

Tables

DRAFT Table 1
Summary of Soil Analytical Results - VOC
Former Raytheon Facility
Wayland, Massachusetts

Parameter	MCP Criteria Method 1 S-2 & GW-1	Sample I.D. Date Sampled Depth	SB-515 01-Feb-06 15' - 20'	SB-522 01-Feb-06 10' - 15'	SB-522A 01-Feb-06 10' - 15'	SB-525A 14-Apr-06 10 - 15'	SB-525B 14-Apr-06 10 - 15'	SB-529 31-Jan-06 15' - 20'	SB-529 31-Jan-06 5' - 10'	SB-530 31-Jan-06 5' - 10'	SB-530A 01-Feb-06 10' - 15'	SB-530B 14-Apr-06 10' - 15'	SB-530C 14-Apr-06 10' - 15'	SB-531A 31-Jan-06 15' - 20'	SB-531B 31-Jan-06 10' - 15'	SB-531C 14-Apr-06 15-20'	SB-531D 14-Apr-06 15-20'	SB-531E 14-Apr-06 15-20'	SB-531F 14-Apr-06 15-20'	SB-534 31-Jan-06 15' - 20'	SB-534A 31-Jan-06 20' - 25'	SB-534B 01-Feb-06 15' - 20'
Volatile Organic Compounds (VOCs) (8260) ug/kg																						
Tetrachloroethene	1,000		490	1,800	-	220	44	6.3	17,000	2,900	160	210	94	63	250	200	160	100	140	230	1.2	-
Trichloroethene	300		16,000	26,000	1.4	1,800	250	30	57,000	3,900	520	1,700	460	440	1,300	1,200	1,400	780	720	6,000	14	3.6
cis-1,2-Dichloroethene	300		240	1,700	-	330	85	3.5	2,500	2,200	150	260	86	53	380	180	140	-	130	-	1.4	-
Toluene	30,000		-	-	-	-	-	-	5,400	-	-	-	-	-	-	-	-	-	-	-	-	-
p-Isopropyltoluene	NS		-	-	-	-	-	-	-	-	0.91	-	-	-	-	-	-	-	-	-	-	-
N-Butylbenzene	NS		-	-	-	-	-	-	-	-	0.91	-	-	-	-	-	-	-	-	-	-	-
Acetone	3,000		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	10

Notes:
Only compounds with detectable results are tabulated
ug/kg = micrograms per kilogram (parts per billion (ppb))
- = Analytical result below the method detection limit.
NS = No Standard
Bold and shaded cells exceed regulatory criteria.

DRAFT Table 2
Summary of Soil Analytical Results - Additional Parameters
Former Raytheon Facility
Wayland, Massachusetts

Parameter	MCP Criteria RCS-1	Sample I.D. Date Sampled Depth	Composite Soil Boring 01-Feb-06	SB-522 01-Feb-06 10' - 15'
Semivolatile Organic Compounds (SVOCs) (8270) ug/kg			-	-
Extractable Petroleum Hydrocarbons (EPH) (EPH-04-1) mg/kg			-	-
Polychlorinated Biphenyls (PCBs) (8082) ug/kg			-	-
Total Metals (6010) & (7471) mg/kg				
Antimony	10		-	-
Arsenic	30		5.6	4.9
Beryllium	0.7		-	-
Cadmium	30		-	-
Chromium	1,000		15	17
Copper	1,000		13	16
Lead	300		5.4	5.5
Mercury	20		-	-
Nickel	300		13	16
Selenium	400		-	-
Silver	100		-	-
Thallium	8		-	-
Zinc	2,500		30	32

Notes:

- = Analytical result below the method detection limit.

NA = Not Analyzed

ug/kg = micrograms per kilogram (parts per billion (ppb))

mg/kg = milligrams per kilogram (parts per million (ppm))

NS = No Standard

DRAFT Table 3
Summary of Soil Analytical Results - Waste Characterization
Former Raytheon Facility
Wayland, Massachusetts

Parameter	Regulatory Level ug/L	Sample I.D. Date Sampled	SB-529 31-Jan-06
TCLP Volatile Organic Compounds (VOCs) (8260) ug/l			
Tetrachloroethene	700		82
Trichloroethene	500		260
TCLP Semivolatile Organic Compounds (SVOCs) (8270) ug/l			
2,4,5-Trichlorophenol	400,000		28
TCLP Pesticides and Herbicides			-
TCLP Metals (6010)			-

Notes:

- = Analytical result below the method detection limit.

NA = Not Analyzed

ug/l = micrograms per liter (parts per billion (ppb))

Regulatory Level = Maximum Concentration for Toxicity Characteristic (310 CMR 30.125B)

DRAFT Table 4
Summary of Groundwater Gauging Data
Former Raytheon Facility
Wayland, Massachusetts

Well I.D.	Measuring Point Elevation (ft. ASL)	3-Apr-06	
		Depth to Water (ft. below measuring point)	Potentiometric Surface Elevation (ft. above sea level)
DEP-19S	120.79	2.93	117.86
DEP-19M	120.62	0.40	120.22
DEP-19D	120.78	0.78	120.00
DEP-20	119.98	0.35	119.63
DEP-21	119.18	**	**
HA-101	127.27	6.90	120.37
HA-102	128.14	13.41	114.73
HA-103	131.54	13.67	117.87
HA-104	132.39	16.90	115.49
IP-16S	134.77	16.18	118.59
IP-16D	134.74	16.49	118.25
IP-17S	134.80	17.80	117.00
IP-17D	134.83	17.40	117.43
MW-1S	133.79	9.54	124.25
MW-1M	133.78	12.84	120.94
MW-1D	133.74	14.14	119.60
MW-10	130.86	7.88	122.98
MW-32	124.41	3.62	120.79
MW-33S	133.58	17.75	115.83
MW-33M	133.77	17.62	116.15
MW-33D	133.57	17.68	115.89
MW-33B	133.67	16.48	117.19
MW-34	136.67	10.49	126.18
MW-37	134.43	15.21	119.22
MW-37M	134.40	17.02	117.38
MW-38	134.42	14.67	119.75
MW-40	134.84	14.25	120.59
MW-40S	134.82	14.24	120.58
MW-41	127.46	13.51	113.95
MW-42S	134.44	13.84	120.60
MW-43S	133.82	14.30	119.52
MW-43D	134.31	48.30	86.01
MW-44S	134.73	14.85	119.88
MW-44M	134.57	15.12	119.45
MW-44D	134.66	15.30	119.36
MW-45S	132.07	17.14	114.93
MW-45M	132.28	17.33	114.95
MW-45D	131.88	15.41	116.47
MW-45B	131.59	16.43	115.16
MW-46S	131.44	13.56	117.88
MW-46M	131.52	-	-
MW-47S	132.30	16.64	115.66
MW-47M	131.99	15.96	116.03
MW-47D	132.29	16.25	116.04
MW-101	134.60	18.22	116.38
MW-102	134.50	17.89	116.61
MW-103	134.50	15.85	118.65
MW-104	134.22	14.49	119.73
MW-105	134.58	14.63	119.95
MW-105M	134.22	19.94	114.28
MW-106	134.63	15.44	119.19
MW-106M	134.63	16.20	118.43
MW-107	134.65	17.42	117.23
MW-108	134.69	17.36	117.33
MW-109	134.12	25.50	108.62
MW-110	134.04	16.21	117.83
MW-111	133.88	24.09	109.79
MW-112	133.68	16.24	117.44

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Former Raytheon Facility
Wayland, Massachusetts

Well I.D.	Measuring Point Elevation (ft. ASL)	3-Apr-06	
		Depth to Water (ft. below measuring point)	Potentiometric Surface Elevation (ft. above sea level)
MW-113	133.60	24.65	108.95
MW-114	133.48	16.39	117.09
MW-115	133.56	-	-
MW-116	133.72	16.50	117.22
MW-117	134.84	16.79	118.05
MW-118	134.88	16.61	118.27
MW-201S	132.38	16.59	115.79
MW-201M	132.19	16.25	115.94
MW-201D	132.10	16.00	116.10
MW-202S	132.74	16.48	116.26
MW-202M	132.98	16.80	116.18
MW-202D	132.72	16.74	115.98
MW-203S	132.50	17.41	115.09
MW-203M	132.39	17.20	115.19
MW-203D	132.14	16.24	115.90
MW-204S	132.98	17.69	115.29
MW-204M	132.02	16.69	115.33
MW-204D	132.30	16.55	115.75
MW-205S	131.98	16.61	115.37
MW-205M	132.12	16.79	115.33
MW-205D	131.98	14.50	117.48
MW-206S	130.82	16.04	114.78
MW-206M	130.75	16.19	114.56
MW-206D	130.66	15.61	115.05
MW-207S	129.16	14.49	114.67
MW-207M	129.29	14.74	114.55
MW-207D	129.10	13.70	115.40
MW-208S	132.14	16.39	115.75
MW-208M	132.38	16.73	115.65
MW-208D	132.38	16.42	115.96
MW-209	134.56	****	****
MW-210	134.48	19.92	114.56
MW-211	135.26	14.80	120.46
MW-212	134.39	14.72	119.67
MW-212M	133.84	19.48	114.36
MW-213	134.84	17.81	117.03
MW-214	134.60	18.29	116.31
MW-215S	133.42	13.45	119.97
MW-215M	133.48	13.54	119.94
MW-215D	133.44	14.11	119.33
MW-216S	134.54	14.06	120.48
MW-216M	134.59	14.12	120.47
MW-216D	134.59	15.19	119.40
MW-217S	130.06	13.21	116.85
MW-217M	130.44	13.99	116.45
MW-217D	130.20	13.70	116.50
MW-218S	130.24	14.16	116.08
MW-218M	130.16	14.41	115.75
MW-218D	130.02	13.76	116.26
MW-219S	118.12	3.75	114.37
MW-219M	118.09	3.23	114.86
MW-219D	117.95	2.99	114.96
MW-220S	117.09	3.64	113.45
MW-220M	117.29	3.15	114.14
MW-220D	116.99	2.00	114.99

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Wayland, Massachusetts

Well I.D.	Measuring Point Elevation (ft. ASL)	3-Apr-06	
		Depth to Water (ft. below measuring point)	Potentiometric Surface Elevation (ft. above sea level)
MW-221M	120.07	2.90	117.17
MW-221D	120.22	3.60	116.62
MW-261S	131.28	10.80	120.48
MW-262S	129.60	8.85	120.75
MW-262M	130.52	13.26	117.26
MW-262D	129.73	11.26	118.47
MW-263S	127.96	7.60	120.36
MW-263M	127.77	8.30	119.47
MW-264S	126.32	6.30	120.02
MW-264M	126.28	6.75	119.53
MW-264D	126.63	9.28	117.35
MW-265S	130.06	9.54	120.52
MW-265M	129.89	10.43	119.46
MW-265D	130.07	12.54	117.53
MW-266S	126.79	8.33	118.46
MW-266Ma	127.72	8.22	119.50
MW-266Mb	126.88	10.39	116.49
MW-266D	127.70	10.24	117.46
MW-266B	128.14	8.42	119.72
MW-267S	125.30	8.06	117.24
MW-267M	125.40	8.39	117.01
MW-267D	125.88	8.82	117.06
MW-267B	124.02	7.19	116.83
MW-268S	123.66	6.89	116.77
MW-268M	122.34	6.00	116.34
MW-268D	123.41	7.00	116.41
MW-268B	124.86	8.53	116.33
MW-269S	125.54	8.29	117.25
MW-269Ma	124.96	9.02	115.94
MW-269Mb	125.42	9.76	115.66
MW-269D	125.34	10.74	114.60
MW-307	124.86	10.50	114.36
MW-313S	114.61	1.90	112.71
MW-313D	114.37	3.10	111.27
MW-314S	114.10	3.75	110.35
MW-314D	114.09	3.50	110.59
MW-315S	114.07	3.10	110.97
MW-315D	113.79	-	-
MW-403	134.39	18.21	116.18
MW-404	134.94	17.89	117.05
MW-405S	134.90	17.01	117.89
MW-551	129.30	8.68	120.62
MW-552	130.09	9.61	120.48
MW-553	130.33	9.65	120.68
MW-554S	120.93	7.80	113.13
MW-554Ma	120.82	5.20	115.62
MW-554Mb	120.96	4.90	116.06
MW-554D	120.96	5.55	115.41
MW-555S	121.10	8.23	112.87
MW-555Ma	121.25	5.70	115.55
MW-555Mb	121.26	6.12	115.14
MW-555D	121.19	5.93	115.26
MW-556S	120.93	8.90	112.03
MW-556M	121.00	5.36	115.64
MW-556D	120.92	5.44	115.48
MW-TP-3	131.08	9.70	121.38

Notes:

- = not measured / not accessible

** = potentiometric surface was at or above the top of casing

**** = dry well

DRAFT Table 5
 Summary of Vertical Hydraulic Gradient Data
 Former Raytheon Facility
 Wayland, Massachusetts

Well Designation	3-Apr-06							
	Reference Elevation (ft ASL)	Depth to Water (ft)	Saturation Elevation (ft ASL)	Head Elevation (ft)	Head Change (ft)	Length Change (ft)	Hydraulic Gradient (ft/ft)	Up/Down
DEP-19S	120.79	2.93	108.10	117.86	-2.36	25.00	-0.09440	Up
DEP-19M	120.62	0.40	83.10	120.22				
DEP-19M	120.62	0.40	83.10	120.22	0.22	10.00	0.02200	Down
DEP-19D	120.78	0.78	73.10	120.00				
MW-1S	133.79	9.54	121.10	124.25	3.31	27.50	0.1204	Down
MW-1M	133.78	12.84	93.60	120.94				
MW-1M	133.78	12.84	93.60	120.94	1.34	15.00	0.0893	Down
MW-1D	133.74	14.14	78.60	119.60				
MW-262S	129.60	8.85	104.86	120.75	3.49	26.04	0.1340	Down
MW-262M	130.52	13.26	78.82	117.26				
MW-262M	130.52	13.26	78.82	117.26	-1.21	24.86	-0.0487	Up
MW-262D	129.73	11.26	53.96	118.47				
MW-263S	127.96	7.60	105.28	120.36	0.89	27.40	0.03248	Down
MW-263M	127.77	8.30	77.88	119.47				
MW-264S	126.32	6.30	108.60	120.02	0.49	24.50	0.02000	Down
MW-264M	126.28	6.75	84.10	119.53				
MW-264M	126.28	6.75	84.10	119.53	2.18	34.88	0.06250	Down
MW-264D	126.63	9.28	49.22	117.35				
MW-265S	130.06	9.54	114.50	120.52	1.06	29.52	0.03591	Down
MW-265M	129.89	10.43	84.98	119.46				
MW-265M	129.89	10.43	84.98	119.46	1.93	44.00	0.04386	Down
MW-265D	130.07	12.54	40.98	117.53				
MW-266S	126.79	8.33	113.04	118.46	-1.04	37.29	-0.02789	Up
MW-266Ma	127.72	8.22	75.75	119.50				
MW-266Ma	127.72	8.22	75.75	119.50	3.01	13.33	0.22581	Down
MW-266Mb	126.88	10.39	62.42	116.49				
MW-266Mb	126.88	10.39	62.42	116.49	-0.97	39.60	-0.02449	Up
MW-266D	127.70	10.24	22.82	117.46				
MW-266B	128.14	8.42	-10.39	119.72				
MW-267S	125.30	8.06	48.72	117.24	0.23	15.46	0.01488	Down
MW-267M	125.40	8.39	33.26	117.01				
MW-267M	125.40	8.39	33.26	117.01	-0.05	28.70	-0.00174	Up
MW-267D	125.88	8.82	4.56	117.06				
MW-267D	125.88	8.82	4.56	117.06	0.23	32.18	0.00715	Down
MW-267B	124.02	7.19	-27.62	116.83				
MW-268S	123.66	6.89	49.86	116.77	-0.64	17.38	-0.03682	Up
MW-268M	123.41	6.00	32.48	117.41				
MW-268M	123.41	6.00	32.48	117.41	-0.45	35.42	-0.01270	Up
MW-268D	124.86	7.00	-2.94	117.86				
MW-268D	124.86	7.00	-2.94	117.86	4.05	26.10	0.15517	Down
MW-268B	122.34	8.53	-29.04	113.81				
MW-269S	125.54	8.29	107.41	117.25	1.31	14.55	0.0900	Down
MW-269Ma	124.96	9.02	92.86	115.94				
MW-269Ma	124.96	9.02	92.86	115.94	0.28	49.69	0.00563	Down
MW-269Mb	125.42	9.76	43.17	115.66				
MW-269Mb	125.42	9.76	43.17	115.66	1.06	62.53	0.01695	Down
MW-269D	125.34	10.74	-19.36	114.60				
MW-313S	114.61	1.90	105.60	112.71	1.44	22.00	0.06545	Down
MW-313D	114.37	3.10	83.60	111.27				
MW-314S	114.10	3.75	105.30	110.35	-0.24	22.00	-0.01091	Up
MW-314D	114.09	3.50	83.30	110.59				
MW-315S	114.07	3.10	105.20	110.97	NM	22.00	NM	NM
MW-315D	113.79	NM	83.20	NM				
MW-554S	120.93	7.80	78.50	113.13	-2.49	67.50	-0.03689	Up
MW-554Ma	120.82	5.20	11.00	115.62				
MW-554Ma	120.82	5.20	11.00	115.62	-0.44	30.00	-0.01467	Up
MW-554Mb	120.96	4.90	-19.00	116.06				
MW-554Mb	120.96	4.90	-19.00	116.06	0.65	61.00	0.01066	Down
MW-554D	120.96	5.55	-80.00	115.41				
MW-555S	121.10	8.23	78.30	112.87	-2.68	47.50	-0.05642	Up
MW-555Ma	121.25	5.70	30.80	115.55				
MW-555Ma	121.25	5.70	30.80	115.55	0.41	48.00	0.00854	Down
MW-555Mb	121.26	6.12	-17.20	115.14				
MW-555Mb	121.26	6.12	-17.20	115.14	-0.12	62.00	-0.00194	Up
MW-555D	121.19	5.93	-79.20	115.26				
MW-556S	120.93	8.90	78.80	112.03	-3.61	101.50	-0.03557	Up
MW-556M	121.00	5.36	-22.70	115.64				
MW-556M	121.00	5.36	-22.70	115.64	0.16	21.00	0.00762	Down
MW-556D	120.92	5.44	-43.70	115.48				

Notes:

- (-) vertical gradient represents upward groundwater flow
- (+) vertical gradient represents downward groundwater flow
- NM = Not measured (Not accessible)

DRAFT Table 6
Summary of Groundwater Geochemical Parameters
Former Raytheon Facility
Wayland, Massachusetts

Well ID	April 06					
	Temperature (deg C)	pH (std units)	Oxidation-Reduction Potential (mV)	Dissolved Oxygen (mg/L)	Specific Conductivity (uS/cm)	Conductivity (uS/cm)
DEP-19M	NMD	NMD	NMD	NMD	NMD	NMD
MW-261S	9.41	6.66	31.6	1.74	173	122
MW-262S	7.69	6.67	-42.7	0.3	200	134
MW-264M	7.21	6.33	-15.4	0.37	274	181
MW-265M	5.52	6.31	108	0.67	276	173
MW-266Ma	6.86	6.18	20.5	0.76	420	272
MW-266Mb	6.14	6.59	-68.8	0.7	243	155
MW-267M	8.7	6.88	-49.4	0.92	314	216
MW-267S	9.8	6.83	-75.1	0.21	404	287
MW-268D	9.3	8.19	-155.9	0.37	305	213
MW-268M	9.34	6.72	-90.3	0.28	381	267
MW-551	9.62	6.98	-69.9	0.18	159	112
MW-552	9.71	7.22	21.9	0.44	258	183
MW-553	8.86	11.08	-72.1	0.19	269	185
MW-554D	10.44	8.36	-309.2	1.01	216	156
MW-554Ma	9.9	8.27	-288.2	0.6	170	121
MW-554Mb	10.74	8.28	-165.4	0.63	189	138
MW-554S	10.36	8.83	-173.5	0.29	250	180
MW-555D	10.68	8.19	-230.2	1.1	408	296
MW-555Ma	11.12	7.49	-123.6	0.51	219	161
MW-555Mb	10.83	8.12	-155.3	0.6	174	127
MW-555S	12.08	8.89	-158.3	0.31	261	196
MW-556D	10.4	8.45	-256.4	0.64	197	142
MW-556M	10.31	8.14	-160.8	0.51	230	166
MW-556S	10.39	7.85	-174.8	0.27	268	193

