TECHNICAL REPORT ON THE WOBURN, MASSACHUSETTS WELLS G & H SITE

APPENDICES

March 1989

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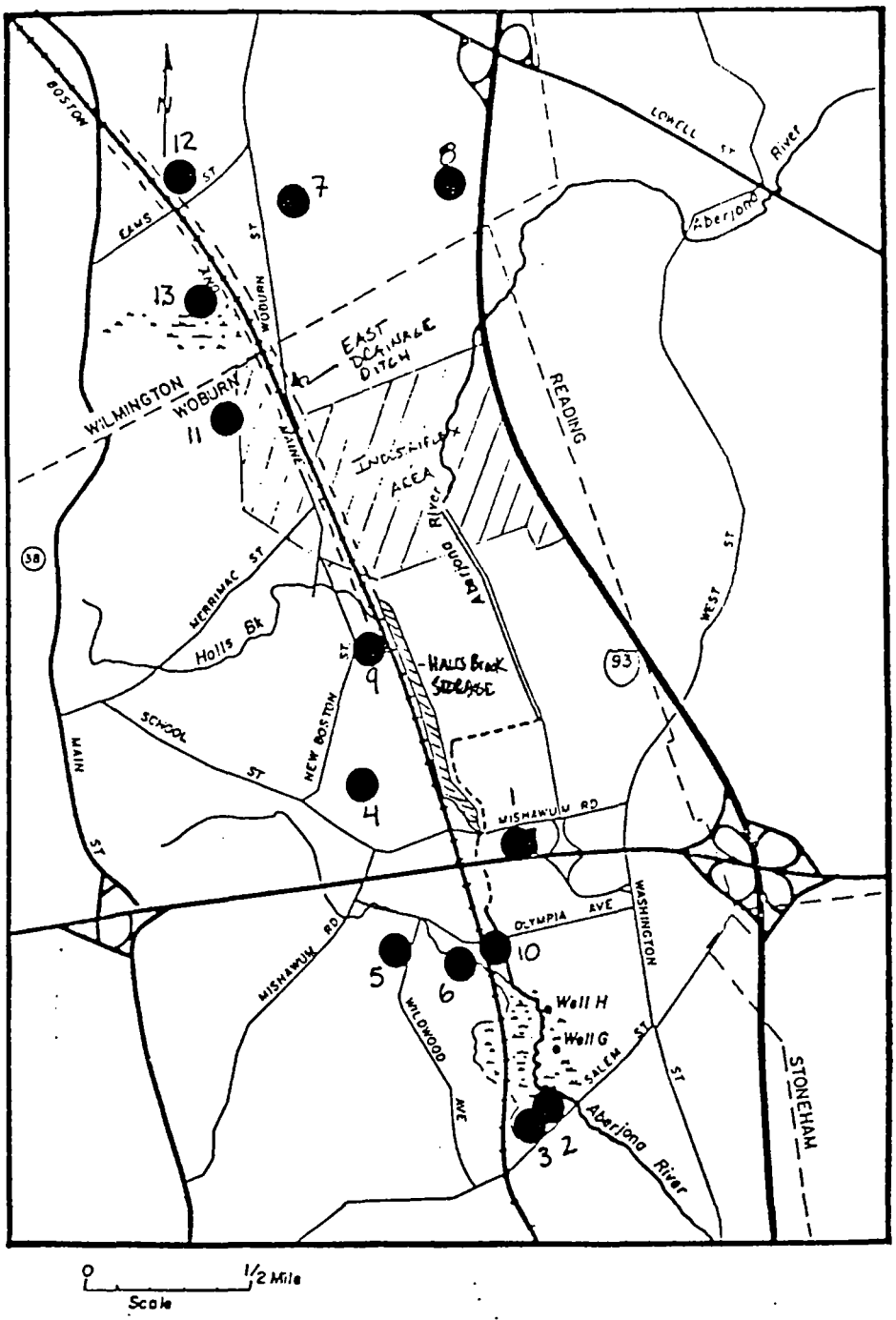
Site Specific Chemical Data for Woburn
(tabulated from Geotrans, July, 1987, Appendix B)

PARTIAL ABERJONA WATERSHED CONTAMINATION SUMMARY LIST

March 10, 1989

SOURCE	Reference	Location Name	Date	Location	Chemical	Concentration (ppb)	I.D. Nature	Notes
A76	DEQE Files	Hemingway Trucking	Sept. 1985	60 Olympia Avenue	Trichloroethylene	460 - 390,000	Soils	Barrel spill
A76	DEQE Files	Hemingway Trucking	Sept. 1985	60 Olympia Avenue	Tetrachloroethylene	57 - 32,000	Soils	Barrel spill
A76	DEQE Files	Hemingway Trucking	Sept. 1985	60 Olympia Avenue	Trichloroethylene	ND - 49,000	Soils	Barrel spill
A76	DEQE Files	Hemingway Trucking	Sept. 1985	60 Olympia Avenue	Toluene	ND - 4,100	Soils	Barrel spill
A76	DEQE Files	Hemingway Trucking	Sept. 1985	60 Olympia Avenue	Chlorodane	42,000 - 51,000,00	Soils	Barrel spill
A76	DEQE Files	Hemingway Trucking	Sept. 1985	60 Olympia Avenue	PCB Aroclor (1260)	31,000 - 31,000,00	Soils	Barrel spill
A81	Goldberg Zoino Assoc.	Hemingway Trucking	Feb. 1985	60 Olympia Avenue	Benzene	170	Groundwater	MW B-2
A81	Goldberg Zoino Assoc.	Hemingway Trucking	Feb. 1985	60 Olympia Avenue	Toluene	540	Groundwater	
A81	Goldberg Zoino Assoc.	Hemingway Trucking	Feb. 1985	60 Olympia Avenue	Ethylbenzene	150	Groundwater	
A81	Goldberg Zoino Assoc.	Hemingway Trucking	Feb. 1985	60 Olympia Avenue	Xylene	250	Groundwater	
A83	MDC	Piggeries (Murphy)		Wildwood/Olympia Avenue	Nitrate, Ammonia	Not stated	Ground & Surface water	
A83	MDC	Piggeries (Balkus)		Woburn St., Wilmington	Nitrate, Ammonia	Not stated	Ground & Surface water	
A83	MDC	Piggeries (Mastromarino)		S. of Lowell St. W. of 93	Nitrate, Ammonia	Not stated	Ground & Surface water	
A83	MDC	Piggeries (Roketenetz)		New Boston St./Hallsbrook	Nitrate, Ammonia	Not stated	Ground & Surface water	
A84	DEQE memo (6/10/82)	Sewer Surcharging/MDC	1982 - 1984	Trunk Sewer Parallel to B&M tracks	Effluent & Industrial Waste	Not measured	Qualitative Ascertain	
A84	MDWPC	??????????????????????	March 1967	*Corner of New Boston & Mishawum	Sodium, Sulfate, Chlorides, Ammonia	6,600 - 7,350	Sludge Sample	Dredge Material
A84	MDWPC	??????????????????????	March 1967	** Corner of Newton & Olympia	Sodium, Sulfate, Chlorides, Ammonia	1,570 - 2,970	Sludge Sample	from Mystic
A84	MDWPC	??????????????????????	March 1967	*,** Corner of Newton & Olympia	Sodium, Sulfate, Chlorides, Ammonia	9,300 - 9,600	Sludge Sample	River
A84	MDWPC	??????????????????????	March 1967	*,** Corner of Newton & Olympia	Sodium, Sulfate, Chlorides, Ammonia	42 - 69	Sludge Sample	
A84	MDWPC	??????????????????????	March 1967	*,** Corner of Newton & Olympia	Sodium, Sulfate, Chlorides, Ammonia		Sludge Sample	
A87	E & E (1980A)	Aberjona Auto Parts	~ 1980	Salem Street	Trichloroethylene	2 - 420	Groundwater	Offsite Wells S77 & S83
A87	E & E (1980A)	Aberjona Auto Parts	~ 1980	Salem Street	Tetrachloroethylene	ND - 750 ppb	Groundwater	
A87	E & E (1980A)	Aberjona Auto Parts	~ 1980	Salem Street	111, Trichloroethane	ND - 34	Groundwater	Offsite Wells S77
A87	E & E (1980A)	Aberjona Auto Parts	~ 1980	Salem Street	1,2 Transdichloroethylene	ND - 110	Groundwater	Off site Wells S77 & S83
A94	E & E	Whitney Barrel Company	1980 - 1985	256 Salem Street	TCE	Max = 1,372	Qualitative Ascertain Groundwater	Offsite Wells S46, S83, BSW2, BW2 & BW4
A94	E & E	Whitney Barrel Company	1980 - 1985	256 Salem Street	1,2 Transdichloroethylene	Max = 1,500	Qualitative Ascertain Groundwater	Offsite Wells S46, S83, BSW2, BW2 & BW4
A94	E & E	Whitney Barrel Company	1980 - 1985	256 Salem Street	Tetrachloroethylene	Max = 240	Qualitative Ascertain Groundwater	Offsite Wells S46, S83, BSW2, BW2 & BW4
A94	E & E	Whitney Barrel Company	1980 - 1985	256 Salem Street	111, Trichloroethane	Max = 104	Qualitative Ascertain Groundwater	Offsite Wells S46, S83, BSW2, BW2 & BW4
A94	MDC & DEQE Files	Brodie Industrial Trucks	1980 - 1985	299 Mishawam Road	Solvents, paint, paint thinner, Gas	Not measured	Qualitative Ascertain	Onsite Subsurface disposal 1958 - 1964
A94	MDC & DEQE Files	Brodie Industrial Trucks	1980 - 1985	299 Mishawam Road	Caustic Cleaners, Acid, Waste Oil	?	Qualitative Ascertain	
A99	E & E 1982A	Raffi & Swanson	Feb & Mar 1982	100 Eames Street, Wilmington	Toluene	Max) 1,000	East Drainage ditch surface water	
A99	E & E 1982A	Raffi & Swanson	Feb & Mar 1982	100 Eames Street, Wilmington	Methyl Ethyl Ketone	840	East Drainage ditch surface water	
A99	E & E 1982A	Raffi & Swanson	Feb & Mar 1982	100 Eames Street, Wilmington	Methyl Ethyl Ketone	570	East Drainage ditch surface water	
A99	E & E 1982A	Raffi & Swanson	Feb & Mar 1982	100 Eames Street, Wilmington	111, Trichloroethane	500 - 1,000	East Drainage ditch surface water	
A99	E & E 1982A	Raffi & Swanson	Feb & Mar 1982	100 Eames Street, Wilmington	Xylene	50 - 200	East Drainage ditch surface water	
A99	E & E 1982A	Olin Corp.	Feb & Mar 1982	S. of Eames Street, Wilmington	1,2 trans-dichloroethylene	) ND	East Drainage ditch surface water	
A110	E & E 1980d	Olin Corp.	Dec. 15, 1980	S. of Eames Street, Wilmington	dioctophthalate	not stated	East Drainage ditch surface water	
A122	Stauffer Consultant	Woburn Landfill	1984	W. of New Boston, N. of Merrimack	Napthalene	63	groundwater	DW 1
A122	Stauffer Consultant	Woburn Landfill	1984	W. of New Boston, N. of Merrimack	bis (ethyl hexly) Phthalate	Max = 181	groundwater	DWs 1 & 1A
A122	Stauffer Consultant	Woburn Landfill	1984	W. of New Boston, N. of Merrimack	di-N-Octyl Phthalate	Max = 14	groundwater	DWs 1 & 1A
A122	Stauffer Consultant	Woburn Landfill	1984	W. of New Boston, N. of Merrimack	Trichloropropene	144	groundwater	DW 1
A122	Stauffer Consultant	Woburn Landfill	1984	W. of New Boston, N. of Merrimack	Triaethyl benzene	45	groundwater	DW 1
A122	Stauffer Consultant	Woburn Landfill	1984	W. of New Boston, N. of Merrimack	Ethyl Methyl benzene	45	groundwater	DW 1
A122	Stauffer Consultant	Woburn Landfill	1984	W. of New Boston, N. of Merrimack	bromocyclo hexene	84	groundwater	DW 1
A122	Stauffer Consultant	Woburn Landfill	1984	W. of New Boston, N. of Merrimack	hexahydro azepinone	Max = 114 ppb	groundwater	DW 1 & 14
A125	?	All State Dump	June 1968	Mishawan & New Boston Road	Unknown	Not measured	hundreds of barrels (Paint?)	Exploded at dump
B23	EPA July 1979	Industriplex	July 1979	North of Former Stauffers Plant	Chromium	Max = 3,900	Soils	Central Drainage
B23	EPA July 1979	Industriplex	July 1979	North of Former Stauffers Plant	Lead	Max = 920 ppm	Soils	West Bank S. Pond
B23	EPA July 1979	Industriplex	July 1979	North of Former Stauffers Plant	Zinc	Max = 1,600 ppm	Soils	Central Drainage
B23	EPA July 1979	Industriplex	July 1979	North of Former Stauffers Plant	Arsenic	Max = 1,100 ppm	Soils	"Arsenic Pit"
B23	EPA July 1979	Industriplex	July 1979	North of Former Stauffers Plant	Copper	Max = 1,690 ppm	Soils	Central Drainage
B23	EPA July 1979	Industriplex	July 1979	North of Former Stauffers Plant	Iron	Max = 257,000 ppm	Soils	Near "Arsenic Pit"
B23	EPA July 1979	Industriplex	July 1979	North of Former Stauffers Plant	Titanium	Max = 2,100 ppm	Soils	West bank S. Pond
B23	EPA July 1979	Industriplex	July 1979	North of Former Stauffers Plant	Manganese	Max = 15,800 ppm	Soils	Near "Arsenic Pit"
B23	EPA July 1979	Industriplex	July 1979	North of Former Stauffers Plant	Nickel	Max = 339 ppm	Soils	Near "Arsenic Pit"
B23	EPA July 1979	Industriplex	July 1979	North of Former Stauffers Plant	Aluminum	Max = 85,000 ppm	Soils	Near "Arsenic Pit"
B23	EPA July 1979	Industriplex	July 1979	North of Former Stauffers Plant	Tin	Max = 1,990 ppm	Soils	Near "Arsenic Pit"
B23	EPA July 1979	Industriplex	July 1979	Near Head of Hall's Brook Storage	Chromium	78,000 ppm	Soils	Chromium Lagoon Area
B23	EPA July 1979	Industriplex	July 1979	Near Head of Hall's Brook Storage	Arsenic	400 ppm	Soils	Chromium Lagoon Area
B23	EPA July 1979	Industriplex	July 1979	Near Head of Hall's Brook Storage	Lead	1,200 ppm	Soils	Chromium Lagoon Area
B23	EPA July 1979	Industriplex	July 1979	Near Head of Hall's Brook Storage	Tin	200 ppm	Soils	Chromium Lagoon Area
B23	EPA July 1979	Industriplex	July 1979	Near Head of Hall's Brook Storage	Antimony	100 ppm	Soils	Chromium Lagoon Area
B	DEQE	Industriplex	Jan 7, 1989	North of Chromium Lagoon	Arsenic	1,900 ppm	Soils	Chromium Lagoon Area
B	DEQE	Industriplex	Jan 7, 1989	North of Chromium Lagoon	Lead	8,900 ppm	Soils	Chromium Lagoon Area

Sources
A - GeoTrans Report (1987) Appendix B
B - Department of Urban and Environmental Policy, Tufts University. Hazardous Waste in Woburn (1980)



1 Brodie Industrial Trucks
2 Aberjona Auto Parts
3 Whitney Barrel Co.
4 Old Woburn Dump
5 Mystic River Sludge Disposal area
6 Murphey Piggery
7 Balkus Piggery
8 Mastromarino Piggery
9 Roketenetz Piggery
10 Hemingway Trucking
11 Woburn Landfill
12 Raffi & Swanson
13 Olin Chemical

MAP MODIFIED FROM GEOTRANS REPORT DATED JULY 1987

TABLE E-25 (CONT'D)
CENTRAL AREA
SEDIMENT SAMPLE RESULTS
PHASE I

	SD-01 EBASCO 9-29-87	SD-02 EBASCO 9-29-87	SD-03 EBASCO 9-29-87	SD-04 EBASCO 9-29-87	SD-05 EBASCO 9-29-87	SD-06 EBASCO 9-29-87	SD-08 EBASCO 9-29-87	SD-09 EBASCO 12-10-87	SD-10 EBASCO 12-10-87	SD-11 EBASCO 12-11-87	G-SD1 EBASCO 12-10-87
PESTICIDES/PCB'S											
4,4'-DDD	ND	ND	ND	ND	ND	ND	26.87 J	ND	ND	ND	ND
ALDRIN	12.12 J	ND	28.87	ND	31.69	84.39	ND	ND	ND	ND	ND
INORGANICS (mg/kg)											
ALUMINUM	3,860	5,350	3,830	8,660	5,270	48,800	10,100	17,700	18,400	10,600	6,170
ANTIMONY	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ARSENIC	24	196	36	36	11	3,630	325	218	149	20	6.3 JB
BARIUM	11 JB	26 JB	14 JB	57	59	63	48	52	47	69	25
CADMIUM	ND	2.4 JB	ND	4 JB	3 JB	13 JB	8.3 JB	ND	ND	ND	ND
CALCIUM	647	1,860	596	3,010	2,500	7,930	3,920	4,090	4,480	6,840	2,120 J
CHROMIUM	12	143	21	37	35	1,250	469	1,560	1,540	214	11 J
COBALT	ND	ND	ND	ND	ND	ND	ND	12	17	12	ND
COPPER	25	146 J	21 JB	82 J	40 J	3,810 J	542 J	641	611	166	8.5 J
IRON	10,200	14,700	7,150	15,500	52,600	89,400	41,100	30,000	25,100	18,700	8,990 J
LEAD	R	R	R	R	51	1,190	939	274	165	349	32 JB
MAGNESIUM	1,230	1,600	1,240	3,310	2,000	1,470	3,230	4,270	3,430	3,580	2,860 JB
MANGANESE	73	467	76	194	282	589	397	224	276	284	79 J
MERCURY	ND	2.0	0.15	0.24	ND	27	17	3.9	3.1	ND	.2 J
NICKEL	ND	27	ND	38	20	ND	29	16	18	14	4.9 JB
POTASSIUM	ND	ND	416	1,030	784	ND	918	664	710	751	434 JB
SELENIUM	ND	ND	ND	ND	ND	22	ND	ND	ND	ND	ND
SODIUM	145	280	76	713	167	897	240	398	519	618	258
VANADIUM	8.8	ND	ND	29	ND	58	ND	51	44	70	19 JB
ZINC	76	625	186	525	450	5,170	1,380	1,340	1,520	343	32

Appendix 2

EBASCO Central Area Surface Sediment Sample Results
(from Final Supplemental RI, Appendix E-25)

TABLE F-25
CENTRAL AREA
SURFACE SEDIMENT SAMPLE RESULTS
PHASE I

ORGANICS (ug/kg)	SD-01 EBASCO 9-29-87	SD-02 EBASCO 9-29-87	SD-03 EBASCO 9-29-87	SD-04 EBASCO 9-29-87	SD-05 EBASCO 9-29-87	SD-06 EBASCO 9-29-87	SD-08 EBASCO 9-29-87	SD-09 EBASCO 12-10-87	SD-10 EBASCO 12-10-87	SD-11 EBASCO 12-11-87	G-SD1 EBASCO 12-10-87
VOLATILES											
ACETONE	39.9	113.5	135.7	152.7	128.8	389.6	395.1	80 B	ND	9 BJ	ND
2-BUTANONE	12.2	19.9	11.7	16.9	22.1	72.9	64.7	ND	ND	ND	ND
BENZENE	ND	4.5	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOLUENE	ND	1.0	ND	3.1	2.6	2.7	ND	ND	ND	ND	ND
1,1,1-TRICHLOROETHANE	ND	ND	ND	ND	ND	2.8	ND	ND	ND	ND	ND
1,1-DICHLOROETHANE	ND	3.8	ND	ND	ND	ND	ND	ND	ND	ND	ND
TRICHLOROETHENE	ND	1.1	ND	ND	2.0	ND	ND	ND	ND	ND	ND
1,2-DICHLOROETHENE	ND	ND	ND	ND	4.5	2.6	8.5	ND	ND	ND	ND
VINYL CHLORIDE	ND	ND	ND	ND	1.9	ND	ND	ND	ND	ND	ND
METHYLENE CHLORIDE	27.6	95.7 J	85.5	112.6 J	92.4	152.6	315.0	7	2 B	1	R
1,2-DICHLOROETHANE	ND	ND	ND	ND	ND	ND	ND	ND	ND	R	ND
CHLOROFORM	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3
SEMI-VOLATILES											
4-METHYLPHENOL	ND	ND	ND	ND	168.1 J	ND	ND	ND	ND	ND	ND
BIS(2-ETHYLHEXYL)PHTHALATE	246.0	910.3	1,337.5	ND	518.5	410.4	1,630.9	ND	ND	ND	ND
ACENAPHTHENE	ND	256.0	91.4	ND	ND	ND	194.3	ND	ND	ND	ND
ACENAPHTHYLENE	ND	ND	ND	ND	ND	ND	510.7	ND	ND	ND	ND
ANTHRACENE	49.0	686.0	189.2	ND	91.3	ND	949.1	ND	ND	ND	ND
BENZO(A)ANTHRACENE	314.4	2,871.2	721.4	ND	399.0	ND	4,182.7	4 J	4 J	4 J	ND
BENZO(B)FLUORANTHENE	314.2	1,953.4	960.7	ND	678.9	ND	4,213.8	ND	ND	ND	3 J
BENZO(K)FLUORANTHENE	297.9	1,338.2	563.2	ND	568.0	ND	4,877.6	9 J	8 J	9 J	ND
BENZO(G,H,I)PERYLENE	201.7	567.6	337.9	ND	280.9	ND	666.1	ND	ND	ND	ND
BENZO(A)PYRENE	282.9	1,649.9	673.0	ND	464.9	ND	3,665.2	5 J	ND	6 J	ND
CHRYSENE	487.2	2097.4	961.3	ND	664.1	ND	4,612.8	4 J	4 J	4 J	2
DIBENZ(A,H)ANTHRACENE	89.6	363.1	123.7	ND	131.1	ND	425.9	ND	ND	ND	ND
FLUORANTHENE	519.2	3986.3	1,648.5	ND	1,099.3	223.1	8,151.3	ND	7 J	ND	ND
FLUORENE	ND	247.2	ND	ND	ND	ND	513.9	ND	ND	ND	ND
INDENO(1,2,3-CD)PYRENE	162.6	649.1	373.1 J	ND	298.6	ND	913.4	ND	ND	ND	ND
NAPHTHALENE	ND	89.1	ND	ND	ND	ND	292.2	ND	ND	ND	ND
PHENANTHRENE	158.5	2,399.5	912.4	ND	458.1	ND	3,377	ND	6 J	ND	ND
PYRENE	464.6	3,737.5	1,366.9	ND	838.5 J	218.9	7228.7	ND	ND	ND	ND
N-NITROSODIPHENYLAMINE	ND	ND	ND	ND	ND	ND	746.8	ND	ND	ND	ND
DIBENZOFURAN	ND	114.9 J	ND	ND	ND	ND	187.1	ND	ND	ND	ND

TABLE 6-25 (CONT'D)
CENTRAL AREA
SEDIMENT SAMPLE RESULTS
PHASE I

	SD-01 EBASCO 9-29-87	SD-02 EBASCO 9-29-87	SD-03 EBASCO 9-29-87	SD-04 EBASCO 9-29-87	SD-05 EBASCO 9-29-87	SD-06 EBASCO 9-29-87	SD-08 EBASCO 9-29-87	SD-09 EBASCO 12-10-87	SD-10 EBASCO 12-10-87	SD-11 EBASCO 12-11-87	G-SD1 EBASCO 12-10-87
PESTICIDES/PCB'S											
4,4'-DDD	ND	ND	ND	ND	ND	ND	26.87 J	ND	ND	ND	ND
ALDRIN	12.12 J	ND	28.87	ND	31.69	84.39	ND	ND	ND	ND	ND
INORGANICS (mg/kg)											
ALUMINUM	3,860	5,350	3,830	8,660	5,270	48,800	10,100	17,700	18,400	10,600	6,170
ANTIMONY	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ARSENIC	24	196	36	36	11	3,630	325	218	149	20	6.3 JB
BARIUM	11 JB	26 JB	14 JB	57	59	63	48	52	47	69	25
CADMIUM	ND	2.4 JB	ND	4 JB	3 JB	13 JB	8.3 JB	ND	ND	ND	ND
CALCIUM	647	1,860	596	3,810	2,500	7,930	3,920	4,090	4,480	6,840	2,120 J
CHROMIUM	12	143	21	37	35	1,250	469	1,560	1,540	214	11 J
COBALT	ND	ND	ND	ND	ND	ND	ND	12	17	12	ND
COPPER	25	146 J	21 JB	82 J	40 J	3,810 J	542 J	641	611	166	8.5 J
IRON	10,200	14,700	7,150	15,500	52,600	89,400	41,100	30,800	25,100	18,700	8,990 J
LEAD	R	R	R	R	51	1,190	939	274	165	349	32 JB
MAGNESIUM	1,230	1,600	1,240	3,310	2,000	1,470	3,230	4,270	3,430	3,500	2,850 JB
MANGANESE	73	487	76	194	282	589	397	224	276	284	79 J
MERCURY	ND	2.0	0.15	0.24	ND	27	17	3.9	3.1	ND	.2 J
NICKEL	ND	27	ND	38	20	ND	29	16	18	14	4.9 JB
POTASSIUM	ND	ND	416	1,830	784	ND	918	664	718	751	434 JB
SELENIUM	ND	ND	ND	ND	ND	22	ND	ND	ND	ND	ND
SODIUM	145	280	76	713	167	897	240	390	519	618	258
VANADIUM	8.8	ND	ND	29	ND	58	ND	51	44	70	19 JB
ZINC	76	625	186	625	458	5,170	1,380	1,340	1,520	343	32

Appendix 3

Woburn (Industriplex) Soil Heavy Metal Analyses
(from - Industriplex NPL Site Administrative
Record V 1-12, June 24, 1988)

B

TABLE 1.1

SUMMARY OF 254 WOBURN SOIL HEAVY METAL ANALYSIS (1)

Element		Number Samples 0-100 PPM	>100 PPM	>500 PPM	>1000 PPM	Concentration - PPM 25 Percentile	50 Percentile	75 Percentile	Maximum
Antimony	-01	246	8			< 2	2	13	455
Arsenic	-02	149	105	51	29	5	23	250	24227
Barium	-16	155	99	36	30	<10	45	202	5612
Beryllium	-03	254				< 2	2	2	7
Cadmium	-04	252	2			< 1	2	3	199
Chromium	-05	176	78	41	27	5	18	37	145455
Copper	-06	152	102	56	38	8	45	409	29167
Lead	-07	101	153	97	74	10	186	1576	89109
Mercury	-08	219	4			< 1	< 1		545
Nickel	-09	249	6			5	14	23	500
Selenium	-10	253	1			< 2	< 2	3	112
Silver	-11	252	2			< 2	< 2	5	116
Thallium	-12	253	1			<10	< 10	25	258
Zinc	-13	111	143	80	63	16	198	903	144330

(1)
This consisted of the following soil analysis
- (21) JANPET
- (7) EPA/DEQE
- (7) Stauffer 4/2/82
- (15) Boston Edison
- (204) Phase I Study

It was assumed JANPET, Boston Edison, EPA/DEQE analyzed for same 14 elements as in the study.

B

TABLE 1.3 - SOIL HEAVY METAL ANALYSIS

LOCATION	Ref. #	HEAVY METAL CONCENTRATION - PPM														Depth	PHYSICAL CHARACTERISTIC			
		3/Be	4/Cd	5/Cr	6/Cu	7/Pb	9/Ni	11/Ag	12/Tl	13/Zn	16/Ba	1/Sb	2/As	8/Hg	10/Se	Ft.	Odor	Color	Dom Tex	Sub Tex
	LLD	1	1	5	2	5	2	1	10	1	10	2	2	1	2					
T-1	73630102			16	11	9	19			18	35		7			3.5	1	1	5	2
B-1	0108			22	17	13	27			38	64		4			7	1	1	5	2
B-2	0117			7	8	6	14			11	40		4			7.75	1	1	5	7
B-3	0114			8	7	8	10			15	36		2			5	1	1	5	5
B-4	0124			5	14	3	16			9	35		5			7	1	1	5	4
B-6	0133		3	280	634	4516	26	16	11	903	420	7	806	4		1	1	5	6	7
B-7	0213		2	68	35	225	12				54		39	6	10	.3	1	1	3	7
B-8	0212				7	11	12			14			3			1	2	2	10	7
B-9	0207			637	27	86	15			216	29		118			1	2	1	5	7
"	0216			16	18		12			16			12			3	2	1	5	7
B-10	0209			2105	23	100	13		11	283	37		126	69		5.4	3	2	7	8
B-11	0201			977	78	188	15			182	220		104			1	3	2	7	8
B-12	0219		15	7	2137	8803	22	46	26	4530	1500	13	1026	2	3	1	2	5	3	4
"	0224			7	35	11	12			59	10					9	1	5	5	4
B-13	0225			409	95	525	27	3		229	81		194	43		.25	1	1	10	4
"	0230		4	161	1307	503	29	10	20	864	450		281	7	5	5	1	5	3	4
B-14	0233		4	112	466	1837	220	3	41	745	130		235	1	5	1	1	5	3	5
"	0302		3	16	435	212	20	10	21	1753	260		289		2	3	1	5	9	4
B-15	0307		2	20	602	2143	22	15	31	443	560		296	4	15	5	1	3	3	4
"	0306		2	19	670	2062	23	12	31	443	400		237	4	7	6.4	1	3	3	4
B-19	0310			89	105	765	21	2		231	130		192	79		1	2	1	3	4
B-20	0312			648	166	451	30			278	200		308	84		1	1	2	3	4

PHYSICAL CHARACTERISTICS CODE

Odor

1 None
2 Moderate
3 Strong

Color

1 Normal
2 Black
3 White
4 Grey
5 Red
6 Orange
7 Yellow
8 Green
9 Blue
10 Purple

Dom Tex (50%)

#	Description
1	Coarse Gravel
2	Fine Gravel
3	Artificial Components (brick, cement, traprock, etc.)
4	Coarse Sand
5	Medium Sand
6	Fine Sand
7	Silt
8	Clay
9	Poorly sorted mixture of clay, silt, sand and gravel.
10	Topsoil (Organic zone)

Sub Text (20%)

#	Description
1	Coarse Gravel
2	Fine Gravel
3	Coarse Sand
4	Fine Sand
5	Silt
6	Clay
7	Organic Matter (roots, grass, etc)
8	Hides, hair particles
9	Artificial components
10	Combination of numbers 8 & 9

A blank space indicates below LLD level.

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SOIL HEAVY METAL ANALYSIS

LOCATION	Ref. #	HEAVY METAL CONCENTRATION - PPM													Depth Ft.	PHYSICAL CHARACTERISTIC			
		3/Be	4/Cd	5/Cr	6/Cu	7/Pb	9/Ni	11/Ag	12/Tl	13/Zn	16/Ba	1/Sb	2/As	8/Hg	10/Se		Odor	Color	Dom Tex	Sub Tex
B-21	73630316			11	21	13	11			11			1215			5.5	2	2	7	9
"	0317			31	40	13	29	3		34	70		210			9.5	2	2	8	3
B-22	0327		6	4956	81	196	18	2	18	3363	31	3	88	58		7	3	4	7	8
"	0322			216	21	8	21			61	45		5			8.9	3	2	5	2
"	0324			42	29	12	35			39	98		5			14.65	2	4	9	6
B-23	0332		2	1753	398	445	24	5	31	1237	124		237	1	4	1	2	3	3	6
"	0401		2	36	548	207	21	4	46	36	20		95	1		3	2	7	3	6
"	0330		2		3145	131	23	3	31	97	23		12			5	2	2	3	6
B-24	0406		13	6	1856	866	16	17	21	5979	640		11	16	3	1	1	5	3	3
"	0405		8	16	259	3800	33	7	45	3300	120	13	15	11	35	7	2	4	3	6
B-25	0412	3	13	135	29167	1875	59	11	31	7396	180		21	5		7	2	2	8	7
B-26	0419		2	202	281	2018	23	5	18	211	210	5	284	5	15	11	2	2	9	4
B-27	0432		3	4090	161	555	22	2	10	685	97		64			5	2	2	8	9
"	0502		4	51	84	45	24		11	2128	43		71		6	21	1	1	8	7
B-28	0506	4	86	124	3918	4124	47	6	46	6701	100	9	866	17		11	2	2	8	5
B-29	0525		3	117	409	5631	23	6	39	854	330	17	204	12	15	3	1	7	9	9
B-30	0523		1	33	26	55	23		10	107	50		5			.9	1	7	9	4
B-31	0530		2	830	90	126	16			230	45		9	40		3.5	3	2	6	8
"	0534		2	1170	34	249	18	4	21	216	48		8	43		9.85	3	4	8	7
B-32	0620		1	688	132	156	22		10	3229	110	2	6			5	2	4	8	8
"	0619		5	1619	258	385	30	2	29	5714	640	7	6			7	3	2	4	7
B-33	0702			12	17	70	11			33	45		11			3	2	2	5	4
"	0633	2		17	26	26	12			32	71		7			5.75	3	4	8	4
B-34	0714		1	23	26	108	32			43	67					1	1	1	7	4
"	0630			22	15	15	23			45	33		3			6.35	2	1	2	3
B-35	0707	2	7	42	340	2857	40	4	20	1735	300	10	1122	9	7	1	1	2	9	4
"	0711		9	36	367	1152	60	4	10	2020	190	3	133	4	3	2.35	2	4	5	7
B-36	0811		2	10	437	4660	10	16		359	490	21	1262	4	6	1	1	5	3	5
"	0808		8		1792	5849	8	32		8151	1700	10	1321	72	4	3	1	5	3	3
"	0807		9	5	1111	343	6	15	28	6944	1700	13	1944		2	5	1	4	3	3
"	0804			14	37	123	13		28	70	38		858			7	1	4	5	2
B-37	0733		5	30	964	540	25	3		1600	160	10	1500	1		3	2	1	3	5
"	0732	2	20	48	3241	1944	32	5		7685	300	19	204	5	2	9	2	6	8	4
B-39	0825			6	25	77	7			28	30		12			1	1	1	5	4

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SOIL HEAVY METAL ANALYSIS

LOCATION	Ref. #	HEAVY METAL CONCENTRATION - PPM														Depth Ft.	PHYSICAL CHARACTERISTIC			
		3/Be	4/Cd	5/Cr	6/Cu	7/Pb	9/Ni	11/Ag	12/TL	13/Zn	16/Ba	1/Sb	2/As	8/Hg	10/Se		Odor	Color	Dom Tex	Sub Tex
B-21	73630316			11	21	13	11			11			1215			5.5	2	2	7	9
"	0317			31	40	13	29	3		34	70		210			9.5	2	2	8	3
B-22	0327		6	4956	81	196	18	2	18	3363	31	3	88	54		7	3	4	7	8
"	0322			216	21	8	21			61	45		5			8.9	3	2	5	2
"	0324			42	29	12	35			39	98		5			14.65	2	4	9	6
B-23	0332		2	1753	398	445	24	5	31	1237	124		237	1	4	1	2	3	3	6
"	0401		2	36	548	207	21	4	46	36	20		95	1		3	2	7	3	6
"	0330		2		3145	131	23	3	31	97	23		12			5	2	2	3	6
B-24	0406		13	6	1856	866	16	17	21	5979	640		11	16	3	1	1	5	3	3
"	0405		8	16	259	3800	33	7	45	3300	120	13	15	11	35	7	2	4	3	6
B-25	0412	3	13	135	29167	1875	59	11	31	7396	180		21	5		7	2	2	8	7
B-26	0419		2	202	281	2018	23	5	18	211	210	5	284	5	15	11	2	2	9	4
B-27	0432		3	4090	161	555	22	2	10	685	97		64			5	2	2	8	9
"	0502		4	51	84	45	24		11	2128	43		71		6	21	1	1	8	7
B-28	0506	4	86	124	3918	4124	47	6	46	6701	100	9	866	17		11	2	2	8	5
B-29	0525		3	117	409	5631	23	6	39	854	330	17	204	12	15	3	1	7	9	9
B-30	0523		1	33	26	55	23		10	107	50		5			.9	1	7	9	4
B-31	0530		2	830	90	126	16			230	45		9	40		3.5	3	2	6	8
"	0534		2	1170	34	149	18	4	21	216	48		8	43		9.85	3	4	8	7
B-32	0620		1	688	132	156	22		10	3229	110	2	6			5	2	4	8	8
"	0619		5	1619	258	385	30	2	29	5714	640	7	6			7	3	2	4	7
B-33	0702			12	17	70	11			33	45		11			3	2	2	5	4
"	0633	2		17	26	26	12			32	71		7			5.75	3	4	8	4
B-34	0714		1	23	26	108	32			43	67					1	1	1	7	4
"	0630			22	15	15	23			45	33		3			6.35	2	1	2	3
B-35	0707	2	7	42	340	2857	40	4	20	1735	300	10	1122	9	7	1	1	2	9	4
"	0711		9	36	367	1152	60	4	10	2020	190	3	133	4	3	2.35	2	4	5	7
B-36	0811		2	10	437	4660	10	16		359	490	21	1262	4	6	1	1	5	3	5
"	0808		8		1792	5849	8	32		4151	1700	10	1321	72	4	3	1	5	3	3
"	0807		9	5	1111	343	6	15	28	6944	1700	13	1944		2	5	1	4	3	3
"	0804			14	37	123	13		28	70	38		858			7	1	4	5	2
B-37	0733		5	30	964	540	25	3		1600	160	10	1500	1		3	2	1	3	5
"	0732	2	20	48	3241	1944	32	5		7685	300	19	204	5	2	9	2	6	8	4
B-39	0825			6	25	77	7			28	30		12			1	1	1	5	4

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SOIL HEAVY METAL ANALYSIS

LOCATION	Ref. #	3/Be	4/Cd	5/Cr	6/Cu	7/Pb	9/Ni	11/Ag	12/Tl	13/Zn	16/Ba	1/Sb	2/As	8/Hg	10/Se	Depth Ft.	PHYSICAL CHARACTERISTIC Odor	Color	Den Tex	Sub Tex
							HEAVY METAL CONCENTRATION - PPM													
B-40	73630834		1	10	262	1010	13	3		465	110	8	19	1	4	1	1	1	6	5
"	0833			7	8	5	11			89	30					3	1	1	5	4
"	0832			7	11	6	10			50	30					5	2	1	5	4
B-41	0901		2	25	127	465	20	4	30	525	160	3	101	4		1	1	5	3	4
"	0902	2	2	28	147	570	33	4	30	100	300		250	12		3	2	3	3	3
B-42	0909		2	131	247	1616	11	6	10	505	1000	19	93	3	5	1	1	5	3	5
"	0911		9		437	5243	9	8		2915	510	39	814	15	16	3	1	5	3	5
B-43	0914		1	63	30	94	19			280	45		20	47	3	1	1	2	6	4
"	0915		1	13	114	7476	15	4		214	290	37	1845	54	81	3	1	6	3	4
"	0917		2	7	270	52	11			140	25		190	40	3	5	2	4	5	4
B-44	0920		1	18	26	51	21			66	45		14			1	2	1	5	2
"	0921			11	6	10	11			18			6			7	2	4	5	4
B-45	1006			6	20	10	13		10	36			184			7	1	1	5	4
B-46	1001		5		316	21212	9	25	258	1414	1000	141	5960	545		1	2	5	3	4
B-47	1011		3	63	257	951	44	4	29	767	130		223	2	4	1	1	1	7	2
"	1009			37	6	10	12			14			5		8	7	2	4	5	3
B-48	1015			13	19	21	19		21	27	260		10	57		8.3	2	2	8	9
B-49	1018		12	6	1485	4950	17	16	20	6637	660	5	881	62		.3	1	5	7	4
"	1017		3	27	808	606	38	7	20	838	190		21			.5	1	7	8	5
B-50	1023		2	15	55	190	16		20		45		19			1	2	2	7	4
"	1022			21	42	10	32		10	51	25					2.65	1	1	3	2
B-51	1030		2	78	59	90	36		30	234	80		19	79		2.35	1	1	5	6
B-52	1101			6	5	5	13			12			9		3	5	2	4	5	3
"	1104			7	7	5	14		10	15			10			11	2	2	5	4
"	1102			9	8		13		10	15			10		3	15	3	2	7	4
B-53	1107		3	180	169	1160	26	5	45	333	130	5	410	5	9	1	3	4	9	9
"	1112			7	6	15			20	12						9	2	2	5	4
B-54	1121		2	110	41	140	19	3	40	137	50		9			1	3	3	6	6
"	1116			33	15	5	17		10	56	25		3			11	3	2	5	3
B-55	1127		4	12	12	8200	24	16	50	790	25	13	680	6	9	1	1	5	3	4
"	1130		4	22	554	871	31	6	20	762	200		782	4	5	5	2	5	3	6
"	1124		5	19	71	27	15		11	681	89		73			11	2	2	7	7
B-56	1210		19	68	29	36408	34	32	24	14563	126	78	8932	3		3	1	6	3	4
"	1202		35	5	2894	76	7	8		32993	132	5	1398			7	1	5	4	4
B-57	1208		3	187	1818	278	30		15	207	131	5	76			1	3	2	6	3
"	1205		3	8	94	67	5			1340		4	88			5	2	2	6	6

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SOIL HEAVY METAL ANALYSIS

LOCATION	Ref. #	HEAVY METAL CONCENTRATION - PPM 3/Be	4/Cd	5/Cr	6/Cu	7/Pb	9/Ni	11/Ag	12/TL	13/Zn	16/Ba	1/Sb	2/As	8/Hg	10/Se	Depth Ft.	PHYSICAL CHARACTERISTIC Odor	Color	Dom Tex	Sub Tex
T-2	73631410		14	51	2143	4694	20	23	36	4490	673	61	2755	8	4	1.5	1	5	9	9
"	1412		20	22	27	7071	15	45	35	3162	1242	69	8081	4		5.5	1	5	8	7
T-3	1416		4	22	255	7041	10	7	56	342	265	61	1531	34	87	3	1	7	3	9
T-4	1417		12		2913	26699	17	82	29	11165	1282	61	1748	3		.5	2	4	3	1
"	1418		3	29	72	417	9		15	282	49	7	204	1		4.5	1	7	7	1
T-5	1419		5	366	733	4257	40	5	25	2178	337	33	1386	15	2	2	1	3	3	3
T-7	1509		2	25	5	20	5			30		3	7			4.5	2	4	5	5
T-8	1507		2	5	57	3				5		5	4			3	3	2	6	4
T-9	1508		4	28	59	(165)	20		10	113	50	8	23			3.5	3	6	6	2
"	1505			22	39	25	30		20	50	50	6	7			4.5	2	5	6	2
T-10	1501		5	44444	505	227	10	10	30	374	202	10	10	1	3	unk.	3	5	8	8
"	1503		4	15481	162	396	15	2	20	2840	132	9	8	1		10	3	2	9	8
T-11	1502		3	180	21	15	15			280	50	5	7			unk.	3	3	9	8
T-12	1508			248	1485	30	9			113		5	7			2	3	2	5	4
"	1506		4	15	12	30	10			40		5	10			4.5	2	1	5	2
T-13	1511			10	10		9			34		4	8			2.5	1	6	5	5
T-14	1512	2	6	185455	172	136	20	2	25	11111		9	3	1		4.0	2	2	-	8
"	1518		45	20	5	10			40	50	3	4	4			5	1	4	2	5
T-15	1514			248	32	59	15			198		7	5			3	3	2	-	8
T-16	1510		3	12121	44	253	15				5	32				1	1	3	9	5
"	1519			94	15		6	2		59			50			unk.	1	2	5	4
T-17	1525	3		15	158	1881	30	7	25	188		68	743	16	15	3	1	3	3	9
"	1526		4		840	10400	9	61	55	190	2200	60	1100	2	5	3.5	1	5	4	1
"	1528		5	109	302	1832	295	12	30	1733	337	62	238	2		unk.	2	7	9	6
T-18	1527		5	10	36	1959	21	5	62	2784	515	26	1856	1	2	7.5	1	3	3	9
T-19	1532		5	5	1100	10800	10	59	30	2300	2100	58	950	4	5	unk.	1	5	9	1
T-20	1531	3			157	618	2			70		7	25	4	16	unk.	1	6	8	9
T-22	1601		2	10	41	75	9			25		16	15		2	8.5	1	2	10	7
T-23	1611		5	10	26	290	18	5	55	1800	400	4	11000	1		3.5	1	3	8	9
T-24	1613		6	10	14	109	15	6	64	4257	525		9			4.15	1	3	8	9
T-25	1617		199	186	2165	268	36	4	21	144330	103	10	24227			2.0	1	5	6	9
T-26	1622	3	5	179	142	2189	324	2	30	465	129	23	139			2	1	5	8	9
T-27	1624	7	5	260	59	1961	500		49	225	98	15	3			4	1	5	6	9
T-28	1626	3	4	149	26	186	24	3	52	134	103	62	186			2	1	7	8	9
T-29	1609		5	49	922	2353	15	10		3725	98	58	93	1	8	3	2	3	8	9
"	1615		5	29	294	98	9			2549			5882			4	3	2	6	7

Table 1.3

SOIL HEAVY METAL ANALYSIS

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LOCATION	Ref. #	HEAVY METAL CONCENTRATION - PPM 3/Be	4/Cd	5/Cr	6/Cu	7/Pb	9/Ni	11/Ag	12/TL	13/Zn	16/Ba	1/Sb	2/As	8/Hg	10/Se	Depth Ft.	PHYSICAL CHARACTERISTIC Odor	Color	Dom Tex	Sub Tex
T-30	73631606		16		990	89109	9	10	50	4554	10	11	16337	594	10	2	1	4	3	4
T-31	73631608	2	6	110	78	320	205	2	38	1700	280	6	175	1	7	2.5	1	5	5	9
"	1604		6	12	35	5100	35	5	60	2950	400	35	2050	1		4	1	3	8	9
T-32	1628		4	64	168	376	18	3	25	198	257	5	129	2	2	2	1	2	6	9
T-33	1631		4	20	647	3088	15	5	20	1520	98	50	67	2	4	2	1	4	8	9
T-35	1718		3	1111	45	93	13			359		5	21			1.5	3	2	6	8
T-36	1717		2	99	14	15	9	16		114		2	8			2	3	2	6	8
T-38	1632		20	8	2970	14851	18	79	30	8713	297	49	594	1	3	1.5	1	5	5	9
T-40	1625		26	105	2500	11000	35	50	35	7700	1700	45	5200	2		3	1	7	6	9
T-42	1721			5	37	176	3			29		4	157			3	2	6	6	5
T-43	1722		10	348	2424	4646	18	32	28	3838	1010	45	404	2	4	.5	1	5	3	4
T-45	1724		16	16000	830	2600	62	8	25	29500	720	23	8	6		5.2	2	2	6	9
"	1726		8	5	2062	5979	9	15	26	3814	742	26	928	1	4	9	1	5	7	9
T-46	1725		3	396	11	20	9	34		272		4	7			1.15	3	2	6	10
T-47	1727		4	65	310	3100	15		20	1520	330	35	250		3	3.6	3	2	6	9
T-48	1732		2	1010	121	30	9			435	101	5	13	1		4	2	2	6	7
T-50	1733		4		1485	12475	5	72	20	2495	2178	40	40	1	2	1	1	5	9	9
T-57	1810		2	13000	59	3100	15	5		430	100	17	1450	1	24	2.75	2	2	5	3
T-59	1813			1750	14	14	10			170		4	8			2	3	2	7	8
T-60	1812		4	4902	75	88	10		20	11275	490	9	59	1		.8	3	2	7	8
T-63	1815		2	37	28	888	27	4	28		67	41	1633	13	20	1	1	3	7	9
"	1818		13		1414	22222	12	96	34	8564	4444	91	5556	4		2.55	1	5	7	9
T-64	1820		13		1531	26531	14	101	28	6735	5612	102	7959			.4	1	5	7	9
T-65	1816		5		1287	23762	14	116	41	1089	3762	109	1485	2		.3	1	5	7	9
T-70	1827		10	97	1900	5100	26	22	41	1900	700	190	1400	6	9	2.5	1	5	7	9
T-73	1905			7	9		11			16	37	2	3			.7	1	3	6	4
"	1901				4		8		13	16		4	3			1	1	7	6	5
T-75	1903		2	58	82	5	55		15	129	65	8	5			2.0	1	4	9	1
T-79	1907		2	12	19		18		12	24		4	5			1.5	1	6	9	1
T-81	1909			21	18	10	29		15	51		5	7			.75	1	5	9	1
T-83	1911			41	41	10	46		20	51	37	8	11			1.5	1	5	9	1
T-84	1913		4	7	83	360	14	4	41	33	66	54	200			1	1	7	8	9
T-85	1915		3	75	314	1576	12	6	23	350	365	33	675	4	5	2	1	5	8	9
"	1916	2	4		653	158	16	2	41	9	37	40	594			5.5	2	3	9	8
T-86	1918		3	100	1300	2600	14	7	20	390	550	47	1100	5		1.5	1	5	6	9
T-87	1920		2		745	13725	16	10	54	529	3137	88	588	2		1.5	1	5	9	9
T-88	1919		6		444	11111	12	13	34	1212	1515	68	778	3		2.25	1	5	9	9
T-89	1923		4	198	28713	1980	24	7	20	1584	1287	27	941	5	5	2.7	3	2	9	9
"	1922		4	82	1364	7475	29	9	34	556	323	455	1414	192	5	7.2	3	2	3	8

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Table 1-3
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SOIL HEAVY METAL ANALYSIS

LOCATION	Ref. #	HEAVY METAL CONCENTRATION - PPM														Depth Ft.	PHYSICAL CHARACTERISTIC			
		3/Be	4/Cd	5/Cr	6/Cu	7/Pb	9/Ni	11/Ag	12/TL	13/Zn	16/Ba	1/Sb	2/As	8/Hg	10/Se		Odor	Color	Dom Tex	Sub Tex
T-91	1924		4	14	599	1692	29	3	48	92	119	249	796	2	6	3	1	3	8	9
T-93	1930				108		9		13	30		4				2.5	1	6	5	4
T-94	1929		3	2178	1287	218	29		34	525	178	31	743			2	1	6	5	5
T-95	1928		2	303	93	1313	22	2	27	414	182	253	727	5	8	.85	1	3	5	3
"	1927		3	13	624	149	19	2	41	12	149	43	12			1.75	1	6	5	4
"	1926		3	949	152	424	19	6	27	1111	354	24	101		3	4.1	1	5	6	4
T-96	2016				131		12		13	11		5	6			1	1	7	5	3
T-98	2020				4		9			10		7	7			1.5	1	6	5	4
T-100	2024			12	17		19			28	23	11	7			1	1	7	5	2
T-101	2023																1	6	5	9
T-102	2022			10	11		14			20	23	9	8			1	1	6	5	2
T-103	2025			17	19		21			33	23	14	12			.1	1	6	5	4
T-104	2031			1560	8			7		45	51	11	3			3.05	3	2	5	8
T-105	2032		3	39	1000		16	7	13	620	150	15	190		4	3.5	2	2	9	7
T-106	7363 2033			17	22		20			35	37	8	11			2	1	1	9	3
T-107	2118		9		2500	1500	14	31	20	2200	870	27	290		4	1.8	2	5	6	9
"	2117				48	567	4			78		10	639		6	2.8	1	2	6	9
T-108	2116		8		1400	550	7	16		2400	170	16	120			2	1	5	4	9
T-110	2114			28	32	810	22			120		12	500		6	1	1	6	5	9
"	2112		5	18	11	110	36	5	52	14	200	14	5			unk.	1	3	3	9
T-111	2113			10	4		6			5	23	4				0	1	3	6	4
T-112	2110		5	347	109	412	8	12	10	703	1608	23	48		4	unk.	1	5	6	3
"	2111		2	2300	85	480	9		13	300	210	8	75			unk.	1	3	5	4
T-113	2108		3	4343	1313	8788	24	6	20	778	707	303	14141	111	14	1.5	1	6	5	7
"	2109		14	7	480	160	24		20	1300		32	17000			4.5	1	6	3	9
T-114	2107			7	48	55	17			46	23	7	12		7	1	1	2	3	9
"	2106		3	21	290	4200	36		34	89	120	11	2400	3	5	1.5	1	3	6	9

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Table 1.4 SOIL HEAVY METAL CONCENTRATION (OLD DATA)

Location	Reference#	3Be	4/d	5/Cr	6 /Cu	7/Pb	9/Ni	11/Ag	12/Tl	13/Zn	16/Na	1/Sb	2/As	8/Hg	10/Se	Depth. ft.	Physical Characteristics Odor	Color	DomTex	SubTex
				Heavy Metal Concentration - PPM																
J/GZ1	00100000			3		210							64			2	1	10	7	3
"	-100010			19		16							57							
J/GZ5	200000			11		14000							270				0			
"	200010			18	14000	1700				1300			2600							
"	200020			12		15							160							
"	200030			14		15							210							
J/C3	300000			450		2100							400			2	0	5	7	3
"	400000			810	830	3200				4300			100							
J/GZ2	500000			360	4200	1100				20000			75			6	0	10	7	8
"	500010			64		5800							160							
"	500020			6		15							13							
J/GZ4	600000			15		870							620			4	0	6	7	3
J/GZ1	700000			64	230	860				49			65			7	0	4	7	0
"	700010			2		120							25							
J/D	800000			650		440							100			0	0	5	10	3
J/E	900000			310		370							29			0	0	10	3	3
J/B-9A	1000000			2		55							8							
J/B-2	1100000			3		1600							69							
J/B-3	1200000			16		3000							55							
J/B-5	1300000			1		470							74							
J/B-6	1400000			12		470							42							
B-1-1	2400000			270	340								70			0.1				
B-1-2	2500000			270	1400								160			0.1				
B-2-1	2600000			340		610							230			0.1				
B-2-2	2700000			510	150								7			0.1				
B-3-1	2800000			0	0								10			0.1				
B-3-2	2900000			30	290								72			1.0				

It is assumed analytical data met basic laboratory quality assurance checks and is acceptable.

