



TABLES

TABLE 2-1 (Sheet 1 of 1)
MONITORING WELL INFORMATION
PENINSULA BOULEVARD GROUNDWATER PLUME SITE
HEMPSTEAD, NASSAU COUNTY, NEW YORK

Well ID	Installation Date	Well Diameter (inches)	TIC Elevation (feet above msl)	Depth of Screened Interval (feet bgs)	Elevation of Screened Interval (feet above msl)	Length of Screened Interval (feet)	Total Depth of Well (feet bgs)
MW-03D	NA	NA	4.15	NA	NA	NA	20.5
MW-03S	NA	NA	4.91	NA	NA	NA	14.2
MW-04	NA	NA	5.78	NA	NA	NA	10.5
MW-06	NA	NA	4.99	NA	NA	NA	11
MW-07	3/21/2001	2	6.77	12-22	-15.23 to -10.23	10	20.7
MW-08	3/21/2001	2	5.82	10-20	-14.18 to -9.18	10	18.3
MW-10D	7/12/2007	2	6.88	52-57	-50.12 to -45.12	5	57
MW-10S	7/12/2007	2	6.8	27-32	-25.20 to -20.20	5	32
MW-11	6/28/2007	2	5.58	20-25	-19.42 to -14.42	5	25
MW-12	7/10/2007	2	4.48	20-25	-20.52 to -15.52	5	25
MW-13D	7/11/2007	2	4.93	60-65	-60.07 to -55.07	5	65
MW-13S	6/28/2007	2	5.18	12-17	-11.82 to -6.82	5	17
MW-14	6/29/2007	2	6.47	13-18	-11.53 to -6.53	5	18
MW-15D	7/13/2007	2	8.35	57-62	-53.65 to -48.65	5	62
MW-15S	7/13/2007	2	8.43	18-23	-14.57 to -9.57	5	23
MW-16	8/2/2007	2	6.99	10-15	-8.01 to -3.01	5	15
MW-17	8/14/2007	2	9.32	11-16	-6.68 to -1.68	5	16
MW-18D	7/24/2007	2	10.74	69-75	-64.26 to -59.26	6	75
MW-18S	7/24/2007	2	10.69	10-15	-4.31 to 0.69	5	15
MW-19	8/3/2007	2	11.19	10-15	-3.81 to 1.19	5	15
MW-20	8/3/2007	2	19.43	20-25	-5.57 to -0.57	5	25
MW-21D	7/23/2007	2	13.41	58-64	-50.59 to -45.59	6	69
MW-21S	7/23/2007	2	13.33	13-18	-4.67 to 0.33	5	18
MW-22D	8/13/2007	2	19.08	75-80	-60.92 to -55.92	5	80
MW-22S	8/13/2007	2	18.76	20-25	-6.24 to -1.24	5	25
MW-23	8/2/2007	2	24.74	28-33	-8.26 to -3.26	5	35
N1114	NA	NA	22.33	NA	NA	NA	27.5
PW-01S	4/2/2013	6	14.15	25-35	-10.5 to -20.5	10	35.5
PW-02S	1/28/2014	4	14.20	8-36	6.5 to -21.5	28	36
PW-01D	5/3/2013	6	12.42	46.5-81.5	-33.4 to -68.4	35	82
OW-01S	3/27/2013	2	15.90	6-26	10.3 to -9.7	20	26
OW-01D	4/18/2013	2	10.19	42-70	-31.5 to -59.5	28	70
IW-01S	3/29/2013	6	19.67	33-43	-12.6 to -22.6	10	44
IW-01D	5/9/2013	6	19.03	51-91	-30.8 to -70.8	40	91
TW-01S	3/5/2013	2	21.04	20-35	1.4 to -13.6	15	35
TW-01D	3/18/2013	1	20.90	73-83	-51.8 to -61.8	10	83
TW-02S	3/5/2013	2	18.02	15-30	3.4 to -11.6	15	30
TW-02D	3/18/2013	1	17.98	73-83	-54.8 to -64.8	10	83
TW-03S	3/7/2013	2	14.29	12-27	2.5 to -12.5	15	27
TW-03D	3/14/2013	2	13.93	60-70	-45.7 to -55.7	10	70
TW-04S	3/8/2013	2	11.69	14-29	-2.1 to -17.1	15	29
TW-04D	3/12/2013	2	11.40	54.5-64.5	-42.9 to -52.9	10	64.5
TW-05D	3/20/2013	1	16.15	66-76	-49.6 to -59.6	10	76
TW-06D	3/20/2013	1	14.40	65-75	-50.2 to -60.2	10	75
TW-07D	3/11/2013	2	10.83	62-72	-51 to -61	10	72
TW-08D	3/8/2013	2	10.53	60-70	-49.3 to -59.3	10	70
TW-09	1/27/2014	2	14.20	8-36	6.5 to -21.5	28	36
PB-JW-01	5/17/2013	4	NA	156-166	NA	10	167
PB-JW-02	5/22/2013	4	NA	147-157	NA	10	160
PB-JW-03	5/31/2013	4	NA	147-157	NA	10	159

Notes:

bgs - below ground surface

D - Deep

ft - Feet

msl - Mean Sea Level

NA - Not Available

S - Shallow

TIC - Top of Inner Casing

TABLE 2-2 (Sheet 1 of 13)
SUMMARY OF DETECTED CONSTITUENTS IN JULY 2012 CURRENT UNDERSTANDING GROUNDWATER SAMPLING EVENT
PENINSULA BOULEVARD GROUNDWATER PLUME SITE
HEMPSTEAD, NASSAU COUNTY, NEW YORK

Sample Location Sample Date Sample Depth (ft bgs)	EPA Drinking Water Regulations (MCLs)	NYSDEC Water Quality Standards/ Guidance Values [Class GA]	MW-03D 7/12/2012 20.5	MW-03S 7/12/2012 14	MW-03S Duplicate 7/12/2012 14	MW-04 7/13/2012 10	MW-06 7/12/2012 9	MW-07 7/13/2012 19	MW-10D 7/13/2012 55	MW-10S 7/13/2012 29
Volatiles Organic Compounds (ug/L)										
1,1-Dichloroethane	--	5	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	7	5	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	600	3	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	75	3	ND	ND	ND	ND	ND	ND	ND	ND
Acetone	--	50	ND	ND	9.2	ND	ND	5.3	ND	ND
Benzene	5	1	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	--	5	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Disulfide	--	60	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	80 ^(a)	7	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	--	5	1.2	2	2.3	1.6	4.8 L	7.7	4.5	2.8
cis-1,2-Dichloroethene	70	5	11	3.6	3.6	4	1.9	2.2	ND	1.2
Cyclohexane	--	--	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	700	5	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	--	5	ND	ND	ND	ND	ND	ND	ND	ND
m/p-Xylene	10000 ^(c)	5 ^(c)	ND	ND	ND	ND	ND	ND	ND	ND
Methyl tert-Butyl Ether	--	10	ND	ND	ND	ND	ND	ND	ND	5.5
Methylcyclohexane	--	--	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene	10000 ^(c)	5 ^(c)	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	5	5	480	140	130	1.9	180	600 K	ND	10
Toluene	1000	5	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	100	5	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	5	5	39	5.7	5.5	1.4	4.2	18	ND	1.1
Vinyl Chloride	2	2	ND	ND	ND	2.5	ND	ND	ND	ND
Semi-Volatile Organic Compounds (ug/L)										
1,4-Dioxane	--	--	ND	ND	ND	ND	ND	ND	ND	ND
Bis(2-ethylhexyl)phthalate	6	5	ND	2.0 J	ND	ND	ND	ND	2.8 J	ND
Caprolactam	--	--	84	ND	ND	ND	9.2	ND	ND	2.7 J
Naphthalene	--	10	ND	ND	ND	ND	ND	ND	ND	ND
Metals - Total (ug/L)										
Aluminum	50 ^(h)	--	ND	ND	ND	34	32.8	135	312	39.2
Arsenic	10	25	ND	ND	ND	1.2	ND	ND	ND	ND
Barium	2000	1000	28.1	25.7	26.8	45	13.3	26.9	14.1	58.4

TABLE 2-2 (Sheet 2 of 13)
SUMMARY OF DETECTED CONSTITUENTS IN JULY 2012 CURRENT UNDERSTANDING GROUNDWATER SAMPLING EVENT
PENINSULA BOULEVARD GROUNDWATER PLUME SITE
HEMPSTEAD, NASSAU COUNTY, NEW YORK

Sample Location	EPA Drinking Water Regulations (MCLs)	NYSDEC Water Quality Standards/ Guidance Values [Class GA]	MW-03D 7/12/2012 20.5	MW-03S 7/12/2012 14	MW-03S Duplicate 7/12/2012 14	MW-04 7/13/2012 10	MW-06 7/12/2012 9	MW-07 7/13/2012 19	MW-10D 7/13/2012 55	MW-10S 7/13/2012 29
Beryllium	4	3	ND	ND	ND	ND	ND	ND	ND	ND
Cadmium	5	5	ND	ND	ND	ND	ND	ND	ND	ND
Calcium	--	--	43600	41900	42300	73000	37600	33900	17500	30900
Chromium	100	50	0.70 J	0.33 J	0.37 J	1.4 J	0.48 J	1.3 J	1.4 J	0.35 J
Cobalt	--	--	2.6	1.1	ND	ND	ND	1.4	ND	1.4
Copper	1300 ^(h)	200	ND	2.5	2.7	ND	3.1	2.5	ND	ND
Iron	300 ^(h)	300	260	254	245	1740	225	1390	33100	893
Lead	15 ⁽ⁱ⁾	25	ND	ND	ND	ND	ND	1.4	1.1	ND
Magnesium	--	35000	10000	10300	10400	16000	11200	6070	5920	5210
Manganese	50 ^(h)	300	599 J	212 J	200 J	144 J	53.7 J	125 J	584 J	981 J
Mercury	2	0.7	ND	ND	ND	ND	ND	ND	ND	ND
Nickel	--	100	1.6	0.85 J	0.95 J	0.98 J	0.75 J	2.8	2	1.7
Potassium	--	--	3990	3950	3950	2550	2760	4690	1900	3460
Selenium	50	10	ND	ND	ND	ND	ND	1.4 J	ND	ND
Sodium	--	20000	52100	62200	62700	21600	67700	47100	13000	40300
Vanadium	--	--	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	5000 ^(h)	2000	8.4	8.4	14.9	6.6	9.9	14.9	14.1	9.9
Metals - Dissolved (ug/L)										
Aluminum	50 ^(h)	--	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	10	25	NA	NA	NA	NA	NA	NA	NA	NA
Barium	2000	1000	NA	NA	NA	NA	NA	NA	NA	NA
Calcium	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Iron	300 ^(h)	300	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium	--	35000	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	50 ^(h)	300	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	2	0.7	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	--	100	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	--	20000	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	5000 ^(h)	2000	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 2-2 (Sheet 3 of 13)
SUMMARY OF DETECTED CONSTITUENTS IN JULY 2012 CURRENT UNDERSTANDING GROUNDWATER SAMPLING EVENT
PENINSULA BOULEVARD GROUNDWATER PLUME SITE
HEMPSTEAD, NASSAU COUNTY, NEW YORK

Sample Location Sample Date Sample Depth (ft bgs)	EPA Drinking Water Regulations (MCLs)	NYSDEC Water Quality Standards/ Guidance Values [Class GA]	MW-03D 7/12/2012 20.5	MW-03S 7/12/2012 14	MW-03S Duplicate 7/12/2012 14	MW-04 7/13/2012 10	MW-06 7/12/2012 9	MW-07 7/13/2012 19	MW-10D 7/13/2012 55	MW-10S 7/13/2012 29
Water Quality Parameters (mg/L)										
Alkalinity, Total	--	--	120	150	160	250	120	74	59	59
Ammonia [as N]	30 ^(l)	2000	0.059	0.2	0.14 L	0.43	0.13	0.14	0.32	0.19 L
BOD	--	--	ND	ND	ND	ND	ND	ND	ND	ND
Chemical Oxygen Demand	--	--	ND	ND	ND	ND	ND	ND	ND	ND
Chloride	250 ^(h)	250	100	100	100	36	130	83	42	83
Filterable Residue (Total Dissolved Solids)	500 ^(h)	--	340	350	360	370	360	310	200	280
Nitrate [as N]	10	10	2.1	1.9	2	ND	1.7	2.3	ND	0.91
Nitrite [as N]	1	1	ND	ND	ND	ND	0.067	ND	ND	ND
Organic Carbon	--	--	2	2.8	2.7	5.7	4.5	2.9	ND	1.2
Phosphorus	--	--	ND	ND	ND	ND	ND	ND	0.11	ND
Sulfate	250 ^(h)	250	28	22	24	28	24	36	24	28
Sulfide	--	0.05	ND	ND	ND	0.064	ND	0.013	ND	ND

Notes provided on last page of table.

