PRE-DESIGN INVESTIGATION REPORT
Apple Valley Shopping Center – RD
(NYSDEC Site Number 314084)

NYSDEC STANDBY ENGINEERING CONTRACT
Work Assignment #D007625-15

PREPARED FOR
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ACRONYMS AND ABBREVIATIONS

6NYCRR	Title 6 of the Official Compilation of New York Codes, Rules and Regulations
AES	Associated Environmental Services Inc.
amsl	above mean sea level
ASP	Analytical Services Protocol
bgs	below ground surface
cis-1,2 DCE	cis-1,2 dichloroethene
DCDOH	Dutchess County Department of Health
DVS	Data Validation Services
EPA	Environmental Protection Agency
FAP	Field Activities Plan
gpm	gallons per minute
GWE&TS	groundwater extraction and treatment system
HASP	Health and Safety Plan
HSA	hollow stem auger
IDW	investigative derived waste
IRM	interim remedial measure
ISCO	in situ chemical oxidation
ND	non-detect
NTU	Nephelometric Turbidity Units
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
PCE	tetrachloroethylene
PDI	Pre-Design Investigation
PID	photoionization detector
PPE	personal protective equipment
PVC	polyvinyl chloride
QAPP	Quality Assurance Project Plan
RAOs	Remedial Action Objectives
RD	Remedial Design
RI	Remedial Investigation
ROD	Record of Decision
SSDS	Sub Slab Depressurization System
Sterling	Sterling Environmental Engineering, P.C.
SVE	Soil Vapor Extraction
TAL	Target Analyte List
TCE	trichloroethylene
VOCs	volatile organic compounds
York	York Analytical Laboratories

1 PURPOSE AND OBJECTIVES

1.1 Purpose

Henningson, Durham & Richardson Architecture and Engineering, P.C. (HDR) has completed this Pre-Design Investigation (PDI) Report as part of the remedial design (RD) for the Apple Valley Shopping Center (NYSDEC Site #314084) site under Superfund Standby Engineering Contract No. D007625-15. The purpose of this work assignment is to collect sufficient additional site data to design an enhancement to the existing interim remedial measure (IRM) that consists of a groundwater extraction and treatment (GWE&T) system for the bedrock aquifer. Previous investigations have shown that the groundwater and soil vapor on the site have been impacted with chlorinated volatile organic compounds (VOCs) which were used by one or more dry cleaning establishments located in the shopping center.

1.2 Objectives

The objectives of the PDI included:

- Refining the distribution of the chlorinated VOC groundwater contamination in the bedrock aquifer;
- Evaluation of the potential for vapor intrusion into nearby residential structures;
- Evaluating the degree of hydraulic connection within the bedrock aquifer; and
- Determining aquifer characteristics and capture zones within the bedrock aquifer at the site though aquifer pump testing.

1.3 Site Background

1.3.1 Site Location and Description

The Apple Valley Shopping Center is located at 702 Freedom Plains Road (Route 55) in LaGrange, Dutchess County, New York (Figure 1). The site is approximately 4 acres in size with two primary commercial buildings that house 20 various retail businesses. The site is zoned for commercial use. Residential properties exist along the southern border of the site, with a small wooded area and unnamed stream located in the southeast corner of the site. A small treatment building containing the GWE&T system air stripper is located directly behind the shopping center with the treated effluent discharging into a wetland that eventually discharges to an unnamed stream (Figure 2). Additional details on the existing GWE&T system are provided below.

1.3.2 Site History

Construction of the Apple Valley Shopping Center occurred in 1967 – 1968, with multiple commercial and retail businesses operating at the shopping center since that time. Several groundwater supply wells operated on-site to service the shopping plaza until the installation of municipal water hookups in early 1999. From 1968 until the early 1990s, a dry cleaning business, as well as a laundromat containing a coin-operated dry cleaning machine, was located at the site. Beginning in 1988, Investigations by the Dutchess County Department of Health (DCDOH) revealed groundwater contaminated with PCE and its various breakdown products in both on-site water supply wells and in residential wells to the south of the site. Further investigations by the NYSDOH and the NYSDEC revealed elevated levels of VOCs (primarily PCE) detected in on-site soils, and in soil gas and indoor air samples of several on-site businesses surrounding the dry cleaners. These investigations revealed the source of PCE contamination to be inadequate storage of PCE in the laundromat, as well as spills due to poor material management from the PCE supplier. As a result of these investigations, the site was listed as a Class 2 Inactive Hazardous Waste Disposal Site in 1990.

1.3.3 Summary of Previous Investigations and Remedial Actions

In September and November 1988, an initial investigation conducted by the DCDOH revealed elevated levels of PCE, TCE and cis-1, 2-DCE in the Apple Valley Shopping Center supply well AV-2 and in a residential well located in the neighboring residential parcels. The concentrations of these VOCs exceeded the NYS standards for public drinking water. The results of this initial investigation facilitated the installation of a carbon filter system to treat the shopping center well water, and the installation of a new supply well (AV-3), for use until AV-2 was brought back online in 1992 with a permanent treatment system. Based on the analytical results of the residential well tested in 1988, the DCDOH conducted an expanded investigation involving 32 neighboring homes. Site related contaminants were found in multiple residential wells and in quantities that exceeded NYS drinking water standards, prompting the DCDOH to issue health advisories and distribute bottled water to those affected residents.

A former supply well, AV-1, was sampled in September 1990. Analytical results showed PCE at 5,150 µg/L, TCE at 74 µg/L, cis 1,2-DCE at 110 µg/L, and 1,1,2-TCA at 45 µg/L which exceeds the NY drinking water standard of 5 µg/L for each of those compounds. Elevated levels of the same VOCS were also detected in soil vapor in the area behind the dry cleaners, and within a former leach field behind the shopping center during investigations in February 1991 and May 1993. Follow-up soil sampling was conducted in August 1991, April 1993 and January 1997, with results showing low level VOC contamination behind and underneath the laundromat and septic leach field, with higher concentrations of soil contamination beneath and behind the dry cleaner facility.

In September 1991, the site owner installed granular activated carbon (GAC) filter systems on eight of the impacted residential wells to address site-related contaminants in household drinking water, and two GWE&T systems utilizing air strippers to address groundwater contamination related to the site. The GWE&T systems provided potable water to two adjacent residences located behind the shopping center and to the shopping center itself. The site owner was ordered to install, maintain and monitor these units by the USEPA. In early 1999, the shopping center received a municipal water supply connection and the on-site groundwater was no longer used for drinking water purposes. Since the groundwater was no longer used for drinking, the on-site GWE&T system discharge was redirected to the wetland to the rear of the shopping area. In 2001, the GWE&T system servicing the residential parcels was decommissioned.

From April 2001 to January 2002, a Remedial Investigation/Feasibility Study (RI/FS) was conducted by NYSDEC to define the nature and extent of any contamination resulting from previous activities at the site. Results of the RI portion of the investigation revealed the presence of PCE in seven of the ten subsurface soil samples. Several soil samples contained degradation products of PCE as well as several polyaromatic hydrocarbons (PAHS). However, all contaminants were found below their applicable SCO. Groundwater in the bedrock aquifer was found to contain high levels of PCE and its breakdown products beginning at the water table to 158 ft bgs. The highest on-site contamination was found in MW-4A, located behind the laundromat, which exhibited a total VOC concentration of 9,003 µg/L (8,690 µg/L PCE). Groundwater sampling of site monitoring wells in January 2002 yielded VOC contaminant ranges of 5 µg/L to 2,600 µg/L for PCE, 32 µg/L to 130 µg/L for TCE, and 19 µg/L to 74 µg/L for cis 1,2-DCE. Analytical results of indoor air sampling indicated elevated PCE concentrations above NYSDOH guidelines were found in the kitchen of the neighboring pizzeria and in the rear storeroom of an adjacent liquor store. No site-related contamination was found in surface water or in surface sediments.

In 2006, a GWE&S IRM was implemented that expanded the number of extraction wells used by the operating air stripper from one to four requiring the construction of three additional extraction wells (RW-1, RW-2 and RW-3) and two monitoring wells. Maximum concentrations of total site-related VOCs found in the three extraction wells were 4,742 µg/L at a depth of 9-20 ft bgs in RW-1, 14,329 µg/L ft bgs at a depth of 40-50 ft bgs in RW-2, and 2,300 µg/L at a depth of 60-70 ft bgs in RW-3. At the present time the groundwater extraction system is composed of four bedrock wells (RW-1, RW-2, RW-3 and AV-2) the vertical and lateral extent of capture for the system is poorly defined other than the fact that AV-2 (the highest yielding well) appears to maintain hydraulic control in the area.

Due to the preliminary indoor air findings from the RI, indoor air and sub-slab sampling events occurred in multiple adjacent businesses in January 2005, February 2005, April 2005, November 2005, June 2006, and January 2007. The PCE concentrations were found to potentially fluctuate based on the operational status of the GWE&T system. For example, in January 2005, while the GWE&T system was operational, the sub-slab PCE concentration beneath the pizzeria was measured at 160 µg/m^3. In January 2006, while the GWE&T system was non-operational while undergoing upgrades, the PCE concentration was measured at 307,000 µg/m^3. Indoor air PCE concentrations also fluctuated from 28 µg/m^{3}to 584 µg/m^3 over the same period. That trend was not as defined in other adjacent locations, particularly businesses in the westernmost portion of the shopping center.

Due to high levels of air contamination, a second IRM was implemented at the site in February 2006. This IRM consisted of the installation of two sub-slab depressurization systems (SSDSs) at two locations in the shopping center. These systems restricted the migration of contaminant vapors into the building, mitigating inhalation as a potential exposure pathway.

1.4 Site Geology and Hydrogeology

1.4.1 Regional and Site Geology

The site is located in the town of LaGrange, Dutchess County, New York. The surficial geology of the site is composed of layer (15 to 30 ft. thick) of unconsolidated sand, silt, and gravel with some cobbles. These glacial deposits are primarily tills deposited during the northward retreat of the Late Wisconsinan continental glacier (NYSM, 1989). To the west of the site, the surficial deposits primarily consist of glaciolacustrine sediments from Glacial Lake Albany. The glacial deposits overlie highly friable Ordovician shale and slate bedrock from the Stuyvesant Falls Formation, and the Mount Merino and Indian River Formations. Generally the bedrock is 15 to 30 ft bgs and are highly weathered along its surface. The bedrock generally exhibits weak to moderate bedding and relatively limited fracturing especially with depth. Bedding and bedding plane fractures were typically relatively steeply inclined (on the order of 45 degrees) and in certain locations / depth intervals exhibits a higher fracture density and poor rock quality.

The soil series observed within the unpaved areas of the site is reflective of the surficial geology. The majority of the site contains Pittstown silt loam, 3 to 8 percent slopes, which are moderately well drained soils that are formed in glacial till deposits. The remainder of the soil found at the site is the poorly drained Canandaigua Silt Loam, formed in lacustrine deposits, and occupy the wetlands/stream located behind the shopping center (http://websoilsurvey.sc.egov.usda.gov/).

1.4.2 Regional and Site Hydrogeology

The regional hydrogeology of the site consists of shallow groundwater contained within the thin layer of unconsolidated glacial deposits, and deeper groundwater contained within the highly fractured bedrock that becomes confined with depth. The groundwater contained within the bedrock aquifer in Dutchess County is generally within acceptable drinking water quality and yields sufficient quantities of water for residential and in most cases commercial use. This aquifer is a typical source of potable drinking water for many residences, although the incidence of private well usage is lower near urban, commercial or industrial areas due to contamination and ability to connect to a municipal water supply. The shallow groundwater in the unconsolidated aquifer is generally not considered suitable for private drinking water due to lower, varied yields and a higher risk of contamination. Groundwater flow generally follows the overall surficial topography and flows toward the Hudson River, several miles to the west.

At the Apple Valley Shopping Center, the water levels of the shallow groundwater contained within the unconsolidated aquifer are highly variable. During the RI investigation, this water level was found to range between 8.8 to 12.5 ft bgs along the southern boundary of the site. However, these values tended to fluctuate temporally as some wells measured as “dry” during several monthly gauging events. Recharge of the shallow groundwater is limited due to the paved nature of a majority of the site. Groundwater within the bedrock aquifer can be found 10 to 60 ft bgs, and are transmitted through numerous water-bearing fractures. Many of these fractures were identified during the RI as producing over 1 gpm during discrete interval packer testing. Groundwater flow follows the regional trend towards the west - southwest.

As outlined in the discussion on the previous investigations at this site the bedrock aquifer is no longer used as source of water for the Apple Valley shopping Center. After 1999, the site was hooked up to the municipal system in the area and the AV series of wells no longer used for drinking water. Municipal water lines were also extended to the Woodbridge Estates subdivision, which is located to the rear of the shopping center. All lots in this subdivision have hooked up to the municipal system with the exception of Lot 6.

1.5 Remedial Action Objectives

The Remedial Action Objectives (RAOs) for the site identified in the December 2008 ROD are:

RAOs for Public Health Protection

- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards (PCE – 5 µg/L, TCE – 5 µg/L, and DCE – 5 µg/L); and
- Prevent contact with, or inhalation of, volatiles, from contaminated groundwater.

RAOs for Environmental Protection

- Restore ground water aquifer to pre-disposal/pre-release conditions, to the extent practicable;
- Remove the source of groundwater contamination.

The selected remedy outlined in the ROD consists of hydraulic containment using the existing IRM GWE&T system with possible system enhancement to reduce the length of time necessary to meet the RAOs. The purpose of the PDI is to inform and provide data to assist with the design and implementation of possible enhancements specified in the ROD (hydraulic/pneumatic fracturing, additional wells, or changes to the well depths) to the existing IRM GWE&T system.

2 PRE-DESIGN INVESTIGATION FIELD ACTIVITIES

All of the field activities were conducted in conformance with the HDR Program Field Activities Plan (FAP), Health and Safety Plan (HASP), and Quality Assurance Project Plan (QAPP). The PDI included two rounds of groundwater sampling, installation of bedrock monitoring wells, a soil vapor intrusion sampling event, and an aquifer pumping test. The laboratory analytical data summary and NYSDEC Analytical Services Protocol (ASP) Category B reports for all collected groundwater and soil vapor samples can be found on a compact disk (CD), provided as Appendix H, the last appendix of this Report.

2.1 Installation of Bedrock Monitoring Wells

Eight additional bedrock monitoring wells were installed at the site by HDR's drilling subcontractor Associated Environmental, Inc. between December 8, 2014 and April 15, 2015. Due to very severe winter conditions during the drilling program the new well installations progressed discontinuously, with delays spanning multiple days to several weeks during prolonged periods of cold weather.

To allow detailed examination of the bedrock geology and hydrogeology of the fractured bedrock at the site, wire line HQ diamond core drilling was selected as the drilling method for this portion of the investigation. Rock cores retrieved as the boreholes for the wells were advanced were inspected to characterize fracture density and orientation and to check for indications that fracture or fracture zones served as pathways for groundwater flow. Boring logs describing the details of these inspections and characterization of the bedrock are contained in Appendix A along with the well construction/development logs for each well.

At each new well location drilling progressed according to the following sequence:

- 6.25-in. ID hollow stem augers were advanced through the overburden material overlying bedrock. The top surface of competent bedrock was typically encountered at a depth of approximately 15 ft.

- Upon reaching the target depth for each location a rock socket was advanced by drilling with a 6-in diameter air rotary bit approximately 5-ft into competent bedrock. A 4-in diameter steel spin casing was installed and tremie grouted in place in the rock socket. The grout was allowed to harden for a minimum of 24-hrs prior to continuing with the final step of the drilling sequence.
- Well drilling was completed via HQ wireline diamond bit coring of the bedrock to the target depth range for each well.

Once the target depth of the borehole was reached, the well was constructed in the manner of a typical monitoring well using 2” diameter flush joint threaded schedule 40 PVC screen and riser. 10-slot well screen was used for each well and the screen length varied according to the configuration of the target fracture zone each well was attempting to intersect. The insertion of the screen and riser into the open borehole produced by HQ coring was conducted to isolate the depth range of groundwater subsequently sampled from each well and as a way to prevent zones of significant fracturing and poor rock quality from breaking off and restricting the depth that could be accessed within the borehole. A filter pack consisting of #1 well sand was installed to a depth of approximately 3-ft above the top of the well screen and in some cases was used to set the final level of the bottom of the well shallower by backfilling the bottom of the borehole. A bentonite seal consisting of an approximately 3-ft thick layer of bentonite pellets was installed above the sand pack to prevent vertical flow of groundwater through the upper portion of the borehole and into the screen zone of the well. Once the bentonite pellets were allowed time to fully hydrate the remainder of the borehole annulus surrounding the well riser was tremie grouted to the ground surface. Each well was completed by fitting the PVC riser with a locking compression plug and installing a protective flush mount manhole at the ground surface to cover the top of the well.

The final step of the well installation program was the development of the wells to insure subsequent sampling of the wells resulted in the collection of representative groundwater samples from the bedrock aquifer. Development was conducted using a Waterra inertial pump which allowed the well to be both surged and pumped due to the oscillation of tubing in the well and the use of a foot valve at the bottom of the tubing. At each location the attempt at fully developing the well involved pumping for a least two hours to decrease the turbidity of the groundwater. In some cases longer periods of development were required or the well went dry during pumping, however at the conclusion of the development period and during the well sampling program all of the wells were observed to have been developed sufficiently to allow for the collection of a representative sample. Development logs summarizing the well development and water quality parameters associated with this activity are also compiled in Appendix A.

