	32.44
2637	Alcohol or alkene	6.59
2665	Fatty acid methyl ester	4.07
2681	Alkene	2.24
2720	Fatty acid methylester or alkene	8.93
2785	Unknown	1.71
2806	$C_{13}H_9ON$ or $C_{12}H_9N_3$	0.62
2875	Alkene	6.22
2982	Alcohol	18.68
3053	Azelate	3.21
3099	Unknown	4.76
3234	Bis(2-ethylhexyl)phthalate	3.77
3314	Unknown (glycol-type compound)	5.31
3328	Unknown (glycol-type compound)	2.26
3490	Unknown	2.96
3548	Unknown	4.63
3603	Unknown	1.44
3616	Unknown (glycol-type compound)	4.47

Table 2. Compounds Identified in Well 23, Acid Fraction

(Continued)

Scan Number	Compound Identification	Approximate Concentration (μg/L)
3637	Unknown (glycol-type compound	8.59
3871	Long chain Aldehyde or Alkene	1.35
3891	Unknown (glycol-type compound)	2.79
3916	Unknown (glycol-type compound)	8.72
4060	Alkene or long chain aldehyde	0.63
4146	Unknown (glycol-type compound)	1.50
4176	Unknown (glycol-type compound)	3.05
4240	Unknown	1.73

2/28/85
N.

ACUREX Corporation

Energy & Environmental Division

Mr. Paul Bitter
U.S. Environmental Protection Agency
SHR-13
230 Dearborne Street
Chicago, IL 60404

February 28, 1985
Acurex ID#: 8412-016
Project: SAS 1141E

Subject: Results of GC/MS Analyses for Well 23; SAS 1141E

Enclosed please find the results of the GC/MS analyses for Well 23. Sample extraction was performed by continuous liquid-liquid extraction according to procedures in EPA Method 625. The extract was concentrated to 10 mL using Kuderna-Danish evaporation and was split into two 5 mL aliquots. One aliquot was further concentrated to 1 mL using nitrogen blowdown. The other aliquot was diluted to 50 mL with methylene chloride and fractionated into acids, base, neutrals following the procedures in SAS 1141E Protocol. Only the GC/MS results of the whole extract are presented. Analysis of fractions was completed and it will be submitted shortly. The following is a list of deliverables.

1. DFTPP (form, plot, list format) for 2/2/85

2. Solvent blank for 2/2/85 (RIC; diagnostic report; quantitation report)

3. GC/MS standard for 2/2/85 (RIC; RT quantitation report, RP quantitation report, calibration check forms)

4. Concentration data for 8412-016-1--Well 23; whole extract--(data form; Table 1; RT quantitation report, RP quantitation report; quantitation report for other compounds found in the sample, RIC, RT diagnostic report, RP diagnostic report, spectra: enhanced, unenhanced, library display of 3 best fits (pages 013 through 438); peak areas; additional spectra (pages 438A through 438T)

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5. Chain of custody forms.

Sincerely,

Viorica Lopez-Avila

Viorica Lopez-Avila, Ph.D.
Technical Director

VLA/ats

Enclosures

cc: Dr. Brenda Kimble
Amphion Associates

Linda Haas Boynton
Sample Management Office

Data Audit Staff
EMSL - Las Vegas

Curtis Ross
EPA Region V

These results were obtained using accepted laboratory practices; the liability of Acurex Corporation shall not exceed the amount paid for this report. In no event shall Acurex be liable for special or consequential damages.

TRAVELER # 8412-016-1 Composite well 23 3 1.42 [illegible]

PRIORITY POLLUTANT BNA'S	(1) Conc (ng/µL)	(1) Conc (µg/L)	(2) Conc (ng/µL)	(2) Conc (µg/L)
ACENAPHTHENE	152	41.1	195.6	52.9
BENZIDINE	NA*			
1,2,4-TRICHLOROBENZENE				
HEXACHLOROBENZENE				
HEXACHLOROETHANE				
BIS(2-CHLOROETHYL)ETHER				
2-CHLORONAPHTHALENE				
2,4,6-TRICHLOROPHENOL				
P-CHLORO-M-CRESOL				
2-CHLOROPHENOL				
1,2-DICHLOROBENZENE				
1,3-DICHLOROBENZENE				
1,4-DICHLOROBENZENE				
3,3-DICHLOROBENZIDINE	NA*			
2,4-DICHLOROPHENOL				
2,4-DIMETHYLPHENOL				
2,4-DINITROTOLUENE				
2,6-DINITROTOLUENE				
1,2-DIPHENYLHYDRAZINE	NA			
FLUORANTHENE	45.2	12.2	63.2	17.1
4-CHLOROPHENYL PHENYL ETHER				
4-BROMOPHENYL PHENYL ETHER				
BIS(2-CHLOROISOPROPYL) ETHER				
BIS(2-CHLOROETHOXY) METHANE				
HEXACHLOROBUTADIENE				
HEXACHLOROCYCLOPENTADIENE				
ISOPHORONE				
NAPHTHALENE	74.7	20.2	109.6	29.6
NITROBENZENE				
2-NITROPHENOL				
4-NITROPHENOL				
2,4-DINITROPHENOL				
4,6-DINITRO-2-METHYLPHENOL				
N-NITROSODIMETHYL AMINE				
N-NITROSODIPHENYLAMINE				
N-NITROSODIPROPYLAMINE				
PENTACHLOROPHENOL				
PHENOL				
BIS(2-ETHYLHEXYL) PHTHALATE				

(1) - internal standard calibration with phenanthrene-d_{10} as internal standard
(2) - isotope dilution

BENZYL BUTYL PHTHALATE				
DI-N-BUTYL PHTHALATE	6.1	1.7		
DI-N-OCTYL PHTHALATE				
DIETHYL PHTHALATE				
DIMETHYL PHTHALATE				
BENZO(A)ANTHRACENE				
BENZO(A)PYRENE	0.33	0.09	0.4	0.11
BENZO(B)FLUORANTHENE				
BENZO(K)FLUORANTHENE				
CHRYSENE	1.75	0.47	2.5	0.68
ACENAPHTHYLENE	51.2	13.8		
ANTHRACENE	31.7	8.6		
BENZO(GHI)PERYLENE				
FLUORENE	132.6	35.9		
PHENANTHRENE	145	39.2		
DIBENZO(AH)ANTHRACENE				
INDENO(123-CD)PYRENE				
PYRENE	31.2	8.4	39.8	10.8
NON-PRIORITY POLLUTANTS				
BENZOIC ACID				
2-METHYLPHENOL				
4-METHYLPHENOL	0.9	0.2		
2,4,5-TRICHLOROPHENOL				
2-METHYLNAPHTHALENE	0.8	0.2		
ANILINE				
BENZYL ALCOHOL				
4-CHLOROANILINE				
DIBENZOFURAN	113.9	30.8		
2-NITROANILINE				
3-NITROANILINE				
4-NITROANILINE				
Approximate DETECTION LIMIT	0.1-0.5 ng/µL	0.03		

	(1) ng/µL	(1) µg/L	(2) (ng/µL)	(2) (µg/L)
Carbazole	37.2	10.1		
4-Hydroxybiphenyl				
1-Naphthylamine				
Acridine	7.9	2.1	10.2	2.76
1,2,3-Trimethylbenzene	12.4	3.4		
Quinoline				
2,3,5-Trimethylphenol	1.9	0.5		
3-Methyl-cholanthrene				
7,12-Dimethylbenz(a)anthracene				
1-Naphthol				
2,3,4-Trichlorophenol				
2,3,4,5-Tetrachlorophenol				
4-Aminobiphenyl				
Thiophene	NA			
13H-Dibenzo(a,i)carbazole	~~NS~~ NA			

Field Surrogates[b]	Percent Recovery	
Acenaphthene-d_{10}	41.6	83
Pyrene-D_{10}	38.9	78
Perylene-d_{12}	13.0	26
Naphthalene-d_8	39.7	79
Phenol-d_5	43.7	87
Carbazole-d_3	42.2	84
Benzo(a)pyrene-d_{12}	33.5	67
2-Naphthylamine-d_7	NS	--
Quinoline-d_7	43.1	86
Dibenzo(a,h)anthracene-d_{12}[a]	16.2	65.
1,2-Benz(a)anthracene-d_{12}	NS	--

Laboratory Surrogatges[b]	Percent Recovery	
Naphthol-d_7	23.0	46
Acridine-d_9	38.6	77
Pyridine-d_5	NA	--
Chrysene-d_{12}	34.1	68
Fluoranthene-d_{10}	36.1	72
Benzo(e)pyrene-d_{12}	32.6	65

b/ Spike level of field and laboratory surrogates 100µg in 7.4 L samp

NA - Not able to see by GC/MS

NS - not spiked

NA+ - not present in GCMS standard

a/ - Spike concentration is 25µg

Table 1. Compounds Identified in Well 23 (whole extract)

Scan Number	Compound Identification	Approximate Concentration (μg/L)[a]
208	Acetic acid ethyl ester	24.0[b]
228	Tetrachloroethylene	3.4[b]
295	Hydroxy-methylpentanone	8.5[b]
318	Xylene	15.6[b]
329	Xylene	13.0[b]
368	Xylene	10.0[b]
439	C_3-Alkylbenzene	1.4[b]
490	Trichloropropene	1.2[b]
530	C_3-Alkylbenzene	2.8[b]
546	C_3-Alkylbenzene	2.6[b]
574	C_3-Alkylbenzene	2.0[b]
610	C_3-Alkylbenzene	7.8[b]
708	Propenyl-benzene	22.0[b]
724	Indene	15.6[b]
832	Dihydro-methyl-indene	2.6[b]
834	C_4-Alkylbenzene	
862	Phenyl-propenal	2.6[b]
873	Phenyl-propenal	2.4[b]
956	Methyl-propenyl-benzene	2.9[b]
993	$C_{10}H_{10}$	5.1[b]
1054	Naphthalene	17.2
1074	Benzothiophene	4.2
1100	Methyl-propenyl-phenol	1.05

[a] Quantitation performed by internal standard calibration using phenanthrene-d_{10} as internal standard. Total peak areas were used in calculations. Since phenanthrene and phenanthrene-d_{10} collute, a factor of 15 was used to adjust the total peak area at scan 2186.

[b] Quantitation performed by internal standard calibration with 1,4-dichlorobenzene as internal standard.

Table 1. Compounds Identified in Well 23 (whole extract) (Continued)

Scan Number	Compound Identification	Approximate Concentration (μg/L)[a]
1106	Dimethyl-benzofuran	1.50
1121	Dimethyl-benzofuran	0.30
1136	Dimethyl-benzofuran	1.35
1208	Dihydro-dimethyl-indene	0.45
1226	Dimethyl-indene	1.35
1241	Dimethyl-indene or Dihydro-methylnaphthalene	1.65
1280	Dihydro-indenone	11.7
1299	2-Methyl-naphthalene	2.25
1335	1-Methyl-naphthalene	39.9
1469	Dihydro-naphthalenone	0.60
1481	Biphenyl	13.2
1504	C_2-Alkyl-naphthalene + unknown	2.55
1510	C_2-Alkyl-naphthalene	1.05
1525	C_2-Alkyl-naphthalene	10.2
1554	C_2-Alkyl-naphthalene	19.05
1572	Biphenyl (?)	0.75
1590	C_2-Alkyl-naphthalene	6.45
1596	C_2-Alkyl-naphthalene	1.35
1605	Acenaphthylene	9.41
1619	C_2-Alkyl-naphthylene	4.32
1677	Acenaphthene	38.6
1687	Methyl-biphenyl	1.92
1702	Methyl-biphenyl	1.65

[a] Quantitation performed by internal standard calibration using phenanthrene-d_{10} as internal standard. Total peak areas were used in calculations. Since phenanthrene and phenanthrene-d_{10} collute, a factor of 15 was used to adjust the total peak area at scan 2186.

Table 1. Compounds Identified in Well 23 (whole extract) (Continued)

Scan Number	Compound Identification	Approximate Concentration (μg/L)[a]
1717	C_3-Alkyl-naphthalene	0.87
1734	Dibenzofuran	23.8
1749	C_3-Alkyl-naphthalene	0.71
1757	C_3-Alkyl-naphthalene	1.61
1764	C_3-Alkyl-naphthalene	1.41
1773	Ethylidene-bis-benzene	0.17
1795	C_3-Alkyl-naphthalene	3.50
1822	Phenalene + C_3-Alkyl-naphthalene	2.37
1856	Fluorene	42.2
1864	C_3-Alkyl-naphthalene	2.24
1887	Propenyl-naphthalene	3.65
1899	Methyl-biphenyl	3.26
1915	Phenalene	0.66
1925	Dimethyl-biphenyl	3.96
1946	Methyl-dibenzofuran	4.17
1962	Methyl-dibenzofuran	1.32
2023	Dihydro-phenanthrene	2.55
2055	Methyl-fluorene	2.72
2066	Methyl-fluorene	0.71
2085	Methyl-fluorene	2.00
2119	Dimethyl-phenylmethyl-benzene	1.23
2139	Dibenzothiopehene	3.98
2200	Anthracene	6.02

[a] Quantitation performed by internal standard calibration using phenanthrene-d_{10} as internal standard. Total peak areas were used in calculations. Since phenanthrene and phenanthrene-d_{10} collute, a factor of 15 was used to adjust the total peak area at scan 2186.

Table 1. Compounds Identified in Well 23 (whole extract) (Continued)

Scan Number	Compound Identification	Approximate Concentration (μg/L)[a]
2346	Alkene	22.9
2381	Alcohol	34.5
2396	Cyclopentaphenanthrene	2.12
2490	Unknown + Phenyl-naphthalene	5.45
2498	Alkene	9.99
2534	Alcohol	1.6
2546	Sulfur	1.17
2558	Alkene	1.38
2574	Tetrahydro-indeno-indene	0.71
2662	Alcohol	272
2668	Alcohol or alkene	85.2
2670	Alcohol	80.5
2684	Pyrene + Alcohol or Alkene	20.9
2710	Fatty acid ester	14.9
2726	Alkene	P
2765	Alcohol	P
2784	Alcohol	P
2846	Benzofluorene	P
2920	Alkene	P
2930	Alkene	P
2956	Alcohol	P

P - Present but not quantitated (concentration <5 μg/L).

[a] Quantitation performed by internal standard calibration using phenanthrene-d_{10} as internal standard. Total peak areas were used in calculations. Since phenanthrene and phenanthrene-d_{10} collute, a factor of 15 was used to adjust the total peak area at scan 2186.

3/12/85
N.

ACUREX Corporation

Energy & Environmental Division

Mr. Paul Bitter
USEPA
SHR-13
230 Dearborne Street
Chicago, IL 60404

March 12, 1985
Acurex ID#: 8411-044
Project: SAS 1141E
Page 1 of 2

Subject: GCMS Results for the Tar Sample:
Acid Fraction, Base Fraction,
Neutral Fraction, and Fraction III

Enclosed please find the results of the GC/MS analyses for the tar sample. The sample was obtained from Mr. George Boyer of Eugene A. Hickok and Associates, Inc. and is identified as OW23-574 (collected 6-11-82 from Well W23-SLP, by Paul D. Josephson). Analyses were performed according to procedures specified in SAS 1141E protocol. Figure 1 outlines the sample extraction and fractionation procedures. The following is a list of deliverables.

1. Chain of custody form

2. DFTPP (form, plot, list format) for 2/14/85 and 2/15/85.

3. GC/MS standards 2/14/85 and 2/15/85 (RIC; RT diagnostic report; RP diagnostic report, quantitation report, calibration check forms)

4. Solvent blank for 2/14/85 and 2/15/85 (RIC; diagnostic report, quantitation report, spectra of phthalate esters detected in blank)

5. Concentration data for 8411-044-1, Acid fraction: data form, Table 1, RIC, RT diagnostic report, RP diagnostic report, RT quantitation report, RP quantitation report, quantitation report for other compounds detected in the acid fraction, spectra: enhanced, unenhanced, library display of 3 best fits (pages 001 through 146), peak areas.

6. Concentration data for 8411-044-1, Base fraction: data form, Table 2, RIC, RT diagnostic report, RP diagnostic report, RT quantitation report, RP quantitation report, quantitation report for other compounds detected in the base fraction, spectra: enhanced, unenhanced, library display of 3 best fits (pages 1 through 188), peak areas.

7. Concentration data for 8411-044-1, Neutral fraction: data form, Table 3, RT quantitation report, RP quantitation report, mass chromatograms for: naphthalene, acenaphthene, dibenzofuran, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benzo(a)anthracene, chrysene, benzofluoranthenes, benzopyrene; quantitation report for other compounds detected in the neutral fraction, RIC, RT diagnostic report, RP diagnostic report, spectra: enhanced, unenhanced, library display of 3 best fits (pages 1 through 374), peak areas.

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7. Concentration data for 8411-044-1, Fraction III: data form, Table 4, RT quantitation report, RP quantitation report, quantitation report for other compounds detected in the Fraction III, RIC, RT diagnostic report, RP diagnostic report, spectra: enhanced, unenhanced, library display of 3 best fits (pages 1 through 138), peak areas.

Sincerely,

Viorica Lopez-Avila

Viorica Lopez-Avila
Technical Director

VLA/ats

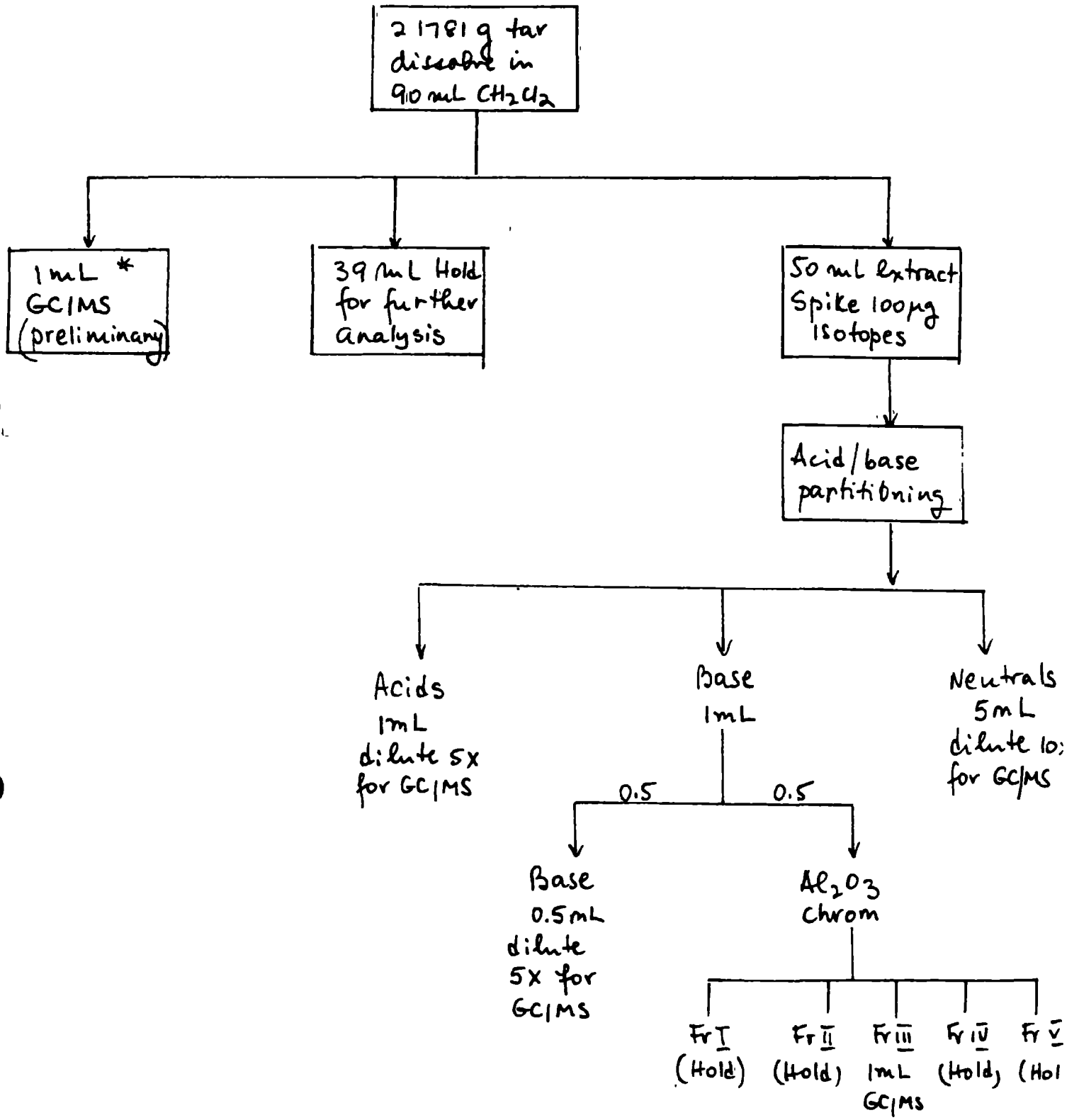
Enclosures

cc: Dr. Brenda Kimble
Amphion Associates

Linda Haas Boynton
Sample Management Office

Data Audit Staff
EMSL - Las Vegas

Curtis Ross
EPA Region V



* to establish the spiking level of isotopes

Figure 1 Scheme for extraction and fractionation of tar sample

gene A Hickok and Associates, Inc Hydrologists - Engineers

trol Agency
ivision
B2
13

545 Indian Mound
Wayzata, Minnesota 55391
(612) 473-4224

8411-044

S 05015

CHAIN OF CUSTODY RECORD

Chemical

Name of Sampler: Paul D. Josephson

Field Number	Date	Time	monitoring well	existing well	surface water	wastewater	waste	other Soil Tar	Sample Location	Analyses Requested	Comments on Samples
OW23-SL	6-11-82							✓	Well W23-SLP		Continuation of original Chain of Custody Record MPCA # 9621479

Remarks on Site

Samples Relinquished by	Samples Received by	Comments	Date/Time
George Boyer	Vionica Yoyz Avila	Jar was sealed per MPCA instructions. Sealed with tape only. frozen; aluminum foil covered, in plastic bag	11/2/84
Samples Relinquished by: Vionica Yoyz Avila	Samples Received by: M. Claire Ferguson	Comments	Date/Time: 11/5/84
Samples Relinquished by	Samples Received by	Comments	Date/Time

Means of Delivery: Hand delivered

Seals intact: ☐ YES ☐ NO ☐ N.A.

Original and yellow copies to lab. Pink copy to MPCA. Lab forwards completed yellow copy to MPCA with analytical results.
PQ-00343-01 (12/83)

TRAVELLER - _____

PRIORITY POLLUTANT BNA'S	conc (ng/µL)		conc (ng/µL)		
ACENAPHTHENE					
BENZIDINE	NA*				
1,2,4-TRICHLOROBENZENE					
HEXACHLOROBENZENE					
HEXACHLOROETHANE					
BIS(2-CHLOROETHYL)ETHER					
2-CHLORONAPHTHALENE					
2,4,6-TRICHLOROPHENOL					
P-CHLORO-M-CRESOL					
2-CHLOROPHENOL					
1,2-DICHLOROBENZENE					
1,3-DICHLOROBENZENE					
1,4-DICHLOROBENZENE					
3,3-DICHLOROBENZIDINE	NA*				
2,4-DICHLOROPHENOL					
2,4-DIMETHYLPHENOL					
2,4-DINITROTOLUENE					
2,6-DINITROTOLUENE					
1,2-DIPHENYLHYDRAZINE	NA				
FLUORANTHENE					
4-CHLOROPHENYL PHENYL ETHER					
4-BROMOPHENYL PHENYL ETHER					
BIS(2-CHLOROISOPROPYL) ETHER					
BIS(2-CHLOROETHOXY) METHANE					
HEXACHLOROBUTADIENE					
HEXACHLOROCYCLOPENTADIENE					
ISOPHORONE					
NAPHTHALENE					
NITROBENZENE					
2-NITROPHENOL					
4-NITROPHENOL					
2,4-DINITROPHENOL					
4,6-DINITRO-2-METHYLPHENOL					
N-NITROSODIMETHYL AMINE					
N-NITROSODIPHENYLAMINE					
N-NITROSODIPROPYLAMINE					
PENTACHLOROPHENOL					
PHENOL					
BIS(2-ETHYLHEXYL) PHTHALATE	6.8	11.24			

(1) internal standard calibration with phenanthrene-d_{10} as internal std

(2) isotope dilution

BENZYL BUTYL PHTHALATE					
DI-N-BUTYL PHTHALATE	57	9.34			
DI-N-OCTYL PHTHALATE					
DIETHYL PHTHALATE					
DIMETHYL PHTHALATE					
BENZO(A)ANTHRACENE					
BENZO(A)PYRENE					
BENZO(B)FLUORANTHENE					
BENZO(K)FLUORANTHENE					
CHRYSENE					
ACENAPHTHYLENE					
ANTHRACENE					
BENZO(GHI)PERYLENE					
FLUORENE					
PHENANTHRENE					
DIBENZO(AH)ANTHRACENE					
INDENO(123-CD)PYRENE					
PYRENE					
NON-PRIORITY POLLUTANTS					
BENZOIC ACID					
2-METHYLPHENOL					
4-METHYLPHENOL					
2,4,5-TRICHLOROPHENOL					
2-METHYLNAPHTHALENE					
ANILINE					
BENZYL ALCOHOL					
4-CHLOROANILINE					
DIBENZOFURAN					
2-NITROANILINE					
3-NITROANILINE					
4-NITROANILINE					
Approximate DETECTION LIMIT	0.5 ng/ml	0.83 µg/g			

	mg/µL	(µg/g)	(mg/µL)	(µg/g)
Carbazole				
4-Hydroxybiphenyl				
1-Naphthylamine				
Acridine	33.34	55.11	48.69	80.48
1,2,3-Trimethylbenzene				
Quinoline				
2,3,5-Trimethylphenol				
3-Methyl-cholanthrene				
7,12-Dimethylbenz(a)anthracene				
1-Naphthol				
2,3,4-Trichlorophenol				
2,3,4,5-Tetrachlorophenol				
4-Aminobiphenyl				
Thiophene	NA			
13H-Dibenzo(a,i)carbazole				

Field Surrogates [a]	Percent Recovery	
Acenaphthene-d_{10}		
Pyrene-D_{10}		
Perylene-d_{12}		
Naphthalene-d_8		
Phenol-d_5		
Carbazole-d_3	ND	0
Benzo(a)pyrene-d_{12}		
2-Naphthylamine-d_7		
Quinoline-d_7	27.1	54
Dibenzo(a,h)anthracene-d_{12}		
1,2-Benz(a)anthracene-d_{12}	NS	

Laboratory Surrogates [a]	Percent Recovery	
Naphthol-d_7		
Acridine-d_9	34.2	69
Pyridine-d_5	NA	
Chrysene-d_{12}		
Fluoranthene-d_{10}		
Benzo(e)pyrene-d_{12}		

a/ only recovery of surrogates expected to be present in Fraction III is presented.

NA - Not able to see by GC/MS

NS - not spiked

NA* - not present in GC/MS Std.

PRIORITY POLLUTANT BNA'S	(1) Conc (mg/L)	(1) Conc (µg/g)	(2) Conc (mg/L)	(2) Conc (µg/g)
ACENAPHTHENE	5.8	24.1		
BENZIDINE	NA*			
1,2,4-TRICHLOROBENZENE				
HEXACHLOROBENZENE				
HEXACHLOROETHANE				
BIS(2-CHLOROETHYL)ETHER				
2-CHLORONAPHTHALENE				
2,4,6-TRICHLOROPHENOL				
P-CHLORO-M-CRESOL				
2-CHLOROPHENOL				
1,2-DICHLOROBENZENE				
1,3-DICHLOROBENZENE				
1,4-DICHLOROBENZENE				
3,3-DICHLOROBENZIDINE	NA*			
2,4-DICHLOROPHENOL				
2,4-DIMETHYLPHENOL				
2,4-DINITROTOLUENE				
2,6-DINITROTOLUENE				
1,2-DIPHENYLHYDRAZINE	NA			
FLUORANTHENE	45.5	188.2		
4-CHLOROPHENYL PHENYL ETHER				
4-BROMOPHENYL PHENYL ETHER				
BIS(2-CHLOROISOPROPYL) ETHER				
BIS(2-CHLOROETHOXY) METHANE				
HEXACHLOROBUTADIENE				
HEXACHLOROCYCLOPENTADIENE				
ISOPHORONE				
NAPHTHALENE	4.3	17.9		
NITROBENZENE				
2-NITROPHENOL				
4-NITROPHENOL				
2,4-DINITROPHENOL				
4,6-DINITRO-2-METHYLPHENOL				
N-NITROSODIMETHYL AMINE				
N-NITROSODIPHENYLAMINE				
N-NITROSODIPROPYLAMINE				
PENTACHLOROPHENOL				
PHENOL				
BIS(2-ETHYLHEXYL) PHTHALATE	1.7	6.8		

(1) internal standard calibration with phenanthrene-d_{10} as internal standard.

(2) isotope dilution

BENZYL BUTYL PHTHALATE					
DI-N-BUTYL PHTHALATE	1.5	6.3			
DI-N-OCTYL PHTHALATE					
DIETHYL PHTHALATE					
DIMETHYL PHTHALATE					
BENZO(A)ANTHRACENE	18.0	74.4			
BENZO(A)PYRENE	16.3	67.3			
BENZO(B)FLUORANTHENE }					
BENZO(K)FLUORANTHENE }	27.3	112.9			
CHRYSENE	17.1	70.5			
ACENAPHTHYLENE					
ANTHRACENE	12.2	50.6			
BENZO(GHI)PERYLENE	9.6	39.6			
FLUORENE	10.3	42.6			
PHENANTHRENE	57.3	236.6			
DIBENZO(AH)ANTHRACENE	2.8	11.7			
INDENO(123-CD)PYRENE	8.2	33.9			
PYRENE	36.4	150.4			
NON-PRIORITY POLLUTANTS					
BENZOIC ACID					
2-METHYLPHENOL					
4-METHYLPHENOL					
2,4,5-TRICHLOROPHENOL					
2-METHYLNAPHTHALENE	3.9	16.2			
ANILINE					
BENZYL ALCOHOL					
4-CHLOROANILINE					
DIBENZOFURAN	5.8	24.4			
2-NITROANILINE					
3-NITROANILINE					
4-NITROANILINE					
Approximate DETECTION LIMIT	0.5 mg/ml	2 µg/g			

	mg/kL	µg/g	mg/kL	µg/g
Carbazole				
4-Hydroxybiphenyl				
1-Naphthylamine				
Acridine				
1,2,3-Trimethylbenzene				
Quinoline				
2,3,5-Trimethylphenol				
3-Methyl-cholanthrene				
7,12-Dimethylbenz(a)anthracene				
1-Naphthol				
2,3,4-Trichlorophenol				
2,3,4,5-Tetrachlorophenol				
4-Aminobiphenyl				
Thiophene	NA			
13H-Dibenzo(a,i)carbazole				

Field Surrogates[a]	Percent Recovery	
Acenaphthene-d_{10}		
Pyrene-D_{10}		
Perylene-d_{12}		
Naphthalene-d_8		
Phenol-d_5	14	70
Carbazole-d_3		
Benzo(a)pyrene-d_{12}		
2-Naphthylamine-d_7		
Quinoline-d_7		
Dibenzo(a,h)anthracene-d_{12}		
1,2-Benz(a)anthracene-d_{12}	NS	

Laboratory Surrogates[a]	Percent Recovery	
Naphthol-d_7	13.3	67
Acridine-d_9		
Pyridine-d_5	NA	
Chrysene-d_{12}		
Fluoranthene-d_{10}		
Benzo(e)pyrene-d_{12}		

NA - Not able to see by GC/MS

NS - not spiked

NA* - not present in GC/MS standard

a/ Only the recovery data for the acid surrogates are presented.

Table 1. Approximate Concentrations of Compounds Identified in the Tar Sample, Acid Fraction

Scan Number	Compound Identification	Approximate Concentration (μg/g)
994	Naphthalene	11.49; a
1242	2-Methyl-naphthalene	12.40
1498	C_2-Alkylnaphthalene	10.03
1615	Acenaphthene	23.39; a
1795	Fluorene	41.93; a
1866	Dimethyl-biphenyl	7.76
2076	Dibenzothiophene	9.71
2122	Phenanthrene	a
2136	Anthracene	43.07; a
2307	Methyl-phenanthrene	53.32
2324	Methyl-phenanthrene + unknown	41.60
2343	Methyl-phenanthrene	22.66
2424	Phenyl-naphthalene	31.02
2441	Di-n-butyl-phthalate	16.35; a
2541	Fluoranthene	207.53; a
2586	Alkene	478.21
2595	Alkene }	73.50
2597	Alcohol }	
2612	Pyrene	136.93; a
2623	Alcohol + unknown PAH (MW 204?)	P

P - Present but not quantitated.

a - See also data form.

Table 1. Approximate Concentrations of Compounds Identified in the Tar Sample, Acid Fraction (Continued)

Scan Number	Compound Identification	Approximate Concentration (μg/g)
2750	$C_{17}H_{12}$ (Methylpyrene or benzofluorene)	50.60
2777	$C_{17}H_{12}$ (Methylpyrene or benzofluorene)	53.31
2862	Alcohol (?)	12.71
2937	$C_{18}H_{14}$	P
3066	Chrysene	56.29; a
3221	Bis(2-ethylhexyl)phthalate	10.69; a
3419	Benzo(k)fluoranthene	104.83; a
3508	Benzo(a)pyrene	66.24; a
3536	Unknown + perylene (?)	55.53

P - Present but not quantitated.

a - See also data form.

PRIORITY POLLUTANT BNA'S	conc (mg/mL) (1)	conc (µg/g) (1)	conc (mg/mL) (2)	conc (µg/g) (2)
ACENAPHTHENE	8.6	35.54		
BENZIDINE	NA*			
1,2,4-TRICHLOROBENZENE				
HEXACHLOROBENZENE				
HEXACHLOROETHANE				
BIS(2-CHLOROETHYL)ETHER				
2-CHLORONAPHTHALENE				
2,4,6-TRICHLOROPHENOL				
P-CHLORO-M-CRESOL				
2-CHLOROPHENOL				
1,2-DICHLOROBENZENE				
1,3-DICHLOROBENZENE				
1,4-DICHLOROBENZENE				
3,3-DICHLOROBENZIDINE	NA*			
2,4-DICHLOROPHENOL				
2,4-DIMETHYLPHENOL				
2,4-DINITROTOLUENE				
2,6-DINITROTOLUENE				
1,2-DIPHENYLHYDRAZINE	NA			
FLUORANTHENE	49.2	203.30		
4-CHLOROPHENYL PHENYL ETHER				
4-BROMOPHENYL PHENYL ETHER				
BIS(2-CHLOROISOPROPYL) ETHER				
BIS(2-CHLOROETHOXY) METHANE				
HEXACHLOROBUTADIENE				
HEXACHLOROCYCLOPENTADIENE				
ISOPHORONE				
NAPHTHALENE	6.9	28.80		
NITROBENZENE				
2-NITROPHENOL				
4-NITROPHENOL				
2,4-DINITROPHENOL				
4,6-DINITRO-2-METHYLPHENOL				
N-NITROSODIMETHYL AMINE				
N-NITROSODIPHENYLAMINE				
N-NITROSODIPROPYLAMINE				
PENTACHLOROPHENOL				
PHENOL				
BIS(2-ETHYLHEXYL) PHTHALATE	2.7	11.16		

(1) Internal standard calibration with phenanthrene-d10 as internal std

(2) Isotope dilution

BENZYL BUTYL PHTHALATE					
DI-N-BUTYL PHTHALATE	3.6	12.40			
DI-N-OCTYL PHTHALATE					
DIETHYL PHTHALATE					
DIMETHYL PHTHALATE					
BENZO(A)ANTHRACENE	24.1	99.58			
BENZO(A)PYRENE	17.9	73.96			
BENZO(B)FLUORANTHENE }					
BENZO(K)FLUORANTHENE }	28.7	118.63			
CHRYSENE	17.3	71.48			
ACENAPHTHYLENE	1.0	4.20			
ANTHRACENE	15.9	65.70			
BENZO(GHI)PERYLENE	8.6	35.54			
FLUORENE	14.6	60.33			
PHENANTHRENE	65.8	271.80			
DIBENZO(AH)ANTHRACENE	3.2	13.22			
INDENO(123-CD)PYRENE	8.2	33.88			
PYRENE	38.8	160.32			
NON-PRIORITY POLLUTANTS					
BENZOIC ACID					
2-METHYLPHENOL					
4-METHYLPHENOL					
2,4,5-TRICHLOROPHENOL					
2-METHYLNAPHTHALENE	5.5	22.86			
ANILINE					
BENZYL ALCOHOL					
4-CHLOROANILINE					
DIBENZOFURAN	8.7	35.95			
2-NITROANILINE					
3-NITROANILINE					
4-NITROANILINE					
Approximate DETECTION LIMIT	0.5ng	2µg/g			

	(1) (mg/µL)	(1) (µg/g)	(2) (mg/µL)	(2) (µg/g)
Carbazole				
4-Hydroxybiphenyl				
1-Naphthylamine				
Acridine	17.8	73.55	19.07	78.8
1,2,3-Trimethylbenzene				
Quinoline				
2,3,5-Trimethylphenol				
3-Methyl-cholanthrene				
7,12-Dimethylbenz(a)anthracene				
1-Naphthol				
2,3,4-Trichlorophenol				
2,3,4,5-Tetrachlorophenol				
4-Aminobiphenyl				
Thiophene	NA			
13H-Dibenzo(a,i)carbazole				

Field Surrogates	Percent Recovery	
Acenaphthene-d_{10}		
Pyrene-D_{10}		
Perylene-d_{12}		
Naphthalene-d_8		
Phenol-d_5		
Carbazole-d_3		
Benzo(a)pyrene-d_{12}		
2-Naphthylamine-d_7		
Quinoline-d_7	17.9	90
Dibenzo(a,h)anthracene-d_{12}		
1,2-Benz(a)anthracene-d_{12}	NS	

Laboratory Surrogatges	Percent Recovery	
Naphthol-d_7		
Acridine-d_9	18.7	94
Pyridine-d_5	NA	
Chrysene-d_{12}		
Fluoranthene-d_{10}		
Benzo(e)pyrene-d_{12}		

NA - Not able to see by GC/MS

NS - not spiked

NA* - Not present in GCMS standard

Table 2. Compounds Identified in the Tar Sample, Base Fraction

Scan Number	Compound Identification	Approximate Concentration (μg/g)
992	Naphthalene	20.04; a
1241	2-Methyl-naphthalene	17.64; a
1276	Methyl-quinoline	25.70
1468	Dimethyl-naphthalene	9.55
1616	Acenaphthene	35.82; a
1675	Dibenzofuran	30.99; a
1796	Fluorene	64.83; a
1867	Dimethyl-biphenyl (?)	15.66
1888	$C_{13}H_{10}O$	18.22
1996	Methyl-fluorene	13.35
2125	Phenanthrene	a
2138	Anthracene	91.73;a
2153	Acridine + Acridine-d_9	125.08
2159	Acridine	a
2244,2246	$C_{14}H_{11}N$ (N-containing PAH; methyl substituted)	39.79
2289	Alcohol or Alkene	9.88
2307	Methyl-phenanthrene	54.50
2344	Methyl-phenanthrene	29.83
2426	Phenyl-naphthalene	25.12
2514	Dimethyl-naphthalene	20.00

a - See also data form

Table 2. Compounds Identified in the Tar Sample, Base Fraction (Continued)

Scan Number	Compound Identification	Approximate Concentration (μg/g)
2544	Fluoranthene	225.77
2571	$C_{15}H_9N$ (N-containing PAH)	13.43
2587	Alkene	691.46
2595	Alkene + $C_{15}H_9N$	151.40
2614	Pyrene	125.78
2623	Aliphatic Compound + PAH (m/z 204, 220?)	10.74
2676	$C_{15}H_9N$ (N-containing PAH)	90.74
2752	$C_{17}H_{12}$ (methyl-pyrene)	51.90
2778	$C_{17}H_{12}$ (methyl-pyrene)	48.59
2966	$C_{16}H_{10}S$	24.83
2997	$C_{18}H_{14}$ (Dimethyl-pyrene)	58.84
3056	Benzo(a)anthracene	186.69
3067	Chrysene	46.82
3160	$C_{18}H_{13}N$ (methyl-substituted N-containing PAH)	25.66
3219	Bis(2-ethylhexyl)phthalate	a
3420	Benzo(k)fluoranthene	111.15
3535	N-containing PAH (MW 253?) + unknown (m/z 69, 81)	93.80
3601	N-containing PAH (MW 267?)	25.37
3881	Dibenzo(a,h)anthracene-d_{14} + N-containing PAH (MW 321)	31.40
3908	N-containing PAH ($C_{19}H_{22}ON_2$; MW 294)	84.71

a - See also data form

PRIORITY POLLUTANT BNA'S	Conc (ng/µL)	Conc (µg/g)	Conc (ng/µL)		
ACENAPHTHENE a	147.1	6,180			
BENZIDINE	NA*				
1,2,4-TRICHLOROBENZENE					
HEXACHLOROBENZENE					
HEXACHLOROETHANE					
BIS(2-CHLOROETHYL)ETHER					
2-CHLORONAPHTHALENE					
2,4,6-TRICHLOROPHENOL					
P-CHLORO-M-CRESOL					
2-CHLOROPHENOL					
1,2-DICHLOROBENZENE					
1,3-DICHLOROBENZENE					
1,4-DICHLOROBENZENE					
3,3-DICHLOROBENZIDINE	NA*				
2,4-DICHLOROPHENOL					
2,4-DIMETHYLPHENOL					
2,4-DINITROTOLUENE					
2,6-DINITROTOLUENE					
1,2-DIPHENYLHYDRAZINE	NA				
FLUORANTHENE	334.9	13,840			
4-CHLOROPHENYL PHENYL ETHER					
4-BROMOPHENYL PHENYL ETHER					
BIS(2-CHLOROISOPROPYL) ETHER					
BIS(2-CHLOROETHOXY) METHANE					
HEXACHLOROBUTADIENE					
HEXACHLOROCYCLOPENTADIENE					
ISOPHORONE					
NAPHTHALENE a	173.5	7,170			
NITROBENZENE					
2-NITROPHENOL					
4-NITROPHENOL					
2,4-DINITROPHENOL					
4,6-DINITRO-2-METHYLPHENOL					
N-NITROSODIMETHYL AMINE					
N-NITROSODIPHENYLAMINE					
N-NITROSODIPROPYLAMINE					
PENTACHLOROPHENOL					
PHENOL					
BIS(2-ETHYLHEXYL) PHTHALATE	9.1	376.0			

(1) internal standard calibration with phenanthrene-d_{10} as internal std

(2) isotope dilution

DI-N-BUTYL PHTHALATE	2.4	99.2			
DI-N-OCTYL PHTHALATE					
DIETHYL PHTHALATE					
DIMETHYL PHTHALATE					
BENZO(A)ANTHRACENE					
BENZO(A)PYRENE	170.3	7,040			
BENZO(B)FLUORANTHENE }	163.4	6,750			
BENZO(K)FLUORANTHENE }					
CHRYSENE	183.5	7,580			
ACENAPHTHYLENE	26.3	1,090			
ANTHRACENE	80.5	3,330			
BENZO(GHI)PERYLENE	95.8	3,960			
FLUORENE a	178.9	7,390			
PHENANTHRENE	441.2	18,230			
DIBENZO(AH)ANTHRACENE	30.8	1,270			
INDENO(123-CD)PYRENE	94.9	3,920			
PYRENE	270.5	11,180			
NON-PRIORITY POLLUTANTS					
BENZOIC ACID					
2-METHYLPHENOL					
4-METHYLPHENOL					
2,4,5-TRICHLOROPHENOL					
2-METHYLNAPHTHALENE or 1-methyl	149.6	6,180			
ANILINE					
BENZYL ALCOHOL					
4-CHLOROANILINE					
DIBENZOFURAN a	133.9	5530			
2-NITROANILINE					
3-NITROANILINE					
4-NITROANILINE					
approximate DETECTION LIMIT	0.5 ng/μL	20 μg/g			

Carbazole		
4-Hydroxybiphenyl		
1-Naphthylamine		
Acridine		
1,2,3-Trimethylbenzene	3.9	161.2
Quinoline		
2,3,5-Trimethylphenol		
3-Methyl-cholanthrene		
7,12-Dimethylbenz(a)anthracene		
1-Naphthol		
2,3,4-Trichlorophenol		
2,3,4,5-Tetrachlorophenol		
4-Aminobiphenyl		
Thiophene	NA	
13H-Dibenzo(a,i)carbazole		

Field Surrogates	Percent Recovery	
Acenaphthene-d_{10}	2.3	115
Pyrene-D_{10}	3.1	155
Perylene-d_{12}	0.5	25
Naphthalene-d_8	2.5	125
Phenol-d_5	--	--
Carbazole-d_3	2.9	145
Benzo(a)pyrene-d_{12}	0.4	20
2-Naphthylamine-d_7	--	--
Quinoline-d_7	--	--
Dibenzo(a,h)anthracene-d_{12}	NA	--
1,2-Benz(a)anthracene-d_{12}	NS	--

Laboratory Surrogatges	Percent Recovery	
Naphthol-d_7	--	--
Acridine-d_9	--	--
Pyridine-d_5	NA	--
Chrysene-d_{12}	1.1	55
Fluoranthene-d_{10}	2.2	110
Benzo(e)pyrene-d_{12}	NA	--

a/quantitation done by external Std. Calibration using secondary ions. See attached Chromatograms

NA - Not able to see by GC/MS

NS - not Spiked

NA* - not present in GC/MS Std

Table 3. Approximate Concentrations of Compounds Identified in the Tar Sample, Neutral Fraction

Scan Number	Compound Identification	Approximate Concentration (μg/g)
452	C_3-Alkyl-benzene	74.9
468	C_3-Alkyl-benzene	57.3
536	C_3-Alkyl-benzene	197.3
572	Alkane	P
613	C_3-Alkyl-benzene	44.0
645	C_9H_{10} (Propenyl benzene)	256.6
664	C_9H_8 (Indene)	104.3
669	C_9H_8 (Indene)	70.8
715	C_4-Alkyl-benzene	31.8
721	C_4-Alkyl-benzene	29.2
766	C_4-Alkyl-benzene	68.4
782	C_4-Alkyl-benzene + $C_{10}H_{12}$	141.3
812	$C_{10}H_{12}$ (Dimethyl-ethenyl-benzene or Methyl-propenyl-benzene)	53.9
823	C_9H_8O[a]	33.9
839	Alkane	244.3
856	C_4-Alkyl-benzene	30.4
869	C_4-Alkyl-benzene	90.2
908	$C_{10}H_{12}$ (Dihydro-methyl-indene)	198.6
912	$C_{10}H_{12}$ (Dihydro-methyl-indene)	
934	$C_{10}H_{12}$[a] + $C_{10}H_{10}$	413.2

a - See library display of 3 best fits.
b - See also data form.
P - Present but not quantitated.