TABLE 2-2 (Sheet 4 of 13)
SUMMARY OF DETECTED CONSTITUENTS IN JULY 2012 CURRENT UNDERSTANDING GROUNDWATER SAMPLING EVENT
PENINSULA BOULEVARD GROUNDWATER PLUME SITE
HEMPSTEAD, NASSAU COUNTY, NEW YORK

Sample Location	EPA Drinking Water Regulations (MCLs)	NYSDEC Water Quality Standards/ Guidance Values [Class GA]	MW-13D 7/5/2012 63	MW-13S 7/12/2012 15	MW-14 7/16/2012 8	MW-15D 7/13/2012 56	MW-15D Duplicate 7/13/2012 56	MW-15S 7/13/2012 18	MW-17 7/18/2012 13	MW-18D 7/16/2012 70
Sample Date										
Sample Depth (ft bgs)										
Volatile Organic Compounds (ug/L)										
1,1-Dichloroethane	--	5	ND	ND	0.64	ND	ND	ND	ND	ND
1,1-Dichloroethene	7	5	ND	ND	ND	0.64	0.6	ND	ND	ND
1,2-Dichlorobenzene	600	3	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	75	3	ND	ND	ND	ND	ND	ND	ND	ND
Acetone	--	50	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	5	1	ND	ND	ND	8.3	8.2	ND	ND	ND
Bromomethane	--	5	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Disulfide	--	60	ND	ND	2.1	ND	ND	ND	ND	ND
Chloroform	80 ^(a)	7	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	--	5	0.98	1.9	1.9	2.8	0.87	1.6	1.6	2.1
cis-1,2-Dichloroethene	70	5	ND	0.65	ND	5.9	7.3	ND	ND	5
Cyclohexane	--	--	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	700	5	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	--	5	ND	ND	ND	ND	ND	ND	ND	ND
m/p-Xylene	10000 ^(c)	5 ^(c)	ND	ND	ND	ND	ND	ND	ND	ND
Methyl tert-Butyl Ether	--	10	ND	0.74	11	1.2	1.1	ND	ND	19
Methylcyclohexane	--	--	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene	10000 ^(c)	5 ^(c)	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	5	5	ND	2.1	ND	21	18	7.8	ND	ND
Toluene	1000	5	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	100	5	ND	ND	ND	ND	ND	ND	ND	0.6
Trichloroethene	5	5	ND	0.7	ND	44	38	1.1	ND	ND
Vinyl Chloride	2	2	ND	ND	ND	0.99	1	ND	ND	ND
Semi-Volatile Organic Compounds (ug/L)										
1,4-Dioxane	--	--	ND	ND	ND	ND	ND	ND	ND	2.6
Bis(2-ethylhexyl)phthalate	6	5	3.0 J	2.2 J	ND	ND	2.8 J	2.4 J	ND	ND
Caprolactam	--	--	7.1	17	2.0 J	68	43	70	ND	ND
Naphthalene	--	10	ND	ND	ND	ND	ND	ND	ND	ND
Metals - Total (ug/L)										
Aluminum	50 ^(h)	--	ND	33.8	ND	25.7	40.9	168	57.4	87.3
Arsenic	10	25	ND	ND	ND	ND	ND	ND	ND	ND
Barium	2000	1000	13	12.5	33.2	43.1	43.8	44.9	50	76.8

TABLE 2-2 (Sheet 5 of 13)
SUMMARY OF DETECTED CONSTITUENTS IN JULY 2012 CURRENT UNDERSTANDING GROUNDWATER SAMPLING EVENT
PENINSULA BOULEVARD GROUNDWATER PLUME SITE
HEMPSTEAD, NASSAU COUNTY, NEW YORK

Sample Location	EPA Drinking Water Regulations (MCLs)	NYSDEC Water Quality Standards/ Guidance Values [Class GA]	MW-13D 7/5/2012 63	MW-13S 7/12/2012 15	MW-14 7/16/2012 8	MW-15D 7/13/2012 56	MW-15D Duplicate 7/13/2012 56	MW-15S 7/13/2012 18	MW-17 7/18/2012 13	MW-18D 7/16/2012 70
Beryllium	4	3	ND	ND	ND	ND	ND	ND	ND	ND
Cadmium	5	5	1.3	ND	ND	ND	ND	ND	ND	4.1
Calcium	--	--	30000	43000	20600 J	40800	42100	36600	48000	78000
Chromium	100	50	0.49 J	0.53 J	ND	0.32 J	0.32 J	0.68 J	ND	ND
Cobalt	--	--	ND	ND	ND	ND	ND	1.2	1.8	ND
Copper	1300 ^(h)	200	ND	ND	ND	ND	ND	ND	ND	ND
Iron	300 ^(h)	300	40200	9910	11400 J	14500	12900	622	1100 J	12600 J
Lead	15 ^(l)	25	ND	ND	ND	ND	ND	ND	ND	ND
Magnesium	--	35000	9100	5530	16000	9860	9540	7360	10200	8720 J
Manganese	50 ^(h)	300	890 J	677 J	324	895 J	829 J	7.1 J	201	429
Mercury	2	0.7	ND	ND	ND	ND	ND	ND	ND	ND
Nickel	--	100	0.89 J	1.2	ND	0.78 J	1.3	1.6	2.2	ND
Potassium	--	--	2240	3280	5420 J	3670	3830	4230	3220	2660 J
Selenium	50	10	ND	ND	ND	ND	ND	1.4 J	ND	ND
Sodium	--	20000	16400	67400	48500 J	14800	14500	133000	142000	31100 J
Vanadium	--	--	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	5000 ^(h)	2000	3.9	9.5	15.4 J	8.6	9.7	9.6	18.7 J	18.4 J
Metals - Dissolved (ug/L)										
Aluminum	50 ^(h)	--	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	10	25	NA	NA	NA	NA	NA	NA	NA	NA
Barium	2000	1000	NA	NA	NA	NA	NA	NA	NA	NA
Calcium	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Iron	300 ^(h)	300	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium	--	35000	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	50 ^(h)	300	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	2	0.7	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	--	100	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	--	20000	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	5000 ^(h)	2000	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 2-2 (Sheet 6 of 13)
SUMMARY OF DETECTED CONSTITUENTS IN JULY 2012 CURRENT UNDERSTANDING GROUNDWATER SAMPLING EVENT
PENINSULA BOULEVARD GROUNDWATER PLUME SITE
HEMPSTEAD, NASSAU COUNTY, NEW YORK

Sample Location Sample Date Sample Depth (ft bgs)	EPA Drinking Water Regulations (MCLs)	NYSDEC Water Quality Standards/ Guidance Values [Class GA]	MW-13D 7/5/2012 63	MW-13S 7/12/2012 15	MW-14 7/16/2012 8	MW-15D 7/13/2012 56	MW-15D Duplicate 7/13/2012 56	MW-15S 7/13/2012 18	MW-17 7/18/2012 13	MW-18D 7/16/2012 70
Water Quality Parameters (mg/L)										
Alkalinity, Total	--	--	62	90	17	91	94	81	110	150
Ammonia [as N]	30 ^(l)	2000	0.36	0.21	1.1	0.32	0.26	ND	0.062	0.28
BOD	--	--	3.2	ND	ND	ND	ND	ND	ND	ND
Chemical Oxygen Demand	--	--	ND	ND	28	ND	ND	ND	ND	22
Chloride	250 ^(h)	250	66	140	160	57	58	220	240	96
Filterable Residue (Total Dissolved Solids)	500 ^(h)	--	280	390	440	270	280	510	550	510
Nitrate [as N]	10	10	ND	1.1	ND	ND	ND	3.5	0.27	ND
Nitrite [as N]	1	1	ND	ND	ND	ND	ND	ND	ND	ND
Organic Carbon	--	--	ND	1.2	ND	ND	ND	ND	ND	1.6
Phosphorus	--	--	ND	0.11	ND	0.076	0.1	ND	ND	0.078
Sulfate	250 ^(h)	250	37	33	42	27	26	41	37	41
Sulfide	--	0.05	ND	ND	0.01	ND	0.011	0.017	ND	0.11

Notes provided on last page of table.

TABLE 2-2 (Sheet 7 of 13)
SUMMARY OF DETECTED CONSTITUENTS IN JULY 2012 CURRENT UNDERSTANDING GROUNDWATER SAMPLING EVENT
PENINSULA BOULEVARD GROUNDWATER PLUME SITE
HEMPSTEAD, NASSAU COUNTY, NEW YORK

Sample Location	EPA Drinking Water Regulations (MCLs)	NYSDEC Water Quality Standards/ Guidance Values [Class GA]	MW-18S 7/16/2012 12	MW-19 7/17/2012 12	MW-20 7/18/2012 21	MW-21D 7/16/2012 63	MW-21S 7/16/2012 13	MW-22D 7/17/2012 77	MW-22S 7/17/2012 22	MW-24 7/16/2012 59
Sample Date										
Sample Depth (ft bgs)										
Volatiles Organic Compounds (ug/L)										
1,1-Dichloroethane	--	5	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	7	5	ND	ND	ND	1.9	ND	ND	ND	ND
1,2-Dichlorobenzene	600	3	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	75	3	ND	ND	ND	ND	ND	ND	ND	ND
Acetone	--	50	12	ND	ND	ND	5.2	ND	ND	ND
Benzene	5	1	ND	ND	ND	4	ND	2	ND	ND
Bromomethane	--	5	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Disulfide	--	60	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	80 ^(a)	7	ND	ND	ND	ND	0.85	ND	ND	ND
Chloromethane	--	5	2.5	0.70 K	2.3	3.1	2.1	4.9	3.2	ND
cis-1,2-Dichloroethene	70	5	ND	0.57 K	ND	1.7	2.9	ND	ND	ND
Cyclohexane	--	--	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	700	5	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	--	5	ND	ND	ND	ND	ND	ND	ND	ND
m/p-Xylene	10000 ^(c)	5 ^(c)	ND	ND	ND	ND	ND	ND	ND	ND
Methyl tert-Butyl Ether	--	10	ND	ND	ND	ND	ND	ND	ND	ND
Methylcyclohexane	--	--	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene	10000 ^(c)	5 ^(c)	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	5	5	3.8	ND	ND	2600	130 K	ND	ND	ND
Toluene	1000	5	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	100	5	ND	ND	ND	0.71	ND	ND	ND	ND
Trichloroethene	5	5	ND	ND	ND	230	2	ND	ND	ND
Vinyl Chloride	2	2	ND	ND	ND	1.4	ND	4.3	ND	ND
Semi-Volatile Organic Compounds (ug/L)										
1,4-Dioxane	--	--	ND	ND	ND	ND	ND	ND	ND	NA
Bis(2-ethylhexyl)phthalate	6	5	ND	ND	ND	ND	ND	ND	ND	NA
Caprolactam	--	--	ND	ND	ND	27	ND	ND	ND	NA
Naphthalene	--	10	ND	ND	ND	ND	ND	ND	ND	NA
Metals - Total (ug/L)										
Aluminum	50 ^(h)	--	25.7	56.9	ND	267	ND	26.8	27.6	606
Arsenic	10	25	ND	1.1	ND	ND	ND	1.7	ND	1.1
Barium	2000	1000	31.8	61.3	43.3	15.9	71.4	18	29.7	11.8

TABLE 2-2 (Sheet 8 of 13)
SUMMARY OF DETECTED CONSTITUENTS IN JULY 2012 CURRENT UNDERSTANDING GROUNDWATER SAMPLING EVENT
PENINSULA BOULEVARD GROUNDWATER PLUME SITE
HEMPSTEAD, NASSAU COUNTY, NEW YORK

Sample Location Sample Date Sample Depth (ft bgs)	EPA Drinking Water Regulations (MCLs)	NYSDEC Water Quality Standards/ Guidance Values [Class GA]	MW-18S 7/16/2012 12	MW-19 7/17/2012 12	MW-20 7/18/2012 21	MW-21D 7/16/2012 63	MW-21S 7/16/2012 13	MW-22D 7/17/2012 77	MW-22S 7/17/2012 22	MW-24 7/16/2012 59
Beryllium	4	3	ND	ND	ND	ND	ND	ND	ND	ND
Cadmium	5	5	ND	ND	ND	3.3	ND	ND	ND	ND
Calcium	--	--	36100 J	64600	43400	33200 J	28700 J	36500	50600	65000
Chromium	100	50	ND	ND	ND	ND	2.8 J	ND	5.8 J	2.2 J
Cobalt	--	--	ND	ND	ND	ND	ND	1.6	ND	ND
Copper	1300 ^(h)	200	ND	ND	ND	2.5	ND	ND	ND	ND
Iron	300 ^(h)	300	ND	1900 J	261 J	21300 J	ND	40200 J	267 J	4910 J
Lead	15 ^(l)	25	ND	ND	ND	1.2	ND	ND	ND	1.3
Magnesium	--	35000	6960 J	15900	6550	6580 J	5860 J	9590	4200	5890 J
Manganese	50 ^(h)	300	ND	89.7	80.8	647	5.1 J	511	1.3	213
Mercury	2	0.7	ND	ND	ND	ND	ND	ND	ND	ND
Nickel	--	100	ND	ND	2	ND	1.7	ND	ND	ND
Potassium	--	--	4350 J	3970	8530	2820 J	5010 J	2750	2910	1940 J
Selenium	50	10	2.4 J	ND	ND	ND	1.3 J	ND	2.9 J	ND
Sodium	--	20000	114000	250000	159000	19400 J	159000	19300	115000	19700 J
Vanadium	--	--	ND	ND	ND	0.51 J	ND	ND	0.64 J	1.9 J
Zinc	5000 ^(h)	2000	R	6.2 J	15.2 J	107 J	25.6 J	9.7 J	9.3 J	13.5 J
Metals - Dissolved (ug/L)										
Aluminum	50 ^(h)	--	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	10	25	NA	NA	NA	NA	NA	NA	NA	NA
Barium	2000	1000	NA	NA	NA	NA	NA	NA	NA	NA
Calcium	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Iron	300 ^(h)	300	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium	--	35000	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	50 ^(h)	300	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	2	0.7	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	--	100	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	--	20000	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	5000 ^(h)	2000	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 2-2 (Sheet 9 of 13)
SUMMARY OF DETECTED CONSTITUENTS IN JULY 2012 CURRENT UNDERSTANDING GROUNDWATER SAMPLING EVENT
PENINSULA BOULEVARD GROUNDWATER PLUME SITE
HEMPSTEAD, NASSAU COUNTY, NEW YORK

Sample Location Sample Date Sample Depth (ft bgs)	EPA Drinking Water Regulations (MCLs)	NYSDEC Water Quality Standards/ Guidance Values [Class GA]	MW-18S 7/16/2012 12	MW-19 7/17/2012 12	MW-20 7/18/2012 21	MW-21D 7/16/2012 63	MW-21S 7/16/2012 13	MW-22D 7/17/2012 77	MW-22S 7/17/2012 22	MW-24 7/16/2012 59
Water Quality Parameters (mg/L)										
Alkalinity, Total	--	--	110	230	110	84	52	65	77	140
Ammonia [as N]	30 ^(l)	2000	0.11 L	0.11	0.1	0.28	0.14	0.36	0.14 L	0.23
BOD	--	--	ND	ND	ND	ND	ND	5.8	ND	ND
Chemical Oxygen Demand	--	--	ND	25	62	ND	ND	21	ND	ND
Chloride	250 ^(h)	250	180	450	27	66	240	110	240	53
Filterable Residue (Total Dissolved Solids)	500 ^(h)	--	450	930	540	350	560	400	550	340
Nitrate [as N]	10	10	4.9	ND	0.49	0.07	4.9	ND	1.8	ND
Nitrite [as N]	1	1	ND	ND	ND	ND	ND	ND	ND	ND
Organic Carbon	--	--	1.5	1.8	1.8	1	ND	ND	1.4	ND
Phosphorus	--	--	ND	0.083	ND	ND	ND	0.075	ND	0.55
Sulfate	250 ^(h)	250	31	ND	18	21	26	26	24	31
Sulfide	--	0.05	ND	0.44	ND	0.012	ND	ND	ND	0.02

Notes provided on last page of table.

