Click Here to Return to Appendix A.2 Contents

than five minutes. When dried, the sediment was homogenized and placed into wide mouth sample containers.

All of M&E's field sampling was conducted between November 12, 1997 and November 20, 1997. The weather during the sampling event was generally clear and cold with temperatures falling from the start of the event from the mid 40's°F to about 30°F at the end. Snow and sleet fell on November 14th, but sampling continued as there was no wind. Sample dewatering on that day took place under tarps to exclude falling precipitation from the samples.

2.2 Analytical Program

The analytical program used to analyze the sediment samples collected by M&E is described in the Final QAPP (M&E, 1997b). All analyses were conducted under the EPA DAS program following EPA Region I approved DAS analytical methodologies. The EPA-approved DAS analytical specifications are provided in Appendix B of the QAPP (M&E, 1997b). No changes to the methods were proposed from the results of the pre-test sampling. Analysis for VOCs, PAHs, pesticides, PCBs, and grain size were conducted by Southwest Research Institute in San Antonio, Texas. Nine of the sediment samples were reanalyzed for PAHs using Gas Chromatography/Mass Spectroscopy/Selected Ion Monitoring (GC/MS/SIM) due to low concentrations of PAHs, and in order to meet the required reporting limits for the ecological risk assessment (M&E, 1997a and 1997c). Analysis for low concentration metals, total combustible organics (TCO), moisture content, and pH were conducted by RECRA LabNet Philadelphia, in Lionville, Pennsylvania. The AVS/SEM analyses were conducted by American Environmental Network in Monroe, Connecticut. Table 2-3 summarizes laboratory information about the analyses that were conducted for the samples collected. No significant deviations occurred from the DAS analytical methods.

3.0 SEDIMENT SAMPLE RESULTS

Validated data for all sediment and field quality control (QC) samples collected during M&E's field investigation are presented in Appendix B. The data are presented by analytical fraction and method in sequential sample station/location order:

- VOCs
- PAHs
- PAHs GC/MS/SIM
- Pesticides
- PCBs
- Metals (total extractable)
- AVS/SEM
- TCO
- Grain size -- sieve
- Grain size -- hydrometer

Table 2-3
Sample Location and Laboratory Reference Table

Sample Location	Date Collected	Matrix	QC Sample	Case Number	DAS Number	SDG Lab - SWRI	SDG Lab - RECRA	SDG Lab - IEA
SED-01-06	12-Nov-97	Sediment		0049M	DAM322	DAM320-OA	DAM320-IA	DAM320-OB
SED-01-07	12-Nov-97	Sediment		0049M	DAM323	DAM320-OA	DAM320-IA	DAM320-OB
SED-02-01	13-Nov-97	Sediment		0049M	DAM326	DAM320-OA	DAM320-IA	DAM320-OB
SED-02-02	13-Nov-97	Sediment		0049M	DAM327	DAM320-OA	DAM320-IA	DAM320-OB
SED-03-02	13-Nov-97	Sediment		0049M	DAM325	DAM320-OA	DAM320-IA	DAM320-OB
SED-04-02	14-Nov-97	Sediment		0049M	DAM333	DAM320-OA	DAM320-IA	DAM320-OB
SED-04-03	14-Nov-97	Sediment		0049M	DAM334	DAM320-OA	DAM320-IA	DAM320-OB
SED-05-03	13-Nov-97	Sediment	Duplicate	0049M	DAM328	DAM320-OA	DAM320-IA	DAM320-OB
SED-05-05	13-Nov-97	Sediment	Duplicate	0049M	DAM331	DAM320-OA	DAM320-IA	DAM320-OB
SED-06-03	18-Nov-97	Sediment		0049M	DAM345	DAM340-OA	DAM345-IA	DAM345-OA
SED-07-02	20-Nov-97	Sediment		0049M	DAM359	DAM340-OA	DAM345-IA	DAM345-OA
SED-07-05	20-Nov-97	Sediment	MS/MSD	0049M	DAM360	DAM340-OA	DAM345-IA	DAM345-OA
SED-07-10	19-Nov-97	Sediment		0049M	DAM353	DAM340-OA	DAM345-IA	DAM345-OA
SED-10-01	19-Nov-97	Sediment	Duplicate	0049M	DAM351	DAM340-OA	DAM345-IA	DAM345-OA
SED-10-04	19-Nov-97	Sediment	Duplicate	0049M	DAM355	DAM340-OA	DAM345-IA	DAM345-OA
SED-10-02	19-Nov-97	Sediment		0049M	DAM352	DAM340-OA	DAM345-IA	DAM345-OA
SED-11-01	14-Nov-97	Sediment		0049M	DAM336	DAM320-OA	DAM320-IA	DAM320-OB
SED-12-01	20-Nov-97	Sediment		0049M	DAM357	DAM340-OA	DAM345-IA	DAM345-OA
SED-12-03	20-Nov-97	Sediment		0049M	DAM358	DAM340-OA	DAM345-IA	DAM345-OA
SED-13-01	17-Nov-97	Sediment		0049M	DAM341	DAM340-OA	DAM320-IA	DAM320-OB
SED-13-03	17-Nov-97	Sediment		0049M	DAM342	DAM340-OA	DAM320-IA	DAM320-OB
SED-15-01	17-Nov-97	Sediment		0049M	DAM340	DAM340-OA	DAM320-IA	DAM320-OB
SED-18-02	18-Nov-97	Sediment		0049M	DAM347	DAM340-OA	DAM345-IA	DAM345-OA
SED-18-03	18-Nov-97	Sediment		0049M	DAM348	DAM340-OA	DAM345-IA	DAM345-OA
SED-19-01	19-Nov-97	Sediment		0049M	DAM354	DAM340-OA	DAM345-IA	DAM345-OA
SED-20-01	17-Nov-97	Sediment	MS/MSD	0049M	DAM339	DAM320-OA	DAM320-IA	DAM320-OB
SED-21-01	14-Nov-97	Sediment	Duplicate	0049M	DAM335	DAM320-OA	DAM320-IA	DAM320-OB
SED-21-05	14-Nov-97	Sediment	Duplicate	0049M	DAM337	DAM320-OA		
SED-22-02	12-Nov-97	Sediment		0049M	DAM321	DAM320-OA	DAM320-IA	DAM320-OB
SED-24-03	12-Nov-97	Sediment		0049M	DAM320	DAM320-OA	DAM320-IA	DAM320-OB
SED-25-02	18-Nov-97	Sediment		0049M	DAM346	DAM340-OA	DAM345-IA	DAM345-OA
SED-12-TB	12-Nov-97	Methanol	Trip Blank	0049M	DAM324	DAM320-OA		
SED-13-TB	13-Nov-97	Methanol	Trip Blank	0049M	DAM329	DAM320-OA		
SED-14-TB	14-Nov-97	Methanol	Trip Blank	0049M	DAM332	DAM320-OA		
SED-17-TB	17-Nov-97	Methanol	Trip Blank	0049M	DAM343	DAM340-OA		
SED-18-TB	18-Nov-97	Methanol	Trip Blank	0049M	DAM350	DAM340-OA		
SED-19-TB	19-Nov-97	Methanol	Trip Blank	0049M	DAM356	DAM340-OA		
SED-20-TB	20-Nov-97	Methanol	Trip Blank	0049M	DAM361	DAM340-OA		
SED-13-PE	13-Nov-97	Sediment	PE Sample	0049M	DAM330	DAM320-OA	DAM320-IA	DAM320-OB
SED-18-PE	18-Nov-97	Sediment	PE Sample	0049M	DAM349	DAM340-OA	DAM345-IA	DAM345-OA
SED-17-EB	17-Nov-97	Aqueous	Equip. Blk	0049M	DAM344	DAM320-OA	DAM320-IA	DAM320-OB
SED-20-EB	20-Nov-97	Aqueous	Equip. Blk	0049M	DAM362	DAM340-OA	DAM345-IA	DAM345-OA

3.1 Analytical Data Validation

Quality control (QC) samples were taken and submitted for laboratory analysis to monitor precision, accuracy, and potential contamination throughout the sampling episode. These samples included trip blanks, equipment blanks, field duplicates, and matrix spike/matrix spike duplicate samples.

All sediment analytical data generated from field investigation were validated to EPA Region I's Tier III level in accordance with Region I EPA New England Data Validation Guidelines (U.S. EPA, 1996), which were modified to meet the QC criteria set forth in the DAS analytical specifications. Typical actions implemented during validation of analytical data are described in Appendix D and are summarized below.

Data found to be suspect during the validation process were qualified, and a description of the discrepancy was noted in the validation summary. Positive and non-detect results that were shown to have serious QC problems were rejected and flagged with an "R." Positive results that were shown to exhibit poor precision or accuracy were qualified as approximated and flagged with a "J." Nondetect results that were shown to exhibit poor precision were flagged with a "UJ." Nonqualified positive results were found to meet all validation criteria. Nondetect results that were found to meet the validation criteria were shown as the quantitative limit or detection limit followed by a "U" qualifier. Rejected values were considered as non-usable results for subsequent evaluations. Approximated and nonqualified results were used in further evaluations, but the qualified data were first reviewed to establish their usability.

The data tables presented in Appendix B show the results of the validation. As was described in Section 3.1, the % solids in each sediment sample were increased (the moisture content decreased) using field techniques and laboratory procedures specifically designed for this project. All results presented in the Appendix B data tables are in dry weight units; however, the % moisture for each sample is listed at the bottom of the tables. This value represents the % moisture after field manipulation. Only sediment samples collected for VOC analysis were analyzed at the "true" or unmanipulated moisture content found in the field.

3.2 Sediment Data Results

Table 3-1 summarizes by station/location the validated data for analytes that were detected in at least one sediment sample collected by M&E.

4.0 DATA EVALUATION

This section discusses the comparison between the 1995 and 1997 sediment data as well as data trends for the major chemical groups detected across the site.

TABLE 3-1. ANALYTES DETECTED IN 1997 SEDIMENT SAMPLES [1,2]

M&E SAMPLE ID:	SED-01-06	SED-01-07	SED-02-01	SED-02-02	SED-03-02	SED-04-02	SED-04-03
DAS SAMPLE NUMBER:	DAM322	DAM323	DAM326	DAM327	DAM325	DAM333	DAM334
DATE SAMPLED:	11/12/97	11/12/97	11/13/97	11/13/97	11/13/97	11/14/97	11/14/97
REMARKS:	-----	-----	-----	-----	-----	-----	-----
VOCs (ug/Kg)							
Benzene	26 UJ	30 UJ	10 UJ	21 UJ	9 J	24 UJ	32 UJ
Chloroform	66 UJ	76 UJ	26 UJ	53 UJ	44 UJ	60 UJ	224 UJ
cis-1,2-Dichloroethene	62 J	58 J	26 UJ	53 UJ	28 J	60 UJ	74 UJ
Ethylbenzene	26 UJ	30 UJ	10 UJ	21 UJ	18 UJ	24 UJ	29 UJ
m/p-Xylene	66 UJ	76 UJ	26 UJ	53 UJ	44 UJ	60 UJ	74 UJ
Naphthalene	197 UJ	228 UJ	77 UJ	159 UJ	132 UJ	180 U	221 U
Tetrachloroethene	197 UJ	228 UJ	77 UJ	159 UJ	132 UJ	180 U	221 U
trans-1,2-Dichloroethene	197 UJ	228 UJ	77 UJ	159 UJ	132 UJ	180 U	221 U
Trichloroethene	37 J	76 UJ	26 UJ	53 UJ	44 UJ	60 UJ	74 UJ
Vinyl chloride	197 UJ	228 UJ	77 UJ	159 UJ	132 UJ	180 U	221 U
PAHs (ug/Kg)							
2-Methylnaphthalene	20 J	20 J	10 J	20 J	16 J	41 J	70
Acenaphthene	33 J	32 J	R	30 J	45 J	110 J	170 J
Acenaphthylene	33 J	37 J	19 J	57 J	39 J	170	160
Anthracene	92	100	62 J	140	120	420	640
Benzo(a)anthracene	1000	1100	590	1500	1300	3100	3200
Benzo(a)pyrene	930	920	620	1400	1000	4100	3500
Benzo(b)fluoranthene	1400	1600	720	1700	1400	5100	6000
Benzo(g,h,i)perylene	480	510	330	640	570	1900	2100
Benzo(k)fluoranthene	730	690	340	710	640	2100	3800
Chrysene	880	980	660	1400	1300	3700	3800
Dibenz(a,h)anthracene	120	110	60 J	150	110	720	890
Fluoranthene	2100	2200	1200	3000	2600	8300	8500
Fluorene	89	89	44 J	97	150	290	490
Indeno(1,2,3-cd)pyrene	580	640	420	860	620	2600	2500
Naphthalene	24 J	23 J	13 J	24 J	18 J	56 J	96 J
Phenanthrene	840	900	390	970	1000	3200	3400
Pyrene	1900	1900	1100	2500	2600	6700	6000
PAH-SIMS (ug/Kg)							
Naphthalene			13 UJ				
2-Methylnaphthalene			12 J				
Acenaphthylene			22 J				
Acenaphthene			11 J				
Fluorene			42 J				
Dibenz(a,h)anthracene			69 J				