Table 3. Approximate Concentrations of Compounds Identified in the Tar Sample, Neutral Fraction (Continued)

Scan Number	Compound Identification	Approximate Concentration (μg/g)
1010	Naphthalene	6,210; b
1027	Dibenzothiopehene	244.4
1080	Alkane	465.5
1112	Alkane	241.7
1244	Alkane	4,140
1259	2-Methyl-naphthalene	6,970; b
1292	1-Methyl-naphthalene	5,470
1300	Alkane + 1-Methyl-naphthalene	
1438	Biphenyl	2,730
1457	Alkane + C_2-Alkyl-naphthalene	1,680
1462	C_2-Alkyl-naphthalene	
1484	C_2-Alkyl-naphthalene	4,380
1517	C_2-Alkyl-naphthalene	6,210
1531	$C_{12}H_{10}$[a]	118.1
1552	C_2-Alkyl-naphthalene	2,120
1562	Acenaphthylene	471.8; b
1577	C_2-Alkyl-naphthalene	878.7
1624	Acenaphthene + Alkane	7,710
1633	Acenaphthene	7,850; b
1646	$C_{13}H_{12}$ (Methyl-biphenyl or 1,1'-Methylene bis-benzene)	771.9

a - See library display of 3 best fits.
b - See also data form.
P - Present but not quantitated.

Table 3. Approximate Concentrations of Compounds Identified in the Tar Sample, Neutral Fraction (Continued)

Scan Number	Compound Identification	Approximate Concentration (μg/g)
1661	$C_{13}H_{12}$ (Methyl-biphenyl)	346.7
1677	C_3-Alkyl-naphthalene	75.7
1687	Dibenzofuran + N-containing PAH (MW 153?)	6,590; b
1693	Dibenzofuran	
1695	Alkane + Dibenzofuran	
1715	C_3-Alkyl-naphthalene	543.5
1722	C_3-Alkyl-naphthalene	1,200
1729	C_3-Alkyl-naphthalene	
1752, 1756	C_3-Alkyl-naphthalene	1,980
1776, 1784	Phenalene + C_3-Alkyl-naphthalene	1,410
1813	Fluorene	9,320; b
1853	$C_{14}H_{12}$[a]	5,420
1882	Methyl-dibenzofuran	2,710
1904	Methyl-dibenzofuran	2,840
1961	Alkane	247.8
1977	$C_{14}H_{12}$ (dihydro-phenanthrene) + C_4-Alkyl-naphthalene	729.3
2015	$C_{14}H_{12}$[a]	1,140
2058	Alkane + Methyl-phenanthrene	261.3
2093	Dibenzothiophene	3,110
2151	Phenanthrene	12,120; b
2164	Anthracene	3,410; b

a - See library display of 3 best fits.
b - See also data form.
P - Present but not quantitated.

Table 3. Approximate Concentrations of Compounds Identified in the Tar Sample, Neutral Fraction (Continued)

Scan Number	Compound Identification	Approximate Concentration (μg/g)
2210	Alkane + Unknown (MW 204?)	256.8
2330	$C_{15}H_{12}$ (Methyl-phenanthrene)	4,830
2354, 2367	Cyclopentaphenanthrene + Methyl-phenanthrene	9,580
2444	Phenyl-naphthalene	2,520
2502	C_2-Alkyl-phenanthrene	150.1
2575	Fluoranthrene	11,520; b
2642	Pyrene	18,300; b
2775	$C_{17}H_{12}$[a]	4,780
2796	$C_{17}H_{12}$ (?)	4,960
2803	$C_{17}H_{12}$	
3087, 3100	Chrysene	11,550; b
3236	Bis(2-ethylhexyl)phthalate +	2,090
	$C_{19}H_{14}$ (methyl-chrysene?)	
3238	$C_{19}H_{14}$[a]	
3251	$C_{19}H_{14}$	1,120

a - See library display of 3 best fits.
b - See also data form.
P - Present but not quantitated.

Table 3. Approximate Concentrations of Compounds Identified in the Tar Sample, Neutral Fraction (Continued)

Scan Number	Compound Identification	Approximate Concentration (μg/g)
3454	$C_{20}H_{12}$[a]	9,290; b
3508	$C_{20}H_{12}$	P
3522	$C_{20}H_{12}$	1,120
3534	$C_{20}H_{12}$	6,520
3546	$C_{20}H_{12}$	4,220
3550	$C_{20}H_{12}$	
3561	$C_{20}H_{12}$	P
3588	$C_{21}H_{14}$ (Methyl-benzofluoranthene or Methyl-benzopyrene)	539.3
3625	$C_{21}H_{14}$ PAH	1,830
3839	$C_{22}H_{14}$ PAH + $C_{22}H_{12}$ PAH	248.4
3857	Indeno(1,2,3-Cd)pyrene	981.4; b
3877	Dibenzo(a,h)anthracene	190.9; b
3901	$C_{22}H_{14}$ PAH + $C_{22}H_{12}$ PAH	354.4
3923	Benzo(g,h,i)perylene	3,000; b
3973	$C_{22}H_{12}$ PAH	1,670

a - See library display of 3 best fits.
b - See also data form.
P - Present but not quantitated.

Note: Quantitation was also attempted using phenanthrene-d_{10} as internal standard. Concentration values almost identical. Estimated area of phenanthrene-d_{10} is 229464 vs area of terphenyl-d_{14} is 253138.

3/19/85
N.

ACUREX Corporation

Energy & Environmental Division

Mr. Paul Bitter
U.S. Environmental Protection Agency
SHR-13
230 Dearborne Street
Chicago, IL 60604

March 19, 1985
Acurex ID#: 8412-011
Project: SAS 1141E

Subject: Results of GC/MS Analyses for Well SLP-15; Cartridge Extracts

Enclosed please find the results of the GC/MS analyses for well SLP-15. The well was sampled on December 5, 1984 in duplicate; the two samples are identified as SLP-15A ($V_{sampled}$ = 16.9 L) and SLP-15B ($V_{sampled}$ = 19.2 L). Analyses were performed as specified in SAS 1141E protocol with various modifications identified in Acurex's letter dated January 3, 1985. The following is a list of deliverables:

1. DFTPP (form, plot, list format) for 1/25/85 and 1/27/85.

2. Solvent blanks for 1/25/85 and 1/17/85 (RIC; diagnostic report; quantitation report)

3. GC/MS standards for 1/25/85 and 1/27/85 (RIC; RT diagnostic report; RP diagnostic report; RT quantitation report; RP quantitation report; calibration check forms)

4. Concentration data for 8412-011-1 -- Well SLP-15A, cartridge extract (data form; Table 1; RIC; RT diagnostic report; RP diagnostic report, RT quantitation report; RP quantitation report; quantitation report for other compounds found in sample; spectra: enhanced, unenhanced, library display of 3 best fits (pages 1 through 288); peak areas.

5. Concentration data for 8412-011-2 -- Well SLP-15B, cartridge extract (data form; Table 2; RIC; RT diagnostic report; RP diagnostic report, RT quantitation report; RP quantitation report; quantitation report for other compounds found in sample; spectra: enhanced, unenhanced, library display of 3 best fits (pages 1 through 369); peak areas.

6. Concentration data for 8412-010-7--Method blank for Well SLP-15 and Well SLP-8 (data form, RIC; RT diagnostic report, RP diagnostic report, RT quantitation report; quantitation report for other compounds found on method blank; spectra (enhanced, unenhanced, library display of 3 best fits (pages 1 through 129); peak areas.

555 Clyde Avenue, P.O. Box 7555, Mountain View, CA 94039 (415) 964-3200 Telex: 34-6391 TWX: 910-7796593

7. Chain of custody forms.

Sincerely,

Viorica Lopez-Avila, Ph.D.
Technical Director

VLA/ats

Enclosures

cc: Dr. Brenda Kimble
Amphion Associates

Linda Haas Boynton
Sample Management Office

Data Audit Staff
EMSL - Las Vegas

Curtis Ross
EPA Region V

These results were obtained using accepted laboratory practices; the liability of Acurex Corporation shall not exceed the amount paid for this report. In no event shall Acurex be liable for special or consequential damages.

51?-15A Corrected for laboratory contamination
To correct for blank we have used method
blank 8412-010-7 • YLA

PRIORITY POLLUTANT BNA'S	Conc (mg/mL)	(1) Conc (µg/L)	(mg/mL)	(2) Conc (µg/L)
ACENAPHTHENE	11.0	1.30	19.08	2.26
BENZIDINE	NA*			
1,2,4-TRICHLOROBENZENE				
HEXACHLOROBENZENE				
HEXACHLOROETHANE				
BIS(2-CHLOROETHYL)ETHER				
2-CHLORONAPHTHALENE				
2,4,6-TRICHLOROPHENOL				
P-CHLORO-M-CRESOL				
2-CHLOROPHENOL				
1,2-DICHLOROBENZENE				
1,3-DICHLOROBENZENE				
1,4-DICHLOROBENZENE				
3,3-DICHLOROBENZIDINE	NA*			
2,4-DICHLOROPHENOL				
2,4-DIMETHYLPHENOL				
2,4-DINITROTOLUENE				
2,6-DINITROTOLUENE				
1,2-DIPHENYLHYDRAZINE	NA			
FLUORANTHENE	3.65	0.43	4.18	0.49
4-CHLOROPHENYL PHENYL ETHER				
4-BROMOPHENYL PHENYL ETHER				
BIS(2-CHLOROISOPROPYL) ETHER				
BIS(2-CHLOROETHOXY) METHANE				
HEXACHLOROBUTADIENE				
HEXACHLOROCYCLOPENTADIENE				
ISOPHORONE				
NAPHTHALENE				
NITROBENZENE				
2-NITROPHENOL				
4-NITROPHENOL				
2,4-DINITROPHENOL				
4,6-DINITRO-2-METHYLPHENOL				
N-NITROSODIMETHYL AMINE				
N-NITROSODIPHENYLAMINE				
N-NITROSODIPROPYLAMINE				
PENTACHLOROPHENOL				
PHENOL				
BIS(2-ETHYLHEXYL) PHTHALATE				

(1) internal standard calibration with phenanthrene-d_{10} as internal std
(2) isotope dilution

SI-15A Corrected for laboratory contamination VLA

BENZYL BUTYL PHTHALATE				
DI-N-BUTYL PHTHALATE				
DI-N-OCTYL PHTHALATE				
DIETHYL PHTHALATE				
DIMETHYL PHTHALATE				
BENZO(A)ANTHRACENE				
BENZO(A)PYRENE				
BENZO(B)FLUORANTHENE				
BENZO(K)FLUORANTHENE				
CHRYSENE				
ACENAPHTHYLENE	5.87	0.69		
ANTHRACENE	0.93	0.11		
BENZO(GHI)PERYLENE				
FLUORENE	9.49	1.12		
PHENANTHRENE	0.18	0.02		
DIBENZO(AH)ANTHRACENE				
INDENO(123-CD)PYRENE				
PYRENE	3.36	0.40	3.73	0.44
NON-PRIORITY POLLUTANTS				
BENZOIC ACID				
2-METHYLPHENOL				
4-METHYLPHENOL				
2,4,5-TRICHLOROPHENOL				
2-METHYLNAPHTHALENE				
ANILINE				
BENZYL ALCOHOL				
4-CHLOROANILINE				
DIBENZOFURAN	6.53	0.77		
2-NITROANILINE				
3-NITROANILINE				
4-NITROANILINE				
approximate DETECTION LIMIT	0.1-0.5	0.01-0.06		
	mg/µL	µg/L		

SLP - A Corrected for laboratory contamination

Carbazole	
4-Hydroxybiphenyl	
1-Naphthylamine	
Acridine	
1,2,3-Trimethylbenzene	
Quinoline	
2,3,5-Trimethylphenol	
3-Methyl-cholanthrene	
7,12-Dimethylbenz(a)anthracene	
1-Naphthol	
2,3,4-Trichlorophenol	
2,3,4,5-Tetrachlorophenol	
4-Aminobiphenyl	
Thiophene	NA
13H-Dibenzo(a,i)carbazole	

Field Surrogates	Percent Recovery	
Acenaphthene-d_{10}	14.5	58
Pyrene-D_{10}	22.5	90
Perylene-d_{12}	28.8	115
Naphthalene-d_8	13.8	55
Phenol-d_5	7.37	29
Carbazole-d_3	18.9	76
Benzo(a)pyrene-d_{12}	27.04	108
2-Naphthylamine-d_7	ND	--
Quinoline-d_7	ND	--
Dibenzo(a,h)anthracene-d_{12}	13.10	52
1,2-Benz(a)anthracene-d_{12}	NS	--

Laboratory Surrogatges	Percent Recovery	
Naphthol-d_7	9.81	39
Acridine-d_9	19.7	79
Pyridine-d_5	NA	--
Chrysene-d_{12}	24.7	99
Fluoranthene-d_{10}	21.9	88
Benzo(e)pyrene-d_{12}	27.78	111

NA - Not able to see by GC/MS

NA* - Not present in GCMS Standard

NS - not spiked

SLP-15A. No corrected for laboratory contamination yet

PRIORITY POLLUTANT BNA'S	conc (mg/mL)	conc (µg/L)	conc (mg/mL)	conc (µg/L)	
ACENAPHTHENE	11.0	1.30	19.08	2.26	
BENZIDINE	NA*				
1,2,4-TRICHLOROBENZENE					
HEXACHLOROBENZENE					
HEXACHLOROETHANE					
BIS(2-CHLOROETHYL)ETHER					
2-CHLORONAPHTHALENE					
2,4,6-TRICHLOROPHENOL					
P-CHLORO-M-CRESOL					
2-CHLOROPHENOL					
1,2-DICHLOROBENZENE					
1,3-DICHLOROBENZENE					
1,4-DICHLOROBENZENE					
3,3-DICHLOROBENZIDINE	NA*				
2,4-DICHLOROPHENOL					
2,4-DIMETHYLPHENOL					
2,4-DINITROTOLUENE					
2,6-DINITROTOLUENE					
1,2-DIPHENYLHYDRAZINE	NA				
FLUORANTHENE	3.65	0.43	4.18	0.49	
4-CHLOROPHENYL PHENYL ETHER					
4-BROMOPHENYL PHENYL ETHER					
BIS(2-CHLOROISOPROPYL) ETHER					
BIS(2-CHLOROETHOXY) METHANE					
HEXACHLOROBUTADIENE					
HEXACHLOROCYCLOPENTADIENE					
ISOPHORONE					
NAPHTHALENE					
NITROBENZENE					
2-NITROPHENOL					
4-NITROPHENOL					
2,4-DINITROPHENOL					
4,6-DINITRO-2-METHYLPHENOL					
N-NITROSODIMETHYL AMINE					
N-NITROSODIPHENYLAMINE					
N-NITROSODIPROPYLAMINE					
PENTACHLOROPHENOL					
PHENOL					
BIS(2-ETHYLHEXYL) PHTHALATE	3.39	0.40			

(1) internal standard calibration with phenanthrene-d_{10} as internal std.
(2) isotope dilution

SLP-15A : Not corrected for laboratory contamination VLA

DI-N-BUTYL PHTHALATE	1.11	0.13			
DI-N-OCTYL PHTHALATE	0.12	0.01			
DIETHYL PHTHALATE					
DIMETHYL PHTHALATE					
BENZO(A)ANTHRACENE					
BENZO(A)PYRENE					
BENZO(B)FLUORANTHENE					
BENZO(K)FLUORANTHENE					
CHRYSENE					
ACENAPHTHYLENE	5.87	0.69			
ANTHRACENE	0.93	0.11			
BENZO(GHI)PERYLENE					
FLUORENE	9.49	1.12			
PHENANTHRENE	0.18	0.02			
DIBENZO(AH)ANTHRACENE					
INDENO(123-CD)PYRENE					
PYRENE	3.36	0.40	3.73	0.44	
NON-PRIORITY POLLUTANTS					
BENZOIC ACID					
2-METHYLPHENOL					
4-METHYLPHENOL					
2,4,5-TRICHLOROPHENOL					
2-METHYLNAPHTHALENE					
ANILINE					
BENZYL ALCOHOL					
4-CHLOROANILINE					
DIBENZOFURAN	6.53	0.77			
2-NITROANILINE					
3-NITROANILINE					
4-NITROANILINE					
approximate DETECTION LIMIT	0.1-0.5 ng/µL	0.01-0.05 µg/L			

SLP-15A Vi corrected for laboratory contamination

	(mg/µL)	(µg/L)	(mg/µL)	(µg/L)
Carbazole	0.33	0.04	0.44	0.05
4-Hydroxybiphenyl				
1-Naphthylamine				
Acridine				
1,2,3-Trimethylbenzene				
Quinoline				
2,3,5-Trimethylphenol				
3-Methyl-cholanthrene				
7,12-Dimethylbenz(a)anthracene				
1-Naphthol				
2,3,4-Trichlorophenol				
2,3,4,5-Tetrachlorophenol				
4-Aminobiphenyl				
Thiophene	NA			
13H-Dibenzo(a,i)carbazole				

Field Surrogates	Percent Recovery	
Acenaphthene-d_{10}	14.5	58
Pyrene-D_{10}	22.5	90
Perylene-d_{12}	28.8	115
Naphthalene-d_8	13.8	55
Phenol-d_5	7.37	29
Carbazole-d_3	18.9	76
Benzo(a)pyrene-d_{12}	27.04	108
2-Naphthylamine-d_7	ND	--
Quinoline-d_7	ND	--
Dibenzo(a,h)anthracene-d_{14}	13.10	52
1,2-Benz(a)anthracene-d_{12}	NS	--

Laboratory Surrogatges	Percent Recovery	
Naphthol-d_7	9.81	39
Acridine-d_9	19.7	79
Pyridine-d_5	NA	--
Chrysene-d_{12}	24.7	99
Fluoranthene-d_{10}	21.9	88
Benzo(e)pyrene-d_{12}	27.78	111

NA - Not able to see by GC/MS

NA* - Not present in GCMS standard

NS - not spiked

Table 1. Approximate Concentrations of Compounds Identified in Well SLP 15A (resin cartridge)

Scan Number	Compound Identification	Approximate Concentration (μg/L)
333	Alkane	0.12
354	$C_6H_{12}O_2$[a]	P
362	$C_6H_{12}O_2$[a,b]	5.01
762	C_9H_{10}[a]	0.78
767	Alkane	P
884	$C_{10}H_{12}$[a]	0.05
921	C_9H_8O[a]	0.04
1028	$C_{10}H_{12}$[a]	0.18
1039	$C_{10}H_{10}$[a]	0.15
1119	Dibenzothiophene	0.66
1518	Biphenyl	0.29
1635	C_2-Alkyl-naphthalene	0.03
1927	$C_{13}H_{12}$[a]	0.17
1939	$C_{13}H_{12}$[a]	0.08
2095	$C_{14}H_{12}$[a]	0.06
2384	Alkene	0.51
2416	Alcohol	0.93

a - See library display of 3 best fits.

b - Compound present in blank also.

P - present but not quantitated (conc < 0.5 μg/L)

Table 1. Approximate Concentrations of Compounds Identified in Well SLP 15A (resin cartridge) (Continued)

Scan Number	Compound Identification	Approximate Concentration (μg/L)
2534	Alkene	0.09
2598	Sulfur	0.14
2681	Alkene[b]	27.12
2689, 2692		
2961	Alkene	0.35
3136	Azelate ester[b]	0.84
3491	Alkane	0.10
3708	Alkane	0.33
3813	Alkane	0.17
3914	Alkane	0.16

a - See library display of 3 best fits.

b - Compound present in blank also.

SLP-1513 Corrected for laboratory contamination

To correct for blank we have used method blank

8412-010-7

PRIORITY POLLUTANT BNA'S	conc (mg/mL)	conc (µg/L)	conc (mg/mL)	conc (µg/L)	V=19.2L
ACENAPHTHENE	10.79	1.12	22.32	2.33	
BENZIDINE	NA+				
1,2,4-TRICHLOROBENZENE					
HEXACHLOROBENZENE					
HEXACHLOROETHANE					
BIS(2-CHLOROETHYL)ETHER					
2-CHLORONAPHTHALENE					
2,4,6-TRICHLOROPHENOL					
P-CHLORO-M-CRESOL					
2-CHLOROPHENOL					
1,2-DICHLOROBENZENE					
1,3-DICHLOROBENZENE					
1,4-DICHLOROBENZENE					
3,3-DICHLOROBENZIDINE	NA+				
2,4-DICHLOROPHENOL					
2,4-DIMETHYLPHENOL					
2,4-DINITROTOLUENE					
2,6-DINITROTOLUENE					
1,2-DIPHENYLHYDRAZINE	NA				
FLUORANTHENE	3.50	0.36	5.05	0.53	
4-CHLOROPHENYL PHENYL ETHER					
4-BROMOPHENYL PHENYL ETHER					
BIS(2-CHLOROISOPROPYL) ETHER					
BIS(2-CHLOROETHOXY) METHANE					
HEXACHLOROBUTADIENE					
HEXACHLOROCYCLOPENTADIENE					
ISOPHORONE					
NAPHTHALENE	0.15	0.02	0.32	0.03	
NITROBENZENE					
2-NITROPHENOL					
4-NITROPHENOL					
2,4-DINITROPHENOL					
4,6-DINITRO-2-METHYLPHENOL					
N-NITROSODIMETHYL AMINE					
N-NITROSODIPHENYLAMINE					
N-NITROSODIPROPYLAMINE					
PENTACHLOROPHENOL					
PHENOL	0.39	0.04	1.33	0.14	
BIS(2-ETHYLHEXYL) PHTHALATE					

(1) internal standard calibration with phenanthrene-d_{10} as internal std

(2) isotope dilution

SLP-15B corrected for laboratory contamination VLA

BENZYL BUTYL PHTHALATE				
DI-N-BUTYL PHTHALATE				
DI-N-OCTYL PHTHALATE				
DIETHYL PHTHALATE	0.47	0.05		
DIMETHYL PHTHALATE				
BENZO(A)ANTHRACENE	0.11	0.01		
BENZO(A)PYRENE				
BENZO(B)FLUORANTHENE				
BENZO(K)FLUORANTHENE				
CHRYSENE	0.08	0.01	0.12	0.01
ACENAPHTHYLENE	5.96	0.62		
ANTHRACENE	1.05	0.11		
BENZO(GHI)PERYLENE				
FLUORENE	10.0	1.04		
PHENANTHRENE	0.20	0.02		
DIBENZO(AH)ANTHRACENE				
INDENO(123-CD)PYRENE				
PYRENE	2.97	0.31	4.27	0.44
NON-PRIORITY POLLUTANTS				
BENZOIC ACID				
2-METHYLPHENOL				
4-METHYLPHENOL				
2,4,5-TRICHLOROPHENOL				
2-METHYLNAPHTHALENE				
ANILINE				
BENZYL ALCOHOL				
4-CHLOROANILINE				
DIBENZOFURAN	6.65	0.69		
2-NITROANILINE				
3-NITROANILINE				
4-NITROANILINE				
Approximate DETECTION LIMIT	0.1-0.5 mg/µL	0.01-0.05 µg/L		

Correct for laboratory contamination YLA

Si 15B

	Conc (mg/µL)	Conc (µg/L)	Conc (mg/µL)	Conc (µg/L)
Carbazole				
4-Hydroxybiphenyl	0.21	0.02		
1-Naphthylamine				
Acridine	0.17	0.02	0.25	0.03
1,2,3-Trimethylbenzene				
Quinoline				
2,3,5-Trimethylphenol				
3-Methyl-cholanthrene				
7,12-Dimethylbenz(a)anthracene				
1-Naphthol				
2,3,4-Trichlorophenol				
2,3,4,5-Tetrachlorophenol				
4-Aminobiphenyl				
Thiophene	NA			
13H-Dibenzo(a,i)carbazole				

Field Surrogates	Percent Recovery	
Acenaphthene-d_{10}	12.1	48
Pyrene-D_{10}	17.4	70
Perylene-d_{12}	18.6	74
Naphthalene-d_8	11.6	46
Phenol-d_5	7.6	30
Carbazole-d_3	16.6	66
Benzo(a)pyrene-d_{12}	15.7	63
2-Naphthylamine-d_7	NA	--
Quinoline-d_7	ND	--
Dibenzo(a,h)anthracene-d_{12}	15.8	63
1,2-Benz(a)anthracene-d_{12}	NS	

Laboratory Surrogatges	Percent Recovery	
Naphthol-d_7	4.96	20
Acridine-d_9	16.8	67
Pyridine-d_5	NA	--
Chrysene-d_{12}	17.1	68
Fluoranthene-d_{10}	17.4	70
Benzo(e)pyrene-d_{12}	19.8	79

NA - Not able to see by GC/MS

NS - not spiked

NA* - not present in GC/MS std

TRAVELER _____

PRIORITY POLLUTANT BNA'S	conc (mg/mL)	conc (µg/L)	conc (mg/mL)	conc (µg/L)
ACENAPHTHENE	10.79	1.12	22.32	2.33
BENZIDINE	NA*			
1,2,4-TRICHLOROBENZENE				
HEXACHLOROBENZENE				
HEXACHLOROETHANE				
BIS(2-CHLOROETHYL)ETHER				
2-CHLORONAPHTHALENE				
2,4,6-TRICHLOROPHENOL				
P-CHLORO-M-CRESOL				
2-CHLOROPHENOL				
1,2-DICHLOROBENZENE				
1,3-DICHLOROBENZENE				
1,4-DICHLOROBENZENE				
3,3-DICHLOROBENZIDINE	NA*			
2,4-DICHLOROPHENOL				
2,4-DIMETHYLPHENOL				
2,4-DINITROTOLUENE				
2,6-DINITROTOLUENE				
1,2-DIPHENYLHYDRAZINE	NA			
FLUORANTHENE	3.50	0.36	5.05	0.53
4-CHLOROPHENYL PHENYL ETHER				
4-BROMOPHENYL PHENYL ETHER				
BIS(2-CHLOROISOPROPYL) ETHER				
BIS(2-CHLOROETHOXY) METHANE				
HEXACHLOROBUTADIENE				
HEXACHLOROCYCLOPENTADIENE				
ISOPHORONE				
NAPHTHALENE	0.15	0.02	0.32	0.03
NITROBENZENE				
2-NITROPHENOL				
4-NITROPHENOL				
2,4-DINITROPHENOL				
4,6-DINITRO-2-METHYLPHENOL				
N-NITROSODIMETHYL AMINE				
N-NITROSODIPHENYLAMINE				
N-NITROSODIPROPYLAMINE				
PENTACHLOROPHENOL				
PHENOL	0.39	0.04	1.33	0.14
BIS(2-ETHYLHEXYL) PHTHALATE	2.39	0.25		

VLA

C-15B Not: corrected for laboratory contamination

(1) internal standard calibration with phenanthrene-d_{10} as internal std

(2) isotope dilution

SLP-15B Not corrected for laboratory contamination VLA

BENZYL BUTYL				
DI-N-BUTYL PHTHALATE	0.67	0.07		
DI-N-OCTYL PHTHALATE				
DIETHYL PHTHALATE	0.57	0.06		
DIMETHYL PHTHALATE				
BENZO(A)ANTHRACENE	0.11	0.01		
BENZO(A)PYRENE				
BENZO(B)FLUORANTHENE				
BENZO(K)FLUORANTHENE				
CHRYSENE	0.08	0.01	0.12	0.01
ACENAPHTHYLENE	5.96	0.62		
ANTHRACENE	1.05	0.11		
BENZO(GHI)PERYLENE				
FLUORENE	10.0	1.04		
PHENANTHRENE	0.20	0.02		
DIBENZO(AH)ANTHRACENE				
INDENO(123-CD)PYRENE				
PYRENE	2.97	0.31	4.27	0.44
NON-PRIORITY POLLUTANTS				
BENZOIC ACID				
2-METHYLPHENOL				
4-METHYLPHENOL				
2,4,5-TRICHLOROPHENOL				
2-METHYLNAPHTHALENE				
ANILINE				
BENZYL ALCOHOL				
4-CHLOROANILINE				
DIBENZOFURAN	6.65	0.69		
2-NITROANILINE				
3-NITROANILINE				
4-NITROANILINE				
Approximate DETECTION LIMIT	0.1-0.5 mg/μL	0.01-0.05 μg/L		

SLP-15B Not rected for laboratory contamination

	(1) mg/µL	µg/L	(mg/µL)	µg/L)
Carbazole	0.36	0.04	0.54	0.06
4-Hydroxybiphenyl	0.21	0.02		
1-Naphthylamine				
Acridine	0.17	0.02	0.25	0.03
1,2,3-Trimethylbenzene				
Quinoline				
2,3,5-Trimethylphenol				
3-Methyl-cholanthrene				
7,12-Dimethylbenz(a)anthracene				
1-Naphthol				
2,3,4-Trichlorophenol				
2,3,4,5-Tetrachlorophenol				
4-Aminobiphenyl				
Thiophene	NA			
13H-Dibenzo(a,i)carbazole				

Field Surrogates	Percent Recovery	
Acenaphthene-d_{10}	12.1	48
Pyrene-D_{10}	17.4	70
Perylene-d_{12}	18.6	74
Naphthalene-d_8	11.6	46
Phenol-d_5	7.6	30
Carbazole-d_3	166	66
Benzo(a)pyrene-d_{12}	15.7	63
2-Naphthylamine-d_7	NA	--
Quinoline-d_7	ND	--
Dibenzo(a,h)anthracene-d_{12}	15.8	63
1,2-Benz(a)anthracene-d_{12}	NS	

Laboratory Surrogatges	Percent Recovery	
Naphthol-d_7	4.96	20
Acridine-d_9	16.8	67
Pyridine-d_5	NA	--
Chrysene-d_{12}	17.1	68
Fluoranthene-d_{10}	17.4	70
Benzo(e)pyrene-d_{12}	19.8	79

NA - Not able to see by GC/MS

NA* - not present in GC/MS Std.

NS - not Spiked

Table 2. Approximate Concentrations of Compounds Identified in Well SLP-15B (resin cartridge)

Scan Number	Compound Identification	Approximate Concentration (μg/L)
310	Tetrachloroethylene	0.01
332	C_9H_{18}	0.02
341	Alkane (C_9?)	0.42
349	Alkane	0.16
377	$C_6H_{12}O_2$[a,b]	4.63
381	$C_6H_{12}O_2$[a]	
401	C_2-Alkyl-benzene	0.01
529	C_3-Alkyl-benzene	0.03
642	$C_4H_{10}O_3$ or $C_3H_8O_2$	0.2
648	$C_4H_{10}O_3$[a] + C_3-Alkyl-benzene	0.11
771	C_9H_{10}[a]	0.66
779	Alkane[b]	0.05
793	Indene	0.03
850	Alkane	0.05
876	C_4-Alkyl-benzene	0.02
889	$C_{10}H_{12}$[a]	0.05
920	C_9H_8O[a]	0.05
928	C_9H_8O[a]	0.05
971	C_4-Alkyl-benzene	0.02

a - See library display of 3 best fits.
b - Compound present in blank also.

Table 2. Approximate Concentrations of Compounds Identified in Well SLP 15B (resin cartridge) (Continued)

Scan Number	Compound Identification	Approximate Concentration (μg/L)
1010	$C_{10}H_{12}$[a]	0.02
1034	Dihydro-methyl-indene	0.18
1044	$C_{10}H_{10}$[a]	0.14
1070	C_2-Alkyl-benzaldehyde	0.06
1123	benzothiophene	0.08
1521	Biphenyl	0.24
1553	C_2-Alkyl-naphthalene	0.03
1595	C_2-Alkyl-naphthalene	0.03
1632	C_2-Alkyl-naphthalene	0.04
1661	C_2-Alkyl-naphthalene	0.04
1774	$C_{13}H_{12}$[a]	0.03
1863	Phenalene	0.04
1921	$C_{13}H_{12}$[a]	0.05
1930	$C_{13}H_{12}$[a]	0.20
1942	$C_{13}H_{12}$[a]	0.13
1967, 1969	$C_{14}H_{14}$ or $C_{13}H_{10}O$	0.12
1989	$C_{13}H_{10}O$	0.12
2065	$C_{14}H_{12}$[a]	0.05

a - See library display of 3 best fits.
b - Compound present in blank also.

Table 2. Approximate Concentrations of Compounds Identified in Well SLP 15B (resin cartridge) (Continued)

Scan Number	Compound Identification	Approximate Concentration (μg/L)
2098	$C_{14}H_{12}$ [a]	0.08
2128	$C_{14}H_{12}$ [a]	0.04
2182	Dibenzothiophene	0.10
2391	Alkene	0.25
2410	Methyl-phenanthrene	0.08
2423	Alcohol	0.46
2439	Cyclopentaphenanthrene	0.21
2448	Methyl-phenanthrene	P
2544	Di-n-butyl-phthalate + alcohol	0.16
2596	Sulfur	0.14
2685	Alkene[b]	14.4
2967, 2969	Alkene	0.15
3141	Azelate ester[b]	0.33
3712	Alkane	0.05
3817	Alkane	0.04
3918	Alkane	0.05

a - See library display of 3 best fits.
b - Compound present in blank also.
P - present but not quantitated

PRIORITY POLLUTANT BNA'S	(1) ng/µL		chloride)	
ACENAPHTHENE				
BENZIDINE	NA*			
1,2,4-TRICHLOROBENZENE				
HEXACHLOROBENZENE				
HEXACHLOROETHANE				
BIS(2-CHLOROETHYL)ETHER				
2-CHLORONAPHTHALENE				
2,4,6-TRICHLOROPHENOL				
P-CHLORO-M-CRESOL				
2-CHLOROPHENOL				
1,2-DICHLOROBENZENE				
1,3-DICHLOROBENZENE				
1,4-DICHLOROBENZENE				
3,3-DICHLOROBENZIDINE	NA*			
2,4-DICHLOROPHENOL				
2,4-DIMETHYLPHENOL				
2,4-DINITROTOLUENE				
2,6-DINITROTOLUENE				
1,2-DIPHENYLHYDRAZINE	NA			
FLUORANTHENE				
4-CHLOROPHENYL PHENYL ETHER				
4-BROMOPHENYL PHENYL ETHER				
BIS(2-CHLOROISOPROPYL) ETHER				
BIS(2-CHLOROETHOXY) METHANE				
HEXACHLOROBUTADIENE				
HEXACHLOROCYCLOPENTADIENE				
ISOPHORONE				
NAPHTHALENE				
NITROBENZENE				
2-NITROPHENOL				
4-NITROPHENOL				
2,4-DINITROPHENOL				
4,6-DINITRO-2-METHYLPHENOL				
N-NITROSODIMETHYL AMINE				
N-NITROSODIPHENYLAMINE				
N-NITROSODIPROPYLAMINE				
PENTACHLOROPHENOL				
PHENOL				
BIS(2-ETHYLHEXYL) PHTHALATE	5.6			

(1) internal standard calibration with phenanthrene-d10 as internal std

BENZYL BUTYL PHTHALATE	0.5				
DI-N-BUTYL PHTHALATE	1.1				
DI-N-OCTYL PHTHALATE	0.1				
DIETHYL PHTHALATE	0.1				
DIMETHYL PHTHALATE					
BENZO(A)ANTHRACENE					
BENZO(A)PYRENE					
BENZO(B)FLUORANTHENE					
BENZO(K)FLUORANTHENE					
CHRYSENE					
ACENAPHTHYLENE					
ANTHRACENE					
BENZO(GHI)PERYLENE					
FLUORENE					
PHENANTHRENE					
DIBENZO(AH)ANTHRACENE					
INDENO(123-CD)PYRENE					
PYRENE					
NON-PRIORITY POLLUTANTS					
BENZOIC ACID					
2-METHYLPHENOL					
4-METHYLPHENOL					
2,4,5-TRICHLOROPHENOL					
2-METHYLNAPHTHALENE					
ANILINE					
BENZYL ALCOHOL					
4-CHLOROANILINE					
DIBENZOFURAN					
2-NITROANILINE					
3-NITROANILINE					
4-NITROANILINE					
Approximate DETECTION LIMIT	0.1-0.5 ng/µL				

	1 (ng/μL)
Carbazole	0.24
4-Hydroxybiphenyl	
1-Naphthylamine	
Acridine	
1,2,3-Trimethylbenzene	
Quinoline	
2,3,5-Trimethylphenol	
3-Methyl-cholanthrene	
7,12-Dimethylbenz(a)anthracene	
1-Naphthol	
2,3,4-Trichlorophenol	
2,3,4,5-Tetrachlorophenol	
4-Aminobiphenyl	
Thiophene	NA
13H-Dibenzo(a,i)carbazole	

Field Surrogates	Percent Recovery
Acenaphthene-d_{10}	13.0
Pyrene-D_{10}	23.2
Perylene-d_{12}	29.0
Naphthalene-d_8	11.8
Phenol-d_5	10.5
Carbazole-d_3	18.6
Benzo(a)pyrene-d_{12}	26.3
2-Naphthylamine-d_7	ND
Quinoline-d_7	11.4
Dibenzo(a,h)anthracene-d_{12}	13 7
1,2-Benz(a)anthracene-d_{12}	NS

Laboratory Surrogatges	Percent Recovery
Naphthol-d_7	16.7
Acridine-d_9	18.1
Pyridine-d_5	NA
Chrysene-d_{12}	23.7
Fluoranthene-d_{10}	20.8
Benzo(e)pyrene-d_{12}	25.9

NA - Not able to see by GC/MS

NS - not Spiked

NA* - not present in GCMS Standard

3/21/85
N.

ACUREX Corporation

Energy & Environmental Division

Mr. Paul Bitter
U.S. Environmental Protection Agency
SHR-13
230 Dearborne Street
Chicago, IL 60604

March 21, 1985
Acurex ID#: 8412-010
Project: SAS 1141E

Subject: Results of GC/MS Analyses for Well SLP-8; Cartridge Extracts

Enclosed please find the results of the GC/MS analyses for Well SLP-8. The well was sampled on December 3 & 4, 1984 in duplicate; the two samples are identified as SLP-8A ($V_{sampled}$ = 257.4 L) and SLP-8B ($V_{sampled}$ = 236.3 L).

Analyses were performed as specified in SAS 1141E protocol with various modifications identified in Acurex's letter dated January 3, 1985. The following is a list of deliverables:

1. DFTPP (form, plot, list format) for 1/24/85.

2. Solvent blank for 1/24/85 (RIC; diagnostic report; quantitation report).

3. Concentration data for 8412-010-1 -- Well SLP-8A, cartridge extract (data form; Table 1, RIC; RT diagnostic report; RP diagnostic report, RT quantitation report; RP quantitation report; quantitation report for other compounds found in sample; spectra: enhanced, unenhanced, library display of 3 best fits (pages 1 through 181); peak areas.

4. Concentration data for 8412-010-2 -- Well SLP-8B, cartridge extract (data form; Table 2, RIC; RT diagnostic report; RP diagnostic report, RT quantitation report; RP quantitation report; quantitation report for other compounds found in sample; spectra: enhanced, unenhanced, library display of 3 best fits (pages 1 through 142); peak areas.

5. Concentration data for 8412-010-8 -- Method standard for Well SLP-15 and Well SLP-8 (data form, RIC, RT diagnostic report, RP diagnostic report; RT quantitation report; RP quantitation report).

555 Clyde Avenue, PO Box 7555, Mountain View, CA 94039 (415) 964-3200 Telex 34-6391 TWX 910-7796593

6. Chain of custody forms.

Sincerely,

Viorica Lopez-Avila, Ph.D.
Technical Director

VLA/ats

Enclosures

cc: Dr. Brenda Kimble
Amphion Associates

Linda Haas Boynton
Sample Management Office

Data Audit Staff
EMSL - Las Vegas

Curtis Ross
EPA Region V

These results were obtained using accepted laboratory practices; the liability of Acurex Corporation shall not exceed the amount paid for this report. In no event shall Acurex be liable for special or consequential damages.

TRAVELER # 12 - - = 257.