TABLE 2-2 (Sheet 10 of 13)
SUMMARY OF DETECTED CONSTITUENTS IN JULY 2012 CURRENT UNDERSTANDING GROUNDWATER SAMPLING EVENT
PENINSULA BOULEVARD GROUNDWATER PLUME SITE
HEMPSTEAD, NASSAU COUNTY, NEW YORK

Sample Location	EPA Drinking Water Regulations (MCLs)	NYSDEC Water Quality Standards/ Guidance Values [Class GA]	MW-25 (D) 7/17/2012 60	MW-25 (S) 7/17/2012 16	MW-26 (D) 7/17/2012 67	MW-26 (S) 7/17/2012 23	MW-27 (D) 7/18/2012 70	MW-27 (S) 7/18/2012 25	MW-29 7/18/2012 60	N1114 7/18/2012 25
Sample Date										
Sample Depth (ft bgs)										
Volatile Organic Compounds (ug/L)										
1,1-Dichloroethane	--	5	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	7	5	ND	ND	ND	ND	110	ND	ND	ND
1,2-Dichlorobenzene	600	3	ND	ND	ND	ND	1.1	ND	ND	ND
1,4-Dichlorobenzene	75	3	ND	ND	ND	ND	0.72	ND	ND	ND
Acetone	--	50	ND	6.8	ND	ND	ND	ND	ND	ND
Benzene	5	1	ND	ND	ND	ND	73	2.3	ND	ND
Bromomethane	--	5	ND	ND	ND	ND	0.57 L	ND	ND	ND
Carbon Disulfide	--	60	ND	ND	ND	ND	13	ND	ND	ND
Chloroform	80 ^(a)	7	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	--	5	2	2.3	0.97	2	18	1.5	1.6	2.5
cis-1,2-Dichloroethene	70	5	ND	ND	ND	ND	2600	1.2	ND	ND
Cyclohexane	--	--	ND	ND	ND	ND	ND	ND	ND	4.3
Ethylbenzene	700	5	ND	ND	ND	ND	ND	ND	ND	4.5
Isopropylbenzene	--	5	ND	ND	ND	ND	ND	ND	ND	48
m/p-Xylene	10000 ^(c)	5 ^(c)	ND	ND	ND	ND	0.93	ND	ND	4.2
Methyl tert-Butyl Ether	--	10	ND	ND	ND	ND	ND	ND	ND	ND
Methylcyclohexane	--	--	ND	ND	ND	ND	ND	ND	ND	6
o-Xylene	10000 ^(c)	5 ^(c)	ND	ND	ND	ND	0.57	ND	ND	ND
Tetrachloroethene	5	5	ND	2.4	ND	14	31000	1.2	ND	ND
Toluene	1000	5	ND	ND	ND	ND	1.2	ND	ND	1.2
trans-1,2-Dichloroethene	100	5	ND	ND	ND	ND	78 J	ND	ND	ND
Trichloroethene	5	5	ND	ND	ND	1	6300	0.78	ND	ND
Vinyl Chloride	2	2	ND	ND	ND	ND	300	ND	ND	ND
Semi-Volatile Organic Compounds (ug/L)										
1,4-Dioxane	--	--	ND	ND	ND	ND	ND	ND	ND	ND
Bis(2-ethylhexyl)phthalate	6	5	ND	ND	ND	ND	ND	ND	ND	ND
Caprolactam	--	--	ND	ND	ND	ND	ND	ND	11	ND
Naphthalene	--	10	ND	ND	ND	ND	ND	ND	ND	2.4 J
Metals - Total (ug/L)										
Aluminum	50 ^(h)	--	12100	5130	1510	12400	6400	1090	48.4	51.6
Arsenic	10	25	12.1	4.6	4.7	15.4	6.1	1.8	ND	19.7
Barium	2000	1000	31	45.6	14.5	135	46.1	40.2	ND	24.8

TABLE 2-2 (Sheet 11 of 13)
SUMMARY OF DETECTED CONSTITUENTS IN JULY 2012 CURRENT UNDERSTANDING GROUNDWATER SAMPLING EVENT
PENINSULA BOULEVARD GROUNDWATER PLUME SITE
HEMPSTEAD, NASSAU COUNTY, NEW YORK

Sample Location	EPA Drinking Water Regulations (MCLs)	NYSDEC Water Quality Standards/ Guidance Values [Class GA]	MW-25 (D) 7/17/2012 60	MW-25 (S) 7/17/2012 16	MW-26 (D) 7/17/2012 67	MW-26 (S) 7/17/2012 23	MW-27 (D) 7/18/2012 70	MW-27 (S) 7/18/2012 25	MW-29 7/18/2012 60	N1114 7/18/2012 25
Beryllium	4	3	ND	ND	ND	1.1	ND	ND	ND	ND
Cadmium	5	5	ND	ND	ND	ND	ND	ND	ND	30
Calcium	--	--	53400	18500	40900	37300	86100	31700	84600	20200
Chromium	100	50	30.6 J	13.6 J	14.5 J	32.7 J	18.8 J	3.6 J	ND	5.9 J
Cobalt	--	--	7.7	3.5	1.3	11.5	6.7	1.5	ND	ND
Copper	1300 ^(h)	200	15.4	7.2	4.6	16.7	33.2	3.3	2.5	11
Iron	300 ^(h)	300	28200 J	11500 J	5870 J	30500 J	16900 J	3590 J	2620 J	17100 J
Lead	15 ^(l)	25	10.5	5.3	2.9	12.6	22.4	2.4	ND	272
Magnesium	--	35000	11600	5710	5550	10800	9310	9160	7290	3550
Manganese	50 ^(h)	300	901	110	120	422	261	140	303	105
Mercury	2	0.7	0.032 J	ND	ND	ND	0.046 J	ND	ND	ND
Nickel	--	100	15.2	5.8	7.4	19.6	13	4.7	4.1	6.7
Potassium	--	--	3480	3340	1730	5410	3390	3950	2940	3350
Selenium	50	10	ND	ND	ND	1.5 J	ND	1.4 J	ND	ND
Sodium	--	20000	41600	110000	58700	231000	31200	93400	27500	77800
Vanadium	--	--	33.2	15.8	4.8 J	47	23.8	ND	ND	ND
Zinc	5000 ^(h)	2000	60.2 J	29.3 J	17.2 J	78.5 J	72.0 J	38.4 J	16.2 J	10900 J
Metals - Dissolved (ug/L)										
Aluminum	50 ^(h)	--	20.3	ND	ND	ND	76.2	ND	NA	NA
Arsenic	10	25	3	ND	3.4	ND	ND	ND	NA	NA
Barium	2000	1000	ND	27.6	ND	80.5	18.8	34.2	NA	NA
Calcium	--	--	54000	20900	41700	37400	83600	30200	NA	NA
Cobalt	--	--	ND	ND	ND	1.7	ND	ND	NA	NA
Iron	300 ^(h)	300	2690	261	2540	ND	1070	461	NA	NA
Magnesium	--	35000	9160	4940	5520	7420	7000	8610	NA	NA
Manganese	50 ^(h)	300	718	42.9	99	250	124	122	NA	NA
Mercury	2	0.7	ND	0.22	0.14 J	0.24	0.24	0.24	NA	NA
Nickel	--	100	ND	ND	ND	2.2	ND	2.2	NA	NA
Potassium	--	--	2240	2580	1530	3540	2570	3780	NA	NA
Sodium	--	20000	44100	113000	62400	247000	31300	92700	NA	NA
Zinc	5000 ^(h)	2000	6.7 J	13.5 J	7.8 J	4.8 J	4.8 J	8.4 J	NA	NA

TABLE 2-2 (Sheet 12 of 13)
SUMMARY OF DETECTED CONSTITUENTS IN JULY 2012 CURRENT UNDERSTANDING GROUNDWATER SAMPLING EVENT
PENINSULA BOULEVARD GROUNDWATER PLUME SITE
HEMPSTEAD, NASSAU COUNTY, NEW YORK

Sample Location	EPA Drinking Water Regulations (MCLs)	NYSDEC Water Quality Standards/ Guidance Values [Class GA]	MW-25 (D)	MW-25 (S)	MW-26 (D)	MW-26 (S)	MW-27 (D)	MW-27 (S)	MW-29	N1114
Sample Date			7/17/2012	7/17/2012	7/17/2012	7/17/2012	7/18/2012	7/18/2012	7/18/2012	7/18/2012
Sample Depth (ft bgs)			60	16	67	23	70	25	60	25
Water Quality Parameters (mg/L)										
Alkalinity, Total	--	--	130	37	150	72	200	54	210	75
Ammonia [as N]	30 ^(l)	2000	0.55	0.63	0.38	0.6	0.72	0.26	0.31	0.4
BOD	--	--	ND	ND	ND	ND	ND	ND	ND	ND
Chemical Oxygen Demand	--	--	25	ND	ND	ND	23	ND	ND	ND
Chloride	250 ^(h)	250	87	140	56	330	66	170	66	140
Filterable Residue (Total Dissolved Solids)	500 ^(h)	--	410	410	330	790	440	430	390	270
Nitrate [as N]	10	10	ND	1.5	ND	0.75	ND	1	ND	ND
Nitrite [as N]	1	1	ND	ND	ND	ND	ND	ND	ND	ND
Organic Carbon	--	--	1.4	1.6	ND	ND	1.8	2	1.2	2.7
Phosphorus	--	--	0.99	ND	0.23	0.22	0.43	0.08	0.13	ND
Sulfate	250 ^(h)	250	39	350	26	46	51	44	30	1.1
Sulfide	--	0.05	ND	ND	0.022	0.01	ND	ND	ND	0.25

Notes provided on last page of table.

TABLE 2-2 (Sheet 13 of 13)
SUMMARY OF DETECTED CONSTITUENTS IN JULY 2012 CURRENT UNDERSTANDING GROUNDWATER SAMPLING EVENT
PENINSULA BOULEVARD GROUNDWATER PLUME SITE
HEMPSTEAD, NASSAU COUNTY, NEW YORK

Notes:

- (a) EPA criterion value corresponds to "Total Trihalomethanes" (i.e., disinfection byproducts including bromodichloromethane, bromoform, chloroform, and dibromochloromethane).
- (b) NYSDEC criterion value corresponds to the sum of cis- and trans-1,3-dichloropropene.
- (c) Criterion value corresponds to xylenes (total).
- (d) NYSDEC criterion value corresponds to the sum of total phenolic compounds.
- (e) NYSDEC criterion value corresponds to a value of "non-detect."
- (f) EPA and NYSDEC criterion values correspond to chlordane (total).
- (g) EPA and NYSDEC criterion values correspond to the sum of all PCBs.
- (h) EPA criterion value corresponds to EPA "Secondary Drinking Water Regulations" [for Aluminum, using minimum of 50 to 200 ug/l values].
- (i) EPA criterion value corresponds to an action level.
- (j) EPA criterion value corresponds to taste threshold advisory value.

-- - No criteria

ft bgs - feet below ground surface; generally corresponds to pump intake depth

J - Estimated

NA - Not analyzed

ND - Not detected

K - Biased high

L - Biased low

Peach shading and bold denotes value greater than EPA Maximum Contaminant Level (MCL).

Yellow shading and bold denotes value greater than NYSDEC criterion.

Purple shading and bold denotes value greater than both EPA MCL and NYSDEC criterion.

TABLE 2-3 (Sheet 1 of 5)
SUMMARY OF DETECTED CONSTITUENTS IN MAY 2013 PRE-INJECTION GROUNDWATER SAMPLING EVENT
PENINSULA BOULEVARD GROUNDWATER PLUME SITE
HEMPSTEAD, NASSAU COUNTY, NEW YORK

Sample Location	EPA Drinking Water Regulations (MCLs)	NYSDEC Water Quality Standards/ Guidance Values [Class GA]	IW-01D 05/17/2013 70	IW-01S 05/20/2013 38	MW-18D 05/15/2013 67	MW-18S 05/14/2013 12	MW-21D 05/13/2013 61	MW-21S 05/13/2013 15
Sample Date								
Estimated Sample Depth (ft bgs)								
Volatile Organic Compounds (ug/L)								
1,1-Dichloroethane	--	5	ND	1.2	ND	ND	ND	ND
1,1-Dichloroethene	7	5	7	ND	ND	ND	2.1	ND
1,2-Dichlorobenzene	600	3	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	75	3	ND	ND	ND	ND	ND	ND
Acetone	--	50	ND	ND	ND	ND	ND	ND
Benzene	5	1	8.4	2.1	ND	ND	6.2	ND
Carbon Disulfide	--	60	ND	ND	ND	ND	ND	ND
Chloroform	80 ^(a)	7	ND	ND	ND	ND	ND	0.88
cis-1,2-Dichloroethene	70	5	6.4	7.8	2.5	ND	160	1.7
m/p-Xylene	10000 ^(b)	5 ^(b)	ND	ND	ND	ND	ND	ND
Methyl tert-Butyl Ether	--	10	ND	ND	17	ND	ND	ND
o-Xylene	10000 ^(b)	5 ^(b)	ND	ND	ND	ND	ND	ND
Tetrachloroethene	5	5	9800	6.4	0.85	26	2000	360
Toluene	1000	5	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	100	5	ND	ND	ND	ND	3.3	ND
Trichloroethene	5	5	400	0.61	ND	ND	700	1.1 K
Vinyl Chloride	2	2	3.5	0.77	0.51	ND	1.7	ND
Metabolic Acids (mg/L)								
Acetic Acid	--	--	0.14	0.59	NA	NA	NA	NA
Butyric Acid	--	--	ND	0.084	NA	NA	NA	NA
Lactic Acid	--	--	0.15	0.13	NA	NA	NA	NA
Propionic Acid	--	--	0.027 J	0.03 J	NA	NA	NA	NA
Dissolved Gases (ug/L)								
Acetylene	--	--	5.2	ND	NA	NA	NA	NA
Ethane	--	--	7.0	0.26	NA	NA	NA	NA
Ethene	--	--	4.7	0.47	NA	NA	NA	NA
Methane	--	--	64	3.0	NA	NA	NA	NA
Total Organic Carbon (mg/L)								
TOC	--	--	10.4	2.1	NA	NA	NA	NA

Notes provided on last page of table.