HEAVY METAL CONCENTRATION - PPM

Location	Reference #	3Be	4/Cd	5/Cr	6/Cu	7/Pb	9/Ni	11/Ag	12/Tl	13/Zn	16/Ba	1/Sb	2/As	8/Hg	10/Se	Depth Ft.	Physical Characteristics Odor	Color	DomTex	SubTex
BE 925	3100000		1	10		5		0			18		14		4	.3				
BE 925A	3200000		1	17		10					17		17		6	99.99				
BE 925A	3300000		2	38		16					45		15		10	1.5				
BE 926A	3400000		2	33		29					47		20		10	1.0				
BE 927	3500000		1	9		52					9		10		2	3.0				
BE 927A	3600000		1	7		92					28		12		3	99.99				
BE 928	3700000		2	605		353					59		104		10	3.0				
BE 928A	3800000		155	2917		2059		32			2		1608	8	112	3.0				
BE 928A	3900000		5	1429		1064					129		246		19	3.0				
BE 928A	4000000		15	2691		865					132		266		31	2.5				
BE 929	4100000		3	1477		79					79		283		17	99.99				
BE 929	4200000		2	552		136					30		47		9	1.0				
BE 929A	4300000		3	1853		625					63		194		19	1.5				
BE 929A	4400000		3	2466		272					134		164		27	2.0				
BE 929A	4500000		4	1586		1254					82		290		19	1.0				

Appendix 4

Woburn (Industriplex) Monitor Well Analyses
(from - Industriplex NPL Site Administrative
Record V 1-12, June 24, 1988)

March 11, 1983

B

TABLE 7.1 MONITOR WELL ANALYSIS

Location	Heavy Metals Ref. #	µg/l	pH Ref.#		Conductivity Ref.#	µmo/cm	Cyanide Ref.#	mg/l	Ref.#	Organic Pollutants Compound	µg/l
OW-1	2925	Cd-7 Zn-20	3222	6.0	3308	100	3009	N.D.	3029,3115,3135		
OW-1A	2927	Cd-5 Ni-62 Zn-100	3223	6.0	3309	600	3011	N.D.	3031,3117,3201	bis(pentafluorophenyl) phosphin BE 13	31 14
OW-2	2619	Zn-21	3215	7.0	3301	100	2805	N.D.	2723,2601,2705	VO 22 VO 25 VO 30	15 14 23
OW-3	2621	Cd-6 Zn-30	3216	7.0	3302	900	2807	N.D.	2527,2603,2707	VO 30 BE 13 AE 10	23 34 53
OW-4	2625		3218	7.0	3304	700	2811	N.D.	2729,2607,2711	VO 30	23
OW-5	2627	As-200 Cd-5 Zn-41	3219	7.0	3305	600	2813		2731,2609,2713	VO 3 VO 22 VO 30 BE 13	10 16 26 17
OW-6	2631	Cd-6 Zn-56	3221	7.0	3307	300	2817	N.D.	2735,2613,2717	Carbon disulfide VO 22 Trichloropropane Bromocyclohexane	90 19 90 36
OW-7	2933	Cd-5 Cu-23 Pb-120 Zn-51	3226	5.0	3312	300	3017	N.D.	3103,3123,3207	Octanoic Acid Nonanoic Acid BE 13	40 14 14
OW-8	2629	Cd-5 Zn-110	3220	7.0	3306	600	2815	N.D.	2733,2611,2715	VO 22 VO 25 VO 30 Tri Decatriene Nitrile BE 13	19 10 11 19 14
OW-9	2623	As-420 Cd-5 Zn-33	3217	9.0	3303	950	2809	N.D.	2605,2727,2709	Carbon disulfide VO 3 VO 22	108 10 17

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TABLE 7.1 MONITOR WELL ANALYSIS

Location	Heavy Metals Ref. #	µg/l	pH Ref.#		Conductivity Ref.# mho/cm		Cyanide Ref.#	mg/l	Ref.#	Organic Pollutants Compound	µg/l
OW-10	2931	Cd-28 Cu-1000 Zn-51	3225	6.0	3311	300	3015	N.D.	3101,3121,3205		
OW-11	2929	Cd-5 Cu-25 Zn-57	3224	6.0	3310	800	3013	N.D.	3033,3119,3203	Trichloropropane	66
										Dichlorocyclohexane	13
										Bromocyclohexane	26
										Phthalate	18
										BE 13	63
										BE 29	23
OW-12	3003	Cd-11 Cr-54 Cu-32 Ni-32 Zn-37 Ba-250	3229	7.0	3315	700	3023	N.D.	3109,3129,3213	Methyl-Butanoic Acid	121
										Benzaldehyde	22
										Dihydrotetrazine	102
										Benzene Acetic Acid	1850
										Bis Sulfonyl Benzene	651
										Sulfur	805
										BE 39	15
OW-13	3001	Zn-40	3228	7.0	3314	1900	3021	N.D.	3107,3127,3211	Trichloropropane	44
										Bis Sulfonyl Benzene	39
										Sulfur	233
OW-14	2935	Cu-45 Pb-74 Zn-58	3227	5.0	3313	1100	3019	N.D.	3105,3125,3209		

Appendix 5

Leachate Analyses (Industriplex)
(from - Industriplex NPL Site Administrative
Record V 1-12, June 24, 1988)

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Table 7.2 LEACHATE ANALYSIS

March 11, 1983

Location	Heavy Metals Ref. #	g/l	pH Ref.#	Conductivity Ref.#	who/cm	Cyanide Ref.#	mg/l	Ref.#	Organic Pollutants Compound	g/l
L-1	2825	Sb-200				2833	N.D.	2907,2919,2920	AE 10	860
		As-300							Methyl phenol	566
		Cd-7							Benzoic Acid	290
		Zn-24							Piperidinone	62
									Benzene Propanoic Acid	477
									Bis (Sulfonyl) Benzene	30
									Sulfur	221
Spring next to 193 I-93	2823	Cd-6				2831	N.D.	2905,2915,2919	BE 13	58
		Pb-62							VO 22	29
		Zn-36							VO 30	14
		Be-110								

Appendix 6

EBASCO Central Area Sewer Composite Sample Results
(from Final Supplemental RI, Appendix E-25)

TABLE E-28 (CONT'D)
CENTRAL AREA
SEWER COMPOSITE SAMPLE RESULTS

	SC-01 EBASCO 9-24-87	SC-02 EBASCO 9-25-87
INORGANICS (ug/l)		
ALUMINUM	571	892
ANTIMONY	ND	ND
ARSENIC	ND	ND
BARIUM	44 JB	58 JB
BERYLLIUM	ND	ND
CADMIUM	ND	ND
CALCIUM	33,600	36,900
CHROMIUM	ND	281
COBALT	ND	ND
COPPER	188	1,680
IRON	2,540	8,690
LEAD	17	166
MAGNESIUM	5,420	6,660
MANGANESE	250	858
MERCURY	ND	ND
NICKEL	ND	369
POTASSIUM	32,200	18,100
SELENIUM	ND	ND
SILVER	8	114
SODIUM	98,400	450,000
THALLIUM	ND	ND
VANADIUM	ND	ND
ZINC	139	636
CYANIDE	ND	ND

TABLE E-28
CENTRAL AREA
SEWER COMPOSITE SAMPLE RESULTS

ORGANICS (ug/l)	SC-01 EMSCO 9-24-87	SC-02 EMSCO 9-25-87
VOLATILES		
ACETONE	54 J	1,000
2-BUTANONE	R	290
TOLUENE	110	28
ETHYLBENZENE	R	R
TOTAL XYLENES	R	4 J
1,1,1-TRICHLOROETHANE	63	20
1,1-DICHLOROETHANE	ND	25
TETRACHLOROETHENE	1	27
TRICHLOROETHENE	1	14
1,2-DICHLOROETHENE	ND	ND
VINYL CHLORIDE	ND	ND
CHLOROFORM	ND	2 J
METHYLENE CHLORIDE	R	R
STYRENE	ND	14
SEMI-VOLATILES		
PHENOL	1	ND
4-METHYLPHENOL	8	ND
PENTACHLOROPHENOL		53
BIS(2-ETHYLHEXYL)PHTHALATE	64	11 J
DI-N-OCTYL PHTHALATE	.9	ND
DI-N-BUTYL PHTHALATE	R	R
DIETHYL PHTHALATE	3	4
BUTYLBENZYL PHTHALATE	28	4
DIMETHYL PHTHALATE	R	R
NAPHTHALENE	ND	4
2-METHYLNAPHTHALENE	ND	.3
1,2-DICHLOROBENZENE	ND	58
1,4-DICHLOROBENZENE	ND	1

Appendix 7

Chemical List from Woburn Chemical Works
(from - Industriplex NPL Site Administrative
Record V 1-12, June 24, 1988)

Table 1 A

WOBURN CHEMICAL WORKS - CHEMICAL LIST 1853 - 1863

CHEMICAL	OTHER NAME	FORMULA	USE	MISC.
Oil of Vitriol	conc. sulfuric acid	H_2SO_4	textile, paper, tanning, raw material	
Muriatic acid	hydrochloric acid	HCl		
Salt Cake	impure sodium sulfate	Na_2SO_4	paper, tanning	
Glauber Salt	sodium sulfate	$Na_2SO_4 \cdot 10H_2O$	paper, glass	
Soda Ash	---	Na_2CO_3		
Tin crystals	tin chloride	---	dye, textiles	
Blue Vitriol	copper sulfate	---	textiles	

Source: American Chemical Industry: A History, Haynes, Volume I, p. 186

Appendix 8

Chemical List from Merrimack Chemical Company
(from - Industriplex NPL Site Administrative
Record V 1-12, June 24, 1988)

Table A 2.1 MERRIMAC CHEMICAL COMPANY - CHEMICAL LIST FEBRUARY, 1888

CHEMICAL	OTHER NAME	FORMULA	USE	MISC.
Alum	generally potassium aluminum sulfate	$K_2Al_2(SO_4)_4 \cdot 24H_2O$	dyeing, tanning, paper industry	from alunite
Silicate of soda	sodium silicate		egg preservation, adhesive, plaster	production started 1859
Salt cake	sodium sulfate	Na_2SO_4	tanning, paper	
Sulphate of soda	sodium sulfate	$Na_2SO_4 \cdot 4H_2O$	paper	
Glauber salts	sodium sulfate	$Na_2SO_4 \cdot 10H_2O$	paper, glass	
Nitrate of soda	sodium nitrate	$NaNO_3$	for nitric acid production	boiled with sulfuric acid
Nitric acid	---	HNO_3	explosives	
Chloride of sulfur		SCl_2	bleaching agent	
Tin crystals	tin chloride	---	dyeing	
Oil of vitriol	sulfuric acid	H_2SO_4		
Muriatic acid	hydrochloric acid	HCl		
Sulphur	sulfur	---	sulfuric acid manufacture	

Source: Sanborn Fire Insurance Map, February 1888

Table 2.2 A

MERRIMAC CHEMICAL COMPANY - CHEMICAL LIST 1894

CHEMICAL	OTHER NAME	FORMULA	USE	MISC.
Bauxite	aluminum ore		Raw material for alum	
Nitrate of iron				
Pyrites	iron ore	FeS_2	raw material for sulfuric acid	
Sulfuric acid		H_2SO_4		
Alum.	previously mentioned			
Silicate of soda				
Salt cake				
Sulfate of soda				
Nitrate of soda				
Nitric Acid				
Muriatic Acid				

Source: EPA Files

Table 2.3A MERRIMAC CHEMICAL COMPANY - CHEMICAL LIST 1899

CHEMICAL	OTHER NAME	FORMULA	USE	MISC.
Bisulfate of soda				
Hydrate of aluminum			Intermediate in alum manufacture	
Chloride of aluminum	Aluminum chloride	$AlCl_3$		
Paint grinding				
Alum	previously mentioned			
Sulfuric acid	previously mentioned			
Sulfate of soda	previously mentioned			
Bauxite	previously mentioned			
Pyrites	previously mentioned			
Muriatic acid	previously mentioned			
Nitric acid	previously mentioned			
Nitrate of iron	previously mentioned			

Source: EPA Files

Table A 2.4 MERRIMAC CHEMICAL COMPANY - CHEMICAL LIST 1904

CHEMICAL	OTHER NAME	FORMULA	USE	MISC.
Carbonizer	aluminum chloride	---	textile mills	started production in 1890
Acetate of soda	sodium acetate	---	dyes in textile mills	Merrimac bought acetate to make acetic acid and acetates for textile industry
Acetic acid				
Hypo acid	---	$Na_2S_2O_4$	photographic	
Bisultite	hydro sulfide	NaSH	paper making	
Carbonic acid	---	H_2CO_3	paper, tanning	
Oil of vitriol Muriatic acid Nitrate of soda Glauber salts Tin crystals Alum Hydrate of aluminum Bauxite Pyrites	previously mentioned			

Source: Sanborn Fire Insurance Map May 1904

Table A 2.5

MERRIMAC CHEMICAL COMPANY - CHEMICAL LIST 1910

CHEMICAL	OTHER NAME	FORMULA	USE	MISC.
Arsenate of lead		$Pb_3(AsO_4)_2$	Insecticide	
(Arsenite of lead)	---	$Pb(AsO_2)_2$		
Sulphuric acid				
Bisulfide				
Hypo acid				
Carbonic acid				
Alum				
Hydrates				
Bauxite		previously mentioned		
Pyrites				
Tin crystals				
Muriatic acid				
Glauber salts				
Acetic acid				
Acetate of soda				
Nitric acid				
Nitrate of soda				

Source: Sanborn Fire Insurance Map, June 1910

Table 2.6.1 A

MERRIMAC CHEMICAL COMPANY - CHEMICAL LIST 1918

CHEMICAL	OTHER NAME	FORMULA	USE	MISC.
Acetate of lime				
H acid	---	---	dye	naphthalene derivative production moved to Everett by 1926
Naphahalene	---	---	produce H acid	
Litharge	lead monoxide	---	---	---
Nitre	potassium nitrate or sodium nitrate	---	nitric acid production	
Copper sulfate	---	$CuSO_4$		
Mercol.Paint manufacture	alkyl aryl sulfinate paint	---	---	---
Sulfuric acid	previously mentioned			
Muriatic acid				
Pyrites				
Bauxite				
Hydrate				
Alum				
Alumina				
Arsenate of lead				
Glaubers salt				
Acetic acid				
Acetate of soda				
Bisulfite				
Carbonic acid				
Sulphur				
Nitric acid				

Source: Sanborn Fire Insurance Map, May 1918

Table 2.7 A

MERRIMAC CHEMICAL COMPANY CHEMICAL LIST May 1926

CHEMICAL	OTHER NAME	FORMULA	USE	MISC.
Merclor	sodium hypochlorite	NaOCl	bleaching for textiles and paper	
Alum				
Hydrate				
Iron sulphate				
Bisulphite				
Pyrites				
Nitre				
Nitric acid				
Paint manufacturing				
Glauber salt	previously mentioned			
Salt cake				
Nitric acid				
Muriatic acid				
Sulfuric acid				
Sulfur				
Nitrate				
Hydro acid				
Acetic acid				
Acetate of lime				

Source: 1926 Sanborn Fire Insurance Map

Appendix 9

Chemical List from New England Manufacturing
(from - Industriplex NPL Site Administrative
Record V 1-12, June 24, 1988)

Table 2.6.2 A

NEW ENGLAND MANUFACTURING CHEMICAL LIST, May 1918

CHEMICAL	OTHER NAME	USE
Phenol	---	intermediate
Benzol	Benzene	explosives, intermediate, misc.
Picric acid		explosives
Toluene	---	explosives

Source: 1918 Sanborn Fire Insurance Map

Appendix 10

Chemical List from Stauffer Chemical Co.
(from - Industriplex NPL Site Administrative
Record V 1-12, June 24, 1988)

Table 3 - STAUFFER CHEMICAL COMPANY
Chemical List - October 1966

Taken from October 1966 monthly inventory and believed to represent, with minor exceptions, chemicals used from 1938 - 1969 by Stauffer on site.

CHEMICAL	OTHER NAME	FORMULA	USE	OCTOBER USAGE -lb-
Albone	Hydroxide peroxide	H_2O_2	Glue treatment	2,000
Anhydrous ammonia		NH_3	Refrigerant	700
Caustic soda - Flake	Sodium hydroxide	NaOH	Hide treatment	2,400
Caustic soda - Liquid 50-B-1	Sodium hydroxide	NaOH	Hide treatment	41,000
Chloride of lime			Odor control	4,000
Defoamer-Nopco NZH			Glue treatment	7,426
-Nopco 1719A			Glue treatment	4,386
Epon resin			Glue treatment	0
Epsom salt			Glue treatment	0
Excelsior	Wood shavings		Cooking kettle filter	9,976
Filter aid - Celite 0535	Diatomaceous earth		Filtration	0
Gum arabic			Glue treatment	0
Hygrol			Air conditioning	0
Lime	Unslaked lime	CaO	Hide treatment	68,200
Lime slurry - Dry basis		$Ca(OH)_2$	Hide treatment	375,952
Magnesite	Magnesium carbonate		Hide treatment	24,000
Muriatic acid	Hydrochloric acid	HCl	Hide treatment	0
Rock salt		NaCl	Utilities/Safety	2,820
Santobrite; Dow "G"; Chlorophene 665	Sodium pentachloro phenate		Water/glue disinfectant	6,750
Seakem	Sea weed extract		Glue treatment	700
Soda ash	Sodium carbonate	Na_2CO_3	Hide treatment	37,100
Sodium perborate			Glue treatment	7,850
Sugar, granulated			Glue treatment	0
Sulphur dioxide		SO_2	Hide treatment	68,060
Sulphuric acid		H_2SO_4	Hide treatment	591,250
Tomol-SH	Sodium salt of Napthalene sulfonic acid		Glue treatment	0
Tri-sodium phosphate		Na_3PO_4	Washing	300
Triethylene glycol			Utilities	0
Zinc Hydrosulphite			Glue treatment	0
Zinc Sulphate		$ZnSO_4$	Water/glue disinfectant	12,250

Definition of Use

1. Hide treatment - Chemicals used to prepare raw hides and any chrome tanned leather for glue cooking; and recover and purify grease.
2. Glue treatment - Chemicals used to brighten, increase viscosity, etc. of finished glue.
3. Water/glue disinfectant - Glue solutions provided almost an ideal media for bacterial growth which degraded or sometimes destroyed glue being processed. Bactericides (Zinc sulfate, Santobrite, Dow "G", etc. were added to clean and disinfect glue pipelines, tanks, equipment, etc.
4. Refrigerant, Odor Control, Air Conditioning, etc. - as stated.

Appendix 11

Typical Analysis of Stauffer Chemical Waste
(from - Industriplex NPL Site Administrative
Record V 1-12, June 24, 1988)

Table 4 A

TYPICAL ANALYSIS OF STAUFFER WASTE

Taken from 9/6/62 analysis by Rohm and Haas

Residue remaining after cooking glue from hide pieces

Contains

1. Water 60 - 75%
2. Residual glue in solution 3% concentration
3. Zinc sulfate. Small amount also Santobrite
4. Grease. Varies from very small to large amount
   a. Grease consists of varying amounts of:
      1. Olein
      2. Oleic Acid
      3. Stearin
      4. Stearic Acid
      5. Palmitin
      6. Palmitic Acid
      7. Calcium soaps of the above
5. Some residue contains chromium largely as either chrome leather or insoluble $Cr(OH)_3$
6. Calcium sulfate
7. Small amounts of Fe^{+++}, Mg^{++}, Cl^{-}, SO_3^{--}, Al^{+++}, CO_2, etc. in solution
8. Keratin: hair and wool
9. pH varies from around 6 to 8
10. Insoluble proteins present in animal skins, i.e., non-collagen proteins

Appendix 12

Locations of Potential Sources of Groundwater Contamination
(from - Industriplex NPL Site Administrative
Record V 1-12, June 24, 1988)

KEY: FIGURE 2

Number	Site Name	Potential Source of Contamination: Leaching of Surface Deposits	Potential Source of Contamination: Exfiltration from Sewers
1.	Ritter Trucking Company, Inc.		x
2.	E. C. Whitney & Sons		x
3.	New England Pigments and Resins	x	x
4.	Woburn Steel Drum		x
5.	MDC Septage Receiving Station		x
6.	Raffi and Swanson, Inc.	x	x
7.	Olin Chemical Group, Wilmington Plant	x	
8.	Polyvinyl Chemicals Industries	x	
9.	John J. Riley Company	x	x
10.	Murphy's Waste Oil Service		x
11.	Whitney Barrel Company		x
12.	Aberjona Auto Parts, Inc.		x
13.	Tanners Degreasing	x	x
14	Former City of Woburn Sanitary Landfill	x	
15.	Present Location of Hide Piles	x	
16.	Chromium Lagoon	x	
17.	Former Location of Hide Piles	x	
18.	Arsenic Pits	x	
19.	Arsenic Trioxide Drums (now removed)	x	
20.	Unlabelled Barrels and Drums along unpaved road; possible area of midnight dumping.	x	x
21.	Atlantic Gelatin	x	

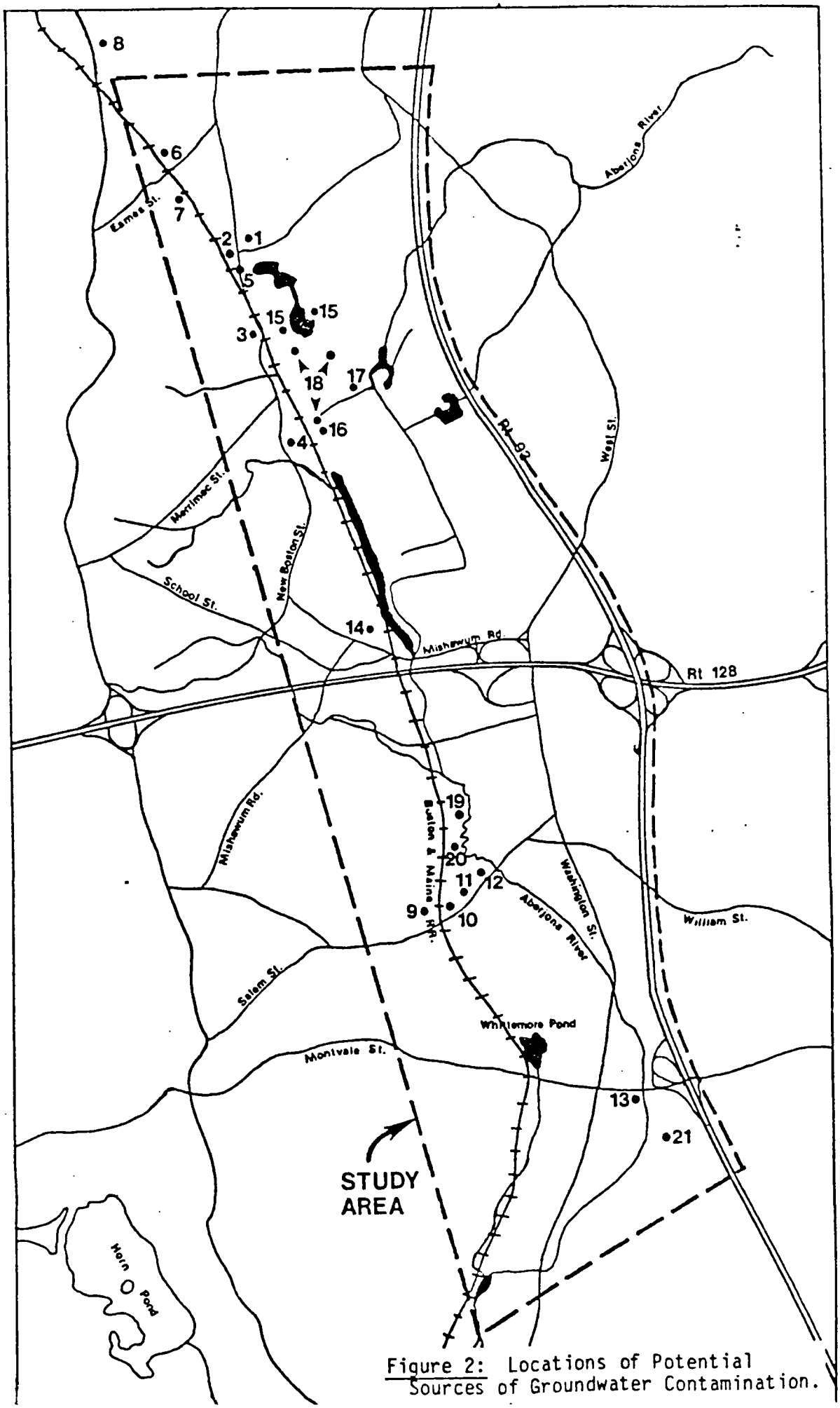


Figure 2: Locations of Potential Sources of Groundwater Contamination.

Appendix 13

Sources of Pollution (partial) Along the Aberjona River
Summer (1970)
(from F.L. Defo ≈ (1970) Tufts University Thesis

TABLE I

SOURCES OF POLLUTION ALONG THE ABERJONA RIVER EXAMINED DURING SUMMER 1970*

No.	Source	Pollutants	Flow	Pollution Abated	Comments
1	Walter and Bills Inc. Winchester	Caustic Rinse Water	Nil	No	Firm awaiting permission to tie into sewerage
2	General Foods-Atlantic Gelatin-Woburn	Thermal	Variable	Yes	Sweetwater Brook is monitored 24 hours by TV.
3	Anderson Foreign Motors Building #5-Woburn	Soap, oil and grease	Variable	Yes	Operation moved to main shops
4	Brodie Industial Trucks, Inc.-Woburn	Soap and oil	Variable	No	Firm awaiting city approval of oil trap
5	Stauffer Chemicals-Mark Phillip Trust-Owner (abandoned chemical pits and lagoons)	Abandoned filled chemical pits Intermittent leaching into drainage Some Cr^{+6}	Intermittent	No	Method of disposal of pit contents to be determined and approved by Division and MDPH
6	Woburn Dump-Woburn	Dump drainage containing assimilative organics and fecal bacteria	Variable	No	Landfill needs attention to lessen pollution to drainage into Michawum Lake

7	Whitney Barrel Company-Wilmington	Spillage and drainage	Nil	Yes	Owner will provide better storage procedures
8	NationalPolychemicals-Wilmington	Salts, acids, amines, oil, grease	Considerable	No	Discharge will terminate during Spring 1971
10	International Minerals-Woburn	Fertilizer piles and bags-drainage is intermittent	Nil	No	Owner will remove piles from near small pond
11	International Salt Co.-Wilmington	Salt Piles	Runoff	No	Future surveillance will determine action
12	J. O. Whitin Co.-Winchester	Thermal condensate	168 gpm	No	Writer will meet with plant engineer to reduce temp. of effluent

* Taken from report by Robert Cady of the Division of Water Pollution Control (See reference 3 in Bibliography)

Appendix 14

List of Confirmed Disposal Sites and Locations to be Investigated for Woburn
(from DEQE, January 15, 1989)

M A S T E R I N D E X O F A L L S I T E S A N D L O C A T I O N S

January 15, 1989

Town	Site Number	Name	Address	Currently Listed	On Page	New to Book
WILMINGTON	3-0472	WILMINGTON HIGH SCHOOL	CHURCH ST.	CONFIRMED	CON - 99	
WINCHENDON	2-0324	GALE CHEVROLET-BUICK INC.	67 CENTRAL ST.	L.T.B.I.	LTB - 57	
WINCHENDON	2-0167	MOBIL GAS STATION 2	234 SPRING ST.	L.T.B.I.	LTB - 57	
WINCHENDON	2-0418	NORTHEAST GAS/SAHAGEN	LINCOLN AVE.	L.T.B.I.	LTB - 57	
WINCHENDON	2-0419	NORTHEAST GAS/SAHAGEN	SCHOOL ST.	L.T.B.I.	LTB - 57	
WINCHENDON	2-0421	NORTHEAST GAS/SAHAGEN	33-35 RAILROAD AVE.	L.T.B.I.	LTB - 57	
WINCHENDON	2-0331	SPEEDWAY PETROLEUM	246 SCHOOL ST.	CONFIRMED	CON - 99	
WINCHENDON	2-0367	SUN CITY AUTO SALES	131 SPRING ST.	L.T.B.I.	LTB - 57	
WINCHENDON	2-0217	SURE OIL/OLD COLONY NO. 6	230 WEST CENTRAL ST.	CONFIRMED	CON - 99	
WINCHENDON	2-0264	TANK FARM	LINCOLN RD.	L.T.B.I.	LTB - 57	Yes
WINCHENDON	2-0166	WINCHENDON LANDFILL	637 RIVER ST.	REMEDIAL	REM - 13	
WINCHESTER	3-0873	EXXON STATION	586 MAIN ST.	L.T.B.I.	LTB - 57	
WINCHESTER	3-0114	FORMER GAS STATION	611 MAIN ST.	CONFIRMED	CON - 99	
WINCHESTER	3-0115	FORMER J.O. WHITTEN CO.	134 CROSS ST.	CONFIRMED	CON - 99	
WINCHESTER	3-0667	GEOTECHNICAL ENGINEERS	1017 MAIN ST.	L.T.B.I.	LTB - 57	
WINCHESTER	3-1730	LOCATELLI'S WNCH.RLTY TRST	12 THOMPSON ST.	CONFIRMED	CON - 99	
WINCHESTER	3-0906	PROPERTY	HILL ST & ROCK AVE.	L.T.B.I.	LTB - 57	
WINCHESTER	3-0917	ULTIMAR PETROLEUM STATION	135 SWANTON ST.	L.T.B.I.	LTB - 58	
WINTHROP	3-1283	DEER ISLAND TREATMENT PLT	DEER ISLAND	CONFIRMED	CON - 99	
WOBURN	3-1146	ABERJONA AUTO PARTS	278 SALEM ST.	L.T.B.I.	LTB - 58	
WOBURN	3-1737	ATLANTIC GELATIN	HILL ST.	L.T.B.I.	LTB - 58	
WOBURN	3-0473	BLOX/BRUSSARD	100 ASHBURTON AVE.	CONFIRMED	CON - 99	
WOBURN	3-1512	CITGO STATION	505 MAIN ST.	L.T.B.I.	LTB - 58	
WOBURN	3-0474	DUNDEE PARK	NEW BOSTON ST.	L.T.B.I.	LTB - 58	

MASTER INDEX OF ALL SITES AND LOCATIONS

January 15, 1989

Town	Site Number	Name	Address	Currently Listed	On Page	New to Book
WOBURN	3-1867	FORMER ACE DISPOSAL SERVICES	22 N. MAPLE ST.	L.T.B.I.	LTB - 58	Yes
WOBURN	3-1932	FORMER EXXON	300 CAMBRIDGE ST.	L.T.B.I.	LTB - 58	Yes
WOBURN	3-0475	FORMER OIL DEPOT	50 STURGIS ST.	CONFIRMED	CON -100	
WOBURN	3-0476	FORMER TANNERY	60 SOUTH BEDFORD ST.	CONFIRMED	CON -100	
WOBURN	3-0671	GLOBE TICKET CO.	166 NEW BOSTON ST.	L.T.B.I.	LTB - 58	
WOBURN	3-0151	GORCHEV PHOTO	11 CABOT RD.	L.T.B.I.	LTB - 58	
WOBURN	3-0854	HILLTOP CONSTRUCTION	124 DRAGON COURT	CONFIRMED	CON -100	
WOBURN	3-1734	INDEPENDENT TALLOW CO, INC	39 CEDAR ST.	L.T.B.I.	LTB - 58	
WOBURN	3-1731	INDUSTRI-PLEX 128	COMMERCE & ATLANTIC	CONFIRMED	CON -100	
WOBURN	3-0507	INDUSTRIAL BUILDING	171 MERRIMAC ST.	L.T.B.I.	LTB - 58	
WOBURN	3-1966	INDUSTRIAL SITE	225 WILDWOOD AVE.	L.T.B.I.	LTB - 58	Yes
WOBURN	3-0482	JOHN J. RILEY CO./BEATRICE	228 SALEM ST.	L.T.B.I.	LTB - 58	
WOBURN	3-1890	LOT 2A	007 UNDERCOVER WAY	L.T.B.I.	LTB - 58	Yes
WOBURN	3-1735	MBTA PROPERTY	MISHAWUM RD.	REMEDIAL	REM - 13	
WOBURN	3-0481	MCLEAN TRUCKING SITE	85 CEDAR ST.	CONFIRMED	CON -100	
WOBURN	3-0488	MICHIENZI CONSTRUCTION	11 SIXTH RD.	L.T.B.I.	LTB - 58	
WOBURN	3-1881	MOBIL SERVICE STATION	4 FEDERAL ST.	L.T.B.I.	LTB - 58	Yes
WOBURN	3-0853	MOBIL STATION	23 PLEASANT ST.	L.T.B.I.	LTB - 58	
WOBURN	3-1264	NEW ENG. RESINS & PIGMENT	316 NEW BOSTON ST.	L.T.B.I.	LTB - 58	
WOBURN	3-0150	NO. WOBURN INDUSTRIAL PARK	GILL ST./SIXTH RD.	CONFIRMED	CON -100	
WOBURN	3-0594	OLYMPIA NOMINEE TRUST	60 OLYMPIA AVE.	CONFIRMED	CON -100	
WOBURN	3-1736	PROPERTY	25 OLYMPIA AVE.	L.T.B.I.	LTB - 58	
WOBURN	3-0180	PROPERTY	HOLTEN ST.	REMEDIAL	REM - 14	
WOBURN	3-0731	PROPERTY	8-10 GREEN ST.	L.T.B.I.	LTB - 58	

M A S T E R I N D E X O F A L L S I T E S A N D L O C A T I O N S

January 15, 1989

Town	Site Number	Name	Address	Currently Listed	On Page	New to Book
WOBURN	3-1732	RESTAURANT	921 BOYLSTON ST.	REMEDIAL	REM - 14	
WOBURN	0-0305	STAUFFER CHEMICAL CO.(DUP)	NEW BOSTON ST.	DELETED	DEL - 7	
WOBURN	3-0195	SUTHERLAND FOUNDRY	3 ABERJONA DR.	L.T.B.I.	LTB - 58	
WOBURN	3-0478	THREE C CO.	181 NEW BOSTON ST.	CONFIRMED	CON -100	
WOBURN	3-1424	UNIFIRST	15 OLYMPIA AVE.	CONFIRMED	CON -100	
WOBURN	3-0477	VAC-CENT	5 GREEN ST.	REMEDIAL	REM - 14	
WOBURN	3-1423	W. R. GRACE, CRYOVAC	369 WASHINGTON ST,	CONFIRMED	CON -101	
WOBURN	3-0479	WELLS G & H	ABERJONA RIVER VALLEY	CONFIRMED	CON -101	
WOBURN	3-0595	WEYERHAUSER CORP.	3 WHEELING AVE.	CONFIRMED	CON -101	
WOBURN	3-0534	WHITNEY BARREL CO.	256 SALEM ST.	CONFIRMED	CON -101	
WOBURN	3-0480	WINN TRUCKING TERMINAL	195 NEW BOSTON ST.	CONFIRMED	CON -101	
WOBURN	3-1738	WOBURN STEEL DRUM INC.	7 HARLOW CT.	L.T.B.I.	LTB - 58	
WORCESTER	2-0313	ALAN CORPORATION	290 WEST BOYLSTON ST.	L.T.B.I.	LTB - 58	Yes
WORCESTER	2-0452	AMERICAN PRESSED METAL	15 HOPE AVE.	L.T.B.I.	LTB - 58	
WORCESTER	2-0456	APPLIANCE SERVICE & REPAIR	490 WEST BOYLSTON ST.	L.T.B.I.	LTB - 59	Yes
WORCESTER	2-0315	AVIALL	AIRPORT DRIVE	L.T.B.I.	LTB - 59	
WORCESTER	2-0168	BABCO REALTY	2 KANSAS ST.	CONFIRMED	CON -101	
WORCESTER	2-0386	BREAULTS AUTO SERVICE	1270 GRAFTON ST.	L.T.B.I.	LTB - 59	Yes
WORCESTER	2-0266	C.K. SMITH / TANK FARM	233 SOUTHBRIDGE ST.	L.T.B.I.	LTB - 59	
WORCESTER	2-0365	CASTLE METALS	QUINSIGAMOND AVE.	L.T.B.I.	LTB - 59	
WORCESTER	2-0170	CHARLES MANOOG YARD #9	401 SOUTHBRIDGE ST.	CONFIRMED	CON -101	
WORCESTER	2-0171	COMMONWEALTH GAS	QUINSIGAMOND AVE.	CONFIRMED	CON -101	
WORCESTER	2-0296	CONSTRUCTION SITE	130 HIGGINS ST.	L.T.B.I.	LTB - 59	Yes
WORCESTER	2-0172	CUSTOM COATING+LAMINATION	PLANTATION ST.	L.T.B.I.	LTB - 59	

REMEDIAL SITES LISTED BY TOWN AND SITE NAME

January 15, 1989

Town	Site Number	Name	Address	Resp. Codes	Response Action By	First Listed L.T.B.I.	First Listed Remedial	New to List
EST SPRINGFIELD	1-0220	PROPERTY	759 MEMORIAL AVE.	D	RP ONLY	04/15/87	10/15/88	
EST SPRINGFIELD	1-0225	REPUBLIC OIL	274 WESTFIELD ST.	AD	RP ONLY	04/15/87	01/15/88	
EST SPRINGFIELD	1-0252	SOUTHLAND CORP.	85 MEMORIAL AVE.	AD	RP ONLY	07/15/87	01/15/88	
EST SPRINGFIELD	1-0300	TEXACO, F.L. ROBERTS	928 RIVERDALE ST.	D	RP ONLY	07/15/87	10/15/88	
ESTBOROUGH	2-0152	DOERING EQUIPMENT CO.	176 EAST MAIN ST.	A	RP ONLY	/ /	01/15/87	
ESTFIELD	1-0229	EXXON-WESTFIELD	1 FRANKLIN ST.	D	RP ONLY	04/15/87	07/15/88	
ESTFIELD	1-0427	LEAKING STORAGE TANK	163 UNION ST.	AD	RP ONLY	/ /	10/15/87	
ESTFIELD	1-0230	MOBIL GAS	27 SOUTHWICK RD.	A	RP ONLY	/ /	10/15/87	
ESTFIELD	1-0232	MTD/COLUMBIA MFG. CO.	CYCLE ST.	AB	RP ONLY	/ /	01/15/87	
ESTFIELD	1-0428	PREFERRED ELECTRONICS INC.	MAIN LINE DR.	AE	RP ONLY	/ /	01/15/87	
ESTFIELD	1-0233	PTS ELECTRONICS	300 UNION ST.	D	RP ONLY	04/15/87	01/15/88	
ESTFIELD	1-0236	TELL TOOL	TURNPIKE INDUSTRIAL RD.	D	RP ONLY	04/15/87	07/15/88	
ESTFIELD	1-0429	WESTFIELD FORD	234 EAST MAIN ST.	A	RP ONLY	/ /	07/15/87	
ORD	2-0164	STAR CHEMICAL	RTE 117	A	RP ONLY	/ /	01/15/87	
ESTWOOD	3-0085	WITLECK PROPERTY	346 GAY ST.	A	RP ONLY	/ /	04/15/87	
EYMOUTH	3-0465	AGRICO AMER AGRI. CHEM. CO	FIRST PA., WEBB PK.	A	RP ONLY	/ /	01/15/87	
EYMOUTH	3-0464	FORMER HUDSON BUS	BROAD AND CENTER ST.	A	RP ONLY	/ /	04/15/87	
BRAHAM	1-0239	CONRAIL	RTE 20	AD	RP ONLY	04/15/87	01/15/88	
BRAHAM	1-0240	STONY HILL SHELL	1993 BOSTON RD..	D	RP ONLY	04/15/87	01/15/88	
LIAMSTOWN	1-0245	GENERAL PHOTO	330 COLE AVENUE	A	RP ONLY	04/15/87	07/15/87	
LMINGTON	3-1788	PROPERTY	23 INDUSTRIAL WAY	A	RP ONLY	10/15/87	04/15/88	
LMINGTON	3-1786	THREE M COMPANY	21 INDUSTRIAL WAY	A	RP ONLY	/ /	04/15/88	
NCHENDON	2-0166	WINCHENDON LANDFILL	637 RIVER ST.	A	RP ONLY	/ /	01/15/88	
BURN	3-1735	MBTA PROPERTY	MISHAWUM RD.	A	RP ONLY	/ /	01/15/87	

REMEDIAL SITES LISTED BY TOWN AND SITE NAME

January 15, 1989

Town	Site Number	Name	Address	Resp. Codes	Response Action By	First Listed L.T.B.I.	First Listed Remedia
WOBURN	3-0180	PROPERTY	HOLTEN ST.	E	RP ONLY	/ /	04/15/E
WOBURN	3-1732	RESTAURANT	921 BOYLSTON ST.	A	RP ONLY	07/15/87	10/15/E
WOBURN	3-0477	VAC-CENT	5 GREEN ST.	A	RP AND DEQE	/ /	01/15/E
WORCESTER	2-0183	OWENS ILLINOIS FPD	68 SOUTH LUDLOW ST.	AD	RP ONLY	/ /	01/15/E
WORCESTER	2-0188	UNIVERSAL METALS CORP.	345 SHREWSBURY ST.	A	RP ONLY	/ /	01/15/E
WORCESTER	2-0189	WARNER AND SWASEY	145 BROOKS ST.	A	DEQE ONLY	/ /	01/15/E
YARMOUTH	4-0183	CANNON'S ENGINEERING	350 MAIN ST.	A	RP ONLY	/ /	01/15/E
YARMOUTH	4-0187	WHITES PATH AUTO BODY	383 WHITES PATH	A	RP ONLY	/ /	01/15/E
YARMOUTH	4-0185	YARMOUTH LANDFILL	SOUTH OF RTE 6 N OF TWNHS	A	RP ONLY	/ /	01/15/E

CONFIRMED SITES LISTED BY TOWN AND SITE NAME

January 15, 1989

Town	Site Number	Name	Address	Current Status	First Listed L.T.B.I.	First Listed Confirmed	New to List
WILMINGTON	3-0009	RITTER TRANSPORTATION	856 WOBURN ST.	PHASE 5	/ /	01/15/87	
	** Hazardous Material Release Site						
	** Response action by: RP ONLY						
	** NON_PRIORITY Site						
	** Short Term Measures Taken						
WILMINGTON	3-0472	WILMINGTON HIGH SCHOOL	CHURCH ST.	PHASE 4	/ /	01/15/87	
	** Petroleum Release Site						
	** Response action by: RP ONLY						
	** Unclassified Site						
WINCHENDON	2-0331	SPEEDWAY PETROLEUM	246 SCHOOL ST.	PHASE 2	01/15/88	04/15/88	
	** Petroleum and Hazardous Material Release Site						
	** Response action by: RP ONLY						
	** PRIORITY Site						
WINCHENDON	2-0217	SURE OIL/OLD COLONY NO. 6	*230 WEST CENTRAL ST.	PHASE 2	07/15/87	10/15/87	
	** Petroleum and Hazardous Material Release Site						
	** Response action by: RP ONLY						
	** NON_PRIORITY Site						
	** Short Term Measures Taken						
WINCHESTER	3-0114	FORMER GAS STATION	611 MAIN ST.	PHASE 2	/ /	01/15/87	
	** Petroleum Release Site						
	** Response action by: RP ONLY						
	** NON_PRIORITY Site						
	** Short Term Measures Taken						
WINCHESTER	3-0115	FORMER J.O. WHITTEN CO.	134 CROSS ST.	PHASE 3	/ /	01/15/87	
	** Hazardous Material Release Site						
	** Response action by: RP ONLY						
	** Unclassified Site						
WINCHESTER	3-1730	LOCATELLI'S WNCH.RLTY TRST	12 THOMPSON ST.	PHASE 2	04/15/87	07/15/87	
	** Petroleum Release Site						
	** Response action by: RP ONLY						
	** Unclassified Site						
WINTHROP	3-1283	DEER ISLAND TREATMENT PLT	DEER ISLAND	PHASE 2	04/15/88	04/15/88	
	** Petroleum Release Site						
	** Response action by: RP ONLY						
	** Unclassified Site						
WOBURN	3-0473	BLOX/BRUSSARD	100 ASHBURTON AVE.	PHASE 2	/ /	01/15/87	
	** Hazardous Material Release Site						
	** Response action by: RP ONLY						
	** NON_PRIORITY Site						

CONFIRMED SITES LISTED BY TOWN AND SITE NAME

January 15, 1989

Town	Site Number	Name	Address	Current Status	First Listed L.T.B.I.	First Listed Confirmed
WOBURN	3-0475	FORMER OIL DEPOT	50 STURGIS ST.	PHASE 4	/ /	01/15/87
	** Petroleum Release Site					
	** Response action by: DEQE ONLY					
	** NON_PRIORITY Site					
	** Short Term Measures Taken					
WOBURN	3-0476	FORMER TANNERY	60 SOUTH BEDFORD ST.	PHASE 1	/ /	01/15/87
	** Hazardous Material Release Site					
	** Response action by: DEQE ONLY					
	** Unclassified Site					
	** Short Term Measures Taken					
WOBURN	3-0854	HILLTOP CONSTRUCTION	124 DRAGON COURT	PHASE 1	04/15/87	10/15/87
	** Hazardous Material Release Site					
	** Response action by: RP ONLY					
	** Unclassified Site					
WOBURN	3-1731	INDUSTRI-PLEX 128	COMMERCE & ATLANTIC	PHASE 3	/ /	01/15/87
	** Federal Superfund Site					
	** Response action by: RP AND DEQE					
	** PRIORITY Site					
	** Short Term Measures Taken					
WOBURN	3-0481	MCLEAN TRUCKING SITE	85 CEDAR ST.	PHASE 1	/ /	01/15/87
	** Petroleum Release Site					
	** Response action by: RP ONLY					
	** NON_PRIORITY Site					
	** Short Term Measures Taken					
WOBURN	3-0150	NO. WOBURN INDUSTRIAL PARK	GILL ST./SIXTH RD.	PHASE 2	/ /	01/15/87
	** Hazardous Material Release Site					
	** Response action by: RP ONLY					
	** Unclassified Site					
	** Short Term Measures Taken					
WOBURN	3-0594	OLYMPIA NOMINEE TRUST	60 OLYMPIA AVE.	PHASE 2	/ /	01/15/87
	** Petroleum Release Site					
	** Response action by: RP ONLY					
	** PRIORITY Site					
WOBURN	3-0478	THREE C CO.	181 NEW BOSTON ST.	PHASE 4	/ /	01/15/87
	** Hazardous Material Release Site					
	** Response action by: RP ONLY					
	** NON_PRIORITY Site					
	** Short Term Measures Taken					
WOBURN	3-1424	UNIFIRST	15 OLYMPIA AVE.	PHASE 3	/ /	01/15/87
	** Hazardous Material Release Site					
	** Response action by: RP ONLY					
	** PRIORITY Site					

CONFIRMED SITES LISTED BY TOWN AND SITE NAME

January 15, 1989

Town	Site Number	Name	Address	Current Status	First Listed L.T.B.I.	First Listed Confirmed	New to List
WOBURN	3-1423	W. R. GRACE, CRYOVAC	369 WASHINGTON ST.	PHASE 3	/ /	01/15/87	
	** Hazardous Material Release Site						
	** Response action by: RP ONLY						
	** PRIORITY Site						
WOBURN	3-0479	WELLS G & H	ABERJONA RIVER VALLEY	PHASE 3	/ /	01/15/87	
	** Federal Superfund Site						
	** Response action by: RP ONLY						
	** PRIORITY Site						
WOBURN	3-0595	WEYERHAUSER CORP.	3 WHEELING AVE.	PHASE 2	/ /	01/15/87	
	** Petroleum Release Site						
	** Response action by: DEQE ONLY						
	** PRIORITY Site						
WOBURN	3-0534	WHITNEY BARREL CO.	256 SALEM ST.	PHASE 2	/ /	01/15/87	
	** Hazardous Material Release Site						
	** Response action by: RP AND DEQE						
	** Unclassified Site						
WOBURN	3-0480	WINN TRUCKING TERMINAL	195 NEW BOSTON ST.	PHASE 2	/ /	01/15/87	
	** Hazardous Material Release Site						
	** Response action by: RP ONLY						
	** NON_PRIORITY Site						
ESTER	2-0168	BABCO REALTY	2 KANSAS ST.	PHASE 2	/ /	01/15/87	
	** Petroleum and Hazardous Material Release Site						
	** Response action by: RP ONLY						
	** NON_PRIORITY Site						
WORCESTER	2-0170	CHARLES MANOOG YARD #9	401 SOUTHBRIDGE ST.	PHASE 2	/ /	01/15/87	
	** Petroleum and Hazardous Material Release Site						
	** Response action by: RP ONLY						
	** NON_PRIORITY Site						
WORCESTER	2-0171	COMMONWEALTH GAS	QUINSIGAMOND AVE.	PHASE 2	01/15/87	04/15/87	
	** Petroleum and Hazardous Material Release Site						
	** Response action by: RP ONLY						
	** Unclassified Site						
WORCESTER	2-0174	EASTERN CHEM. SPECIALTIES	241 SOUTHBRIDGE ST.	PHASE 2	/ /	01/15/87	
	** Petroleum and Hazardous Material Release Site						
	** Response action by: RP AND DEQE						
	** NON_PRIORITY Site						
	** Short Term Measures Taken						
WORCESTER	2-0175	FORMER EXXON STATION	S.W. CUTOFF/MASSASOIT RD.	PHASE 2	07/15/87	10/15/87	
	** Petroleum and Hazardous Material Release Site						
	** Response action by: RP ONLY						
	** Unclassified Site						

LOCATIONS TO BE INVESTIGATED LISTED BY TOWN AND SITE NAM

January 15, 1989

Town	Site Number	Name	Address	Current Status	Source	First Listed L.T.B.I.
WINCHESTER	3-0917	ULTIMAR PETROLEUM STATION	135 SWANTON ST.	P.A.	DEQE	07/15/87
WOBURN	3-1146	ABERJONA AUTO PARTS	278 SALEM ST.	P.A.	EPA	01/15/87
WOBURN	3-1737	ATLANTIC GELATIN	HILL ST.	P.A.	EPA	01/15/87
WOBURN	3-1512	CITGO STATION	505 MAIN ST.	PHASE 1	DEQE	10/15/88
WOBURN	3-0474	DUNDEE PARK	NEW BOSTON ST.	PHASE 1	DEQE	01/15/87
WOBURN	3-1867	FORMER ACE DISPOSAL SERVICES	22 N. MAPLE ST.	PHASE 1	DEQE	01/15/89
WOBURN	3-1932	FORMER EXXON	300 CAMBRIDGE ST.	PHASE 1	DEQE	01/15/89
WOBURN	3-0671	GLOBE TICKET CO.	166 NEW BOSTON ST.	PHASE 1	DEQE	10/15/88
WOBURN	3-0151	GORCHEV PHOTO	11 CABOT RD.	PHASE 1	DEQE	01/15/87
WOBURN	3-1734	INDEPENDENT TALLOW CO, INC	39 CEDAR ST.	P.A.	EPA	01/15/87
WOBURN	3-0507	INDUSTRIAL BUILDING	171 MERRIMAC ST.	PHASE 1	DEQE	01/15/87
WOBURN	3-1966	INDUSTRIAL SITE	225 WILDWOOD AVE.	PHASE 1	DEQE	01/15/89
WOBURN	3-0482	JOHN J. RILEY CO./BEATRICE	228 SALEM ST.	P.A.	EPA	01/15/87
WOBURN	3-1890	LOT 2A	007 UNDERCOVER WAY	PHASE 1	DEQE	01/15/89
WOBURN	3-0488	MICHIENZI CONSTRUCTION	11 SIXTH RD.	PHASE 1	DEQE	01/15/87
WOBURN	3-1881	MOBIL SERVICE STATION	4 FEDERAL ST.	P.A.	DEQE	01/15/89
WOBURN	3-0853	MOBIL STATION	23 PLEASANT ST.	PHASE 1	DEQE	07/15/87
WOBURN	3-1264	NEW ENG. RESINS & PIGMENT	316 NEW BOSTON ST.	P.A.	EPA	01/15/87
WOBURN	3-1736	PROPERTY	25 OLYMPIA AVE.	P.A.	DEQE	04/15/87
WOBURN	3-0731	PROPERTY	8-10 GREEN ST.	PHASE 1	DEQE	10/15/88
WOBURN	3-0195	SUTHERLAND FOUNDRY	3 ABERJONA DR.	PHASE 1	DEQE	01/15/87
WOBURN	3-1738	WOBURN STEEL DRUM INC.	7 HARLOW CT.	P.A.	EPA	01/15/87
WORCESTER	2-0313	ALAN CORPORATION	290 WEST BOYLSTON ST.	P.A.	DEQE	01/15/89
WORCESTER	2-0452	AMERICAN PRESSED METAL	15 HOPE AVE.	PHASE 1	DEQE	10/15/88

Appendix 15

List of Confirmed Disposal Sites and Locations to be Investigated for Reading
(from DEQE, January 15, 1989)

