ARCADIS Design & Consultancy for natural and built assets

Melville Opportunity LLC and Karakoram LLC

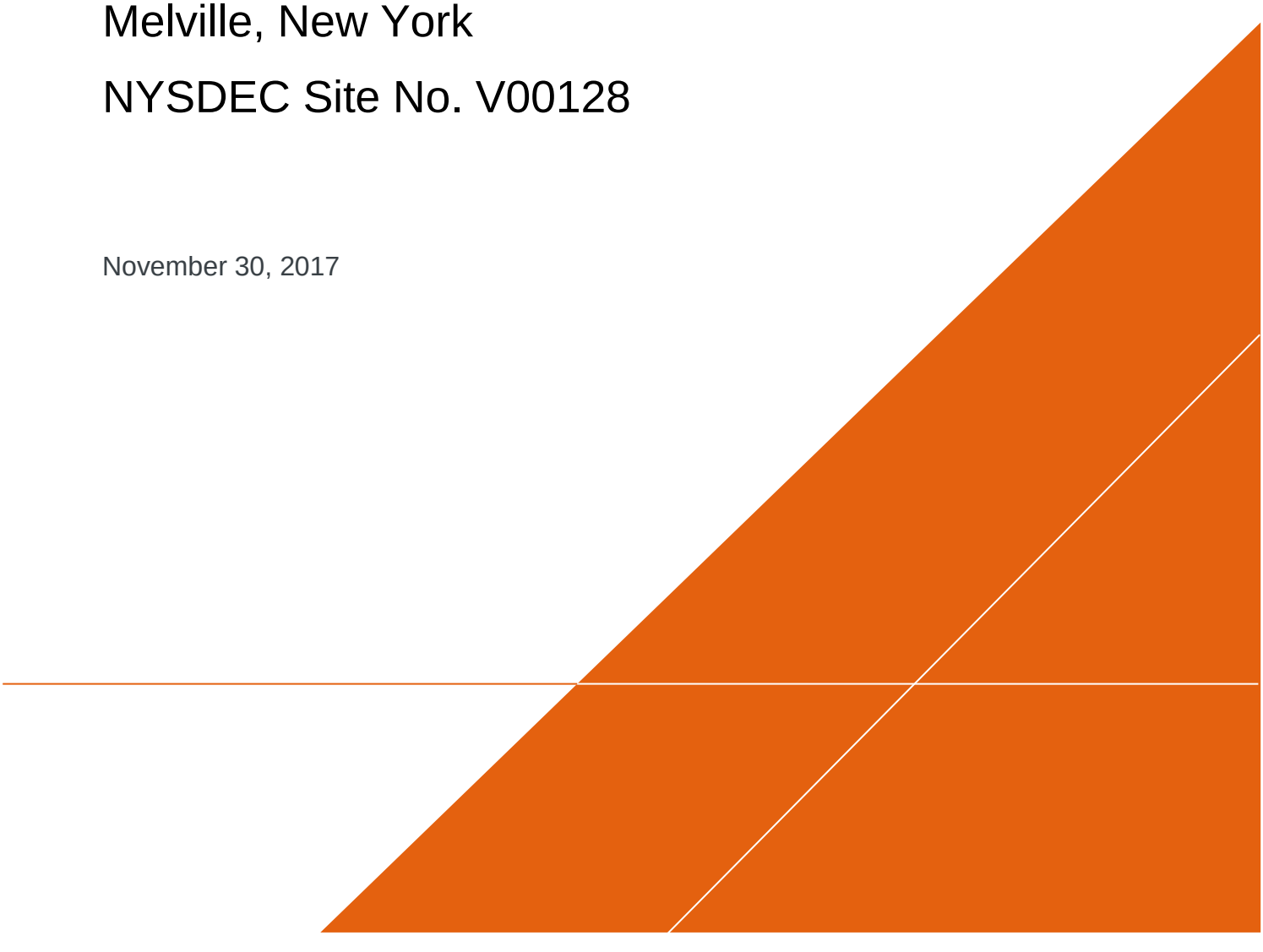
PERIODIC REVIEW REPORT

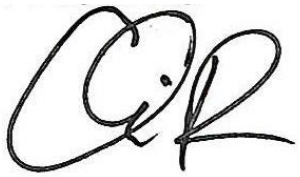
25 Melville Park Road

Melville, New York

NYSDEC Site No. V00128

November 30, 2017





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PERIODIC REVIEW REPORT

25 Melville Park Road Site
Melville, New York
NYSDEC Site No. V00128

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EXECUTIVE SUMMARY

Arcadis of New York, Inc. (Arcadis), on behalf of Melville Opportunity LLC and Karakoram LLC, has prepared this Periodic Review Report (PRR) for the 25 Melville Park Road Site (hereinafter referred to as the "Site") in Melville, New York. The Site is being remediated in accordance with the Voluntary Cleanup Agreement (VCA) Index # W1-0778-96-11, Site # 1-52-169, Voluntary Cleanup Site V00128-1, which was issued on January 13, 1998, and the Record of Decision (ROD), which was issued on March 29, 2004.

Several remedial action objectives (RAOs) have been established for protection of both human health and the environment at the Site. The following remedial actions have been implemented at the Site to meet the RAOs.

- Enhanced Reductive Dechlorination (ERD) to remediate chlorinated volatile organic compound (CVOC) impacts in groundwater;
- Non-aqueous phase liquid (NAPL) recovery;
- Operation of a vapor control system (VCS) to prevent vapor intrusion; and,
- Implementation of institutional controls and engineering controls (ICs/ECs).

The following conclusions and recommendations are made based on results provided within this PRR:

- The requirements of each remedy component and/or plan were met during the reporting period as follows:
  - Each engineering control (e.g., active remedial component) resulted in achievement of their respective RAOs;
  - The periodic review inspection and executed IC/EC forms confirm that all ICs remain in place and effective; and,
  - All monitoring and operation and maintenance (O&M) activities were completed in accordance with the requirements provided in the Site Management Plan (SMP; Arcadis 2010) and SMP Addendum (Arcadis 2015).
- Each remedy component performed as designed and has mitigated the identified risks to human health and the environment.
- The timing of the next emulsified vegetable oil (EVO) injection will be based on an ongoing evaluation of the groundwater monitoring data, but is anticipated to occur in 2019.
- Based upon the findings herein and the future anticipated site activities, it is recommended that the current periodic review period (annual) be continued.

1 SITE OVERVIEW

The following subsections provide a site overview including a site description, current conceptual site model (CSM), RAOs, and description of the main components of the remedy.

1.1 Site Description

The Site is located at 25 Melville Park Road in Suffolk County, New York and is identified as District 0400, Section 268, Block 01, Lot 04. The Site is located slightly south and east of the intersection of Broadhollow Road (Route 110) and the Long Island Expressway (Route 495) in the Village of Melville. The approximately 6-acre Site is located in an industrial and commercial area and is bounded to the south by Melville Park Road and to the west, north, and east by adjoining properties. The Site is presently occupied by a two-story office building and parking facilities. Figure 1 (Site Plan) shows the Site features and layout.

1.2 Conceptual Site Model

There are two primary impacted zones at the Site. The shallow aquifer zone extends from approximately 45 to 70 feet below land surface (ft bls) and the intermediate aquifer zone extends from approximately 70 to 100 ft bls. The most likely source of impacts is a historical release(s) from the former manufacturing operations, whereby NAPL migrated vertically through the vadose zone to the aquifer zones described above; the exact release mechanism(s) is unknown. The on-site dissolved-phase volatile organic compound (VOC) plume currently extends from the source area beneath the northeast portion of the building to the general vicinity of monitoring wells MW-31 in the shallow zone and MW-34 in the intermediate zone based on groundwater monitoring between December 2016 and September 2017. The dissolved-phase VOC plume in the source area is present to a depth of approximately 90 ft bls and appears to be migrating downgradient of the source area within a narrow horizontal region. The non-aqueous phase liquid (NAPL) extent has been defined and, historically, generally extended from the vicinity of angle wells IW-27 and IW-25 to the loading dock area.

In 2013 Arcadis completed a supplemental source area investigation to refine the CSM and further delineate source area NAPL and groundwater impacts. A detailed summary of the current CSM is provided in Progress Report 79 (Arcadis 2013). Figures 2 and 3 show the distribution of total CVOCs in the shallow and intermediate aquifer zones, respectively, for the June 2003 (pre-remediation) and December 2016 groundwater sampling events.

1.3 Remedial Action Objectives

RAOs for public health protection include eliminating or reducing to the extent practicable:

- Exposures of persons at or around the Site to chlorinated solvents and petroleum in the underlying groundwater;
- The migration of chlorinated solvents from groundwater into indoor air through soil vapors; and,

- The migration of on-site groundwater contamination to off-site where additional exposures to contaminated groundwater are possible.

RAOs for environmental protection include attaining to the extent practicable:

- Elimination of VOC source areas in groundwater, thereby removing the source of the dissolved groundwater plume;
- Ambient groundwater quality standards to be met at the downgradient property boundary, thereby preventing further impacts to off-site groundwater; and,
- Ensure that indoor air quality continues to meet New York State Department of Health (NYSDOH) guidance values.

1.4 Remedial Program Elements

The following are the primary components of the selected remedy:

- The operation and maintenance of downgradient and source area IRZs by periodic injection of organic carbon to the subsurface until the remedial objectives have been achieved, or until the New York State Department of Environmental Conservation (NYSDEC) determines that continued operation is technically impracticable or not feasible;
- NAPL bailing in productive wells until NAPL recovery is no longer productive;
- Operation of the VCS in the northeast portion of the building;
- Operation of the heating, ventilation, and air conditioning (HVAC) system to maintain a positive pressure within the building to help prevent the potential migration of vapors into indoor air;
- Execution and recording of an Environmental Easement (EE) to restrict land use and prevent future exposure to any contamination remaining at the Site;
- Development and implementation of a SMP for long term management of remaining contamination as required by the EE, which includes plans for: (1) Institutional and Engineering Controls, (2) monitoring, (3) operation and maintenance, and (4) reporting;
- Periodic certification of the institutional and engineering controls listed above.

There have not been any significant changes made to the selected remedy since remedy selection. In 2013 and 2014 Arcadis completed a feasibility evaluation for alternate source area remedial technologies and has implemented an optimized enhanced reductive dechlorination (ERD) program. The optimized ERD program was initially proposed in the 2014 PRR (Arcadis 2014) and is discussed in detail in the 2015 PRR. A detailed history of the injection activities completed as part of the ERD remedy is included in Appendix A.

2 EVALUATION OF REMEDY PERFORMANCE, EFFECTIVENESS, AND PROTECTIVENESS

The selected remedy was effective at achieving each of the RAOs during the reporting period. The groundwater monitoring data are discussed in Section 5.2.1. Table 1 provides a summary of how each RAO was achieved through operation of its respective remedy component. Supporting data in the form of tables and graphs are provided in the remaining sections of this PRR.

CVOCs were detected at property boundary wells MW-31 (shallow zone), MW-34, MW-35, and MW-37 (intermediate zone) at concentrations above the groundwater quality criteria; however, the data collected from wells MW-31 and MW-34 indicate 100 percent and 99.8 percent conversion to daughter products, respectively, and 94 percent and 92 percent conversion to non-toxic end products (ethane and ethene), respectively. MW-35 is not consistently monitored for end products and MW-37 has an inadequate monitoring history to evaluate treatment effectiveness. CVOCs were not detected at property boundary wells MW-4 (shallow zone), MW-16D (intermediate zone), and MW-36 (deep zone) above the groundwater quality criteria.

The light hydrocarbons data collected at MW-37 indicate the groundwater is methanogenic and that complete dechlorination is occurring. Additional monitoring in accordance with the approved long-term groundwater monitoring plan will continue to be performed to confirm a stable to decreasing trend.

3 IC/EC PLAN COMPLIANCE REPORT

ICs and ECs have been implemented at the Site to ensure achievement of the RAOs described in Section 1.3. The Site has three primary ECs. The ECs consist of the following:

- Downgradient and source area IRZs that involve the delivery of organic carbon to the subsurface through a network of injection wells;
- NAPL recovery that involves the manual removal of NAPL from the monitoring well network by hand bailing; and,
- A VCS in the northeast portion of the building consisting of extraction points VCS-1 and VCS-2 and induced vacuum monitoring points MP-1 through MP-6. In addition to the VCS, the HVAC system is operated to maintain a positive pressure within the building to help prevent the potential migration of vapors into indoor air.

Table 1 provides a summary of how each EC is used in achievement of the RAOs.

A series of ICs are used to implement, maintain, and monitor the ECs. The EE requires compliance with these ICs. The ICs consist of the following:

- All ECs must be operated and maintained as specified in the SMP;
- All ECs on the Site must be inspected and certified at a frequency and in a manner defined in the SMP;
- Groundwater, NAPL, sub-slab soil vapor, and indoor air monitoring must be performed as defined in the SMP;
- Data and information pertinent to site management must be reported at the frequency and in a manner defined in the SMP; and,
- On-site environmental monitoring devices, including but not limited to, injection wells, groundwater monitoring wells, VCS extraction and monitoring points, and soil vapor probes, must be protected and replaced, as necessary, or properly abandoned, as directed by the NYSDEC, to ensure continued functioning in the manner specified in the SMP.

In addition to the ICs referenced above, additional ICs have been implemented in the form of site restrictions. Site restrictions that apply to the Site consist of the following:

- Require compliance with the approved SMP;
- Restrict the use of groundwater beneath the Site as a source of potable or process water, without necessary water quality treatment as determined by the Suffolk County Department of Health Services (SCDHS);
- Limit the use and development of the property to commercial or industrial uses only; and,
- Require the property owner to complete and submit to the NYSDEC an annual certification to ensure that the ICs are still in place.

The annual site inspection was completed on October 23, 2017. No deficiencies were noted during the annual site inspection. As such, all ICs/ECs remain in place and effective in meeting the goals described above. There are no recommended changes at this time.

The completed site management certification forms executed as part of the annual site inspection and review process are provided in Appendix B.

4 MONITORING PLAN COMPLIANCE REPORT

The monitoring plan provided in the SMP (Arcadis 2010) describes the measures for evaluating the performance and effectiveness of the implemented ECs in reducing or mitigating contamination at the Site. The SMP was revised in July 2015 with submittal of a SMP Addendum (Arcadis 2015), which was approved by the NYSDEC in an email dated July 27, 2015. The NYSDEC approved the SMP Addendum in a follow up letter dated August 11, 2015. The monitoring program for the Site includes long-term IRZ performance monitoring, groundwater compliance monitoring, groundwater plume configuration monitoring, water-level measurements, NAPL gauging, indoor air quality (IAQ) monitoring, sub-slab soil vapor monitoring, and VCS monitoring. Figures 4 and 5 show the locations of the monitoring points that are used in the monitoring program. Detailed descriptions of the monitoring program elements are provided in the SMP (Arcadis 2010) and SMP Addendum (Arcadis 2015).

The monitoring activities that were completed during this PRR reporting period include the following:

- Quarterly IRZ performance monitoring and groundwater compliance monitoring were performed in December 2016, March 2017, July 2017, and September 2017;
- Annual groundwater plume configuration monitoring was performed in December 2016;
- Annual water-level measurements were collected in March 2017;
- Quarterly NAPL gauging was performed in December 2016, March 2017, July 2017, and September 2017;
- Annual IAQ monitoring and sub-slab soil vapor monitoring were performed in March 2017; and,
- Quarterly VCS monitoring was performed in December 2016, March 2017, July 2017, and September 2017.

There are no monitoring deficiencies and the monitoring complied with the monitoring plan. The monitoring that was performed during the PRR reporting period continues to demonstrate that the ECs are effective in reducing or mitigating contamination at the Site. Additional evaluation of remedy-specific monitoring data is described below and in Section 5 of this PRR.

4.1 Groundwater Monitoring

Tables 2 and 3 provide a summary of the groundwater monitoring data collected during the current reporting period. Figures 2 and 3 show the distribution of total CVOCs in the shallow and intermediate aquifer zones, respectively, for the June 2003 (pre-remediation) and December 2016 groundwater sampling events. Interpretation of the groundwater analytical results with respect to the effectiveness of the remedial actions (specifically the IRZs) is included in Section 5.2.1.

4.2 Water-Level Measurements

Arcadis collected water-level measurements from the hydraulic monitoring well network on March 27 and 28, 2017 (see Table 4). Water-level elevation data indicate that the horizontal direction of shallow

groundwater flow is to the south-southeast, which is consistent with data collected during previous monitoring rounds (see Figure 6).

4.3 NAPL Gauging

Table 5 provides the NAPL gauging data from December 2016 through September 2017. NAPL was detected in well IW-18 at trace thicknesses (ranging from 0.01 feet to 0.02 feet) during this PRR reporting period (in December 2016, March 2017, and September 2017); NAPL was not detected in well IW-18 in July 2017. NAPL was detected in well IW-9 at a trace thickness (0.02 feet) in September 2017. The distribution of drainable NAPL correlates with the source area and there is no evidence, based on the quarterly NAPL gauging data, that there has been a horizontal spread or vertical migration of NAPL from the source area to other areas. There are regions within the source area where NAPL is present as residual NAPL that cannot be recovered from wells.

4.4 IAQ Monitoring and Sub-Slab Soil Vapor Monitoring

The annual vapor intrusion monitoring program consists of collecting two (2) indoor air quality samples (SW Office Space and SE Office Space) and two (2) sub-slab soil vapor quality samples (SS-5A and SE SS-A). Arcadis collected the indoor air quality samples and sub-slab soil vapor samples on March 18, 2017. Table 6 presents a summary of the March 2017 analytical data.

The 2017 sub-slab soil vapor sample data were similar to the 2016 sub-slab soil vapor sample data. PCE was detected in the SE SS-A and SS-5A sub-slab soil vapor samples at concentrations of 460 and 110 micrograms per cubic meter ($\mu g/m^3$), respectively. 1,1,1-trichloroethane (1,1,1-TCA) was detected in the SE SS-A and SS-5A samples at concentrations of 6.9 and 7.7 $\mu g/m^3$, respectively. TCE was detected in the SE SS-A sample at a concentration of 14 $\mu g/m^3$. The compound 2-butanone (methyl ethyl ketone) was detected in the SE SS-A sample at a concentration of 6.3 $\mu g/m^3$.

2-butanone (methyl ethyl ketone) was detected in the SE Office Space indoor air quality sample at a concentration of 5.8 $\mu g/m^3$. PCE, trichloroethene (TCE), 1,1,1-TCA, vinyl chloride (VC), and 1,1-dichloroethane (1,1-DCA) were detected in the SE Office Space indoor air quality sample or its associated duplicate sample at concentrations of 1.2, 1.5, 0.99, 0.20, and 0.14 $\mu g/m^3$, respectively. PCE was detected in the SW Office Space indoor air quality sample at a concentration of 0.25 $\mu g/m^3$.

Evaluating the 2017 sub-slab soil vapor data in conjunction with the 2017 indoor air quality data in the context of the updated May 2017 NYSDOH decision matrices indicates that the concentrations of TCE in the SE Office Space indoor air quality sample and SE SS-A sub-slab soil vapor sample are slightly above the concentrations identified in Soil Vapor/Indoor Air Matrix A (e.g., 1 $\mu g/m^3$ and above for indoor air) that result in a recommendation for mitigation; however, the detected TCE concentration (1.5 $\mu g/m^3$) in the SE Office Space indoor air quality sample is below the NYSDOH air guideline for TCE (2 $\mu g/m^3$) and is not consistent with historical indoor air sample TCE concentrations, which have generally been non-detect. Based on the updated May 2017 NYSDOH decision matrices, no further action is warranted for VC, PCE, and 1,1,1-TCA at the two sampling locations. The site-related CVOCs will continue to be monitored on an annual basis and the next vapor intrusion monitoring event will be conducted in the early part of 2018 (e.g., January or February). The 2018 data will be compared to the March 2017 data upon receipt and transmitted to the NYSDEC for review and discussion.

4.5 VCS Monitoring

The VCS continued to maintain negative pressure beneath the building within the entire target area (i.e., on both sides of the wall footing). This is evidenced by negative pressure readings at all induced vacuum monitoring points during operation. Photoionization detector (PID) measurements collected from extraction points VCS-1 and VCS-2 were generally non-detect. The VCS operating data for the period of December 2016 through September 2017 are provided in Table 7.

5 OPERATION AND MAINTENANCE (O&M) PLAN COMPLIANCE REPORT

The O&M Plan provided in the SMP (Arcadis 2010) and SMP Addendum (Arcadis 2015) describe the activities necessary to implement each of the active remedial components with the ultimate goal of achieving their specific RAOs. As described previously, the active remedial components at the Site include:

- Implementation of the downgradient and source area IRZs;
- NAPL recovery; and,
- Operation of the VCS.

A summary of the O&M methodology and activities completed during the reporting period is provided below.

5.1 Operation and Maintenance Methodology and Activities Completed

The following subsections provide a brief description of the methodology and activities for each of the active remedial components during the reporting period.

5.1.1 In-Situ Reactive Zone Activities

Maintenance of the downgradient and source area IRZs involves the periodic injection of a fermentable organic carbon substrate through a network of injection wells and groundwater monitoring program. The injection well locations are shown on Figure 7. The injection of organic carbon drives the groundwater geochemistry to strongly reducing conditions that fosters the growth of bacteria capable of completing reductive dechlorination. The organic carbon also promotes enhanced solubilization of NAPL through the generation of mild surfactants, organic acids, and other chemical processes.

A second injection of emulsified vegetable oil (EVO) in the source area injection wells and an injection of molasses in the downgradient injection wells was implemented in May/June 2017. Consistent with the first optimized ERD program reagent injection in August 2015, a longer lasting electron donor in the form of a commercially available EVO product was injected into an expanded well network that was installed to cover the entirety of the suspected source area. The EVO included sodium bicarbonate as an amendment to minimize a potential decrease in pH due to potential formation of volatile fatty acids during fermentation of the carbon. EVO was introduced into injection wells IW-3, IW-17, IW-20, IW-25, IW-27, IW-28, and IW-29. Molasses was introduced into injection wells IW-6, IW-11, IW-13, and IW-15. At the request of the NYSDEC, well IW-13 was added to this injection. In an email dated March 22, 2017, Arcadis provided the NYSDEC with details related to the injection event. A bullet summary of the injection methodology history is provided in Appendix A.

5.1.2 Groundwater Performance Monitoring

The groundwater monitoring program is used to demonstrate that sufficient organic carbon is delivered to the subsurface, confirm reagent distribution, and confirm that conditions conducive for reductive dechlorination are being maintained. Groundwater analytical parameters used to confirm these objectives include VOCs, total organic carbon (TOC), methane, ethene, ethane, and the field parameter pH.

Four performance monitoring events were completed during this reporting period. The December 2016, March 2017, July 2017, and September 2017 events were completed in accordance with the NYSDEC-approved revised groundwater monitoring program that was described in the SMP Addendum (Arcadis 2015).

5.1.3 NAPL Recovery

NAPL recovery is completed through manual hand-bailing of NAPL from all monitoring wells containing recoverable NAPL. Recovered NAPL is containerized in labeled, sealed 55-gallon drums. The 55-gallon drums are stored in a secure location and are disposed in accordance with applicable local, State, and Federal regulations.

As described previously, NAPL gauging and recovery events were completed on a quarterly basis in December 2016, March 2017, July 2017, and September 2017. A summary of the gauging and recovery data are provided in Tables 5 and 8.

5.1.4 Vapor Control System

Maintenance of the VCS involved quarterly site visits that include the following activities:

- Periodic site inspections to ensure the system is running properly;
- The collection of meteorological and system operating parameters on a quarterly basis including:
  - Barometric pressure, ambient temperature and atmospheric conditions. In addition, it is noted if the barometric pressure is rising or falling;
  - Induced vacuum readings at all monitoring points;
  - Recovery vacuum and flow rate at each recovery well; and,
  - PID readings from each recovery well to confirm vapor treatment is not required (NYSDEC 2007).
- Maintenance of system equipment (i.e., blower maintenance), as necessary during the site inspections.

The VCS operated continuously during the reporting period. Site inspections are completed during each scheduled quarterly VCS monitoring event, during each groundwater and NAPL monitoring event, and during each reagent injection event. Quarterly site visits for the collection of system operating parameters were completed in December 2016, March 2017, July 2017, and September 2017.

5.2 Evaluation of Remedial Systems

The following subsections evaluate the ability of each of the active remedial components to perform as designed based upon the O&M activities completed during the reporting period.

5.2.1 Downgradient and Source Area In-Situ Reactive Zones

O&M activities completed during the reporting period resulted in operation of the IRZs in accordance with their design objectives. The design objectives are to achieve the RAOs for groundwater identified in Section 1 of this PRR. Key analytical and field parameter data that support this conclusion includes:

- TOC provides a direct measurement of the residual electron donor available for microbial utilization and fermentation to generate dissolved hydrogen for dechlorination. Generally, a TOC concentration of greater than 20 milligrams per liter (mg/L) at monitoring wells located within 60 to 100 days hydraulically downgradient of the injection wells is considered optimal for ERD. A summary of the area with TOC greater than 20 mg/L during the December 2016 sampling event is provided on Figure 8. The extent of TOC exceeding 20 mg/L is generally consistent with the extent of the CVOC plume in groundwater in both the shallow and intermediate zones, which indicates adequate TOC has been distributed to the aquifer to maintain reducing conditions and drive the ERD process. A summary of the TOC analytical data collected during the reporting period is provided in Table 3.
- Optimal reductive dechlorination rates are generally achieved at pH values greater than 5 SU, depending on the extent and distribution of subsurface biomass. With the exception of one pH measurement (4.76 SU) at monitoring well IW-18 in March 2017, the pH at all monitoring wells remained greater than 5 SU, the lower limit for achieving optimal reductive dechlorination. A summary of the pH data collected during the reporting period is provided in Table 3.
- The presence of elevated dissolved methane relative to baseline conditions provides a positive indication that the strongly reducing conditions required for complete reductive dechlorination have been established. A summary of the methane analytical data collected during the reporting period is provided in Table 3. Trend plots that include the concentration of methane versus time for the downgradient monitoring wells that are part of the revised annual (Quarter 4) monitoring program for light hydrocarbons are provided in Appendix C. These select IRZ monitoring wells (MW-31 in the shallow zone and IW-18, MW-23 and MW-34 in the intermediate zone) will be considered the key monitoring wells for performance evaluation. Results indicate the concentration of methane is generally elevated at each of these key monitoring wells.

  As discussed in Progress Report 93, during the March 2017 sampling event, it was determined that the MW-28M PDB was not submerged below the water table due to the decreasing trend in groundwater elevation. There is also a potential that the MW-28M PDB was not submerged during previous sampling events (i.e., September and December 2016). Therefore, a trend plot is not included in Appendix C for monitoring well MW-28M.
- Ethene and ethane are the primary end products of reductive dechlorination. The presence of ethene and ethane demonstrates that the necessary microorganisms for complete transformation of chlorinated VOCs are both present and active within the subsurface and confirms that COCs are

undergoing complete reductive dechlorination through a biologically mediated pathway. Ethane and ethene detections were widespread during monitoring activities conducted during this reporting period. These data corroborate TOC data and indicate that complete reductive dechlorination is occurring within the IRZs. A summary of the ethene and ethane analytical data collected during the reporting period is provided in Table 3. Trend plots that include the concentration of ethene and ethane versus time for key monitoring wells (MW-31 in the shallow zone and IW-18, MW-23 and MW-34 in the intermediate zone) are provided in Appendix C.

- Based on the groundwater monitoring data collected by Arcadis from off-site monitoring well ERM-MW-02 between June and December 2016, the NYSDEC requested that a new monitoring well be installed near the downgradient property boundary. In emails dated February 24, 2017 and March 16, 2017, Arcadis indicated that a new on-site well (MW-37) would be installed near the downgradient property boundary and a temporary well point would be drilled for the collection of vertical aquifer profiling (VAP) groundwater samples to support the selection of the screen interval for MW-37. Additional details were provided by Arcadis to the NYSDEC in an email dated March 22, 2017 and the NYSDEC approved the scope of work in an email dated March 23, 2017. The VAP sampling and monitoring well installation were conducted in April 2017. The highest CVOC concentrations were detected in the 90 to 95 ft bls VAP sample interval and relatively similar concentrations were detected in the 85 to 90 ft bls and 95 to 100 ft bls VAP sample intervals. Cis-1,2-dichloroethene (cis-1,2-DCE) was the only VOC detected in the 100 to 105 ft bls VAP sample interval above groundwater quality criteria; cis-1,2-DCE was detected at a low-level concentration (9.3 micrograms per liter [ug/L]). Intermediate zone property boundary monitoring well MW-37 (screened from 87.5 to 97.5 ft bls) was first sampled during the second quarter of 2017. VOCs were detected in well MW-37 at concentrations similar to the April 2017 VAP data.
- CVOCs were detected at property boundary wells in the shallow (MW-31) and intermediate (MW-34, MW-35, and MW-37) zones at concentrations above the groundwater quality criteria; however, the data collected from wells MW-31 and MW-34 indicate 100 percent and 99.8 percent conversion to daughter products, respectively, and 94 percent and 92 percent conversion to non-toxic end products (ethane and ethene), respectively. MW-35 is not consistently monitored for end products and MW-37 has an inadequate monitoring history to evaluate treatment effectiveness. The light hydrocarbons data collected at these property boundary wells indicate the groundwater is methanogenic and that complete dechlorination is occurring. The downgradient IRZ is achieving its respective RAO.
- Groundwater samples were collected from off-site monitoring well ERM-MW-02 in December 2016, March 2017, July 2017, and September 2017 for the analysis of VOCs and light hydrocarbons. CVOC concentrations measured in September 2017 in monitoring well ERM-MW-02 exhibited a declining trend relative to recent highs measured in December 2016 and March 2017. The light hydrocarbons data collected at ERM-MW-02 indicates the groundwater is methanogenic and that complete dechlorination is occurring.
- The optimized ERD program continues to be effective. The absence of PCE above the applicable groundwater standard at the majority of on-site wells and the general absence of NAPL in the source zone wells indicate the ERD program is effectively mining out NAPL and promoting biological degradation of VOCs in the source zone.