TABLE 2-3 (Sheet 2 of 5)
SUMMARY OF DETECTED CONSTITUENTS IN MAY 2013 PRE-INJECTION GROUNDWATER SAMPLING EVENT
PENINSULA BOULEVARD GROUNDWATER PLUME SITE
HEMPSTEAD, NASSAU COUNTY, NEW YORK

Sample Location	EPA Drinking Water Regulations (MCLs)	NYSDEC Water Quality Standards/ Guidance Values [Class GA]	MW-27D 05/16/2013 70	MW-27S 05/16/2013 25	OW-01S 05/16/2013 16	PW-01D 05/16/2013 65	TW-01D 05/16/2013 78	TW-01D Duplicate 05/16/2013 78
Sample Date								
Estimated Sample Depth (ft bgs)								
Volatile Organic Compounds (ug/L)								
1,1-Dichloroethane	--	5	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	7	5	88	ND	ND	ND	23	23
1,2-Dichlorobenzene	600	3	0.65	ND	ND	ND	0.79	0.73
1,4-Dichlorobenzene	75	3	0.5	ND	ND	ND	ND	ND
Acetone	--	50	ND	ND	ND	ND	ND	ND
Benzene	5	1	82	ND	ND	1.1	3.9	3.9
Carbon Disulfide	--	60	3	ND	ND	ND	ND	ND
Chloroform	80 ^(a)	7	ND	ND	1.6	ND	ND	ND
cis-1,2-Dichloroethene	70	5	1300	0.96	ND	ND	25	24
m/p-Xylene	10000 ^(b)	5 ^(b)	0.98	ND	ND	ND	0.87	0.86
Methyl tert-Butyl Ether	--	10	0.84	ND	ND	1.7	1.3	1.4
o-Xylene	10000 ^(b)	5 ^(b)	0.6	ND	ND	ND	0.51	ND
Tetrachloroethene	5	5	22000	39	ND	20	47000	43000
Toluene	1000	5	1.2	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	100	5	30	ND	ND	ND	0.68	0.69
Trichloroethene	5	5	4000	4.9	ND	0.7	2600	2300
Vinyl Chloride	2	2	79	ND	ND	ND	2.6	2.6
Metabolic Acids (mg/L)								
Acetic Acid	--	--	0.28	0.088	0.078	0.74	NA	NA
Butyric Acid	--	--	0.088	ND	ND	0.083	NA	NA
Lactic Acid	--	--	0.10	0.29	0.14	0.092 J	NA	NA
Propionic Acid	--	--	0.030 J	ND	ND	0.11	NA	NA
Dissolved Gases (ug/L)								
Acetylene	--	--	0.33 J	ND	ND	ND	NA	NA
Ethane	--	--	1.9	0.012 J	0.079	6.7	NA	NA
Ethene	--	--	6.8	0.043	0.058	1.6	NA	NA
Methane	--	--	24	2.5	3.8	85	NA	NA
Total Organic Carbon (mg/L)								
TOC	--	--	1.3	1.6	2.7	3.1	NA	NA

Notes provided on last page of table.

TABLE 2-3 (Sheet 3 of 5)
SUMMARY OF DETECTED CONSTITUENTS IN MAY 2013 PRE-INJECTION GROUNDWATER SAMPLING EVENT
PENINSULA BOULEVARD GROUNDWATER PLUME SITE
HEMPSTEAD, NASSAU COUNTY, NEW YORK

Sample Location	EPA Drinking Water Regulations (MCLs)	NYSDEC Water Quality Standards/ Guidance Values [Class GA]	TW-01S 05/17/2013 27	TW-02D 05/15/2013 78	TW-02S 05/15/2013 22	TW-03D 05/14/2013 65	TW-03S 05/14/2013 20	TW-04D 05/15/2013 60
Sample Date								
Estimated Sample Depth (ft bgs)								
Volatile Organic Compounds (ug/L)								
1,1-Dichloroethane	--	5	ND	ND	ND	ND	ND	1.5
1,1-Dichloroethene	7	5	ND	29	ND	ND	ND	ND
1,2-Dichlorobenzene	600	3	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	75	3	ND	ND	ND	ND	ND	ND
Acetone	--	50	ND	ND	ND	36	ND	ND
Benzene	5	1	ND	33	ND	ND	ND	9.6
Carbon Disulfide	--	60	ND	ND	ND	0.69	ND	ND
Chloroform	80 ^(a)	7	ND	ND	ND	ND	1.5	ND
cis-1,2-Dichloroethene	70	5	ND	49	ND	16	ND	0.81
m/p-Xylene	10000 ^(b)	5 ^(b)	ND	0.56	ND	ND	ND	ND
Methyl tert-Butyl Ether	--	10	ND	ND	ND	ND	ND	23
o-Xylene	10000 ^(b)	5 ^(b)	ND	ND	ND	ND	ND	ND
Tetrachloroethene	5	5	0.77	13000	ND	54	ND	8
Toluene	1000	5	ND	0.86	ND	1.2	ND	ND
trans-1,2-Dichloroethene	100	5	ND	1.7	ND	1	ND	ND
Trichloroethene	5	5	ND	1400	ND	1.6	ND	0.56
Vinyl Chloride	2	2	ND	6	ND	ND	ND	0.61
Metabolic Acids (mg/L)								
Acetic Acid	--	--	NA	NA	NA	4.3	0.027 J	NA
Butyric Acid	--	--	NA	NA	NA	ND	ND	NA
Lactic Acid	--	--	NA	NA	NA	0.065 J	0.073 J	NA
Propionic Acid	--	--	NA	NA	NA	0.085	0.024 J	NA
Dissolved Gases (ug/L)								
Acetylene	--	--	NA	NA	NA	ND	ND	NA
Ethane	--	--	NA	NA	NA	34	0.0082 J	NA
Ethene	--	--	NA	NA	NA	1.9	0.018 J	NA
Methane	--	--	NA	NA	NA	140	0.63	NA
Total Organic Carbon (mg/L)								
TOC	--	--	NA	NA	NA	3.0	1.5	NA

Notes provided on last page of table.

TABLE 2-3 (Sheet 4 of 5)
SUMMARY OF DETECTED CONSTITUENTS IN MAY 2013 PRE-INJECTION GROUNDWATER SAMPLING EVENT
PENINSULA BOULEVARD GROUNDWATER PLUME SITE
HEMPSTEAD, NASSAU COUNTY, NEW YORK

Sample Location	EPA Drinking Water Regulations (MCLs)	NYSDEC Water Quality Standards/ Guidance Values [Class GA]	TW-04S 05/15/2013 22	TW-05D 05/15/2013 71	TW-06D 05/13/2013 70	TW-07D 05/14/2013 67	TW-07D Duplicate 05/14/2013 67	TW-08D 05/14/2013 65
Sample Date								
Estimated Sample Depth (ft bgs)								
Volatile Organic Compounds (ug/L)								
1,1-Dichloroethane	--	5	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	7	5	ND	5.3	38	4	4.2	28
1,2-Dichlorobenzene	600	3	ND	ND	1.4	ND	ND	ND
1,4-Dichlorobenzene	75	3	ND	ND	0.75	ND	ND	ND
Acetone	--	50	ND	ND	ND	14	ND	ND
Benzene	5	1	ND	4.1	19	0.83	0.87	26
Carbon Disulfide	--	60	ND	ND	ND	ND	ND	ND
Chloroform	80 ^(a)	7	0.56	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	70	5	ND	140	25	3.4	3.4	44
m/p-Xylene	10000 ^(b)	5 ^(b)	ND	ND	1.1	ND	ND	ND
Methyl tert-Butyl Ether	--	10	ND	ND	ND	ND	ND	ND
o-Xylene	10000 ^(b)	5 ^(b)	ND	ND	0.64	ND	ND	ND
Tetrachloroethene	5	5	1.1	2500	80000	4400	4200	22000
Toluene	1000	5	ND	ND	0.69	ND	ND	1
trans-1,2-Dichloroethene	100	5	ND	9.2	1	ND	ND	4.6
Trichloroethene	5	5	ND	590	2200	280	260	2200
Vinyl Chloride	2	2	ND	1.7	6.6	1.5	1.5	6.9
Metabolic Acids (mg/L)								
Acetic Acid	--	--	NA	NA	NA	4.9	4.5	0.67
Butyric Acid	--	--	NA	NA	NA	ND	ND	ND
Lactic Acid	--	--	NA	NA	NA	0.056 J	0.049 J	0.049 J
Propionic Acid	--	--	NA	NA	NA	0.085	0.25	0.024 J
Dissolved Gases (ug/L)								
Acetylene	--	--	NA	NA	NA	1.7	1.7	0.56
Ethane	--	--	NA	NA	NA	17	17	33
Ethene	--	--	NA	NA	NA	14	14	13
Methane	--	--	NA	NA	NA	190	170	550
Total Organic Carbon (mg/L)								
TOC	--	--	NA	NA	NA	3.1	3.1	1.2

Notes provided on last page of table.

TABLE 2-3 (Sheet 5 of 5)
SUMMARY OF DETECTED CONSTITUENTS IN MAY 2013 PRE-INJECTION GROUNDWATER SAMPLING EVENT
PENINSULA BOULEVARD GROUNDWATER PLUME SITE
HEMPSTEAD, NASSAU COUNTY, NEW YORK

Notes:

(a) EPA criterion value corresponds to "Total Trihalomethanes" (i.e., disinfection byproducts including bromodichloromethane, bromoform, chloroform, and dibromochloromethane).

(b) Criterion value corresponds to xylenes (total).

-- - No criteria

ft bgs - feet below ground surface; generally corresponds to estimating pump intake depth at one-half of screen length

J - Estimated

NA - Not analyzed

ND - Not detected

K - Biased high

L - Biased low

Peach shading and bold denotes value greater than EPA Maximum Contaminant Level (MCL).

Yellow shading and bold denotes value greater than NYSDEC criterion.

Purple shading and bold denotes value greater than both EPA MCL and NYSDEC criterion.

TABLE 2-4 (Sheet 1 of 1)
SUMMARY OF DETECTED CONSTITUENTS IN JUNE 2013, NOVEMBER 2013 AND DECEMBER 2013 BIOLOGICAL INDICATORS GROUNDWATER SAMPLING EVENTS
PENINSULA BOULEVARD GROUNDWATER PLUME SITE
HEMPSTEAD, NASSAU COUNTY, NEW YORK

Sample Location Sample ID Sample Date	EPA Drinking Water Regulations (MCLs)	NYSDEC Water Quality Standards/ Guidance Values [Class GA]	IW-01S			IW-01D		
			IW-01S	IW-01S-20131106	IW-01S-20131219	IW-01D	IW-01D-20131106	IW-01D-20131219
			6/26/2013	11/6/2013	12/19/2013	6/26/2013	11/6/2013	12/19/2013
Biological Indicators (cells/bead)								
Total Eubacteria (EBAC)	--	--	1,020,000	37,600	87,600,000	953,000	2,420,000	234,000,000
BAV1 Vinyl Chloride Reductase (BVC)	--	--	ND	ND	ND	ND	ND	39,700
tceA Reductase (TCE)	--	--	ND	ND	11.1 J	ND	ND	ND
Methanogen (MGN)	--	--	ND	ND	ND	ND	23.2 J	ND

Notes:

-- - No criteria

J - Estimated

ND - Not detected

Peach shading and bold denotes value greater than EPA Maximum Contaminant Level (MCL).

Yellow shading and bold denotes value greater than NYSDEC criterion.

Purple shading and bold denotes value greater than both EPA MCL and NYSDEC criterion.