MASTER INDEX OF ALL SITES AND LOCATIONS

January 15, 1989

Town	Site Number	Name	Address	Currently Listed	On Page	New to Bos
RANDOLPH	3-1706	SUNOCO STATION	733 SOUTH MAIN ST.	L.T.B.I.	LTB - 45	
RAYNHAM	4-0325	BOB ALBERT'S AUTO SALES	472 NEW STATE HWY	L.T.B.I.	LTB - 45	
RAYNHAM	4-0587	CITGO STATION	343 BROADWAY	CONFIRMED	CON - 72	
RAYNHAM	4-0458	MASTER BUICK	244 NORTH MAIN ST.	L.T.B.I.	LTB - 45	
RAYNHAM	4-0452	OCTOGON SERVICE STATION	CHURCH ST. & RTE 44	L.T.B.I.	LTB - 45	
RAYNHAM	4-0147	OLD COLONY GAS	RTE 44 AND SOUTH ST.	CONFIRMED	CON - 73	
RAYNHAM	4-0613	PROPERTY	620 BROADWAY ST.	L.T.B.I.	LTB - 45	Yes
RAYNHAM	4-0249	RAYNHAM TEXACO	RT. 44 SOUTH STREET	CONFIRMED	CON - 73	
RAYNHAM	4-0520	ROZENAS, INC.	1443 NORTH MAIN ST.	CONFIRMED	CON - 73	
RAYNHAM	4-0388	SHAW'S PLAZA	RTE 44	CONFIRMED	CON - 73	
READING	3-1017	ARCO STATION	MAIN ST.	CONFIRMED	CON - 73	
READING	3-0494	EXXON STATION	85 MAIN ST.	CONFIRMED	CON - 73	
READING	3-1982	FORMER GREENHOUSES	266-280.PLEASANT ST.	L.T.B.I.	LTB - 45	Yes
READING	3-0423	GENCORP	1 GENERAL ST.	REMEDIAL	REM - 10	
READING	3-0424	ICON/TRANCOA	312 ASH ST.	REMEDIAL	REM - 10	
READING	3-1502	PROPERTY	4 MINOT ST.	L.T.B.I.	LTB - 45	
READING	3-0047	READING DPW	181 JOHN ST.	CONFIRMED	CON - 73	
READING	3-0991	WEBBER & SMITH	15 PIERCE ST.	L.T.B.I.	LTB - 45	
REHOBETH	4-0148	L. AUBIN	260 PROVIDENCE ST.	CONFIRMED	CON - 73	
REHOBETH	4-0250	SPILL	RTE 44	REMEDIAL	REM - 10	
REVERE	3-0537	ADAMSON'S AUTO REPAIR	404 REVERE BEACH PARKWAY	CONFIRMED	CON - 73	
REVERE	3-0197	FORMER OLD COLONY GAS STATIO	12 SQUIRE RD.	CONFIRMED	CON - 74	
REVERE	3-0931	GIBBS OIL	41 LEE BURBANK HWY.	L.T.B.I.	LTB - 45	
REVERE	3-0132	HY-SIL/KEYS FIBER	HY-SIL AVE.	CONFIRMED	CON - 74	

REMEDIAL SITES LISTED BY TOWN AND SITE NAME

January 15, 1989

Town	Site Number	Name	Address	Resp. Codes	Response Action By	First Listed L.T.B.I.	First Listed Remedi
NORTHBRIDGE	2-0301	POLYPLATE, INC.	1 MAIN ST., BLDG 26	A	RP ONLY	/ /	04/15/
NORWOOD	3-0402	FAIRBAIRN PROP.	DAVIS AVE.	A	RP ONLY	01/15/87	04/15/
OAK BLUFFS	4-0201	OAK BLUFFS LANDFILL	COUNTY RD. & PENN AVE.	A	RP ONLY	01/15/87	07/15/
ORANGE	1-0135	CASS N D CO.	OFF TULLY RD.	A	RP AND DEQE	/ /	01/15/
ORLEANS	4-0136	PROPERTY	14 ANCHOR WAY	ACD	RP ONLY	/ /	01/15/
PALMER	1-0141	MASS. CENTRAL RAILROAD	BOSTON RD.	A	RP ONLY	/ /	01/15/
PALMER	1-0325	RATHBONE CORP.	241 PARKER ST.	AD	RP ONLY	10/15/87	07/15/
PEABODY	3-1018	LIDO SERVICE STATION	18 CENTRAL ST.	A	RP ONLY	/ /	10/15/
PEABODY	3-0411	OLD TANNERY(DICROCE)	WINTER ST.	A	RP ONLY	/ /	01/15/
PEABODY	3-0408	PIERPOINT PARK	15 PIERPOINT ST.	AB	RP ONLY	/ /	01/15/
PEABODY	3-0410	ROPET REAL ESTATE TRUST	58 PULASKI ST.	AD	RP ONLY	/ /	01/15/
PEMBROKE	4-0138	JERRY'S AUTO SERVICE	794 WASHINGTON ST.	A	RP ONLY	/ /	07/15/
PEPPERELL	2-0116	PEPPERELL ABANDONED DRUMS	RTE 111, NASHUA RD.	A	DEQE ONLY	/ /	01/15/
PITTSFIELD	1-0250	DOWNING INDUSTRIAL	DOWNING PARKWAY	D	RP ONLY	07/15/87	01/15/
PITTSFIELD	1-0305	WAYNE'S AUTO BODY	763 EAST ST.	D	RP ONLY	10/15/87	01/15/
QUINCY	3-0646	MATHEWSON CORPORATION	2 HANCOCK ST.	A	RP ONLY	04/15/88	01/15/
RANDOLPH	3-0419	PACELLA PARK	PACELLA DR.	A	RP ONLY	/ /	01/15/
READING	3-0423	GENCORP	1 GENERAL ST.	A	RP ONLY	/ /	01/15/
READING	3-0424	ICON/TRANCOA	312 ASH ST.	A	RP ONLY	/ /	01/15/
REHOBETH	4-0250	SPILL	RTE 44	A	RP ONLY	/ /	01/15/
REVERE	3-0011	NEW ENGLAND TELEPHONE	321A CHARGER ST.	A	RP ONLY	04/15/87	04/15/
SALEM	3-0430	O'BRIEN TANNERY	TREMONT PL.	A	RP ONLY	/ /.	01/15/
SALEM	3-1710	SALEM WAREHOUSE	12 FRANKLIN ST.	A	DEQE ONLY	/ /	01/15/
SALISBURY	3-1713	QUINN WELLS 1, 5 & 6	MA/NH STATE LINE	C	RP ONLY	/ /	01/15/

CONFIRMED SITES LISTED BY TOWN AND SITE NAME

January 15, 1989

Town	Site Number	Name	Address	Current Status	First Listed L.T.B.I.	First Listed Confirmed	New to List
RAYNHAM	4-0147	OLD COLONY GAS	RTE 44 AND SOUTH ST.	PHASE 1	01/15/88	01/15/88	
	** Petroleum Release Site						
	** Response action by: RP ONLY						
	** Unclassified Site						
RAYNHAM	4-0249	RAYNHAM TEXACO	RT. 44 SOUTH STREET	PHASE 2	10/15/88	10/15/88	
	** Petroleum Release Site						
	** Response action by: RP ONLY						
	** Unclassified Site						
RAYNHAM	4-0520	ROZENAS, INC.	1443 NORTH MAIN ST.	PHASE 2	07/15/87	04/15/88	
	** Hazardous Material Release Site						
	** Response action by: RP ONLY						
	** PRIORITY Site						
RAYNHAM	4-0388	SHAW'S PLAZA	RTE 44	PHASE 2	07/15/87	10/15/87	
	** Hazardous Material Release Site						
	** Response action by: RP ONLY						
	** NON-PRIORITY Site						
READING	3-1017	ARCO STATION	MAIN ST.	PHASE 1	/ /	01/15/87	
	** Petroleum Release Site						
	** Response action by: RP ONLY						
	** Unclassified Site						
READING	3-0494	EXXON STATION	85 MAIN ST.	PHASE 2	01/15/87	04/15/88	
	** Petroleum Release Site						
	** Response action by: RP ONLY						
	** Unclassified Site						
	** Short Term Measures Taken						
READING	3-0047	READING DPW	181 JOHN ST.	PHASE 1	/ /	01/15/87	
	** Petroleum Release Site						
	** Response action by: RP ONLY						
	** Unclassified Site						
	** Short Term Measures Taken						
REHOBETH	4-0148	L. AUBIN	260 PROVIDENCE ST.	PHASE 2	/ /	01/15/87	
	** Hazardous Material Release Site						
	** Response action by: DEQE ONLY						
	** NON-PRIORITY Site						
	** Short Term Measures Taken						
REVERE	3-0537	ADAMSON'S AUTO REPAIR	404 REVERE BEACH PARKWAY	PHASE 5	/ /	01/15/87	
	** Petroleum Release Site						
	** Response action by: RP ONLY						
	** NON_PRIORITY Site						
	** Short Term Measures Taken						

LOCATIONS TO BE INVESTIGATED LISTED BY TOWN AND SITE NAME

January 15, 1989

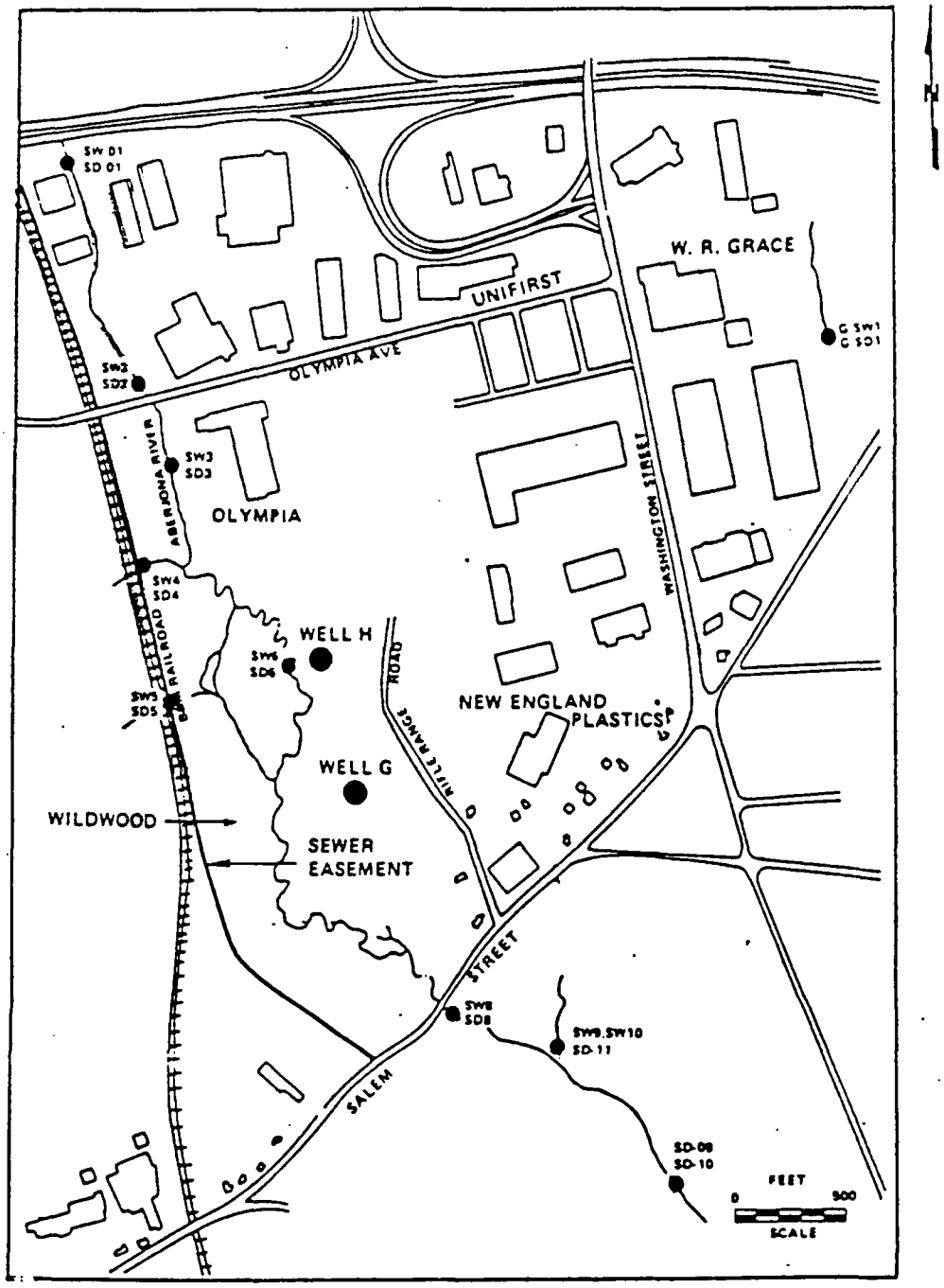
Town	Site Number	Name	Address	Current Status	Source	First Listed L.T.B.I.	New to List
QUINCY	3-0916	MBTA PUMPING STATION	GRANITE ST.	P.A.	DEQE	07/15/87	
QUINCY	3-0769	MORSE RADIATOR	179 WEST SQUANTUM ST.	PHASE 1	DEQE	10/15/88	
QUINCY	3-1704	PROPERTY	542 EAST SQUANTUM ST.	P.A.	DEQE	04/15/87	
QUINCY	3-1443	PROPERTY	573-593 SOUTHERN ARTERY	PHASE 1	DEQE	10/15/88	
QUINCY	3-1774	QUINCY LANDFILL CITY OF	WILLARD ST.	P.A.	EPA	01/15/87	
QUINCY	3-0102	TEXACO STATION	15 CENTRE ST.	PHASE 1	DEQE	01/15/87	
QUINCY	3-0416	THE RICCIANDI CO.	218 WILLARD ST.	PHASE 1	DEQE	01/15/87	
QUINCY	3-0938	VACANT LOT	HANCOCK ST.	P.A.	DEQE	07/15/87	
RANDOLPH	3-1524	CITGO SERVICE STATION	954 NORTH MAIN ST.	P.A.	DEQE	04/15/87	
RANDOLPH	3-0146	EXXON STATION	315 NORTH MAIN ST.	PHASE 1	DEQE	01/15/87	
RANDOLPH	3-1706	SUNOCO STATION	733 SOUTH MAIN ST.	P.A.	DEQE	01/15/87	
RAYNHAM	4-0325	BOB ALBERT'S AUTO SALES	472 NEW STATE HWY	P.A.	DEQE	04/15/87	
AM	4-0458	MASTER BUICK	244 NORTH MAIN ST.	P.A.	DEQE	01/15/88	
RAYNHAM	4-0452	OCTOGON SERVICE STATION	CHURCH ST. & RTE 44	P.A.	DEQE	01/15/88	
RAYNHAM	4-0613	PROPERTY	620 BROADWAY ST.	PHASE 1	DEQE	01/15/89	Yes
READING	3-1982	FORMER GREENHOUSES	266-280 PLEASANT ST.	PHASE 1	DEQE	01/15/89	Yes
READING	3-1502	PROPERTY	4 MINOT ST.	PHASE 1	DEQE	10/15/88	
READING	3-0991	WEBBER & SMITH	15 PIERCE ST.	P.A.	DEQE	04/15/87	
REVERE	3-0931	GIBBS OIL	41 LEE BURBANK HWY.	PHASE 1	DEQE	07/15/87	
REVERE	3-1873	LAKE'S EXXON STATION	485 BROADWAY	PHASE 1	DEQE	01/15/89	Yes
REVERE	3-0770	PROPERTY	460 REVERE BEACH BLVD.	PHASE 1	DEQE	10/15/88	
REVERE	3-1707	SUNOCO	1030 BROADWAY ST.	P.A.	DEQE	04/15/87	
REVERE	3-0929	VILLAGE COURT CONDOS	29 MACOBA ST.	PHASE 1	DEQE	07/15/87	
ROCKLAND	4-0476	BOSTON WHALER	1147 HINGHAM ST.	P.A.	DEQE	01/15/88	

Appendix 16

EBASCO Surface Water Quality Sampling Results
August 1984 - December 1987
(from Final Supplemental RI, Appendix E-25)

Surface Water Sampling History
By NUS and EBASCO

Station		Number of Samples	Analysis
Upstream	April 85	1	VOC's only
	May 85	1	VOC's only
	June 85	1	VOC's only
	Sept. 87	1	VOC's, Semi-VOC + Inorganic
Subtotal	4 dates	4	4 VOC, 1 Semi-VOC, 1 Inorganic
On-site	April 87	5	VOC's + Inorganic Elements at two stream
	May 87	5	VOC's only
	June 87	5	VOC's only
	Sept. 87	5	VOC, Semi-VOC, Inorganics
Subtotal	4 dates	20	4 VOC, 1 Semi-VOC, 2 inorganic
Down stream	Sept. 87	3	VOC, Semi-VOC, Inorganic
Subtotal	1 date	3	1 VOC, 1 Semi-VOC, Inorganic
Total	4 dates	25 samples	27 VOC, 9 Semi-VOC, 4 Inorganic



● SW-01 SURFACE WATER SAMPLING LOCATION

● SD-01 SEDIMENT SAMPLING LOCATION

U.S. ENVIRONMENTAL PROTECTION AGENCY

WELLS G & H

Figure 7-3

PHASE I SURFACE WATER AND SEDIMENT SAMPLING LOCATIONS AT THE WELLS G&H SITE

EBASCO SERVICES INCORPORATED

JLE 7-3
COMPOUNDS DETECTED IN SURFACE WATER AT THE CENTRAL AREA OF THE WELLS G & H SITE

COMPOUND	SITE			UPSTREAM			DOWNSTREAM		
ORGANICS (ug/L)	FREQ. OF DETECTION	GEOMETRIC MEAN	MAXIMUM	FREQ. OF DETECTION	GEOMETRIC MEAN	MAXIMUM	FREQ. OF DETECTION	GEOMETRIC MEAN	MAXIMUM
VOLATILES									
CHLOROFORM	ND			ND			1/3	NA	2.00
1,1-DICHLOROETHANE	2/24	NR	2.00	1/4	NA	2.00	ND		
TRANS-1,2-DICHLOROETHENE	2/24	4.18	22.0	ND			ND		
1,1,1-TRICHLORETHANE	13/22	3.48	8.00	3/4	4.30	10.0	ND		
TRICHLOROETHENE	5/24	2.71	26.0	1/3	NA	1.00	1/3	NA	0.50
TETRACHLOROETHENE	2/24	2.59	4.00	ND			ND		
TOLUENE	2/24	NR	1.00	ND			ND		
SEMI-VOLATILES									
BIS(2-ETHYLHEXYL)PHTHALATE	1/1	NA	100	1/1	NA	38.0	ND		
DI-N-OCTYL PHTHALATE	1/5	NA	5.00	ND			ND		
DI-N-BUTYL PHTHALATE	ND			ND			1/2	NA	1.00
BUTYLBENZYL PHTHALATE	2/5	5.90	29.0	1/1	NA	11.0	ND		
INORGANICS (ug/L)									
ALUMINUM	3/6	75.9	548	1/2	NA	25.0	2/3	247	396
ANTIMONY	ND			ND			1/3	NA	57.0
ARSENIC	4/6	5.45	8.80	1/2	NA	8.90	1/3	NA	6.10
BARIUM	5/6	26.0	46.0	2/2	25.5	27.0	3/3	18.1	27.0
BERYLLIUM	ND			1/1	NA	0.70	ND		
CADMIUM	ND			1/2	NA	6.00	ND		
CALCIUM	6/6	31600	43000	2/2	32900	39000	3/3	13300	28000
CHROMIUM	ND			1/2	NA	4.30	ND		
COPPER	2/5	NR	12.0	1/1	NA	10.0	3/3	12.7	17.0
IRON	6/6	1310	5200	2/2	712	1490	3/3	990	1050
LEAD	5/6	3.56	11.0	1/2	NA	2.20	3/3	7.83	20.0
MAGNESIUM	6/6	5090	8100	2/2	6140	7400	3/3	3980	4970
MANGANESE	6/6	377	460	2/2	408	480	3/3	129	230
POTASSIUM	6/6	4010	5700	2/2	4010	4700	3/3	2100	3460
SILVER	ND			1/2	NA	5.90	ND		
SODIUM	6/6	35700	70000	2/2	44000	59000	3/3	23700	33500
ZINC	6/6	141	190	2/2	183	196	3/3	99.2	192

NA = Not applicable; mean not calculated with only one positive detection.
ND = Not detected.
NR = Not reported; chemical was detected infrequently, and the use of one-half the detection limit in calculating a mean results in a mean concentration which exceeds the maximum detected value. Therefore a mean is not used.

#NOTE# DUE TO THE OCCASIONAL REJECTION OF SAMPLES DURING THE QA/QC PROCESS THE NUMBER OF SAMPLES USED TO CALCULATE THE GEOMETRIC MEAN WILL SOMETIMES BE LESS THAN THE TOTAL NUMBER OF SAMPLES AS PRESENTED IN THE DENOMINATOR OF THE FREQUENCY OF DETECTION.

TABLE E-24
CENTRAL AREA
SURFACE WATER SAMPLE RESULTS

ORGANICS (ug/l)	SW-01 EBASCO 9-24-87	SW-02 EBASCO 9-24-87	SW-03 EBASCO 9-24-87	SW-04 EBASCO 9-24-87	SW-05 EBASCO 9-24-87	SW-06 EBASCO 9-24-87	SW-08 EBASCO 9-24-87	SW-09 EBASCO 12-11-87	SW-10 EBASCO 12-11-87	B-SW1 EBASCO 12-10-87
VOLATILES										
ACETONE	ND	R	R	R	ND	R	ND	ND	ND 30 B	ND ND
2-BUTANONE	R	R	R	R	R	R	R	ND	ND	ND
TOLUENE	ND	ND	ND	0.9	ND	ND	ND	ND	ND	ND
ETHYLBENZENE	R	R	R	R	ND	ND	R	ND	ND	ND
TOTAL XYLENES	R	R	R	R	R	R	R	ND	ND	ND
1,1,1-TRICHLOROETHANE	2	2	1	ND	ND	ND	ND	ND	ND	ND
1,1-DICHLOROETHANE	2	2	2	ND	ND	ND	ND	ND	ND	ND
TETRACHLOROETHENE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TRICHLOROETHENE	1	1	1	ND	ND	0.7	0.5	ND	ND	ND
1,2-DICHLOROETHENE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
VINYL CHLORIDE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CHLOROFORM	ND	ND	ND	ND	ND	ND	ND	ND	2 J	ND
METHYLENE CHLORIDE	R	R	R	R	R	R	R	ND	ND	1
1,2-DICHLOROETHANE	ND	ND	ND	ND	ND	ND	ND	ND	ND	R
SEMI-VOLATILES										
BIS(2-ETHYLHEXYL)PHTHALATE	38 B	R	100 B	R	R	R	R	ND	ND	ND
DI-N-OCTYL PHTHALATE	ND	ND	0.4 J	ND	ND	ND	ND	ND	ND	ND
DI-N-BUTYL PHTHALATE	R	R	R	R	R	R	R	ND	1 J	ND
BUTYLBENZYL PHTHALATE	11	ND	29	ND	ND	0.9 J	ND	ND	ND	ND
DIMETHYL PHTHALATE	R	R	R	R	R	R	R	ND	ND	ND
BENZO(B)FLUORANTHENE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CHRYSENE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

TABLE E-24 (CONT'D)
CENTRAL AREA
SURFACE WATER SAMPLE RESULTS

INORGANICS (ug/l)	SW-01 EBASCO 9-24-87	SW-02 EBASCO 9-24-87	SW-03 EBASCO 9-24-87	SW-04 EBASCO 9-24-87	SW-05 EBASCO 9-24-87	SW-06 EBASCO 9-24-87	SW-08 EBASCO 9-24-87	SW-09 EBASCO 12-11-87	SW-10 EBASCO 12-11-87	G-SW1 EBASCO 12-10-87
ALUMINUM	ND	ND	ND	56	548	54	ND	382	396	51 JB
ANTIMONY	ND	ND	ND	ND	ND	ND	ND	57	ND	ND
ARSENIC	9	8.3	8.8	ND	4.9	7.3	6.1	ND	ND	ND
BARIUM	27 JB	32 JB	34 JB	37 JB	46 JB	28 JB	27 JB	17	13	85 JB
BERYLLIUM	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CADMIUM	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CALCIUM	27,000	28,200	28,500	27,900	35,100	29,200	28,000	9,220	9,860	28,400 JB
CHROMIUM	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
COBALT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
COPPER	10 JB	ND	12 JB	ND	11 JB	ND	11 JB	11	17	6 JB
IRON	1,490	1,510	1,460	1,070	5,200	1,420	1,050	1,000	905	486 JB
LEAD	2.2	ND	7.1	4.2	11	2.5	2.4	20	10	ND
MAGNESIUM	5,090	5,200	5,200	4650	3230	5,310	4970	3420	3710	112 J
MANGANESE	346	345	341	376	393	358	230	106	89	ND
MERCURY	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
NICKEL	ND	ND	ND	ND	ND	ND	ND	ND	ND	3,620 JB
POTASSIUM	3,420	3490	3420	5080	3240	3720	3,460	1630	1650	ND
SELENIUM	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SILVER	ND	ND	ND	ND	ND	ND	ND	ND	ND	72,700
SODIUM	32,600	33,700	34,700	53,400	33,500	35,000	33,500	20,100	19,700	ND
THALLIUM	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
VANADIUM	ND	ND	ND	ND	ND	ND	ND	ND	ND	20
ZINC	R	R	R	R	R	R	R	66	77	ND
CYANIDE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

TABLE 25
SURFACE WATER CLP INORGANIC ANALYTICAL RESULTS
NUS/FIT APRIL, 1985 SAMPLING ROUND

Sample Location		SW04	SW06	Blank
Sample No.		12484	12486	12436
Traffic Report No.		MAA223	MAA224	MAA217
Inorganic Elements	Detection Limits (ug/L)			
Aluminum	23	-	25	-
Antimony	46	-	-	-
Arsenic	4	-	-	-
Barium	12	-	24	-
Beryllium	0.5	-	0.7	-
Cadmium	5	-	6	-
Calcium	290	43,000	39,000	-
Chromium	4	-	4.3	-
Cobalt	7	-	-	-
Copper	25	*	*	4.9
Iron	100	290	340	-
Lead	2	-	-	-
Magnesium	330	8,100	7,400	-
Manganese	3	460	480	-
Mercury	0.1	-	-	-
Nickel	40	-	*	-
Potassium	470	5,700	4,700	-
Selenium	2	-	-	-
Silver	4	-	5.9	-
Sodium	880	70,000	59,000	-
Thallium	4	-	-	-
Tin	36	-	-	-
Vanadium	4	-	-	-
Zinc	20	150	170	7.1

- - Element is not detected.
* - Value is rejected due to presence of blank contamination detected below contract required detection limit.

TABLE 24
SURFACE WATER CLP
VOLATILE ORGANIC ANALYTICAL RESULTS
NUS/FIT APRIL, MAY, JUNE 1985 SAMPLING ROUNDS
PAGE TWO

June 1985 Sampling Round

Sample Location		SW-01	SW-02	SW-03	SW-04	SW-04	SW-05	SW-06
Sample Number		13274	13275	13276	13277	13278	13279	13280
Traffic Report Number		AC234	AC249	AC250	AC251	AC252	AC253	AC254
Volatile Compounds	CRDL							
Chloromethane	10	-	-	-	-	-	-	-
Bromoethane	10	-	-	-	-	-	-	-
Vinyl Chloride	10	-	-	-	-	-	-	-
Chloroethane	10	-	-	-	-	-	-	-
Methylene Chloride	5	-	*	*	*	*	*	*
Acetone	10	-	-	-	-	-	-	-
Carbon Disulfide	5	-	-	-	-	-	-	-
1,1-Dichloroethene	5	-	-	-	-	-	-	-
1,1-Dichlorethane	5	-	-	-	-	-	-	-
trans-1,2-Dichloroethene	5	-	-	-	-	-	-	-
Chloroform	5	-	*	*	*	*	*	-
1,2-Dichloroethane	5	-	-	-	-	-	-	-
2-Butanone	10	-	*	-	*	*	-	-
1,1,1-Trichloroethane	5	*	-	-	-	-	*	-
Carbon Tetrachloride	5	-	-	-	-	-	-	-
Vinyl Acetate	10	-	-	-	-	-	-	-
Bromodichloromethane	5	-	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	5	-	-	-	-	-	-	-
1,2-Dichloropropane	5	-	-	-	-	-	-	-
trans-1,3-Dichloropropane	5	-	-	-	-	-	-	-
Trichloroethene	5	-	-	-	-	-	-	-
Dibromochloromethane	5	-	-	-	-	-	-	-
1,1,2-Trichloroethane	5	-	-	-	-	-	-	-
Benzene	5	-	-	-	-	-	-	-
cis-1,3-Dichloropropane	5	-	-	-	-	-	-	-
2-Chloroethyl vinyl ether	10	-	-	-	-	-	-	-
Bromoform	5	-	-	-	-	-	-	-
2-Hexanone	10	-	-	-	-	-	-	-
4-Methyl-2-Pentanone	10	-	-	-	-	-	-	-
Tetrachloroethene	5	-	-	-	-	-	-	-
Toluene	5	-	-	-	-	-	-	-
Chlorobenzene	5	-	-	-	-	-	-	-
Ethylbenzene	5	-	-	-	-	-	-	-
Styrene	5	-	-	-	-	-	-	-
Total Xylene	5	-	-	-	-	-	-	-
Dilution Factor		1	5	5	5	5	5	5

NOTES: - - Indicates compound was not detected.
J - Quantitation is approximate due to quality control review (data validation).
* - Value is rejected due to blank contamination identified in quality control review.
CRDL - Contract Required Detection Limit (multipy by dilution factor to obtain sample detection limit).

TABLE 24
SURFACE WATER CLP
VOLATILE ORGANIC ANALYTICAL RESULTS
NUS/FIT APRIL, MAY, JUNE 1985 SAMPLING ROUNDS

		April 1985 Sampling Round								May 1985 Sampling Round							
Sample Locations		SW-01	SW-02	SW-02	SW-03	SW-03	SW-04	SW-05	SW-06	SW-01	SW-02	SW-03	SW-03	SW-04	SW-05	SW-06
Sample Number		12361	12362	12363	12482	12483	12484	12485	12486	12807	12808	12809	12810	12811	12812	12813
Traffic Report Number		AB323	AB324	AB325	AB514	AB515	AB540	AB516	AB541	AB917	AB918	AB919	AB920	AB921	AB922	AB923
Volatile Compounds	CRDL															
Chloromethane	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromoethane	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl Chloride	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroethane	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methylene Chloride	5	-	-	-	-	-	*	-	*	*	*	*	*	*	*	*
Acetone	10	*	*	*	-	-	-	-	-	*	-	-	-	-	*	*
Carbon Disulfide	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethene	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichlorethane	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,2-Dichloroethene	5	-	-	-	-	-	-	-	-	-	-	22	21	-	-	-
Chloroform	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloroethane	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2-Butanone	10	*	*	*	-	-	-	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	5	2 J	5 J	5 J	5	6	7 J	8	10 J	4 J	3 J	-	-	3 J	5	7
Carbon Tetrachloride	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl Acetate	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromodichloromethane	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloropropane	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,3-Dichloropropane	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichloroethene	5	-	-	-	-	-	-	-	*	-	-	26	25	-	-	-
Dibromochloromethane	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,2-Trichloroethane	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzene	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
cis-1,3-Dichloropropane	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2-Chloroethyl vinyl ether	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromoform	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2-Hexanone	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4-Methyl-2-Pentanone	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tetrachloroethene	5	-	-	-	-	-	-	-	-	-	-	4 J	3 J	-	-	-
Toluene	5	-	1 J	-	-	-	-	-	-	-	-	-	-	-	-	-
Chlorobenzene	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Styrene	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Xylene	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dilution Factor		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

NOTES:
- \- - Indicates compound was not detected.
- J - Quantitation is approximate due to quality control review (data validation).
- * - Value is rejected due to blank contamination identified in quality control review.
- CRDL - Contract Required Detection Limit (multipy by dilution factor to obtain sample detection limit).

TABLE 23
NUS/FIT ANALYTICAL SCREENING RESULTS OF
SURFACE WATER AND SEDIMENT SAMPLES FROM NUS/FIT INITIAL SAMPLING ROUND
AUGUST, 1984

SAMPLE NUMBER	77570	77571	77574	77575	77576	77577	77572	77573
SAMPLE LOCATION	SW-01	SS-01	SW-02	SW-02	SS-02	SS-02	SW-04	SS-04
Tentative Identification								
trichloroethene	*	D*	*	*	-	D*	*	-
trans-1,2-dichloroethene	-	-	-	-	-	-	-	-
tetrachloroethene	-	-	-	-	-	-	-	-
benzene	-	-	-	-	-	-	-	-
toluene	-	-	-	-	-	-	-	-
ethylbenzene	-	-	-	-	-	-	-	-
m-xylene	-	-	-	-	-	-	-	-
o-xylene	-	-	-	-	-	-	-	-

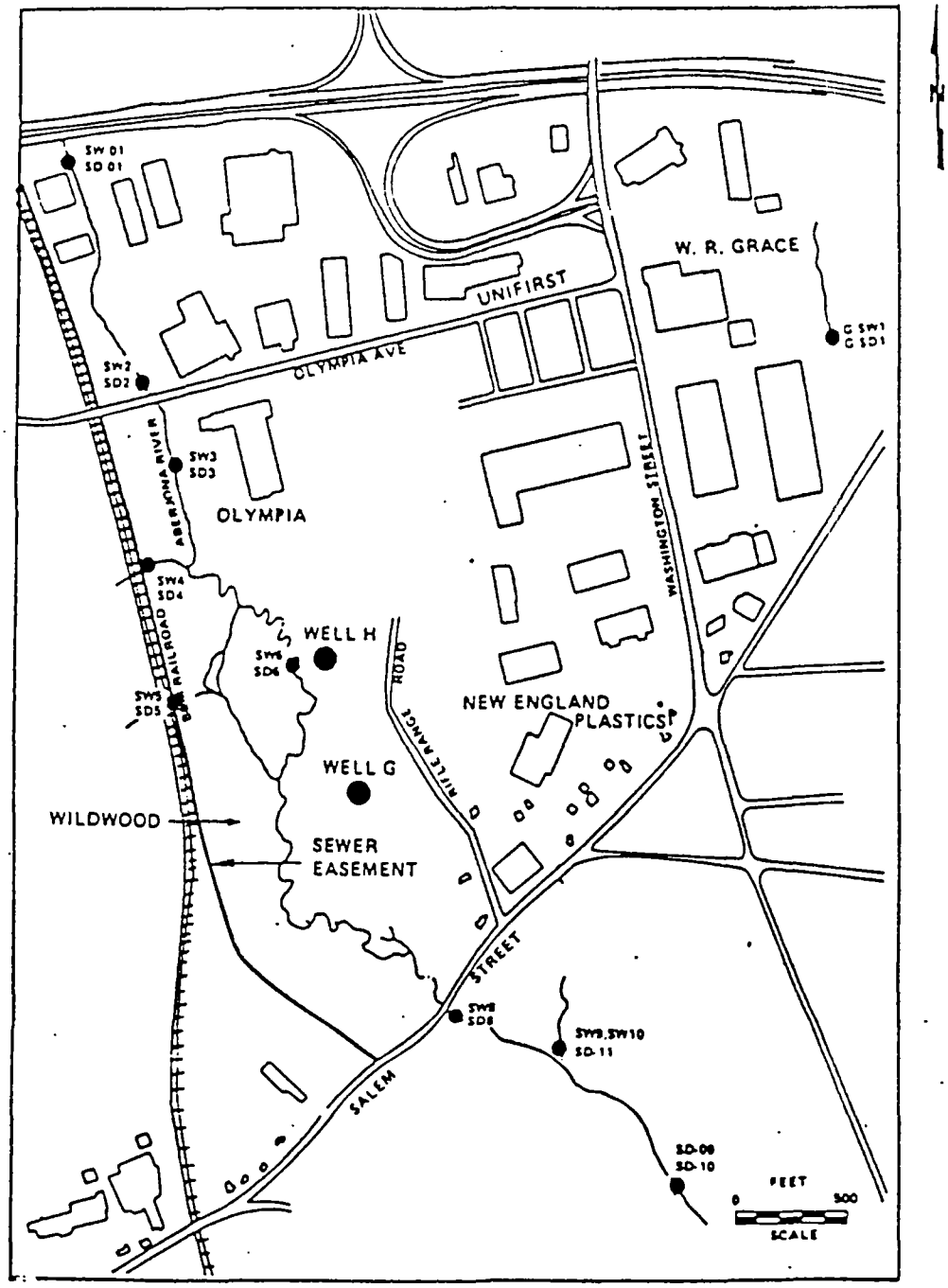
ppb
<10.0 *
- not detected

D* - Detected, but headspace analysis of soils and sediments can not be quantified.
SW - surface water sample
SS - sediment sample

All samples were screened in-house by NUS chemists utilizing a Photovac 10A10 GC for volatile organic headspace analysis. It should be stressed that the results garnered from this screening technique are qualitative and indicate the presence of contaminant compounds. They should not be used as quantitative results. Therefore, all concentrations are given in ranges. In addition, compound identification is tentative in that compounds were identified by comparison of retention time of sample compounds to the retention times of various standards.

Appendix 17

EBASCO River Sediment Chemistry Sampling Results
September - December 1987
(from Final Supplemental RI, Appendix E-25)



● SW-01 SURFACE WATER SAMPLING LOCATION

● SD-01 SEDIMENT SAMPLING LOCATION

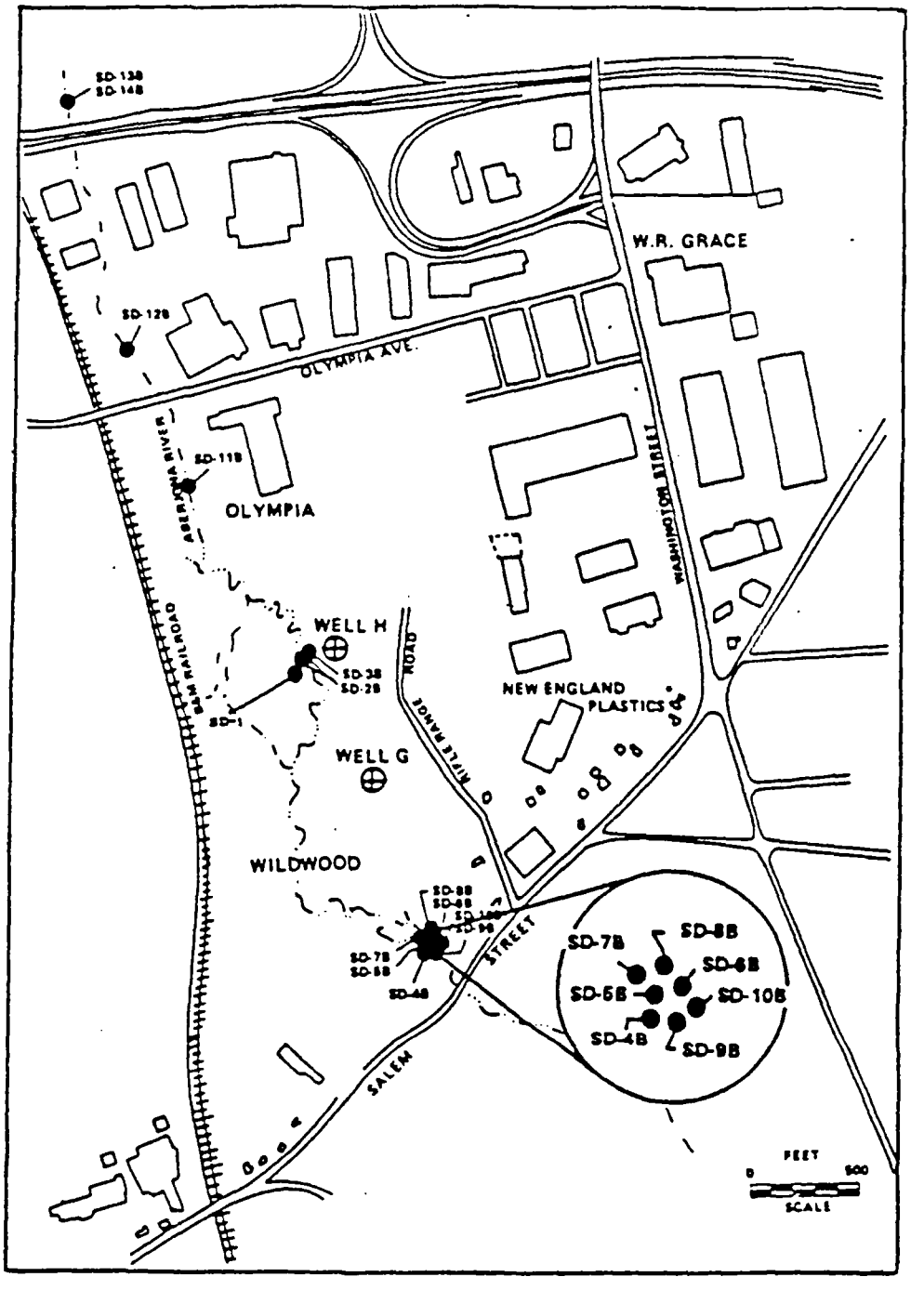
U.S. ENVIRONMENTAL PROTECTION AGENCY

WELLS G & H

Figure 7-3

PHASE I SURFACE WATER AND SEDIMENT SAMPLING LOCATIONS AT THE WELLS G&H SITE

EBASCO SERVICES INCORPORATED



● SD-13B – SEDIMENT SAMPLING LOCATION

U.S. ENVIRONMENTAL PROTECTION AGENCY
WELLS G & H
Figure 7-4 APPROXIMATE LOCATIONS OF PHASE II SEDIMENT SAMPLES COLLECTED DURING JUNE 1988
EBASCO SERVICES INCORPORATED

TABLE 7-4
COMPOUNDS DETECTED IN SEDIMENT AT THE CENTRAL AREA OF THE WELLS G & H SITE

CHEMICAL	SITE			UPSTREAM			DOWNSTREAM		
	FREQ. OF DETECTION	GEOMETRIC MEAN	MAXIMUM	FREQ. OF DETECTION	GEOMETRIC MEAN	MAXIMUM	FREQ. OF DETECTION	GEOMETRIC MEAN	MAXIMUM
ORGANICS (ug/L)									
VOLATILES									
ACETONE	5/5	164	390	1/1	NA	39.9	3/4	34.5	395
2-BUTANONE	5/5	22.9	72.9	1/1	NA	12.2	1/4	NA	64.7
BENZENE	1/5	NA	4.50	ND			ND		
TOLUENE	4/5	2.22	3.10	ND			ND		
1,1-DICHLOROETHANE	1/5	NA	3.80	ND			ND		
1,1,1-TRICHLORETHANE	1/5	NA	2.80	ND			ND		
TRICHLOROETHENE	2/5	2.03	2.50	ND			ND		
1,2-DICHLOROETHENE	2/5	2.83	4.50	ND			1/4	NA	8.50
VINYL CHLORIDE	1/5	NA	5.00	ND			ND		
METHYLENE CHLORIDE	5/5	105	153	1/1	NA	27.6	4/4	8.15	315
BASE/NEUTRAL EXTRACTABLES									
ACENAPHTHENE	2/5	160	255	ND			2/4	78.0	194
ACENAPHTHYLENE	ND			ND			2/4	72.6	511
ANTHRACENE	3/5	195	606	1/1	NA	49.0	1/4	NA	949
BENZO(A)ANTHRACENE	3/5	439	2070	1/1	NA	314	4/4	36.3	4180
BENZO(A)PYRENE	3/5	426	1650	1/1	NA	283	2/4	149	3670
BENZO(B)FLUORANTHENE	3/5	511	1950	1/1	NA	314	1/4	NA	4210
BENZO(G,H,I)PERYLENE	3/5	271	568	1/1	NA	202	2/4	158	655
BENZO(K)FLUORANTHENE	3/5	410	1340	1/1	NA	298	3/4	87.2	4880
BIS(2-ETHYLHEXYL)PHTHALATE	4/5	532	1340	1/1	NA	246	1/4	NA	1630
BUTYL BENZYL PHTHALATE	ND			ND			1/4	NA	20.0
CHRYSENE	3/5	515	2100	1/1	NA	407	3/4	59.1	4610
DIBENZOFURAN	1/5	NA	115	ND			2/4	67.2	187
DIBENZO(A,H)ANTHRACENE	3/5	174	363	1/1	NA	89.6	1/4	NA	426
DI-N-BUTYL PHTHALATE	ND			ND			2/4	NR	8.00
DI-N-OCTYL PHTHALATE	ND			ND			1/4	NA	6.00
FLUORANTHENE	4/5	767	3990	1/1	NA	519	2/4	199	8150
FLUORENE	1/5	NA	247	ND			1/4	NA	514
INDENO(1,2,3-C,D)PYRENE	3/5	288	649	1/1	NA	163	2/4	159	913
2-METHYL NAPHTHALENE	ND			ND			1/4	NA	1.00
4-METHYLPHENOL	1/5	NA	168	ND			ND		
NAPHTHALENE	1/5	NA	89.1	ND			2/4	75.1	292
N-NITROSODIPHENYLAMINE	ND			ND			1/4	NA	747
PHENANTHRENE	3/5	487	2400	1/1	NA	160	3/4	74.4	3380
PYRENE	4/5	687	3740	1/1	NA	465	1/4	NA	7230
CARCINOGENIC PAHs, TOTAL	3/5	5440	10700	1/1	NA	1920	4/4	145	23800
NONCARCINOGENIC PAHs, TOTAL	4/5	2760	11300	1/1	NA	1350	3/4	247	20900

TABLE 7-4 (continued)
COMPOUNDS DETECTED IN SEDIMENT AT THE CENTRAL AREA OF THE WELLS G & H SITE

CHEMICAL	SITE			UPSTREAM			DOWNSTREAM		
	FREQ. OF DETECTION	GEOMETRIC MEAN	MAXIMUM	FREQ. OF DETECTION	GEOMETRIC MEAN	MAXIMUM	FREQ. OF DETECTION	GEOMETRIC MEAN	MAXIMUM
PESTICIDES/PCB'S									
ALDRIN	4/5	16.5	84.4	1/1	NA	12.1	ND		
4,4'-DDD	ND			ND			1/4	NA	26.9
INORGANICS (mg/Kg)									
ALUMINUM	5/5	8160	48800	1/1	NA	3060	4/4	13700	18400
ARSENIC	5/5	100	3630	1/1	NA	24.0	4/4	121	325
BARIUM	5/5	37.8	63.0	1/1	NA	11.0	4/4	53.3	69.0
BERYLLIUM									
CADMIUM	4/5	2.52	13.0	ND			1/4	NA	8.30
CALCIUM	5/5	2320	7980	1/1	NA	647	4/4	4700	6840
CHROMIUM	5/5	86.6	1250	1/1	NA	12.0	4/4	701	1560
COBALT	ND			ND			3/4	8.84	17.0
COPPER	5/5	125	3010	1/1	NA	25.0	4/4	433	641
IRON	5/5	23800	89400	1/1	NA	10200	4/4	27600	41100
LEAD	ND			1/1	NA	75.0	3/3	251	349
MAGNESIUM	5/5	1810	3310	1/1	NA	1230	4/4	3610	4270
MANGANESE	5/5	260	589	1/1	NA	73.0	4/4	289	397
MERCURY	4/5	0.45	27.0	ND			3/4	1.20	17.0
NICKEL	3/5	9.61	38.0	ND			4/4	18.5	29.0
POTASSIUM	3/5	462	1030	ND			4/4	755	918
SELENIUM	1/5	NA	22.0	ND			ND		
SODIUM	5/5	277	897	1/1	NA	145	4/4	416	618
VANADIUM	3/5	29.6	2500	1/1	NA	8.80	3/4	25.0	70.0
ZINC	5/5	584	5170	1/1	NA	76.0	4/4	976	1520

NA = Not applicable; mean not calculated with only one positive detection.
ND = Not detected.
NR = Not reported; chemical was detected infrequently, and the use of one-half the detection limit in calculating a mean results in a mean concentration which exceeds the maximum detected value. Therefore a mean is not used.

#NOTE# DUE TO THE OCCASIONAL REJECTION OF SAMPLES DURING THE QA/QC PROCESS THE NUMBER OF SAMPLES USED TO CALCULATE A GEOMETRIC MEAN WILL SOMETIMES BE LESS THAN THE TOTAL NUMBER OF SAMPLES AS PRESENTED IN THE DENOMINATOR OF THE FREQUENCY OF DETECTION.

TABLE E-25
CENTRAL AREA
SURFACE SEDIMENT SAMPLE RESULTS
PAGE 1

ORGANICS (ug/kg)	SD-01 EBASCO 9-29-87	SD-02 EBASCO 9-29-87	SD-03 EBASCO 9-29-87	SD-04 EBASCO 9-29-87	SD-05 EBASCO 9-29-87	SD-06 EBASCO 9-29-87	SD-08 EBASCO 9-29-87	SD-09 EBASCO 12-10-87	SD-10 EBASCO 12-10-87	SD-11 EBASCO 12-11-87	G-SD1 EBASCO 12-10-87
VOLATILES											
ACETONE	39.9	113.5	135.7	152.7	128.8	389.6	396.1	88 B	ND	9 BJ	ND
2-BUTANONE	12.2	19.9	11.7	16.9	22.1	72.9	64.7	ND	ND	ND	ND
BENZENE	ND	4.5	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOLUENE	ND	1.0	ND	3.1	2.6	2.7	ND	ND	ND	ND	ND
1,1,1-TRICHLOROETHANE	ND	ND	ND	ND	ND	2.8	ND	ND	ND	ND	ND
1,1-DICHLOROETHANE	ND	3.8	ND	ND	ND	ND	ND	ND	ND	ND	ND
TRICHLOROETHENE	ND	1.1	ND	ND	2.0	ND	ND	ND	ND	ND	ND
1,2-DICHLOROETHENE	ND	ND	ND	ND	4.5	2.6	8.5	ND	ND	ND	ND
VINYL CHLORIDE	ND	ND	ND	ND	1.9	ND	ND	ND	ND	ND	ND
METHYLENE CHLORIDE	27.6	95.7 J	85.5	112.6 J	92.4	152.6	315.0	7	2 B	1	R
1,2-DICHLOROETHANE	ND	ND	ND	ND	ND	ND	ND	ND	ND	R	ND
CHLOROFORM	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3
SEMI-VOLATILES											
4-METHYLPHENOL	ND	ND	ND	ND	168.1 J	ND	ND	ND	ND	ND	ND
BIS(2-ETHYLHEXYL)PHTHALATE	246.0	918.3	1,337.5	ND	518.5	418.4	1,638.9	ND	ND	ND	ND
ACENAPHTHENE	ND	256.0	91.4	ND	ND	ND	194.3	ND	ND	ND	ND
ACENAPHTHYLENE	ND	ND	ND	ND	ND	ND	518.7	ND	ND	ND	ND
ANTHRACENE	49.0	686.0	189.2	ND	91.3	ND	949.1	ND	ND	ND	ND
BENZO(A)ANTHRACENE	314.4	2,871.2	721.4	ND	399.0	ND	4,182.7	4 J	4 J	4 J	ND
BENZO(B)FLUORANTHENE	314.2	1,953.4	960.7	ND	678.9	ND	4,213.8	ND	ND	ND	3 J
BENZO(K)FLUORANTHENE	297.9	1,338.2	563.2	ND	568.0	ND	4,877.6	9 J	8 J	9 J	ND
BENZO(G,H,I)PERYLENE	281.7	567.6	337.9	ND	288.9	ND	666.1	ND	ND	ND	ND
BENZO(A)PYRENE	282.9	1,649.9	673.0	ND	464.9	ND	3,665.2	5 J	ND	6 J	ND
CHRYSENE	487.2	2097.4	961.3	ND	664.1	ND	4,612.8	4 J	4 J	4 J	2
DIBENZ(A,H)ANTHRACENE	88.6	363.1	123.7	ND	131.1	ND	425.9	ND	ND	ND	ND
FLUORANTHENE	519.2	3986.3	1,648.5	ND	1,099.3	223.1	8,151.3	ND	7 J	ND	ND
FLUORENE	ND	247.2	ND	ND	ND	ND	513.9	ND	ND	ND	ND
INDENO(1,2,3-CD)PYRENE	162.6	649.1	373.1 J	ND	298.6	ND	913.4	ND	ND	ND	ND
NAPHTHALENE	ND	89.1	ND	ND	ND	ND	292.2	ND	ND	ND	ND
PHENANTHRENE	159.5	2,399.5	912.4	ND	458.1	ND	3,377	ND	6 J	ND	ND
PYRENE	464.6	3,737.5	1,366.9	ND	838.5 J	218.9	7228.7	ND	ND	ND	ND
N-NITROSODIPHENYLAMINE	ND	ND	ND	ND	ND	ND	746.8	ND	ND	ND	ND
DIBENZOFURAN	ND	114.9 J	ND	ND	ND	ND	187.1	ND	ND	ND	ND

TABLE E-27
CENTRAL AREA
SEDIMENT SAMPLE RESULTS
PHASE II

	CB-10 6-23-00	CB-20 6-23-00	CB 30 6-23-00	CB-40 6-23-00	CB-50 6-23-00	CB 60 6-23-00	CB-70 6-23-00	CB-80 6-23-00	CB-90 6-23-00
INORGANICS (mg/kg)									
ALUMINUM	00300 J	20500 J	9350 J	9510 J	10300	9070 J	6140 J	11000 J	23600 J
ANTIMONY	00	00	00	00	00	00	00	00	07.2
ARSENIC	732	560	691	127	442	113	215	3237	4650
BARIUM	37.6	192	66.3	22.3	29.7	41.7	20.6	35	57.0
BERYLLIUM	1.0	0.89	0.66	0.00	1.2	0.95	0.66	0.92	1.5
CADMIUM	36.2	13	5	10.1	10.0	00	00	00	5.0
CALCIUM	5010	0550	3620	6310	6550	0220	4120	7570	0170
CHROMIUM	003 J	770 J	337 J	40.0 J	101 J	56.7 J	24.2 J	02.6 J	505 J
COBALT	21.1	07.0	23.5	00	00	20.1	15.5	00	35.5
COPPER	1260	606	272	23.3 JB	300	20.5 JB	16.2 JB	2000 JB	2100
IRON	02400	100000	47500	9550	15600	0420	7720	9050	52200
LEAD	0	0	0	16.2	120	17.3	0.5	20.3	0
MAGNESIUM	1340	5100	2210	1050	1100	1040	1960	1620	1450
MANGANESE	555	11000	1160	101	350	334	175	190	502
MERCURY	0.3	0.7	1.0	0.35	0.47	0.20	0.16	0.26	20.0
NICKEL	20.5	52.6	20.3	15.1	25.2	17.0	13.0	10.0	30.0
POTASSIUM	0	0	0	0	0	0	0	0	0
SELENIUM	1.6 J	1.2 J	0.05 J	1 J	0	1.6 J	0.77 J	0.6 J	36.5 J
SILVER	00	00	00	00	00	00	00	00	00
SODIUM	0	0	0	0	0	0	0	0	0
THALLIUM	00	1.0	00	1.5	00	1	0.02	1.2	1.5
VANADIUM	25.7	06.0	36.3	21.3	20.0	10.9	10.9	25.0	04
ZINC	5000	2530	1260	612	1010	1630	1300	1210	1610
TOC	10.1	00	06	10.0	04	04	10.0	04	06

RIVER ... MISSING 1 PI

TABLE E-27 (CONT'D)
CENTRAL AREA
SEDIMENT SAMPLE RESULTS
PHASE II

	CN-10B 6-23-88	CN-11B 6-23-88	CN-12B 6-24-88	CN-13B 6-24-88	CN-14B 6-24-88
INORGANICS (mg/kg)					
ALUMINUM	8200 J	5050 J	3640 J	4320 J	3720 J
ANTIMONY	ND	ND	ND	ND	ND
ARSENIC	473	19.2	40.3	11	16.5
BARIUM	18.8	13.2	14.2	20.9	8.1
BERYLLIUM	1.3	0.57	ND	ND	0.29
CADMIUM	8.4	ND	ND	ND	ND
CALCIUM	4690	1950	866	1260	1290
CHROMIUM	47.6 J	27.9 J	50.7 J	14.4 J	18.8 J
COBALT	ND	ND	ND	ND	ND
COPPER	111	14.8	94.9	18	16.2
IRON	15700	6860	7220	10200	8310
LEAD	68.4	12.3	31	R	R
MAGNESIUM	1140	630	1190	2430	1980
MANGANESE	183	272	8.3	97.7	77.9
MERCURY	0.45	0.11	0.4	0.07	0.1
NICKEL	ND	6.4	5.8	8.5	7.5
POTASSIUM	R	R	R	R	R
SELENIUM	1.2 J	ND	0.3 J	ND	ND
SILVER	ND	ND	ND	ND	ND
SODIUM	R	R	R	R	R
THALLIUM	1.4	ND	ND	ND	ND
VANADIUM	21.3	7.5	8.1	14	9.8
ZINC	84.2	113	204	79.4	6.8
TOC	NA	NA	NA	NA	NA

Appendix 18

Johnson Company Surface Water Quality Results from
Route 128 Bridge and Salem Street Bridge
February 20 & 21, 1989

SCITEST
LABORATORY SERVICES
Box 339
Randolph, Vermont 05060-0339
(802) 728-3379

LABORATORY REPORT

CLIENT NAME: The Johnson Company
ADDRESS: 5 State Street
Montpelier, VT 05602
ATTENTION: Mr. Robert Butler

LABORATORY NO.: 188-89
PROJECT NO.: 78611
DATE OF RECEIPT: 02/21/89
DATE OF REPORT: 02/23/89
DATE OF SAMPLE: 02/20&21/89

ABERJONA RIVER RESULTS IN WOBURN, MASSACHUSETTS

(Expressed as milligrams per liter mg/l except as noted)

	2/21/89 Salem St	2/21/89 Rt 128	2/20/89 Salem St	2/20/89 Rt 128	Field Blank	% Recovery 2/20/89-128
Arsenic	<0.005	<0.005	<0.005	<0.005	<0.005	95 %
Barium	<0.10	<0.10	<0.10	<0.10	<0.10	--
Cadmium	0.0007	0.0008	0.0006	<0.0002	0.0002	100 %
Calcium	17.4	8.29	38.8	38.8	<0.2	--
Chromium	0.007	0.007	0.007	<0.005	<0.005	115 %
Copper	<0.02	0.02	<0.02	<0.02	<0.02	--
Iron	1.75	1.62	2.44	1.68	<0.02	--
Lead	<0.005	0.010	<0.005	<0.005	<0.005	90 %
Manganese	0.43	0.17	0.76	0.63	<0.02	--
Mercury	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	96 %
Selenium	<0.005	<0.005	<0.005	<0.005	<0.005	93 %
Silver	<0.02	<0.02	<0.02	<0.02	<0.02	98 %
Sodium	39.2	20.5	72.9	72.2	0.2	--
Zinc	0.207	0.220	0.256	0.261	<0.005	--
Turbidity (NTU's)	19	88	16	12	--	--
Sulfide	<0.02	<0.02	<0.02	<0.02	--	--
Total Diss Solids	195	82	358	353	--	--
Alkalinity as $CaCO_3$	32.5	20.6	78.1	78.1	--	--
Fluoride	0.17	<0.10	0.25	0.26	--	--
Chloride	67.0	30.6	113	117	--	--
Nitrates	1.21	0.45	1.23	1.36	--	--
Sulfates	52.0	40.0	86.0	85.4	--	--
Total Coliform MPN Method unconf.	1100/ 100mls	700/ 100mls	3000/ 100mls	3000/ 100mls	--	--

FIELD DATA
COLLECTED BY R. BUTLER

	2/21/89 Salem St	2/21/89 128	2/20/89 Salem St	2/20/89 128	Field Blank	% Recovery 2/20/89-128
pH (su)	6.20	6.38	6.70	6.80	--	--
Temp °C	1.1	3.4	1.9	2.8	--	--
Condutivity (umhos/cm)	380	218	704	736	--	--
ORP (mv)	200	180	71.0	69.0	--	--
Time	12:00 PM	11:21 AM	7:41 PM	8:20 PM	--	--

SCITEST
LABORATORY SERVICES

PARAMETER	02/20/89 Rt 128	02/20/89 Salem St	02/21/89 Rt 128	02/21/89 Salem St	QUALITY CONTROL Spike 02/20/89 Rt 128	QUALITY CONTROL Duplicate 02/20/89 Salem St
Bromobenzene	<1	<1	<1	<1	---	<1
n-Butylbenzene	<1	<1	<1	<1	---	<1
sec-Butylbenzene	<1	<1	<1	<1	---	<1
tert-Butylbenzene	<1	<1	<1	<1	---	<1
2-Chlorotoluene	<1	<1	<1	<1	---	<1
4-Chlorotoluene	<1	<1	<1	<1	---	<1
Hexachlorobutadiene	<1	<1	<1	<1	---	<1
Isopropyltoluene	<1	<1	<1	<1	---	<1
n-Propylbenzene	<1	<1	<1	<1	---	<1
Styrene	<1	<1	<1	<1	---	<1
1,3-Dichloropropane	<1	<1	<1	<1	---	<1
1,2,3-Trichloropropane	<1	<1	<1	<1	---	<1
Bromochloromethane	<1	<1	<1	<1	---	<1
Dibromomethane	<1	<1	<1	<1	---	<1
1,2-Dibromoethane	<1	<1	<1	<1	---	<1

Note: The field blanks from both the 02/20 and 02/21 had small amounts of Toluene, 1,1,2-Trichlorofluoroethane, and Acetone.