PRIORITY POLLUTANT BNA'S	(1) conc (mg/µL)	(1) conc (µg/L)	(2) conc (mg/µL)	(2) conc (µg/L)
ACENAPHTHENE	ND			
BENZIDINE	NA*			
1,2,4-TRICHLOROBENZENE	ND			
HEXACHLOROBENZENE				
HEXACHLOROETHANE				
BIS(2-CHLOROETHYL)ETHER				
2-CHLORONAPHTHALENE				
2,4,6-TRICHLOROPHENOL				
P-CHLORO-M-CRESOL				
2-CHLOROPHENOL				
1,2-DICHLOROBENZENE				
1,3-DICHLOROBENZENE				
1,4-DICHLOROBENZENE				
3,3-DICHLOROBENZIDINE	NA*			
2,4-DICHLOROPHENOL	ND			
2,4-DIMETHYLPHENOL				
2,4-DINITROTOLUENE				
2,6-DINITROTOLUENE				
1,2-DIPHENYLHYDRAZINE	NA			
FLUORANTHENE	ND			
4-CHLOROPHENYL PHENYL ETHER				
4-BROMOPHENYL PHENYL ETHER				
BIS(2-CHLOROISOPROPYL) ETHER				
BIS(2-CHLOROETHOXY) METHANE				
HEXACHLOROBUTADIENE				
HEXACHLOROCYCLOPENTADIENE				
ISOPHORONE				
NAPHTHALENE				
NITROBENZENE				
2-NITROPHENOL				
4-NITROPHENOL				
2,4-DINITROPHENOL				
4,6-DINITRO-2-METHYLPHENOL				
N-NITROSODIMETHYL AMINE				
N-NITROSODIPHENYLAMINE				
N-NITROSODIPROPYLAMINE				
PENTACHLOROPHENOL				
PHENOL				
BIS(2-ETHYLHEXYL) PHTHALATE				

SLI 8A corrected for laboratory contamin. Have used method blank 8412-080-07 for correction. VJA

(1) internal standard calibration with phenanthrene-d_{10} as internal std

(2) isotope dilution ; ND - not detected

BENZYL BUTYL PHTHALATE	ND				
DI-N-BUTYL PHTHALATE					
DI-N-OCTYL PHTHALATE					
DIETHYL PHTHALATE					
DIMETHYL PHTHALATE					
BENZO(A)ANTHRACENE					
BENZO(A)PYRENE					
BENZO(B)FLUORANTHENE					
BENZO(K)FLUORANTHENE					
CHRYSENE					
ACENAPHTHYLENE					
ANTHRACENE					
BENZO(GHI)PERYLENE					
FLUORENE					
PHENANTHRENE					
DIBENZO(AH)ANTHRACENE					
INDENO(123-CD)PYRENE					
PYRENE					
NON-PRIORITY POLLUTANTS	ND				
BENZOIC ACID					
2-METHYLPHENOL					
4-METHYLPHENOL					
2,4,5-TRICHLOROPHENOL					
2-METHYLNAPHTHALENE					
ANILINE					
BENZYL ALCOHOL					
4-CHLOROANILINE					
DIBENZOFURAN					
2-NITROANILINE					
3-NITROANILINE					
4-NITROANILINE					
Approximate DETECTION LIMIT	0.1-0.5 mg/µL	0.004 µg/L			

ND - not detected

S1-8A corrected in laboratory contamination VHA

SL -8A corrected for laboratory contamination

	(1) Conc (ng/µL)	(1) (µg/L)	(2) (ng/µL)	(2) (µg/L)
Carbazole	ND			
4-Hydroxybiphenyl				
1-Naphthylamine				
Acridine				
1,2,3-Trimethylbenzene				
Quinoline				
2,3,5-Trimethylphenol				
3-Methyl-cholanthrene				
7,12-Dimethylbenz(a)anthracene				
1-Naphthol				
2,3,4-Trichlorophenol				
2,3,4,5-Tetrachlorophenol				
4-Aminobiphenyl				
Thiophene	NA			
13H-Dibenzo(a,i)carbazole	NA			

Field Surrogates	Percent Recovery	
Acenaphthene-d_{10}	16.5	66
Pyrene-D_{10}	18.5	74
Perylene-d_{12}	20.8	83
Naphthalene-d_8	21.7	87
Phenol-d_5	7.7	31
Carbazole-d_3	18.2	73
Benzo(a)pyrene-d_{12}	19.7	79
2-Naphthylamine-d_7	ND	--
Quinoline-d_7	NS	--
Dibenzo(a,h)anthracene-d_{12}	10.1	40
1,2-Benz(a)anthracene-d_{12}	NS	--

Laboratory Surrogatges	Percent Recovery	
Naphthol-d_7	6.9	28
Acridine-d_9	18.2	73
Pyridine-d_5	NA	--
Chrysene-d_{12}	17.2	69
Fluoranthene-d_{10}	18.3	73
Benzo(e)pyrene-d_{12}	20.0	80

NA - Not able to see by GC/MS

NS - not spiked

NA* - not present in GC/MS Standard

ND - not detected

TRAVELER # 8412-010-01 SLP 8A

=257.4

PRIORITY POLLUTANT A'S	(1) conc ng/µL	(1) conc µg/L	(2) conc ng/µL	(2) conc µg/L
ACENAPHTHENE	ND			
BENZIDINE	NA*			
1,2,4-TRICHLOROBENZENE	ND			
HEXACHLOROBENZENE				
HEXACHLOROETHANE				
BIS(2-CHLOROETHYL)ETHER				
2-CHLORONAPHTHALENE				
2,4,6-TRICHLOROPHENOL				
P-CHLORO-M-CRESOL				
2-CHLOROPHENOL				
1,2-DICHLOROBENZENE				
1,3-DICHLOROBENZENE				
1,4-DICHLOROBENZENE				
3,3-DICHLOROBENZIDINE	NA*			
2,4-DICHLOROPHENOL	ND			
2,4-DIMETHYLPHENOL				
2,4-DINITROTOLUENE				
2,6-DINITROTOLUENE				
1,2-DIPHENYLHYDRAZINE	NA			
FLUORANTHENE	ND			
4-CHLOROPHENYL PHENYL ETHER				
4-BROMOPHENYL PHENYL ETHER				
BIS(2-CHLOROISOPROPYL) ETHER				
BIS(2-CHLOROETHOXY) METHANE				
HEXACHLOROBUTADIENE				
HEXACHLOROCYCLOPENTADIENE				
ISOPHORONE				
NAPHTHALENE				
NITROBENZENE				
2-NITROPHENOL				
4-NITROPHENOL				
2,4-DINITROPHENOL				
4,6-DINITRO-2-METHYLPHENOL				
N-NITROSODIMETHYL AMINE				
N-NITROSODIPHENYLAMINE				
N-NITROSODIPROPYLAMINE				
PENTACHLOROPHENOL				
PHENOL				
BIS(2-ETHYLHEXYL) PHTHALATE	3.3	0.03		

SL 8A - not corrected for laboratory contamination VLA

(1) internal standard calibration with phenanthrene-d_{10} as internal std

(2) isotope dilution ; ND - not detected

	(1) mg/µL	(1) µg/L	(2) mg/µL	(2) µg/L
Carbazole	0.3	0.0023	0.37	0.003
4-Hydroxybiphenyl	ND			
1-Naphthylamine				
Acridine				
1,2,3-Trimethylbenzene				
Quinoline				
2,3,5-Trimethylphenol				
3-Methyl-cholanthrene				
7,12-Dimethylbenz(a)anthracene				
1-Naphthol				
2,3,4-Trichlorophenol				
2,3,4,5-Tetrachlorophenol				
4-Aminobiphenyl				
Thiophene	NA			
13H-Dibenzo(a,i)carbazole	NA			

SL 8A - not corrected for laboratory contamination VLA

Field Surrogates	Percent Recovery	
Acenaphthene-d_{10}	16.5	66
Pyrene-D_{10}	18.5	74
Perylene-d_{12}	20.8	83
Naphthalene-d_8	21.7	87
Phenol-d_5	7.7	31
Carbazole-d_3	18.2	73
Benzo(a)pyrene-d_{12}	19.7	79
2-Naphthylamine-d_7	ND	--
Quinoline-d_7	NS	--
Dibenzo(a,h)anthracene-d_{12}	10.1	40
1,2-Benz(a)anthracene-d_{12}	~~NS~~ VLA	--

Laboratory Surrogatges	Percent Recovery	
Naphthol-d_7	6.9	28
Acridine-d_9	18.2	73
Pyridine-d_5	NA	--
Chrysene-d_{12}	17.2	69
Fluoranthene-d_{10}	18.3	73
Benzo(e)pyrene-d_{12}	20.0	80

NA - Not able to see by GC/MS

NA* - not present in GC/MS Std.

ND - not detected

NS - not spiked

Table 1. Approximate Concentrations of Compounds Found in Well SLP-8A (Continued)

Scan Number	Compound Identification	Approximate Concentration (µg/L)
2581	Sulfur	0.03
2676, 2686	Alkene[b]	1.26
3135	Azelate ester[b]	0.11
3314, 3319	Bis(2-ethylhexyl)phthalate	0.09
1172	$C_5H_{10}O_2$ or $C_8H_{16}O$[a]	0.06

a - See library display of 3 best fits.

b - Compound detected in method blank

Table 1. Approximate Concentrations of Compounds Found in Well SLP-8A

Scan Number	Compound Identification	Approximate Concentration (μg/L)
302	Tetrachloroethylene	0.01
319	C_9H_{18} + Tetrachloroethylene	0.02
331	Alkane	0.05
339	Alkane	0.05
502	$C_4H_6O_2$ (dihydro-furanone)	0.01
509	Alkane	0.19
644	$C_4H_{10}O_3$[a]	0.02
771	Alkane	0.01
817	Alkane	0.01
942	Alkane	0.03
980	Alkane	0.06
1066	Ethyl-benzaldehyde	0.01
1084	$C_6H_{10}O_2$ or $C_5H_{10}O_2$[a]	0.25
1150	$C_7H_{12}O_3$ or $C_8H_{16}O$ or $C_5H_{10}O_2$[a]	0.05
2378	Alkene	0.02
2411	Alcohol	0.03
2535	Di-n-butylphthalate	0.02
2542	Butyl-methylpropyl-phthalate	0.01

a - See library display of 3 best fits.

TRAVELER # 12-D

PRIORITY POLLUTANT BNA'S	(1) conc (mg/µL)	(1) conc (µg/L)	(2) conc mg/µL	(2) conc (µg/L)
ACENAPHTHENE	ND			
BENZIDINE	NA*			
1,2,4-TRICHLOROBENZENE	ND			
HEXACHLOROBENZENE				
HEXACHLOROETHANE				
BIS(2-CHLOROETHYL)ETHER				
2-CHLORONAPHTHALENE				
2,4,6-TRICHLOROPHENOL				
P-CHLORO-M-CRESOL				
2-CHLOROPHENOL				
1,2-DICHLOROBENZENE				
1,3-DICHLOROBENZENE				
1,4-DICHLOROBENZENE				
3,3-DICHLOROBENZIDINE	NA*			
2,4-DICHLOROPHENOL	ND			
2,4-DIMETHYLPHENOL				
2,4-DINITROTOLUENE				
2,6-DINITROTOLUENE				
1,2-DIPHENYLHYDRAZINE	NA			
FLUORANTHENE	ND			
4-CHLOROPHENYL PHENYL ETHER				
4-BROMOPHENYL PHENYL ETHER				
BIS(2-CHLOROISOPROPYL) ETHER				
BIS(2-CHLOROETHOXY) METHANE				
HEXACHLOROBUTADIENE				
HEXACHLOROCYCLOPENTADIENE				
ISOPHORONE				
NAPHTHALENE				
NITROBENZENE				
2-NITROPHENOL				
4-NITROPHENOL				
2,4-DINITROPHENOL				
4,6-DINITRO-2-METHYLPHENOL				
N-NITROSODIMETHYL AMINE				
N-NITROSODIPHENYLAMINE				
N-NITROSODIPROPYLAMINE				
PENTACHLOROPHENOL				
PHENOL				
BIS(2-ETHYLHEXYL) PHTHALATE	ND			

(1) internal standard calibration with phenanthrene-d10 as internal standa

(2) isotope dilution , ND- not detected

C) P-8B corrected for laboratory contaminati
Have used method blank 8412-010-7
for correction. VLA

BENZYL BUTYL PHTHALATE	ND				
DI-N-BUTYL PHTHALATE	↓				
DI-N-OCTYL PHTHALATE	↓				
DIETHYL PHTHALATE	ND				
DIMETHYL PHTHALATE	↓				
BENZO(A)ANTHRACENE	↓				
BENZO(A)PYRENE	↓				
BENZO(B)FLUORANTHENE	↓				
BENZO(K)FLUORANTHENE	↓				
CHRYSENE	↓				
ACENAPHTHYLENE	↓				
ANTHRACENE	↓				
BENZO(GHI)PERYLENE	↓				
FLUORENE	↓				
PHENANTHRENE	↓				
DIBENZO(AH)ANTHRACENE	↓				
INDENO(123-CD)PYRENE	↓				
PYRENE	↓				
NON-PRIORITY POLLUTANTS					
BENZOIC ACID	ND				
2-METHYLPHENOL	↓				
4-METHYLPHENOL	↓				
2,4,5-TRICHLOROPHENOL	↓				
2-METHYLNAPHTHALENE	↓				
ANILINE	↓				
BENZYL ALCOHOL	↓				
4-CHLOROANILINE	↓				
DIBENZOFURAN	↓				
2-NITROANILINE	↓				
3-NITROANILINE	↓				
4-NITROANILINE	↓				
Approximate DETECTION LIMIT	0.1-0.5 mg/µL	0.004 µg/L			

ND - not detected

SLP-88 correct for laboratory contamination

SLP-8B corrected for laboratory contamination

	(1) Conc (mg/µL)	(1) Conc (µg/L)	(2) Conc (mg/µL)	(2) Conc (µg/L)
Carbazole	ND			
4-Hydroxybiphenyl	ND			
1-Naphthylamine	↓			
Acridine				
1,2,3-Trimethylbenzene				
Quinoline				
2,3,5-Trimethylphenol				
3-Methyl-cholanthrene				
7,12-Dimethylbenz(a)anthracene				
1-Naphthol				
2,3,4-Trichlorophenol				
2,3,4,5-Tetrachlorophenol				
4-Aminobiphenyl				
Thiophene	NA			
13H-Dibenzo(a,i)carbazole	NA			

Field Surrogates	Percent Recovery	
Acenaphthene-d_{10}	20.2	81
Pyrene-D_{10}	18.2	73
Perylene-d_{12}	19.1	76
Naphthalene-d_8	27.7	111
Phenol-d_5	3.8	15
Carbazole-d_3	17.5	70
Benzo(a)pyrene-d_{12}	18.7	75
2-Naphthylamine-d_7	ND	--
Quinoline-d_7	NS	--
Dibenzo(a,h)anthracene-d_{12}	9.8	39
1,2-Benz(a)anthracene-d_{12}	--	--

Laboratory Surrogatges	Percent Recovery	
Naphthol-d_7	a	
Acridine-d_9	19.0	76
Pyridine-d_5	NA	--
Chrysene-d_{12}	17.5	70
Fluoranthene-d_{10}	18.8	75
Benzo(e)pyrene-d_{12}	19.3	77

a/ surrogate present; not able to retrieve data due to bad sector on the hard disk

NA - Not able to see by GC/MS

NS - not spiked

NA* - not present in GCMS standard

TRAVELER # 12-010-2 - D V= 236.3 L

PRIORITY POLLUTANT BNA'S	(1) conc (mg/µL)	(1) conc (µg/L)	(2) conc mg/µL	(2) conc (µg/L)
ACENAPHTHENE	ND			
BENZIDINE	NA*			
1,2,4-TRICHLOROBENZENE	ND			
HEXACHLOROBENZENE				
HEXACHLOROETHANE				
BIS(2-CHLOROETHYL)ETHER				
2-CHLORONAPHTHALENE				
2,4,6-TRICHLOROPHENOL				
P-CHLORO-M-CRESOL				
2-CHLOROPHENOL				
1,2-DICHLOROBENZENE				
1,3-DICHLOROBENZENE				
1,4-DICHLOROBENZENE				
3,3-DICHLOROBENZIDINE	NA*			
2,4-DICHLOROPHENOL	ND			
2,4-DIMETHYLPHENOL				
2,4-DINITROTOLUENE				
2,6-DINITROTOLUENE				
1,2-DIPHENYLHYDRAZINE	NA			
FLUORANTHENE	ND			
4-CHLOROPHENYL PHENYL ETHER				
4-BROMOPHENYL PHENYL ETHER				
BIS(2-CHLOROISOPROPYL) ETHER				
BIS(2-CHLOROETHOXY) METHANE				
HEXACHLOROBUTADIENE				
HEXACHLOROCYCLOPENTADIENE				
ISOPHORONE				
NAPHTHALENE				
NITROBENZENE				
2-NITROPHENOL				
4-NITROPHENOL				
2,4-DINITROPHENOL				
4,6-DINITRO-2-METHYLPHENOL				
N-NITROSODIMETHYL AMINE				
N-NITROSODIPHENYLAMINE				
N-NITROSODIPROPYLAMINE				
PENTACHLOROPHENOL				
PHENOL				
BIS(2-ETHYLHEXYL) PHTHALATE	8.3	0.07		

(1) internal standard calibration with phenanthrene-d_{10} as internal standard

(2) isotope dilution ; ND- not detected

P-8B not corrected for laboratory contamination VLA

P. 8B not correct for laboratory contamination VLA

BENZYL BUTYL PHTHALATE	1.1	0.01			
DI-N-BUTYL PHTHALATE	1.9	0.02			
DI-N-OCTYL PHTHALATE	0.2	0.002			
DIETHYL PHTHALATE	ND				
DIMETHYL PHTHALATE					
BENZO(A)ANTHRACENE					
BENZO(A)PYRENE					
BENZO(B)FLUORANTHENE					
BENZO(K)FLUORANTHENE					
CHRYSENE					
ACENAPHTHYLENE					
ANTHRACENE					
BENZO(GHI)PERYLENE					
FLUORENE					
PHENANTHRENE					
DIBENZO(AH)ANTHRACENE					
INDENO(123-CD)PYRENE					
PYRENE					
NON-PRIORITY POLLUTANTS					
BENZOIC ACID	ND				
2-METHYLPHENOL					
4-METHYLPHENOL					
2,4,5-TRICHLOROPHENOL					
2-METHYLNAPHTHALENE					
ANILINE					
BENZYL ALCOHOL					
4-CHLOROANILINE					
DIBENZOFURAN					
2-NITROANILINE					
3-NITROANILINE					
4-NITROANILINE					
Approximate DETECTION LIMIT	0.1-0.5 mg/μL	0.004 μg/L			

ND - not detected

	(1) Conc (ng/µL)	(1) Conc (µg/L)	(2) Conc (ng/µL)	(2) Conc (µg/L)
Carbazole	0.28	0.002	0.39	0.003
4-Hydroxybiphenyl	ND			
1-Naphthylamine				
Acridine				
1,2,3-Trimethylbenzene				
Quinoline				
2,3,5-Trimethylphenol				
3-Methyl-cholanthrene				
7,12-Dimethylbenz(a)anthracene				
1-Naphthol				
2,3,4-Trichlorophenol				
2,3,4,5-Tetrachlorophenol				
4-Aminobiphenyl				
Thiophene	NA			
13H-Dibenzo(a,i)carbazole	NA			

P. 88 not some id for Laboratory contamination via

Field Surrogates	Percent Recovery	
Acenaphthene-d_{10}	20.2	81
Pyrene-D_{10}	18.2	73
Perylene-d_{12}	19.1	76
Naphthalene-d_8	27.7	111
Phenol-d_5	3.8	15
Carbazole-d_3	17.5	70
Benzo(a)pyrene-d_{12}	18.7	75
2-Naphthylamine-d_7	ND	--
Quinoline-d_7	NS	--
Dibenzo(a,h)anthracene-d_{12}	9.8	39
1,2-Benz(a)anthracene-d_{12}	--	--

Laboratory Surrogatges	Percent Recovery	
Naphthol-d_7	a	
Acridine-d_9	19.0	76
Pyridine-d_5	NA	--
Chrysene-d_{12}	17.5	70
Fluoranthene-d_{10}	18.8	75
Benzo(e)pyrene-d_{12}	19.3	77

a/ surrogate present; not able to retrieve data due to bad sector on the hard disk.

NA - Not able to see by GC/MS

NS - not spiked

NA* - not present in GCMS standard

Table 2. Approximate Concentrations of Compounds Found in Well SLP-8B

Scan Number	Compound Identification	Approximate Concentration (μg/L)[b]
324	Alkane	0.06
328	Alkane	0.03
390	$C_7H_{14}O$ (?)	0.02
443	$C_6H_{10}O$ (?)[a]	P
500	$C_4H_6O_2$ (dihydro-furanone)	0.02
632	$C_4H_{10}O_3$[a]	0.13
642		
647		
651		
751	Alkane	0.01
771	Alkane	0.01
817	Alkane	0.02
822	Alkane	P
843	Alkane	0.01
870	Alkane	0.07
943	Alkane	0.04
980	Alkane	0.12
1066	Ethyl-benzaldehyde	0.03
1085	$C_5H_{10}O_2$ or $C_8H_{16}O$[a]	0.56

a - See library display of 3 best fits.
b - Concentration of compounds eluting after scan 1421 is not given due to problems in accessing the GCMS data.

P- present but not quantitated

Table 2. Approximate Concentrations of Compounds Found in Well SLP-8B (Continued)

Scan Number	Compound Identification	Approximate Concentration (μg/L)[b]
1123	$C_5H_{10}O_2$ or $C_6H_{10}O_2$[a]	0.09
1151	$C_7H_{12}O_3$ or $C_8H_{16}O$ or $C_5H_{10}O_2$[a]	0.11
1173	$C_5H_{10}O_2$ or $C_6H_{10}O_2$	0.20
1288	$C_{10}H_{12}O$[a]	<0.01
1421	Alkane	0.01

a - See library display of 3 best fits.
b - Concentration of compounds eluting after scan 1421 is not given due to problems in accessing the GCMS data.

TRAVELER # 8412-010-08 Method Standard SL-8 and SLP15

PRIORITY POLLUTANT BNA'S	(1) Conc mg/µL	(1) % Rec	(2) Conc mg/µL	(2) % Rec
ACENAPHTHENE	18.0	72	28.2	113
BENZIDINE	NA*	--		
1,2,4-TRICHLOROBENZENE	18.5	74		
HEXACHLOROBENZENE	18.6	74		
HEXACHLOROETHANE	24.4	98		
BIS(2-CHLOROETHYL)ETHER	ND	--		
2-CHLORONAPHTHALENE	17.8	71		
2,4,6-TRICHLOROPHENOL	17.9	72		
P-CHLORO-M-CRESOL	26.9	108		
2-CHLOROPHENOL	22.1	88		
1,2-DICHLOROBENZENE	26.6	106		
1,3-DICHLOROBENZENE				
1,4-DICHLOROBENZENE	22.3	89		
3,3-DICHLOROBENZIDINE	NA*	--		
2,4-DICHLOROPHENOL	21.9	88		
2,4-DIMETHYLPHENOL	23.7	95		
2,4-DINITROTOLUENE	30.1	120		
2,6-DINITROTOLUENE	27.5	110		
1,2-DIPHENYLHYDRAZINE	NA	--		
FLUORANTHENE	18.3	73	26.8	107
4-CHLOROPHENYL PHENYL ETHER	18.9	76		
4-BROMOPHENYL PHENYL ETHER	19.3	77		
BIS(2-CHLOROISOPROPYL) ETHER	25.9	104		
BIS(2-CHLOROETHOXY) METHANE	23.4	94		
HEXACHLOROBUTADIENE	18.9	76		
HEXACHLOROCYCLOPENTADIENE	17.4	70		
ISOPHORONE	22.9	92		
NAPHTHALENE	22.2	89	27.6	110
NITROBENZENE	25.1	100		
2-NITROPHENOL	25.2	101		
4-NITROPHENOL	ND	--		
2,4-DINITROPHENOL	ND	--		
4,6-DINITRO-2-METHYLPHENOL	35.9	144		
N-NITROSODIMETHYL AMINE	ND	--		
N-NITROSODIPHENYLAMINE	ND	--		
N-NITROSODIPROPYLAMINE	26.5	106		
PENTACHLOROPHENOL	7.8	31		
PHENOL	19.0	76	16.8	67
BIS(2-ETHYLHEXYL) PHTHALATE	26.2	105		

(1) internal standard quantitation with phenanthrene-d_{10} as internal standard
(2) isotope dilution

BENZYL BUTYL PHTHALATE	21.9	88			
DI- -BUTYL PHTHALATE	21.7	87			
DI-N-OCTYL PHTHALATE	24.9	100			
DIETHYL PHTHALATE	23.7	95			
DIMETHYL PHTHALATE	22.3	89			
BENZO(A)ANTHRACENE	17.7	71			
BENZO(A)PYRENE	17.9	72	26.8	107	
BENZO(B)FLUORANTHENE	16.0	64			
BENZO(K)FLUORANTHENE	22.2	89			
CHRYSENE	18.5	74	27.5	110	
ACENAPHTHYLENE	18.9	76			
ANTHRACENE	20.8	80			
BENZO(GHI)PERYLENE	19.9	80			
FLUORENE	18.7	75			
PHENANTHRENE	18.8	75			
DIBENZO(AH)ANTHRACENE	20.8	83	25.8	103	
INDENO(123-CD)PYRENE	20.2	81			
PYRENE	17.6	70	26.4	106	
NON-PRIORITY POLLUTANTS					
BENZOIC ACID	ND	--			
2-METHYLPHENOL	15.0	60			
4-METHYLPHENOL	24.3	97			
2,4,5-TRICHLOROPHENOL	18.1	72			
2-METHYLNAPHTHALENE	19.5	78			
ANILINE	16.5	66			
BENZYL ALCOHOL	26.4	106			
4-CHLOROANILINE	15.2	61			
DIBENZOFURAN	18.8	75			
2-NITROANILINE	25.0	100			
3-NITROANILINE	21.6	86			
4-NITROANILINE	ND	--			
DETECTION LIMIT					

	(1) Conc (mg/µL)	(1) % Rec	(2) (µg/µL)	(2) % Rec
Carbazole	21.8	87	32.2	129
4-Hydroxybiphenyl	19.4	78		
1-Naphthylamine	9.5	38		
Acridine	19.5	78	28.1	112
1,2,3-Trimethylbenzene	37.6	150		
Quinoline	21.7	87	25.8	103
2,3,5-Trimethylphenol	26.9	108		
3-Methyl-cholanthrene	19.9	80		
7,12-Dimethylbenz(a)anthracene	15.4	62		
1-Naphthol	17.0	68	24.8	99
2,3,4-Trichlorophenol	19.8	79		
2,3,4,5-Tetrachlorophenol	17.6	70		
4-Aminobiphenyl	ND			
Thiophene	NA			
13H-Dibenzo(a,i)carbazole	NA			

Field Surrogates	Percent Recovery	
Acenaphthene-d_{10}	16.0	64
Pyrene-D_{10}	16.6	66
Perylene-d_{12}	17.0	68
Naphthalene-d_8	20.1	80
Phenol-d_5	15.3	61
Carbazole-d_3	16.9	68
Benzo(a)pyrene-d_{12}	16.7	67
2-Naphthylamine-d_7	ND	--
Quinoline-d_7	21.0	84
Dibenzo(a,h)anthracene-d_{12}	10.5	42
1,2-Benz(a)anthracene-d_{12}	--	--

Laboratory Surrogatges	Percent Recovery	
Naphthol-d_7	17.1	68
Acridine-d_9	17.4	70
Pyridine-d_5	NA	--
Chrysene-d_{12}	16.9	68
Fluoranthene-d_{10}	17.1	68
Benzo(e)pyrene-d_{12}	16.9	68

NA - Not able to see by GC/MS

4/2/85
N.

ACUREX Corporation

Energy & Environmental Division

Mr. Paul Bitter
U.S. Environmental Protection Agency
SHR-13
230 Dearborne Street
Chicago, IL 60604

April 2, 1985
Acurex ID#: 8412-018
Project: SAS 1141E

Subject: Results of GC/MS Analyses for Well SLP-6; Cartridge Extracts

Enclosed please find the results of the GC/MS analyses for well SLP-6. The well was sampled on December 6-8, 1984 in duplicate; the two samples are identified as SLP-6A ($V_{sampled}$ = 268.0 L) and SLP-6B ($V_{sampled}$ = 256.5 L). Analyses were performed as specified in SAS 1141E protocol with various modifications identified in Acurex's letter dated January 3, 1985. The following is a list of deliverables:

1. DFTPP (form, plot, list format) for 1/30/85.

2. Solvent blank for 1/30/85 (RIC; diagnostic report; quantitation report)

3. GC/MS standards for 1/30/85 (RIC; RT diagnostic report; RP diagnostic report; RT quantitation report; RP quantitation report; calibration check forms); one standard was analyzed before the samples and the other standard was analyzed after the samples.

4. Concentration data for 8412-018-1 -- Well SLP-6A, cartridge extract (data form; Table 1; RIC; RT diagnostic report; RP diagnostic report, RT quantitation report; RP quantitation report; quantitation report for other compounds found in sample; spectra: enhanced, unenhanced, library display of 3 best fits (pages 1 through 165); peak areas.

5. Concentration data for 8412-018-2 -- Well SLP-6B, cartridge extract (data form; RIC; RT diagnostic report; RP diagnostic report, RT quantitation report; RP quantitation report; spectra: enhanced, unenhanced, library display of 3 best fits (pages 1 through 29); peak areas. Data for compounds eluting after scan 1100 could not be retrieved due to problems with disk file structure, therefore the quantitation report for other compounds found in this sample is not included.

555 Clyde Avenue, PO Box 7555, Mountain View, CA 94039 (415) 964-3200 Telex 34-6391 TWX 910-7796593

6. Concentration data and recovery data for 8412-018-8 Method Standard (data form, RIC; RT diagnostic report, RP diagnostic report, RT quantitation report, RP quantitation report). Method Standard was obtained by spiking 350 mL acetone-methylene chloride (20:80) with 50 µg of stable-labeled isotopes, priority pollutants, and target compounds and processed similarly as the cartridge extracts.

7. Chain of custody forms.

Sincerely,

Viorica Lopez Avila

Viorica Lopez-Avila, Ph.D.
Technical Director

VLA/ats

Enclosures

cc: Dr. Brenda Kimble
Amphion Associates

Linda Haas Boynton
Sample Management Office

Data Audit Staff
EMSL - Las Vegas

Curtis Ross
EPA Region V

These results were obtained using accepted laboratory practices; the liability of Acurex Corporation shall not exceed the amount paid for this report. In no event shall Acurex be liable for special or consequential damages.

SL' GA not correct for laboratory contamination ∴ No compounds listed on this form were detected (except phthalates) at levels above 0.5 - 1.0 mg/µL in water or 0.004 - 0.007 µg/L in extract equivalent to

TRAVELER

PRIORITY POLLUTANT BNA'S	conc mg/(µL)	conc (µg/L)	conc (mg/(µL)	(2) conc (µg/L)
ACENAPHTHENE	ND			
BENZIDINE	NA*			
1,2,4-TRICHLOROBENZENE	ND			
HEXACHLOROBENZENE				
HEXACHLOROETHANE				
BIS(2-CHLOROETHYL)ETHER				
2-CHLORONAPHTHALENE				
2,4,6-TRICHLOROPHENOL				
P-CHLORO-M-CRESOL				
2-CHLOROPHENOL				
1,2-DICHLOROBENZENE				
1,3-DICHLOROBENZENE				
1,4-DICHLOROBENZENE				
3,3-DICHLOROBENZIDINE	NA*			
2,4-DICHLOROPHENOL	ND			
2,4-DIMETHYLPHENOL				
2,4-DINITROTOLUENE				
2,6-DINITROTOLUENE				
1,2-DIPHENYLHYDRAZINE	NA			
FLUORANTHENE	ND			
4-CHLOROPHENYL PHENYL ETHER				
4-BROMOPHENYL PHENYL ETHER				
BIS(2-CHLOROISOPROPYL) ETHER				
BIS(2-CHLOROETHOXY) METHANE				
HEXACHLOROBUTADIENE				
HEXACHLOROCYCLOPENTADIENE				
ISOPHORONE				
NAPHTHALENE				
NITROBENZENE				
2-NITROPHENOL				
4-NITROPHENOL				
2,4-DINITROPHENOL				
4,6-DINITRO-2-METHYLPHENOL				
N-NITROSODIMETHYL AMINE				
N-NITROSODIPHENYLAMINE				
N-NITROSODIPROPYLAMINE				
PENTACHLOROPHENOL				
PHENOL				
BIS(2-ETHYLHEXYL) PHTHALATE	9.4 a			

(1) internal standard calibration with phenanthrene-d_{10} as internal std.

(2) isotope dilution

a/ probably due to laboratory contamination

1-N-BUTYL PHTHALATE	1.9				
1- -OCTYL PHTHALATE	ND				
DIETHYL PHTHALATE					
DIMETHYL PHTHALATE					
BENZO(A)ANTHRACENE					
BENZO(A)PYRENE					
BENZO(B)FLUORANTHENE					
BENZO(K)FLUORANTHENE					
CHRYSENE					
ACENAPHTHYLENE					
ANTHRACENE					
BENZO(GHI)PERYLENE					
FLUORENE					
PHENANTHRENE					
DIBENZO(AH)ANTHRACENE					
INDENO(123-CD)PYRENE					
PYRENE					
NON-PRIORITY POLLUTANTS					
BENZOIC ACID	ND				
2-METHYLPHENOL					
4-METHYLPHENOL					
2,4,5-TRICHLOROPHENOL					
2-METHYLNAPHTHALENE					
ANILINE					
BENZYL ALCOHOL					
4-CHLOROANILINE					
DIBENZOFURAN					
2-NITROANILINE					
3-NITROANILINE					
4-NITROANILINE					
approximate DETECTION LIMIT	0.5-1.0 mg/μL	0.004-0.007 μg/L			

	(1) conc (mg/µL)	(1) conc (µg/L)	(2) conc (mg/µL)	2) conc (µg/L)
Carbazole	ND			
4-Hydroxybiphenyl				
1-Naphthylamine				
Acridine				
1,2,3-Trimethylbenzene				
Quinoline				
2,3,5-Trimethylphenol				
3-Methyl-cholanthrene				
7,12-Dimethylbenz(a)anthracene				
1-Naphthol				
2,3,4-Trichlorophenol				
2,3,4,5-Tetrachlorophenol				
4-Aminobiphenyl				
Thiophene	NA			
13H-Dibenzo(a,i)carbazole	NA			

Field Surrogates		Percent Recovery
Acenaphthene-d_{10}	19.3	77
Pyrene-D_{10}	21.8	87
Perylene-d_{12}	10.4	42
Naphthalene-d_8	21.9	88
Phenol-d_5	0.6	2.0
Carbazole-d_3	20.3	81
Benzo(a)pyrene-d_{12}	22.4	90
2-Naphthylamine-d_7	NS	--
Quinoline-d_7	NS	--
Dibenzo(a,h)anthracene-d_{12}	13.2	53
1,2-Benz(a)anthracene-d_{12}	NS	--

Laboratory Surrogatges		Percent Recovery
Naphthol-d_7	NS	--
Acridine-d_9	21.2	85
Pyridine-d_5	NA	--
Chrysene-d_{12}	19.2	77
Fluoranthene-d_{10}	20.8	83
Benzo(e)pyrene-d_{12}	24.5	98

NA - Not able to see by GC/MS

NS - not spiked

NA* - not present in GC/MS Std.

Table 1 Approximate concentrations of compounds detected in SLP-6A (8412-018-1)

Scan Number	Compound identification	approximate conc (µg/L)
302, 322, 340	$C_6H_{12}O_2$ [a]	0.03
367	Cyclohexen-ol	0.01
433	$C_5H_{10}O_2$ (?) [a]	0.18
467	C_6H_8O (cyclohexen-one)	0.02
717	C_9H_{10} [a]	0.03
948	Alkane	0.07
1038	Ethylbenzaldehyde	0.01
2413	Alcohol or Alkene	0.10
2667	Alkyne	2.55
3121	Azelate ester	0.24

SLP 6B not corrected for laboratory contamination
No compounds listed on this form were detected:
(except phthalates) at levels above 0.5-1.0 mg/µL
in extract equivalent to 0.004-0.007 µg/L in water

PRIORITY POLLUTANT BNA'S	conc (mg/µL)	conc (µg/L)	conc mg/µL	conc µg/L
ACENAPHTHENE	ND			
BENZIDINE	NA*			
1,2,4-TRICHLOROBENZENE	ND			
HEXACHLOROBENZENE				
HEXACHLOROETHANE				
BIS(2-CHLOROETHYL)ETHER				
2-CHLORONAPHTHALENE				
2,4,6-TRICHLOROPHENOL				
P-CHLORO-M-CRESOL				
2-CHLOROPHENOL				
1,2-DICHLOROBENZENE				
1,3-DICHLOROBENZENE				
1,4-DICHLOROBENZENE				
3,3-DICHLOROBENZIDINE	NA*			
2,4-DICHLOROPHENOL	ND			
2,4-DIMETHYLPHENOL				
2,4-DINITROTOLUENE				
2,6-DINITROTOLUENE				
1,2-DIPHENYLHYDRAZINE	NA			
FLUORANTHENE	ND			
4-CHLOROPHENYL PHENYL ETHER				
4-BROMOPHENYL PHENYL ETHER				
BIS(2-CHLOROISOPROPYL) ETHER				
BIS(2-CHLOROETHOXY) METHANE				
HEXACHLOROBUTADIENE				
HEXACHLOROCYCLOPENTADIENE				
ISOPHORONE				
NAPHTHALENE				
NITROBENZENE				
2-NITROPHENOL				
4-NITROPHENOL				
2,4-DINITROPHENOL				
4,6-DINITRO-2-METHYLPHENOL				
N-NITROSODIMETHYL AMINE				
N-NITROSODIPHENYLAMINE				
N-NITROSODIPROPYLAMINE				
PENTACHLOROPHENOL				
PHENOL				
BIS(2-ETHYLHEXYL) PHTHALATE	16.1 a			

(1) internal standard calibration with phenanthrene-d_{10} as internal std
(2) isotope dilution

a/ Probably due to laboratory contaminat

DI-N-BUTYL PHTHALATE	2.3				
DI-N-OCTYL PHTHALATE	ND				
DIETHYL PHTHALATE					
DIMETHYL PHTHALATE					
BENZO(A)ANTHRACENE					
BENZO(A)PYRENE					
BENZO(B)FLUORANTHENE					
BENZO(K)FLUORANTHENE					
CHRYSENE					
ACENAPHTHYLENE					
ANTHRACENE					
BENZO(GHI)PERYLENE					
FLUORENE					
PHENANTHRENE					
DIBENZO(AH)ANTHRACENE					
INDENO(123-CD)PYRENE					
PYRENE					
NON-PRIORITY POLLUTANTS					
BENZOIC ACID	ND				
2-METHYLPHENOL					
4-METHYLPHENOL					
2,4,5-TRICHLOROPHENOL					
2-METHYLNAPHTHALENE					
ANILINE					
BENZYL ALCOHOL					
4-CHLOROANILINE					
DIBENZOFURAN					
2-NITROANILINE					
3-NITROANILINE					
4-NITROANILINE					
Approximate DETECTION LIMIT	0.5-1.0 mg/µL	0.004-0.007 µg/L			

	C (mg/mL)	C conc (µg/L)
Carbazole	ND	
4-Hydroxybiphenyl	↓	
1-Naphthylamine	↓	
Acridine	↓	
1,2,3-Trimethylbenzene	↓	
Quinoline	↓	
2,3,5-Trimethylphenol	↓	
3-Methyl-cholanthrene	↓	
7,12-Dimethylbenz(a)anthracene	↓	
1-Naphthol	↓	
2,3,4-Trichlorophenol	↓	
2,3,4,5-Tetrachlorophenol	↓	
4-Aminobiphenyl	↓	
Thiophene	NA	
13H-Dibenzo(a,i)carbazole	NA	

Field Surrogates	Percent Recovery	
Acenaphthene-d_{10}	16.3	65
Pyrene-D_{10}	22.7	91
Perylene-d_{12}	27.3	109
Naphthalene-d_8	18.1	72
Phenol-d_5	ND	--
Carbazole-d_3	21.1	84
Benzo(a)pyrene-d_{12}	24.2	97
2-Naphthylamine-d_7	NS	--
Quinoline-d_7	NS	--
Dibenzo(a,h)anthracene-d_{12}	13.8	55
1,2-Benz(a)anthracene-d_{12}	NS	

Laboratory Surrogatges	Percent Recovery	
Naphthol-d_7	NS	--
Acridine-d_9	21.3	85
Pyridine-d_5	NA	--
Chrysene-d_{12}	20.9	84
Fluoranthene-d_{10}	21.0	84
Benzo(e)pyrene-d_{12}	25.3	101

NA - Not able to see by GC/MS

NA* - not present in GC/MS Std.

NS - not Spiked

TRAVELER # 8412-018-8

PRIORITY POLLUTANT	(1) conc (ng/µL)	(1) % Rec	(2) conc (ng/µL)	(2) % Rec	Method
ACENAPHTHENE	22.5	90	26.9	108	
BENZIDINE	NA*	--			
1,2,4-TRICHLOROBENZENE	19.7	79			
HEXACHLOROBENZENE	23.8	95			
HEXACHLOROETHANE	23.9	96			
BIS(2-CHLOROETHYL)ETHER	29.9	120			
2-CHLORONAPHTHALENE	20.3	81			
2,4,6-TRICHLOROPHENOL	ND				
P-CHLORO-M-CRESOL	ND				
2-CHLOROPHENOL	22.9	92			
1,2-DICHLOROBENZENE	25.4	102			
1,3-DICHLOROBENZENE	16.6	66			
1,4-DICHLOROBENZENE	21.9	88			
3,3-DICHLOROBENZIDINE	NA*	--			
2,4-DICHLOROPHENOL	ND				
2,4-DIMETHYLPHENOL	10.3	41			
2,4-DINITROTOLUENE	25.8	103			
2,6-DINITROTOLUENE	43.4	174			
1,2-DIPHENYLHYDRAZINE	NA	--			
FLUORANTHENE	14.1	56	15.6	62	
4-CHLOROPHENYL PHENYL ETHER	24.8	99			
4-BROMOPHENYL PHENYL ETHER	25.1	100			
BIS(2-CHLOROISOPROPYL) ETHER	27.1	108			
BIS(2-CHLOROETHOXY) METHANE	29.7	119			
HEXACHLOROBUTADIENE	20.0	80			
HEXACHLOROCYCLOPENTADIENE	9.7	39			
ISOPHORONE	23.9	96			
NAPHTHALENE	25.5	102	23.9	96	
NITROBENZENE	27.6	110			
2-NITROPHENOL	10.0	40			
4-NITROPHENOL	ND				
2,4-DINITROPHENOL	ND				
4,6-DINITRO-2-METHYLPHENOL	ND				
N-NITROSODIMETHYL AMINE	31.4	126			
N-NITROSODIPHENYLAMINE	ND				
N-NITROSODIPROPYLAMINE	27.9	112			
PENTACHLOROPHENOL	ND				
PHENOL	38.9	156	28.7	115	
BIS(2-ETHYLHEXYL) PHTHALATE	39.4	158			

(1) internal standard calibration with phenanthrene-d_{10} as internal std

(2) isotope dilution

DI- -BUTYL PHTHALATE	27.8	111			
I- -OCTYL PHTHALATE	34.5	138			
DIETHYL PHTHALATE	26.7	107			
DIMETHYL PHTHALATE	24.7	99			
BENZO(A)ANTHRACENE	27.8	111			
BENZO(A)PYRENE	16.3	65	18.9	76	
BENZO(B)FLUORANTHENE	24.2	97			
BENZO(K)FLUORANTHENE	42.1	168	(high recovery due to poor		
CHRYSENE	20.8	83	resolution) 22.9	90	
ACENAPHTHYLENE	21.9	88			
ANTHRACENE	26.3	105			
BENZO(GHI)PERYLENE	30.1	120			
FLUORENE	23.7	95			
PHENANTHRENE	25.9	104			
DIBENZO(AH)ANTHRACENE	33.1	132	26.9	107	
INDENO(123-CD)PYRENE	31.5	126			
PYRENE	13.2	53	12.3	49	
NON-PRIORITY POLLUTANTS					
BENZOIC ACID	ND				
2-METHYLPHENOL	27.1	108			
4-METHYLPHENOL	32.0	128			
2,4,5-TRICHLOROPHENOL	ND				
2-METHYLNAPHTHALENE	21.5	86			
ANILINE	20.2	81			
BENZYL ALCOHOL	31.3	125			
4-CHLOROANILINE	17.5	70			
DIBENZOFURAN	22.9	92			
2-NITROANILINE	31.2	125			
3-NITROANILINE	35.5	142			
4-NITROANILINE	46.9	188			
Approximate DETECTION LIMIT	5ng/µL for the phenols.				

