Click Here to Return to Main Document

TABLE 6-29A

COMPARISON OF MAXIMUM CONCENTRATIONS TO GROUNDWATER PROTECTION BENCHMARKS
AREA A-3, RESIDENTIAL PROPERTIES ON HOUSATONIC AVENUE
SURFACE SOIL/SEDIMENT
FERRY CREEK, STRATFORD, CONNECTICUT
PAGE 4 OF 4

Parameter	Frequency	Range Of Detects	Range Of Nondetects	Average	Location of Maximum	SSL Migration To Groundwater (1)	State Pollutant Mobility (GB) (2)
VANADIUM	60/61	6.6 - 157	0.36 - 0.36	50	RM-SD-SD16-03	6000	-
ZINC	59/61	47.9 - 4800	51.8 - 436	651	OU3-A3-SD02-0002	12000	-
Dioxin (ug/kg)							
TOXICITY EQUIVALENCY (TEQ)	39/39	0.001866 - 6.123	-	0.4449	OU3-A3-SD02-0002	-	-
Asbestos (%)							
ASBESTOS	73/184	0.99 - 90	0.1 - 0.1	5	SPD F3	-	-
Total Organic Carbon (mg/kg)							
TOTAL ORGANIC CARBON	8/8	11900 - 1020000	-	171688	OU3-A3-SD08-0002	-	-

1 USEPA Soil Screening Levels (USEPA, May 1996). Values associated with dilution and attenuation factor (DAF) of 20 are used.
2 CTDEP, January 1996. State Pollutant Mobility criteria for metals and PCBs are not included since direct comparison of the aqueous SPLP criteria (in ug/L) and the soil analytical results (in ug/kg or mg/kg) cannot be made. TCLP and SPLP results for soil samples are presented in a separate table. In some cases, calculated or surrogate or ceiling value presented as detailed in Table 6-1.
- Not available or not applicable.

TABLE 6-29B

COMPARISON OF MAXIMUM CONCENTRATIONS TO GROUNDWATER PROTECTION BENCHMARKS
AREA A-3, RESIDENTIAL PROPERTIES ON HOUSATONIC AVENUE
ALL SOIL/SEDIMENT (0-15')
FERRY CREEK, STRATFORD, CONNECTICUT
PAGE 1 OF 4

Parameter	Frequency	Range Of Detects	Range Of Nondetects	Average	Location of Maximum	SSL Migration To Groundwater (1)	State Pollutant Mobility (GB) (2)
Volatile Organic Compounds (ug/kg)							
1,1,1-TRICHLOROETHANE	2/63	9 - 13	10 - 32	9	RM-SD-SD16-04	2000	40000
1,1,2,2-TETRACHLOROETHANE	1/62	7 - 7	10 - 32	9	HU103AC-N790,W245(0.3-0.8)	3	100
1,1,2-TRICHLOROETHANE	1/62	7 - 7	10 - 32	9	HU181AC-N1180,W148(3.0-4.0)	20	1000
1,1-DICHLOROETHANE	14/62	2 - 59	10 - 32	10	RM-SD-SD12-04	23000	14000
1,2-DICHLOROETHANE	2/62	7 - 7	10 - 32	9	HU181AC-N1180,W148(3.0-4.0), HU103AC-N790,W245(0.3-0.8)	20	200
1,2-DICHLOROETHENE (TOTAL)	5/62	5 - 12	10 - 32	8	RM-SD-SD12-02	400	14000
2-BUTANONE	7/62	32 - 170	10 - 35	15	HU75AC-N686,W285(4.0-4.6)	-	80000
2-HEXANONE	2/62	9 - 11	10 - 32	9	HU181AC-N1180,W148(3.0-4.0)	-	56000
4-METHYL-2-PENTANONE	2/62	7 - 9	10 - 32	9	HU181AC-N1180,W148(3.0-4.0)	-	14000
ACETONE	5/64	46 - 220	11 - 240	32	OU3-A3-SB02-1416	16000	140000
BROMOFORM	1/62	7 - 7	10 - 32	9	HU103AC-N790,W245(0.3-0.8)	800	800
CARBON DISULFIDE	17/62	1 - 58	10 - 32	10	RM-SD-SD24-04	32000	140000
CHLOROBENZENE	6/62	2 - 27	10 - 32	9	RM-SD-SD13-02	1000	20000
ETHYLBENZENE	2/62	9 - 29	10 - 32	9	RM-SD-SD2D-03	13000	10100
METHYLENE CHLORIDE	1/62	7 - 7	10 - 63	11	OU3-A3-SB02-1416	20	1000
TETRACHLOROETHENE	1/62	3 - 3	10 - 32	9	SD-09	60	1000
TOLUENE	7/63	2 - 12	10 - 32	8	RM-SD-SD2D-03	12000	67000
TRICHLOROETHENE	4/63	2 - 23	10 - 32	9	RM-SD-SD16-04	60	1000
XYLENES, TOTAL	2/62	3 - 88	10 - 32	10	RM-SD-SD2D-03	190000	19500
Semivolatile Organic Compounds (ug/kg)							
1,4-DICHLOROBENZENE	1/79	79 - 79	160 - 17000	723	RM-SD-SD2D-03	2000	15000
2,4-DIMETHYLPHENOL	19/79	25 - 11000	160 - 17000	844	OU3-A3-SB02-0608	9000	28000
2-METHYLNAPHTHALENE	20/79	20 - 4500	160 - 17000	737	RM-SD-SD2D-03	-	56000
2-METHYLPHENOL	8/79	57 - 390	160 - 17000	687	OU3-A3-SB02-0608	15000	70000
4-METHYLPHENOL	14/80	24 - 850	160 - 17000	675	OU3-A3-SB02-0608	-	7000
ACENAPHTHENE	31/79	33 - 3400	160 - 17000	672	RM-SD-SD2D-03	570000	84000
ACENAPHTHYLENE	43/80	31 - 2600	160 - 17000	768	RM-SD-SD16-03	-	84000
ANTHRACENE	49/76	40 - 6500	350 - 17000	879	HU235AC-N1380,W182(3.0-3.6)	12000000	400000
BENZO(A)ANTHRACENE	68/82	21 - 19000	270 - 620	1713	HU235AC-N1380,W182(3.0-3.6), HU235AC-N1380,W182(3.0-3.6)	2000	1000
BENZO(A)PYRENE	70/82	24 - 17000	270 - 520	1582	HU235AC-N1380,W182(3.0-3.6)	8000	1000
BENZO(B)FLUORANTHENE	71/82	22 - 29000	270 - 520	2775	HU235AC-N1380,W182(3.0-3.6), HU235AC-N1380,W182(3.0-3.6)	5000	1000
BENZO(G,H,I)PERYLENE	58/82	39 - 8600	270 - 7900	961	HU235AC-N1380,W182(3.0-3.6)	-	40000
BENZO(K)FLUORANTHENE	51/80	28 - 29000	270 - 8900	1740	HU235AC-N1380,W182(3.0-3.6)	49000	1000
BIS(2-ETHYLHEXYL)PHTHALATE	33/83	290 - 160000	270 - 8800	6107	SD-08	3600000	11000
BUTYLBENZYL PHTHALATE	20/81	41 - 1700	160 - 17000	703	OU3-A3-SD06-0002	930000	200000
CARBAZOLE	40/80	36 - 2200	160 - 17000	654	HU235AC-N1380,W182(3.0-3.6)	600	360
CHRYSENE	73/83	22 - 20000	270 - 520	2110	HU235AC-N1380,W182(3.0-3.6), HU235AC-N1380,W182(3.0-3.6)	160000	960
DI-N-BUTYL PHTHALATE	26/82	24 - 1900	160 - 17000	675	RM-SD-SD06-04, RM-SD-SD14-04	2300000	140000
DI-N-OCTYL PHTHALATE	22/80	32 - 4200	200 - 17000	779	SD-08	10000000	20000

TABLE 6-29B

COMPARISON OF MAXIMUM CONCENTRATIONS TO GROUNDWATER PROTECTION BENCHMARKS
AREA A-3, RESIDENTIAL PROPERTIES ON HOUSATONIC AVENUE
ALL SOIL/SEDIMENT (0-15')
FERRY CREEK, STRATFORD, CONNECTICUT
PAGE 2 OF 4

Parameter	Frequency	Range Of Detects	Range Of Nondetects	Average	Location of Maximum	SSL Migration To Groundwater (1)	State Pollutant Mobility (GB) (2)
DIBENZO(A,H)ANTHRACENE	43/81	46 - 1800	160 - 17000	691	HU235AC-N1380,W182(3.0-3.6)	2000	0.96
DIBENZOFURAN	29/79	23 - 2300	160 - 17000	646	RM-SD-SD2D-03	-	5600
DIETHYL PHTHALATE	3/79	140 - 485	160 - 17000	724	RM-SD-SD06-03	-	1100000
DIMETHYL PHTHALATE	5/79	61 - 2200	160 - 17000	738	RM-SD-SD14-03	-	14000000
FLUORANTHENE	74/83	32 - 35000	270 - 520	3779	HU235AC-N1380,W182(3.0-3.6)	4300000	56000
FLUORENE	41/78	23 - 5700	160 - 8900	596	HU235AC-N1380,W182(3.0-3.6)	560000	56000
INDENO(1,2,3-CD)PYRENE	66/82	36 - 11000	270 - 620	1008	HU235AC-N1380,W182(3.0-3.6)	14000	9.6
N-NITROSO-DI-N-PROPYLAMINE	1/79	110 - 110	160 - 17000	724	RM-SD-SD2D-03	0.05	1
N-NITROSODIPHENYLAMINE	7/79	55 - 2900	160 - 17000	743	OU3-A3-SB02-0608	1000	1400
NAPHTHALENE	31/79	29 - 36000	160 - 8900	996	RM-SD-SD2D-03	84000	56000
PENTACHLOROPHENOL	1/79	120 - 120	400 - 43000	1782	RM-SD-SD2D-03	30	1000
PHENANTHRENE	71/82	22 - 30000	270 - 520	1995	HU235AC-N1380,W182(3.0-3.6)	-	40000
PHENOL	20/74	18 - 4600	200 - 17000	921	RM-SD-SD14D-03	100000	800000
PYRENE	75/83	33 - 33000	270 - 520	3514	HU235AC-N1380,W182(3.0-3.6)	4200000	40000
Pesticides/PCBs (ug/kg)							
4,4'-DDD	27/77	0.07 - 80	2 - 220	14	RM-SD-SD24-04	16000	29
4,4'-DDE	43/76	0.11 - 80	1.9 - 85	11	HU75AC-N647,W285(0.0-0.5)	54000	21
4,4'-DDT	27/66	0.2 - 4600	1.6 - 160	92	SPDG4	32000	21
ALDRIN	24/75	0.051 - 12	0.98 - 44	4	OU3-A3-SD01-0002	500	0.41
ALPHA-BHC	18/75	0.055 - 4.4	0.82 - 85	5	OU3-A3-SD01-0204	0.5	1.1
ALPHA-CHLORDANE	32/81	0.06 - 110	0.82 - 85	10	SPDB2	10000	66
AROCLOR-1248	4/77	310 - 1400	16 - 2200	144	SPDAC-E275,S130(0.4-1.5)	-	-
AROCLOR-1254	6/79	100 - 1200	16 - 2200	133	SPDAC-E275,S130(0.4-1.5)	-	-
AROCLOR-1260	2/78	5100 - 24125	16 - 2200	482	SD-09	-	-
AROCLOR-1262	51/82	10 - 68000	30 - 360	4425	OU3-A3-SD02-0002	-	-
AROCLOR-1268	56/81	21 - 60000	19 - 2200	4603	OU3-A3-SD02-0002	-	-
BETA-BHC	9/75	0.46 - 12	0.82 - 85	5	RM-SD-SD2D-03	3	3.9
DELTA-BHC	4/77	1.2 - 24	0.82 - 110	6	RM-SD-SD01-04	-	1.1
DIELDRIN	35/77	0.034 - 39	3.2 - 220	12	RM-SD-SD16-03	4	7
ENDOSULFAN I	12/67	0.11 - 30	0.82 - 110	6	SPDAC-E275,S130(0.4-1.5)	18000	8400
ENDOSULFAN II	7/73	0.16 - 43	1.6 - 220	11	RM-SD-SD02-01	18000	8400
ENDOSULFAN SULFATE	11/72	1.1 - 55	1.6 - 220	12	RM-SD-SD14D-03	-	8400
ENDRIN	20/75	0.17 - 92	1.6 - 220	12	OU3-A3-SB02-0608	1000	-
ENDRIN ALDEHYDE	27/76	0.52 - 1200	1.6 - 220	57	RM-SD-SD02-01	-	-
ENDRIN KETONE	4/77	0.23 - 2000	1.6 - 220	37	SPDAC-E275,S130(0.4-1.5)	-	-
GAMMA-BHC (LINDANE)	12/75	0.05 - 14	0.82 - 85	5	RM-SD-SD14D-03	9	40
GAMMA-CHLORDANE	41/80	0.07 - 120	0.82 - 85	10	SPDB2	10000	66
HEPTACHLOR	6/74	0.24 - 2.8	0.82 - 85	5	OU3-A3-SB01-0002	23000	13
HEPTACHLOR EPOXIDE	21/77	0.16 - 19.5	0.82 - 110	6	OU3-A3-SD05-0002	700	20
METHOXYCHLOR	3/72	41 - 260	3.3 - 850	50	RM-SD-SD01-01	160000	8000

TABLE 6-29B

COMPARISON OF MAXIMUM CONCENTRATIONS TO GROUNDWATER PROTECTION BENCHMARKS
AREA A-3, RESIDENTIAL PROPERTIES ON HOUSATONIC AVENUE
ALL SOIL/SEDIMENT (0-15')
FERRY CREEK, STRATFORD, CONNECTICUT

Parameter	Frequency	Range Of Detects	Range Of Nondetects	Average	Location of Maximum	SSL Migration To Groundwater (1)	State Pollutant Mobility (GB) (2)
PCB Congeners (ug/kg)							
2',3,4,4',5-PENTACHLOROBIPHENYL (123)	2/2	1.61 - 43.4	-	23	OU3-A3-SD05-0002	-	-
2,2',3,3',4,4',5-HEPTACHLOROBIPHENYL (170)	1/2	1020 - 1020	2.88 - 2.88	511	OU3-A3-SD05-0002	-	-
2,3',4,4',5,5'-HEXACHLOROBIPHENYL (167)	1/2	4.95 - 4.95	0.0532 - 0.0532	2	OU3-A3-SD05-0002	-	-
2,3',4,4',5-PENTACHLOROBIPHENYL (118)	1/2	5.47 - 5.47	0.233 - 0.233	3	OU3-A3-SD05-0002	-	-
2,3,3',4,4',5'-HEXACHLOROBIPHENYL (157)	1/2	8.87 - 8.87	0.0733 - 0.0733	4	OU3-A3-SD05-0002	-	-
2,3,3',4,4',5-HEXACHLOROBIPHENYL (156)	1/2	42.2 - 42.2	0.0507 - 0.0507	21	OU3-A3-SD05-0002	-	-
2,3,3',4,4'-PENTACHLOROBIPHENYL (105)	1/2	0.209 - 0.209	0.0143 - 0.0143	0.1	OU3-A3-SD05-0204	-	-
2,3,4,4',5-PENTACHLOROBIPHENYL (114)	2/2	0.565 - 108	-	54	OU3-A3-SD05-0002	-	-
3,3',4,4',5,5'-HEXACHLOROBIPHENYL (169)	1/2	1.28 - 1.28	0.0272 - 0.0272	1	OU3-A3-SD05-0002	-	-
3,3',4,4'-TETRACHLOROBIPHENYL (77)	1/2	8.01 - 8.01	0.123 - 0.123	4	OU3-A3-SD05-0002	-	-
DECACHLOROBIPHENYL	1/2	382 - 382	0.0114 - 0.0114	191	OU3-A3-SD05-0002	-	-
TOTAL DICHLOROBIPHENYLS	2/2	0.444 - 93.5	-	47	OU3-A3-SD05-0002	-	-
TOTAL HEPTACHLOROBIPHENYLS	1/2	6890 - 6890	3.15 - 3.15	3446	OU3-A3-SD05-0002	-	-
TOTAL HEXACHLOROBIPHENYLS	1/2	1770 - 1770	0.792 - 0.792	885	OU3-A3-SD05-0002	-	-
TOTAL MONOCHLOROBIPHENYLS	2/2	0.0229 - 4.92	-	2	OU3-A3-SD05-0002	-	-
TOTAL NONACHLOROBIPHENYLS	1/2	554 - 554	1.38 - 1.38	277	OU3-A3-SD05-0002	-	-
TOTAL OCTACHLOROBIPHENYLS	1/2	6270 - 6270	4.3 - 4.3	3136	OU3-A3-SD05-0002	-	-
TOTAL PENTACHLOROBIPHENYLS	1/2	995 - 995	0.277 - 0.277	498	OU3-A3-SD05-0002	-	-
TOTAL TETRACHLOROBIPHENYLS	2/2	1.16 - 662	-	332	OU3-A3-SD05-0002	-	-
TOTAL TRICHLOROBIPHENYLS	2/2	1.97 - 404	-	203	OU3-A3-SD05-0002	-	-
Metals (mg/kg)							
ALUMINUM	86/86	3830 - 24300	-	11332	OU3-A3-SD04-0002	-	-
ANTIMONY	9/82	1.8 - 13	1.2 - 30.4	4	OU3-A3-SD01-0204	5	-
ARSENIC	80/86	1.7 - 21.2	1.6 - 5.8	9	RM-SD-SD16-03	29	-
BARIUM	86/86	10.6 - 21000	-	1736	SPDAC-E275,S130(0.4-1.5)	1600	-
BERYLLIUM	54/85	0.29 - 1.5	0.14 - 1.7	1	HU263AC-N1695,W192(7.5-8.0)	63	-
CADMIUM	30/84	0.62 - 22.5	0.24 - 5.7	3	SD-08	8	-
CALCIUM	81/86	470 - 30700	2090 - 3890	3527	OU3-A3-SB01-0002	-	-
CHROMIUM	86/86	7.6 - 730	-	110	OU3-A3-SD01-0204	38	-
COBALT	84/86	3.1 - 46.8	2.3 - 6.4	11	OU3-A3-SB02-0608	-	-
COPPER	84/97	16.2 - 34600	6.5 - 300	2858	SPDAC-E275,S130(0.4-1.5)	-	-
IRON	86/86	7570 - 57000	-	22353	RM-SD-SD13-02	-	-
LEAD	338/405	6.4 - 35400	5.1 - 335	1085	OU3-A3-SB02-0608	-	-
MAGNESIUM	86/86	2000 - 95400	-	13651	OU3-A3-SB02-0608	-	-
MANGANESE	86/86	70.1 - 1870	-	320	RM-SD-SD16-03	-	-
MERCURY	41/86	0.06 - 2.4	0.05 - 0.58	0.4	RM-SD-SD14D-03	2	-
NICKEL	82/86	6.6 - 580	3.5 - 13.5	101	OU3-A3-SB02-0608	130	-
POTASSIUM	83/86	470 - 4330	139 - 667	1906	OU3-A3-SD08-0002	-	-
SELENIUM	7/83	0.87 - 2.5	0.24 - 6.7	1	RM-SD-SD14D-03	5	-

TABLE 6-29B

COMPARISON OF MAXIMUM CONCENTRATIONS TO GROUNDWATER PROTECTION BENCHMARKS
AREA A-3, RESIDENTIAL PROPERTIES ON HOUSATONIC AVENUE
ALL SOIL/SEDIMENT (0-15')
FERRY CREEK, STRATFORD, CONNECTICUT
PAGE 4 OF 4

Parameter	Frequency	Range Of Detects	Range Of Nondetects	Average	Location of Maximum	SSL Migration To Groundwater (1)	State Pollutant Mobility (GB) (2)
SILVER	20/83	0.34 - 7.6	0.49 - 4.6	1	HU103AC-N720,W258(0.0-0.3)	34	-
SODIUM	81/86	42.1 - 19400	53.9 - 1030	3266	RM-SD-SD04-04	-	-
THALLIUM	9/82	1 - 3.9	0.15 - 11.2	1	OU3-A3-SD01-0002	0.7	-
VANADIUM	85/86	6.6 - 157	0.36 - 0.36	44	RM-SD-SD16-03	6000	-
ZINC	84/86	22.4 - 4800	51.8 - 436	603	OU3-A3-SD02-0002	12000	-
Dioxin (ug/kg)							
TOXICITY EQUIVALENCY(TEQ)	58/58	0.0014 - 10.540	-	0.66	OU3-A3-SB02-0608	-	-
Asbestos (%)							
ASBESTOS	104/350	0.99 - 90	0.1 - 0.1	3	SPD F3	-	-

1 USEPA Soil Screening Levels (USEPA, May 1996). Values associated with dilution and attenuation factor (DAF) of 20 are used.

2 CTDEP, January 1996. State Pollutant Mobility criteria for metals and PCBs are not included since direct comparison of the aqueous SPLP criteria (in ug/L) and the soil analytical results (in ug/kg or mg/kg) cannot be made. TCLP and SPLP results for soil samples are presented in a separate table. In some cases, calculated or surrogate or ceiling value presented as detailed in Table 6-1.

- Not available or not applicable.