Investigation derived wastes associated with the well drilling and development were contained in 55 gallon drums and staged on-site for later processing (via the on-site treatment system for liquids) or off-site disposal by HDR's IDW management subcontractor (drill cuttings). Rock cores obtained during the drilling were retained and labeled in standard core boxes and stored on-site for possible future reference.

2.2 Groundwater Baseline Sampling

The first round of groundwater sampling that was conducted at the site included a total of thirteen existing wells, this round of sampling was completed by YEC, Inc. on September 10 – 12, 2014. Groundwater recovery wells RW-1, RW-2, RW-3, and AV-2 were sampled directly from their respective sampling tap within the treatment building. Low-flow groundwater sampling was conducted at the remaining accessible wells including: MW-1, MW-2, MW-3, MW-4A, MW-4B, MW-5, MW-6, MW-7, and RC-1 (Figure 3). Prior to sampling, a synoptic round of groundwater level measurements were obtained to determine the groundwater elevation at the site. All samples were analyzed for USEPA Method 524.2 VOCs with a standard turn-around time of 30 days. The analytical services for the aqueous phase samples were provided by H2M (now Pace Analytical Services, Inc.).

The second round of groundwater sampling was conducted by HDR personnel on May 18 – 20, 2015 and included groundwater sample collection from the 8 new bedrock wells at the site and 13 existing wells (21 total locations) (Figure 3). One full round of groundwater level measurements were also obtained during the groundwater sampling. Groundwater samples designated for VOC analysis were collected using low flow sampling techniques. All samples were analyzed for USEPA Method 524.2 VOCs with a standard turn-around time of 30 days. H2M (Pace Analytical Services, Inc.) performed the analytical services for this round of groundwater sampling.

Liquid investigation derived wastes associated with the well sampling were contained in 55 gallon drums and staged on-site for later processing (via the on-site treatment system). Groundwater sampling logs for both sampling events are found in Appendix B.

2.3 Soil Vapor Intrusion Investigation

A soil vapor intrusion investigation was conducted at several off-site residences in February 2015. Based on outreach performed by the NYSDOH and NYSDEC, five of the six residents near the site participated in the sampling program.

Both indoor and sub-slab vapor samples were collected from the structures included in the sampling program. A two person HDR sampling crew completed the vapor sampling and the samples were collected in batch certified 6 liter summa canisters over a 24 hour sampling period. HDR personnel collected twelve samples and submitted them for laboratory analysis. Mitkem (now Spectrum Analytical) analyzed the vapor samples for TO-15.

Sampling documentation for the SVI investigation is found in Appendix C.

In addition to the 2015 SVI investigation performed by HDR, Sterling Environmental Engineering, P.C (Sterling), on behalf of the responsible party (RP), performed a supplemental vapor investigation of the 2 operational SSDSs. In January and March 2018, Sterling collected a total of 5 vapor samples, 3 from the 2 SSDSs and 2 outdoor ambient samples, and submitted them to York Analytical Laboratories (York) for the analysis of VOCs by EPA Method TO-15. Each sample was collected in a batch certified 6-liter summa canister over an 8 hour period. A copy of Sterling’s vapor investigation report can be found in Appendix D.

2.4 Aquifer Pump Testing

The existing IRM that has been implemented at the site consists of a groundwater extraction and treatment system for the bedrock aquifer. This system has been operated and maintained by the RP since 1992 with AV-2 being the primary pumping well. The system was substantially modified with the addition of RW-1, RW-2, and RW-3 in 2006 to address the suspected source areas of the contamination. At the present time the groundwater extraction system is composed of the four bedrock wells that exhibit various yields. Prior to conducting the PDI aquifer pump test the vertical and lateral extent of capture for the system was poorly defined other than the fact that AV-2 (the highest yielding well) appears to maintain hydraulic control in the area. After discussions with the RP a specific aquifer testing plan was developed and this plan is described in detail below:

At this time, only AV-2 and RW-1 are operational. The reported average pumping rates with the interval are outlined below:

Well	Depth (ft.)	Rate (gpm)	High/Low Switch (ft.)
AV-02	205	8	70/90
RW-01	160	1.5 to 2.0	60/61
RW-02	150	0	40/70
RW-03	150	6	40/56

Table 1. Pumping Rates for Apple Valley Shopping Center Extraction Wells.

The extraction wells are fitted with high and low switches but do not have water level recording transducers installed in them. The continuous water level monitoring conducted during the PDI drilling program at MW-2 and MW-4B showed one confirmed time when the system was off for maintenance and the water levels at those two particular locations responded to this shutdown. At the time it was unknown if the response was caused by any single well or a combination of all of the wells. A total of 13 water level monitoring locations at the site were outfitted with data logging water level meters over a period of approximately seven weeks. Originally the aquifer testing was planned over a three week period but this was extended due to several rainfall events and a lack of stabilization in the water levels. The seven week period provided for background, testing, and pumping period as outlined below.

The aquifer testing proceeded through the following sequence using the existing extraction well pumps.

1. Switch off RW-01 while maintaining pumping at AV-2 (partial operation to determine the influence of AV-02)
2. Switch off AV-2 (system shutdown, the non-pumping condition)
3. Switch on RW-01 while leaving AV-2 off (partial operation to determine the influence of RW-01)
4. Switch on AV-2 in addition to RW-01 (the typical current operating condition)

The purpose of switching off the wells in sequence was to determine the influence of the individual wells on the system capture zone. It was anticipated that one or two days would be required between each well shutdown to reestablish a new stabilized groundwater level in the monitored locations. As the water level data was collected in the field a determination was made if the water levels were stabilized, allowing the next step in the sequence to proceed. Once the shutdown phase was completed a similar process was followed to reactivate the wells in sequence allowing the groundwater levels to equilibrate each time.

A limited number of groundwater samples were also collected during the test to evaluate the concentration trends under the various pumping scenarios. Six groundwater samples were collected for VOCs using USEPA Method 524.2. Analytical services for the aqueous phase samples were provided by H2M (Pace Analytical Services, Inc.) with a standard turn-around time of 30 days. The data was collected to assist in the overall evaluation and was not subject to a data usability study.

The aquifer testing data can be found in Appendix E.

3 PRE-DESIGN INVESTIGATION RESULTS

3.1 Groundwater Baseline Sampling Results

Baseline groundwater sampling results for the September 2014 and May 2015 sampling events are found in Tables 2 and 3, respectively. During the September 2014 sampling event, PCE and its breakdown products TCE and cis-1, 2 DCE were detected in 10 of 13 wells at concentrations greater than the NYSDEC Class GA standard. PCE concentrations ranged from non-detect (ND) to 2,200 µg/L. The highest PCE concentrations are found in the vicinity of extraction wells RW-1, RW-2 and RW-3 (Figure 4) with concentrations in those wells range from 140 µg/L to 2,200 µg/L with quantities of TCE and cis-1, 2 DCE exceeding the 5 µg/L NYSDEC Class GA standard. The May 2015 sampling round exhibited similar results in contaminant concentrations and wells affected. PCE and its breakdown products TCE and cis-1, 2 DCE were detected in the same wells in similar concentrations (Figure 5). PCE concentrations ranged from non-detect (ND) to 2,900 µg/L. Contaminants again appear to center around extraction wells RW-1, RW-2 and RW-3 (Figure 4) with concentrations in those wells range from 170 µg/L to 1,700 µg/L with quantities of TCE and cis-1, 2 DCE exceeding the 5 µg/L NYSDEC Class GA standard.

The concentration of PCE and its breakdown products in the vicinity of extraction wells RW-1, RW-2 and RW-3 as well as surrounding wells (MW-2, in particular, whose 2,900 µg/L PCE concentration is the highest concentration observed across both sampling events) differ from the correspondingly low concentrations found at extraction well AV-2 (7 µg/L for September 2014 and May 2015). Based on the groundwater levels and flow directions at the site (Figure 6) the groundwater contamination appears to exhibit higher concentrations near the RW wells as opposed to AV-2.

Groundwater data usability summary reports are included in Appendix F.

3.2 Soil Vapor Results

3.2.1 Soil Vapor Baseline Sampling Results

From February 17 to 24, 5 residences were sampled for soil vapor intrusion for a total of twelve samples (Figure 7, Table 3). Results of the SVI sampling event indicate that two residences to the southwest contain PCE in both sub-slab and indoor air. The concentrations of both the indoor air and sub-slab are 1.22 µg/m^3 and 1.76 µg/m^3, and 1.22 µg/m^3 and 31.67 µg/m^3 for indoor air and sub-slab at locations AVSP-R2 and AVSP-R3 respectively. According to NYSDOH soil vapor/indoor air matrix 2 guidance, these concentrations are below the threshold for monitoring or mitigation. The residence closest to the shopping center did not contain any PCE in its indoor air or sub-slab. Possible explanations for this observation maybe related to differences in building construction or the fact that extraction well AV-2 is only 150 ft. to the northeast. PCE measurements in soil vapor occurring to the west of this residence may be from contaminants that have migrated off-site and outside of the influence of the GWE&T systems. Also notable, the residence located furthest to the south contained 13.97 µg/m^3 of TCE in the indoor air and none in the sub-slab. This likely indicates a separate (possibly indoor) source of TCE contamination not related to the site. BTEX compounds were found in nearly all samples, including the outside air sample, and may be related to the gas station located at the Apple Valley Shopping Center or to more localized sources of hydrocarbons such as home fuel oil tanks. The remaining analytes are likely lab contaminants or have other sources not related to PCE-based contamination.

Soil Vapor Intrusion data usability summary reports are included in Appendix G.

3.2.2 Supplemental Soil Vapor Investigation

As stated in Section 2.3, in January and March 2018, Sterling collected a total of 5 vapor samples, 3 from the 2 SSDSs and 2 outdoor ambient samples, and submitted them for the analysis of VOCs. The results of both sampling events indicate that all detected parameters were below the May 2017 NYSDOH Guidance for Evaluating SVI. Of the highest detected parameters, PCE in SSDS-E ranged from a concentration of 1.2 µg/m^3 (January 19, 2018) to 24 µg/m^3 (March 6, 2018).

3.3 Aquifer Pump Testing

3.3.1 Introduction

The aquifer test began on November 4, 2015 and concluded on December 22, 2015. Over this period, three distinct phases defined each portion of the test. The first phase was the development of a baseline water level dataset with both extraction wells (AV-2 and RW-1) operating (i.e. the pumping or typical operating scenario). This phase began on November 4 and 5 with the installation of data logging water level meters, and lasted for approximately 20 days. The second phase was the extraction well shutdown and aquifer response, which began on November 24 with the shutdown of RW-1. This phase lasted for an additional twenty days and ended with the restart of AV-2 on December 14. The last phase was a post-test observation period allowing for examination and review of the operating scenario with both extraction wells pumping again. This phase lasted until December 22 when a majority of the monitoring wells had stabilized and the water level loggers were removed from the observation wells. The results of the aquifer test for each observation well are summarized on Figure 8 and Table 5.

To determine the influence of both extraction wells on groundwater elevation and flow, water level elevations were contoured based on the data recorded on December 7 (Figure 9). This allows for the conservative establishment of static, non-pumping conditions from which to determine aquifer drawdowns/responses when either well is shutdown (or operating). When the water level responses from the individual shutdowns of RW-1 and AV-2 are compared to this static non-pumping condition, it is evident that AV-2 is more effective in hydraulically containing a wider area than RW-1. Elaboration of the response of each well is in its respective section below.

3.3.2 Aquifer Response to Pumping RW-1

Pumping of RW-1 began on December 7, after a period where neither RW-1 nor AV-2 was operational. Immediately, water levels in RW-1, RW-2 and MW-4B declined to nearly the same water levels as the pre-shutdown pumping conditions. MW-13 and MW-14 showed a slight decline, although not nearly as significant as when AV-2 was restarted on December 14. Review of the groundwater contours with only RW-1 pumping (Figure 10) indicates that the western most extent of the capture zone is likely in the vicinity of MW-13 and MW-14.

Confirmation of the hydraulic connection between observation wells RW-2, MW-4B, MW-13, and MW-14 with the pumping well RW-1 is further supported by the water level responses observed when RW-1 was initially shutdown on November 24. Immediately after RW-1 shutdown, the water levels in RW-1, RW-2 and MW-4B exhibited a sudden and obvious rebound. Water levels in those wells rapidly rose for 2-3 days and continued to rise at an increasingly slower rate until December 7 when RW-1 was restarted. The largest response was observed in RW-2, with a water level rise of 25 ft., the next largest recovery responses were observed in MW-4B and RW-2 where both exhibited water level recoveries of approximately 17 ft. Noticeable water level changes were also measured at MW-10 and MW-13 while several other monitoring wells experienced a slight increase in their respective water levels, however it was difficult to determine given the available data whether these wells were located just on the periphery of the capture zone of RW-1 (Table 5).

Some wells, such as MW-3, MW-5 and MW-8, exhibited a slight change in their water levels when the status of the groundwater system changed from static conditions with no extraction wells pumping to the re-start of pumping at extraction well RW-1. However, this change is more than likely a result of an overall decline in groundwater levels that were naturally occurring throughout several periods of the monitoring as water levels slowly returned to equilibrium after precipitation events on November 10 – 12, November 18, December 1 – 2, December 15, and December 18 (Figure 8). When isolating the data for the time periods directly before and after the reactivation of RW-1, water levels in MW-3, MW-5, and MW-8 do not show any apparent response to RW-1 pumping.

3.3.3 Aquifer Response to Pumping AV-2

On November 30, AV-2 was shutdown and the recovery from the cessation of pumping at this well was measured. Every observation well exhibited some degree of water level response. The changes measured between 14.10 ft. at AV-2 to 0.72 ft. at RW-1 and RW-2 (Table 5). The small measured change at three observation wells (RW-1, RW-2 and MW-4B) that experienced the highest water level rise when RW-1 was shutdown may be influenced by the continued water level recovery after the RW-1 shutdown. However, the slight slope change of those wells as seen in Figure 8 at the time of the AV-2 shutdown indicates some degree of connectivity. When comparing the groundwater contours of AV-2 pumping (Figure 11) to the static, non-pumping conditions, the majority of the AV-2 capture zone appears to extend as far east as MW-10. Beyond this well, the influence of AV-2 is far more subtle with groundwater contours matching close to the non-pumping conditions.

3.3.4 System Capture Zone

With both AV-2 and RW-1 pumping, the cone of depression from both extraction wells merges and forms a single combined capture zone. The capture zone from AV-2 is the larger portion of the combined zone and acts to hydraulically contain the known groundwater contamination (Figure 12). When compared to the static, non-pumping condition, maximum drawdowns site-wide range from 2.56 ft. at MW-3 to 19.78 ft. at RW-1. Each observation well has an apparent hydraulic connection to the extraction wells as each observation well shows positive values of drawdown. When AV-2 is operating individually, the extent of its capture zone extends to around MW-10. When RW-1 is operating individually, the extent of its capture zone extends to just west of MW-13/14. This indicates a small zone of overlap in-between both wells that bridge both capture zones.

Analytical results from several groundwater samples taken at successive stages of the aquifer test provide further information on the extent of contamination (Table 6). On November 24, just prior to RW-1 shutdown, groundwater samples at RW-1 revealed PCE concentration of 1,200 µg/L. On December 7, after the static, non-pumping period, concentration of PCE rose to 5,400 µg/L. It later declined to 1,300 µg/L on December 14, after RW-1 had been operating for 7 days. AV-2 had a similar trend in PCE concentration. On November 14, AV-2 contained a PCE concentration of 46 µg/L, which rose to 71 µg/L on November 30, shortly before AV-2 shutdown. This slight increase may be related to the capture of contaminants that were previously upgradient and had moved downgradient while RW-1 was shutdown. On December 14, the PCE concentration in AV-2 further increased to 290 µg/L. This increase may also be attributed to the capture of previously upgradient contaminants that were not contained during the RW-1 shutdown period. The re-start of RW-2 on December 7 cut-off the upgradient contamination source and tapered the December 14 AV-2 concentration.

Operation of both AV-2 and RW-1 appear effective in hydraulically containing the groundwater contamination within the extent of the on-site observation wells based on the size of the combined capture zone. Extraction wells RW-2 and RW-3 were non-operational during the test so the influence from these two wells could not be determined. It is likely that pumping from these two locations would further increase the positive drawdown from the system operation assuming they exhibit hydraulic connection with the aquifer and other wells at the site.

3.3.5 Aquifer Parameters

Aquifer parameter estimation was conducted using data from the drawdown phases of the aquifer test. Displacement – time curves generated from data collected during the drawdown phases upon re-start of RW-1 and AV-2 were analyzed using the software program AQTESOLV. The software allowed digital type curve matching to the observed monitoring well drawdown data according to various analytical solutions under pumping conditions.

Under the RW-1 pumping scenario two observation wells of known construction specifications, MW-4B and MW-13, were analyzed in an attempt to fit analytical solution type curves to the collected drawdown data. The RW-1 pumping phase was initiated at 1612 on December 7, 2015. The observed pumping rate at RW-1 specified for the analysis was 2 gpm which was observed on the in-line flow meter / totalizer with the on-site remediation system trailer. Since no confining conditions were observed for the bedrock aquifer at the site unconfined analytical solutions were used in an attempt to match the observed data. A saturated thickness (b) of 500 ft, selected to represent an aquifer significantly thicker than the depth of any on-site wells, was used for the analysis. Subsequent sensitivity analysis using other values for b did not indicate the curve matching was very sensitive to this parameter although ultimately the calculated hydraulic conductivity values did depend on the value selected for b (since K =T/b). Even with this consideration however the calculated K values varied only a small amount for selected values for b.

Results of the type curve matching analysis for MW-4B were anomalous when compared to the results for the other analyzed wells from both the RW-1 and AV-2 pumping phases. The best fit for the observed data was achieved using the unconfined Tartakovsky - Neuman solution; however, this solution required the assumption of a significant difference in vertical vs. radial conductivity in the aquifer. Although the pumping in RW-1 produced a smooth drawdown curve in MW-4B it appears the proximity of the observation well to the pumping well (separated by only 12 ft) and the nature of the bedrock / fractures zones in this area resulted in drawdown that could not be matched without the inclusion of a significant degree of anisotropy in the solution. This resulted in a transmissivity (and conductivity) much lower (K = 0.01 ft/day) than that calculated for other observation wells during the RW-1 and AV-2 pumping phases. The other observation well analyzed, MW-13, had a smaller drawdown response due to its distance from RW-1 but the observed data fit the Moench solution relatively closely, particularly for the early time portion of the data, and yielded a conductivity estimate of 0.08 ft/day. This conductivity value is within the range of published K values for the type of rock (fractured metamorphic) observed at the site.

Given the higher pumping rate of 8 gpm (observed via in-line flow meter / totalizer) for AV-2, the pumping phase for this well (re-started at 0905 on December 14, 2015 and isolated after RW-1 pumping and resultant drawdown had equilibrated) induced a more widespread drawdown in observation wells surrounding the pumping well. This larger area of influence allowed for an analysis of whether K values were similar for wells located at various directions and distances from the pumping well. Drawdown data from observation wells MW-2, MW-7, MW-10, MW-11D, and MW-12 were analyzed using AQTESOLV (typically the best fit to the observed drawdown data for the AV-2 pumping phase was provided by the unconfined Theis solution) to estimate conductivity values for the aquifer in the vicinity of each well. The wells ranged from 47 to 81 ft in distance from AV-2 and the resultant conductivity estimates were relatively consistent for all of the analyzed wells regardless of direction or distance from the pumping well. Estimated conductivity values for the wells with drawdown data analyzed during the AV-2 pumping phase included:

- MW-2 K = 0.32 ft/day
- MW-7 K = 0.33 ft/day
- MW-10 K = 0.32 ft/day
- MW-11D K = 0.44 ft/day
- MW-12 K = 0.46 ft/day

All of the estimated conductivity values resulting from the monitoring of the observation wells associated with the pumping at AV-2 are within the range of published values for fractured metamorphic rock consistent with the rock type that forms the bedrock aquifer underlying the site.

4 CONCLUSIONS AND RECOMMENDATIONS

The operation of extraction wells RW-1 and AV-2 form a combined cone of depression in the bedrock aquifer water levels that is effective at hydraulically containing the known on-site groundwater contamination. However, the concentration of VOCs found during the September 2014 and May 2015 groundwater sampling events, as well as sampling during the aquifer test, clearly indicate a persistent, relatively concentrated, contaminant source in the groundwater. Two groundwater sampling events were conducted while the existing GWE&T system was operating. Both sampling events exhibited very little variation in the chlorinated VOC concentrations in the wells that were sampled. The second round of sampling conducted in May 2015 after the installation of the additional monitoring wells suggests that two areas of groundwater exhibit chlorinated VOCs in excess of 1,000 µg/L. The first area appears to be centered about RW-2 while the second area is centered about MW-2. Monitoring wells between these two locations including the newly installed MW-10, MW-13, and MW-14 exhibit much lower or non-detectable concentrations. The finding that two highly concentrated areas of groundwater contamination exist is consistent with the reported site history that indicated dry cleaning chemicals were used by two separate businesses at the shopping center. The results of the soil vapor intrusion investigation do not indicate that soil gas mitigation/monitoring is necessary at the surveyed residences south of the site. Trace amounts of chlorinated VOCs in the soil gas that were located outside of the groundwater containment area maybe indicative of the contaminants that migrated off-site prior to IRM implementation or during periods of system or individual extraction well downtime. Other soil gas contaminants, particularly BTEX compounds, may be related to the gas station at the shopping center or more localized sources such as fuel oil storage for home heating.

The PDI aquifer pump test utilized the existing GWE&T system and based on the continuous set of water level measurements collected during the various phases of the testing demonstrated that the bedrock aquifer is hydraulically connected and quickly responds to changes in pumping or recharge. All of the monitoring points were found to respond to changes in the operating status of AV-2 and several precipitation events that occurred during the testing period. At RW-1 the response to pumping is smaller than AV-2 with the furthest definitive water level response seen at MW-13.

Operation of both AV-2 and RW-1 appear effective in hydraulically containing the groundwater contamination within the extent of the on-site observation wells based on the size of the combined capture zone. Extraction wells RW-2 and RW-3 were non-operational during the test so the influence from these two wells could not be determined.

Although this work assignment did not include a specific evaluation of the run time performance of the GWE&T system it was noted that AV-2 was the only extraction well being pumped on a consistent basis. Pumping at just this one well likely meets the primary objective of maintaining hydraulic containment over the most contaminated groundwater but owing to the relatively low concentrations exhibited at this location the total mass removal is small in comparison to running all of the extraction wells in the system. The low runtimes for recovery wells RW-1, RW-2, and RW-3 appear to be related to the low yields at these locations.

The hydraulic conductivities of the bedrock aquifer, 0.01 ft/day to 0.46 ft/day (with a majority between 0.3 ft/day and 0.46 ft/day) computed from the water level drawdown response curves of different on-site wells, is consistent with published K values for fractured metamorphic bedrock. Although the higher values indicate a more favorable level of groundwater transmission, the inherent anisotropy within the shale bedrock indicates a more complex relationship of water transmission through the bedrock aquifer at the Apple Valley Shopping Center than is suggested by the results of the aquifer parameter calculations.

Hydraulic or pneumatic fracturing (fracking) of the bedrock is unlikely to significantly expand the noted overall hydraulic containment zone of the existing GWE&T system. It is possible that it could increase the yield of the lower yielding recovery wells such as RW-1, RW-2, and RW-3. All of these recovery wells exhibit relatively high concentrations of chlorinated VOCs and increasing the pumping rates at these locations would improve overall contaminant mass removal. However, the increase in yield and hydraulic connection with the bedrock aquifer is anticipated to be minimal based on the prevalence of high angle fractures in the underlying bedrock. The largest improvements in yield would likely be limited to RW-2. This particular recovery well has a reported yield of zero gpm (pumps to dryness and slowly recovers) and fracking may improve the hydraulic connection between adjacent high angle fractures if any are located in the immediate vicinity of this location. Fracking on AV-2 is not recommended for several reasons including the presence of the high angle bedrock fractures, the apparent higher yield/conductivity at this location, and the low likelihood that this process would significantly increase the yield.

Based on the data collected during this PDI the following recommendations are provided relative to the ROD required reassessment:

1. Because the present GWE&T scenario is effectively limiting the migration of contaminant in the bedrock aquifer, there is no reason to risk upsetting the present equilibrium and potentially increasing the release of contaminant into the bedrock aquifer as a result of hydraulic/pneumatic fracturing.

2. Improvements to the system runtime should be implemented including installation of new pumps, settings, and controls in the RW series of wells. The PDI groundwater quality data indicates the position of these wells is in close proximity to the most heavily contaminated groundwater at this site. Optimizing the performance of the RW series of wells by adjusting the high and low switch settings will improve the rate of contaminant mass removal within the two areas of the site that exhibit chlorinated VOC concentrations in excess of 1,000 µg/L.

3. The PDI aquifer test indicates that additional extraction wells are not necessary to maintain hydraulic containment over the groundwater plume. The current pumping capacities of the existing wells is sufficient to maintain containment.

4. In-situ treatment of the source zone (DNAPL) with a chemical oxidant does not appear to be feasible at this time since the specific location for the DNAPL source area has not be located. Further costly site characterization efforts would be needed to locate the sources

of the DNAPL and it is likely it would be technically impractical to deliver chemical oxidants to the sources due to the nature of the site bedrock.

The ROD also included possible future provisions for a soil vapor extraction (SVE) system to extract contaminant vapors from the source areas. Again, the DNAPL source boundaries would need to be defined with a high degree of confidence prior to installing a SVE system that would remove the remaining contaminant mass. As a result of the January and March 2018 SSDS vapor sampling event completed by Sterling, site related VOCs were either ND or significantly lower than their respective May 2017 NYSDOH Guidance values. The analytical results suggest that if placed within the SSDSs' vicinity, SVE will not be an effective remedial technology as a minor vadose zone contaminant mass is present.

5 CERTIFICATION

I ________________________________ certify that I am currently a NYS registered professional engineer and that this Pre-Design Investigation Report was prepared in accordance with all applicable statutes and regulations and in substantial conformance with DER Technical Guidance for Site Investigation and Remediation (DER-10) and that all activities were performed in full accordance with the DER-approved work plan and any DER-approved modifications.

Signature: ____

Date: ____

Name: Erich Zimmerman, P.E.

License No.:

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Tables

	Sample Location	AV-2		MW-1		MW-2		MW-3		MW-4A		MW-4B		MW-5	
	Sample Name	AV-2-20140910		MW-1-20140911		MW-2-20140912		MW-3-20140912		MW-4A-20140911		MW-4B-20140911		MW-5-20140911	
	Sample Date	09/10/2014 11:20:00		09/11/2014 13:00:00		09/12/2014 09:15:00		09/12/2014 14:00:00		09/11/2014 09:55:00		09/11/2014 11:10:00		09/11/2014 14:40:00	
	Laboratory SDG	HDR011		HDR011		HDR011		HDR011		HDR011		HDR011		HDR011	
Constituent	**Criteria**	**Result**	**Qualifier**	**Result**	**Qualifier**	**Result**	**Qualifier**	**Result**	**Qualifier**	**Result**	**Qualifier**	**Result**	**Qualifier**	**Result**	**Qualifier**
1,1,1,2-TETRACHLOROETHANE	5	ND	U	ND	U	ND	U	ND	UJ	ND	U	ND	U	ND	U
1,1,1-TRICHLOROETHANE	5	ND	U	ND	U	ND	U	ND	UJ	ND	U	ND	U	ND	U
1,1,2,2-TETRACHLOROETHANE	5	ND	U	ND	U	ND	U	ND	UJ	ND	U	ND	U	ND	U
1,1,2-TRICHLOROETHANE	1	ND	U	ND	U	ND	U	ND	UJ	ND	U	ND	U	ND	U
1,1-DICHLOROETHANE	5	ND	U	ND	U	ND	U	ND	UJ	ND	U	ND	U	ND	U
1,1-DICHLOROETHENE	5	ND	U	ND	U	ND	U	ND	UJ	ND	U	ND	U	ND	U
1,1-DICHLOROPROPENE	5	ND	U	ND	U	ND	U	ND	UJ	ND	U	ND	U	ND	U
1,2,3-TRICHLOROBENZENE	5	ND	U	ND	U	ND	U	ND	UJ	ND	U	ND	U	ND	U
1,2,3-TRICHLOROPROPANE	0.04	ND	R	ND	R	ND	R	ND	R	ND	R	ND	R	ND	R
1,2,4-TRICHLOROBENZENE	5	ND	U	ND	U	ND	U	ND	UJ	ND	U	ND	U	ND	U
1,2,4-TRIMETHYLBENZENE	5	ND	U	ND	U	ND	U	ND	UJ	ND	U	ND	U	ND	U
1,2-DICHLOROBENZENE	3	ND	U	ND	U	ND	U	ND	UJ	ND	U	ND	U	ND	U
1,2-DICHLOROETHANE	0.6	ND	U	ND	U	ND	U	ND	UJ	ND	U	ND	U	ND	U
1,2-DICHLOROPROPANE	1	ND	U	ND	U	ND	U	ND	UJ	ND	U	ND	U	ND	U
1,3,5-TRIMETHYLBENZENE (MESITYLENE)	5	ND	U	ND	U	ND	U	ND	UJ	ND	U	ND	U	ND	U
1,3-DICHLOROBENZENE	3	ND	U	ND	U	ND	U	ND	UJ	ND	U	ND	U	ND	U
1,3-DICHLOROPROPANE	5	ND	U	ND	U	ND	U	ND	UJ	ND	U	ND	U	ND	U
1,4-DICHLOROBENZENE	3	ND	U	ND	U	ND	U	ND	UJ	ND	U	ND	U	ND	U
2,2-DICHLOROPROPANE	5	ND	U	ND	U	ND	U	ND	UJ	ND	U	ND	U	ND	U
2/4-Chlorotoluene	NS	ND	U	ND	U	ND	U	ND	UJ	ND	U	ND	U	ND	U
BENZENE	1	ND	U	ND	U	ND	U	ND	UJ	ND	U	ND	U	ND	U
BROMOBENZENE	5	ND	U	ND	U	ND	U	ND	UJ	ND	U	ND	U	ND	U
BROMOCHLOROMETHANE	5	ND	U	ND	U	ND	U	ND	UJ	ND	U	ND	U	ND	U
BROMODICHLOROMETHANE	5	ND	U	ND	U	ND	U	ND	UJ	ND	U	ND	U	ND	U
BROMOFORM	NS	ND	U	ND	U	ND	U	ND	UJ	ND	U	ND	U	ND	U
BROMOMETHANE	5	ND	U	ND	U	ND	U	ND	UJ	ND	U	ND	U	ND	U
CARBON TETRACHLORIDE	5	ND	U	ND	U	ND	U	ND	UJ	ND	U	ND	U	ND	U
CHLOROBENZENE	5	ND	U	ND	U	ND	U	ND	UJ	ND	U	ND	U	ND	U
CHLOROETHANE	5	ND	U	ND	U	ND	U	ND	UJ	ND	U	ND	U	ND	U
CHLOROFORM	7	ND	U	ND	U	ND	U	ND	UJ	ND	U	ND	U	ND	U
CHLOROMETHANE	5	ND	U	ND	U	ND	U	ND	UJ	ND	U	ND	U	ND	U
CIS-1,2-DICHLOROETHYLENE	5	1		ND	U	**290**		ND	UJ	**20**		0.9		ND	U
CIS-1,3-DICHLOROPROPENE	cis + trans = 0.4	ND	U	ND	U	ND	U	ND	UJ	ND	U	ND	U	ND	U
CYMENE	NS	ND	U	ND	U	ND	U	ND	UJ	ND	U	ND	U	ND	U
DIBROMOCHLOROMETHANE	NS	ND	U	ND	U	ND	U	ND	UJ	ND	U	ND	U	ND	U
DIBROMOMETHANE	5	ND	U	ND	U	ND	U	ND	UJ	ND	U	ND	U	ND	U
DICHLORODIFLUOROMETHANE	5	ND	U	ND	UJ	ND	U	ND	UJ	ND	U	ND	U	ND	U
ETHYLBENZENE	5	ND	U	ND	U	ND	U	ND	UJ	ND	U	ND	U	ND	U
HEXACHLOROBUTADIENE	0.5	ND	R	ND	R	ND	R	ND	R	ND	R	ND	R	ND	R
ISOPROPYLBENZENE (CUMENE)	5	ND	U	ND	U	ND	U	ND	UJ	ND	U	ND	U	ND	U
M,P-XYLENES	NS	ND	U	ND	U	ND	U	ND	UJ	ND	U	ND	U	ND	U
METHYLENE CHLORIDE	5	ND	U	ND	U	ND	U	ND	UJ	**7**		ND	U	ND	U
N-BUTYLBENZENE	5	ND	U	ND	U	ND	U	ND	UJ	ND	U	ND	U	ND	U
N-PROPYLBENZENE	5	ND	U	ND	U	ND	U	ND	UJ	ND	U	ND	U	ND	U
O-XYLENE (1,2-DIMETHYLBENZENE)	NS	ND	U	ND	U	ND	U	ND	UJ	ND	U	ND	U	ND	U
SEC-BUTYLBENZENE	5	ND	U	ND	U	ND	U	ND	UJ	ND	U	ND	U	ND	U
STYRENE	5	ND	U	ND	U	ND	U	ND	UJ	ND	U	ND	U	ND	U
T-BUTYLBENZENE	NS	ND	U	ND	U	ND	U	ND	UJ	ND	U	ND	U	ND	U
TERT-BUTYL METHYL ETHER	NS	0.8		ND	U	ND	U	ND	UJ	ND	U	ND	U	ND	U
TETRACHLOROETHYLENE(PCE)	5	**7**		**7**	J	**1500**		ND	UJ	**350**		**7**		3	
TOLUENE	NS	ND	U	ND	U	ND	U	ND	UJ	ND	U	ND	U	ND	U
TOTAL TRIHALOMETHANES	NS	ND	U	ND	U	ND	U	ND	UJ	ND	U	ND	U	ND	U
TRANS-1,2-DICHLOROETHENE	5	ND	U	ND	U	ND	U	ND	UJ	ND	U	ND	U	ND	U
TRANS-1,3-DICHLOROPROPENE	cis + trans = 0.4	ND	U	ND	U	ND	U	ND	UJ	ND	U	ND	U	ND	U
TRICHLOROETHYLENE (TCE)	5	1		ND	U	**190**		ND	UJ	**23**		2		ND	U
TRICHLOROFLUOROMETHANE	5	ND	U	ND	U	ND	U	ND	UJ	ND	U	ND	U	ND	U
VINYL CHLORIDE	2	ND	U	ND	U	ND	U	ND	UJ	ND	U	ND	U	ND	U