TABLE 2-5 (Sheet 1 of 5)
SUMMARY OF DETECTED CONSTITUENTS IN OCTOBER 2013 AND DECEMBER 2013 POST-INJECTION GROUNDWATER SAMPLING EVENTS
PENINSULA BOULEVARD GROUNDWATER PLUME SITE
HEMPSTEAD, NASSAU COUNTY, NEW YORK

Sample Location Sample Date Estimated Sample Depth (ft bgs)	EPA Drinking Water Regulations (MCLs)	NYSDEC Water Quality Standards/ Guidance Values [Class GA]	IW-01D		IW-01S	MW-18D		MW-18S	MW-27D	MW-27S
			10/23/2013	12/19/2013	12/19/2013	10/22/2013	12/17/2013	12/17/2013	12/19/2013	12/19/2013
			70	70	38	67	67	12	70	25
Volatile Organic Compounds (ug/L)										
1,1-Dichloroethane	--	5	0.42 J	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	7	5	ND	ND	ND	ND	ND	ND	100 J	ND
1,2,3-Trichlorobenzene	--	5	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	600	3	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	75	3	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone	--	50	ND	44	250	ND	ND	ND	ND	6.2 J
Acetone	--	50	ND	68	ND	ND	ND	ND	ND	29
Benzene	5	1	1.1	ND	ND	ND	ND	ND	96	5.8
Carbon Disulfide	--	60	0.27 J	ND	ND	0.29 J	0.29 J	ND	ND	ND
Chloroethane	--	5	ND	4.0 J	ND	ND	ND	ND	ND	ND
Chloromethane	--	5	ND	3.0 J	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	70	5	280	60	40	14	13	ND	1200	16
m/p-Xylene	10000 ^(b)	5 ^(b)	ND	ND	ND	ND	ND	ND	2.0 J	ND
Methyl Acetate	--	--	19	ND	ND	ND	ND	ND	ND	ND
Methyl tert-Butyl Ether	--	10	0.26 J	ND	ND	32	16	ND	ND	ND
o-Xylene	10000 ^(b)	5 ^(b)	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	5	5	96	ND	75	ND	ND	410	36000	ND
Toluene	1000	5	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	100	5	1.4	ND	ND	4.8	5.7	ND	21 J	ND
Trichloroethene	5	5	19	ND	11 J	ND	ND	2.7 J	4800	ND
Vinyl Chloride	2	2	15	5.5	ND	1.4	ND	ND	110	ND
Metabolic Acids (mg/L)										
Acetic Acid	--	--	170	210	3100	NA	NA	NA	0.70	25
Butyric Acid	--	--	8.2	91	1700	NA	NA	NA	0.12	6.5
Lactic Acid	--	--	11	7.7 J	1100	NA	NA	NA	0.21	0.88 J
Propionic Acid	--	--	85	140	1400	NA	NA	NA	0.14	14
Dissolved Gases (ug/L)										
Acetylene	--	--	ND	ND	0.096 J	NA	NA	NA	0.31 J	ND
Ethane	--	--	1.4	0.72	4.9	NA	NA	NA	6.0	0.0076 J
Ethene	--	--	0.77	0.61	1.4	NA	NA	NA	14	0.13
Methane	--	--	92	7000	4800	NA	NA	NA	78	8000
Total Organic Carbon (mg/L)										
TOC	--	--	175	222	7760	NA	NA	NA	4.8	47

Notes provided on last page of table.

TABLE 2-5 (Sheet 2 of 5)
SUMMARY OF DETECTED CONSTITUENTS IN OCTOBER 2013 AND DECEMBER 2013 POST-INJECTION GROUNDWATER SAMPLING EVENTS
PENINSULA BOULEVARD GROUNDWATER PLUME SITE
HEMPSTEAD, NASSAU COUNTY, NEW YORK

Sample Location	EPA Drinking Water Regulations (MCLs)	NYSDEC Water Quality Standards/ Guidance Values [Class GA]	OW-01S	PW-01D		TW-01D		TW-01S	TW-02D	
Sample Date			12/19/2013	10/24/2013	12/18/2013	10/23/2013	12/20/2013	12/17/2013	10/22/2013	12/19/2013
Estimated Sample Depth (ft bgs)			16	65	65	78	78	27	78	78
Volatile Organic Compounds (ug/L)										
1,1-Dichloroethane	--	5	ND	1.3	1.2	ND	ND	ND	ND	ND
1,1-Dichloroethene	7	5	ND	ND	ND	21 J	ND	ND	56 J	ND
1,2,3-Trichlorobenzene	--	5	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	600	3	ND	ND	ND	1.0 J	ND	ND	0.84	ND
1,4-Dichlorobenzene	75	3	ND	ND	ND	0.59 J	ND	ND	0.56	ND
2-Butanone	--	50	ND	ND	ND	ND	ND	ND	ND	ND
Acetone	--	50	ND	ND	ND	ND	ND	ND	5.5	ND
Benzene	5	1	ND	5.5	1.9	1.4 J	ND	ND	54 J	ND
Carbon Disulfide	--	60	ND	ND	ND	2.9 J	ND	ND	2.3	ND
Chloroethane	--	5	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	--	5	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	70	5	ND	60	44	350 J	920	ND	1100	3000
m/p-Xylene	10000 ^(b)	5 ^(b)	ND	ND	ND	1.0 J	ND	ND	0.9	ND
Methyl Acetate	--	--	ND	ND	ND	ND	ND	ND	ND	ND
Methyl tert-Butyl Ether	--	10	ND	7.9	6.5	3.1 J	ND	ND	ND	ND
o-Xylene	10000 ^(b)	5 ^(b)	ND	ND	ND	0.57 J	ND	ND	0.49 J	ND
Tetrachloroethene	5	5	0.71	11	25	74000	1700	0.22 J	25000	2300
Toluene	1000	5	ND	0.33 J	ND	ND	ND	ND	0.6	ND
trans-1,2-Dichloroethene	100	5	ND	0.26 J	0.35 J	26 J	ND	ND	21 J	ND
Trichloroethene	5	5	ND	8.5	16	1100 J	610	ND	3000	1500
Vinyl Chloride	2	2	ND	0.97	0.74	2.6 J	ND	ND	14	ND
Metabolic Acids (mg/L)										
Acetic Acid	--	--	0.11	0.19	0.043 J	NA	NA	NA	NA	NA
Butyric Acid	--	--	0.059	0.054	ND	NA	NA	NA	NA	NA
Lactic Acid	--	--	0.12	0.2	0.073 J	NA	NA	NA	NA	NA
Propionic Acid	--	--	0.066	0.02 J	ND	NA	NA	NA	NA	NA
Dissolved Gases (ug/L)										
Acetylene	--	--	ND	ND	ND	NA	NA	NA	NA	NA
Ethane	--	--	0.031	1.1	0.74	NA	NA	NA	NA	NA
Ethene	--	--	0.018 J	0.18	0.13	NA	NA	NA	NA	NA
Methane	--	--	0.5	120	390	NA	NA	NA	NA	NA
Total Organic Carbon (mg/L)										
TOC	--	--	1.6	1.7	1.1	NA	NA	NA	NA	NA

Notes provided on last page of table.

TABLE 2-5 (Sheet 3 of 5)
SUMMARY OF DETECTED CONSTITUENTS IN OCTOBER 2013 AND DECEMBER 2013 POST-INJECTION GROUNDWATER SAMPLING EVENTS
PENINSULA BOULEVARD GROUNDWATER PLUME SITE
HEMPSTEAD, NASSAU COUNTY, NEW YORK

Sample Location	EPA Drinking Water Regulations (MCLs)	NYSDEC Water Quality Standards/ Guidance Values [Class GA]	TW-02S	TW-03D [Duplicate]			TW-03S	TW-04D		TW-04S
Sample Date			12/17/2013	10/23/2013	10/23/2013	12/18/2013	12/18/2013	10/22/2013	12/17/2013	12/17/2013
Estimated Sample Depth (ft bgs)			22	65	65	65	20	60	60	22
Volatile Organic Compounds (ug/L)										
1,1-Dichloroethane	--	5	ND	ND	ND	ND	ND	1.0	1.7	ND
1,1-Dichloroethene	7	5	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	--	5	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	600	3	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	75	3	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone	--	50	ND	ND	ND	ND	ND	ND	ND	ND
Acetone	--	50	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	5	1	ND	0.83	0.88	0.9	ND	7.4	8.9	ND
Carbon Disulfide	--	60	ND	1.7	1.8	0.22 J	ND	ND	ND	ND
Chloroethane	--	5	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	--	5	ND	ND	0.27 J	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	70	5	2.4	17	19	21	1.1	0.53	1.9	ND
m/p-Xylene	10000 ^(b)	5 ^(b)	ND	ND	ND	ND	ND	ND	ND	ND
Methyl Acetate	--	--	ND	ND	ND	ND	ND	ND	ND	ND
Methyl tert-Butyl Ether	--	10	ND	ND	ND	ND	ND	16	18	ND
o-Xylene	10000 ^(b)	5 ^(b)	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	5	5	0.36 J	1.6 J	1.6 J	0.36 J	1.7	3.3	0.96	1.4
Toluene	1000	5	ND	0.31 J	0.31 J	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	100	5	ND	1.2	1.3	1.5	ND	ND	ND	ND
Trichloroethene	5	5	ND	2.7	2.8	4.1	0.35 J	0.28 J	0.33 J	ND
Vinyl Chloride	2	2	ND	ND	ND	ND	ND	ND	ND	ND
Metabolic Acids (mg/L)										
Acetic Acid	--	--	NA	0.25	0.24	0.066 J	0.68	NA	NA	NA
Butyric Acid	--	--	NA	0.05	ND	ND	0.23	NA	NA	NA
Lactic Acid	--	--	NA	0.062 J	0.12	0.048 J	0.067 J	NA	NA	NA
Propionic Acid	--	--	NA	0.063	0.039 J	ND	0.37	NA	NA	NA
Dissolved Gases (ug/L)										
Acetylene	--	--	NA	ND	ND	ND	ND	NA	NA	NA
Ethane	--	--	NA	31	31	34	0.16	NA	NA	NA
Ethene	--	--	NA	2.2	2.2	1.0	0.019 J	NA	NA	NA
Methane	--	--	NA	130	130	150	20	NA	NA	NA
Total Organic Carbon (mg/L)										
TOC	--	--	NA	1.9	1.4	ND	2.1	NA	NA	NA

Notes provided on last page of table.

TABLE 2-5 (Sheet 4 of 5)
SUMMARY OF DETECTED CONSTITUENTS IN OCTOBER 2013 AND DECEMBER 2013 POST-INJECTION GROUNDWATER SAMPLING EVENTS
PENINSULA BOULEVARD GROUNDWATER PLUME SITE
HEMPSTEAD, NASSAU COUNTY, NEW YORK

Sample Location Sample Date Estimated Sample Depth (ft bgs)	EPA Drinking Water Regulations (MCLs)	NYSDEC Water Quality Standards/ Guidance Values [Class GA]	TW-05D		TW-06D		TW-07D		TW-08D [Duplicate]	
			10/24/2013	12/19/2013	10/23/2013	12/20/2013	10/23/2013	12/18/2013	12/18/2013	12/18/2013
			71	71	70	70	67	67	65	65
Volatile Organic Compounds (ug/L)										
1,1-Dichloroethane	--	5	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	7	5	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	--	5	ND	ND	ND	ND	ND	ND	89 J	ND
1,2-Dichlorobenzene	600	3	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	75	3	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone	--	50	ND	ND	ND	ND	ND	ND	ND	ND
Acetone	--	50	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	5	1	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Disulfide	--	60	ND	ND	ND	ND	ND	0.21 J	ND	ND
Chloroethane	--	5	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	--	5	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	70	5	260	480	ND	ND	ND	2.8	650	600
m/p-Xylene	10000 ^(b)	5 ^(b)	ND	ND	ND	ND	ND	ND	ND	ND
Methyl Acetate	--	--	ND	ND	ND	ND	ND	ND	ND	ND
Methyl tert-Butyl Ether	--	10	ND	ND	ND	ND	ND	0.69	ND	ND
o-Xylene	10000 ^(b)	5 ^(b)	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	5	5	360	69	ND	63000	ND	16	17000	18000
Toluene	1000	5	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	100	5	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	5	5	250	120	ND	3000	ND	1.6	2400	2200
Vinyl Chloride	2	2	ND	ND	ND	ND	ND	8.3 J	ND	ND
Metabolic Acids (mg/L)										
Acetic Acid	--	--	NA	NA	NA	NA	0.18	0.11	0.64	0.045 J
Butyric Acid	--	--	NA	NA	NA	NA	ND	0.081	0.24	ND
Lactic Acid	--	--	NA	NA	NA	NA	0.089 J	0.073 J	ND	0.054 J
Propionic Acid	--	--	NA	NA	NA	NA	0.046 J	0.077	0.26	ND
Dissolved Gases (ug/L)										
Acetylene	--	--	NA	NA	NA	NA	ND	ND	0.11 J	0.098 J
Ethane	--	--	NA	NA	NA	NA	0.23	0.20	34	32
Ethene	--	--	NA	NA	NA	NA	0.58	0.54	5.8	5.5
Methane	--	--	NA	NA	NA	NA	11	15	730	660
Total Organic Carbon (mg/L)										
TOC	--	--	NA	NA	NA	NA	ND	ND	ND	ND

Notes provided on last page of table.

TABLE 2-5 (Sheet 5 of 5)
SUMMARY OF DETECTED CONSTITUENTS IN OCTOBER 2013 AND DECEMBER 2013 POST-INJECTION GROUNDWATER SAMPLING EVENT
PENINSULA BOULEVARD GROUNDWATER PLUME SITE
HEMPSTEAD, NASSAU COUNTY, NEW YORK

Notes:

(a) EPA criterion value corresponds to "Total Trihalomethanes" (i.e., disinfection byproducts including bromodichloromethane, bromoform, chloroform, and dibromochloromethane).

(b) Criterion value corresponds to xylenes (total).

-- - No criteria

ft bgs - feet below ground surface; generally corresponds to estimating pump intake depth at one-half of screen length

J - Estimated

NA - Not analyzed

ND - Not detected

K - Biased high

L - Biased low

Peach shading and bold denotes value greater than EPA Maximum Contaminant Level (MCL).

Yellow shading and bold denotes value greater than NYSDEC criterion.

Purple shading and bold denotes value greater than both EPA MCL and NYSDEC criterion.