TABLE 6-29C

COMPARISON OF LEACHATE CONCENTRATIONS TO TCLP/SPLP CRITERIA
AREA A3, RESIDENTIAL PROPERTIES ON HOUSATONIC AVENUE
FERRY CREEK, STRATFORD, CONNECTICUT

		Sample Number	SPDAC-E275,S130(0.4-1.5)	
		Sample Location	SPDA E275,S130	
Connecticut	Federal	Date Sampled	10/21/1993	
TCLP/SPLP	TCLP	QC Type	Field Dup. (1102)	
Criteria	Criteria	MATRIX	SOIL	
(ug/L)	(ug/L)	Filtering	UNF	
		Metals (TCLP) (UG/L)		
500	5000	Arsenic	42	U
10000	100000	Barium	7010	
50	1000	Cadmium	7.4	
500	5000	Chromium		R
150	5000	Lead	***375000***	
20	200	Mercury	0.2	U
500	1000	Selenium	28	U
360	5000	Silver	3.7	U
Values in **BOLD** exceed Connecticut TCLP/SPLP Criteria				
Values in ***BOLD ITALICS*** exceed Connecticut TCLP/SPLP and Federal TCLP Criteria				

U - Not detected; UJ - Detection limit approximate; J - Quantitation approximate;
* - From dilution analysis; R - Rejected; EB/TB - Equipment/Trip Blank contamination; NA - Not Analyzed

TABLE 6-30

SELECTION OF CHEMICALS OF POTENTIAL CONCERN
AREA A-3, RESIDENTIAL PROPERTIES ON HOUSATONIC AVENUE
SURFACE WATER
FERRY CREEK, STRATFORD, CONNECTICUT
PAGE 1 OF 1

Parameter	Frequency	Range Of Detects	Range Of Nondetects	Average	Location of Maximum	COPC Screening Level (1)	N/C (2)	Federal MCL (3)	State MCL (4)	Select As COPC? (5)
Volatiles (ug/L)										
1,1,1-TRICHLOROETHANE	16/17	1 - 130	10 - 10	41	RM-SW-SD06 & 14-02	54	N	200	200	Y
1,1-DICHLOROETHANE	11/17	3 - 29	10 - 10	11	RM-SW-SD23-04	81	N	-	-	N
1,1-DICHLOROETHENE	12/17	4 - 50	10 - 10	17	RM-SW-SD06-02	0.044	C	7	7	Y
1,2-DICHLOROETHENE (TOTAL)	15/17	2 - 81	10 - 10	25	RM-SW-SD23-04	5.5	N	70	70	Y
BENZENE	3/17	1 - 1	10 - 10	4	RM-SW-SD12 & 14-02; RM-SW-SD06-02	0.36	C	5	5	Y
CHLOROBENZENE	6/17	1 - 4	10 - 10	4	RM-SW-SD06-02	3.9	N	100	100	Y
CHLOROETHANE	1/17	1 - 1	10 - 10	5	RM-SW-SD12-02	3.6	C	-	-	N
TRICHLOROETHENE	15/17	2 - 78	10 - 10	20	RM-SW-SD23-04	1.6	C	5	5	Y
VINYL CHLORIDE	6/17	2 - 12	10 - 10	6	RM-SW-SD06-02	0.019	C	2	2	Y
Semivolatiles (ug/L)										
BUTYLBENZYL PHTHALATE	1/17	1 - 1	10 - 10	5	RM-SW-SD13-02	730	N	-	-	N
DI-N-BUTYL PHTHALATE	1/17	1 - 1	10 - 10	5	RM-SW-SD06-01	370	N	-	-	N
Pesticides/PCBs (ug/L)										
ALPHA-BHC	1/17	0.0024 - 0.0024	0.05 - 0.05	0.02	RM-SW-SD13-02	0.011	C	-	-	N
AROCLOR-1262	2/17	0.072 - 0.23	0.5 - 1	0.3	RM-SW-SD13-02	0.034	-	0.5	0.5	Y
BETA-BHC	1/17	0.033 - 0.033	0.05 - 0.05	0.03	RM-SW-SD01-01	0.037	C	-	-	N
DIELDRIN	2/17	0.002 - 0.0025	0.1 - 0.1	0.04	RM-SW-SD14-02	0.0042	C	-	-	N
ENDRIN KETONE	1/17	0.0024 - 0.0024	0.1 - 0.1	0.05	RM-SW-SD13-02	-	-	-	-	N
Inorganics (ug/L)										
ALUMINUM	5/17	186 - 2180	25 - 148	220	RM-SW-SD13-04	3700	N	50 - 200	-	N(6)
ANTIMONY	2/16	6 - 20.8	5 - 26.3	7	RM-SW-SD13-04	1.5	N	6	6	Y
ARSENIC	3/17	4.8 - 75.1	2.7 - 66	20	RM-SW-SD22-04	0.045	C	50	50	Y
BARIUM	17/17	9.5 - 173	-	37	RM-SW-SD13-02	260	N	2000	2000	N
BERYLLIUM	1/17	0.31 - 0.31	0.3 - 1	0.3	RM-SW-SD01-04	7.3	C	4	4	N
CALCIUM	17/17	15100 - 197000	-	119182	RM-SW-SD05-01	-		-	-	N
CHROMIUM	9/17	8.8 - 20.5	4.7 - 5	7	RM-SW-SD13-04	11	N	100	100	Y
COPPER	8/17	3.4 - 156	3 - 29.1	26	RM-SW-SD13-02	150	N	1300	-	Y
IRON	17/17	241 - 4500	-	696	RM-SW-SD13-04	1100	N	-	-	N(6)
LEAD	5/17	5.5 - 147	1.5 - 42	23	RM-SW-SD13-04	-	-	15	-	Y
MAGNESIUM	17/17	23000 - 675000	-	339729	RM-SW-SD05-01	-	-	-	-	N
MANGANESE	17/17	105 - 2910	-	675	RM-SW-SD23-04	73	N	-	-	Y
MERCURY	7/17	0.3 - 3.3	0.1 - 0.2	0.5	RM-SW-SD12-04	1.1	N	2	2	Y
NICKEL	2/17	4.2 - 11.7	3.6 - 15.4	4	RM-SW-SD13-04	73	N	100	100	N
POTASSIUM	17/17	12400 - 275000	-	123459	RM-SW-SD05-01	-	-	-	-	N
SODIUM	17/17	148000 - 7600000	-	3244059	RM-SW-SD14-02	-	-	-	28000(7)	N
VANADIUM	4/17	2.8 - 9.8	2 - 8.6	2	RM-SW-SD13-04	26	N	-	-	N
ZINC	6/15	38.3 - 127	18.4 - 43.6	39	RM-SW-SD13-04	1100	N	5000	-	N

1 Based on current USEPA Region III guidance (USEPA Region III, 10-1-98). Value for noncarcinogens is based on a target hazard quotient of 0.1. Value for carcinogens is based on a cancer risk of 1E-6.
2 COPC screening level based on noncarcinogenic (N)/carcinogenic (C) effects.
3 Maximum Contaminant Level (USEPA, October 1996). Values presented for lead and copper are action levels.
4 Title 19, Health and Safety, the Public Health Code of the State of Connecticut, Chapter 11 Environmental Health.
5 Chemical selected as COPC if maximum detected concentration exceeds screening levels or MCLs.
6 USEPA Region I does not advocate quantitative risk assessment of the health effects of this metal due to lack of an adequate toxicity criteria.
7 This is a state notification level and is not risk based.
- Not available or not applicable

TABLE 6-31

SELECTION OF RECEPTORS AND EXPOSURE PATHWAYS
AREA A-3, RESIDENTIAL PROPERTIES ON HOUSATONIC AVENUE
FERRY CREEK, STRATFORD, CONNECTICUT

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current/Future	Soils, Sediments, & Wetland Soils	Soils, Sediments, & Wetland Soils	Exposed Surface Soils, Sediments, & Wetland Soils in Entire Area	Frequent Recreational User	Adult	Ingestion	Quant	Residential properties are located in the vicinity of the site. Adults may be exposed to contaminated soil/sediment through inadvertent contact.
						Dermal	Quant	Residential properties are located in the vicinity of the site. Adults may be exposed to contaminated soil/sediment through inadvertent contact.
						Inhalation	Qual	Inhalation exposures represent a relatively minor exposure relative to dermal and ingestion pathways. A qualitative comparison of site soil data to USEPA Generic SSLs will be performed.
					Child	Ingestion	Quant	Residential properties are located in vicinity of the site. Children may be exposed to contaminated soil/sediment through inadvertent contact.
						Dermal	Quant	Residential properties are located in vicinity of the site. Children may be exposed to contaminated soil/sediment through inadvertent contact.
						Inhalation	Qual	Inhalation exposures represent a relatively minor exposure relative to dermal and ingestion pathways. A qualitative comparison of site soil data to USEPA Generic SSLs will be performed.
	Surface Water	Surface Water	Surface Water in Wetlands and Creek	Frequent Recreational User	Adult	Ingestion	Qual	Residents in the vicinity of Area A-3 may recreate in the creek. Adults may be exposed to contaminated surface water through inadvertent contact. Exposure is expected to be minimal since limited contact with surface water is anticipated.
						Dermal	Quant	Residents in the vicinity of Area A-3 may recreate in the creek. Adults may be exposed to contaminated surface water through inadvertent contact.
						Inhalation	None	Inhalation exposures represent a relatively minor exposure relative to dermal and ingestion pathways.
					Child	Ingestion	Qual	Residents in the vicinity of Area A-3 may recreate in the creek. Children may be exposed to contaminated surface water through inadvertent contact. Exposure is expected to be minimal since limited contact with surface water is anticipated.
						Dermal	Quant	Residents in the vicinity of Area A-3 may recreate in the creek. Children may be exposed to contaminated surface water through inadvertent contact.
						Inhalation	None	Inhalation exposures represent a relatively minor exposure relative to dermal and ingestion pathways.

Notes:

Quant - Quantitative Analysis

Qual - Qualitative Analysis

TABLE 6-32

EXPOSURE POINT CONCENTRATIONS
AREA A-3, RESIDENTIAL PROPERTIES ON HOUSATONIC AVENUE
FERRY CREEK, STRATFORD, CONNECTICUT
PAGE 1 OF 2

Chemical of Potential Concern	Frequent Recreational User (Adult and Child)	
	Surface Soil (0 to 2 Feet bgs)/ Sediment/Wetland Material (mg/kg)	Surface Water (ug/L)
Volatile Organic Compounds		
1,1,1-Trichloroethane	NA	86/32
1,1-Dichloroethene	NA	30/14
1,2-Dichloroethene (total)	NA	81/22
Benzene	NA	4
Chlorobenzene	NA	4
Trichloroethene	NA	78/20
Vinyl Chloride	NA	6/5.4
Semivolatile Organic Compounds		
Benzo(a)anthracene	4	NA
Benzo(a)pyrene	4	NA
Benzo(b)fluoranthene	8	NA
Bis(2-ethylhexyl)phthalate	21	NA
Dibenzo(a,h)anthracene	1	NA
Indeno(1,2,3-cd)pyrene	2	NA
Pesticides/PCBs		
4,4'-DDT	0.18	NA
Dieldrin	0.022/0.016	NA
Aroclor-1248	0.38	NA
Aroclor-1254	0.33	NA
Aroclor-1260	0.76	NA
Aroclor-1262	29	0.15
Aroclor-1268	24	NA
Aroclor, total	32	NA
PCB Congeners:		
(Dioxin-like)		
Toxicity Equivalence (TEQ) Concentration	0.000203	--
(Nondioxin-like)		
Total	16.783	--
Inorganics		
Antimony	5.5	11.6/7.5
Arsenic	12.5	75.1/21.5
Barium	6890	NA
Cadmium	4.9	NA
Chromium (total)	198	12.3/8.1

TABLE 6-32

EXPOSURE POINT CONCENTRATIONS
AREA A-3, RESIDENTIAL PROPERTIES ON HOUSATONIC AVENUE
FERRY CREEK, STRATFORD, CONNECTICUT
PAGE 2 OF 2

Chemical of Potential Concern	Frequent Recreational User (Adult and Child)	
	Surface Soil (0 to 2 Feet bgs)/ Sediment/Wetland Material (mg/kg)	Surface Water (ug/L)
Copper	14900	138/23.4
Lead	1280	118/21.7
Manganese	435	2910/694
Mercury	0.55	1.7/0.5
Nickel	193	NA
Thallium	1.5	NA
Vanadium	88.4	NA
Zinc	1050	NA
Dioxins		
Toxic Equivalent (TEQ) Concentration	0.0021	--

1 Exposure to currently exposed surface soil is assumed for the commercial worker under current land use.
2 Since development of the site for industrial use may occur, exposure to all soil (currently exposed and beneath pavement) to an estimated depth of 15 feet bgs is assumed for the commercial worker under future land use.
ND: Contaminant has been selected as a Chemical of Potential Concern (COPC) for this area/medium; however, this COPC was not detected (ND) in the respective sample subset for this receptor.
NA: Contaminant has not been selected as a COPC for this area/medium; an exposure point concentration is not applicable (NA).
-- Analysis for this chemical was not performed for samples collected from this medium.
For datasets with greater than 10 samples: EPCs represent the 95 percent UCL of the mean for the RME and CTE cases, unless the 95 percent UCL was greater than the maximum reported concentration. If the 95 percent UCL is greater than the maximum, the maximum is selected as the EPC for the RME case and the arithmetic mean is selected as the EPC for the CTE case. For datasets with 10 or less samples: the maximum detected and arithmetic mean concentration are selected as the EPCs for the RME and CTE cases respectively. (When a pair of numbers are presented in a cell of this table, the first number presented is the maximum detected concentration and the second number presented is the arithmetic mean concentration.)

TABLE 6-33A

SUMMARY OF CANCER RISKS AND HAZARD INDICES
REASONABLE MAXIMUM EXPOSURE SCENARIO
AREA A-3, RESIDENTIAL PROPERTIES ON HOUSATONIC AVENUE
FERRY CREEK, STRATFORD, CONNECTICUT

Receptor	Media	Exposure Route	Cancer Risk	Chemicals with Cancer Risk $>10^{-4}$	Chemicals with Cancer Risk $>10^{-5}$	Chemicals with Cancer Risk $>10^{-6}$	Hazard Index	Chemicals with HI > 1
Frequent Recreational User Adult (Current/Future)	Exposed Surface Soils, Sediments, & Wetland Soils in Entire Area	Incidental Ingestion	5.4E-05	--	TEQ-Dioxins/Furans	Benzo(a)pyrene, Aroclor (total), Arsenic	1.1E-01	--
		Dermal Contact	3.3E-05	--	Aroclor (total)	Benzo(a)pyrene, Benzo(b)fluoranthene, Dibenzo(a,h)anthracene, Arsenic	2.8E-02	--
		Total	8.7E-05	--	Benzo(a)pyrene, Aroclor (total), TEQ-Dioxins/Furans	Benzo(a)anthracene, Benzo(b)fluoranthene, Dibenzo(a,h)anthracene, Arsenic	1.4E-01	--
	Surface Water in Wetlands and Creek	Dermal Contact	1.6E-05	--	Aroclor 1262	1,1-Dichloroethene, Vinyl Chloride	9.7E-02	--
		Total All Routes	1.0E-04	--	Aroclor (total), TEQ-Dioxins/Furans	Benzo(a)anthracene, Benzo(b)fluoranthene, Dibenzo(a,h)anthracene, Arsenic, 1,1-Dichloroethene, Vinyl Chloride	2.4E-01	--
Frequent Recreational User Child (Current/Future)	Exposed Surface Soils, Sediments, & Wetland Soils in Entire Area	Incidental Ingestion	5.4E-05	--	TEQ-Dioxins/Furans	Benzo(a)pyrene, Aroclor (total), Arsenic	8.8E-01	--
		Dermal Contact	2.8E-05	--	Aroclor (total)	Benzo(a)pyrene, Benzo(b)fluoranthene, Dibenzo(a,h)anthracene	1.9E-01	--
		Total	8.2E-05	--	Benzo(a)pyrene, Aroclor (total), TEQ-Dioxins/Furans	Benzo(a)anthracene, Benzo(b)fluoranthene, Dibenzo(a,h)anthracene, Arsenic	1.1E+00	--
	Surface Water in Wetlands and Creek	Dermal Contact	2.8E-06	--	--	Aroclor 1262	1.3E-01	--
		Total All Routes	8.3E-05	--	Benzo(a)pyrene, Aroclor (total), TEQ-Dioxins/Furans	Benzo(a)anthracene, Benzo(b)fluoranthene, Dibenzo(a,h)anthracene, Arsenic	1.2E+00	--

TABLE 6-33B

SUMMARY OF CANCER RISKS AND HAZARD INDICES
CENTRAL TENDENCY EXPOSURE SCENARIO
AREA A-3, RESIDENTIAL PROPERTIES ON HOUSATONIC AVENUE
FERRY CREEK, STRATFORD, CONNECTICUT

Receptor	Media	Exposure Route	Cancer Risk	Chemicals with Cancer Risk $>10^{-4}$	Chemicals with Cancer Risk $>10^{-5}$	Chemicals with Cancer Risk $>10^{-6}$	Hazard Index	Chemicals with HI > 1
Frequent Recreational User Adult (Current/Future)	Exposed Surface Soils, Sediments, &	Incidental Ingestion	7.3E-06	--	--	TEQ-Dioxins/Furans	5.5E-02	--
		Dermal Contact	9.2E-07	--	--	--	3.7E-03	--
		Total	8.2E-06	--	--	TEQ-Dioxins/Furans	5.9E-02	--
	Surface Water in Wetlands and Creek	Dermal Contact	3.4E-06	--	--	Aroclor 1262	2.5E-02	--
		Total All Routes	1.20E-05	--	--	TEQ-Dioxins/Furans, Aroclor 1262	8.4E-02	--
Frequent Recreational User Child (Current/Future)	Exposed Surface Soils, Sediments, & Wetland Soils in Entire Area	Incidental Ingestion	2.5E-05	--	TEQ-Dioxins/Furans	Benzo(a)pyrene, Aroclor (total), Arsenic	4.4E-01	--
		Dermal Contact	4.0E-06	--	--	Benzo(a)pyrene, Aroclor (total)	3.7E-02	--
		Total	2.9E-05	--	TEQ-Dioxins/Furans	Benzo(a)pyrene, Aroclor (total), Arsenic	4.8E-01	--
	Surface Water in Wetlands and Creek	Dermal Contact	2.1E-06	--	--	Aroclor 1262	3.5E-02	--
		Total All Routes	3.1E-05	--	TEQ-Dioxins/Furans	Benzo(a)pyrene, Aroclor (total), Arsenic	5.2E-01	--

TABLE 6-34

SUMMARY OF REMEDIAL INVESTIGATIONS AND RECOMMENDATIONS
AREA A-3, RESIDENTIAL PROPERTIES ON HOUSATONIC AVENUE
FERRY CREEK, STRATFORD, CONNECTICUT

Area of Concern	Chemicals of Potential Concern			Receptor	Reasonable Maximum Exposure (RME) Risk Estimates						RME Lead Results [1] [2]	Asbestos Results [3]
					ILCR	Risk Drivers			HI	Risk Drivers		
A-3 Properties East of Ferry Creek (Residential Properties on Housatonic Avenue	Surface Soil/Sediment (0 to 2 feet)			Frequent Recreational User (adult) (current/future)	8.7E-05	$>10^{-4}$ None	$>10^{-5}$ benzo(a)pyrene Aroclor (total) dioxins/furans	$>10^{-6}$ benzo(b)fluoranthene benzo(a)anthracene dibenzo(a,h)anthracene arsenic	0.14	>1.0 None	Slope Factor Approach - The fetal blood lead level (7.5 to 11.2 ug/dl) exceeds the level of concern (10 ug/dl).	Asbestos was detected at an average concentration of 5%. This exceeds the 1% concentration which defines an asbestos-containing material.
	benzo(a)anthracene	dieldrin	mercury									
	benzo(a)pyrene	asbestos	nickel									
	benzo(b)fluoranthene	antimony	thallium									
	dibenzo(a,h)anthracene	arsenic	vanadium									
	indeno(1,2,3-cd)pyrene	barium	zinc	Frequent Recreational User (adult) (current/future) (PCB congener data only)	1.6E-05	$>10^{-4}$ None	$>10^{-5}$ Non-dioxin like congeners	$>10^{-6}$ Dioxin-like congeners	NA	>1.0 None		
	Aroclors	cadmium	Aroclor-1248									
	PCB congeners	chromium, total	Aroclor-1254									
	dioxins/furans	copper	Aroclor-1260									
	bis(2-ethylhexyl)phthalate	lead	Aroclor-1262									
	4,4'-DDT	manganese	Aroclor-1268									
				Frequent Recreational User (child) (current/future)	8.2E-05	$>10^{-4}$ None	$>10^{-5}$ benzo(a)pyrene Aroclor (total) dioxins/furans	$>10^{-6}$ benzo(a)anthracene benzo(b)fluoranthene dibenzo(a,h)anthracene arsenic	1.1	>1.0 None	IEUBK - The geometric mean (11.5 ug/dl) exceeds the level of concern (10 ug/dl) for the residential child. 58% of the children have blood lead levels greater than 10 ug/dl.	
	All Soil/Sediment (0 to15 feet)											Asbestos was detected at an average concentration of 3%. This exceeds the 1% concentration which defines an asbestos-containing material.
	benzo(a)anthracene	asbestos	nickel									
	benzo(a)pyrene	dioxins/furans	thallium									
	benzo(b)fluoranthene	antimony	vanadium									
	benzo(k)fluoranthene	arsenic	zinc									
	dibenzo(a,h)anthracene	barium	Aroclor-1248									
	indeno(1,2,3-cd)pyrene	cadmium	Aroclor-1254									
	bis(2-ethylhexyl)phthalate	chromium, total	Aroclor-1260									
	4,4'-DDT	copper	Aroclor-1262									
	dieldrin	lead	Aroclor-1268									
	Aroclors	manganese										
	PCB congeners	mercury										
	Surface Water			Frequent Recreational User (adult) (current/future)	1.6E-05	$>10^{-4}$ None	$>10^{-5}$ Aroclor 1262	$>10^{-6}$ vinyl chloride 1,1-dichloroethene	0.097	>1.0 None		
	1,1,1-trichloroethane	trichloroethene	chromium									
	1,1-dichloroethene	vinyl chloride	copper									
	1,2-dichloroethene, total	Aroclor-1262	lead									
	benzene	antimony	manganese									
	chlorobenzene	arsenic	mercury									
				Frequent Recreational User (child) (current/future)	2.8E-06	$>10^{-4}$ None	$>10^{-5}$ --	$>10^{-6}$ Aroclor 1262	0.13	>1.0 None		

1 The risk from lead for an adult was evaluated following "Recommendations of the Technical Review Workgroup for Lead for the Interim Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil", USEPA, December 1996.
2 The risk from lead exposure for a residential child was evaluated with the Integrated Exposure Uptake Biokinetic Model (IEUBK), EPA/540/R-93/081, 1994.
3 The National Emission Standards for Hazardous Air Pollutants - EPA regulation 40 CFR Subpart M, Part 61 (NESHAP) defines asbestos as material containing one percent asbestos.

TABLE 7-1
TOTAL ORGANIC CARBON STATISTICS
SURFACE SEDIMENT SAMPLES
FINAL REMEDIAL INVESTIGATION REPORT – AREA I
RAYMARK - FERRY CREEK, OU3
STRATFORD, CT

AOC	Sediment TOC, %				N
	min	median	mean	max	
A-1	0.2	1.7	2.8	8.1	12
A-3	0.6	5.0	7.5	102.0	46
BKG	0.5	4.4	3.5	4.8	4

TABLE 7-2
SEDIMENT AVS - SEM STATISTICS
FINAL REMEDIAL INVESTIGATION REPORT – AREA I
RAYMARK - FERRY CREEK, OU3
STRATFORD, CT

A. Summed SEM minus AVS

AOC	Summed SEM - AVS				
	µmole/g (dry)				Frequency
	Minimum	Median	Mean	Maximum	< 0
A-3	-3	10.8	12.8	33.4	2/12
Background	-27.5	1.9	-6.7	5.5	1/3
Difference between duplicates					
QC Samples	1.3	10.3	12.0	27.6	1/5[a]

QC = Quality Control
[a] Frequency with which one duplicate is positive and one is negative

B. Extracted Metal as Fraction of Total Metal

Metal	Minimum	Median	Mean	Maximum	n
Cadmium	0.33	0.59	0.69	0.96	8
Copper	0.00	0.01	0.09	0.62	8
Lead	0.41	0.87	0.76	0.94	8
Nickel	0.11	0.45	0.46	0.74	8
Zinc	0.54	0.75	0.73	0.97	8

TABLE 7-3
CONTAMINANTS OF CONCERN[1]
FINAL REMEDIAL INVESTIGATION REPORT - AREA I
RAYMARK - FERRY CREEK, OU3
STRATFORD, CT

CONTAMINANTS OF CONCERN				
Metals and Metalloids	**PAHs**	**Dioxins and Furans**	**Pesticides**	**PCBs**
Arsenic	Acenaphthene	Penta- through hepta-chlorodioxins and furans	DDD	Aroclor 1016
Cadmium	Acenaphthylene		DDE	Aroclor 1221
Chromium	Anthracene		DDT	Aroclor 1232
Copper	Benzo(a)anthracene			Aroclor 1242
Lead	Benzo(a)pyrene			Aroclor 1248
Mercury	Benzo(b)fluoranthene			Aroclor 1254
Nickel	Chrysene			Aroclor 1260
Silver	Dibenz(a,h)fluoranthene			Aroclor 1262
Zinc	Fluoranthene			Aroclor 1268
	Fluorene			
	2-Methylnaphthalene			
	Naphthalene			
	Phenanthrene			
	Pyrene			

(1) "COCs evaluated in the Phase II ERA", Ecological Risk Assessment (NOAA, 1998).

TABLE 7-4
COMPARISON OF AWQC FOR CoCs WITH MEASURED WATER CONCENTRATIONS (UG/L)
EXCEEDING CRITERIA
FINAL REMEDIAL INVESTIGATION REPORT – AREA I
RAYMARK - FERRY CREEK, OU3
STRATFORD, CT

COC	Chronic AWQC [a]		Concentration (ug/L)	Qualifier	AOC	Sample ID
	Freshwater	Marine				
ARSENIC	190	36	38.8		A3	RM-SW-SD01
ARSENIC			75.1	J	A3	RM-SW-SD22-04
CHROMIUM	11	50 (Cr^{+6})	11.1	J	A3	RM-SW-SD24-04
	210	10300(Cr^{+3})	11.5		A3	RM-SW-SD13
			12.3		A3	RM-SW-SD22-04
COPPER	11.8 +	2.9	6		A1	RM-SW-MF01
			6.3		A1	RM-SW-MF02
			6.8		A3	RM-SW-SD14
			9		A3	RM-SW-SD01
			12.5		A3	RM-SW-SD06
			21.3		A3	RM-SW-SD12
			138		A3	RM-SW-SD13
LEAD	3.2 +	8.5	3.7		A3	RM-SW-SD20-04
			5.5		A3	RM-SW-SD24-04
			6		A3	RM-SW-SD21-04
			15.6		A3	RM-SW-SD12
			118		A3	RM-SW-SD13
MERCURY	0.012	0.025	0.1		A1	RM-SW-MF02
			0.12		A1	RM-SW-MF03-03
			0.21		A3	RM-SW-SD06
			0.24		A3	RM-SW-SD01
			0.3		A3	RM-SW-SD21-04
			0.46		A3	RM-SW-SD14
			0.57	J	A3	RM-SW-SD22-04
			1.2	J	A3	RM-SW-SD23-04
			1.7		A3	RM-SW-SD12
NICKEL	158 +	8.3	8.4		A3	RM-SW-SD13
ZINC	106 +	86	126		A3	RM-SW-SD13
AROCLOR-1262	0.014	0.03	0.15		A3	RM-SW-SD13
4,4'-DDT	0.001	0.001	0.026		A1	RM-SW-MF01

Notes:
Only detected concentrations are presented.
J - estimated
[a] - All AWQC are in ug/L. A + indicates that the AWQC is hardness dependent; the value at 100 mg/L CaCO3 shown.

TABLE 7-5
CONCENTRATIONS OF CONTAMINANTS DETECTED IN SEDIMENT SAMPLES
(DRY WEIGHT BASIS)
FINAL REMEDIAL INVESTIGATION REPORT – AREA I
RAYMARK - FERRY CREEK, OU3
STRATFORD, CT

	AREA A1					AREA A3					REFERENCE AREA (N = 6)			
Parameter	**Detection Frequency**	**Average**	**Maximum**	**Mean HQ_{TEL}**	**Mean HQ_{PEL}**	**Detection Frequency**	**Average**	**Maximum**	**Mean HQ_{TEL}**	**Mean HQ_{PEL}**	**Mean (No.)[a]**	**Max.**	**Mean HQ_{TEL}**	**Mean HQ_{PEL}**
Metals , mg/kg														
ARSENIC	10/12	5.7	13.1	0.8	0.1	47/47	9.7	23.9	1.3	0.2	6.8	11.2	0.9	0.2
CADMIUM	6/12	4.3	18.5	6.3	1.0	28/46	4.1	22.5	6.0	1.0	1.2	1.6	1.8	0.3
CHROMIUM	12/12	127	900	2.4	0.8	47/47	138	528	2.6	0.9	200	304	3.8	1.3
COPPER	12/12	793	6780	42.4	7.3	48/48	2310	21000	123.5	21.4	652.5	1260	34.9	6.0
LEAD	20/20	1410	7330	46.7	12.6	96/97	1470	22900	48.7	13.1	97.7	141	3.2	0.9
MERCURY	4/12	0.36	3.1	2.8	0.5	29/47	0.4	2.4	3.1	0.6	0.6	0.91	4.6	1.3
NICKEL	12/12	46.9	162	2.9	1.1	46/47	109	506	6.9	2.5	29	38.1	1.9	0.7
SILVER	4/11	0.97	3.2	1.3	0.5	13/45	0.88	3.4	1.2	0.5		ND		
ZINC	9/12	330	1040	2.7	1.2	45/47	668	4800	5.4	2.5	306.5	551	2.5	1.1
Organics, ug/kg														
Total PAH	10/11	20000	43000	11.9	1.2	46/46	27000	72000	16.0	1.6	14,467	72,700	8.6	0.9
4.4'-DDD	6/12	9.9	42	8.1	1.3	19/35	18	80	14.8	2.3	28 (1)	99	1.3	0.1
4,4'-DDE	9/12	5.4	7.2	2.6	0.0	26/38	12	80	5.8	0.0	3.78 (1)	9.0	3.1	0.5
4,4'-DDT	5/12	6.1	6	5.1	1.3	14/32	24	220	20.2	5.0	0.72 (2)	1.8	0.3	0.0
AROCLOR, TOTAL	11/12	2700	12000	125.0	14.3	37/39	10000	130000	463.0	52.9	1.1 (1)	4.4	0.9	0.2
TEQs[b] (µg/kg)	7/8	0.16	1.2	32.0	6.4	30/32	0.37	6.1	74.0	14.8	0.0066	0.0163	1.3	0.3

Notes:

ND not detected

[a] Number in parentheses is the number of samples with levels below the detection limit

[b] TCDD TEQs were calculated using dioxin and furan data; a benchmark of 0.005 µg/kg was used for HQ_{TEL} and 0.025 for HQ_{PEL}.

TABLE 7-6
CONCENTRATIONS OF TRACE METALS, PCBs, DDTs, AND PAHs IN FISH TISSUES (wet weight)
FINAL REMEDIAL INVESTIGATION REPORT – AREA I
RAYMARK - FERRY CREEK, OU3
STRATFORD, CT

Analyte	SAIC	NOAA		SAIC		NOAA	
	Great Meadows	Milford Point		Area A-1	Area A-3	Area A-3	
	Value[1]	Min	Max	Value[1]	Value[1]	Min	Max
Trace Elements (mg/kg)							
Arsenic	-	0.42	0.48	-	-	0.49	0.55
Cadmium	-	0.009	0.018	-	-	0.023	0.14
Chromium	-	0.75	2.23	-	-	0.46	2.32
Copper	-	4.09	6.82	-	-	5.34	16.46
Lead	-	0.24	0.64	-	-	0.98	11.83
Mercury	-	0.011	0.015	-	-	0.01	0.015
Nickel	-	0.23	0.446	-	-	0.26	1.07
Silver	-	0.03	0.047	-	-	0.019	0.026
Zinc	-	39.27	42.8	-	-	44.98	56.87
DDTs and PCBs (ug/kg)							
4,4'-DDD	-	5UJ	5	-	-	2U	5UJ
4,4'-DDE	-	5UJ	10	-	-	5UJ	6
4,4'-DDT	-	2UJ	3	-	-	5U	9U
Total PCBs	550	20	430	550	540	nd	nd
PCDDs and PCDFs (ng/kg)							
2,3,7,8-TCDD TEQs	1.82	0.533	0.673	1.11	1.42	0.786	1.9
PAHs (ug/kg)							
Total PAHs	-	nd	12	-	-	21	546
%Lipids	**3.6**	**1.75U**	**1.96**	**1.60**	**2.10**	**1.46**	1.71
%Solids	-	**22.1**	**22.7**	-	-	**21.1**	**21.4**

U Undetected at the concentration not greater than the value shown.
J Estimated value.
nd None detected.
- No analysis performed.
[1] A single sample taken.

TABLE 7-7
CONCENTRATIONS OF TRACE METALS, PCBs, DDTs, AND PAHs IN CRAB TISSUES (wet weight)
FINAL REMEDIAL INVESTIGATION REPORT – AREA I
RAYMARK - FERRY CREEK, OU3
STRATFORD, CT

Analyte	Milford Point	Upper Ferry Creek Area A-3
Trace Elements (mg/kg)		
Arsenic	1.70	0.78
Cadmium	0.09	1.26
Chromium	3.73	1.95
Copper	52.65	72.23
Lead	3.66	15.84
Mercury	0.02	0.02 U
Nickel	2.75	3.32
Silver	NR	NR
Zinc	23.48	27.37
DDTs and PCBs (µg/kg)		
4,4'-DDD	3U	2U
4,4'-DDT	2U	5U
4,4'-DDE	2U	4U
Total PCBs	80	290
PCDDs and PCDFs (ng/kg)		
2,3,7,8-TCDD TEQs	2.29	4.28
PAHs (µg/kg)		
Total PAHs	37	352
%Lipids	**1.06**	**0.97**
%Solids	**32.7**	**31**

U Undetected at the concentration not greater than the value shown.
NR Not reported

TABLE 8-1
SUMMARY OF RISKS
FINAL REMEDIAL INVESTIGATION REPORT
AREA I
RAYMARK – FERRY CREEK – OU3
STRATFORD, CONNECTICUT

AREA	MATRIX	HUMAN HEALTH RISK					ENVIRONMENTAL RISK
		NON-CARCINOGENIC	CARCINOGENIC	LEAD	LEAD HOT SPOT	ASBESTOS	
A-1	SURFACE SOIL	NO	YES	YES	YES	YES	-
	SUBSURFACE SOIL	NO	YES	YES	-	-	-
	SEDIMENT	NO	NO	-	YES	YES	YES
	SURFACE WATER	NO	NO	NO	-	-	YES
A-2	SURFACE SOIL	NO	YES	YES	YES	YES	-
	SUBSURFACE SOIL	NO	YES	YES	-	-	-
A-3	SURFACE SOIL	NO	NO	YES	-	YES	-
	SUBSURFACE SOIL	-	-	-	-	-	-
	SEDIMENT	NO	NO	YES	-	YES	YES
	SURFACE WATER	NO	NO	NO	-	-	YES

- = Not Evaluated

FIGURES

BASEMAP: PORTIONS OF THE FOLLOWING U.S.G.S. QUADRANGLE MAPS: BRIDGEPORT, CONN., 1970 (PHOTOREVISED: 1984) AND MILFORD, CONN., 1960 (PHOTOREVISED: 1984), SCALE ALTERED FOR CLARITY

0 1/2 1 MILE

1000 0 1000 2000 3000 4000 5000 FEET

QUADRANGLE LOCATION

SITE LOCUS

AREA I FINAL – RI REPORT

RAYMARK – FERRY CREEK (OU3) – STRATFORD, CT

DRAWN BY:	D.W. MACDOUGALL	REV.:	0
PROJECT MANAGER:	D. CHISOLM	DATE:	SEPTEMBER 22, 1999
SCALE:	AS SHOWN	ACAD NAME:	DWG\RAYMARK\OU3\AREAIRI\USGS.DWG

FIGURE 1–1

TETRA TECH NUS, INC.
55 Jonspin Road Wilmington, MA 01887
(978)658–7899

TARGET SHEET

THE MATERIAL DESCRIBED BELOW
WAS NOT SCANNED BECAUSE:

(X) OVERSIZED

() NON-PAPER MEDIA

() OTHER:

DESCRIPTION: DOC# 10952
FIGURE 1-2 STUDY AREA.

THE OMITTED MATERIAL IS AVAILABLE FOR REVIEW
BY APPOINTMENT
AT THE EPA NEW ENGLAND SUPERFUND RECORDS CENTER,
BOSTON, MA

TARGET SHEET

THE MATERIAL DESCRIBED BELOW
WAS NOT SCANNED BECAUSE:

(X) OVERSIZED

() NON-PAPER MEDIA

() OTHER:

DESCRIPTION: DOC# 10952
FIGURE 3-1 AREA A-1: ESTIMATED THICKNESS
OF FILL.

THE OMITTED MATERIAL IS AVAILABLE FOR REVIEW
BY APPOINTMENT
AT THE EPA NEW ENGLAND SUPERFUND RECORDS CENTER,
BOSTON, MA

TARGET SHEET

THE MATERIAL DESCRIBED BELOW
WAS NOT SCANNED BECAUSE:

(X) OVERSIZED

() NON-PAPER MEDIA

() OTHER:

DESCRIPTION: DOC# 10952
FIGURE 3-2 AREAS A-2 AND A-3:
ESTIMATED THICKNESS OF FILL.

THE OMITTED MATERIAL IS AVAILABLE FOR REVIEW
BY APPOINTMENT
AT THE EPA NEW ENGLAND SUPERFUND RECORDS CENTER,
BOSTON, MA

TARGET SHEET

THE MATERIAL DESCRIBED BELOW
WAS NOT SCANNED BECAUSE:

(X) OVERSIZED

() NON-PAPER MEDIA

() OTHER:

DESCRIPTION: DOC# 10952
FIGURE 3-3 GEOLOGIC PROFILES.

THE OMITTED MATERIAL IS AVAILABLE FOR REVIEW
BY APPOINTMENT
AT THE EPA NEW ENGLAND SUPERFUND RECORDS CENTER,
BOSTON, MA

TARGET SHEET

THE MATERIAL DESCRIBED BELOW
WAS NOT SCANNED BECAUSE:

(X) OVERSIZED

() NON-PAPER MEDIA

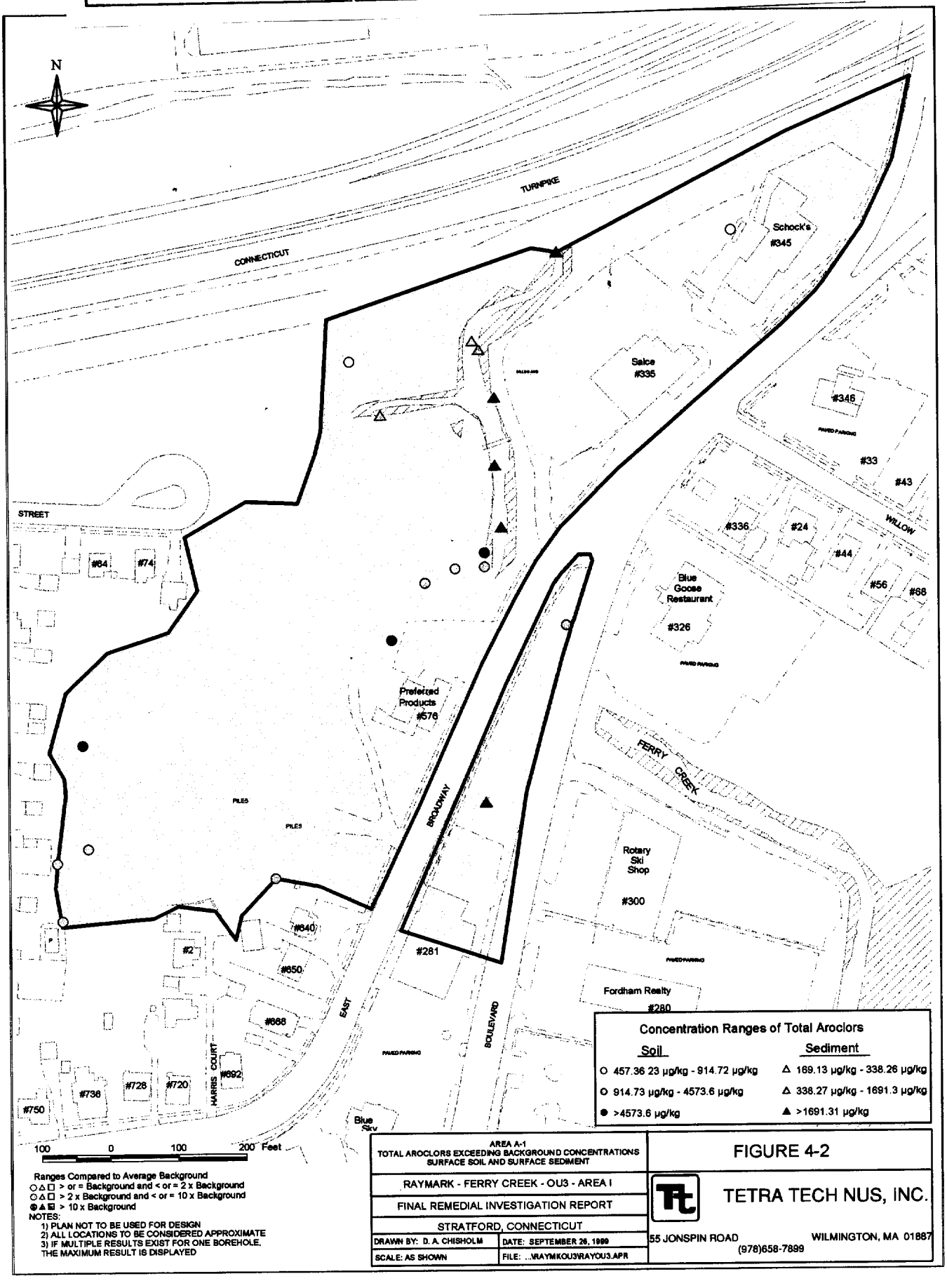
() OTHER:

DESCRIPTION: DOC# 10952
FIGURE 4-1 SAMPLE LOCATION PLAN -
AREA A-1.

THE OMITTED MATERIAL IS AVAILABLE FOR REVIEW
BY APPOINTMENT
AT THE EPA NEW ENGLAND SUPERFUND RECORDS CENTER,
BOSTON, MA

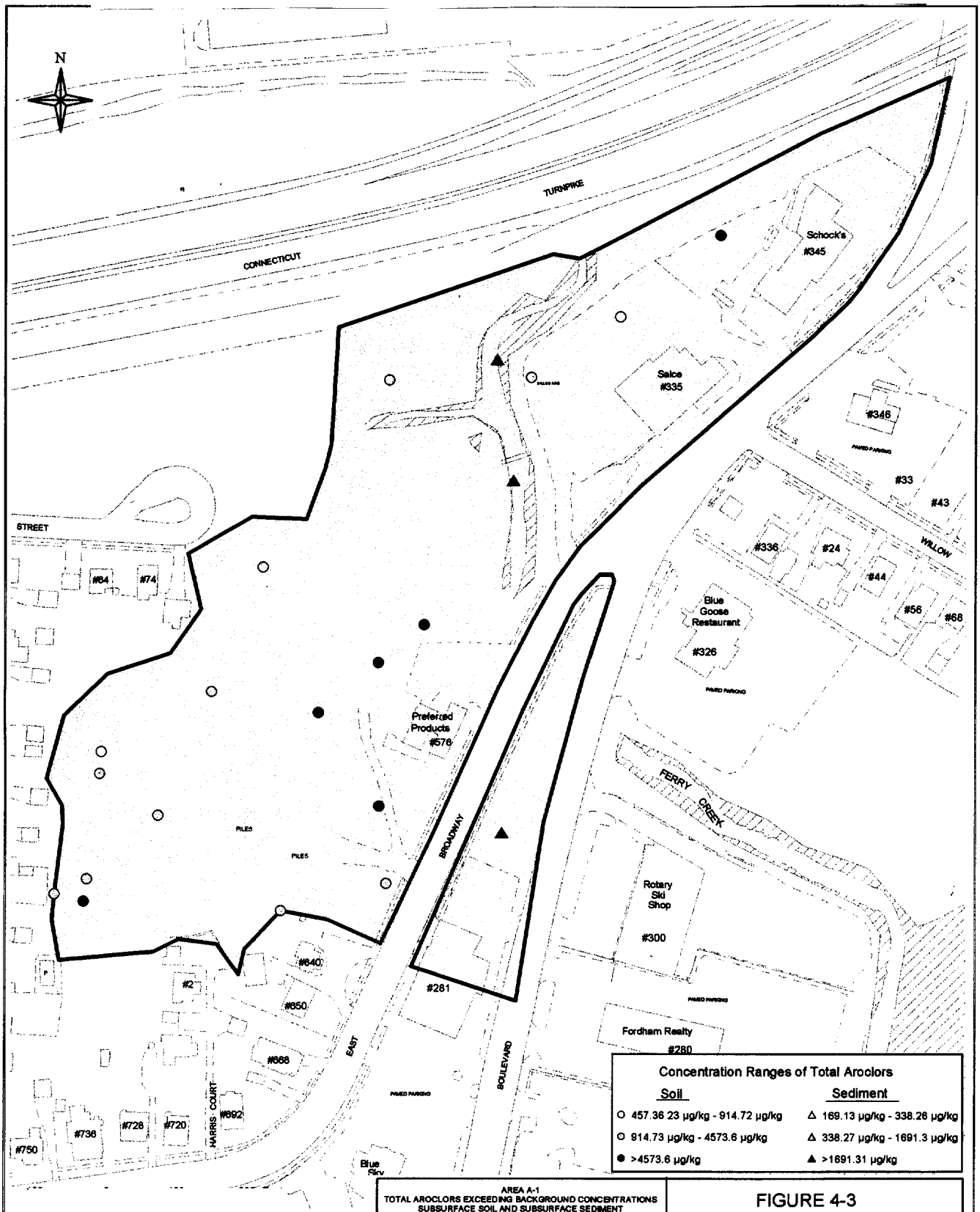
ORIGINAL INCLUDES COLOR CODING.

Available at the US EPA New England Superfund Records Center, Boston, MA



ORIGINAL INCLUDES COLOR CODING.

Available at the US EPA New England Superfund Records Center, Boston, MA



Concentration Ranges of Total Aroclors

Soil	Sediment
○ 457.36 23 µg/kg - 914.72 µg/kg	△ 169.13 µg/kg - 338.26 µg/kg
○ 914.73 µg/kg - 4573.6 µg/kg	△ 338.27 µg/kg - 1691.3 µg/kg
● >4573.6 µg/kg	▲ >1691.31 µg/kg

Ranges Compared to Average Background
○△□ > or = Background and < or = 2 x Background
⊙△□ > 2 x Background and < or = 10 x Background
◍▲■ > 10 x Background

NOTES:
1) PLAN NOT TO BE USED FOR DESIGN
2) ALL LOCATIONS TO BE CONSIDERED APPROXIMATE
3) IF MULTIPLE RESULTS EXIST FOR ONE BOREHOLE, THE MAXIMUM RESULT IS DISPLAYED

AREA A-1
TOTAL AROCLORS EXCEEDING BACKGROUND CONCENTRATIONS
SUBSURFACE SOIL AND SUBSURFACE SEDIMENT

RAYMARK - FERRY CREEK - OU3 - AREA I

FINAL REMEDIAL INVESTIGATION REPORT

STRATFORD, CONNECTICUT

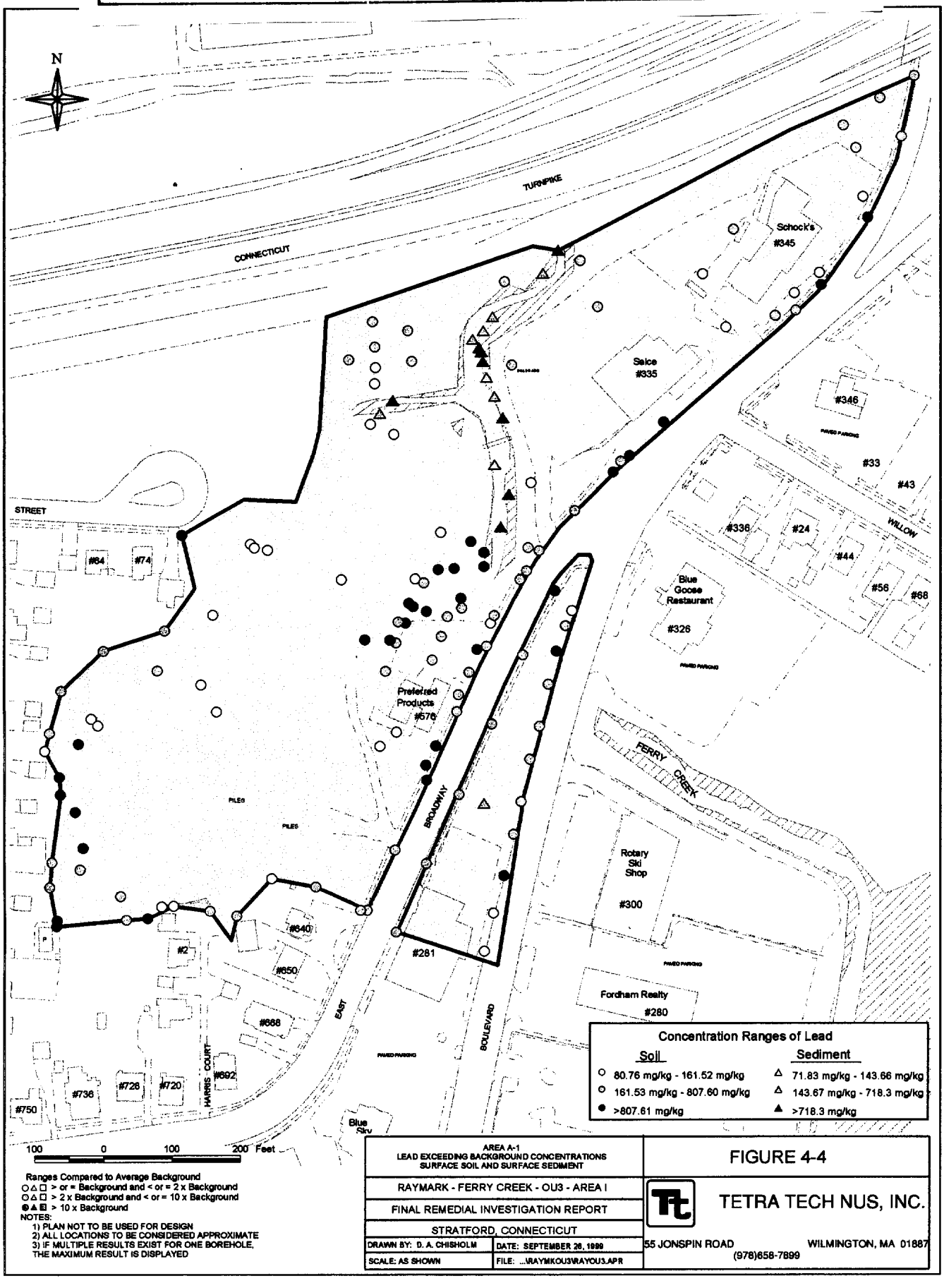
DRAWN BY: D. A. CHISHOLM	DATE: SEPTEMBER 28, 1999
SCALE: AS SHOWN	FILE: ..\RAYMKOU3\RAYOU3.APR

FIGURE 4-3

TETRA TECH NUS, INC.
55 JONSPIN ROAD WILMINGTON, MA 01887
(978)658-7899

ORIGINAL INCLUDES COLOR CODING.

Available at the US EPA New England Superfund Records Center, Boston, MA



AREA A-1
LEAD EXCEEDING BACKGROUND CONCENTRATIONS
SURFACE SOIL AND SURFACE SEDIMENT

FIGURE 4-4

RAYMARK - FERRY CREEK - OU3 - AREA I

FINAL REMEDIAL INVESTIGATION REPORT

STRATFORD, CONNECTICUT

DRAWN BY: D. A. CHISHOLM	DATE: SEPTEMBER 28, 1999
SCALE: AS SHOWN	FILE: ...\RAYMKOU3\RAYOU3.APR

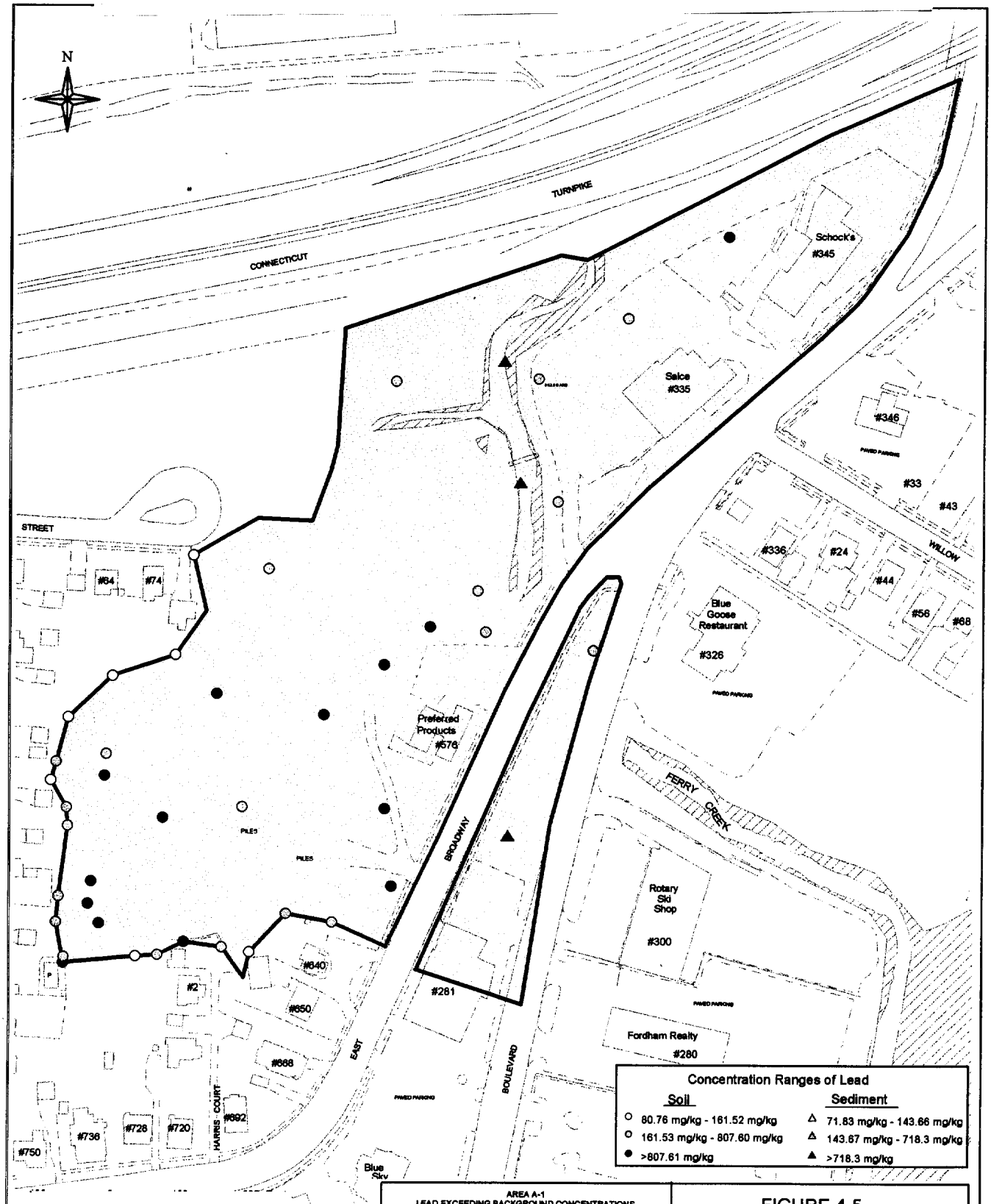
TETRA TECH NUS, INC.

55 JONSPIN ROAD WILMINGTON, MA 01887

(978)658-7899

ORIGINAL INCLUDES COLOR CODING.

Available at the US EPA New England Superfund Records Center, Boston, MA



Ranges Compared to Average Background
○△□ > or = Background and < or = 2 x Background
○△□ > 2 x Background and < or = 10 x Background
●▲■ > 10 x Background

NOTES:
1) PLAN NOT TO BE USED FOR DESIGN
2) ALL LOCATIONS TO BE CONSIDERED APPROXIMATE
3) IF MULTIPLE RESULTS EXIST FOR ONE BOREHOLE, THE MAXIMUM RESULT IS DISPLAYED

AREA A-1
LEAD EXCEEDING BACKGROUND CONCENTRATIONS
SUBSURFACE SOIL AND SUBSURFACE SEDIMENT

FIGURE 4-5

RAYMARK - FERRY CREEK - OU3 - AREA I

FINAL REMEDIAL INVESTIGATION REPORT

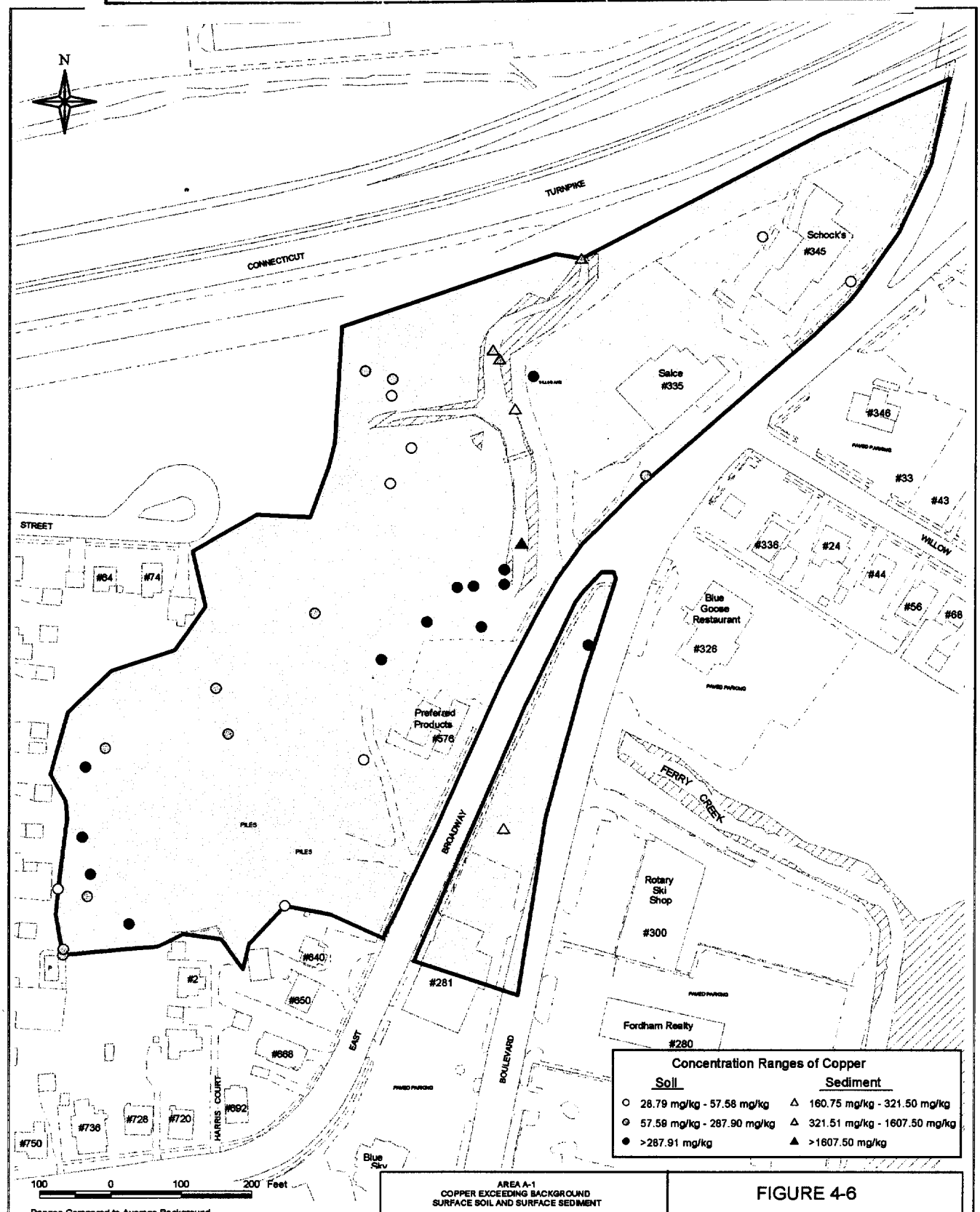
STRATFORD, CONNECTICUT

DRAWN BY: D. A. CHISHOLM	DATE: SEPTEMBER 26, 1999
SCALE: AS SHOWN	FILE: ...\RAYMKOU3\RAYOU3.APR

TETRA TECH NUS, INC.
55 JONSPIN ROAD WILMINGTON, MA 01887
(978)658-7899

ORIGINAL INCLUDES COLOR CODING.

Available at the US EPA New England Superfund Records Center, Boston, MA



Ranges Compared to Average Background
○△□ > or = Background and < or = 2 x Background
○△□ > 2 x Background and < or = 10 x Background
●▲■ > 10 x Background

NOTES:
1) PLAN NOT TO BE USED FOR DESIGN
2) ALL LOCATIONS TO BE CONSIDERED APPROXIMATE
3) IF MULTIPLE RESULTS EXIST FOR ONE BOREHOLE, THE MAXIMUM RESULT IS DISPLAYED

AREA A-1
COPPER EXCEEDING BACKGROUND
SURFACE SOIL AND SURFACE SEDIMENT

RAYMARK - FERRY CREEK - OU3 - AREA I

FINAL REMEDIAL INVESTIGATION REPORT

STRATFORD, CONNECTICUT

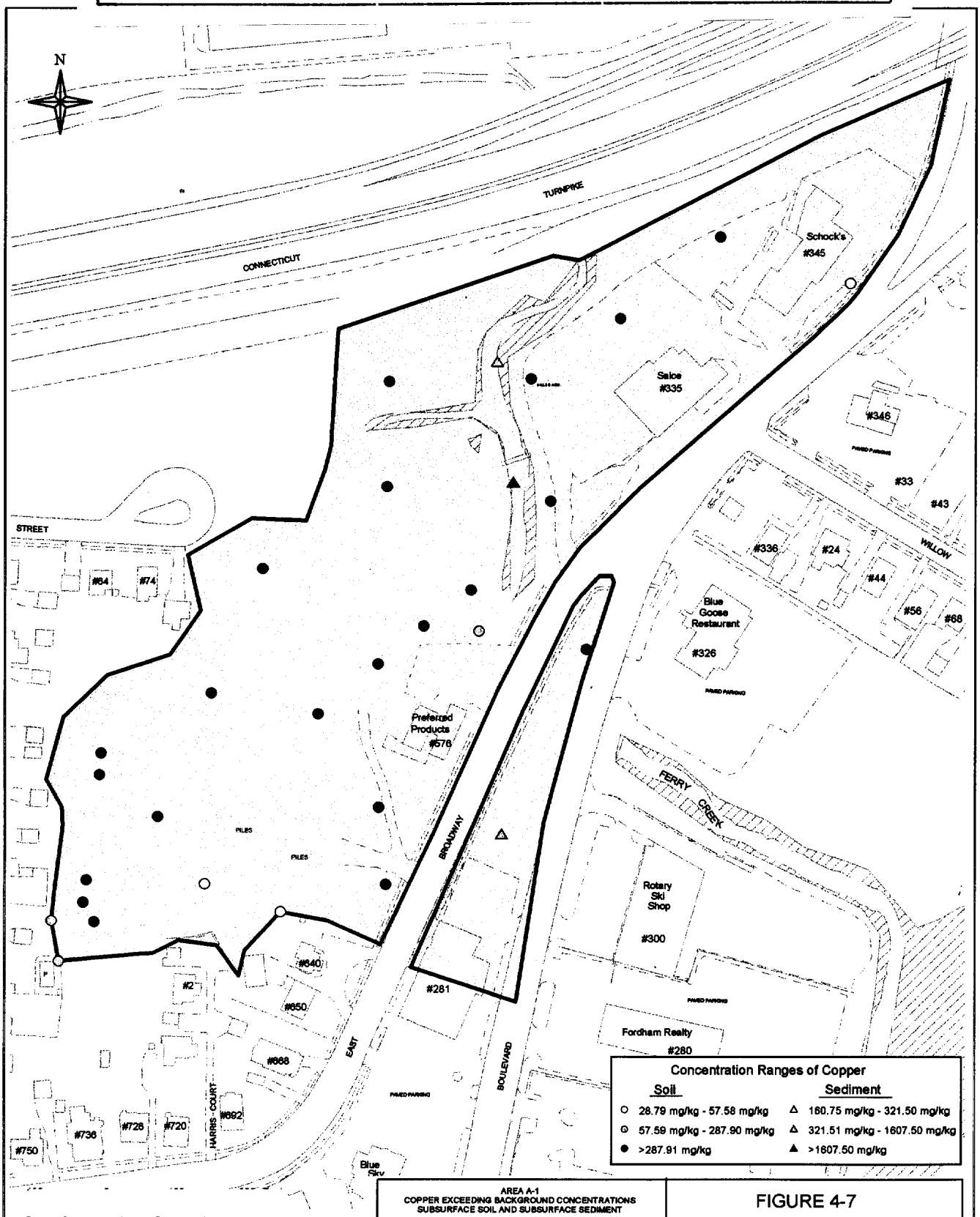
DRAWN BY: D. A. CHISHOLM	DATE: SEPTEMBER 28, 1999
SCALE: AS SHOWN	FILE: ...\RAYMKOU3\RAYCU3.APR

FIGURE 4-6

TETRA TECH NUS, INC.
55 JONSPIN ROAD WILMINGTON, MA 01887
(978)658-7899

ORIGINAL INCLUDES COLOR CODING.

Available at the US EPA New England Superfund Records Center, Boston, MA



Concentration Ranges of Copper

Soil		Sediment	
○	28.79 mg/kg - 57.58 mg/kg	△	160.75 mg/kg - 321.50 mg/kg
⊙	57.59 mg/kg - 287.90 mg/kg	△	321.51 mg/kg - 1607.50 mg/kg
●	>287.91 mg/kg	▲	>1607.50 mg/kg

Ranges Compared to Average Background
○△□ > or = Background and < or = 2 x Background
⊙△□ > 2 x Background and < or = 10 x Background
●▲■ > 10 x Background

NOTES:
1) PLAN NOT TO BE USED FOR DESIGN
2) ALL LOCATIONS TO BE CONSIDERED APPROXIMATE
3) IF MULTIPLE RESULTS EXIST FOR ONE BOREHOLE, THE MAXIMUM RESULT IS DISPLAYED

AREA A-1
COPPER EXCEEDING BACKGROUND CONCENTRATIONS
SUBSURFACE SOIL AND SUBSURFACE SEDIMENT

RAYMARK - FERRY CREEK - OU3 - AREA I

FINAL REMEDIAL INVESTIGATION REPORT

STRATFORD, CONNECTICUT

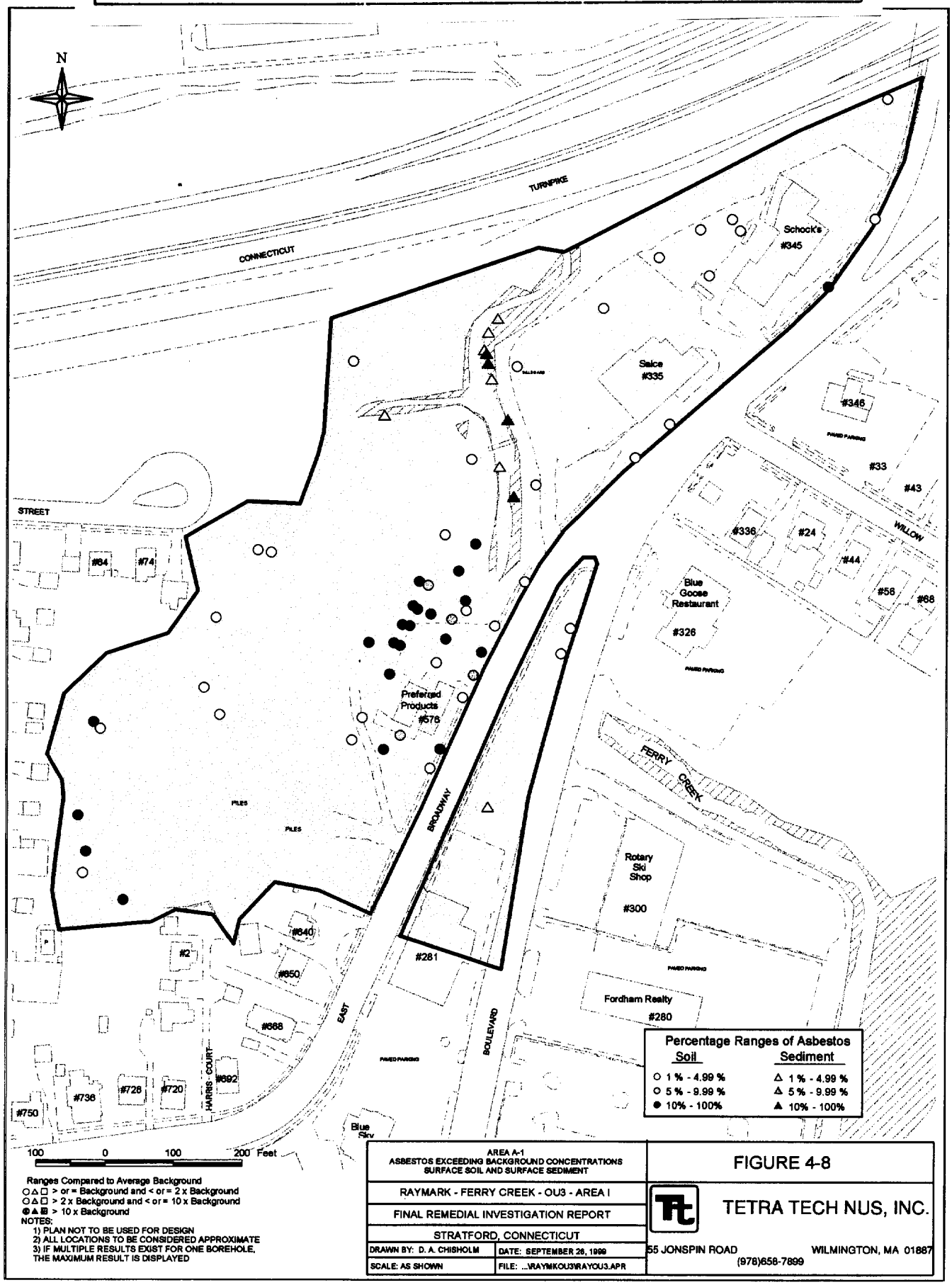
DRAWN BY: D. A. CHISHOLM	DATE: SEPTEMBER 28, 1999
SCALE: AS SHOWN	FILE: ...\RAYMKOU3\RAYOU3.APR

FIGURE 4-7

TETRA TECH NUS, INC.
55 JONSPIN ROAD WILMINGTON, MA 01887
(978)658-7899

ORIGINAL INCLUDES COLOR CODING.

Available at the US EPA New England Superfund Records Center, Boston, MA



AREA A-1
ASBESTOS EXCEEDING BACKGROUND CONCENTRATIONS
SURFACE SOIL AND SURFACE SEDIMENT

RAYMARK - FERRY CREEK - OU3 - AREA I

FINAL REMEDIAL INVESTIGATION REPORT

STRATFORD, CONNECTICUT

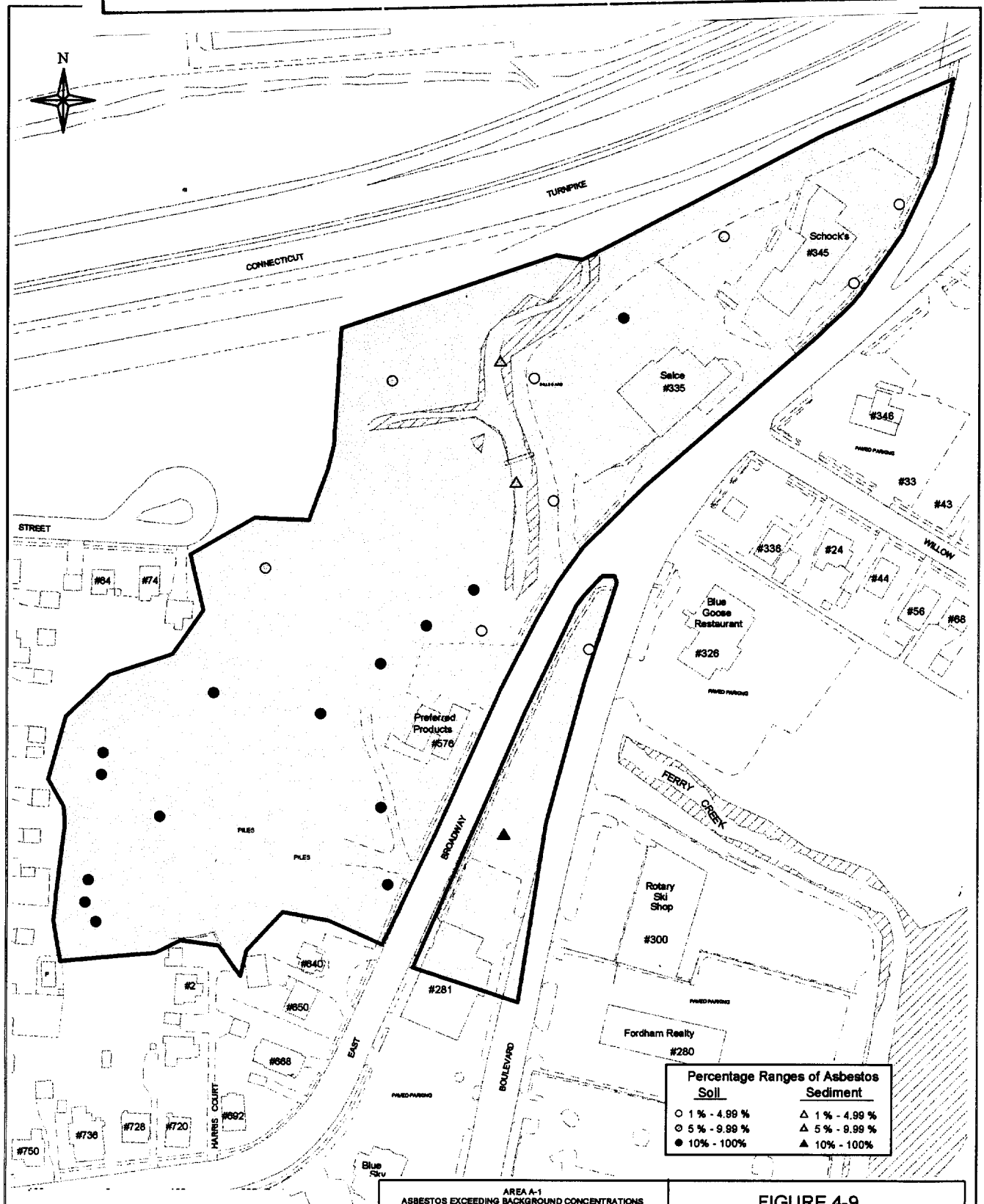
DRAWN BY: D. A. CHISHOLM	DATE: SEPTEMBER 28, 1999
SCALE: AS SHOWN	FILE: ...\RAYM\OU3\RAYOU3.APR

FIGURE 4-8

TETRA TECH NUS, INC.
55 JONSPIN ROAD WILMINGTON, MA 01887
(978)658-7899

ORIGINAL INCLUDES COLOR CODING.

Available at the US EPA New England Superfund Records Center, Boston, MA



Percentage Ranges of Asbestos	
Soil	Sediment
○ 1 % - 4.99 %	△ 1 % - 4.99 %
⊘ 5 % - 9.99 %	⊿ 5 % - 9.99 %
● 10% - 100%	▲ 10% - 100%

Ranges Compared to Average Background
○△□ > or = Background and < or = 2 x Background
⊘⊿◪ > 2 x Background and < or = 10 x Background
●▲■ > 10 x Background

NOTES:
1) PLAN NOT TO BE USED FOR DESIGN
2) ALL LOCATIONS TO BE CONSIDERED APPROXIMATE
3) IF MULTIPLE RESULTS EXIST FOR ONE BOREHOLE, THE MAXIMUM RESULT IS DISPLAYED

AREA A-1
ASBESTOS EXCEEDING BACKGROUND CONCENTRATIONS
SUBSURFACE SOIL AND SUBSURFACE SEDIMENT

RAYMARK - FERRY CREEK - OU3 - AREA I

FINAL REMEDIAL INVESTIGATION REPORT

STRATFORD, CONNECTICUT

DRAWN BY: D. A. CHISHOLM | DATE: SEPTEMBER 26, 1999

SCALE: AS SHOWN | FILE: ...\RAYMKOU3\RAYOU3.APR

FIGURE 4-9

TETRA TECH NUS, INC.
55 JONSPIN ROAD WILMINGTON, MA 01887
(978)658-7899

TARGET SHEET

THE MATERIAL DESCRIBED BELOW
WAS NOT SCANNED BECAUSE:

(X) OVERSIZED

() NON-PAPER MEDIA

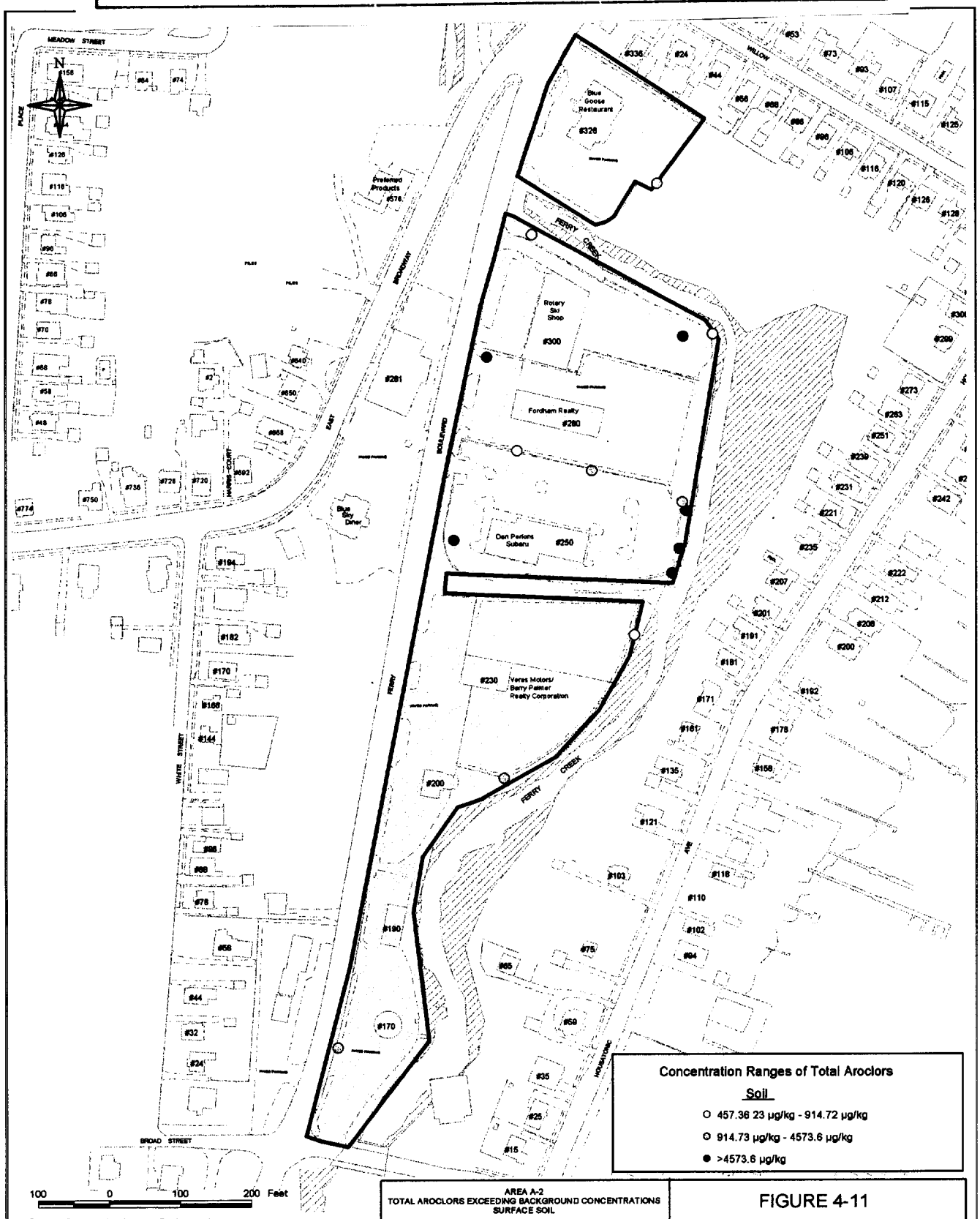
() OTHER:

DESCRIPTION: DOC# 10952
FIGURE 4-10 SAMPLE LOCATION PLAN -
AREA A-2.

THE OMITTED MATERIAL IS AVAILABLE FOR REVIEW
BY APPOINTMENT
AT THE EPA NEW ENGLAND SUPERFUND RECORDS CENTER,
BOSTON, MA

ORIGINAL INCLUDES COLOR CODING.

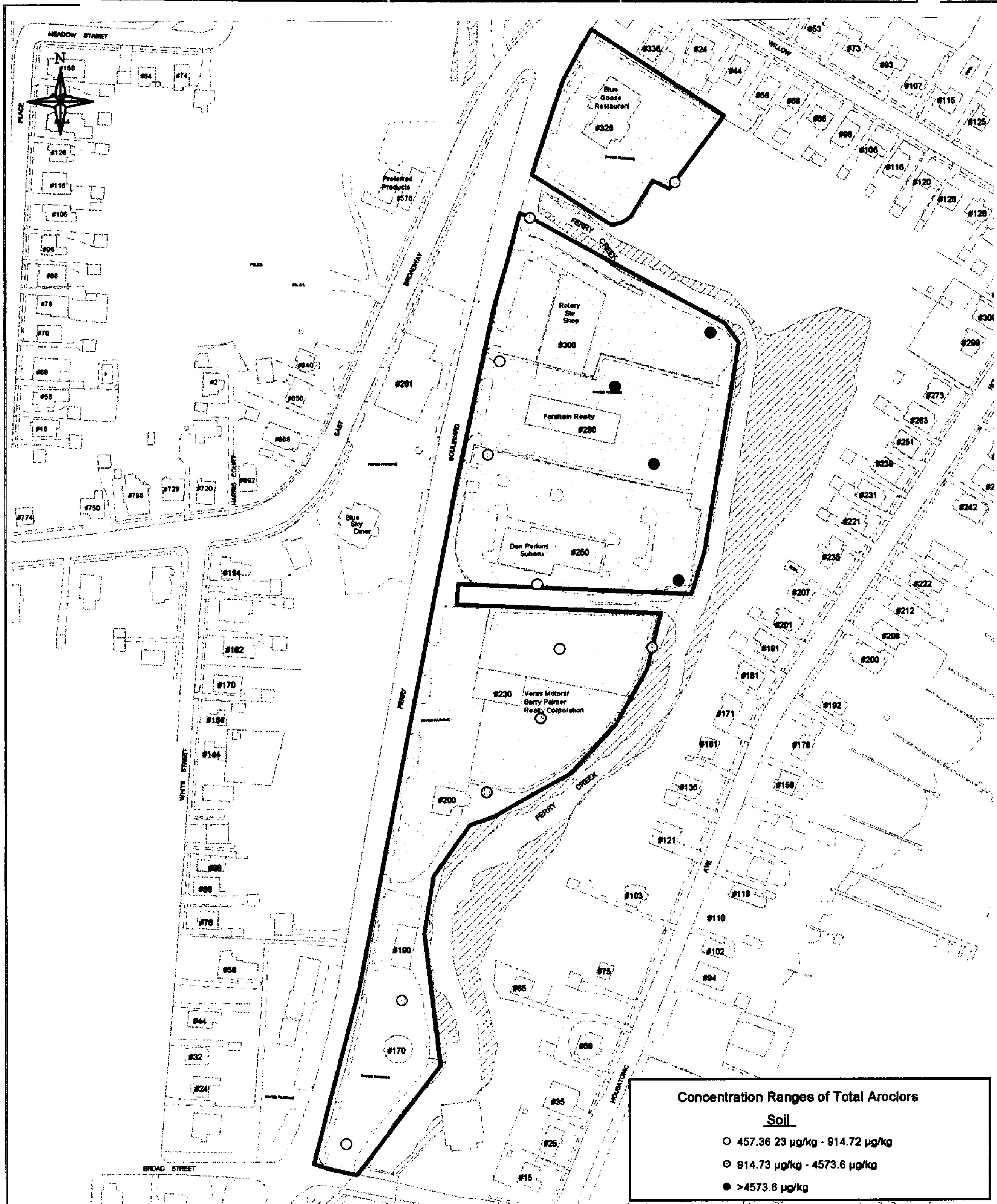
Available at the US EPA New England Superfund Records Center, Boston, MA



AREA A-2 TOTAL AROCLORS EXCEEDING BACKGROUND CONCENTRATIONS SURFACE SOIL	FIGURE 4-11
RAYMARK - FERRY CREEK - OU3 - AREA I	TETRA TECH NUS, INC.
FINAL REMEDIAL INVESTIGATION REPORT	
STRATFORD, CONNECTICUT	
DRAWN BY: D. A. CHISHOLM / DATE: SEPTEMBER 26, 1999	55 JONSPIN ROAD WILMINGTON, MA 01887
SCALE: AS SHOWN / FILE: ...\RAYMKOU3\RAYOU3.APR	(978)658-7899

ORIGINAL INCLUDES COLOR CODING.

Available at the US EPA New England Superfund Records Center, Boston, MA



Ranges Compared to Average Background
○△□ > or = Background and < or = 2 x Background
○△□ > 2 x Background and < or = 10 x Background
⊕▲▣ > 10 x Background

NOTES:
1) PLAN NOT TO BE USED FOR DESIGN
2) ALL LOCATIONS TO BE CONSIDERED APPROXIMATE
3) IF MULTIPLE RESULTS EXIST FOR ONE BOREHOLE, THE MAXIMUM RESULT IS DISPLAYED

AREA A-2
TOTAL AROCLORS EXCEEDING BACKGROUND CONCENTRATIONS
SUBSURFACE SOIL

FIGURE 4-12

RAYMARK - FERRY CREEK - OU3 - AREA I

FINAL REMEDIAL INVESTIGATION REPORT

STRATFORD, CONNECTICUT

TETRA TECH NUS, INC.

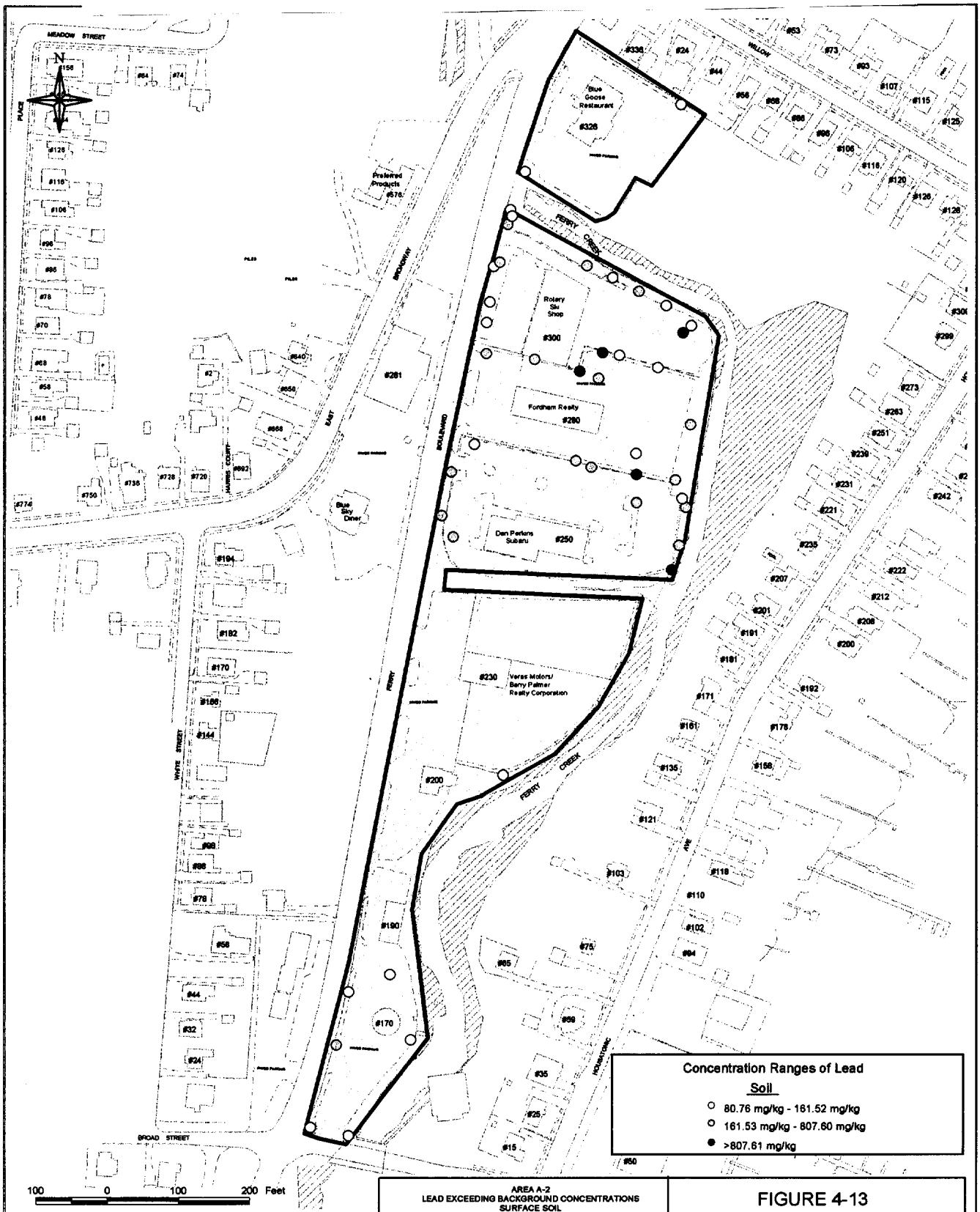
55 JONSPIN ROAD WILMINGTON, MA 01887
(978)658-7899

DRAWN BY: D. A. CHISHOLM | DATE: SEPTEMBER 28, 1999

SCALE: AS SHOWN | FILE: ...\RAYMKOU3\RAYOU3.APR

ORIGINAL INCLUDES COLOR CODING.

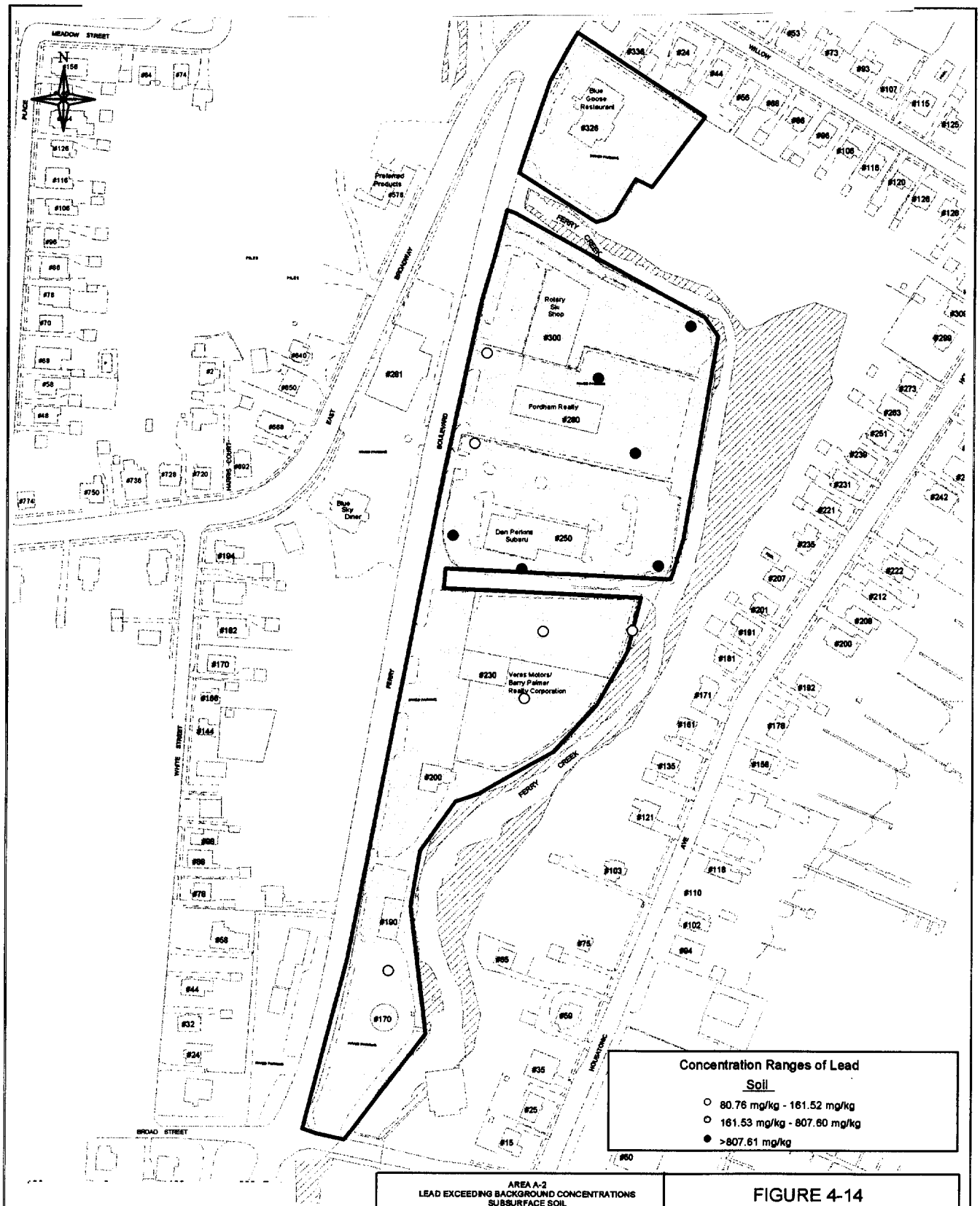
Available at the US EPA New England Superfund Records Center, Boston, MA



AREA A-2 LEAD EXCEEDING BACKGROUND CONCENTRATIONS SURFACE SOIL	FIGURE 4-13
RAYMARK - FERRY CREEK - OU3 - AREA I	TETRA TECH NUS, INC.
FINAL REMEDIAL INVESTIGATION REPORT	
STRATFORD, CONNECTICUT	
DRAWN BY: D. A. CHISHOLM / DATE: SEPTEMBER 28, 1999	55 JONSPIN ROAD WILMINGTON, MA 01887
SCALE: AS SHOWN / FILE: ...\RAYMKOU3\RAYOU3.APR	(978)658-7899

ORIGINAL INCLUDES COLOR CODING.

Available at the US EPA New England Superfund Records Center, Boston, MA



Ranges Compared to Average Background
○△□ > or = Background and < or = 2 x Background
○△□ > 2 x Background and < or = 10 x Background
●▲■ > 10 x Background

NOTES:
1) PLAN NOT TO BE USED FOR DESIGN
2) ALL LOCATIONS TO BE CONSIDERED APPROXIMATE
3) IF MULTIPLE RESULTS EXIST FOR ONE BOREHOLE, THE MAXIMUM RESULT IS DISPLAYED

AREA A-2
LEAD EXCEEDING BACKGROUND CONCENTRATIONS
SUBSURFACE SOIL

RAYMARK - FERRY CREEK - OU3 - AREA I

FINAL REMEDIAL INVESTIGATION REPORT

STRATFORD, CONNECTICUT

DRAWN BY: D. A. CHISHOLM | DATE: SEPTEMBER 26, 1999

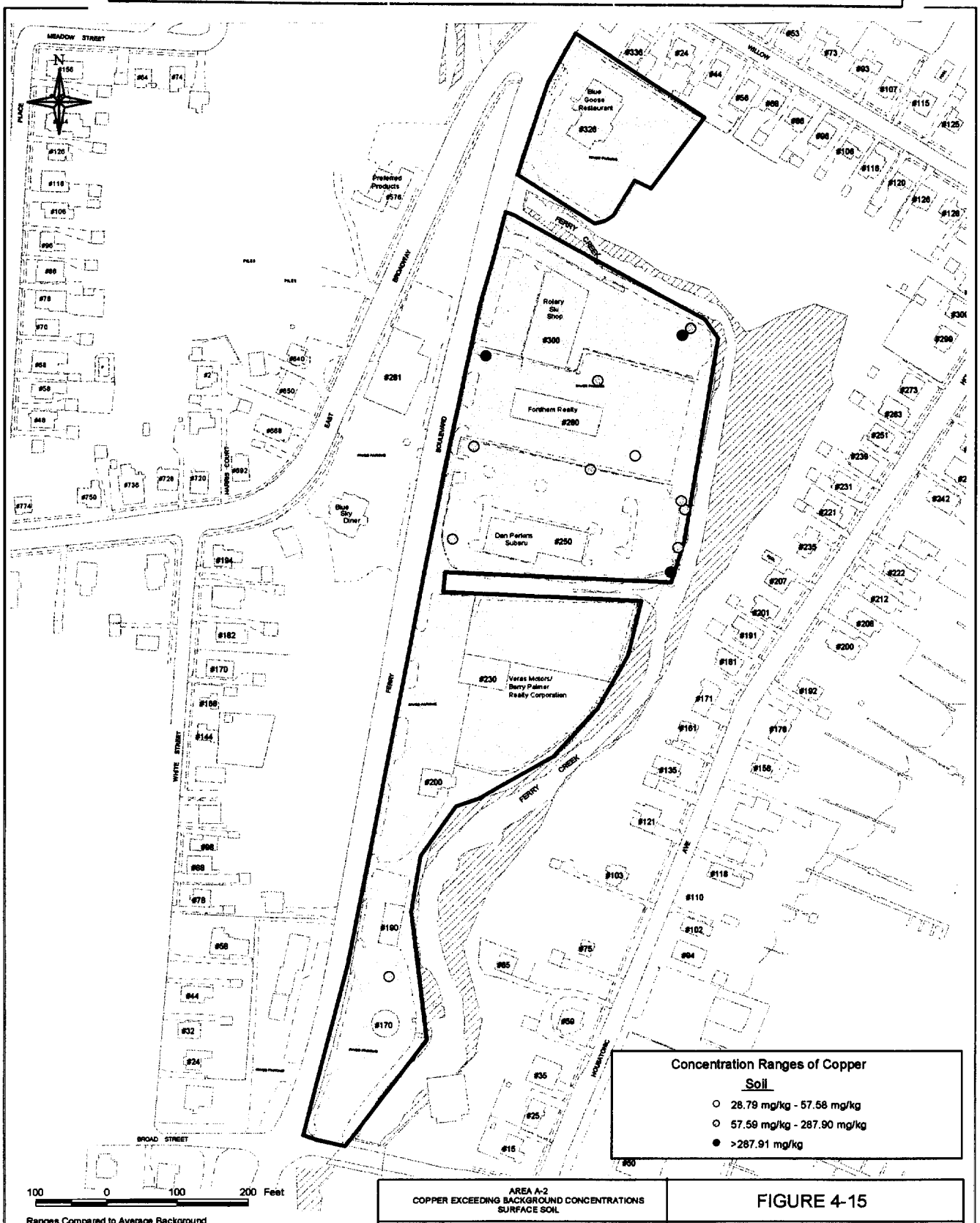
SCALE: AS SHOWN | FILE: ...\RAYMK\OU3\RAYOU3.APR

FIGURE 4-14

TETRA TECH NUS, INC.
55 JONSPIN ROAD WILMINGTON, MA 01887
(978)658-7899

ORIGINAL INCLUDES COLOR CODING.

Available at the US EPA New England Superfund Records Center, Boston, MA



AREA A-2
COPPER EXCEEDING BACKGROUND CONCENTRATIONS
SURFACE SOIL

RAYMARK - FERRY CREEK - OU3 - AREA I

FINAL REMEDIAL INVESTIGATION REPORT

STRATFORD, CONNECTICUT

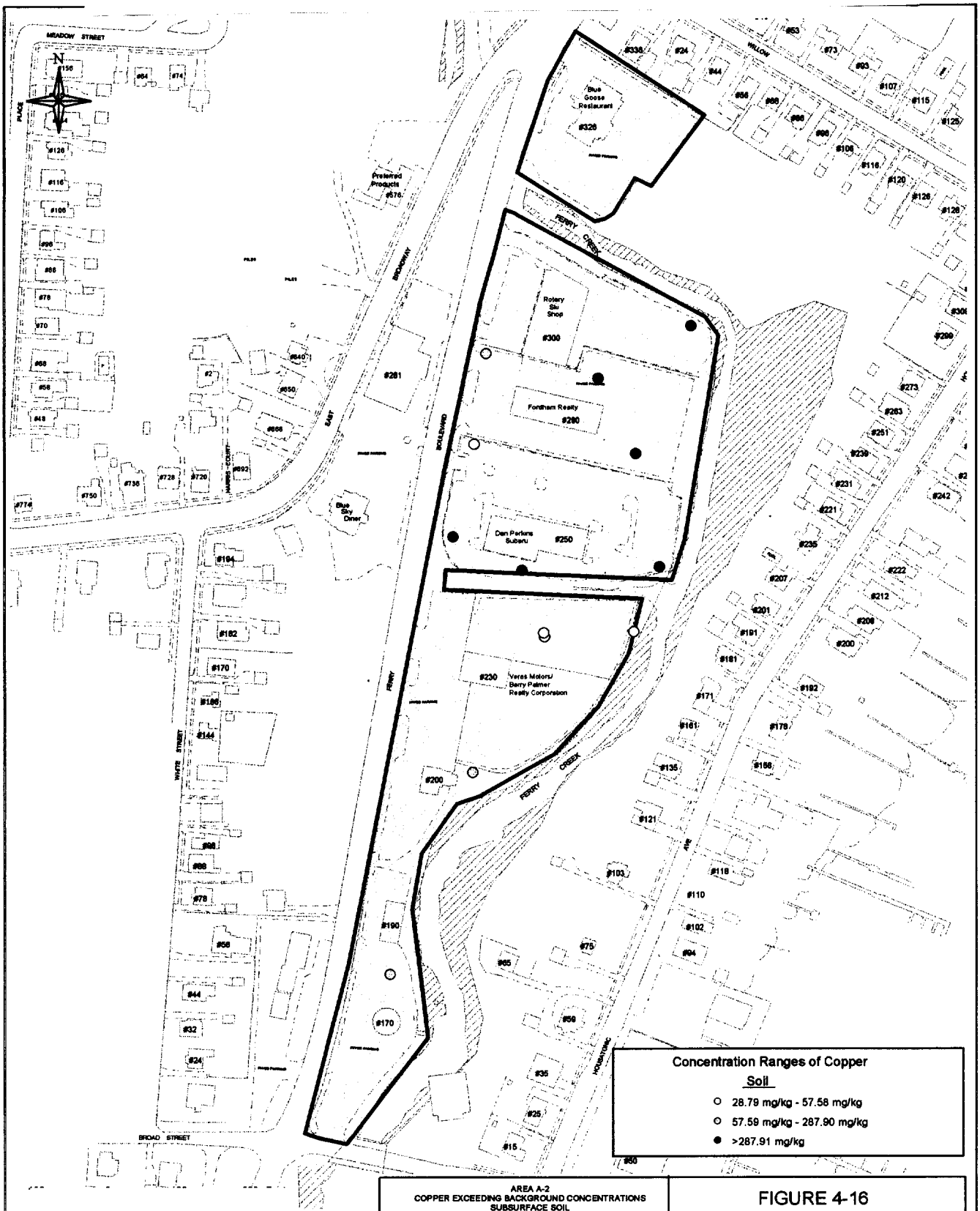
DRAWN BY: D. A. CHISHOLM	DATE: SEPTEMBER 26, 1999
SCALE: AS SHOWN	FILE: ..\RAYMKOU3\RAYOU3.APR

FIGURE 4-15

TETRA TECH NUS, INC.
55 JONSPIN ROAD WILMINGTON, MA 01887
(978)658-7899

ORIGINAL INCLUDES COLOR CODING.

Available at the US EPA New England Superfund Records Center, Boston, MA



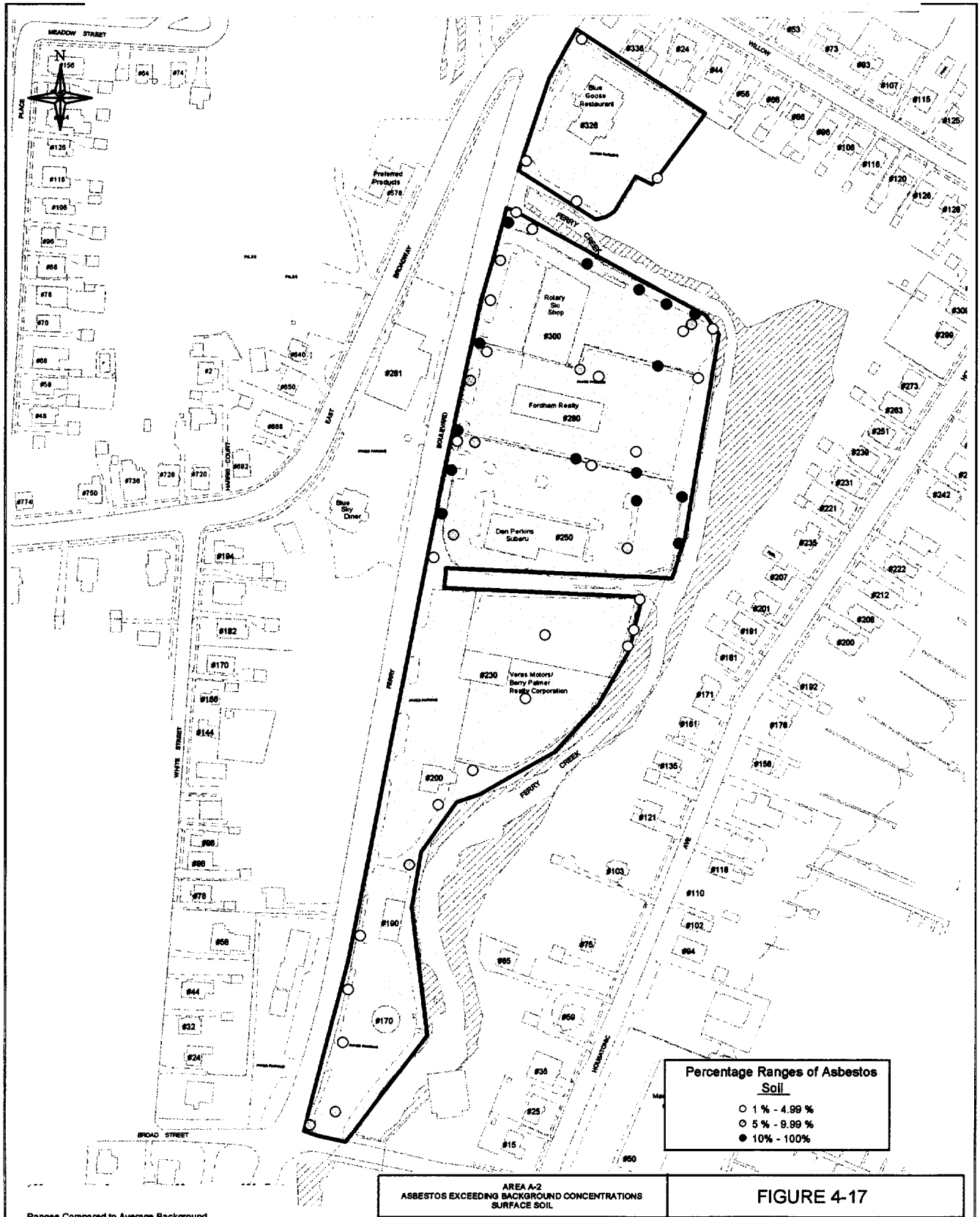
Ranges Compared to Average Background
○△□ > or = Background and < or = 2 x Background
○△□ > 2 x Background and < or = 10 x Background
●▲■ > 10 x Background

NOTES:
1) PLAN NOT TO BE USED FOR DESIGN
2) ALL LOCATIONS TO BE CONSIDERED APPROXIMATE
3) IF MULTIPLE RESULTS EXIST FOR ONE BOREHOLE, THE MAXIMUM RESULT IS DISPLAYED

AREA A-2 COPPER EXCEEDING BACKGROUND CONCENTRATIONS SUBSURFACE SOIL	FIGURE 4-16
RAYMARK - FERRY CREEK - OU3 - AREA I	TETRA TECH NUS, INC.
FINAL REMEDIAL INVESTIGATION REPORT	
STRATFORD, CONNECTICUT	
DRAWN BY: D. A. CHISHOLM / DATE: SEPTEMBER 26, 1999	55 JONSPIN ROAD WILMINGTON, MA 01887
SCALE: AS SHOWN / FILE: ..\RAYMKOU3\RAYOU3.APR	(978)658-7899

ORIGINAL INCLUDES COLOR CODING.

Available at the US EPA New England Superfund Records Center, Boston, MA



Ranges Compared to Average Background
○△□ > or = Background and < or = 2 x Background
○△□ > 2 x Background and < or = 10 x Background
●▲■ > 10 x Background

NOTES:
1) PLAN NOT TO BE USED FOR DESIGN
2) ALL LOCATIONS TO BE CONSIDERED APPROXIMATE
3) IF MULTIPLE RESULTS EXIST FOR ONE BOREHOLE, THE MAXIMUM RESULT IS DISPLAYED

AREA A-2
ASBESTOS EXCEEDING BACKGROUND CONCENTRATIONS
SURFACE SOIL

RAYMARK - FERRY CREEK - OU3 - AREA I

FINAL REMEDIAL INVESTIGATION REPORT

STRATFORD, CONNECTICUT

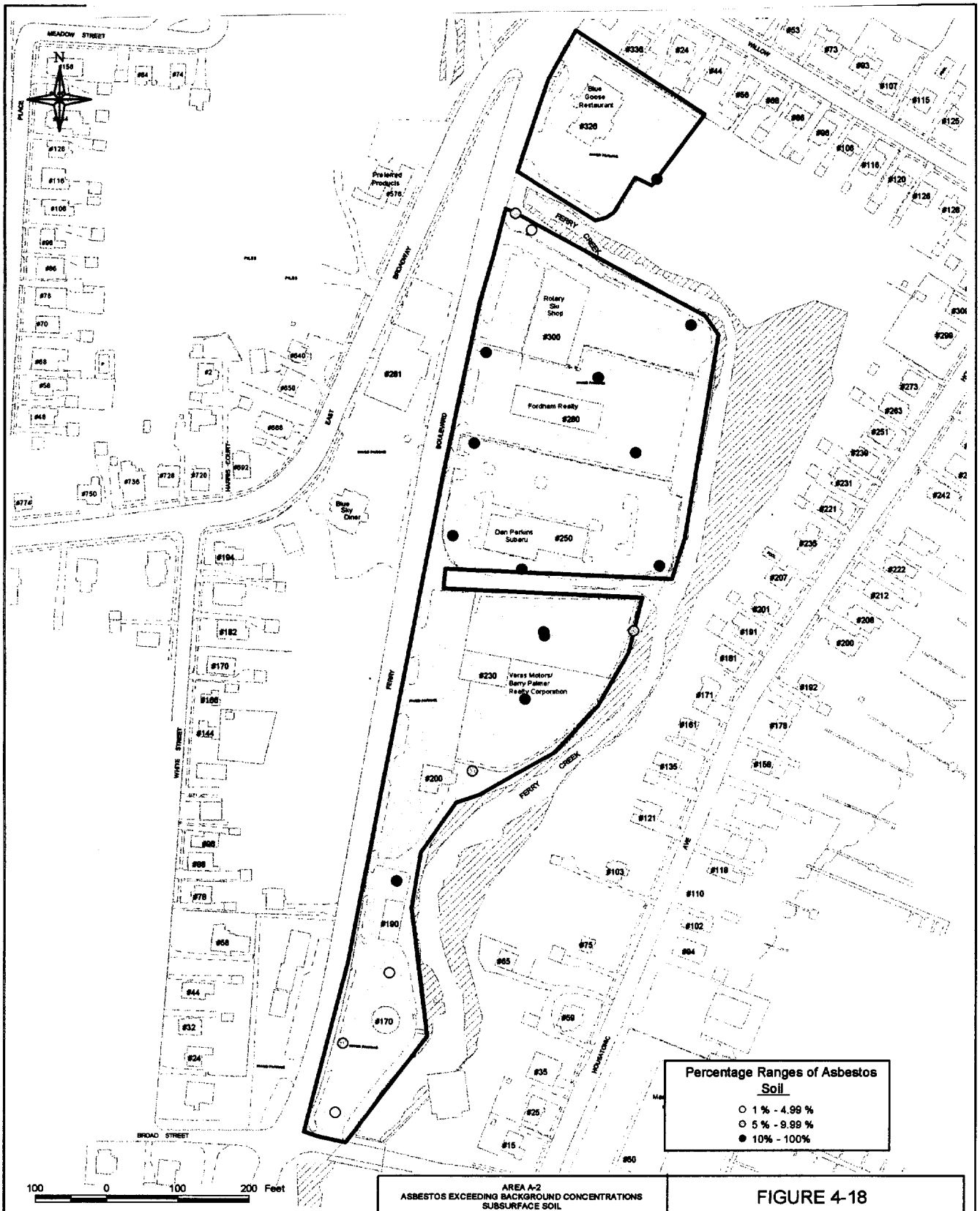
DRAWN BY: D. A. CHISHOLM	DATE: SEPTEMBER 26, 1999
SCALE: AS SHOWN	FILE: ...\RAYM\KOU3\RAYOU3.APR

FIGURE 4-17

TETRA TECH NUS, INC.
55 JONSPIN ROAD WILMINGTON, MA 01887
(978)658-7899

ORIGINAL INCLUDES COLOR CODING.

Available at the US EPA New England Superfund Records Center, Boston, MA



AREA A-2
ASBESTOS EXCEEDING BACKGROUND CONCENTRATIONS
SUBSURFACE SOIL

RAYMARK - FERRY CREEK - OU3 - AREA I

FINAL REMEDIAL INVESTIGATION REPORT

STRATFORD, CONNECTICUT

DRAWN BY: D. A. CHISHOLM | DATE: SEPTEMBER 28, 1999

SCALE: AS SHOWN | FILE: ...\RAYMKOU3\RAYOU3.APR

FIGURE 4-18

TETRA TECH NUS, INC.
55 JONSPIN ROAD WILMINGTON, MA 01887
(978)658-7899

TARGET SHEET

THE MATERIAL DESCRIBED BELOW
WAS NOT SCANNED BECAUSE:

(X) OVERSIZED

() NON-PAPER MEDIA

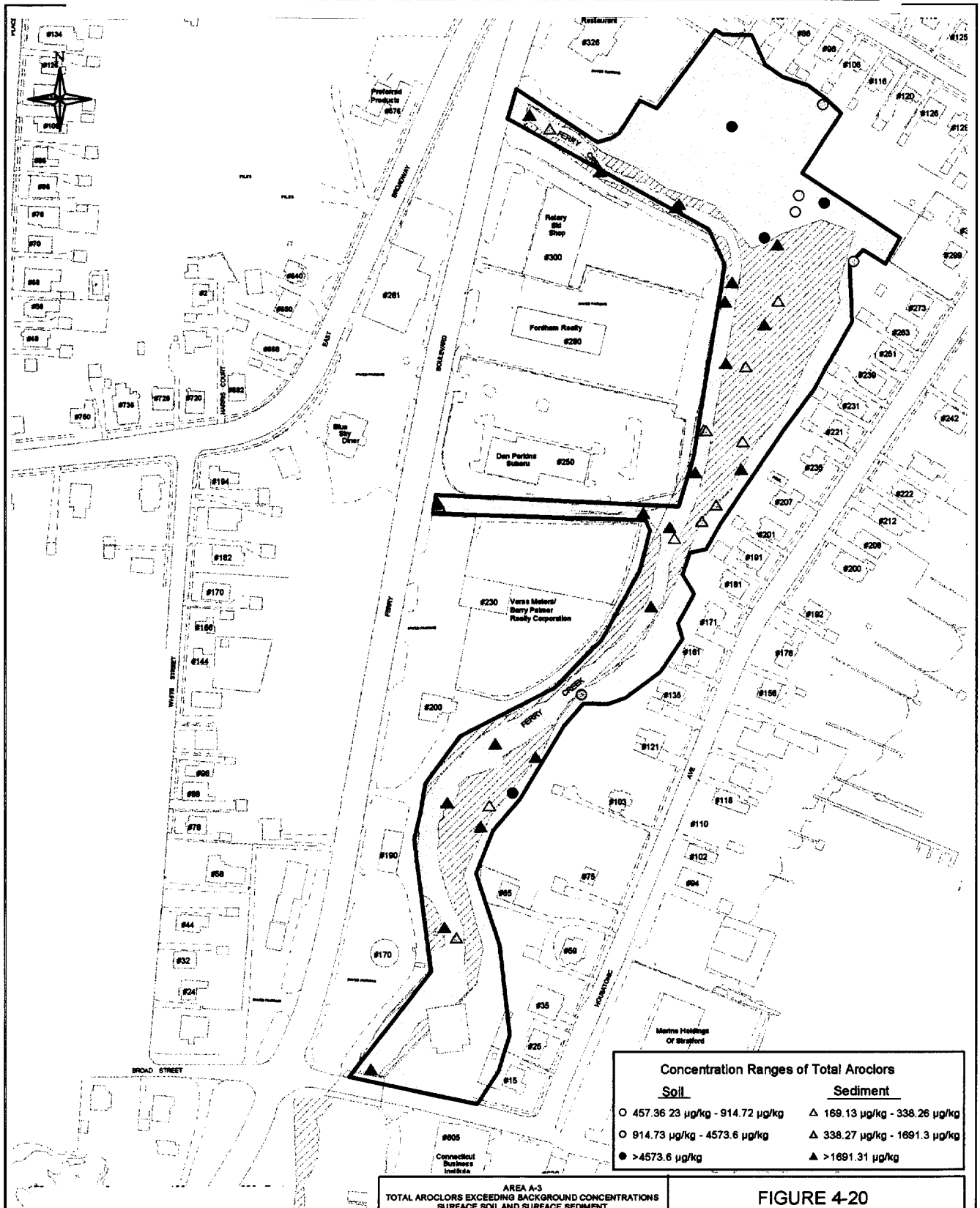
() OTHER:

DESCRIPTION: DOC# 10952
FIGURE 4-19 SAMPLE LOCATION PLAN -
AREA A-3.

THE OMITTED MATERIAL IS AVAILABLE FOR REVIEW
BY APPOINTMENT
AT THE EPA NEW ENGLAND SUPERFUND RECORDS CENTER,
BOSTON, MA

ORIGINAL INCLUDES COLOR CODING.

Available at the US EPA New England Superfund Records Center, Boston, MA



Concentration Ranges of Total Aroclors

Soil	Sediment
○ 457.36 23 µg/kg - 914.72 µg/kg	△ 169.13 µg/kg - 338.26 µg/kg
○ 914.73 µg/kg - 4573.6 µg/kg	△ 338.27 µg/kg - 1691.3 µg/kg
● >4573.6 µg/kg	▲ >1691.31 µg/kg

Ranges Compared to Average Background
○△□ > or = Background and < or = 2 x Background
○△□ > 2 x Background and < or = 10 x Background
●▲■ > 10 x Background

NOTES:
1) PLAN NOT TO BE USED FOR DESIGN
2) ALL LOCATIONS TO BE CONSIDERED APPROXIMATE
3) IF MULTIPLE RESULTS EXIST FOR ONE BOREHOLE, THE MAXIMUM RESULT IS DISPLAYED

AREA A-3
TOTAL AROCLORS EXCEEDING BACKGROUND CONCENTRATIONS
SURFACE SOIL AND SURFACE SEDIMENT

RAYMARK - FERRY CREEK - OU3 - AREA I

FINAL REMEDIAL INVESTIGATION REPORT

STRATFORD, CONNECTICUT

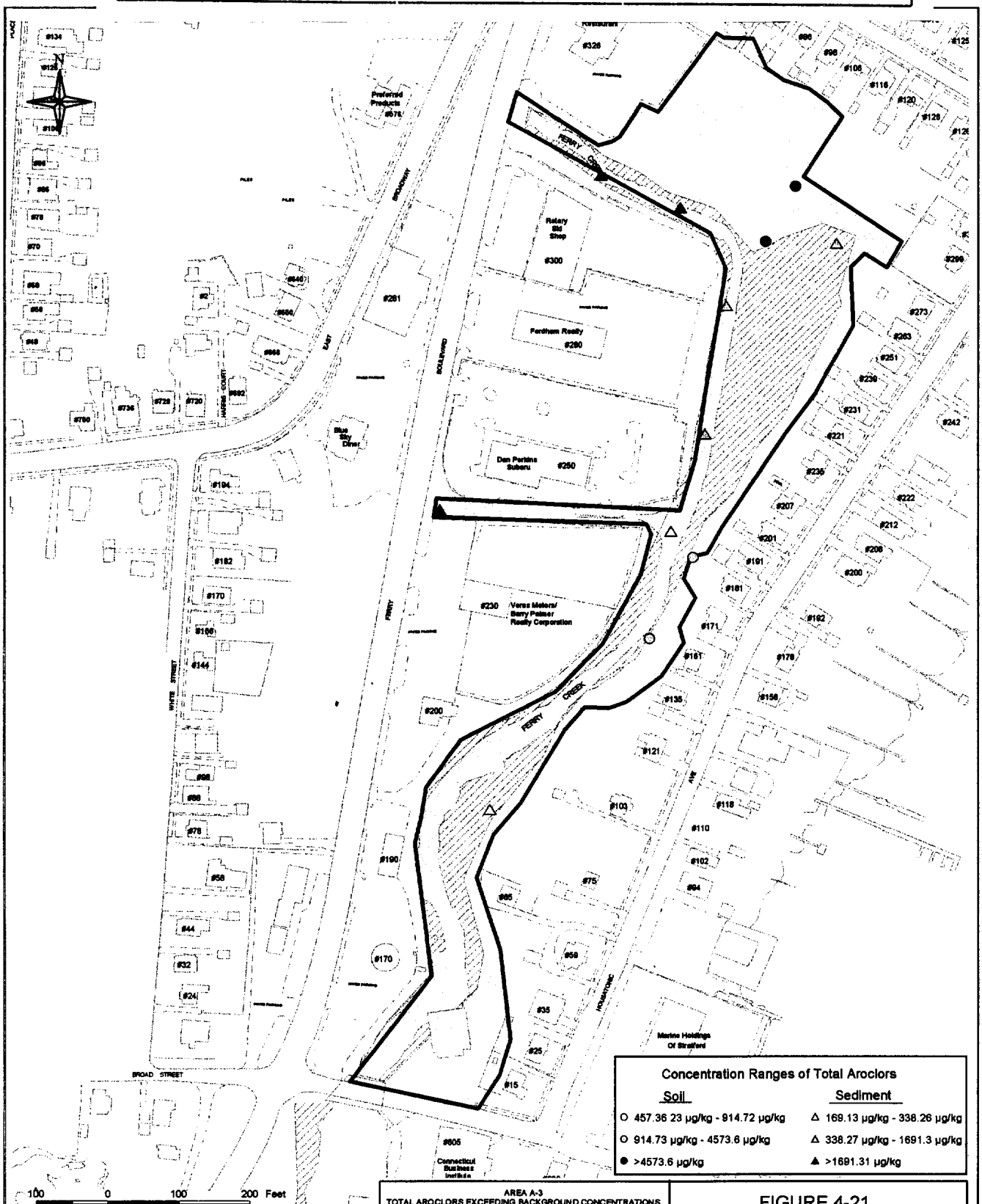
DRAWN BY: D. A. CHISHOLM	DATE: SEPTEMBER 26, 1999
SCALE: AS SHOWN	FILE: ...\RAYMKOU3\RAYOU3.APR

FIGURE 4-20

TETRA TECH NUS, INC.
55 JONSPIN ROAD WILMINGTON, MA 01887
(978)658-7899

ORIGINAL INCLUDES COLOR CODING.

Available at the US EPA New England Superfund Records Center, Boston, MA



Concentration Ranges of Total Aroclors

Soil	Sediment
○ 457.36 23 µg/kg - 914.72 µg/kg	△ 169.13 µg/kg - 338.26 µg/kg
○ 914.73 µg/kg - 4573.6 µg/kg	△ 338.27 µg/kg - 1691.3 µg/kg
● >4573.6 µg/kg	▲ >1691.31 µg/kg

Ranges Compared to Average Background
○△□ > or = Background and < or = 2 x Background
○△□ > 2 x Background and < or = 10 x Background
●▲■ > 10 x Background

NOTES:
1) PLAN NOT TO BE USED FOR DESIGN
2) ALL LOCATIONS TO BE CONSIDERED APPROXIMATE
3) IF MULTIPLE RESULTS EXIST FOR ONE BOREHOLE, THE MAXIMUM RESULT IS DISPLAYED

AREA A-3
TOTAL AROCLORS EXCEEDING BACKGROUND CONCENTRATIONS SUBSURFACE SOIL AND SUBSURFACE SEDIMENT

RAYMARK - FERRY CREEK - OU3 - AREA I

FINAL REMEDIAL INVESTIGATION REPORT

STRATFORD, CONNECTICUT

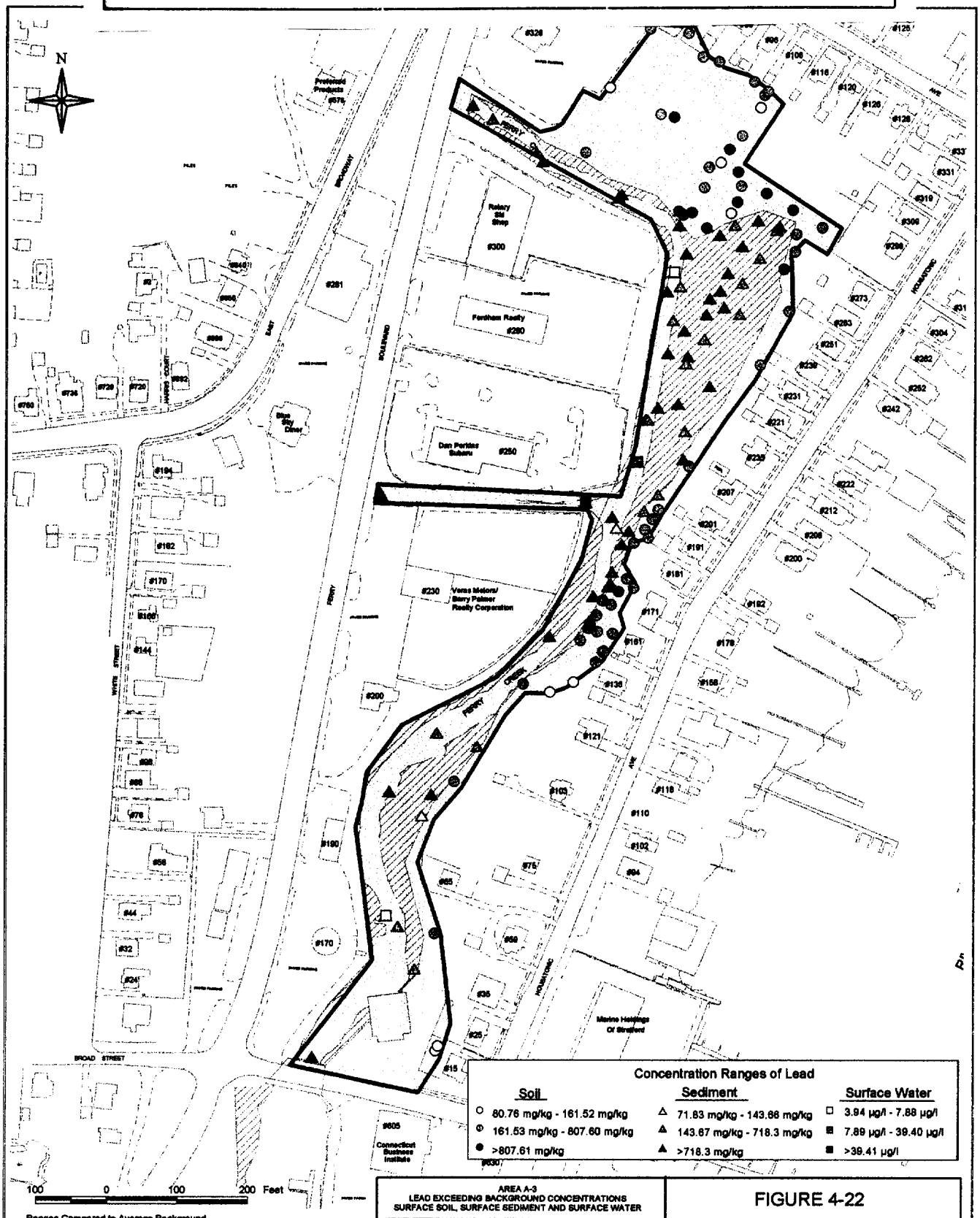
DRAWN BY: D. A. CHISHOLM	DATE: SEPTEMBER 26, 1999
SCALE: AS SHOWN	FILE: ...\RAYMKOU3\RAYOU3.APR

FIGURE 4-21

TETRA TECH NUS, INC.
55 JONSPIN ROAD WILMINGTON, MA 01887
(978)658-7899

ORIGINAL INCLUDES COLOR CODING.

Available at the US EPA New England Superfund Records Center, Boston, MA



AREA A-3
LEAD EXCEEDING BACKGROUND CONCENTRATIONS
SURFACE SOIL, SURFACE SEDIMENT AND SURFACE WATER

RAYMARK - FERRY CREEK - OU3 - AREA I

FINAL REMEDIAL INVESTIGATION REPORT

STRATFORD, CONNECTICUT

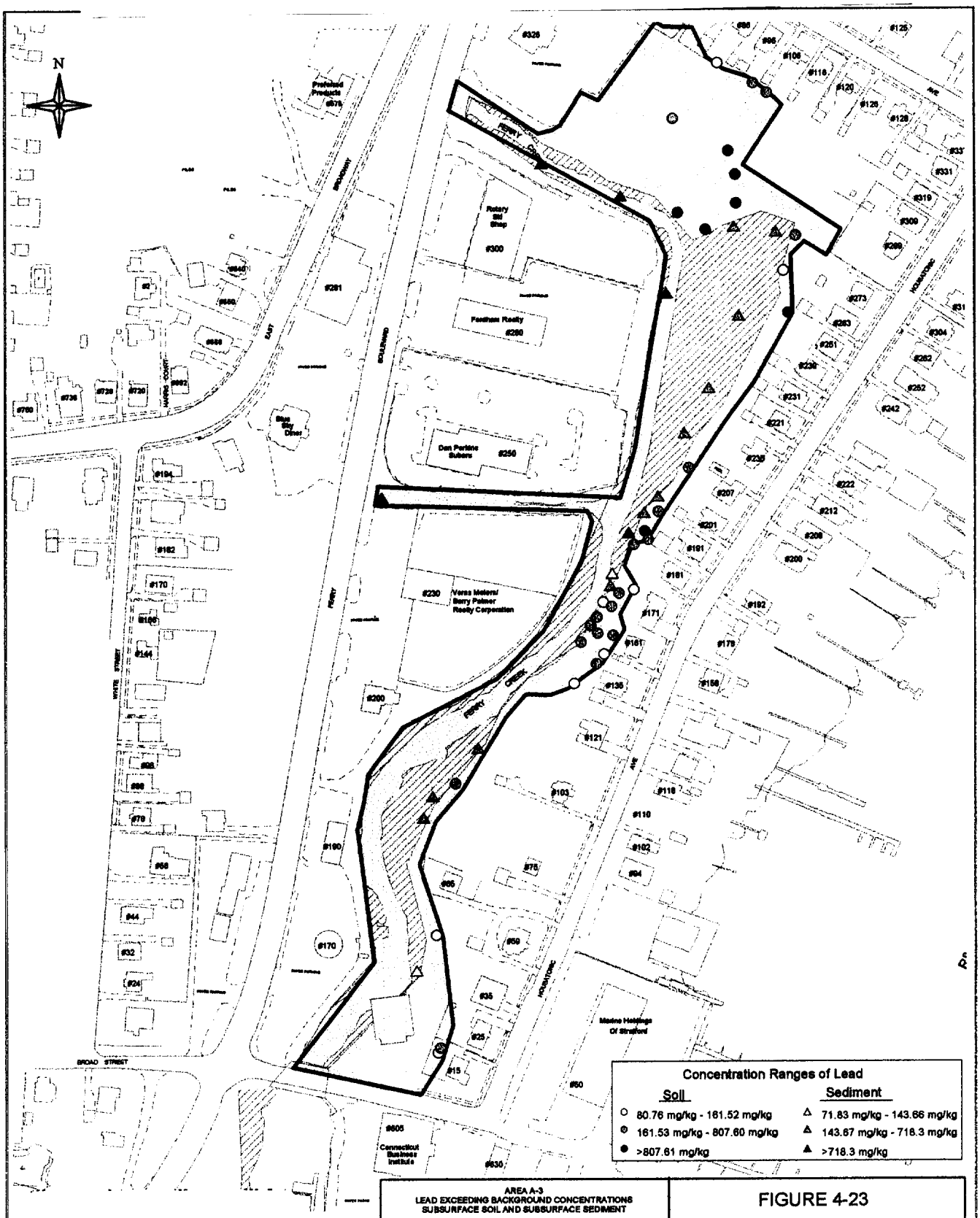
DRAWN BY: D. A. CHISHOLM	DATE: SEPTEMBER 28, 1999
SCALE: AS SHOWN	FILE: ...\RAYMKOU3\RAYOU3.APR

FIGURE 4-22

TETRA TECH NUS, INC.
55 JONSPIN ROAD WILMINGTON, MA 01887
(978)658-7899

ORIGINAL INCLUDES COLOR CODING.

Available at the US EPA New England Superfund Records Center, Boston, MA



Concentration Ranges of Lead

Soil		Sediment	
○	80.76 mg/kg - 161.52 mg/kg	△	71.83 mg/kg - 143.66 mg/kg
◎	161.53 mg/kg - 807.60 mg/kg	▲	143.67 mg/kg - 718.3 mg/kg
●	>807.61 mg/kg	▲	>718.3 mg/kg

Ranges Compared to Average Background
○△□ > or = Background and < or = 2 x Background
◎▲▣ > 2 x Background and < or = 10 x Background
●▲■ > 10 x Background

NOTES:
1) PLAN NOT TO BE USED FOR DESIGN
2) ALL LOCATIONS TO BE CONSIDERED APPROXIMATE
3) IF MULTIPLE RESULTS EXIST FOR ONE BOREHOLE, THE MAXIMUM RESULT IS DISPLAYED

AREA A-3
LEAD EXCEEDING BACKGROUND CONCENTRATIONS
SUBSURFACE SOIL AND SUBSURFACE SEDIMENT

RAYMARK - FERRY CREEK - OU3 - AREA I

FINAL REMEDIAL INVESTIGATION REPORT

STRATFORD, CONNECTICUT

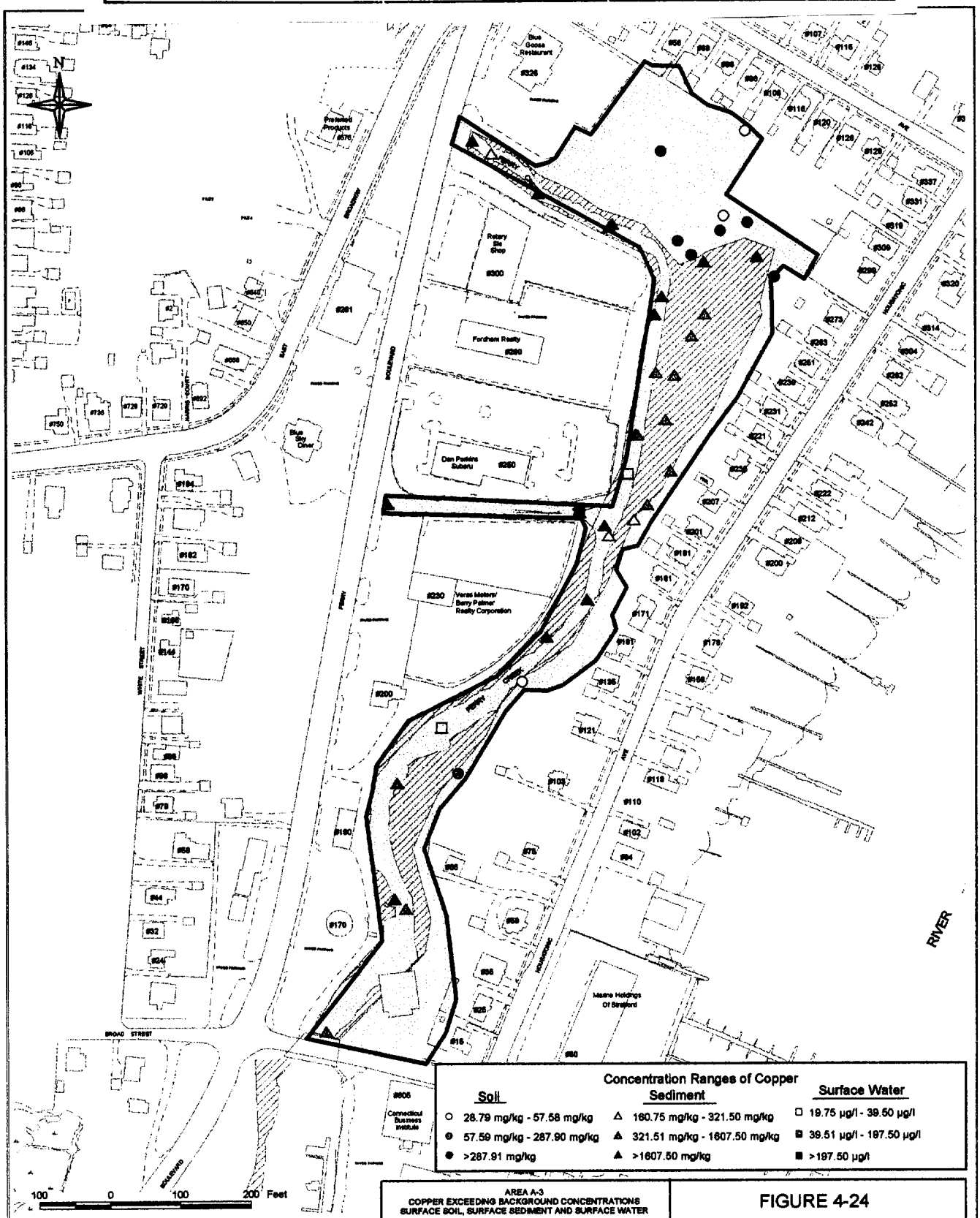
DRAWN BY: D. A. CHISHOLM	DATE: SEPTEMBER 28, 1999
SCALE: AS SHOWN	FILE: ...\RAYMKOU3\RAYOU3.APR

FIGURE 4-23

TETRA TECH NUS, INC.
55 JONSPIN ROAD WILMINGTON, MA 01887
(978)658-7899

ORIGINAL INCLUDES COLOR CODING.

Available at the US EPA New England Superfund Records Center, Boston, MA



Concentration Ranges of Copper

Soil	Sediment	Surface Water
○ 28.79 mg/kg - 57.58 mg/kg	△ 160.75 mg/kg - 321.50 mg/kg	□ 19.75 µg/l - 39.50 µg/l
◎ 57.59 mg/kg - 287.90 mg/kg	▲ 321.51 mg/kg - 1607.50 mg/kg	▣ 39.51 µg/l - 197.50 µg/l
● >287.91 mg/kg	▲ >1607.50 mg/kg	■ >197.50 µg/l

Ranges Compared to Average Background
○△□ > or = Background and < or = 2 x Background
◎▲▣ > 2 x Background and < or = 10 x Background
●▲■ > 10 x Background

NOTES:
1) PLAN NOT TO BE USED FOR DESIGN
2) ALL LOCATIONS TO BE CONSIDERED APPROXIMATE
3) IF MULTIPLE RESULTS EXIST FOR ONE BOREHOLE, THE MAXIMUM RESULT IS DISPLAYED

AREA A-3
COPPER EXCEEDING BACKGROUND CONCENTRATIONS
SURFACE SOIL, SURFACE SEDIMENT AND SURFACE WATER

RAYMARK - FERRY CREEK - OU3 - AREA I

FINAL REMEDIAL INVESTIGATION REPORT

STRATFORD, CONNECTICUT

DRAWN BY: D. A. CHISHOLM | DATE: SEPTEMBER 28, 1998

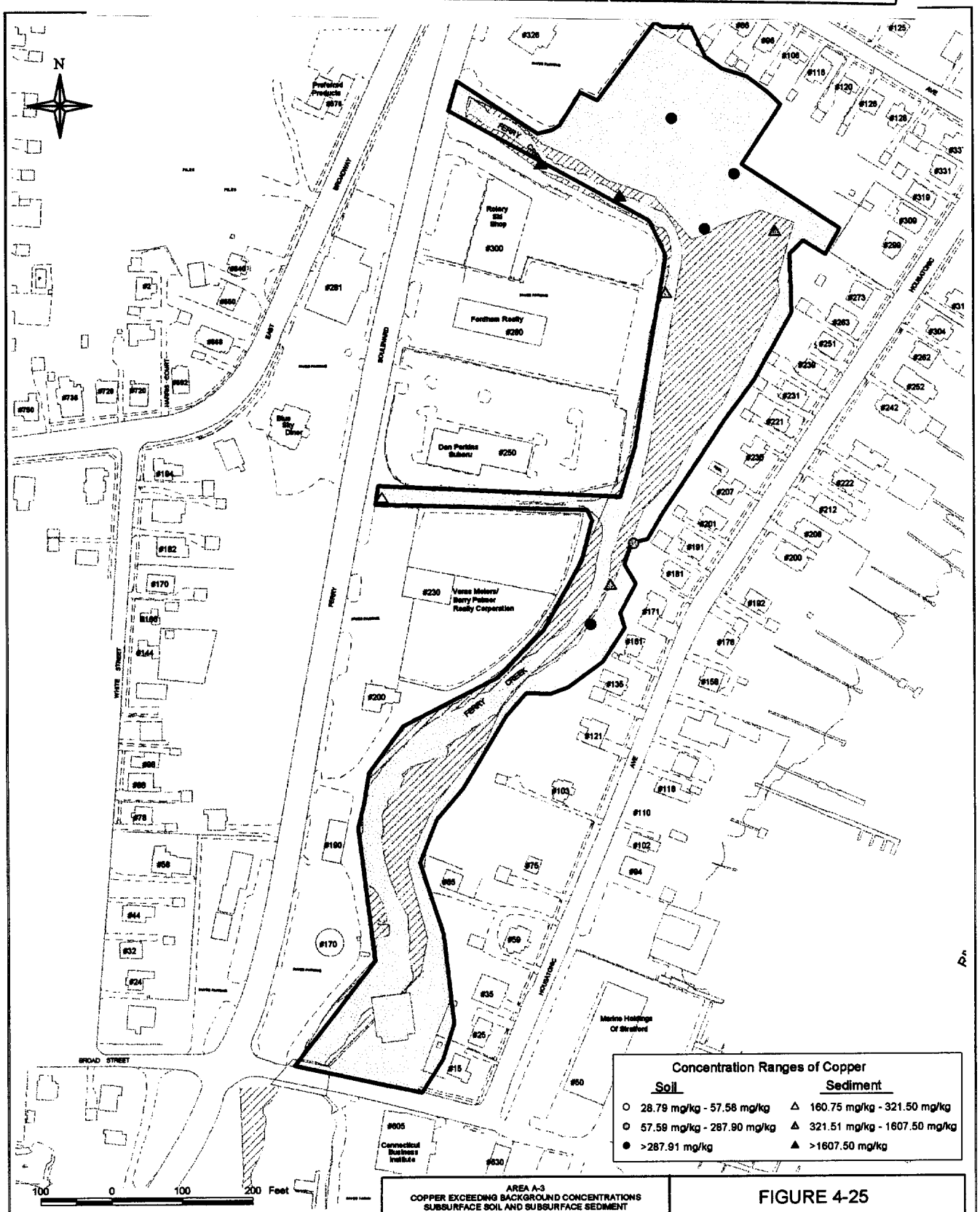
SCALE: AS SHOWN | FILE: ...\RAYMKOU3\RAYOU3.APR

FIGURE 4-24

TETRA TECH NUS, INC.
55 JONSPIN ROAD WILMINGTON, MA 01887
(978)658-7899

ORIGINAL INCLUDES COLOR CODING.

Available at the US EPA New England Superfund Records Center, Boston, MA



AREA A-3
COPPER EXCEEDING BACKGROUND CONCENTRATIONS
SUBSURFACE SOIL AND SUBSURFACE SEDIMENT

RAYMARK - FERRY CREEK - OU3 - AREA I

FINAL REMEDIAL INVESTIGATION REPORT

STRATFORD, CONNECTICUT

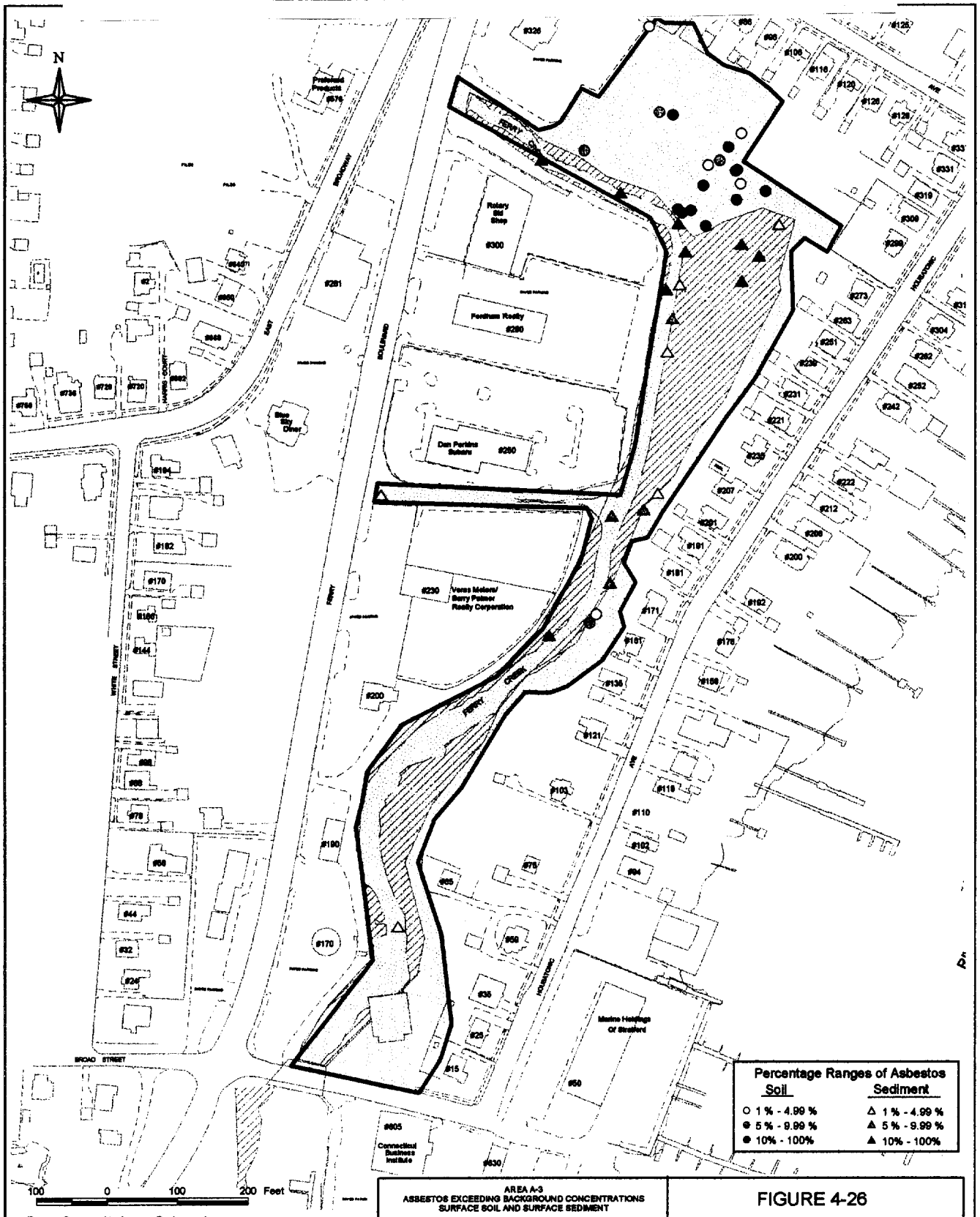
DRAWN BY: D. A. CHISHOLM	DATE: SEPTEMBER 26, 1999
SCALE: AS SHOWN	FILE: ...\RAYMKOU3\RAYOU3.APR

FIGURE 4-25

TETRA TECH NUS, INC.
55 JONSPIN ROAD WILMINGTON, MA 01887
(978)658-7899

ORIGINAL INCLUDES COLOR CODING.

Available at the US EPA New England Superfund Records Center, Boston, MA



Percentage Ranges of Asbestos

Soil	Sediment
○ 1 % - 4.99 %	△ 1 % - 4.99 %
◉ 5 % - 9.99 %	▲ 5 % - 9.99 %
● 10% - 100%	▲ 10% - 100%

Ranges Compared to Average Background
○△□ > or = Background and < or = 2 x Background
◉▲▣ > 2 x Background and < or = 10 x Background
●▲■ > 10 x Background

NOTES:
1) PLAN NOT TO BE USED FOR DESIGN
2) ALL LOCATIONS TO BE CONSIDERED APPROXIMATE
3) IF MULTIPLE RESULTS EXIST FOR ONE BOREHOLE, THE MAXIMUM RESULT IS DISPLAYED

AREA A-3
ASBESTOS EXCEEDING BACKGROUND CONCENTRATIONS
SURFACE SOIL AND SURFACE SEDIMENT

RAYMARK - FERRY CREEK - OU3 - AREA I

FINAL REMEDIAL INVESTIGATION REPORT

STRATFORD, CONNECTICUT

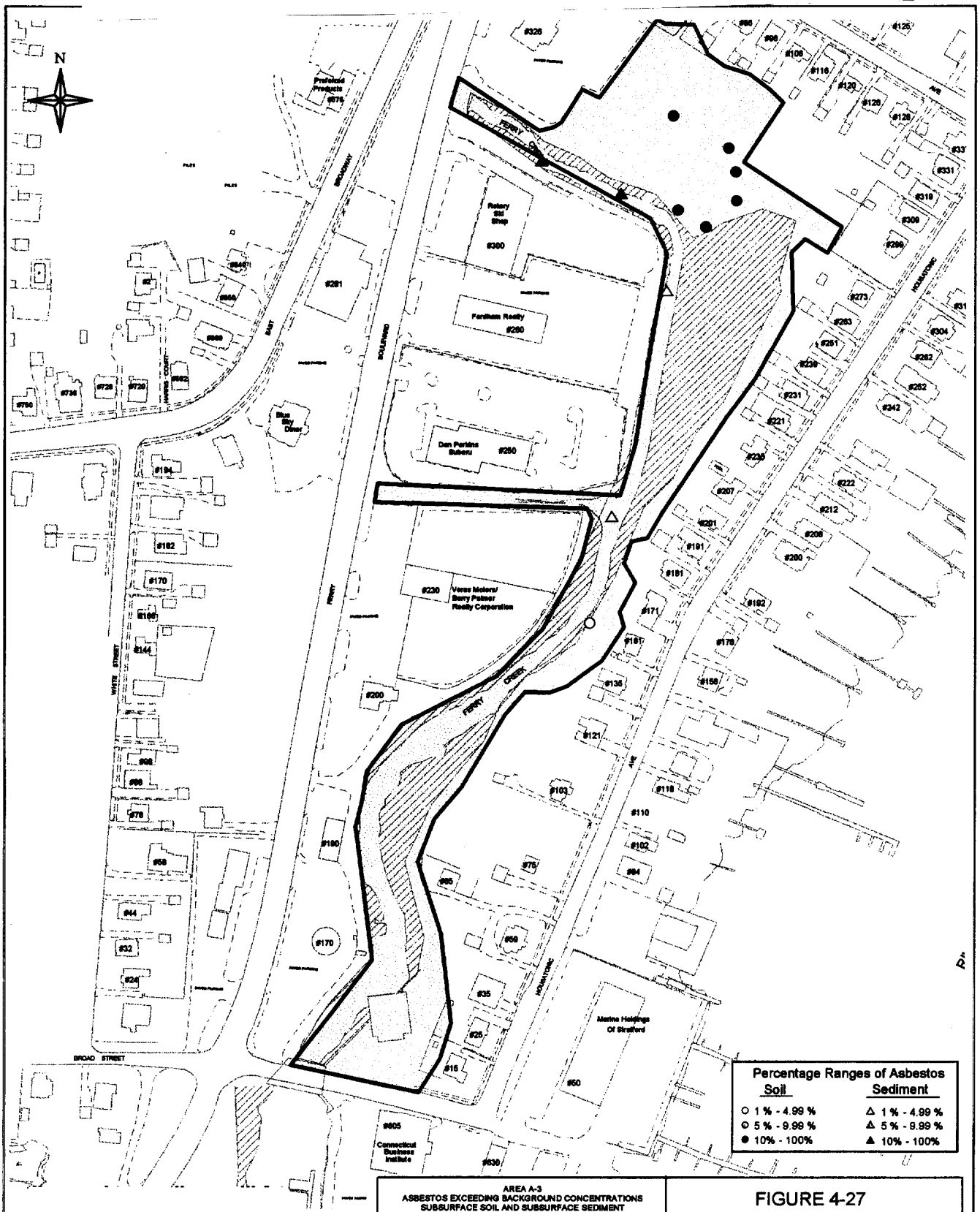
DRAWN BY: D. A. CHISHOLM | DATE: SEPTEMBER 26, 1999

SCALE: AS SHOWN | FILE: ...\RAYMKOU3\RAYOU3.APR

FIGURE 4-26

TETRA TECH NUS, INC.
55 JONSPIN ROAD WILMINGTON, MA 01887
(978)658-7899

ORIGINAL INCLUDES COLOR CODING.
Available at the US EPA New England Superfund Records Center, Boston, MA



Ranges Compared to Average Background
○△□ > or = Background and < or = 2 x Background
◎▲⊡ > 2 x Background and < or = 10 x Background
●▲■ > 10 x Background

NOTES:
1) PLAN NOT TO BE USED FOR DESIGN
2) ALL LOCATIONS TO BE CONSIDERED APPROXIMATE
3) IF MULTIPLE RESULTS EXIST FOR ONE BOREHOLE, THE MAXIMUM RESULT IS DISPLAYED

AREA A-3
ASBESTOS EXCEEDING BACKGROUND CONCENTRATIONS
SUBSURFACE SOIL AND SUBSURFACE SEDIMENT

RAYMARK - FERRY CREEK - OU3 - AREA I

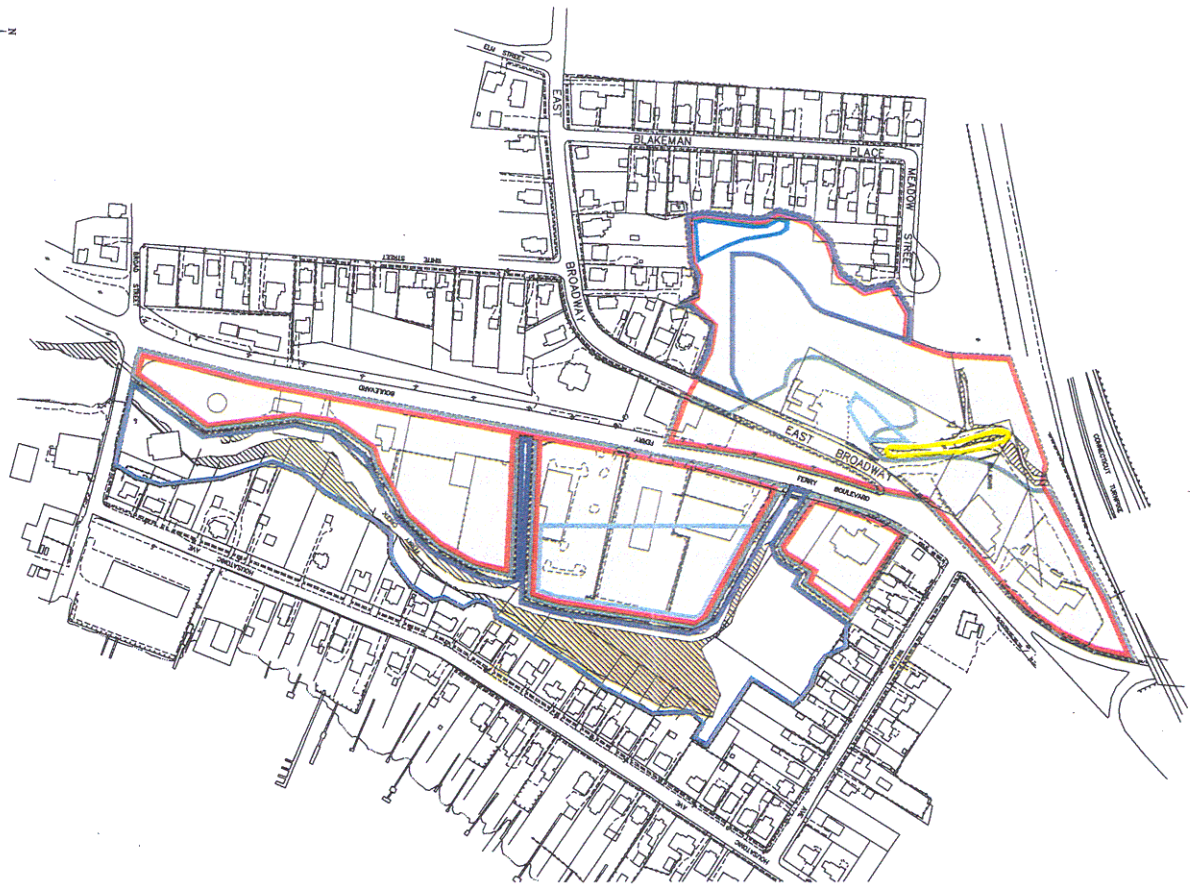
FINAL REMEDIAL INVESTIGATION REPORT

STRATFORD, CONNECTICUT

DRAWN BY: D. A. CHISHOLM	DATE: SEPTEMBER 28, 1999
SCALE: AS SHOWN	FILE: ...\RAYMKOU3\RAYOU3.APR

FIGURE 4-27

TETRA TECH NUS, INC.
55 JONSPIN ROAD WILMINGTON, MA 01887
(978)658-7899



LEGEND

- MARSH
- FENCE
- WATER LINE
- WETLANDS PERIMETER & WETLANDS AREA
- LIMITS OF AREA
- TRESSPASSER
- TRESPASSER HOT SPOT
- FREQUENT RECREATIONAL
- FREQUENT RECREATIONAL HOT SPOT
- CURRENT / FUTURE COMMERCIAL
- COMMERCIAL HOT SPOT
- FUTURE COMMERCIAL

NOTES:

1. MAPPED BY PHOTOGRAMETRIC METHODS. GRIDS BASED ON CONNECTICUT STATE PLANE COORDINATE SYSTEM 1927. POINTS LOCATED BY CONVENTIONAL SURVEY METHODS.
2. BASE MAP BY GEOD—PHOTOGRAMMETRIC SCIENCES SURVEY TECHNOLOGIES.
3. PLAN NOT TO BE USED FOR DESIGN.
4. SAMPLE POINT SYMBOLS ARE NOT TO SCALE.

GRAPHIC SCALE

0′ 300′ 600′

1 INCH = 300 FEET

HUMAN HEALTH RISK RECEPTOR GROUPS AND HOT SPOTS			FIGURE 6–1
REMEDIAL INVESTIGATION REPORT – AREA 1			
RAYMARK – FERRY CREEK (OU3) – STRATFORD, CT			
DRAWN BY:	R.G. DEWSNAP	REV.:	0
CHECKED BY:	C. WOODS	DATE:	SEPTEMBER 22, 1999
SCALE:	1″ = 300′	FILE NO.:	\DWG\RAYMARK\OU3\AREAIR\COMBO_RA.DWG

TETRA TECH NUS, INC.
55 Jonspin Road Wilmington, MA 01887
(978) 658–7899

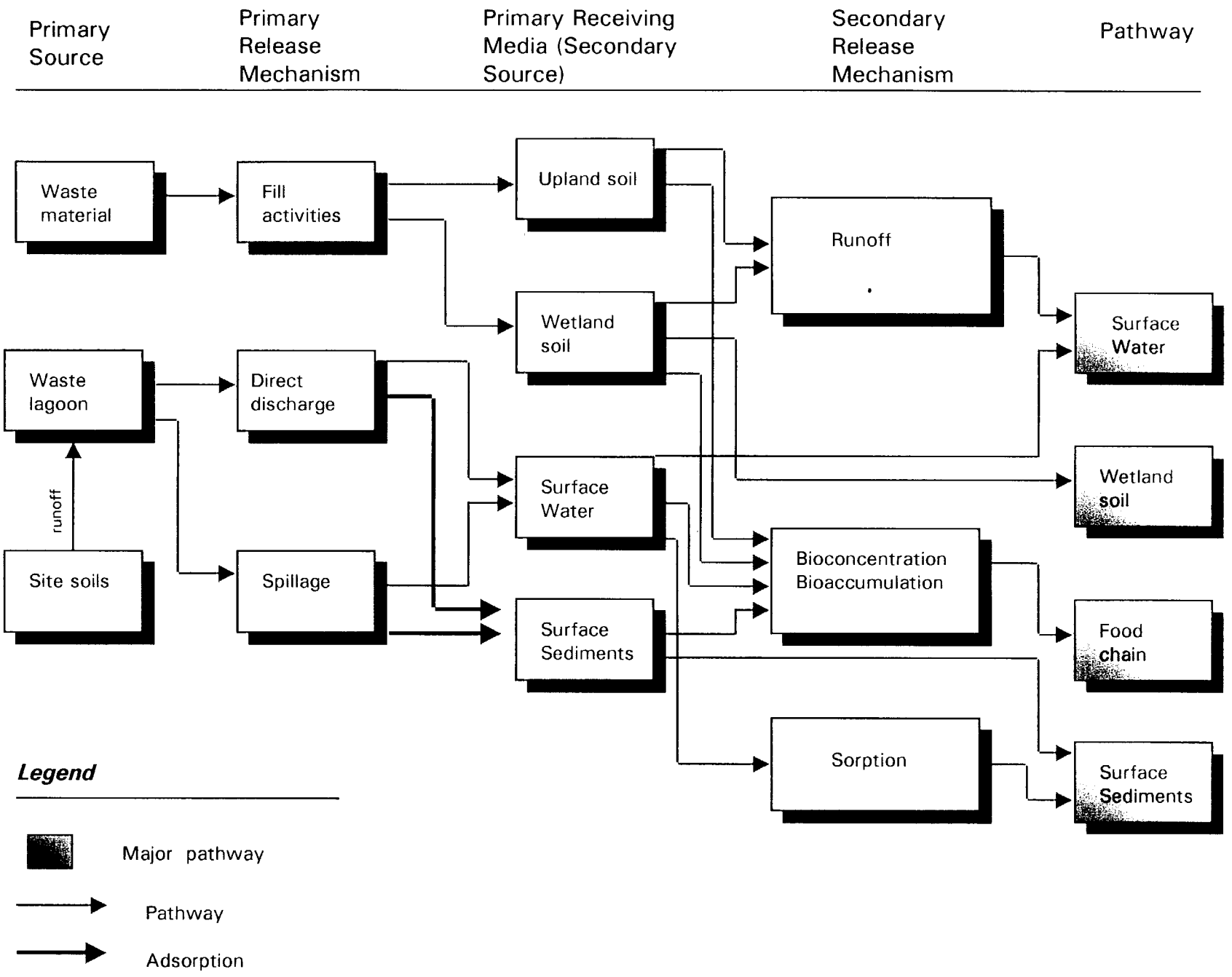


Figure 7-1. Primary Contaminant Pathways from the Raymark Industries Facility