Notes:

C = degrees Celsius

uS/cm = microSiemens per centimeter

mg/L = milligrams per liter

pH units = standard units

mV = millivolts

NTU = Nephelometric Turbidity Units

NMD = Not Measured due to a Dry well

DRAFT Table 7

Summary of Groundwater VOC Analytical Results

Former Raytheon Facility

Wayland, Massachusetts

Parameter	MCP Method 1: GW1	Sample I.D. Date Sampled Comments	DEP-19M 06-Apr-06	DEP-19M 06-Apr-06 DUP	MW-261S 03-Apr-06	MW-262S 05-Apr-06	MW-264M 05-Apr-06	MW-265M 05-Apr-06	MW-266Ma 05-Apr-06	MW-266Mb 05-Apr-06	MW-267S 04-Apr-06	MW-267M 04-Apr-06	MW-268M 03-Apr-06	MW-268M 03-Apr-06 DUP	MW-268D 03-Apr-06
Volatile Organics (VOCs) (ug/L)															
Tetrachloroethene	5		0.61	0.61	56	11	7.6	54	-	53	6.1	24	51	-	-
Trichloroethene	5		4	4.2	3,600	100	59	1,100	9.7	290	400	510	2,200	2,100	21
cis-1,2-Dichloroethene	70		24	24	80	-	200	2,300	1.8	310	67	260	5,100	5,100	22
Vinyl Chloride	2		-	-	-	-	26	310	-	22	-	-	230	230	-
1,1-Dichloroethane	70		-	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,2-Dichloroethene	100		-	-	-	-	-	-	-	1.2	-	-	-	-	-

Notes:

- = Analytical result below the method detection limit. (ND)

Empty Cells = Not Analyzed

Bold and Shaded cells indicate exceedance of MCP Standard

DUP = Field Duplicate

ug/L=micrograms per liter (parts per billion (ppb))

DRAFT Table 7

Summary of Groundwater VOC Analytical Results

Former Raytheon Facility

Wayland, Massachusetts

Parameter	MCP Method 1: GW1	Sample I.D. Date Sampled Comments	MW-551 04-Apr-06	MW-552 04-Apr-06	MW-553 04-Apr-06	MW-554S 06-Apr-06	MW-554Ma 06-Apr-06	MW-554Mb 06-Apr-06	MW-554D 06-Apr-06	MW-555S 06-Apr-06	MW-555Ma 06-Apr-06	MW-555Mb 06-Apr-06	MW-555D 06-Apr-06	MW-555D 06-Apr-06 DUP	MW-556S 06-Apr-06	MW-556M 06-Apr-06	MW-556D 06-Apr-06
Volatile Organics (VOCs) (ug/L)																	
Tetrachloroethene	5		0.7	230	24	-	-	-	-	-	-	-	-	-	-	-	-
Trichloroethene	5		40	6,200	400	-	-	-	-	-	-	-	-	-	-	-	-
cis-1,2-Dichloroethene	70		0.58	310	68	-	-	-	-	-	-	-	2.4	2.7	-	-	-
Vinyl Chloride	2		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethane	70		-	-	-	-	-	-	-	-	-	-	0.79	0.86	-	-	-
trans-1,2-Dichloroethene	100		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

- = Analytical result below the method detection limit. (ND)

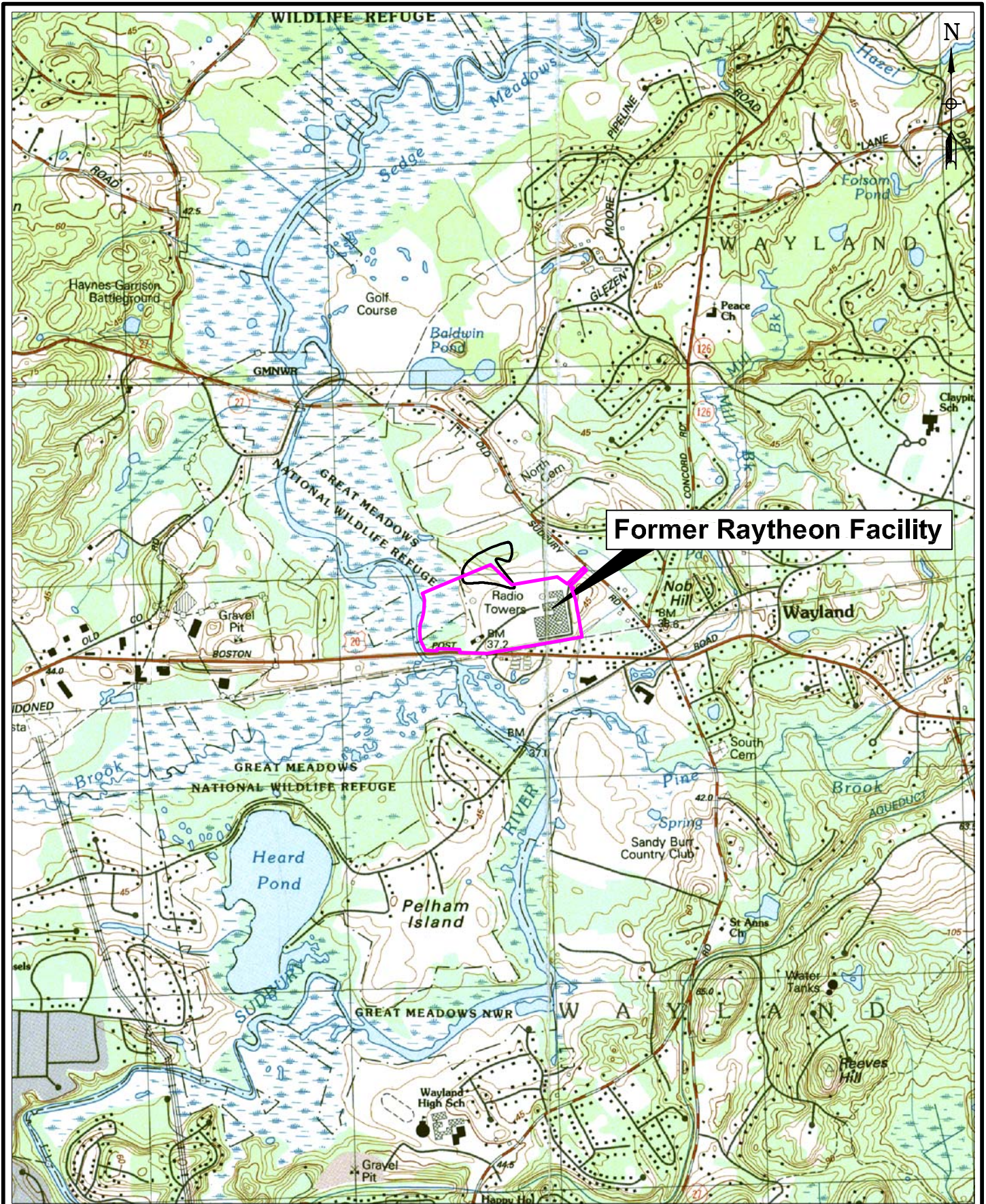
Empty Cells = Not Analyzed

Bold and Shaded cells indicate exceedance of MCP Standard

DUP = Field Duplicate

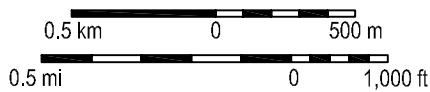
ug/L=micrograms per liter (parts per billion (ppb))

Figures



Former Raytheon Facility

Scale 1:25,000





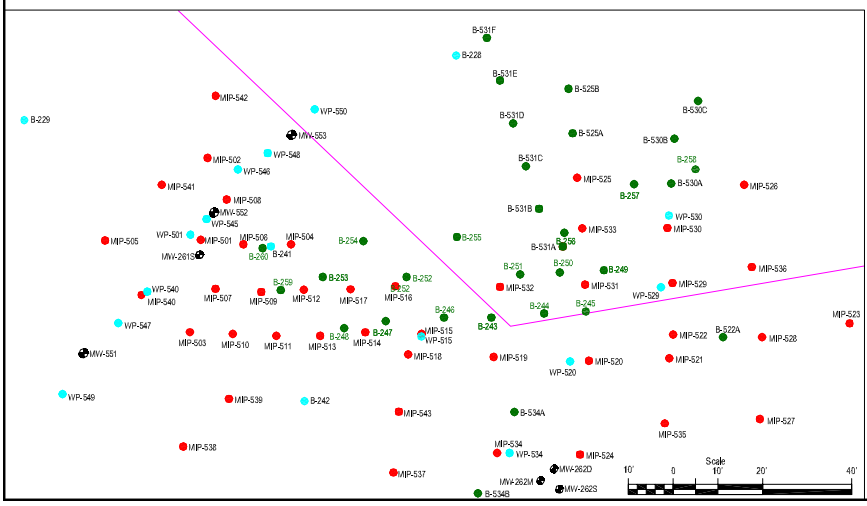
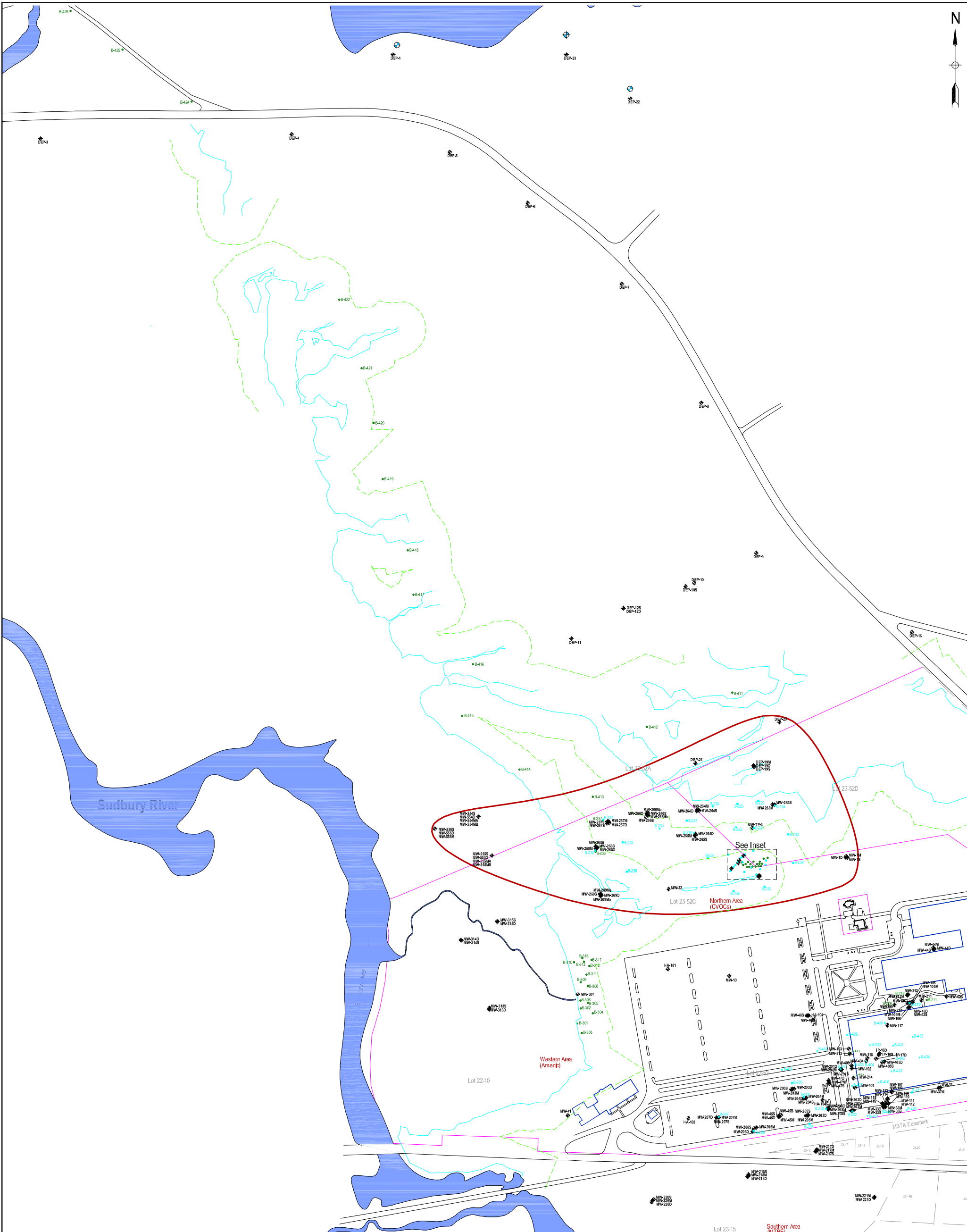
Legend	
	Subject Property Line
	Disposal Site Boundary

Figure 1 - Site Locus Map
Former Raytheon Facility - Wayland, MA

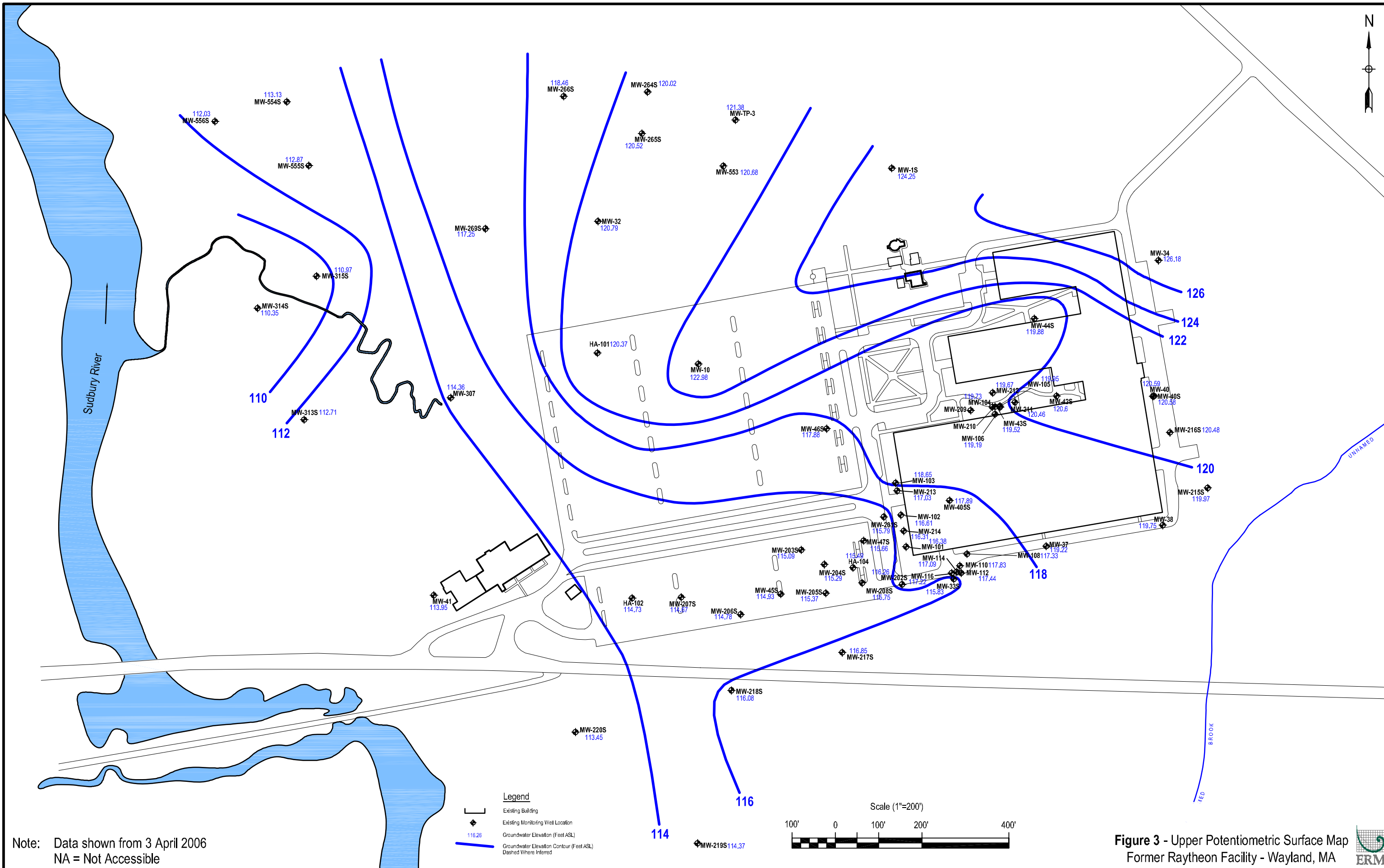




- Legend**
- Property Line
 - Standing Water Based on 2001 Aerial Photo
 - Delineated Wetland Boundary
 - 100' Wetland Buffer Zone
 - OHM Investigation Area
 - ⊕ Monitoring Well Cluster Location
 - ⊕ DEP Monitoring Well Location
 - ⊕ Baldwin Pond Wells
 - ⊕ Waterloo Profiler Location
 - ⊕ Soil Boring Location
 - ⊕ MIP Boring Location
 - Source Area Investigation Area

Figure 2 - Site Map
Former Raytheon Facility - Wayland, MA





Note: Data shown from 3 April 2006
 NA = Not Accessible

- Legend**
- Existing Building
 - Existing Monitoring Well Location
 - Groundwater Elevation (Feet ASL)
 - Groundwater Elevation Contour (Feet ASL)
Dashed Where Inferred