TABLE 2-6 (Sheet 1 of 1)
SUMMARY OF DETECTED CONSTITUENTS IN SEPTEMBER 2013 JAMECO AQUIFER GROUNDWATER SAMPLING EVENT
PENINSULA BOULEVARD GROUNDWATER PLUME SITE
HEMPSTEAD, NASSAU COUNTY, NEW YORK

Sample Location	EPA Drinking Water Regulations (MCLs)	NYSDEC Water Quality Standards/ Guidance Values [Class GA]	JW01	JW01 Duplicate	JW02	JW03
Sample Date			09/04/2013	09/04/2013	09/04/2013	09/05/2013
Estimated Sample Depth (ft bgs)			161	161	153	152
Volatile Organic Compounds (ug/L)						
Toluene	1000	5	2.8	3	ND	0.74

Notes:

ft bgs - feet below ground surface; generally corresponds to estimating pump intake depth at one-half of screen length

ND - Not detected

Peach shading and bold denotes value greater than EPA Maximum Contaminant Level (MCL).

Yellow shading and bold denotes value greater than NYSDEC criterion.

Purple shading and bold denotes value greater than both EPA MCL and NYSDEC criterion.

TABLE 3-1
CHEMICAL-, ACTION-, AND LOCATION-SPECIFIC ARARs AND TBCs
PENINSULA BOULEVARD GROUNDWATER PLUME SITE
HEMPSTEAD, NASSAU COUNTY, NEW YORK
PAGE 1 OF 4

ARAR/TBC TYPE	AUTHORITY	REQUIREMENT	STATUS	DESCRIPTION
CHEMICAL-SPECIFIC	FEDERAL			
	Safe Drinking Water Act (SDWA) MCLs	40 CFR Part 141.11-12, 141.61-62; 42 USC 300	Applicable	MCLs have been promulgated for a number of common organic and inorganic contaminants to regulate the concentration of contaminants in public drinking water supply systems. MCLs are relevant because the aquifer beneath the Site is used for drinking water supplies.
	SDWA Maximum Contaminant Level Goals (MCLGs)	40 CFR Part 141; 42 USC 300	TBC	MCLGs are health-based limits for contaminant concentrations in drinking water. MCLGs are established at levels at which no known or anticipated adverse effects on human health are anticipated and that allow for an adequate margin of safety. MCLGs are set without regard for cost or feasibility.
	SDWA Secondary Maximum Contaminant Levels (SMCLs)	40 CFR Part 143	TBC	SMCLs are non-enforceable guidelines developed for contaminants that may adversely affect the aesthetic quality of drinking water such as taste, odor, color, and appearance. SMCLs are TBCs.
	Clean Water Act Ambient Water Quality Criteria (AWQCs)	40 CFR Part 131; 33 USC 1251 et seq. Section 304(a)(1)	TBC	Regulation establishes non-enforceable guidelines for surface water bodies. AWQCs are available for the protection of human health from exposure to contaminants in drinking water as well as from ingestion of aquatic biota and for the protection of fresh and saltwater aquatic life. AWQCs are TBCs and may be used to assess need for remediation of discharges to surface water or to use as benchmarks during long-term monitoring at the Site.
	Resource Conservation and Recovery Act (RCRA) Groundwater Protection Standards	40 CFR 264.94	Applicable	Maximum constituent concentrations for groundwater protection at hazardous waste management facilities. Potential ARAR for groundwater cleanup standards.
	CERCLA Off-Site Rule	40 CFR 300.440	Applicable	Establishes compliance and release criteria and procedures for determining whether facilities are acceptable for the receipt of CERCLA wastes from response actions authorized or funded under CERCLA. Also establishes a process for determining whether facilities are acceptable based on those criteria.
	NEW YORK STATE			
	State Classification and Quality Standards	6 NYCRR Parts 609, 700-704	Applicable	Determines the classification system for groundwater. Establishes quality standards. Applicable to groundwater treatment. Potentially applicable for discharge to groundwater.

Note: Shaded boxes represent ARARs and TBCs pertinent to the in-situ groundwater treatment remedy. Other ARARs and TBCs may be pertinent to the groundwater pump-and-treat portion of the remedy.

TABLE 3-1 (continued)
CHEMICAL-, ACTION-, AND LOCATION-SPECIFIC ARARs AND TBCs
PENINSULA BOULEVARD GROUNDWATER PLUME SITE
HEMPSTEAD, NASSAU COUNTY, NEW YORK
PAGE 2 OF 4

ARAR/TBC TYPE	AUTHORITY	REQUIREMENT	STATUS	DESCRIPTION
CHEMICAL-SPECIFIC	NEW YORK STATE (CONT'D)			
	State Class GA Standards	6 NYCRR 701.18	Applicable	Establishes groundwater cleanup objectives based on Class GA, Sources of Drinking Water. The aquifer is classified as Class GA meaning that it is designated as a potable water supply.
	State Pollution Discharge Elimination System (SPDES)	6 NYCRR Parts 750-758	Applicable	Sets forth the requirements and provisions of discharge permits to effluent limits. Applicable to discharge to groundwater.
ACTION-SPECIFIC	FEDERAL			
	RCRA Hazardous Waste Generator and Transporter Requirements	40 CFR Parts 262 and 263	Applicable	Establishes responsibilities of hazardous waste generators/transporters for the handling, transportation, and life-cycle management of waste. The regulations specify packaging, labeling, record keeping, and manifest requirements related to off-site shipment. Applicable for disposal of contaminated drill cuttings and other wastes produced by remediation (e.g., investigation-derived wastes) if new wells are installed or sampled.
	Federal Underground Injection Control Program	40 CFR Part 144	Applicable	Establishes Federal requirements for the classification and operation of injection wells.
	Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Groundwater	EPA/600/R-98/128	TBC	Assessment of bioremediation-stimulated attenuation may benefit from a review of monitored natural attenuation protocol for contaminated groundwater.
	Hazardous Waste Management System: General Definitions	40 CFR 260.10 (Subpart B)	Applicable	Provides definitions for when hazardous waste management requirements are triggered. Only those applicable Federal requirements that are not part of New York's authorized State RCRA program.
	Identification and Listing of Hazardous Wastes	40 CFR Part 261	Applicable	Contains criteria and lists for identifying characteristic and listed wastes. Only those applicable Federal requirements that are not part of New York's authorized State RCRA program.
	Department of Transportation (DOT) Rules for Hazardous Materials Transport	49 CFR Parts 107, 171-179	Applicable	Regulations for the transportation of hazardous materials including packaging, marking, labeling, and transporting methods. Off-site shipments of contaminated materials would have to comply with these regulations.

Note: Shaded boxes represent ARARs and TBCs pertinent to the in-situ groundwater treatment remedy. Other ARARs and TBCs may be pertinent to the groundwater pump-and-treat portion of the remedy.

TABLE 3-1 (continued)
CHEMICAL-, ACTION-, AND LOCATION-SPECIFIC ARARs AND TBCs
PENINSULA BOULEVARD GROUNDWATER PLUME SITE
HEMPSTEAD, NASSAU COUNTY, NEW YORK
PAGE 3 OF 4

ARAR/TBC TYPE	AUTHORITY	REQUIREMENT	STATUS	DESCRIPTION
ACTION-SPECIFIC	NEW YORK STATE			
	SPDES	6 NYCRR Parts 750-758	Applicable	If State water quality standards are more stringent than Federal standards, groundwater treatment would follow State standards. Applicable Federally-approved State water quality standards must be complied with. Discharge must conform to applicable water quality requirements when the discharge affects a State other than the certifying State. Discharge limitations must be established for all toxic pollutants that are or may be discharged at levels greater than that which can be achieved by technology-based standards.
	NYSDEC Water Quality Regulations for Surface Waters and Groundwater	6 NYCRR Parts 700-705	Applicable	Cleanup level goals are based on the State specific standards. Standards are established for chemical concentrations and physical properties of groundwater.
	NYSDEC Division of Water Technical and Operational Guidance Series	2.1.2. Underground Injection Recirculation for Groundwater Remediation	Applicable	Will apply if a remediation system utilizing recharge/recirculation is selected. Provides guidance on the applicability of SPDES permits and groundwater effluent standards to the use of Underground Injection Recirculation as a remedial measure.
	NYSDOH State Sanitary Code Public Water Systems	Subpart 5-1 (1/6/93)	Applicable	The operation of a groundwater remediation system would achieve cleanup objectives based upon the most recent MCLs. The MCLs must not be exceeded in the treatment processes, in the water quality to be discharged, or in the character of the watershed aquifer which may affect the water quality; or the combination of the previous information.
	NYSDEC Hazardous Waste Management Regulations	6 NYCRR 370-374, Part 370-1.1 Solid Waste Management Facilities	Applicable	Installation of a treatment system would require compliance with this regulation. All solid waste other than hazardous waste must be transferred, processed, recovered, stored, reclaimed, and disposed of in a manner consistent with the Part. Disposal includes material discharged, deposited, injected, dumped, spilled, leaked, or placed into or onto any land or water.
	Identification and Listing of Hazardous Wastes	6 NYCRR Part 371	Applicable	Outlines criteria for determining if a solid waste is a hazardous waste and is subject to regulation under 6 NYCRR Parts 372-376.
	State Hazardous Waste Management Facility Regulations	6 NYCRR Part 370.373.372	Applicable	Applicable if remediation wastes are determined to be hazardous. Establishes New York State's hazardous waste management program. Includes standards for hazardous waste generation, manifesting, and transport

Note: Shaded boxes represent ARARs and TBCs pertinent to the in-situ groundwater treatment remedy. Other authorities may be pertinent to the groundwater pump-and-treat portion of the remedy

TABLE 3-1 (continued)
CHEMICAL-, ACTION-, AND LOCATION-SPECIFIC ARARs AND TBCs
PENINSULA BOULEVARD GROUNDWATER PLUME SITE
HEMPSTEAD, NASSAU COUNTY, NEW YORK
PAGE 4 OF 4

ARAR/TBC TYPE	AUTHORITY	REQUIREMENT	STATUS	DESCRIPTION
ACTION-SPECIFIC	NEW YORK STATE (CONT'D)			
	New York State Water Classifications and Quality Standards	6 NYCRR Parts 701, 702, 703, 704	Applicable	Potentially applicable where treated groundwater discharges to surface water. Defines surface water classifications and ambient water quality standards that are the basis for establishing effluent limitations under the SPDES program.
	NYSDEC Ambient Water Quality Standards and Guidance Values	Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1	TBC	These standards and guidance values are to be considered in establishing discharge limitations to surface waters. Provides a compilation of ambient water quality standards and guidance values for toxic and non-conventional pollutants for use in NYSDEC programs, including the SPDES permit program.
LOCATION-SPECIFIC	FEDERAL			
	Sole Source Aquifer under Safe Drinking Water Act	40 CFR 149	Applicable	This applies if the site is located over a sole source aquifer. Sole source drinking water aquifer designation.
	NEW YORK STATE			
	None			

Note: Shaded boxes represent ARARs and TBCs pertinent to the in-situ groundwater treatment remedy. Other authorities may be pertinent to the groundwater pump-and-treat portion of the remedy

TABLE 3-2
PERFORMANCE STANDARDS FOR GROUNDWATER TREATMENT
PENINSULA BOULEVARD GROUNDWATER PLUME SITE
HEMPSTEAD, NASSAU COUNTY, NEW YORK

CONTAMINANT OF CONCERN (COC)	GROUNDWATER CLEANUP GOAL (µg/L)	STANDARDS ⁽¹⁾⁽²⁾
PCE	5	Federal MCL; New York State Water Quality Standards
TCE	5	Federal MCL; New York State Water Quality Standards
Cis-1,2-DCE	5	New York State Water Quality Standards ⁽³⁾
Vinyl Chloride	2	Federal MCL; New York State Water Quality Standards

Notes:

⁽¹⁾ Federal MCL is derived from CFR Title 40, Chapter 1, Part 141 National Primary Drinking Water Regulations, 141.61 Maximum Contaminant Levels for Organic Contaminants.

⁽²⁾ New York State Water Quality Standards derived from NYCRR, Title 6, Chapter X - Division of Water, Part 703: Surface Water and Groundwater Quality Standards and Groundwater Effluent Limitations, Table 1.

⁽³⁾ Federal MCL for cis-1,2-DCE is 70 µg/L.