Note: Not able to detect all phenols in the 20ng/µL standard at the end of the shift

	conc (ng/µL)	%Rec	conc (ng/µL)	
Carbazole	10.3	41	26.8	107
4-Hydroxybiphenyl	30.4	122		
1-Naphthylamine	12.4	50		
Acridine	26.6	106	28.6	114
1,2,3-Trimethylbenzene	41.6	166		
Quinoline	23.5	94	26.4	106
2,3,5-Trimethylphenol	28.7	115		
3-Methyl-cholanthrene	30.7	125		
7,12-Dimethylbenz(a)anthracene	24.4	98		
1-Naphthol	23.7	95	27.5	110
2,3,4-Trichlorophenol	ND			
2,3,4,5-Tetrachlorophenol	ND			
4-Aminobiphenyl	26.3	105		
Thiophene	NA			
13H-Dibenzo(a,i)carbazole	NA			

Field Surrogates	Percent Recovery	
Acenaphthene-d_{10}	21.0	84
Pyrene-D_{10}	25.1	100
Perylene-d_{12}	28.6	114
Naphthalene-d_8	22.9	92
Phenol-d_5	33.9	136
Carbazole-d_3	9.7	39
Benzo(a)pyrene-d_{12}	21.6	86
2-Naphthylamine-d_7	NS	--
Quinoline-d_7	22.2	89
Dibenzo(a,h)anthracene-d_{12}	15.4	62
1,2-Benz(a)anthracene-d_{12}	NS	--

Laboratory Surrogatges	Percent Recovery	
Naphthol-d_7	21.5	86
Acridine-d_9	23.7	95
Pyridine-d_5	NA	--
Chrysene-d_{12}	23.2	93
Fluoranthene-d_{10}	22.7	91
Benzo(e)pyrene-d_{12}	27.2	109

NA - Not able to see by GC/MS

NS - not spiked

NA* - not present in GC/MS Std.

4/5/85
N.

ACUREX Corporation

Energy & Environmental Division

Mr. Paul Bitter
U.S. Environmental Protection Agency
SHR-13
230 Dearborne Street
Chicago, IL 60404

April 5, 1985
Acurex ID#: 8412-026
Project: SAS 1141E

Subject: Results of GC/MS Analyses for Well W14; Cartridge Extracts

Enclosed please find the results of the GC/MS analyses for Well 14. The well was sampled on December 14, 1985 in duplicate; the two samples are identified as W14A ($V_{sampled}$ = 22.0 L) and W14B ($V_{sampled}$ = 25.3 L). Analyses were performed as specified in SAS 1141E protocol with various modifications identified in Acurex's letter dated January 3, 1985. The following is a list of deliverables:

1. DFTPP (form, plot, list format) for 1/29/85.

2. Solvent blank for 1/29/85 (RIC; diagnostic report; quantitation report)

3. GC/MS standard for 1/29/85 (RIC; RT diagnostic report; RP diagnostic report; RT quantitation report; RP quantitation report; calibration check forms)

4. Concentration data for 8412-026-1 -- Well 14A, cartridge extract (data form; Table 1; RIC; RT diagnostic report; RP diagnostic report, RT quantitation report; RP quantitation report; quantitation report for other compounds found in sample; spectra: enhanced, unenhanced, library display of 3 best fits (pages 1 through 219); peak areas.

5. Concentration data for 8412-026-2 -- Well 14B, cartridge extract (data form; Table 2; RIC; RT diagnostic report; RP diagnostic report, RT quantitation report; RP quantitation report; quantitation report for other compounds found in sample; spectra: enhanced, unenhanced, library display of 3 best fits (pages 1 through 171); peak areas.

555 Clyde Avenue, PO Box 7555, Mountain View, CA 94039 (415) 964-3200 Telex 34-6391 TWX 910-7796593

6. Chain of custody forms.

Sincerely,

Viorica Lopez-Avila, Ph.D.
Technical Director

VLA/ats

Enclosures

cc: Dr. Brenda Kimble
Amphion Associates

Linda Haas Boynton
Sample Management Office

Data Audit Staff
EMSL - Las Vegas

Curtis Ross
EPA Region V

These results were obtained using accepted laboratory practices; the liability of Acurex Corporation shall not exceed the amount paid for this report. In no event shall Acurex be liable for special or consequential damages.

TRAVELER # 412-026- W1 A

PRIORITY POLLUTANT BNA'S	(1) Conc (ng/µL)	(1)	(2) Conc (ng/µL)	(2)
ACENAPHTHENE	ND			
BENZIDINE	NA*			
1,2,4-TRICHLOROBENZENE	ND			
HEXACHLOROBENZENE				
HEXACHLOROETHANE				
BIS(2-CHLOROETHYL)ETHER				
2-CHLORONAPHTHALENE				
2,4,6-TRICHLOROPHENOL				
P-CHLORO-M-CRESOL				
2-CHLOROPHENOL				
1,2-DICHLOROBENZENE				
1,3-DICHLOROBENZENE				
1,4-DICHLOROBENZENE				
3,3-DICHLOROBENZIDINE	NA*			
2,4-DICHLOROPHENOL	ND			
2,4-DIMETHYLPHENOL				
2,4-DINITROTOLUENE				
2,6-DINITROTOLUENE				
1,2-DIPHENYLHYDRAZINE	NA			
FLUORANTHENE	ND			
4-CHLOROPHENYL PHENYL ETHER				
4-BROMOPHENYL PHENYL ETHER				
BIS(2-CHLOROISOPROPYL) ETHER				
BIS(2-CHLOROETHOXY) METHANE				
HEXACHLOROBUTADIENE				
HEXACHLOROCYCLOPENTADIENE				
ISOPHORONE				
NAPHTHALENE				
NITROBENZENE				
2-NITROPHENOL				
4-NITROPHENOL				
2,4-DINITROPHENOL				
4,6-DINITRO-2-METHYLPHENOL				
N-NITROSODIMETHYL AMINE				
N-NITROSODIPHENYLAMINE				
N-NITROSODIPROPYLAMINE				
PENTACHLOROPHENOL				
PHENOL				
BIS(2-ETHYLHEXYL) PHTHALATE	1.6[a]			

(1) internal standard calibration with phenanthrene-d_{10} as internal std

(2) isotope dilution

a/ possible laboratory contamination

BENZYL BUTYL PHTHALATE	ND				
DI-N-BUTYL PHTHALATE	2.2[a]				
DI-N-OCTYL PHTHALATE	ND				
DIETHYL PHTHALATE					
DIMETHYL PHTHALATE					
BENZO(A)ANTHRACENE					
BENZO(A)PYRENE					
BENZO(B)FLUORANTHENE					
BENZO(K)FLUORANTHENE					
CHRYSENE					
ACENAPHTHYLENE					
ANTHRACENE					
BENZO(GHI)PERYLENE					
FLUORENE					
PHENANTHRENE					
DIBENZO(AH)ANTHRACENE					
INDENO(123-CD)PYRENE					
PYRENE					
NON-PRIORITY POLLUTANTS					
BENZOIC ACID	ND				
2-METHYLPHENOL					
4-METHYLPHENOL					
2,4,5-TRICHLOROPHENOL					
2-METHYLNAPHTHALENE					
ANILINE					
BENZYL ALCOHOL					
4-CHLOROANILINE					
DIBENZOFURAN					
2-NITROANILINE					
3-NITROANILINE					
4-NITROANILINE					
Approximate DETECTION LIMIT	0.1-0.5 ng/μL	0.009-0.45 μg/L			

	(1) mg/µL	(1) µg/L	(2) mg/µL	(2) µg/L
Carbazole	ND			
4-Hydroxybiphenyl	↓			
1-Naphthylamine	↓			
Acridine	↓			
1,2,3-Trimethylbenzene	↓			
Quinoline	↓			
2,3,5-Trimethylphenol	↓			
3-Methyl-cholanthrene	↓			
7,12-Dimethylbenz(a)anthracene	↓			
1-Naphthol	↓			
2,3,4-Trichlorophenol	↓			
2,3,4,5-Tetrachlorophenol	↓			
4-Aminobiphenyl	↓			
Thiophene	NA			
13H-Dibenzo(a,i)carbazole	NA			

Field Surrogates	Percent Recovery	
Acenaphthene-d_{10}	16.5	66
Pyrene-D_{10}	21.9	88
Perylene-d_{12}	27.1	108
Naphthalene-d_8	17.0	68
Phenol-d_5	3.6	14
Carbazole-d_3	10.7	43
Benzo(a)pyrene-d_{12}	23.4	94
2-Naphthylamine-d_7	NS	--
Quinoline-d_7	16.1	64
Dibenzo(a,h)anthracene-d_{12}	14.2	57
1,2-Benz(a)anthracene-d_{12}	NS	--

Laboratory Surrogatges	Percent Recovery	
Naphthol-d_7	18.6	74
Acridine-d_9	20.4	82
Pyridine-d_5	NA	--
Chrysene-d_{12}	25.0	100
Fluoranthene-d_{10}	22.4	90
Benzo(e)pyrene-d_{12}	25.9	104

NA - Not able to see by GC/MS

NA* - not present in GC/MS Std.

NS - not Spiked

Table 1 Approximate concentrations of other compounds detected in well 4A (8412-026-1)

Scan Number	Compound identification	Approx conc (µg/L)
320, 338	$C_6H_{12}O_2$ [a]	8.90
459	$C_4H_6O_2$ [a] (?)	0.08
565	Benzaldehyde	0.02
601, 609, 616, 623	$C_4H_{10}O_3$ [a]	0.75
741	C_9H_{10} [a]	0.08
874	$C_4H_{10}O_3$ [a] (?)	0.28
1055	Ethyl benzaldehyde	0.09
1074	$C_6H_{10}O_2$ or $C_5H_{10}O_2$ [a]	0.10
2010, 2014	C_8-Alkyl-benzene (?)	0.21
2391	Alkyne	0.53
2422	Alcohol	0.94
2680	Alkyne	23.40
3133, 3136	Azelate ester	0.82

a) See library display of 3 best fits

P Present but not quantitated

TRAVELER # ___ - 02 - V=25.3L

PRIORITY POLLUTANT BNA'S	(1) conc ng/µL	(1) conc µg/L	(2) conc ng/µL	(2) conc µg/L
ACENAPHTHENE	ND			
BENZIDINE	NA*			
1,2,4-TRICHLOROBENZENE	ND			
HEXACHLOROBENZENE				
HEXACHLOROETHANE				
BIS(2-CHLOROETHYL)ETHER				
2-CHLORONAPHTHALENE				
2,4,6-TRICHLOROPHENOL				
P-CHLORO-M-CRESOL				
2-CHLOROPHENOL				
1,2-DICHLOROBENZENE				
1,3-DICHLOROBENZENE				
1,4-DICHLOROBENZENE				
3,3-DICHLOROBENZIDINE	NA*			
2,4-DICHLOROPHENOL	ND			
2,4-DIMETHYLPHENOL				
2,4-DINITROTOLUENE				
2,6-DINITROTOLUENE				
1,2-DIPHENYLHYDRAZINE	NA			
FLUORANTHENE	ND			
4-CHLOROPHENYL PHENYL ETHER				
4-BROMOPHENYL PHENYL ETHER				
BIS(2-CHLOROISOPROPYL) ETHER				
BIS(2-CHLOROETHOXY) METHANE				
HEXACHLOROBUTADIENE				
HEXACHLOROCYCLOPENTADIENE				
ISOPHORONE				
NAPHTHALENE				
NITROBENZENE				
2-NITROPHENOL				
4-NITROPHENOL				
2,4-DINITROPHENOL				
4,6-DINITRO-2-METHYLPHENOL				
N-NITROSODIMETHYL AMINE				
N-NITROSODIPHENYLAMINE				
N-NITROSODIPROPYLAMINE				
PENTACHLOROPHENOL				
PHENOL				
BIS(2-ETHYLHEXYL) PHTHALATE	4.9 a)			

(1) internal standard calibration with phenanthrene-d_{10} as internal std
(2) isotope dilution

BENZYL BUTY				
DI-N-BUTYL PHTHALATE	1.9a			
DI-N-OCTYL PHTHALATE	ND			
DIETHYL PHTHALATE				
DIMETHYL PHTHALATE				
BENZO(A)ANTHRACENE				
BENZO(A)PYRENE				
BENZO(B)FLUORANTHENE				
BENZO(K)FLUORANTHENE				
CHRYSENE				
ACENAPHTHYLENE				
ANTHRACENE				
BENZO(GHI)PERYLENE				
FLUORENE				
PHENANTHRENE				
DIBENZO(AH)ANTHRACENE				
INDENO(123-CD)PYRENE				
PYRENE				
NON-PRIORITY POLLUTANTS				
BENZOIC ACID	ND			
2-METHYLPHENOL				
4-METHYLPHENOL				
2,4,5-TRICHLOROPHENOL				
2-METHYLNAPHTHALENE				
ANILINE				
BENZYL ALCOHOL				
4-CHLOROANILINE				
DIBENZOFURAN				
2-NITROANILINE				
3-NITROANILINE				
4-NITROANILINE				
Approximate DETECTION LIMIT	0.1-0.5 mg/µL	0.008-	.040 g/L	

	(1) conc (mg/µL)	(1) conc (µg/L)	(2) conc mg/µL	(2) conc (µg/L)
Carbazole	ND			
4-Hydroxybiphenyl	↓			
1-Naphthylamine	↓			
Acridine	↓			
1,2,3-Trimethylbenzene	↓			
Quinoline	↓			
2,3,5-Trimethylphenol	↓			
3-Methyl-cholanthrene	↓			
7,12-Dimethylbenz(a)anthracene	↓			
1-Naphthol	↓			
2,3,4-Trichlorophenol	↓			
2,3,4,5-Tetrachlorophenol	↓			
4-Aminobiphenyl	↓			
Thiophene	NA			
13H-Dibenzo(a,i)carbazole	NA			

Field Surrogates	Percent Recovery	
Acenaphthene-d_{10}	15.2	61
Pyrene-D_{10}	20.6	82
Perylene-d_{12}	26.7	107
Naphthalene-d_8	16.4	66
Phenol-d_5	2.6	10
Carbazole-d_3	17.3	69
Benzo(a)pyrene-d_{12}	23.1	92
2-Naphthylamine-d_7	NS	--
Quinoline-d_7	15.1	60
Dibenzo(a,h)anthracene-d_{12}	13.9	56
1,2-Benz(a)anthracene-d_{12}	NS	--

Laboratory Surrogatges	Percent Recovery	
Naphthol-d_7	15.5	62
Acridine-d_9	18.0	72
Pyridine-d_5	NA	--
Chrysene-d_{12}	22.5	90
Fluoranthene-d_{10}	20.1	80
Benzo(e)pyrene-d_{12}	24.1	97

NA - Not able to see by GC/MS

NA* - not present in GC/MS Std.

NS - not Spiked

Table 2 Approximate concentrations of other compounds detected in well 14B (84/12-026-2)

Scan Number	Compound identification	Approx. conc (µg/L)
325, 329, 340	$C_6H_{12}O_2$ [a]	5.10
496	Cyclohexen-one	0.11
611, 617	$C_4H_{10}O_3$ [a]	0.27
744	C_9H_{10} [a]	0.12
748	Alkane	P
875	$C_4H_{10}O_3$ (?)	0.21
1057	Ethyl-benzaldehyde	0.05
1076	$C_5H_{10}O_2$ or $C_8H_{10}O$ [a]	0.08
2015	C_8-Alkyl-benzene (?)	0.14
2394	Alkyne	0.24
2425	Alcohol	0.47
2682	Alkyne	11.22
3138	Azelate ester	1.27
3154	Alcohol	0.03

a/ See library display of 3 best fits
P - present but not quantitated

4/22/85
N.

ACUREX Corporation

Energy & Environmental Division

Mr. Paul Bitter
U.S. Environmental Protection Agency
SHR-13
230 Dearborne Street
Chicago, IL 60604

April 22, 1985
Acurex ID#: 8412-017
Project: SAS 1141E

Subject: Results of GC/MS Analyses for Well W-24; Cartridge Extracts

Enclosed please find the results of the GC/MS analyses for well W-24. The well was sampled on December 10, 1985 in duplicate; the two samples are identified as W-24A ($V_{sampled}$ = 22.9 L) and W-24B ($V_{sampled}$ = 19.5 L). Analyses were performed as specified in SAS 1141E protocol with various modifications identified in Acurex's letter dated January 3, 1985. The following is a list of deliverables:

1. DFTPP (form, plot, list format) for 2/1/85.

2. Solvent blank for 2/1/85 (RIC; diagnostic report; quantitation report)

3. GC/MS standard for 2/1/85 and 2/2/85 (RIC; RT diagnostic report; RP diagnostic report; RT quantitation report; RP quantitation report; calibration check forms)

4. Concentration data for 8412-017-1 -- Well W-24A, cartridge extract (data form; Table 1; RIC; RT diagnostic report; RP diagnostic report, RT quantitation report; RP quantitation report; quantitation report for other compounds found in sample; spectra: enhanced, unenhanced, library display of 3 best fits (pages 1 through 278); peak areas.

5. Concentration data for 8412-017-2 -- Well W-24B, cartridge extract (data form; Table 2; RIC; RT diagnostic report; RP diagnostic report, RT quantitation report; RP quantitation report; quantitation report for other compounds found in sample; spectra: enhanced, unenhanced, library display of 3 best fits (pages 1 through 279); peak areas.

6. Concentration data for 8412-017-10 -- Method blank for Well W-24 (data form, Table 3; RIC; RT diagnostic report, RP diagnostic report, RT quantitation report; quantitation report for other compounds found on method blank; spectra (enhanced, unenhanced, library display of 3 best fits (pages 1 through 159); peak areas. Method blank was obtained by spiking 350 mL acetone-methylene chloride (20:80) with 50 µg of stable-labeled isotopes and processed similarly as the cartridge extracts.

555 Clyde Avenue, PO Box 7555, Mountain View, CA 94039 (415) 964-3200 Telex 34-6391 TWX 910-7796593

7. Concentration data and recovery data for 8412-017-11 Method Standard (data form, RIC; RT diagnostic report, RP diagnostic report, RT quantitation report, RP quantitation report). Method Standard was obtained by spiking 350 mL acetone-methylene chloride (20:80) with 50 µg of stable-labeled isotopes, priority pollutants, and target compounds and processed similarly as the cartridge extracts.

8. Chain of custody forms.

Sincerely,

Viorica Lopez-Avila

Viorica Lopez-Avila, Ph.D.
Technical Director

VLA/ats

Enclosures

cc: Dr. Brenda Kimble
Amphion Associates

Linda Haas Boynton
Sample Management Office

Data Audit Staff
EMSL - Las Vegas

Curtis Ross
EPA Region V

These results were obtained using accepted laboratory practices; the liability of Acurex Corporation shall not exceed the amount paid for this report. In no event shall Acurex be liable for special or consequential damages.

TRAVELER # 8412-017-1 W-24A V=224

PRIORITY POLLUTANT BNA'S	(1) conc (mg/µL)	(1) conc (µg/L)	(2) conc (mg/µL)	(2) conc (µg/L)
ACENAPHTHENE	21.5	1.88	29.4	2.57
BENZIDINE	NA*			
1,2,4-TRICHLOROBENZENE	ND			
HEXACHLOROBENZENE				
HEXACHLOROETHANE				
BIS(2-CHLOROETHYL)ETHER				
2-CHLORONAPHTHALENE				
2,4,6-TRICHLOROPHENOL				
P-CHLORO-M-CRESOL				
2-CHLOROPHENOL				
1,2-DICHLOROBENZENE				
1,3-DICHLOROBENZENE				
1,4-DICHLOROBENZENE				
3,3-DICHLOROBENZIDINE	NA*			
2,4-DICHLOROPHENOL	ND			
2,4-DIMETHYLPHENOL				
2,4-DINITROTOLUENE				
2,6-DINITROTOLUENE				
1,2-DIPHENYLHYDRAZINE	NA			
FLUORANTHENE	ND			
4-CHLOROPHENYL PHENYL ETHER				
4-BROMOPHENYL PHENYL ETHER				
BIS(2-CHLOROISOPROPYL) ETHER				
BIS(2-CHLOROETHOXY) METHANE				
HEXACHLOROBUTADIENE				
HEXACHLOROCYCLOPENTADIENE				
ISOPHORONE				
NAPHTHALENE				
NITROBENZENE				
2-NITROPHENOL				
4-NITROPHENOL				
2,4-DINITROPHENOL				
4,6-DINITRO-2-METHYLPHENOL				
N-NITROSODIMETHYL AMINE				
N-NITROSODIPHENYLAMINE				
N-NITROSODIPROPYLAMINE				
PENTACHLOROPHENOL				
PHENOL				
BIS(2-ETHYLHEXYL) PHTHALATE	9.4[a]	0.82		

(1) internal standard calibration with phenanthrene-d_{10} as internal standard

(2) isotope dilution

a/ Possi due to labora contamin.

BENZYL BUTYL PHTHALATE	ND				
DI-N- BUTYL PHTHALATE	1.9[a]	0.17			
DI-N-OCTYL PHTHALATE	ND				
DIETHYL PHTHALATE					
DIMETHYL PHTHALATE					
BENZO(A)ANTHRACENE					
BENZO(A)PYRENE					
BENZO(B)FLUORANTHENE					
BENZO(K)FLUORANTHENE					
CHRYSENE					
ACENAPHTHYLENE					
ANTHRACENE					
BENZO(GHI)PERYLENE					
FLUORENE					
PHENANTHRENE					
DIBENZO(AH)ANTHRACENE					
INDENO(123-CD)PYRENE					
PYRENE					
NON-PRIORITY POLLUTANTS					
BENZOIC ACID	ND				
2-METHYLPHENOL					
4-METHYLPHENOL					
2,4,5-TRICHLOROPHENOL					
2-METHYLNAPHTHALENE					
ANILINE					
BENZYL ALCOHOL					
4-CHLOROANILINE					
DIBENZOFURAN	1.3	0.11			
2-NITROANILINE	ND				
3-NITROANILINE					
4-NITROANILINE					
Approximate DETECTION LIMIT	0.1-0.5 ng/µL	0.009-0.044 µg/L			

	(1) Conc (mg/µL)	(1) Conc (µg/L)	(2) Conc (mg/µL)	(2) Conc (µg/L)
Carbazole	2.7	0.24	3.80	0.33
4-Hydroxybiphenyl	ND			
1-Naphthylamine				
Acridine				
1,2,3-Trimethylbenzene				
Quinoline				
2,3,5-Trimethylphenol				
3-Methyl-cholanthrene				
7,12-Dimethylbenz(a)anthracene				
1-Naphthol				
2,3,4-Trichlorophenol				
2,3,4,5-Tetrachlorophenol				
4-Aminobiphenyl				
Thiophene	NA			
13H-Dibenzo(a,i)carbazole	NA			

Field Surrogates		Percent Recovery
Acenaphthene-d_{10}	16.4	67
Pyrene-D_{10}	22.9	92
Perylene-d_{12}	22.1	88
Naphthalene-d_8	16.9	68
Phenol-d_5	2.8	11
Carbazole-d_3	16.8	67
Benzo(a)pyrene-d_{12}	18.6	74
2-Naphthylamine-d_7	NS	--
Quinoline-d_7	17.2	69
Dibenzo(a,h)anthracene-d_{12}	12.9	52
1,2-Benz(a)anthracene-d_{12}	NS	--

Laboratory Surrogatges		Percent Recovery
Naphthol-d_7	19.4	78
Acridine-d_9	19.9	80
Pyridine-d_5	NA	--
Chrysene-d_{12}	21.5	86
Fluoranthene-d_{10}	19.8	79
Benzo(e)pyrene-d_{12}	23.2	93

NA - Not able to see by GC/MS

NA* - not present in GC/MS Std.

NS - not Spiked

Table 1 Approximate concentrations of other compounds detected in well 24 A (8412-017-1)

Scan Number	Compound identification	Approximate conc. (μg/L)
318, 323, 326, 333	$C_6H_{12}O_2$ [a]	3.18
395	Xylene	0.04
454	$C_4H_6O_2$ (dihydrofuranone)	0.08
472	C_3-Alkyl-benzene	0.03
550	Benzaldehyde	0.02
586, 595	$C_4H_{10}O_3$ [a] (?)	0.14
599	C_3-Alkylbenzene	0.15
611	$C_4H_{10}O_3$ [a] (?)	0.15
625	$C_4H_{10}O_3$ or $C_3H_8O_2$ [a]	0.17
726	C_9H_{10} [a]	1.78
846	C_7H_9N [a]	0.12
852	$C_{10}H_{12}$ [a]	0.10
882	C_9H_8O [a]	0.10
891	C_9H_8O [a]	0.06
998	$C_{10}H_{12}$ [a]	0.17

1009	$C_{10}H_{10}$ [a]	0.07
1038	Ethyl-benzaldehyde	0.12
1230	Dihydro-benzothiophene	0.22
1278	C_4-Alkylphenol (?)	0.08
1299	Methyl-benzothiophene	0.05
2371	Alkyne	0.51
2661	Alkyne	15.0
2703	Alcohol or Alkene	0.24

TRAVELER # 8412-017-2 W-24B V=19.5L

PRIORITY POLLUTANT BNA'S	(1) conc (mg/μL)	(1) Conc μg/L	(2) Conc mg/μL	(2) Conc (μg/L)
ACENAPHTHENE	19.3	1.98	25.4	2.61
BENZIDINE	NA*			
1,2,4-TRICHLOROBENZENE	ND			
HEXACHLOROBENZENE				
HEXACHLOROETHANE				
BIS(2-CHLOROETHYL)ETHER				
2-CHLORONAPHTHALENE				
2,4,6-TRICHLOROPHENOL				
P-CHLORO-M-CRESOL				
2-CHLOROPHENOL				
1,2-DICHLOROBENZENE				
1,3-DICHLOROBENZENE				
1,4-DICHLOROBENZENE				
3,3-DICHLOROBENZIDINE	NA*			
2,4-DICHLOROPHENOL	ND			
2,4-DIMETHYLPHENOL				
2,4-DINITROTOLUENE				
2,6-DINITROTOLUENE				
1,2-DIPHENYLHYDRAZINE	NA			
FLUORANTHENE	ND			
4-CHLOROPHENYL PHENYL ETHER				
4-BROMOPHENYL PHENYL ETHER				
BIS(2-CHLOROISOPROPYL) ETHER				
BIS(2-CHLOROETHOXY) METHANE				
HEXACHLOROBUTADIENE				
HEXACHLOROCYCLOPENTADIENE				
ISOPHORONE				
NAPHTHALENE				
NITROBENZENE				
2-NITROPHENOL				
4-NITROPHENOL				
2,4-DINITROPHENOL				
4,6-DINITRO-2-METHYLPHENOL				
N-NITROSODIMETHYL AMINE				
N-NITROSODIPHENYLAMINE				
N-NITROSODIPROPYLAMINE				
PENTACHLOROPHENOL				
PHENOL				
BIS(2-ETHYLHEXYL) PHTHALATE	6.5[a]	0.67		

(1) internal standard calibration with phenanthrene-d_{10} as internal s

(2) isoto dilution

a) Possibly due to laboratory contamination.

BENZYL BUTYL PHTHALATE	ND				
DI-N-BUTYL PHTHALATE	1.7[a]	0.17			
DI-N-OCTYL PHTHALATE	ND				
DIETHYL PHTHALATE					
DIMETHYL PHTHALATE					
BENZO(A)ANTHRACENE					
BENZO(A)PYRENE					
BENZO(B)FLUORANTHENE					
BENZO(K)FLUORANTHENE					
CHRYSENE					
ACENAPHTHYLENE					
ANTHRACENE					
BENZO(GHI)PERYLENE					
FLUORENE					
PHENANTHRENE					
DIBENZO(AH)ANTHRACENE					
INDENO(123-CD)PYRENE					
PYRENE					
NON-PRIORITY POLLUTANTS					
BENZOIC ACID	ND				
2-METHYLPHENOL					
4-METHYLPHENOL					
2,4,5-TRICHLOROPHENOL					
2-METHYLNAPHTHALENE					
ANILINE					
BENZYL ALCOHOL					
4-CHLOROANILINE					
DIBENZOFURAN	1.1	0.11			
2-NITROANILINE	ND				
3-NITROANILINE					
4-NITROANILINE					
Approximate DETECTION LIMIT	0.1-0. ng/μL	0.010- μg/L	.050		

	(1) conc (mg/µL)	(1) conc (µg/L)	(2) conc (mg/µL)	(2) conc (µg/L)
Carbazole	2.4	0.25	2.8	0.29
4-Hydroxybiphenyl	ND			
1-Naphthylamine				
Acridine				
1,2,3-Trimethylbenzene				
Quinoline				
2,3,5-Trimethylphenol				
3-Methyl-cholanthrene				
7,12-Dimethylbenz(a)anthracene				
1-Naphthol				
2,3,4-Trichlorophenol				
2,3,4,5-Tetrachlorophenol				
4-Aminobiphenyl				
Thiophene	NA			
13H-Dibenzo(a,i)carbazole	NA			

Field Surrogates		Percent Recovery
Acenaphthene-d_{10}	17.4	70
Pyrene-D_{10}	19.8	79
Perylene-d_{12}	22.9	92
Naphthalene-d_8	18.0	72
Phenol-d_5	3.3	13
Carbazole-d_3	20.5	82
Benzo(a)pyrene-d_{12}	18.4	74
2-Naphthylamine-d_7	NS	--
Quinoline-d_7	17.8	71
Dibenzo(a,h)anthracene-d_{12}	12.5	50
1,2-Benz(a)anthracene-d_{12}	NS	--

Laboratory Surrogatges		Percent Recovery
Naphthol-d_7	20.6	82
Acridine-d_9	19.5	78
Pyridine-d_5	NA	--
Chrysene-d_{12}	21.6	86
Fluoranthene-d_{10}	19.9	80
Benzo(e)pyrene-d_{12}	24.1	96

NA - Not able to see by GC/MS

NA* - not present in GC/MS Std.

NS - not Spiked

Table 2 Approximate concentrations of other compounds detected in well 24B (8412-017-2)

Scan Number	Compound identification	Approximate conc (µg/L)
342	$C_7H_{14}O$ [a]	0.09
351	Xylene	0.06
389	Xylene	0.04
469	C_3- Alkyl benzene	0.03
546	Benzaldehyde	0.03
589	$C_4H_{10}O_3$ or $C_3H_8O_2$ [a]	0.12
595	C_3 - Alkyl benzene	?
599, 607, 615	$C_4H_{10}O_3$ or $C_3H_8O_2$ [a]	0.68
722	C_9H_{10} [a]	2.19
727	C_9H_{10} [a]	
844	C_7H_9N [a]	0.18
851	$C_{10}H_{12}$ [a]	0.16
881, 890	C_9H_8O [a]	0.18
998	$C_{10}H_{12}$ [a] (dihydro-methyl indene)	0.17
1010	$C_{10}H_{10}$ [a]	0.08

Table 2 (concluded)

		Conc. (μg/L)
1038	Ethyl-benzaldehyde	0.12
1231	Dihydro-benzothiophene	0.23
1645	Phenyl-pyridine (??)	0.93
2253	Methyl-quinoline (??)	0.54
2366	Alkene	0.49
2399	Alkene or alcohol	0.51
2658, 2661, 2671	Alkyne	19.55
2699	Alcohol	0.20
3115	azelate ester	0.73

P - present but not quantitated
a/ - see library display of 3 best fits

TRAVELER # 8412-017-10 method blank

PRIORITY POLLUTANT BNA'S	(1) conc (mg/mL)	(1) conc µg/L	(2) conc mg/mL	(2) conc (µg/L)
ACENAPHTHENE	ND			
BENZIDINE	NA*			
1,2,4-TRICHLOROBENZENE	ND			
HEXACHLOROBENZENE				
HEXACHLOROETHANE				
BIS(2-CHLOROETHYL)ETHER				
2-CHLORONAPHTHALENE				
2,4,6-TRICHLOROPHENOL				
P-CHLORO-M-CRESOL				
2-CHLOROPHENOL				
1,2-DICHLOROBENZENE				
1,3-DICHLOROBENZENE				
1,4-DICHLOROBENZENE				
3,3-DICHLOROBENZIDINE	NA*			
2,4-DICHLOROPHENOL	ND			
2,4-DIMETHYLPHENOL				
2,4-DINITROTOLUENE				
2,6-DINITROTOLUENE				
1,2-DIPHENYLHYDRAZINE	NA			
FLUORANTHENE	ND			
4-CHLOROPHENYL PHENYL ETHER				
4-BROMOPHENYL PHENYL ETHER				
BIS(2-CHLOROISOPROPYL) ETHER				
BIS(2-CHLOROETHOXY) METHANE				
HEXACHLOROBUTADIENE				
HEXACHLOROCYCLOPENTADIENE				
ISOPHORONE				
NAPHTHALENE				
NITROBENZENE				
2-NITROPHENOL				
4-NITROPHENOL				
2,4-DINITROPHENOL				
4,6-DINITRO-2-METHYLPHENOL				
N-NITROSODIMETHYL AMINE				
N-NITROSODIPHENYLAMINE				
N-NITROSODIPROPYLAMINE				
PENTACHLOROPHENOL				
PHENOL				
BIS(2-ETHYLHEXYL) PHTHALATE	1.6			

(1) internal standard calibration with phenanthrene-d_{10} as internal s

(2) isotope dilution

BENZYL BUTYL PHTHALATE	1.2				
DI-N-BUTYL PHTHALATE	1.3				
DI-N-OCTYL PHTHALATE	ND				
DIETHYL PHTHALATE					
DIMETHYL PHTHALATE					
BENZO(A)ANTHRACENE					
BENZO(A)PYRENE					
BENZO(B)FLUORANTHENE					
BENZO(K)FLUORANTHENE					
CHRYSENE					
ACENAPHTHYLENE					
ANTHRACENE					
BENZO(GHI)PERYLENE					
FLUORENE					
PHENANTHRENE					
DIBENZO(AH)ANTHRACENE					
INDENO(123-CD)PYRENE					
PYRENE					
NON-PRIORITY POLLUTANTS					
BENZOIC ACID	ND				
2-METHYLPHENOL					
4-METHYLPHENOL					
2,4,5-TRICHLOROPHENOL					
2-METHYLNAPHTHALENE					
ANILINE					
BENZYL ALCOHOL					
4-CHLOROANILINE					
DIBENZOFURAN					
2-NITROANILINE					
3-NITROANILINE					
4-NITROANILINE					
Approximate DETECTION LIMIT	0.1-0.5 ng/μL				

	(1) conc (mg/µL)	(1) conc (µg/L)	(2) conc (mg/µL)	(2) conc (µg/L)
Carbazole	ND			
4-Hydroxybiphenyl				
1-Naphthylamine				
Acridine				
1,2,3-Trimethylbenzene				
Quinoline				
2,3,5-Trimethylphenol				
3-Methyl-cholanthrene				
7,12-Dimethylbenz(a)anthracene				
1-Naphthol				
2,3,4-Trichlorophenol				
2,3,4,5-Tetrachlorophenol				
4-Aminobiphenyl				
Thiophene	NA			
13H-Dibenzo(a,i)carbazole	NA			

Field Surrogates		Percent Recovery
Acenaphthene-d_{10}	12.9	52
Pyrene-D_{10}	19.3	77
Perylene-d_{12}	22.6	90
Naphthalene-d_8	12.4	50
Phenol-d_5	16.6	66
Carbazole-d_3	18.4	74
Benzo(a)pyrene-d_{12}	19.6	78
2-Naphthylamine-d_7	NS	—
Quinoline-d_7	12.4	50
Dibenzo(a,h)anthracene-d_{12}	12.5	50
1,2-Benz(a)anthracene-d_{12}	NS	--

Laboratory Surrogatges		Percent Recovery
Naphthol-d_7	15.3	61
Acridine-d_9	18.3	73
Pyridine-d_5	NA	--
Chrysene-d_{12}	20.2	81
Fluoranthene-d_{10}	18.8	75
Benzo(e)pyrene-d_{12}	14.6	58

NA - Not able to see by GC/MS

NA* - not present in GC/MS Std.

NS - not Spiked

Table 3 Approximate concentrations of other compounds detected in method blank 8412-017-10

Scan Number	Compound identification	Approximate Conc (ng/μL)
337	$C_7H_{14}O$ or $C_5H_{10}O$	0.55
602, 616,	$C_4H_{10}O_3$ [a]	2.20
1147	$C_5H_{10}O_2$ or $C_8H_{16}O$ [a]	1.23
2400	Alcohol	10.96
2661	Alkyne	271.7
3113	Azelate ester	1362

TRAVELER # 8412-017-11 Method (1) (1) (2) (2)

PRIORITY POLLUTANT BNA'S	Standard conc (mg/mL)	% Rec	conc mg/mL	% Rec
ACENAPHTHENE	15.7	63	26.9	108
BENZIDINE	NA*	--		
1,2,4-TRICHLOROBENZENE	11.9	48		
HEXACHLOROBENZENE	19.8	79		
HEXACHLOROETHANE	16.1	64		
BIS(2-CHLOROETHYL)ETHER	11.7	47		
2-CHLORONAPHTHALENE	14.6	58		
2,4,6-TRICHLOROPHENOL	14.5	58		
P-CHLORO-M-CRESOL	18.3	73		
2-CHLOROPHENOL	11.5	46		
1,2-DICHLOROBENZENE	11.4	46		
1,3-DICHLOROBENZENE	11.5	46		
1,4-DICHLOROBENZENE	11.3	45		
3,3-DICHLOROBENZIDINE	NA*	--		
2,4-DICHLOROPHENOL	14.1	56		
2,4-DIMETHYLPHENOL	14.3	57		
2,4-DINITROTOLUENE	19.7	79		
2,6-DINITROTOLUENE	23.5	94		
1,2-DIPHENYLHYDRAZINE	NA	--		
FLUORANTHENE	20.1	80	27.5	110
4-CHLOROPHENYL PHENYL ETHER	16.5	66		
4-BROMOPHENYL PHENYL ETHER	18.4	74		
BIS(2-CHLOROISOPROPYL) ETHER	12.5	50		
BIS(2-CHLOROETHOXY) METHANE	12.4	50		
HEXACHLOROBUTADIENE	11.3	45		
HEXACHLOROCYCLOPENTADIENE	9.3	37		
ISOPHORONE	13.1	52		
NAPHTHALENE	13.8	55	28.4	114
NITROBENZENE	13.2	53		
2-NITROPHENOL	13.1	52		
4-NITROPHENOL	ND	--		
2,4-DINITROPHENOL	ND	--		
4,6-DINITRO-2-METHYLPHENOL	8.2	33		
N-NITROSODIMETHYL AMINE	ND	--		
N-NITROSODIPHENYLAMINE	ND	--		
N-NITROSODIPROPYLAMINE	13.3	53		
PENTACHLOROPHENOL	3.1	12		
PHENOL	5.2	21	26.5	106
BIS(2-ETHYLHEXYL) PHTHALATE	22.7	91		

(1) internal standard calibration with phenanthrene-d_{10} as internal s

(2) isoto dilution

BENZYL BUTYL PHTHALATE	22.6	90			
[illegible] BUTYL PHTHALATE	19.4	78			
DI-N-OCTYL PHTHALATE	24.5	98			
DIETHYL PHTHALATE	17.5	70			
DIMETHYL PHTHALATE	16.6	66			
BENZO(A)ANTHRACENE	21.2	85			
BENZO(A)PYRENE	21.9	88	27.2	109	
BENZO(B)FLUORANTHENE	28.2	113			
BENZO(K)FLUORANTHENE	a/				
CHRYSENE	17.7	71	25.8	103	
ACENAPHTHYLENE	15.4	62			
ANTHRACENE	20.8	83			
BENZO(GHI)PERYLENE	24.1	96			
FLUORENE	17.7	71			
PHENANTHRENE	25.8	103			
DIBENZO(AH)ANTHRACENE	24.5	98	25.7	103	
INDENO(123-CD)PYRENE	24.9	100			
PYRENE	19.7	79	26.0	104	
NON-PRIORITY POLLUTANTS					
BENZOIC ACID	3.9	16			
2-METHYLPHENOL	13.4	54			
4-METHYLPHENOL	14.2	57			
2,4,5-TRICHLOROPHENOL	5.5	22			
2-METHYLNAPHTHALENE	13.2	53			
ANILINE	5.1	20			
BENZYL ALCOHOL	14.5	58			
4-CHLOROANILINE	8.0	32			
DIBENZOFURAN	16.1	64			
2-NITROANILINE	20.7	83			
3-NITROANILINE	16.4	66			
4-NITROANILINE	ND	--			
approximate DETECTION LIMIT					

a/ Not able to resolve benzo(b)fluoranthene and benzo(k)fluoran

	(1) Conc (ng/µL)	(1) % Rec	(2) Conc (ng/µL)	(2) % Rec
Carbazole	24.7	99	30.2	121
4-Hydroxybiphenyl	18.8	75		
1-Naphthylamine	6.6	26		
Acridine	21.5	86	27.9	112
1,2,3-Trimethylbenzene	11.8	47		
Quinoline	14.9	60	26.7	107
2,3,5-Trimethylphenol	16.7	67		
3-Methyl-cholanthrene	26.3	105		
7,12-Dimethylbenz(a)anthracene	28.1	112		
1-Naphthol	18.9	76	24.2	97
2,3,4-Trichlorophenol	ND	--		
2,3,4,5-Tetrachlorophenol	12.6	50		
4-Aminobiphenyl	13.3	53		
Thiophene	NA	--		
13H-Dibenzo(a,i)carbazole	NA	--		

Field Surrogates		Percent Recovery
Acenaphthene-d_{10}	13.3	53
Pyrene-D_{10}	19.2	77
Perylene-d_{12}	22.9	92
Naphthalene-d_8	12.7	51
Phenol-d_5	7.2	29
Carbazole-d_3	19.5	78
Benzo(a)pyrene-d_{12}	20.3	81
2-Naphthylamine-d_7	NS	--
Quinoline-d_7	13.6	54
Dibenzo(a,h)anthracene-d_{12}	12.6	50
1,2-Benz(a)anthracene-d_{12}	NS	--

Laboratory Surrogatges		Percent Recovery
Naphthol-d_7	16.8	67
Acridine-d_9	18.3	73
Pyridine-d_5	NA	--
Chrysene-d_{12}	19.9	80
Fluoranthene-d_{10}	18.9	76
Benzo(e)pyrene-d_{12}	21.2	85

NA - Not able to see by GC/MS

NA* - not present in GC/MS Std.