TABLE 3-1. ANALYTES DETECTED IN 1997 SEDIMENT SAMPLES [1,2]

M&E SAMPLE ID:	SED-01-06	SED-01-07	SED-02-01	SED-02-02	SED-03-02	SED-04-02	SED-04-03
DAS SAMPLE NUMBER:	DAM322	DAM323	DAM326	DAM327	DAM325	DAM333	DAM334
DATE SAMPLED:	11/12/97	11/12/97	11/13/97	11/13/97	11/13/97	11/14/97	11/14/97
REMARKS:	-----	-----	-----	-----	-----	-----	-----
Pesticides (ug/Kg)							
4,4'-DDD	16 J	18 J	20 J	25 J	94	160	37 J
4,4'-DDE	24	28	26 J	30	29	91	20 J
4,4'-DDT	2.5 J	3.2 J	1.8 J	2.4 J	5.8 J	21 J	4.4 J
Aldrin	0.16 U	0.21 J	0.16 UJ	0.16 U	1.6 U	1.9 U	0.30 J
alpha-BHC	0.16 U	0.17 J	0.16 UJ	0.16 U	1.6 U	1.9 U	0.16 U
alpha-Chlordane	9.3 J	10 J	11 J	16	11 J	21	29 J
delta-BHC	0.19 J	0.16 U	1.3 J	0.16 U	2.3 J	1.9 U	1.3 J
Dieldrin	0.50 J	0.61 J	0.45 J	0.47	3.2 U	3.9 U	0.73 J
Endosulfan I	0.16 U	0.16 U	0.16 UJ	0.17 U	1.6 U	1.9 U	0.16 U
Endosulfan II	0.41	0.66	0.21 J	0.28	3.2 U	3.9 U	0.49
Endosulfan Sulfate	0.67 J	0.78 J	0.47 J	0.33 U	3.2 U	3.9 U	0.33 J
Endrin	1.2 J	1.8 J	1.3 J	1.9	3.2 U	5.0 J	3.2 J
Endrin Aldehyde	3.4 J	3.2 J	1.6 J	1.9 J	3.2 U	11 J	4.9 J
gamma-BHC	0.16 U	0.16 U	0.16 UJ	0.16 U	1.6 U	1.9 U	0.16 U
gamma-Chlordane	6.4 J	6.8 J	8.0 J	11 J	9.3 J	16 J	22 J
Heptachlor Epoxide	0.16 U	0.16 U	0.16 UJ	0.16 U	1.6 U	1.9 U	0.16 U
PCBs (ug/Kg)							
Aroclor-1248	46 J	70 J	160 J	180 J	160 J	200 J	44 J
Aroclor-1260	47	69 J	140	170	110	94	160
Total Metals (mg/Kg)							
Aluminum	12200 J	13200 J	6570 J	11200 J	6720 J	17700 J	11500 J
Antimony	1.7 J	1.8 J	1.9 J	2.1 J	1.7 J	11.1 J	1.8 J
Arsenic	78.1	111	56.4	105	86.5	1570	98.6
Barium	85.8	95.1	50.6	81.2	84.6	77.3	175
Beryllium	0.87 J	0.98 J	0.47 J	0.91 J	0.59 J	1.7 J	0.86 J
Cadmium	6.8	8.5	3.8	16.1	5.2	19.1	7.4
Calcium	5420	7510	2610	4600	4410	5900	6310
Chromium	148 J	192 J	103 J	190 J	200 J	3000 J	240 J
Cobalt	27.9 J	33.1 J	17.0 J	33.0 J	21.4 J	42.7 J	21.6 J
Copper	305	436	128	381	171	1080	323
Iron	31800 J	32500 J	16900 J	26000 J	21900 J	86200 J	31600 J
Lead	413 J	477 J	225 J	449 J	345 J	425 J	487 J
Magnesium	3480	3430	2150	2510	1790	1400	3470
Manganese	479	595	206	390	503	803	1010
Mercury	1.0	1.1	0.37	1.1	0.71	13.6	1.7
Nickel	40.4 J	41.3 J	21.5 J	31.0 J	26.7 J	41.2 J	33.6 J
Potassium	1190 J	1170 J	640 J	784 J	604 J	476 J	1120 J

TABLE 3-1. ANALYTES DETECTED IN 1997 SEDIMENT SAMPLES [1,2]

M&E SAMPLE ID:	SED-01-06	SED-01-07	SED-02-01	SED-02-02	SED-03-02	SED-04-02	SED-04-03
DAS SAMPLE NUMBER:	DAM322	DAM323	DAM326	DAM327	DAM325	DAM333	DAM334
DATE SAMPLED:	11/12/97	11/12/97	11/13/97	11/13/97	11/13/97	11/14/97	11/14/97
REMARKS:	-----	-----	-----	-----	-----	-----	-----
Selenium	5.1 J	1.4 J	1.6 J	2.0 J	4.2 J	1.8 J	2.0 J
Silver	0.75 J	0.66 J	0.40 J	0.91 J	0.69 J	0.59 J	0.91 J
Sodium	583	611	197	382	321	330	347
Thallium	0.63 UJ	0.43 UJ	0.53 UJ	0.48 UJ	0.43 UJ	0.44 UJ	0.43 UJ
Vanadium	56.4	55.3	32.2	46.1	49.2	63.8	55.7
Zinc	2080 J	2370 J	992 J	5170 J	1420 J	4330 J	1590 J
AVS-SEM (umoles/g)							
Arsenic	0.06 J	0.11 J	0.05 U	0.05 J	0.05 U	0.09 J	0.08 J
Cadmium	0.08 UJ	0.09 J	0.05 U	0.15 J	0.08 UJ	0.08 UJ	0.06 UJ
Copper	0.05 UJ	0.08 J	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
Lead	1.87 J	2.13 J	0.83 J	1.88 J	1.69 J	1.96 J	1.60 J
Nickel	0.86 J	0.23 J	0.14 J	0.49 J	0.98 J	0.24 J	0.34 J
Sulfide	72.0	79.9	34.7	129	88.0	23.5	18.7
Zinc	26.5 J	29.3 J	11.2 J	36.7 J	25.0 J	21.0 J	15.1 J
SEM/AVS Ratio	0.41	0.40	0.35	0.30	0.32	0.99	0.91
TCO (mg/Kg)							
Total Combustible Organics	230000 J	152000 J	125000 J	160000 J	195000 J	193000 J	255000 J

NOTES:

[1] Validated data for all sediment and field QC samples collected during M&E's field investigation are reported in Appendix B.

[2] Data presented for an analyte if the analyte was detected in at least one sediment sample

FD - Field duplicate

J - Quantitation is approximate due to limitations identified in the quality control review

U - Value reported is the sample-specific detection limit

R - Value is rejected

UJ - Sample-specific detection limit is approximate due to limitations identified in the quality control review

TABLE 3-1. ANALYTES DETECTED IN 1997 SEDIMENT SAMPLES [1,2]

M&E SAMPLE ID:	SED-05-03	SED-05-05	SED-06-03	SED-07-02	SED-07-05	SED-07-10	SED-10-01
DAS SAMPLE NUMBER:	DAM328	DAM331	DAM345	DAM359	DAM360	DAM353	DAM351
DATE SAMPLED:	11/13/97	11/13/97	11/18/97	11/20/97	11/20/97	11/19/97	11/19/97
REMARKS:	FD of SED-05-05	FD of SED-05-03	-----	-----	-----	-----	FD of SED-10-04
VOCs (ug/Kg)							
Benzene	6 J		17 J	10 UJ	11 UJ	13 UJ	44 UJ
Chloroform	9 UJ		32 UJ	25 UJ	26 UJ	34 UJ	110 UJ
cis-1,2-Dichloroethene	7 J		38 J	20 J	18 J	24 J	110 UJ
Ethylbenzene	5 J		9 J	5 J	11 UJ	13 UJ	44 UJ
m/p-Xylene	10 J		25 J	25 UJ	26 UJ	34 UJ	110 UJ
Naphthalene	17 J		70 J	74 UJ	79 UJ	101 UJ	330 U
Tetrachloroethene	28 U		96 U	74 UJ	79 UJ	101 UJ	330 U
trans-1,2-Dichloroethene	28 U		96 U	74 UJ	79 UJ	101 UJ	330 U
Trichloroethene	6 J		52 J	16 J	24 J	35 J	110 UJ
Vinyl chloride	28 U		96 U	74 UJ	79 UJ	101 UJ	330 U
PAHs (ug/Kg)							
2-Methylnaphthalene	41 J	70	40 J	45 J	44 J	59 J	37 J
Acenaphthene	84 J	120 J	130 J	220 J	170 J	230 J	27 J
Acenaphthylene	30 J	42 J	120	140	130	140	16 J
Anthracene	200	290	550	740	880	890	93
Benzo(a)anthracene	830	1200	4200 J	6000	5200	9600	500
Benzo(a)pyrene	660	810	5100 J	6000	5700	10000	540
Benzo(b)fluoranthene	770	700	6100 J	8800 J	7800 J	16000 J	830 J
Benzo(g,h,i)perylene	280	330	1900 J	3300	3400	5300	330
Benzo(k)fluoranthene	67 UJ	860 J	1300 J	4100 J	1800 J	2300 J	470 J
Chrysene	890	980	6900 J	6600	6000	10000	520
Dibenz(a,h)anthracene	95	130	720 J	1200 J	1400 J	2000	110
Fluoranthene	1900	2600	9900	14000	14000	23000	1600
Fluorene	160 J	290 J	400	640	500	550	110
Indeno(1,2,3-cd)pyrene	340	370	2400 J	4200	4200	6900	360
Naphthalene	34 J	35 J	53 J	61 J	57 J	72 J	86 J
Phenanthrene	1300 J	2200 J	5200	8500	4800	12000	600
Pyrene	1600	2600	7500	9500	9800	15000	1300
PAH-SIMS (ug/Kg)							
Naphthalene							
2-Methylnaphthalene							
Acenaphthylene							
Acenaphthene							
Fluorene							
Dibenz(a,h)anthracene							

TABLE 3-1. ANALYTES DETECTED IN 1997 SEDIMENT SAMPLES [1,2]

M&E SAMPLE ID:	SED-05-03	SED-05-05	SED-06-03	SED-07-02	SED-07-05	SED-07-10	SED-10-01
DAS SAMPLE NUMBER:	DAM328	DAM331	DAM345	DAM359	DAM360	DAM353	DAM351
DATE SAMPLED:	11/13/97	11/13/97	11/18/97	11/20/97	11/20/97	11/19/97	11/19/97
REMARKS:	FD of SED-05-05	FD of SED-05-03	-----	-----	-----	-----	FD of SED-10-04
Pesticides (ug/Kg)							
4,4'-DDD	180	180	79	47	39 J	36	98 J
4,4'-DDE	37	34	71	19 J	41	33	90 J
4,4'-DDT	9.7 J	8.8 J	15 J	21 J	18 J	14 J	3.4 U
Aldrin	1.7 U	1.7 U	1.6 U	1.6 U	1.6 U	1.6 U	11 J
alpha-BHC	1.7 U	1.7 U	1.6 U	1.6 U	1.6 U	1.6 U	1.7 U
alpha-Chlordane	9.1 J	17 J	80	49 J	64	80	18 J
delta-BHC	3.0 J	4.3 J	25 J	1.6 U	24 J	1.6 U	1.7 U
Dieldrin	4.2 J	3.3 U	5.0 J	4.1 J	3.2 U	3.2 U	13
Endosulfan I	1.7 U	1.7 U	1.6 U	1.6 U	1.6 U	1.6 U	1.7 U
Endosulfan II	3.3 U	3.3 U	3.2 U	3.3 U	3.2 U	3.2 U	3.4 U
Endosulfan Sulfate	3.3 U	3.3 U	3.2 U	3.3 U	3.2 U	3.2 U	3.4 U
Endrin	3.3 U	3.3 U	17 J	8.6 J	17 J	16 J	4.7 J
Endrin Aldehyde	3.3 U	3.3 U	3.2 U	27 J	3.2 U	3.2 U	6.4 J
gamma-BHC	1.7 U	1.7 U	1.6 U	1.6 U	1.6 U	1.6 U	1.7 U
gamma-Chlordane	7.3 J	16 J	48 J	41	38 J	45 J	16 J
Heptachlor Epoxide	1.7 U	1.7 U	1.6 U	1.6 U	1.6 U	1.6 U	1.7 U
PCBs (ug/Kg)							
Aroclor-1248	120 J	120 J	120 J	37 J	29 J	67 J	300 J
Aroclor-1260	77	72	82	95	74	50	190 J
Total Metals (mg/Kg)							
Aluminum	4860 J	4300 J	14300	13200	14700	12500	30100
Antimony	2.4 J	0.68 UJ	2.5 J	2.6 J	2.8 J	2.4 J	17.7 J
Arsenic	9.8	9.9	135	111	98.3	87.4	715
Barium	40.8	37.8	130	110	118	89.8	99.2
Beryllium	0.32 J	0.27 J	1.0	0.95	1.0	0.86	2.0
Cadmium	0.76	0.48	7.7	6.3	5.8	4.5	17.5
Calcium	1590	1090	5510	5310	6630	5840	9570
Chromium	90.0 J	46.9 J	403	291	277	238	3290
Cobalt	5.6 J	4.4 J	20.9	19.2	21.5	18.2	34.5
Copper	45.9	40.4	389	306	304	261	2590
Iron	9520 J	8600 J	40600	33800	35400	29100	45500
Lead	1090 J	220 J	455	382	406	326	975
Magnesium	2100	1590	4260	4180	5330	4420	2130
Manganese	103	91.9	1630	517	495	397	570
Mercury	0.23	0.22	2.6	2.3	2.0	1.6	24.4
Nickel	11.2 J	10.8 J	32.2	35.2	37.5	31.5	41.4
Potassium	681 J	390 J	1380	1310	1620	1320	597