Units - ug/l Bold/highlighted cell – exceedance of criteria
NS - No Standard
Qualifiers - NA - criteria or standard not available
R - rejected
B – also detected in associated method blank
J – estimated value; ND – not detected
NDJ – not detected, estimated reporting limit
NJ – positive identification of tentatively identified compound, estimated value
P – greater than 40% difference between primary and confirmation analyses
Criteria – Groundwater– NYS DEC 6 NYCRR PART 703.5 Class GA

	Sample Location	MW-6		MW-7		MW-RCI		RW-1		RW-2		RW-3	
	Sample Name	MW-6-20140912		MW-7-20140912		MW-RCI-20140912		RW-1-20140910		RW-2-20140910		RW-3-20140910	
	Sample Date	09/12/2014 15:50:00		09/12/2014 15:10:00		09/12/2014 12:45:00		09/10/2014 11:27:00		09/10/2014 11:34:00		09/10/2014 11:37:00	
	Laboratory SDG	HDR011		HDR011		HDR011		HDR011		HDR011		HDR011	
Constituent	Criteria	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
1,1,1,2-TETRACHLOROETHANE	5	ND	U	ND	U	ND	U	ND	UJ	ND	UJ	ND	UJ
1,1,1-TRICHLOROETHANE	5	ND	U	ND	U	ND	U	ND	UJ	ND	UJ	ND	UJ
1,1,2,2-TETRACHLOROETHANE	5	ND	U	ND	U	ND	U	ND	UJ	ND	UJ	ND	UJ
1,1,2-TRICHLOROETHANE	1	ND	U	ND	U	ND	U	ND	UJ	ND	UJ	ND	UJ
1,1-DICHLOROETHANE	5	ND	U	ND	U	ND	U	ND	UJ	ND	UJ	ND	UJ
1,1-DICHLOROETHENE	5	ND	U	ND	U	ND	U	ND	UJ	ND	UJ	ND	UJ
1,1-DICHLOROPROPENE	5	ND	U	ND	U	ND	U	ND	UJ	ND	UJ	ND	UJ
1,2,3-TRICHLOROBENZENE	5	ND	U	ND	U	ND	U	ND	UJ	ND	UJ	ND	UJ
1,2,3-TRICHLOROPROPANE	0.04	ND	R	ND	R	ND	R	ND	R	ND	R	ND	R
1,2,4-TRICHLOROBENZENE	5	ND	U	ND	U	ND	U	ND	UJ	ND	UJ	ND	UJ
1,2,4-TRIMETHYLBENZENE	5	ND	U	ND	U	ND	U	ND	UJ	ND	UJ	ND	UJ
1,2-DICHLOROBENZENE	3	ND	U	ND	U	ND	U	ND	UJ	ND	UJ	ND	UJ
1,2-DICHLOROETHANE	0.6	ND	U	ND	U	ND	U	ND	UJ	ND	UJ	ND	UJ
1,2-DICHLOROPROPANE	1	ND	U	ND	U	ND	U	ND	UJ	ND	UJ	ND	UJ
1,3,5-TRIMETHYLBENZENE (MESITYLENE)	5	ND	U	ND	U	ND	U	ND	UJ	ND	UJ	ND	UJ
1,3-DICHLOROBENZENE	3	ND	U	ND	U	ND	U	ND	UJ	ND	UJ	ND	UJ
1,3-DICHLOROPROPANE	5	ND	U	ND	U	ND	U	ND	UJ	ND	UJ	ND	UJ
1,4-DICHLOROBENZENE	3	ND	U	ND	U	ND	U	ND	UJ	ND	UJ	ND	UJ
2,2-DICHLOROPROPANE	5	ND	U	ND	U	ND	U	ND	UJ	ND	UJ	ND	UJ
2/4-Chlorotoluene	NS	ND	U	ND	U	ND	U	ND	UJ	ND	UJ	ND	UJ
BENZENE	1	ND	U	ND	U	ND	U	ND	UJ	ND	UJ	ND	UJ
BROMOBENZENE	5	ND	U	ND	U	ND	U	ND	UJ	ND	UJ	ND	UJ
BROMOCHLOROMETHANE	5	ND	U	ND	U	ND	U	ND	UJ	ND	UJ	ND	UJ
BROMODICHLOROMETHANE	5	ND	U	ND	U	ND	U	ND	UJ	ND	UJ	ND	UJ
BROMOFORM	NS	ND	U	ND	U	ND	U	ND	UJ	ND	UJ	ND	UJ
BROMOMETHANE	5	ND	U	ND	U	ND	U	ND	UJ	ND	UJ	ND	UJ
CARBON TETRACHLORIDE	5	ND	U	ND	U	ND	U	ND	UJ	ND	UJ	ND	UJ
CHLOROBENZENE	5	ND	U	ND	U	ND	U	ND	UJ	ND	UJ	ND	UJ
CHLOROETHANE	5	ND	U	ND	U	ND	U	ND	UJ	ND	UJ	ND	UJ
CHLOROFORM	7	ND	U	ND	U	ND	U	ND	UJ	ND	UJ	ND	UJ
CHLOROMETHANE	5	ND	U	ND	U	ND	U	ND	UJ	ND	UJ	ND	UJ
CIS-1,2-DICHLOROETHYLENE	5	ND	U	2		**76**		3	J	**35**	J	**45**	J
CIS-1,3-DICHLOROPROPENE	cis + trans = 0.4	ND	U	ND	U	ND	U	ND	UJ	ND	UJ	ND	UJ
CYMENE	NS	ND	U	ND	U	ND	U	ND	UJ	ND	UJ	ND	UJ
DIBROMOCHLOROMETHANE	NS	ND	U	ND	U	ND	U	ND	UJ	ND	UJ	ND	UJ
DIBROMOMETHANE	5	ND	U	ND	U	ND	U	ND	UJ	ND	UJ	ND	UJ
DICHLORODIFLUOROMETHANE	5	ND	U	ND	U	ND	U	ND	UJ	ND	UJ	ND	UJ
ETHYLBENZENE	5	ND	U	ND	U	ND	U	ND	UJ	ND	UJ	ND	UJ
HEXACHLOROBUTADIENE	0.5	ND	R	ND	R	ND	R	ND	R	ND	R	ND	R
ISOPROPYLBENZENE (CUMENE)	5	ND	U	ND	U	ND	U	ND	UJ	ND	UJ	ND	UJ
M,P-XYLENES	NS	ND	U	ND	U	ND	U	ND	UJ	ND	UJ	ND	UJ
METHYLENE CHLORIDE	5	ND	U	ND	U	ND	U	1	J	**47**	J	**14**	J
N-BUTYLBENZENE	5	ND	U	ND	U	ND	U	ND	UJ	ND	UJ	ND	UJ
N-PROPYLBENZENE	5	ND	U	ND	U	ND	U	ND	UJ	ND	UJ	ND	UJ
O-XYLENE (1,2-DIMETHYLBENZENE)	NS	ND	U	ND	U	ND	U	ND	UJ	ND	UJ	ND	UJ
SEC-BUTYLBENZENE	5	ND	U	ND	U	ND	U	ND	UJ	ND	UJ	ND	UJ
STYRENE	5	ND	U	ND	U	ND	U	ND	UJ	ND	UJ	ND	UJ
T-BUTYLBENZENE	NS	ND	U	ND	U	ND	U	ND	UJ	ND	UJ	ND	UJ
TERT-BUTYL METHYL ETHER	NS	ND	U	ND	U	ND	U	ND	UJ	ND	UJ	ND	UJ
TETRACHLOROETHYLENE(PCE)	5	ND	U	**13**		**610**		**140**	J	**2200**	J	**610**	J
TOLUENE	NS	ND	U	ND	U	ND	U	ND	UJ	ND	UJ	ND	UJ
TOTAL TRIHALOMETHANES	NS	ND	U	ND	U	ND	U	ND	UJ	ND	UJ	ND	UJ
TRANS-1,2-DICHLOROETHENE	5	ND	U	ND	U	ND	U	ND	UJ	ND	UJ	ND	UJ
TRANS-1,3-DICHLOROPROPENE	cis + trans = 0.4	ND	U	ND	U	ND	U	ND	UJ	ND	UJ	ND	UJ
TRICHLOROETHYLENE (TCE)	5	ND	U	2		**70**		**7**	J	**36**	J	**44**	J
TRICHLOROFLUOROMETHANE	5	ND	U	ND	U	ND	U	ND	UJ	ND	UJ	ND	UJ
VINYL CHLORIDE	2	ND	U	ND	U	ND	U	ND	UJ	ND	UJ	ND	UJ

Units - ug/l Bold/highlighted cell – exceedance of criteria
NS - No Standard
Qualifiers - NA - criteria or standard not available
R - rejected
B – also detected in associated method blank
J – estimated value; ND – not detected
NDJ – not detected, estimated reporting limit
NJ – positive identification of tentatively identified compound, estimated value
P – greater than 40% difference between primary and confirmation analyses
Criteria – Groundwater– NYS DEC 6 NYCRR PART 703.5 Class GA

	Sample Location	AV-2		MW-1		MW-12		MW-13		MW-14		MW-3		MW-4B	
	Sample Name	AV2-2015-05-18		MW1-2015-05-19		MW12-2015-05-19		MW13-2015-05-19		MW14-2015-05-19		MW3-2015-05-19		MW4B-2015-05-18	
	Sample Date	5/18/15 10:50		5/19/15 12:35		5/19/15 17:25		5/19/15 10:05		5/19/15 9:55		5/19/15 13:20		5/18/15 14:45	
	Laboratory SDG	HDR012		HDR012		HDR012		HDR012		HDR012		HDR012		HDR012	
Constituent	Criteria	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
1,1,1,2-TETRACHLOROETHANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,1,1-TRICHLOROETHANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,1,2,2-TETRACHLOROETHANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,1,2-TRICHLOROETHANE	1	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,1-DICHLOROETHANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,1-DICHLOROETHENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,1-DICHLOROPROPENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,2,3-TRICHLOROBENZENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,2,3-TRICHLOROPROPANE	0.04	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,2,4-TRICHLOROBENZENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,2,4-TRIMETHYLBENZENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,2-DICHLOROBENZENE	3	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,2-DICHLOROETHANE	0.6	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,2-DICHLOROPROPANE	1	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,3,5-TRIMETHYLBENZENE (MESITYLENE)	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,3-DICHLOROBENZENE	3	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,3-DICHLOROPROPANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,4-DICHLOROBENZENE	3	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
2,2-DICHLOROPROPANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
2/4-Chlorotoluene	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
BENZENE	1	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
BROMOBENZENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
BROMOCHLOROMETHANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
BROMODICHLOROMETHANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
BROMOFORM	NS	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
BROMOMETHANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
CARBON TETRACHLORIDE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
CHLOROBENZENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
CHLORODIBROMOMETHANE	NS	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
CHLOROETHANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
CHLOROFORM	7	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
CHLOROMETHANE	NS	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
CIS-1,2-DICHLOROETHYLENE	5	1		ND	U	2		ND	U	ND	U	ND	U	1	
CIS-1,3-DICHLOROPROPENE	cis + trans = 0.4	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
CYMENE	NS	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
DIBROMOMETHANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
DICHLORODIFLUOROMETHANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
ETHYLBENZENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
HEXACHLOROBUTADIENE	0.5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
ISOPROPYLBENZENE (CUMENE)	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
M,P-XYLENES	NS	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
METHYLENE CHLORIDE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
N-BUTYLBENZENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
N-PROPYLBENZENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
O-XYLENE (1,2-DIMETHYLBENZENE)	NS	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
SEC-BUTYLBENZENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
STYRENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
T-BUTYLBENZENE	NS	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
TERT-BUTYL METHYL ETHER	NS	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
TETRACHLOROETHYLENE(PCE)	5	**7**		ND	U	4		ND	U	ND	U	ND	U	**13**	
TOLUENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
TOTAL TRIHALOMETHANES	NS	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
TRANS-1,2-DICHLOROETHENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
TRANS-1,3-DICHLOROPROPENE	cis + trans = 0.4	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
TRICHLOROETHYLENE (TCE)	5	1		ND	U	1		ND	U	ND	U	ND	U	2	
TRICHLOROFLUOROMETHANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
VINYL CHLORIDE	2	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U

Units - µg/l Bold/highlighted cell – exceedance of criteria
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Qualifiers - NA - criteria or standard not available
R - rejected
B – also detected in associated method blank
J – estimated value; ND – not detected
NDJ – not detected, estimated reporting limit
NJ – positive identification of tentatively identified compound, estimated value
P – greater than 40% difference between primary and confirmation analyses
D- Dilution Factor
Criteria – NYS DEC 6 NYCRR PART 703.5 Class GA

	Sample Location	MW-6		MW-7		MW-RCI		RW-1		RW-2		RW-3		MW-10	
	Sample Name	MW6-2015-05-19		MW7-2015-05-19		MWRC1-2015-05-18		RW1-2015-05-18		RW2-2015-05-18		RW3-2015-05-18		MW10-2015-05-20	
	Sample Date	5/19/15 14:30		5/19/15 18:25		5/18/15 15:45		5/18/15 10:45		5/18/15 10:40		5/18/15 10:55		5/20/15 14:05	
	Laboratory SDG	HDR012		HDR012		HDR012		HDR012		HDR012		HDR012		HDR013	
Constituent	Criteria	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
1,1,1,2-TETRACHLOROETHANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,1,1-TRICHLOROETHANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,1,2,2-TETRACHLOROETHANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,1,2-TRICHLOROETHANE	1	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,1-DICHLOROETHANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,1-DICHLOROETHENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,1-DICHLOROPROPENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,2,3-TRICHLOROBENZENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,2,3-TRICHLOROPROPANE	0.04	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,2,4-TRICHLOROBENZENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,2,4-TRIMETHYLBENZENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,2-DICHLOROBENZENE	3	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,2-DICHLOROETHANE	0.6	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,2-DICHLOROPROPANE	1	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,3,5-TRIMETHYLBENZENE (MESITYLENE)	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,3-DICHLOROBENZENE	3	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,3-DICHLOROPROPANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,4-DICHLOROBENZENE	3	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
2,2-DICHLOROPROPANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
2/4-Chlorotoluene	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
BENZENE	1	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
BROMOBENZENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
BROMOCHLOROMETHANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
BROMODICHLOROMETHANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
BROMOFORM	NS	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
BROMOMETHANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
CARBON TETRACHLORIDE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
CHLOROBENZENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
CHLORODIBROMOMETHANE	NS	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
CHLOROETHANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
CHLOROFORM	7	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
CHLOROMETHANE	NS	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
CIS-1,2-DICHLOROETHYLENE	5	ND	U	0.8		**580**	D	**8**		**13**		**54**		2	
CIS-1,3-DICHLOROPROPENE	cis + trans = 0.4	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
CYMENE	NS	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
DIBROMOMETHANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
DICHLORODIFLUOROMETHANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
ETHYLBENZENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
HEXACHLOROBUTADIENE	0.5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
ISOPROPYLBENZENE (CUMENE)	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
M,P-XYLENES	NS	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
METHYLENE CHLORIDE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
N-BUTYLBENZENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
N-PROPYLBENZENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
O-XYLENE (1,2-DIMETHYLBENZENE)	NS	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
SEC-BUTYLBENZENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
STYRENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
T-BUTYLBENZENE	NS	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
TERT-BUTYL METHYL ETHER	NS	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
TETRACHLOROETHYLENE(PCE)	5	ND	U	**9**		**92**		**170**	D	**1700**	D	**810**	D	**21**	
TOLUENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
TOTAL TRIHALOMETHANES	NS	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
TRANS-1,2-DICHLOROETHENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	0.8		ND	U
TRANS-1,3-DICHLOROPROPENE	cis + trans = 0.4	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
TRICHLOROETHYLENE (TCE)	5	ND	U	0.9		**16**		**6**		**19**		**53**		2	
TRICHLOROFLUOROMETHANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
VINYL CHLORIDE	2	ND	U	ND	U	**15**		ND	U	ND	U	0.7		ND	U

Units - µg/l Bold/highlighted cell – exceedance of criteria
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NDJ – not detected, estimated reporting limit
NJ – positive identification of tentatively identified compound, estimated value
P – greater than 40% difference between primary and confirmation analyses
D- Dilution Factor
Criteria – NYS DEC 6 NYCRR PART 703.5 Class GA

	Sample Location	MW-11D		MW-11M		MW-2		MW-5		MW-08		MW-09	
	Sample Name	MW11D-2015-05-20		MW11M-2015-05-20		MW2-2015-05-20		MW5-2015-05-20		MW8-2015-05-20		MW9-2015-05-20	
	Sample Date	5/20/15 10:15		5/20/15 10:10		5/20/15 13:35		5/21/15 13:05		5/21/15 9:50		5/21/15 9:55	
	Laboratory SDG	HDR013		HDR013		HDR013		HDR013		HDR013		HDR013	
Constituent	Criteria	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
1,1,1,2-TETRACHLOROETHANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,1,1-TRICHLOROETHANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,1,2,2-TETRACHLOROETHANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,1,2-TRICHLOROETHANE	1	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,1-DICHLOROETHANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,1-DICHLOROETHENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,1-DICHLOROPROPENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,2,3-TRICHLOROBENZENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,2,3-TRICHLOROPROPANE	0.04	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,2,4-TRICHLOROBENZENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,2,4-TRIMETHYLBENZENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,2-DICHLOROBENZENE	3	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,2-DICHLOROETHANE	0.6	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,2-DICHLOROPROPANE	1	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,3,5-TRIMETHYLBENZENE (MESITYLENE)	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,3-DICHLOROBENZENE	3	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,3-DICHLOROPROPANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,4-DICHLOROBENZENE	3	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
2,2-DICHLOROPROPANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
2/4-Chlorotoluene	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
BENZENE	1	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
BROMOBENZENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
BROMOCHLOROMETHANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
BROMODICHLOROMETHANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
BROMOFORM	NS	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
BROMOMETHANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
CARBON TETRACHLORIDE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
CHLOROBENZENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
CHLORODIBROMOMETHANE	NS	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
CHLOROETHANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
CHLOROFORM	7	ND	U	ND	U	ND	U	0.9		ND	U	ND	U
CHLOROMETHANE	NS	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
CIS-1,2-DICHLOROETHYLENE	5	4		**96**		**380**	D	ND	U	1		0.6	
CIS-1,3-DICHLOROPROPENE	cis + trans = 0.4	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
CYMENE	NS	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
DIBROMOMETHANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
DICHLORODIFLUOROMETHANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
ETHYLBENZENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
HEXACHLOROBUTADIENE	0.5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
ISOPROPYLBENZENE (CUMENE)	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
M,P-XYLENES	NS	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
METHYLENE CHLORIDE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
N-BUTYLBENZENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
N-PROPYLBENZENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
O-XYLENE (1,2-DIMETHYLBENZENE)	NS	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
SEC-BUTYLBENZENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
STYRENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
T-BUTYLBENZENE	NS	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
TERT-BUTYL METHYL ETHER	NS	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
TETRACHLOROETHYLENE(PCE)	5	**10**		**170**	D	**2900**	D	1		3		2	
TOLUENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
TOTAL TRIHALOMETHANES	NS	ND	U	ND	U	ND	U	0.9		ND	U	ND	U
TRANS-1,2-DICHLOROETHENE	5	ND	U	2	U	**7**		ND	U	ND	U	ND	U
TRANS-1,3-DICHLOROPROPENE	cis + trans = 0.4	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
TRICHLOROETHYLENE (TCE)	5	2		**58**		**320**	D	ND	U	1		ND	U
TRICHLOROFLUOROMETHANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
VINYL CHLORIDE	2	ND	U	**3**		**8**		ND	U	ND	U	ND	U

Units - µg/l Bold/highlighted cell – exceedance of criteria

NS - No Standard

Qualifiers -
- NA - criteria or standard not available
- R - rejected
- B – also detected in associated method blank
- J – estimated value; ND – not detected
- NDJ – not detected, estimated reporting limit
- NJ – positive identification of tentatively identified compound, estimated value
- P – greater than 40% difference between primary and confirmation analyses
- D- Dilution Factor

Criteria – NYS DEC 6 NYCRR PART 703.5 Class GA

	Sample Location	AVSP-R2		AVSP-R2		AVSP-R3		AVSP-R3		AVSP-R4		AVSP-R4	
	Sample Name	AVSP-R2-SS-20150223		AVSP-R2-AI-20150223		AVSP-R3-SS-20150223		AVSP-R3-AI-20150223		AVSP-R4-SS-20150223		AVSP-R4-AI-20150223	
	Sample Date	2/23/2015 10:27		02/23/2015 10:20		02/23/2015 14:37		02/23/2015 14:44		02/23/2015 16:15		02/23/2015 16:18	
Constituent		Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
1,1,1,2-Tetrachloroethane		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,1,1-Trichloroethane		ND	U	1.64		ND	U	ND	U	ND	U	ND	U
1,1,2,2-Tetrachloroethane		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,1,2-Trichloroethane		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,1,2-trichlorotrifluoroethane		0.69	J	1.07		ND	U	0.84		ND	U	ND	U
1,1-Dichloroethane		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,1-Dichloroethene		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,2,4-Trichlorobenzene		ND	U	1.48		ND	U	ND	U	ND	U	ND	U
1,2,4-Trimethylbenzene		3.00		0.74		0.84		2.21		4.05		0.93	
1,2-Dibromoethane		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,2-Dichlorobenzene		ND	U	0.72		0.54	J	ND	U	ND	U	ND	U
1,2-Dichloroethane		ND	U	ND	U	ND	U	ND	U	ND	U	0.49	
1,2-Dichloropropane		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,2-Dichlorotetrafluoroethane		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,3,5-Trimethylbenzene		1.18		0.49		0.49		0.98		2.80	J	0.69	
1,3-Butadiene		ND	U	ND	U	1.83		ND	U	ND	U	ND	U
1,3-Dichlorobenzene		0.54	J	0.78		ND	U	ND	U	ND	U	ND	U
1,4-Dichlorobenzene		0.96		0.84		0.60		ND	U	ND	U	ND	U
1,4-Dioxane		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
2-Butanone		14.57		2.33		2.01		1.09		48.36		245.9362	
2-Hexanone		2.46		ND	U	ND	U	ND	U	ND	U	ND	U
4-Ethyltoluene		1.28		0.59		0.54		0.84		2.80	J	0.84	
4-Isopropyltoluene		2.25		0.59		0.64		0.91		4.08		0.70	
4-Methyl-2-pentanone		3.28		0.45		ND	U	ND	U	ND	U	ND	U
Acetone		75.8033		15.83		18.01		8.27		127.84		211.4887	
Acrylonitrile		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
Benzene		1.63		2.01		1.12		2.39		ND	U	6.32	
Benzyl chloride		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
Bromodichloromethane		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
Bromoform		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
Bromomethane		ND	U	0.27	J	0.35	J	ND	U	ND	U	ND	U
Carbon disulfide		15.53		ND	U	1.74		ND	U	12.79		ND	U
Carbon tetrachloride		0.38	J	0.88		0.63		0.57	J	ND	U	0.75	
Chlorobenzene		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
Chloroethane		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
Chloroform		ND	U	0.73		0.92		ND	U	ND	U	ND	U
Chloromethane		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
cis-1,2-Dichloroethene		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
cis-1,3-Dichloropropene		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
Cyclohexane		ND	U	0.72		0.72		1.48		ND	U	2.86	
Dibromochloromethane		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
Dichlorodifluoromethane		6.48		28.482		2.32		3.02		8.16		4.20	
Ethanol		23.38		32.05		63.1636		262.0818		66.56	J	85.0352	
Ethyl acetate		ND	U	2.95		19.46		2.27		9.12		3.10	
Ethylbenzene		1.34		0.39	J	ND	U	1.65		ND	U	4.94	
Hexachlorobutadiene		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
Hexane		1.87		3.88		22.28		4.34		14.28		12.80	
Isopropyl alcohol		15.19		3.39		15.66		3.12		31.17		15.46	
isopropylbenzene (cumene)		0.25	J	ND	U	ND	U	ND	U	1.24	J	0.20	J
m,p-Xylene		5.77		ND	U	0.91		6.16		ND	U	12.92	
Methyl tert-butyl ether		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
Methylene chloride		8.02		22.88		0.38		0.38		ND	U	0.97	
Naphthalene		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
n-Butylbenzene		1.10		0.71		ND	U	0.71		4.17		ND	U
n-Heptane		1.07		1.52		0.49		2.46		ND	U	7.38	
o-Xylene		2.08		ND	U	0.43		2.30		ND	U	3.86	
Propylene		ND	UJ	ND	U	ND	U	ND	U	ND	U	132.35	J
sec-Butylbenzene		ND	U	0.55		ND	U	ND	U	3.47	J	0.49	J
Styrene		0.81		0.55		0.55		0.43		ND	U	ND	U
Tetrachloroethene		1.76		1.22		31.67		1.22		ND	U	ND	U
Tetrahydrofuran		1.80		0.44		0.32		0.27	J	15.48		124.7374	
Toluene		11.36		13.51		2.26		9.93		9.29		27.20	
trans-1,2-Dichloroethene		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
trans-1,3-Dichloropropene		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
Trichloroethene		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
Trichlorofluoromethane		395.6221		5.84		1.46		1.63		3.56	J	1.69	
Vinyl chloride		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U

Units - mg/m^3
Qualifiers -
- U - Non-detect
- R - rejected
- B – also detected in associated method blank
- J – estimated value; ND – not detected
- NDJ – not detected, estimated reporting limit
- NJ – positive identification of tentatively identified compound, estimated value
- P – greater than 40% difference between primary and confirmation analyses

	Sample Location	AVSP-AO		AVSP-R5		AVSP-R5		AVSP-R1		AVSP-R1		AVSP-R1	
	Sample Name	AVSP-AO-20150223		AVSP-R5-SS-20150224		AVSP-R5-AI-20150224		AVSP-R1-SS-20150217		AVSP-R1-AA-20150217		AVSP-R1-AI-20150217	
	Sample Date	02/23/2015 16:25		02/24/2015 10:33		2/24/2015 10:40		02/17/2015 10:38		02/17/2015 10:50		02/17/2015 10:21	
Constituent		**Result**	**Qualifier**	**Result**	**Qualifier**	**Result**	**Qualifier**	**Result**	**Qualifier**	**Result**	**Qualifier**	**Result**	**Qualifier**
1,1,1,2-Tetrachloroethane		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,1,1-Trichloroethane		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,1,2,2-Tetrachloroethane		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,1,2-Trichloroethane		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,1,2-trichlorotrifluoroethane		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,1-Dichloroethane		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,1-Dichloroethene		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,2,4-Trichlorobenzene		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,2,4-Trimethylbenzene		0.79		3.44		ND	U	1.92	J	ND	U	ND	U
1,2-Dibromoethane		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,2-Dichlorobenzene		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,2-Dichloroethane		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,2-Dichloropropane		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,2-Dichlorotetrafluoroethane		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,3,5-Trimethylbenzene		0.59		1.23		ND	U	ND	U	ND	U	ND	U
1,3-Butadiene		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,3-Dichlorobenzene		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,4-Dichlorobenzene		ND	U	0.84		ND	U	ND	U	ND	U	ND	U
1,4-Dioxane		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
2-Butanone		1.47		11.35		1.92		1.42	J	ND	U	ND	U
2-Hexanone		ND	U	2.95		ND	U	ND	U	ND	U	ND	U
4-Ethyltoluene		0.64		1.23		ND	U	1.62	J	ND	U	ND	U
4-Isopropyltoluene		ND	U	1.99		ND	U	ND	U	ND	U	ND	U
4-Methyl-2-pentanone		ND	U	3.28		ND	U	ND	U	ND	U	ND	U
Acetone		9.81		38.02		13.31		20.72		5.20		8.60	
Acrylonitrile		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
Benzene		2.58		ND	U	2.23		ND	U	ND	U	ND	U
Benzyl chloride		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
Bromodichloromethane		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
Bromoform		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
Bromomethane		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
Carbon disulfide		ND	U	1.77		ND	U	ND	U	ND	U	ND	U
Carbon tetrachloride		0.63		0.63		ND	U	ND	U	ND	U	ND	U
Chlorobenzene		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
Chloroethane		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
Chloroform		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
Chloromethane		ND	U	ND	U	ND	U	0.78	J	0.78	J	0.76	J
cis-1,2-Dichloroethene		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
cis-1,3-Dichloropropene		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
Cyclohexane		0.89		ND	U	1.62		ND	U	ND	U	ND	U
Dibromochloromethane		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
Dichlorodifluoromethane		3.31		3.12		2.62		2.42	J	2.32	J	2.47	
Ethanol		34.6928	J	20.9288	J	105.964		96.73		6.94		119.54	
Ethyl acetate		2.16		2.41		3.32		10.77		1.91		18.09	
Ethylbenzene		1.47		1.26		ND	U	ND	U	ND	U	ND	U
Hexachlorobutadiene		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
Hexane		3.70		0.95	J	7.23		ND	U	ND	U	ND	U
Isopropyl alcohol		ND	U	33.37		5.18		69.94		ND	U	26.01	
isopropylbenzene (cumene)		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
m,p-Xylene		4.99		5.20		ND	U	ND	U	ND	U	ND	U
Methyl tert-butyl ether		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
Methylene chloride		ND	U	ND	U	0.87		ND	U	ND	U	ND	U
Naphthalene		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
n-Butylbenzene		ND	U	1.21		ND	U	ND	U	ND	U	ND	U
n-Heptane		1.56		ND	U	2.01		ND	U	ND	U	ND	U
o-Xylene		1.73		1.73		ND	U	ND	U	ND	U	ND	U
Propylene		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
sec-Butylbenzene		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
Styrene		ND	U	0.47		ND	U	ND	U	ND	U	ND	U
Tetrachloroethene		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
Tetrahydrofuran		0.62		4.31		0.65		ND	U	ND	U	ND	U
Toluene		10.54		4.40		4.44		ND	U	ND	U	1.43	J
trans-1,2-Dichloroethene		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
trans-1,3-Dichloropropene		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
Trichloroethene		ND	U	ND	U	ND	U	ND	U	ND	U	13.97	
Trichlorofluoromethane		1.52		1.46		1.52		ND	U	ND	U	ND	U
Vinyl chloride		ND	U	ND	U	ND	U	ND	U	ND	U	ND	U

Units - mg/m^3
Qualifiers -
- U - Non-detect
- R - rejected
- B – also detected in associated method blank
- J – estimated value; ND – not detected
- NDJ – not detected, estimated reporting limit
- NJ – positive identification of tentatively identified compound, estimated value
- P – greater than 40% difference between primary and confirmation analyses

Well	**AV-2 Recovery Period (AV-2 OFF/RW-1 OFF)**			**RW-1 Pumping Period**			**RW-1 and AV-2 Pumping Period**			
	Groundwater Elevation		**Recovery from AV-2**	**Static Conditions**	**Groundwater Elevation**	**Positive Drawdown from RW-1[4]**	**Static Conditions**	**Groundwater Elevation**		**Positive Drawdown from RW-1 & AV-2**
	RW-1 OFF AV-2 Pumping	RW-1 OFF AV-2 OFF	RW-1 OFF AV-2 OFF	RW-1 OFF AV-2 OFF	RW-1 Pumping AV-2 OFF	RW-1 Pumping AV-2 OFF	RW-1 OFF AV-2 OFF	RW-1 Pumping AV-2 Pumping		RW-1 Pumping AV-2 Pumping
	11/30/15 9:30	12/1/15 15:00		12/7/15 16:00	12/14/15 9:00		12/7/15 16:00	Minimum Value after 12/7		
	feet	feet	Change in feet	feet	feet	Change in feet	feet	feet		Change in feet
AV-2	319.94	334.04	14.10	334.99	334.74	0.25	334.99	321.78	12/14/15 19:43	13.21
RW-1	342.92	343.64	0.72 [1]	345.00	326.95	18.05	345.00	325.22	12/17/15 7:26	19.78
RW-2	341.86	342.59	0.72 [1]	344.00	332.41	11.59	344.00	330.99	12/17/15 21:55	13.01
MW-2	328.41	334.28	5.87	336.23	335.03	1.20	336.23	329.24	12/16/15 18:37	6.99
MW-3	335.12	336.32	1.20	339.14	337.75	1.39	339.14	336.59	12/16/15 0:22	2.56
MW-4B	342.34	343.09	0.75 [1]	344.38	332.90	11.48	344.38	331.26	12/17/15 3:17	13.11
MW-5	330.34	332.10	1.76	333.71	332.86	0.85	333.71	330.86	12/16/15 18:06	2.85
MW-7	328.37	333.76	5.39	335.55	334.44	1.11	335.55	329.24	12/16/15 18:26	6.31
MW-08	333.97	336.15	2.18	339.29	338.06	1.23	339.29	337.10	12/16/15 23:07	2.19
MW-09	329.18	333.24	4.06	335.91	334.89	1.02	335.91	330.22	12/16/15 19:24	5.69
MW-10	328.94	334.24	5.30	336.16	334.60	1.56	336.16	329.30	12/16/15 18:27	6.86
MW-11D	324.77	333.02	8.25	334.11	333.78	0.34	334.11	325.35	12/15/15 0:59	8.76
MW-11M	326.78	333.50	6.72	334.70	334.26	0.44	334.70	327.70	12/16/15 19:03	7.00
MW-12[2]	325.12	334.66	9.54	334.10	333.50	0.60	334.10	325.00	[3]	9.10
MW-13	331.50	335.74	4.24	337.67	334.70	2.97	337.67	330.35	12/16/15 20:40	7.32
MW-14	331.65	334.81	3.16	337.69	335.90	1.79	337.69	332.76	12/17/15 7:36	4.93
	Observation well responses isolated to period after AV-2 pump turned off and water levels allowed to recover (RW-1 already off)			Observation well response isolated to period following re-start of RW-1 (AV-2 OFF)			Observation well responses - Maximum drawdown due to combined pumping at RW-1 and AV-2 (maximum recorded drawdown prior to subsequent influence from Dec 17-18, 2015 rain event)			

Notes:

[1] The small measured change may be the result of the continuted recovery of RW-1

[2] Elevations approximated to correct for transducer data drift

[3] Due to elevations being approxmiated, there is no specific date/time

[4] During this time period the overall trend in water levels at the site was downward and positive drawdown values less than 1 ft are likely influenced by that trend

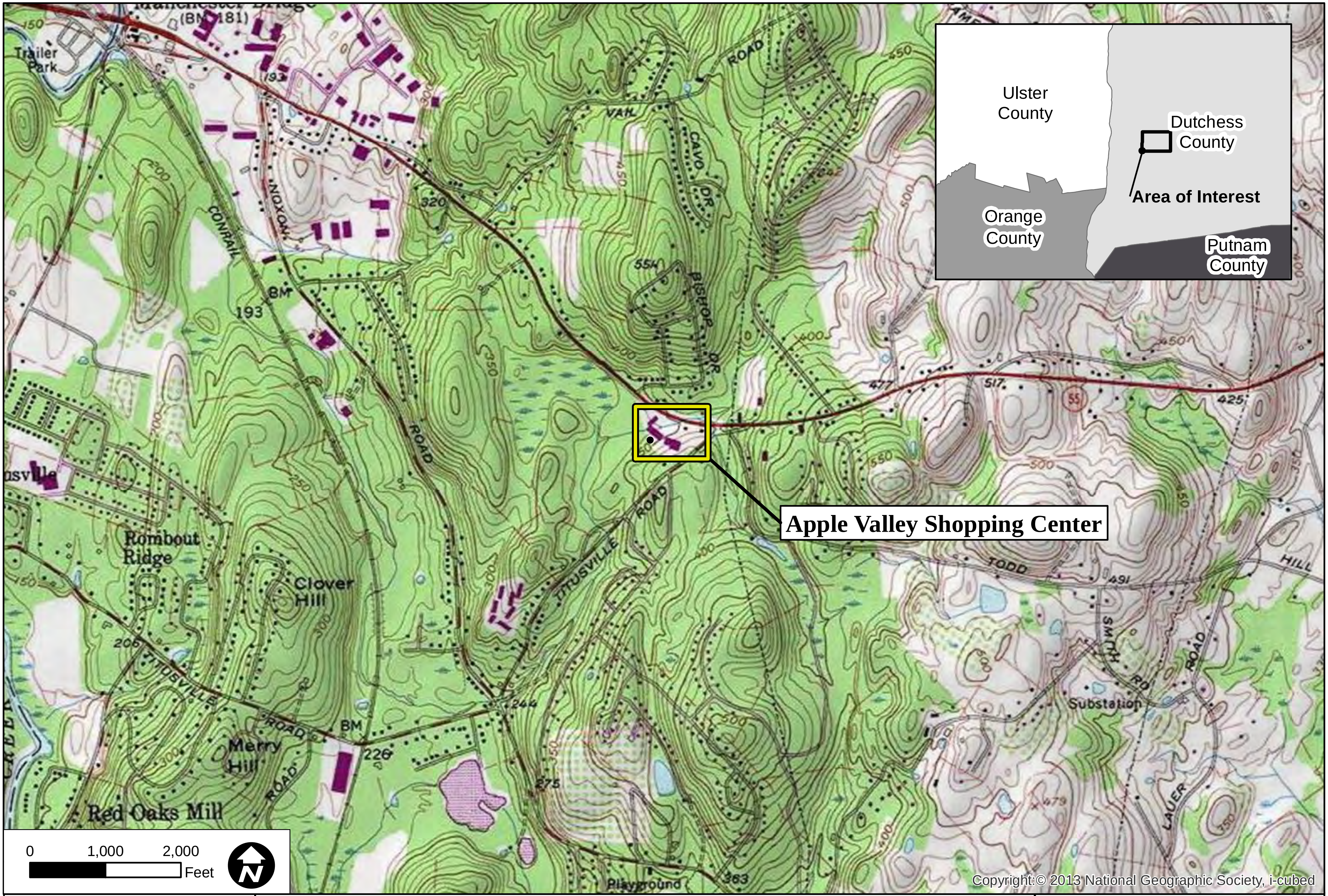
	Sample Location	AV-2		RW-1		RW-1DL		TRIP BLANK		STORAGE BLANK		AV-2	
	Sample Name	AV-2		RW-1		RW-1DL		TRIP BLANK		STORAGE BLANK		AV-2	
	Sample Date	11/24/2015 16:15		11/24/2015 16:10		11/24/2015 16:10		11/23/2015 12:00		11/23/2015 12:00		11/30/2015 12:30	
	Laboratory SDG	HDR14		HDR14		HDR14		HDR14		HDR14		HDR14	
Constituent	Criteria	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
1,1,1,2-TETRACHLOROETHANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,1,1-TRICHLOROETHANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,1,2,2-TETRACHLOROETHANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,1,2-TRICHLOROETHANE	1	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,1-DICHLOROETHANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,1-DICHLOROETHENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,1-DICHLOROPROPENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,2,3-TRICHLOROBENZENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,2,3-TRICHLOROPROPANE	0.04	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,2,4-TRICHLOROBENZENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,2,4-TRIMETHYLBENZENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,2-DICHLOROBENZENE	3	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,2-DICHLOROETHANE	0.6	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,2-DICHLOROPROPANE	1	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,3,5-TRIMETHYLBENZENE (MESITYLENE)	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,3-DICHLOROBENZENE	3	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,3-DICHLOROPROPANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,4-DICHLOROBENZENE	3	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
2,2-DICHLOROPROPANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
2/4-Chlorotoluene	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
BENZENE	1	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
BROMOBENZENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
BROMOCHLOROMETHANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
BROMODICHLOROMETHANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
BROMOFORM	NS	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
BROMOMETHANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
CARBON TETRACHLORIDE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
CHLOROBENZENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
CHLORODIBROMOMETHANE	NS	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
CHLOROETHANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
CHLOROFORM	7	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
CHLOROMETHANE	NS	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
CIS-1,2-DICHLOROETHYLENE	5	4		**8**		ND	U	ND	U	ND	U	**6**	
CIS-1,3-DICHLOROPROPENE	NS	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
CYMENE	NS	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
DIBROMOMETHANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
DICHLORODIFLUOROMETHANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
ETHYLBENZENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
HEXACHLOROBUTADIENE	0.5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
ISOPROPYLBENZENE (CUMENE)	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
M,P-XYLENES	NS	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
METHYLENE CHLORIDE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
N-BUTYLBENZENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
N-PROPYLBENZENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
O-XYLENE (1,2-DIMETHYLBENZENE)	NS	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
SEC-BUTYLBENZENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
STYRENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
T-BUTYLBENZENE	NS	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
TERT-BUTYL METHYL ETHER	NS	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
TETRACHLOROETHYLENE(PCE)	5	**46**		**1200**		**540**	**D**	ND	U	ND	U	**71**	
TOLUENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
TOTAL TRIHALOMETHANES	NS	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
TRANS-1,2-DICHLOROETHENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
TRANS-1,3-DICHLOROPROPENE	0.4	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
TRICHLOROETHYLENE (TCE)	5	4		**15**		**57**	**D**	ND	U	ND	U	**5**	
TRICHLOROFLUOROMETHANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
VINYL CHLORIDE	2	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U

Units - **µg/l** Bold/highlighted cell – exceedance of criteria
NS - No Standard
Qualifiers - NA - criteria or standard not available
R - rejected
B – also detected in associated method blank
J – estimated value; ND – not detected
NDJ – not detected, estimated reporting limit
NJ – positive identification of tentatively identified compound, estimated value
P – greater than 40% difference between primary and confirmation analyses
D- Dilution Factor
Criteria – NYS DEC 6 NYCRR PART 703.5 Class GA

	Sample Location	RW-1		RW-1		RW-1		RW-1		AV-2		AV-2	
	Sample Name	RW-1 (RS)		RW-1 (RS)DL		RW-1-INF-20151214		RW-1-INF-20151214 DL		AV-2-INF-20151214		AV-2-INF-20151214 DL.	
	Sample Date	12/7/2015 16:50		12/7/2015 16:50		12/14/2015 10:04		12/14/2015 10:04		12/14/2015 10:10		12/14/2015 10:10	
	Laboratory SDG	HDR15		HDR15		HDR15		HDR15		HDR15		HDR15	
Constituent	**Criteria**	**Result**	**Qualifier**	**Result**	**Qualifier**	**Result**	**Qualifier**	**Result**	**Qualifier**	**Result**	**Qualifier**	**Result**	**Qualifier**
1,1,1,2-TETRACHLOROETHANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,1,1-TRICHLOROETHANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,1,2,2-TETRACHLOROETHANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,1,2-TRICHLOROETHANE	1	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,1-DICHLOROETHANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,1-DICHLOROETHENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,1-DICHLOROPROPENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,2,3-TRICHLOROBENZENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,2,3-TRICHLOROPROPANE	0.04	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,2,4-TRICHLOROBENZENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,2,4-TRIMETHYLBENZENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,2-DICHLOROBENZENE	3	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,2-DICHLOROETHANE	0.6	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,2-DICHLOROPROPANE	1	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,3,5-TRIMETHYLBENZENE (MESITYLENE)	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,3-DICHLOROBENZENE	3	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,3-DICHLOROPROPANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,4-DICHLOROBENZENE	3	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
2,2-DICHLOROPROPANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
2/4-Chlorotoluene	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
BENZENE	1	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
BROMOBENZENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
BROMOCHLOROMETHANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
BROMODICHLOROMETHANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
BROMOFORM	NS	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
BROMOMETHANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
CARBON TETRACHLORIDE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
CHLOROBENZENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
CHLORODIBROMOMETHANE	NS	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
CHLOROETHANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
CHLOROFORM	7	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
CHLOROMETHANE	NS	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
CIS-1,2-DICHLOROETHYLENE	5	**47**		ND	U	**14**		**13**	D	**20**		**17**	D
CIS-1,3-DICHLOROPROPENE	NS	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
CYMENE	NS	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
DIBROMOMETHANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
DICHLORODIFLUOROMETHANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
ETHYLBENZENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
HEXACHLOROBUTADIENE	0.5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
ISOPROPYLBENZENE (CUMENE)	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
M,P-XYLENES	NS	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
METHYLENE CHLORIDE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
N-BUTYLBENZENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
N-PROPYLBENZENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
O-XYLENE (1,2-DIMETHYLBENZENE)	NS	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
SEC-BUTYLBENZENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
STYRENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
T-BUTYLBENZENE	NS	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
TERT-BUTYL METHYL ETHER	NS	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
TETRACHLOROETHYLENE(PCE)	5	**5400**	E	**6800**	D	**1300**	E	**1700**	D	**290**	E	**230**	D
TOLUENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
TOTAL TRIHALOMETHANES	NS	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
TRANS-1,2-DICHLOROETHENE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
TRANS-1,3-DICHLOROPROPENE	0.4	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
TRICHLOROETHYLENE (TCE)	5	**81**		**76**	D	**25**		**23**	D	**18**		**15**	D
TRICHLOROFLUOROMETHANE	5	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
VINYL CHLORIDE	2	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U

Units - **µg/l** Bold/highlighted cell – exceedance of criteria
NS - No Standard
Qualifiers - NA - criteria or standard not available
R - rejected
B – also detected in associated method blank
J – estimated value; ND – not detected
NDJ – not detected, estimated reporting limit
NJ – positive identification of tentatively identified compound, estimated value
P – greater than 40% difference between primary and confirmation analyses
D- Dilution Factor
Criteria – NYS DEC 6 NYCRR PART 703.5 Class GA

Figures



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Site Location Plan

Apple Valley Shopping Center NYSDEC Site # 314084

Town of LaGrange, Dutchess County, New York

Date: 7/29/2016

Figure: 1

Z:\D007625 NYSDEC Standby Contract\Work Assignment Folders\WA#15 Apple Valley RD\EI_GIS\Map_Docs\Draft\Figure 1 Site_Location_Map.mxd

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community, Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors, and the GIS user community

Site Plan

Apple Valley Shopping Center NYSDEC Site # 314084

Town of LaGrange, Dutchess County, New York

Date: 7/29/2016

Figure: 2

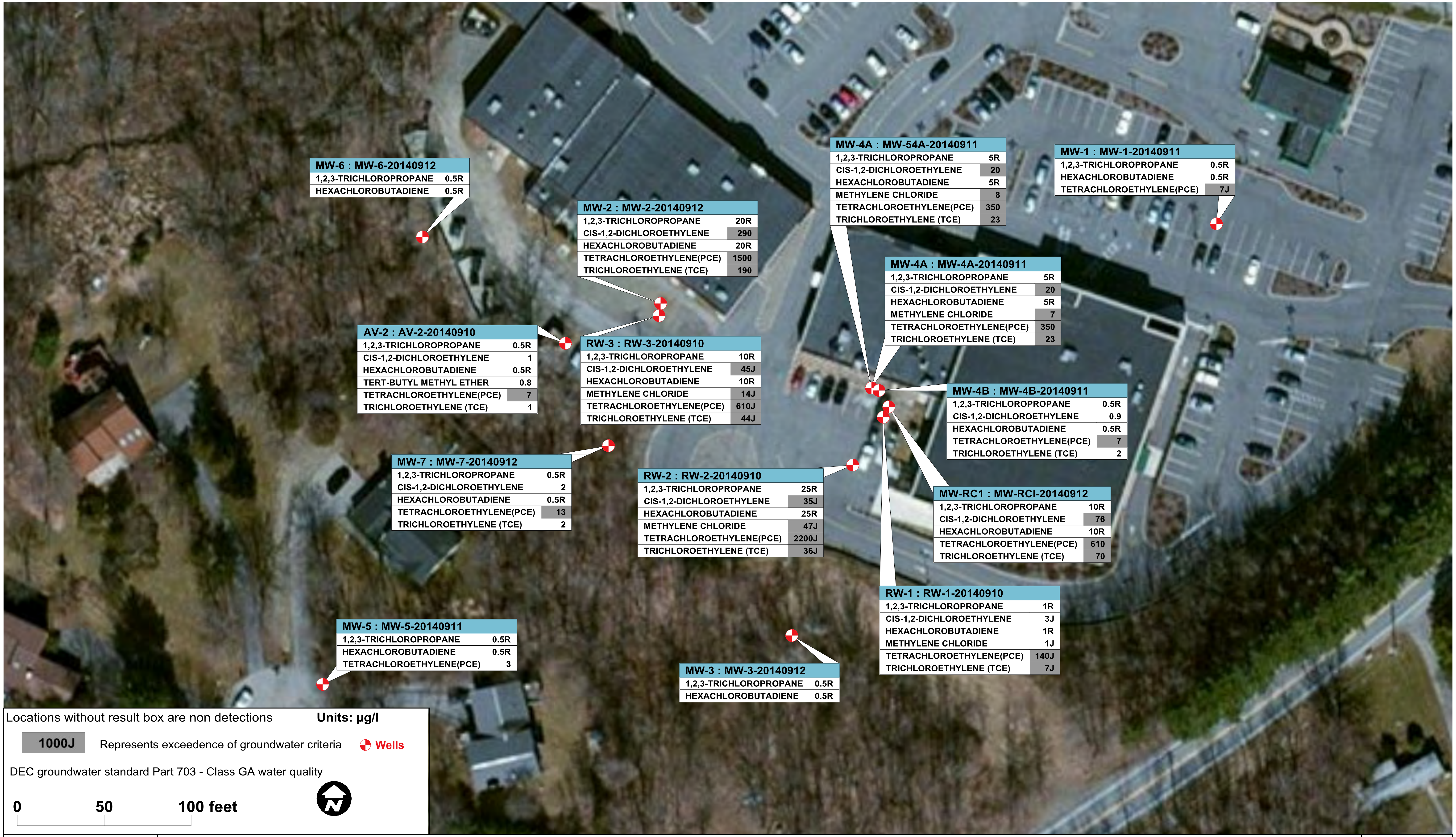
Z:\D007625 NYSDEC Standby Contract\Work Assignment Folders\WA#15 Apple Valley RD\EI_GIS\Map_Docs\Draft\Figure2.mxd

Groundwater Well Location Map

Apple Valley Shopping Center NYSDEC Site # 314084
Town of LaGrange, Dutchess County, New York

DATE
07/15/2015

FIGURE
3



MW-6 : MW-6-20140912

1,2,3-TRICHLOROPROPANE	0.5R
HEXACHLOROBUTADIENE	0.5R

MW-4A : MW-54A-20140911

1,2,3-TRICHLOROPROPANE	5R
CIS-1,2-DICHLOROETHYLENE	20
HEXACHLOROBUTADIENE	5R
METHYLENE CHLORIDE	8
TETRACHLOROETHYLENE(PCE)	350
TRICHLOROETHYLENE (TCE)	23

MW-1 : MW-1-20140911

1,2,3-TRICHLOROPROPANE	0.5R
HEXACHLOROBUTADIENE	0.5R
TETRACHLOROETHYLENE(PCE)	7J

MW-2 : MW-2-20140912

1,2,3-TRICHLOROPROPANE	20R
CIS-1,2-DICHLOROETHYLENE	290
HEXACHLOROBUTADIENE	20R
TETRACHLOROETHYLENE(PCE)	1500
TRICHLOROETHYLENE (TCE)	190

MW-4A : MW-4A-20140911

1,2,3-TRICHLOROPROPANE	5R
CIS-1,2-DICHLOROETHYLENE	20
HEXACHLOROBUTADIENE	5R
METHYLENE CHLORIDE	7
TETRACHLOROETHYLENE(PCE)	350
TRICHLOROETHYLENE (TCE)	23

AV-2 : AV-2-20140910

1,2,3-TRICHLOROPROPANE	0.5R
CIS-1,2-DICHLOROETHYLENE	1
HEXACHLOROBUTADIENE	0.5R
TERT-BUTYL METHYL ETHER	0.8
TETRACHLOROETHYLENE(PCE)	7
TRICHLOROETHYLENE (TCE)	1

RW-3 : RW-3-20140910

1,2,3-TRICHLOROPROPANE	10R
CIS-1,2-DICHLOROETHYLENE	45J
HEXACHLOROBUTADIENE	10R
METHYLENE CHLORIDE	14J
TETRACHLOROETHYLENE(PCE)	610J
TRICHLOROETHYLENE (TCE)	44J

MW-4B : MW-4B-20140911

1,2,3-TRICHLOROPROPANE	0.5R
CIS-1,2-DICHLOROETHYLENE	0.9
HEXACHLOROBUTADIENE	0.5R
TETRACHLOROETHYLENE(PCE)	7
TRICHLOROETHYLENE (TCE)	2

MW-7 : MW-7-20140912

1,2,3-TRICHLOROPROPANE	0.5R
CIS-1,2-DICHLOROETHYLENE	2
HEXACHLOROBUTADIENE	0.5R
TETRACHLOROETHYLENE(PCE)	13
TRICHLOROETHYLENE (TCE)	2

RW-2 : RW-2-20140910

1,2,3-TRICHLOROPROPANE	25R
CIS-1,2-DICHLOROETHYLENE	35J
HEXACHLOROBUTADIENE	25R
METHYLENE CHLORIDE	47J
TETRACHLOROETHYLENE(PCE)	2200J
TRICHLOROETHYLENE (TCE)	36J

MW-RC1 : MW-RCI-20140912

1,2,3-TRICHLOROPROPANE	10R
CIS-1,2-DICHLOROETHYLENE	76
HEXACHLOROBUTADIENE	10R
TETRACHLOROETHYLENE(PCE)	610
TRICHLOROETHYLENE (TCE)	70

RW-1 : RW-1-20140910

1,2,3-TRICHLOROPROPANE	1R
CIS-1,2-DICHLOROETHYLENE	3J
HEXACHLOROBUTADIENE	1R
METHYLENE CHLORIDE	1J
TETRACHLOROETHYLENE(PCE)	140J
TRICHLOROETHYLENE (TCE)	7J

MW-5 : MW-5-20140911

1,2,3-TRICHLOROPROPANE	0.5R
HEXACHLOROBUTADIENE	0.5R
TETRACHLOROETHYLENE(PCE)	3

MW-3 : MW-3-20140912

1,2,3-TRICHLOROPROPANE	0.5R
HEXACHLOROBUTADIENE	0.5R

Locations without result box are non detections **Units: µg/l**

1000J Represents exceedence of groundwater criteria

● **Wells**

DEC groundwater standard Part 703 - Class GA water quality

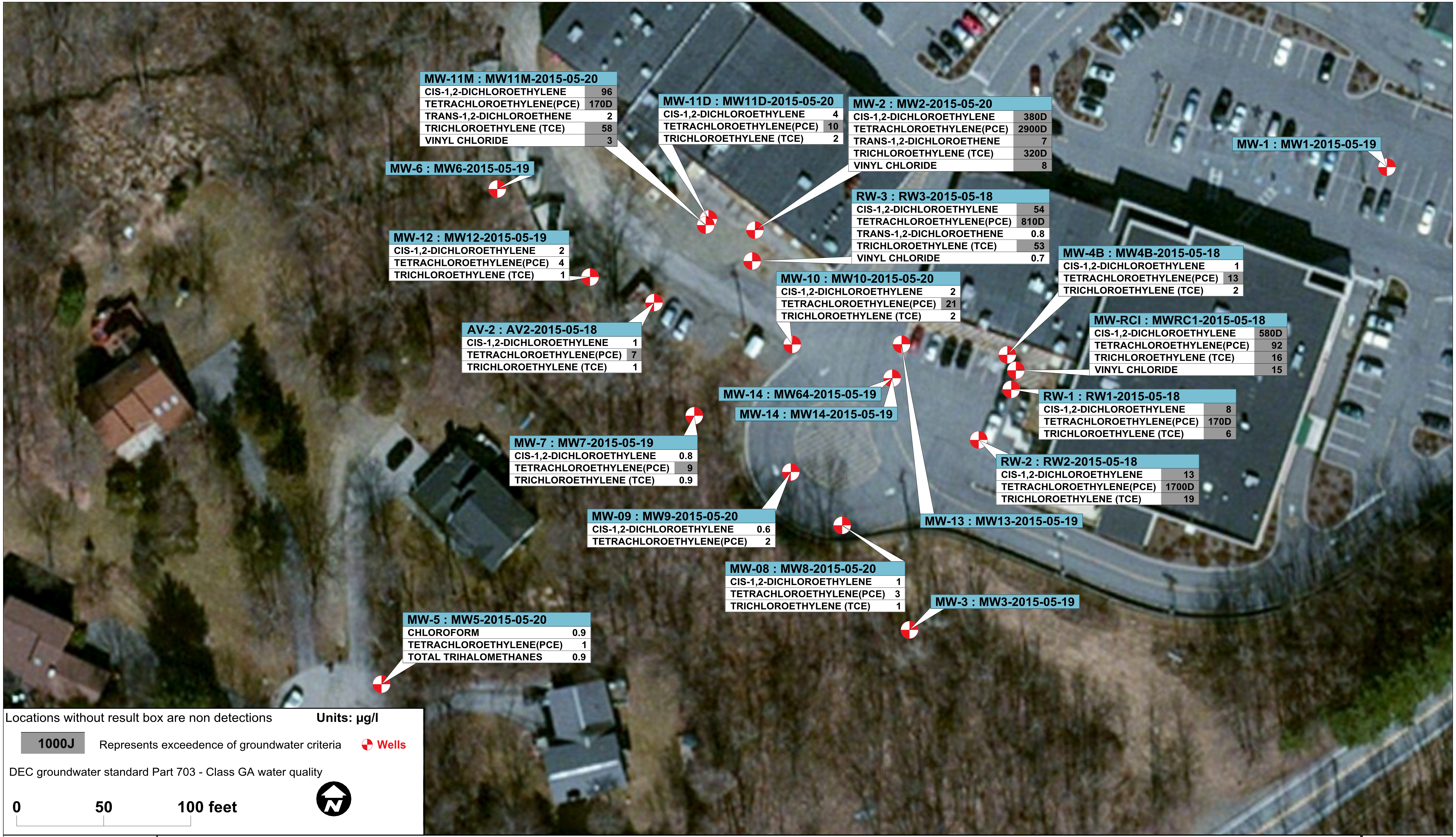
Groundwater Analytical Results - September 2014

Apple Valley Shopping Center NYSDEC Site # 314084

Town of LaGrange, Dutchess County, New York

DATE 07/15/2015

FIGURE 4



MW-11M : MW11M-2015-05-20	
CIS-1,2-DICHLOROETHYLENE	96
TETRACHLOROETHYLENE(PCE)	170D
TRANS-1,2-DICHLOROETHENE	2
TRICHLOROETHYLENE (TCE)	58
VINYL CHLORIDE	3

MW-11D : MW11D-2015-05-20	
CIS-1,2-DICHLOROETHYLENE	4
TETRACHLOROETHYLENE(PCE)	10
TRICHLOROETHYLENE (TCE)	2

MW-2 : MW2-2015-05-20	
CIS-1,2-DICHLOROETHYLENE	380D
TETRACHLOROETHYLENE(PCE)	2900D
TRANS-1,2-DICHLOROETHENE	7
TRICHLOROETHYLENE (TCE)	320D
VINYL CHLORIDE	8

RW-3 : RW3-2015-05-18	
CIS-1,2-DICHLOROETHYLENE	54
TETRACHLOROETHYLENE(PCE)	810D
TRANS-1,2-DICHLOROETHENE	0.8
TRICHLOROETHYLENE (TCE)	53
VINYL CHLORIDE	0.7

MW-12 : MW12-2015-05-19	
CIS-1,2-DICHLOROETHYLENE	2
TETRACHLOROETHYLENE(PCE)	4
TRICHLOROETHYLENE (TCE)	1

MW-4B : MW4B-2015-05-18	
CIS-1,2-DICHLOROETHYLENE	1
TETRACHLOROETHYLENE(PCE)	13
TRICHLOROETHYLENE (TCE)	2

MW-10 : MW10-2015-05-20	
CIS-1,2-DICHLOROETHYLENE	2
TETRACHLOROETHYLENE(PCE)	21
TRICHLOROETHYLENE (TCE)	2

AV-2 : AV2-2015-05-18	
CIS-1,2-DICHLOROETHYLENE	1
TETRACHLOROETHYLENE(PCE)	7
TRICHLOROETHYLENE (TCE)	1

MW-RCI : MWRC1-2015-05-18	
CIS-1,2-DICHLOROETHYLENE	580D
TETRACHLOROETHYLENE(PCE)	92
TRICHLOROETHYLENE (TCE)	16
VINYL CHLORIDE	15

RW-1 : RW1-2015-05-18	
CIS-1,2-DICHLOROETHYLENE	8
TETRACHLOROETHYLENE(PCE)	170D
TRICHLOROETHYLENE (TCE)	6

MW-7 : MW7-2015-05-19	
CIS-1,2-DICHLOROETHYLENE	0.8
TETRACHLOROETHYLENE(PCE)	9
TRICHLOROETHYLENE (TCE)	0.9

RW-2 : RW2-2015-05-18	
CIS-1,2-DICHLOROETHYLENE	13
TETRACHLOROETHYLENE(PCE)	1700D
TRICHLOROETHYLENE (TCE)	19

MW-09 : MW9-2015-05-20	
CIS-1,2-DICHLOROETHYLENE	0.6
TETRACHLOROETHYLENE(PCE)	2

MW-08 : MW8-2015-05-20	
CIS-1,2-DICHLOROETHYLENE	1
TETRACHLOROETHYLENE(PCE)	3
TRICHLOROETHYLENE (TCE)	1

MW-5 : MW5-2015-05-20	
CHLOROFORM	0.9
TETRACHLOROETHYLENE(PCE)	1
TOTAL TRIHALOMETHANES	0.9

Locations without result box are non detections **Units: µg/l**

1000J Represents exceedence of groundwater criteria ◑ **Wells**

DEC groundwater standard Part 703 - Class GA water quality

0 50 100 feet

N

HDR

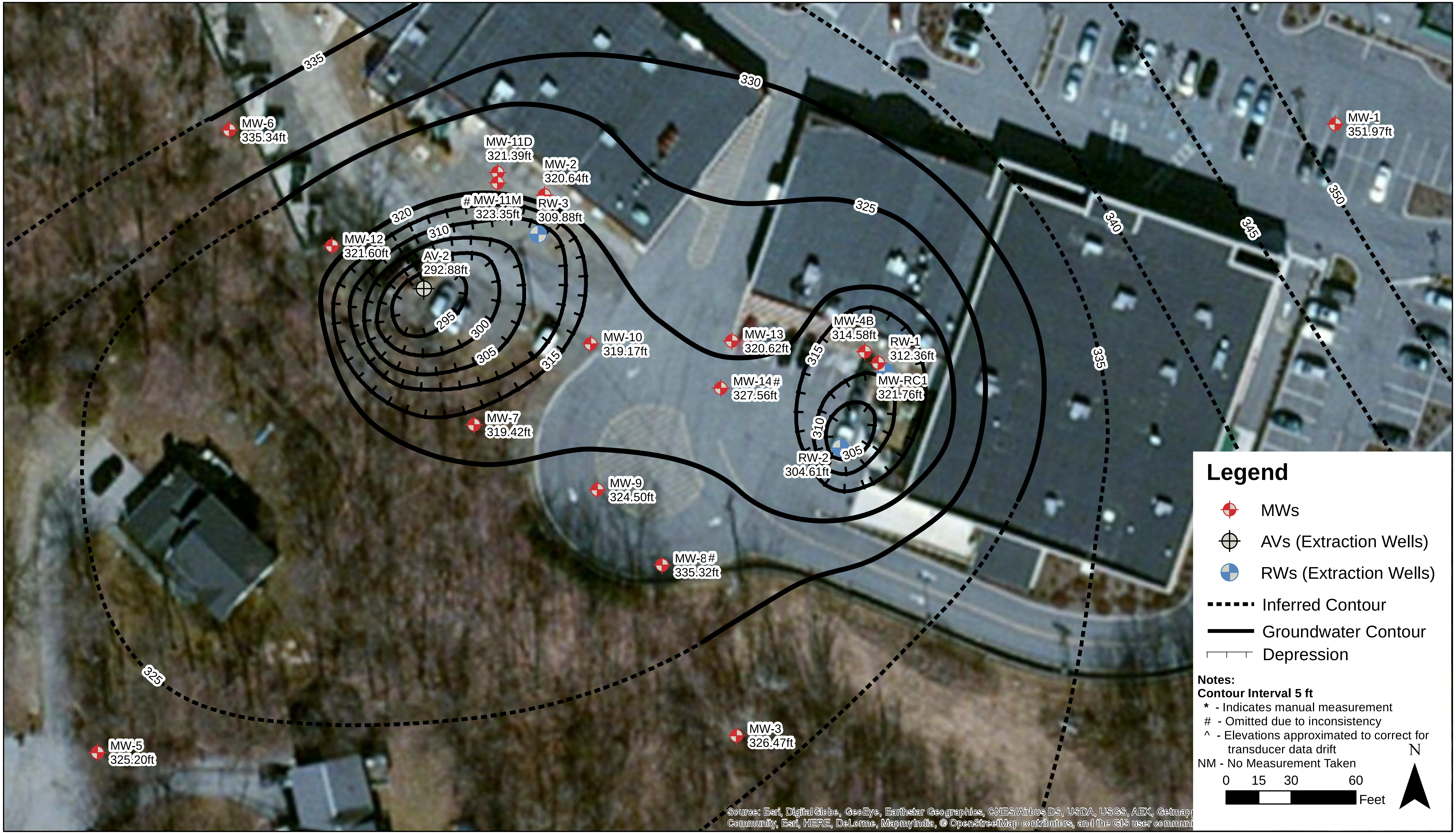
Groundwater Analytical Results - May 2015

Apple Valley Shopping Center NYSDEC Site # 314084

Town of LaGrange, Dutchess County, New York

DATE 07/15/2015

FIGURE 5



Notes:
Contour Interval 5 ft
* - Indicates manual measurement
\# - Omitted due to inconsistency
^ - Elevations approximated to correct for transducer data drift
NM - No Measurement Taken

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapp
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HDR

May 2015 Groundwater Contours

Apple Valley Shopping Center NYSDEC Site # 314084

Town of LaGrange, Dutchess County, New York

Date: 8/5/2016

Figure: 6

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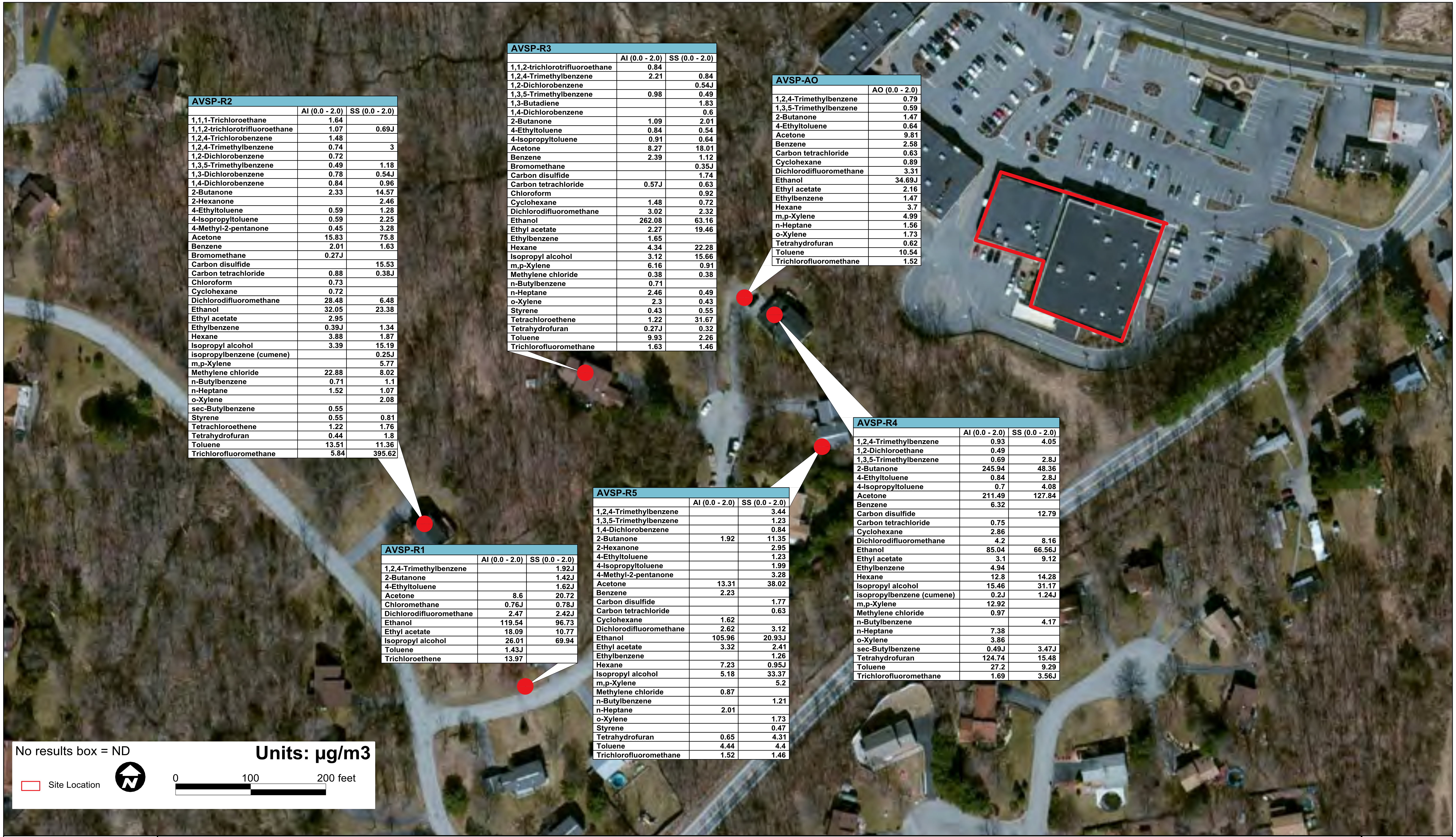


AVSP-R2

	AI (0.0 - 2.0)	SS (0.0 - 2.0)
1,1,1-Trichloroethane	1.64	
1,1,2-trichlorotrifluoroethane	1.07	0.69J
1,2,4-Trichlorobenzene	1.48	
1,2,4-Trimethylbenzene	0.74	3
1,2-Dichlorobenzene	0.72	
1,3,5-Trimethylbenzene	0.49	1.18
1,3-Dichlorobenzene	0.78	0.54J
1,4-Dichlorobenzene	0.84	0.96
2-Butanone	2.33	14.57
2-Hexanone		2.46
4-Ethyltoluene	0.59	1.28
4-Isopropyltoluene	0.59	2.25
4-Methyl-2-pentanone	0.45	3.28
Acetone	15.83	75.8
Benzene	2.01	1.63
Bromomethane	0.27J	
Carbon disulfide		15.53
Carbon tetrachloride	0.88	0.38J
Chloroform	0.73	
Cyclohexane	0.72	
Dichlorodifluoromethane	28.48	6.48
Ethanol	32.05	23.38
Ethyl acetate	2.95	
Ethylbenzene	0.39J	1.34
Hexane	3.88	1.87
Isopropyl alcohol	3.39	15.19
isopropylbenzene (cumene)		0.25J
m,p-Xylene		5.77
Methylene chloride	22.88	8.02
n-Butylbenzene	0.71	1.1
n-Heptane	1.52	1.07
o-Xylene		2.08
sec-Butylbenzene	0.55	
Styrene	0.55	0.81
Tetrachloroethene	1.22	1.76
Tetrahydrofuran	0.44	1.8
Toluene	13.51	11.36
Trichlorofluoromethane	5.84	395.62

AVSP-R3

	AI (0.0 - 2.0)	SS (0.0 - 2.0)
1,1,2-trichlorotrifluoroethane	0.84	
1,2,4-Trimethylbenzene	2.21	0.84
1,2-Dichlorobenzene		0.54J
1,3,5-Trimethylbenzene	0.98	0.49
1,3-Butadiene		1.83
1,4-Dichlorobenzene		0.6
2-Butanone	1.09	2.01
4-Ethyltoluene	0.84	0.54
4-Isopropyltoluene	0.91	0.64
Acetone	8.27	18.01
Benzene	2.39	1.12
Bromomethane		0.35J
Carbon disulfide		1.74
Carbon tetrachloride	0.57J	0.63
Chloroform		0.92
Cyclohexane	1.48	0.72
Dichlorodifluoromethane	3.02	2.32
Ethanol	262.08	63.16
Ethyl acetate	2.27	19.46
Ethylbenzene	1.65	
Hexane	4.34	22.28
Isopropyl alcohol	3.12	15.66
m,p-Xylene	6.16	0.91
Methylene chloride	0.38	0.38
n-Butylbenzene	0.71	
n-Heptane	2.46	0.49
o-Xylene	2.3	0.43
Styrene	0.43	0.55
Tetrachloroethene	1.22	31.67
Tetrahydrofuran	0.27J	0.32
Toluene	9.93	2.26
Trichlorofluoromethane	1.63	1.46

AVSP-AO

	AO (0.0 - 2.0)
1,2,4-Trimethylbenzene	0.79
1,3,5-Trimethylbenzene	0.59
2-Butanone	1.47
4-Ethyltoluene	0.64
Acetone	9.81
Benzene	2.58
Carbon tetrachloride	0.63
Cyclohexane	0.89
Dichlorodifluoromethane	3.31
Ethanol	34.69J
Ethyl acetate	2.16
Ethylbenzene	1.47
Hexane	3.7
m,p-Xylene	4.99
n-Heptane	1.56
o-Xylene	1.73
Tetrahydrofuran	0.62
Toluene	10.54
Trichlorofluoromethane	1.52

AVSP-R4

	AI (0.0 - 2.0)	SS (0.0 - 2.0)
1,2,4-Trimethylbenzene	0.93	4.05
1,2-Dichloroethane	0.49	
1,3,5-Trimethylbenzene	0.69	2.8J
2-Butanone	245.94	48.36
4-Ethyltoluene	0.84	2.8J
4-Isopropyltoluene	0.7	4.08
Acetone	211.49	127.84
Benzene	6.32	
Carbon disulfide		12.79
Carbon tetrachloride	0.75	
Cyclohexane	2.86	
Dichlorodifluoromethane	4.2	8.16
Ethanol	85.04	66.56J
Ethyl acetate	3.1	9.12
Ethylbenzene	4.94	
Hexane	12.8	14.28
Isopropyl alcohol	15.46	31.17
isopropylbenzene (cumene)	0.2J	1.24J
m,p-Xylene	12.92	
Methylene chloride	0.97	
n-Butylbenzene		4.17
n-Heptane	7.38	
o-Xylene	3.86	
sec-Butylbenzene	0.49J	3.47J
Tetrahydrofuran	124.74	15.48
Toluene	27.2	9.29
Trichlorofluoromethane	1.69	3.56J

AVSP-R5

	AI (0.0 - 2.0)	SS (0.0 - 2.0)
1,2,4-Trimethylbenzene		3.44
1,3,5-Trimethylbenzene		1.23
1,4-Dichlorobenzene		0.84
2-Butanone	1.92	11.35
2-Hexanone		2.95
4-Ethyltoluene		1.23
4-Isopropyltoluene		1.99
4-Methyl-2-pentanone		3.28
Acetone	13.31	38.02
Benzene	2.23	
Carbon disulfide		1.77
Carbon tetrachloride		0.63
Cyclohexane	1.62	
Dichlorodifluoromethane	2.62	3.12
Ethanol	105.96	20.93J
Ethyl acetate	3.32	2.41
Ethylbenzene		1.26
Hexane	7.23	0.95J
Isopropyl alcohol	5.18	33.37
m,p-Xylene		5.2
Methylene chloride	0.87	
n-Butylbenzene		1.21
n-Heptane	2.01	
o-Xylene		1.73
Styrene		0.47
Tetrahydrofuran	0.65	4.31
Toluene	4.44	4.4
Trichlorofluoromethane	1.52	1.46

AVSP-R1

	AI (0.0 - 2.0)	SS (0.0 - 2.0)
1,2,4-Trimethylbenzene		1.92J
2-Butanone		1.42J
4-Ethyltoluene		1.62J
Acetone	8.6	20.72
Chloromethane	0.76J	0.78J
Dichlorodifluoromethane	2.47	2.42J
Ethanol	119.54	96.73
Ethyl acetate	18.09	10.77
Isopropyl alcohol	26.01	69.94
Toluene	1.43J	
Trichloroethene	13.97	

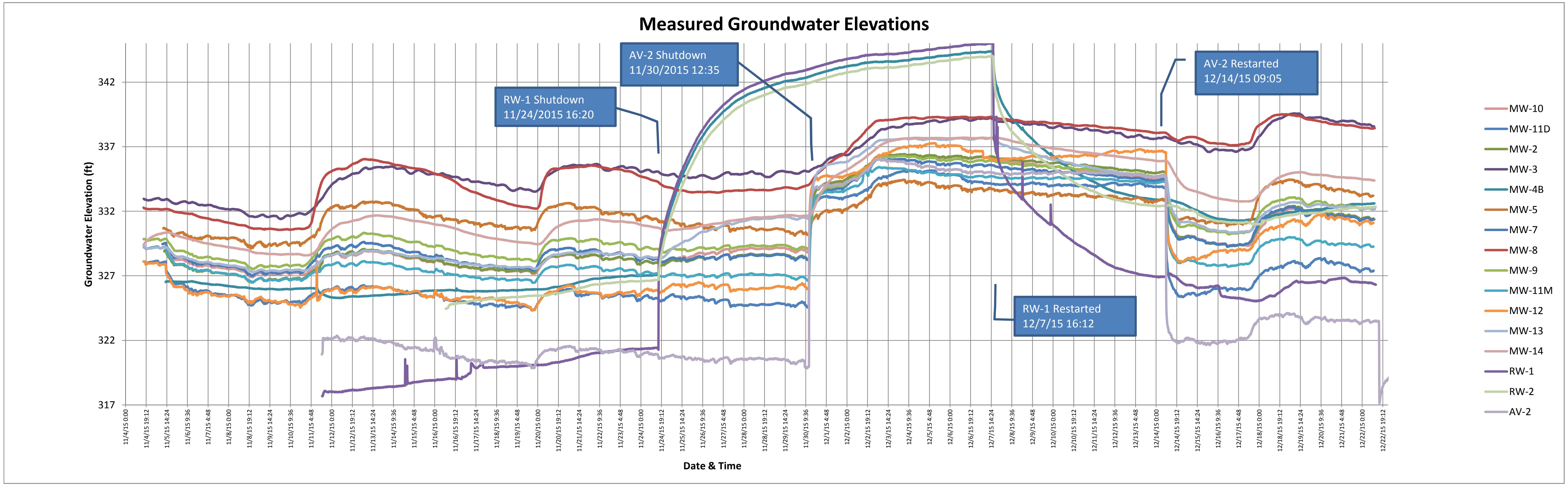
Soil Vapor Intrusion Analytical Results

Apple Valley Shopping Center NYSDEC Site # 314084

La Grange, Dutchess County, New York

DATE
07/23/2015

FIGURE
7

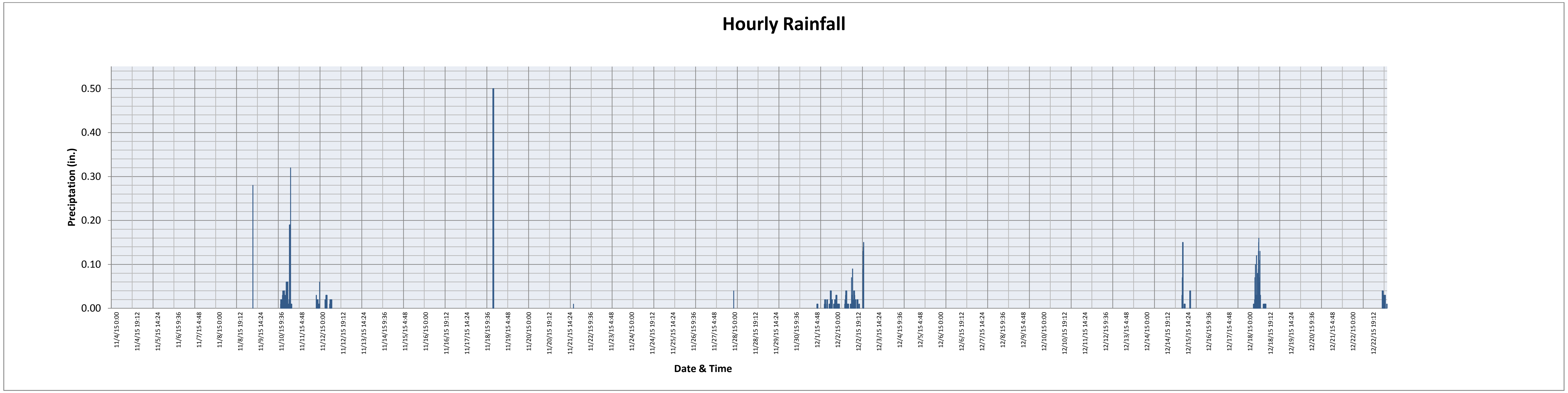


RW-1 Shutdown
11/24/2015 16:20

AV-2 Shutdown
11/30/2015 12:35

AV-2 Restarted
12/14/15 09:05

RW-1 Restarted
12/7/15 16:12



HDR

Aquifer Testing - Measured Groundwater Elevations

Apple Valley Shopping Center New York State Department of Environmnetal Conservation Site # 314084

Town of LaGrange, Dutchess County, New York

Date: 8/3/2016

Figure: 8

Notes:
Contour Interval 2 ft
* - Indicates manual measurement
\# - Omitted due to inconsistency
^ - Elevations approximated to correct for transducer data drift
NM - No Measurement Taken

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapp
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Groundwater Contours – Non-Pumping Condition (12/7/2015)

Apple Valley Shopping Center New York State Department of Environmnetal Conservation Site # 314084

Town of LaGrange, Dutchess County, New York

Date: 8/4/2016

Figure: 9

Z:\D007625 NYSDEC Standby Contract\Work Assignment Folders\WA#15 Apple Valley RD\EI_GIS\Contouring\Fall_2015\Figure_9_GW_Contours_Static.mxd

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmap
Community, Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors, and the GIS user commun

Notes:
Contour Interval 2 ft
* - Indicates manual measurement
\# - Omitted due to inconsistency
^ - Elevations approximated to correct for transducer data drift
NM - No Measurement Taken

Groundwater Contours – RW-1 Pumping (12/14/2015)

Apple Valley Shopping Center New York State Department of Environmnetal Conservation Site # 314084
Town of LaGrange, Dutchess County, New York

Date: 8/4/2016
Figure: 10

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Notes:
Contour Interval 2 ft
* - Indicates manual measurement
# - Omitted due to inconsistency
^ - Elevations approximated to correct for transducer data drift
NM - No Measurement Taken

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmap
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Groundwater Contours – AV-2 Pumping (11/30/2015)

Apple Valley Shopping Center New York State Department of Environmnetal Conservation Site # 314084

Town of LaGrange, Dutchess County, New York

Date: 8/4/2016

Figure: 11

Z:\D007625 NYSDEC Standby Contract\Work Assignment Folders\WA#15 Apple Valley RD\EI_GIS\Contouring\Fall_2015\Figure_11_GW_Contours_AV-2_Only_20160804 - Copy.mxd

Legend

⊕	MWs
⊕	AVs (Extraction Wells)
●	RWs (Extraction Wells)
┅┅	Inferred Contour
━━	Groundwater Contour
┬┬	Depression

Notes:

Contour Interval 2 ft

* - Indicates manual measurement
\# - Omitted due to inconsistency
^ - Elevations approximated to correct for transducer data drift
NM - No Measurement Taken

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmap
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Groundwater Contours – RW-1 and AV-2 Pumping

Apple Valley Shopping Center New York State Department of Environmnetal Conservation Site # 314084

Town of LaGrange, Dutchess County, New York

Date: 8/4/2016

Figure: 12

Z:\D007625 NYSDEC Standby Contract\Work Assignment Folders\WA#15 Apple Valley RD\EI_GIS\Contouring\Fall_2015\Figure_12_GW_Contours_AV-2_RW-1_20160804 - Copy.mxd