Respectfully submitted,

SCITEST, INC.

Roderick J. Lamothe

Roderick J. Lamothe
Laboratory Director

RJL/jf

LABORATORY REPORT

CLIENT NAME: The Johnson Company
SAMPLE LOCATION: Aberjona River, Woburn, MA
LABORATORY NUMBER: 188-89
PROJECT NUMBER: 78611

DATE OF SAMPLE: 02/21/89
DATE OF RECEIPT: 02/21/89
DATE ANALYZED: 02/22/89

PARAMETER	02/20/89 Rt 128	02/20/89 Salem St	02/21/89 Rt 128	02/21/89 Salem St	40ppb Spike 02/20/89 Rt 128	Duplicate 02/20/89 Salem St
Chloromethane	<1	<1	<1	<1	---	<1
Bromoform	<5	<5	<5	<5	95.8 %	<5
Bromomethane	<1	<1	<1	<1	---	<1
Dibromochloromethane	<1	<1	<1	<1	---	<1
Vinyl Chloride	<1	<1	<1	<1	---	<1
2-Chloroethylvinyl Ether	<5	<5	<5	<5	---	<5
Chloroethane	<1	<1	<1	<1	---	<1
Methylene Chloride	<1	<1	<1	<1	---	<1
Trichloroethylene	4	4	<1	TRACE	5	4
Trichlorofluoromethane	<1	<1	<1	<1	---	<1
1,1-Dichloroethene	<1	<1	<1	<1	---	<1
1,1-Dichloroethane	1	TRACE	<1	<1	TRACE	TRACE
cis or trans-1,2-Dichloroethylene	2	8	<1	TRACE	100.1 %	7
Chloroform	<1	<1	<1	<1	---	<1
1,2-Dichloroethane	<1	<1	<1	<1	81.8 %	<1
1,1,1-Trichloroethane	3	2	<1	TRACE	109.1 %	1
Carbon Tetrachloride	<1	<1	<1	<1	---	<1
Bromodichloromethane	<1	<1	TRACE	<1	85.5 %	<1
1,2-Dichloropropane	<1	<1	<1	<1	---	<1
trans-1,3-Dichloropropene	<1	<1	<1	<1	---	<1
cis-1,3-Dichloropropene	<1	<1	<1	<1	100.5 %	<1
1,1,2,2-Tetrachloroethane	<1	<1	<1	<1	---	<1
1,1,2-Trichloroethane	<1	<1	<1	<1	---	<1
Tetrachloroethylene	TRACE	TRACE	<1	<1	TRACE	TRACE
Benzene	<1	<1	<1	<1	---	<1
Toluene	1	TRACE	TRACE	TRACE	106.0 %	TRACE
Ethylbenzene	<1	<1	<1	<1	109.0 %	<1
Chlorobenzene	<1	<1	<1	<1	---	<1
1,4-Dichlorobenzene	<1	<1	<1	<1	---	<1
1,3-Dichlorobenzene	<1	<1	<1	<1	---	<1
1,2-Dichlorobenzene	<1	<1	<1	<1	---	<1
Xylenes	<1	<1	TRACE	TRACE	---	<1
Acetone	<5	<5	<5	<5	---	<5
			Note 1		Note 2	

EPA Method 502.1 & 503.1; All results reported as ug/l or ppb.

Note: The Trichlorobenzene, Trimethylbenzenes, and Napthalene were not determined by this method.

Note 1: This sample had a strong fuel oil odor.

Note 2: Expressed as % Recovery.

SCITEST
LABORATORY SERVICES

SCITEST
LABORATORY SERVICES
Box 339
Randolph, Vermont 05060-0339
(802) 728-3379

LABORATORY REPORT

CLIENT NAME: The Johnson Company

ADDRESS: State Street
Montpelier, VT 05602

SAMPLING LOCATION: Aberjona River
Woburn, MA

ATTENTION: Mr. Seth Pitkin

LABORATORY NO.: 188-89

PROJECT NO.: 78611

DATE OF RECEIPT: 02/21/89

DATE OF REPORT: 03/07/89

DATE OF SAMPLE: 02/20-02/21/89

RESULTS EXPRESSED AS MICROGRAMS PER LITER(ug/l)

Location	Date	Total TOX	Extractable TOX	POX
Salem Street	02/20/89	11	nd.	11
Route 128	02/20/89	12	4.5	7.8
Salem Street	02/21/89	<10	---	---
Route 128	02/21/89	<10	---	---

QC DATA

Spike of
Salem Street 02/21/89 (@ 15.4 ppb, PCB Aroclor 1254) 112 % Recovery

nd.=Not Detected.

Respectfully submitted,

SCITEST, INC.

Roderick J. Lamothe
Laboratory Director

RJL/jf

Appendix 19

Aberjona Water Quality Sampling Results
(from Defo, summer 1970)

ABERJONA RIVER STUDY
SAMPLING LOCATIONS

STATION	LOCATION
1	Western branch of Aberjona River at West Street, Reading
2	Eastern branch of Aberjona River at West Street, Reading
3	Halls Brook below railroad bridge, off New Boston St., Woburn
3A	Drainage Ditch at Woburn Barrel Company, off New Boston St., Woburn
3B	Halls Brook at New Boston Road, Woburn
3C	Drainage Ditch at rear of Brown Warehouse, off New Boston St., Woburn
4	Aberjona River at bridge on Olympia Street, Woburn
5	Unnamed Brook behind Wingarsheet Company off Cedar St., Woburn
6	Aberjona River between Washington Street and Washington Circle, Woburn
7	Sweetwater Brook below General Foods, off Montvale Ave., Woburn
7A	Sweetwater Brook at Sanborn Trucking, off Montvale Ave., Stoneham
8	Aberjona River opposite J. H. Winn Inc., Washington St., Winchester
9	Aberjona River below Parkview Apartment discharge, off Swanton St., Winchester
10	Wedge Pond effluent at Main Street, Winchester
11	Aberjona River at U. S. G. S. Gaging Station, Winchester
12	Upper Mystic Lake at narrows, Winchester

TABLE III
RESULTS OF SAMPLES COLLECTED ON JUNE 16, 1971
ANALYSES BY LAWRENCE EXPERIMENT STATION

Sta.	Flow (cfs)	pH	Alkalinity mg/l	Acidity mg/l	BOD mg/l	Chlorides mg/l	Coliform Total Organisms per 100ml	Coliform Fecal Organisms per 100ml
1	0.5	6.9	48		2.6	70	930	430
2	0.4	6.6	48		3.0	47	750	430
3	2.9	2.0		476	80.0	390	< 36	< 36
4	6.3	2.4		185	48.0	255	< 36	< 36
5	0.5	7.0	50		2.0	215	1500	210
6	6.1	3.0		58	27.0	220	< 36	< 36
7	0.8	6.0	23		1.0	130	< 36	< 36
8	8.2	3.1		128	15.0	210	< 36	< 36
9	9.5	5.9	23		5.2	190	< 36	< 36
10	neg.	7.2	41		4.2	130	150	71
11	9.9	6.7	51		13.0	190	2400	230
12		7.2	19		4.2	155	73	36

neg-Flow could not be measured with the current meter

TABLE V
RESULTS OF SAMPLES COLLECTED ON JUNE 30, 1971
ANALYSES BY TUFTS UNIVERSITY LABORATORY

Sta.	pH	Alkalinity mg/l	Acidity mg/l	BOD mg/l	Chlorides mg/l
2	7.4	53.0		1.0	80
3A	1.5		1343	>100	*
3B	7.0	66.0		1.5	67
10	6.6	34.0		2.7	203
11	7.1	37.0		2.5	182

* A proper endpoint could not be obtained in this sample

TABLE VI
RESULTS OF SAMPLES COLLECTED ON JULY 7, 1971
ANALYSES BY LAWRENCE EXPERIMENT STATION

Sta.	Flow (cfs)	pH	Alkalinity mg/l	Acidity mg/l	BOD mg/l	Chlorides mg/l	Coliform	
							Total Organisms per 100ml	Fecal Organisms per 100ml
2	1.1	6.5	47		4.8	85	2400	930
3	1.4	6.3	74		165.0	150	46000	430
3A	0.7	6.3	170		530.0	290	2400	36
3B	0.6	6.6	71		12.0	50	2400	2400
4	1.0	6.4	95		102.0	150	1500	91
5	0.04	7.1	52		3.6	160	1500	230
6	2.4	6.5	71		52.0	120	930	430
7	neg.	6.5	58		2.8	90	15000	930
8	3.1	6.6	59		29.0	120	2400	2400
9	2.2	6.5	60		18.0	130	4600	4600
10	neg.	7.8	63		15.0	100	4600	150
11	2.5	6.3	45		10.0	160	2400	430
12		6.8	18		9.6	120	750	430

neg-Flow could not be measured with the current meter

TABLE VII
RESULTS OF SAMPLES COLLECTED ON JULY 12, 1971
ANALYSES BY TUFTS UNIVERSITY LABORATORY

Sta.	pH	Alkalinity mg/l	BOD mg/l	DO mg/l	Chlorides mg/l	Coliform Total Organisms per 100ml	Coliform Fecal Organisms per 100ml
2	7.1	32	0.6	7.8	60	7500	7500
3A	6.6	200	350.0	0.5	378	2300	2300
3B	7.0	66	0.5	3.1	80	110000	46000
3C	6.4	240	540.0	0.0	478	9300	<36
3	6.5	90	120.0	2.2	252	2300	2300
4	7.1	97	45.0	1.7	218	300	<36
6	7.5	91	20.0	3.5	190	700	<36
7A						110000	24000
11				9.0		700	700
12				7.7		900	900

TABLE VIII
RESULTS OF SAMPLES COLLECTED ON JULY 15, 1971
ANALYSES BY TUFTS UNIVERSITY LABORATORY

Sta.	pH	Alkalinity mg/l	BOD mg/l	Chlorides mg/l	Coliform	
					Total Organisms per 100ml	Fecal Organisms per 100ml
2	6.8	21	0.8	67	4300	400
Nat. Poly.	6.3	16	11.0	63	1500	36
Sewer Pumpage	5.9	497	>660	225	9300	400
3A	6.7	167	340.0	377	9300	900
3B	6.8	50	0.5	76	24000	1500
3	6.5	60	46.0	128	2300	900
6	6.9	48	4.0	114	15000	9300
7A					210000	210000

TABLE IX
RESULTS OF SAMPLES COLLECTED ON JULY 20, 1971
ANALYSES BY TUFTS UNIVERSITY LABORATORY

Sta.	pH	Alkalinity mg/l	Acidity mg/l	BOD mg/l	Chlorides mg/l	Coliform Total Organisms per 100ml	Coliform Fecal Organisms per 100ml
2	6.9	29		0.5	46	2300	2300
Nat. Poly.	6.4	17		5.2	58	900	<36
Sewer Pumpage	5.8			>1320	125		
3A	1.9		1030	240.0	1700	<36	<36
3B	6.8	63		1.5	63	900	400
3C	1.7		1580	240.0	1800	<36	<36
3	2.4		386	107.0	700	<36	<36
6	7.1	62		7.5	103	900	400
7A						24000	9300
11	7.2	53				110000	400

TABLE X
RESULTS OF SAMPLES COLLECTED ON JULY 28, 1971
ANALYSES BY LAWRENCE EXPERIMENTSTATION

Sta.	Flow (cfs)	pH	Alkalinity mg/l	Acidity mg/l	BOD mg/l	Chlorides mg/l	Coliform Total Organisms per 100ml	Coliform Fecal Organisms per 100ml
2	0.5	6.7	28		3.0	71	4600	930
3	2.8	4.5	0		160.0	450	∠36	∠36
3A	1.0	2.0		1050	250.0	1050	∠36	∠36
3B	1.2	6.5	53		3.6	70	2400	930
4	1.9	5.5	11		126.0	425	∠36	∠36
5	neg.	6.9	45		2.6	180	7500	2400
6	1.6	7.2	120		9.0	250	11000	1500
7	neg.	6.9	41		6.8	95	240000	4300
8	2.6	7.5	84		5.2	190	46000	15000
9	neg.	7.9	47		13.0	235	9300	4600
10	neg.	7.5	55		9.2	130	9300	150
11	0.7	7.2	51		5.2	265	4300	150
12		7.3	29		6.0	170	930	230

neg-Flow could not be measured with the current meter

Appendix 20

Aberjona Water Quality Sampling Results
(from Water Resources Data for MA, NH, RI & VT
U.S.G.S. Department of the Interior, 1973)

CHEMICAL ANALYSES OF SURFACE WATER, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973.--Continued

DATE	TIME	DIS-CHARGE (CFS)	DIS-SOLVED SILICA (SIO2) (MG/L)	TOTAL IRON (FE) (UG/L)	TOTAL MAN-GANESE (MN) (UG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)
MERRIMACK RIVER BASIN.--CONTINUED										
01100470 - MERRIMACK RIVER AT I495, NEAR HAVERHILL, MASS. (LAT 42 46 06 LONG 071 07 17.01)										
APR.. 1973										
24...	1215	--	4.2	540	40	5.0	.9	7.9	.8	7
01100684 - LITTLE RIVER AT WESTVILLE, N.H. (LAT 42 49 06 LONG 071 06 50.01)										
APR.. 1973										
26...	1100	--	5.4	640	30	7.1	1.5	11	1.1	16
01100690 - LITTLE RIVER AT HAVERHILL, MASS. (LAT 42 46 38 LONG 071 05 20.01)										
APR.. 1973										
26...	0930	--	5.5	860	70	9.3	1.9	14	1.4	20
01100700 - EAST MEADOW RIVER NEAR HAVERHILL, MASS. (LAT 42 48 41 LONG 071 01 59.01)										
APR.. 1973										
24...	1415	16	6.2	490	50	13	2.1	13	1.3	25
01100750 - MERRIMACK RIVER AT WEST NEWBURY, MASS. (LAT 42 48 38 LONG 071 00 02.01)										
APR.. 1973										
24...	1310	--	4.2	570	30	5.5	.8	7.7	.8	9
MAY										
21...	1100	--	4.3	--	100	5.0	.9	7.5	.8	10
01100804 - COBBLER BROOK AT MERRIMAC, MASS. (LAT 42 49 55 LONG 070 59 55.01)										
APR.. 1973										
24...	1730	4.6	7.8	1000	100	14	1.9	28	2.0	36
01100820 - ARTICHOKE RIVER NEAR NEWBURYPORT, MASS. (LAT 42 48 47 LONG 070 55 56.01)										
APR.. 1973										
26...	1630	E2.0	.4	200	0	7.7	1.5	7.7	.6	17
01100840 - POWWOW RIVER NEAR AMESBURY, MASS. (LAT 42 51 42 LONG 070 59 02.01)										
APR.. 1973										
25...	1830	95	.8	530	50	5.2	.9	6.1	.8	10
01100850 - POWWOW RIVER AT AMESBURY, MASS. (LAT 42 50 48 LONG 070 55 18.01)										
APR.. 1973										
25...	1145	159	1.6	730	30	6.2	1.3	7.4	1.0	14
01100870 - MERRIMACK RIVER AT NEWBURYPORT, MASS. (LAT 42 48 56 LONG 070 52 24.01)										
APR.. 1973										
24...	1055	--	4.2	540	30	6.5	1.3	11	1.0	9
MYSTIC RIVER BASIN										
01102460 - ABERJONA RIVER NEAR WOBURN, MASS. (LAT 42 29 29 LONG 071 07 46.01)										
JUNE, 1973										
06...	1145	8.0	7.7	1500	1300	36	7.0	64	5.1	43
01102495 - HORN POND BROOK AT WINCHESTER, MASS. (LAT 42 27 20 LONG 071 08 19)										
JUNE, 1973										
06...	1315	2.0	1.1	480	130	25	4.3	46	3.6	46

E Estimated.

CHEMICAL ANALYSES OF SURFACE WATER, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973.--Continued

DATE	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED NITRATE (N) (MG/L)	DISSOLVED NITRITE (N) (MG/L)	DISSOLVED AMMONIA NITROGEN (N) (MG/L)	ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)
MERRIMACK RIVER BASIN.--CONTINUED										
01100670 - MERRIMACK RIVER AT I495, NEAR HAVERHILL, MASS. (LAT 42 46 06 LONG 071 07 17.01)										
APR., 1973 24...	0	6	8.8	12	.4	.80	.00	.05	.87	--
01100684 - LITTLE RIVER AT WESTVILLE, N.H. (LAT 42 49 06 LONG 071 06 50.01)										
APR., 1973 26...	0	13	10	19	.3	.19	.00	.17	.16	--
01100690 - LITTLE RIVER AT HAVERHILL, MASS. (LAT 42 46 38 LONG 071 05 20.01)										
APR., 1973 26...	0	16	12	25	.3	.29	.00	.11	.33	--
01100700 - EAST MEADOW RIVER NEAR HAVERHILL, MASS. (LAT 42 48 41 LONG 071 01 59.01)										
APR., 1973 24...	0	21	12	24	.3	.09	.00	.14	.30	--
01100750 - MERRIMACK RIVER AT WEST NEWBURY, MASS. (LAT 42 48 38 LONG 071 00 02.01)										
APR., 1973 24...	0	7	8.7	13	.4	.59	.01	.11	.64	--
MAY 21...	0	8	7.8	12	.2	.49	.00	.07	.51	--
01100804 - COBBLER BROOK AT MERRIMAC, MASS. (LAT 42 49 55 LONG 070 59 55.01)										
APR., 1973 24...	0	30	18	34	.3	2.6	1.9	.17	.82	--
01100820 - ARTICHOKE RIVER NEAR NEWBURYPORT, MASS. (LAT 42 48 47 LONG 070 55 56.01)										
APR., 1973 26...	0	14	8.5	13	.1	.05	.06	.07	.37	--
01100840 - POWWOW RIVER NEAR AMESBURY, MASS. (LAT 42 51 47 LONG 070 59 02.01)										
APR., 1973 25...	0	8	6.5	11	.3	.01	.00	.17	.12	--
01100850 - POWWOW RIVER AT AMESBURY, MASS. (LAT 42 50 48 LONG 070 55 18.01)										
APR., 1973 25...	0	11	8.5	12	.3	.18	.00	.10	.45	--
01100870 - MERRIMACK RIVER AT NEWBURYPORT, MASS. (LAT 42 48 56 LONG 070 52 24.01)										
APR., 1973 24...	0	7	8.5	18	.4	.59	.00	.06	.57	--
MYSTIC RIVER BASIN										
01102460 - ABERJONA RIVER NEAR WOBURN, MASS. (LAT 42 29 29 LONG 071 07 46.01)										
JUNE, 1973 06...	0	35	100	87	.5	5.7	.16	5.8	1.4	--
01102495 - HORN POND BROOK AT WINCHESTER, MASS. (LAT 42 27 20 LONG 071 08 19)										
JUNE, 1973 06...	0	38	20	85	.2	.66	.24	.05	.59	--

CHEMICAL ANALYSES OF SURFACE WATER, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973.--Continued

DATE	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	HARD-NESS (CA+MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	CARBON DIOXIDE (CO2) (MG/L)	COLOR (PLAT-INUM-COBALT UNITS)
MERRIMACK RIVER BASIN.--CONTINUED										
01100670 - MERRIMACK RIVER AT 1495, NEAR HAVERHILL, MASS. (LAT 42 46 06 LONG 071 07 17.01)										
APR., 1973 24...	.05	.12	47	16	10	82	6.4	14.3	4.5	10
01100684 - LITTLE RIVER AT WESTVILLE, N.H. (LAT 42 49 06 LONG 071 06 50.01)										
APR., 1973 26...	.00	.02	64	24	11	114	7.3	11.5	1.3	80
01100690 - LITTLE RIVER AT HAVERHILL, MASS. (LAT 42 46 38 LONG 071 05 20.01)										
APR., 1973 26...	.00	.03	91	31	15	142	6.9	14.0	4.0	70
01100700 - EAST MEADOW RIVER NEAR HAVERHILL, MASS. (LAT 42 48 41 LONG 071 01 59.01)										
APR., 1973 24...	.00	.02	85	41	21	145	7.1	17.2	3.2	60
01100750 - MERRIMACK RIVER AT WEST NEWBURY, MASS. (LAT 42 48 38 LONG 071 00 02.01)										
APR., 1973 24...	.03	.10	48	17	10	81	6.2	14.5	9.1	10
MAY 21...	.04	.13	46	16	8	79	6.6	13.4	4.0	--
01100804 - COBBLER BROOK AT MERRIMAC, MASS. (LAT 42 49 55 LONG 070 59 55.01)										
APR., 1973 24...	.16	.26	136	43	13	230	6.8	16.0	9.1	70
01100820 - ARTICHOKE RIVER NEAR NEWBURYPORT, MASS. (LAT 42 48 47 LONG 070 55 56.01)										
APR., 1973 26...	.00	.01	48	25	11	92	6.7	15.0	5.4	5
01100840 - POWWOW RIVER NEAR AMESBURY, MASS. (LAT 42 51 42 LONG 070 59 02.01)										
APR., 1973 25...	.00	.01	37	17	8	68	6.5	18.0	5.1	60
01100850 - POWWOW RIVER AT AMESBURY, MASS. (LAT 42 50 48 LONG 070 55 18.01)										
APR., 1973 25...	.01	.06	46	21	9	84	6.5	17.5	7.1	50
01100870 - MERRIMACK RIVER AT NEWBURYPORT, MASS. (LAT 42 48 56 LONG 070 52 24.01)										
APR., 1973 24...	.02	.12	58	22	14	103	6.2	14.0	9.1	5
MYSTIC RIVER BASIN										
01102460 - ABERJONA RIVER NEAR WOBURN, MASS. (LAT 42 29 29 LONG 071 07 46.01)										
JUNE, 1973 06...	.00	.05	361	120	83	620	6.6	16.8	17	80
01102495 - HORN POND BROOK AT WINCHESTER, MASS. (LAT 42 27 20 LONG 071 08 19)										
JUNE, 1973 06...	.00	.03	211	80	42	400	7.4	20.2	2.9	5

CHEMICAL ANALYSES OF SURFACE WATER, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973.--Continued

DATE	TIME	DIS-CHARGE (CFS)	DIS-SOLVED SILICA (SIO2) (MG/L)	TOTAL IRON (FE) (UG/L)	TOTAL MAN-GANESE (MN) (UG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)
MYSTIC RIVER BASIN.--CONTINUED										
01102500 - AMERJONA RIVER AT WINCHESTER, MASS. (LAT 42 26 50 LONG 071 08 22.01)										
JUNE, 1973										
06...	1430	14	7.6	1400	400	38	7.2	66	4.7	24
01103015 - MILL BROOK AT ARLINGTON, MASS. (LAT 42 25 20 LONG 071 08 59.01)										
JUNE, 1973										
06...	1630	3.9	6.9	1400	120	26	5.7	40	4.8	46
01103025 - ALEWIFE BROOK NEAR ARLINGTON, MASS. (LAT 42 24 25 LONG 071 08 04)										
JUNE, 1973										
06...	1900	4.9	4.0	1400	200	40	10	47	5.6	98
01103050 - MYSTIC RIVER AT AMELIA EARHART DAM, SOMERVILLE, MASS. (LAT 42 23 44 LONG 071 04 32)										
JUNE, 1973										
07...	1130	--	1.8	1300	230	31	11	88	5.4	43
WEWEANTIC RIVER BASIN										
01105905 - SIPPICAN RIVER NEAR MARION, MASS. (LAT 41 44 05 LONG 070 46 30)										
OCT., 1972										
13...	1030	44	7.8	--	--	3.5	1.0	6.1	1.3	5
AUG., 1973										
08...	1345	19	7.7	1100	40	2.6	1.2	6.4	1.2	4
AUCOOT CREEK BASIN										
01105908 - AUCOOT CREEK NEAR MARION, MASS. (LAT 41 41 05 LONG 070 46 25)										
AUG., 1973										
08...	1430	.68	9.3	600	40	1.4	1.0	11	3.4	4
MATTAPOISETT RIVER BASIN										
01105911 - MATTAPOISETT RIVER AT ROUNSEVILLE ROAD, NEAR ROCHESTER, MASS. (LAT 41 44 10 LONG 070 51 45)										
OCT., 1972										
13...	0920	17	4.9	--	--	4.1	1.0	5.3	.9	6
AUG., 1973										
08...	1530	7.7	4.8	1300	50	3.0	1.1	5.7	.8	6
01105914 - MATTAPOISETT RIVER AT TINKHAM LANE, MATTAPOISETT, MASS. (LAT 41 41 05 LONG 070 50 30)										
AUG., 1973										
09...	0850	9.2	6.6	1300	30	3.0	1.2	6.0	.8	7
01105921 - SWIFT BROOK NEAR MATTAPOISETT MASS (LAT 41 39 50 LONG 070 49 40.01)										
AUG., 1973										
09...	0950	.07	19	1000	40	--	1.2	9.4	1.7	1
ACUSHNET RIVER BASIN										
01105924 - ACUSHNET RIVER AT LEONARD STREET, ACUSHNET, MASS. (LAT 41 43 25 LONG 070 53 50)										
AUG., 1973										
09...	1045	4.5	6.5	700	290	4.2	1.2	5.4	1.5	11

CHEMICAL ANALYSES OF SURFACE WATER, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973.--Continued

DATE	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED NITRATE (N) (MG/L)	DISSOLVED NITRITE (N) (MG/L)	DISSOLVED AMMONIA NITROGEN (N) (MG/L)	ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)
MYSTIC RIVER BASIN.--CONTINUED										
01102500 - ABERJONA RIVER AT WINCHESTER, MASS. (LAT 42 26 50 LONG 071 08 22.01)										
JUNE, 1973 06...	0	20	56	110	.4	7.0	.02	.13	5.6	--
01103015 - MILL BROOK AT ARLINGTON, MASS. (LAT 42 25 20 LONG 071 08 59.01)										
JUNE, 1973 06...	0	38	23	75	.2	2.0	.01	.13	.75	--
01103025 - ALEWIFE BROOK NEAR ARLINGTON, MASS. (LAT 42 24 25 LONG 071 08 04)										
JUNE, 1973 06...	0	80	41	82	.2	2.0	.00	.14	1.4	--
01103050 - MYSTIC RIVER AT AMELIA EARHART DAM, SOMERVILLE, MASS. (LAT 42 23 44 LONG 071 04 32)										
JUNE, 1973 07...	0	35	62	150	.3	2.6	.01	.11	1.8	--
WEWEANTIC RIVER BASIN										
01105905 - SIPPICAN RIVER NEAR MARION, MASS. (LAT 41 44 05 LONG 070 46 30)										
OCT., 1972 13...	0	4	5.9	11	.0	.08	--	.40	--	--
AUG., 1973 08...	0	3	13	10	.3	.16	.01	.13	--	.35
AUCOOT CREEK BASIN										
01105908 - AUCOOT CREEK NEAR MARION, MASS. (LAT 41 41 05 LONG 070 46 25)										
AUG., 1973 08...	0	3	17	12	.3	.04	.01	.24	--	.52
MATTAPOISETT RIVER BASIN										
01105911 - MATTAPOISETT RIVER AT ROUNSEVILLE ROAD, NEAR ROCHESTER, MASS. (LAT 41 44 10 LONG 070 51 45)										
OCT., 1972 13...	0	5	6.7	11	.0	.09	--	.40	--	--
AUG., 1973 08...	0	5	11	8.5	.3	.12	.00	.09	--	.26
01105914 - MATTAPOISETT RIVER AT TINKHAM LANE, MATTAPOISETT, MASS. (LAT 41 41 05 LONG 070 50 30)										
AUG., 1973 09...	0	6	6.1	9.0	.3	.21	.00	.10	--	.20
01105921 - SWIFT BROOK NEAR MATTAPOISETT MASS (LAT 41 39 50 LONG 070 49 40.01)										
AUG., 1973 09...	0	1	40	18	.6	.00	.02	.27	--	1.4
ACUSHNET RIVER BASIN										
01105924 - ACUSHNET RIVER AT LEONARD STREET, ACUSHNET, MASS. (LAT 41 43 25 LONG 070 53 50)										
AUG., 1973 09...	0	9	10	9.0	.3	.21	.00	.10	--	.50

CHEMICAL ANALYSES OF SURFACE WATER, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973.--Continued

DATE	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	CARBON DIOXIDE (CO2) (MG/L)	COLOR (PLAT-INUM-COBALT UNITS)
MYSTIC RIVER BASIN.--CONTINUED										
01102500 - AMERJONA RIVER AT WINCHESTER, MASS. (LAT 42 26 50 LONG 071 08 22.01)										
JUNE, 1973 06...	.00	.07	333	130	110	615	7.3	19.5	1.9	20
01103015 - MILL BROOK AT ARLINGTON, MASS. (LAT 42 25 20 LONG 071 08 59.01)										
JUNE, 1973 06...	.09	.19	214	86	51	392	7.2	19.0	4.6	23
01103025 - ALEWIFE BROOK NEAR ARLINGTON, MASS. (LAT 42 24 25 LONG 071 09 04)										
JUNE, 1973 06...	.08	.23	288	140	61	521	7.3	19.6	7.9	5
01103050 - MYSTIC RIVER AT AMELIA EARHART DAM, SOMERVILLE, MASS. (LAT 42 23 44 LONG 071 04 32)										
JUNE, 1973 07...	.06	.14	382	120	87	708	6.9	20.0	8.7	13
WEWEANTIC RIVER BASIN										
01105905 - SIPPICAN RIVER NEAR MARION, MASS. (LAT 41 44 05 LONG 070 46 30)										
OCT., 1972 13...	--	--	40	13	9	61	5.9	11.0	10	--
AUG., 1973 08...	.05	.06	45	11	8	61	5.9	23.0	8.1	160
AUCOOT CREEK BASIN										
01105908 - AUCOOT CREEK NEAR MARION, MASS. (LAT 41 41 05 LONG 070 46 25)										
AUG., 1973 08...	.04	.05	58	8	4	63	5.1	22.0	51	200
MATTAPOISETT RIVER BASIN										
01105911 - MATTAPOISETT RIVER AT ROUNSEVILLE ROAD, NEAR ROCHESTER, MASS. (LAT 41 44 10 LONG 070 51 45)										
OCT., 1972 13...	--	--	39	14	9	56	6.2	11.0	6.1	--
AUG., 1973 08...	.03	.04	39	12	7	57	6.0	25.0	9.6	100
01105914 - MATTAPOISETT RIVER AT TINKHAM LANE, MATTAPOISETT, MASS. (LAT 41 41 05 LONG 070 50 30)										
AUG., 1973 09...	.04	.06	38	12	7	60	6.3	22.0	5.6	110
01105921 - SWIFT BROOK NEAR MATTAPOISETT MASS (LAT 41 38 50 LONG 070 49 40.01)										
AUG., 1973 09...	.09	.09	--	--	--	84	4.6	20.0	40	600
ACUSHNET RIVER BASIN										
01105924 - ACUSHNET RIVER AT LEONARD STREET, ACUSHNET, MASS. (LAT 41 43 25 LONG 070 53 50)										
AUG., 1973 09...	.02	.03	45	15	6	65	6.6	25.0	4.4	100

Appendix 21

PAH Data
Furnished by ENSR

ENSR

Formerly ERT

ENSR Consulting
and Engineering

33 Industrial Way
Wilmington, MA 01887
(508) 657-4290

March 16, 1989

Mr. Tim Cosgrave
ENSR Consulting and Engineering
35 Nagog Park
Acton, MA 01720

REFERENCE: Project No. : 8500-089-021C
(3140-001-009)
Project Name : Unifirst
Date Received: March 6, 1989

Dear Mr. Cosgrave:

Enclosed are the results of analyses performed at your request on the project submission referenced above. Please feel free to contact us if you have any questions concerning the enclosed data.

Sincerely yours,

Marie A. Wojtas
Marie A. Wojtas
Laboratory Project Mgr.
(508) 657-4290

Martha S. Sparlin
Laboratory QA Manager

Marilyn Hoyt
Marilyn Hoyt
Laboratory Manager

cc: Jeff Bates

LABORATORY ANALYTICAL REPORT

I. INTRODUCTION

This report represents the results of analyses conducted on ENSR Project No. 8500-089-021C, received by the Wilmington Laboratory on March 6, 1989. Upon receipt by the laboratory, the samples were inspected for condition, Chain of Custody field identification accountability, and individual sample analytical requirements. The submitted samples were entered into the computerized Laboratory Information Management data base and unique laboratory identification numbers were assigned to each sample. The sample I.D. number is subsequently used throughout the laboratory to provide positive sample accountability in accordance with recommended USEPA sample management protocol. Table I summarizes the field identification, laboratory sample numbers, and analytical methodologies performed for this project.

TABLE I.
Project Sample Summary

Project No. : 8500-089-021C
Project Name: Unifirst, Woburn, MA

Field Identification	Sample Number	Sample Matrix	Analytical Method and Reference
Drainage Composite	66261	water	PPT PAH - ENSR SAM-002
Drainage Composite	66262	water	PPT PAH - ENSR SAM-002 (filtered)
Salem Composite	66263	water	PPT PAH - ENSR SAM-002
Salem Composite	66264	water	PPT PAH - ENSR SAM-002 (filtered)
128 Composite	66265	water	PPT PAH - ENSR SAM-002
128 Composite	66266	water	PPT PAH - ENSR SAM-002 (filtered)

II. QUALITY ASSURANCE AND QUALITY CONTROL

As an indication of the overall quality of the data generated by the ENSR Laboratory for this report, one or more of the following types of Quality Control analyses may be included in this report as required by the analytical methodology referenced in the project summary contained in TABLE I.

1. Method Blanks (MB)
2. Sample Duplicate Analyses
3. Laboratory Control Samples (LCS)
4. Matrix Spikes and Duplicates (MS/MSD)
5. Surrogate Compound Recoveries

Results of the quality control and quality assurance samples analyzed concurrently with the submitted samples for this project were within acceptable ranges. Quality control analyses and criteria for all methodologies performed by this laboratory are established by regulatory agencies and are constantly monitored as part of the laboratory's formal QA/QC program. Appendix I contains descriptions of the various types of QA/QC requirements which may have been required in this project.

III. ANALYTICAL RESULTS AND DISCUSSION

The results of analyses included in this report have been reviewed by the appropriate analytical department managers, the Laboratory Quality Assurance Manager, and the Laboratory Project Manager for accuracy and completeness. Method descriptions and summaries of procedures used in this report are available upon request. Appendix II contains general references to analytical procedures used by this laboratory.

Please note that three samples (ENSR laboratory nos. 66262, 66264, 66266) were pressure filtered prior to analysis with 0.045 micron pore size Nucleopore filters. These samples are designated on the appropriate report sheets. Also, one sample (ENSR laboratory no. 66261) required dilution prior to analysis. Surrogate recoveries could not be calculated due to the dilution factor.

Due to the necessity to run sample nos. 66261, 66263 and 66265 at dilutions, the detection limits for the sample results should be adjusted accordingly. Also, because phenanthrene and anthracene co-eluted on the gas chromatographic column, these two compounds are reported as total values.

APPENDIX I

QUALITY CONTROL AND ASSURANCE PROCEDURES

1. Method Blanks (MB) - Analytical control consisting of all reagents, internal standards, and surrogate compounds carried through an analytical procedure to check for laboratory or instrumental contamination.

2. Surrogates - Isotope labelled compounds added to analyses used to evaluate analytical efficiency by measuring recovery.

3. Duplicate Analysis - A quality assurance check on the integrity of sample preparation as well as sample collection and shipping. Field duplicates and laboratory duplicates may be analyzed for each submission of samples when requested and where sample volumes permit. A laboratory duplicate is an aliquot of a field sample.

4. Laboratory Control Sample (LCS) - A standard control matrix spiked with a group of target compounds representative of the method analytes. The LCS is used to monitor the day-to-day accuracy of routine analytical methods within defined QC limits. An LCS has been established for most routine analytical methods. Control limits are defined by the most recent six months of LCS data for the appropriate methodology with an acceptable range for each analyte of the mean plus or minus 3 standard deviations.

5. Matrix Spike and Matrix Spike Duplicate (MS/MSD) - An aliquot of the sample matrix spiked with known quantities of specific compounds and subjected to the entire analytical procedure in order to evaluate the effect of sample matrix on measurable analyte recovery. The MSD is a duplicate analysis of the matrix used to measure method precision.

APPENDIX II

ANALYTICAL PROCEDURE REFERENCES

1. "Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act", 40 CFR, Part 136; Federal Register, Vol.49, No.209, 1984.

2. US EPA. Test Methods for Evaluating Solid Waste, Physical/Chemical Methods. (SW 846) Washington, D.C., April, 1984.

3. US EPA. Methods for Chemical Analysis of Water and Wastes. EPA-600/4-79-020. Cincinnati, OH, March, 1983.

4. American Public Health Association, American Water Works Association, Water Pollution Control Federation. Standard Methods for the Examination of Water and Wastewater, 15th & 16th Ed., Washington, D.C., April, 1985.

5. 1984 Annual Book of ASTM Standards Section 4: Construction, Vol. 04.08: Soil & Rock; Building Stones.

6. 1984 Book of ASTM Standards, Part 31: Water.

7. Manuals of Soil Laboratory Testing, Vol. 1: Soil Classification and Compaction Tests, K.H. Head, 1980.

8. US EPA. Methods for the Determination of Organic Compounds in Finished Drinking Water and Raw Source Water. Cincinnati, OH, Sep 1986.

9. Methods of Soil Analysis Agronomy No. 9, Part 2: Chemical and Microbiological Properties, 1965.

10. Current EPA Contract Laboratory Program (CLP) Invitation for Bid protocols for analysis of organic and inorganic hazardous substances.

11. ENSR/ERT developed and validated screening methods and specialized techniques for parameters not covered by published EPA protocols.

PPT PAH ANALYSES IN WATER

SUMMARY OF SAMPLE RESULTS

ENSR CONSULTING AND ENGINEERING
SUMMARY OF ANALYTICAL RESULTS
PPT-PAH RESULTS IN WATER

ENSR NO : 66261(UNFILTERED)
FIELD ID : DRAINAGE COMPOSITE
CLIENT : UNIFIRST
SAMPLING SITE : LOWELL,MA
PROJECT NO : 8500-089-021

DATE SAMPLED : 03/05/89
DATE RECEIVED : 03/06/89
DATE EXTRACTED : 03/07/89
DATE ANALYZED : 03/09/89

PARAMETER	RESULT (NG/L)	MDL#	0.64 MDL
BENZO(A)ANTHRACENE	730.	4.30	2.80
CHRYSENE	750.	2.60	1.70
BENZOFLUORANTHENES(B&K)	1500.	1.40	0.90
BENZO(A)PYRENE	600.	2.90	1.90
INDENO(1,2,3-CD)PYRENE	530.	0.67	0.43
DIBENZ(A,H)ANTHRACENE	580.	0.42	0.27
BENZO(G,H,I)PERYLENE	690.	0.67	0.43
NAPHTHALENE	160.	2.00	1.30
2-METHYLNAPHTHALENE	540.	1.60	1.00
1-METHYLNAPHTHALENE	350.	1.30	0.83
BIPHENYL	83.	1.30	0.83
ACENAPHTHYLENE	48.	1.00	0.64
ACENAPHTHENE	190.	1.20	0.77
DIBENZOFURAN	100.	0.69	0.44
FLUORENE	210.	0.64	0.41
TOTAL PHENANTHRENE/ANTHRACENE	1700.	3.40	2.20
FLUORANTHENE	2200.	0.97	0.62
PYRENE	1700.	0.74	0.47
BENZO(E)PYRENE	620.	4.00	2.40
PERYLENE	400.	1.20	0.77

MDL# = SAMPLE DILUTION FACTOR IS 10X; ADJUST MDL ACCORDINGLY (SEE DISCUSSION)

SURROGATE	RECOVERY,%	RECOVERY LIMITS,%
NAPHTHALENE-D8	NA*	14-108
FLUORENE-D10	NA*	41-162
CHRYSENE-D12	NA*	10-118

NA* = NOT ANALYZED DUE TO SAMPLE DILUTION AND MATRIX INTERFERENCE

REVIEWED BY: MW QC BY: K.M.

ENSR CONSULTING AND ENGINEERING
SUMMARY OF ANALYTICAL RESULTS
PPT-PAH RESULTS IN WATER

ENSR NO : 66262(FILTERED)
FIELD ID : DRAINAGE COMPOSITE
CLIENT : UNIFIRST
SAMPLING SITE : LOWELL,MA
PROJECT NO : 8500-089-021

DATE SAMPLED : 03/05/89
DATE RECEIVED : 03/06/89
DATE EXTRACTED : 03/08/89
DATE ANALYZED : 03/13/89

PARAMETER	RESULT (NG/L)	MDL	0.64 MDL
BENZO(A)ANTHRACENE	65.	4.30	2.80
CHRYSENE	190.	2.60	1.70
BENZOFLUORANTHENES(B&K)	130.	1.40	0.90
BENZO(A)PYRENE	30.	2.90	1.90
INDENO(1,2,3-CD)PYRENE	59.	0.67	0.43
DIBENZ(A,H)ANTHRACENE	19.	0.42	0.27
BENZO(G,H,I)PERYLENE	73.	0.67	0.43
NAPHTHALENE	9.9	2.00	1.30
2-METHYLNAPHTHALENE	86.	1.60	1.00
1-METHYLNAPHTHALENE	32.	1.30	0.83
BIPHENYL	BDL	1.30	0.83
ACENAPHTHYLENE	BDL	1.00	0.64
ACENAPHTHENE	2.9	1.20	0.77
DIBENZOFURAN	BDL	0.69	0.44
FLUORENE	1.5	0.64	0.41
TOTAL PHENANTHRENE/ANTHRACENE	30.	3.40	2.20
FLUORANTHENE	120.	0.97	0.62
PYRENE	120.	0.74	0.47
BENZO(E)PYRENE	33.	4.00	2.40
PERYLENE	22.	1.20	0.77

SURROGATE	RECOVERY,%	RECOVERY LIMITS,%
NAPHTHALENE-D8	77	14-108
FLUORENE-D10	114	41-162
CHRYSENE-D12	101	10-118

* = OUTSIDE CONTROL LIMITS

REVIEWED BY: MW QC BY: M.M.

ENSR CONSULTING AND ENGINEERING
SUMMARY OF ANALYTICAL RESULTS
PPT-PAH RESULTS IN WATER

ENSR NO : 66263(UNFILTERED)
FIELD ID : SALEM COMPOSITE
CLIENT : UNIFIRST
SAMPLING SITE : LOWELL,MA
PROJECT NO : 8500-089-021

DATE SAMPLED : 03/05/89
DATE RECEIVED : 03/06/89
DATE EXTRACTED : 03/07/89
DATE ANALYZED : 03/09/89

PARAMETER	RESULT (NG/L)	MDL#	0.64 MDL
BENZO(A)ANTHRACENE	28.	4.30	2.80
CHRYSENE	32.	2.60	1.70
BENZOFLUORANTHENES(B&K)	58.	1.40	0.90
BENZO(A)PYRENE	23.	2.90	1.90
INDENO(1,2,3-CD)PYRENE	24.	0.67	0.43
DIBENZ(A,H)ANTHRACENE	22.	0.42	0.27
BENZO(G,H,I)PERYLENE	25.	0.67	0.43
NAPHTHALENE	11.	2.00	1.30
2-METHYLNAPHTHALENE	14.	1.60	1.00
1-METHYLNAPHTHALENE	11.	1.30	0.83
BIPHENYL	BDL	1.30	0.83
ACENAPHTHYLENE	BDL	1.00	0.64
ACENAPHTHENE	18.	1.20	0.77
DIBENZOFURAN	8.0	0.69	0.44
FLUORENE	13.	0.64	0.41
TOTAL PHENANTHRENE/ANTHRACENE	63.	3.40	2.20
FLUORANTHENE	110.	0.97	0.62
PYRENE	81.	0.74	0.47
BENZO(E)PYRENE	22.	4.00	2.40
PERYLENE	14.	1.20	0.77

MDL# = SAMPLE DILUTION FACTOR IS 5X; ADJUST MDL ACCORDINGLY (SEE DISCUSSION)

SURROGATE	RECOVERY,%	RECOVERY LIMITS,%
NAPHTHALENE-D8	108	14-108
FLUORENE-D10	85	41-162
CHRYSENE-D12	99	10-118

* = OUTSIDE CONTROL LIMITS

REVIEWED BY: MW QC BY: K.M.

ENSR CONSULTING AND ENGINEERING
SUMMARY OF ANALYTICAL RESULTS
PPT-PAH RESULTS IN WATER

ENSR NO : 66264(FILTERED)
FIELD ID : SALEM COMPOSITE
CLIENT : UNIFIRST
SAMPLING SITE : LOWELL,MA
PROJECT NO : 8500-089-021

DATE SAMPLED : 03/05/89
DATE RECEIVED : 03/06/89
DATE EXTRACTED : 03/08/89
DATE ANALYZED : 03/13/89

PARAMETER	RESULT (NG/L)	MDL	0.64 MDL
BENZO(A)ANTHRACENE	6.6	4.30	2.80
CHRYSENE	8.7	2.60	1.70
BENZOFLUORANTHENES(B&K)	13.	1.40	0.90
BENZO(A)PYRENE	3.7	2.90	1.90
INDENO(1,2,3-CD)PYRENE	3.8	0.67	0.43
DIBENZ(A,H)ANTHRACENE	1.8	0.42	0.27
BENZO(G,H,I)PERYLENE	4.1	0.67	0.43
NAPHTHALENE	7.9	2.00	1.30
2-METHYLNAPHTHALENE	3.6	1.60	1.00
1-METHYLNAPHTHALENE	BDL	1.30	0.83
BIPHENYL	BDL	1.30	0.83
ACENAPHTHYLENE	BDL	1.00	0.64
ACENAPHTHENE	BDL	1.20	0.77
DIBENZOFURAN	2.2	0.69	0.44
FLUORENE	1.5	0.64	0.41
TOTAL PHENANTHRENE/ANTHRACENE	7.1	3.40	2.20
FLUORANTHENE	11.	0.97	0.62
PYRENE	8.1	0.74	0.47
BENZO(E)PYRENE	<4.0	4.00	2.40
PERYLENE	3.2	1.20	0.77

SURROGATE	RECOVERY,%	RECOVERY LIMITS,%
NAPHTHALENE-D8	58	14-108
FLUORENE-D10	108	41-162
CHRYSENE-D12	71	10-118

ND = NOT DETECTED
* = OUTSIDE CONTROL LIMITS

REVIEWED BY: MW QC BY: K.M.

ENSR CONSULTING AND ENGINEERING
SUMMARY OF ANALYTICAL RESULTS
PPT-PAH RESULTS IN WATER

ENSR NO : 66265(UNFILTERED)
FIELD ID : 128 COMPOSITE
CLIENT : UNIFIRST
SAMPLING SITE : LOWELL,MA
PROJECT NO : 8500-089-021

DATE SAMPLED : 03/05/89
DATE RECEIVED : 03/06/89
DATE EXTRACTED : 03/07/89
DATE ANALYZED : 03/09/89

PARAMETER	RESULT (NG/L)	MDL#	0.64 MDL
BENZO(A)ANTHRACENE	72.	4.30	2.80
CHRYSENE	78.	2.60	1.70
BENZOFLUORANTHENES(B&K)	160.	1.40	0.90
BENZO(A)PYRENE	59.	2.90	1.90
INDENO(1,2,3-CD)PYRENE	60.	0.67	0.43
DIBENZ(A,H)ANTHRACENE	47.	0.42	0.27
BENZO(G,H,I)PERYLENE	59.	0.67	0.43
NAPHTHALENE	15.	2.00	1.30
2-METHYLNAPHTHALENE	13.	1.60	1.00
1-METHYLNAPHTHALENE	7.9	1.30	0.83
BIPHENYL	BDL	1.30	0.83
ACENAPHTHYLENE	BDL	1.00	0.64
ACENAPHTHENE	21.	1.20	0.77
DIBENZOFURAN	11.	0.69	0.44
FLUORENE	36.	0.64	0.41
TOTAL PHENANTHRENE/ANTHRACENE	170.	3.40	2.20
FLUORANTHENE	290.	0.97	0.62
PYRENE	190.	0.74	0.47
BENZO(E)PYRENE	58.	4.00	2.40
PERYLENE	27.	1.20	0.77

MDL# = SAMPLE DILUTION FACTOR IS 5X; ADJUST MDL ACCORDINGLY (SEE DISCUSSION)

SURROGATE	RECOVERY,%	RECOVERY LIMITS,%
NAPHTHALENE-D8	105	14-108
FLUORENE-D10	95	41-162
CHRYSENE-D12	118	10-118

* = OUTSIDE CONTROL LIMITS

REVIEWED BY: uw QC BY: K.M.