NS - not Spiked

5/9/85
N.

ACUREX Corporation

Energy & Environmental Division

Mr. Paul Bitter
U.S. Environmental Protection Agency
SHR-13
230 Dearborne Street
Chicago, IL 60604

May 9, 1985
Acurex ID#: 8412-027A
Project: SAS 1141E

Subject: Additional Results of GC/MS Analyses for Well W-40; Control Cartridges and Method Blank

Enclosed please find the results for two control cartridges and one method blank that have been analyzed with the Well W-40 samples. The letter report submitted on April 26 contained only the priority pollutant and target compound results for the two control cartridges identified as 8412-027-11 and 8412-027-12, and method blank identified as 8412-027-13. This letter report contains the concentration data for other compounds detected in the control cartridges (Tables 1 and 2) and the method blank (Table 3), the quantitation reports, as well as the spectra (enhanced, unenhanced library display of 3 best fits) and peak areas for all compounds present in the extracts identified above.

Sincerely,

Viorica Lopez-Avila

Viorica Lopez-Avila, Ph.D.
Technical Director

VLA/ats

Enclosures

cc: Dr. Brenda Kimble
Amphion Associates

Linda Haas Boynton
Sample Management Office

Data Audit Staff
EMSL - Las Vegas

Curtis Ross
EPA Region V

These results were obtained using accepted laboratory practices; the liability of Acurex Corporation shall not exceed the amount paid for this report. In no event shall Acurex be liable for special or consequential damages.

555 Clyde Avenue, PO Box 7555, Mountain View, CA 94039 (415) 964-3200 Telex 34-6391 TWX 910-7796593

Table 1 Approximate concentrations of other compounds detected in control cartridge 8412-027-11

Scan Number	Compound identification	Approximate Conc (μg per cartridge)
356, 360, 365, 369	$C_6H_{12}O_2$ (Hydroxy-methylpentanone)	582
638, 658	$C_4H_{10}O_3$ (glycol type compound)	9.6
939	Alkane	2.3
976	Alkane	3.6
1078	$C_5H_{10}O_2$ or $C_8H_{16}O$ [a]	3.9
1167	$C_5H_{10}O_2$ or $C_8H_{16}O$ [a]	2.7
2419	Alcohol or alkene	37.7
2679	Alkyne	1027
2810	Alkyne	15.6
2967	Alkyne	17.3
3130	Azelate ester	89.8

a/ See library display of 3 best fits

Table 2 Approximate concentrations of other compounds detected in control cartridge 8412-027-12

Scan Number	Compound identification	approximate conc (µg per cartridge
319	Alkane	11.9
354, 366,	$C_6H_{12}O_2$ (hydroxy-methylpentanone)	724
405	Alkane	1.4
628, 635, 640, 663	$C_4H_{10}O_3$ (glycol type compound)	17.4
941	Alkane	2.3
979	Alkane or Alkene	3.5
2391	alkyldiene or alkyne	25.8
2421	alcohol	43.8
2539	Dibutyl-phthalate + unknown	15.8
2684	Alkyne	943
2970	Alkyne or alkyldiene	20.5
3135	Azelate ester	90.9

Table 3 Approximate concentrations of other compounds detected in method blank 8412-027-13

Scan Number	Compound identification	Approx. Conc a (µg/mL extrac
336	Alkane	0.5
361, 375,	$C_6H_{12}O_2$ (Hydroxy-methylpentanone)	60.9
444	Cyclohexenol	P
530	Cyclohexen-one	1.7
631, 638	$C_4H_{10}O_3$ (glycol type compound)	5.7
811	Alkane	0.6
838	Alkane	0.7
1078	$C_5H_{10}O_2$ or $C_8H_{16}O$ b	1.6
1166	$C_5H_{10}O_2$ or $C_8H_{16}O$ b	1.5
2387	Alkyne or alkyldiene	11.1
2420	Alcohol	17.7
2536	Di-n-butyl phthalate + unknown	5.7
2591	Alkyne	1.8
2680	Alkyne	408
2969	Alkyne or alcohol	7.2

13.8

3131 Azelate ester

a/ value is given in µg/mL extract; 350 mL acetone/methylene chloride were concentrated down to 2 mL

P present but not quantitated

b/ see library display of 3 best fits

5/9/85
N.

ACUREX Corporation

Energy & Environmental Division

Mr. Paul Bitter
U.S. Environmental Protection Agency
SHR-13
230 Dearborne Street
Chicago, IL 60604

May 9, 1985
Acurex ID#: 8411-045
Project: SAS 1141E

Subject: Results of GC/MS Analyses for Well 48 Composite Sample.

Enclosed please find the results for Well 48. The well was sampled on November 16, 1984 by Gary J. Schroeher. Four 1-gal samples, identified as Methodist Hospital 01, 02, 03, 04, were received at Acurex on November 19, 1984. An 8L composite sample was obtained from samples identified as Methodist Hospital 01 and 02 and was extracted by continuous liquid-liquid extraction with methylene chloride. Analyses were performed as specified in SAS 1141E protocol with various modifications identified in Acurex's letter dated January 3, 1985. The following is a list of deliverables:

1. DFTPP (form, plot, list format) for 2/2/85.

2. Solvent blank for 2/2/85 (RIC; diagnostic report; quantitation report)

3. GC/MS standard for 2/2/85 (RIC; RT diagnostic report; RP diagnostic report; RT quantitation report; RP quantitation report; calibration check forms)

4. Concentration data for 8411-045-1 -- Well 48, composite sample (data form; Table 1; RIC; RT diagnostic report; RP diagnostic report, RT quantitation report; RP quantitation report; quantitation report for other compounds found in sample; spectra: enhanced, unenhanced, library display of 3 best fits (pages 1 through 198); peak areas.

5. Concentration data and recovery data for 8412-016-3 Method Standard (data form, RIC; RT diagnostic report, RP diagnostic report, RT quantitation report, RP quantitation report). Method Standard was obtained by spiking 50 µg of stable-labeled isotopes, priority pollutants, and target compounds into 3L of organics free water and extracted using the continuous liquid-liquid procedure.

555 Clyde Avenue, PO Box 7555, Mountain View, CA 94039 (415) 964-3200 Telex 34-6391 TWX. 910-7796593

6. Chain of custody forms.

Sincerely,

Viorica Lopez-Avila, Ph.D.
Technical Director

VLA/kek

Enclosures

cc: Dr. Brenda Kimble
Amphion Associates

Linda Haas Boynton
Sample Management Office

Data Audit Staff
EMSL - Las Vegas

Curtis Ross
EPA Region V

Gail Lowry
Minnesota Pollution Control Association

These results were obtained using accepted laboratory practices; the liability of Acurex Corporation shall not exceed the amount paid for this report. In no event shall Acurex be liable for special or consequential damages.

TRAVELER # 8412-016-3

~~100~~

PRIORITY POLLUTANT BNA'S	(1) Conc ng/µL	% Rec	(2) Conc (ng/µL)	% Rec
ACENAPHTHENE	19.5	78.0	13.9	56
BENZIDINE	NA*	--		
1,2,4-TRICHLOROBENZENE	16.0	64.0		
HEXACHLOROBENZENE	15.3	61.2		
HEXACHLOROETHANE	13.4	53.6		
BIS(2-CHLOROETHYL)ETHER	18.5	74.0		
2-CHLORONAPHTHALENE	17.8	71.2		
2,4,6-TRICHLOROPHENOL	ND	--		
P-CHLORO-M-CRESOL	ND	--		
2-CHLOROPHENOL	4.5	18.0		
1,2-DICHLOROBENZENE	16.7	66.8		
1,3-DICHLOROBENZENE	14.6	58.4		
1,4-DICHLOROBENZENE	15.8	63.2		
3,3-DICHLOROBENZIDINE	NA*	--		
2,4-DICHLOROPHENOL	ND	--		
2,4-DIMETHYLPHENOL	10.2	40.8		
2,4-DINITROTOLUENE	17.8	71.2		
2,6-DINITROTOLUENE	25.2	100.8		
1,2-DIPHENYLHYDRAZINE	NA	--		
FLUORANTHENE	16.9	67.6	15.2	61
4-CHLOROPHENYL PHENYL ETHER	17.8	71.2		
4-BROMOPHENYL PHENYL ETHER	16.8	67.2		
BIS(2-CHLOROISOPROPYL) ETHER	16.7	66.8		
BIS(2-CHLOROETHOXY) METHANE	23.2	92.8		
HEXACHLOROBUTADIENE	9.9	39.6		
HEXACHLOROCYCLOPENTADIENE	ND	--		
ISOPHORONE	21.4	85.6		
NAPHTHALENE	19.7	78.8	14.3	57
NITROBENZENE	20.9	83.6		
2-NITROPHENOL	ND	--		
4-NITROPHENOL	ND	--		
2,4-DINITROPHENOL	ND	--		
4,6-DINITRO-2-METHYLPHENOL	ND	--		
N-NITROSODIMETHYL AMINE	ND	--		
N-NITROSODIPHENYLAMINE	ND	--		
N-NITROSODIPROPYLAMINE	21.0	84.0		
PENTACHLOROPHENOL	ND	--		
PHENOL	54.0	216	32.6	130
BIS(2-ETHYLHEXYL) PHTHALATE	27.8	111.2		

(1) using internal standard calibration with phenanthrene-d10

(2) using isotope dilution

BENZYL BUTYL PHTHALATE	11.8	47.2			
DI-N-BUTYL PHTHALATE	11.2	44.8			~~300~~
DI-N-OCTYL PHTHALATE	18.5	74.0			
DIETHYL PHTHALATE	4.3	17.2			
DIMETHYL PHTHALATE	3.2	12.8			
BENZO(A)ANTHRACENE	15.9	63.6			
BENZO(A)PYRENE	14.1	56.4	10.7	43	
BENZO(B)FLUORANTHENE	12.3	49.2			
BENZO(K)FLUORANTHENE	17.7	70.8			
CHRYSENE	16.1	64.4	16.3	65	
ACENAPHTHYLENE	20.1	80.4			
ANTHRACENE	19.1	76.4			
BENZO(GHI)PERYLENE	13.7	54.8			
FLUORENE	18.9	75.6			
PHENANTHRENE	28.3	113.2			
DIBENZO(AH)ANTHRACENE	14.3	57.2			
INDENO(123-CD)PYRENE	14.3	57.2			
PYRENE	17.3	69.2	13.5	54	
NON-PRIORITY POLLUTANTS					
BENZOIC ACID	ND	--			
2-METHYLPHENOL	3.0	12.0			
4-METHYLPHENOL	4.7	18.8			
2,4,5-TRICHLOROPHENOL	ND	--			
2-METHYLNAPHTHALENE	18.1	72.4			
ANILINE	3.7	14.8			
BENZYL ALCOHOL	4.8	19.2			
4-CHLOROANILINE	19.8	79.2			
DIBENZOFURAN	18.8	75.2			
2-NITROANILINE	9.3	37.2			
3-NITROANILINE	23.2	92.8			
4-NITROANILINE	12.1	48.4			
DETECTION LIMIT					

	(1)	% Rec	(2)	% Rec
Carbazole	10.5	42	16.7	67
4-Hydroxybiphenyl	1.7	6.8		
1-Naphthylamine	23.6	94		
Acridine	20.3	81	15.0	60
1,2,3-Trimethylbenzene	15.6	62		
Quinoline	21.2	85	13.7	55
2,3,5-Trimethylphenol	13.9	56		
3-Methyl-cholanthrene	14.6	58		
7,12-Dimethylbenz(a)anthracene	15.8	63		
1-Naphthol	4.4	18	12.6	50
2,3,4-Trichlorophenol	ND	--		
2,3,4,5-Tetrachlorophenol	ND	--		
4-Aminobiphenyl	30.7	123		
Thiophene	NA	--		
13H-Dibenzo(a,i)carbazole	NA	--		

Field Surrogates	Percent Recovery	
Acenaphthene-d_{10}	35.5	142
Pyrene-D_{10}	31.5	126
Perylene-d_{12}	27.0	108
Naphthalene-d_8	36.8	147
Phenol-d_5	22.1	88
Carbazole-d_3	36.6	146
Benzo(a)pyrene-d_{12}	31.1	124
2-Naphthylamine-d_7	NS	--
Quinoline-d_7	39.2	157
Dibenzo(a,h)anthracene-d_{12}	13.9	56
1,2-Benz(a)anthracene-d_{12}	NS	--

Laboratory Surrogatges	Percent Recovery	
Naphthol-d_7	9.1	36
Acridine-d_9	34.1	136
Pyridine-d_5	NA	--
Chrysene-d_{12}	26.7	107
Fluoranthene-d_{10}	27.9	112
Benzo(e)pyrene-d_{12}	25.4	102

NA - Not able to see by GC/MS

NS - not spiked

NA* - not present in GC/MS Std.

TRAVELER 0 - L - pose W V=8L

PRIORITY POLLUTANT BNA'S	(1) mg/mL	(1) µg/L	(2) mg/mL	(2) µg/L
ACENAPHTHENE	2.0	0.50		
BENZIDINE	NA*			
1,2,4-TRICHLOROBENZENE	ND			
HEXACHLOROBENZENE				
HEXACHLOROETHANE				
BIS(2-CHLOROETHYL)ETHER				
2-CHLORONAPHTHALENE				
2,4,6-TRICHLOROPHENOL				
P-CHLORO-M-CRESOL				
2-CHLOROPHENOL				
1,2-DICHLOROBENZENE				
1,3-DICHLOROBENZENE				
1,4-DICHLOROBENZENE				
3,3-DICHLOROBENZIDINE	NA*			
2,4-DICHLOROPHENOL	ND			
2,4-DIMETHYLPHENOL				
2,4-DINITROTOLUENE				
2,6-DINITROTOLUENE				
1,2-DIPHENYLHYDRAZINE	NA			
FLUORANTHENE	ND			
4-CHLOROPHENYL PHENYL ETHER				
4-BROMOPHENYL PHENYL ETHER				
BIS(2-CHLOROISOPROPYL) ETHER				
BIS(2-CHLOROETHOXY) METHANE				
HEXACHLOROBUTADIENE				
HEXACHLOROCYCLOPENTADIENE				
ISOPHORONE				
NAPHTHALENE				
NITROBENZENE				
2-NITROPHENOL				
4-NITROPHENOL				
2,4-DINITROPHENOL				
4,6-DINITRO-2-METHYLPHENOL				
N-NITROSODIMETHYL AMINE				
N-NITROSODIPHENYLAMINE				
N-NITROSODIPROPYLAMINE				
PENTACHLOROPHENOL				
PHENOL				
BIS(2-ETHYLHEXYL) PHTHALATE	18.6[a]	4.6[a]		

(1) internal standard calibration with phenanthrene-d_{10} as internal std

(2) isotope dilution

a/ possibly due to laboratory contamination

BENZYL BUTYL PHTHALATE	ND				
DI-N-BUTYL PHTHALATE	6.8 a	1.70 a			
DI-N-OCTYL PHTHALATE	ND				
DIETHYL PHTHALATE					
DIMETHYL PHTHALATE					
BENZO(A)ANTHRACENE					
BENZO(A)PYRENE					
BENZO(B)FLUORANTHENE					
BENZO(K)FLUORANTHENE					
CHRYSENE					
ACENAPHTHYLENE					
ANTHRACENE					
BENZO(GHI)PERYLENE					
FLUORENE					
PHENANTHRENE					
DIBENZO(AH)ANTHRACENE					
INDENO(123-CD)PYRENE					
PYRENE					
NON-PRIORITY POLLUTANTS					
BENZOIC ACID	ND				
2-METHYLPHENOL					
4-METHYLPHENOL					
2,4,5-TRICHLOROPHENOL					
2-METHYLNAPHTHALENE					
ANILINE					
BENZYL ALCOHOL					
4-CHLOROANILINE					
DIBENZOFURAN					
2-NITROANILINE					
3-NITROANILINE					
4-NITROANILINE					
Approximate DETECTION LIMIT	0.1-1.0 mg/µL	0.03-0.25 µg/L			

a/ Possibly due to laboratory contamination.

	(1)	(1)	(2)	(2)
Carbazole	ND			
4-Hydroxybiphenyl	↓			
1-Naphthylamine	↓			
Acridine	↓			
1,2,3-Trimethylbenzene	↓			
Quinoline	↓			
2,3,5-Trimethylphenol	↓			
3-Methyl-cholanthrene	↓			
7,12-Dimethylbenz(a)anthracene	↓			
1-Naphthol	↓			
2,3,4-Trichlorophenol	↓			
2,3,4,5-Tetrachlorophenol	↓			
4-Aminobiphenyl	↓			
Thiophene	NA			
13H-Dibenzo(a,i)carbazole	NA			

Field Surrogates	Percent Recovery	
Acenaphthene-d_{10}	39.5	79
Pyrene-D_{10}	39.4	79
Perylene-d_{12}	35.3	71
Naphthalene-d_8	38.3	77
Phenol-d_5	11.9	24
Carbazole-d_3	40.2	80
Benzo(a)pyrene-d_{12}	33.2	66
2-Naphthylamine-d_7	NS	--
Quinoline-d_7	44.5	89
Dibenzo(a,h)anthracene-d_{12}	17.2	34
1,2-Benz(a)anthracene-d_{12}	NS	--

Laboratory Surrogatges	Percent Recovery	
Naphthol-d_7	14.5	29
Acridine-d_9	40.1	80
Pyridine-d_5	NA	--
Chrysene-d_{12}	37.2	74
Fluoranthene-d_{10}	375	75
Benzo(e)pyrene-d_{12}	34.8	70

NA - Not able to see by GC/MS

NA* - not present in GC/MS Std.

NS - not spiked

Table 1 Approximate concentrations of other compounds detected in week 48 composite sample

Scan Number	Compound identification	Approximate concentration (μg/L)
600, 617, 626 634,	$C_4H_{10}O_3$ (glycol type compound)	22.8
2346	Alkyne or alkyl diene	26.1
2380	Alcohol	43.2
2499	Di-butyl-phthalate ester + unknown	14.2
2576	Alkyne	1.5
2654, 2672	Alkyne	803
2683	Alcohol or alkyl diene	24.4
2727	Alkyne or alkyl diene	9.4
2922	Alkyne or alkyl diene	18.6
3095	Azelate ester	13.1
3273	Bis(2ethylhexyl)phthalate	4.6

5/14/85
N.

ACUREX Corporation

Energy & Environmental Division

Mr. Curtis Ross
U.S. EPA Region V
536 S. Clark Street
Central Regional Laboratory
10th Floor
Chicago, IL 60605

May 14, 1985
Acurex ID#: 8412-028
Project: SAS 1141E

Subject: Results of GC/MS Analyses for Well 133; Composite Sample

Enclosed please find the results of the GC/MS analyses for Well 133. The well was sampled on December 12, 1984; the four samples are identified as W133A, W133B, W133C, W133D (1 gallon each). Analyses were performed as specified in SAS 1141E protocol with various modifications identified in Acurex's letter dated January 3, 1985. The following is a list of deliverables:

1. Concentration data for 8412-028-1,2,3,4 -- Well 133, composite sample (V = 15.7 L) (data form; Table 1; RIC; RT diagnostic report; RP diagnostic report, RT quantitation report; RP quantitation report; quantitation report for other compounds found in sample; spectra: enhanced, unenhanced, library display of 3 best fits (pages 1 through 297); peak areas.

2. Concentration data for 8412-028-5 -- Well 133, control sample (V = 3.8 L) (data form; Table 2; RIC; RT diagnostic report; RP diagnostic report, RT quantitation report; RP quantitation report; quantitation report for other compounds found in sample; spectra: enhanced, unenhanced, library display of 3 best fits (pages 1 through 167); peak areas.

555 Clyde Avenue, PO Box 7555, Mountain View, CA 94039 (415) 964-3200 Telex 34-6391 TWX 910-7796593

3. Chain of custody forms.

Sincerely,

Viorica Lopez-Avila, Ph.D.
Technical Director

VLA/ats

Enclosures

cc: Dr. Brenda Kimble
Amphion Associates

Linda Haas Boynton
Sample Management Office

Data Audit Staff
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Paul Bitter
EPA Region V

Gail Lowry
Minnesota Pollution Control Association

These results were obtained using accepted laboratory practices; the liability of Acurex Corporation shall not exceed the amount paid for this report. In no event shall Acurex be liable for special or consequential damages.

TRAVELER 0

Well 13 Composite Sample V=15.7L

PRIORITY POLLUTANT BNA'S	(1) ng/μL	(1) μg/L	(2) ng/μL	(2) μg/L
ACENAPHTHENE	ND			
BENZIDINE	NA*			
1,2,4-TRICHLOROBENZENE	ND			
HEXACHLOROBENZENE				
HEXACHLOROETHANE				
BIS(2-CHLOROETHYL)ETHER				
2-CHLORONAPHTHALENE				
2,4,6-TRICHLOROPHENOL				
P-CHLORO-M-CRESOL				
2-CHLOROPHENOL				
1,2-DICHLOROBENZENE				
1,3-DICHLOROBENZENE				
1,4-DICHLOROBENZENE				
3,3-DICHLOROBENZIDINE	NA*			
2,4-DICHLOROPHENOL	ND			
2,4-DIMETHYLPHENOL				
2,4-DINITROTOLUENE				
2,6-DINITROTOLUENE				
1,2-DIPHENYLHYDRAZINE	NA			
FLUORANTHENE	ND			
4-CHLOROPHENYL PHENYL ETHER				
4-BROMOPHENYL PHENYL ETHER				
BIS(2-CHLOROISOPROPYL) ETHER				
BIS(2-CHLOROETHOXY) METHANE				
HEXACHLOROBUTADIENE				
HEXACHLOROCYCLOPENTADIENE				
ISOPHORONE				
NAPHTHALENE	24.7	3.15	34.5	4.39
NITROBENZENE	ND			
2-NITROPHENOL				
4-NITROPHENOL				
2,4-DINITROPHENOL				
4,6-DINITRO-2-METHYLPHENOL				
N-NITROSODIMETHYL AMINE				
N-NITROSODIPHENYLAMINE				
N-NITROSODIPROPYLAMINE				
PENTACHLOROPHENOL				
PHENOL	<17	<2.2		
BIS(2-ETHYLHEXYL) PHTHALATE	98.2[a]	12.5[a]		

(1) internal standard calibration with phenanthrene-d_{10} as internal std

(2) isotope dilution

a/ probably due to laboratory contamination

ENZYL BUTYL PHTHALATE	ND				
I-N- UTYL PHTHALATE	6.1[a]	0.78			
DI-N-OCTYL PHTHALATE	ND				
DIETHYL PHTHALATE					
DIMETHYL PHTHALATE					
BENZO(A)ANTHRACENE					
BENZO(A)PYRENE					
BENZO(B)FLUORANTHENE					
BENZO(K)FLUORANTHENE					
CHRYSENE					
ACENAPHTHYLENE					
ANTHRACENE					
BENZO(GHI)PERYLENE					
FLUORENE					
PHENANTHRENE	3.9	0.50			
DIBENZO(AH)ANTHRACENE	ND				
INDENO(123-CD)PYRENE					
PYRENE					
NON-PRIORITY POLLUTANTS					
BENZOIC ACID	ND				
2-METHYLPHENOL					
4-METHYLPHENOL					
2,4,5-TRICHLOROPHENOL					
2-METHYLNAPHTHALENE					
ANILINE					
BENZYL ALCOHOL					
4-CHLOROANILINE					
DIBENZOFURAN					
2-NITROANILINE					
3-NITROANILINE					
4-NITROANILINE					
Approximate DETECTION LIMIT	1-5	0.13-0.4			

a/ Probably due to laboratory contamination.

µg/L

	(1) mg/µL	(1) µg/µL	(2) mg/µL	(2) µg/L
Carbazole	ND			
4-Hydroxybiphenyl	↓			
1-Naphthylamine	↓			
Acridine	↓			
1,2,3-Trimethylbenzene	↓			
Quinoline	↓			
2,3,5-Trimethylphenol	8.6	1.10		
3-Methyl-cholanthrene	ND			
7,12-Dimethylbenz(a)anthracene	↓			
1-Naphthol	↓			
2,3,4-Trichlorophenol	↓			
2,3,4,5-Tetrachlorophenol	↓			
4-Aminobiphenyl	↓			
Thiophene	NA			
13H-Dibenzo(a,i)carbazole	NA			

Field Surrogates	Percent Recovery	
Acenaphthene-d_{10}	30.8	62
Pyrene-D_{10}	29.2	58
Perylene-d_{12}	38.2	76
Naphthalene-d_8	35.8	72
Phenol-d_5	33.3	67
Carbazole-d_3	38.7	77
Benzo(a)pyrene-d_{12}	48.8	98 (coeluting with BeP-d_{12})
2-Naphthylamine-d_7	NS	--
Quinoline-d_7	42.4	85
Dibenzo(a,h)anthracene-d_{12}	19.9	40
1,2-Benz(a)anthracene-d_{12}	NS	--

Laboratory Surrogates	Percent Recovery	
Naphthol-d_7	12.6	25
Acridine-d_9	34.8	70
Pyridine-d_5	NA	--
Chrysene-d_{12}	34.2	68
Fluoranthene-d_{10}	35.5	71
Benzo(e)pyrene-d_{12}	not able to resolve from BaP-d_{12}	

NA - Not able to see by GC/MS

NS - not spiked

NA* - not present in GC/MS Std.

Table 1 Approximate concentrations of other compounds detected in well 133 composite sample (8412-028-1,2,3,4)

Scan Number	Compound identification	Approximate conc (µg/L)
321	$C_6H_{12}O_2$ (Hydroxy-methylpentanone)	2.7
335	Xylene	1.3
348	Xylene	0.6
378	Methyl cyclopentanol	1.0
385	Cyclohexen-one	0.2
391	Cyclohexen-one	0.9
427	Trichloropropene	0.6
185, 498, 500	$C_4H_{10}O_3$ (glycol type compound) / C_3-Alkylbenzene	0.4
510	$C_4H_{10}O_3$ (glycol type compound)	0.4
540	C_3-Alkylbenzene	P
544, 551, 587, 593, 603	$C_4H_{10}O_3$ (glycol type compound)	2.0
605	C_3-Alkylbenzene	P
629	C_9H_{10} a	P
635	C_9H_{10} a	5.3

Table 1 (concluded)

653	$C_8H_{18}O$ [a]	P
660	C_9H_8 [a]	5.5
763	$C_{10}H_{12}$ (dihydro-methyl-indene)	3.8
912	$C_{10}H_{12}$ (dihydro-methyl-indene)	0.4
1470	Alkane	0.6
1843	Alkane	0.8
22, 2289	Alkyne or alkyldiene	20.4
2483	Sulfur (S_8)	1.9
2630	Alkyne	12.3
2668	Alkyne	9.2
2859	Alkyne	19.4
3036	Azelate ester	18.9

a, see library display of 3 best fits

P - present but not quantitated

TRAVELER # 8 12-028-5 V=3.8

PRIORITY POLLUTANT BNA'S	sample (1) mg/µL	(1) µg/L	(2) mg/µL	(2) µg/L
ACENAPHTHENE	ND			
BENZIDINE	NA*			
1,2,4-TRICHLOROBENZENE	ND			
HEXACHLOROBENZENE				
HEXACHLOROETHANE				
BIS(2-CHLOROETHYL)ETHER				
2-CHLORONAPHTHALENE				
2,4,6-TRICHLOROPHENOL				
P-CHLORO-M-CRESOL				
2-CHLOROPHENOL				
1,2-DICHLOROBENZENE				
1,3-DICHLOROBENZENE				
1,4-DICHLOROBENZENE				
3,3-DICHLOROBENZIDINE	NA*			
2,4-DICHLOROPHENOL	ND			
2,4-DIMETHYLPHENOL				
2,4-DINITROTOLUENE				
2,6-DINITROTOLUENE				
1,2-DIPHENYLHYDRAZINE	NA			
FLUORANTHENE	ND			
4-CHLOROPHENYL PHENYL ETHER				
4-BROMOPHENYL PHENYL ETHER				
BIS(2-CHLOROISOPROPYL) ETHER				
BIS(2-CHLOROETHOXY) METHANE				
HEXACHLOROBUTADIENE				
HEXACHLOROCYCLOPENTADIENE				
ISOPHORONE				
NAPHTHALENE				
NITROBENZENE				
2-NITROPHENOL				
4-NITROPHENOL				
2,4-DINITROPHENOL				
4,6-DINITRO-2-METHYLPHENOL				
N-NITROSODIMETHYL AMINE				
N-NITROSODIPHENYLAMINE				
N-NITROSODIPROPYLAMINE				
PENTACHLOROPHENOL				
PHENOL	45.8	24.1	62.8	33.1
BIS(2-ETHYLHEXYL) PHTHALATE	3.8 a	2.0 a		

(1) internal standard calibration with phenanthrene-d_{10} as internal std

(2) isotope dilution

a/ probably due to laboratory contami

BENZYL BUTYL PHTHALATE	ND				
DI-N-BUTYL PHTHALATE	2.4[a]	1.26[a]			
DI-N-OCTYL PHTHALATE	ND				
DIETHYL PHTHALATE					
DIMETHYL PHTHALATE					
BENZO(A)ANTHRACENE					
BENZO(A)PYRENE					
BENZO(B)FLUORANTHENE					
BENZO(K)FLUORANTHENE					
CHRYSENE					
ACENAPHTHYLENE					
ANTHRACENE					
BENZO(GHI)PERYLENE					
FLUORENE					
PHENANTHRENE					
DIBENZO(AH)ANTHRACENE					
INDENO(123-CD)PYRENE					
PYRENE					
NON-PRIORITY POLLUTANTS					
BENZOIC ACID	ND				
2-METHYLPHENOL					
4-METHYLPHENOL					
2,4,5-TRICHLOROPHENOL					
2-METHYLNAPHTHALENE					
ANILINE	1.5	0.79			
BENZYL ALCOHOL	ND				
4-CHLOROANILINE					
DIBENZOFURAN					
2-NITROANILINE					
3-NITROANILINE					
4-NITROANILINE					
Approximate DETECTION LIMIT	0.1-0.5 mg/μL	0.05-0.26 μg/L			

a/ probably due to laboratory contamination

	(1) (mg/µL)	(1) (µg/L)	(2) (mg/µL)	(2) (µg/L)
Carbazole	ND			
4-Hydroxybiphenyl				
1-Naphthylamine				
Acridine				
1,2,3-Trimethylbenzene				
Quinoline				
2,3,5-Trimethylphenol				
3-Methyl-cholanthrene				
7,12-Dimethylbenz(a)anthracene				
1-Naphthol				
2,3,4-Trichlorophenol				
2,3,4,5-Tetrachlorophenol				
4-Aminobiphenyl				
Thiophene	NA			
13H-Dibenzo(a,i)carbazole	NA			

Field Surrogates		Percent Recovery
Acenaphthene-d_{10}	15.1	60
Pyrene-D_{10}	16.4	66
Perylene-d_{12}	18.8	75
Naphthalene-d_8	15.9	64
Phenol-d_5	18.2	73
Carbazole-d_3	17.2	69
Benzo(a)pyrene-d_{12}	16.0	64
2-Naphthylamine-d_7	NS	--
Quinoline-d_7	19.3	77
Dibenzo(a,h)anthracene-d_{12}	10.5	42
1,2-Benz(a)anthracene-d_{12}	NS	--

Laboratory Surrogatges		Percent Recovery
Naphthol-d_7	5.3	21
Acridine-d_9	17.1	68
Pyridine-d_5	NA	--
Chrysene-d_{12}	16.5	66
Fluoranthene-d_{10}	16.4	66
Benzo(e)pyrene-d_{12}	18.6	74

NA - Not able to see by GC/MS

NA* - not present in GC/MS Std.

NS - not spiked

Table 2 Approximate concentrations of other compounds detected in Well 133 control sample (8412-028-5)

Scan Number	Compound identification	Approximate conc (µg/L)
316	$C_6H_{12}O_2$ (Hydroxy-methyl-pentanone)	2.9
382	methyl cyclopentanol	3.0
387	methyl cyclopentanol	5.0
487	Cyclohexen-one	0.4
1068	$C_5H_{10}O_2$ or $C_8H_{16}O$ [a]	0.8
1160	$C_5H_{10}O_2$ or $C_8H_{16}O$ [a]	1.4
2385	Alkyne	7.0
2418	Alcohol or alkene	10.5
2683, 2692	Alkyne	338.5
2721	Alcohol or alkene	3.5
2962	Alkyne or alkyl diene	8.1
3131	Azelate ester	14.9

a/ See library display of 3 best fits

6/26/85
N.

ACUREX Corporation

Energy & Environmental Division

Mr. Curtis Ross
USEPA Region V
536 South Clark Street
Central Regional Laboratory
10th Floor
Chicago, IL 60604

June 26, 1985
Acurex ID#: 8412-018A
Project: SAS 1141E

Subject: Results of GC/MS Analyses for Well SLP-6; Filter Extracts, Tasks 4 through 7

Enclosed please find the results of the GC/MS analyses for well SLP-6. The well was sampled on December 6-8, 1984 in duplicate; the two samples are identified as SLP-6A ($V_{sampled}$ = 268.0 L) and SLP-6B ($V_{sampled}$ = 256.5 L). The two filters for sample SLP-6A were identified as SLP-6 FA1 and SLP-6 FA2 and were extracted together in a soxhlet extractor with methylene chloride. The two filters for sample SLP-6B were identified as SLP-6 FB1 and SLP-6 FB2 and were also extracted together in a soxhlet extractor with methylene chloride. Analyses were performed as specified in SAS 1141E protocol with various modifications identified in Acurex's letter dated January 3, 1985. Results are reported in total µg of a specific compound per filter. The following is a list of deliverables:

1. DFTPP (form, plot, list format) for 2/6/85.

2. GC/MS standard for 2/6/85 (RIC; RT diagnostic report; RP diagnostic report; RT quantitation report; RP quantitation report; calibration check forms).

3. Concentration data for 8412-018-3,4 -- Well SLP-6A, filter extract composite of SLP-6 FA1 and SLP-6 FA2 (data form; Table 1; RIC; RT diagnostic report; RP diagnostic report, RT quantitation report; RP quantitation report; quantitation report for other compounds found in sample; spectra: enhanced, unenhanced, library display of 3 best fits; peak areas).

4. Concentration data for 8412-018-5,6 -- Well SLP-6B, filter extract composite of SLP-6 FB1 and SLP-6 FB2 (data form; RIC; RT diagnostic report; RP diagnostic report, RT quantitation report; RP quantitation report; spectra: enhanced, unenhanced, library display of 3 best fits; peak areas).

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Please note the following

- The chain of custody forms have been submitted on April 2, 1985, with the results of the cartridge analysis.

- A solvent blank was analyzed on 2/6/85 following analysis of the daily standard, however due to a bad file structure the data had to be deleted subsequently to the analysis of the filter extracts and is no longer available for submission.

Sincerely,

Viorica Lopez Avila

Viorica Lopez-Avila, Ph.D.
Technical Director

VLA/ats

Enclosures

cc: Dr. Brenda Kimble
Amphion Associates

Linda Haas Boynton
Sample Management Office

Data Audit Staff
EMSL - Las Vegas

Paul Bitter
EPA Region V

Gail Lowry
Minnesota Pollution Control Association

These results were obtained using accepted laboratory practices; the liability of Acurex Corporation shall not exceed the amount paid for this report. In no event shall Acurex be liable for special or consequential damages.

TRAVELL # 8412-018-3,4 Well #6 filter A (composite of two samples)

PRIORITY POLLUTANT N'S	(1) ng/µL	(1) µg	(2) ng/µL	(2) µg	14
ACENAPHTHENE	ND				
BENZIDINE	NA*				
1,2,4-TRICHLOROBENZENE	ND				
HEXACHLOROBENZENE					
HEXACHLOROETHANE					
BIS(2-CHLOROETHYL)ETHER					
2-CHLORONAPHTHALENE					
2,4,6-TRICHLOROPHENOL					
P-CHLORO-M-CRESOL					
2-CHLOROPHENOL					
1,2-DICHLOROBENZENE					
1,3-DICHLOROBENZENE					
1,4-DICHLOROBENZENE					
3,3-DICHLOROBENZIDINE	NA*				
2,4-DICHLOROPHENOL	ND				
2,4-DIMETHYLPHENOL					
2,4-DINITROTOLUENE					
2,6-DINITROTOLUENE					
1,2-DIPHENYLHYDRAZINE	NA				
FLUORANTHENE	ND				
4-CHLOROPHENYL PHENYL ETHER					
4-BROMOPHENYL PHENYL ETHER					
BIS(2-CHLOROISOPROPYL) ETHER					
BIS(2-CHLOROETHOXY) METHANE					
HEXACHLOROBUTADIENE					
HEXACHLOROCYCLOPENTADIENE					
ISOPHORONE					
NAPHTHALENE					
NITROBENZENE					
2-NITROPHENOL					
4-NITROPHENOL					
2,4-DINITROPHENOL					
4,6-DINITRO-2-METHYLPHENOL					
N-NITROSODIMETHYL AMINE					
N-NITROSODIPHENYLAMINE					
N-NITROSODIPROPYLAMINE					
PENTACHLOROPHENOL					
PHENOL					
BIS(2-ETHYLHEXYL) PHTHALATE	21.9	21.9			

(1) internal standard calibration with phenanthrene-d_{10} as internal std

(2) isotope dilution

BENZYL BUTYL PHTHALATE	ND				
DI-N-BUTYL PHTHALATE	50.6	50.6			
DI-N-OCTYL PHTHALATE	ND				
DIETHYL PHTHALATE					
DIMETHYL PHTHALATE					
BENZO(A)ANTHRACENE					
BENZO(A)PYRENE					
BENZO(B)FLUORANTHENE					
BENZO(K)FLUORANTHENE					
CHRYSENE					
ACENAPHTHYLENE					
ANTHRACENE					
BENZO(GHI)PERYLENE					
FLUORENE					
PHENANTHRENE					
DIBENZO(AH)ANTHRACENE					
INDENO(123-CD)PYRENE					
PYRENE					
NON-PRIORITY POLLUTANTS					
BENZOIC ACID	ND				
2-METHYLPHENOL					
4-METHYLPHENOL					
2,4,5-TRICHLOROPHENOL					
2-METHYLNAPHTHALENE					
ANILINE					
BENZYL ALCOHOL					
4-CHLOROANILINE					
DIBENZOFURAN					
2-NITROANILINE					
3-NITROANILINE					
4-NITROANILINE					
Approximate DETECTION LIMIT (see Acurex report 8501-017B)					

	(1) mg/µL	(1) µg	(2) mg/µL	(2) µg
Carbazole	ND			
4-Hydroxybiphenyl	↓			
1-Naphthylamine	↓			
Acridine	↓			
1,2,3-Trimethylbenzene	↓			
Quinoline	↓			
2,3,5-Trimethylphenol	↓			
3-Methyl-cholanthrene	↓			
7,12-Dimethylbenz(a)anthracene	↓			
1-Naphthol	↓			
2,3,4-Trichlorophenol	↓			
2,3,4,5-Tetrachlorophenol	↓			
4-Aminobiphenyl	↓			
Thiophene	NA			
13H-Dibenzo(a,i)carbazole	NA			

Field Surrogates		Percent Recovery
Acenaphthene-d_{10}	44.7	89
Pyrene-D_{10}	63.4	127
Perylene-d_{12}	67.9	136
Naphthalene-d_8	52.9	106
Phenol-d_5	40.4	81
Carbazole-d_3	50.5	101
Benzo(a)pyrene-d_{12}	65.3	131
2-Naphthylamine-d_7	NS	--
Quinoline-d_7	50.6	101
Dibenzo(a,h)anthracene-d_{12}	35.3	71
1,2-Benz(a)anthracene-d_{12}	NS	--

Laboratory Surrogatges		Percent Recovery
Naphthol-d_7	43.4	87
Acridine-d_9	53.1	106
Pyridine-d_5	NA	--
Chrysene-d_{12}	63.1	126
Fluoranthene-d_{10}	57.1	114
Benzo(e)pyrene-d_{12}	64.7	129

NA - Not able to see by GC/MS

NS - not spiked

NA* - not present in GC/MS Std.

Table 1 Approximate concentrations of other compounds detected in well #6 composite filter A (8412-018-3,4)

Scan number	Compound identification	approx conc (μg per filter)
302	$C_7H_{14}O$ [a]	5.50
404	$C_4H_6O_2$ [a]	4.47
563, 572, 588	$C_4H_{10}O_3$ glycol type compound	23.31
2297	alkyne	65.3
2329	alcohol	
2442	Di-n-butylphthalate + unknown	191.45
2605, 2608, 2612	alkyne	2785
2631	alcohol or alkene	100.8
2675	alkyne or alkene	30.67
2868	alkyne	47.75

a) See library display of 3 best fits

TRAVELER 0 - - ether (com te of filters)

PRIORITY POLLUTANT N'S	(1) mg/µL	(1) µg	( )	(2)	~~220~~
ACENAPHTHENE	ND				
BENZIDINE	NA*				
1,2,4-TRICHLOROBENZENE	ND				
HEXACHLOROBENZENE					
HEXACHLOROETHANE					
BIS(2-CHLOROETHYL)ETHER					
2-CHLORONAPHTHALENE					
2,4,6-TRICHLOROPHENOL					
P-CHLORO-M-CRESOL					
2-CHLOROPHENOL					
1,2-DICHLOROBENZENE					
1,3-DICHLOROBENZENE					
1,4-DICHLOROBENZENE					
3,3-DICHLOROBENZIDINE	NA*				
2,4-DICHLOROPHENOL	ND				
2,4-DIMETHYLPHENOL					
2,4-DINITROTOLUENE					
2,6-DINITROTOLUENE					
1,2-DIPHENYLHYDRAZINE	NA				
FLUORANTHENE	ND				
4-CHLOROPHENYL PHENYL ETHER					
4-BROMOPHENYL PHENYL ETHER					
BIS(2-CHLOROISOPROPYL) ETHER					
BIS(2-CHLOROETHOXY) METHANE					
HEXACHLOROBUTADIENE					
HEXACHLOROCYCLOPENTADIENE					
ISOPHORONE					
NAPHTHALENE					
NITROBENZENE					
2-NITROPHENOL					
4-NITROPHENOL					
2,4-DINITROPHENOL					
4,6-DINITRO-2-METHYLPHENOL					
N-NITROSODIMETHYL AMINE					
N-NITROSODIPHENYLAMINE					
N-NITROSODIPROPYLAMINE					
PENTACHLOROPHENOL					
PHENOL					
BIS(2-ETHYLHEXYL) PHTHALATE	11.8	158			

(1) internal standard calibration with phenanthrene-d_{10} as internal std

(2) isotope dilution

BENZYL BUTYL PHTHALATE	ND				
DI-N-BUTYL PHTHALATE	4.6	4.6			
DI-N-OCTYL PHTHALATE	ND				
DIETHYL PHTHALATE					
DIMETHYL PHTHALATE					
BENZO(A)ANTHRACENE					
BENZO(A)PYRENE					
BENZO(B)FLUORANTHENE					
BENZO(K)FLUORANTHENE					
CHRYSENE					
ACENAPHTHYLENE					
ANTHRACENE					
BENZO(GHI)PERYLENE					
FLUORENE					
PHENANTHRENE					
DIBENZO(AH)ANTHRACENE					
INDENO(123-CD)PYRENE					
PYRENE					
NON-PRIORITY POLLUTANTS					
BENZOIC ACID	ND				
2-METHYLPHENOL					
4-METHYLPHENOL					
2,4,5-TRICHLOROPHENOL					
2-METHYLNAPHTHALENE					
ANILINE					
BENZYL ALCOHOL					
4-CHLOROANILINE					
DIBENZOFURAN					
2-NITROANILINE					
3-NITROANILINE					
4-NITROANILINE					
Approximate DETECTION LIMIT (see Acurex Report 8501-017B)					

	(1) mg/µL	(1) µg	(2) mg/µL	(2) 228 µg
Carbazole	ND			
4-Hydroxybiphenyl				
1-Naphthylamine				
Acridine				
1,2,3-Trimethylbenzene				
Quinoline				
2,3,5-Trimethylphenol				
3-Methyl-cholanthrene				
7,12-Dimethylbenz(a)anthracene				
1-Naphthol				
2,3,4-Trichlorophenol				
2,3,4,5-Tetrachlorophenol				
4-Aminobiphenyl				
Thiophene	NA			
13H-Dibenzo(a,i)carbazole	NA			

Field Surrogates		Percent Recovery
Acenaphthene-d_{10}	46.2	92
Pyrene-D_{10}	16.7	33
Perylene-d_{12}	67.4	135
Naphthalene-d_8	57.0	114
Phenol-d_5	120.8	* high recovery probably due to interference
Carbazole-d_3	7.6	15
Benzo(a)pyrene-d_{12}	38.0	76
2-Naphthylamine-d_7	NS	--
Quinoline-d_7	25.7	51
Dibenzo(a,h)anthracene-d_{12}	35.9	72
1,2-Benz(a)anthracene-d_{12}	NS	--

Laboratory Surrogatges		Percent Recovery
Naphthol-d_7	30.4	61
Acridine-d_9	49.7	99
Pyridine-d_5	NA	--
Chrysene-d_{12}	59.6	119
Fluoranthene-d_{10}	50.4	101
Benzo(e)pyrene-d_{12}	38.0	76

NA - Not able to see by GC/MS

NS - not spiked

NA* - not present in GC/MS Std.