TABLE 3-1. ANALYTES DETECTED IN 1997 SEDIMENT SAMPLES [1,2]

M&E SAMPLE ID:	SED-05-03	SED-05-05	SED-06-03	SED-07-02	SED-07-05	SED-07-10	SED-10-01
DAS SAMPLE NUMBER:	DAM328	DAM331	DAM345	DAM359	DAM360	DAM353	DAM351
DATE SAMPLED:	11/13/97	11/13/97	11/18/97	11/20/97	11/20/97	11/19/97	11/19/97
REMARKS:	FD of SED-05-05	FD of SED-05-03	-----	-----	-----	-----	FD of SED-10-04
Selenium	0.53 U	0.53 U	3.4 J	2.2 J	2.2 J	2.4 J	10.3
Silver	0.18 J	0.73 J	0.18 J	0.86 J	0.91 J	0.78 J	0.62 J
Sodium	103	85.3	617 U	416 U	519 U	483 U	726 U
Thallium	0.04 UJ	0.04 UJ	0.77 U	0.81 U	0.44 U	0.76 U	1.7 U
Vanadium	26.3	20.8	60.2	56.7	62.6	54.6	75.5
Zinc	144 J	126 J	1630	1500	1450	1190	3340
AVS-SEM (umoles/g)							
Arsenic	0.05 U	0.05 U	0.17 J	0.19 J	0.10 J	0.17 J	1.56 J
Cadmium	0.05 U	0.05 U	0.06	0.05 U	0.05	0.07	0.11
Copper	0.46 J	0.05 UJ	0.08	0.19	0.05 U	0.05 U	0.10
Lead	1.17 J	0.78 J	1.54	1.46	1.41	1.67	1.98 J
Nickel	0.10 J	0.06 J	0.39 J	0.47 J	0.30 J	0.25 J	0.34 J
Sulfide	24.7	15.3	5.44	20.4	49.6	5.22	64.3
Zinc	3.88 J	2.24 J	11.2 J	15.1 J	17.1 J	11.2 J	24.1 J
SEM/AVS Ratio	0.23	0.20	2.44	0.84	0.38	2.53	0.41
TCO (mg/Kg)							
Total Combustible Organics	34200 J	84000 J	197000 J	194000 J	210000 J	218000 J	471000 J

NOTES:

[1] Validated data for all sediment and field QC samples collected during M&E's field investigation are reported in Appendix B.

[2] Data presented for an analyte if the analyte was detected in at least one sediment sample

FD - Field duplicate

J - Quantitation is approximate due to limitations identified in the quality control review

U - Value reported is the sample-specific detection limit

R - Value is rejected

UJ - Sample-specific detection limit is approximate due to limitations identified in the quality control review

TABLE 3-1. ANALYTES DETECTED IN 1997 SEDIMENT SAMPLES [1,2]

M&E SAMPLE ID:	SED-10-02	SED-10-04	SED-11-01	SED-12-01	SED-12-03	SED-13-01	SED-13-03
DAS SAMPLE NUMBER:	DAM352	DAM355	DAM336	DAM357	DAM358	DAM341	DAM342
DATE SAMPLED:	11/19/97	11/19/97	11/14/97	11/20/97	11/20/97	11/17/97	11/17/97
REMARKS:	-----	FD of SED-10-01	-----	-----	-----	-----	-----
VOCs (ug/Kg)							
Benzene	21 J	42 UJ	23 UJ	41 UJ	9 J	8 J	7 J
Chloroform	93 UJ	104 UJ	154 UJ	103 UJ	41 UJ	35 UJ	32 UJ
cis-1,2-Dichloroethene	93 UJ	64 J	170 J	417 J	25 J	35 UJ	23 J
Ethylbenzene	37 UJ	42 UJ	23 UJ	41 UJ	16 UJ	9 J	13 UJ
m/p-Xylene	93 UJ	104 UJ	57 UJ	103 UJ	41 UJ	35 UJ	32 UJ
Naphthalene	278 U	312 U	171 U	309 U	124 U	104 UJ	97 UJ
Tetrachloroethene	278 U	312 U	171 U	309 U	124 U	108 UJ	97 UJ
trans-1,2-Dichloroethene	278 U	312 U	387	309 U	124 U	104 UJ	97 UJ
Trichloroethene	60 J	104 UJ	103 UJ	53 J	41 UJ	35 UJ	37 J
Vinyl chloride	278 U	312 U	171 U	309 U	124 U	104 UJ	97 UJ
PAHs (ug/Kg)							
2-Methylnaphthalene	67 U	29 J	13 J	12 J	22 J	73	23 J
Acenaphthene	R	31 J	R	R	R	89 J	22 J
Acenaphthylene	8 J	24 J	9 J	16 J	14 J	31 J	26 J
Anthracene	49 J	100 J	54 J	69 J	79	300	99
Benzo(a)anthracene	210	660	410	560 J	420	1700	750
Benzo(a)pyrene	250	700	520	1000 J	440	1700	890
Benzo(b)fluoranthene	290 J	1100 J	780	1500 J	780 J	1900 J	1100 J
Benzo(g,h,i)perylene	200	400	300	640 J	290	820	540
Benzo(k)fluoranthene	220 J	430 J	720	720 J	440 J	850 J	570 J
Chrysene	380	780	670	850 J	610	1700	1100
Dibenz(a,h)anthracene	69	140	99	220 J	110	220	180
Fluoranthene	570	2300 J	1000	1200 J	750	5200	2300
Fluorene	59 J	120 J	46 J	47 J	59 J	220	67 J
Indeno(1,2,3-cd)pyrene	190	450	360	740 J	330	1000	610
Naphthalene	26 J	56 J	29 J	26 J	98 J	67 J	40 J
Phenanthrene	210	780 J	260	570 J	460	2700	960
Pyrene	470	2000 J	950	1000 J	650	4000	1700
PAH-SIMS (ug/Kg)							
Naphthalene	30 UJ		32 J	24 J	120 J		
2-Methylnaphthalene	10 U		16 J	13 J	25 J		
Acenaphthylene	13 J		9 J	19 J	23 J		
Acenaphthene	13		8 J	10 J	15 J		
Fluorene	72 J		57 J	45 J	78 J		
Dibenz(a,h)anthracene	42 J		97 J	320 J	150		

TABLE 3-1. ANALYTES DETECTED IN 1997 SEDIMENT SAMPLES [1,2]

M&E SAMPLE ID:	SED-10-02	SED-10-04	SED-11-01	SED-12-01	SED-12-03	SED-13-01	SED-13-03
DAS SAMPLE NUMBER:	DAM352	DAM355	DAM336	DAM357	DAM358	DAM341	DAM342
DATE SAMPLED:	11/19/97	11/19/97	11/14/97	11/20/97	11/20/97	11/17/97	11/17/97
REMARKS:	-----	FD of SED-10-01	-----	-----	-----	-----	-----
Pesticides (ug/Kg)							
4,4'-DDD	17	260 J	45 J	17	1.9	18 J	310
4,4'-DDE	5.1	230 J	15 J	4.0	0.90 J	17 J	130
4,4'-DDT	0.35 U	5.3 J	1.9 J	1.3 J	1.1 J	4.0 J	12 J
Aldrin	0.17 U	25 J	0.16 UJ	0.17 U	0.16 U	0.16 UJ	1.6 U
alpha-BHC	0.17 U	1.7 U	0.16 UJ	0.17 U	0.16 U	0.16 UJ	1.6 U
alpha-Chlordane	1.5 J	41 J	8.1 J	2.4 J	1.1 J	17 J	93
delta-BHC	0.17 U	1.7 U	0.16 UJ	0.17 U	0.16 U	0.16 UJ	15 J
Dieldrin	0.35 U	15 J	1.4 J	0.78 J	0.32 U	1.4 J	11 J
Endosulfan I	0.17 U	1.7 U	0.44 J	0.17 U	0.16 U	0.16 UJ	1.6 U
Endosulfan II	0.35 U	3.3 U	0.51 J	0.33 U	0.32 U	0.39 J	3.3 U
Endosulfan Sulfate	0.35 U	3.3 U	0.72 J	0.33 U	0.32 U	0.38 J	3.3 U
Endrin	0.61 J	6.9	0.69 J	1.4 J	0.77 J	9.6 J	3.3 U
Endrin Aldehyde	1.7 J	17 J	1.7 J	1.8 J	0.87 J	2.2 J	7.5 J
gamma-BHC	0.17 U	1.7 U	0.16 UJ	0.23 J	0.34 J	0.16 UJ	1.6 U
gamma-Chlordane	0.25 J	25 J	5.6 J	1.7 J	0.73 J	16 J	650 J
Heptachlor Epoxide	0.54 J	2.3 J	0.16 UJ	0.46 J	0.27 J	0.40 J	1.6 U
PCBs (ug/Kg)							
Aroclor-1248	47 J	820 J	180 J	28 J	15 J	25 J	170 J
Aroclor-1260	44	450 J	230	58	18	79	250
Total Metals (mg/Kg)							
Aluminum	24400	28400	12600 J	26000	27500	6430 J	14800 J
Antimony	13.9 J	10.2 J	1.5 UJ	68.0 J	117 J	1.7 J	4.2 J
Arsenic	875	670	121	3230	4550	15.9	186
Barium	53.4	126	149	78.8	52.5	63.8	107
Beryllium	1.7	2.1	0.97 J	2.0	1.7	0.45 J	1.1 J
Cadmium	12.4	19.9	9.5	11.7	11.4	3.1	3.8
Calcium	8590	9970	5800	8920	7160	3020	6950
Chromium	934	3580	303 J	2120	726	61.2 J	562 J
Cobalt	16.5	46.1	25.3 J	36.2	38.1	7.2 J	9.7 J
Copper	1870	2040	402	2080	1980	113	450
Iron	31900	57800	31700 J	90200	107000	12800 J	20200 J
Lead	559	787	606 J	1240	1220	340 J	771 J
Magnesium	1500	2410	2980	1860	1480	1930	2370
Manganese	409	760	728	776	586	123	330
Mercury	24.2	15.4	1.9	27.5	44.8	0.25 J	14.3 J
Nickel	18.4	50.1	32.8 J	28.3	20.5	15.9 J	19.4 J
Potassium	345 U	877	956 J	795	450 U	715 J	741 J

TABLE 3-1. ANALYTES DETECTED IN 1997 SEDIMENT SAMPLES [1,2]

M&E SAMPLE ID:	SED-10-02	SED-10-04	SED-11-01	SED-12-01	SED-12-03	SED-13-01	SED-13-03
DAS SAMPLE NUMBER:	DAM352	DAM355	DAM336	DAM357	DAM358	DAM341	DAM342
DATE SAMPLED:	11/19/97	11/19/97	11/14/97	11/20/97	11/20/97	11/17/97	11/17/97
REMARKS:	-----	FD of SED-10-01	-----	-----	-----	-----	-----
Selenium	11.5	8.3 J	2.5 J	18.3	30.3	0.53 J	3.1 J
Silver	0.57 J	0.17 J	0.92 J	0.54 J	1.2 J	0.21 J	0.32 J
Sodium	642 U	815	421	708 U	493 U	622	798
Thallium	1.3 U	2.6 U	0.44 UJ	1.2 U	1.5 U	0.43 UJ	0.43 UJ
Vanadium	47.8	78.4	58.8	107	127	27.4	54.0
Zinc	1570	4700	2260 J	2640	4760	445 J	641 J
AVS-SEM (umoles/g)							
Arsenic	4.53 J	0.80 J	2.98 J	3.40 J	2.99 J	0.05 U	0.50 J
Cadmium	0.05 U	0.12	0.10 UJ	0.05 U	0.08	0.05 U	0.05 U
Copper	0.61	0.05 U	1.45 J	1.27	0.62	0.05 UJ	0.59 J
Lead	1.87 J	1.53	1.29 J	1.54	3.26	1.17 J	2.79 J
Nickel	0.23 J	0.83 J	0.44 J	0.26 J	0.28 J	0.15 J	0.21 J
Sulfide	5.15	64.8	15.7	35.8	11.6	4.80	3.79
Zinc	9.56 J	25.0 J	17.8 J	13.0 J	13.3 J	5.79 J	4.96 J
SEM/AVS Ratio	2.38	0.42	1.34	0.45	1.51	1.48	2.26
TCO (mg/Kg)							
Total Combustible Organics	463000 J	459000 J	387000 J	912000 J	431000 J	232000 J	118000 J

NOTES:

[1] Validated data for all sediment and field QC samples collected during M&E's field investigation are reported in Appendix B.