ENSR CONSULTING AND ENGINEERING
SUMMARY OF ANALYTICAL RESULTS
PPT-PAH RESULTS IN WATER

ENSR NO : 66266(FILTERED)
FIELD ID : 128 COMPOSITE
CLIENT : UNIFIRST
SAMPLING SITE : LOWELL,MA
PROJECT NO : 8500-089-021

DATE SAMPLED : 03/05/89
DATE RECEIVED : 03/06/89
DATE EXTRACTED : 03/08/89
DATE ANALYZED : 03/13/89

PARAMETER	RESULT (NG/L)	MDL	0.64 MDL
BENZO(A)ANTHRACENE	7.5	4.30	2.80
CHRYSENE	10.	2.60	1.70
BENZOFLUORANTHENES(B&K)	11.	1.40	0.90
BENZO(A)PYRENE	<2.9	2.90	1.90
INDENO(1,2,3-CD)PYRENE	3.2	0.67	0.43
DIBENZ(A,H)ANTHRACENE	1.4	0.42	0.27
BENZO(G,H,I)PERYLENE	3.7	0.67	0.43
NAPHTHALENE	5.0	2.00	1.30
2-METHYLNAPHTHALENE	3.1	1.60	1.00
1-METHYLNAPHTHALENE	3.0	1.30	0.83
BIPHENYL	BDL	1.30	0.83
ACENAPHTHYLENE	BDL	1.00	0.64
ACENAPHTHENE	BDL	1.20	0.77
DIBENZOFURAN	BDL	0.69	0.44
FLUORENE	1.8	0.64	0.41
TOTAL PHENANTHRENE/ANTHRACENE	7.3	3.40	2.20
FLUORANTHENE	11.	0.97	0.62
PYRENE	7.7	0.74	0.47
BENZO(E)PYRENE	<4.0	4.00	2.40
PERYLENE	2.3	1.20	0.77

SURROGATE	RECOVERY,%	RECOVERY LIMITS,%
NAPHTHALENE-D8	40	14-108
FLUORENE-D10	101	41-162
CHRYSENE-D12	70	10-118

ND = NOT DETECTED
* = OUTSIDE CONTROL LIMITS

IEWED BY: MW QC BY: K. M.

PPT PAH ANALYSES IN WATER

SUMMARY OF QA/QC RESULTS

ENSR CONSULTING AND ENGINEERING
SUMMARY OF ANALYTICAL RESULTS
PPT-PAH RESULTS IN WATER

ENSR NO : 66315
FIELD ID : MB890198
CLIENT : UNIFIRST
SAMPLING SITE : ENSR.WILMINGTON,MA
PROJECT NO : 8500-089-021

DATE SAMPLED : 03/07/89
DATE RECEIVED : NOT APPLICABLE
DATE EXTRACTED : 03/07/89
DATE ANALYZED : 03/09/89

PARAMETER	RESULT (NG/L)	MDL	0.64 MDL
BENZO(A)ANTHRACENE	BDL	4.30	2.80
CHRYSENE	<2.6	2.60	1.70
BENZOFLUORANTHENES(B&K)	1.5	1.40	0.90
BENZO(A)PYRENE	BDL	2.90	1.90
INDENO(1,2,3-CD)PYRENE	BDL	0.67	0.43
DIBENZ(A,H)ANTHRACENE	BDL	0.42	0.27
BENZO(G,H,I)PERYLENE	BDL	0.67	0.43
NAPHTHALENE	2.1	2.00	1.30
2-METHYLNAPHTHALENE	BDL	1.60	1.00
1-METHYLNAPHTHALENE	BDL	1.30	0.83
BIPHENYL	BDL	1.30	0.83
ACENAPHTHYLENE	BDL	1.00	0.64
ACENAPHTHENE	BDL	1.20	0.77
DIBENZOFURAN	BDL	0.69	0.44
FLUORENE	BDL	0.64	0.41
TOTAL PHENANTHRENE/ANTHRACENE	<3.4	3.40	2.20
FLUORANTHENE	BDL	0.97	0.62
PYRENE	1.3	0.74	0.47
BENZO(E)PYRENE	BDL	4.00	2.40
PERYLENE	BDL	1.20	0.77

SURROGATE	RECOVERY,%	RECOVERY LIMITS,%
NAPHTHALENE-D8	38	14-108
FLUORENE-D10	95	41-162
CHRYSENE-D12	19	10-118

* = OUTSIDE CONTROL LIMITS

REVIEWED BY: UW QC BY: K.M.

ENSR CONSULTING AND ENGINEERING
SUMMARY OF ANALYTICAL RESULTS
PPT-PAH RESULTS IN WATER

ENSR NO : 66323(FILTERED)
FIELD ID : MB890206
CLIENT : UNIFIRST
SAMPLING SITE : ENSR,WILMINGTON,MA
PROJECT NO : 8500-089-021

DATE SAMPLED : 03/08/89
DATE RECEIVED : NOT APPLICABLE
DATE EXTRACTED : 03/08/89
DATE ANALYZED : 03/13/89

PARAMETER	RESULT (NG/L)	MDL	0.64 MDL
BENZO(A)ANTHRACENE	BDL	4.30	2.80
CHRYSENE	BDL	2.60	1.70
BENZOFLUORANTHENES(B&K)	BDL	1.40	0.90
BENZO(A)PYRENE	BDL	2.90	1.90
INDENO(1,2,3-CD)PYRENE	BDL	0.67	0.43
DIBENZ(A,H)ANTHRACENE	BDL	0.42	0.27
BENZO(G,H,I)PERYLENE	BDL	0.67	0.43
NAPHTHALENE	4.4	2.00	1.30
2-METHYLNAPHTHALENE	3.3	1.60	1.00
1-METHYLNAPHTHALENE	BDL	1.30	0.83
BIPHENYL	BDL	1.30	0.83
ACENAPHTHYLENE	BDL	1.00	0.64
ACENAPHTHENE	BDL	1.20	0.77
DIBENZOFURAN	BDL	0.69	0.44
FLUORENE	BDL	0.64	0.41
TOTAL PHENANTHRENE/ANTHRACENE	BDL	3.40	2.20
FLUORANTHENE	2.4	0.97	0.62
PYRENE	2.3	0.74	0.47
BENZO(E)PYRENE	BDL	4.00	2.40
PERYLENE	BDL	1.20	0.77

SURROGATE	RECOVERY,%	RECOVERY LIMITS,%
NAPHTHALENE-D8	42	14-108
FLUORENE-D10	75	41-162
CHRYSENE-D12	76	10-118

ND = NOT DETECTED
* = OUTSIDE CONTROL LIMITS

REVIEWED BY: MW QC BY: K.M.

ENSR CONSULTING AND ENGINEERING
SUMMARY OF ANALYTICAL RESULTS
QUALITY CONTROL CHECK SAMPLES
PPT-PAH RESULTS IN WATER

ENSR NO : 66341 CLIENT : UNIFIRST

LAB FORT NO : LF890202 PROJECT NO : 8500-089-021

EXTRACTION DATE : 03/07/89 ANALYSIS DATE : 03/09/89

COMPOUND	SPIKED CONC. (NG/L)	SAMPLE CONC. (NG/L)	RECOVERY (%)
2-METHYLNAPHTHALENE	22.4	8.8	39
FLUORENE	20.0	10.9	55
CHRYSENE	20.0	32.0	160
BENZO(E)PYRENE	16.0	8.3	52
NAPHTHALENE	20.0	7.4	37
BENZO(ghi)PERYLENE	20.0	26.2	131

SURROGATES	EXP. CONC. (NG/L)	OBS. CONC. (NG/L)	RECOVERY (%)
NAPHTHALENE, D8	10.9	3.5	32
FLUORENE, D10	9.9	9.4	95
CHRYSENE, D12	11.1	8.6	77

REVIEWED BY: MW QC BY: K.M.

ENSR CONSULTING AND ENGINEERING
SUMMARY OF ANALYTICAL RESULTS
QUALITY CONTROL CHECK SAMPLES
PPT-PAH RESULTS IN WATER

ENSR NO : 66367 CLIENT : UNIFIRST

LAB FORT NO : LF890206 PROJECT NO : 8500-089-021

EXTRACTION DATE : 03/08/89 ANALYSIS DATE : 03/13/89

COMPOUND	SPIKED CONC. (NG/L)	SAMPLE CONC. (NG/L)	RECOVERY (%)
2-METHYLNAPHTHALENE	22.4	16.5	83
FLUORENE	20.0	13.1	66
CHRYSENE	20.0	27.1	136
BENZO(E)PYRENE	16.0	16.6	104
NAPHTHALENE	20.0	12.6	63
BENZO(ghi)PERYLENE	20.0	25.6	128

SURROGATES	EXP. CONC. (NG/L)	OBS. CONC. (NG/L)	RECOVERY (%)
NAPHTHALENE, D8	10.9	4.8	44
FLUORENE, D10	9.9	9.2	93
CHRYSENE, D12	11.1	8.1	73

REVIEWED BY: LW QC BY: K.M.

CHAIN OF CUSTODY SHEETS

AND

SAMPLE RECEIVING CHECKLISTS

8500-084-CDALC

CHAIN OF CUSTODY RECORD

Client/Project Name	Project Location
UniFirst	Woburn, MA
Project No.	**Field Logbook No.**
3140-001-009	
Sampler: (Signature)	**Chain of Custody Tape No.**
[signature]	

ANALYSES: PPT PAH

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample		REMARKS
~~SHELTER~~ -	3/5/89	17.08.			~~X~~	
128 7			66265		✓	
128 9			66265		✓	
DRAINAGE 1		17.20	66261		✓	
DRAINAGE 3			66261		✓	
DRAINAGE 5			66261		✓	
DRAINAGE 7			66261		✓	
DRAINAGE 9			66261		✓	

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
[signature]	3/5/89	12:15			
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Date	Time	Received for Laboratory: (Signature) James Powers	Date 3/6/89	Time 1020
Sample Disposal Method:	Disposed of by: (Signature)			Date	Time

SAMPLE COLLECTOR

C.O.C Completed By/
James Powers ENSR Wilmington

ANALYTICAL LABORATORY

Environmental Research and Technology, Inc.
33 Industrial Way
Wilmington, MA 01887
617-657-4290

ERT

Nº 24510

1974-3-84

CHAIN OF CUSTODY RECORD

SSU-087-021C

Client/Project Name	Project Location
UNIFIRST	WOBURN
Project No.	**Field Logbook No.**
3140-001-009	
Sampler: (Signature)	**Chain of Custody Tape No.**
[signature]	

ANALYSES: RPT PAH

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample		REMARKS
128 8	3/5/89	17.08	66266		✓	
128 10		17.08	66266		✓	
DRAINAGE 2		17.20	66262		✓	
DRAINAGE 4			66263		✓	
DRAINAGE 6			66262		✓	
DRAINAGE 8			66262		✓	
DRAINAGE 10			66262		✓	

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
[signature]	3/6/89	1220			
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Date	Time	Received for Laboratory: (Signature)	Date	Time
			James Powers	3/6/89	1220
Sample Disposal Method:			Disposed of by: (Signature)	Date	Time

SAMPLE COLLECTOR

C.O.C. Completed By
James Powers ERSA Wilmington

ANALYTICAL LABORATORY

Environmental Research and Technology, Inc.
33 Industrial Way
Wilmington, MA 01887
617-657-4290

ERT

Nº 24512

1974-3-84

8500-089-C IC

CHAIN OF CUSTODY RECORD

Client/Project Name	Project Location
UniFirst	Woburn, MA
Project No.	**Field Logbook No.**
3140-001-009	
Sampler: (Signature)	**Chain of Custody Tape No.**
[signature]	

ANALYSES: 2PT PAH

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample		REMARKS
SALEM ST 1	3/5/89	17.34	66263		✓	
SALEM ST 3			66263		✓	
SALEM 5			66263		✓	
SALEM 7			66263		✓	
SALEM 9		↓	66263		✓	
128 1		17.08	66265		✓	
128 3			66265		✓	
128 5	↓	↓	66265		✓	

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
[signature]	3/6/89	12:15			
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Date	Time	Received for Laboratory: (Signature)	Date	Time
			James Powers	3/6/89	1220
Sample Disposal Method:			Disposed of by: (Signature)	Date	Time

SAMPLE COLLECTOR

C.O.C. Completed By
James Powers ENSR Wilmington

ANALYTICAL LABORATORY

Environmental Research and Technology, Inc.
33 Industrial Way
Wilmington, MA 01887
617-657-4290

ERT

Nº 24509

1974-3-84

CHAIN OF CUSTODY RECORD

8500-089-0216

Client/Project Name: UNIFIRST	Project Location: WOBURN, MA
Project No.: 3140-001-009	Field Logbook No.
Sampler: (Signature)	Chain of Custody Tape No.

ANALYSES: RT 24H

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample		REMARKS
SALEM 2	3/5/84	17.39	660264		✓	
SALEM 4			660264		✓	
SALEM 6			660264		✓	
SALEM 8			660264		✓	
SALEM 10		↓	660264		✓	
128 2		17.08	660266		✓	
128 4		↓	660266		✓	
128 6	↓		660266		✓	

	Date	Time		Date	Time
Relinquished by: (Signature)	3/6/84	12:15	Received by: (Signature)		
Relinquished by: (Signature)			Received by: (Signature)		
Relinquished by: (Signature)			Received for Laboratory: (Signature) James Powers	3/6/84	1200
Sample Disposal Method.			Disposed of by: (Signature)		

SAMPLE COLLECTOR

C.o.C. Completed By
James Powers ENSR Wilmington

ANALYTICAL LABORATORY

Environmental Research and Technology, Inc.
33 Industrial Way
Wilmington, MA 01887
617-657-4290

ERT

Nº 24511

1974-3-84

ERT LABORATORIES
SAMPLE RECEIPT CHECKLIST

CLIENT WCC-ST PROJECT NO. 8500-089-021C AUTHORIZATION NUMBER 3140-001-009

1. ____ shipped
   ✓ hand-delivered
   NOTES: Greg Johnson

2. ✓ COC present on receipt
   ____ no COC
   NOTES:

3. ✓ COC tape on shipping container
   ____ no COC tape
   NOTES: 30889

4. ____ samples broken/leaking
   ✓ samples intact of receipt
   ____ other, see notes
   NOTES:

5. ____ ambient on receipt
   ✓ chilled on receipt
   NOTES:

6. ____ samples preserved correctly
   ____ improper preservatives
   ✓ N/A, no recommended preservatives
   ____ other, see notes
   NOTES:

7. ✓ received within holding time
   ____ not received within holding times
   ____ N/A, no recommended holding time
   ____ other, see notes
   NOTES:

8. ____ COC tapes on samples
   ✓ no COC tapes
   NOTES:

9. ____ discrepancies between COC and sample labels
   ✓ no discrepancies noted
   ____ N/A, no COC received
   NOTES:

10. Storage Location R7

Additional comments:

Samples inspected and logged in by: James Powers Date/Time: 3/7/85 1615

ENSR

Formerly ERT

ENSR Consulting
and Engineering

33 Industrial Way
Wilmington, MA 01887
(508) 657-4290

March 20, 1989

Mr. Tim Cosgrave
ENSR Consulting and Engineering
35 Nagog Park
Acton, MA 01720

REFERENCE: Project No. : 8500-089-021C ADDENDUM
(3140-001-009)
Project Name : Unifirst
Date Received: March 6, 1989

Dear Mr. Cosgrave:

Attached is an addendum to the report orginally sent on March 17, 1989. Please find attached an addition to the discussion, and three sample chromatograms. Please feel free to contact us if you have any questions concerning the enclosed data.

Sincerely yours,

Marie A. Wojtas
Marie A. Wojtas
Laboratory Project Mgr.
(508) 657-4290

Martha S. Sparlin
Laboratory QA Manager

Marilyn Hoyt
Marilyn Hoyt
Laboratory Manager

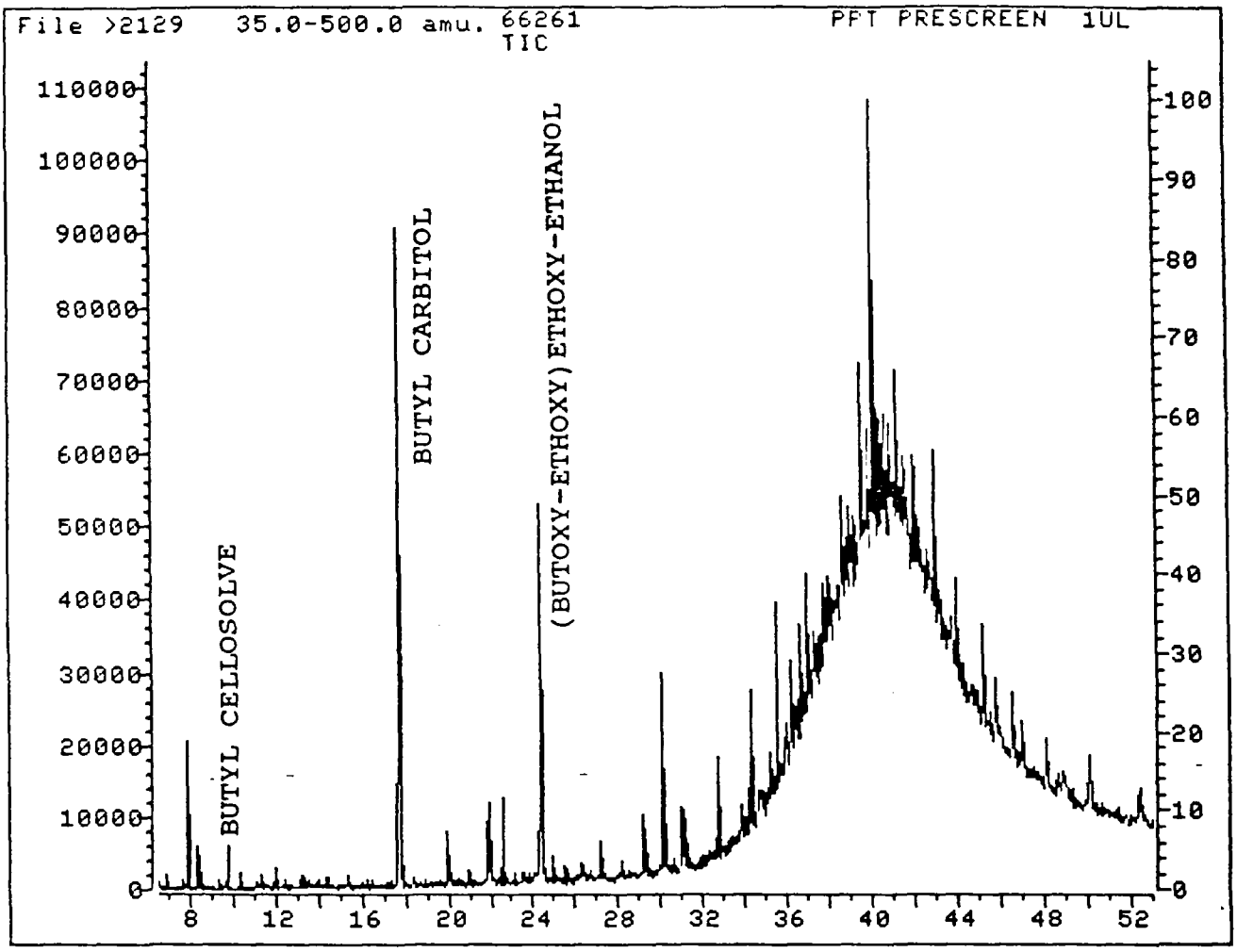
cc: Jeff Bates

In addition to low level polyaromatic hydrocarbons detected in these samples, one sample (ENSR no. 62261-unfiltered) contained relatively high amounts of some commonly used industrial solvents. The following table summarizes the identity and approximate amounts present in the sample extract:

Compound	Appoximate Concentration Present in Sample Extract (ug/L)
2-butanone (methyl ethyl ketone)	3
2-butoxy ethanol (Butyl Cellosolve)	3
2-butoxy ethoxy ethanol (Butyl Carbitol)	40

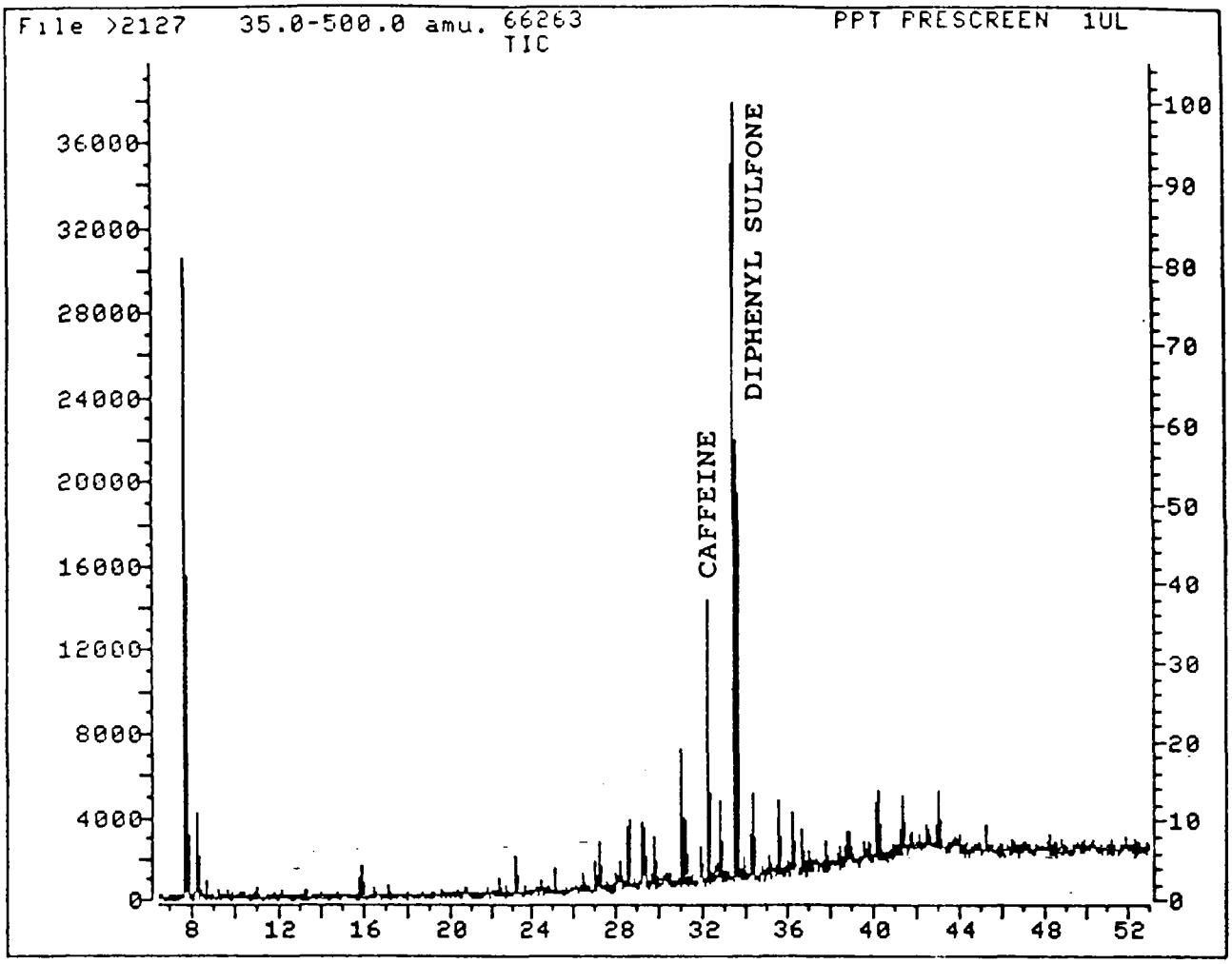
Please note that the water samples submitted to the laboratory were extracted using the ENSR PAH extraction procedure. Because these solvents are extremely water soluble, their extraction efficiency is expected to be low, and these values should be interpreted as minimum values.

Sample chromatograms (in the total ion scan mode) of all unfiltered samples are attached. Please note that all samples contain discernable levels of petroleum hydrocarbon oils. Other primary peaks are identified on the sample chromatograms.



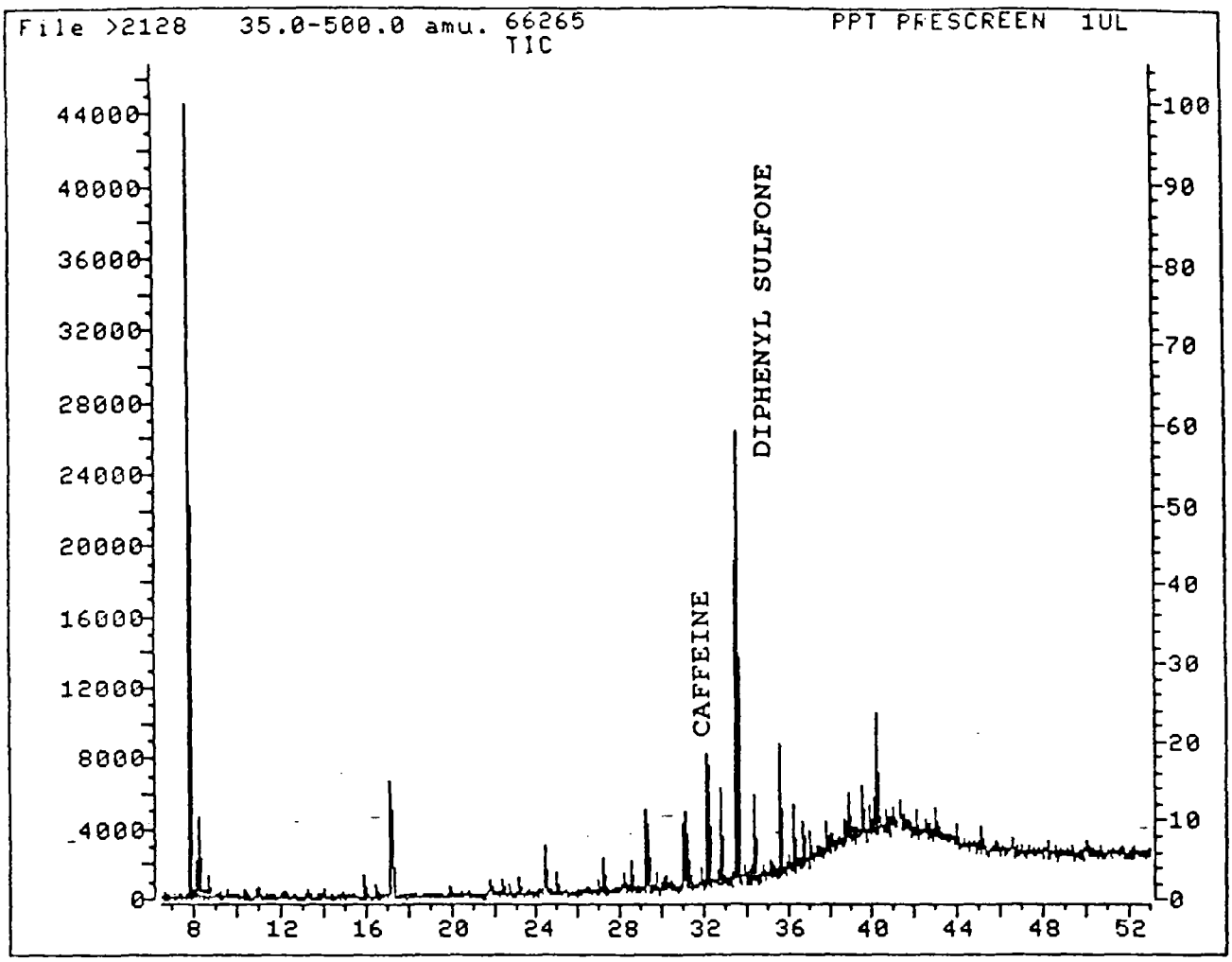
GC/MS TOTAL ION CHROMATOGRAM

SAMPLE IDENTIFICATION: DRAINAGE COMPOSITE (UNFILTERED)
ENSR NO.: 66261



GC/MS TOTAL ION CHROMATOGRAM

SAMPLE IDENTIFICATION: SALEM COMPOSITE (UNFILTERED)
ENSR NO.: 66263



GC/MS TOTAL ION CHROMATOGRAM

SAMPLE IDENTIFICATION: 128 COMPOSITE (UNFILTERED)
ENSR NO.: 66265

ENSR

Formerly

ENSR
and
33
Wilmington
(508)

March 16, 1989

Mr. Tim Cosgrave
ENSR Consulting and Engineering
35 Nagog Park
Acton, MA 01720

REFERENCE: Project No. : 8500-089-021C
(3140-001-009)
Project Name : Unifirst
Date Received: March 6, 1989

Dear Mr. Cosgrave:

Enclosed are the results of analyses performed at your request on the project submission referenced above. Please feel free to contact us if you have any questions concerning the enclosed data.

Sincerely yours,

Marie A. Wojtas
Marie A. Wojtas
Laboratory Project
(508) 657-4290

Karen McNamara for M. S.
Martha S. Sparlin
Laboratory QA Manager

Marilyn Hoyt
Marilyn Hoyt
Laboratory Manager

cc: Jeff Bates

APPENDIX I

QUALITY CONTROL AND ASSURANCE PROCEDURES

1. Method Blanks (MB) - Analytical control consisting of reagents, internal standards, and surrogate compounds through an analytical procedure to check for laboratory instrumental contamination.

2. Surrogates - Isotope labelled compounds added to a used to evaluate analytical efficiency by measuring re

3. Duplicate Analysis - A quality assurance check on integrity of sample preparation as well as sample col and shipping. Field duplicates and laboratory duplica be analyzed for each submission of samples when reques where sample volumes permit. A laboratory duplicate aliquot of a field sample.

4. Laboratory Control Sample (LCS) - A standard con matrix spiked with a group of target compounds repres of the method analytes. The LCS is used to monitor to-day accuracy of routine analytical methods within QC limits. An LCS has been established for most routi analytical methods. Control limits are defined by the recent six months of LCS data for the appropriate meth with an acceptable range for each analyte of the mea minus 3 standard deviations.

5. Matrix Spike and Matrix Spike Duplicate (MS/MSD) aliquot of the sample matrix spiked with known quanti specific compounds and subjected to the entire analyti procedure in order to evaluate the effect of sample m measurable analyte recovery. The MSD is a duplicate of the matrix used to measure method precision.

LABORATORY ANALYTICAL REPORT

I. INTRODUCTION

This report represents the results of analyses conduc... ENSR Project No. 8500-089-021C, received by the Wilm... Laboratory on March 6, 1989. Upon receipt by the lab... samples were inspected for condition, Chain of Custo... identification accountability, and individual sample ... requirements. The submitted samples were entered into ... computerized Laboratory Information Management data ba... unique laboratory identification numbers were assigned ... sample. The sample I.D. number is subsequently used t... the laboratory to provide positive sample accountabili... accordance with recommended USEPA sample management p... Table I summarizes the field identification, laborato... sample numbers, and analytical methodologies performe... this project.

TABLE I.
Project Sample Summary

Project No. : 8500-089-021C
Project Name: Unifirst, Woburn, MA

Field Identification	Sample Number	Sample Matrix	Analytical Method and Reference
Drainage Composite	66261	water	PPT PAH - ENSR SAM...
Drainage Composite	66262	water	PPT PAH - ENSR SAM... (filtered)
Salem Composite	66263	water	PPT PAH - ENSR SAM...
Salem Composite	66264	water	PPT PAH - ENSR SAM... (filtered)
128 Composite	66265	water	PPT PAH - ENSR SAM...
128 Composite	66266	water	PPT PAH - ENSR SA... (filtered)

II. QUALITY ASSURANCE AND QUALITY CONTROL

As an indication of the overall quality of the data ge... by the ENSR Laboratory for this report, one or more o... following types of Quality Control analyses may be in... in this report as required by the analytical methodol... referenced in the project summary contained in TABLE 1.

1. Method Blanks (MB)
2. Sample Duplicate Analyses
3. Laboratory Control Samples (LCS)
4. Matrix Spikes and Duplicates (MS/MSD)
5. Surrogate Compound Recoveries

Results of the quality control and quality assurance ... analyzed concurrently with the submitted samples for th... project were within acceptable ranges. Quality contro... analyses and criteria for all methodologies performed b... laboratory are established by regulatory agencies and ... constantly monitored as part of the laboratory's formal ... program. Appendix I contains descriptions of the vari... types of QA/QC requirements which may have been requi... this project.

III. ANALYTICAL RESULTS AND DISCUSSION

The results of analyses included in this report have be... reviewed by the appropriate analytical department mana... Laboratory Quality Assurance Manager, and the Laborat... Manager for accuracy and completeness. Method descri... summaries of procedures used in this report are availab... request. Appendix II contains general references to a... procedures used by this laboratory.

Please note that three samples (ENSR laboratory nos. ... 66264, 66266) were pressure filtered prior to analysis ... micron pore size Nucleopore filters. These samples ar... designated on the appropriate report sheets. Also, ... (ENSR laboratory no. 66261) required dilution prior to ... Surrogate recoveries could not be calculated due to th... factor.

Due to the necessity to run sample nos. 66261, 66263 ... dilutions, the detection limits for the sample results ... adjusted accordingly. Also, because phenanthrene and ... co-eluted on the gas chromatographic column, these tw... are reported as total values.

APPENDIX II

ANALYTICAL PROCEDURE REFERENCES

1. "Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act CFR, Part 136; Federal Register, Vol.49, No.209.

2. US EPA. Test Methods for Evaluating Solid Waste, Physical/Chemical Methods. (SW 846) Washington, April, 1984.

3. US EPA. Methods for Chemical Analysis of Water and Wastes. EPA-600/4-79-020. Cincinnati, OH, March

4. American Public Health Association, American Water Association, Water Pollution Control Federation. Standard Methods for the Examination of Water and Wastewater, 15th & 16th Ed., Washington, D.C., Ap 1985.

5. 1984 Annual Book of ASTM Standards Section 4: Construction, Vol. 04.08: Soil & Rock; Building

6. 1984 Book of ASTM Standards, Part 31: Water.

7. Manuals of Soil Laboratory Testing, Vol. 1: Soil Classification and Compaction Tests, K.H. Head,

8. US EPA. Methods for the Determination of Organic Compounds in Finished Drinking Water and Raw Sou Water. Cincinnati, OH, Sep 1986.

9. Methods of Soil Analysis Agronomy No. 9, Part 2. Chemical and Microbiological Properties, 1965.

10. Current EPA Contract Laboratory Program (CLP) Inv for Bid protocols for analysis of organic and in hazardous substances.

11. ENSR/ERT developed and validated screening meth specialized techniques for parameters not cover published EPA protocols.

PPT PAH ANALYSES IN WATER

SUMMARY OF SAMPLE RESULTS

ENSR CONSULTING AND ENGINEERING
SUMMARY OF ANALYTICAL RESULTS
PPT-PAH RESULTS IN WATER

ENSR NO : 66261(UNFILTERED)
FIELD ID : DRAINAGE COMPOSITE
CLIENT : UNIFIRST
SAMPLING SITE : LOWELL,MA
PROJECT NO : 8500-089-021

DATE SAMPLED : 03/
DATE RECEIVED : 03/
DATE EXTRACTED : 03/
DATE ANALYZED : 03/

PARAMETER	RESULT (NG/L)	MDL#
BENZO(A)ANTHRACENE	730.	4.30
CHRYSENE	750.	2.60
BENZOFLUORANTHENES(B&K)	1500.	1.40
BENZO(A)PYRENE	600.	2.90
INDENO(1,2,3-CD)PYRENE	530.	0.67
DIBENZ(A,H)ANTHRACENE	580.	0.42
BENZO(G,H,I)PERYLENE	690.	0.67
NAPHTHALENE	160.	2.00
2-METHYLNAPHTHALENE	540.	1.60
1-METHYLNAPHTHALENE	350.	1.30
BIPHENYL	83.	1.30
ACENAPHTHYLENE	48.	1.00
ACENAPHTHENE	190.	1.20
DIBENZOFURAN	100.	0.69
FLUORENE	210.	0.64
TOTAL PHENANTHRENE/ANTHRACENE	1700.	3.40
FLUORANTHENE	2200.	0.97
PYRENE	1700.	0.74
BENZO(E)PYRENE	620.	4.00
PERYLENE	400.	1.20

MDL# = SAMPLE DILUTION FACTOR IS 10X; ADJUST MDL ACCO
(SEE DISCUSSION)

SURROGATE	RECOVERY,%	RECOVERY
NAPHTHALENE-D8	NA*	14-
FLUORENE-D10	NA*	41-
CHRYSENE-D12	NA*	10-

NA* = NOT ANALYZED DUE TO SAMPLE DILUTION AND MATRIX

REVIEWED BY: MW QC BY: K.M.

ENSR CONSULTING AND ENGINEERING
SUMMARY OF ANALYTICAL RESULTS
PPT-PAH RESULTS IN WATER

ENSR NO : 66262(FILTERED)
FIELD ID : DRAINAGE COMPOSITE
CLIENT : UNIFIRST
SAMPLING SITE : LOWELL,MA
PROJECT NO : 8500-089-021

DATE SAMPLED : 03/05/
DATE RECEIVED : 03/
DATE EXTRACTED : 03/
DATE ANALYZED : 03/

PARAMETER	RESULT (NG/L)	MDL
BENZO(A)ANTHRACENE	65.	4.30
CHRYSENE	190.	2.60
BENZOFLUORANTHENES(B&K)	130.	1.40
BENZO(A)PYRENE	30.	2.90
INDENO(1,2,3-CD)PYRENE	59.	0.67
DIBENZ(A,H)ANTHRACENE	19.	0.42
BENZO(G,H,I)PERYLENE	73.	0.67
NAPHTHALENE	9.9	2.00
2-METHYLNAPHTHALENE	86.	1.60
1-METHYLNAPHTHALENE	32.	1.30
BIPHENYL	BDL	1.30
ACENAPHTHYLENE	BDL	1.00
ACENAPHTHENE	2.9	1.20
DIBENZOFURAN	BDL	0.69
FLUORENE	1.5	0.64
TOTAL PHENANTHRENE/ANTHRACENE	30.	3.40
FLUORANTHENE	120.	0.97
PYRENE	120.	0.74
BENZO(E)PYRENE	33.	4.00
PERYLENE	22.	1.20

SURROGATE	RECOVERY,%	RECOVERY
NAPHTHALENE-D8	77	14-
FLUORENE-D10	114	42-
CHRYSENE-D12	101	10-

* = OUTSIDE CONTROL LIMITS

REVIEWED BY: LW QC BY: K.M.

ENSR CONSULTING AND ENGINEERING
SUMMARY OF ANALYTICAL RESULTS
PPT-PAH RESULTS IN WATER

ENSR NO : 66263(UNFILTERED)
FIELD ID : SALEM COMPOSITE
CLIENT : UNIFIRST
SAMPLING SITE : LOWELL,MA
PROJECT NO : 8500-089-021

DATE SAMPLED : 03/0[illegible]
DATE RECEIVED : 03/[illegible]
DATE EXTRACTED : 03/[illegible]
DATE ANALYZED : 03/[illegible]

PARAMETER	RESULT (NG/L)	MDL#
BENZO(A)ANTHRACENE	28.	4.30
CHRYSENE	32.	2.60
BENZOFLUORANTHENES(B&K)	58.	1.40
BENZO(A)PYRENE	23.	2.90
INDENO(1,2,3-CD)PYRENE	24.	0.67
DIBENZ(A,H)ANTHRACENE	22.	0.42
BENZO(G,H,I)PERYLENE	25.	0.67
NAPHTHALENE	11.	2.00
2-METHYLNAPHTHALENE	14.	1.60
1-METHYLNAPHTHALENE	11.	1.30
BIPHENYL	BDL	1.30
ACENAPHTHYLENE	BDL	1.00
ACENAPHTHENE	18.	1.20
DIBENZOFURAN	8.0	0.69
FLUORENE	13.	0.64
TOTAL PHENANTHRENE/ANTHRACENE	63.	3.40
FLUORANTHENE	110.	0.97
PYRENE	81.	0.74
BENZO(E)PYRENE	22.	4.00
PERYLENE	14.	1.20

MDL# = SAMPLE DILUTION FACTOR IS 5X; ADJUST MDL ACCOR[illegible]
(SEE DISCUSSION)

SURROGATE	RECOVERY,%	RECOVERY
NAPHTHALENE-D8	108	[illegible]
FLUORENE-D10	85	[illegible]
CHRYSENE-D12	99	[illegible]

* = OUTSIDE CONTROL LIMITS

REVIEWED BY: MW QC BY: [illegible]

ENSR CONSULTING AND ENGINEERING
SUMMARY OF ANALYTICAL RESULTS
PPT-PAH RESULTS IN WATER

ENSR NO : 66264(FILTERED)
FIELD ID : SALEM COMPOSITE
CLIENT : UNIFIRST
SAMPLING SITE : LOWELL,MA
PROJECT NO : 8500-089-021

DATE SAMPLED : 03/05/
DATE RECEIVED : 03/
DATE EXTRACTED : 03/
DATE ANALYZED : 03/

PARAMETER	RESULT (NG/L)	MDL
BENZO(A)ANTHRACENE	6.6	4.30
CHRYSENE	8.7	2.60
BENZOFLUORANTHENES(B&K)	13.	1.40
BENZO(A)PYRENE	3.7	2.90
INDENO(1,2,3-CD)PYRENE	3.8	0.67
DIBENZ(A,H)ANTHRACENE	1.8	0.42
BENZO(G,H,I)PERYLENE	4.1	0.67
NAPHTHALENE	7.9	2.00
2-METHYLNAPHTHALENE	3.6	1.60
1-METHYLNAPHTHALENE	BDL	1.30
BIPHENYL	BDL	1.30
ACENAPHTHYLENE	BDL	1.00
ACENAPHTHENE	BDL	1.20
DIBENZOFURAN	2.2	0.69
FLUORENE	1.5	0.64
TOTAL PHENANTHRENE/ANTHRACENE	7.1	3.40
FLUORANTHENE	11.	0.97
PYRENE	8.1	0.74
BENZO(E)PYRENE	<4.0	4.00
PERYLENE	3.2	1.20

SURROGATE	RECOVERY,%	RECOVER
NAPHTHALENE-D8	58	14-
FLUORENE-D10	108	41-
CHRYSENE-D12	71	10-

ND = NOT DETECTED
* = OUTSIDE CONTROL LIMITS

REVIEWED BY: MW QC BY: K.M.

ENSR CONSULTING AND ENGINEERING
SUMMARY OF ANALYTICAL RESULTS
PPT-PAH RESULTS IN WATER

ENSR NO : 66265(UNFILTERED)
FIELD ID : 128 COMPOSITE
CLIENT : UNIFIRST
SAMPLING SITE : LOWELL,MA
PROJECT NO : 8500-089-021

DATE SAMPLED : 03/
DATE RECEIVED : 03/
DATE EXTRACTED : 03/
DATE ANALYZED : 03/

PARAMETER	RESULT (NG/L)	MDL#
BENZO(A)ANTHRACENE	72.	4.30
CHRYSENE	78.	2.60
BENZOFLUORANTHENES(B&K)	160.	1.40
BENZO(A)PYRENE	59.	2.90
INDENO(1,2,3-CD)PYRENE	60.	0.67
DIBENZ(A,H)ANTHRACENE	47.	0.42
BENZO(G,H,I)PERYLENE	59.	0.67
NAPHTHALENE	15.	2.00
2-METHYLNAPHTHALENE	13.	1.60
1-METHYLNAPHTHALENE	7.9	1.30
BIPHENYL	BDL	1.30
ACENAPHTHYLENE	BDL	1.00
ACENAPHTHENE	21.	1.20
DIBENZOFURAN	11.	0.69
FLUORENE	36.	0.64
TOTAL PHENANTHRENE/ANTHRACENE	170.	3.40
FLUORANTHENE	290.	0.97
PYRENE	190.	0.74
BENZO(E)PYRENE	58.	4.00
PERYLENE	27.	1.20

MDL# = SAMPLE DILUTION FACTOR IS 5X; ADJUST MDL ACCORD
(SEE DISCUSSION)

SURROGATE	RECOVERY,%	RECOVER
NAPHTHALENE-D8	105	1
FLUORENE-D10	95	4
CHRYSENE-D12	118	1

* = OUTSIDE CONTROL LIMITS

REVIEWED BY: _____ QC BY: _____

ENSR CONSULTING AND ENGINEERING
SUMMARY OF ANALYTICAL RESULTS
PPT-PAH RESULTS IN WATER

ENSR NO : 66264(FILTERED)
FIELD ID : SALEM COMPOSITE
CLIENT : UNIFIRST
SAMPLING SITE : LOWELL,MA
PROJECT NO : 8500-089-021

DATE SAMPLED : 03/
DATE RECEIVED : 03/
DATE EXTRACTED : 03/
DATE ANALYZED : 03/

PARAMETER	RESULT (NG/L)	MDL
BENZO(A)ANTHRACENE	6.6	4.30
CHRYSENE	8.7	2.60
BENZOFLUORANTHENES(B&K)	13.	1.40
BENZO(A)PYRENE	3.7	2.90
INDENO(1,2,3-CD)PYRENE	3.8	0.67
DIBENZ(A,H)ANTHRACENE	1.8	0.42
BENZO(G,H,I)PERYLENE	4.1	0.67
NAPHTHALENE	7.9	2.00
2-METHYLNAPHTHALENE	3.6	1.60
1-METHYLNAPHTHALENE	BDL	1.30
BIPHENYL	BDL	1.30
ACENAPHTHYLENE	BDL	1.00
ACENAPHTHENE	BDL	1.20
DIBENZOFURAN	2.2	0.69
FLUORENE	1.5	0.64
TOTAL PHENANTHRENE/ANTHRACENE	7.1	3.40
FLUORANTHENE	11.	0.97
PYRENE	8.1	0.74
BENZO(E)PYRENE	<4.0	4.00
PERYLENE	3.2	1.20

SURROGATE	RECOVERY,%	RECOVER
NAPHTHALENE-D8	58	14-
FLUORENE-D10	108	41
CHRYSENE-D12	71	10-

ND = NOT DETECTED
* = OUTSIDE CONTROL LIMITS

REVIEWED BY: MW QC BY: K.M.

ENSR CONSULTING AND ENGINEERING
SUMMARY OF ANALYTICAL RESULTS
PPT-PAH RESULTS IN WATER

ENSR NO : 66265(UNFILTERED)
FIELD ID : 128 COMPOSITE
CLIENT : UNIFIRST
SAMPLING SITE : LOWELL,MA
PROJECT NO : 8500-089-021

DATE SAMPLED : 03/
DATE RECEIVED : 03/
DATE EXTRACTED : 03/
DATE ANALYZED : 03/

PARAMETER	RESULT (NG/L)	MDL#
BENZO(A)ANTHRACENE	72.	4.30
CHRYSENE	78.	2.60
BENZOFLUORANTHENES(B&K)	160.	1.40
BENZO(A)PYRENE	59.	2.90
INDENO(1,2,3-CD)PYRENE	60.	0.67
DIBENZ(A,H)ANTHRACENE	47.	0.42
BENZO(G,H,I)PERYLENE	59.	0.67
NAPHTHALENE	15.	2.00
2-METHYLNAPHTHALENE	13.	1.60
1-METHYLNAPHTHALENE	7.9	1.30
BIPHENYL	BDL	1.30
ACENAPHTHYLENE	BDL	1.00
ACENAPHTHENE	21.	1.20
DIBENZOFURAN	11.	0.69
FLUORENE	36.	0.64
TOTAL PHENANTHRENE/ANTHRACENE	170.	3.40
FLUORANTHENE	290.	0.97
PYRENE	190.	0.74
BENZO(E)PYRENE	58.	4.00
PERYLENE	27.	1.20

MDL# = SAMPLE DILUTION FACTOR IS 5X; ADJUST MDL ACCOR.
(SEE DISCUSSION)

SURROGATE	RECOVERY,%	RECOVER
NAPHTHALENE-D8	105	1
FLUORENE-D10	95	4
CHRYSENE-D12	118	1

* = OUTSIDE CONTROL LIMITS

REVIEWED BY: _____ QC BY: K M.

ENSR CONSULTING AND ENGINEERING
SUMMARY OF ANALYTICAL RESULTS
PPT-PAH RESULTS IN WATER

ENSR NO : 66266(FILTERED)
FIELD ID : 128 COMPOSITE
CLIENT : UNIFIRST
SAMPLING SITE : LOWELL,MA
PROJECT NO : 8500-089-021

DATE SAMPLED : 03/0[illegible]
DATE RECEIVED : 03/[illegible]
DATE EXTRACTED : 03/[illegible]
DATE ANALYZED : 03/[illegible]

PARAMETER	RESULT (NG/L)	MDL
BENZO(A)ANTHRACENE	7.5	4.30
CHRYSENE	10.	2.60
BENZOFLUORANTHENES(B&K)	11.	1.40
BENZO(A)PYRENE	<2.9	2.90
INDENO(1,2,3-CD)PYRENE	3.2	0.67
DIBENZ(A,H)ANTHRACENE	1.4	0.42
BENZO(G,H,I)PERYLENE	3.7	0.67
NAPHTHALENE	5.0	2.00
2-METHYLNAPHTHALENE	3.1	1.60
1-METHYLNAPHTHALENE	3.0	1.30
BIPHENYL	BDL	1.30
ACENAPHTHYLENE	BDL	1.00
ACENAPHTHENE	BDL	1.20
DIBENZOFURAN	BDL	0.69
FLUORENE	1.8	0.64
TOTAL PHENANTHRENE/ANTHRACENE	7.3	3.40
FLUORANTHENE	11.	0.97
PYRENE	7.7	0.74
BENZO(E)PYRENE	<4.0	4.00
PERYLENE	2.3	1.20

SURROGATE	RECOVERY,%	RECOVER[illegible]
NAPHTHALENE-D8	40	[illegible]
FLUORENE-D10	101	[illegible]
CHRYSENE-D12	70	[illegible]

ND = NOT DETECTED
* = OUTSIDE CONTROL LIMITS

REVIEWED BY: MW QC BY: [illegible]

PPT PAH ANALYSES IN WATER

SUMMARY OF QA/QC RESULTS

ENSR CONSULTING AND ENGINEERING
SUMMARY OF ANALYTICAL RESULTS
PPT-PAH RESULTS IN WATER

ENSR NO : 66315
FIELD ID : MB890198
CLIENT : UNIFIRST
SAMPLING SITE : ENSR.WILMINGTON,MA
PROJECT NO : 8500-089-021

DATE SAMPLED : 03/1
DATE RECEIVED : NOT
DATE EXTRACTED : 03/
DATE ANALYZED : 03/

PARAMETER	RESULT (NG/L)	MDL
BENZO(A)ANTHRACENE	BDL	4.30
CHRYSENE	<2.6	2.60
BENZOFLUORANTHENES(B&K)	1.5	1.40
BENZO(A)PYRENE	BDL	2.90
INDENO(1,2,3-CD)PYRENE	BDL	0.67
DIBENZ(A,H)ANTHRACENE	BDL	0.42
BENZO(G,H,I)PERYLENE	BDL	0.67
NAPHTHALENE	2.1	2.00
2-METHYLNAPHTHALENE	BDL	1.60
1-METHYLNAPHTHALENE	BDL	1.30
BIPHENYL	BDL	1.30
ACENAPHTHYLENE	BDL	1.00
ACENAPHTHENE	BDL	1.20
DIBENZOFURAN	BDL	0.69
FLUORENE	BDL	0.64
TOTAL PHENANTHRENE/ANTHRACENE	<3.4	3.40
FLUORANTHENE	BDL	0.97
PYRENE	1.3	0.74
BENZO(E)PYRENE	BDL	4.00
PERYLENE	BDL	1.20

SURROGATE	RECOVERY,%	RECOVE
NAPHTHALENE-D8	38	1
FLUORENE-D10	95	4
CHRYSENE-D12	19	1

* = OUTSIDE CONTROL LIMITS

REVIEWED BY: MW QC BY: K.N.

ENSR CONSULTING AND ENGINEERING
SUMMARY OF ANALYTICAL RESULTS
QUALITY CONTROL CHECK SAMPLES
PPT-PAH RESULTS IN WATER

ENSR NO : 66367 CLIENT : UNIFIRST

LAB FORT NO : LF890206 PROJECT NO : 8500-089-

EXTRACTION DATE : 03/08/89 ANALYSIS DATE : 03/13/

COMPOUND	SPIKED CONC. (NG/L)	SAMPLE CONC. (NG/L)	R
2-METHYLNAPHTHALENE	22.4	16.5	
FLUORENE	20.0	13.1	
CHRYSENE	20.0	27.1	
BENZO(E)PYRENE	16.0	16.6	
NAPHTHALENE	20.0	12.6	
BENZO(ghi)PERYLENE	20.0	25.6	

SURROGATES	EXP. CONC. (NG/L)	OBS. CONC. (NG/L)	R
NAPHTHALENE, D8	10.9	4.8	
FLUORENE, D10	9.9	9.2	
CHRYSENE, D12	11.1	8.1	

REVIEWED BY: LW QC BY: K.M.

ENSR CONSULTING AND ENGINEERING
SUMMARY OF ANALYTICAL RESULTS
PPT-PAH RESULTS IN WATER

ENSR NO : 66323(FILTERED)
FIELD ID : MB890206
CLIENT : UNIFIRST
SAMPLING SITE : ENSR,WILMINGTON,MA
PROJECT NO : 8500-089-021

DATE SAMPLED : 03/08/
DATE RECEIVED : NOT
DATE EXTRACTED : 03/
DATE ANALYZED : 03/

PARAMETER	RESULT (NG/L)	MDL
BENZO(A)ANTHRACENE	BDL	4.30
CHRYSENE	BDL	2.60
BENZOFLUORANTHENES(B&K)	BDL	1.40
BENZO(A)PYRENE	BDL	2.90
INDENO(1,2,3-CD)PYRENE	BDL	0.67
DIBENZ(A,H)ANTHRACENE	BDL	0.42
BENZO(G,H,I)PERYLENE	BDL	0.67
NAPHTHALENE	4.4	2.00
2-METHYLNAPHTHALENE	3.3	1.60
1-METHYLNAPHTHALENE	BDL	1.30
BIPHENYL	BDL	1.30
ACENAPHTHYLENE	BDL	1.00
ACENAPHTHENE	BDL	1.20
DIBENZOFURAN	BDL	0.69
FLUORENE	BDL	0.64
TOTAL PHENANTHRENE/ANTHRACENE	BDL	3.40
FLUORANTHENE	2.4	0.97
PYRENE	2.3	0.74
BENZO(E)PYRENE	BDL	4.00
PERYLENE	BDL	1.20

SURROGATE	RECOVERY,%	RECOVE
NAPHTHALENE-D8	42	2
FLUORENE-D10	75	4
CHRYSENE-D12	76	1

ND = NOT DETECTED
* = OUTSIDE CONTROL LIMITS

REVIEWED BY: MW QC BY: K.M.