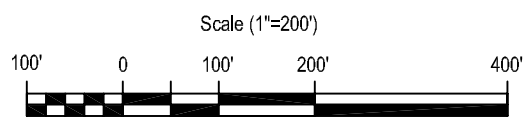
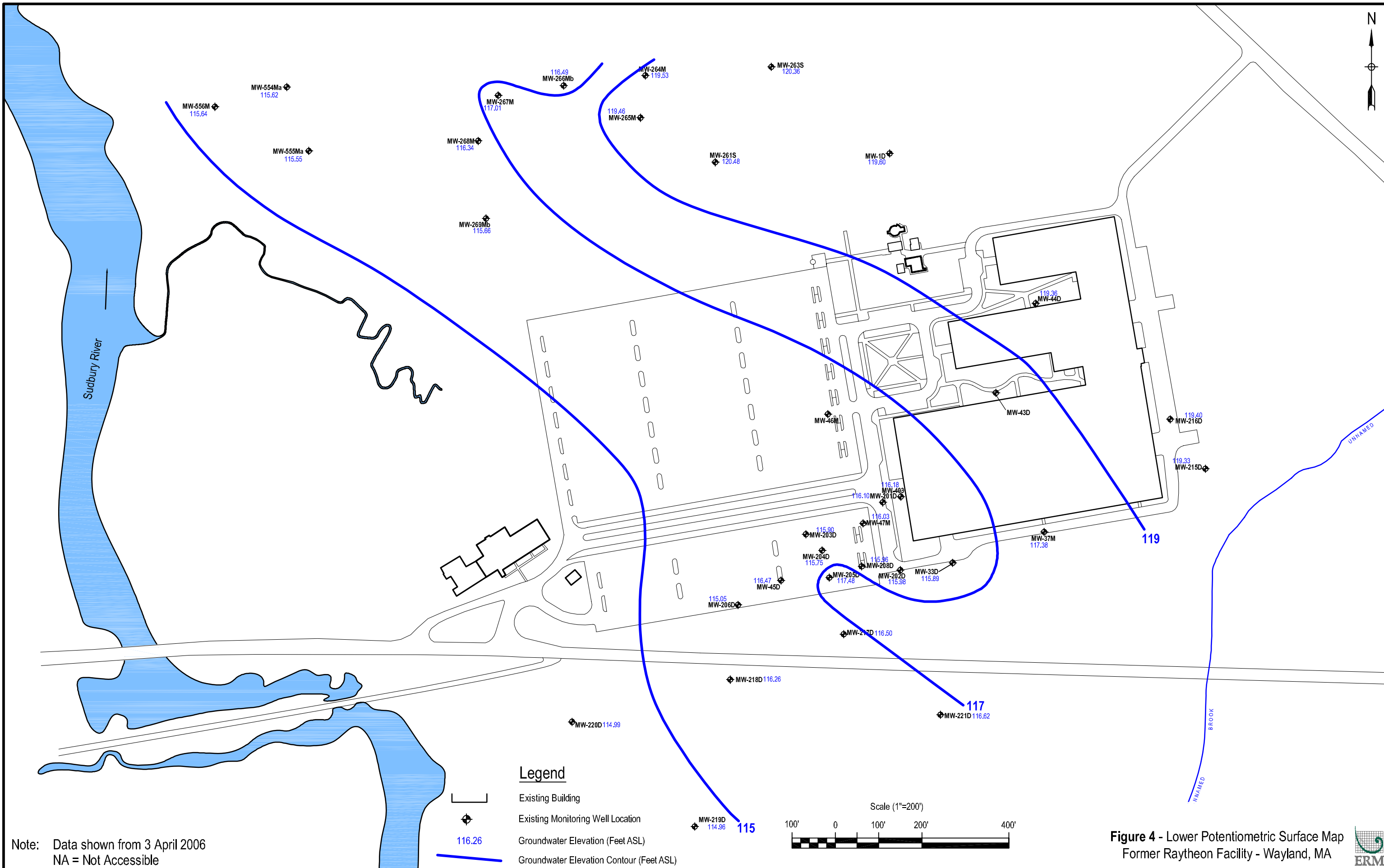


Figure 3 - Upper Potentiometric Surface Map
 Former Raytheon Facility - Wayland, MA



R:\Raytheon\Wayland - 1922\Report - Phase 4 April 2006\Raytheon.GW.DWG (05/03/2006 - 2:46pm Boston)



**Figure 4 - Lower Potentiometric Surface Map
Former Raytheon Facility - Wayland, MA**



R:\Raytheon\Wayland - 1922\Report - Phase 4 - April 2006\Raytheon.GW.DWG (05/03/2006 - 2:46pm Boston)

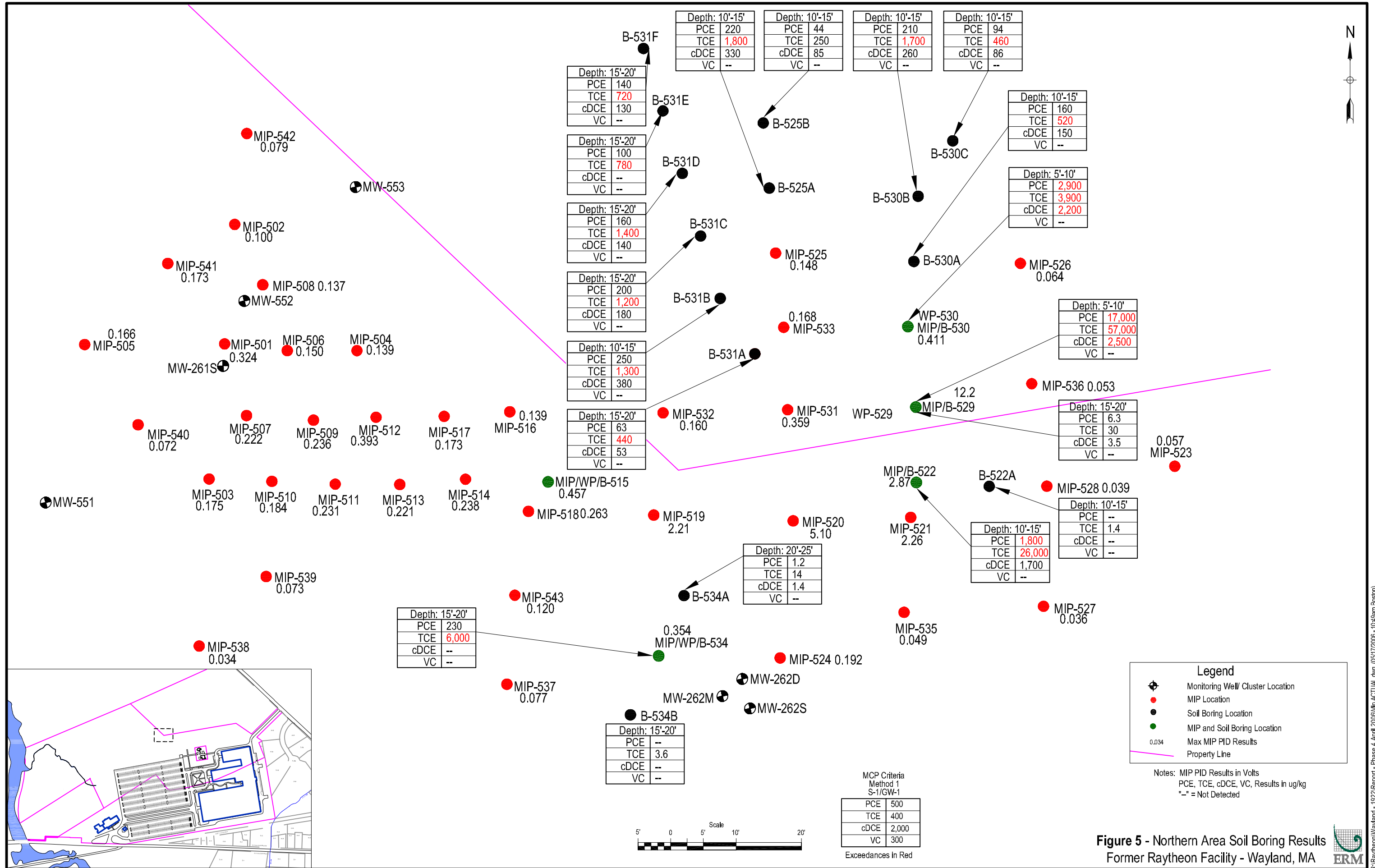
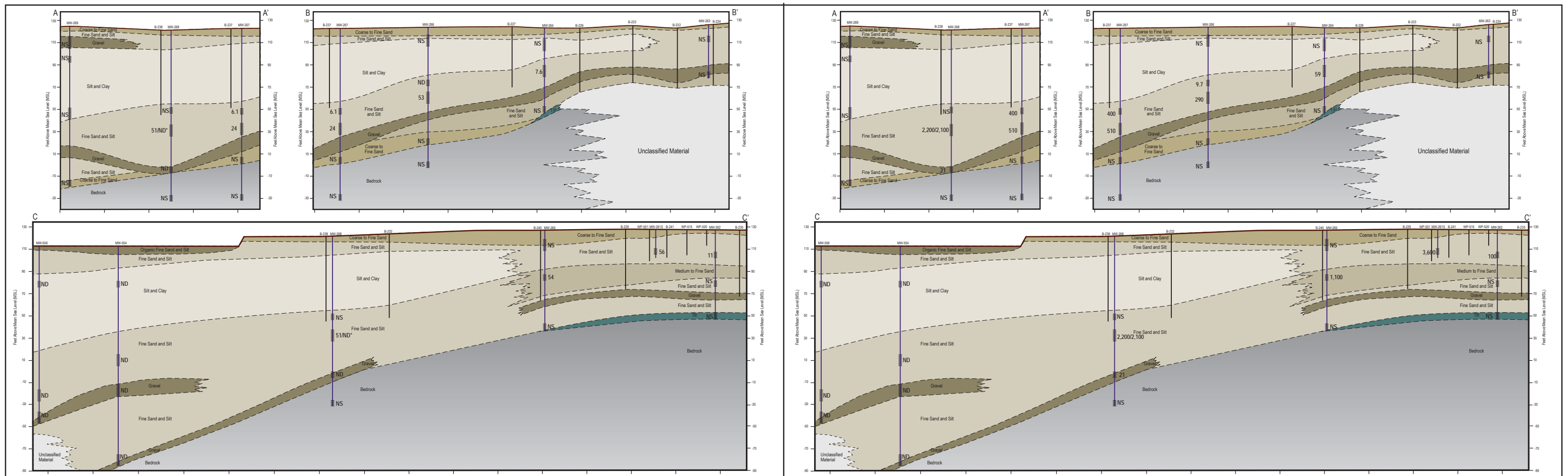


Figure 5 - Northern Area Soil Boring Results
Former Raytheon Facility - Wayland, MA

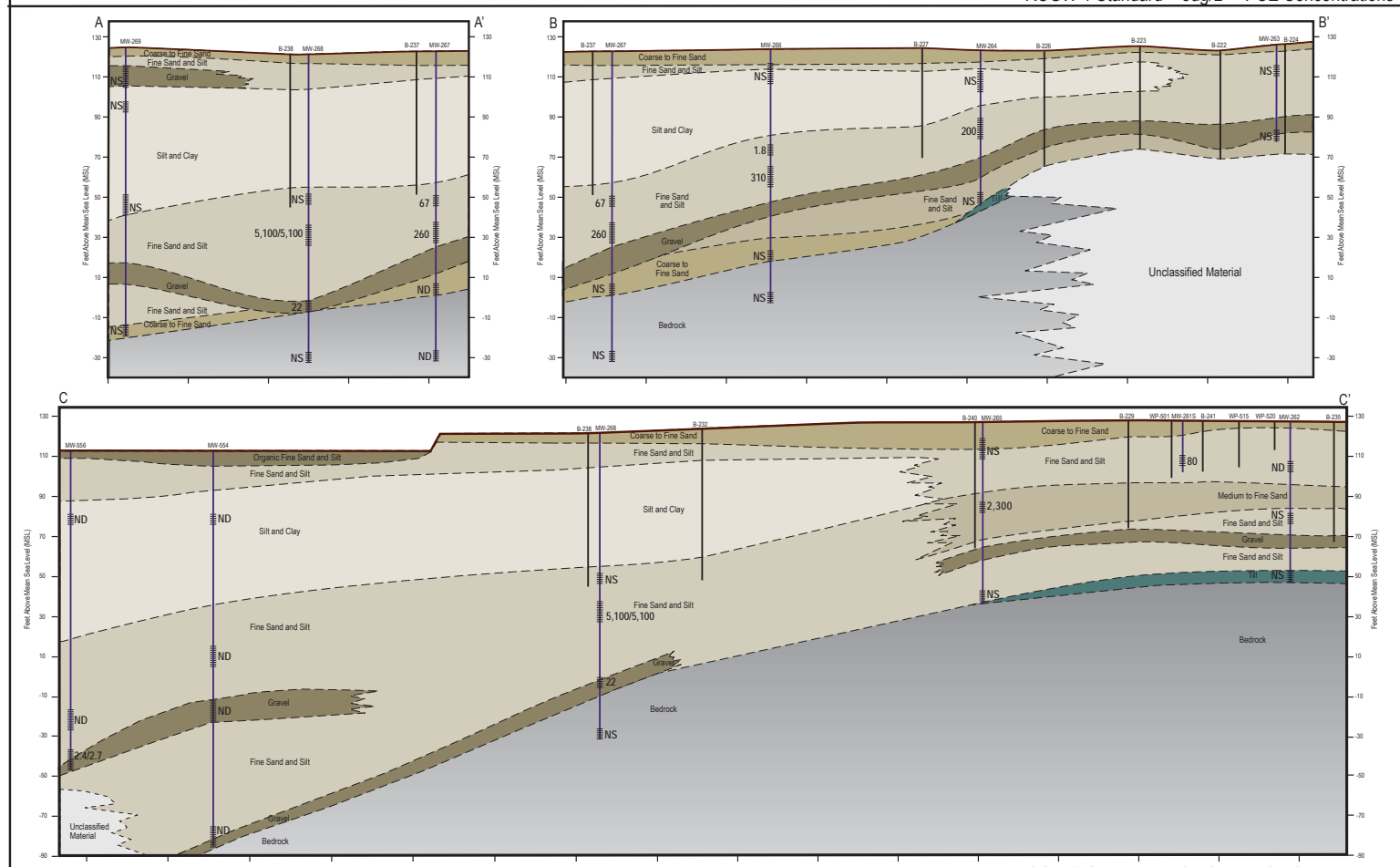


R:\Raytheon\Wayland - 1922\Report - Phase 4 April 2006\Mp ACT\UML.dwg (05/17/2006 - 10:49am Boston)

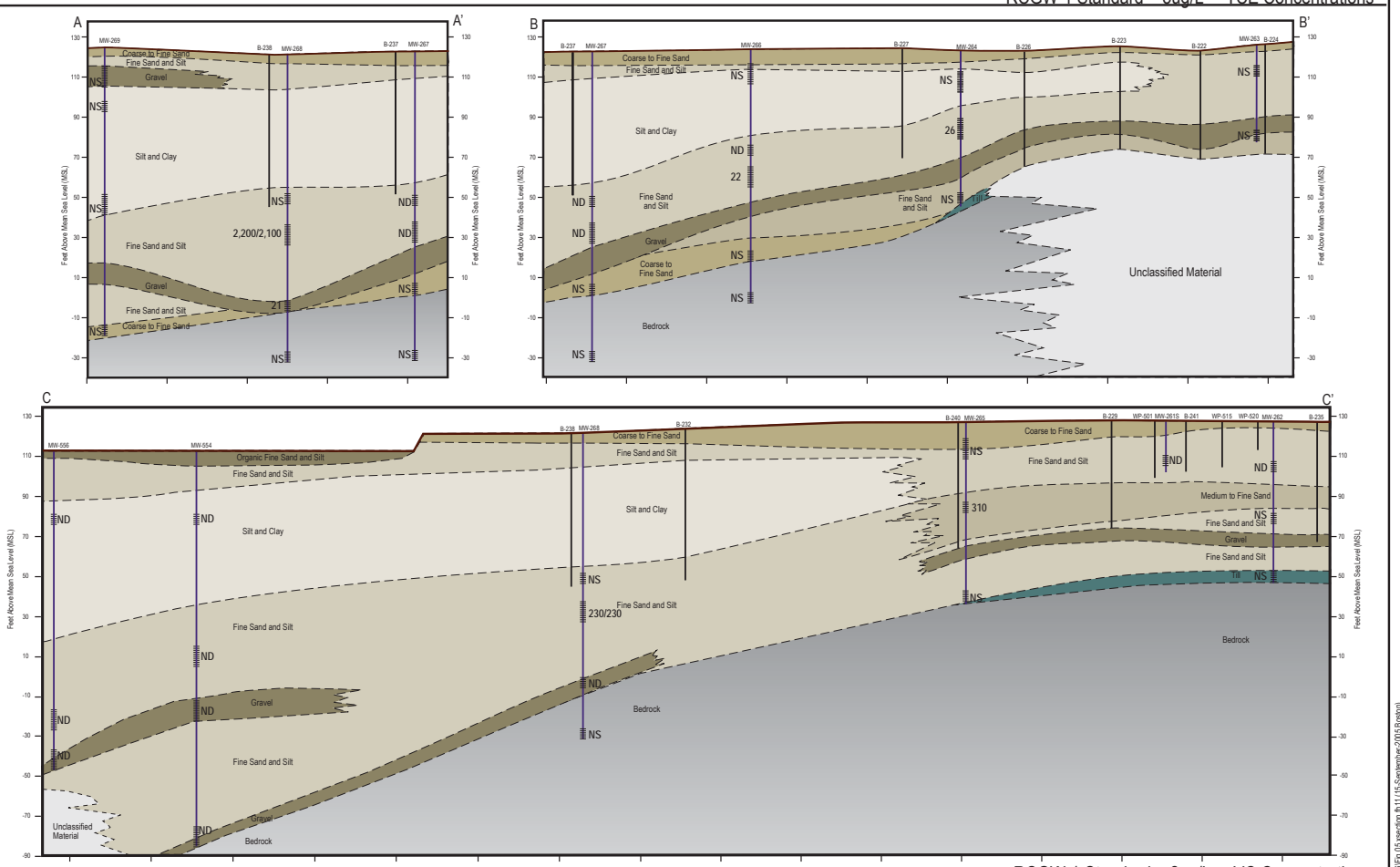


RCGW-1 Standard = 5ug/L PCE Concentrations

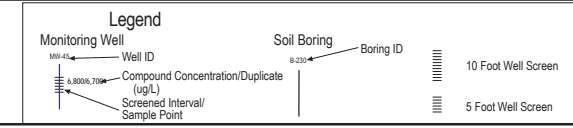
RCGW-1 Standard = 5ug/L TCE Concentrations