[2] Data presented for an analyte if the analyte was detected in at least one sediment sample

FD - Field duplicate

J - Quantitation is approximate due to limitations identified in the quality control review

U - Value reported is the sample-specific detection limit

R - Value is rejected

UJ - Sample-specific detection limit is approximate due to limitations identified in the quality control review

TABLE 3-1. ANALYTES DETECTED IN 1997 SEDIMENT SAMPLES [1,2]

M&E SAMPLE ID:	SED-15-01	SED-18-02	SED-18-03	SED-19-01	SED-20-01	SED-21-01	SED-21-05
DAS SAMPLE NUMBER:	DAM340	DAM347	DAM348	DAM354	DAM339	DAM335	DAM337
DATE SAMPLED:	11/17/97	11/18/97	11/18/97	11/19/97	11/17/97	11/14/97	11/14/97
REMARKS:	-----	-----	-----	-----	-----	FD of SED-21-05	FD of SED-21-01
VOCs (ug/Kg)							
Benzene	25 UJ	24 UJ	31 UJ	32 UJ	46 UJ	19 J	22 J
Chloroform	63 UJ	59 UJ	76 UJ	79 UJ	114 UJ	75 UJ	76 UJ
cis-1,2-Dichloroethene	187 J	37 J	76 UJ	82 J	562 J	75 UJ	76 UJ
Ethylbenzene	25 UJ	24 UJ	31 UJ	32 UJ	46 UJ	30 UJ	31 UJ
m/p-Xylene	63 UJ	59 UJ	76 UJ	79 UJ	114 UJ	75 UJ	76 UJ
Naphthalene	190 UJ	178 U	229 U	237 UJ	343 U	255 J	379
Tetrachloroethene	190 UJ	178 U	229 U	237 UJ	790 U	225 UJ	229 U
trans-1,2-Dichloroethene	190 UJ	178 U	229 U	237 UJ	343 U	19 UJ	229 U
Trichloroethene	206 J	59 UJ	76 UJ	42 J	2025 J	75 UJ	76 UJ
Vinyl chloride	190 UJ	178 U	229 U	237 UJ	343 U	225 UJ	229 U
PAHs (ug/Kg)							
2-Methylnaphthalene	67 U	15 J	21 J	R	11 J	140	
Acenaphthene	R	30 J	29 J	R	R	67 J	
Acenaphthylene	67 U	16 J	23 J	R	67 UJ	38 J	
Anthracene	50 J	150	130	18 J	26 J	420	
Benzo(a)anthracene	200	1400	1400	130 J	210	390	
Benzo(a)pyrene	180 J	1900	1900 J	160 J	290 J	890 J	
Benzo(b)fluoranthene	440 J	2500 J	2400 J	290 J	330	980	
Benzo(g,h,i)perylene	150 J	1400	1600 J	120 J	210 J	710 J	
Benzo(k)fluoranthene	270 J	1200 J	920 J	200 J	370	67 U	
Chrysene	410	2200	2000	230 J	400	940	
Dibenz(a,h)anthracene	60 J	430	410 J	46 J	97 J	240 J	
Fluoranthene	990	4000	3100	410 J	720	1400	
Fluorene	50 J	110	94	14 J	29 J	240	
Indeno(1,2,3-cd)pyrene	170 J	1400	1500 J	140 J	210 J	620 J	
Naphthalene	15 J	29 J	34 J	12 J	14 J	1300 J	
Phenanthrene	400	1400	1200	160 J	240	600	
Pyrene	590	3100	2600	340 J	540 J	1300	
PAH-SIMS (ug/Kg)							
Naphthalene	15 UJ			11 U	14 UJ		
2-Methylnaphthalene	10 J			6 U	13 J		
Acenaphthylene	7 J			1 J	6 J		
Acenaphthene	8 J			3 J	6 J		
Fluorene	69 J			14 J	36 J		
Dibenz(a,h)anthracene	34 J			18 J	45 J		

TABLE 3-1. ANALYTES DETECTED IN 1997 SEDIMENT SAMPLES [1,2]

M&E SAMPLE ID:	SED-15-01	SED-18-02	SED-18-03	SED-19-01	SED-20-01	SED-21-01	SED-21-05
DAS SAMPLE NUMBER:	DAM340	DAM347	DAM348	DAM354	DAM339	DAM335	DAM337
DATE SAMPLED:	11/17/97	11/18/97	11/18/97	11/19/97	11/17/97	11/14/97	11/14/97
REMARKS:	-----	-----	-----	-----	-----	FD of SED-21-05	FD of SED-21-01
Pesticides (ug/Kg)							
4,4'-DDD	6.9 J	23 J	4.9 J	9.0	8.4 J	35 J	
4,4'-DDE	3.8 J	28	30	3.2	4.4	22	
4,4'-DDT	1.8 J	1.2 J	1.7 J	0.33 U	4.6 J	4.4 J	
Aldrin	0.17 UJ	0.16 U	0.17 U	0.16 U	R	1.6 U	
alpha-BHC	0.17 UJ	0.16 U	0.17 U	0.16 U	0.16 U	1.6 U	
alpha-Chlordane	6.0 J	7.7 J	17 J	0.98 J	12 J	29	
delta-BHC	0.17 UJ	0.16 U	0.17 U	0.16 U	0.16 U	1.8 J	
Dieldrin	0.57 J	0.33 J	0.94 J	2.5 J	0.70 J	3.2 U	
Endosulfan I	0.45 J	0.16 U	0.17 U	0.44 J	0.16 U	1.6 U	
Endosulfan II	0.33 UJ	0.33 U	0.34 U	0.33 U	0.31 U	5.2	
Endosulfan Sulfate	0.33 UJ	0.33 U	0.41 J	0.33 U	0.31 U	3.2 U	
Endrin	0.48 J	1.3 J	1.1 J	0.92 J	0.97 J	3.6 J	
Endrin Aldehyde	2.0 J	2.4 J	3.6 J	0.33 U	1.3 J	9.0 J	
gamma-BHC	0.17 UJ	0.16 U	0.17 U	0.16 U	0.16 U	1.6 U	
gamma-Chlordane	0.98 J	1.9 J	26 J	0.59 J	6.8 J	19 J	
Heptachlor Epoxide	0.17 J	0.16 U	0.17 U	0.16 U	0.49 J	1.6 U	
PCBs (ug/Kg)							
Aroclor-1248	43 J	60 J	170 J	35 J	28 J	240 J	
Aroclor-1260	83	90	190	11	79	420	
Total Metals (mg/Kg)							
Aluminum	6100 J	20300	24100	10100	13500 J	11300 J	
Antimony	3.9 J	8.9 J	9.2 J	5.2 J	3.8 J	2.0 J	
Arsenic	184	1180	839	182	236	258	
Barium	65.6	143	169	66.5	44.2	181	
Beryllium	0.76 J	1.8	2.3	2.9	1.2 J	0.93 J	
Cadmium	17.7	15.1	16.0	7.4	15.3	14.1	
Calcium	13400	7300	6860	11800	11100	8290	
Chromium	537 J	3890	4340	226	1090 J	5590 J	
Cobalt	23.1 J	44.3	54.9	18.7	28.3 J	26.9 J	
Copper	306	1010	1310	557	1060	613	
Iron	16000 J	99600	85100	19800	18500 J	20800 J	
Lead	157 J	469	678	197	450 J	546 J	
Magnesium	1300	2780	2930	1300	1530	2170	
Manganese	956	1630	1580	677	711	268	
Mercury	1.3 J	7.5	5.5	0.98	1.3 J	0.15	
Nickel	18.9 J	42.5	46.7	14.6	27.5 J	29.8 J	
Potassium	243 J	894	1050	342 U	454 J	531 J	

TABLE 3-1. ANALYTES DETECTED IN 1997 SEDIMENT SAMPLES [1,2]

M&E SAMPLE ID:	SED-15-01	SED-18-02	SED-18-03	SED-19-01	SED-20-01	SED-21-01	SED-21-05
DAS SAMPLE NUMBER:	DAM340	DAM347	DAM348	DAM354	DAM339	DAM335	DAM337
DATE SAMPLED:	11/17/97	11/18/97	11/18/97	11/19/97	11/17/97	11/14/97	11/14/97
REMARKS:	-----	-----	-----	-----	-----	FD of SED-21-05	FD of SED-21-01
Selenium	1.2 UJ	8.0 J	9.0 J	5.6	3.3 J	3.2 J	
Silver	0.29 J	0.74 J	0.62 J	0.12 UJ	0.29 J	0.30 J	
Sodium	642	648 U	551 U	706 U	612	796	
Thallium	2.4 J	1.0 U	1.9 U	1.5 U	0.44 UJ	0.44 UJ	
Vanadium	22.4	76.0	95.9	25.4	38.2	46.2	
Zinc	2490 J	4020	3600	1080	2380 J	4940 J	
AVS-SEM (umoles/g)							
Arsenic	0.47 J	3.43 J	3.00 J	0.52 J	1.12 J	0.19 J	
Cadmium	0.20 J	0.11	0.08	0.05 U	0.09 J	0.09 UJ	
Copper	0.05 UJ	2.18	4.11	0.38	1.29 J	0.05 UJ	
Lead	0.81 J	1.70	2.38	0.60	1.43 J	1.68 J	
Nickel	0.52 J	0.47 J	0.61 J	0.15 J	0.72 J	0.17 J	
Sulfide	31.3	17.1	15.9	6.88	17.7	28.0	
Zinc	26.1 J	19.5 J	18.9 J	9.55 J	20.6 J	25.7 J	
SEM/AVS Ratio	0.88	1.40	1.64	1.55	1.36	0.99	
TCO (mg/Kg)							
Total Combustible Organics	702000 J	361000 J	423000 J	686000 J	441000 J	344000 J	

NOTES:

(1) Validated data for all sediment and field QC samples collected during M&E's field investigation are reported in Appendix B.

(2) Data presented for an analyte if the analyte was detected in at least one sediment sample

FD - Field duplicate

J - Quantitation is approximate due to limitations identified in the quality control review

U - Value reported is the sample-specific detection limit

R - Value is rejected

UJ - Sample-specific detection limit is approximate due to limitations identified in the quality control review

TABLE 3-1. ANALYTES DETECTED IN 1997 SEDIMENT SAMPLES [1,2]

M&E SAMPLE ID:	SED-22-02	SED-24-03	SED-25-02
DAS SAMPLE NUMBER:	DAM321	DAM320	DAM346
DATE SAMPLED:	11/12/97	11/12/97	11/18/97
REMARKS:	-----	-----	-----
VOCs (ug/Kg)			
Benzene	27 UJ	9 UJ	4 J
Chloroform	68 UJ	23 UJ	12 UJ
cis-1,2-Dichloroethene	73 J	23 UJ	12 UJ
Ethylbenzene	27 UJ	9 UJ	5 UJ
m/p-Xylene	68 UJ	23 UJ	12 UJ
Naphthalene	205 U	69 U	36 UJ
Tetrachloroethene	3164	69 U	36 UJ
trans-1,2-Dichloroethene	205 U	69 U	36 UJ
Trichloroethene	803	23 UJ	12 UJ
Vinyl chloride	205 U	69 U	36 UJ
PAHs (ug/Kg)			
2-Methylnaphthalene	11 J	23 J	22 J
Acenaphthene	R	50 J	69 J
Acenaphthylene	8 J	44 J	22 J
Anthracene	46 J	250	330
Benzo(a)anthracene	300	960	1300
Benzo(a)pyrene	200	790 J	1300
Benzo(b)fluoranthene	440	880	1500 J
Benzo(g,h,i)perylene	190	550 J	650
Benzo(k)fluoranthene	290	400	740 J
Chrysene	400	920	1400
Dibenz(a,h)anthracene	44 J	120 J	220
Fluoranthene	840	2600	2500
Fluorene	23 J	130	120
Indeno(1,2,3-cd)pyrene	220	620 J	670
Naphthalene	24 J	23 J	32 J
Phenanthrene	490	1300	1600
Pyrene	610	2400	2300
PAH-SIMS (ug/Kg)			
Naphthalene	25 J		
2-Methylnaphthalene	13 J		
Acenaphthylene	12 J		
Acenaphthene	11 J		
Fluorene	26 J		
Dibenz(a,h)anthracene	36 J		

TABLE 3-1. ANALYTES DETECTED IN 1997 SEDIMENT SAMPLES [1,2]