ENSR CONSULTING AND ENGINEERING
SUMMARY OF ANALYTICAL RESULTS
QUALITY CONTROL CHECK SAMPLES
PPT-PAH RESULTS IN WATER

ENSR NO : 66341 CLIENT : UNIFIRST

LAB FORT NO : LF890202 PROJECT NO : 8500-069

EXTRACTION DATE : 03/07/89 ANALYSIS DATE : 03/

COMPOUND	SPIKED CONC. (NG/L)	SAMPLE CONC. (NG/L)
2-METHYLNAPHTHALENE	22.4	8.8
FLUORENE	20.0	10.9
CHRYSENE	20.0	32.0
BENZO(E)PYRENE	16.0	8.3
NAPHTHALENE	20.0	7.4
BENZO(ghi)PERYLENE	20.0	26.2

SURROGATES	EXP. CONC. (NG/L)	OBS. CONC. (NG/L)
NAPHTHALENE, D8	10.9	3.5
FLUORENE, D10	9.9	9.4
CHRYSENE, D12	11.1	8.6

REVIEWED BY: MW QC BY: KM

CHAIN OF CUSTODY SHEETS

AND

SAMPLE RECEIVING CHECKLISTS

UNIFIRST — WILMINGTON, MA

Project No	Field Logbook
3140-001-009	

Sampler (Signature)	Chain of Custody Tape No.
Gregory B Silvia	

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample	ANALYSES: PPT PAH	REMARKS
~~SHEEN~~	3/5/97	17:18			~~SS~~	
128 7			66265		✓	
126 7			66265		✓	
DRAINAGE 1		17:20	66261		✓	
DRAINAGE 3			66261		✓	
DRAINAGE 5			66261		✓	
DRAINAGE 7			66261		✓	
DRAINAGE 9			66261		✓	

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Gregory B Silvia	3/5/97	12:15			
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Date	Time	Received for Laboratory: (Signature)	Date	Time
			James Fortuna	3/6/97	0720
Courier Airbill Number	Disposed of by: (Signature)			Date	Time

7-96 10:31 AM GPCH BOSTON

CHAIN OF CU ODY RECORD 8500-087-CDAC

CHAIN OF CUSTODY RECORD 8500-087-021C

Client/Project Name	Project Location
UNIFIRST	WOBURN
Project No	**Field Logbook No.**
3140-001-009	
Sampler (Signature)	**Chain of Custody Tape No.**

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample	ANALYSES: PPT PAH	REMARKS
128 8	3/5/89	17.00	66266		✓	
128 10		17.00	66266		✓	
DRAINAGE 2		17.00	66262		✓	
DRAINAGE 4			66263		✓	
DRAINAGE 6			66264		✓	
DRAINAGE 8			66265		✓	
DRAINAGE 10			66266		✓	

Relinquished by (Signature)	Date	Time	Received by (Signature)	Date	Time
	3/6/89	1200			
Relinquished by (Signature)	**Date**	**Time**	**Received by (Signature)**	**Date**	**Time**
Relinquished by (Signature)	**Date**	**Time**	**Received for Laboratory (Signature)**	**Date**	**Time**
				3/6/89	1200
Shipped by (Signature) Method	**Disposed of by (Signature)**			**Date**	**Time**

03 17 89 10:21 AM GP&H BOSTON

8500-089-C

CHAIN OF CUSTODY RECORD

Client/Project Name	Project Location
UniFirst	Woburn, MA
Project No.	**Field Logbook No.**
3140-001-009	
Sampler: (Signature)	**Chain of Custody Tape No.**
[signature]	

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample	ANALYSES: RPT RAH	REMARKS
SALEM #1	3/5/89	17.34	66263		✓	
SALEM #3			66263		✓	
SALEM 5			66263		✓	
SALEM 7			66263		✓	
SALEM 9			66263		✓	
128 1		17.09	66265		✓	
128 3			66265		✓	
128 5			66265		✓	

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
[signature]	3/6/89	12:15			
Relinquished by: (Signature)	**Date**	**Time**	**Received by: (Signature)**	**Date**	**Time**
Relinquished by: (Signature)	**Date**	**Time**	**Received for Laboratory: (Signature)**	**Date**	**Time**
			[signature]	3/6/89	1220
Disposed of by: (Signature)	Date	Time			

03.17.89 10:31 AM +GP&H BOSTON

CHAIN OF CUSTODY RECORD

8500-084-0216

Client/Project Name	Project Location
UNIFIRST	WILBURN, MA
Project No	**Field Logbook No**
3140-001-009	
Sampler: (Signature)	**Chain of Custody Tape No.**

ANALYSES: RPT RCH

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample		REMARKS
SALEM 2	3/5/89	17.37	662264		✓	
SALEM 4			662264		✓	
SALEM 6			662264		✓	
SALEM 8			662264		✓	
SALEM 10		↓	662264		✓	
128 2		17.04	662266		✓	
128 4		↓	662266		✓	
128 6	↓		662266		✓	

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	3/6/89	12:15			
Relinquished by: (Signature)	**Date**	**Time**	**Received by: (Signature)**	**Date**	**Time**
Relinquished by: (Signature)	**Date**	**Time**	**Received for Laboratory: (Signature)**	**Date**	**Time**
				3/6/89	1220
Method of Shipment	Disposed of by: (Signature)			Date	Time

03.17.89 10:21 AM GP&H BOSTON

ERT LABORATORIES
SAMPLE RECEIPT CHECKLIST

CLIENT Uni Cost PROJECT NO. 8500-069-021C AUTHORITY NUMBER

1. ____ shipped
   ✓ hand-delivered
   NOTES: Greg Jr.

2. ✓ COC present on receipt
   ____ no COC
   NOTES:

3. ✓ COC tape on shipping container
   ____ no COC tape
   NOTES: 30559

4. ____ samples broken/leaking
   ✓ samples intact of receipt
   ____ other, see notes
   NOTES:

5. ____ ambient on receipt
   ✓ chilled on receipt
   NOTES:

6. ____ samples preserved correctly
   ____ improper preservatives
   ✓ N/A, no recommended preservatives
   ____ other, see notes
   NOTES:

7. ✓ received within holding time
   ____ not received within holding times
   ____ N/A, no recommended holding time
   ____ other, see notes
   NOTES:

8. ____ COC tapes on samples
   ✓ no COC tapes
   NOTES:

9. ____ discrepancies between COC and sample labels
   ✓ no discrepancies noted
   ____ N/A, no COC received
   NOTES:

10. Storage Location 27
Additional comments:

Samples inspected and logged in by: James Powers Date:

Appendix 22

Water Quality Data for Central Area Aquifer
(from various sources)

- From Geotrans, Inc. Report, "Review of EPA Report Titled 'Wells G and H Site Remedial Investigation Report, Part 1, Woburn, Massachusetts'", 1987

Table A-1 Inorganic Water Quality 1963 to 1980;
Well G

DATE	10/14/63	11/01/63	11/06/63	02/24/64	02/25/64	02/26/64	02/27/64	02/28/64	03/01/64	03/02/64	03/04/64	03/05/64	09/18/64	09/19/84	10/02/64	10/13/64
pH	6.4	6.4	6.7	6.3	6.4	6.4	6.5	6.6	6.5	6.5	6.5	6.6	6.9	6.8	7.0	7.0
ALKALINITY	21	22	38	22	25	23	24	26	25	27	28	27	30	27	31	30
HARDNESS	82	112	116	100	100	110	108	102	100	100	94	98	104	88	94	96
CALCIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MAGNESIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SODIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
POTASSIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
IRON	0.10	0.08	0.01	0.07	0.08	0.02	0.08	0.10	0.05	0.02	0.03	0.02	0.03	0.03	0.03	0.02
MANGANESE	0.02	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02
SILICA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SULFATE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CHLORIDE	7.5	21.0	20.0	23.0	22.0	19.0	19.0	20.0	20.0	21.0	28.0	23.0	20.0	18.0	22.0	28.0
SPEC.CONDUCTIVITY	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PHOSPHATE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
FLUORIDE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AMMONIA	0.01	0.02	0.07	0.02	0.02	0.02	0.02	0.02	0.05	0.02	0.04	0.02	0.00	0.00	0.00	0.00
NITRATE	2.50	6.40	6.40	1.30	1.50	1.30	1.30	1.20	5.00	5.00	1.60	0.80	6.80	6.80	6.00	5.00
NITRITE	0	0	0.001	0	0	0	0	0	NA	NA	0	0	0	0	0	0
COPPER	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ARSENIC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
COLIFORM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SOURCE	MDPH/LAWRENCE	DEQE	DEQE	DEQE	DEQE	DEQE	DEQE	DEQE	DEQE	DEQE	DEQE	DEQE	MDPH	MDPH/LAWRENCE	MDPH/LAWRENCE	MDPH

WELL 6

DATE	10/19/64	10/26/64	11/03/64	11/17/64	02/10/65	02/11/65	03/01/66	06/13/66	08/29/66	03/06/67	06/27/67	09/26/67	11/30/67	12/06/67
pH	7.0	7.0	NA	6.9	6.5	6.7	6.0	6.6	6.7	6.4	6.2	6.4	6.2	NA
ALKALINITY	29	32	NA	32	32	33	45	41	49	NA	60	51	54	NA
HARDNESS	98	110	NA	110	94	24	118	160	162	184	250	188	230	NA
CALCIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA	64	NA	NA	NA	NA
MAGNESIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA	5.8	NA	NA	NA	NA
SODIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA	49	NA	NA	NA	NA
POTASSIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.0	NA	NA	NA	NA
IRON	0.01	0.00	0.01	0.01	0.05	0.03	0.01	0.03	0.03	0.04	0.00	0.12	0.04	NA
MANGANESE	0.02	0.02	0.24	0.02	0.02	0.02	0.00	0.02	0.02	0.04	0.16	0.04	0.04	NA
SILICA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10.0	NA	NA	NA	NA
SULFATE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CHLORIDE	32.0	32.0	NA	37.0	21.0	21.0	46.0	55.0	66.0	76.0	120.0	79.0	90.0	NA
SPEC.CONDUCTIVITY	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PHOSPHATE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
FLUORIDE	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.1	NA	NA	NA	NA
AMMONIA	0.01	0.00	0.00	NA	0.00	0.00	NA	NA	NA	NA	NA	NA	0.13	NA
NITRATE	3.30	2.20	1.40	2.20	0.00	1.60	2.00	3.30	3.20	21.30	4.00	4.40	4.80	NA
NITRITE	0	0	0.001	0.001	5.400	0.001	0.008	0.033	0.014	NA	0.012	0.020	0.040	NA
COPPER	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ARSENIC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
COLIFORM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SOURCE	MOPH	MOPH/LAWRENCE	MOPH/LAWRENCE	MOPH	MOPH/LAWRENCE	MOPH/LAWRENCE	MOPH	MOPH	MOPH	LES	MOPH/LAWRENCE	MOPH	MOPH	MOPH

WELL G

DATE	12/07/67	04/11/68	01/08/69	01/20/69	03/18/69	09/16/69	09/24/69	08/18/70	11/05/70	05/12/71	09/08/71	01/22/73	08/05/74	12/10/74	03/11/75	03/18/75	12/02/75
pH	6.3	6.6	7.6	6.7	6.2	6.4	6.5	6.1	6.4	6.7	6.5	6.9	6.5	6.5	6.5	6.5	6.6
ALKALINITY	90	52	63	63	61	60	62	58	63	55	55	49	44	56	54	55	58
HARDNESS	240	178	262	240	274	250	244	204	222	180	194	79	137	141	116	34	128
CALCIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	24	40	35	27	7.8	37
MAGNESIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.5	9.0	13.0	12.0	3.5	8.7
SODIUM	NA	NA	NA	NA	NA	NA	NA	45	62	70	100	50	50	100	100	85	45
POTASSIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.0	3.5	5.0	5.0	5.5	5.0
IRON	0.07	0.04	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.02
MANGANESE	0.06	NA	0.30	0.34	0.38	0.78	0.84	0.62	0.68	0.58	0.72	0.32	0.35	0.75	0.70	0.75	0.60
SILICA	NA	NA	12.0	15.0	NA	NA	NA	NA	NA	NA	NA	7.6	16.0	14.0	12.0	12.0	11.0
SULFATE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	22	114	107	105	NA	89
CHLORIDE	102.0	70.0	NA	NA	130.0	160.0	185.0	NA	NA	90.0	135.0	81.0	90.0	125.0	130.0	135.0	120.0
SPEC.CONDUCTIVITY	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	370	485	800	740	760	700
PHOSPHATE	NA	NA	1	0.8	NA	NA	NA	0.1	NA	0.20	0.20	NA	NA	NA	0.00	0.00	NA
FLUORIDE	NA	NA	NA	NA	<.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AMMONIA	0.15	0.16	0.80	NA	NA	2.00	NA	6.00	5.00	1.80	4.00	0.01	1.40	NA	4.30	4.80	3.40
NITRATE	4.60	5.30	6.00	NA	2.80	6.00	4.00	4.70	6.90	9.30	6.00	0.40	5.40	2.80	3.00	3.00	2.50
NITRITE	0.060	0.052	0.070	NA	0.008	0.023	0.036	0.004	0.007	0.004	0.003	0.001	0.001	NA	0.002	0.004	0.001
COPPER	NA	NA	0.01	NA	NA	NA	NA	NA	NA	NA	NA	0.00	0.00	0.01	0.00	0.00	0.05
ARSENIC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
COLIFORM	NA	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SOURCE	MDPH/LAWRENCE	MDPH	MDPH	MDPH	MDPH	MDPH	MDPH	MDPH	MDPH	MDPH	MDPH	MDPH	DEQE	DEQE	DEQE	DEQE STATE LAB	

WELL G

DATE	04/13/76	04/13/76	04/15/76	05/12/76	05/12/76	05/12/76	05/12/76	06/01/76	06/08/76	06/08/76	06/18/76	07/09/76	08/02/76	08/02/76	08/04/78	11/16/76	03/02/77
pH	6.5	6.4	6.5	6.6	6.4	6.6	6.6	6.5	NA	NA	NA	NA	NA	NA	6.5	6.6	6.7
ALKALINITY	53	31	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	83	55	NA
HARDNESS	110	61	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	93	124	NA
CALCIUM	33	18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	26	35	NA
MAGNESIUM	6.7	3.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.9	9.0	NA
SODIUM	40	30	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	67	80	NA
POTASSIUM	3.5	2.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.9	5.0	NA
IRON	0.15	0.00	0.01	0.02	0.01	0.02	0.02	0.21	0.10	0.08	0.00	0.08	0.01	0.01	0.03	0.15	0.10
MANGANESE	0.30	0.25	0.34	0.53	0.53	0.53	0.53	0.27	0.56	0.54	0.58	0.25	0.59	0.59	0.62	1.00	0.52
SILICA	10.0	8.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11.0	13.0	NA
SULFATE	76	19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	143	102	NA
CHLORIDE	76.0	54.0	72.0	74.0	78.0	74.0	74.0	78.0	NA	NA	NA	NA	NA	NA	130.0	82.0	NA
SPEC.CONDUCTIVITY	500	270	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	620	550	NA
PHOSPHATE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.29	NA	NA	NA	NA	NA	NA
FLUORIDE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AMMONIA	1.30	0.02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.10	5.00	NA
NITRATE	1.70	0.70	2.10	2.84	2.36	2.84	2.84	2.22	NA	NA	NA	NA	NA	NA	1.80	2.90	1.50
NITRITE	0.035	0.000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.000	0.023	NA
COPPER	0.00	0.00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.02	0.00	NA
ARSENIC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
COLIFORM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3	NA	NA
SOURCE	STATE LAB	DEQE	D-H	D-H	D-H	D-H	D-H	D-H	D-H	D-H	D-H	D-H	D-H	D-H	DEQE	DEQE	D-H

WELL G

DATE	03/07/77	03/11/77	03/14/77	03/24/77	03/28/77	03/29/77	03/31/77	04/27/77	05/05/77	05/17/77	05/18/77	05/31/77	06/17/77	07/14/77	08/01/77	09/29/77	08/22/78
pH	6.3	6.45	6.4	6.8	6.65	6.5	6.85	6.4	7.25	6.6	6.55	6.6	6.8	6.75	NA	7	6.9
ALKALINITY	NA	NA	NA	NA	NA	50	NA	50	NA	54	NA	52	NA	NA	NA	85	52
HARDNESS	NA	NA	NA	NA	NA	133	NA	123	NA	131	NA	131	NA	NA	NA	183	121
CALCIUM	NA	NA	NA	NA	NA	40	NA	37	NA	36	NA	40	NA	NA	NA	50	35
MAGNESIUM	NA	NA	NA	NA	NA	8.0	NA	7.5	NA	7.5	NA	7.5	NA	NA	NA	14.0	8.0
SODIUM	NA	NA	NA	NA	NA	60	NA	90	NA	75	NA	50	NA	NA	NA	90	50
POTASSIUM	NA	NA	NA	NA	NA	4.3	NA	4.3	NA	5.0	NA	4.7	NA	NA	NA	4.9	4.1
IRON	0.13	0.01	0.01	0.02	0.00	0.00	0.01	0.00	0.00	0.00	0.02	0.00	NA	0.03	NA	0.40	0.02
MANGANESE	0.57	1.26	1.30	0.54	0.59	0.57	0.57	0.50	0.58	0.55	1.17	0.58	0.47	0.49	NA	0.39	50.00
SILICA	NA	NA	NA	NA	NA	13.0	NA	15.0	NA	12.0	NA	11.0	NA	NA	NA	18.0	16.0
SULFATE	NA	NA	NA	NA	NA	-	NA	100	NA	100	NA	95	NA	NA	NA	135.	98
CHLORIDE	NA	NA	NA	NA	NA	85.0	NA	89.0	NA	91.0	NA	89.0	NA	NA	NA	210.0	79.0
SPEC.CONDUCTIVITY	NA	NA	NA	NA	NA	540	NA	530	NA	600	NA	580	NA	NA	NA	640	560
PHOSPHATE	NA	NA	NA	NA	NA	NA	NA	NA	0.99	0.60	0.21	NA	NA	0.64	NA	NA	NA
FLUORIDE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AMMONIA	NA	NA	NA	NA	NA	3.80	2.80	4.30	2.30	4.50	2.80	4.70	NA	NA	NA	0.70	1.90
NITRATE	1.33	2.84	2.06	2.50	0.85	2.20	2.20	1.60	0.12	1.70	1.75	1.10	NA	0.68	NA	0.10	0.80
NITRITE	NA	NA	NA	NA	NA	0.001	NA	0.001	NA	0.001	NA	0.003	NA	NA	NA	0.001	0.000
COPPER	NA	NA	NA	NA	NA	0.01	NA	0.00	NA	0.02	NA	0.00	NA	NA	NA	0.00	0.01
ARSENIC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
COLIFORM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5	NA	NA
SOURCE	D-H	D-H	D-H	D-H	D-H	STATE LAB	D-H	DEQE	D-H	DEQE	D-H	DEQE	D-H	D-H	DEQE?	DEQE	DEQE

WELL 6

DATE	08/24/78	09/24/79	09/25/79	11/01/80
pH	6.9	6.6	6.6	NA
ALKALINITY	52	57	57	NA
HARDNESS	131	136	136	NA
CALCIUM	35	42	42	41
MAGNESIUM	8.0	7.6	7.6	7.5
SODIUM	50	61	61	25
POTASSIUM	4.1	3.4	3.4	NA
IRON	0.02	0.04	0.04	0.07
MANGANESE	0.50	0.60	0.60	0.42
SILICA	16.0	12.0	12.0	NA
SULFATE	98	75	75	NA
CHLORIDE	79.0	75.0	75.0	NA
SPEC.CONDUCTIVITY	560	520	520	NA
PHOSPHATE	NA	NA	NA	NA
FLUORIDE	NA	NA	NA	NA
AMMONIA	1.90	3.40	3.40	NA
NITRATE	0.80	1.50	1.50	NA
NITRITE	0.000	0.001	0.001	NA
COPPER	0.01	0.01	0.01	<.02
ARSENIC	NA	NA	0.00	<.01
CHROMIUM	NA	NA	0.00	<.01
LEAD	NA	NA	0.0	0.3
COLIFORM	NA	NA	NA	NA
SOURCE	DEQE	DEQE	DEQE	AQUATEC

Table A-2 .Inorganic Water Quality 1964 to 1980;
Well H

DATE	04/03/64	09/26/67	11/30/67	12/06/67	12/07/67	06/05/74	12/10/74	04/13/76	08/02/76	08/04/76	10/07/76	10/28/76	11/16/76	03/03/77	05/05/77	05/31/77	08/17/77
pH	6.7	6.4	6.2	NA	NA	6.4	6.4	6.2	NA	6.4	7.3	6.4	6.6	6.6	6.5	6.5	NA
ALKALINITY	31	47	45	NA	NA	43	53	43	NA	59	NA	NA	53	54	NA	51	NA
HARDNESS	114	188	250	NA	NA	149	116	113	NA	128	NA	NA	124	137	NA	117	NA
CALCIUM	NA	NA	NA	NA	NA	40	25	32	NA	35	NA	NA	35	40	NA	35	NA
MAGNESIUM	NA	NA	NA	NA	NA	12.0	13.0	8.0	NA	10.0	NA	NA	9.0	9.0	NA	7.5	NA
SODIUM	NA	NA	NA	NA	NA	50.0	100.0	40.0	NA	86.0	NA	NA	80.0	73.0	NA	50.0	NA
POTASSIUM	NA	NA	NA	NA	NA	3.5	5.0	4.5	NA	5.4	NA	NA	5.0	5.0	NA	4.5	NA
IRON	0.07	0.15	0.04	NA	NA	0.00	0.00	0.15	0.04	0.06	0.04	0.13	0.00	0.14	0.08	0.04	0.21
MANGANESE	0.00	0.20	0.50	NA	NA	0.40	0.72	1.40	0.82	0.87	0.60	0.54	0.65	0.86	1.27	0.80	0.05
SILICA	NA	NA	NA	NA	NA	17	14	13	NA	13	NA	NA	15	13	NA	20	NA
SULFATE	NA	NA	NA	NA	NA	126	119	150	NA	143	NA	NA	94	125	NA	85	NA
CHLORIDE	25	75	116	NA	NA	100	120	96	NA	115	NA	NA	83	105	NA	90	NA
SPEC.CONDUCTIVITY	NA	NA	NA	NA	NA	580	800	660	NA	660	NA	NA	515	610	NA	588	NA
PHOSPHATE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.72	NA	NA
FLUORIDE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AMMONIA	0.03	NA	5.00	NA	NA	2.40	NA	4.70	NA	4.80	NA	NA	4.60	2.80	0.40	3.90	NA
NITRATE	3.20	6.40	12.00	NA	NA	8.30	2.80	0.70	NA	2.80	2.05	2.29	2.00	0.30	0.01	0.70	NA
NITRITE	0.002	0.170	0.010	NA	NA	0.020	NA	0.001	NA	0.001	NA	NA	0.240	0.002	NA	0.001	NA
COPPER	NA	NA	NA	NA	NA	0.00	0.05	0.02	NA	0.05	NA	NA	0.00	0.08	NA	0.02	NA
ARSENIC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
COLIFORM	NA	NA	NA	38	1200	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SOURCE	MOPH/LAWRENCE	DEQE	DEQE	DEQE	DEQE	DEQE	DEQE	DEQE	D-H	DEQE	D-H	D-H	DEQE	DEQE	D-H	DEQE	D-H

WELL H

DATE	06/17/77	08/23/77	08/23/77	08/24/77	08/24/77	08/24/77	08/24/77	09/02/77	09/02/77	09/12/77	09/12/77	09/16/77	09/16/77	08/24/78	09/24/79	11/01/80
pH	NA	7.6	6.7	6.6	6.6	6.5	6.5	6.3	6.6	6.4	6.5	NA	NA	6.9	6.5	NA
ALKALINITY	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	52	58	NA
HARDNESS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	139	127	NA
CALCIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	40	37	38.1
MAGNESIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	9.5	8.2	7.5
SODIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	45.0	58.0	40.4
POTASSIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.1	4.0	NA
IRON	2.40	0.88	2.26	0.33	0.33	0.18	0.18	0.87	0.08	0.24	0.10	0.10	0.02	0.03	0.07	<.04
MANGANESE	1.88	2.99	2.16	1.27	1.27	1.25	1.25	1.02	0.23	0.89	0.89	0.95	0.95	0.60	1.00	1.30
SILICA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	15	17	NA
SULFATE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	98	80	NA
CHLORIDE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	77	80	NA
SPEC.CONDUCTIVITY	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	540	540	NA
PHOSPHATE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
FLUORIDE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AMMONIA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.00	5.00	NA
NITRATE	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.30	0.30	0.03	0.08	0.80	0.30	NA
NITRITE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.000	0.000	NA
COPPER	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.01	0.02	<.02
ARSENIC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00	<.01
CHROMIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00	<.01
LEAD	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00	<.27
COLIFORM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SOURCE	D-H	D-H	D-H	D-H	D-H	D-H	D-H	D-H	D-H	D-H	D-H	D-H	D-H	VERSAR	VERSAR	VERSAR

Table A-3 Inorganic Water Quality Test Wells

WELL	17	A	A-85	1-77	1-77	1-77	1-77	1-77	1-77
DATE	11/06/63	11/03/64	05/07/65	09/14/77	09/29/77	11/14/77	11/16/77	11/20/77	11/23/77
pH	6.3	NA	6.3	6.6	7.0	6.6	6.4	6.7	6.6
ALKALINITY	28	NA	20	84	85	74	59	54	53
HARDNESS	100	NA	76	NA	183	141	94	98	83
CALCIUM	NA	NA	NA	NA	50	40	18	26	20
MAGNESSIUM	NA	NA	NA	NA	14.0	10.0	7.9	8.0	7.9
SODIUM	NA	NA	NA	NA	90	43	78	72	57
POTASSIUM	NA	NA	NA	NA	4.9	4.6	5.0	6.8	4.5
IRON	0.19	0.01	0.10	NA	0.40	0.12	0.01	0.06	0.08
MANGANESE	0.00	0.24	0.00	NA	0.39	0.58	0.61	0.64	0.63
SILICA	NA	NA	NA	16	18	13	13	17	17
SULFATE	NA	NA	NA	145	135	160	135	120	125
CHLORIDE	22	NA	30	95	210	110	100	100	105
SPEC.CONDUCTIVITY	NA	NA	NA	640	640	640	620	520	540
PHOSPHATE	NA	NA	NA	NA	NA	NA	NA	NA	NA
FLUORINE	NA	NA	NA	NA	NA	NA	NA	NA	NA
AMMONIA	0.02	0.00	0.10	0.01	0.70	3.20	4.80	3.20	3.70
NITRATE	5.6	1.4	1.6	0.0	0.1	0.0	0.7	0.9	1.0
NITRITE	0.001	0.001	0.000	0.000	0.001	0.001	0.001	0.001	0.002
COPPER	NA	NA	NA	NA	0.00	0.00	0.18	0.07	0.00
ARSENIC	NA	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA	NA	NA	NA	NA
COLIFORM	NA	NA	NA	NA	NA	NA	NA	NA	NA
SOURCE	MDPH/LAWRENCE	MDPH/LAWRENCE	MDPH/LAWRENCE	DEQE	DEQE	DEQE	DEQE	DEQE	DEQE

- From Weston Geophysical, Sampling of Wells G and H during the U.S.G.S. 30 days pumping test, 1985-1986

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Weston Geophysical

Sample Description
C51942 - S 88 M
C51943 - H-1
C51944 - H-1-D
C51945 - H-2
C51946 - H-2-D

StepTest 12/2/85

D samples Taken from Discharge P

Job No.: 40086-4-50
Report No.: 07929
Date: December 18, 1985

Concentrations reported as parts per billion unless listed otherwise.

Lab Number	C51942	C51943	C51944	C51945	C51946
Collector	Client	Client	Client	Client	Client
Date Received	12-6-85	12-6-85	12-6-85	12-6-85	12-6-85
Date Analyzed (Completed)	12-12-85	12-12-85	12-12-85	12-12-85	12-12-85
GC FRACTION-VOLATILE COMPOUNDS					
1V. Acrolein	ND*	ND*	ND*	ND*	ND*
2V. Acrylonitrile	ND*	ND*	ND*	ND*	ND*
3V. Benzene	ND	ND	ND	ND	ND
4V. Bis (Chloromethyl) Ether	ND	ND	ND	ND	ND
5V. Bromoform	ND	ND	ND	ND	ND
6V. Carbon Tetrachloride	ND	ND	ND	ND	ND
7V. Chlorobenzene	ND	ND	ND	ND	ND
8V. Chlorodibromomethane	ND	ND	ND	ND	ND
9V. Chloroethane	ND	ND	ND	ND	ND
10V. 2-Chloroethylvinyl Ether	ND	ND	ND	ND	ND
11V. Chloroform	ND	ND	ND	ND	ND
12V. Dichlorobromomethane	ND	ND	ND	ND	ND
13V. Dichlorodifluoromethane	ND	ND	ND	ND	ND
14V. 1,1-Dichloroethane	ND	ND	ND	ND	ND
15V. 1,2-Dichloroethane	ND	ND	ND	ND	ND
16V. 1,1-Dichloroethylene	ND	ND	3.19	2.95	3.22
17V. 1,2-Dichloropropane	ND	ND	ND	ND	ND
18V. 1,2-Dichloropropylene	ND	ND	ND	ND	ND
19V. Ethylbenzene	ND	ND	ND	ND	ND
20V. Methyl Bromide	ND	ND	ND	ND	ND
21V. Methyl Chloride	ND	ND	ND	ND	ND
22V. Methylene Chloride	ND	ND	ND	ND	ND
23V. 1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	ND
24V. Tetrachloroethylene	ND	5.04	292	274	241
25V. Toluene	ND	ND	ND	ND	ND
26V. 1,2-Trans-Dichloroethylene	ND	ND	55.7	52.1	52.5
27V. 1,1,1-Trichloroethane	ND	ND	49.7	47.3	47.7
28V. 1,1,2-Trichloroethane	ND	ND	ND	ND	ND
29V. Trichloroethylene	31.5	ND	108	102	102
30V. Trichlorofluoromethane	ND	ND	ND	ND	ND
31V. Vinyl Chloride	ND	ND	ND	ND	ND

ND = Parameter not detected at sensitivity level of instrument which is <1 µg/L (ppb)
ND* = Parameter not detected at sensitivity level of instrument which is <100 µg/L (ppb)

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Weston Geophysical

Sample Description
C51942 - S 88 M
C51943 - H-1
C51944 - H-1-D
C51945 - H-2
C51946 - H-2-D

Job No.: 40086-4-50
Report No.: 07929
Date: December 18, 1985

Concentrations reported as parts per billion unless listed otherwise.

Lab Number	C51942	C51943	C51944	C51945	C51946
Collector	Client	Client	Client	Client	Client
Date Received	12-6-85	12-6-85	12-6-85	12-6-85	12-6-85
Date Analyzed (Completed)	12-12-85	12-12-85	12-12-85	12-12-85	12-12-85
GC FRACTION-VOLATILE COMPOUNDS					
Non-Priority Volatiles					
Trichlorotrifluoroethane	ND	ND	28.9	ND	ND
Xylene	ND	ND	ND	ND	ND

ND = Parameter not detected at sensitivity level of instrument which is <1 µg/L (ppb)

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Easthampton, Massachusetts 01027
Mass. Certificate No. C 8212/Conn. Certificate No. PH-0494

Weston Geophysical

Sample Description		Job No.:	40086-4-50
C51947 - PTH-1	12/4/85	Report No.:	07929
C51948 - PTG-1		Date:	December 18, 1985

Concentrations reported as parts per billion unless listed otherwise.

Lab Number	C51947	C51948
Collector	Client	Client
Date Received	12-6-85	12-6-85
Date Analyzed (Completed)	12-12-85	12-12-85
GC FRACTION-VOLATILE COMPOUNDS		
1V. Acrolein	ND*	ND*
2V. Acrylonitrile	ND*	ND*
3V. Benzene	ND	ND
4V. Bis (Chloromethyl) Ether	ND	ND
5V. Bromoform	ND	ND
6V. Carbon Tetrachloride	ND	ND
7V. Chlorobenzene	ND	ND
8V. Chlorodibromomethane	ND	ND
9V. Chloroethane	ND	ND
10V. 2-Chloroethylvinyl Ether	ND	ND
11V. Chloroform	ND	ND
12V. Dichlorobromomethane	ND	ND
13V. Dichlorodifluoromethane	ND	ND
14V. 1,1-Dichloroethane	ND	ND
15V. 1,2-Dichloroethane	ND	ND
16V. 1,1-Dichloroethylene	ND	ND
17V. 1,2-Dichloropropane	ND	ND
18V. 1,2-Dichloropropylene	ND	ND
19V. Ethylbenzene	ND	ND
20V. Methyl Bromide	ND	ND
21V. Methyl Chloride	ND	ND
22V. Methylene Chloride	ND	ND
23V. 1,1,2,2-Tetrachloroethane	ND	ND
24V. Tetrachloroethylene	20.1	165
25V. Toluene	ND	ND
26V. 1,2-Trans-Dichloroethylene	32.2	43.3
27V. 1,1,1-Trichloroethane	13.3	37.4
28V. 1,1,2-Trichloroethane	ND	ND
29V. Trichloroethylene	88.0	83.6
30V. Trichlorofluoromethane	ND	ND
31V. Vinyl Chloride	ND	ND

ND = Parameter not detected at sensitivity level of instrument which is <1 µg/L (ppb)
ND* = Parameter not detected at sensitivity level of instrument which is <100 µg/L (ppb)

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Weston Geophysical

Sample Description	Job No.:	40086-4-50
C51947 - PTH-1	Report No.:	07929
C51948 - PTG-1	Date:	December 18, 1985

Concentrations reported as parts per billion unless listed otherwise.

Lab Number	C51947	C51948
Collector	Client	Client
Date Received	12-6-85	12-6-85
Date Analyzed (Completed)	12-12-85	12-12-85

GC FRACTION-VOLATILE COMPOUNDS
Non-Priority Volatiles

Trichlorotrifluoroethane	ND	ND
Xylene	ND	ND

ND = Parameter not detected at sensitivity level of instrument which is <1 µg/L (ppb)

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Weston Geophysical

Sample Description
C52306 - S-93-M
C52307 - S-93-S
C52308 - PTG-5 } 12/19/85
C52309 - PTH-5 }
C52310 - PT-GD #4 12/17/85

Job No.: 40086-4-50
Report No.: 08046
Date: January 14, 1986

Concentrations reported as parts per billion unless listed otherwise.

Lab Number	C52306	C52307	C52308	C52309	C52310
Collector	Client	Client	Client	Client	Client
Date Received	12-24-85	12-24-85	12-24-85	12-24-85	12-24-85
Date Analyzed (Completed)	1-5-86	1-5-86	1-5-86	1-5-86	1-5-86
GC FRACTION-VOLATILE COMPOUNDS					
1V. Acrolein	ND*	ND*	ND*	ND*	ND*
2V. Acrylonitrile	ND*	ND*	ND*	ND*	ND*
3V. Benzene	ND	ND	ND	ND	ND
4V. Bis (Chloromethyl) Ether	ND	ND	ND	ND	ND
5V. Bromoform	ND	ND	ND	ND	ND
6V. Carbon Tetrachloride	ND	ND	ND	ND	ND
7V. Chlorobenzene	ND	ND	ND	ND	ND
8V. Chlorodibromomethane	ND	ND	ND	ND	ND
9V. Chloroethane	ND	ND	ND	ND	ND
10V. 2-Chloroethylvinyl Ether	ND	ND	ND	ND	ND
11V. Chloroform	ND	ND	ND	ND	ND
12V. Dichlorobromomethane	ND	ND	ND	ND	ND
13V. Dichlorodifluoromethane	ND	ND	ND	ND	ND
14V. 1,1-Dichloroethane	2.32	1.07	ND	1.70	ND
15V. 1,2-Dichloroethane	ND	ND	ND	ND	ND
16V. 1,1-Dichloroethylene	ND	ND	ND	2.00	ND
17V. 1,2-Dichloropropane	ND	ND	ND	ND	ND
18V 1,2-Dichloropropylene	ND	ND	ND	ND	ND
19V. Ethylbenzene	ND	ND	ND	ND	ND
20V. Methyl Bromide	ND	ND	ND	ND	ND
21V. Methyl Chloride	ND	ND	ND	ND	ND
22V. Methylene Chloride	ND	ND	ND	ND	ND
23V. 1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	ND
24V. Tetrachloroethylene	ND	ND	ND.	ND	ND
25V. Toluene	ND	ND	ND	ND	ND
26V. 1,2-Trans-Dichloroethylene	ND	7.35	17.5	29.7	17.0
27V. 1,1,1-Trichloroethane	ND	ND	11.5	16.1	10.4
28V. 1,1,2-Trichloroethane	ND	ND	ND	ND	ND
29V. Trichloroethylene	5.70	9.68	108	65.5	92.7
30V. Trichlorofluoromethane	ND	ND	ND	ND	ND
31V. Vinyl Chloride	ND	ND	ND	ND	ND

ND = Parameter not detected at sensitivity level of instrument which is <1 µg/L (ppb)
ND* = Parameter not detected at sensitivity level of instrument which is <100 µg/L (ppb)

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Sample Description	Job No.:	40086-4-50
C52306 - S-93-M	Report No.:	08046
C52307 - S-93-S	Date:	January 14, 1986
C52308 - PTG-5		
C52309 - PTH-5		
C52310 - PT-GD		

Concentrations reported as parts per billion unless listed otherwise.

Lab Number	C52306	C52307	C52308	C52309	C52310
Collector	Client	Client	Client	Client	Client
Date Received	12-24-85	12-24-85	12-24-85	12-24-85	12-24-85
Date Analyzed (Completed)	1-5-86	1-5-86	1-5-86	1-5-86	1-5-86

GC FRACTION-VOLATILE COMPOUNDS

Non-Priority Volatiles

Trichlorotrifluoroethane	ND	ND	ND	ND	ND
Xylene	ND	ND	ND	ND	ND

ND = Parameter not detected at sensitivity level of instrument which is <1 µg/L (ppb)

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Weston Geophysical

Sample Description
C52311 - PT-HD #4 12/17/85

Job No.: 40086-4-50
Report No.: 08046
Date: January 14, 1986

Concentrations reported as parts per billion unless listed otherwise

Lab Number	C52311
Collector	Client
Date Received	12-24-85
Date Analyzed (Completed)	1-5-86

GC FRACTION-VOLATILE COMPOUNDS

1V. Acrolein	ND*
2V. Acrylonitrile	ND*
3V. Benzene	ND
4V. Bis (Chloromethyl) Ether	ND
5V. Bromoform	ND
6V. Carbon Tetrachloride	ND
7V. Chlorobenzene	ND
8V. Chlorodibromomethane	ND
9V. Chloroethane	ND
10V. 2-Chloroethylvinyl Ether	ND
11V. Chloroform	ND
12V. Dichlorobromomethane	ND
13V. Dichlorodifluoromethane	ND
14V. 1,1-Dichloroethane	1.25
15V. 1,2-Dichloroethane	ND
16V. 1,1-Dichloroethylene	1.95
17V. 1,2-Dichloropropane	ND
18V. 1,2-Dichloropropylene	ND
19V. Ethylbenzene	ND
20V. Methyl Bromide	ND
21V. Methyl Chloride	ND
22V. Methylene Chloride	ND
23V. 1,1,2,2-Tetrachloroethane	ND
24V. Tetrachloroethylene	96.6
25V. Toluene	ND
26V. 1,2-Trans-Dichloroethylene	31.5
27V. 1,1,1-Trichloroethane	17.2
28V. 1,1,2-Trichloroethane	ND
29V. Trichloroethylene	64.7
30V. Trichlorofluoromethane	ND
31V. Vinyl Chloride	ND

ND = Parameter not detected at sensitivity level of instrument which is <1 µg/L (ppb)
ND* = Parameter not detected at sensitivity level of instrument which is <100 µg/L (ppb)

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Weston Geophysical

Sample Description
C52311 - PT-HD

Job No.: 40086-4-50
Report No.: 08046
Date: January 14, 1986

Concentrations reported as parts per billion unless listed otherwise

Lab Number	C52311
Collector	Client
Date Received	12-24-85
Date Analyzed (Completed)	1-5-86

GC FRACTION-VOLATILE COMPOUNDS

Non-Priority Volatiles

Trichlorotrifluoroethane	ND
Xylene	ND

ND = Parameter not detected at sensitivity level of instrument which is <1 µg/L (ppb)

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Weston Geophysical

Sample Description
C52370 - PT-G-6(D) } 12/29/85
C52371 - PT-H-6

Job No.: 40086-4-50
Report No.: 08078
Date: January 14, 1986

Concentrations reported as parts per billion unless listed otherwise.

Lab Number	C52370	C52371
Collector	Client	Client
Date Received	1-2-86	1-2-86
Date Analyzed (Completed)	1-4-86	1-4-86
GC FRACTION-VOLATILE COMPOUNDS		
1V. Acrolein	ND*	ND*
2V. Acrylonitrile	ND*	ND*
3V. Benzene	ND	ND
4V. Bis (Chloromethyl) Ether	ND	ND
5V. Bromoform	ND	ND
6V. Carbon Tetrachloride	ND	ND
7V. Chlorobenzene	ND	ND
8V. Chlorodibromomethane	ND	ND
9V. Chloroethane	ND	ND
10V. 2-Chloroethylvinyl Ether	ND	ND
11V. Chloroform	ND	ND
12V. Dichlorobromomethane	ND	ND
13V. Dichlorodifluoromethane	ND	ND
14V. 1,1-Dichloroethane	ND	1.58
15V. 1,2-Dichloroethane	ND	ND
16V. 1,1-Dichloroethylene	ND	1.36
17V. 1,2-Dichloropropane	ND	ND
18V. 1,2-Dichloropropylene	ND	ND
19V. Ethylbenzene	ND	ND
20V. Methyl Bromide	ND	ND
21V. Methyl Chloride	ND	ND
22V. Methylene Chloride	ND	ND
23V. 1,1,2,2-Tetrachloroethane	ND	ND
24V. Tetrachloroethylene	40.6	70.7
25V. Toluene	ND	ND
26V. 1,2-Trans-Dichloroethylene	14.3	21.3
27V. 1,1,1-Trichloroethane	8.92	11.4
28V. 1,1,2-Trichloroethane	ND	ND
29V. Trichloroethylene	91.3	57.0
30V. Trichlorofluoromethane	ND	ND
31V. Vinyl Chloride	ND	ND

ND = Parameter not detected at sensitivity level of instrument which is <1 µg/L (ppb)
ND* = Parameter not detected at sensitivity level of instrument which is <100 µg/L (ppt

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Weston Geophysical

Sample Description	Job No.:	40086-4-50
C52370 - PT-G-6(D)	Report No.:	08078
C52371 - PS-H-6	Date:	January 14, 1986

Concentrations reported as parts per billion unless listed otherwise.

Lab Number	C52370	C52371
Collector	Client	Client
Date Received	12-24-85	12-24-85
Date Analyzed (Completed)	1-4-86	1-4-86

GC FRACTION-VOLATILE COMPOUNDS

Non-Priority Volatiles

Trichlorotrifluoroethane	ND	ND
Xylene	ND	ND

ND = Paremeter not detected at sensitivity level of instrument which is <1 µg/L (ppb)

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Weston Geophysical

Sample Description
C52405 - PT-G-7
C52406 - PT-H-7
1/3/86
End of Test

Job No.: 40086-4-50
Report No.: 08096
Date: January 14, 1986

Concentrations reported as parts per billion unless listed otherwise.

Lab Number	C52405	C52406
Collector	Client	Client
Date Received	1-6-86	1-6-86
Date Analyzed (Completed)	1-8-86	1-8-86
GC FRACTION-VOLATILE COMPOUNDS		
1V. Acrolein	ND*	ND*
2V. Acrylonitrile	ND*	ND*
3V. Benzene	ND	ND
4V. Bis (Chloromethyl) Ether	ND	ND
5V. Bromoform	ND	ND
6V. Carbon Tetrachloride	ND	ND
7V. Chlorobenzene	ND	ND
8V. Chlorodibromomethane	ND	ND
9V. Chloroethane	ND	ND
10V. 2-Chloroethylvinyl Ether	ND	ND
11V. Chloroform	ND	ND
12V. Dichlorobromomethane	ND	ND
13V. Dichlorodifluoromethane	ND	ND
14V. 1,1-Dichloroethane	ND	ND
15V. 1,2-Dichloroethane	ND	ND
16V. 1,1-Dichloroethylene	ND	ND
17V. 1,2-Dichloropropane	ND	ND
18V. 1,2-Dichloropropylene	ND	ND
19V. Ethylbenzene	ND	ND
20V. Methyl Bromide	ND	ND
21V. Methyl Chloride	ND	ND
22V. Methylene Chloride	ND	ND
23V. 1,1,2,2-Tetrachloroethane	ND	ND
24V. Tetrachloroethylene	48.0	91.7
25V. Toluene	ND	ND
26V. 1,2-Trans-Dichloroethylene	12.5	24.2
27V. 1,1,1-Trichloroethane	9.80	23.1
28V. 1,1,2-Trichloroethane	ND	ND
29V. Trichloroethylene	111	57.9
30V. Trichlorofluoromethane	ND	ND
31V. Vinyl Chloride	ND	ND

ND = Parameter not detected at sensitivity level of instrument which is <1 µg/L (ppb)
ND* = Parameter not detected at sensitivity level of instrument which is <100 µg/L (pp

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Sample Description	Job No.:	40086-4-50
C52405 - PT-G-7	Report No.:	08096
C52406 - PT-H-7	Date:	January 14, 1986

Concentrations reported as parts per billion unless listed otherwise.

Lab Number	C52405	C52406
Collector	Client	Client
Date Received	1-6-86	1-6-86
Date Analyzed (Completed)	1-8-86	1-8-86

GC FRACTION-VOLATILE COMPOUNDS

Non-Priority Volatiles

Trichlorotrifluoroethane	161	39.7
Xylene	ND	ND

ND = Parameter not detected at sensitivity level of instrument which is <1 µg/L (ppb

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Weston Geophysical

Sample Description
C51927 - G 15 S
C51928 - G 15 D
C51929 - G:-X
C51930 - G:-X2
C51931 - G - D1S
} Step Test 12/27/85

Job No.: 40086-4-50
Report No.: 07929
Date: December 18, 1985

will G

Concentrations reported as parts per billion unless listed otherwise.

Lab Number	C51927	C51928	C51929	C51930	C51931
Collector	Client	Client	Client	Client	Client
Date Received	12-6-85	12-6-85	12-6-85	12-6-85	12-6-85
Date Analyzed (Completed)	12-12-85	12-12-85	12-12-85	12-12-85	12-12-85
GC FRACTION-VOLATILE COMPOUNDS					
1V. Acrolein	ND*	ND*	ND*	ND*	ND*
2V. Acrylonitrile	ND*	ND*	ND*	ND*	ND*
3V. Benzene	ND	ND	ND	ND	ND
4V. Bis (Chloromethyl) Ether	ND	ND	ND	ND	ND
5V. Bromoform	ND	ND	ND	ND	ND
6V. Carbon Tetrachloride	ND	ND	ND	ND	ND
7V. Chlorobenzene	ND	ND	ND	ND	ND
8V. Chlorodibromomethane	ND	ND	ND	ND	ND
9V. Chloroethane	ND	ND	ND	ND	ND
10V. 2-Chloroethylvinyl Ether	ND	ND	ND	ND	ND
11V. Chloroform	ND	ND	ND	ND	ND
12V. Dichlorobromomethane	ND	ND	ND	ND	ND
13V. Dichlorodifluoromethane	ND	ND	ND	ND	ND
14V. 1,1-Dichloroethane	ND	ND	ND	ND	ND
15V. 1,2-Dichloroethane	ND	ND	ND	ND	ND
16V. 1,1-Dichloroethylene	15.3	13.0	ND	ND	ND
17V. 1,2-Dichloropropane	ND	ND	ND	ND	ND
18V. 1,2-Dichloropropylene	ND	ND	ND	ND	ND
19V. Ethylbenzene	ND	ND	ND	ND	ND
20V. Methyl Bromide	ND	ND	ND	ND	ND
21V. Methyl Chloride	ND	ND	ND	ND	ND
22V. Methylene Chloride	ND	ND	ND	ND	ND
23V. 1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	ND
24V. Tetrachloroethylene	24.1	122	40.7	55.1	43.3
25V. Toluene	4420	3750	1.19	ND	ND
26V. 1,2-Trans-Dichloroethylene	6970	8510	33.4	34.8	31.0
27V. 1,1,1-Trichloroethane	ND	ND	9.26	10.9	9.44
28V. 1,1,2-Trichloroethane	ND	ND	ND	ND	ND
29V. Trichloroethylene	129	2350	87.5	90.7	84.2
30V. Trichlorofluoromethane	ND	ND	ND	ND	ND
31V. Vinyl Chloride	1420	565	ND	ND	ND

ND = Parameter not detected at sensitivity level of instrument which is <1 µg/L (ppb)
ND* = Parameter not detected at sensitivity level of instrument which is <100 µg/L (ppb)

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Weston Geophysical

Sample Description
C51927 - G 15 S
C51928 - G 15 D
C51929 - G:-X
C51930 - G:-X2
C51931 - G - D1S

Job No.: 40086-4-50
Report No.: 07929
Date: December 18, 1985

Concentrations reported as parts per billion unless listed otherwise.

Lab Number	C51927	C51928	C51929	C51930	C51931
Collector	Client	Client	Client	Client	Client
Date Received	12-6-85	12-6-85	12-6-85	12-6-85	12-6-85
Date Analyzed (Completed)	12-12-85	12-12-85	12-12-85	12-12-85	12-12-85
GC FRACTION-VOLATILE COMPOUNDS					
Non-Priority Volatiles					
Trichlorotrifluoroethane	ND	ND	ND	ND	ND
Xylene	441	230	ND	ND	ND

ND = Parameter not detected at sensitivity level of instrument which is <1 µg/L (ppb)

- From Ecology and Environmental, Inc. report, "Chloronated Solvent Contamination of the Groundwater, East Central Woburn, Massachusetts", 1982

SECTION 1 - INTRODUCTION

In May 1979, several chlorinated solvents were detected by the Massachusetts Department of Environmental Quality Engineering (DEQE) in two of the City of Woburn's municipal drinking water wells. As a result, these wells ("G" and "H") were shut down forcing Woburn to use MDC water to supplement its other groundwater wells located near Horn Pond. The levels of contamination detected prior to shutdown and immediately after shutdown are given in Table 1-1.

Table 1-1

Analyses of Water from Wells

"G" AND "H", Woburn, Massachusetts (ppb)

	"G" Well					
	5/21/79	7/24/79	7/24/79	9/25/79	9/28/79	2/26/81
	(1)	(2)	(2) (Dupl)	(3)	(3)	(4)
1,1,1-trichloroethane	1	28	28	ND	10	ND
1,2-trans-dichloroethylene	ND	0	0	ND	11	14
tetrachloroethylene	21	18	13	13	43	36
trichloroethylene	267	208	236	184	400	210
chloroform	12	ND	ND	ND	ND	ND
trichlorotrifluoroethane	ND	22	23	ND	ND	ND

	"H" Well			
	5/21/79	7/24/79	9/26/79	2/26/81
	(1)	(2)	(3)	(4)
1,1,1-trichloroethane	ND	ND	2	ND
1,2-trans-dichloroethylene	ND	ND	ND	14
tetrachloroethylene	18	26	9	41
trichloroethylene	118	188	63	73
chloroform	1	ND	ND	ND
trichlorotrifluoroethane	ND	23	ND	ND

- From EBASCO Report, "Appendices A - F of the Endangerment Assessment for the Wells G and H Site, Woburn, Massacuhsetts", 1988

TABLE 7-2
COMPOUNDS DETECTED IN GROUNDWATER FOR THE CENTRAL AREA OF THE WELLS G & H SITE

COMPOUND	FREQ. OF DETECTION	GEOMETRIC MEAN	MAXIMUM
ORGANICS (ug/liter)			
BIS(2-ETHYLHEXYL) PHTHALATE	3/17	5.88	79.0
CHLOROBENZENE	1/33	NA	2.80
CHLOROFORM	1/1	NA	13.0
1,2-DICHLOROBENZENE	1/18	NA	5.00
1,1-DICHLOROETHANE	1/1	NA	2.00
1,1-DICHLOROETHENE	1/33	NA	2.70
PHENOL	1/18	NA	5.00
TRANS-1,2-DICHLOROETHENE	21/30	8.94	80.0
TETRACHLOROETHENE	29/29	26.8	180
TOLUENE	2/2	3.46	4.00
TOTAL-XYLENE	1/33	NA	5.00
1,1,1-TRICHLOROETHANE	14/30	6.12	1700
TRICHLOROETHENE	30/32	17.9	140
INORGANICS (ug/liter)			
ALUMINUM	3/12	183	5800
ARSENIC	1/12	NA	20
BARIUM	3/12	93.4	210
BERYLLIUM	1/14	NA	2.50
CADMIUM	1/14	NA	5.90
CALCIUM	5/14	7010	75000
CHROMIUM	3/14	4.80	20.0
COBALT	2/14	14.3	25.0
COPPER	2/13	15.0	49.0
IRON	2/12	106	7400
LEAD	1/12	NA	58.0
MAGNESIUM	5/14	4390	16300
MANGANESE	5/14	22.8	1100
NICKEL	1/12	NA	36.0
POTASSIUM	5/14	2913	8770
RADIONUCLIDES (a)			
Radium 226 and 228	5/5	2.2	14
gross Alpha	5/5	26	350
gross Beta	5/5	30	180
Uranium	5/5	3.6	6
SILVER	2/14	4.33	5.00
SODIUM	5/14	5927	30500
TIN	1/14	NA	20.0
VANADIUM	5/14	19.8	27.0
ZINC	3/12	16.5	104

NA = Not applicable; mean not calculated with only one positive detection.

(a) Units for the radionuclides are pCi/liter except for uranium data which have units of ug/liter.

#NOTE# DUE TO THE OCCASIONAL REJECTION OF SAMPLES DURING THE QA/QC PROCESS THE NUMBER OF SAMPLES USED TO CALCULATE A GEOMETRIC MEAN WILL SOMETIMES BE LESS THAN THE TOTAL NUMBER OF SAMPLES AS PRESENTED IN THE DENOMINATOR FO THE FREQUENCY OF DETECTION.

CENTRAL AREA GROUNDWATER (ug/liter)	APRIL 85	APRIL 85	APRIL 85	APRIL 85	APRIL 85	APRIL 85	APRIL 85	APRIL 85	APRIL 85	MAY 1985	MAY 1985	MAY 1985
SAMPLE LOCATION	S68S	S68M	S84S	S84M	S84D	S85S	S85M	S86S	S86M	S68S	S68M	S84S
SAMPLE NUMBER	12477	12478	12472	12471	12437	12397	12398	12410	12409	12753	12754	12741
TRAFFIC REPORT NUMBER	AB533	AB542	AB509	AB508	AB507	AB361	AB362	AB387	AB386	AB730	AB731	AB720
DILUTION FACTORS ----->	500	1	1	1	1	1	1	1	1	1	1	1
VOLATILES												
ACETONE	NDR	5 ND	5 ND	5 ND	# R	# R	5 ND	# R	# R	5 ND	5 ND	5 ND
1,1-DICHLOROETHENE	NDR	2.5 ND	2.5 ND	2.5 ND	2.5 ND	2.5 ND	2.5 ND	2.5 ND	2.5 ND	2.5 ND	2.5 ND	2.5 ND
1,1-DICHLOROETHANE	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
TRANS-1,2-DICHLOROETHENE	NDR	# R	10	7	8	68	22	2.5 ND	2.5 ND	29	36.5	10
CHLOROFORM	# R	NDR	NDR	NDR	NDR	NDR	NDR	# R	# R	NDR	NDR	NDR
1,1,1-TRICHLOROETHANE	1700 J	15 J	2.5 ND	2.5 ND	2.5 ND	8	34	17 J	2.5 ND	6	12.5	2.5 ND
TRICHLOROETHENE	NDR	# R	24	17	23	110	48	18 J	17 J	54	87	21
TETRACHLOROETHENE	NDR	# R	20	11	10	56	150	56 J	48 J	47	85.5	18
TOLUENE	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
CHLOROBENZENE	NDR	2.5 ND	2.5 ND	2.5 ND	2.5 ND	2.5 ND	2.5 ND	2.5 ND	2.5 ND	2.5 ND	2.5 ND	2.5 ND
TOTAL-XYLENE	NDR	2.5 ND	2.5 ND	2.5 ND	2.5 ND	2.5 ND	2.5 ND	2.5 ND	2.5 ND	2.5 ND	2.5 ND	2.5 ND
SEMIVOLATILES												
PHENOL	5 ND	5 ND	NT	NT	NT	NT	NT	5 ND	2.5 K	NT	NT	NT
1,2-DICHLOROBENZENE	5 ND	3 K	NT	NT	NT	NT	NT	5 ND	5 ND	NT	NT	NT
BIS(2-ETHYLHEXYL) PHTHALATE	5 ND	5 K	NT	NT	NT	NT	NT	5 ND	5 ND	NT	NT	NT
INORGANICS												
ALUMINUM	1000	5800	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
ARSENIC	2 ND	2 ND	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
BARIUM	30	70	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
BERYLLIUM	0.25 ND	0.6	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
CADMIUM	2.5 ND	5.9	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
CALCIUM	37000	75000	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
CHROMIUM	7.4	5.7	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
COBALT	3.5 ND	23	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
COPPER	# R	49	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
IRON	2900	7400	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
LEAD	1 ND	1 ND	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MAGNESIUM	8400	16000	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MANGANESE	100	1100	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
NICKEL	# R	# R	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
POTASSIUM	2500	4400	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
SELENIUM	1 ND	## R	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
SILVER	2 ND	2 ND	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
SODIUM	27000	27000	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
THALLIUM	2 ND	2 ND	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TIN	18 ND	18 ND	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
VANADIUM	11	27	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
ZINC	56	72	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
N-NITROSODIPHENYLAMINE	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT

CENTRAL AREA

GROUNDWATER (ug/liter)	MAY 1985	MAY 1985	MAY 1985	MAY 1985	MAY 1985	MAY 1985	JUNE 1985	JUNE 1985	JUNE 1985	JUNE 1985	JUNE 1985	JUNE 1985
SAMPLE LOCATION	S84M	S84D	S85S	S85M	S86S	S86M	S68S	S68M	S84S	S84M	S84D	S85S
SAMPLE NUMBER	12742	12743	12738	12739	12752	12757	13188	13187	13197	13196	13182	13217
TRAFFIC REPORT NUMBER	AB721	AB722	AB711	AB712	AB729	AB734	AC453	AC452	AC435	AC432	AC443	AB929
DILUTION FACTORS ----->	1	1	10	10	5	1	1	1	1	1	1	1
VOLATILES												
ACETONE	5 ND	5 ND	NDR	NDR	NDR	5 ND	5 ND	5 ND	## R	## R	## R	# R
1,1-DICHLOROETHENE	2.5 ND	2.5 ND	NDR	NDR	NDR	2.5 ND	2.5 ND	2.5 ND	2.5 ND	2.5 ND	2.5 ND	2.5 ND
1,1-DICHLOROETHANE	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
TRANS-1,2-DICHLOROETHENE	2.5 ND	11	62	NDR	NDR	2.5 ND	55	80 J	# R	# R	# R	76.5
CHLOROFORM	NDR	NDR	NDR	13 J	NDR	NDR	# R	NDR	NDR	# R	NDR	NDR
1,1,1-TRICHLOROETHANE	2.5 ND	2.5 ND	NDR	NDR	NDR	2.5 ND	# R	29 J	# R	# R	# R	13
TRICHLOROETHENE	16	26	92	39 J	3 J	3 J	50 J	73 J	# R	# R	# R	140
TETRACHLOROETHENE	11	9	22 J	170	12	13	50	85 J	# R	# R	# R	83.5
TOLUENE	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	# R	NDR	NDR	NDR
CHLOROBENZENE	2.5 ND	2.5 ND	NDR	NDR	NDR	2.5 ND	2.5 ND	2.5 ND	2.5 ND	2.5 ND	2.5 ND	2.5 ND
TOTAL-XYLENE	2.5 ND	2.5 ND	NDR	NDR	NDR	2.5 ND	2.5 ND	2.5 ND	5 J	2.5 ND	2.5 ND	2.5 ND
SEMIVOLATILES												
PHENOL	NT	NT	5 ND	5 ND	NT	NT	5 ND	5 ND	NT	NT	NT	NT
1,2-DICHLOROBENZENE	NT	NT	5 ND	5 ND	NT	NT	5 ND	5 ND	NT	NT	NT	NT
BIS(2-ETHYLHEXYL) PHTHALATE	NT	NT	5 ND	79 J	NT	NT	5 ND	# R	NT	NT	NT	NT
INORGANICS												
ALUMINUM	NT	NT	NT	NT	NT	NT	# R	# R	NT	NT	NT	NT
ARSENIC	NT	NT	NT	NT	NT	NT	# R	# R	NT	NT	NT	NT
BARIUM	NT	NT	NT	NT	NT	NT	# R	# R	NT	NT	NT	NT
BERYLLIUM	NT	NT	NT	NT	NT	NT	0.3 ND	0.3 ND	NT	NT	NT	NT
CADMIUM	NT	NT	NT	NT	NT	NT	0.95 ND	0.95 ND	NT	NT	NT	NT
CALCIUM	NT	NT	NT	NT	NT	NT	33600 J	53300 J	NT	NT	NT	NT
CHROMIUM	NT	NT	NT	NT	NT	NT	1.45 ND	1.45 ND	NT	NT	NT	NT
COBALT	NT	NT	NT	NT	NT	NT	1.65 ND	1.65 ND	NT	NT	NT	NT
COPPER	NT	NT	NT	NT	NT	NT	11.25 ND	11.25 ND	NT	NT	NT	NT
IRON	NT	NT	NT	NT	NT	NT	# R	# R	NT	NT	NT	NT
LEAD	NT	NT	NT	NT	NT	NT	# R	# R	NT	NT	NT	NT
MAGNESIUM	NT	NT	NT	NT	NT	NT	8960 J	13200 J	NT	NT	NT	NT
MANGANESE	NT	NT	NT	NT	NT	NT	17 J	352 J	NT	NT	NT	NT
NICKEL	NT	NT	NT	NT	NT	NT	2.5 ND	2.5 ND	NT	NT	NT	NT
POTASSIUM	NT	NT	NT	NT	NT	NT	2000 J	4300 J	NT	NT	NT	NT
SELENIUM	NT	NT	NT	NT	NT	NT	2.4 ND	2.4 ND	NT	NT	NT	NT
SILVER	NT	NT	NT	NT	NT	NT	4.9 J	4.2 J	NT	NT	NT	NT
SODIUM	NT	NT	NT	NT	NT	NT	27900 J	27900 J	NT	NT	NT	NT
THALLIUM	NT	NT	NT	NT	NT	NT	2.3 ND	2.3 ND	NT	NT	NT	NT
TIN	NT	NT	NT	NT	NT	NT	4.85 ND	14 J	NT	NT	NT	NT
VANADIUM	NT	NT	NT	NT	NT	NT	10	13 J	NT	NT	NT	NT
ZINC	NT	NT	NT	NT	NT	NT	# R	# R	NT	NT	NT	NT
N-NITROSODIPHENYLAMINE	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT

CENTRAL AREA
GROUNDWATER (ug/liter)

SAMPLE LOCATION	S85M	S86S	S86M	S68S-01	S89S-01	S89S-02	S89M-01	S89D-01	S85-01	S87	S86S
	JUNE 1985	JUNE 1985	JUNE 1985								
SAMPLE NUMBER	13219	13224	13225	EBASCO	EBASCO	EBASCO	EBASCO	EBASCO	EBASCO	EBASCO	EBASCO
TRAFFIC REPORT NUMBER	AB930	AB935	AB936	DATA 1987	DATA 1987	DATA 1987	DATA 1987	DATA 1987	DATA 1987	DATA 1987	DATA 1987
DILUTION FACTORS ----->	1.12	1	1								
VOLATILES											
ACETONE	# R	# R	5 ND	5 ND	5 ND	5 ND	5 ND	5 ND	5 ND	5 ND	# R
1,1-DICHLOROETHENE	2.7	2.5 ND	2.5 ND	2.5 ND	2.5 ND	2.5 ND	2.5 ND	2.5 ND	2.5 ND	2.5 ND	2.5 ND
1,1-DICHLOROETHANE	NDR	NDR	NDR	NDR	NDR	NDR	NDR	2	NDR	NDR	NDR
TRANS-1,2-DICHLOROETHENE	23	2.5 ND	2.5 ND	28	4	4	3	3	12	2.5 ND	2.5 ND
CHLOROFORM	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR	NDR
1,1,1-TRICHLOROETHANE	35.3	3	2.5 ND	5	2.5 ND	2.5 ND	2.5 ND	4	24	2.5 ND	2.5 ND
TRICHLOROETHENE	47.5	4	3	47	6	6	21	21	23	2.5 ND	2.5 ND
TETRACHLOROETHENE	180	12	8	47	NDR	NDR	3	24	110	NDR	10
TOLUENE	NDR	NDR	NDR	# R	NDR	NDR	4	3	NDR	NDR	NDR
CHLOROBENZENE	2.8 ND	2.5 ND	2.5 ND	2.5 ND	2.5 ND	2.5 ND	2	2.5 ND	2.5 ND	2.5 ND	2.5 ND
TOTAL-XYLENE	2.8 ND	2.5 ND	2.5 ND	2.5 ND	2.5 ND	2.5 ND	2.5 ND	2.5 ND	2.5 ND	2.5 ND	2.5 ND
SEMIVOLATILES											
PHENOL	NT	NT	NT	5 ND	5 ND	5 ND	5 ND	5 ND	5 ND	5 ND	5 ND
1,2-DICHLOROBENZENE	NT	NT	NT	5 ND	5 ND	5 ND	5 ND	5 ND	5 ND	5 ND	5 ND
BIS(2-ETHYLHEXYL) PHTHALATE	NT	NT	NT	5	5 ND	5 ND	5 ND	5 ND	5 ND	5 ND	5 ND
INORGANICS											
ALUMINUM	NT	NT	NT	240	100 ND	100 ND	100 ND	100 ND	100 ND	100 ND	100 ND
ARSENIC	NT	NT	NT	20 N	5 ND	5 ND	5 ND	5 ND	5 ND	5 ND	5 ND
BARIUM	NT	NT	NT	210	100 ND	100 ND	100 ND	100 ND	100 ND	100 ND	100 ND
BERYLLIUM	NT	NT	NT	2.5 ND	2.5 ND	2.5 ND	2.5 ND	2.5 ND	2.5 ND	2.5 ND	2.5 ND
CADMIUM	NT	NT	NT	2.5 ND	2.5 ND	2.5 ND	2.5 ND	2.5 ND	2.5 ND	2.5 ND	2.5 ND
CALCIUM	NT	NT	NT	36500	2500 ND	2500 ND	2500 ND	2500 ND	2500 ND	2500 ND	2500 ND
CHROMIUM	NT	NT	NT	20	5 ND	5 ND	5 ND	5 ND	5 ND	5 ND	5 ND
COBALT	NT	NT	NT	18 [	25 ND	25 ND	25 ND	25 ND	25 ND	25 ND	25 ND
COPPER	NT	NT	NT	42	12.5 ND	12.5 ND	12.5 ND	12.5 ND	12.5 ND	12.5 ND	12.5 ND
IRON	NT	NT	NT	50 ND	50 ND	50 ND	50 ND	50 ND	50 ND	50 ND	50 ND
LEAD	NT	NT	NT	58 *	2.5 ND	2.5 ND	2.5 ND	2.5 ND	2.5 ND	2.5 ND	2.5 ND
MAGNESIUM	NT	NT	NT	16300	2500 ND	2500 ND	2500 ND	2500 ND	2500 ND	2500 ND	2500 ND
MANGANESE	NT	NT	NT	205	7.5 ND	7.5 ND	7.5 ND	7.5 ND	7.5 ND	7.5 ND	7.5 ND
NICKEL	NT	NT	NT	36 [	20 ND	20 ND	20 ND	20 ND	20 ND	20 ND	20 ND
POTASSIUM	NT	NT	NT	8770 A	2500 ND	2500 ND	2500 ND	2500 ND	2500 ND	2500 ND	2500 ND
SELENIUM	NT	NT	NT	2.5 ND	2.5 ND	2.5 ND	2.5 ND	2.5 ND	2.5 ND	2.5 ND	2.5 ND
SILVER	NT	NT	NT	5 ND	5 ND	5 ND	5 ND	5 ND	5 ND	5 ND	5 ND
SODIUM	NT	NT	NT	30500	2500 ND	2500 ND	2500 ND	2500 ND	2500 ND	2500 ND	2500 ND
THALLIUM	NT	NT	NT	5 ND	5 ND	5 ND	5 ND	5 ND	5 ND	5 ND	5 ND
TIN	NT	NT	NT	20 ND	20 ND	20 ND	20 ND	20 ND	20 ND	20 ND	20 ND
VANADIUM	NT	NT	NT	9.9 [	25 ND	25 ND	25 ND	25 ND	25 ND	25 ND	25 ND
ZINC	NT	NT	NT	104	10 ND	10 ND	10 ND	10 ND	10 ND	10 ND	10 ND
N-NITROSODIPHENYLAMINE	NT	NT	NT	5 ND	5 ND	5 ND	5 ND	5 ND	5 ND	5 ND	5 ND

CENTRAL AREA
GROUNDWATER (ug/liter)

SAMPLE LOCATION	S86D-01		S84S-01	
SAMPLE NUMBER	EBASCO		EBASCO	
TRAFFIC REPORT NUMBER	DATA 1987		DATA 1987	
DILUTION FACTORS ----->				
VOLATILES				
ACETONE	#	R	#	R
1,1-DICHLOROETHENE	2.5	ND	2.5	ND
1,1-DICHLOROETHANE		NDR		NDR
TRANS-1,2-DICHLOROETHENE	2.5	ND	4	
CHLOROFORM		NDR		NDR
1,1,1-TRICHLOROETHANE	2.5	ND	2.5	ND
TRICHLOROETHENE	3		7	
TETRACHLOROETHENE	14		4	
TOLUENE		NDR		NDR
CHLOROBENZENE	2.5	ND	2.5	ND
TOTAL-XYLENE	2.5	ND	2.5	ND
SEMIVOLATILES				
PHENOL	5	ND	5	ND
1,2-DICHLOROBENZENE	5	ND	5	ND
BIS(2-ETHYLHEXYL) PHTHALATE	5	ND	5	ND
INORGANICS				
ALUMINUM	100	ND	100	ND
ARSENIC	5	ND	5	ND
BARIUM	100	ND	100	ND
BERYLLIUM	2.5	ND	2.5	ND
CADMIUM	2.5	ND	2.5	ND
CALCIUM	2500	ND	2500	ND
CHROMIUM	5	ND	5	ND
COBALT	25	ND	25	ND
COPPER	12.5	ND	12.5	ND
IRON	50	ND	50	ND
LEAD	2.5	ND	2.5	ND
MAGNESIUM	2500	ND	2500	ND
MANGANESE	7.5	ND	7.5	ND
NICKEL	20	ND	20	ND
POTASSIUM	2500	ND	2500	ND
SELENIUM	2.5	ND	2.5	ND
SILVER	5	ND	5	ND
SODIUM	2500	ND	2500	ND
THALLIUM	5	ND	5	ND
TIN	20	ND	20	ND
VANADIUM	25	ND	25	ND
ZINC	10	ND	10	ND
N-NITROSODIPHENYLAMINE	5	ND	5	ND

CENTRAL AREA
METALS ONLY

GROUNDWATER (ug/liter)	APRIL 85	APRIL 85	APRIL 85	APRIL 85	APRIL 85	APRIL 85	APRIL 85	APRIL 85	APRIL 85	MAY 1985	MAY 1985	MAY 1985
SAMPLE LOCATION	S68S	S68M	S84S	S84M	S84D	S85S	S85M	S86S	S86M	S68S	S68M	S84S
SAMPLE NUMBER	12477	12478	12472	12471	12437	12397	12398	12410	12409	12753	12754	12741
TRAFFIC REPORT NUMBER	AB533	AB542	AB509	AB508	AB507	AB361	AB362	AB387	AB386	AB730	AB731	AB720
INORGANICS												
ALUMINUM	1000	5800	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
ARSENIC	2 ND	2 ND	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
BARIUM	30	70	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
BERYLLIUM	0.25 ND	0.6	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
CADMIUM	2.5 ND	5.9	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
CALCIUM	37000	75000	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
CHROMIUM	7.4	5.7	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
COBALT	3.5 ND	23	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
COPPER	# R	49	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
IRON	2900	7400	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
LEAD	1 ND	1 ND	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MAGNESIUM	8400	16000	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MANGANESE	100	1100	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
NICKEL	# R	# R	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
POTASSIUM	2500	4400	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
SELENIUM	1 ND	## R	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
SILVER	2 ND	2 ND	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
SODIUM	27000	27000	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
THALLIUM	2 ND	2 ND	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TIN	18 ND	18 ND	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
VANADIUM	11	27	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
ZINC	56	72	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT

CENTRAL AREA
METALS ONLY
GROUNDWATER (ug/liter)

	MAY 1985	MAY 1985	MAY 1985	MAY 1985	MAY 1985	MAY 1985	JUNE 1985	JUNE 1985	JUNE 1985	JUNE 1985	JUNE 1985	JUNE 1985
SAMPLE LOCATION	S84M	S84D	S85S	S85M	S86S	S86M	S68S	S68M	S84S	S84M	S84D	S85S
SAMPLE NUMBER	12742	12743	12738	12739	12752	12757	13188	13187	13197	13196	13182	13217
TRAFFIC REPORT NUMBER	AB721	AB722	AB711	AB712	AB729	AB734	AC453	AC452	AC435	AC432	AC443	AB929
INORGANICS												
ALUMINUM	NT	NT	NT	NT	NT	NT	# R	# R	NT	NT	NT	NT
ARSENIC	NT	NT	NT	NT	NT	NT	# R	# R	NT	NT	NT	NT
BARIUM	NT	NT	NT	NT	NT	NT	# R	# R	NT	NT	NT	NT
BERYLLIUM	NT	NT	NT	NT	NT	NT	0.3 ND	0.3 ND	NT	NT	NT	NT
CADMIUM	NT	NT	NT	NT	NT	NT	0.95 ND	0.95 ND	NT	NT	NT	NT
CALCIUM	NT	NT	NT	NT	NT	NT	33600 J	53300 J	NT	NT	NT	NT
CHROMIUM	NT	NT	NT	NT	NT	NT	1.45 ND	1.45 ND	NT	NT	NT	NT
COBALT	NT	NT	NT	NT	NT	NT	1.65 ND	1.65 ND	NT	NT	NT	NT
COPPER	NT	NT	NT	NT	NT	NT	11.25 ND	11.25 ND	NT	NT	NT	NT
IRON	NT	NT	NT	NT	NT	NT	# R	# R	NT	NT	NT	NT
LEAD	NT	NT	NT	NT	NT	NT	# R	# R	NT	NT	NT	NT
MAGNESIUM	NT	NT	NT	NT	NT	NT	8960 J	13200 J	NT	NT	NT	NT
MANGANESE	NT	NT	NT	NT	NT	NT	17 J	352 J	NT	NT	NT	NT
NICKEL	NT	NT	NT	NT	NT	NT	2.5 ND	2.5 ND	NT	NT	NT	NT
POTASSIUM	NT	NT	NT	NT	NT	NT	2000 J	4300 J	NT	NT	NT	NT
SELENIUM	NT	NT	NT	NT	NT	NT	2.4 ND	2.4 ND	NT	NT	NT	NT
SILVER	NT	NT	NT	NT	NT	NT	4.9 J	4.2 J	NT	NT	NT	NT
SODIUM	NT	NT	NT	NT	NT	NT	27900 J	27900 J	NT	NT	NT	NT
THALLIUM	NT	NT	NT	NT	NT	NT	2.3 ND	2.3 ND	NT	NT	NT	NT
TIN	NT	NT	NT	NT	NT	NT	4.85 ND	14 J	NT	NT	NT	NT
VANADIUM	NT	NT	NT	NT	NT	NT	10	13 J	NT	NT	NT	NT
ZINC	NT	NT	NT	NT	NT	NT	# R	# R	NT	NT	NT	NT

CENTRAL AREA
METALS ONLY

GROUNDWATER (ug/liter)	JUNE 1985	JUNE 1985	JUNE 1985
SAMPLE LOCATION	S85M	S86S	S86M
SAMPLE NUMBER	13219	13224	13225
TRAFFIC REPORT NUMBER	AB930	AB935	AB936
INORGANICS			
ALUMINUM	NT	NT	NT
ARSENIC	NT	NT	NT
BARIUM	NT	NT	NT
BERYLLIUM	NT	NT	NT
CADMIUM	NT	NT	NT
CALCIUM	NT	NT	NT
CHROMIUM	NT	NT	NT
COBALT	NT	NT	NT
COPPER	NT	NT	NT
IRON	NT	NT	NT
LEAD	NT	NT	NT
MAGNESIUM	NT	NT	NT
MANGANESE	NT	NT	NT
NICKEL	NT	NT	NT
POTASSIUM	NT	NT	NT
SELENIUM	NT	NT	NT
SILVER	NT	NT	NT
SODIUM	NT	NT	NT
THALLIUM	NT	NT	NT
TIN	NT	NT	NT
VANADIUM	NT	NT	NT
ZINC	NT	NT	NT

- From NUS Corp. Report, "Wells G and H Site Remedial Investigation Report, Part 1, Woburn, Massachusetts", 1986

TABLE 2
NUS/FIT ANALYTICAL SCREENING RESULTS
RECENTLY INSTALLED WELLS

Sample Location		S63S	S63D	S64S	S64M	S64D	S65S	S65M	S65D	S66D	S67S	S67M	S67D	S68S	S68M
Tenatively Identified Compounds	Detection Limits														
Trichloroethene	1 ppb	***	****	***	***	****	*	**	**	**	**	**	**	***	***
Benzene	1ppb	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Toluene	3 ppb	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tetrachloroethene	3ppb	***	***	**	**	**	*	**	**	*	-	-	-	***	***
Chlorobenzene	5 ppb	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	5 ppb	-	-	-	-	-	-	-	-	-	-	-	-	-	-
m-Xylene	5 ppb	-	-	-	-	-	-	-	-	-	-	-	-	-	-
o-Xylene	10 ppb	-	-	-	-	-	-	-	-	-	-	-	-	-	-

\- - Not Detected
* - <10 ppb
** - 10-70 ppb
*** - 70-200 ppb
**** - 200-350 ppb
***** - 350-1000 ppb
****** - 1000-5000 ppb

All samples were screened in-house by NUS chemists utilizing a Photovac 10A10 GC for volatile organic headspace analysis. It should be stressed that the results garnered from this screening technique are qualitative and indicate the presence of contaminant compounds. They should not be used as quantitative results. Therefore, all concentrations are given in ranges. In addition, compound identification is tentative in that compounds were identified by comparison of retention time of sample compounds to the retention times of various standards.

TABLE 2
NUS/FIT ANALYTICAL SCREENING RESULTS
RECENTLY INSTALLED WELLS
PAGE FOUR

Sample Location		S79M	S79D	S80S	S80M	S81S	S81M	S81D	S82	S83	S84S	S84M	S84D	S85S	S85M	S86S	S86M
Tenatively Identified Compounds	Detection Limits																
Trichloroethene	1 ppb	-	-	-	-	**	*	*	**	******	**	**	*	***	***	*	**
Benzene	3 ppb	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Toluene	3 ppb	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tetrachloroethene	5 ppb	-	-	-	-	*****	***	**	**	****	**	*	*	***	*****	**	*
Chlorobenzene	5 ppb	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	5 ppb	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
m-Xylene	5 ppb	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
o-Xylene	10 ppb	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

\- - Not Detected
* - <10 ppb
** - 10-70 ppb
*** - 70-200 ppb
**** - 200-350 ppb
***** - 350-1000 ppb
****** - 1000-5000 ppb

All samples were screened in-house by NUS chemists utilizing a Photovac 10A10 GC for volatile organic headspace analysis. It should be stressed that the results garnered from this screening technique are qualitative and indicate the presence of contaminant compounds. They should not be used as quantitative results. Therefore, all concentrations are given in ranges. In addition, compound identification is tentative in that compounds were identified by comparison of retention time of sample compounds to the retention times of various standards.

TABLE 3
CLP VOLATILE ORGANIC ANALYTICAL RESULTS
NUS/FIT APRIL 1985 SAMPLING ROUND (ppb) PAGE TWO

SAMPLE LOCATION		S65M	S65D	S66D	S67S	S67M	S67D	S68S	S68M	S69D	S70S	S70M	S71M	S71D	S72S	S72M	S72D	S73S	S73D
SAMPLE NUMBER		12364	12365	12407	12384	12385	12386	12477	12478	12364	12370	12371	12432	12433	12394	12396	12395	12474	12473
TRAFFIC REPORT NUMBER		AB328	AB327	AB370	AB345	AB346	AB347	AB533	AB542	AB326	AB332	AB333	AB505	AB534	AB359	AB384	AB360	AB511	AB510
VOLATILE COMPOUNDS	CRQL																		
CHLOROMETHANE	10																		
BROMOMETHANE	10																		
VINYL CHLORIDE	10																		
CHLOROETHANE	10																		
METHYLENE CHLORIDE	5			∅				∅						∅		∅	∅		
ACETONE	10		∅							∅		∅	∅			∅			
CARBON DISULFIDE	5																		
1,1-DICHLOROETHENE	5				2 J	3 J													3 J
1,1-DICHLOROETHANE	5														6				18
trans-1,2-DICHLOROETHENE	5	20 J	31 J	5					∅				64	5000 J		∅		12	31
CHLOROFORM	5							∅								∅			
1,2-DICHLOROETHANE	5																		
2-BUTANONE	10	∅	∅		∅	∅	∅			∅	∅	∅							
1,1,1-TRICHLOROETHANE	5				15 J	23 J		1700 J	15 J				91			∅			
CARBON TETRACHLORIDE	5																		
VINYL ACETATE	10																		
BROMODICHLOROMETHANE	5																		
1,1,2,2-TETRACHLOROETHANE	5															10			
1,2-DICHLOROPROPANE	5																		
trans-1,3-DICHLOROPROPENE	5																		
TRICHLOROETHENE	5	34 J	44 J	10	17 J	56 J	33 J		∅					16000 J	4 J	74 J	9	7	37
DIBROMOCHLOROMETHANE	5																		
1,1,2-TRICHLOROETHANE	5																		
BENZENE	5													1700 J		∅			
cis-1,3-DICHLOROPROPENE	5																		
2-CHLOROETHYL VINYL ETHER	10																		
BROMOFORM	5													3000 J					
2-HEXANONE	10																		
4-METHYL-2-PENTANONE	10																		
TETRACHLOROETHENE	5	9 J	16 J	3 J		1 J			∅			4 J	1500	7300 J	6				
TOLUENE	5											1 J							
CHLOROBENZENE	5																		
ETHYLBENZENE	5													7400 J					
STYRENE	5																		
TOTAL-XYLENE	5													2900 J					
DILUTION FACTOR		1	1	1	1	1	1	500	1	1	1	1	10	500	1	1	1	1	1

NOTES: "BLANK SPACE" - Indicates the compound was not detected.
J - Quantitation is approximate due to quality control review (data validation).
∅ - Value is rejected due to blank contamination identified in quality control review. The detection limit for blank
CRQL - Contract required detection limit (multiply by dilution factor to obtain sample detection limit).

TABLE 3
CLP VOLATILE ORGANIC ANALYTICAL RESULTS
NUS/FIT APRIL 1985 SAMPLING ROUND (ppb) PAGE FOUR

SAMPLE LOCATION		S01M	S01D	S02	S03	S03	S04S	S04M	S04D	S05S	S05M	S06S	S06M	TW 2C	TW 4C	IUS-2A	IUS-2B	IUS-2C	GO-1S
SAMPLE NUMBER		12369	12368	12379	12479	12480	12472	12471	12437	12397	12398	12410	12409	12502	12491	12375	12373	12372	12456
TRAFFIC REPORT NUMBER		AB331	AB330	AB340	AB538	AB539	AB509	AB508	AB507	AB361	AB362	AB387	AB386	AB502	AB501	AB336	AB335	AB334	AB528
VOLATILE COMPOUNDS	CRDL																		
CHLOROMETHANE	10																		
BROMOMETHANE	10																		
VINYL CHLORIDE	10																		
CHLOROETHANE	10																		
METHYLENE CHLORIDE	5				0	0				0	0	0	0						0
ACETONE	10								0	0		0	0					0	
CARBON DISULFIDE	5																		
1,1-DICHLOROETHENE	5																		
1,1-DICHLOROETHANE	5																		
trans-1,2-DICHLOROETHENE	5		3 J	30 J			10	7	8	68	22			44	38				
CHLOROFORM	5				0	0						0	0						0
1,2-DICHLOROETHANE	5																		
2-BUTANONE	10		0	0					0							0	0	0	
1,1,1-TRICHLOROETHANE	5		21 J							8	34	17 J		6	6				
CARBON TETRACHLORIDE	5																		
VINYL ACETATE	10																		
BROMODICHLOROMETHANE	5																		
1,1,2,2-TETRACHLOROETHANE	5																		
1,2-DICHLOROPROPANE	5																		
trans-1,3-DICHLOROPROPENE	5																		
TRICHLOROETHENE	5	2 J	6 J	48 J		1400 J	24	17	23	110	48	18 J	17 J	90	93				0
DIBROMOCHLOROMETHANE	5																		
1,1,2-TRICHLOROETHANE	5																		
BENZENE	5											0	0						
cis-1,3-DICHLOROPROPENE	5																		
2-CHLOROETHYL VINYL ETHER	10																		
BROMOFORM	5																		
2-HEXANONE	10																		
4-METHYL-2-PENTANONE	10																		
TETRACHLOROETHENE	5	34 J	200 J	24 J			20	11	10	56	150	56 J	48 J	56	39		2 J		0
TOLUENE	5														6				
CHLOROBENZENE	5																		
ETHYLBENZENE	5																		
STYRENE	5																		
TOTAL-XYLENE	5														6				
DILUTION FACTOR		1	1	1	100	100	1	1	1	1	1	1	1	1	1	1	1	1	1

NOTES:
- "BLANK SPACE" - Indicates the compound was not detected.
- J - Quantitation is approximate due to quality control review (data validation).
- 0 - Value is rejected due to blank contamination identified in quality control review. The detection limit for blank
- CRDL - Contract required detection limit (multiply by dilution factor to obtain sample detection limit).

TABLE 4
CLP VOLATILE ORGANIC ANALYTICAL RESULTS
NUS/FIT MAY 1985 SAMPLING ROUND (ppb) PAGE TWO

SAMPLE LOCATION		S67M	S67D	S68G	S68M	S68M	S70S	S70M	S71M	S71D	S72G	S72M	S72M	S72B	S73S	S73B	S74M	S74B	S75S
SAMPLE NUMBER		12778	12780	12753	12754	12755	12758	12759	12760	12761	12773	12772	12777	12776	12769	12768	12770	12771	12782
TRAFFIC REPORT NUMBER		AB809	AB807	AB730	AB731	AB732	AB829	AB828	AB827	AB826	AB814	AB815	AB810	AB811	AB818	AB819	AB817	AB816	AB804
VOLATILE COMPOUNDS	CRDL																		
CHLOROMETHANE	10																		
BROMOMETHANE	10																		
VINYL CHLORIDE	10																		
CHLOROETHANE	10																		
METHYLENE CHLORIDE	5	*	*				*	*	*	*	*	*	*	*	*	*	*		*
ACETONE	10	*	*				*	*	*	*	*	*	*	*		*	*		*
CARBON DISULFIDE	5																		
1,1-DICHLOROETHENE	5	4 J													2 J	5 J			
1,1-DICHLOROETHANE	5										6				5 J	17			
trans-1,2-DICHLOROETHENE	5			29	37	36			110		1 J				20	36			
CHLOROFORM	5						*	*											
1,2-DICHLOROETHANE	5																		
2-BUTANONE	10	*	*						42	110	*	*	*	*	*	*	*	*	49
1,1,1-TRICHLOROETHANE	5	18		6	13	12			130	110									
CARBON TETRACHLORIDE	5																		
VINYL ACETATE	10																		
BROMODICHLOROMETHANE	5																		
1,1,2,2-TETRACHLOROETHANE	5																		
1,2-DICHLOROPROPANE	5																		
trans-1,3-DICHLOROPROPENE	5																		
TRICHLOROETHENE	5	56	37	54	88	86			19 J		5	16	12	11	9	52			
DIBROMOCHLOROETHANE	5																		
1,1,2-TRICHLOROETHANE	5																		
BENZENE	5											3 J							1800
cis-1,3-DICHLOROPROPENE	5																		
2-CHLOROETHYL VINYL ETHER	10																		
BROMOFORM	5																		
2-HEXANONE	10																		
4-METHYL-2-PENTANONE	10																		
TETRACHLOROETHENE	5			47	88	83		*	1900	2500	*	*	*	*	*	*	*		
TOLUENE	5																		280
CHLOROBENZENE	5																		
ETHYLBENZENE	5																		180
STYRENE	5																		190
TOTAL-XYLENE	5																		590
DILUTION FACTOR		1	1	1	1	1	1	1	10	20	1	1	1	1	1	1	1	1	10

NOTES: "BLANK SPACE" - Indicates the compound was not detected.
J - Quantitation is approximate due to quality control review (data validation).
* - Value is rejected due to blank contamination identified in quality control review. The detection limit for blank contaminants is determined by the amount detected in blank, detailed in Appendix B.
CRDL - Contract required detection limit (multiply by dilution factor to obtain sample detection limit).

TABLE 4
CLP VOLATILE ORGANIC ANALYTICAL RESULTS
NUS/FIT MAY 1985 SAMPLING ROUND (ppb) PAGE FOUR

SAMPLE LOCATION		SB1S	SB1M	SB1D	SB2	SB2	SB3	SB4S	SB4M	SB4D	SB5S	GB5M	SB6S	SB6M	TW 2A	TW 2C	TW 4B	GD-1S	GD-1D
SAMPLE NUMBER		12746	12745	12744	12730	12731	12814	12741	12742	12743	12738	12739	12752	12757	12756	12740	12747	12727	12729
TRAFFIC REPORT NUMBER		AB723	AB713	AB714	AB715	AB716	AB924	AB720	AB721	AB722	AB711	AB712	AB729	AB734	AB733	AB719	AB724	AB703	AB705
VOLATILE COMPOUNDS	CRDL																		
CHLOROMETHANE	10																		
BROMOMETHANE	10																		
VINYL CHLORIDE	10																		
CHLOROETHANE	10																		
METHYLENE CHLORIDE	5	*	*				*					*							
ACETONE	10	*					*									*			
CARBON DISULFIDE	5																		
1,1-DICHLOROETHENE	5																		
1,1-DICHLOROETHANE	5																		
trans-1,2-DICHLOROETHENE	5				21	24	110	10		11	62				8	75	37		
CHLOROFORM	5		17 J									13 J							
1,2-DICHLOROETHANE	5																		
2-BUTANONE	10														*				
1,1,1-TRICHLOROETHANE	5	99														11	6		27 J
CARBON TETRACHLORIDE	5																		
VINYL ACETATE	10																		
BROMODICHLOROMETHANE	5																		
1,1,2,2-TETRACHLOROETHANE	5																		
1,2-DICHLOROPROPANE	5																		
trans-1,3-DICHLOROPROPENE	5																		
TRICHLOROETHENE	5	30			37	39	470	21	16	26	92	39 J	3 J	3 J	4 J	120	66		7 J
DIBROMOCHLOROMETHANE	5																		
1,1,2-TRICHLOROETHANE	5																		
BENZENE	5																		
cis-1,3-DICHLOROPROPENE	5																		
2-CHLOROETHYL VINYL ETHER	10																		
BROMOFORM	5																		
2-HEXANONE	10																		
4-METHYL-2-PENTANONE	10																		
TETRACHLOROETHENE	5	670	35 J	140	33	34	15	18	11	9	22 J	170	12	13	5	110	47	*	900 J
TOLUENE	5																		
CHLOROBENZENE	5																		
ETHYLBENZENE	5																		
STYRENE	5																		
TOTAL-XYLENE	5																		
DILUTION FACTOR	:	5	10	10	1	1	2.94	1	1	1	10	10	1	1	1	1	1	1	1

NOTES: "BLANK SPACE" - Indicates the compound was not detected.
J - Quantitation is approximate due to quality control review (data validation).
* - Value is rejected due to blank contamination identified in quality control review. The detection limit for blank contaminants is determined by the amount detected in blank, detailed in Appendix B.
CRDL - Contract required detection limit (multiply by dilution factor to obtain sample detection limit).

TABLE 5
CLP VOLATILE ORGANIC ANALYTICAL RESULTS
NUS/FIT JUNE 1985 SAMPLING ROUND (ppb) PAGE TWO

SAMPLE LOCATION		S67M	S67B	S68S	S68M	S70S	S70M	S71M	S71B	S72S	S72M	S72O	S73S	S73B	S75S	S75S	S75M	S75O	S76S
SAMPLE NUMBER		13237	13235	13180	13187	13291	13290	13292	13289	13298	13299	13185	13229	13230	13227	13206	13228	13231	13193
TRAFFIC REPORT NUMBER		AB940	AB946	AC453	AC452	AC439	AC438	AC436	AC445	AC431	AC427	AC424	AB940	AB941	AB938	AC460	AB939	AB942	AC426
VOLATILE COMPOUNDS	CRDL																		
CHLOROMETHANE	10																		
BROMOMETHANE	10																		
VINYL CHLORIDE	10																		
CHLOROETHANE	10																		
METHYLENE CHLORIDE	5	*	*	*	*	*	*	*	*	*	*	*	*	*				*	*
ACETONE	10	*	*			**	**	*		**			*					*	
CARBON DISULFIDE	5																		
1,1-DICHLOROETHENE	5	*								*			3	3					
1,1-DICHLOROETHANE	5										*	*	7	13 J					
trans-1,2-DICHLOROETHENE	5			55	80 J			115 J	100	*	*		23	27					
CHLOROFORM	5			*															
1,2-DICHLOROETHANE	5																		
2-BUTANONE	10			*		**													
1,1,1-TRICHLOROETHANE	5	19		*	29 J			*	180										
CARBON TETRACHLORIDE	5																		
VINYL ACETATE	10																		
BROMODICHLOROMETHANE	5																		
1,1,2,2-TETRACHLOROETHANE	5																		
1,2-DICHLOROPROPANE	5																		
trans-1,3-DICHLOROPROPENE	5																		
TRICHLOROETHENE	5	54	34	50 J	73 J				13	*	*	*	12	38					*
DIBROMOCHLOROETHANE	5																		
1,1,2-TRICHLOROETHANE	5																		
BENZENE	5										5 J				2800	5700 J	67	160	
cis-1,3-DICHLOROPROPENE	5																		
2-CHLOROETHYL VINYL ETHER	10																		
BROMOFORM	5																		
2-HEXANONE	10																		
4-METHYL-2-PENTANONE	10																		
TETRACHLOROETHENE	5			50	85 J			*	2450	*	*	*							
TOLUENE	5					*	*					5			440	680 J	5	11	*
CHLOROBENZENE	5																		
ETHYLBENZENE	5														270	380 J	24	32	
STYRENE	5														330	140 J			
TOTAL-XYLENE	5					5 J									850	680 J	51 J	74	
DILUTION FACTOR		1	1	5	1	1	1	25	10	1	1	1	1	1	20	20	1	1	1

"BLANK SPACE" - Indicates the compound was not detected.
J - Quantitation is approximate due to quality control review (data validation).
* - Value is rejected due to blank contamination identified in quality control review. The detection limit for blank contaminants is determined by the amount detected in blank, detailed in Appendix B.
** - Value is rejected due to other contractual requirements identified in quality control review.
CRDL - Contract required detection limit (multiply by dilution factor to obtain sample detection limit).

TABLE 5
CLP VOLATILE ORGANIC ANALYTICAL RESULTS
NUS/FIT JUNE 1985 SAMPLING ROUND (ppb) PAGE THREE

SAMPLE LOCATION		S76M	S76D	S77SS	S77S	S77M	S77D	S78S	S78D	S81S	S81R	S81M	S81D	S82	S83	S83	S84S	S84M	S84D
SAMPLE NUMBER		13191	13192	13205	13204	13255	13288	13203	13202	13194	13297	13287	13190	13245	13222	13223	13197	13196	13182
TRAFFIC REPORT NUMBER		AC442	AC433	AC459	AC458	AC229	AC429	AC457	AC437	AC449	AC447	AC448	AC461	AD956	AD933	AD934	AC435	AC432	AC443
VOLATILE COMPOUNDS	CRDL																		
CHLOROMETHANE	10																		
BROMOMETHANE	10																		
VINYL CHLORIDE	10																		
CHLOROETHANE	10																		
METHYLENE CHLORIDE	5	*	*	*			*		*		*	*		*	*	*	*	*	*
ACETONE	10	**	**			6100 J	*		*					*	*	*	**	**	**
CARBON DISULFIDE	5																		
1,1-DICHLOROETHENE	5																		
1,1-DICHLOROETHANE	5		*																
trans-1,2-DICHLOROETHENE	5					48 J	*						1 J	38	93	100	*	*	*
CHLOROFORM	5	*		*	*	*				*	*	*						*	
1,2-DICHLOROETHANE	5																		
2-BUTANONE	10	**																	
1,1,1-TRICHLOROETHANE	5	*	*	*	*	*				340	*	*	16 J	3			*	*	*
CARBON TETRACHLORIDE	5																		
VINYL ACETATE	10																		
BROMODICHLOROMETHANE	5																		
1,1,2,2-TETRACHLOROETHANE	5																		
1,2-DICHLOROPROPANE	5																		
trans-1,3-DICHLOROPROPENE	5																		
TRICHLOROETHENE	5			390	160 J	120	300 J	80000 J		*			3 J	68	490	670	*	*	*
DIBROMOCHLOROMETHANE	5																		
1,1,2-TRICHLOROETHANE	5																		
BENZENE	5																		
cis-1,3-DICHLOROPROPENE	5																		
2-CHLOROETHYL VINYL ETHER	10																		
BROMOFORM	5																		
2-HEPTANONE	10																		
4-METHYL-2-PENTANONE	10																		
TETRACHLOROETHENE	5			180	20 J	50	*	22000 J		580	75	71	98 J	86 J	12	14	*	*	*
TOLUENE	5																*		
CHLOROBENZENE	5																		
ETHYLBENZENE	5																		
STYRENE	5																		
TOTAL-XYLENE	5							1824 J			25						5 J		
DILUTION FACTOR		1	1	5	10	10	1	1000	1	10	5	5	1	1	3.33	3.33	1	1	1

"BLANK SPACE" - Indicates the compound was not detected.
J - Quantitation is approximate due to quality control review (data validation).
* - Value is rejected due to blank contamination identified in quality control review. The detection limit for blank contaminants is determined by the amount detected in blank, detailed in Appendix B.
** - Value is rejected due to other contractual requirements identified in quality control review.
CRDL - Contract required detection limit (multiply by dilution factor to obtain sample detection limit).

TABLE 5
CLP VOLATILE ORGANIC ANALYTICAL RESULTS
NUS/FIT JUNE 1985 SAMPLING ROUND (ppb) PAGE FOUR

SAMPLE LOCATION		SB5S	SB5S	SB5M	SB5M	SB6S	SB6M	TW 2C	TW 4B	GD-1S	GD-1DB	GW-3S	GW-3S	GW-3D	GW-3D	GW-3DB	GW-3DB	GW-4S	GW-4D
SAMPLE NUMBER		13217	13220	13219	13221	13224	13225	13241	13240	13271	13272	13265	13266	13267	13268	1269	13270	13259	13260
TRAFFIC REPORT NUMBER		AB929	AB931	AB930	AB932	AB935	AB936	AB952	AB951	AC247	AC248	AC241	AC242	AC243	AC244	AC245	AC246	AC235	AC236
VOLATILE COMPOUNDS	CRDL																		
CHLOROMETHANE	10									90									
BROMOMETHANE	10																		
VINYL CHLORIDE	10											140 J	180 J	350 J	290 J	140 J	125 J		
CHLOROETHANE	10																		
METHYLENE CHLORIDE	5	*	*	*	*	*		*	*		*	*	*		*		*		*
ACETONE	10	*	*		*	*		*	*										
CARBON DISULFIDE	5																		
1,1-DICHLOROETHENE	5			3															
1,1-DICHLOROETHANE	5																		
trans-1,2-DICHLOROETHENE	5	76	77	23	23			74	37		*	2500	3000	4400	4200	1700	1900	*	1900 J
CHLOROFORM	5									*	*	*	*	*	*	*	*	*	*
1,2-DICHLOROETHANE	5																		
2-BUTANONE	10																		*
1,1,1-TRICHLOROETHANE	5	13	13	32	39	3		21	9		260								*
CARBON TETRACHLORIDE	5																		
VINYL ACETATE	10																		
BROMODICHLOROMETHANE	5																		
1,1,2,2-TETRACHLOROETHANE	5																		
1,2-DICHLOROPROPANE	5																		
trans-1,3-DICHLOROPROPENE	5																		
TRICHLOROETHENE	5	140	140	46	49	4	3	140	76		20	610	1200	2700	2600	2300	2200	10 J	390 J
DIBROMOCHLOROMETHANE	5																		
1,1,2-TRICHLOROETHANE	5																		
BENZENE	5																		
cis-1,3-DICHLOROPROPENE	5																		
2 CHLOROETHYL VINYL ETHER	10																		
BROMOFORM	5																		
2-HEXANONE	10																		
4-METHYL-2-PENTANONE	10																		
TETRACHLOROETHENE	5	82	85	170	190	12	8	120 J	51 J		3000	15	30	75	50	50	45		
TOLUENE	5																		
CHLOROBENZENE	5																		
ETHYLBENZENE	5																		
STYRENE	5																		
TOTAL-XYLENE	5																		
DILUTION FACTOR		1	1	1.25	1	1	1	1	1	5	5	5	5	5	5	10	5	1	5

"BLANK SPACE" - Indicates the compound was not detected.
J - Quantitation is approximate due to quality control review (data validation).
* - Value is rejected due to blank contamination identified in quality control review. The detection limit for blank contaminants is determined by the amount detected in blank, detailed in Appendix B.
CRDL - Contract required detection limit (multiply by dilution factor to obtain sample detection limit).

TABLE 6 MEAN CONCENTRATIONS OF SELECTED VOLATILE ORGANIC COMPOUNDS FROM THE NUS/FIT FINAL SAMPLING ROUNDS (APRIL, MAY, JUNE 1985)(PPB)

SAMPLING LOCATIONS	S65M			S65D				S66				S67S			
COMPOUNDS	DUP	RD III	MEAN	RD I	RD II	RD III	MEAN	RD I	RD II	RD III	MEAN	RD I	RD II	RD III	MEAN
TRICHLOROETHENE	26	33	31	44	33	37	38	10	12	16	13	17	20	49	29
TETRACHLOROETHENE	7	10	9	16	10	11	12	3	0	5	3	0	0	0	0
trans-1,2-DICHLOROETHENE	16	18	18	31	21	24	25	5	7	9	7	0	0	0	0
1,1,1-TRICHLOROETHANE	0	0	0	0	0	0	0	0	0	0	0	15	18	17	17
1,1-DICHLOROETHANE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1,1,2,2-TETRACHLOROETHANE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1,2-DICHLOROETHANE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1,1-DICHLOROETHENE	0	0	0	0	0	0	0	0	0	0	0	2	4	3	3
BENZENE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ETHYLBENZENE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOLUENE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VINYL CHLORIDE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
STYRENE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL-XYLENE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL (SELECTED) VOLATILES			58				75				23				49

SAMPLING LOCATIONS	S67M				S67D				S68S				S68M	
COMPOUNDS	RD I	RD II	RD III	MEAN	RD I	RD II	RD III	MEAN	RD I	RD II	RD III	MEAN	RD I	RD II
TRICHLOROETHENE	56	56	54	55	33	37	34	35	**	54	50	52	*	88
TETRACHLOROETHENE	1	0	0	0	0	0	0	0	**	47	50	49	*	83
trans-1,2-DICHLOROETHENE	0	0	0	0	0	0	0	0	0	29	55	28	*	37
1,1,1-TRICHLOROETHANE	23	18	19	20	0	0	0	0	**	**	*	0	15	13
1,1-DICHLOROETHANE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1,1,2,2-TETRACHLOROETHANE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1,2-DICHLOROETHANE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1,1-DICHLOROETHENE	3	4	4	4	0	0	0	0	0	0	0	0	0	0
BENZENE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ETHYLBENZENE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOLUENE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VINYL CHLORIDE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
STYRENE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL-XYLENE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL (SELECTED) VOLATILES				79				35				129		

NOTES: *-Value rejected due to quality control review (data validation).
**-Value rejected due to statistical test for outliers.
RD I-April 1985 Sampling Round
RD II-May 1985 Sampling Round
RD III-June 1985 Sampling Round

TABLE 6 MEAN CONCENTRATIONS OF SELECTED VOLATILE ORGANIC COMPOUNDS FROM THE NUS/FIT FINAL SAMPLING ROUNDS (APRIL, MAY, JUNE 1985) (PPB)

SAMPLING LOCATIONS	S68R			S70S				S70M				S71N			
COMPOUNDS	DUP	RD III	MEAN	RD I	RD II	RD III	MEAN	RD I	RD II	RD III	MEAN	RD I	RD II	RD III	MEAN
TRICHLOROETHENE	86	73	82	0	0	0	0	0	0	0	0	0	**	0	0
TETRACHLOROETHENE	88	85	85	0	0	0	0	**	0	0	0	1500	1900	*	1700
trans-1,2-DICHLOROETHENE	36	**	37	0	0	0	0	0	0	0	0	64	110	115	96
1,1,1-TRICHLOROETHANE	12	29	17	0	0	0	0	0	0	0	0	91	130	*	111
1,1-DICHLOROETHANE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1,1,2,2-TETRACHLOROETHANE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1,2-DICHLOROETHANE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1,1-DICHLOROETHENE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BENZENE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ETHYLBENZENE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOLUENE	0	0	0	0	0	0	0	**	0	0	0	**	0	0	0
VINYL CHLORIDE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
STYRENE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL-XYLENE	0	0	0	0	0	**	0	0	0	0	0	0	0	0	0
TOTAL (SELECTED) VOLATILES			221				0				0				1907

SAMPLING LOCATIONS	S71R				S72S				S72M				S72D	
COMPOUNDS	RD I	RD II	RD III	MEAN	RD I	RD II	RD III	MEAN	RD I	RD II	RD III	MEAN	RD I	RD II
TRICHLOROETHENE	**	0	13	7	6	5	*	5	74	16	*	45	9	12
TETRACHLOROETHENE	**	2500	2450	2475	6	0	*	3	12	0	*	6	0	0
trans-1,2-DICHLOROETHENE	**	0	100	50	0	1	*	1	*	0	*	0	0	0
1,1,1-TRICHLOROETHANE	**	110	180	145	0	0	0	0	*	0	0	0	0	0
1,1-DICHLOROETHANE	**	0	0	0	6	6	0	4	0	0	**	0	0	0
1,1,2,2-TETRACHLOROETHANE	**	0	0	0	0	0	0	0	**	0	0	0	0	0
1,2-DICHLOROETHANE	**	0	0	0	0	0	0	0	0	0	0	0	0	0
1,1-DICHLOROETHENE	**	0	0	0	0	0	*	0	0	0	0	0	0	0
BENZENE	**	0	0	0	0	0	0	0	0	3	5	3	0	0
ETHYLBENZENE	**	0	0	0	0	0	0	0	0	0	0	0	0	0
TOLUENE	**	0	0	0	0	0	0	0	0	0	0	0	0	0
VINYL CHLORIDE	**	0	0	0	0	0	0	0	0	0	0	0	0	0
STYRENE	**	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL-XYLENE	**	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL (SELECTED) VOLATILES				2677				13				54		

NOTES:
- *-Value rejected due to quality control review (data validation).
- **-Value rejected due to statistical test for outliers.
- RD I-April 1985 Sampling Round
- RD II-May 1985 Sampling Round
- RD III-June 1985 Sampling Round

TABLE 6 MEAN CONCENTRATIONS OF SELECTED VOLATILE ORGANIC COMPOUNDS FROM THE NUS/FIT FINAL SAMPLING ROUNDS (APRIL, MAY, JUNE 1985) (PPB)

SAMPLING LOCATIONS	SB10		SB2					SB3						SB4S	
COMPOUNDS	RD III	MEAN	RD I	RD II	DUP	RD III	MEAN	RD I	DUP	RD II	RD III	DUP	MEAN	RD I	RD II
TRICHLOROETHENE	3	3	48	37	39	**	41	**	**	470	440	470	460	24	21
TETRACHLOROETHENE	98	146	24	33	34	**	30	**	**	15	12	14	14	20	18
trans-1,2-DICHLOROETHENE	1	1	30	21	24	38	28	**	**	110	93	100	101	10	10
1,1,1-TRICHLOROETHANE	16	12	0	0	0	**	0	**	**	0	0	0	0	0	0
1,1-DICHLOROETHANE	0	0	0	0	0	0	0	**	**	0	0	0	0	0	0
1,1,2,2-TETRACHLOROETHANE	0	0	0	0	0	0	0	**	**	0	0	0	0	0	0
1,2-DICHLOROETHANE	0	0	0	0	0	0	0	**	**	0	0	0	0	0	0
1,1-DICHLOROETHENE	0	0	0	0	0	0	0	**	**	0	0	0	0	0	0
BENZENE	0	0	0	0	0	0	0	**	**	0	0	0	0	0	0
ETHYLBENZENE	0	0	0	0	0	0	0	**	**	0	0	0	0	0	0
TOLUENE	0	0	0	0	0	0	0	**	**	0	0	0	0	0	0
VINYL CHLORIDE	0	0	0	0	0	0	0	**	**	0	0	0	0	0	0
STYRENE	0	0	0	0	0	0	0	**	**	0	0	0	0	0	0
TOTAL-XYLENE	0	0	0	0	0	0	0	**	**	0	0	0	0	0	0
TOTAL (SELECTED) VOLATILES		162					99						575		

SAMPLING LOCATIONS	SB4S		SB4N					SB4D					SB5S				
COMPOUNDS	RD III	MEAN	RD I	RD II	RD III	MEAN		RD I	RD II	RD III	MEAN		RD I	RD II	RD III	DUP	MEAN
TRICHLOROETHENE	*	23	17	16	*	17		23	26	*	25		110	92	140	140	121
TETRACHLOROETHENE	*	19	11	11	*	11		10	9	*	10		56	22	82	85	61
trans-1,2-DICHLOROETHENE	*	10	7	0	*	4		8	11	*	10		68	62	77	76	71
1,1,1-TRICHLOROETHANE	*	0	0	0	*	0		0	0	*	0		8	0	13	13	9
1,1-DICHLOROETHANE	0	0	0	0	0	0		0	0	0	0		0	0	0	0	0
1,1,2,2-TETRACHLOROETHANE	0	0	0	0	0	0		0	0	0	0		0	0	0	0	0
1,2-DICHLOROETHANE	0	0	0	0	0	0		0	0	0	0		0	0	0	0	0
1,1-DICHLOROETHENE	0	0	0	0	0	0		0	0	0	0		0	0	0	0	0
BENZENE	0	0	0	0	0	0		0	0	0	0		0	0	0	0	0
ETHYLBENZENE	0	0	0	0	0	0		0	0	0	0		0	0	0	0	0
TOLUENE	*	0	0	0	0	0		0	0	0	0		0	0	0	0	0
VINYL CHLORIDE	0	0	0	0	0	0		0	0	0	0		0	0	0	0	0
STYRENE	0	0	0	0	0	0		0	0	0	0		0	0	0	0	0
TOTAL-XYLENE	5	2	0	0	0	0		0	0	0	0		0	0	0	0	0
TOTAL (SELECTED) VOLATILES		54				32					45						262

NOTES:
*-Value rejected due to quality control review (data validation).
**-Value rejected due to statistical test for outliers.
RD I-April 1985 Sampling Round
RD II-May 1985 Sampling Round
RD III-June 1985 Sampling Round

TABLE 6 MEAN CONCENTRATIONS OF VOLATILE ORGANIC COMPOUNDS FROM THE NUS/FIT FINAL SAMPLING ROUNDS (APRIL, MAY, JUNE 1985)(PPB)

SAMPLING LOCATIONS	SB5M				SB6S				SB6M				TW 2C		
COMPOUNDS	RD I	RD II	RD III	MEAN	RD I	RD II	RD III	MEAN	RD I	RD II	RD III	MEAN	RD I	RD II	RD III
TRICHLOROETHENE	48	39	48	45	**	3	4	4	**	3	3	3	90	120	140
TETRACHLOROETHENE	150	170	180	167	**	12	12	12	**	13	8	11	56	110	120
trans-1,2-DICHLOROETHENE	22	**	23	23	**	0	0	0	**	0	0	0	**	75	74
1,1,1-TRICHLOROETHANE	34	**	36	35	**	0	3	2	**	0	0	0	6	11	21
1,1-DICHLOROETHANE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1,1,2,2-TETRACHLOROETHANE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1,2-DICHLOROETHANE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1,1-DICHLOROETHENE	0	0	**	0	0	0	0	0	0	0	0	0	0	0	0
BENZENE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ETHYLBENZENE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOLUENE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VINYL CHLORIDE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
STYRENE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL-XYLENE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL (SELECTED) VOLATILES				270				18				14			

SAMPLING LOCATIONS	TW-2C	TW 4B			GO-1S				GO-1D			GO-1DR		
COMPOUNDS	MEAN	RD II	RD III	MEAN	RD I	RD II	RD III	MEAN	RD I	RD II	MEAN	RD I	RD II	RD III
TRICHLOROETHENE	117	66	76	71	0	0	0	0	0	7	4	*	10	20
TETRACHLOROETHENE	95	47	51	49	0	*	0	0	*	900	900	370	2000	3000
trans-1,2-DICHLOROETHENE	75	37	37	37	0	0	0	0	0	0	0	0	5	*
1,1,1-TRICHLOROETHANE	13	6	9	8	0	0	0	0	0	27	14	34	95	260
1,1-DICHLOROETHANE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1,1,2,2-TETRACHLOROETHANE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1,2-DICHLOROETHANE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1,1-DICHLOROETHENE	0	0	0	0	0	0	0	0	0	0	0	0	**	0
BENZENE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ETHYLBENZENE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOLUENE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VINYL CHLORIDE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
STYRENE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL-XYLENE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL (SELECTED) VOLATILES	300			165				0			918			

NOTES: *-Value rejected due to quality control review (data validation).
**-Value rejected due to statistical test for outliers.
RD I-April 1985 Sampling Round
RD II-May 1985 Sampling Round
RD III-June 1985 Sampling Round

TABLE 7 CLP EXTRACTABLE ORGANIC ANALYTICAL RESULTS
NUS/FIT APRIL 1985 SAMPLING ROUND (PPB)

SAMPLE LOCATIONS		S48S	S48M	S71D	S72M	S74M	S77M	S78S	S79D	S80S	S80M	S80M
SAMPLE NUMBER		12477	12478	12433	12396	12475	12400	12416	12360	12359	12357	12358
TRAFFIC REPORT NUMBER		AB533	AB542	AB534	AB384	AB536	AB385	AB389	AB322	AB321	AB319	AB320
SEMIVOLATILE COMPOUNDS	CRDL											
PHENOL	10											
1,2-DICHLOROBENZENE	10		3 K					160				
BENZOIC ACID	50											
NAPHTHALENE	10											
2-METHYLNAPHTHALENE	10											
ACENAPHTHYLENE	10											
ACENAPHTHENE	10											
PHENANTHRENE	10											
FLUORANTHENE	10											
BIS(2-ETHYLHEXYL) PHTHALATE	10		5 K						1400	100	22	9 K
CHRYSENE	10											
DI-N-OCTYL PHTHALATE	10											
DILUTION FACTOR:		1	1	1	1	1	1	1	1	1	1	1
PESTICIDE COMPOUND												
CHLORDANE	0.50											

NOTES:

- Appendix G lists all of the compounds analyzed for in the samples.
- "BLANK SPACE" - Indicates the compound was not detected.
- K - Indicates the Mass Spectra data aveals identification for the compound detected, but the quantitative result is less than the specified detection limit but greater than zero.
- CRDL - Contract required detection limit (multiply by dilution factor to obtain sample detection limit).

TABLE 7
CLP EXTRACTABLE ORGANIC ANALYTICAL RESULTS
NUS/FIT APRIL 1985 SAMPLING ROUND (ppb) PAGE TWO

SAMPLE LOCATIONS		SB3S	SB1S	SB3	SB3	SB6S	SB6M	GD-1S	GD-1B	GD-1DB	GW-3S	GW-3D
SAMPLE NUMBER		12411	12412	12479	12480	12410	12409	12456	12458	12457	12453	12454
TRAFFIC REPORT NUMBER		AB395	AB388	AB538	AB539	AB387	AB386	AB528	AB530	AB529	AB531	AB532
SEMIVOLATILE COMPOUNDS	CRDL											
PHENOL	10						2.5 K					
1,2-DICHLOROBENZENE	10											
BENZOIC ACID	50											
NAPHTHALENE	10											
2-METHYLNAPHTHALENE	10											
ACENAPHTHYLENE	10											
ACENAPHTHENE	10											
PHENANTHRENE	10											
FLUORANTHENE	10											
BIS(2-ETHYLHEXYL) PHTHALATE	10			19					18	17		17
CHRYSENE	10											
DI-N-OCTYL PHTHALATE	10											
DILUTION FACTOR:		1	1	1	1	1	1	1	1	1	1	1
PESTICIDE COMPOUND												
CHLORDANE	0.50											

NOTES:
- Appendix B lists all of the compounds analyzed for in the samples.
- "BLANK SPACE" - Indicates the compound was not detected.
- K - Indicates the Mass Spectra data meets identification for the compound detected, but the quantitative result is less than the specified detection limit but greater than zero.
- CRDL - Contract required detection limit (multiply by dilution factor to obtain sample detection limit).

TABLE 9 CLP EXTRACTABLE ORGANIC ANALYTICAL RESULTS
NUS/FIT JUNE 1985 SAMPLING ROUND (ppb) PAGE ONE

SAMPLE LOCATIONS		S64B	S68S	S68M	S71B	S75S	S77S	S77SS	S78S	S81S	S81S	S81M
SAMPLE NUMBER		13207	13188	13187	13289	13206	13204	13205	13203	13194	13195	13297
TRAFFIC REPORT NUMBER		AC462	AC453	AC452	AC445	AC460	AC458	AC459	AC457	AC449	AC450	AC447
				a		b	b		b	b	b	
SEMIVOLATILE COMPOUNDS	CRDL											
PHENOL	10											
1,2-DICHLOROBENZENE	10								70 J			
BENZOIC ACID	50											
NAPHTHALENE	10					3240 J						
2-METHYLNAPHTHALENE	10					192 J						
ACENAPHTHYLENE	10					74 J						
ACENAPHTHENE	10					11 J						
PHENANTHRENE	10					32 J						
FLUORANTHENE	10					19 J						
BIS(2-ETHYLHEXYL) PHTHALATE	10	e		e		e	e	e	e	e		e
CHRYSENE	10				3.3 J							
DI-N-OCTYL PHTHALATE	10											
DILUTION FACTOR:		1	1	1	1	1	1	1	1	1	1	1

NOTES:
- Appendix D lists all of the compounds analyzed for in the samples.
- "BLANK SPACE" - Indicates the compound was not detected.
- J - Quantitation is approximate due to quality control review (data validation).
- e - Value is rejected due to blank contamination identified in quality control review
- CRDL - Contract required detection limit (multiply by dilution factor to obtain sample detection limit).
- a - Base/neutral fraction rejected due to quality control review
- b - Acid fraction rejected due to quality control review

TABLE 10
GROUNDWATER CLP INORGANIC ANALYTICAL RESULTS
NUS/FIT APRIL 1985 SAMPLING ROUNDS
PAGE TWO

Sample Location		S68S	S68M	S71D	S74M	S83	S83(Dup.)	GW3S	GW3D
Sample No.		12477	12478	12433	12475	12479	12480	12453	12454
Traffic Report No.		MAA219	MAA220	MAA216	MAA218	MAA221	MAA222	MAA225	MAA226
Inorganic Elements	Detection Limits (ppb)								
Aluminum	23	1,000	5,800	2,800	5,900	710	740	41	-
Antimony	46	-	-	-	-	-	-	-	-
Arsenic	4	-	-	-	13	-	-	-	-
Barium	12	30	70	79	96	30	28	18	15
Beryllium	0.5	-	0.6	-	0.6	-	-	-	-
Cadmium	5	-	5.9	-	-	8	-	-	-
Calcium	290	37,000	75,000	74,000	150,000	62,000	62,000	53,000	86,000
Chromium	4	7.4	5.7	-	25	-	-	-	-
Cobalt	7	-	23	-	-	7.4	7.9	-	-
Copper	25	*	49	*	69	*	*	*	*
Iron	100	2,900	7,400	7,400	25,000	2,000	2,000	94	86
Lead	2	-	-	-	-	-	-	-	-
Magnesium	330	8,400	16,000	8,200	34,000	12,000	12,000	19,000	18,000
Mangenese	3	100	1,100	220	1,700	740	740	540	-
Mercury	0.1	-	-	-	-	-	-	-	-
Nickel	40	*	*	*	*	*	-	*	-
Potassium	470	2,500	4,400	8,800	7,200	4,900	5,100	10,000	3,100
Selenium	2	-	**	-	**	**	-	-	-
Silver	4	-	-	4.4J	-	-	-	-	-
Sodium	880	27,000	27,000	52,000	32,000	85,000	88,000	43,000	28,000
Thallium	4	-	-	-	-	-	-	-	-
Tin	36	-	-	-	-	-	-	-	-
Vanadium	4	11	27	8.2	11	-	-	-	-
Zinc	20	56	72	44	55	35	35	23	*

TABLE 11

GROUNDWATER CLP INORGANIC ANALYTICAL RESULTS
NUS/FIT MAY 1985 SAMPLING ROUND

Sample Location		S64S	S64M	S64M(Dup)	S64D	S81M	S81D	S85S	S85M
Sample No.		12734	12735	12737	12736	12745	12744	12738	12739
Traffic Report No.		MAA410	MAA411	MAA413	MAA412	MAA401	MAA402	MAA414	MAA415
Inorganic Elements	Detection Limits (ppb)								
Aluminum	1000	-	*	-	*	*	-	*	*
Antimony	60	-	-	-	-	-	-	-	-
Arsenic	10	-	-	-	-	-	-	-	-
Barium	100	-	-	-	-	-	-	-	-
Beryllium	5	19	-	-	25	-	-	16	-
Cadmium	65	*	*	*	*	*	*	*	*
Calcium	1000	46,400	50,000	50,000	89,000	56,000	24,000	39,000	64,000
Chromium	10	13	76	110	34	340	-	-	-
Cobalt	25	-	-	-	-	-	-	-	-
Copper	20	-	-	-	-	-	-	-	-
Iron	100	380	1000	-	750	2100	-	140	500
Lead	5	-	5.4	-	-	-	-	-	-
Magnesium	1000	9,100	11,000	11,000	12,000	-	3,600	6,100	15,000
Manganese	12	14	41	40	37	-	20	160	57
Mercury	0.2	-	-	-	-	-	-	-	-
Nickel	12	110	130	130	100	110	110	96	120
Potassium	2000	4,500	5,400	5,600	4,000	3,400	-	9,700	3,300
Selenium	5	-	-	-	-	-	-	-	-
Silver	10	-	-	-	-	-	-	-	-
Sodium	2000	56,000	58,000	60,000	33,000	12,000	14,000	47,000	28,000
Thallium	5	-	-	-	-	-	-	-	-
Tin	40	-	-	-	-	-	-	-	-
Vanadium	40	-	-	-	-	-	-	-	-
Zinc	15	20J	57J	32J	97J	24J	24J	27J	38J

TABLE 12
GROUNDWATER CLP INORGANIC ANALYTICAL RESULTS
NUS/FIT JUNE 1985 SAMPLING ROUND

Sample Location		S64D	S68S	S68M	S71D	S75S	S77S	S77SS	S78S
Sample No.		13207	13188	13187	13289	13206	13204	13205	13203
Traffic Report No.		MAA663	MAA655	MAA654	MAA647	MAA662	MAA660	MAA661	MAA659
Inorganic Elements	Detection Limits (ppb)								
Aluminum	590	*	*	*	7230J	*	*	*	2290J
Antimony	345	*	*	*	-	*	*	*	*
Arsenic	15.5	*	*	*	*	16J	24J	*	*
Barium	120	*	*	*	223J	*	*	*	*
Beryllium	0.6	-	-	-	-	-	-	-	-
Cadmium	1.9	2.0	-	2.9	5.4	-	-	-	6.5
Calcium	2560	83900J	33600J	53300J	78600J	42400J	38200J	36100J	30300J
Chromium	2.9	-	-	-	-	-	-	-	5.4J
Cobalt	3.3	-	-	-	6.6	-	8.5	-	3.7
Copper	22.5	*	-	-	46J	*	*	*	*
Iron	690	*	*	*	18200J	17400J	1720J	1560J	2220J
Lead	8.5	21J	*	*	18J	-	-	-	-
Magnesium	565	12400J	8960J	13200J	10800J	6360J	7260J	7550J	7560J
Manganese	15.5	31J	17J	352J	435J	8710J	3880J	833J	2810J
Mercury	0.2	-	-	-	0.35	0.23	-	0.21	0.21
Nickle	5.0	-	-	-	11	-	9.8	-	6.3
Potassium	80	4300J	2000J	4300J	4500J	8000J	4500J	4800J	2300J
Selenium	4.8	-	-	-	-	-	-	-	-
Silver	3.9	4.9J	4.2J	13J	-	12J	-	13J	7.5J
Sodium	3185	33000J	27900J	27900J	49900J	14300J	62700J	50000J	27900J
Thallium	4.6	-	-	-	-	-	9.6	-	5.8
Tin	9.7	22J	-	14J	40J	19J	-	-	-
Vanadium	3.1	5.7J	10J	13J	16J	8.0J	-	9.1J	9.9J
Zinc	475	*	*	*	*	*	*	*	*

TABLE 17
CLP INORGANIC ANALYTICAL RESULTS FOR FEDERAL AND STATE
DRINKING WATER QUALITY STANDARDS
NUS/FIT APRIL 1985 SAMPLING ROUND

Sample Location		S22	S68S	S68M	S73S	S73S(Dup)	S73D	S74M	S74D
Sample Number		12481	12477	12478	13082	12474	12473	12475	12476
Case Number 1623A									
Inorganic Elements	Detection Limits (ppb)								
Arsenic (As)	3	15	-	-	-	70	-	17	-
Barium (Ba)	1	324	68	15	89	516	105	413	42
Cadmium (Cd)	60	-	-	-	-	*	-	-	-
Calcium (Ca)	6	45,100	31,900	59,400	60,900	71,900	88,900	135,000	39,100
Chromium (Cr)	215	*	*	-	*	242	*	*	-
Copper (Cu)	165	*	*	*	*	450	*	185	*
Iron (Fe)	2	**	**	**	**	**	**	**	**
Lead (Pb)	1995	-	-	-	-	-	-	-	-
Manganese (Mn)	1	**	**	**	**	**	**	**	**
Mercury (Hg)	0.2	-	-	-	-	-	-	-	-
Selenium (Se)	3	-	-	-	-	-	-	-	-
Silver (Ag)	160	-	-	-	-	-	-	-	-
Sodium (Na)	30	91,400	25,100	28,400	26,600	75,200	16,500	32,200	20,400
Zinc (Zn)	90	183	*	*	*	396	121	215	*

NOTES: - - Indictates the compound was not detected.
* - Value is rejected due to blank contamination identified in quality control review.
** - Value is rejected due to other contractual requirements identified in quality control review.

TABLE 18
CLP INORGANIC ANALYTICAL RESULTS FOR FEDERAL AND STATE
DRINKING WATER QUALITY STANDARDS
NUS/FIT JUNE 1985 SAMPLING ROUND
PAGE TWO

Sample Locations		S86S	S68M	S76S	S76M	S76D	S78S	S84S	S84M	S84D	BW-1
Sample Numbers		MAA636	MAA635	MAA637	MAA638	MAA639	MAA630	MAA628	MAA627	MAA633	MAA629
Case Number 4574											
Inorganic Element	Detection Limits (ppb)										
Aluminum	25	-	-	2880	39	1200	87	27	35	588	-
Antimony	31	-	-	-	-	-	-	-	-	-	-
Arsenic	3	-	-	-	-	-	-	-	-	-	-
Barium	12	-	12	74	23	45	-	57	-	28	-
Beryllium	0.3	-	0.8	-	-	-	-	-	-	-	-
Cadmium	4	-	4.2J	6.1J	-	37J	5.7J	-	-	5.8J	-
Calcium	280	35,200	52,200	30,300	41,200	66,300	32,200	24,900	20,500	38,000	23,000
Chromium	4	-	-	4J	5.2J	5.1J	-	-	-	4.8J	-
Cobalt	4	-	4.3	-	-	-	-	-	-	-	-
Copper	15.3	5J	5.4J	34J	*	132J	*	*	*	52J	*
Iron	120	*	*	972J	133J	2650J	*	136J	*	1,230J	*
Lead	10.5	7910	-	12J	*	*	-	*	-	*	-
Magnesium	250	-	11,600	4590	8,830	8,920	6,420	5,460	4,440	8,330	5,230
Manganese	5	-	329	443	50	258	2,820	171	129	226	14
Mercury	0.1	-	-	-	-	-	-	-	-	-	-
Nickel	5	2,440	6.8	6.2	6.5	7.6	5.9	-	-	-	5.7
Potassium	990	-	3,970	8,110	3,250	4,190	2,570	2,590	2,760	3,320	2,120
Selenium	3	-	-	-	-	-	-	-	-	-	-
Silver	3	32,600	-	-	4.5	-	-	-	-	-	-
Sodium	13850	-	34,600	30,800	45,700	16,100	29,900	26,100	17,200	17,600	15,900
Thallium	3	-	-	-	-	-	-	-	-	-	-
Tin	17	-	-	-	-	-	-	-	-	-	-
Vanadium	4	128	-	-	-	-	-	-	-	-	-
Zinc	2	-	-	55	404	743	42	54	54	73	42

NOTES: "-" - Indicates the compound was not detected.
J - Quantitation is approximate due to quality control review (data validation).
* - Value is rejected due to the presence of blank contamination detected below CRDL (Contract Required Detection Limit).

TABLE 19
CLP INORGANIC ANALYTICAL RESULTS FOR FEDERAL AND STATE
DRINKING WATER QUALITY STANDARDS
NUS/FIT APRIL AND JUNE, 1985 SAMPLING ROUNDS

Sample Location		S22	S68S	S68M	S68M (Dup)	S73S	S73D	S74M	S74D
Sample Number		12481	12477	12478	13082	12474	12473	12475	12476
Case Number 1623A									
	Detection Limit								
pH	0.01 units	6.23	7.30	7.56	7.51	5.65	6.55	6.73	8.14
MBAS (Surfactants)	0.1 ppm	0.11	-	-	-	-	0.27	-	-
Fluoride	0.2 ppm	-	-	-	-	-	-	-	0.276
Nitrate	0.05 ppm	7.20	-	3.56	3.59	-	-	-	-
Sulfate	1.0 ppm	67.4	43.7	56.2	60.0	21.7	27.3	49.6	27.3
Chloride	1.0 ppm	299.0	69.3	98.3	86.6	117.0	330.0	205.0	81.0
Total Dissolved Solids	5.0 ppm	474	182	505	425	201	684	623	461
Langlier Saturation Index @ 25°C		-2.4	-1.9	-0.3	-0.2	-2.0	-0.6	0.1	0.3
Color (chloroplatinate units)		0	0	0	0	500	225	0	0
Threshold of Odor Number	1	16	8	8	16	2	4	8	8
Alkalinity	0.6 ppm	32.4	39.0	101.0	100.0	49.8	190.0	190.0	38.0

NOTES: "-" - Indicates the compound was not detected.
* - Indicates odor was not observed.

TABLE 20
INORGANIC ANALYTICAL RESULTS FOR FEDERAL AND STATE DRINKING WATER QUALITY STANDARDS
NUS/FIT APRIL AND JUNE, 1985 SAMPLING ROUNDS

Sample Location	S64S	S64M	S68M	S68D	S72S	S72M	S76S	S76M	S76D	S78S	S81S*	S81M	NW-1	Blank	Blank	Blank	Blank
Sample Number	13184	13294	13188	13187	13298	13299	13193	13191	13192	13203	13194/95	13297	13201	13293	13295	13281	13282
Analysis																	
pH Standard Units	7.9	7.7	7.5	7.8	7.3	7.9	7.8	8.0	7.8	7.3	6.9/7.5	8.0/9.4	7.6	5.6	5.5	7.0/9.5	7.9
Alkalinity Total ($CaCo_3$)	48	53	39	75	102	88	37	90	90	66	29/31	18	53	3.0	0	13	1.9
Chemical Oxygen Demand	49	9.6	55	36	146	47	33	51	51	48	69/59	19	13	1.9	0	13	19
Hardness ($CaCO_3$)	85	118	95	140	180	163	55	85	135	68	190/225	45	53	-	-	48	120
Calcium (Ca)	34	47	38	56	72	65	22	34	61	27	76/90	18	21	0.1	0	19	48
Suspended Solids	123	24	6.0	90	8.0	16	4.0	2.0	12	6.0	16/6.0	10	33	0	0	6.0	4.8
Sulfate (SO_4)	42	42	40	42	31	38	41	45	41	43	30/31	17	35	3.0	4.0	18	38
Chloride (Cl)	100	120	75	95	95	125	40	56	58	43	305/290	42	39	1.0	2.0	40	60
Nitrogen (nitrate)	3.2	4.8	3.4	3.2	0	0	3.3	4.0	0.4	0	1.5/0.6	0.3	1.3	0	0	0.5	1.2
Total Solids	410	460	340	410	850	590	250	350	360	250	1060/810	270	230	20	0	260	230
Total Dissolved Solids	382	438	334	382	842	574	246	348	348	244	1044/804	260	230	20	0	254	224

NOTES: Analysis provided by the Commonwealth of Massachusetts Department of Environmental Quality Engineering Lawrence Experimental Station.
* - Duplicate Samples

All results reported in parts per million (ppm) except pH (standard units).

TABLE 21
MICROBIOLOGICAL ANALYTICAL RESULTS FOR FEDERAL AND STATE DRINKING WATER QUALITY STANDARDS
NUS/FIT APRIL AND JUNE, 1985 SAMPLING ROUNDS

Sample Location Sample Number	S64S 13184	S64M 13294	S68M 13188	S68D 13187	S72S 13298	S72M 13299	S76S 13193	S76M 13191	S76D 13192	S81S 13194	S81S 13195	S81M 13287	S81M 13297	S84D 13182	Blank 13293	Blank 13295
Fermentation Tube Method																
Total Coliform (MPN/100 ml)	2.0	4.5	33	7.8	33	23	<2.0	<2.0	<2.0	<2.0	23	<2.0	4.5	13	<2.0	<2.0
Fecal Coliform (MPN/100 ml)	<2.0	<2.0	<2.0	<2.0	33	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Membrane Filter Method																
Coliform (MFC/100 ml)	*	*	*	*	*	*	*	0	*	0	*	*	*	*	0	0
Fecal (MFC/100 ml)	*	*	*	*	*	*	*	0	*	0	*	*	*	*	0	0

NOTES:

MPN/100 ml - multitube counts per 100 ml
MFC/100 ml - membrane filter count per 100 ml

* - Sample was not analyzed due to high turbidity.

TABLE 22
CLP ORGANIC ANALYTICAL RESULTS FOR FEDERAL AND STATE
DRINKING WATER QUALITY STANDARDS
NUS/FIT APRIL AND JUNE, 1985 SAMPLING ROUNDS

Sample Location		S22	S68S	S68M	S68M	S73S	S73D	S74M	S74D
Sample Number		12481	12477	12478	13082	12474	12473	12475	12476
Case Number 1623A									
SDWA Pesticides	Detection Limit (ppb)								
Lindane	0.004	-	-	-	-	-	-	-	-
Endrin	0.006	-	-	-	-	-	-	-	-
Methoxychlor	0.25	-	-	-	-	-	-	-	-
Toxaphene	0.24	-	-	-	-	-	-	-	-
SDWA Herbicides									
2,4-D	0.1	-	-	-	-	-	-	-	-
2,4,5-TP (Silvex)	0.05	-	-	-	-	-	-	-	-
Dilution Factor		1	1	1	1	1	1	1	1

NOTES: "-" - Indicates the compound was not detected.
Detection Limit - Multiply by dilution factor to obtain sample detection limit.
SDWA - Safe Drinking Water Act.

Appendix 23

Streambed Piezometer Data Plots and Darcy Calculations

Woburn - Wells G and H - Streambed Piezometer Data
(as received via verbal communicaiton with Joanne Morin, NUS)

Piezometer I.D.	Deep/ Shallow	TOC Elevation	Streambed Elevation	1' Screen Bottom Elevation
SB-1	D	46.00	42.50	34.00
SB-2	S	45.57	42.57	39.57
SB-3	D	46.46	40.76	20.46
SB-4	S	45.98	41.88	39.98
SB-5	D	45.23	40.63	34.23
SB-6	S	44.31	40.51	38.31
SB-7	D	44.32	42.32	33.32
SB-8	S	44.25	42.25	38.25
SB-9	D	44.67	40.27	33.67
SB-10	S	45.42	40.12	37.42

ERH:djm

WELLG&H.PIE

Leakage Calculations for Peat Layer
at end of 30-day Test of Wells G & H

Piezometer Pair	Vertical Hydraulic Gradient (ft/ft)
SBP-1, SBP-2	0.063
SBP-3, SBP-4	0.009
SBP-5, SBP-6	0.032
SBP-7, SBP-8	0.091
SBP-9, SBP-10	0.093

Area of peat covered zone within area of influence and zone of contribution = 1,202,667 ft² (by planimetry based on well logs and seismic lines).

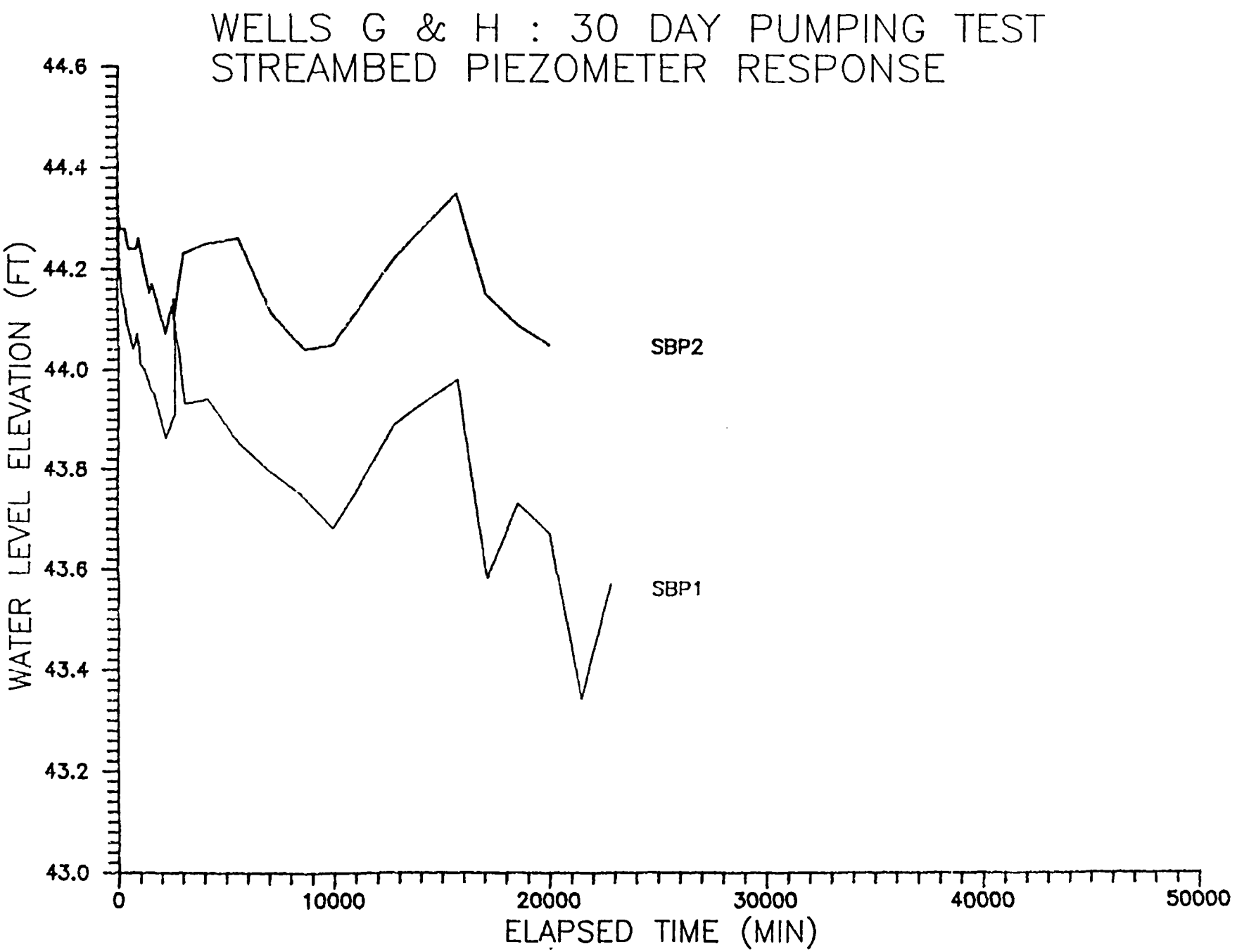
Vertical hydraulic conductivity (K_v) of peat = 0.001 - 0.1 ft/day (Siegel and Ericson, 1980 as cited in Myette, et. al., 1987).

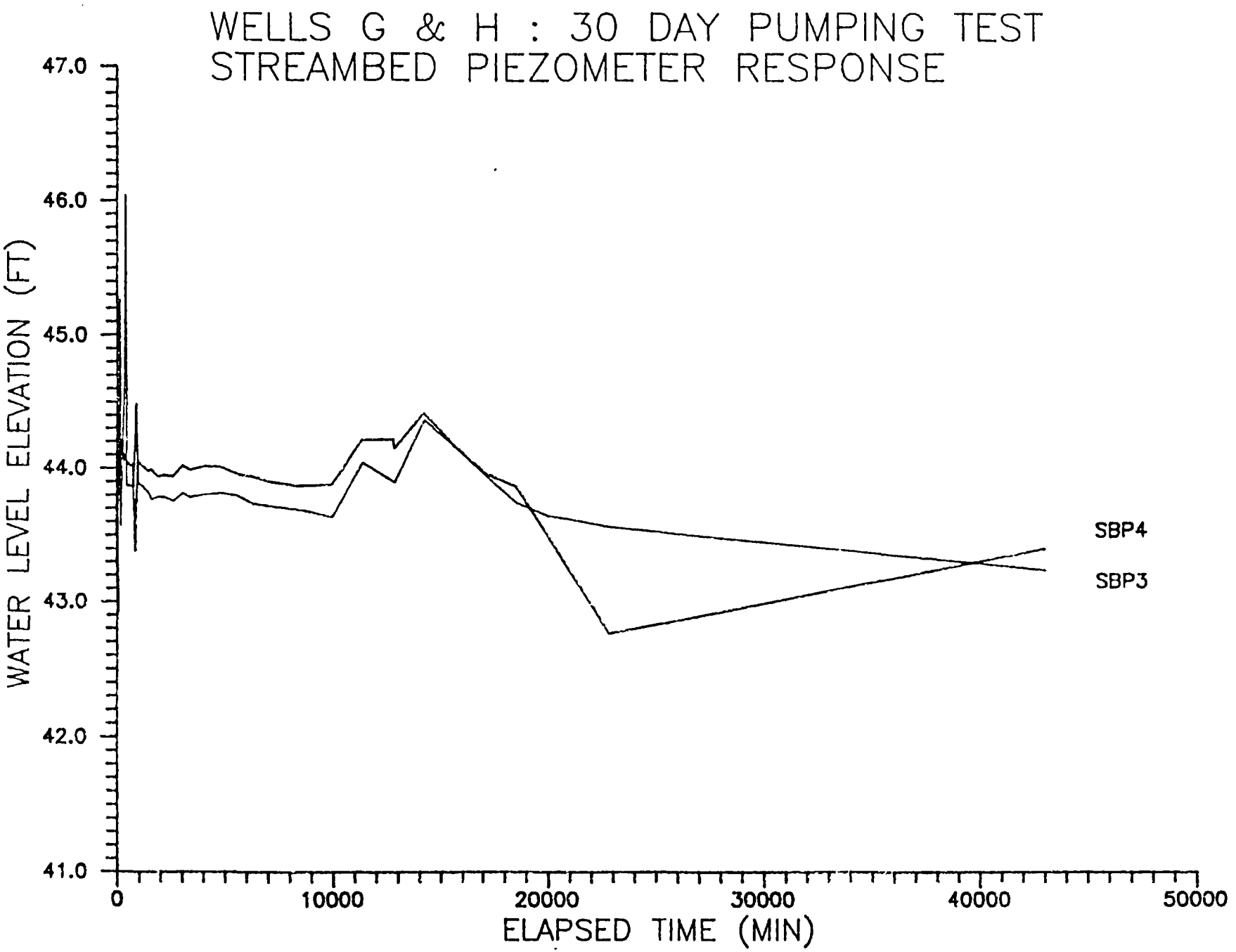
Calculate leakage using highest hydraulic gradient noted and highest value for hydraulic conductivity:

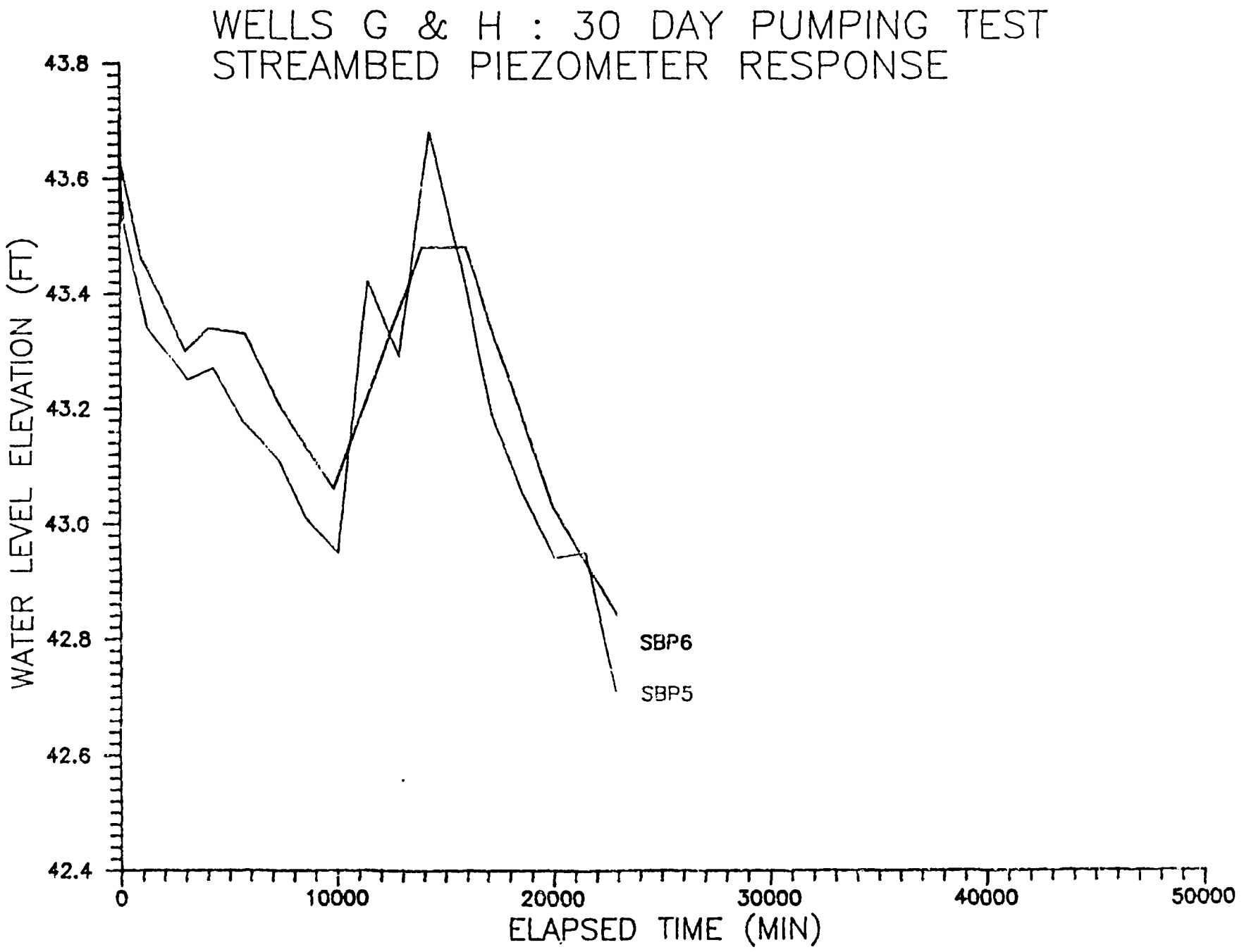
$$Q = (0.1)(0.093)(1{,}202{,}667) = 11{,}185 \text{ ft}^3/\text{day}$$
$$= 58.1 \text{ gpm}$$

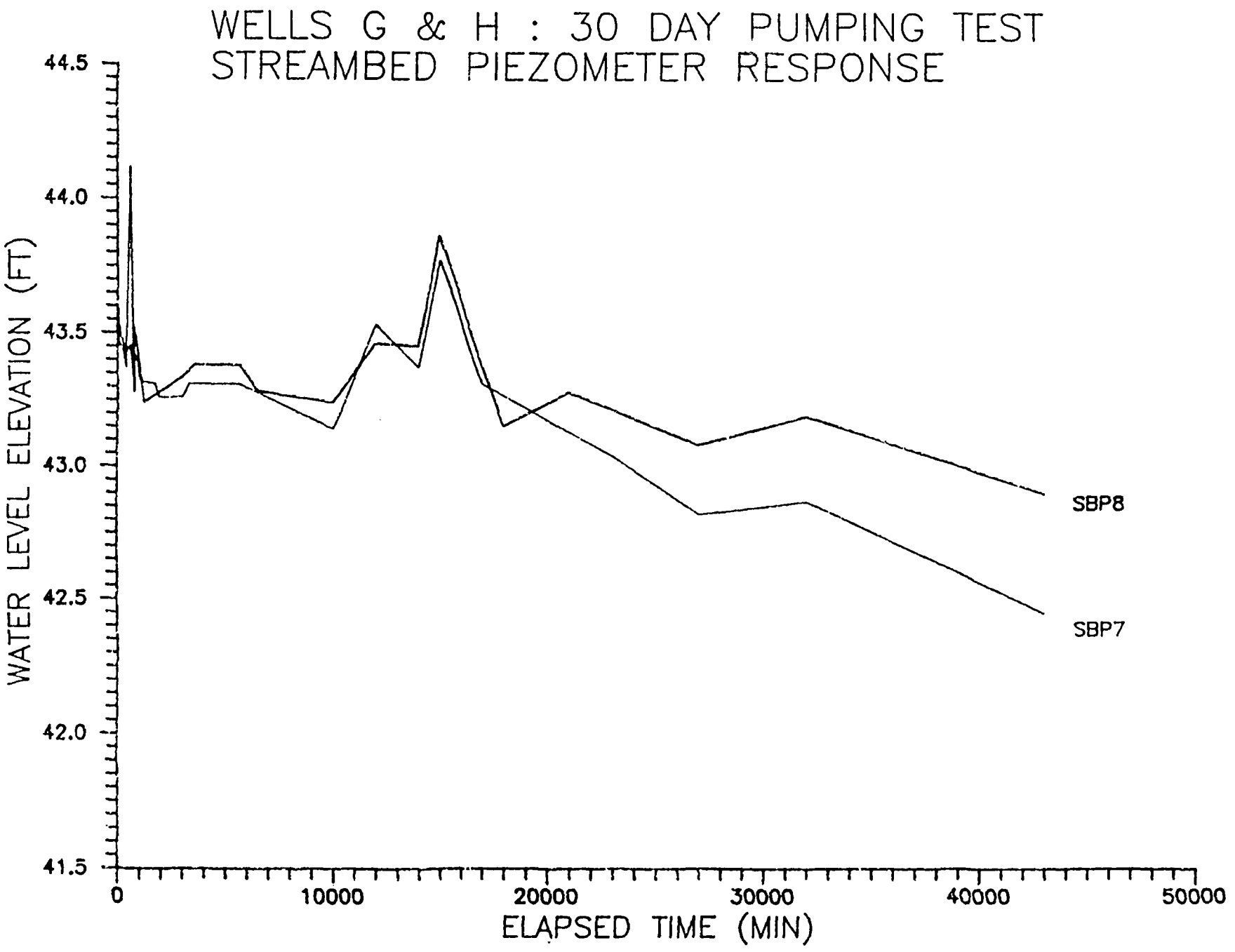
ERH:djm

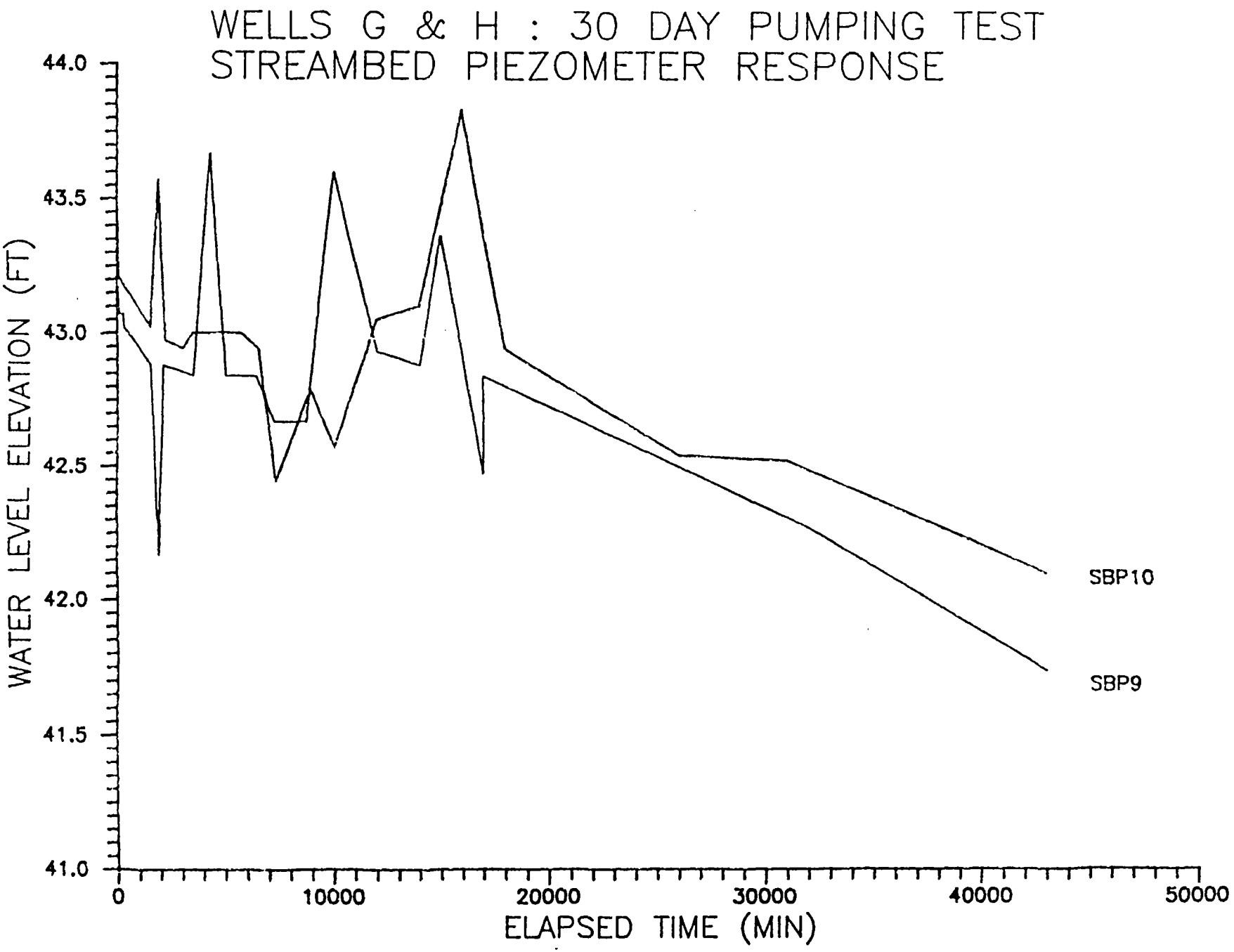
PEATLAY.30D


WELLS G & H : 30 DAY PUMPING TEST
STREAMBED PIEZOMETER RESPONSE
WATER LEVEL ELEVATION (FT)
44.6
44.4
44.2
44.0
43.8
43.6
43.4
43.2
43.0
SBP2
SBP1
0
10000
20000
30000
40000
50000
ELAPSED TIME (MIN)


WELLS G & H : 30 DAY PUMPING TEST
STREAMBED PIEZOMETER RESPONSE
WATER LEVEL ELEVATION (FT)
47.0
46.0
45.0
44.0
43.0
42.0
41.0
0
10000
20000
30000
40000
50000
ELAPSED TIME (MIN)
SBP4
SBP3


WELLS G & H : 30 DAY PUMPING TEST
STREAMBED PIEZOMETER RESPONSE
WATER LEVEL ELEVATION (FT)
43.8
43.6
43.4
43.2
43.0
42.8
42.6
42.4
0
10000
20000
30000
40000
50000
ELAPSED TIME (MIN)
SBP6
SBP5


WELLS G & H : 30 DAY PUMPING TEST
STREAMBED PIEZOMETER RESPONSE
WATER LEVEL ELEVATION (FT)
44.5
44.0
43.5
43.0
42.5
42.0
41.5
0
10000
20000
30000
40000
50000
ELAPSED TIME (MIN)
SBP8
SBP7


WELLS G & H : 30 DAY PUMPING TEST
STREAMBED PIEZOMETER RESPONSE
WATER LEVEL ELEVATION (FT)
44.0
43.5
43.0
42.5
42.0
41.5
41.0
0
10000
20000
30000
40000
50000
ELAPSED TIME (MIN)
SBP10
SBP9

Appendix 24

Travel Time Calculations: Aberjona River to Wells G & H

Calculations of Travel Time from Aberjona River
to Wells G & H
Under Proposed Remediation Pumping Conditions

Proposed pumping rate = 540 gpm (assume 270 gpm each from Wells G & H)

Well G:

Calculate average hydraulic gradient (i) between river and well under pumping conditions.

Distance (d) from river to well = 335'

Using Cooper-Jacob equation (valid for use in water table aquifers when drawdown is small compared to aquifer thickness), determine drawdown at distances of 1' and 335' (use t = 1 day).

Cooper-Jacob equation:

$$s_w = \frac{2.3Q}{4\pi T} \log \frac{2.25Tt}{r^2 S}$$

1. For $T = 10{,}000$ ft²/day and $K = 125$ ft/day
   $s_w = 4.81$ ft. at $r = 1'$
   $s_w = 1.01 \times 10^{-3}$ ft. at $r = 335'$

2. For $T = 29{,}700$ ft²/day and $K = 350$ ft/day
   $s_w = 1.77$ ft. at $r = 1'$
   $s_w = 0.15$ ft. at $r = 335'$

Calculate gradients:

1. $4.81'/334' = 1.44 \times 10^{-2}$ ft/ft

2. $1.62'/334' = 4.85 \times 10^{-3}$ ft/ft

Calculate travel time:

V = Ki (Darcy velocity calculation)
V_m = V/n (Actual velocity - assume n (porosity) = 0.38, mean vlaue from Freeze & Cherry, 1979, p. 37)
T_t = d/V_m (Travel time calculation)

1. $V = 1.80$ ft/day
   $V_m = 4.74$ ft/day
   $T_t = 70.72$ days

2. $V = 1.70$ ft/day
   $V_m = 4.47$ ft/day
   $T_t = 74.99$ days

Well H:

Calculate average hydraulic gradient (i) between river and well under pumping conditions.

Distance (d) from river to well = 120'

Using Cooper-Jacob equation determine drawdown at distances of 1' and 120' (use t = 1 day).

1. For T = 10,700 ft²/day and K = 130 ft/day
   s_w = 4.60 ft. at r = 1'
   s_w = 0.91 ft. at r = 120'

2. For T = 17,600 ft²/day and K = 215 ft/day
   s_w = 2.92 ft. at r = 1'
   s_w = 0.67 ft. at r = 120'

Calculate gradients:

1. 3.69'/119' = 3.10×10^{-2} ft/ft

2. 2.25/119' = 1.89×10^{-2} ft/ft

Calculate travel time:

1. V = 4.03 ft/day
   V_m = 10.61 ft/day
   T_t = 11.32 days

2. V = 4.07 ft/day
   V_m = 10.70 ft/day
   T_t = 11.22 days

ERH:djm

WOBURN.CAL

Appendix 25

Central Area Remediation Wells: Cone of Depression Calculations

Alternative Central Area Remediation Calculations

Time for cone of depression from 50 gpm remediation well located at Well G to intercept the Aberjona River.

By re-arrangement of Cooper-Jacob equation to solve for t,

$$\log 2.25\ Tt = \frac{4\pi Ts_w}{2.3Q} + \log r^2S$$

using $T = 10{,}000\ ft^2/day$ and $S = 0.20$ and $s_w = 0.1$ ft.

$t = 3.7$ days

using $T = 29{,}700\ ft^2/day$ and $S = 0.20$ and $s_w = 0.1$ ft.

$t = 16.3$ days