Table 2 Approximate concentrations of other compounds detected in well # 6 filter B (8412-018-5,6)

Scan Number	Compound identification	Approx conc (μg per filter)
399	$C_6H_{14}O_2$ or $C_5H_{10}O_2$ or $C_7H_{16}O_2$ ~	1.17
559, 567, 583, 590, 649	$C_4H_{10}O_3$ glycol type compound	20.68
1002	$C_5H_{10}O_2$ or $C_6H_{10}O_2$	25.14
2301	Alkyne	110.84
2446	Di-n-butylphthalate + alcohol	66.10
2613, 2618, 2623	Alkyne	1062
2636	Alcohol or alkene	134.65
2676	Alkyne or alkene	54.59
2868	Alkyne	106.5

6/26/85
N.

ACUREX Corporation

Energy & Environmental Division

Mr. Curtis Ross
USEPA Region V
536 South Clark Street
Central Regional Laboratory
10th Floor
Chicago, IL 60604

June 26, 1985
Acurex ID#: 8412-010A
Project: SAS 1141E

Subject: Results of GC/MS Analyses for Well SLP-8;
Filter Extracts, Tasks 4 through 7

Enclosed please find the results of the GC/MS analyses for Well SLP-8. The well was sampled on December 3 & 4, 1984 in duplicate; the two samples are identified as SLP-8A ($V_{sampled}$ = 257.4 L) and SLP-8B ($V_{sampled}$ = 236.3 L). The two filters for sample SLP-8A were identified as SLP-8 FA1 and SLP-8 FA2 and were extracted together in a soxhlet extractor with methylene chloride. The two filters for sample SLP-8B were identified as SLP-8 FB1 and SLP-8 FB2 and were also extracted together in a soxhlet extractor with methylene chloride.

Analyses were performed as specified in SAS 1141E protocol with various modifications identified in Acurex's letter dated January 3, 1985. Results are reported in µg per filter. The following is a list of deliverables:

1. DFTPP (form, plot, list format) for 2/5/85.

2. GC/MS standard for 2/5/85 (RIC, RT diagnostic report; RP diagnostic repot; RT quantitation report; RP quantitation report; calibration check forms).

3. Solvent blank for 2/5/85 (RIC; diagnostic report; quantitation report).

4. Concentration data for 8412-010-3,4 -- Well SLP-8A, filter extract composite of SLP-8 FA1 and SLP-8 FA2 (data form; Table 1, RIC; RT diagnostic report; RP diagnostic report, RT quantitation report; RP quantitation report; quantitation report for other compounds found in sample; spectra: enhanced, unenhanced, library display of 3 best fits; peak areas).

5. Concentration data for 8412-010-5,6 -- Well SLP-8B, filter extract composite of SLP-8 FB1 and SLP-8 FB2 (data form; Table 2, RIC; RT diagnostic report; RP diagnostic report, RT quantitation report; RP quantitation report; quantitation report for other compounds found in sample; spectra: enhanced, unenhanced, library display of 3 best fits; peak areas).

555 Clyde Avenue, PO Box 7555, Mountain View, CA 94039 (415) 964-3200 Telex. 34-6391 TWX. 910-7796593

6. Concentration data for 8412-011-8 -- Method standard for soxhlet extraction (data form, RIC, RT diagnostic report, RP diagnostic report; RT quantitation report; RP quantitation report). Method standard was obtained by spiking 50 µg of the target compounds and priority pollutants directly onto the Teflon filter and extracting the filter with methylene chloride in a soxhlet extractor.

The chain of custody forms have been submitted on March 21, 1985, with the results of the cartridge analysis.

Sincerely,

Viorica Lopez-Avila

Viorica Lopez-Avila, Ph.D.
Technical Director

VLA/ats

Enclosures

cc: Dr. Brenda Kimble
Amphion Associates

Linda Haas Boynton
Sample Management Office

Data Audit Staff
EMSL - Las Vegas

Paul Bitter
EPA Region V

Gail Lowry
Minnesota Pollution Control Association

These results were obtained using accepted laboratory practices; the liability of Acurex Corporation shall not exceed the amount paid for this report. In no event shall Acurex be liable for special or consequential damages.

TRAVELER # 8412-010-3,4 well SLP8 filter A

PRIORITY POLLUTANT BNA'S	(1) ng/µL	(1) µg	(2) ng/µL	(2) µg
ACENAPHTHENE	ND			
BENZIDINE	NA*			
1,2,4-TRICHLOROBENZENE	ND			
HEXACHLOROBENZENE	↓			
HEXACHLOROETHANE				
BIS(2-CHLOROETHYL)ETHER				
2-CHLORONAPHTHALENE				
2,4,6-TRICHLOROPHENOL				
P-CHLORO-M-CRESOL				
2-CHLOROPHENOL				
1,2-DICHLOROBENZENE				
1,3-DICHLOROBENZENE				
1,4-DICHLOROBENZENE	↓			
3,3-DICHLOROBENZIDINE	NA*			
2,4-DICHLOROPHENOL	ND			
2,4-DIMETHYLPHENOL	↓			
2,4-DINITROTOLUENE				
2,6-DINITROTOLUENE	↓			
1,2-DIPHENYLHYDRAZINE	NA			
FLUORANTHENE	ND			
4-CHLOROPHENYL PHENYL ETHER	↓			
4-BROMOPHENYL PHENYL ETHER				
BIS(2-CHLOROISOPROPYL) ETHER				
BIS(2-CHLOROETHOXY) METHANE				
HEXACHLOROBUTADIENE				
HEXACHLOROCYCLOPENTADIENE				
ISOPHORONE				
NAPHTHALENE				
NITROBENZENE				
2-NITROPHENOL				
4-NITROPHENOL				
2,4-DINITROPHENOL				
4,6-DINITRO-2-METHYLPHENOL				
N-NITROSODIMETHYL AMINE				
N-NITROSODIPHENYLAMINE				
N-NITROSODIPROPYLAMINE				
PENTACHLOROPHENOL				
PHENOL	↓			
BIS(2-ETHYLHEXYL) PHTHALATE	8.8	8.8		

(1) internal standard calibration with phenanthrene-d_{10} as internal std

(2) isoto dilution

BENZYL BUTYL PHTHALATE	ND				
DI-N-BUTYL PHTHALATE					
DI-N-OCTYL PHTHALATE					
DIETHYL PHTHALATE					
DIMETHYL PHTHALATE					
BENZO(A)ANTHRACENE					
BENZO(A)PYRENE					
BENZO(B)FLUORANTHENE					
BENZO(K)FLUORANTHENE					
CHRYSENE					
ACENAPHTHYLENE					
ANTHRACENE					
BENZO(GHI)PERYLENE					
FLUORENE					
PHENANTHRENE					
DIBENZO(AH)ANTHRACENE					
INDENO(123-CD)PYRENE					
PYRENE					
NON-PRIORITY POLLUTANTS					
BENZOIC ACID	ND				
2-METHYLPHENOL					
4-METHYLPHENOL					
2,4,5-TRICHLOROPHENOL					
2-METHYLNAPHTHALENE					
ANILINE					
BENZYL ALCOHOL					
4-CHLOROANILINE					
DIBENZOFURAN					
2-NITROANILINE					
3-NITROANILINE					
4-NITROANILINE					
Approximate DETECTION LIMIT (see Acurex report 8501-017B)					

	(1) ng/µL	(1) µg	(2) (ng/µL)	(2) µg
Carbazole	ND			
4-Hydroxybiphenyl				
1-Naphthylamine				
Acridine				
1,2,3-Trimethylbenzene				
Quinoline				
2,3,5-Trimethylphenol				
3-Methyl-cholanthrene				
7,12-Dimethylbenz(a)anthracene				
1-Naphthol				
2,3,4-Trichlorophenol				
2,3,4,5-Tetrachlorophenol				
4-Aminobiphenyl				
Thiophene	NA			
13H-Dibenzo(a,i)carbazole	NA			

Field Surrogates	Percent Recovery	
Acenaphthene-d_{10}	73.9	148
Pyrene-D_{10}	74.2	148
Perylene-d_{12}	26.5	53
Naphthalene-d_8	68.0	136
Phenol-d_5	188.0	* high recovery probably due to interference
Carbazole-d_3	10.8	22
Benzo(a)pyrene-d_{12}	43.8	88
2-Naphthylamine-d_7	NS	--
Quinoline-d_7	46.6	93
Dibenzo(a,h)anthracene-d_{12}	12.5	25
1,2-Benz(a)anthracene-d_{12}	NS	--

Laboratory Surrogatges	Percent Recovery	
Naphthol-d_7	62.5	125
Acridine-d_9	80.5	161
Pyridine-d_5	NA	--
Chrysene-d_{12}	74.9	150
Fluoranthene-d_{10}	62.9	126
Benzo(e)pyrene-d_{12}	37.3	75

NA - Not able to see by GC/MS

NA* - not present in GC/MS Std.

NS - not spiked

Table 1 Approximate concentrations of ~~[illegible]~~ compounds detected in well SLP-8A, filter extracts 8412-010-3,4 (composite of two filters)

Scan Number	Compound identification	Approximate concentration (μg per filter)
312	$C_6H_{10}O$ [a]	1.39
317	$C_7H_{14}O$ [a]	11.11
367	$C_6H_{10}O$ [a]	0.62
406	$C_6H_{14}O_2$ [a]	0.49
418	$C_4H_6O_2$ [a]	3.57
486	Trichloropropene	0.96
562, 571, 578, 586, 592, 599	$C_4H_{10}O_3$ glycol type compd.	18.35
1053, 1103	$C_5H_{10}O_2$ or $C_8H_{16}O$	6.09, 6.15
2309	Alcohol	0.80
2326	Alkyne or alkene	96.64
2636, 2643	Alkyne	889.1
2661	Alkene	53.47
2897	Alkyne	108.72

a, see library display of 3 best fits

TRAVELER # 8412-010-5,6 well SLP 8 filter B

215

PRIORITY POLLUTANT #'S	(1) ng/µl	(1) µg	(2) ng/µl	(2) µg
ACENAPHTHENE	ND			
BENZIDINE	NA*			
1,2,4-TRICHLOROBENZENE	ND			
HEXACHLOROBENZENE				
HEXACHLOROETHANE				
BIS(2-CHLOROETHYL)ETHER				
2-CHLORONAPHTHALENE				
2,4,6-TRICHLOROPHENOL				
P-CHLORO-M-CRESOL				
2-CHLOROPHENOL				
1,2-DICHLOROBENZENE				
1,3-DICHLOROBENZENE				
1,4-DICHLOROBENZENE				
3,3-DICHLOROBENZIDINE	NA*			
2,4-DICHLOROPHENOL	ND			
2,4-DIMETHYLPHENOL				
2,4-DINITROTOLUENE				
2,6-DINITROTOLUENE				
1,2-DIPHENYLHYDRAZINE	NA			
FLUORANTHENE	ND			
4-CHLOROPHENYL PHENYL ETHER				
4-BROMOPHENYL PHENYL ETHER				
BIS(2-CHLOROISOPROPYL) ETHER				
BIS(2-CHLOROETHOXY) METHANE				
HEXACHLOROBUTADIENE				
HEXACHLOROCYCLOPENTADIENE				
ISOPHORONE				
NAPHTHALENE				
NITROBENZENE				
2-NITROPHENOL				
4-NITROPHENOL				
2,4-DINITROPHENOL				
4,6-DINITRO-2-METHYLPHENOL				
N-NITROSODIMETHYL AMINE				
N-NITROSODIPHENYLAMINE				
N-NITROSODIPROPYLAMINE				
PENTACHLOROPHENOL				
PHENOL				
BIS(2-ETHYLHEXYL) PHTHALATE	4.0 B	4.0 B		

(1) internal standard calibration with phenanthrene-d_{10} as internal std

(2) isotope dilution

BENZYL BUTYL PHTHALATE	ND				
DI-N-BUTYL PHTHALATE	3.0				
DI-N-OCTYL PHTHALATE	ND				
DIETHYL PHTHALATE					
DIMETHYL PHTHALATE					
BENZO(A)ANTHRACENE					
BENZO(A)PYRENE					
BENZO(B)FLUORANTHENE					
BENZO(K)FLUORANTHENE					
CHRYSENE					
ACENAPHTHYLENE					
ANTHRACENE					
BENZO(GHI)PERYLENE					
FLUORENE					
PHENANTHRENE					
DIBENZO(AH)ANTHRACENE					
INDENO(123-CD)PYRENE					
PYRENE					
NON-PRIORITY POLLUTANTS					
BENZOIC ACID	ND				
2-METHYLPHENOL					
4-METHYLPHENOL					
2,4,5-TRICHLOROPHENOL					
2-METHYLNAPHTHALENE					
ANILINE					
BENZYL ALCOHOL					
4-CHLOROANILINE					
DIBENZOFURAN					
2-NITROANILINE					
3-NITROANILINE					
4-NITROANILINE					
Approximate DETECTION LIMIT (See Acurex report 8501-017B					

	(1) ng/µL	(1) µg	(2) ng/µL	(2) µg
Carbazole	ND			
4-Hydroxybiphenyl				
1-Naphthylamine				
Acridine				
1,2,3-Trimethylbenzene				
Quinoline				
2,3,5-Trimethylphenol				
3-Methyl-cholanthrene				
7,12-Dimethylbenz(a)anthracene				
1-Naphthol				
2,3,4-Trichlorophenol				
2,3,4,5-Tetrachlorophenol				
4-Aminobiphenyl				
Thiophene	NA			
13H-Dibenzo(a,i)carbazole	NA			

Field Surrogates	Percent Recovery	
Acenaphthene-d_{10}	72.1	144
Pyrene-D_{10}	14.1	28
Perylene-d_{12}	68.7	137
Naphthalene-d_8	38.6	77
Phenol-d_5	159.2	* high recovery due to interference
Carbazole-d_3	6.9	14
Benzo(a)pyrene-d_{12}	43.4	87
2-Naphthylamine-d_7	NS	--
Quinoline-d_7	36.4	73
Dibenzo(a,h)anthracene-d_{12}	30.6	61
1,2-Benz(a)anthracene-d_{12}	NS	--

Laboratory Surrogatges	Percent Recovery	
Naphthol-d_7	56.9	114
Acridine-d_9	37.1	74
Pyridine-d_5	NA	--
Chrysene-d_{12}	35.6	71
Fluoranthene-d_{10}	27.2	54
Benzo(e)pyrene-d_{12}	48.2	96

NA - Not able to see by GC/MS

NS - not spiked

NA* - not present in GC/MS Std.

Table 2 Approximate concentrations of other compounds detected in well SLP-8B, filter extracts 8412-010-5,6 (Composite of two filters)

Scan Number	Compound identification	Approximate conc (μg per filter)
314	$C_7H_{14}O$ [a]	7.86
360	$C_6H_{10}O$ [a]	1.55
400	$C_6H_{14}O_2$ [a]	1.43
409	$C_4H_6O_2$ [a]	3.81
477	Trichloropropene	1.29
572, 578, 587, 593, 641, 654	$C_4H_{10}O_3$ glycol type compd.	18.29
1015	$C_5H_{10}O_2$ or $C_6H_{10}O_2$ or $C_8H_{16}O$ [a]	46.98
2357	Alcohol	87.21
2636, 2643	Alkyne	841.9
2661	Alcohol or alkene	41.97
2896	Alkyne or alkene	98.46
2900	Alkyne	
3300	Alkane	4.06
3734	Alkane	5.00
3835	Alkane	12.21

a/ See library displ 3 best fits

TRAVELER # 8412-011-8 Method standard, filters

PRIORITY POLLUTANT BNA'S	ng/µL (1)	% Rec	ng/µL (2)	% Rec
ACENAPHTHENE	40.3	80	53.3	106
BENZIDINE	NA*	--		
1,2,4-TRICHLOROBENZENE	38.6	78		
HEXACHLOROBENZENE	27.9	46		
HEXACHLOROETHANE	52.8	106		
BIS(2-CHLOROETHYL)ETHER	61.5	120		
2-CHLORONAPHTHALENE	38.5	78		
2,4,6-TRICHLOROPHENOL	ND	--		
P-CHLORO-M-CRESOL	62.3	125		
2-CHLOROPHENOL	49.4	98		
1,2-DICHLOROBENZENE	53.5	108		
1,3-DICHLOROBENZENE	44.3	88		
1,4-DICHLOROBENZENE	44.9	90		
3,3-DICHLOROBENZIDINE	NA*	--		
2,4-DICHLOROPHENOL	44.0	88		
2,4-DIMETHYLPHENOL	55.0	110		
2,4-DINITROTOLUENE	69.3	139		
2,6-DINITROTOLUENE	ND	--		
1,2-DIPHENYLHYDRAZINE	NA	--		
FLUORANTHENE	41.6	84	52.2	104
4-CHLOROPHENYL PHENYL ETHER	41.3	82		
4-BROMOPHENYL PHENYL ETHER	36.4	72		
BIS(2-CHLOROISOPROPYL) ETHER	57.9	116		
BIS(2-CHLOROETHOXY) METHANE	56.5	114		
HEXACHLOROBUTADIENE	39.7	80		
HEXACHLOROCYCLOPENTADIENE	6.4	12		
ISOPHORONE	46.9	94		
NAPHTHALENE	44.5	90	51.6	104
NITROBENZENE	54.9	110		
2-NITROPHENOL	32.6	66		
4-NITROPHENOL	ND	--		
2,4-DINITROPHENOL	ND	--		
4,6-DINITRO-2-METHYLPHENOL	ND	--		
N-NITROSODIMETHYL AMINE	0.6	1.2		
N-NITROSODIPHENYLAMINE	ND	--		
N-NITROSODIPROPYLAMINE	48.4	96		
PENTACHLOROPHENOL	ND	--		
PHENOL	75.6	151	56.3	112
BIS(2-ETHYLHEXYL) PHTHALATE	55.6	112		

(1) internal standard calibration with phenanthrene-d_{10} as internal s

(2) isoto dilution

BENZYL BUTYL PHTHALATE	54.3	109			
DI-N-BUTYL PHTHALATE	47.7	96			458
DI-N-OCTYL PHTHALATE	58.5	118			
DIETHYL PHTHALATE	49.9	100			
DIMETHYL PHTHALATE	46.1	92			
BENZO(A)ANTHRACENE	41.1	82			
BENZO(A)PYRENE	41.4	82	56.2	112	
BENZO(B)FLUORANTHENE	34.4	68			
BENZO(K)FLUORANTHENE	26.9	54			
CHRYSENE	44.4	88	55.1	110	
ACENAPHTHYLENE	40.6	82			
ANTHRACENE	39.6	80			
BENZO(GHI)PERYLENE	42.9	86			
FLUORENE	41.6	84			
PHENANTHRENE	40.9	82			
DIBENZO(AH)ANTHRACENE	46.5	94	58.9	118	
INDENO(123-CD)PYRENE	42.3	84			
PYRENE	41.9	84	50.7	102	
NON-PRIORITY POLLUTANTS					
BENZOIC ACID	ND	--			
2-METHYLPHENOL	57.1	114			
4-METHYLPHENOL	63.6	127			
2,4,5-TRICHLOROPHENOL	ND	--			
2-METHYLNAPHTHALENE	42.5	86			
ANILINE	37.2	74			
BENZYL ALCOHOL	99.8	100			
4-CHLOROANILINE	45.8	92			
DIBENZOFURAN	41.5	84			
2-NITROANILINE	57.2	114			
3-NITROANILINE	45.4	90			
4-NITROANILINE	60.6	121			
Approximate DETECTION LIMIT					

	(1) mg/µL	% Rec	(2) mg/µL	% Rec
Carbazole	43.4	86	50.2	100
4-Hydroxybiphenyl	48.5	98		
1-Naphthylamine	28.5	58		
Acridine	40.6	82	49.8	100
1,2,3-Trimethylbenzene	78.9	158		
Quinoline	44.3	88	52.2	104
2,3,5-Trimethylphenol	31.6	64		
3-Methyl-cholanthrene	37.8	72		
7,12-Dimethylbenz(a)anthracene	16.9	34		
1-Naphthol	24.4	48	53.2	106
2,3,4-Trichlorophenol	ND	--		
2,3,4,5-Tetrachlorophenol	ND	--		
4-Aminobiphenyl	23.3	46		
Thiophene	NA	--		
13H-Dibenzo(a,i)carbazole	NA	--		

Field Surrogates	Percent Recovery	
Acenaphthene-d_{10}	37.8 ✓	78
Pyrene-D_{10}	41.4	80
Perylene-d_{12}	8.8	18
Naphthalene-d_8	43.1 ✓	86
Phenol-d_5	67.1	134
Carbazole-d_3	43.1	86
Benzo(a)pyrene-d_{12}	33.7	68
2-Naphthylamine-d_7	NS	--
Quinoline-d_7	42.4 ✓	86
Dibenzo(a,h)anthracene-d_{12}	19.0	38
1,2-Benz(a)anthracene-d_{12}	NS	--

Laboratory Surrogatges	Percent Recovery	
Naphthol-d_7	22.9	46
Acridine-d_9	40.9	82
Pyridine-d_5	NA	--
Chrysene-d_{12}	40.3 ✓	80
Fluoranthene-d_{10}	39.9 ✓	80
Benzo(e)pyrene-d_{12}	19.5	40

NA - Not able to see by GC/MS

NA* - not present in GC M

NS - not Spiked

6/28/85
N.

ACUREX Corporation

Energy & Environmental Division

Mr. Curtis Ross
USEPA Region V
536 South Clark Street
Central Regional Laboratory
10th Floor
Chicago, IL 60604

June 28, 1985
Acurex ID#: 8412-011A
Project: SAS 1141E

Subject: Results of GC/MS Analyses for Well SLP-15; Filter Extracts, Tasks 4 through 7

Enclosed please find the results of the GC/MS analyses for Well SLP-15. The well was sampled on December 5, 1984 in duplicate; the two samples are identified as SLP-15A ($V_{sampled}$ = 16.9 L) and SLP-15B ($V_{sampled}$ = 19.2 L). The two filters for sample SLP-15A were identified as SLP-15 FA1 and SLP-15 FA2 and were extracted together in a soxhlet extractor with methylene chloride. The two filters for sample SLP-15B were identified as SLP-15 FB1 and SLP-15 FB2 and were also extracted together in a soxhlet extractor with methylene chloride.

Analyses were performed as specified in SAS 1141E protocol with various modifications identified in Acurex's letter dated January 3, 1985. Results are reported in µg per filter. The following is a list of deliverables:

1. Concentration data for 8412-011-3,4 -- Well SLP-15A, filter extract composite of SLP-15 FA1 and SLP-15 FA2 (data form; Table 1, RIC; RT diagnostic report; RP diagnostic report, RT quantitation report; RP quantitation report; quantitation report for other compounds found in sample; spectra: enhanced, unenhanced, library display of 3 best fits; peak areas).

2. Concentration data for 8412-011-5,6 -- Well SLP-15B, filter extract composite of SLP-15 FB1 and SLP-15 FB2 (data form; Table 2, RIC; RT diagnostic report; RP diagnostic report, RT quantitation report; RP quantitation report; quantitation report for other compounds found in sample; spectra: enhanced, unenhanced, library display of 3 best fits; peak areas).

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The chain of custody forms have been submitted on March 19, 1985, with the results of the cartridge analysis. The DFTPP, GC/MS standard data and the solvent blank data for 2/5/85 have been submitted on June 26, 1985 in the Acurex report 8412-010A.

Sincerely,

Viorica Lopez-Avila, Ph.D.
Technical Director

VLA/ats

Enclosures

cc: Dr. Brenda Kimble
Amphion Associates

Linda Haas Boynton
Sample Management Office

Data Audit Staff
EMSL - Las Vegas

Paul Bitter
EPA Region V

Gail Lowry
Minnesota Pollution Control Association

These results were obtained using accepted laboratory practices; the liability of Acurex Corporation shall not exceed the amount paid for this report. In no event shall Acurex be liable for special or consequential damages.

TRAVELER # 8412-011-3,4 Well SLP15, filter sample A (one [illegible] of 2 filters)

PRIORITY POLLUTANT BNA'S	(1) ng/µL	(1) µg	(2) ng/µL	(2) µg	
ACENAPHTHENE	ND				
BENZIDINE	NA*				
1,2,4-TRICHLOROBENZENE	ND				
HEXACHLOROBENZENE					
HEXACHLOROETHANE					
BIS(2-CHLOROETHYL)ETHER					
2-CHLORONAPHTHALENE					
2,4,6-TRICHLOROPHENOL					
P-CHLORO-M-CRESOL					
2-CHLOROPHENOL					
1,2-DICHLOROBENZENE					
1,3-DICHLOROBENZENE					
1,4-DICHLOROBENZENE					
3,3-DICHLOROBENZIDINE	NA*				
2,4-DICHLOROPHENOL	ND				
2,4-DIMETHYLPHENOL					
2,4-DINITROTOLUENE					
2,6-DINITROTOLUENE					
1,2-DIPHENYLHYDRAZINE	NA				
FLUORANTHENE	ND				
4-CHLOROPHENYL PHENYL ETHER					
4-BROMOPHENYL PHENYL ETHER					
BIS(2-CHLOROISOPROPYL) ETHER					
BIS(2-CHLOROETHOXY) METHANE					
HEXACHLOROBUTADIENE					
HEXACHLOROCYCLOPENTADIENE					
ISOPHORONE					
NAPHTHALENE					
NITROBENZENE					
2-NITROPHENOL					
4-NITROPHENOL					
2,4-DINITROPHENOL					
4,6-DINITRO-2-METHYLPHENOL					
N-NITROSODIMETHYL AMINE					
N-NITROSODIPHENYLAMINE					
N-NITROSODIPROPYLAMINE					
PENTACHLOROPHENOL					
PHENOL					
BIS(2-ETHYLHEXYL) PHTHALATE	5.9	5.9			

(1) internal standard calibration with phenanthrene-d_{10} as internal std

(2) isotope dilution

BENZYL BUTYL PHTHALATE	ND				
I- -BUTYL PHTHALATE	1.9	1.9		[illegible]	[illegible]
DI-N-OCTYL PHTHALATE	ND				
DIETHYL PHTHALATE					
DIMETHYL PHTHALATE					
BENZO(A)ANTHRACENE					
BENZO(A)PYRENE					
BENZO(B)FLUORANTHENE					
BENZO(K)FLUORANTHENE					
CHRYSENE					
ACENAPHTHYLENE					
ANTHRACENE					
BENZO(GHI)PERYLENE					
FLUORENE					
PHENANTHRENE					
DIBENZO(AH)ANTHRACENE					
INDENO(123-CD)PYRENE					
PYRENE					
NON-PRIORITY POLLUTANTS					
BENZOIC ACID	ND				
2-METHYLPHENOL					
4-METHYLPHENOL					
2,4,5-TRICHLOROPHENOL					
2-METHYLNAPHTHALENE					
ANILINE					
BENZYL ALCOHOL					
4-CHLOROANILINE					
DIBENZOFURAN					
2-NITROANILINE					
3-NITROANILINE					
4-NITROANILINE					
Approximate DETECTION LIMIT (see Acurex Report 8501-017B					

	(1) ng/µL	(1) µg	(2) ng/µL	(2) µg
Carbazole	ND			
4-Hydroxybiphenyl				
1-Naphthylamine				
Acridine				
1,2,3-Trimethylbenzene				
Quinoline				
2,3,5-Trimethylphenol				
3-Methyl-cholanthrene				
7,12-Dimethylbenz(a)anthracene				
1-Naphthol				
2,3,4-Trichlorophenol				
2,3,4,5-Tetrachlorophenol				
4-Aminobiphenyl				
Thiophene	NA			
13H-Dibenzo(a,i)carbazole	NA			

Field Surrogates	Percent Recovery	
Acenaphthene-d_{10}	72.4	145
Pyrene-D_{10}	69.5	139
Perylene-d_{12}	72.1	144
Naphthalene-d_8	64.6	129
Phenol-d_5	111.9	* high recovery possibly due to interference
Carbazole-d_3	18.1	36
Benzo(a)pyrene-d_{12}	64.7	129
2-Naphthylamine-d_7	NS	--
Quinoline-d_7	77.9	156
Dibenzo(a,h)anthracene-d_{12}	33.8	68
1,2-Benz(a)anthracene-d_{12}	NS	--

Laboratory Surrogatges	Percent Recovery	
Naphthol-d_7	28.8	58
Acridine-d_9	41.4	83
Pyridine-d_5	NA	--
Chrysene-d_{12}	77.7	155
Fluoranthene-d_{10}	75.4	151
Benzo(e)pyrene-d_{12}	41.9	84

NA - Not able to see by GC/MS

NA* - not present in GC/MS Std.

NS - not Spiked

Table 1 Approximate concentrations of compounds detected in well SLP 15 filter sample A, 8412-011-3,4 (composite of two filters)

Scan Number	Compound identification	Approx. Concentration (μg per filter)
304	$C_7H_{14}O$ [a]	10.95
2346	Alcohol	47.47
2657	Alkene	19.77
2888	Alkyne	66.10
3057	Azelate ester	8.27

a/ See library display of the 3 best fits

TRAVELER # 12- - Well SLP 15 filter sample B (composite of 2 filter

PRIORITY POLLUTANT N'S	(1) ng/µL	(1) µg	(2) ng/µL	(2) µg	208
ACENAPHTHENE	ND				
BENZIDINE	NA*				
1,2,4-TRICHLOROBENZENE	ND				
HEXACHLOROBENZENE	↓				
HEXACHLOROETHANE					
BIS(2-CHLOROETHYL)ETHER					
2-CHLORONAPHTHALENE					
2,4,6-TRICHLOROPHENOL					
P-CHLORO-M-CRESOL					
2-CHLOROPHENOL					
1,2-DICHLOROBENZENE					
1,3-DICHLOROBENZENE					
1,4-DICHLOROBENZENE	↓				
3,3-DICHLOROBENZIDINE	NA*				
2,4-DICHLOROPHENOL	ND				
2,4-DIMETHYLPHENOL	↓				
2,4-DINITROTOLUENE					
2,6-DINITROTOLUENE	↓				
1,2-DIPHENYLHYDRAZINE	NA				
FLUORANTHENE	ND				
4-CHLOROPHENYL PHENYL ETHER	↓				
4-BROMOPHENYL PHENYL ETHER					
BIS(2-CHLOROISOPROPYL) ETHER					
BIS(2-CHLOROETHOXY) METHANE					
HEXACHLOROBUTADIENE					
HEXACHLOROCYCLOPENTADIENE					
ISOPHORONE					
NAPHTHALENE					
NITROBENZENE					
2-NITROPHENOL					
4-NITROPHENOL					
2,4-DINITROPHENOL					
4,6-DINITRO-2-METHYLPHENOL					
N-NITROSODIMETHYL AMINE					
N-NITROSODIPHENYLAMINE					
N-NITROSODIPROPYLAMINE					
PENTACHLOROPHENOL					
PHENOL	↓				
BIS(2-ETHYLHEXYL) PHTHALATE	33.3	33.3			

(1) internal standard calibration with phenanthrene-d_{10} as internal std

(2) isotope dilution

BENZYL BUTYL PHTHALATE	ND				
DI-N-BUTYL PHTHALATE	4.1	4.1			
DI-N-OCTYL PHTHALATE	ND				
DIETHYL PHTHALATE					
DIMETHYL PHTHALATE					
BENZO(A)ANTHRACENE					
BENZO(A)PYRENE					
BENZO(B)FLUORANTHENE					
BENZO(K)FLUORANTHENE					
CHRYSENE					
ACENAPHTHYLENE					
ANTHRACENE					
BENZO(GHI)PERYLENE					
FLUORENE					
PHENANTHRENE					
DIBENZO(AH)ANTHRACENE					
INDENO(123-CD)PYRENE					
PYRENE					
NON-PRIORITY POLLUTANTS					
BENZOIC ACID	ND				
2-METHYLPHENOL					
4-METHYLPHENOL					
2,4,5-TRICHLOROPHENOL					
2-METHYLNAPHTHALENE					
ANILINE					
BENZYL ALCOHOL					
4-CHLOROANILINE					
DIBENZOFURAN					
2-NITROANILINE					
3-NITROANILINE					
4-NITROANILINE					
Approximate DETECTION LIMIT (see Acurex report 8501-0176)					

	(1) mg/mL	(1) µg	(2) mg/mL	(2) µg
Carbazole	ND			
4-Hydroxybiphenyl	↓			
1-Naphthylamine	↓			
Acridine	↓			
1,2,3-Trimethylbenzene	↓			
Quinoline	↓			
2,3,5-Trimethylphenol	↓			
3-Methyl-cholanthrene	↓			
7,12-Dimethylbenz(a)anthracene	↓			
1-Naphthol	↓			
2,3,4-Trichlorophenol	↓			
2,3,4,5-Tetrachlorophenol	↓			
4-Aminobiphenyl	↓			
Thiophene	NA			
13H-Dibenzo(a,i)carbazole	NA*			

Field Surrogates	Percent Recovery	
Acenaphthene-d_{10}	75.5	151
Pyrene-D_{10}	71.4	143
Perylene-d_{12}	62.2	124
Naphthalene-d_8	73.6	147
Phenol-d_5	126.1	* high recovery probably due to interference
Carbazole-d_3	87.1	174
Benzo(a)pyrene-d_{12}	56.5	113
2-Naphthylamine-d_7	NS	--
Quinoline-d_7	84.4	169
Dibenzo(a,h)anthracene-d_{12}	27.1	54
1,2-Benz(a)anthracene-d_{12}	NS	--

Laboratory Surrogatges	Percent Recovery	
Naphthol-d_7	34.9	70
Acridine-d_9	74.5	149
Pyridine-d_5	NA	--
Chrysene-d_{12}	73.0	146
Fluoranthene-d_{10}	79.2	158
Benzo(e)pyrene-d_{12}	60.9	122

NA - Not able to see by GC/MS

NA* - not present in GC/MS Std.

NS - not spiked

Table 2 Approximate concentrations of other compounds detected in well SLP 15, filter sample B, 8412-011-5,6 (composite of two filters)

Scan number	Compound identification	Approximate conc (μg per filter)
304	$C_7H_{14}O$ [a]	10.07
391	$C_6H_{14}O_2$ [a]	3.32
1010	$C_5H_{10}O_2$ or $C_6H_{10}O_2$ [a]	8.66
1051, 1101	$C_5H_{10}O_2$ or $C_8H_{16}O$ [a]	16.10
2309	Alkyne or alkene	56.99
2343	Alcohol	89.36
2626, 2631	Alkyne	1519
2652	Alkane or alkene	27.12
2885	Alkyne	81.85
3057	Azelate ester	9.97
3295	Alkane	3.08
3409	Alkane	3.93
3730	Alkane	3.55
3830	Alkane	6.11

a/ See library display of 3 best fits

6/28/85
N.

ACUREX Corporation

Energy & Environmental Division

Mr. Curtis Ross
USEPA Region V
536 South Clark Street
Central Regional Laboratory
10th Floor
Chicago, IL 60604

June 28, 1985
Acurex ID#: 8412-026A
Project: SAS 1141E

Subject: Results of GC/MS Analyses for Well W14;
Filter Extracts, Tasks 4 through 7

Enclosed please find the results of the GC/MS analyses for Well W14. The well was sampled on December 14, 1984 in duplicate; the two samples are identified as W14A ($V_{sampled}$ = 22.0 L) and W14B ($V_{sampled}$ = 25.3 L). The two filters for sample W14A were identified as W14 FA1 and W14 FA2 and were extracted together in a soxhlet extractor with methylene chloride. The two filters for sample W14B were identified as W14 FB1 and W14 FB2 and were also extracted together in a soxhlet extractor with methylene chloride.

Analyses were performed as specified in SAS 1141E protocol with various modifications identified in Acurex's letter dated January 3, 1985. Results are reported in µg per filter. The following is a list of deliverables:

1. DFTPP (form, plot, list format) for 2/10/85.

2. GC/MS standard for 2/10/85 (RIC, RT diagnostic report; RP diagnostic repot; RT quantitation report; RP quantitation report; calibration check forms).

3. Solvent blank for 2/10/85 (RIC; diagnostic report; quantitation report).

4. Concentration data for 8412-026-3,4 -- Well W14A, filter extract composite of W14 FA1 and W14 FA2 (data form; Table 1, RIC; RT diagnostic report; RP diagnostic report, RT quantitation report; RP quantitation report; quantitation report for other compounds found in sample; spectra: enhanced, unenhanced, library display of 3 best fits; peak areas).

5. Concentration data for 8412-026-5,6 -- Well W14B, filter extract composite of W14 FB1 and W14 FB2 (data form; Table 2, RIC; RT diagnostic report; RP diagnostic report, RT quantitation report; RP quantitation report; quantitation report for other compounds found in sample; spectra: enhanced, unenhanced, library display of 3 best fits; peak areas).

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The chain of custody forms have been submitted on April 5, 1985, with the results of the cartridge analysis..

Sincerely,

Viorica Lopez-Avila, Ph.D.
Technical Director

VLA/ats

Enclosures

cc: Dr. Brenda Kimble
Amphion Associates

Linda Haas Boynton
Sample Management Office

Data Audit Staff
EMSL - Las Vegas

Paul Bitter
EPA Region V

Gail Lowry
Minnesota Pollution Control Association

These results were obtained using accepted laboratory practices; the liability of Acurex Corporation shall not exceed the amount paid for this report. In no event shall Acurex be liable for special or consequential damages.

TRAVELER # 8412-026-3,4 well 14 filter sample A (composite of two filters

PRIORITY POLLUTANT #'S	(1) ng/µL	(1) µg	(2) ng/µL	(2) µg	
ACENAPHTHENE	ND				
BENZIDINE	NA*				14
1,2,4-TRICHLOROBENZENE	ND				
HEXACHLOROBENZENE					
HEXACHLOROETHANE					
BIS(2-CHLOROETHYL)ETHER					
2-CHLORONAPHTHALENE					
2,4,6-TRICHLOROPHENOL					
P-CHLORO-M-CRESOL					
2-CHLOROPHENOL					
1,2-DICHLOROBENZENE					
1,3-DICHLOROBENZENE					
1,4-DICHLOROBENZENE					
3,3-DICHLOROBENZIDINE	NA*				
2,4-DICHLOROPHENOL	ND				
2,4-DIMETHYLPHENOL					
2,4-DINITROTOLUENE					
2,6-DINITROTOLUENE					
1,2-DIPHENYLHYDRAZINE	NA				
FLUORANTHENE	ND				
4-CHLOROPHENYL PHENYL ETHER					
4-BROMOPHENYL PHENYL ETHER					
BIS(2-CHLOROISOPROPYL) ETHER					
BIS(2-CHLOROETHOXY) METHANE					
HEXACHLOROBUTADIENE					
HEXACHLOROCYCLOPENTADIENE					
ISOPHORONE					
NAPHTHALENE					
NITROBENZENE					
2-NITROPHENOL					
4-NITROPHENOL					
2,4-DINITROPHENOL					
4,6-DINITRO-2-METHYLPHENOL					
N-NITROSODIMETHYL AMINE					
N-NITROSODIPHENYLAMINE					
N-NITROSODIPROPYLAMINE					
PENTACHLOROPHENOL					
PHENOL					
BIS(2-ETHYLHEXYL) PHTHALATE	20.1	20.1			

(1) internal standard calibration with phenanthrene-d_{10} as internal std

(2) isotope dilution

BENZYL BUTYL PHTHALATE	ND				
DI-N-BUTYL PHTHALATE					
DI-N-OCTYL PHTHALATE					
DIETHYL PHTHALATE					
DIMETHYL PHTHALATE					
BENZO(A)ANTHRACENE					
BENZO(A)PYRENE					
BENZO(B)FLUORANTHENE					
BENZO(K)FLUORANTHENE					
CHRYSENE					
ACENAPHTHYLENE					
ANTHRACENE					
BENZO(GHI)PERYLENE					
FLUORENE					
PHENANTHRENE					
DIBENZO(AH)ANTHRACENE					
INDENO(123-CD)PYRENE					
PYRENE					
NON-PRIORITY POLLUTANTS					
BENZOIC ACID	ND				
2-METHYLPHENOL					
4-METHYLPHENOL					
2,4,5-TRICHLOROPHENOL					
2-METHYLNAPHTHALENE					
ANILINE					
BENZYL ALCOHOL					
4-CHLOROANILINE					
DIBENZOFURAN					
2-NITROANILINE					
3-NITROANILINE					
4-NITROANILINE					
Approximate DETECTION LIMIT (see Acurex report 8501-017B)					

	(1) ng/µL	(1) µg	(2) ng/µL	(2) µg
Carbazole	ND			
4-Hydroxybiphenyl	↓			
1-Naphthylamine	↓			
Acridine	↓			
1,2,3-Trimethylbenzene	↓			
Quinoline	↓			
2,3,5-Trimethylphenol	↓			
3-Methyl-cholanthrene	↓			
7,12-Dimethylbenz(a)anthracene	↓			
1-Naphthol	↓			
2,3,4-Trichlorophenol	↓			
2,3,4,5-Tetrachlorophenol	↓			
4-Aminobiphenyl	↓			
Thiophene	NA			
13H-Dibenzo(a,i)carbazole	NA			

Field Surrogates		Percent Recovery
Acenaphthene-d_{10}	38.1	76
Pyrene-D_{10}	44.1	88
Perylene-d_{12}	51.3	103
Naphthalene-d_8	35.0	70
Phenol-d_5	47.2	94
Carbazole-d_3	45.6	91
Benzo(a)pyrene-d_{12}	46.2	92
2-Naphthylamine-d_7	NS	--
Quinoline-d_7	18.3	37
Dibenzo(a,h)anthracene-d_{12}	26.1	52
1,2-Benz(a)anthracene-d_{12}	NS	--

Laboratory Surrogatges		Percent Recovery
Naphthol-d_7	32.4	65
Acridine-d_9	46.4	93
Pyridine-d_5	NA	--
Chrysene-d_{12}	48.8	98
Fluoranthene-d_{10}	46.0	92
Benzo(e)pyrene-d_{12}	48.2	96

NA - Not able to see by GC/MS

NA* - not present in GC/MS Std.