TABLE 4-1
CONSTRUCTION DETAILS FOR NEWLY INSTALLED WELLS
PENINSULA BOULEVARD GROUNDWATER PLUME SITE
HEMPSTEAD, NASSAU COUNTY, NEW YORK

WELL NO.	INSTALLATION DATE	WELL DIAMETER (inches)	TOP INSIDE CASING ELEVATION (feet above msl)	DEPTH OF SCREENED INTERVAL (feet bgs)	ELEVATION OF SCREENED INTERVAL (feet above msl)	LENGTH OF SCREENED INTERVAL (feet)	TOTAL DEPTH OF WELL (feet bgs)
PW-01S	4/2/2013	6	14.15	25-35	-10.5 to -20.5	10	35.5
PW-02S	1/28/2014	4	14.20	8-36	6.5 to -21.5	28	36
PW-01D	5/3/2013	6	12.42	46.5-81.5	-33.4 to -68.4	35	82
OW-01S	3/27/2013	2	15.90	6-26	10.3 to -9.7	20	26
OW-01D	4/18/2013	2	10.19	42-70	-31.5 to -59.5	28	70
IW-01S	3/29/2013	6	19.67	33-43	-12.6 to -22.6	10	44
IW-01D	5/9/2013	6	19.03	51-91	-30.8 to -70.8	40	91
TW-01S	3/5/2013	2	21.04	20-35	1.4 to -13.6	15	35
TW-01D	3/18/2013	1	20.90	73-83	-51.8 to -61.8	10	83
TW-02S	3/5/2013	2	18.02	15-30	3.4 to -11.6	15	30
TW-02D	3/18/2013	1	17.98	73-83	-54.8 to -64.8	10	83
TW-03S	3/7/2013	2	14.29	12-27	2.5 to -12.5	15	27
TW-03D	3/14/2013	2	13.93	60-70	- 45.7 to -55.7	10	70
TW-04S	3/8/2013	2	11.69	14-29	-2.1 to -17.1	15	29
TW-04D	3/12/2013	2	11.40	54.5-64.5	- 42.9 to -52.9	10	64.5
TW-05D	3/20/2013	1	16.15	66-76	- 49.6 to -59.6	10	76
TW-06D	3/20/2013	1	14.40	65-75	-50.2 to -60.2	10	75
TW-07D	3/11/2013	2	10.83	62-72	-51 to -61	10	72
TW-08D	3/8/2013	2	10.53	60-70	-49.3 to -59.3	10	70
TW-09	1/27/2014	2	14.20	8-36	6.5 to -21.5	28	36
JM-01	5/17/2013	4	NA	156-166	NA	10	167
JM-02	5/22/2013	4	NA	147-157	NA	10	160
JM-03	5/31/2013	4	NA	147-157	NA	10	159

Notes:

bgs - below ground surface D – deep S – Shallow ft – Feet msl - Mean Sea Level NA - Not Available TIC - Top of Inner Casing

TABLE 4-2
LACTOIL PROPORTIONS AND QUANTITIES
PENINSULA BOULEVARD GROUNDWATER PLUME SITE
HEMPSTEAD, NASSAU COUNTY, NEW YORK

PARAMETER	VALUE AND UNIT
Site Groundwater	8,866 US gal
Delivered LactOil™ Product Volume	350 US gal
Injectate Volume	9,216 US gal
Number of Drums (50 USG)	7
Number of Injection Wells	2
Injection Volume per Well	Between 4,116 - 5,100 US gal

TABLE 4-3
SUMMARY OF INJECTION PROGRAM
PENINSULA BOULEVARD GROUNDWATER PLUME SITE
HEMPSTEAD, NASSAU COUNTY, NEW YORK

DATE OF INJECTION	DEPTH (feet bgs)	WELL ID	INJECTED VOLUME (gals)	AVERAGE FLOW RATE (gallons per minute or gpm)
9/11/13 to 9/12/13	33 - 43	IW-01S	4,116	5.8
9/10/13	51 - 91	IW-01D	5,100	16.5
			9,216	

TABLE 4-4
ISCR SLURRY REAGENT REQUIREMENTS
PENINSULA BOULEVARD GROUNDWATER PLUME SITE
HEMPSTEAD, NASSAU COUNTY, NEW YORK

PARAMETER	VALUE AND UNIT
EHC Injectate Weight	2,100 US gals
Delivered EHC Product Weight	5,800 lbs.
Groundwater	1,750 US gals
Number of Bags (50 lbs.)	116
Number of Injection Points	10
Number of Injection Intervals	7 to 8 per point
Injection Volume per Interval	28 US gals

TABLE 4-5
SUMMARY OF POST-INJECTION MONITORING ACTIVITIES
PENINSULA BOULEVARD GROUNDWATER PLUME SITE
HEMPSTEAD, NASSAU COUNTY, NEW YORK

ROUND	DATE	AMENDMENT DISTRIBUTION	REDOX	NATURAL ATTENUATION PARAMETERS	FIXED-BASE LAB ANALYSIS	BIO-TRAP
1	5/20/13	•	•	•	•	•
08/27/13 - 09/4/13		ISCR BARRIER INSTALLATION				
09/10/13 - 09/12/13		LACTOIL INJECTIONS				
2	9/26/13	•	•			
3	10/9/13	•	•			
4	10/22/13	•	•	•	•	
5	11/6/13	•	•			
11/7/13		RECIRCULATION OF SUBSTRATE FROM INJECTION WELLS				
6	11/21/13	•	•			
7	12/17/13	•	•	•	•	•

TABLE 4-6
COMPARISON OF DEHALOCOCCOIDES CONCENTRATIONS TO THE RATE OF DECHLORINATION
PENINSULA BOULEVARD GROUNDWATER PLUME SITE
HEMPSTEAD, NASSAU COUNTY, NEW YORK

<i>Dehalococcoides</i> spp. 16S rRNA (gene copies per L)	INTERPRETATION
10^3 or lower	Suboptimal <i>Dehalococcoides</i> spp. for high rates of dechlorination
$10^4 - 10^6$	Moderate <i>Dehalococcoides</i> spp., which may or may not be associated with observable dechlorination (ethene formation)
10^7 or greater	High <i>Dehalococcoides</i> spp., which is often associated with high rates of dechlorination and ethene production

TABLE 4-7
BREAKDOWN OF WELLS TO EVALUATE TREATABILITY TESTING RESULTS
PENINSULA BOULEVARD GROUNDWATER PLUME SITE
HEMPSTEAD, NASSAU COUNTY, NEW YORK

LACTOIL INJECTIONS	ISCR BARRIER INSTALLATION	BOTH APPROACHES
IW-01S; IW-01D	MW-21S; MW-21D	OW-01D
MW-27S; MW-27D	PW-01S	MW-18D
OW-01S	TW-06D	
PW-01D	TW-07D	
TW-01S; TW-01D	TW-08D	
TW-02S; TW-02D		
TW-03S; TW-03D		
TW-04S; TW-04D		
TW-05D		

TABLE 4-8
WELL RESPONSES
PENINSULA BOULEVARD GROUNDWATER PLUME SITE
HEMPSTEAD, NASSAU COUNTY, NEW YORK

CRITERIA	WELLS (S = Shallow UGA; D = Deep UGA)																			
	IW-01 (1)		TW-01 (1)		TW-02 (1)		TW-03 (1)		TW-04 (1)		TW-05 (1)	TW-06 (2)	TW-07 (2)	TW-08 (2)	MW-18 (1) (2)		MW-27 (1)		PW-01 (2)	OW-01 (1)
	S	D	S	D	S	D	S	D	S	D	D	D	D	D	S	D	S	D	D	S
	RESPONSES																			
ORP Decrease	NR	W	W	W	F	NR	W	W	W	NR	NR	NR	NR	NR	NR	NR	M	--	NR	W
DO Decrease	F	M	W	W	F	M	M	M	M	M	M	W	W	W	M	W	F	--	M	NR
PCE Decrease	NR	F	NR	F	NR	F	NR	F	NR	M	F	M	F	M	NR	NR	M	NR	NR	NR
TCE Decrease	NR	F	NR	F	NR	NR	NR	NR	NR	NR	F	NR	F	NR	NR	NR	W	NR	NR	NR
cis-1,2-DCE Increase/Decrease	F	F	NR	F	W	F	W	W	NR	W	F	F	W	F	NR	W	M	NR	M	NR
Vinyl Chloride Increase/Decrease	NR	F	NR	NR	NR	M	NR	NR	NR	NR	NR	M	M	NR	NR	NR	NR	M	NR	NR
Methane Increase	F	F	--	--	--	--	W	NR	--	--	--	--	NR	W	--	--	F	W	M	NR
Other Gas Increases	F	NR	--	--	--	--	W	NR	--	--	--	--	NR	NR	--	--	W	M	NR	NR
VFA Increases	F	F	--	--	--	--	W	NR	--	--	--	--	NR	NR	--	--	M	M	NR	NR
Biological Indicators	NR	NR	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Presence of Substrate	F	F	W	M	W	F	NR	M	W	M	F	M	M	M	NR	W	F	W	W	NR
Overall Response	M	F	W	F	W	M	W	M	W	M	F	M	F	M	NR	NR	M	NR	W	NR

Notes:

(1) Most likely to be affected by LactOil™ injections.
(2) Most likely to be affected by ISCR barrier installation.
F Favorable or Strong Response.
M Moderate Response.
W Weak Response
NR No Apparent Response
-- Information Not Collected or Not Analyzed

TABLE 4-9
SUMMARY AND COMPARISON OF PRIMARY COC CONCENTRATIONS
PENINSULA BOULEVARD GROUNDWATER PLUME SITE
HEMPSTEAD, NASSAU COUNTY, NEW YORK

WELL	LIKELY INFLUENCED BY	DEPTH / SCREEN	MAY 2013	OCT. 2013	DEC. 2013	CMTS	MAY 2013	OCT. 2013	DEC. 2013	CMTS	MAY 2013	OCT. 2013	DEC. 2013	CMTS	MAY 2013	OCT. 2013	DEC. 2013	CMTS
			PCE				TCE				CIS-1,2-DCE				VC			
IW-01S Δ	LactOil™	33 - 43	6.4	NA	75	↑↑↑	0.61	NA	11J	↑↑↑	7.8	NA	40	↑↑↑	0.77	NA	ND (25U)	NC
IW-01D Δ	LactOil™	51 - 91	9,800	96	ND (5U)	↓↓↓	400	19	ND (5U)	↓↓↓	6.4	280	60	↑↑↑	3.5	15	5.5	↑↑↑
MW-18D	Both	69 - 75	0.85	ND (0.5U)	ND (0.5U)	NC	ND (0.5U)	ND	ND (5U)	NC	2.5	14	13	↑↑↑	0.51	1.4	ND (0.5U)	↑↑↑
MW-18S	Both	10 - 15	26	NA	410	↑↑↑	ND (0.5U)	NA	2.7J	NC	ND (0.5U)	NA	ND (5U)	NC	ND (0.5U)	NA	ND (5U)	NC
MW-27D	LactOil™	70 (Port)	22,000	NA	36,000	↑↑↑	4,000	NA	4,800	↑↑↑	1,300	NA	1,200	NC	79	NA	110	↑↑↑
MW-27S	LactOil™	25 (Port)	39	NA	ND (5U)	↓↓↓	4.9	NA	ND (5U)	NC	0.96	NA	16	↑↑↑	ND (0.5U)	NA	ND (5U)	NC
OW-01S	LactOil™	6 - 26	ND (0.5U)	NA	0.71	NC	ND (0.5U)	NA	ND (0.5U)	NC	ND (0.5U)	NA	ND (0.5U)	NC	ND (0.5U)	NA	ND (0.5U)	NC
PW-01D	LactOil™	46.5 - 81.5	20	11	25	NC	0.7	8.5	16	↑↑↑	ND (0.5U)	60	44	↑↑↑	ND (0.5U)	0.97	0.74	NC
TW-01D	LactOil™	73 - 83	45,000	74,000	1,700	↓↓↓	2,450	1,100J	610	↓↓↓	24.5	350J	920	↑↑↑	2.6	2.6J	ND (100U)	NC
TW-01S	LactOil™	20 - 35	0.77	NA	0.22J	↓↓↓	ND (0.5U)	NA	ND (0.5U)	NC	ND (0.5U)	NA	ND (0.5U)	NC	ND (0.5U)	NA	ND (0.5U)	NC
TW-02D	LactOil™	73 - 83	13,000	25,000	2,300	↓↓↓	1,400	3,000	1,500	NC	49	1,200	3,000	↑↑↑	6	14	ND (100U)	↑↑↑
TW-02S	LactOil™	15 - 30	ND (0.5U)	NA	0.36J	NC	ND (0.5U)	NA	ND (0.5U)	NC	ND (0.5U)	NA	2.4	↑↑↑	ND (0.5U)	NA	ND (0.5U)	NC
TW-03D	LactOil™	60 - 70	54	1.6J	0.36J	↓↓↓	1.6	2.8	4.1	↑↑↑	16	18	21	NC	ND (0.5U)	ND (0.5U)	ND (0.5U)	NC
TW-03S	LactOil™	12 - 27	ND (0.5U)	NA	1.7	NC	ND (0.5U)	NA	0.35J	NC	ND (0.5U)	NA	1.1	NC	ND (0.5U)	NA	ND (0.5U)	NC
TW-04D	LactOil™	54.5 - 64.5	8	3.3	0.96	↓↓↓	0.56	0.28J	0.33J	NC	0.81	0.53	1.9	NC	0.61	ND (0.5U)	ND (0.5U)	NC
TW-04S	LactOil™	14 - 29	1.1	NA	1.4	NC	ND (0.5U)	NA	ND (0.5U)	NC	ND (0.5U)	NA	ND (0.5U)	NC	ND (0.5U)	NA	ND (0.5U)	NC
TW-05D	LactOil™	66 - 76	2,500	360	69	↓↓↓	590	250	120	↓↓↓	140	260	480	↑↑↑	1.7	ND (25U)	ND (50U)	NC
TW-06D	ISCR Barrier	65 - 75	80,000	58,000	63,000	↓↓↓	2,200	2,200J	3,000	↑↑↑	25	350J	ND (2,500U)	↑↑↑	6.6	14	ND (2,500U)	↑↑↑
TW-07D	ISCR Barrier	55 - 60	4,300	5.6	16	↓↓↓	270	0.93	1.6	↓↓↓	3.4	8	2.8	NC	1.5	7.7	8.3J	↑↑↑
TW-08D	ISCR Barrier	60 - 70	22,000	NA	17,500	↓↓↓	2,200	NA	2,300	NC	44	NA	625	↑↑↑	6.9	NA	ND (250U)	NC

Notes:

Δ = Injection Well; Most recent bold, italicized results are less than groundwater performance standards (Table 3-2).

(1) Most likely to be affected by LactOil™ injections.

(2) Most likely to be affected by ISCR barrier installation.

↑↑↑ or ↓↓↓ Represents whether overall concentration trend was evaluated as upward, downward, or unchanged (No Change or NC).

CMTS = Comments.

NA = Not sampled.

NC = No Notable Change.

ND = Not detected above laboratory reporting limit.

J = Estimated value as reported by laboratory.

U = Reporting limit as established by laboratory.

The average of both original and duplicate samples (if collected for a specific well during an individual sampling round) is shown.