RCGW-1 Standard = 70ug/L cDCE Concentrations



RCGW-1 Standard = 2ug/L VC Concentrations

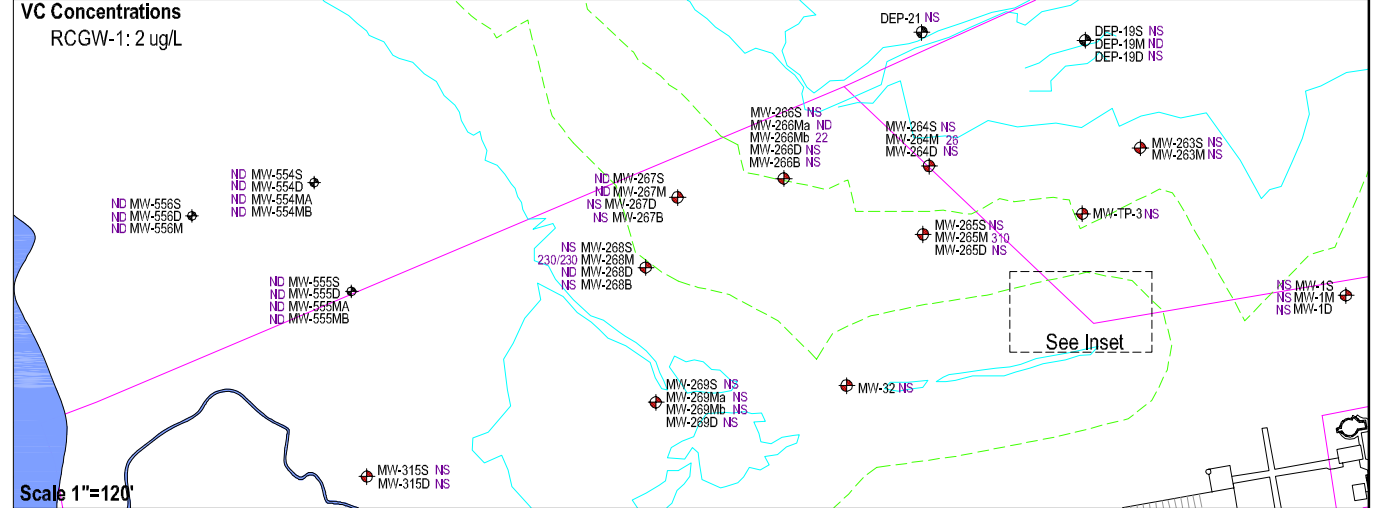
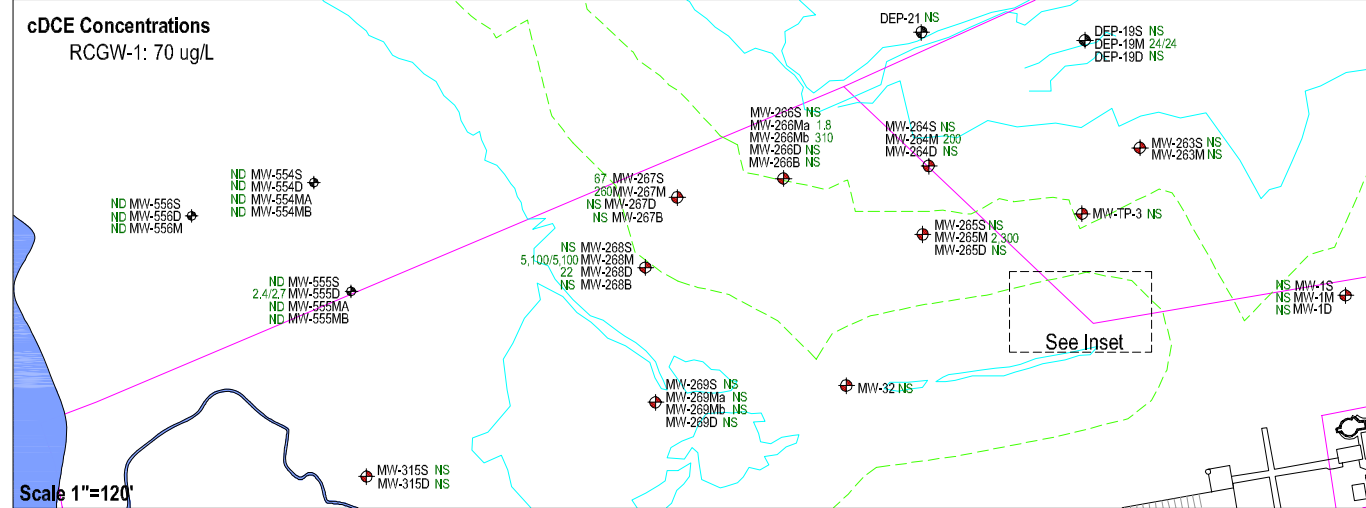
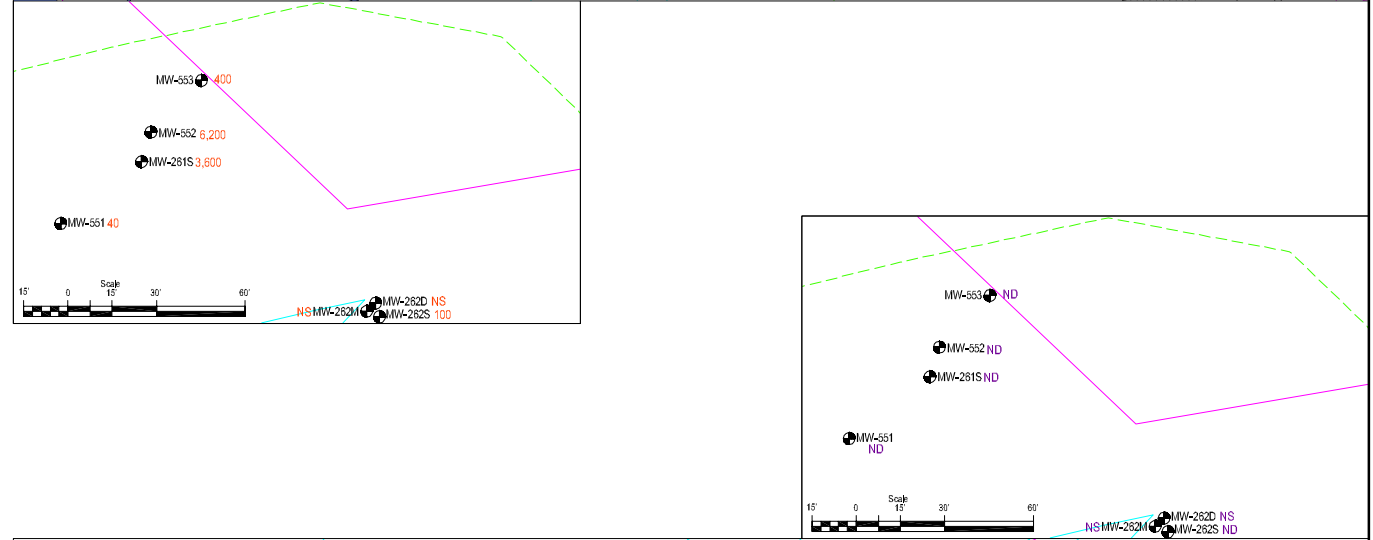
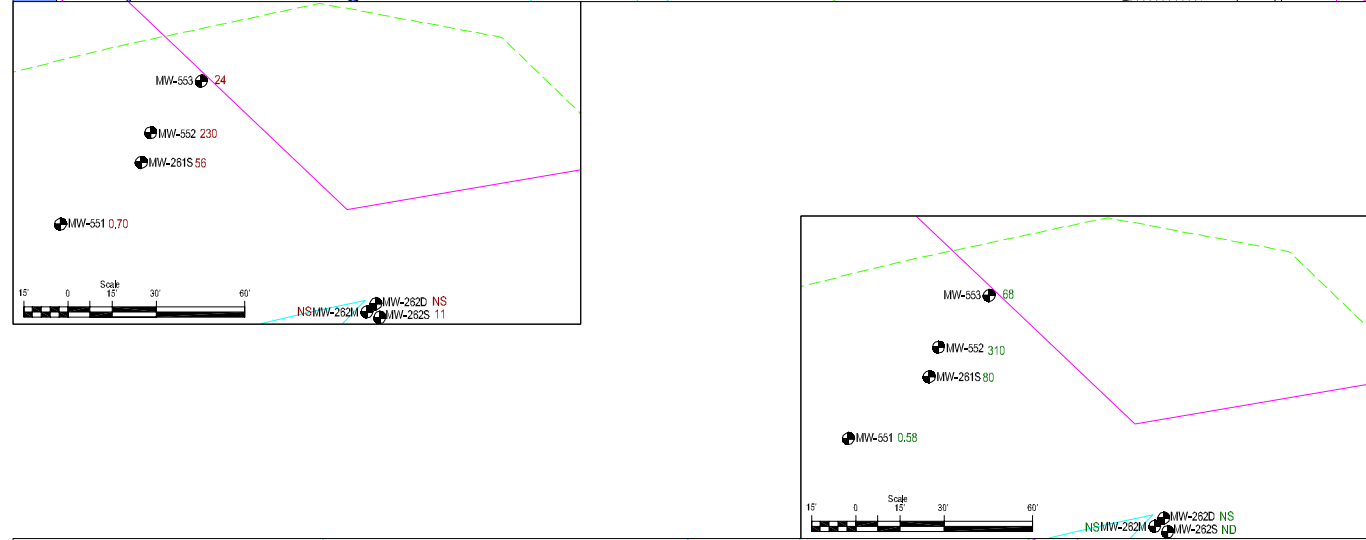
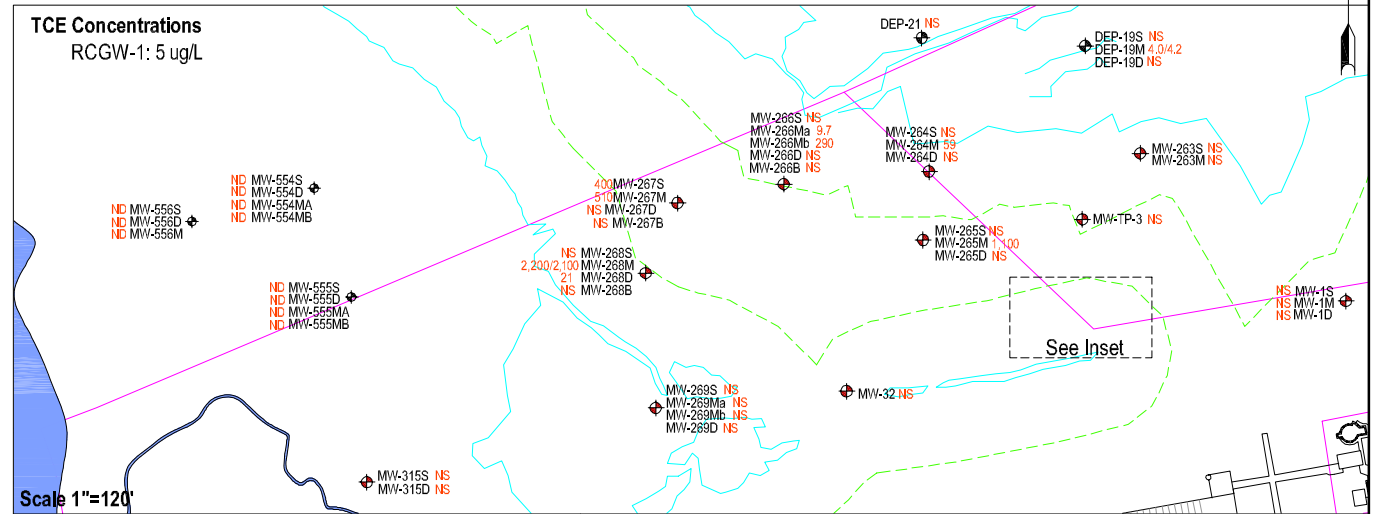
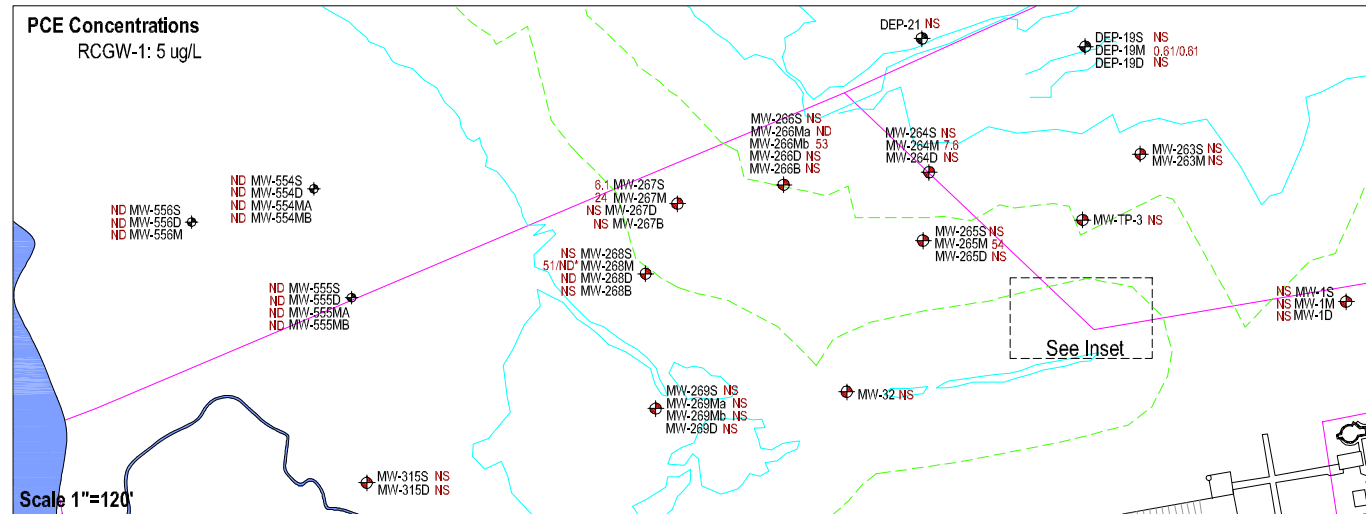


Scale:
Horizontal Scale 1" = 80'
Vertical Scale 1" = 40'

Note: Concentration Values from April 2006 Sample Analyses
2,200/2,100 = Duplicate Sample
* = Detection Limit was 50 ug/L for Sample
ND = Not Detected
NS = Not Sampled; Previous sampling results were below method detection limits or below reportable concentrations for all constituents.

Figure 6 - Cross Sections of Northern Area Groundwater CVOC Concentrations Former Raytheon Facility - Wayland, MA



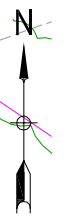
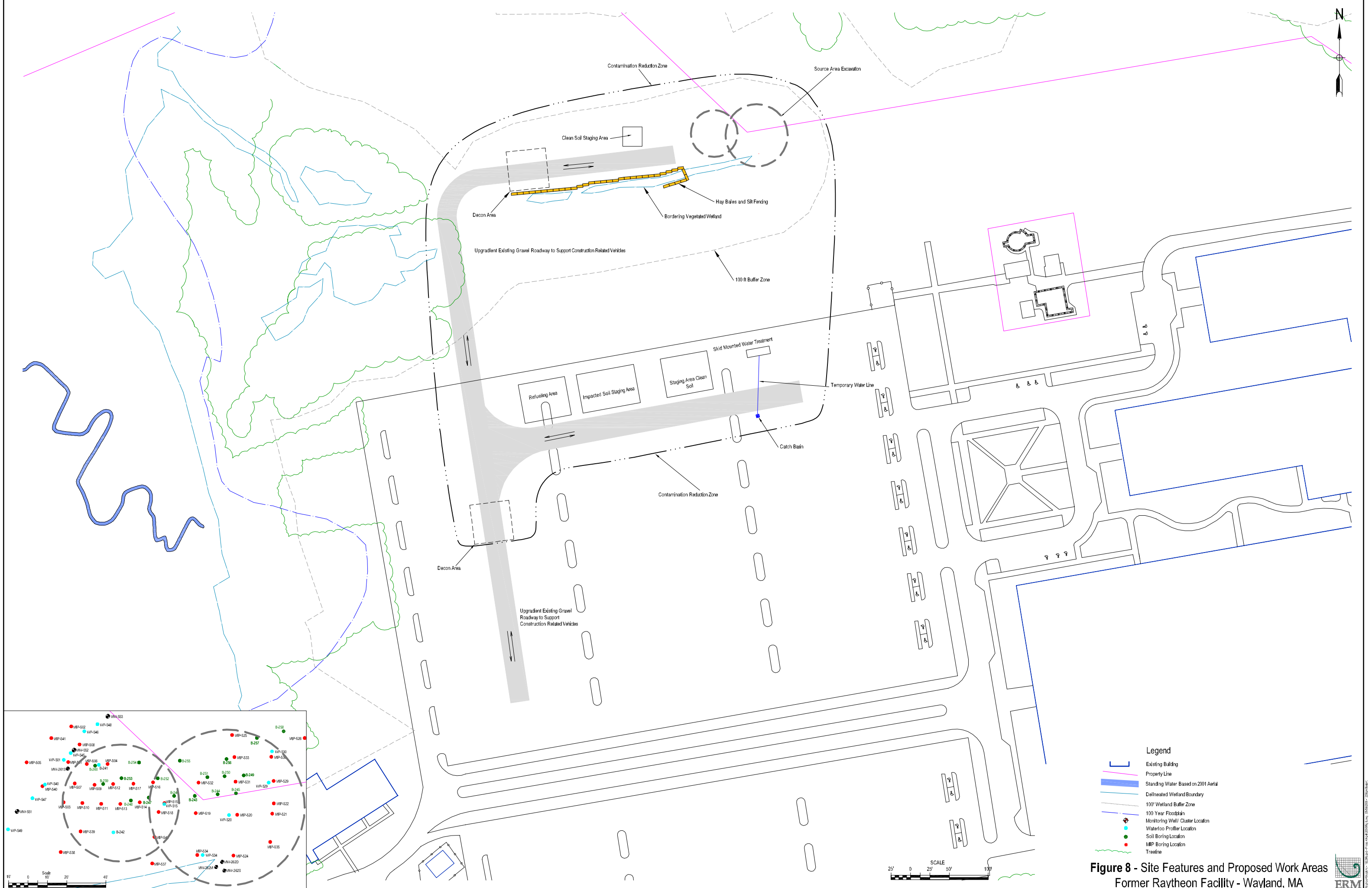


Legend

- Property Line
- Standing Water Based on 2001 Aerial Photo
- Delineated Wetland Boundary
- 100' Wetland Buffer Zone
- Monitoring Well Cluster Location
- DEP Monitoring Well Location
- Baldwin Pond Well Location
- Multi-Level Monitoring Well Location
- Waterloo Profiler Location
- 8.2 Constituent Concentration (ug/L)

* = Detection limit was 50 ug/L for sample
Note: Data shown from April 2006 groundwater sampling event.

Figure 7 - Plan View of Northern Area Groundwater CVOC Concentrations
Former Raytheon Facility - Wayland, MA



Contamination Reduction Zone

Source Area Excavation

Clean Soil Staging Area

Hay Bales and Silt Fencing

Decon Area

Bordering Vegetated Wetland

Upgradient Existing Gravel Roadway to Support Construction Related Vehicles

100 ft Buffer Zone

Refueling Area

Impacted Soil Staging Area

Staging Area Clean Soil

Skid Mounted Water Treatment

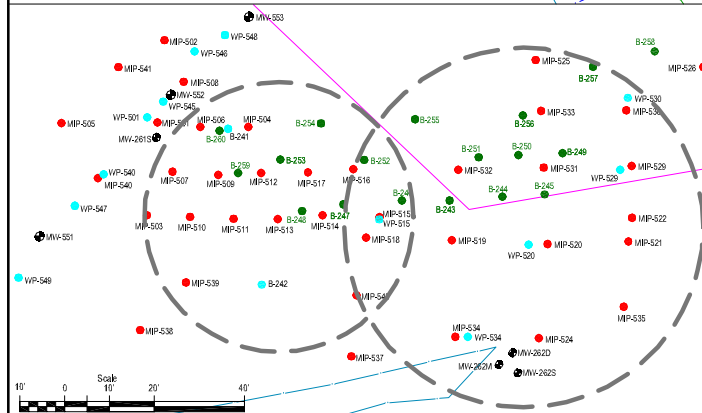
Temporary Water Line

Catch Basin

Contamination Reduction Zone

Decon Area

Upgradient Existing Gravel Roadway to Support Construction Related Vehicles

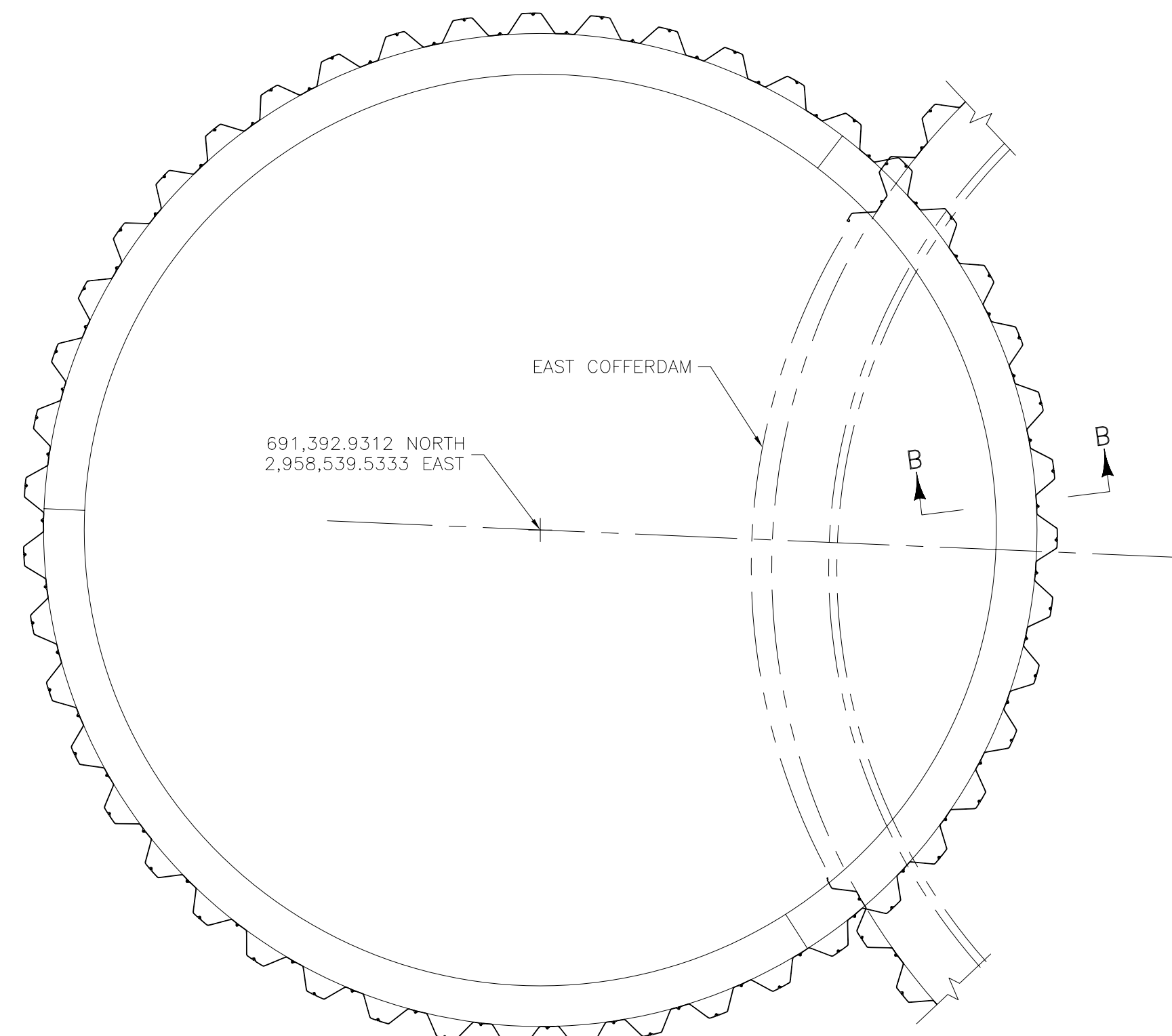


- Legend**
- Existing Building
 - Property Line
 - Standing Water - Based on 2001 Aerial
 - Delineated Wetland Boundary
 - 100' Wetland Buffer Zone
 - 100 Year Floodplain
 - Monitoring Well Cluster Location
 - Waterloo Profiler Location
 - Soil Boring Location
 - MIP Boring Location
 - Trestle