NS - not spiked

Table 1 Approximate concentrations of other compounds detected in well #14, sample A (composite of two filters) 8412-026-3,4

Scan Number	Compound identification	Approximate conc (μg per filter)
350	$C_7H_{14}O$ [a]	2.29
2351	alkyne or alkene	52.2
2386	alcohol	84.5
2498	alkane or alkene	35.9
2669, 2674	alkyne	629
2689	alcohol or alkene	53.8
2731	alkyne or alkene	21.8
2924	alkyne or alkene	35.4
2959	alcohol	4.0

a/ See library display of 3 best fits

TRAVELER # 8412-026-5,6 Well 14 filter sample B (composite of two filter

PRIORITY POLLUTANT #'S	(1) ng/µL	(1) µg	(2) ng/µL	(2) µg
ACENAPHTHENE	ND			
BENZIDINE	NA*			
1,2,4-TRICHLOROBENZENE	ND			
HEXACHLOROBENZENE				
HEXACHLOROETHANE				
BIS(2-CHLOROETHYL)ETHER				
2-CHLORONAPHTHALENE				
2,4,6-TRICHLOROPHENOL				
P-CHLORO-M-CRESOL				
2-CHLOROPHENOL				
1,2-DICHLOROBENZENE				
1,3-DICHLOROBENZENE				
1,4-DICHLOROBENZENE				
3,3-DICHLOROBENZIDINE	NA*			
2,4-DICHLOROPHENOL	ND			
2,4-DIMETHYLPHENOL				
2,4-DINITROTOLUENE				
2,6-DINITROTOLUENE				
1,2-DIPHENYLHYDRAZINE	NA			
FLUORANTHENE	ND			
4-CHLOROPHENYL PHENYL ETHER				
4-BROMOPHENYL PHENYL ETHER				
BIS(2-CHLOROISOPROPYL) ETHER				
BIS(2-CHLOROETHOXY) METHANE				
HEXACHLOROBUTADIENE				
HEXACHLOROCYCLOPENTADIENE				
ISOPHORONE				
NAPHTHALENE				
NITROBENZENE				
2-NITROPHENOL				
4-NITROPHENOL				
2,4-DINITROPHENOL				
4,6-DINITRO-2-METHYLPHENOL				
N-NITROSODIMETHYL AMINE				
N-NITROSODIPHENYLAMINE				
N-NITROSODIPROPYLAMINE				
PENTACHLOROPHENOL				
PHENOL				
BIS(2-ETHYLHEXYL) PHTHALATE	21.9	21.9		

(1) internal standard calibration with phenanthrene-d_{10} as internal std

(2) isotope dilution

BENZYL BUTYL PHTHALATE	ND				
DI- -BUTYL PHTHALATE					
DI-N-OCTYL PHTHALATE					
DIETHYL PHTHALATE					
DIMETHYL PHTHALATE					
BENZO(A)ANTHRACENE					
BENZO(A)PYRENE					
BENZO(B)FLUORANTHENE					
BENZO(K)FLUORANTHENE					
CHRYSENE					
ACENAPHTHYLENE					
ANTHRACENE					
BENZO(GHI)PERYLENE					
FLUORENE					
PHENANTHRENE					
DIBENZO(AH)ANTHRACENE					
INDENO(123-CD)PYRENE					
PYRENE					
NON-PRIORITY POLLUTANTS					
BENZOIC ACID	ND				
2-METHYLPHENOL					
4-METHYLPHENOL					
2,4,5-TRICHLOROPHENOL					
2-METHYLNAPHTHALENE					
ANILINE					
BENZYL ALCOHOL					
4-CHLOROANILINE					
DIBENZOFURAN					
2-NITROANILINE					
3-NITROANILINE					
4-NITROANILINE					
Approximate DETECTION LIMIT (See Acurex report 8501-017B)					

	(1) mg/µL	(1) µg	(2) mg/µL	(2) µg
Carbazole	ND			
4-Hydroxybiphenyl	↓			
1-Naphthylamine	↓			
Acridine	↓			
1,2,3-Trimethylbenzene	↓			
Quinoline	↓			
2,3,5-Trimethylphenol	↓			
3-Methyl-cholanthrene	↓			
7,12-Dimethylbenz(a)anthracene	↓			
1-Naphthol	↓			
2,3,4-Trichlorophenol	↓			
2,3,4,5-Tetrachlorophenol	↓			
4-Aminobiphenyl	↓			
Thiophene	NA			
13H-Dibenzo(a,i)carbazole	NA			

Field Surrogates		Percent Recovery
Acenaphthene-d_{10}	38.4	77
Pyrene-D_{10}	42.8	86
Perylene-d_{12}	26.3	53
Naphthalene-d_8	37.4	75
Phenol-d_5	63.7	127
Carbazole-d_3	43.5	87
Benzo(a)pyrene-d_{12}	44.3	89
2-Naphthylamine-d_7	NS	--
Quinoline-d_7	40.7	81
Dibenzo(a,h)anthracene-d_{12}	26.9	54
1,2-Benz(a)anthracene-d_{12}	NS	--

Laboratory Surrogatges		Percent Recovery
Naphthol-d_7	28.9	58
Acridine-d_9	46.4	93
Pyridine-d_5	NA	--
Chrysene-d_{12}	49.9	100
Fluoranthene-d_{10}	47.2	94
Benzo(e)pyrene-d_{12}	54.8	110

NA - Not able to see by GC/MS

NA* - not present in GC/MS Std.

NS - not spiked

Table 2 Approximate concentrations of other compounds detected in well 14, sample (composite of two filters) 8412-026-576.

Scan Number	Compound identification	Approximate Conc. (μg per filter)
357	$C_7H_{14}O$ [a]	1.96
2355	Alkyne or alkene	52.3
2389	Alcohol	84.1
2500	Alcohol or alkene	22.4
2671, 2677, 2679	Alkyne	614
2692	Alcohol or alkene	56.9
2733	Alkyne or alkene	20.9
2791	Alkyne or alkene	8.68
2926	Alkyne or alkene	39.0
3781	Alkane	10.5
3881	Alkane	13.4
3979	Alkane	25.2
4072	Alkane	8.4
4165	Alkane	2.7

a/ See library display of 3 best fits

7/2/85
N.

ACUREX Corporation

Energy & Environmental Division

Mr. Curtis Ross
USEPA Region V
536 South Clark Street
Central Regional Laboratory
10th Floor
Chicago, IL 60604

July 2, 1985
Acurex ID#: 8412-017A
Project: SAS 1141E

Subject: Results of GC/MS Analyses for Well W24;
Filter Extracts, Tasks 4 through 7

Enclosed please find the results of the GC/MS analyses for Well W24. The well was sampled on December 10, 1984 in duplicate; the two samples are identified as W24A ($V_{sampled}$ = 22.9 L) and W24B ($V_{sampled}$ = 19.5 L). The two filters for sample W24A were identified as W24 FA1 and W24 FA2 and were extracted together in a soxhlet extractor with methylene chloride. The two filters for sample W24B were identified as W24 FB1 and W24 FB2 and were also extracted together in a soxhlet extractor with methylene chloride.

Analyses were performed as specified in SAS 1141E protocol with various modifications identified in Acurex's letter dated January 3, 1985. Results are reported in µg per filter. The following is a list of deliverables:

1. DFTPP (form, plot, list format) for 2/11/85.

2. GC/MS standard for 2/11/85 (RIC, RT diagnostic report; RP diagnostic repot; RT quantitation report; RP quantitation report; calibration check forms).

3. Solvent blank for 2/11/85 (RIC; diagnostic report; quantitation report).

4. Concentration data for 8412-017-3,4 -- Well W24A, filter extract composite of W24 FA1 and W24 FA2 (data form; Table 1, RIC; RT diagnostic report; RP diagnostic report, RT quantitation report; RP quantitation report; quantitation report for other compounds found in sample; spectra: enhanced, unenhanced, library display of 3 best fits; peak areas).

5. Concentration data for 8412-017-5,6 -- Well W24B, filter extract composite of W24 FB1 and W24 FB2 (data form; Table 2, RIC; RT diagnostic report; RP diagnostic report, RT quantitation report; RP quantitation report; quantitation report for other compounds found in sample; spectra: enhanced, unenhanced, library display of 3 best fits; peak areas).

555 Clyde Avenue, PO Box 7555, Mountain View, CA 94039 (415) 964-3200 Telex. 34-6391 TWX 910-7796593

6. Concentration data for 8412-026 -- Method standard for soxhlet extraction (data form, RIC, RT diagnostic report, RP diagnostic report; RT quantitation report; RP quantitation report). Method standard was obtained by spiking 50 µg of the target compounds and priority pollutants directly onto the Teflon filter and extracting the filter with methylene chloride in a soxhlet extractor.

The chain of custody forms have been submitted on April 22, 1985, with the results of the cartridge analysis.

Sincerely,

Viorica Lopez-Avila

Viorica Lopez-Avila, Ph.D.
Technical Director

VLA/ats

Enclosures

cc: Dr. Brenda Kimble
Amphion Associates

Linda Haas Boynton
Sample Management Office

Data Audit Staff
EMSL - Las Vegas

Paul Bitter
EPA Region V

Gail Lowry
Minnesota Pollution Control Association

These results were obtained using accepted laboratory practices; the liability of Acurex Corporation shall not exceed the amount paid for this report. In no event shall Acurex be liable for special or consequential damages.

TRAVELER # 8412-017-3,4 well 24, filter sample A (composite of two filters)

PRIORITY POLLUTANT BNA'S	(1) ng/µL	(1) µg	(2) ng/µL	(2) µg	30
ACENAPHTHENE	ND				
BENZIDINE	NA*				
1,2,4-TRICHLOROBENZENE	ND				
HEXACHLOROBENZENE					
HEXACHLOROETHANE					
BIS(2-CHLOROETHYL)ETHER					
2-CHLORONAPHTHALENE					
2,4,6-TRICHLOROPHENOL					
P-CHLORO-M-CRESOL					
2-CHLOROPHENOL					
1,2-DICHLOROBENZENE					
1,3-DICHLOROBENZENE					
1,4-DICHLOROBENZENE					
3,3-DICHLOROBENZIDINE	NA*				
2,4-DICHLOROPHENOL	ND				
2,4-DIMETHYLPHENOL					
2,4-DINITROTOLUENE					
2,6-DINITROTOLUENE					
1,2-DIPHENYLHYDRAZINE	NA				
FLUORANTHENE	ND				
4-CHLOROPHENYL PHENYL ETHER					
4-BROMOPHENYL PHENYL ETHER					
BIS(2-CHLOROISOPROPYL) ETHER					
BIS(2-CHLOROETHOXY) METHANE					
HEXACHLOROBUTADIENE					
HEXACHLOROCYCLOPENTADIENE					
ISOPHORONE					
NAPHTHALENE					
NITROBENZENE					
2-NITROPHENOL					
4-NITROPHENOL					
2,4-DINITROPHENOL					
4,6-DINITRO-2-METHYLPHENOL					
N-NITROSODIMETHYL AMINE					
N-NITROSODIPHENYLAMINE					
N-NITROSODIPROPYLAMINE					
PENTACHLOROPHENOL					
PHENOL					
BIS(2-ETHYLHEXYL) PHTHALATE	17.9	17.9			

(1) internal standard calibration with phenanthrene-d_{10} as internal std

(2) isotope dilution

BENZYL BUTYL PHTHALATE	ND				
DI-N-BUTYL PHTHALATE					
DI-N-OCTYL PHTHALATE					
DIETHYL PHTHALATE					
DIMETHYL PHTHALATE					
BENZO(A)ANTHRACENE					
BENZO(A)PYRENE					
BENZO(B)FLUORANTHENE					
BENZO(K)FLUORANTHENE					
CHRYSENE					
ACENAPHTHYLENE					
ANTHRACENE					
BENZO(GHI)PERYLENE					
FLUORENE					
PHENANTHRENE					
DIBENZO(AH)ANTHRACENE					
INDENO(123-CD)PYRENE					
PYRENE					
NON-PRIORITY POLLUTANTS					
BENZOIC ACID	ND				
2-METHYLPHENOL					
4-METHYLPHENOL					
2,4,5-TRICHLOROPHENOL					
2-METHYLNAPHTHALENE					
ANILINE					
BENZYL ALCOHOL					
4-CHLOROANILINE					
DIBENZOFURAN					
2-NITROANILINE					
3-NITROANILINE					
4-NITROANILINE					
Approximate DETECTION LIMIT (see Acurex report 8501-017B)					

	(1) ng/µL	(1) µg	(2) ng/µL	(2) µg
Carbazole	ND			
4-Hydroxybiphenyl				
1-Naphthylamine				
Acridine				
1,2,3-Trimethylbenzene				
Quinoline				
2,3,5-Trimethylphenol				
3-Methyl-cholanthrene				
7,12-Dimethylbenz(a)anthracene				
1-Naphthol				
2,3,4-Trichlorophenol				
2,3,4,5-Tetrachlorophenol				
4-Aminobiphenyl				
Thiophene	NA			
13H-Dibenzo(a,i)carbazole	NA			

Field Surrogates	Percent Recovery	
Acenaphthene-d_{10}	31.9	64
Pyrene-D_{10}	28.7	57
Perylene-d_{12}	48.1	96
Naphthalene-d_8	32.8	66
Phenol-d_5	58.9	118
Carbazole-d_3	18.8	38
Benzo(a)pyrene-d_{12}	43.1	86
2-Naphthylamine-d_7	NS	--
Quinoline-d_7	34.4	69
Dibenzo(a,h)anthracene-d_{12}	28.6	57
1,2-Benz(a)anthracene-d_{12}	NS	--

Laboratory Surrogatges	Percent Recovery	
Naphthol-d_7	35.0	70
Acridine-d_9	35.0	70
Pyridine-d_5	NA	--
Chrysene-d_{12}	36.9	74
Fluoranthene-d_{10}	35.6	71
Benzo(e)pyrene-d_{12}	62.3	125

NA - Not able to see by GC/MS

NS - not spiked

NA* - not present in GC/MS Std.

Table 1 Approximate concentrations of other compounds detected in well 24, filter sample A (composite of two fil 8412-017-3,4

Scan Number	Compound identification	Approximate conc (μg per filter)
1117	$C_5H_{10}O_2$ or $C_8H_{16}O$ or $C_7H_{12}O_3$ [a]	10
2337	alkyne	60.2
2371	alcohol	96.4
2481	alkene or alkane	42.9
2655, 2657, 2660 2663, 2665	alkyne	276
2675	alkene or alcohol	59.1
2715	alkyne or alkene	26.2
2773	alkyne or alkene	12.6
2909	alkyne	60.3
2942	alcohol	6.1
3087	azelate ester	4.0

a) See library display of 3 best fits

TRAVELER # well W-24 filter sample B (composite of 2 filters)

PRIORITY POLLUTANT BNA'S	(1) ng/µL	(1) µg	(2) ng/µL	(2) µg	145
ACENAPHTHENE	ND				
BENZIDINE	NA*				
1,2,4-TRICHLOROBENZENE	ND				
HEXACHLOROBENZENE					
HEXACHLOROETHANE					
BIS(2-CHLOROETHYL)ETHER					
2-CHLORONAPHTHALENE					
2,4,6-TRICHLOROPHENOL					
P-CHLORO-M-CRESOL					
2-CHLOROPHENOL					
1,2-DICHLOROBENZENE					
1,3-DICHLOROBENZENE					
1,4-DICHLOROBENZENE					
3,3-DICHLOROBENZIDINE	NA*				
2,4-DICHLOROPHENOL	ND				
2,4-DIMETHYLPHENOL					
2,4-DINITROTOLUENE					
2,6-DINITROTOLUENE					
1,2-DIPHENYLHYDRAZINE	NA				
FLUORANTHENE	ND				
4-CHLOROPHENYL PHENYL ETHER					
4-BROMOPHENYL PHENYL ETHER					
BIS(2-CHLOROISOPROPYL) ETHER					
BIS(2-CHLOROETHOXY) METHANE					
HEXACHLOROBUTADIENE					
HEXACHLOROCYCLOPENTADIENE					
ISOPHORONE					
NAPHTHALENE					
NITROBENZENE					
2-NITROPHENOL					
4-NITROPHENOL					
2,4-DINITROPHENOL					
4,6-DINITRO-2-METHYLPHENOL					
N-NITROSODIMETHYL AMINE					
N-NITROSODIPHENYLAMINE					
N-NITROSODIPROPYLAMINE					
PENTACHLOROPHENOL					
PHENOL					
BIS(2-ETHYLHEXYL) PHTHALATE	23.6	23.6			

(1) internal standard calibration with phenanthrene-d_{10} as internal std

(2) isotope dilution

BENZYL BUTYL PHTHALATE	ND				
DI- -BUTYL PHTHALATE					
DI-N-OCTYL PHTHALATE	ND				
DIETHYL PHTHALATE					
DIMETHYL PHTHALATE					
BENZO(A)ANTHRACENE					
BENZO(A)PYRENE					
BENZO(B)FLUORANTHENE					
BENZO(K)FLUORANTHENE					
CHRYSENE					
ACENAPHTHYLENE					
ANTHRACENE					
BENZO(GHI)PERYLENE					
FLUORENE					
PHENANTHRENE					
DIBENZO(AH)ANTHRACENE					
INDENO(123-CD)PYRENE					
PYRENE					
NON-PRIORITY POLLUTANTS					
BENZOIC ACID	ND				
2-METHYLPHENOL					
4-METHYLPHENOL					
2,4,5-TRICHLOROPHENOL					
2-METHYLNAPHTHALENE					
ANILINE					
BENZYL ALCOHOL					
4-CHLOROANILINE					
DIBENZOFURAN					
2-NITROANILINE					
3-NITROANILINE					
4-NITROANILINE					
approximate DETECTION LIMIT					

	(1) ng/µL	(1) µg	(2) ng/µL	(2) µg
Carbazole	ND			
4-Hydroxybiphenyl				
1-Naphthylamine				
Acridine				
1,2,3-Trimethylbenzene				
Quinoline				
2,3,5-Trimethylphenol				
3-Methyl-cholanthrene				
7,12-Dimethylbenz(a)anthracene				
1-Naphthol				
2,3,4-Trichlorophenol				
2,3,4,5-Tetrachlorophenol				
4-Aminobiphenyl				
Thiophene	NA			
13H-Dibenzo(a,i)carbazole	NA			

Field Surrogates	Percent Recovery	
Acenaphthene-d_{10}	31.4	63
Pyrene-D_{10}		
Perylene-d_{12}	56.5	113
Naphthalene-d_8	28.7	57
Phenol-d_5	54.6	109
Carbazole-d_3	43.7	87
Benzo(a)pyrene-d_{12}	40.0	80
2-Naphthylamine-d_7	NS	--
Quinoline-d_7	30.3	61
Dibenzo(a,h)anthracene-d_{12}	31.8	64
1,2-Benz(a)anthracene-d_{12}	NS	--

Laboratory Surrogatges	Percent Recovery	
Naphthol-d_7	36.1	72
Acridine-d_9	38.9	78
Pyridine-d_5	NA	--
Chrysene-d_{12}	41.4	83
Fluoranthene-d_{10}	39.6	79
Benzo(e)pyrene-d_{12}	66.4	high recovery due to coelution with BaP-d_{12}

NA - Not able to see by GC/MS

NA* - not present in GC/MS Std.

NS - not Spiked

Table 2 Approximate concentrations of other[1] compounds detected in well 24, samp
(Composite of two filters)
8412-017-5,6

Scan Number	Compound identification	Approximate conc (μg per filter)
1069	$C_5H_{10}O_2$ or $C_8H_{16}O$ [a]	1.5
1419	$C_5H_{10}O_2$ or $C_8H_{16}O$ [a]	1.5
2340	Alkyne or alkene	57.2
2372	Alcohol	91.1
2484	Alkene or alkane	38.7
2658, 2664	Alkyne	262
2677	Alkene or alcohol	54.4
2718	Alkyne or alkene	24.5
2774	Alkyne or alkene	13.4
2910	Alkyne	60.1
3444	Alkane	1.67
3764	Alkane	6.23
3864	Alkane	9.20

[1] See library display of 3 best fits

TRAVELER # 8412-026-Method Standard

PRIORITY POLLUTANT BNA'S	(1) ng/µL	% Rec	(2) ng/µL	% Rec	
ACENAPHTHENE	41.1	82	53.7	107	266
BENZIDINE	NA*	--			
1,2,4-TRICHLOROBENZENE	39.8	80			
HEXACHLOROBENZENE	50.3	100			
HEXACHLOROETHANE	38.8	78			
BIS(2-CHLOROETHYL)ETHER	49.4	99			
2-CHLORONAPHTHALENE	38.8	78			
2,4,6-TRICHLOROPHENOL	ND	--			
P-CHLORO-M-CRESOL	55.9	112			
2-CHLOROPHENOL	42.9	86			
1,2-DICHLOROBENZENE	45.8	92			
1,3-DICHLOROBENZENE	34.2	68			
1,4-DICHLOROBENZENE	36.9	74			
3,3-DICHLOROBENZIDINE	NA*	--			
2,4-DICHLOROPHENOL	45.9	92			
2,4-DIMETHYLPHENOL	48.5	97			
2,4-DINITROTOLUENE	63.8	128			
2,6-DINITROTOLUENE	ND	--			
1,2-DIPHENYLHYDRAZINE	NA	--			
FLUORANTHENE	48.3	97	53.8	108	
4-CHLOROPHENYL PHENYL ETHER	44.2	88			
4-BROMOPHENYL PHENYL ETHER	48.3	97			
BIS(2-CHLOROISOPROPYL) ETHER	41.4	83			
BIS(2-CHLOROETHOXY) METHANE	45.4	91			
HEXACHLOROBUTADIENE	40.4	81			
HEXACHLOROCYCLOPENTADIENE	11.7	23			
ISOPHORONE	41.7	83			
NAPHTHALENE	42.2	84	52.9	106	
NITROBENZENE	46.3	93			
2-NITROPHENOL	41.3	83			
4-NITROPHENOL	ND	--			
2,4-DINITROPHENOL	ND	--			
4,6-DINITRO-2-METHYLPHENOL	ND	--			
N-NITROSODIMETHYL AMINE	ND	--			
N-NITROSODIPHENYLAMINE	ND	--			
N-NITROSODIPROPYLAMINE	40.3	81			
PENTACHLOROPHENOL	ND	--			
PHENOL	61.5	123	55.5	110	
BIS(2-ETHYLHEXYL) PHTHALATE	71.9	144			

(1) internal standard calibration with phenanthrene-d_{10} as internal std
(2) isotope dilution

	(1)	% Rec	(2)	% Rec	
BENZYL BUTYL PHTHALATE	60.9	121			
DI-N-BUTYL PHTHALATE	49.7	99			267
DI-N-OCTYL PHTHALATE	52.8	106			
DIETHYL PHTHALATE	47.0	94			
DIMETHYL PHTHALATE	45.5	91			
BENZO(A)ANTHRACENE	53.8	108			
BENZO(A)PYRENE	58.9	118	50.5	101	
BENZO(B)FLUORANTHENE	54.6	109			
BENZO(K)FLUORANTHENE	31.1	62			
CHRYSENE	60.8	122	63	126	
ACENAPHTHYLENE	40.9	82			
ANTHRACENE	44.3	89			
BENZO(GHI)PERYLENE	65.7	131			
FLUORENE	43.2	86			
PHENANTHRENE	44.7	89			
DIBENZO(AH)ANTHRACENE	67.3	135	52	104	
INDENO(123-CD)PYRENE	63.8	128			
PYRENE	48.1	96	51.8	104	
NON-PRIORITY POLLUTANTS					
BENZOIC ACID	ND	--			
2-METHYLPHENOL	47.2	94			
4-METHYLPHENOL	52.8	106			
2,4,5-TRICHLOROPHENOL	ND	--			
2-METHYLNAPHTHALENE	41.5	83			
ANILINE	42.9	86			
BENZYL ALCOHOL	51.7	103			
4-CHLOROANILINE	46.6	93			
DIBENZOFURAN	42.4	85			
2-NITROANILINE	54.4	109			
3-NITROANILINE	46.5	93			
4-NITROANILINE	66.6	133			

Approximate
DETECTION LIMIT

	(1)	% Rec	(2)	% Rec
Carbazole	47.4	95	52.1	104
4-Hydroxybiphenyl	52.6	105		
1-Naphthylamine	43.6	87		
Acridine	45.4	91	54.7	109
1,2,3-Trimethylbenzene	57.2	114		
Quinoline	40.9	82	50.9	102
2,3,5-Trimethylphenol	48.3	97		
3-Methyl-cholanthrene	61.7	123		
7,12-Dimethylbenz(a)anthracene	60.5	121		
1-Naphthol	39.5	79	55.9	112
2,3,4-Trichlorophenol	ND	--		
2,3,4,5-Tetrachlorophenol	ND	--		
4-Aminobiphenyl	24.8	50		
Thiophene	NA	--		
13H-Dibenzo(a,i)carbazole				

Field Surrogates		Percent Recovery
Acenaphthene-d_{10}	38.3	77
Pyrene-D_{10}	46.4	93
Perylene-d_{12}	14.6	29
Naphthalene-d_8	39.8	80
Phenol-d_5	55.4	111
Carbazole-d_3	46.4	93
Benzo(a)pyrene-d_{12}	53.4	107
2-Naphthylamine-d_7	NS	--
Quinoline-d_7	40.2	80
Dibenzo(a,h)anthracene-d_{12}	31.9	64
1,2-Benz(a)anthracene-d_{12}	NS	--

Laboratory Surrogatges		Percent Recovery
Naphthol-d_7	35.4	71
Acridine-d_9	41.5	83
Pyridine-d_5	NA	--
Chrysene-d_{12}	46.9	94
Fluoranthene-d_{10}	45.2	90
Benzo(e)pyrene-d_{12}	36.5	73

A - ?t able to see by C/MS

NS - not spiked

NA* - not present in GC/MS Std.

7/3/85
N.

ACUREX Corporation

Energy & Environmental Division

Mr. Curtis Ross
USEPA Region V
536 South Clark Street
Central Regional Laboratory
10th Floor
Chicago, IL 60604

July 3, 1985
Acurex ID#: 8412-020A
Project: SAS 1141E

Subject: Results of GC/MS Analyses for Well SLP-4 Filter Extracts, Tasks 4 through 7

Enclosed please find the results of the GC/MS analyses for Well SLP-4. The well was sampled on December 11-12, 1984 in duplicate; the two samples are identified as SLP-4A ($V_{sampled}$ = 138.9 L) and SLP-4B ($V_{sampled}$ = 123.9 L). The two filters for sample SLP-4A were identified as SLP-4 FA1 and SLP-4 FA2 and were extracted together in a soxhlet extractor with methylene chloride. The two filters for sample SLP-4B were identified as SLP-4 FB1 and SLP-4 FB2 and were also extracted together in a soxhlet extractor with methylene chloride.

Analyses were performed as specified in SAS 1141E protocol with various modifications identified in Acurex's letter dated January 3, 1985. Results are reported in µg per filter. The following is a list of deliverables:

1. Concentration data for 8412-020-3,4 -- Well SLP-4A, filter extract composite of SLP-4 FA1 and SLP-4 FA2 (data form; Table 1, RIC; RT diagnostic report; RP diagnostic report, RT quantitation report; RP quantitation report; quantitation report for other compounds found in sample; spectra: enhanced, unenhanced, library display of 3 best fits; peak areas).

2. Concentration data for 8412-020-5,6 -- Well SLP-4B, filter extract composite of SLP-4 FB1 and SLP-4 FB2 (data form; Table 2, RIC; RT diagnostic report; RP diagnostic report, RT quantitation report; RP quantitation report; quantitation report for other compounds found in sample; spectra: enhanced, unenhanced, library display of 3 best fits; peak areas).

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Please note that the DFTPP, solvent blank and GC/MS standard data for 2/6/85 and 2/10/85 have been submitted in the Acurex reports 8412-018A and 8412-026A, respectively. The chain of custody forms have been submitted on April 1, 1985, with the results of the cartridge analysis.

Sincerely,

Viorica Lopez-Avila, Ph.D.
Technical Director

VLA/ats

Enclosures

cc: Dr. Brenda Kimble
Amphion Associates

Linda Haas Boynton
Sample Management Office

Data Audit Staff
EMSL - Las Vegas

Paul Bitter
EPA Region V

Gail Lowry
Minnesota Pollution Control Association

These results were obtained using accepted laboratory practices; the liability of Acurex Corporation shall not exceed the amount paid for this report. In no event shall Acurex be liable for special or consequential damages.

TRAVELER # 2-D 0- 1 SLP. sample composite of two f

PRIORITY POLLUTANT BNA'S	(1) ng/µL	(1) µg	(2) mg/µL	(2) µg		2
ACENAPHTHENE	ND					
BENZIDINE	NA*					
1,2,4-TRICHLOROBENZENE	ND					
HEXACHLOROBENZENE						
HEXACHLOROETHANE						
BIS(2-CHLOROETHYL)ETHER						
2-CHLORONAPHTHALENE						
2,4,6-TRICHLOROPHENOL						
P-CHLORO-M-CRESOL						
2-CHLOROPHENOL						
1,2-DICHLOROBENZENE						
1,3-DICHLOROBENZENE						
1,4-DICHLOROBENZENE						
3,3-DICHLOROBENZIDINE	NA*					
2,4-DICHLOROPHENOL	ND					
2,4-DIMETHYLPHENOL						
2,4-DINITROTOLUENE						
2,6-DINITROTOLUENE						
1,2-DIPHENYLHYDRAZINE	NA					
FLUORANTHENE	ND					
4-CHLOROPHENYL PHENYL ETHER						
4-BROMOPHENYL PHENYL ETHER						
BIS(2-CHLOROISOPROPYL) ETHER						
BIS(2-CHLOROETHOXY) METHANE						
HEXACHLOROBUTADIENE						
HEXACHLOROCYCLOPENTADIENE						
ISOPHORONE						
NAPHTHALENE						
NITROBENZENE						
2-NITROPHENOL						
4-NITROPHENOL						
2,4-DINITROPHENOL						
4,6-DINITRO-2-METHYLPHENOL						
N-NITROSODIMETHYL AMINE						
N-NITROSODIPHENYLAMINE						
N-NITROSODIPROPYLAMINE						
PENTACHLOROPHENOL						
PHENOL						
BIS(2-ETHYLHEXYL) PHTHALATE	2.9	2.9				

(1) internal standard calibration with phenanthrene-d_{10} as internal std

(2) isotope dilution

BENZYL BUTYL PHTHALATE	ND				
DI-N-BUTYL PHTHALATE					
DI-N-OCTYL PHTHALATE					
DIETHYL PHTHALATE					
DIMETHYL PHTHALATE					
BENZO(A)ANTHRACENE					
BENZO(A)PYRENE					
BENZO(B)FLUORANTHENE					
BENZO(K)FLUORANTHENE					
CHRYSENE					
ACENAPHTHYLENE					
ANTHRACENE					
BENZO(GHI)PERYLENE					
FLUORENE					
PHENANTHRENE					
DIBENZO(AH)ANTHRACENE					
INDENO(123-CD)PYRENE					
PYRENE					
NON-PRIORITY POLLUTANTS					
BENZOIC ACID	ND				
2-METHYLPHENOL					
4-METHYLPHENOL					
2,4,5-TRICHLOROPHENOL					
2-METHYLNAPHTHALENE					
ANILINE					
BENZYL ALCOHOL					
4-CHLOROANILINE					
DIBENZOFURAN					
2-NITROANILINE					
3-NITROANILINE					
4-NITROANILINE					
Approximate DETECTION LIMIT (see Acurex report 8501-017.B)					

	(1) ng/µL	(1) µg	(2) ng/µL	(2) µg
Carbazole	ND			
4-Hydroxybiphenyl	↓			
1-Naphthylamine				
Acridine				
1,2,3-Trimethylbenzene				
Quinoline				
2,3,5-Trimethylphenol				
3-Methyl-cholanthrene				
7,12-Dimethylbenz(a)anthracene				
1-Naphthol				
2,3,4-Trichlorophenol				
2,3,4,5-Tetrachlorophenol				
4-Aminobiphenyl				
Thiophene	NA			
13H-Dibenzo(a,i)carbazole	NA			

Field Surrogates		Percent Recovery
Acenaphthene-d_{10}	46.1	92
Pyrene-D_{10}	57.2	114
Perylene-d_{12}	64.6	129
Naphthalene-d_8	54.6	109
Phenol-d_5	89.8	180 * high recovery due to interference
Carbazole-d_3	47.1	94
Benzo(a)pyrene-d_{12}	57.2	114
2-Naphthylamine-d_7	NS	--
Quinoline-d_7	54.9	110
Dibenzo(a,h)anthracene-d_{12}	36.7	73
1,2-Benz(a)anthracene-d_{12}	NS	--

Laboratory Surrogatges		Percent Recovery
Naphthol-d_7	40.5	81
Acridine-d_9	49.5	99
Pyridine-d_5	NA	--
Chrysene-d_{12}	60.6	121
Fluoranthene-d_{10}		
Benzo(e)pyrene-d_{12}	65.7	131

NA - Not able to see by GC/MS

NA* - not present in GC/MS Std.

NS - not spiked

Table 1 Approximate concentrations of other compounds detected in SLP-4, filter sample 4 (composite of two filters) 8412-020-3,4

Scan Number	Compound identification	Approximate conc (μg per filter)
381	$C_6H_{14}O_2$ or $C_5H_{10}O_2$ or $C_7H_{16}O_2$ [a]	1.28
393	$C_4H_6O_2$ [a]	4.64
559, 580, 595, 620	$C_4H_{10}O_3$ glycol type compound	27.1
2290	Alkyne or alkene	51.7
2323	Alcohol	86.1
2600, 2605	Alkyne	1377
2624	Alcohol or alkene	50.6
2667	Alkene or alkyne	17.2
2860	Alkyne or alkene	45.3

[a] See library display of 3 best fits

TRAVELER # 8 12-020- week SLP-41, filter sample B (composite of two filters

PRIORITY POLLUTANT BNA'S	(1) ng/µL	(1) µg	(2) ng/µL	(3) µg	108
ACENAPHTHENE	ND				
BENZIDINE	NA*				
1,2,4-TRICHLOROBENZENE	ND				
HEXACHLOROBENZENE					
HEXACHLOROETHANE					
BIS(2-CHLOROETHYL)ETHER					
2-CHLORONAPHTHALENE					
2,4,6-TRICHLOROPHENOL					
P-CHLORO-M-CRESOL					
2-CHLOROPHENOL					
1,2-DICHLOROBENZENE					
1,3-DICHLOROBENZENE					
1,4-DICHLOROBENZENE					
3,3-DICHLOROBENZIDINE	NA*				
2,4-DICHLOROPHENOL	ND				
2,4-DIMETHYLPHENOL					
2,4-DINITROTOLUENE					
2,6-DINITROTOLUENE					
1,2-DIPHENYLHYDRAZINE	NA				
FLUORANTHENE	ND				
4-CHLOROPHENYL PHENYL ETHER					
4-BROMOPHENYL PHENYL ETHER					
BIS(2-CHLOROISOPROPYL) ETHER					
BIS(2-CHLOROETHOXY) METHANE					
HEXACHLOROBUTADIENE					
HEXACHLOROCYCLOPENTADIENE					
ISOPHORONE					
NAPHTHALENE					
NITROBENZENE					
2-NITROPHENOL					
4-NITROPHENOL					
2,4-DINITROPHENOL					
4,6-DINITRO-2-METHYLPHENOL					
N-NITROSODIMETHYL AMINE					
N-NITROSODIPHENYLAMINE					
N-NITROSODIPROPYLAMINE					
PENTACHLOROPHENOL					
PHENOL					
BIS(2-ETHYLHEXYL) PHTHALATE	23.8	23.8			

(1) internal standard calibration with phenanthrene-d_{10} as internal std

(2) isotope dilution

BENZYL BUTYL PHTHALATE	ND				
DI-N-BUTYL PHTHALATE				100	100
DI-N-OCTYL PHTHALATE					
DIETHYL PHTHALATE					
DIMETHYL PHTHALATE					
BENZO(A)ANTHRACENE					
BENZO(A)PYRENE					
BENZO(B)FLUORANTHENE					
BENZO(K)FLUORANTHENE					
CHRYSENE					
ACENAPHTHYLENE					
ANTHRACENE					
BENZO(GHI)PERYLENE					
FLUORENE					
PHENANTHRENE					
DIBENZO(AH)ANTHRACENE					
INDENO(123-CD)PYRENE					
PYRENE					
NON-PRIORITY POLLUTANTS					
BENZOIC ACID	ND				
2-METHYLPHENOL					
4-METHYLPHENOL					
2,4,5-TRICHLOROPHENOL					
2-METHYLNAPHTHALENE					
ANILINE					
BENZYL ALCOHOL					
4-CHLOROANILINE					
DIBENZOFURAN					
2-NITROANILINE					
3-NITROANILINE					
4-NITROANILINE					
Approximate DETECTION LIMIT (see Acurex report 8501-017B)					

	(1) mg/µL	(1) µg	(2) mg/µL	(2) µg/L
Carbazole	ND			
4-Hydroxybiphenyl				
1-Naphthylamine				
Acridine				
1,2,3-Trimethylbenzene				
Quinoline				
2,3,5-Trimethylphenol				
3-Methyl-cholanthrene				
7,12-Dimethylbenz(a)anthracene				
1-Naphthol				
2,3,4-Trichlorophenol				
2,3,4,5-Tetrachlorophenol				
4-Aminobiphenyl				
Thiophene	NA			
13H-Dibenzo(a,i)carbazole	NA			

Field Surrogates		Percent Recovery
Acenaphthene-d_{10}	37.8	76
Pyrene-D_{10}	49.6	99
Perylene-d_{12}	53.2	106
Naphthalene-d_8	37.0	74
Phenol-d_5	46.4	93
Carbazole-d_3	46.9	94
Benzo(a)pyrene-d_{12}	48.5	97
2-Naphthylamine-d_7	NS	--
Quinoline-d_7	40.6	81
Dibenzo(a,h)anthracene-d_{12}	26.8	54
1,2-Benz(a)anthracene-d_{12}	NS	--

Laboratory Surrogatges		Percent Recovery
Naphthol-d_7	28.5	57
Acridine-d_9	47.7	95
Pyridine-d_5	NA	--
Chrysene-d_{12}	50.0	100
Fluoranthene-d_{10}	48.1	96
Benzo(e)pyrene-d_{12}	50.4	101

NA - Not able to see by GC/MS

NS - not spiked

NA* - not present in GC/MS Std.

Table 2 Approximate concentrations of other compounds detected in well SLP-4 filter sample B (composite of two filters, 8412-020-5,6

Scan Number	Compound identification	Approx. Conc (µg per filter)
340	$C_7H_{14}O$ [a] or $C_6H_{12}O$ [a]	3.0
443	$C_4H_6O_2$ [a]	1.6
2351	Alkyne or alkene	32.7
2383	Alcohol or alkene	53.5
2662, 2668, 2670	Alkyne	838
2686	Alcohol or alkene	39.7
2730	Alkyne or alkene	13.5
2924	Alkene	24.5

[a] see library display of 3 best fits

7/9/85
N.

ACUREX Corporation

Energy & Environmental Division

Mr. Curtis Ross
USEPA Region V
536 South Clark Street
Central Regional Laboratory
10th Floor
Chicago, IL 60604

July 9, 1985
Acurex ID#: 8412-027A
Project: SAS 1141E

Subject: Results of GC/MS Analyses for Well W-40 Filter Extracts, Tasks 4 through 7

Enclosed please find the results of the GC/MS analyses for Well W-40. The well was sampled on December 12-13, 1984 in duplicate; the two samples are identified as W-40A ($V_{sampled}$ = 143 L) and W-40B ($V_{sampled}$ = 163.2 L). The two filters for sample W-40A were identified as W-40 FA1 and W-40 FA2 and were extracted together in a soxhlet extractor with methylene chloride. The two filters for sample W-40B were identified as W-40 FB1 and W-40 FB2 and were also extracted together in a soxhlet extractor with methylene chloride.

Analyses were performed as specified in SAS 1141E protocol with various modifications identified in Acurex's letter dated January 3, 1985. Results are reported in µg per filter. The following is a list of deliverables:

1. Concentration data for 8412-027-3,4 -- Well W-40A, filter extract composite of W-40 FA1 and W-40 FA2 (data form; Table 1, RIC; RT diagnostic report; RP diagnostic report, RT quantitation report; RP quantitation report; quantitation report for other compounds found in sample; spectra: enhanced, unenhanced, library display of 3 best fits; peak areas).

2. Concentration data for 8412-027-5,6 -- Well W-40B, filter extract composite of W-40 FB1 and W-40 FB2 (data form; Table 2, RIC; RT diagnostic report; RP diagnostic report, RT quantitation report; RP quantitation report; quantitation report for other compounds found in sample; spectra: enhanced, unenhanced, library display of 3 best fits; peak areas).

3. Concentration data for 8412-026-7 -- Method blank for soxhlet extraction (data form, RIC, RT diagnostic report, RP diagnostic report; RT quantitation report; RP quantitation report). Method blank was obtained by spiking 50 µg of the field surrogates and laboratory surrogates directly onto two Teflon filters (a 5 µ and a 20 µ filter) and extracting the filters with methylene chloride in a soxhlet extractor.

555 Clyde Avenue, PO Box 7555, Mountain View, CA 94039 (415) 964-3200 Telex 34-6391 TWX 910-7796593

Please note that the DFTPP, solvent blank and GC/MS standard data for 2/12/85 have been submitted in the Acurex report 8412-003. The chain of custody forms have been submitted on April 26, 1985, with the results of the cartridge analysis.

Sincerely,

Viorica Lopez-Avila

Viorica Lopez-Avila, Ph.D.
Technical Director

VLA/ats

Enclosures

cc: Dr. Brenda Kimble
Amphion Associates

Linda Haas Boynton
Sample Management Office

Data Audit Staff
EMSL - Las Vegas

Paul Bitter
EPA Region V

Gail Lowry
Minnesota Pollution Control Association

These results were obtained using accepted laboratory practices; the liability of Acurex Corporation shall not exceed the amount paid for this report. In no event shall Acurex be liable for special or consequential damages.

TRAVELER # 8412-027-3,4 well W40, filter sample A (composite of two filt

PRIORITY POLLUTANT BNA'S	(1) mg/µL	(1) µg	(2) mg/µL	(2) µg
ACENAPHTHENE	ND			
BENZIDINE	NA*			
1,2,4-TRICHLOROBENZENE	ND			
HEXACHLOROBENZENE				
HEXACHLOROETHANE				
BIS(2-CHLOROETHYL)ETHER				
2-CHLORONAPHTHALENE				
2,4,6-TRICHLOROPHENOL				
P-CHLORO-M-CRESOL				
2-CHLOROPHENOL				
1,2-DICHLOROBENZENE				
1,3-DICHLOROBENZENE				
1,4-DICHLOROBENZENE				
3,3-DICHLOROBENZIDINE	NA*			
2,4-DICHLOROPHENOL	ND			
2,4-DIMETHYLPHENOL				
2,4-DINITROTOLUENE				
2,6-DINITROTOLUENE				
1,2-DIPHENYLHYDRAZINE	NA			
FLUORANTHENE	ND			
4-CHLOROPHENYL PHENYL ETHER				
4-BROMOPHENYL PHENYL ETHER				
BIS(2-CHLOROISOPROPYL) ETHER				
BIS(2-CHLOROETHOXY) METHANE				
HEXACHLOROBUTADIENE				
HEXACHLOROCYCLOPENTADIENE				
ISOPHORONE				
NAPHTHALENE				
NITROBENZENE				
2-NITROPHENOL				
4-NITROPHENOL				
2,4-DINITROPHENOL				
4,6-DINITRO-2-METHYLPHENOL				
N-NITROSODIMETHYL AMINE				
N-NITROSODIPHENYLAMINE				
N-NITROSODIPROPYLAMINE				
PENTACHLOROPHENOL				
PHENOL				
BIS(2-ETHYLHEXYL) PHTHALATE	26.1	26.1		

(1) internal standard calibration with phenanthrene-d_{10} as internal std

(2) isotope dilution

BENZYL BUTYL PHTHALATE	ND				
DI-N-BUTYL PHTHALATE					
DI-N-OCTYL PHTHALATE					
DIETHYL PHTHALATE					
DIMETHYL PHTHALATE					
BENZO(A)ANTHRACENE					
BENZO(A)PYRENE					
BENZO(B)FLUORANTHENE					
BENZO(K)FLUORANTHENE					
CHRYSENE					
ACENAPHTHYLENE					
ANTHRACENE					
BENZO(GHI)PERYLENE					
FLUORENE					
PHENANTHRENE					
DIBENZO(AH)ANTHRACENE					
INDENO(123-CD)PYRENE					
PYRENE					
NON-PRIORITY POLLUTANTS					
BENZOIC ACID	ND				
2-METHYLPHENOL					
4-METHYLPHENOL					
2,4,5-TRICHLOROPHENOL					
2-METHYLNAPHTHALENE					
ANILINE					
BENZYL ALCOHOL					
4-CHLOROANILINE					
DIBENZOFURAN					
2-NITROANILINE					
3-NITROANILINE					
4-NITROANILINE					
Approximate DETECTION LIMIT (see Acurex report 8501-017B)					

	(1)	(1)	(2)	(2)
Carbazole	ND			
4-Hydroxybiphenyl	↓			
1-Naphthylamine	↓			
Acridine	↓			
1,2,3-Trimethylbenzene	↓			
Quinoline	↓			
2,3,5-Trimethylphenol	↓			
3-Methyl-cholanthrene	↓			
7,12-Dimethylbenz(a)anthracene	↓			
1-Naphthol	↓			
2,3,4-Trichlorophenol	↓			
2,3,4,5-Tetrachlorophenol	↓			
4-Aminobiphenyl	↓			
Thiophene	NA			
13H-Dibenzo(a,i)carbazole	NA			

Field Surrogates	Percent Recovery	
Acenaphthene-d_{10}	37.7	75
Pyrene-D_{10}	43.6	87
Perylene-d_{12}	57.8	116
Naphthalene-d_8	37.6	75
Phenol-d_5	50.1	100
Carbazole-d_3	44.6	89
Benzo(a)pyrene-d_{12}	54.3	109
2-Naphthylamine-d_7	NS	--
Quinoline-d_7	40.0	80
Dibenzo(a,h)anthracene-d_{12}	32.5	65
1,2-Benz(a)anthracene-d_{12}	NS	--

Laboratory Surrogatges	Percent Recovery	
Naphthol-d_7	35.9	72
Acridine-d_9	40.5	81
Pyridine-d_5	NA	--
Chrysene-d_{12}	44.4	89
Fluoranthene-d_{10}	43.7	87
Benzo(e)pyrene-d_{12}	67.6	135

NA - Not able to see by GC/MS

NS - not spiked

NA* - not present in GC/MS Std.

Table 1 Approximate concentrations of other compounds found in well W40, filter sample A, composite of two filters 8412-027-3,4

Scan Number	Compound identification	Approximate conc (µg per filter)
575, 582, 589, 595	$C_4H_{10}O_3$ glycol type compound	7.1
1025	$C_5H_{10}O_2$ or $C_8H_{16}O$ [a]	P
1370	Alkane	2.0
1743	BHT (butylated-hydroxy-toluene) ?	1.1
2335	Alkyne or alkene	43.7
2370	Alcohol	62.5
2479, 2487	Alcohol; Alkene + dibutyl phthalate (?)	30.6
2522	Alcohol	3.5
2649, 2654, 2656	Alkyne	578
2672	Alcohol or alkene	39.5
2714	Alkyne	18.7
2908	Alkyne	33.1
2917	Alkyne or alkene	8.8

a/ See library display of 3 best fits

P/ present but not quantitated because of coeluting compon

TRAVELER # -02 -S,E W W O, v sample B (composite of two filters)

PRIORITY POLLUTANT BNA'S	(4) ng/µL	(1) µg	(2) ng/µL	(2) µg	
ACENAPHTHENE	ND				
BENZIDINE	NA*				133
1,2,4-TRICHLOROBENZENE	ND				
HEXACHLOROBENZENE					
HEXACHLOROETHANE					
BIS(2-CHLOROETHYL)ETHER					
2-CHLORONAPHTHALENE					
2,4,6-TRICHLOROPHENOL					
P-CHLORO-M-CRESOL					
2-CHLOROPHENOL					
1,2-DICHLOROBENZENE					
1,3-DICHLOROBENZENE					
1,4-DICHLOROBENZENE					
3,3-DICHLOROBENZIDINE	NA*				
2,4-DICHLOROPHENOL	ND				
2,4-DIMETHYLPHENOL					
2,4-DINITROTOLUENE					
2,6-DINITROTOLUENE					
1,2-DIPHENYLHYDRAZINE	NA				
FLUORANTHENE	ND				
4-CHLOROPHENYL PHENYL ETHER					
4-BROMOPHENYL PHENYL ETHER					
BIS(2-CHLOROISOPROPYL) ETHER					
BIS(2-CHLOROETHOXY) METHANE					
HEXACHLOROBUTADIENE					
HEXACHLOROCYCLOPENTADIENE					
ISOPHORONE					
NAPHTHALENE					
NITROBENZENE					
2-NITROPHENOL					
4-NITROPHENOL					
2,4-DINITROPHENOL					
4,6-DINITRO-2-METHYLPHENOL					
N-NITROSODIMETHYL AMINE					
N-NITROSODIPHENYLAMINE					
N-NITROSODIPROPYLAMINE					
PENTACHLOROPHENOL					
PHENOL					
BIS(2-ETHYLHEXYL) PHTHALATE	11.3	11.3			

(1) internal standard calibration with phenanthrene-d_{10} as internal std

(2) isotope dilution

BENZYL BUTYL PHTHALATE	ND				
DI-N-BUTYL PHTHALATE	2.5	2.5			
DI-N-OCTYL PHTHALATE	ND				34
DIETHYL PHTHALATE					
DIMETHYL PHTHALATE					
BENZO(A)ANTHRACENE					
BENZO(A)PYRENE					
BENZO(B)FLUORANTHENE					
BENZO(K)FLUORANTHENE					
CHRYSENE					
ACENAPHTHYLENE					
ANTHRACENE					
BENZO(GHI)PERYLENE					
FLUORENE					
PHENANTHRENE					
DIBENZO(AH)ANTHRACENE					
INDENO(123-CD)PYRENE					
PYRENE					
NON-PRIORITY POLLUTANTS					
BENZOIC ACID	ND				
2-METHYLPHENOL					
4-METHYLPHENOL					
2,4,5-TRICHLOROPHENOL					
2-METHYLNAPHTHALENE					
ANILINE					
BENZYL ALCOHOL					
4-CHLOROANILINE					
DIBENZOFURAN					
2-NITROANILINE					
3-NITROANILINE					
4-NITROANILINE					
Approximate DETECTION LIMIT (see Acurex report 8501-017B)					

	(1) mg/µL	(1) µg	(2) mg/µL	(2) µg
Carbazole	ND			
4-Hydroxybiphenyl				
1-Naphthylamine				
Acridine				
1,2,3-Trimethylbenzene				
Quinoline				
2,3,5-Trimethylphenol				
3-Methyl-cholanthrene				
7,12-Dimethylbenz(a)anthracene				
1-Naphthol				
2,3,4-Trichlorophenol				
2,3,4,5-Tetrachlorophenol				
4-Aminobiphenyl				
Thiophene	NA			
13H-Dibenzo(a,i)carbazole	NA			

Field Surrogates		Percent Recovery
Acenaphthene-d_{10}	39.7	79
Pyrene-D_{10}	41.0	82
Perylene-d_{12}	58.3	117
Naphthalene-d_8	44.1	88
Phenol-d_5	58.2	116
Carbazole-d_3	44.5 ✓	89
Benzo(a)pyrene-d_{12}	42.8	86
2-Naphthylamine-d_7	NS	--
Quinoline-d_7	46.1	92
Dibenzo(a,h)anthracene-d_{12}	34.1	68
1,2-Benz(a)anthracene-d_{12}	NS	--

Laboratory Surrogatges		Percent Recovery
Naphthol-d_7	39.4	79
Acridine-d_9	40.6	81
Pyridine-d_5	NA	--
Chrysene-d_{12}	45.8	92
Fluoranthene-d_{10}	43.4	87
Benzo(e)pyrene-d_{12}	73.3	147

NA - Not able to see by GC/MS

NS - not spiked

NA* - not present in GC/MS Std.

Table 2 Approximate concentrations of other compounds detected in well W 40, filter 136 sample B (8412-027-5,6)

Scan Number	Compound identification	Approximate conc (μg per filter)
434	$C_5H_{12}O_3$ [a]	0.78
535, 565, 595, 623	$C_4H_{10}O_3$ glycol type compound	6.50
1063	$C_5H_{10}O_2$ or $C_8H_{16}O$ [a]	2.5
2331	Alkyne or alkene	47.1
2364	Alcohol	63.8
2475	Alkane or alkene	17.6
2518	Alcohol (?)	2.9
2644, 2649, 2651	Alkyne	456
2666	Alkene or alcohol	47.8
2709	Alkyne or alkene	16.7
2902	Alkyne or alkene	36.1
3081	Azelate ester	2.6

a/ see library display of 3 best fits

TRAVELER # 2- -

PRIORITY POLLUTANT BNA'S	(1) ng/µL	(1) µg	(2) ng/µL	(2) µg	
ACENAPHTHENE	ND				253
BENZIDINE	NA*				
1,2,4-TRICHLOROBENZENE	ND				
HEXACHLOROBENZENE					
HEXACHLOROETHANE					
BIS(2-CHLOROETHYL)ETHER					
2-CHLORONAPHTHALENE					
2,4,6-TRICHLOROPHENOL					
P-CHLORO-M-CRESOL					
2-CHLOROPHENOL					
1,2-DICHLOROBENZENE					
1,3-DICHLOROBENZENE					
1,4-DICHLOROBENZENE					
3,3-DICHLOROBENZIDINE	NA*				
2,4-DICHLOROPHENOL	ND				
2,4-DIMETHYLPHENOL					
2,4-DINITROTOLUENE					
2,6-DINITROTOLUENE					
1,2-DIPHENYLHYDRAZINE	NA				
FLUORANTHENE	ND				
4-CHLOROPHENYL PHENYL ETHER					
4-BROMOPHENYL PHENYL ETHER					
BIS(2-CHLOROISOPROPYL) ETHER					
BIS(2-CHLOROETHOXY) METHANE					
HEXACHLOROBUTADIENE					
HEXACHLOROCYCLOPENTADIENE					
ISOPHORONE					
NAPHTHALENE					
NITROBENZENE					
2-NITROPHENOL					
4-NITROPHENOL					
2,4-DINITROPHENOL					
4,6-DINITRO-2-METHYLPHENOL					
N-NITROSODIMETHYL AMINE					
N-NITROSODIPHENYLAMINE					
N-NITROSODIPROPYLAMINE					
PENTACHLOROPHENOL					
PHENOL					
BIS(2-ETHYLHEXYL) PHTHALATE	31.1	31.1			

(1) internal standard calibration with phenanthrene-d_{10} as internal std

(2) isotope dilution

BENZYL BUTYL PHTHALATE	ND				
DI-N-BUTYL PHTHALATE	2.7	2.7			254
DI-N-OCTYL PHTHALATE	ND				
DIETHYL PHTHALATE					
DIMETHYL PHTHALATE					
BENZO(A)ANTHRACENE					
BENZO(A)PYRENE					
BENZO(B)FLUORANTHENE					
BENZO(K)FLUORANTHENE					
CHRYSENE					
ACENAPHTHYLENE					
ANTHRACENE					
BENZO(GHI)PERYLENE					
FLUORENE					
PHENANTHRENE					
DIBENZO(AH)ANTHRACENE					
INDENO(123-CD)PYRENE					
PYRENE					
NON-PRIORITY POLLUTANTS					
BENZOIC ACID	ND				
2-METHYLPHENOL					
4-METHYLPHENOL					
2,4,5-TRICHLOROPHENOL					
2-METHYLNAPHTHALENE					
ANILINE					
BENZYL ALCOHOL					
4-CHLOROANILINE					
DIBENZOFURAN					
2-NITROANILINE					
3-NITROANILINE					
4-NITROANILINE					
Approximate DETECTION LIMIT (see Acurex report 8501-017B)					

	(1) ng/µL	(1) µg	(2) ng/µL	(2) µg
Carbazole	ND			
4-Hydroxybiphenyl	↓			
1-Naphthylamine				
Acridine				
1,2,3-Trimethylbenzene				
Quinoline				
2,3,5-Trimethylphenol				
3-Methyl-cholanthrene				
7,12-Dimethylbenz(a)anthracene				
1-Naphthol				
2,3,4-Trichlorophenol				
2,3,4,5-Tetrachlorophenol				
4-Aminobiphenyl				
Thiophene	NA			
13H-Dibenzo(a,i)carbazole	NA			

Field Surrogates		Percent Recovery
Acenaphthene-d_{10}	38.7	77
Pyrene-D_{10}	8.1	16
Perylene-d_{12}	55.3	111
Naphthalene-d_8	42.7	85
Phenol-d_5	59.1	118
Carbazole-d_3	44.8	90
Benzo(a)pyrene-d_{12}	42.2	84
2-Naphthylamine-d_7	NS	--
Quinoline-d_7	44.1	88
Dibenzo(a,h)anthracene-d_{12}	32.3	65
1,2-Benz(a)anthracene-d_{12}	NS	--

Laboratory Surrogatges		Percent Recovery
Naphthol-d_7	37.6	75
Acridine-d_9	39.2	78
Pyridine-d_5	NA	--
Chrysene-d_{12}	43.7	87
Fluoranthene-d_{10}	42.9	86
Benzo(e)pyrene-d_{12}	69.4	139

NA - Not able to see by GC/MS

NS - not spiked

NA* - not present in GC/MS Std.

Modifications to the EPA-Protocol
for Project SAS 1141E (Reilly Tar Study)

1. Table 1.1, page 3, has been modified as follows:

   a. Volatile organic analyses have been deleted.

   b. A tar sample from W23 will be analyzed for semivolatile organics only.

   c. The following well samples will be sampled: SLP8; SLP15; SLP4; SLP6; W23; W24; W40; W48; W14; W133.

   d. Each sample will consist of the dissolved organics phase (collected on resin cartridges) and the particulate matter (collected on teflon filters); grab samples will also be taken at some of the wells.

2. Table 4.4, page 37; Acurex has purchased the standards listed in the attached Table 4.4 which will be used for confirmation and quantitation of compounds detected in the samples.

3. Table 4.5, page 39; the deuterated compounds listed in the attached Table 4.5 will be used in this study as field surrogates, laboratory surrogates and internal standard.

4. Section 6, page 64; 5 bed volumes of tetrahydrofuran containing 0.1% (v/v) concentrated hydrochloric acid is replaced with 350 mL acetone/methylene chloride (20:80). Cartridge elution is done at 5 mL/min. until 350 mL of acetone/methylene chloride (20:80) are pumped through the cartridge. Cartridges are eluted in the reverse direction of sampling.

5. Page 87, Section 6.2; slurry 90 g of XAD-4 and 60 g of XAD-8 manually. Do not use a glass rotary blender since this might fracture the resin particles. C_{18}-resin will not be subjected to the resin cleaning procedure.

6. Page 87, second paragraph; after cleaning the resins with methylene chloride, and when no contaminants are observed by GC/MS, the resin is removed from the soxhlet extractor and washed three times with 50 mL tetrahydrofuran/water (50:50). Finally the resin is stored in tetrahydrofuran water (50:50).

7. Column packing procedure described in Section 6.3, page 87, is replaced by the step-by-step procedure given below:

- Clean cartridge with organics-free water followed by acetone, CH_2Cl_2
- Put Teflon tape on the large threads of cartridge end fittings
- Assemble rear end fitting to the cartridge
- Add 1.5 mL dry C_{18}-reverse phase resin
- Add approximately 3.4 mL H_2O/tetrahydrofuran (90:10)
- Apply suction from aspirator to end of cartridge and add well-mixed resin slurry
- Tap side of cartridge for several minutes to compact the resin bed
- Continue to add resin mixture until cartridge is full
- Clean all mating surfaces of resin particles
- Add upper O-ring
- Assemble front end fitting and Teflon filter
- Flush cartridge with 100 mL H_2O using HPLC; if shrinking of the resin bed is noticed add more resin. Cap cartridge with Teflon filled ferrules.

8. Section 6.4 - Comment 4 applies to Section 6.4 also.

Table 4.4 Target Semivolatile Compounds for Identification and Quantitation

2,4,5-Trichlorophenol
2,3,4,5-Tetrachlorophenol
2,3,4-Trichlorophenol
2,3,5-Trichlorophenol
2,3,6-Trichlorophenol
Carbazole
Acridine
Indene
Quinoline
13H-Dibenz(a,i)carbazole
Aniline
2-Aminobiphenyl
4-Aminobiphenyl
2,4,6-Trichlorophenol
3,4,5-Trichlorophenol
1,2,3-Trimethylbenzene
1,2,4-Trimethylbenzene
Mesitylene 99
Thiophene
2,3-Benzofuran
2-Hydroxybiphenyl
4-Hydroxybiphenyl
1-Naphthylamine
α-Naphthol
β-Naphthol
2,3,5-Trimethylphenol
2,3,6-Trimethylphenol
2,4,6-Trimethylphenol
3-Methylcholanthrene
7,12-Dimethylbenz(a)anthracene
1,2,6,7-Dibenzopyrene
3,4,9,10-Dibenzopyrene
1,2,4,5-Dibenzopyrene

Table 4.5: Isotopically-labeled Standards for Semi-volatiles Analysis

a) Field Surrogates

Phenol-d_5
2-Naphthylamine-d_7
Quinoline-d_7
Carbazole-d_3
Naphthalene-d_8
Benzo(a)pyrene-d_{12}
Acenaphthene-d_{10}
Pyrene-d_{10}
Perylene-d_{12}
Dibenz(a,h)anthracene-d_{12}
Benz(a)anthracene-d_{12}
Benzo(b)fluoranthene-d_{12}

b) Laboratory Surrogates

Naphthol-d_8
Aniline-d_5
Acridine-d_9
Pyridine-d_5
Benzo(e)pyrene-d_{12}
Chrysene-d_{12}
Fluoranthene-d_{10}
Indeno(1,2,3cd)pyrene-d_{12}

c) Internal Standard

Anthracene-d_{10}

SAMPLING PROTOCOL FOR POLLUTANT SOURCE IDENTIFICATION STUDY SAS 1141-E

Overview

The U.S. Department of Justice and the U.S. Environmental Protection Agency are currently pursing litigation against Reilly Tar and Chemical Company whose activities have resulted in the disposal, leaching, and migration of hazardous and other chemical wastes into the ground and waters in and around the City of St. Louis Park, Minnesota.

The U.S. Department of Justice and the U.S. Environmental Protection Agency (EPA) have requested a pollutant source identifcation study involving the collection of samples from specially selected sites and the analysis of these samples by rigorously and legally defensible methodologies.

This protocol is written to be used in conjunction with the analytical/ project protocol developed earlier for this project. Specifically, this protocol describes the method that will be used in the field to obtain water samples from the Prairie du Chien aquifer.

The collection of samples will utilize state of the art field concentration techniques that will allow for the measurement of sub part-per-billion levels of organic pollutants. These pollutants will be concentrated on cartridges prepared for this purpose under the analytical/project protocol. Using the same protocol, the contaminants will be subsequently removed from the cartridges and analyzed.

SAMPLING PROTOCOL FOR POLLUTANT SOURCE IDENTIFICATION STUDY SAS 1141-E

General Information

As with all carefully undertaken studies in trace organic analysis of environmental samples, appropriate field controls will be incorporated for quality assurance purposes, in addition to maintaining a strict chain-of-custody protocol so as to provide the vigorous and legally-defensible data that are required for this litigation.

The key area that must be addressed in this scientific study is the preparation and analysis of samples that are suitable, both qualitatively and quantitatively, for the designated purpose and which represent as far as possible the nature of the material as it occurs in the environment. The sampling procedures that will be used are significantly different from standarized methodologies (as used for Priority Pollutant analysis, for example). This study will utilize a novel field sampling system, but one scale-up experiment remains to be done before this can be fully adapted for collection of these particular samples, and it is necessary that this experiment be completed prior to the use of the system for collection of the actual environment samples for analysis.

In the interest of timely completion of this project, the application of this protocol will be limited to one type of sample: a sequence of water samples primarily from the Prairie du Chien aquifer.

The purpose of this document is to provide a set of procedures for the field operations required to obtain samples, to document the effectiveness of the sampling technology, and to maintain a strict chain-of-custody program. The components of this protocol are as follows.

SAMPLING PROTOCOL FOR POLLUTANT SOURCE IDENTIFICATION STUDY SAS 1141-E

Sampling Sequence

In general, samples will be collected by sampling from clean wells first and moving progressively to dirtier wells. This technique minimizes the threat of cross contamination through exposure to contaminated equipment. Nonetheless, sampling equipment will be thoroughly cleaned between sample sites.

In this sampling protocol there are only two exceptions to the "Clean to Dirty" rule. Well SLP 15 will be sampled before SLP4 and SLP 6. This is due to the need to conduct a field breakthrough study on a well that has known contamination. Also, Well W23 will be sampled before Well W24. This is due to the difficulties imposed by outdoor sampling in winter conditions and due to the location of W24. A tentative schedule is presented in Figure 1.

Figure 1

Nominal Sampling Schedule

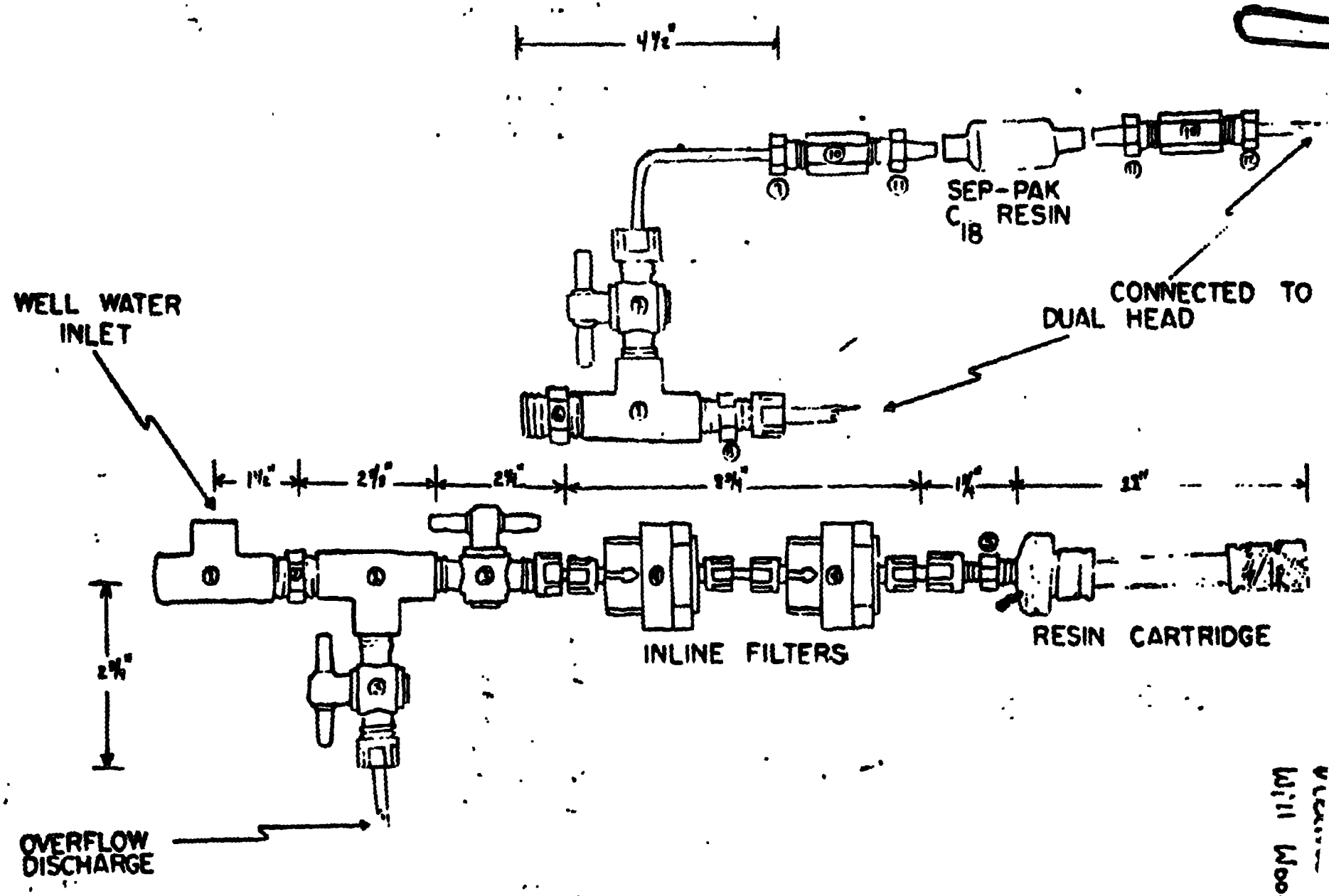
Well #	Set Up	Sample	Move	Activity
SLP 8	Day 2	Day 2-3	--	Breakthrough Study
SLP 15	Day 3	Day 3	--	Breakthrough Study
SLP 8	--	Day 4-5	Day 6	Sampling
SLP 15	--	Day 4	Day 6	Sampling
SLP 4	Day 6	Day 7-8	Day 9	Sampling
SLP 6	Day 6	Day 7-8	Day 9	Sampling
W40	Day 10	Day 11	Day 12	Sampling
W23	Day 12	Day 13	Day 13	Sampling
W24	Day 14	Day 14	Day 15	Sampling

SAMPLING PROTOCOL FOR POLLUTANT SOURCE IDENTIFICATION STUDY SAS 1141-E

Cleaning Procedure

Teflon Manifolds

1. Hot detergent water
2. Pump detergent solution through tubing for 2 minutes
3. Pump hot water through tubing for 2 minutes
4. Pump HPLC water through tubing for 2 minutes
5. Flush with acetone
6. Air or blow dry with nitrogen
7. Rinse with HPLC water


4½"
SEP-PAK
C_{18} RESIN
CONNECTED TO
DUAL HEAD
WELL WATER
INLET
1½"
2⅞"
2¾"
2¾"
1¾"
2⅞"
INLINE FILTERS
RESIN CARTRIDGE
OVERFLOW
DISCHARGE

Breakthrough study

1 isotopes (well 15)

2 isotopes + target compounds (well 15)

3 isotopes (well 8)

4 isotopes + target comp. (well 8)

5 (blank) NO ISOTOPE here

6 isotopes + target compd (control)

7 isotopes (control)

Drum sample

1 ~~2~~ cartridges both spiked with isotopes

Recovery study

1 blank cartridge (isotopes)

1 cartridge (isotopes + target compds)

SAMPLING PROTOCOL FOR POLLUTANT SOURCE

IDENTIFICATION STUDY SAS 1141-E

Chain of Custody Procedures

Chain of Custody must be maintained throughout the project in order for the sample results to be admissable as evidence in court. The following procedures will be observed to insure that Chain of Custody will not be broken.

I. During Sample Acquisition

During sample acquisition, the sampling area will either be continuously monitored by authorized personnel or will be in a secured (locked) area where access is limited to authorized personnel.

The following definitions apply. Authorized personnel are those employees of Acurex Corporation, Minnesota Pollution Control Agency, or Saint Louis Park City that are specifically assigned to this project and whose names appear on a list compiled and controlled by the Acurex Field Manager or his designated representative.

An area will be considered to be continuously monitored if access by unauthorized personnel cannot be made without observation or knowledge of authorized personnel.

An area will be considered to be secured if it is locked in such a way that only authorized personnel can gain entry.

In any event, once sampling has begun every person entering and leaving the area will be required to sign in and out using the form shown in figure 2.

At the time of sampling, the person initiating the sample will begin a Chain of Custody document shown in Figure 3. Each person having custody of the sample from this time until receipt at the lab will be recorded by signature and date.

II. During On Site Storage and Shipping

Once sampling is complete all components of the sample such as liquids, particulate filters, resin cartridges and the like will be kept in locked containers. Access to these containers will be limited to Acurex employees. Only Acurex field personnel and Acurex sample control personnel will have keys to these containers.

In addition, EPA Chain of Custody Seals will be used on all sample containers during shipment.

III. Upon Receipt at Laboratory

Upon receipt at the laboratory locked shipping containers will be inspected for signs of tampering. The contents will then be inventoried against Chain of Custody documents. Finally, each sample will be assigned a unique laboratory I.D. number and stored in a secured area. Chain of Custody records will be kept on file at Acurex for 1 year.

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PROJECT SAS 1141-E

PERSONNEL SIGN IN SHEET

Location: _____ Site Condition:

NAME	AFFILIATION	DATE	TIME IN	TIME OUT

SAMPLING PROTOCOL FOR POLLUTANT SOURCE

IDENTIFICATION STUDY SAS 1141-E

Sep-pak Method

Each sep-pak cartridge is eluted with 10 mL THF containing 0.1% HCl (conc). The THF is concentrated down to 1 mL on a hot plate using N_2 and 10 µL aliquot is injected into the HPLC.

Note:

- After injecting sample, keep syringe in water because HCl might cause syringe to freeze.
- Save all sep-pak extracts since they may be analyzed in the lab again.
- Recap all vials
- Do not inject more than 15 µL since THF may cause shift in retention time.

Recovery data at 10 µg per sep-pak cartridge for PAHs is between 66 and 97%. We have not determined what the values are for specific compounds.

Chromatograms attached for:

1. 1 ng/µL PAH standard 10 µL injection
2. 1 ng/µL PAH standard 1 µL injection
3. THF/0.1% HCl blank
   (10 µ conc to 1 mL)
4. Sep-pak blank
   (100 µL water passed through sep-pak; eluted with 10 mL THF/HCl)
5. PAH standard eluted from sep-pak
   Spike level 10 µg per cartridge

1

1 ng PAH std (10ul)

SAME conditions

ATT = 1

Chart speed 0.5cm/min

35% - 65% HPLC/ACN (5min)

to 100% ACN @ 10ml/min

Linear gradient (20min)

254nm

0.5cm/min

1.7.84

Direct Inject (1ml) (1ng PAH)

1ng PAH

Direct

Omni Scribe® CHART TYPE EC-103

1 ng PAH std (1ul)

ATT = 1

254 NM

11.17.84

HOUSTON INSTRUMENT

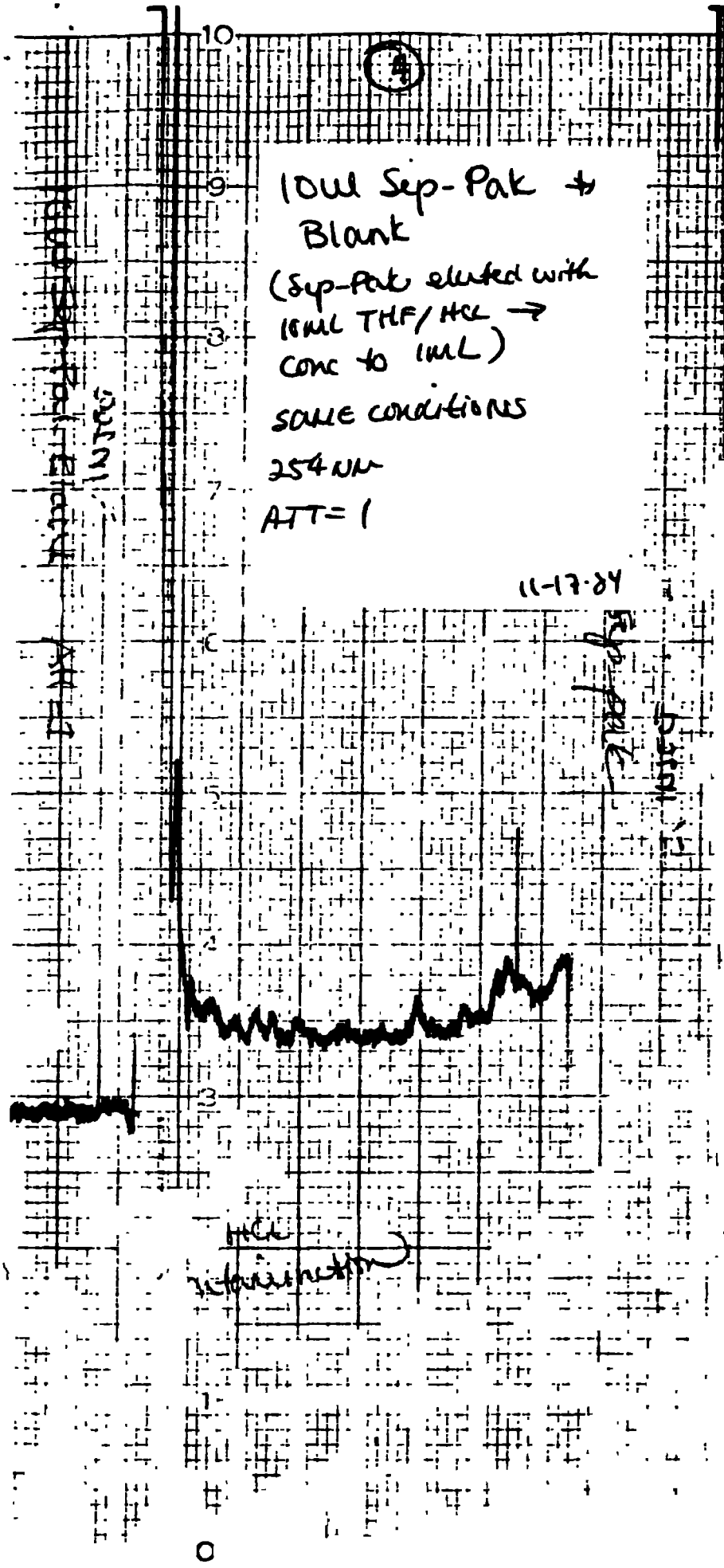
10 ul control *

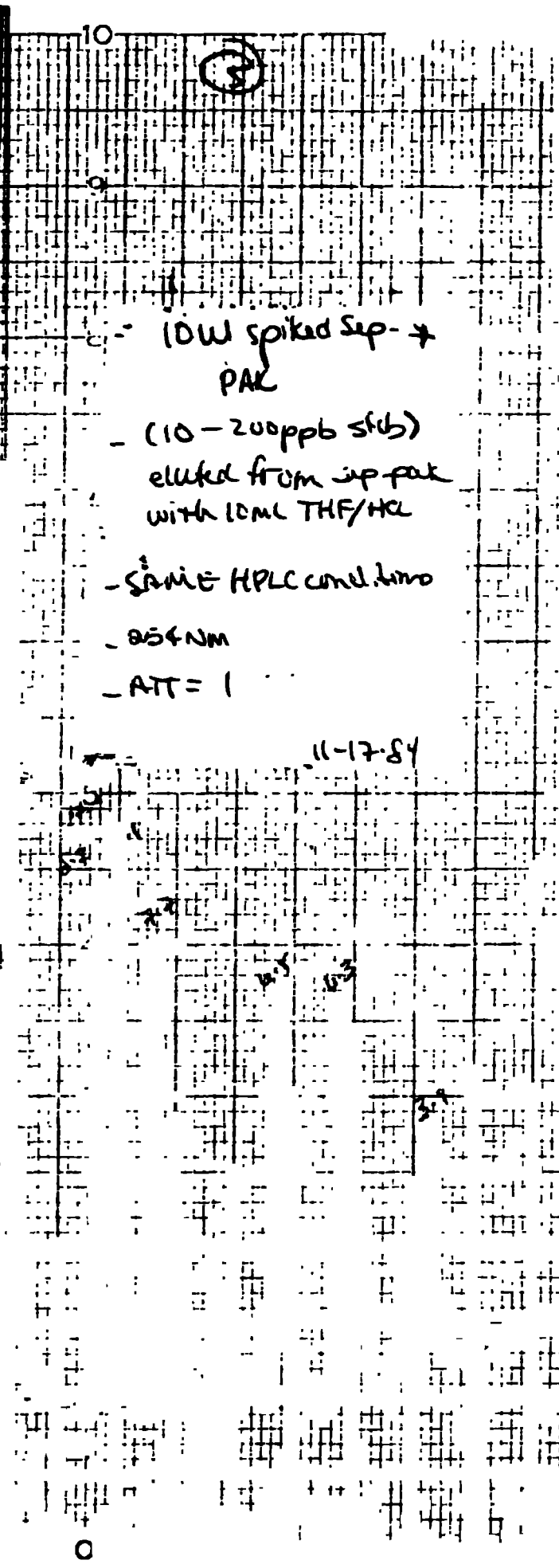
(10ml THF/0.1% HCL
conc. to 1ml)
Determine bkg
level for sep-pak
elution
same conditions
ATT = 1
254 nm

11-17-84

* NOTE:

When injecting samples of THF/HCL - the syringe must rinse and soaked in MeOH or HPLC - to prevent the syringe from freezing up due to the presence of the acid.
It is not advisable to inject >15 of these samples because the THF/HCL may change the RT. of the compounds on the





OmniScribe® CHART TYPE EC 103

11-17-84 10μl spiked sep-pak

spiked 10 ng into 100 ml HPLC - passed thru a sep-pak

eluted with 10 ml THF/HCL

conc to 1 ml.

Sep pak (10 ng = 100%)			10 ng std.	
Calc. ANT (ng)	Peak height	(RT)	Peak height	RF
9.35	8.7	(2.5)	9.3	1.075
9.68	9.1	(2.9)	9.4	1.064
8.11	7.7	(3.5)	9.5	1.053
7.84	4.0	(3.8)	5.1	1.961
7.14	6.5	(5.7)	9.1	1.099
6.63	6.3	(6.7)	9.5	1.053
7.09	3.9	(8.2)	5.5	1.818

HPLC conditions:

gradient: 35% water / 65% CH_3CN 5 min hold at 1 mL/min
to 100% CH_3CN linear gradient (20 min)
total time 25 min
flow rate 1 mL/min

Attn : 2

UV wavelength : 254 nm.

Chart speed 0.5 cm/min

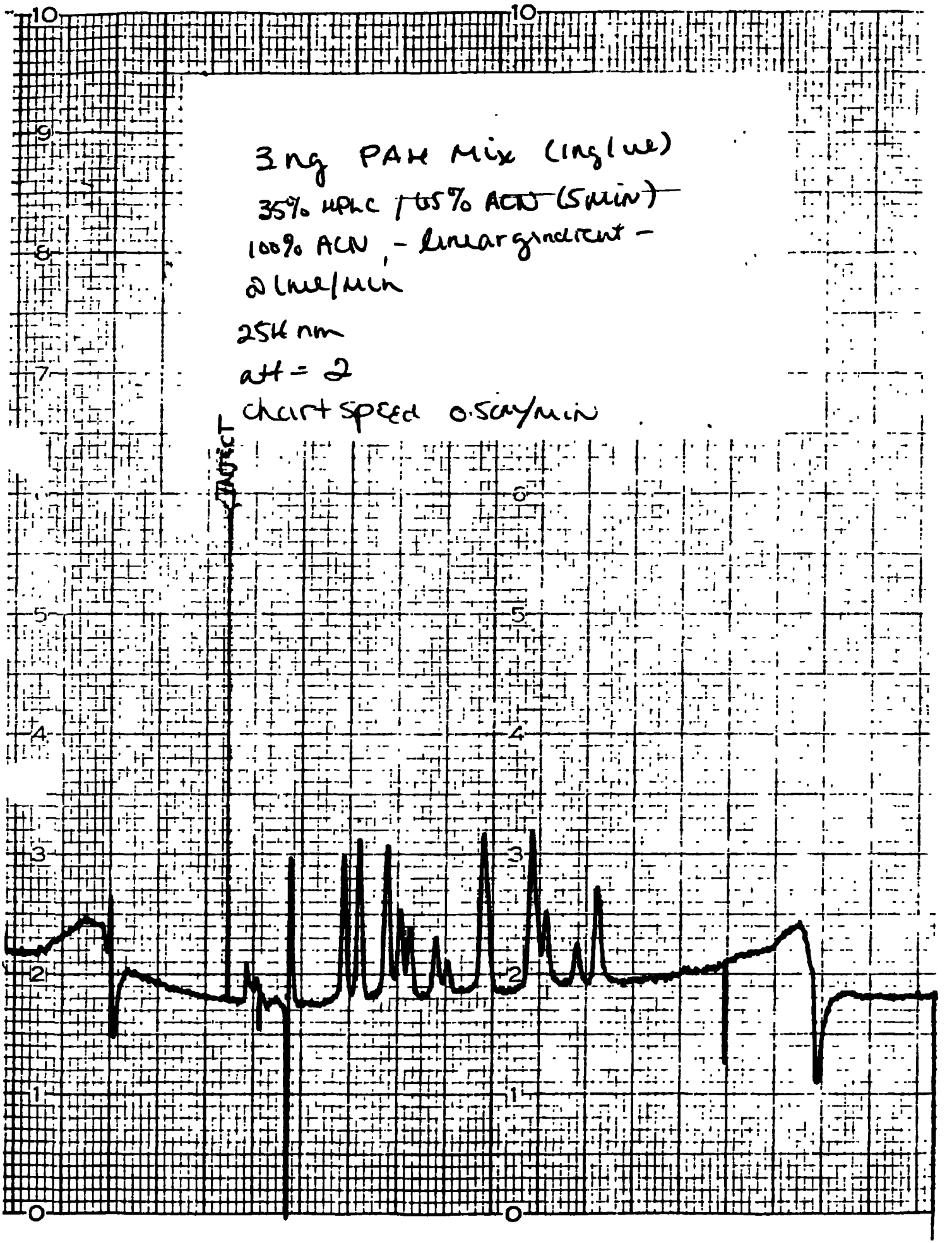
inj. volume : 10 – 15 μL

Rheodyne loop : 20 μL volume

column : HS 5μ C18 (12.5 cm × 4.6 mm ID)

Chromatogram attached

detection limit : 0.1 ng/μL extract or solvent
at attn. 1. This means
~ 1 ng per injection if
10 μL is injected.



OmniScribe® CHART TYPE FC 103

INJECT

30ng (10ng/ul) Supelco PAH Mix
35% HPLC / 65% ACN for 5min (1ml/min)
to 100% ACN - linear gradient - in
20min @ 1ml/min

254 NM
ATT = 2
chart speed 0.5cm/min

10.5.97