TABLE 4-10
MICROBIAL GROWTH AND ACTIVITY RESULTS (in cells/bead)
PENINSULA BOULEVARD GROUNDWATER PLUME SITE
HEMPSTEAD, NASSAU COUNTY, NEW YORK

ANALYSIS	WELL AND SAMPLE DATE					
	IW-01D 6/26/13	IW-01D 11/6/13	IW-01D 12/19/13	IW-01S 6/26/13	IW-01S 11/6/13	IW-01S 12/19/13
Total Eubacteria	9.53E+05	2.42E+06	2.34E+08	1.02E+06	3.76E+04	8.76E+07
Methanogens	<5.00E+01	2.32E+01 (J)	3.97E+04	<5.00E+01	<2.5E+02	1.11E+01 (J)
<i>Dehalococcoides</i> Spp (DHC)	<2.5E+01	<2.5E+01	<2.5E+01	<2.5E+01	<2.5E+01	<2.5E+01
<i>tceA</i> (TCE RDase)	<2.5E+01	<2.5E+01	<2.5E+01	<2.5E+01	<2.5E+01	<2.5E+01
<i>bvcA</i> (BVC RDase)	<2.5E+01	<2.5E+01	<2.5E+01	<2.5E+01	<2.5E+01	<2.5E+01
<i>vcrA</i> (VC RDase)	<2.5E+01	<2.5E+01	<2.5E+01	<2.5E+01	<2.5E+01	<2.5E+01

Notes:

Bold and shaded values indicate positive detection for analysis.

J = Estimated gene copies below the Practical Quantification Limit (PQL) but above Lower Quantifiable Limit (LQL).

TABLE 6-1
ESTIMATION OF EHC™ MATERIAL REQUIRED FOR IN-SITU GROUNDWATER TREATMENT
PENINSULA BOULEVARD GROUNDWATER PLUME SITE
HEMPSTEAD, NASSAU COUNTY, NEW YORK

PARAMETER	UNIT	VALUES		COMMENT
		ISCR barrier “A”	ISCR barrier “B”	
Treatment Area Dimensions				
Width of targeted zone (perpendicular to groundwater flow)	ft	154	150	
Length of targeted zone (parallel to groundwater flow)	ft	5	5	
Depth to top of treatment zone	ft bgs	50	50	
Treatment zone thickness	ft	30	30	
Treatment volume	ft³	23,100	22,500	Calculated value
Total porosity	%	30	30	Default value
Groundwater volume	ft³	6,930	6,750	Calculated value
Soil bulk density	lbs/ft³	110	110	Default value
Soil mass	ton	1,271	1,238	Calculated value
Transport Characteristics				
Treatment time / design life for one application	years	5	5	Default value
Linear groundwater flow velocity	ft/year	365	365	Calculated value
Distance of inflowing groundwater over design life	ft	1,825	1,825	Calculated value
Effective porosity for groundwater flow	%	20	20	Default value
Volume of water passing area over design life	ft³	1,686,300	1,642,500	Calculated value
Soil type (silts and sands; glacial material)	---	---	---	Assume high permeability
Fractional organic carbon, in soil (foc)	---	0.001	0.001	Estimated value
Contaminant of Concern				
PCE - groundwater	mg/L	5	5	
PCE - soil	mg/kg	1.315	1.315	
Total mass	lb	532.0	518.1	Includes contributions from inflowing groundwater
Geochemical Data (Groundwater)				
Dissolved oxygen and nitrate	mg/L	0	0	
Manganese (dissolved)	mg/L	10	10	Default value
Iron (III)	mg/L	35	35	Refer to Section 4.4 for deep UGA
Sulfate	mg/L	30	30	
ORP	mV	190	190	Average baseline value for deep UGA
pH	SU	7	7	Refer to Section 4.4
Stoichiometric Demand Calculations				
Hydrogen (H₂) demand from contaminants of concern	mg/L	0.2	0.2	Soil - 0.1 mg/kg
H₂ demand from competing electron acceptors	mg/L	2.9	2.9	Soil - 0.0 mg/kg
Total H₂ demand	mg/L	3.2	3.2	Soil - 0.1 mg/kg
H₂ demand from soil within targeted area	lb	0.2	0.2	
H₂ demand from groundwater within targeted area	lb	1.4	1.3	
H₂ demand from influx over design life	lb	333.3	324.7	
Total estimated H₂ demand	lb	334.8	326.1	
EHC Demand Calculations				

PARAMETER	UNIT	VALUES		COMMENT
		ISCR barrier "A"	ISCR barrier "B"	
Minimum EHC application rate to meet H ₂ demand	%	0.14	0.14	% by soil mass
Recommended EHC application rate for ISCR barrier	%	0.5	0.5	% by soil mass
Mass of EHC required	lb	12,705	12,375	% by soil mass
Mass of EHC per bag	lb	50	50	
Number of bags required	bag	255	248	
Mass of EHC (rounded up based on bag size)	lb	12,750	12,400	
ISCR Barrier Installation				
EHC Injectate Volume	gal	5,598	5,444	Target concentration (% solids) = 25%
Volume of groundwater required	gal	4,584	4,457	
Number of injection points	each	23	22	
Number of injection intervals per point	each	7 to 8	7 to 8	
Mass EHC per injection point	lb	554	564	
Mass EHC per vertical foot	lb	18.5	18.8	

TABLE 6-2
SITE-SPECIFIC PARAMETERS AFFECTING ELECTRON DONOR DEMAND
PENINSULA BOULEVARD GROUNDWATER PLUME SITE
HEMPSTEAD, NASSAU COUNTY, NEW YORK

PARAMETER	EXPECTED SITE CONDITIONS	EFFECT ON ELECTRON DONOR DEMAND
Pore Volume	Large area. Overall pore volume is large.	Increases demand
Competing Electron Acceptors	Moderate to low concentrations.	Reduces substrate demand
Dissolved Oxygen	Fairly high	Increases substrate demand
Contaminant Concentrations	High maximum CVOCs approaching 100 mg/L concentrations	Increases substrate demand
Substrate Distribution Effectiveness	Low given flat hydraulic gradient	Increases substrate demand
Substrate Parameters	Lactate/EVO mix – high hydrogen yield per mole	Reduces substrate demand

TABLE 6-3
ESTIMATED SUBSTRATE MASS
PENINSULA BOULEVARD GROUNDWATER PLUME SITE
HEMPSTEAD, NASSAU COUNTY, NEW YORK

BASIS AND ASSUMPTIONS FOR SUBSTRATE MASS				
NOTATION	DESCRIPTION	VALUE	UNIT	REFERENCE/ASSUMPTIONS
B	Saturated thickness for injection	40	Feet	Deep zone
A	Area within 10,000 ug/L PCE isopleth	90,000	sq. ft	Drawings C-2/C-3
θ	Porosity	0.2	unit less	Assumption
C_{GW}	Average PCE concentration within 10,000 ug/L PCE isopleth x 1.25 to account for remaining CVOCs species	40.25	mg/L	Ave PCE concentration for six wells within 10 mg/L PCE contour (32.3 mg/L) * 1.25
K _{oc}	Organic carbon partitioning coefficient for PCE	155	L/kg	Ref 3
f _{oc}	Organic carbon fraction	0.20%	unit less	Assumption
ρ	Soil density	120	lbs/cu.ft	Assumption
C_{DO}	Average DO concentration within 10,000 ug/L PCE isopleth	2	mg/L	Typical field measurement in deep interval within 10 mg/L PCE contour
C_{Fe}	Fe III concentration within 10,000 ug/L PCE isopleth (all dissolved iron assumed as Fe III)	36	mg/L	Average between MW-21D and MW-22D (2007 RI sampling)
C_{Mn}	Manganese concentration within 10,000 ug/L PCE isopleth (all dissolved manganese assumed as Mn IV)	0.955	mg/L	Average between MW-21D and MW-22D (2007 RI sampling)
C_{SO4}	Sulfates concentration within 10,000 ug/L PCE isopleth	25.5	mg/L	Average between MW-21D and MW-22D (2007 RI sampling)
CALCULATIONS FOR MASS				
V	Pore volume within 10,000 ug/L PCE isopleth	5385600	gallon	$V=B*A*\theta*7.48$
M_{GW}	Dissolved CVOCs mass within 10,000 ug/L PCE isopleth	1805.0	lbs	$M_{GW}=C_{GW}*V*8.327/1000000$
C_{soil}	Soil CVOCs concentration within 10,000 ug/L PCE isopleth	12.5	mg/kg	$C_{soil}=K_{oc}*f_{oc}*C_{GW}$
M_{soil}	CVOCs mass adsorbed to soil within 10,000 ug/L PCE isopleth	4312.2	lbs	$M_{soil} = C_{soil}*B*A*(1-\theta)*\rho/1000000$
M_{CVOCs}	Total CVOCs mass	6117.3	lbs	$M_{CVOCs}=M_{soil} + M_{GW}$
M_{DO}	Dissolved oxygen mass	89.7	lbs	$M_{DO}=C_{DO}*V*8.327/1000000$
M_{Fe}	Fe III mass (all dissolved iron assumed as Fe III)	1614.5	lbs	$M_{Fe}=C_{Fe}*V*8.327/1000000$
M_{Mn}	Manganese mass (all dissolved manganese assumed as Mn IV)	42.8	lbs	$M_{Mn}=C_{Mn}*V*8.327/1000000$
M_{SO4}	Sulfates mass	1143.6	lbs	$M_{SO4}=C_{SO4}*V*8.327/1000000$

TABLE 6-4
ESTIMATED SUBSTRATE DEMAND
PENINSULA BOULEVARD GROUNDWATER PLUME SITE
HEMPSTEAD, NASSAU COUNTY, NEW YORK
PAGE 1 OF 2

BASIS AND ASSUMPTIONS FOR DEMAND				
NOTATION	DESCRIPTION	VALUE	UNIT	REFERENCE/ASSUMPTIONS
PCE_H	PCE hydrogen demand (grams of PCE per 1 gram of hydrogen)	20.57	unit less	Ref 1.
O_H	Dissolved oxygen demand (grams of oxygen per 1 gram of hydrogen)	7.9	unit less	Ref 1.
F_H	Fe III hydrogen demand (grams of Fe III per 1 gram of hydrogen)	55.9	unit less	Ref 1.
M_H	Mn IV hydrogen demand (grams of Mn IV per 1 gram of hydrogen)	27.5	unit less	Ref 1.
S_H	Sulfate hydrogen demand (grams of Sulfate per 1 gram of hydrogen)	10.6	unit less	Ref 1.
CO2_H	CO2 hydrogen demand (grams of CO2 per 1 gram of hydrogen)	5.5	unit less	Ref 1.
A	Moles of H ₂ released per mole ethyl lactate	4	mole	See equation in Figure A, assuming acetate is the end product
M1	Molar mass of ethyl lactate	118.13	gram/mole	
H1	Grams of H ₂ released per gram ethyl lactate	0.0683	gram	H1=A/M1
H2	Grams of H ₂ released per gram soybean oil	0.3612672	gram	Table 2.3 of Ref 1
L1	Weight percentage of ethyl lactate in LactOil™	35%	unit less	Vendor information
L2	Weight percentage of soybean oil in LactOil™	45%	unit less	Vendor information
M2	Molar mass of PCE	165.8	gram/mole	
M _{TCE}	Total CVOCs mass in the area within 10,000 ug/L PCE Isopleth	6117.3	lbs	Calculation 1
M _O	Dissolved oxygen mass	89.7	lbs	Calculation 1
M _F	Fe III mass (all dissolved iron assumed as Fe III)	1614.5	lbs	Calculation 1
M _{Mn}	Mn IV mass (all dissolved Mn assumed as Mn IV)	42.8	lbs	Calculation 1
M _S	Sulfate mass	1143.6	lbs	Calculation 1
Assumption 1: No other competitors for hydrogen.				
Assumption 2: Unit substrate demand for CVOCs can be represented by that of PCE.				
Reference 1: ESTCP, 2006. Protocol for Enhanced <i>In Situ</i> Bioremediation Using Emulsified Edible Oil. Prepared by Solutions-IES. Herndon, Virginia. May.				

TABLE 6-4
ESTIMATED SUBSTRATE DEMAND
PENINSULA BOULEVARD GROUNDWATER PLUME SITE
HEMPSTEAD, NASSAU COUNTY, NEW YORK
PAGE 2 OF 2

CALCULATIONS FOR DEMAND				
NOTATION	DESCRIPTION	VALUE	UNIT	REFERENCE/ASSUMPTIONS
H	Grams of H ₂ released per gram LactOil™	0.1865	mole	$H = L1 \cdot H1 + L2 \cdot H2$
PCE	Grams LactOil™ needed for 1 gram of TCE being reduced to ethene	0.26	unit less	$PCE = 1 / (H \cdot PCE_H)$
DO	Grams LactOil™ needed to reduce 1 gram of oxygen	0.68	unit less	$DO = 1 / (H \cdot O_H)$
F	Grams LactOil™ needed to reduce 1 gram of Fe III	0.10	unit less	$F = 1 / (H \cdot F_H)$
Mn	Grams LactOil™ needed to reduce 1 gram of Mn IV	0.20	unit less	$Mn = 1 / (H \cdot Mn_H)$
S	Grams LactOil™ needed to reduce 1 gram of sulfates	0.51	unit less	$S = 1 / (H \cdot S_H)$
LO _{CVOCs}	Stoichiometric Demand of LactOil™ to reduce CVOCs to ethene	1594.9	lbs	$LO_{CVOCs} = PCE \cdot M_{CVOCs}$
LO _{DO}	Stoichiometric Demand of LactOil™ to reduce dissolved oxygen	60.9	lbs	$LO_{DO} = DO \cdot M_{DO}$
LO _{Fe}	Stoichiometric Demand of LactOil™ to reduce iron	154.9	lbs	$LO_{Fe} = F \cdot M_{Fe}$
LO _{Mn}	Stoichiometric Demand of LactOil™ to reduce manganese	8.4	lbs	$LO_{Mn} = Mn \cdot M_{Mn}$
LO _{SO4}	Stoichiometric Demand of LactOil™ to reduce sulfates	578.6	lbs	$LO_{SO4} = S \cdot M_{SO4}$
LO	Total Stoichiometric Demand of LactOil™	2397.6	lbs	$LO = LO_{CVOCs} + LO_{DO} + LO_{Fe} + LO_{Mn} + LO_{SO4}$
S _k	Safety coefficient	10.0	unit less	Common industry experience
LO _{total}	Total LactOil™ mass	23976.1	lbs per event	$LO_{total} = LO \cdot S_k$

Figure A:

