COUNTY OF SUFFOLK

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STEVE LEVY
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF HEALTH SERVICES

JAMES L. TOMARKEN, MD
MSW, MPH, MBA, FRCPC, FACP
Commissioner

6/13/11
Jamie pls review this SCHS information for listing and prepare a package for the site. Walter.

June 8, 2011

Walter Parish, P.E.
Regional Hazardous Waste Engineer
New York State Department of Environmental Conservation
Building 40 - SUNY Stony Brook
Stony Brook, NY 11790-2356

Re: Investigation within the vicinity of Ranick Road and Rasons Court, and Maggio Printing, located on the north side of Expressway Drive North, Hauppauge, NY

Dear Mr. Parish:

At your request, my staff within the Suffolk County Department of Health Services (SCDHS) Division of Environmental Quality prepared an investigative report with respect to the above referenced area. In light of the extent of groundwater contamination discovered in several monitoring wells that were recently installed in the vicinity of the above area, as well as contamination that was previously found at Maggio Printing, the SCDHS is referring this matter to your office for consideration for inclusion into the Superfund Program. The contaminants of concern include Perchlorethylene (PCE), Trichloroethene (TCE), Trichloroethane (TCA), Dichloroethene (DCE), and Dichloroethane (DCA). In addition, I would like to mention that we are concerned that developed properties in the area could potentially be impacted by soil vapor intrusion emanating from this groundwater contamination. This is particularly relevant, since it is our understanding the neighboring property east of Maggio Printing is utilized as an indoor athletic facility that may be frequented by children. Enclosed for your use is a copy of the Chronology of the work performed at Maggio Printing together with our technical report.

Should you require any additional information or have any questions with respect to this matter, please feel to contact me at (631) 852-5800, or Mr. Ronald Paulsen, or Douglas Feldman within the department's Office of Water Resources at (631) 852-5774 or (631) 852-5810, respectively.

Sincerely,

Walter Dawydiak, P.E., Chief Engineer
Division of Environmental Quality

cc: Dr. James L. Tomarken, M.D., Commissioner - SCDHS
Leonard Marchese, MBA, CPA – Director of Management/Research – SCDHS
Cathleen McBride, NYS Department of Health
Charlotte Bethoney, NYS Department of Health
Brian Culhane, Commissioner, SC Department of Environment and Energy
Amy Juchatz, MPH – Toxicologist – SC Department of Environment and Energy
Douglas Feldman, P.E., Chief Office of Water Resources – SCDHS
Andrew Rapiejko, Associate Hydrogelogist, Office of Water Resources - SCDHS
Ron Paulsen, Associate Hydrogeologist, Office of Water Resources – SCDHS
Geralynn Rosser, Hydrogeologist , Office of Pollution Control - SCDHS

Chronology of Events
For Maggio Printing, 1735 Express Drive North, Hauppauge

July 2006 – During a follow-up to a site inspection endpoint samples of one leaching structure, LP-4, were found to exceed Suffolk County Department of Health Services (SCDHS) Action Levels. Contamination was found to extend to approx. 39' below ground surface (bgs).

November 2007 – The pool was remediated to the satisfaction of the SCDHS Office of Pollution Control (OPC).

January 2008 – At the request of OPC one monitoring well was installed and sampled. The depth to water was approximately 97' bgs. Results indicate tetrachloroethene (PCE) at 1100 ppb. No other volatile organic compound (VOC) was detected; however, the detection limits were elevated. Three additional sampling events were requested.

May 2008 – The second quarter sampling event took place. Nine VOCs were detected. The highest concentration was cis-1, 2- dichloroethene (1,2 –DCE) at 230 ppb. PCE was detected at 130 ppb.

October 2008 – The third quarter sampling event took place. The results indicate 460 ppb total VOCs (150 ppb of PCE). There has been a continued decline in contaminates of concern (COC) since the remediation of the contaminated pool.

January 2009 – The New York State Department of Health (DOH) was consulted regarding soil vapor at this depth.

March 2009 – The fourth quarter groundwater sampling results indicate 186 ppb total VOCs (37 ppb PCE, 110 ppb of 1,2 –DCE).

April 2009 – A receptor survey concluded that there is not a potential pathway for exposure to groundwater within one-half mile down gradient of the subject property. After discussing the results with the Suffolk County Department of Environment and Energy (SCDEE) and DOH there was a concern the adjacent property may have some exposure to sub-surface vapors.

June 2009 – A sub-surface soil vapor sample was secured adjacent to the pool.

October 2009 – The results from the sub-surface soil vapor sample indicate elevated levels of chlorinated VOCs (i.e. 26,000 ug/m3 TCE, 14,000 ug/m3 1,1,1 – trichloroethane).

January 2010 – The sub-surface soil vapor sample results secured on the adjacent property near the house indicate the presence of chlorinated vapors in the subsurface, however, DOH and SCDEE don't feel the levels pose a health risk and require no further action.

August 2010 – A cluster well was installed on the downgradient property boundary (shallow-85'-87' bgs, intermediate-95'-97' bgs, deep-105'-107' bgs). Groundwater samples revealed chlorinated VOCs in all three levels with the highest being in the shallow level (380 ppb TCE, 300 ppb PCE, 190 ppb cis-1,2-DCE, 72 ppb 1,1,1-TCA) and decreasing with depth.

November 2010 – The SCDHS Office of Water Resources (OWR) installed 6 off-site wells down/side gradient. No drinking water wells have been identified.

February 2011 - OWR wells show high concentrations of chlorinated VOCs. They will be putting together a package for the DEC.

May 26, 2011

Suffolk County Department of Health - Office of Water Resources

Groundwater Investigative Report (Hauppauge, N.Y.)

Monitoring Well Installation and Sampling Techniques

Suffolk County Department of Health Services (SCDHS) staff installed and sampled a total of seventeen monitoring wells (fourteen profile and three permanent monitoring wells) in accordance with established SCDHS protocols. The two-inch diameter PVC monitoring wells with five foot slot 10 screens were installed using hollow stem augers at locations down gradient of a possible source area (Maggio Printing) (Figure 1). Groundwater samples were collected from the profile wells at ten foot intervals through the water column, starting at the deepest depth and ending at the top of the water table. Three permanent wells were installed and sampled at the same locations as profile wells (MP-4, and MP-5). Tables 2-1, 2-2, 2-3, 2-4, 2-5 and 3 show the sample depth intervals of each monitoring well installed. Each sampling event was performed in accordance with SCDHS protocols and included purging the well a minimum of three well casing volumes and using low flow sampling techniques. Additionally, field parameters including pH, conductivity, temperature and dissolved oxygen were monitored to assure that ambient water was being collected. Sample aliquots were collected for Volatile Organic Compounds (VOCs), Standard Inorganics and Dissolved Metals at each profile well interval.