M&E SAMPLE ID:	SED-22-02	SED-24-03	SED-25-02
DAS SAMPLE NUMBER:	DAM321	DAM320	DAM346
DATE SAMPLED:	11/12/97	11/12/97	11/18/97
REMARKS:	-----	-----	-----
Pesticides (ug/Kg)			
4,4'-DDD	9.6 J	390	11 J
4,4'-DDE	31	37	4.4 J
4,4'-DDT	2.7 J	24 J	2.1 J
Aldrin	0.15 U	1.6 U	0.16 U
alpha-BHC	0.15 U	1.6 U	0.16 U
alpha-Chlordane	1.2 J	2.0 J	1.3 J
delta-BHC	0.16 J	1.6 U	0.16 U
Dieldrin	0.38 J	3.2 U	0.32 U
Endosulfan I	0.18 J	1.6 U	0.16 U
Endosulfan II	0.48 J	3.2 U	0.33 J
Endosulfan Sulfate	0.31 U	3.2 U	0.32 U
Endrin	0.31 U	3.2 U	0.98 J
Endrin Aldehyde	3.3 J	5.9 J	4.4 J
gamma-BHC	0.15 U	1.6 U	0.16 U
gamma-Chlordane	0.19 J	4.2	1.3 J
Heptachlor Epoxide	0.29 J	1.6 U	0.36 J
PCBs (ug/Kg)			
Arocior-1248	8.1 J	290 J	56 J
Arocior-1260	29	200	47
Total Metals (mg/Kg)			
Aluminum	2700 J	8440 J	7190
Antimony	8.0 J	1.2 J	0.64 J
Arsenic	6.6	30.7	5.4
Barium	32.9	43.6	48.5
Beryllium	0.48 J	0.80 J	0.37
Cadmium	0.61	2.0	0.78 J
Calcium	19600	2410	2150
Chromium	11.7 J	410 J	26.1
Cobalt	2.7 J	12.1 J	8.1
Copper	26.0	130	52.7
Iron	2710 J	13200 J	14700
Lead	3970 J	566 J	210
Magnesium	1370	2880	3490
Manganese	36.7	131	190
Mercury	0.50	0.71	0.10
Nickel	9.2 J	23.7 J	14.6
Potassium	260 J	1170 J	1210

TABLE 3-1. ANALYTES DETECTED IN 1997 SEDIMENT SAMPLES [1,2]

M&E SAMPLE ID:	SED-22-02	SED-24-03	SED-25-02
DAS SAMPLE NUMBER:	DAM321	DAM320	DAM346
DATE SAMPLED:	11/12/97	11/12/97	11/18/97
REMARKS:	-----	-----	-----
Selenium	8.1 J	0.91 J	0.48 UJ
Silver	0.22 J	2.5 J	0.20 J
Sodium	546	516	187 U
Thallium	0.44 UJ	0.12 UJ	0.14 U
Vanadium	38.8	80.3	29.7 J
Zinc	34.2 J	251 J	178
AVS-SEM (umoles/g)			
Arsenic	0.05 U	0.05 U	0.05 U
Cadmium	0.05 U	0.05 U	0.05 U
Copper	0.53 J	0.05 UJ	0.11
Lead	20.4 J	1.79 J	0.90
Nickel	0.35 J	0.38 J	0.05 J
Sulfide	0.050 U	10.2	2.03
Zinc	2.10 J	3.69 J	1.84 J
SEM/AVS Ratio	467.6	0.57	1.43
TCO (mg/Kg)			
Total Combustible Organics	693000 J	153000 J	59200 J

NOTES:

[1] Validated data for all sediment and field QC samples collected during M&E's field investigation are reported in Appendix B.

[2] Data presented for an analyte if the analyte was detected in at least one sediment sample

FD - Field duplicate

J - Quantitation is approximate due to limitations identified in the quality control review

U - Value reported is the sample-specific detection limit

R - Value is rejected

UJ - Sample-specific detection limit is approximate due to limitations identified in the quality control review

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4.1 Comparison of 1995 and 1997 Sediment Data

The 1995 and 1997 sediment data were compared with each other in order to identify any differences between data sets in terms of the analytical methods employed, the locations where samples were collected, and the time frame between collection of samples. This is helpful in understanding how the data can be used together and if any time or spatial trends are important.

Tables 4-1 and 4-2 summarize the 1995 and 1997 sediment data in terms of the analytes detected, the range of detected values, the sample site and locations where the maximum detected value was found, the frequency of detection, and, where applicable, the range of sample-specific detection limits. The data sets used for both years contained only the locations that were sampled by M&E in 1997. Both M&E's and FW's data were handled in the same manner. The treatment of data used to obtain the summary tables is described in Appendix E. In comparing the tables, it should be noted that for some parameters, nondetected data were rejected for certain 1995 sample locations. This can be seen in the frequency of detection, when fewer than 28 sample locations are reported for the total number of locations.

Similar to the 1995 data, PAHs were the most prevalently detected organic compounds in 1997 and were detected in higher concentrations than other organic compounds. Although PAHs were detected at all of the 1997 sample locations compared to most of the 1995 sample locations, the range of concentrations detected between the two data sets is similar. The highest individual concentrations were detected for more PAHs at the SD-07 site in both data sets. Also, the highest detected concentrations tended to occur with the higher molecular weight PAHs in both data sets. In addition to PAHs, a few other semivolatile organic compounds (SVOCs) were detected in 1995. Due to their prevalence at the site and their associated risks, PAHs were the only SVOCs analyzed for in 1997.

Pesticides were also frequently detected in both the 1995 and 1997 data sets. Like PAHs, pesticides were detected at more sample locations in 1997 compared to 1995. The frequency of detection was above 70% for eight pesticides in the 1997 data set. Many of the same pesticides were detected in both data sets, with the DDT and chlordane groups being the predominant types in terms of frequency of detection and concentrations.

PCB Aroclor 1260 was detected in two locations during FW's 1995 sampling effort. In 1997, Aroclors 1248 and 1260 were detected in all 28 of the locations sampled, including the two reference locations. Comparing the two data sets, the range of concentrations detected are not substantially different between each set. However, the widespread detection of Aroclor 1260 may be attributed to the lower detection limit for the DAS analyses in 1997 relative to the RAS analyses conducted in 1995.

Although relatively few volatile organic compounds (VOCs) were also detected during both sampling periods, the types of VOCs reported differed. For instance, in 1995 ketones were found in relatively high concentrations compared to the three chlorinated VOCs that were detected.

TABLE 4-1. DATA SUMMARY FOR ANALYTES DETECTED IN THE 1997 SEDIMENT SAMPLES [1,2,3]

Parameter/Analyte	Range of Detected Conc. Minimum	Range of Detected Conc. Maximum	Maximum Location	Frequency of Detection	Range of SSDLs Minimum	Range of SSDLs Maximum
Volatile Organic Compounds (ug/Kg)						
cis-1,2-Dichloroethene	7	562	SD-20-01-ME	18 / 26	9	225
trans-1,2-Dichloroethene	387	387	SD-11-01-ME	1 / 26	28	343
Trichloroethene	6	2,025	SD-20-01-ME	14 / 26	9	114
Tetrachloroethene	3,164	3,164	SD-22-02-ME	1 / 26	28	343
Vinyl chloride	255	255	SD-11-01-ME	1 / 26	28	343
Benzene	6	22	SD-21-01-ME	8 / 26	4	225
Ethylbenzene	5	9	SD-06-03-ME	4 / 26	4	46
Xylene, m/p-	10	25	SD-06-03-ME	2 / 26	9	114
Polycyclic Aromatic Hydrocarbons (ug/Kg) [4]						
Naphthalene	12	1,300	SD-21-01-ME	26 / 26	1	67
2-Methylnaphthalene	10	140	SD-21-01-ME	24 / 26	1	67
Acenaphthene	3	230	SD-07-10-ME	26 / 26	1	67
Acenaphthylene	1	170	SD-04-02-ME	26 / 26	1	67
Fluorene	14	640	SD-07-02-ME	26 / 26	1	67
Phenanthrene	160	12,000	SD-07-10-ME	26 / 26	67	67
Anthracene	18	890	SD-07-10-ME	26 / 26	67	67
Fluoranthene	410	23,000	SD-07-10-ME	26 / 26	67	67
Pyrene	340	15,000	SD-07-10-ME	26 / 26	67	67
Benzo(a)anthracene	130	9,600	SD-07-10-ME	26 / 26	67	67
Chrysene	230	10,000	SD-07-10-ME	26 / 26	67	67
Benzo(b)fluoranthene	290	16,000	SD-07-10-ME	26 / 26	67	67
Benzo(k)fluoranthene	200	4,100	SD-07-02-ME	25 / 26	67	67
Benzo(a)pyrene	160	10,000	SD-07-10-ME	26 / 26	67	67
Dibenz(a,h)anthracene	44	2,000	SD-07-10-ME	26 / 26	2	67
Benzo(g,h,i)perylene	120	5,300	SD-07-10-ME	26 / 26	67	67
Indeno(1,2,3-cd)pyrene	140	6,900	SD-07-10-ME	26 / 26	67	67
Pesticides (ug/Kg)						
4,4'-DDD	1.9	310	SD-13-03-ME	26 / 26	0.31	3.9
4,4'-DDE	0.9	160	SD-10-01-ME	26 / 26	0.31	3.9
4,4'-DDT	1.1	21	SD-04-02-ME	24 / 26	0.31	3.9
alpha-BHC	0.17	0.17	SD-01-07-ME	1 / 26	0.15	1.9
delta-BHC	0.16	25	SD-06-03-ME	10 / 26	0.15	1.9
gamma-BHC (Lindane)	0.23	0.34	SD-12-03-ME	2 / 26	0.15	1.9
alpha-Chlordane	0.98	93	SD-13-03-ME	26 / 26	0.15	1.9
gamma-Chlordane	0.19	650	SD-13-03-ME	26 / 26	0.15	1.9
Aldrin	0.21	18	SD-10-01-ME	3 / 25	0.15	1.9
Dieldrin	0.33	14	SD-10-01-ME	19 / 26	0.31	3.9
Endrin	0.48	17	SD-06-03-ME	22 / 26	0.31	3.9
Endrin Aldehyde	0.87	27	SD-07-02-ME	20 / 26	0.31	3.9
Endosulfan I	0.18	0.45	SD-15-01-ME	4 / 26	0.15	1.9
Endosulfan II	0.21	5.2	SD-21-01-ME	9 / 26	0.31	3.9
Endosulfan Sulfate	0.33	0.78	SD-01-07-ME	7 / 26	0.31	3.9
Heptachlor Epoxide	0.17	1.6	SD-10-01-ME	8 / 26	0.15	1.9
PCBs (ug/Kg)						
Aroclor 1248	8.1	560	SD-10-01-ME	26 / 26	2.6	3.5
Aroclor 1260	11	420	SD-21-01-ME	26 / 26	2.6	3.5

TABLE 4-1. DATA SUMMARY FOR ANALYTES DETECTED IN THE 1997 SEDIMENT SAMPLES [1,2,3]

Parameter/Analyte	Range of Detected Conc. Minimum	Range of Detected Conc. Maximum	Maximum Location	Frequency of Detection	Range of SSDLs Minimum	Range of SSDLs Maximum
Metals - Low Concentration (mg/Kg)						
Aluminum	2,700	29,250	SD-10-01-ME	26 / 26	3.5	8.2
Antimony	1.4	117	SD-12-03-ME	25 / 26	0.067	0.46
Arsenic	6.6	4,550	SD-12-03-ME	26 / 26	0.22	0.51
Barium	33	181	SD-21-01-ME	26 / 26	0.018	0.043
Beryllium	0.295	2.9	SD-19-01-ME	26 / 26	0.027	0.064
Cadmium	0.61	19	SD-04-02-ME	26 / 26	0.0048	0.81
Calcium	1,340	19,600	SD-22-02-ME	26 / 26	1.6	3.8
Chromium	12	5,590	SD-21-01-ME	26 / 26	0.055	0.13
Cobalt	2.7	55	SD-18-03-ME	26 / 26	0.37	0.88
Copper	26	2,315	SD-10-01-ME	26 / 26	0.082	0.19
Iron	2,710	107,000	SD-12-03-ME	26 / 26	0.57	1.3
Lead	157	3,970	SD-22-02-ME	26 / 26	0.26	0.62
Magnesium	1,300	5,330	SD-07-05-ME	26 / 26	0.82	8.1
Manganese	37	1,630	SD-06-03-ME	26 / 26	0.018	0.043
Mercury	0.15	45	SD-12-03-ME	26 / 26	0.0037	0.0059
Nickel	9.2	47	SD-18-03-ME	26 / 26	0.15	0.34
Potassium	243	1,620	SD-07-05-ME	23 / 26	2.7	6.3
Selenium	0.53	30	SD-12-03-ME	24 / 26	0.052	0.69
Silver	0.18	1.2	SD-12-03-ME	25 / 26	0.0094	0.043
Sodium	94	798	SD-13-03-ME	16 / 26	0.22	0.51
Thallium	2.4	2.4	SD-15-01-ME	1 / 26	0.038	0.17
Vanadium	22	127	SD-12-03-ME	26 / 26	0.073	0.17
Zinc	34	5,170	SD-02-02-ME	26 / 26	0.16	0.39
Acid Volatile Sulfide/Simultaneously Extracted Metals -- AVS/SEM (mg/Kg)						
Sulfide	122	4,141	SD-02-02-ME	25 / 26	--	--
Arsenic	3.7	339	SD-10-02-ME	21 / 26	--	--
Cadmium	5.6	22	SD-15-01-ME	11 / 26	--	--
Copper	4.0	261	SD-18-03-ME	15 / 26	--	--
Lead	124	4,227	SD-22-02-ME	26 / 26	--	--
Nickel	4.7	58	SD-03-02-ME	26 / 26	--	--
Zinc	138	2,419	SD-02-02-ME	26 / 26	--	--
SEM/AVS Ratio (umoles/g)	0.22	468	SD-22-02-ME	26 / 26	--	--
Total Combustible Organics (mg/Kg)						
Total Combustible Organics	59,100	912,000	SD-12-01-ME	26 / 26	2,000	2,000

NOTES:

1. M&E's analytical data are presented in Appendix B and detected data are summarized in Table 3-1. Field duplicate samples were averaged together as described in Appendix E prior to incorporation into summaries.
2. Data summaries were developed assuming positive detections and included approximated values (due to validation qualifiers) and included approximated values less than SSDLs.
3. The two reference locations that were re-sampled are not included in the data set (SD-24 and SD-25).
4. PAH results combined from both full scan and SIM analyses.