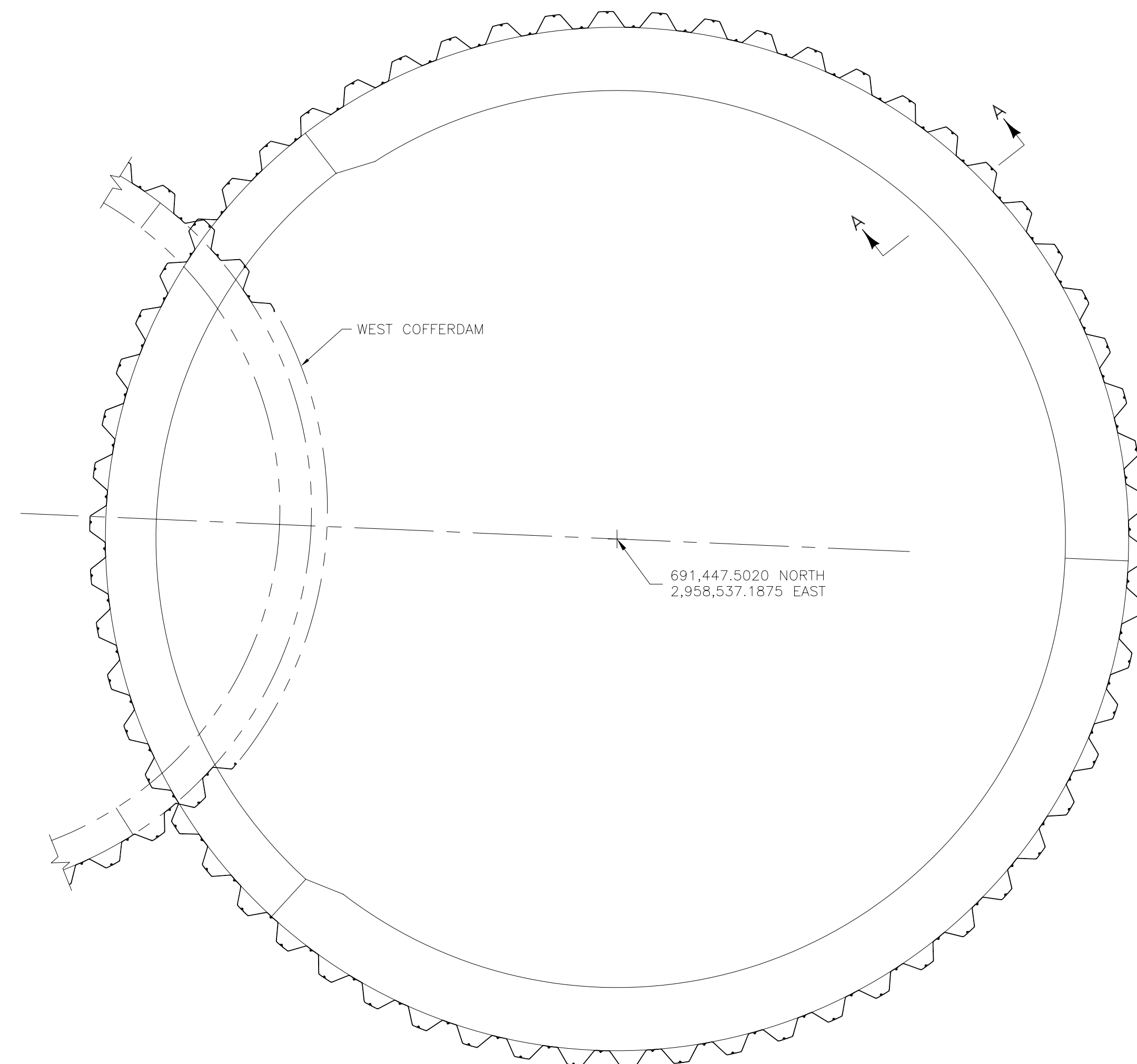
SCALE
25' 0 25' 50' 100'

Figure 8 - Site Features and Proposed Work Areas
Former Raytheon Facility - Wayland, MA





WEST COFFERDAM FOR EXCAVATION OF AREA 2



EAST COFFERDAM FOR EXCAVATION OF AREA 1

GENERAL NOTES

- 1) The cofferdam portion of the project involves the construction of two cofferdams to allow excavation and removal of contaminated soil. The cofferdams will be constructed sequentially because there is an area where they overlap. Either cofferdam may be constructed first.

The cofferdams consist of steel sheet piling walls and circular reinforced concrete wales. It is anticipated that the sheet piling will be extracted after each cofferdam is backfilled. It is anticipated that, except in the area of the overlap, the reinforced concrete wales will be left in place and covered with backfill. In the overlap area, the interfering wale segments of the first cofferdam must be removed.
- 2) Available geotechnical information indicates strata of granular soil with varying amounts of silt and minor amounts of clay. In general terms, the anticipated soil conditions are approximately 9 feet of medium dense sand and silt, underlain by approximately 37 feet of loose sand and silt, then underlain by various strata of more dense granular soil with silt. Groundwater is anticipated approximately 9 feet below existing ground level.

In the event that the soil actually encountered differs significantly from the descriptions above, or if unanticipated obstructions are encountered, Hartman Engineering will be notified immediately and construction operations in the vicinity of the differing soil or obstruction will cease until the situation is evaluated.
- 3) Groundwater will enter the cofferdam through interlock seepage and through the soil at the bottom of the excavation. It is anticipated that pumps located inside the cofferdam will maintain the water at an acceptable level.

Special attention must be directed toward examining the excavation bottom for indications of piping (rapid upward water flow at a specific location) or heave (swelling or uplift of a portion of the excavation bottom). Either of these conditions is an indication of an unanticipated subsurface condition which may cause damage to the cofferdam. If piping or heave is detected or suspected, Hartman Engineering will be notified immediately and dewatering operations will be suspended until the condition is evaluated.
- 4) The Contractor will measure and record the length of each sheet pile prior to driving and will keep a record of all trimming, cutting, etc., such that the bottom elevation of individual sheet piles can be determined at any time. Refer to Monitoring Procedure Item 1A.
- 5) If, at any time, the bracing system is damaged by construction operations, Hartman Engineering will be notified immediately. Until the severity of the damage can be evaluated, construction operations will cease and construction personnel will be evacuated from the excavation.

MATERIAL SPECIFICATIONS

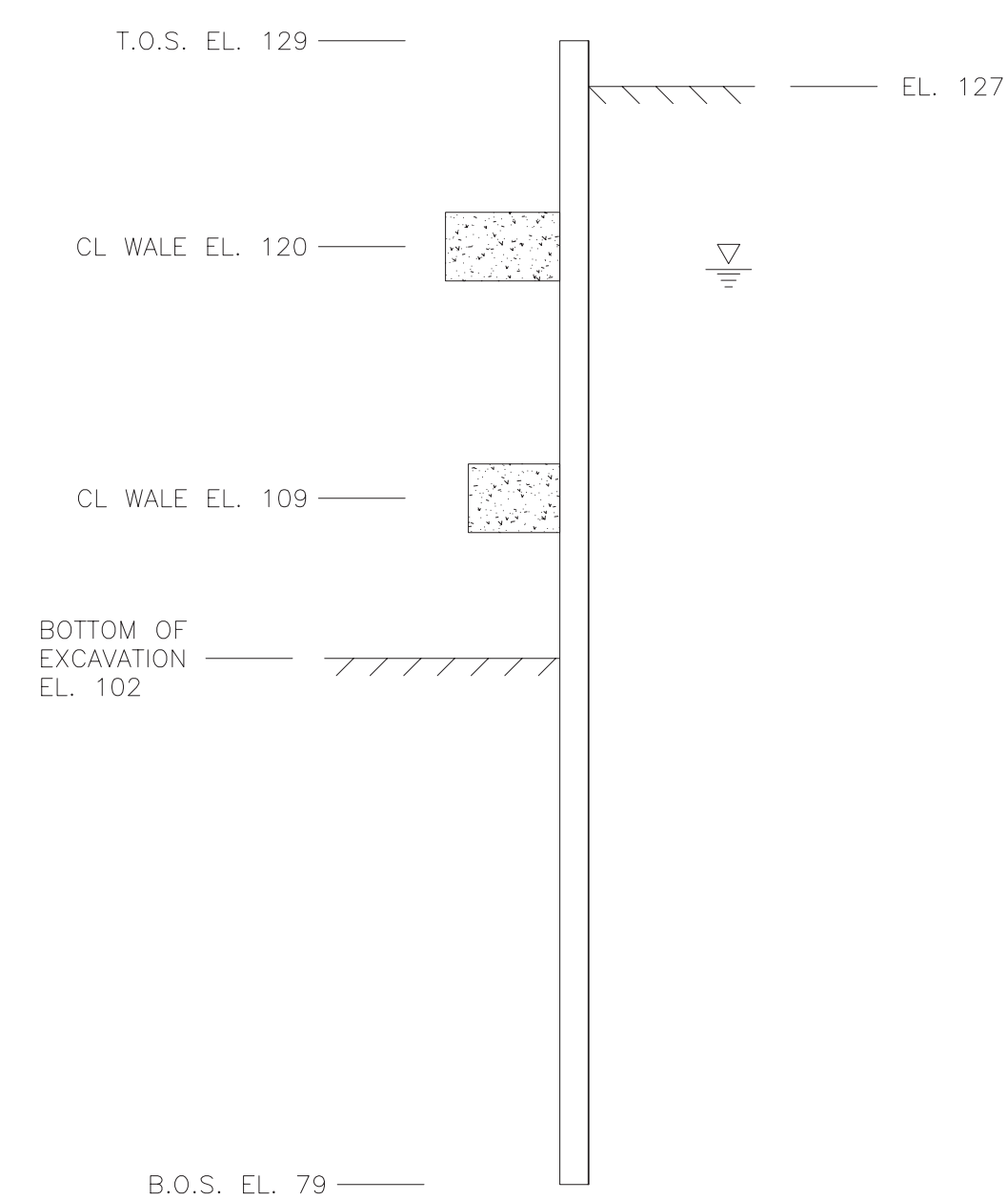
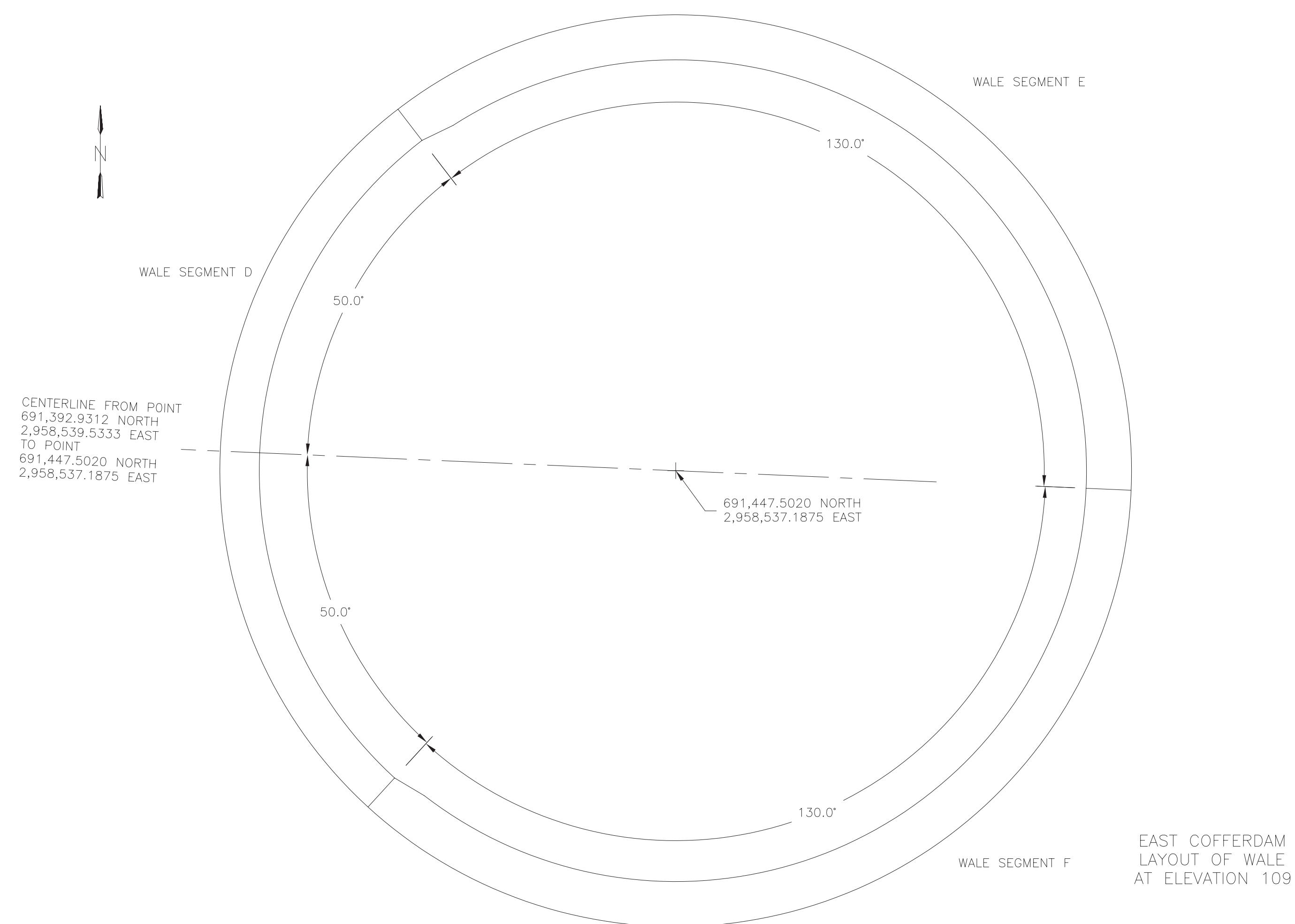
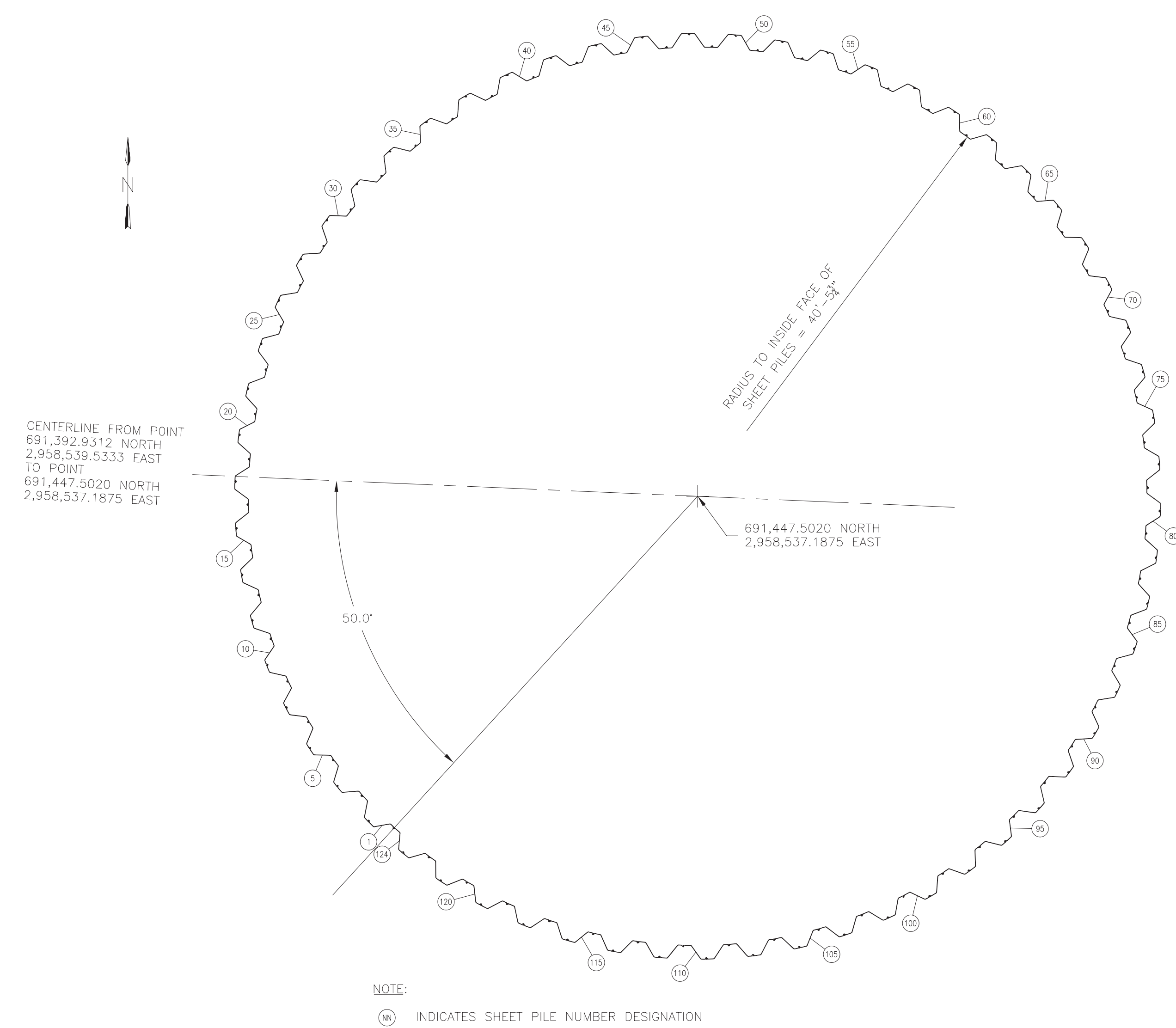
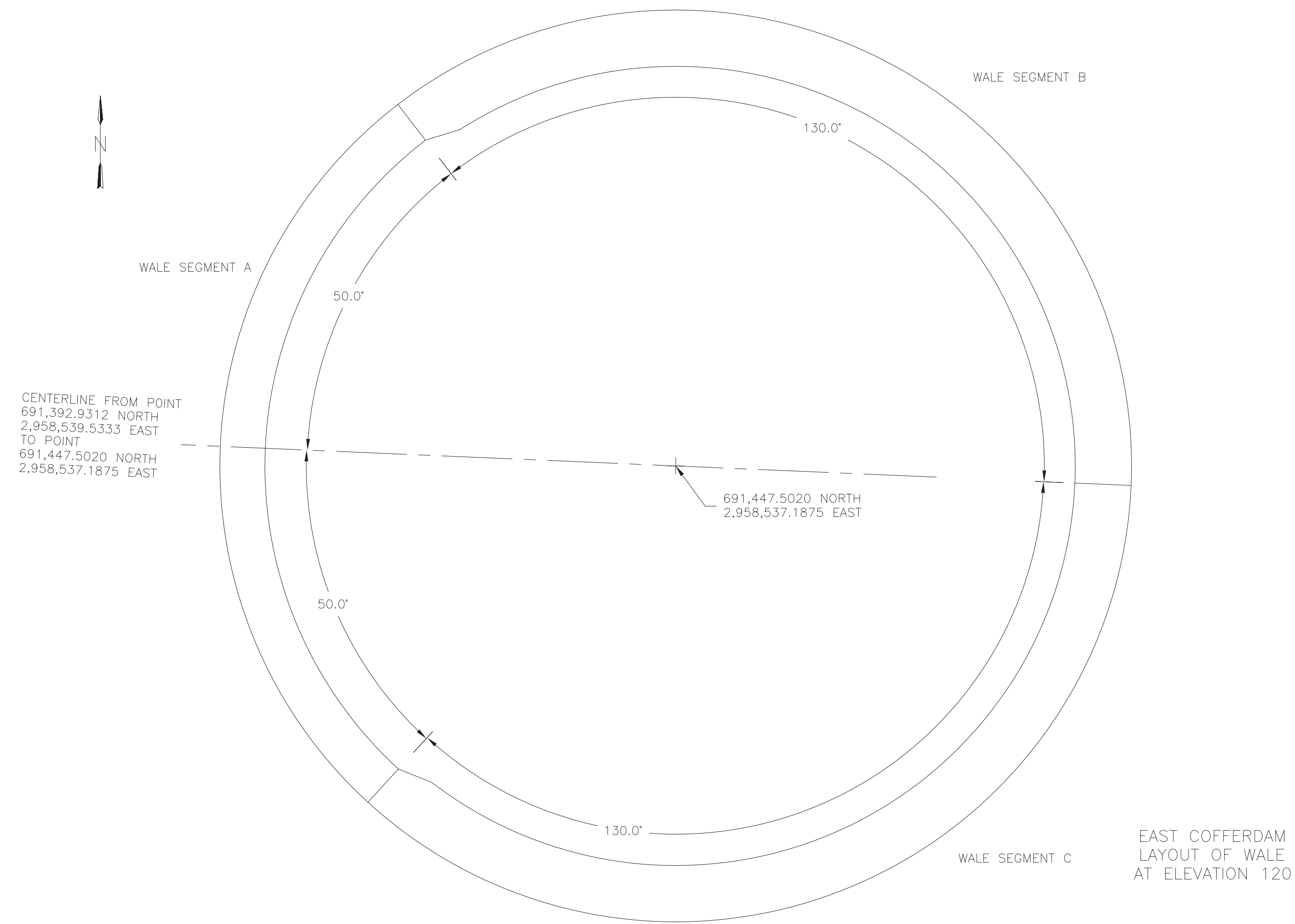
- 6) In the event that the cofferdam cannot be constructed as designed and detailed, the Contractor will not proceed with the construction of the cofferdam until the data for this determination has been reviewed and incorporated into the design by Hartman Engineering.
- 7) Standard construction site safety measures (construction of stairways, provision of barricades to stop rolling objects, provision of ladders, fences, etc.) are the responsibility of the Contractor and are not shown on these drawings.
- 8) The concrete wales are not to be used for storage of materials.
- 9) All work shall be performed in a manner consistent with industry standards established by AISC (American Institute of Steel Construction), ACI (American Concrete Institute), and AWS (American Welding Society).
- 10) Test cylinders will be used to evaluate concrete wale strength. It is recommended that sufficient cylinders be made so that strength can be evaluated 2 days, 3 days, 4 days, 7 days, and 28 days after installation of the concrete.
- 11) It is intended that a representative of Hartman Engineering will be present at the jobsite at the time the strain gauge instrumentation is installed into the upper concrete wale in order to instruct and assist the Engineer's field personnel in the installation and use of the strain gauge monitoring system. The schedule of the visit will be coordinated by the Engineer's personnel and Hartman Engineering.
- 12) For additional information related to the cofferdams, see Drawings No. 06-602-LS-06-602-LS-2 and 06-602-DE-1.

- 1) Sheet Piling: Chaparral Steel Co. PZC18 Section, ASTM A572 Grade 50 Steel or approved equal. All Sheet piling will be new at the start of the project.
- 2) Concrete: Use concrete meeting Project Specifications for Structural Concrete; additionally, concrete must develop 4000 psi ultimate strength after 7 days.
- 3) Concrete Reinforcement: Steel reinforcing bars for concrete will be ASTM A615 Grade 60 bars detailed in accordance with current ACI Specifications. Splices in the longitudinal reinforcement must be capable of developing the full tensile capacity of the reinforcement.
- 4) Structural Steel:
 - (A) Plate and Miscellaneous Steel: ASTM Grade A36 or stronger Steel.
 - (B) Welding Electrodes: E70XX
 - (C) Welder Qualifications: Each Welder, Welding Operator or Tacker who performs work on the cofferdam must be qualified for each process and position used for the construction. Qualification standards required are those stipulated in the Project Documents.

**PROGRESS DRAWINGS
CURRENT TO
MAY 10, 2006**

9a		HARTMAN ENGINEERING	
		4910 RANSOM ROAD CLARENCE, NEW YORK 14031	
DATE: MAY 10, 2006	DRAWN BY: DAM	CHECKED BY: RJH	
COFFERDAMS FOR REMEDIATION OF FORMER RAYTHEON FACILITY SITE IN WAYLAND, MA			
GENERAL PLAN OF EAST AND WEST COFFERDAMS			
SCALE: 3/8" = 1'-0"	DRAWING NUMBER: 06-602-CP-1	SHEET 1 OF 4	

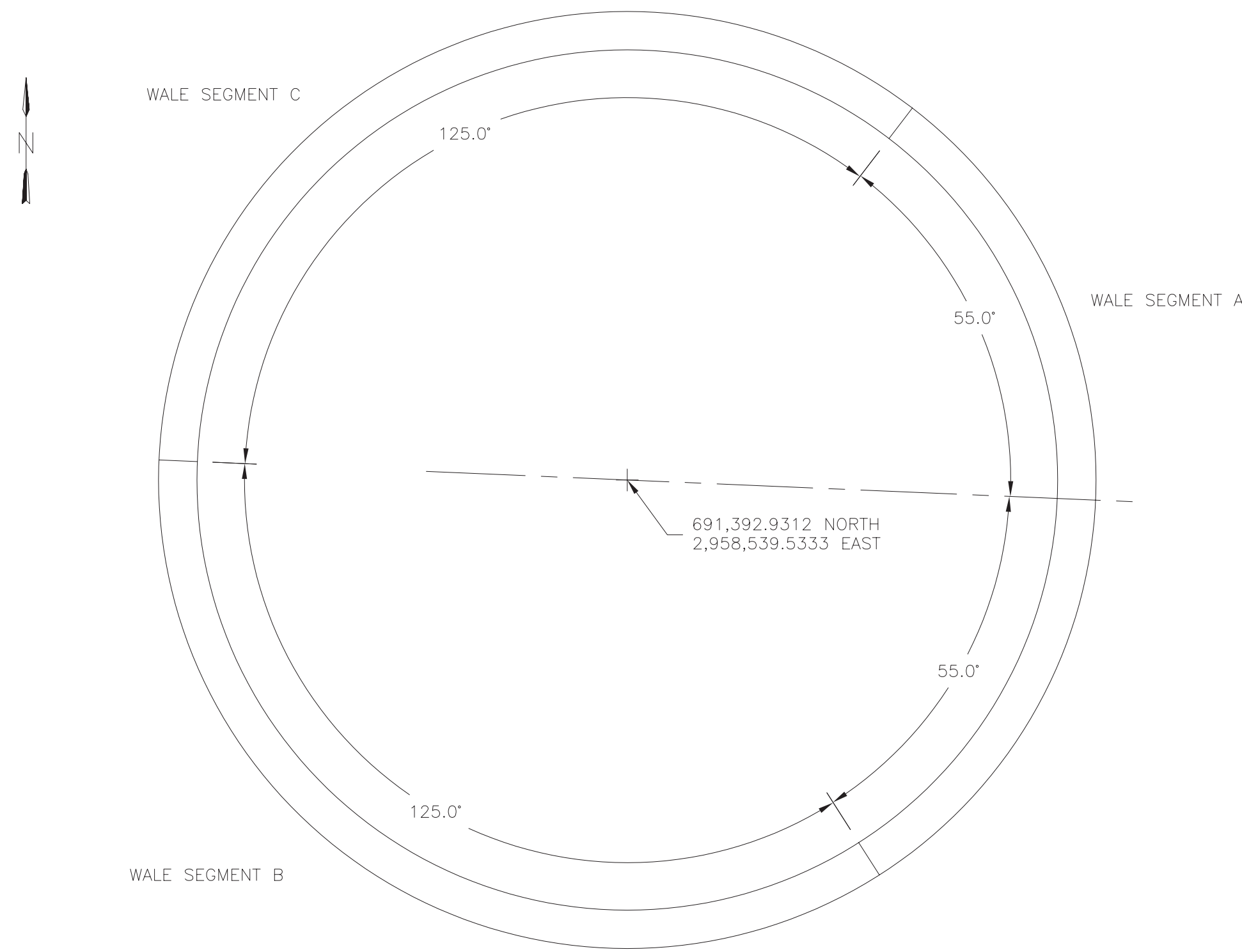
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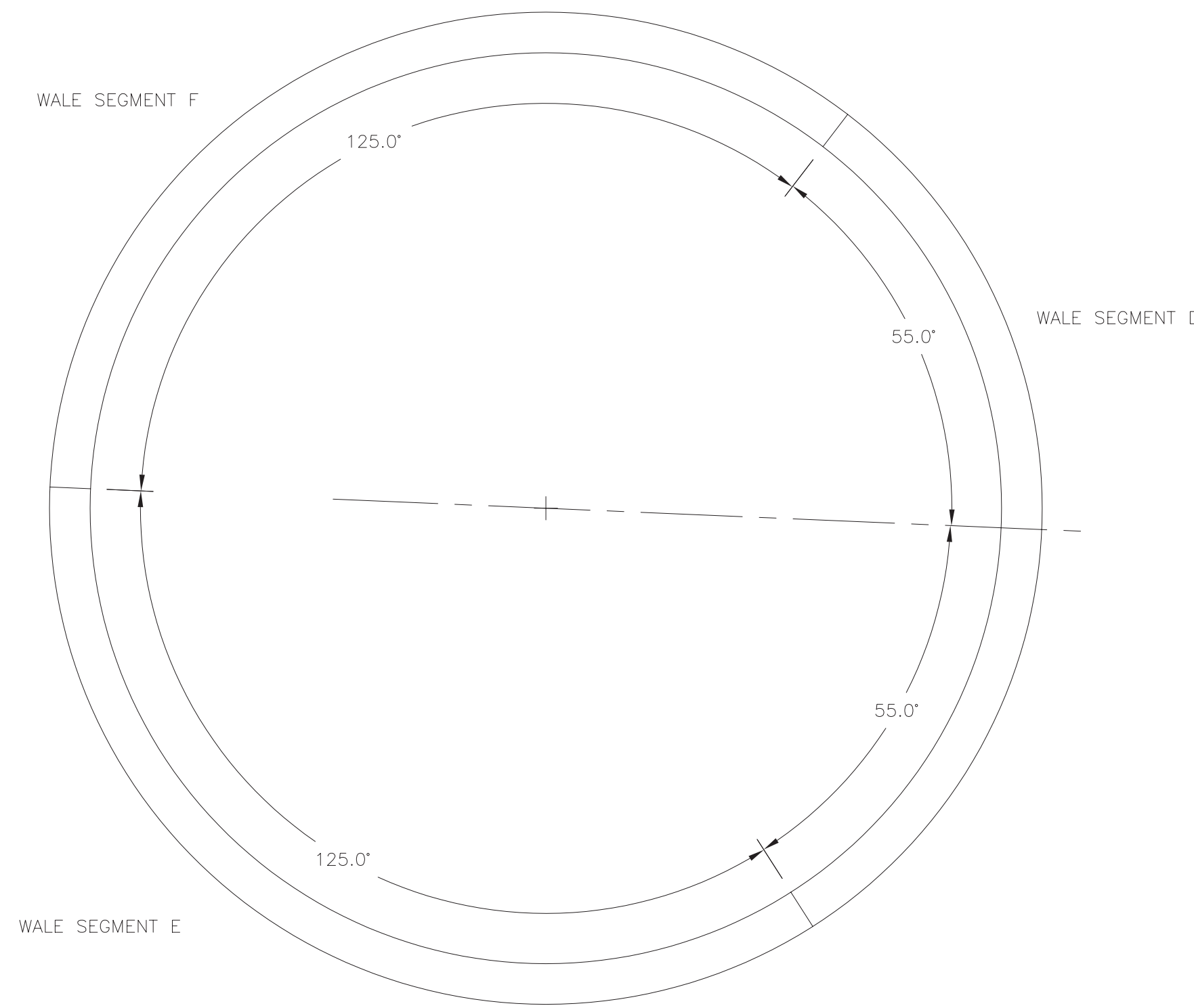
PROGRESS DRAWINGS
CURRENT TO
MAY 10, 2006

9b	HARTMAN ENGINEERING		
	4910 RANSOM ROAD		CLARENCE, NEW YORK 14031
	DATE: MAY 10, 2006	DRAWN BY: DAM	CHECKED BY: RJH
	COFFERDAMS FOR REMEDIATION OF FORMER RAYTHEON FACILITY SITE IN WAYLAND, MA		
EAST COFFERDAM SHEET PILE LAYOUT, WALE LAYOUTS, AND SECTION A-A			
SCALE: 1/8" = 1'-0"	DRAWING NUMBER: 06-602-LS-1	SHEET 2 OF 4	

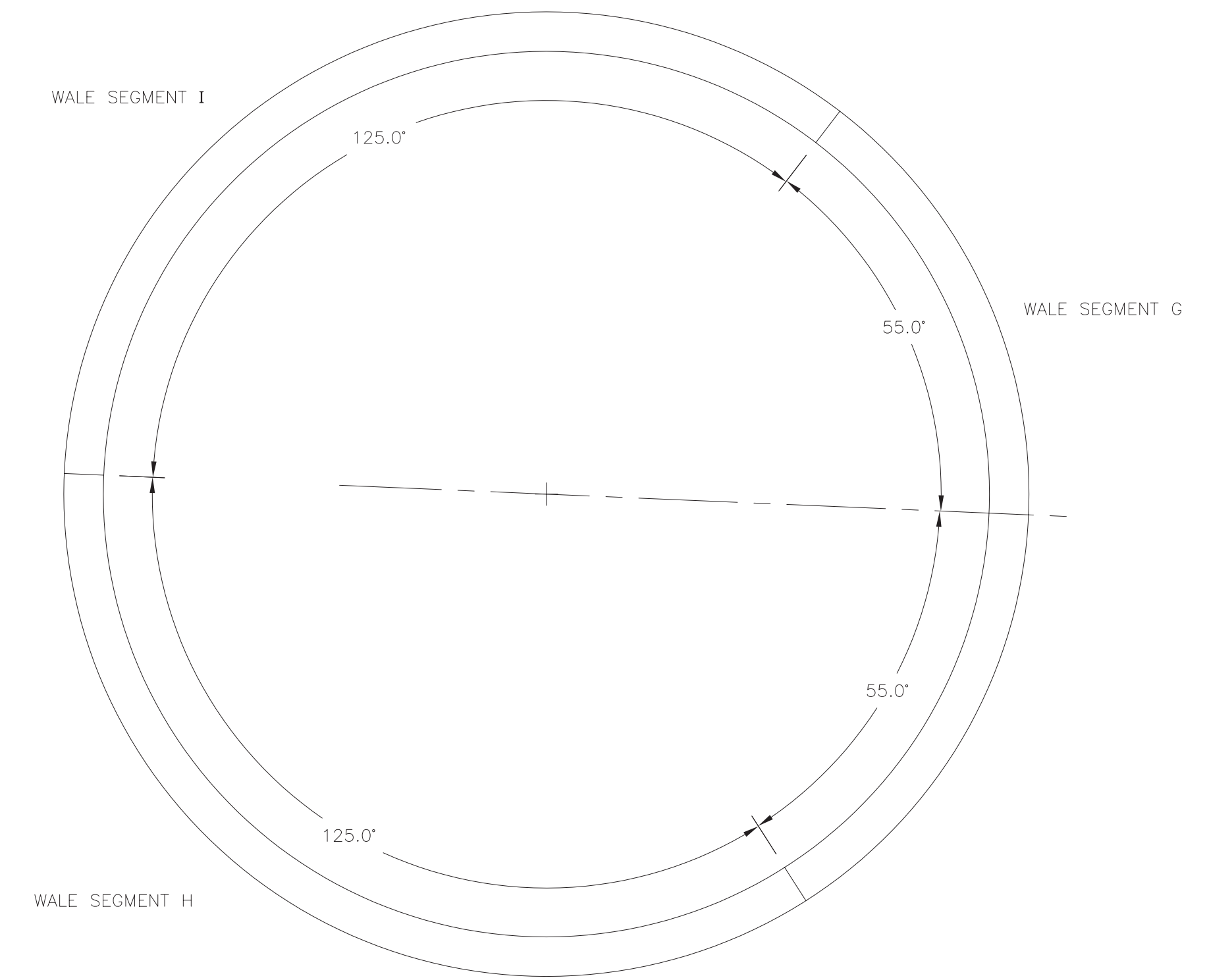
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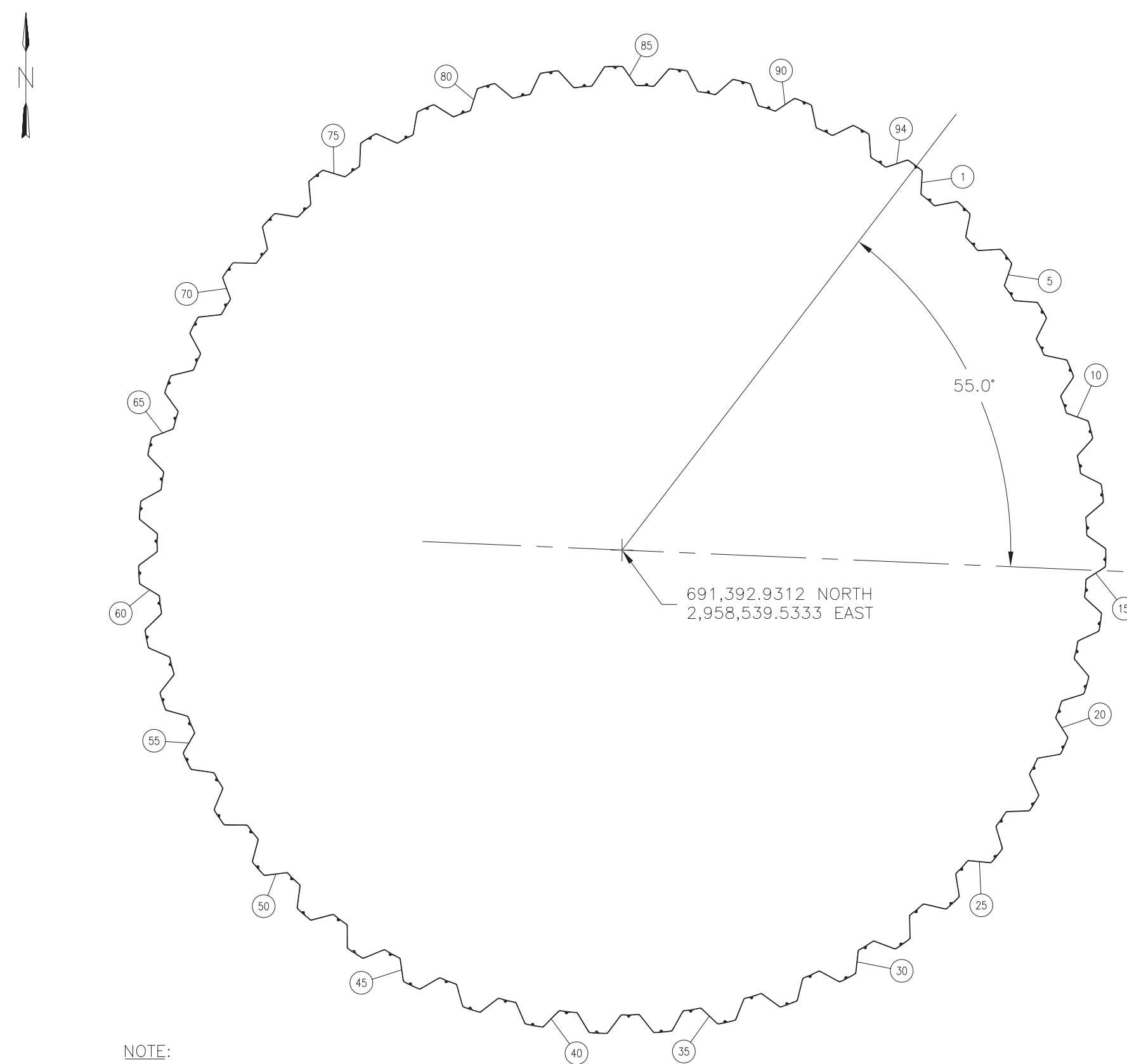
LAYOUT OF WALE
AT ELEVATION 117



LAYOUT OF WALE
AT ELEVATION 107



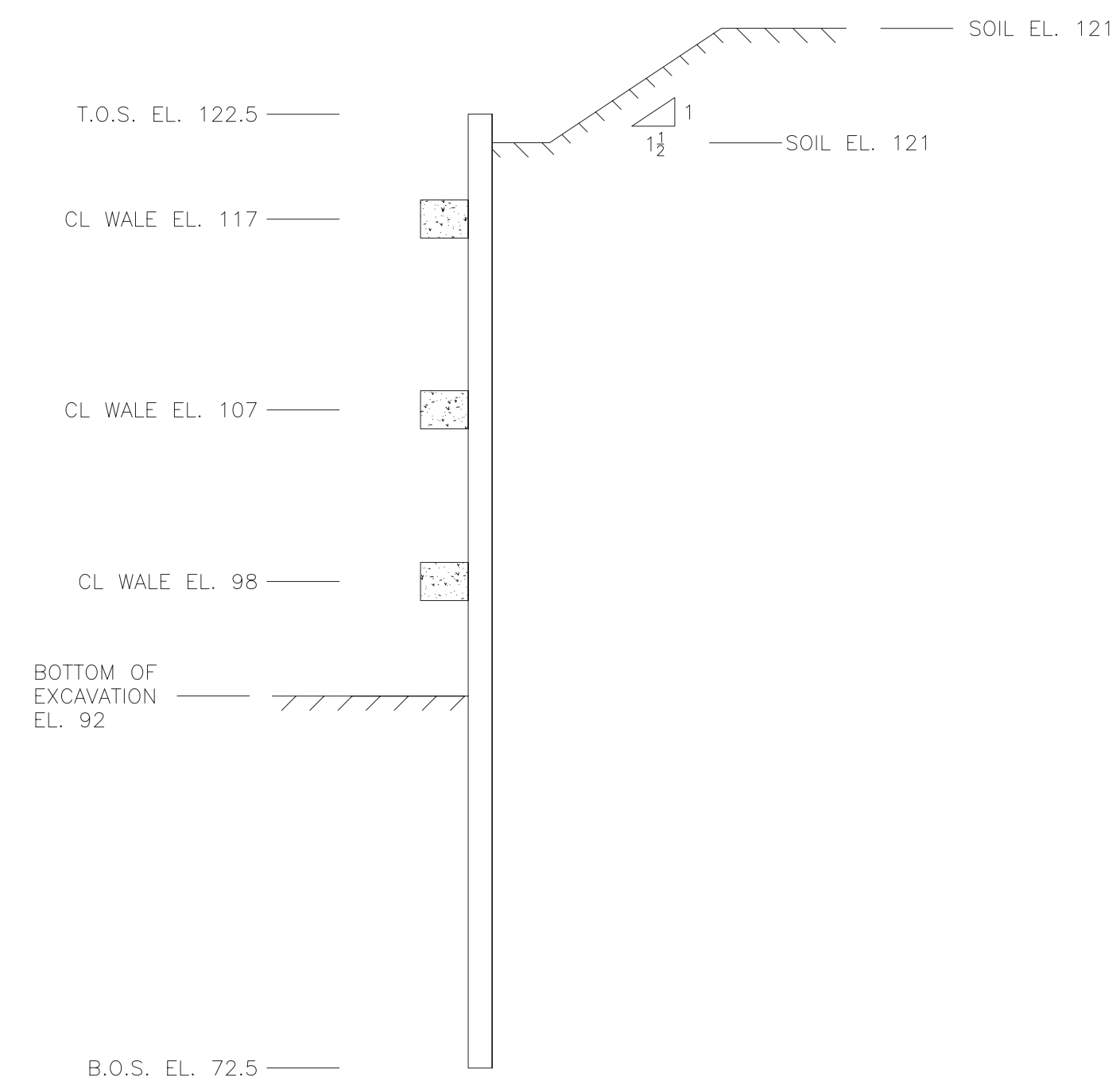
LAYOUT OF WALE
AT ELEVATION 98



NOTE:
⑨ INDICATES SHEET PILE NUMBER DESIGNATION

SHEET PILE LAYOUT
WEST COFFERDAM
94 PCS PZC18

CENTERLINE FROM POINT
691,392.9312 NORTH
2,958,539.5333 EAST
TO POINT
691,447.5020 NORTH
2,958,537.1875 EAST
(TYPICAL)



SECTION B-B

PROGRESS DRAWINGS
CURRENT TO
MAY 10, 2006

9c

HARTMAN ENGINEERING

4910 RANSOM ROAD CLARENCE, NEW YORK 14031

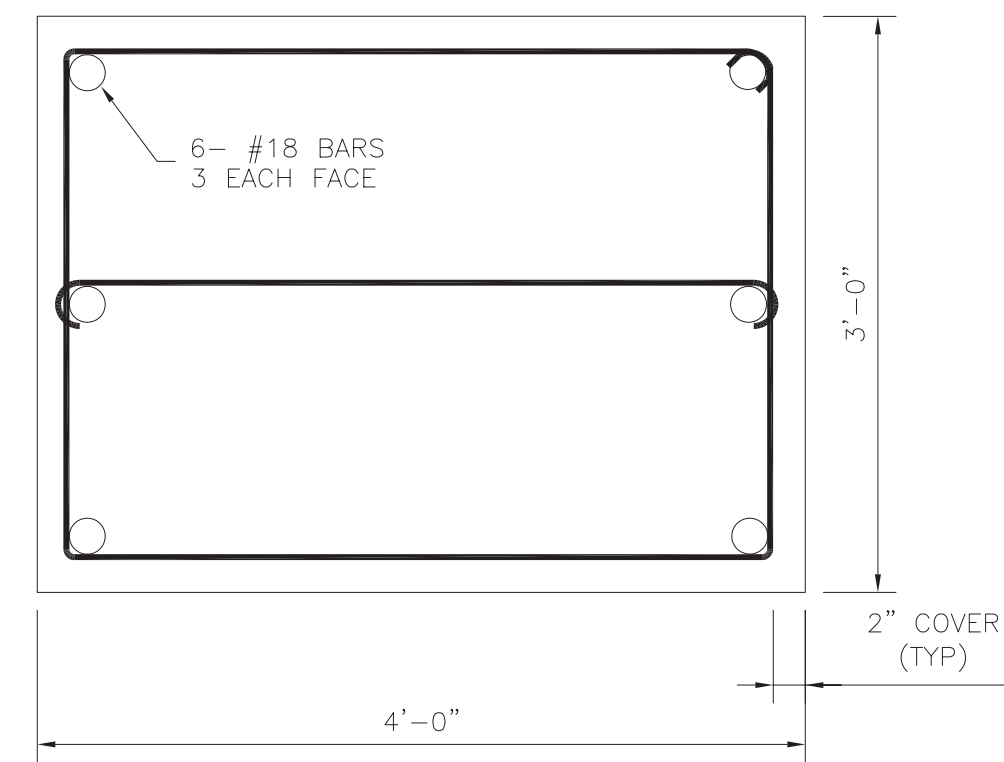
DATE: MAY 10, 2006 DRAWN BY: DAM CHECKED BY: RJH

COFFERDAMS FOR REMEDIATION OF
FORMER RAYTHEON FACILITY SITE
IN WAYLAND, MA

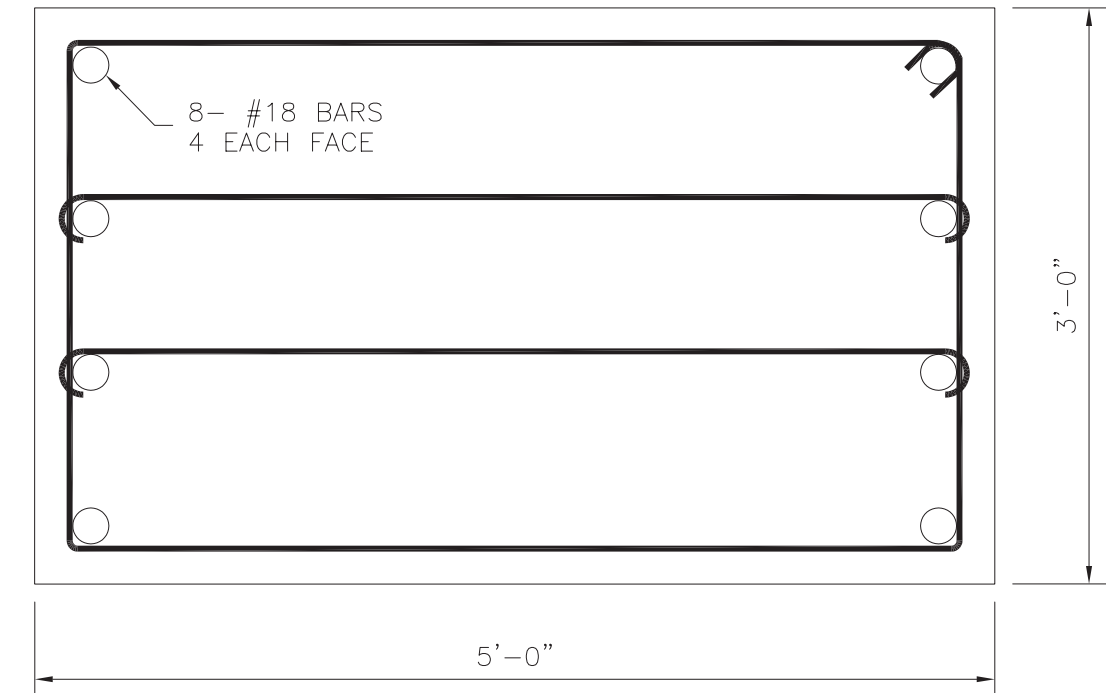
WEST COFFERDAM SHEET PILE LAYOUT,
WALE LAYOUTS, AND SECTION B-B

SCALE: 1/8"=1'-0" DRAWING NUMBER: 06-602-LS-2 SHEET 3 OF 4

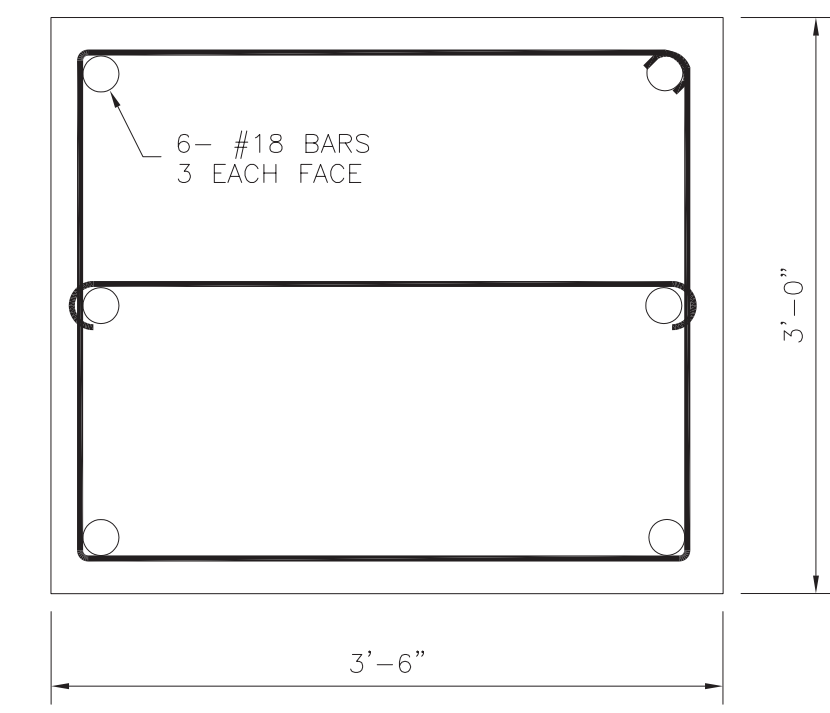
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HARTMAN ENGINEERING.



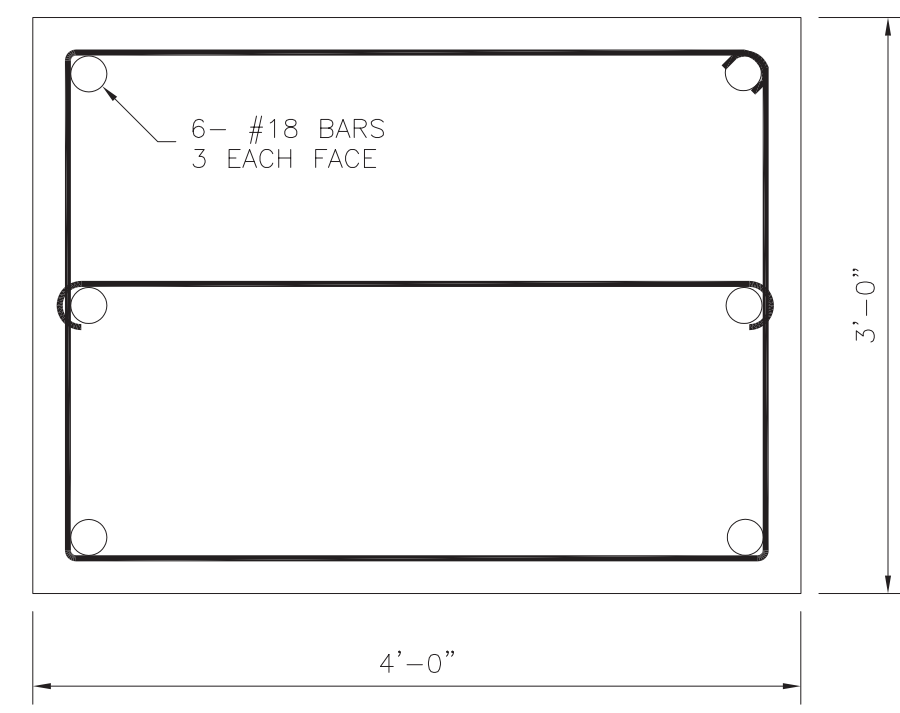
WALE AT ELEVATION 120
AT 100° ARC



WALE AT ELEVATION 120
AT 130° ARCS

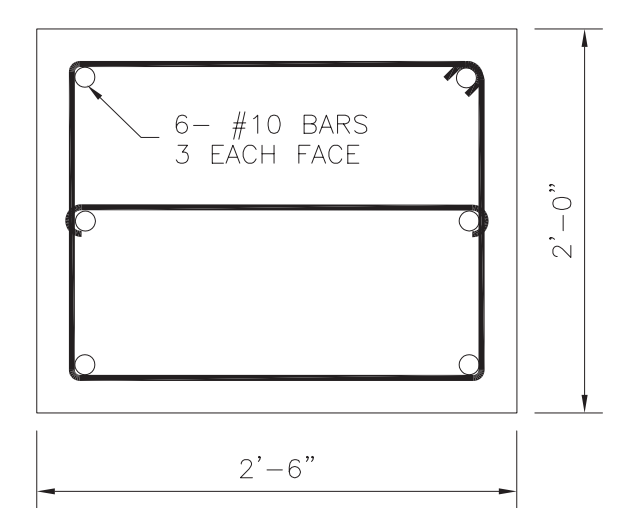


WALE AT ELEVATION 109
AT 100° ARC



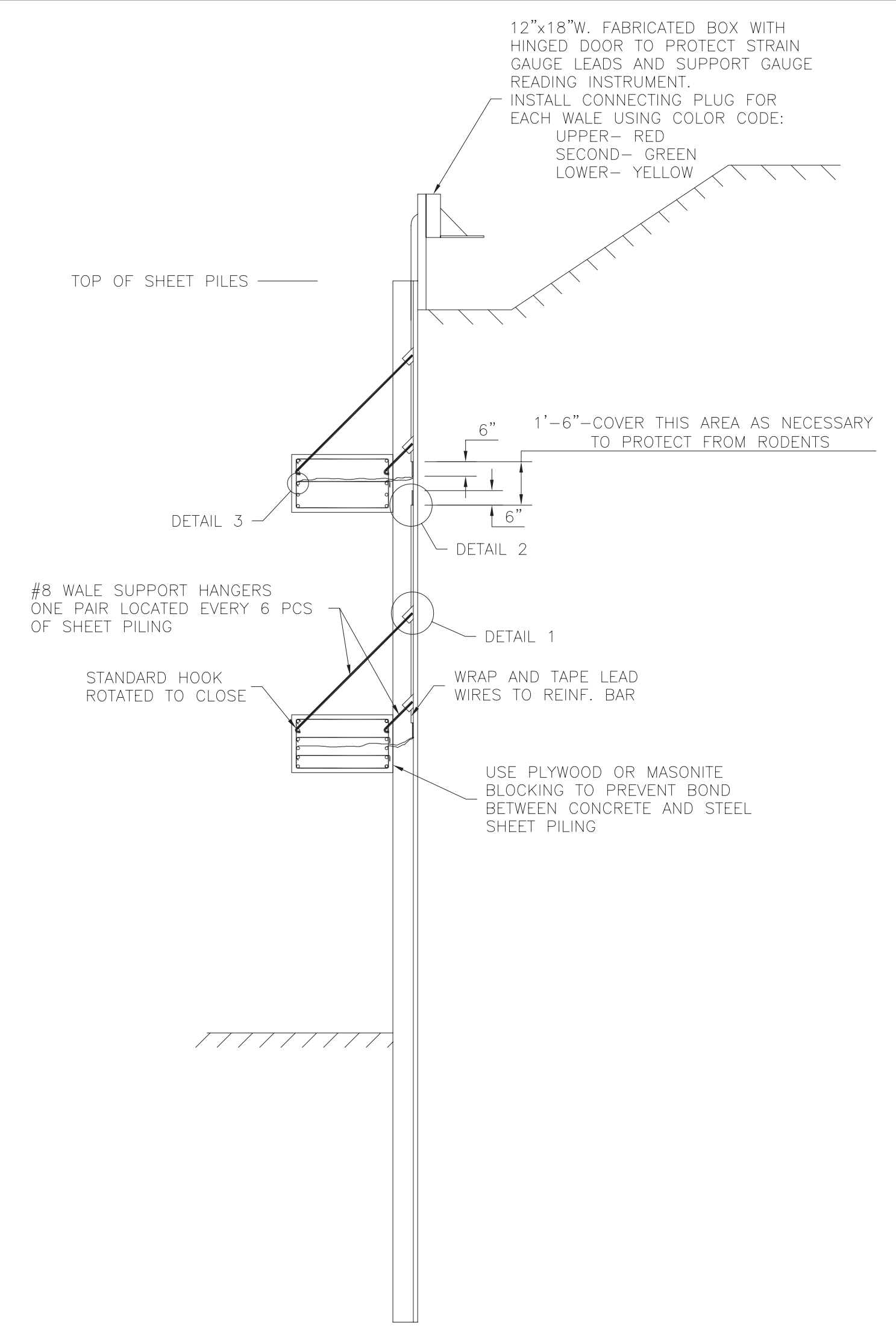
WALE AT ELEVATION 109
AT 130° ARCS

EAST COFFERDAM
WALE SECTIONS
SCALE: 1"=1'-0"