Laboratory Analysis

Water analyses for this study were conducted by the SCDHS Public Environmental Health Laboratory, which is certified by the New York State Department of Health's Environmental Laboratory Approval Program and the U.S. Environmental Protection Agency's National Environmental Laboratory Approval Program. Quality control measures are detailed in the laboratory's Quality Assurance Program Plan (QAPP). Table 1 below provides a summary of analytical methods that were used, and Appendix A contains laboratory analyses data sheets showing all possible analytes by method.

Analytical Methods Utilized for Groundwater Samples

Analysis	Method	Analysis	Method
Volatile Organic Compounds	EPA 524.2	Standard Inorganics	EPA 300.0
Metals	EPA 200.8		

Table 1 Analytical methods

Results and Findings

Water quality results of samples collected from the 17 monitoring wells are provided in Tables 2-1 through 2-5 and Table 3. The contaminates of concern (COC) include PCE, TCE, TCA and their associated degradation products. High concentrations of these contaminants were found in numerous profile wells at or near the top of the water table. The profile wells are located down gradient of an existing monitoring well (MW-2S) which was installed at 1735 Express Drive North, as part of an onsite groundwater investigation conducted by SCDHS Office of Pollution Control. The chemical makeup of the VOC contamination found in the SCDHS profile wells is consistent with the contamination found in the up-gradient profile well MW-2S. The maximum total VOC concentrations of 11,839 ppb (Figure2) were detected in monitoring well MP-4 (110-115 feet below grade). The depth to water in the profile well area is approximately 90 ft below grade.

As depicted in the cross-section of wells MP-1 through MP-6 A-A' (Figure 4) significant VOC contamination was detected in the upper levels of the aquifer. The width of the plume is over 600 ft and the depth of contamination impacts the upper 50 ft of the aquifer. Additional wells (MP-7 through MP-11) were installed north of MP-6 and detection of VOC were found in all five wells although the concentration were much lower (103 to 553 ppb) and are likely associated with other superfund sites (Glaro) in this area.

A second line of profile wells (MP-12 through MP-14) was installed recently along Rasons Court in order to determine the magnitude, extent and trajectory of the plume. High concentrations of the COCs (17,400 ppb) were found in well MP-13 at the 130-135 foot interval below grade. Figure 3 shows the estimated trajectory range of the plume based on the groundwater contours from the 2006 USGS water table map. It appears the plume will turn northward toward the Nissequogue River System and travel beneath residential areas to the north. A private well survey was performed and no private wells were found in the immediate area (Figure 5). The source water capture area for public supply wells S-65766 and S-54308 (Delores Place well field) are located 100 ft south of the potential source area. The capture area projection was based on average pumping conditions and current pumpage from the supply wells is significantly higher and would likely increase the capture area to include the potential source area. Due to the very high concentration of VOCs in the upper section of the aquifer there is also a potential for soil vapor intrusion. There are commercial buildings, offices, children's camps and residential properties along the plumes trajectory. No soil vapor work was done during this preliminary investigation.

Based upon the enclosed analytical results, it appears the plume is over 600 feet in width and impacts the upper 50 feet of the aquifer.

Table 2-1: Water Quality Analysis Results for Profile Wells

Monitoring Well ID	Screen Interval (feet below grade)	Dissolved Oxygen (mg/L)	Temperature °C	pH	Conductivity (umho)	Total VOC / Screen Interval	1,1-Dichloroethane	Chlorodifluoro methane	trans-1,2-Dichloroethene	cis-1,2-Dichloroethene	Chloroform	1,4-Dichlorobenzene (p)	1,2-Dichloroethane	1,1,1-Trichloroethane	Carbon tetrachloride	tert-Amyl-Methyl-Ether	Trichloroethene	Tetrachloroethene	Freon 113	1,1-Dichloroethene	1,1,2-Trichloroethane	1,1,2,2-Tetrachloroethane	m,P-Dichlorobenzene	1,2-Dichlorobenzene (o)	1,3-Dichlorobenzene (m)	Benzene	Toluene	Dimethyldisulfide	Chlorobenzene	Chloroethane	Total Xylene	1,1,1,2-Tetrachloroethane
MP1	100-105	7.45	14.2	4.52	211	0	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	110-115	6.62	15.6	5.57	1010	0	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	120-125	5.73	15.2	5.82	1138	1.7	<.5	1.2	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	0.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	130-135	5.86	15	6	804	4.6	<.5	4.6	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	140-145	5.86	15.1	6.64	792	6.2	<.5	6.2	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
MP-2	100-105	6.43	14.4	5.69	161	1.4	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	0.8	0.6	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	110-115	6.65	14.5	5.58	210	16.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	0.8	<.5	<.5	6.7	9	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	120-125	6.65	14.5	5.2	886	35.9	<.5	<.5	<.5	<.5	<.5	<.5	<.5	1.9	<.5	<.5	10	24	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	130-135	6.55	14.1	5.33	1049	6.5	<.5	2.8	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	1.1	2.6	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	140-145	6.59	14.5	5.82	1113	3	<.5	1.5	<.5	<.5	0.5	<.5	<.5	<.5	<.5	<.5	<.5	1	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	150-155	6.78	13.9	5.74	1149	6.2	<.5	3.8	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	0.7	1.7	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	160-165	6.99	14.3	5.73	1361	1.6	<.5	1.6	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
MP-3	100-105	6.61	14.3	5.51	118	26.9	<.5	<.5	<.5	0.8	<.5	<.5	<.5	1.1	<.5	<.5	10	15	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	110-115	5.29	13.8	5.5	243	627.5	1.6	<.5	1	33	<.5	<.5	<.5	28	1	<.5	214	346	<.5	2.9	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	120-125	2.23	14.3	5.67	565	303.4	1.1	<.5	0.6	21	<.5	<.5	<.5	25	<.5	<.5	107	147	<.5	1.7	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	130-135	0.97	14.3	5.68	1007	0	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	140-145	1.04	13.6	5.74	1060	51.1	<.5	36	<.5	<.5	<.5	<.5	<.5	1	<.5	<.5	4.5	9.6	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	150-156	1.41	13.8	5.67	1216	0.7	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	0.7	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	160-165	7.26	13.8	5.73	1247	0.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	0.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
MP-4	100-105	3.53	15.6	5.68	203	10867.8	29	<.5	16	1270	15	1	3.8	259	2.4	<.5	3650	5600	<.5	19	<.5	0.6	<.5	0.6	0.7	<.5	<.5	<.5	<.5	<.5	<.5	0.7
	110-115	2.32	15.2	5.42	246	11839.2	73	<.5	27	1960	26	3.9	5.3	587	5.5	<.5	3920	5190	<.5	36	<.5	0.8	<.5	0.9	1.2	0.7	<.5	<.5	<.5	0.8	<.5	1.1
	120-125	5.62	14.4	5.93	393	649	3.1	<.5	1.2	95	1.2	<.5	3.1	22	<.5	<.5	229	293	<.5	1.4	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	130-135	6.12	14.1	6.43	452	16.3	<.5	<.5	<.5	<.5	<.5	<.5	<.5	0.6	<.5	<.5	3.7	12	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	140-145	6.1	13.6	6.32	603	5.3	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	1.4	3.9	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	150-155	4.87	13.9	5.98	766	1.9	<.5	1.9	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	160-165	7.08	13.7	5.68	908	41	<.5	41	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5