-- Not applicable

SSDLs -- Sample-Specific Detection Limits

TABLE 4-2. DATA SUMMARY FOR ANALYTES DETECTED IN THE 1995 SEDIMENT SAMPLES [1,2,3]

Parameter/Analyte	Range of Detected Conc. Minimum	Range of Detected Conc. Maximum	Maximum Location	Frequency of Detection (3)	Range of Nondetected Conc. (4) Minimum	Range of Nondetected Conc. (4) Maximum
Volatile Organic Compounds (ug/Kg)						
1,2-Dichloroethene(total)	9	29	SD-15-01-FW	4 / 17	12	29
Tetrachloroethene	120	120	SD-22-02-FW	1 / 14	12	29
Methylene Chloride	28	28	SD-22-02-FW	1 / 14	12	56
2-Butanone	9	290	SD-19-01-FW	11 / 19	12	26
Acetone	210	590	SD-20-01-FW	4 / 18	16	430
Semivolatile Organic Compounds (ug/Kg)						
Naphthalene	83	160	SD-04-03-FW	3 / 14	410	2,900
2-Methylnaphthalene	130	130	SD-07-10-FW	1 / 14	410	2,900
Acenaphthylene	250	480	SD-07-10-FW	3 / 14	410	2,900
Acenaphthene	100	340	SD-04-03-FW	6 / 15	410	2,900
Fluorene	180	530	SD-07-05-FW	7 / 15	410	890
Phenanthrene	74	6,300	SD-06-03-FW	14 / 18	410	890
Anthracene	75	1,300	SD-06-03-FW	10 / 15	410	890
Fluoranthene	210	15,000	SD-07-05-FW	21 / 23	410	890
Pyrene	100	12,000	SD-07-05-FW	20 / 22	410	870
Benzo(a)anthracene	100	6,400	SD-07-05-FW	16 / 19	410	890
Chrysene	150	9,800	SD-07-05-FW	16 / 19	410	890
Benzo(b)fluoranthene	120	12,000	SD-07-05-FW	20 / 23	410	870
Benzo(k)fluoranthene	110	14,000	SD-07-05-FW	18 / 21	410	870
Benzo(a)pyrene	130	6,300	SD-07-05-FW	16 / 19	410	890
Dibenz(a,h)anthracene	180	1,100	SD-04-03-FW	6 / 16	410	2,900
Benzo(g,h,i)perylene	140	2,300	SD-04-03-FW	13 / 17	410	890
Indeno(1,2,3-cd)pyrene	79	2,600	SD-07-05-FW	16 / 19	410	890
Dibenzofuran	87	170	SD-04-03-FW	3 / 14	410	2,900
Bis(2-ethylhexyl)phthalate	140	13,000	SD-07-05-FW	13 / 23	410	3,300
Butylbenzylphthalate	230	620	SD-07-05-FW	3 / 16	410	2,900
Di-n-octylphthalate	430	430	SD-07-05-FW	1 / 15	410	2,900
N-Nitrosodiphenylamine	100	560	SD-10-01-FW	4 / 16	410	2,900
Carbazole	130	580	SD-07-05-FW	7 / 16	410	2,900
Pesticides (ug/Kg)						
4,4'-DDD	2.3	140	SD-04-03-FW	16 / 22	4.1	43
4,4'-DDE	1.7	125	SD-10-01-FW	19 / 23	4.1	43
4,4'-DDT	0.45	47	SD-07-10-FW	10 / 19	4.1	49
alpha-BHC	0.32	2.7	SD-07-02-FW	4 / 15	2.1	25
beta-BHC	1.5	3.9	SD-07-05-FW	6 / 17	2.1	25
delta-BHC	1.8	4.2	SD-07-02-FW	2 / 13	2.1	25
gamma-BHC (Lindane)	1.4	1.4	SD-07-02-FW	1 / 12	2.1	25
alpha-Chlordane	1.6	60	SD-21-01-FW	14 / 21	2.1	22
gamma-Chlordane	0.34	36	SD-07-05-FW	12 / 20	2.1	25
Aldrin	0.47	1.6	SD-13-03-FW	4 / 15	2.1	25
Dieldrin	1.3	5.7	SD-07-05-FW	8 / 18	4.1	49
Endrin	0.2	16	SD-21-01-FW	6 / 16	4.1	49
Endrin aldehyde	1	10	SD-13-03-FW	5 / 14	4.1	49
Endrin ketone	2.3	2.3	SD-07-02-FW	1 / 12	4.1	49
Endosulfan I	0.62	68	SD-21-01-FW	5 / 15	2.1	25
Endosulfan II	0.69	5.2	SD-07-02-FW	3 / 14	4.1	49
Endosulfan sulfate	2.1	2.1	SD-07-05-FW	1 / 13	4.1	49
Heptachlor	0.18	0.29	SD-07-05-FW	3 / 13	2.1	25
Heptachlor epoxide	1	3.7	SD-07-05-FW	4 / 13	2.1	25
Methoxychlor	6.3	12	SD-07-10-FW	2 / 12	21	250

TABLE 4-2. DATA SUMMARY FOR ANALYTES DETECTED IN THE 1995 SEDIMENT SAMPLES [1,2,3]

Parameter/Analyte	Range of Detected Conc. Minimum	Range of Detected Conc. Maximum	Maximum Location	Frequency of Detection (3)	Range of Nondetected Conc. (4) Minimum	Range of Nondetected Conc. (4) Maximum
PCBs (ug/Kg)						
Aroclor 1260	17	310	SD-13-03-FW	2 / 13	41	490
Inorganics (mg/Kg)						
Aluminum	3,560	30,200	SD-13-01-FW	26 / 26	--	--
Antimony	0.33	61	SD-13-01-FW	20 / 23	0.42	2.1
Arsenic	3.6	4,210	SD-13-01-FW	25 / 26	3.7	3.7
Barium	19	155	SD-13-03-FW	26 / 26	--	--
Beryllium	0.3	1.7	SD-10-02-FW	20 / 24	0.11	0.32
Cadmium	0.2	38	SD-01-06-FW	24 / 26	0.035	5.7
Calcium	1,300	15,000	SD-15-01-FW	26 / 26	--	--
Chromium	7.5	2,335	SD-19-01-FW	26 / 26	--	--
Cobalt	1.4	45	SD-19-01-FW	26 / 26	--	--
Copper	10	2,340	SD-13-01-FW	26 / 26	--	--
Iron	2,310	163,500	SD-19-01-FW	26 / 26	--	--
Lead	5.7	1,270	SD-13-01-FW	26 / 26	--	--
Magnesium	715	7,610	SD-13-03-FW	26 / 26	--	--
Manganese	34	1,400	SD-15-01-FW	26 / 26	--	--
Mercury	0.063	20	SD-13-01-FW	23 / 26	0.021	0.1
Nickel	4.4	53	SD-13-03-FW	26 / 26	--	--
Potassium	195	2,030	SD-13-03-FW	22 / 25	369	610
Selenium	2.3	26	SD-13-01-FW	12 / 24	0.43	2.7
Silver	0.87	2	SD-13-01-FW	3 / 17	0.22	0.79
Sodium	141	1,300	SD-18-03-FW	21 / 26	37	404
Thallium	0.47	3.8	SD-07-10-FW	11 / 17	1.2	1.6
Vanadium	12	120	SD-13-03-FW	26 / 26	--	--
Zinc	23	7,380	SD-01-06-FW	26 / 26	--	--
Cyanide	1.8	1.8	SD-07-05-FW	1 / 15	0.59	1.6
Acid Volatile Sulfide/Simultaneously Extracted Metals -- AVS/SEM (mg/Kg)						
Sulfide	13	13,482	SD-07-05-FW	26 / 26	--	--
Cadmium	0.23	34	SD-15-01-FW	24 / 26	0.1	0.37
Copper	42	2,270	SD-13-01-FW	20 / 26	12.3	138
Lead	7.4	1,590	SD-13-01-FW	25 / 26	34	34
Mercury	0.18	1	SD-13-03-FW	2 / 26	0.003	0.02
Nickel	39	258	SD-19-01-FW	8 / 26	2.3	221
SEM/AVS Ratio (umoles/g)	0	70	SD-13-03-FW	26 / 26	--	--
Total Combustible Organics/Total Organic Carbon (mg/Kg)						
Total Combustible Organics	36,700	432,000	SD-15-01-FW	19 / 19	--	--
Total Organic Carbon	6,525	288,000	SD-21-01-FW	7 / 7	--	--

NOTES:

1. FW's analytical data are presented in the Preliminary Data Compendium (1996). Field duplicate samples were averaged together as described in Appendix E prior to incorporation into summaries. The sample group only includes sample station/locations that were re-sampled by M&E.
2. Data summaries were developed assuming positive detections and include approximated values.
3. The two reference locations that were re-sampled are not included in the data set (SD-24 and SD-25).
4. Sample-specific detection limits were not available for the data; therefore, nondetected values are shown.

-- Not applicable or the nondetected values are not available because the analyte was detected in all samples in the data set.

In contrast, five chlorinated VOCs were reported in 1997 and concentrations were higher than those found in 1995. In addition, three aromatic VOCs were found in 1997 (benzene, ethylbenzene, and xylene) but were not reported in any 1995 sample locations.

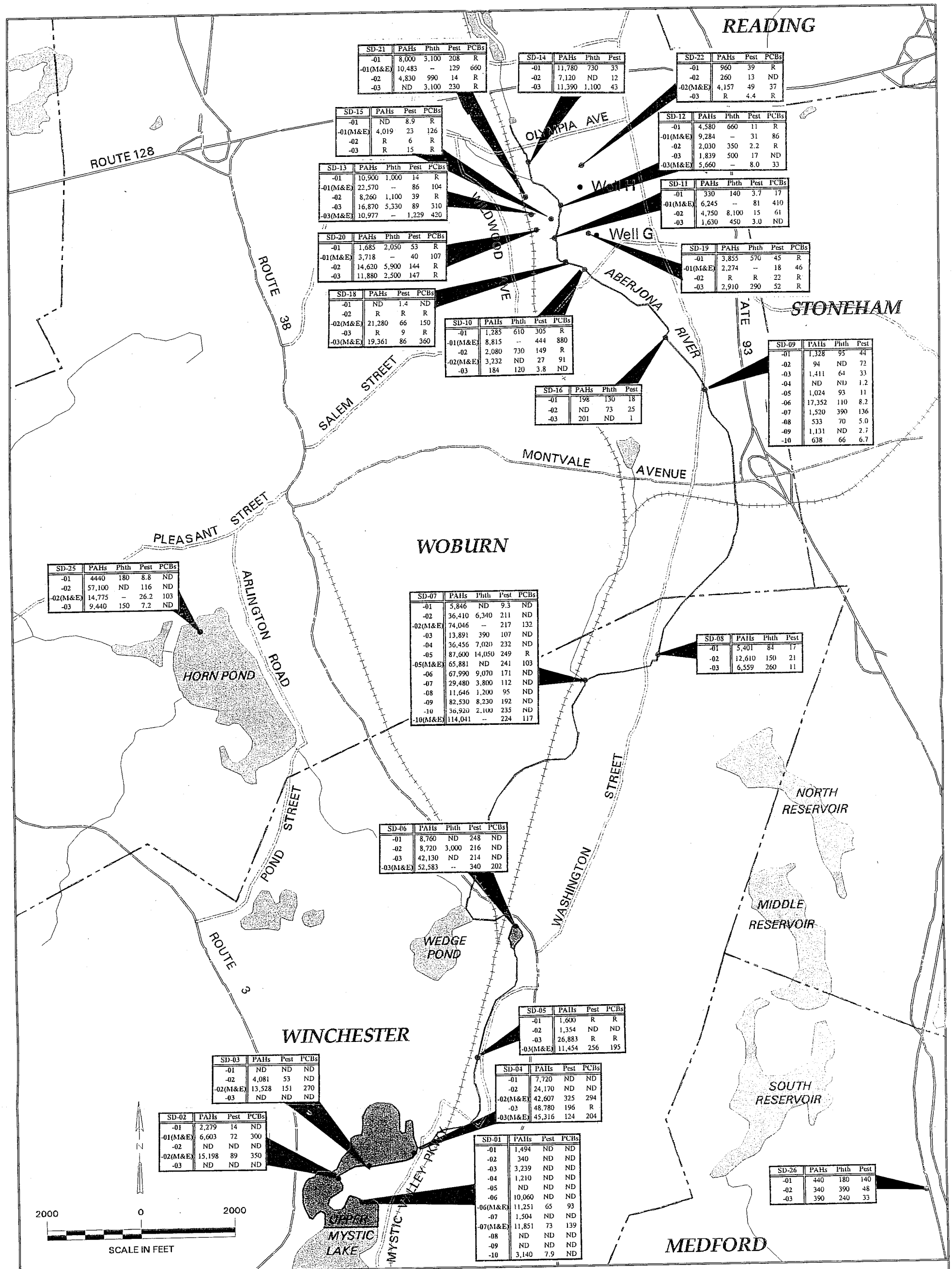
Heavy metals were detected in over 75% of the sample locations in both 1995 and 1997 including antimony, arsenic, cadmium, chromium, cobalt, copper, lead, manganese, mercury, nickel, vanadium, and zinc. In general, concentration ranges for individual metals did not substantially differ between the two data sets. In contrast, the 1995 data exhibited higher AVS/SEM metal concentrations for copper and zinc compared to the 1997 data. Also, arsenic and zinc were reported by AVS/SEM at most of the sample locations in 1997, but not found at any locations in 1995.