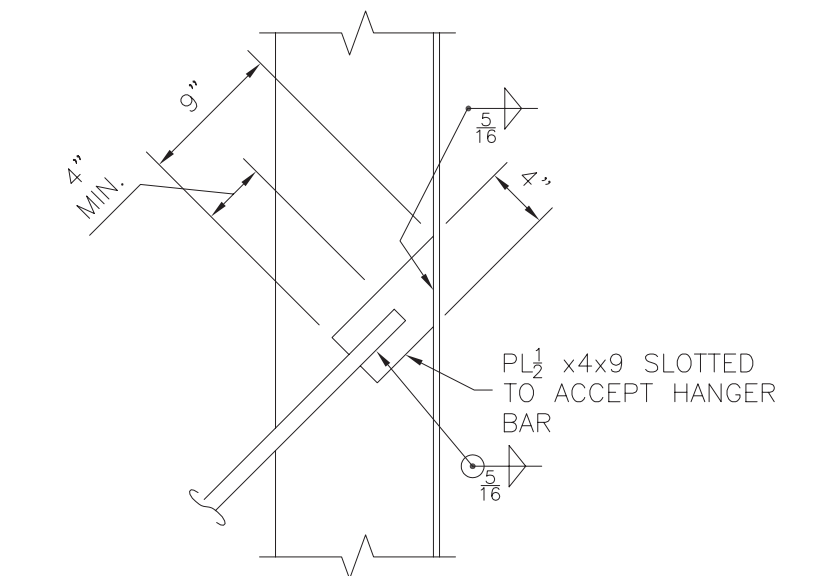


WALES AT ELEVATIONS 117, 107 AND 98
AT ALL ARC LOCATIONS

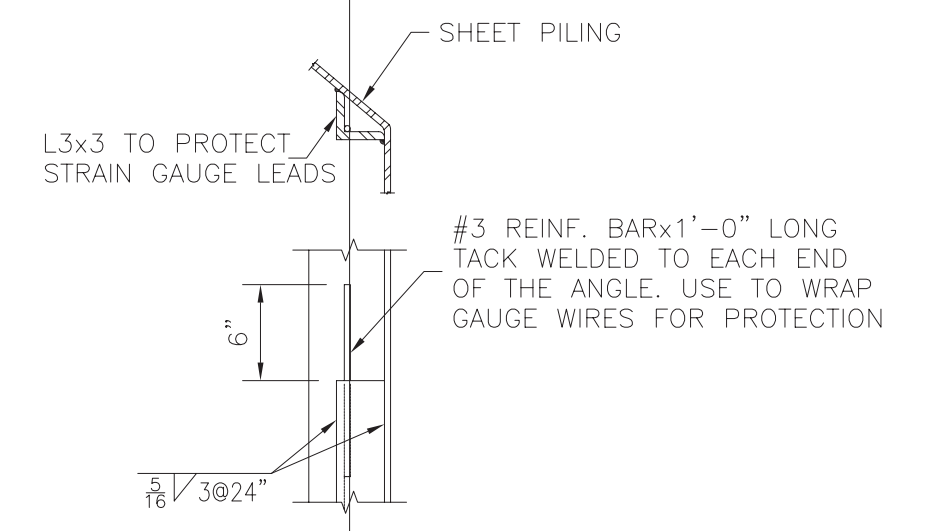
WEST COFFERDAM
WALE SECTION
SCALE: 1"=1'-0"



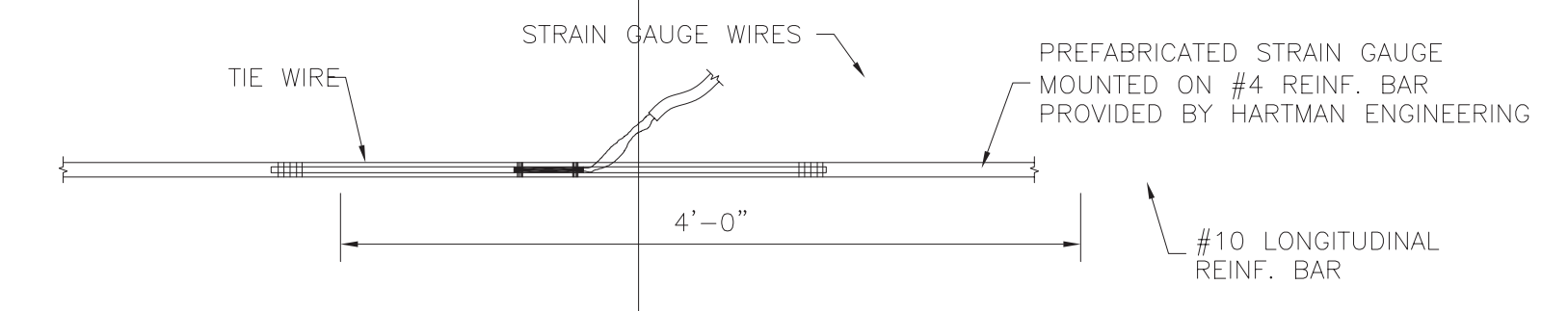
TYPICAL SECTION SHOWING STRAIN
GAUGE MONITORING INSTRUMENTATION
SCALE: 1/2"=1'-0"



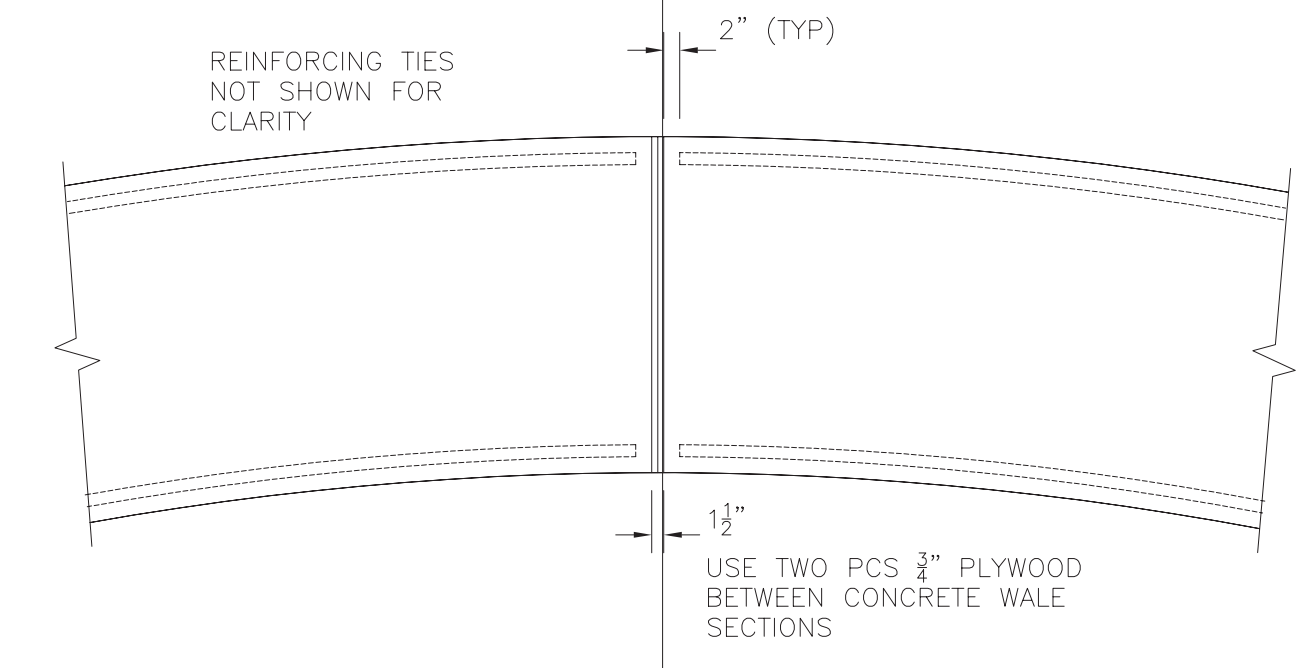
DETAIL 1
WALE HANGER ATTACHMENT
SCALE: 1"=1'-0"



DETAIL 2
GAUGE WIRE PROTECTION
SCALE: 1"=1'-0"



DETAIL 3
INSTALLATION OF STRAIN
GAUGE INSTRUMENTATION
SCALE: 1"=1'-0"

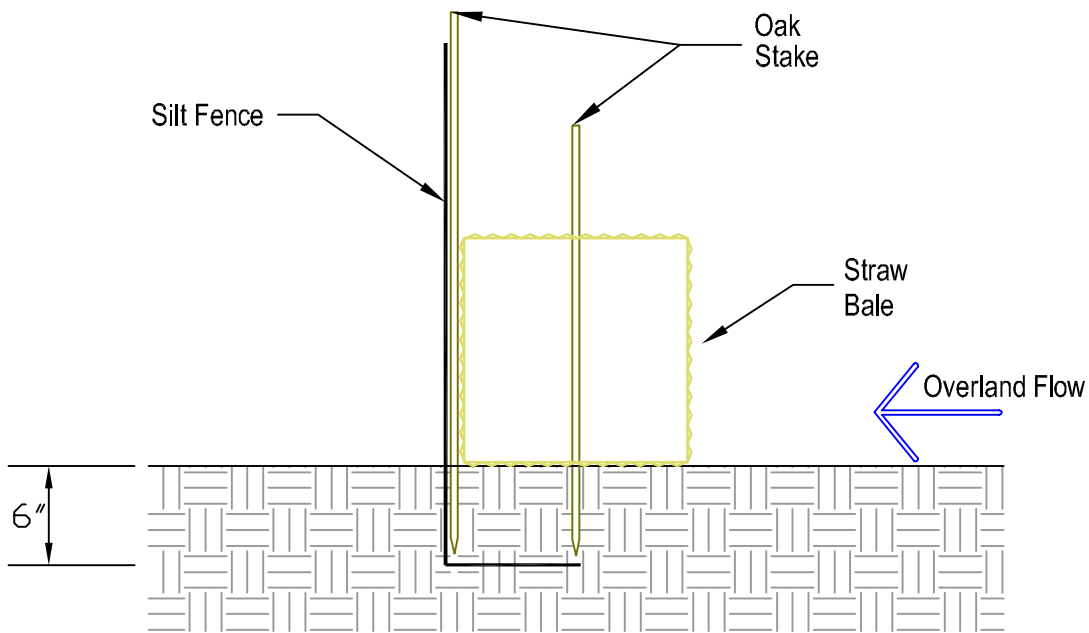


DETAIL 4
JOINT AT ENDS OF
WALE SEGMENTS
SCALE: 1/2"=1'-0"

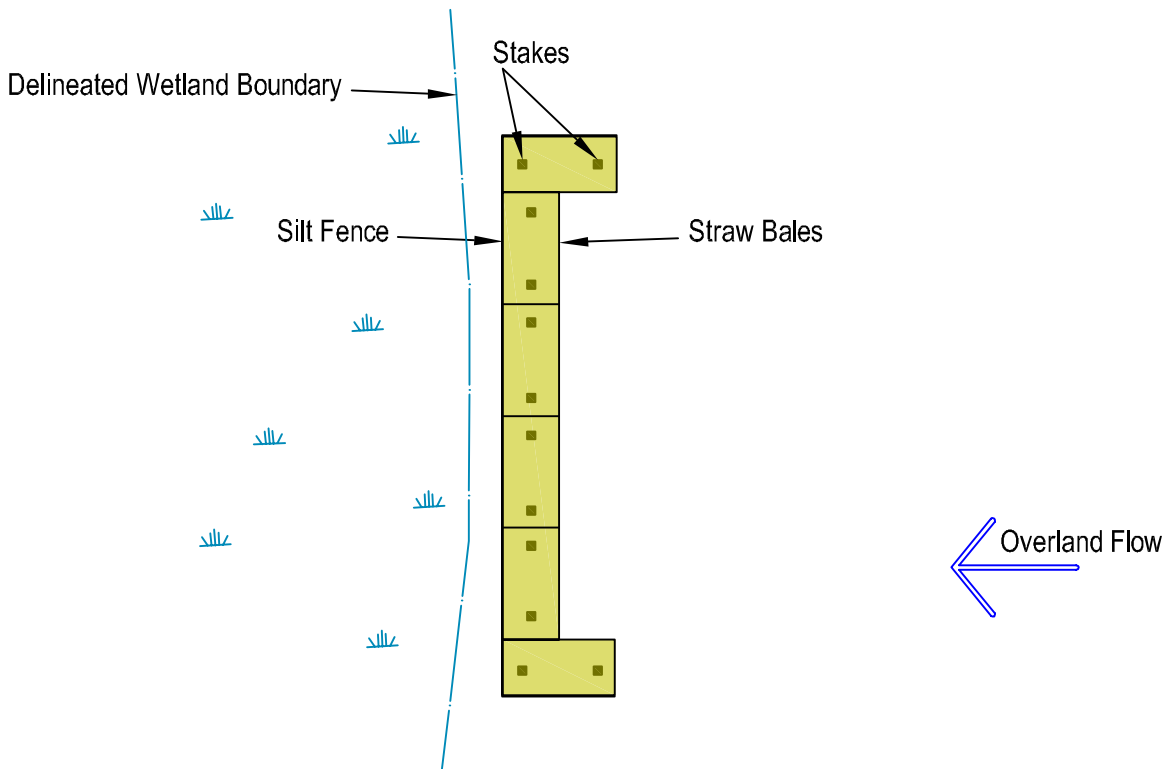
**PROGRESS DRAWINGS
CURRENT TO
MAY 10, 2006**

9d	HARTMAN ENGINEERING		
	4910 RANSOM ROAD		CLARENCE, NEW YORK 14031
	DATE: MAY 10, 2006	DRAWN BY: DAM	CHECKED BY: RJH
	COFFERDAMS FOR REMEDIATION OF FORMER RAYTHEON FACILITY SITE IN WAYLAND, MA		
WALE REINFORCING DETAILS, TYPICAL SECTION SHOWING STRAIN GAUGE MONITORING INSTRUMENTATION, MONITORING PROCEDURE AND DETAILS 1 THROUGH 4			
SCALE: AS NOTED	DRAWING NUMBER: 06-602-DE-1	SHEET 4 OF 4	

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TYP. BARRIER DETAIL



TYP. SILT FENCE AND STRAW BALE ARRANGEMENT

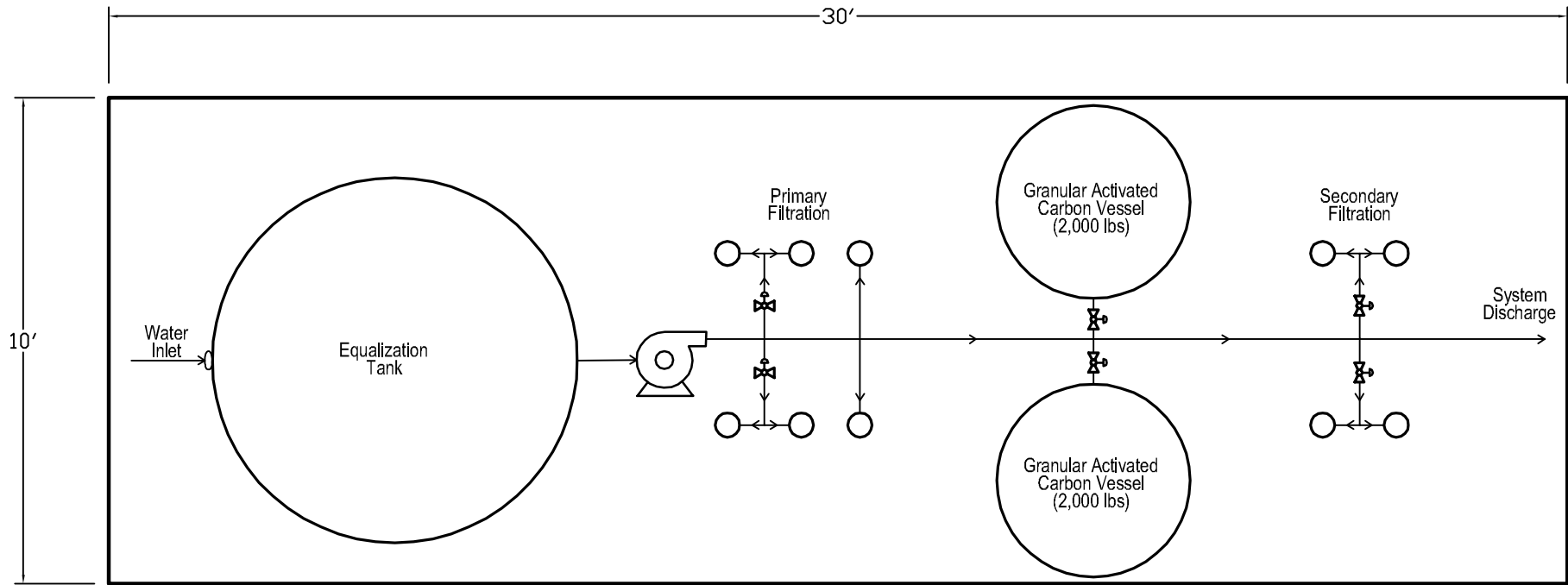
NOTE:

- 1) Erosion check to be bales of hay secured to the ground with two (2) 4'-long stakes for each bale.
- 2) Stakes to be imbedded to a depth of 1', spaced no more than 1.5' apart.
- 3) All silt fences to be landward of Wetland.

Scale = Not To Scale

Figure 10 - Straw Bale and Silt Fence Detail
Former Raytheon Facility - Wayland, MA





Not to Scale

Figure 11 - Typical Skid-Mounted Water Treatment Unit
Former Raytheon Facility - Wayland, MA