Table 2-2: Water Quality Analysis Results for Profile Wells (Continued)

Monitoring Well ID	Screen Interval (feet below grade)	Dissolved Oxygen (mg/L)	Temperature °C	pH	Conductivity (umho)	Total VOC / Screen Interval	1,1-Dichloroethane	Chlorodifluoro methane	trans-1,2-Dichloroethene	cis-1,2-Dichloroethene	Chloroform	1,4-Dichlorobenzene (p)	1,2-Dichloroethane	1,1,1-Trichloroethane	Carbon tetrachloride	tert-Amyl-Methyl-Ether	Trichloroethene	Tetrachloroethene	Freon 113	1,1-Dichloroethene	1,1,2-Trichloroethane	1,1,2,2-Tetrachloroethane	m,P-Dichlorobenzene	1,2-Dichlorobenzene (o)	1,3-Dichlorobenzene (m)	Benzene	Toluene	Dimethyldisulfide	Chlorobenzene	Chloroethane	Total Xylene	1,1,1,2-Tetrachloroethane
MP-5	90-95	6.18	14.1	5.75	124	35.3	<.5	<.5	<.5	1.6	<.5	<.5	<.5	0.7	<.5	<.5	10	23	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	100-105	4.8	14.2	6.15	106	84.8	<.5	<.5	<.5	4.8	<.5	<.5	<.5	3	<.5	<.5	26	51	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	110-115	3.26	14.2	6.12	184	4818.6	18	<.5	6.2	372	6.2	0.5	0.7	179	8.3	<.5	1590	2620	<.5	17	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	0.7
	120-125	4.7	13.7	5.97	240	3569.1	19	<.5	5.3	337	6.1	0.6	1	108	2.8	<.5	1240	1840	<.5	8.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	0.8
	130-135	2.35	13.4	5.78	251	326.3	1.5	<.5	<.5	37	0.7	<.5	<.5	9.9	1.5	<.5	123	152	<.5	0.7	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	140-145	1.7	13.1	6.26	227	2.3	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	0.7	1.6	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	150-155	3	12.8	6.09	414	1.6	<.5	0.7	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	0.9	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	160-165	6.06	12.8	6.52	795	31.4	<.5	29	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	0.6	1.8	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
MP-6	90-95	5.36	15.9	5.53	105	4.1	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	1.2	2.9	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	100-105	4.55	15.6	5.93	199	10.6	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	3.3	7.3	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	110-115	4.58	15.7	6.11	409	8.9	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	2.2	6.7	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	120-125	5.34	15.2	5.62	222	173.6	<.5	<.5	<.5	1.7	<.5	<.5	<.5	6.4	<.5	<.5	43	122	<.5	0.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	130-135	7.2	15.4	6.94	92	730.7	1.5	<.5	0.6	32	0.6	<.5	<.5	26	0.7	<.5	237	431	<.5	1.3	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	140-145	5.75	15.3	7.12	91	113.9	<.5	<.5	<.5	4.9	<.5	<.5	<.5	4	<.5	<.5	37	68	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	150-155	5.11	14.5	6.8	373	0	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	160-165	6.56	14.1	6.75	609	0.5	<.5	<.5	<.5	<.5	0.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
MP-7	90-95	5.86	14.3	6.71	374	254.9	<.5	<.5	<.5	8.7	<.5	<.5	<.5	9.7	0.7	<.5	52	183	<.5	0.8	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	100-105	6.78	14	7.26	235	558.4	0.8	<.5	<.5	22	<.5	<.5	<.5	20	1	<.5	138	375	<.5	1.6	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	110-115	7.47	14.6	8.06	179	149.1	<.5	<.5	<.5	6.2	<.5	<.5	<.5	4.9	<.5	<.5	32	106	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	120-125	5.65	14.9	7.08	834	0	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	130-135	4.85	14.6	7.26	105	0	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	140-145	5.38	14	7.42	245	0	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	150-155	5.49	13.7	7.84	490	0	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	160-165	6.75	14.5	9.55	504	0.7	<.5	<.5	<.5	<.5	0.7	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5

Table 2-3: Water Quality Analysis Results for Profile Wells (Continued)

Monitoring Well ID	Screen Interval (feet below grade)	Dissolved Oxygen (mg/L)	Temperature °C	pH	Conductivity (umho)	Total VOC / Screen Interval	1,1-Dichloroethane	Chlorodifluoro methane	trans-1,2-Dichloroethene	cis-1,2-Dichloroethene	Chloroform	1,4-Dichlorobenzene (p)	1,2-Dichloroethane	1,1,1-Trichloroethane	Carbon tetrachloride	tert-Amyl-Methyl-Ether	Trichloroethene	Tetrachloroethene	Freon 113	1,1-Dichloroethene	1,1,2-Trichloroethane	1,1,2,2-Tetrachloroethane	m,P-Dichlorobenzene	1,2-Dichlorobenzene (o)	1,3-Dichlorobenzene (m)	Benzene	Toluene	Dimethyldisulfide	Chlorobenzene	Chloroethane	Total Xylene	1,1,1,2-Tetrachloroethane
MP-8	80-85	5.25	16.2	6.17	185	11.9	0.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	3.2	8.2	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	90-95	5.27	17.1	5.91	178	47.8	2.6	<.5	<.5	0.8	<.5	<.5	<.5	1.4	<.5	<.5	13	30	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	100-105	5.1	16.2	6.03	377	44.7	1.7	<.5	<.5	0.8	<.5	<.5	<.5	1.2	<.5	<.5	12	29	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	110-115	5.09	16	6.37	388	65.2	2.3	<.5	<.5	1.1	<.5	<.5	<.5	1.8	<.5	<.5	21	39	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	120-125	4.95	15.9	6.26	471	133.3	1.8	<.5	<.5	2.4	<.5	<.5	<.5	4.1	<.5	<.5	38	87	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	130-135	4.92	15.1	6.27	469	101.2	2.1	<.5	<.5	1.8	<.5	<.5	<.5	3.3	<.5	<.5	30	64	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	140-145	5.34	14.9	8.55	192	3.7	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	1.1	2.6	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	150-155	5.34	14.9	6.3	354	0	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	160-165	5.18	14.6	6.41	455	0.6	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	0.6	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
MP-9	80-85	6.15	14.6	6.59	71	0.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	0.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	90-95	5.92	14.3	6.49	318	74.4	8.3	<.5	<.5	1.3	<.5	<.5	<.5	2.8	<.5	<.5	17	45	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	100-105	6.36	14.3	6.48	389	102.5	8.1	<.5	<.5	1.7	<.5	<.5	<.5	3.7	<.5	<.5	27	62	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	110-115	4.89	14.2	7.35	100	0.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	0.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	120-125	6.17	15.2	8.23	176	0	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	130-135	4.05	14.7	6.06	167	0	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	140-145	4.63	15.3	5.9	383	4	<.5	<.5	<.5	<.5	4	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	150-155	4.73	15.3	5.84	434	9.5	<.5	<.5	<.5	<.5	9.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	160-165	2.54	15.3	6.16	648	10.6	<.5	<.5	<.5	<.5	7	<.5	<.5	<.5	<.5	<.5	<.5	0.7	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
MP-10	80-85	5.09	16.2	5.79	244	12	<.5	<.5	<.5	1.2	<.5	<.5	<.5	1.5	<.5	<.5	2.7	6.6	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	90-95	5.28	16	5.6	242	177.7	3.5	<.5	<.5	26	<.5	<.5	<.5	22	<.5	<.5	33	91	<.5	2.2	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	100-105	5.36	16	5.54	350	212.7	6.4	<.5	<.5	30	<.5	<.5	<.5	11	<.5	<.5	30	134	<.5	1.3	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	110-115	4.53	15.8	5.29	440	189.6	4.6	<.5	<.5	13	<.5	<.5	<.5	8.9	<.5	<.5	31	131	<.5	1.1	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	120-125	5.25	15.4	5.21	439	50.2	<.5	<.5	<.5	1.6	<.5	<.5	<.5	2.1	<.5	<.5	8.6	35	<.5	2.9	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	130-135	5.97	15.2	5.4	498	23.8	1.9	<.5	<.5	0.6	<.5	<.5	<.5	1.1	<.5	<.5	4.2	16	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	140-145	4.45	15	5.63	466	13.8	<.5	<.5	<.5	<.5	11	<.5	<.5	<.5	<.5	<.5	0.7	2.1	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	150-155	0.79	14.8	5.49	437	13.3	<.5	<.5	<.5	<.5	11	<.5	<.5	<.5	<.5	<.5	<.5	1.7	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5

Table 2-4: Water Quality Analysis Results for Profile Wells (Continued)

Monitoring Well ID	Screen Interval (feet below grade)	Dissolved Oxygen (mg/L)	Temperature °C	pH	Conductivity (umho)	Total VOC / Screen Interval	1,1-Dichloroethane	Chlorodifluoro methane	trans-1,2-Dichloroethene	cis-1,2-Dichloroethene	Chloroform	1,4-Dichlorobenzene (p)	1,2-Dichloroethane	1,1,1-Trichloroethane	Carbon tetrachloride	tert-Amyl-Methyl-Ether	Trichloroethene	Tetrachloroethene	Freon 113	1,1-Dichloroethene	1,1,2-Trichloroethane	1,1,2,2-Tetrachloroethane	m,P-Dichlorobenzene	1,2-Dichlorobenzene (o)	1,3-Dichlorobenzene (m)	Benzene	Toluene	Dimethyldisulfide	Chlorobenzene	Chloroethane	Total Xylene	1,1,1,2-Tetrachloroethane
MP-11	80-85	1.14	16.1	6.06	192	136.9	1.9	<.5	<.5	16	<.5	<.5	<.5	19	<.5	<.5	36	62	<.5	2	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	90-95	4.91	16.2	5.45	256	269.4	1.4	<.5	<.5	32	<.5	<.5	<.5	39	<.5	<.5	75	118	<.5	4	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	100-105	5.78	16.1	5.36	357	50.6	2.8	<.5	<.5	7	<.5	<.5	<.5	5.2	<.5	<.5	13	22	<.5	0.6	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	110-115	5.47	15.8	5.26	524	93.8	2.7	<.5	<.5	19	<.5	<.5	<.5	11	<.5	<.5	24	36	<.5	1.1	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	120-125	5.07	15.2	5.33	418	8.9	0.8	<.5	<.5	1.6	<.5	<.5	<.5	0.8	<.5	<.5	1.6	4.1	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	130-135	NA	14.8	5.49	476	2.3	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	1.1	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	140-145	0.16	15	5.41	465	6.3	<.5	0.6	<.5	<.5	2.4	<.5	<.5	<.5	<.5	<.5	<.5	1.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	150-155	0.38	14.7	5.6	401	8.8	<.5	4.4	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	3.6	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
MP-12	100-105	6.18	16.1	5.03	219	7.7	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	1.7	6	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	110-115	4.85	15.8	5.24	94	55.4	<.5	<.5	<.5	1.5	<.5	<.5	<.5	0.9	<.5	<.5	17	36	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	120-125	4.26	15.7	5.27	150	1138.6	2.8	<.5	1.2	41	1.4	<.5	<.5	34	1.9	<.5	400	652	<.5	4.3	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	130-135	4.38	15.5	5.43	205	2907.2	10	<.5	3.1	201	5	<.5	0.9	66	2.3	<.5	1090	1520	<.5	8.2	<.5	0.7	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	140-145	0.39	15.3	5.69	199	45.7	<.5	<.5	<.5	2.9	<.5	<.5	<.5	0.8	<.5	<.5	17	25	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	150-155	0.79	14.9	5.99	346	5.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	1.8	3.7	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	160-165	4.72	14.6	5.88	562	2.4	<.5	2.4	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
MP-13	100-105	6.18	15.5	5.66	88	46.9	<.5	<.5	<.5	0.9	<.5	<.5	<.5	<.5	<.5	<.5	11	35	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	110-115	6.4	15.3	5.51	199	52.3	<.5	<.5	<.5	1.7	<.5	<.5	<.5	0.6	<.5	<.5	18	32	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	120-125	5.41	15.2	5.21	179	556.1	1.1	<.5	<.5	25	0.5	<.5	<.5	15	0.5	<.5	200	312	<.5	2	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	130-135	1.42	15.1	5.39	277	17400	35	<.5	11	844	16	5.1	7.6	240	5.9	<.5	6200	10000	<.5	30	<.5	1.5	<.5	1	1	0.7	<.5	<.5	<.5	<.5	<.5	1.2
	140-145	0.22	14.9	5.53	356	9190.2	32	<.5	7.3	583	12	3.7	7.7	165	0.5	<.5	3320	5030	<.5	21	<.5	1.7	<.5	2.2	0.7	<.5	0.6	<.5	<.5	<.5	2.3	0.5
	150-155	0.65	14.8	5.86	384	493.2	1.4	<.5	<.5	36	0.5	<.5	<.5	7.9	<.5	<.5	199	245	<.5	<.5	<.5	<.5	<.5	0.9	<.5	<.5	<.5	<.5	<.5	<.5	2.5	<.5
	160-165	4.65	14.5	5.7	568	5.8	<.5	4.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	1.3	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5

Table 2-5: Water Quality Analysis Results for Profile Wells (Continued)

Monitoring Well ID	Screen Interval (feet below grade)	Dissolved Oxygen (mg/L)	Temperature °C	pH	Conductivity (umho)	Total VOC / Screen Interval	1,1-Dichloroethane	Chlorodifluoro methane	trans-1,2-Dichloroethene	cis-1,2-Dichloroethene	Chloroform	1,4-Dichlorobenzene (p)	1,2-Dichloroethane	1,1,1-Trichloroethane	Carbon tetrachloride	tert-Amyl-Methyl-Ether	Trichloroethene	Tetrachloroethene	Freon 113	1,1-Dichloroethene	1,1,2-Trichloroethane	1,1,2,2-Tetrachloroethane	m,P-Dichlorobenzene	1,2-Dichlorobenzene (o)	1,3-Dichlorobenzene (m)	Benzene	Toluene	Dimethyldisulfide	Chlorobenzene	Chloroethane	Total Xylene	1,1,1,2-Tetrachloroethane
MP-14	100-105	6.16	15.6	5.65	70	11.6	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	3.1	8.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	110-115	5.51	15.1	5.34	283	10.7	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	2.6	8.1	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	120-125	5.58	15.3	5.17	277	61	<.5	<.5	<.5	4.1	<.5	<.5	<.5	0.9	<.5	<.5	21	35	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	130-135	4.71	15.2	5.16	314	1309.8	4.9	<.5	1.5	122	1.8	<.5	0.5	35	<.5	<.5	463	677	<.5	4.1	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	140-145	4.5	15.1	5.41	362	1817.8	7	<.5	2.5	195	2.4	<.5	<.5	53	0.8	<.5	751	798	<.5	7.9	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	150-155	4.43	15	5.53	375	6.6	<.5	0.6	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	1.4	4.6	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	160-165	5.72	15	5.93	568	24.7	<.5	18	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	1.6	5.1	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5

Table 3: Water Quality Analysis Results for Permanent Wells

Monitoring Well ID	Screen Interval (feet below grade)	Dissolved Oxygen (mg/L)	Temperature °C	pH	Conductivity (umho)	1,1-Dichloroethane	trans-1,2-Dichloroethene	cis-1,2-Dichloroethene	Chloroform	1,4-Dichlorobenzene (p)	1,2-Dichloroethane	1,1,1-Trichloroethane	Carbon tetrachloride	Trichloroethene	Tetrachloroethene	1,1-Dichloroethene	1,1,2,2-Tetrachloroethane	1,2-Dichlorobenzene (o)	1,3-Dichlorobenzene (m)	Benzene	Chloroethane	1,1,1,2-Tetrachloroethane
MP-4M	100-105	5.26	16.4	5.43	215	18	5.1	458	7.6	<.5	1.8	119	1.7	1840	2740	9.2	<.5	<.5	<.5	<.5	<.5	<.5
MP-4MA	110-115	2.32	15.8	5.11	238	65	26	1740	21	4	4.7	580	2.7	4680	7890	33	0.7	0.9	1.1	0.5	0.6	0.6
MP-5M	120-125	3.79	15.7	5.56	165	7.6	2.9	137	2.6	<.5	<.5	94	4.2	981	1800	9.4	<.5	<.5	<.5	<.5	<.5	<.5

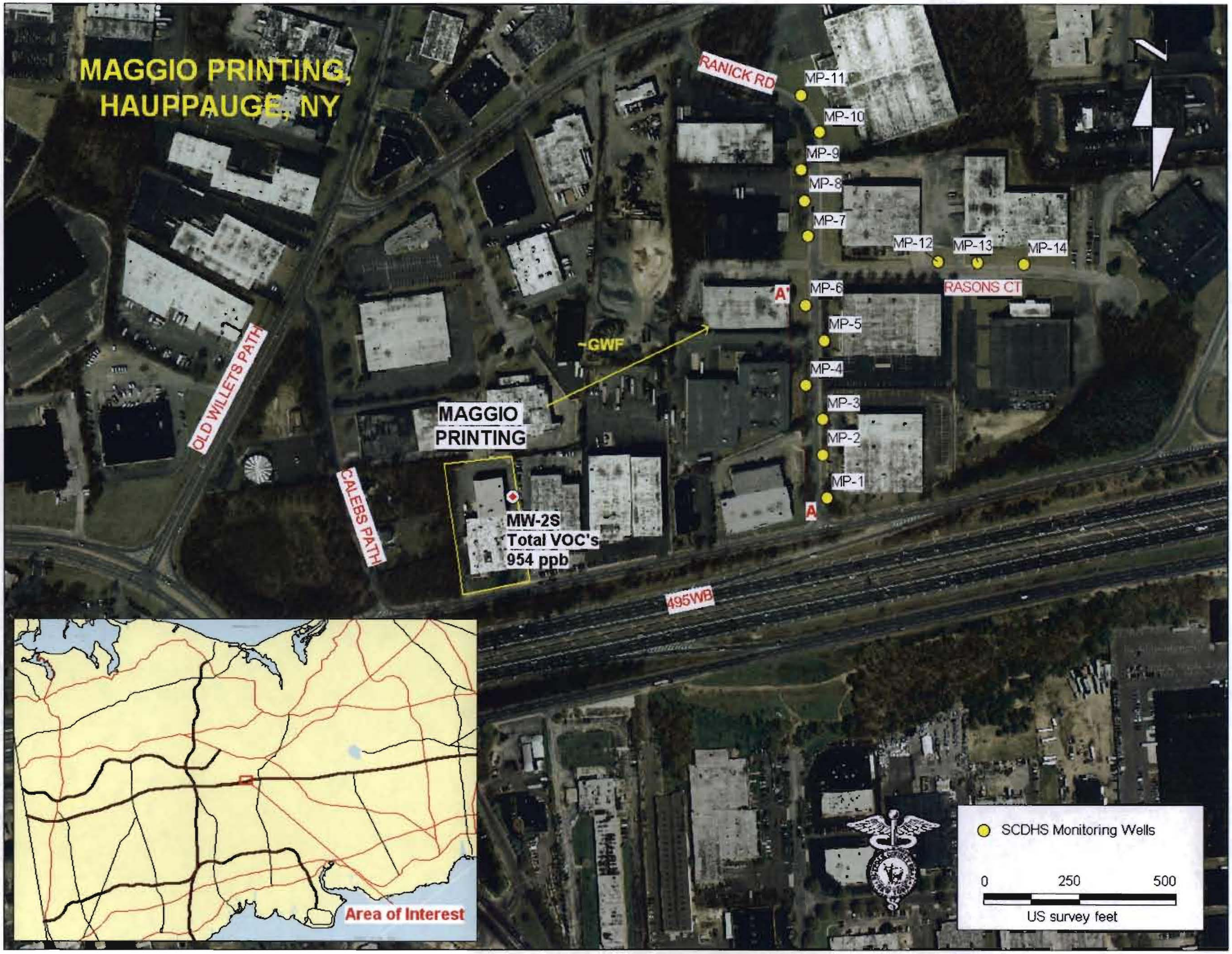

Figure 1: Locations of SCDHS Monitoring Wells

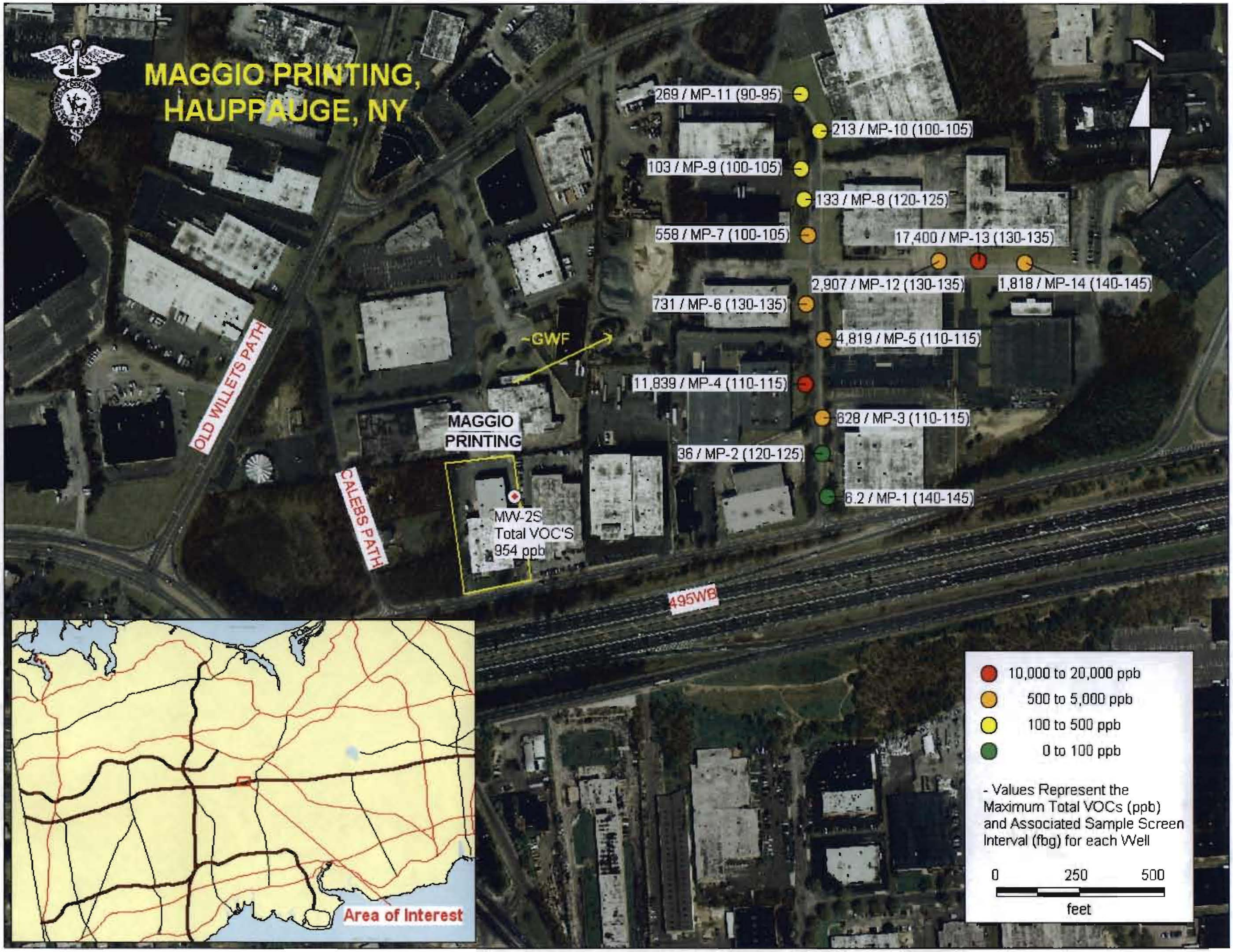

Figure 2: Shows the Maximum Total VOC Concentration (ppb) and Associated Sample Screen Interval (feet below grade) for each Well

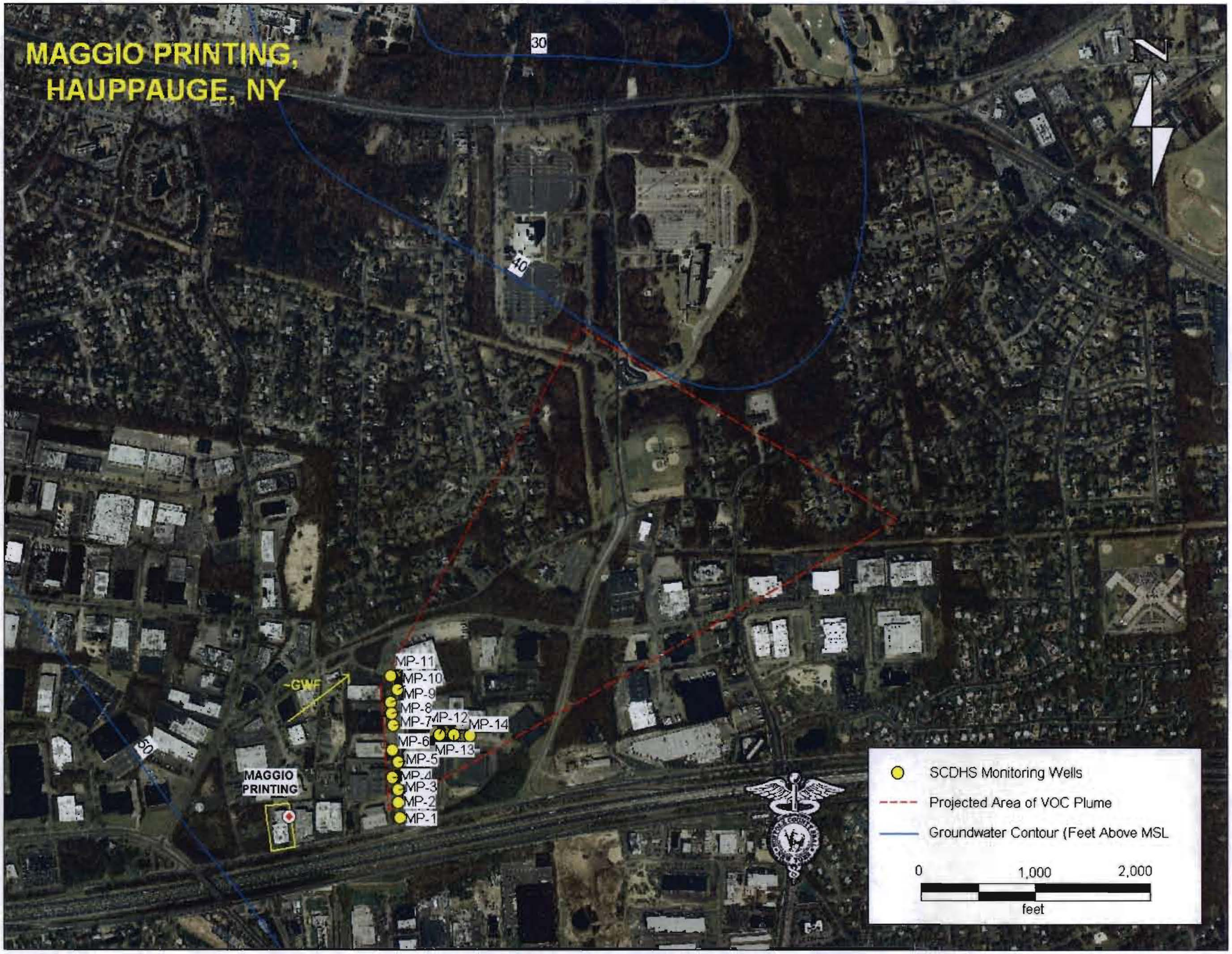

Figure 3: Shows SCDHS Monitoring Wells and Projected Area of VOC Plume

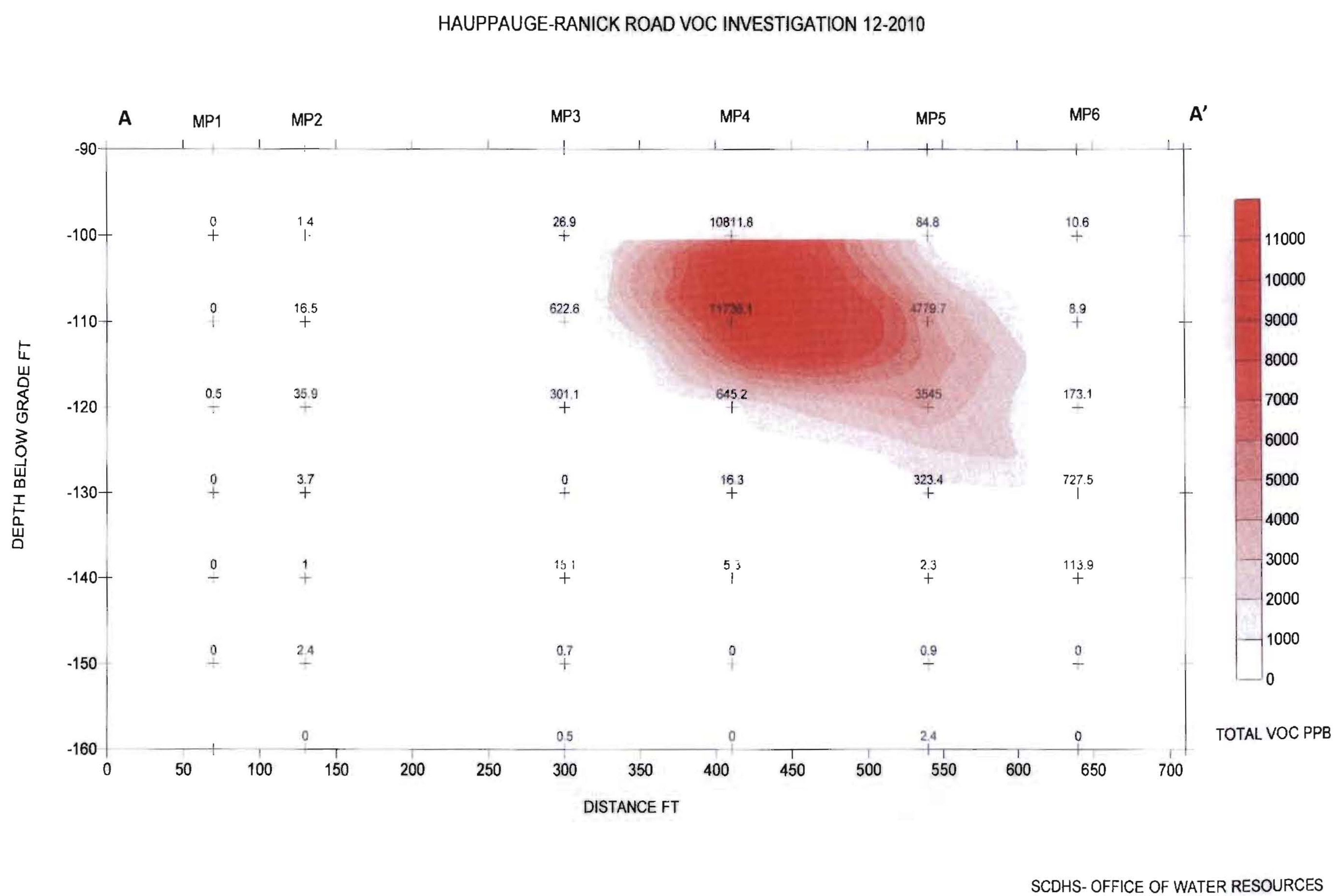

Figure 4: Cross-Section of MWs MP-1 through MP-6 Showing Horizontal and Vertical Extent of VOC Plume

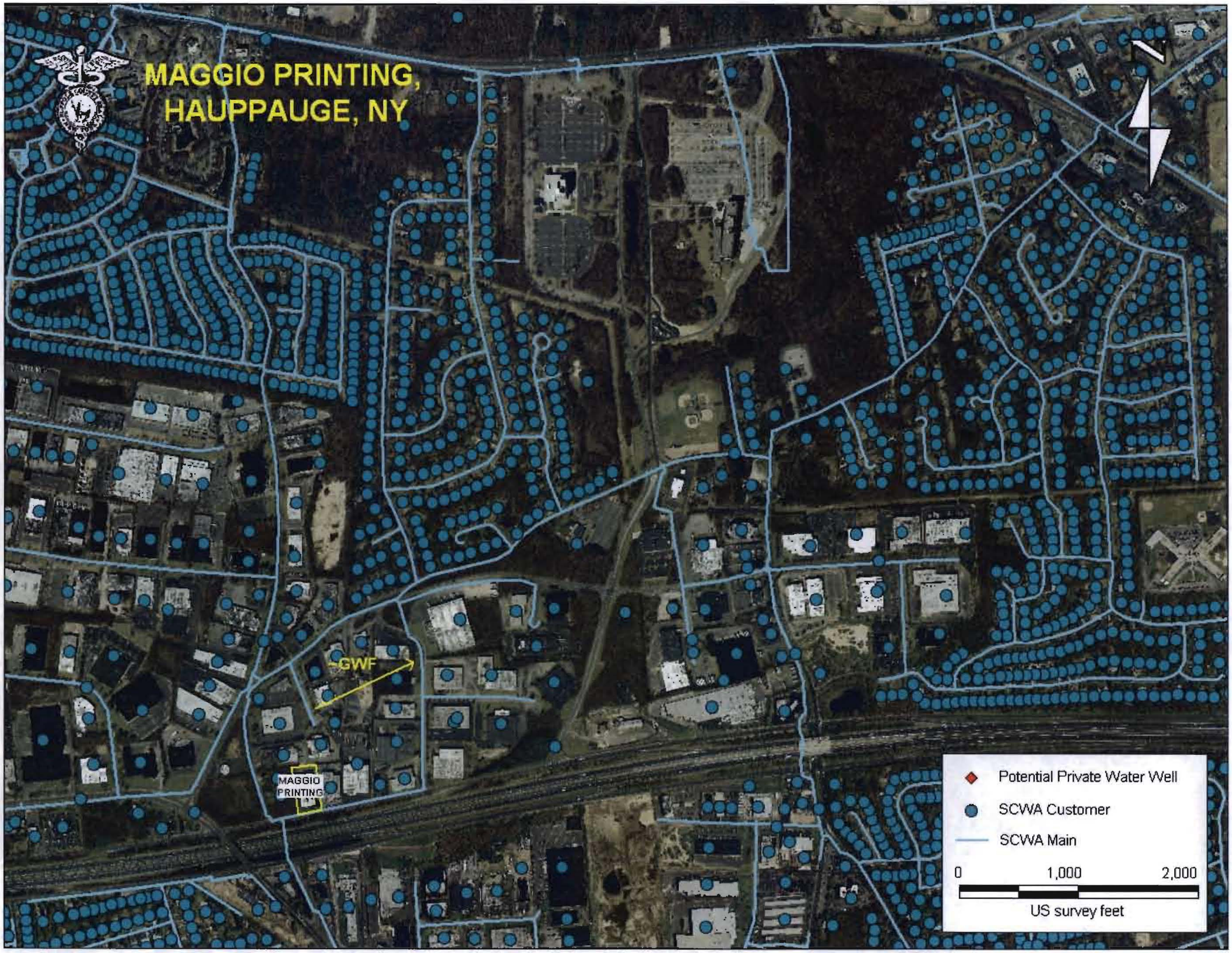

Figure 5: Private Water Well Survey, Downgradient of Maggio Printing