Relatively elevated TCO levels were found in both the 1995 and 1997 data sets. The maximum TCO level reported in 1997 was greater than twice the level reported in 1995.

4.2 Data Trends

To discuss data trends throughout the study area, data are discussed in terms of organic chemical groups and metals. The predominant types of organics detected consist of PAHs, phthalate compounds, pesticides, PCBs, and VOCs (aromatic, chlorinated, and ketones). For each organic group, detected concentrations for analytes with a related chemical type of that group are summed together to provide a total concentration for that organic group. Figure 4-1 presents total concentrations by sediment site/location for PAHs, pesticides, and PCBs, while Figure 4-2 presents total concentrations for aromatic VOCs, chlorinated VOCs, and ketones. The four heavy metals that were selected to represent trends include arsenic, chromium, lead, and mercury, which are shown on Figure 4-3.

Overall, PAHs and pesticides were detected in two or more sediment locations within each of the 28 sites sampled. PAHs were found in over 90% of the locations and pesticides were found in over 85% of the sediment locations sampled. Generally, sediment sites and locations exhibiting highest total PAH concentrations tended to have the more elevated total pesticide concentrations. The highest PAH and pesticide concentrations tended to occur at SED-07 compared to other sites. As reported by FW (1996), the physical characteristics of this site (a spillway, dam, and sand bar) contribute to being an area subject to accumulation of sediments and thus contaminants. Other sites with consistently elevated total PAH and pesticide concentrations include SED-04, SED-06, SED-13, and SED-18. Sites SED-04 and SED-06 are both described as depositional areas near the inlets to water bodies (i.e., Upper Mystic Lake). The predominance of these types of organics is expected given the close proximity of many of the locations to these types of features. The widespread use of pesticides (particularly the DDT and chlordane groups), along railroad lines and public roads as well as water bodies and public areas, was common practice prior to the 1980s. Run-off from these areas would be expected to transport both PAHs and pesticides into the water bodies. These organics would have the tendency to strongly bind to sediment and organic matter, and be further transported



SD-21	PAHs	Phth	Pest	PCBs
-01	8,000	3,100	208	R
-01(M&E)	10,483	--	129	660
-02	4,830	990	14	R
-03	ND	3,100	230	R

SD-14	PAHs	Phth	Pest
-01	11,780	730	33
-02	7,120	ND	12
-03	11,390	1,100	43

SD-22	PAHs	Pest	PCBs
-01	960	39	R
-02	260	13	ND
-02(M&E)	4,157	49	37
-03	R	4.4	R

SD-15	PAHs	Pest	PCBs
-01	ND	8.9	R
-01(M&E)	4,019	23	126
-02	R	6	R
-03	R	15	R

SD-12	PAHs	Phth	Pest	PCBs
-01	4,580	660	11	R
-01(M&E)	9,284	--	31	86
-02	2,030	350	2.2	R
-03	1,839	500	17	ND
-03(M&E)	5,660	--	8.0	33

SD-13	PAHs	Phth	Pest	PCBs
-01	10,900	1,000	14	R
-01(M&E)	22,570	--	86	104
-02	8,260	1,100	39	R
-03	16,870	5,330	89	310
-03(M&E)	10,977	--	1,229	420

SD-11	PAHs	Phth	Pest	PCBs
-01	330	140	3.7	17
-01(M&E)	6,245	--	81	410
-02	4,750	8,100	15	61
-03	1,630	450	3.0	ND

SD-20	PAHs	Phth	Pest	PCBs
-01	1,685	2,050	53	R
-01(M&E)	3,718	--	40	107
-02	14,620	5,900	144	R
-03	11,880	2,500	147	R

SD-19	PAHs	Phth	Pest	PCBs
-01	3,855	570	45	R
-01(M&E)	2,274	--	18	46
-02	R	R	22	R
-03	2,910	290	52	R

SD-18	PAHs	Pest	PCBs
-01	ND	1.4	ND
-02	R	R	R
-02(M&E)	21,280	66	150
-03	R	9	R
-03(M&E)	19,361	86	360

SD-10	PAHs	Phth	Pest	PCBs
-01	1,285	610	305	R
-01(M&E)	8,815	--	444	880
-02	2,080	730	149	R
-02(M&E)	3,232	ND	27	91
-03	184	120	3.8	ND

SD-09	PAHs	Phth	Pest
-01	1,328	95	44
-02	94	ND	72
-03	1,411	64	33
-04	ND	ND	1.2
-05	1,024	93	11
-06	17,352	110	8.2
-07	1,520	390	136
-08	533	70	5.0
-09	1,131	ND	2.7
-10	638	66	6.7

SD-16	PAHs	Phth	Pest
-01	198	130	18
-02	ND	73	25
-03	201	ND	1

SD-25	PAHs	Phth	Pest	PCBs
-01	4440	180	8.8	ND
-02	57,100	ND	116	ND
-02(M&E)	14,775	--	26.2	103
-03	9,440	150	7.2	ND

SD-07	PAHs	Phth	Pest	PCBs
-01	5,846	ND	9.3	ND
-02	36,410	6,340	211	ND
-02(M&E)	74,046	--	217	132
-03	13,891	390	107	ND
-04	36,456	7,020	232	ND
-05	87,600	14,050	249	R
-05(M&E)	65,881	ND	241	103
-06	67,990	9,070	171	ND
-07	29,480	3,800	112	ND
-08	11,646	1,200	95	ND
-09	82,530	8,230	192	ND
-10	36,920	2,100	235	ND
-10(M&E)	114,041	--	224	117

SD-08	PAHs	Phth	Pest
-01	5,401	84	17
-02	12,610	150	21
-03	6,559	260	11

SD-06	PAHs	Phth	Pest	PCBs
-01	8,760	ND	248	ND
-02	8,720	3,000	216	ND
-03	42,130	ND	214	ND
-03(M&E)	52,583	--	340	202

SD-05	PAHs	Pest	PCBs
-01	1,600	R	R
-02	1,354	ND	ND
-03	26,883	R	R
-03(M&E)	11,454	256	195

SD-04	PAHs	Pest	PCBs
-01	7,720	ND	ND
-02	24,170	ND	ND
-02(M&E)	42,607	325	294
-03	48,780	196	R
-03(M&E)	45,316	124	204

SD-03	PAHs	Pest	PCBs
-01	ND	ND	ND
-02	4,081	53	ND
-02(M&E)	13,528	151	270
-03	ND	ND	ND

SD-02	PAHs	Pest	PCBs
-01	2,279	14	ND
-01(M&E)	6,603	72	300
-02	ND	ND	ND
-02(M&E)	15,198	89	350
-03	ND	ND	ND

SD-01	PAHs	Pest	PCBs
-01	1,494	ND	ND
-02	340	ND	ND
-03	3,239	ND	ND
-04	1,210	ND	ND
-05	ND	ND	ND
-06	10,060	ND	ND
-06(M&E)	11,251	65	93
-07	1,504	ND	ND
-07(M&E)	11,851	73	139
-08	ND	ND	ND
-09	ND	ND	ND
-10	3,140	7.9	ND

SD-26	PAHs	Phth	Pest
-01	440	180	140
-02	340	390	48
-03	390	240	33

LEGEND

- Well Location
- Sample Site
- Study Area
- Primary Roads
- Secondary Roads
- Rail Lines
- Bodies of Water

Site No.	PAHs Phth Pest PCBs
Location Numbers	Total Concentration of Detected Analytes in ug/Kg. ND - None Detected R - All Nondetects Rejected -- Not Analyzed

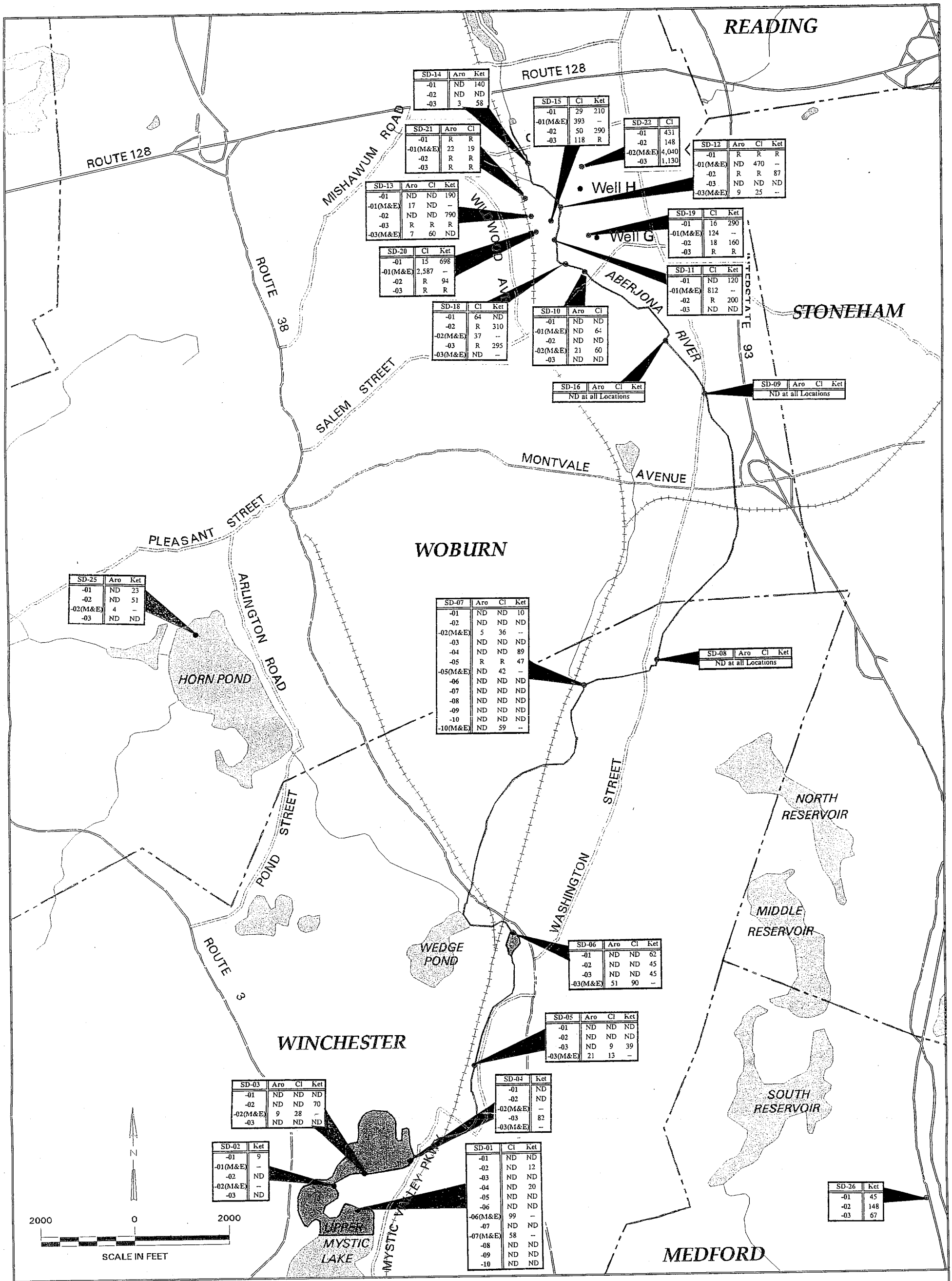
PAHs Polycyclic Aromatic Hydrocarbons
Phth Phthalate Compounds
Pest Pesticides
PCBs Polychlorinated Biphenyl Compounds

NOTES: If an organic group is not shown, no analytes in this group were detected in any of the sediment locations from this site.

M&E sediment locations distinguished from FW sediment locations by (M&E) next to the location number.

FIGURE 4-1.
PAHs, PESTICIDES, AND PCBs DETECTED IN 1995 AND 1997 SEDIMENT SAMPLES WELLS G&H SUPERFUND SITE ABERJONA RIVER STUDY (OPERABLE UNIT 3)

METCALF & EDDY



LEGEND

- Well Location
- Sample Site
- Study Area
- Primary Roads
- Secondary Roads
- Rail Lines
- Bodies of Water

Site No.	Aro	Cl	Ket
Location Numbers	Total Concentration of Detected Analytes in ug/Kg. ND - None Detected R - All Nondetects Rejected -- Not Analyzed		

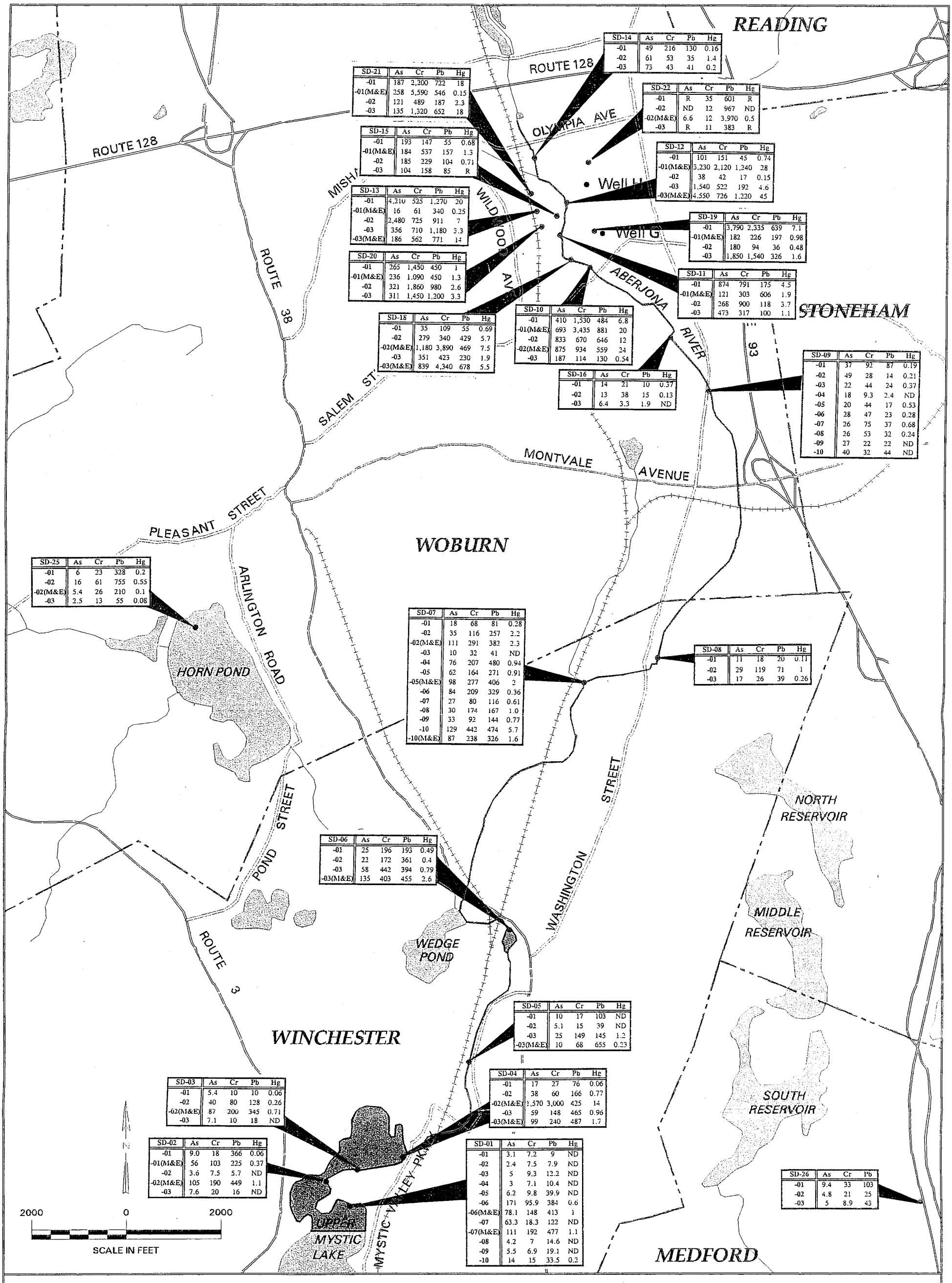
Aro Aromatic Volatile Organic Compounds
Cl Chlorinated Volatile Organic Compounds
Ket Ketones

NOTES: If an organic group is not shown, no analytes in this group were detected in any of the sediment locations from this site.

M&E sediment locations distinguished from FW sediment locations by (M&E) next to the location number.

FIGURE 4-2.
VOLATILE ORGANIC COMPOUNDS DETECTED IN 1995 AND 1997 SEDIMENT SAMPLES WELLS G&H SUPERFUND SITE ABERJONA RIVER STUDY (OPERABLE UNIT 3)

METCALF & EDDY



SD-21	As	Cr	Pb	Hg
-01	187	2,200	722	18
-01(M&E)	258	5,590	546	0.15
-02	121	489	187	2.3
-03	135	1,320	652	18

SD-14	As	Cr	Pb	Hg
-01	49	216	130	0.16
-02	61	53	35	1.4
-03	73	43	41	0.2

SD-22	As	Cr	Pb	Hg
-01	R	35	601	R
-02	ND	12	967	ND
-02(M&E)	6.6	12	3,970	0.5
-03	R	11	383	R

SD-15	As	Cr	Pb	Hg
-01	193	147	55	0.68
-01(M&E)	184	537	157	1.3
-02	185	229	104	0.71
-03	104	158	85	R

SD-12	As	Cr	Pb	Hg
-01	101	151	45	0.74
-01(M&E)	3,230	2,120	1,240	28
-02	38	42	17	0.15
-03	1,540	522	192	4.6
-03(M&E)	4,550	726	1,220	45

SD-13	As	Cr	Pb	Hg
-01	4,210	525	1,270	20
-01(M&E)	16	61	340	0.25
-02	2,480	725	911	7
-03	356	710	1,180	3.3
-03(M&E)	186	562	771	14

SD-19	As	Cr	Pb	Hg
-01	3,790	2,335	639	7.1
-01(M&E)	182	226	197	0.98
-02	180	94	36	0.48
-03	1,850	1,540	326	1.6

SD-20	As	Cr	Pb	Hg
-01	265	1,450	450	1
-01(M&E)	236	1,090	450	1.3
-02	321	1,860	980	2.6
-03	311	1,450	1,200	3.3

SD-11	As	Cr	Pb	Hg
-01	874	791	175	4.5
-01(M&E)	121	303	606	1.9
-02	268	900	118	3.7
-03	473	317	100	1.1

SD-18	As	Cr	Pb	Hg
-01	35	109	55	0.69
-02	279	340	429	5.7
-02(M&E)	1,180	3,890	469	7.5
-03	351	423	230	1.9
-03(M&E)	839	4,340	678	5.5

SD-10	As	Cr	Pb	Hg
-01	410	1,530	484	6.8
-01(M&E)	693	3,435	881	20
-02	833	670	646	12
-02(M&E)	875	934	559	24
-03	187	114	130	0.54

SD-16	As	Cr	Pb	Hg
-01	14	21	10	0.37
-02	13	38	15	0.13
-03	6.4	3.3	1.9	ND

SD-09	As	Cr	Pb	Hg
-01	37	92	87	0.19
-02	49	28	14	0.21
-03	22	44	24	0.37
-04	18	9.3	2.4	ND
-05	20	44	17	0.53
-06	28	47	23	0.28
-07	26	75	37	0.68
-08	26	53	32	0.24
-09	27	22	22	ND
-10	40	32	44	ND

SD-25	As	Cr	Pb	Hg
-01	6	23	328	0.2
-02	16	61	755	0.55
-02(M&E)	5.4	26	210	0.1
-03	2.5	13	55	0.08

SD-07	As	Cr	Pb	Hg
-01	18	68	81	0.28
-02	35	116	257	2.2
-02(M&E)	111	291	382	2.3
-03	10	32	41	ND
-04	76	207	480	0.94
-05	62	164	271	0.91
-05(M&E)	98	277	406	2
-06	84	209	329	0.36
-07	27	80	116	0.61
-08	30	174	167	1.0
-09	33	92	144	0.77
-10	129	442	474	5.7
-10(M&E)	87	238	326	1.6

SD-08	As	Cr	Pb	Hg
-01	11	18	20	0.11
-02	29	119	71	1
-03	17	26	39	0.26

SD-06	As	Cr	Pb	Hg
-01	25	196	193	0.49
-02	22	172	361	0.4
-03	58	442	394	0.79
-03(M&E)	135	403	455	2.6

SD-05	As	Cr	Pb	Hg
-01	10	17	103	ND
-02	5.1	15	39	ND
-03	25	149	145	1.2
-03(M&E)	10	68	655	0.23

SD-04	As	Cr	Pb	Hg
-01	17	27	76	0.06
-02	38	60	166	0.77
-02(M&E)	1,570	3,000	425	14
-03	59	148	465	0.96
-03(M&E)	99	240	487	1.7

SD-03	As	Cr	Pb	Hg
-01	5.4	10	10	0.06
-02	40	80	128	0.26
-02(M&E)	87	200	345	0.71
-03	7.1	10	18	ND

SD-02	As	Cr	Pb	Hg
-01	9.0	18	366	0.06
-01(M&E)	56	103	225	0.37
-02	3.6	7.5	5.7	ND
-02(M&E)	105	190	449	1.1
-03	7.6	20	16	ND

SD-01	As	Cr	Pb	Hg
-01	3.1	7.2	9	ND
-02	2.4	7.5	7.9	ND
-03	5	9.3	12.2	ND
-04	3	7.1	10.4	ND
-05	6.2	9.8	39.9	ND
-06	171	95.9	384	0.6
-06(M&E)	78.1	148	413	1
-07	63.3	18.3	122	ND
-07(M&E)	111	192	477	1.1
-08	4.2	7	14.6	ND
-09	5.5	6.9	19.1	ND
-10	14	15	33.5	0.2

SD-26	As	Cr	Pb
-01	9.4	33	103
-02	4.8	21	25
-03	5	8.9	43

LEGEND

- Well Location
- Sample Site
- Study Area
- Primary Roads
- Secondary Roads
- Rail Lines
- Bodies of Water

Site No.	As Cr Pb Hg
Location Numbers	Concentration of Metal in mg/Kg ND - None Detected R - Nondetected Value was Rejected -- Not Analyzed

As Arsenic
Cr Chromium
Pb Lead
Hg Mercury

NOTES: If an organic group is not shown, no analytes in this group were detected in any of the sediment locations from this site.

M&E sediment locations distinguished from FW sediment locations by (M&E) next to the location number.

FIGURE 4-3.
SELECTED METALS DETECTED IN 1995 AND 1997 SEDIMENT SAMPLES
WELLS G&H SUPERFUND SITE
ABERJONA RIVER STUDY
(OPERABLE UNIT 3)

METCALF & EDDY

downgradient, accumulating in depositional areas and bodies of water with little to no current.

As previously discussed, PCBs were found at all sediment locations sampled in 1997, but only two locations in 1995. The higher concentrations of PCBs detected in 1997 tended to occur at sediment locations exhibiting more elevated concentrations of PAHs and pesticides. The greater frequency of detections in 1997 may be attributed to the lower sample quantitation limits provided by the DAS Analytical Specifications.

In comparison to the above organic compounds, VOCs were less frequently detected during both sampling events, and when detected, concentrations were relatively low. In 1997, chlorinated VOCs were found at 10 of the 12 sites sampled. Sampling site SED-22 exhibited the highest total chlorinated VOC concentrations detected in both 1995 and 1997. Aromatic VOCs on the other hand were found at only 6 of the 12 sites sampled in 1997. Ketones (primarily acetone and 2-butanone) were reported in 11 of the 27 sites sampled in 1995. The majority of the VOCs detected during both sampling events were found in the vicinity of the Well G and Well H locations.

Metals exhibited a pattern of distribution similar to PAHs and pesticides. The range of concentrations between the two data sets is similar. More elevated concentrations of heavy metals tended to occur near roadways and rail lines and were characteristic of depositional areas. Sampling site SD-13 provided the greatest number of maximum metals concentrations in 1995 while the 1997 data did not show one location having a great deal more metals contamination than another location.

Overall, the sediment sampling at the Wells G&H Superfund Site verified the results of the previous sampling performed by FW in 1995. In addition, data gaps were filled using sampling techniques and DAS Analytical Methods specifically written for this site. The Data Quality Objectives and completeness goals were met by the sampling and analysis procedures provided in the QAPP. Sufficient data now exists to develop a site conceptual model and perform a baseline human health and ecological risk assessment for the Aberjona River System within the study area.

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