- The concentrations of cis-1,2-DCE and VC at monitoring well IW-18 remain elevated but the concentrations of TCE and PCE are significantly lower than historical concentrations in this source area well. Well IW-18 had trace NAPL detected at 0.01 feet in December 2016 and March 2017. NAPL was not detected in July 2017, but was detected at a thickness of 0.02 feet in September 2017. A summary of the VOC analytical data collected during the reporting period is provided in Table 2.

In summary, the downgradient and source area IRZs were operated and maintained as designed and resulted in achievement of the RAOs for groundwater during the reporting period. Additional sampling frequency and analytical parameters will continue to be added to the upcoming sampling events to verify that an effective IRZ is being maintained.

5.2.2 NAPL Recovery

NAPL gauging and recovery data collected during each NAPL gauging and recovery event indicate that the quarterly frequency is appropriate for achieving the RAOs. Approximately 0.5 gallons of NAPL/water mixture was removed from Site monitoring wells during the reporting period. A summary of NAPL recovery during the reporting period is provided in Table 8.

5.2.3 Vapor Control System

A summary of the field parameters collected during the reporting period are provided in Table 7. Field parameter data and indoor air quality analytical data collected during the reporting period indicate that the O&M activities completed resulted in operation of the VCS in accordance with its design objectives. Specifically:

- An induced vacuum was measured at all induced vacuum measuring points during each quarterly site visit. The induced vacuum was greater than -0.035 inches of water (iwc) at the majority of measuring points, which is the industry standard for the control of soil vapor (USEPA 1993); and,
- As described in Section 4.4, 2-butanone, TCE, PCE, 1,1,1-TCA, VC, and 1,1-DCA were detected at low-level concentrations in the SE Office Space indoor air quality sample collected from the southeastern portion of the building. The detected PCE concentration (1.2 µg/m^3) is well below the NYSDOH guideline for PCE (30 µg/m^3); the detected TCE concentration (1.5 µg/m^3) is below the NYSDOH guideline for TCE (2 µg/m^3). PCE was detected in the SW Office Space indoor air quality sample at a concentration of 0.25 µg/m^3.

Combined, the data indicate that the VCS is preventing the migration of chlorinated solvents from groundwater into indoor air through soil vapors and is ensuring that indoor air quality continues to meet NYSDOH guidance values.

5.3 Operation and Maintenance Deficiencies

No deficiencies or deviations from the planned O&M activities were noted for the reporting period.

5.4 Conclusions and Recommendations for Improvements

O&M activities for each of the active remedial components resulted in the achievement of the RAOs.

6 OVERALL PRR CONCLUSIONS AND RECOMMENDATIONS

The following conclusions and recommendations are made based on results provided within this PRR:

- The requirements of each remedy component and/or plan were met during the reporting period as follows:
  - As shown in Table 1, each engineering control (e.g., active remedial component) resulted in achievement of their respective RAOs.
  - The periodic review inspection and executed IC/EC forms confirm that all ICs remain in place and effective; and,
  - All monitoring and O&M activities were completed in accordance with the requirements provided in the SMP and SMP Addendum.
- Each remedy component performed as designed and has mitigated the identified risks to human health and the environment as documented in Table 1 and discussed in Sections 4 and 5 herein.
- The timing of the next EVO injection will be based on an ongoing evaluation of the groundwater monitoring data, but is anticipated to occur in 2019.
- Based upon the findings herein and the future anticipated site activities, it is recommended that the current periodic review period (annual) be continued.

7 REFERENCES

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ARCADIS of New York, Inc. 2015. Periodic Review Report, 25 Melville Park Road Site, Melville, New York. November 13, 2015.

New York State Department of Environmental Conservation. 2007. Letter Re: Proposed Changes to Vapor Control System Monitoring, 25 Melville Park Road, V00128. April 9, 2007.

United States Environmental Protection Agency (USEPA), 1993, Radon Reduction Techniques for Existing Detached Houses: Technical Guidance (Third Edition) for Active Depressurization Systems, October 1993.

TABLES

Table 1
Remedy Effectiveness Summary for the Periodic Review Period of October 2016 to September 2017
25 Melville Park Road Site
Melville, New York

Remedial Action Objective	RAO Achieved During Reporting Period?	Rationale
Public health protection. Eliminating or reducing to the extent practicable:		
Exposures of persons at or around the Site to chlorinated solvents and petroleum in the underlying groundwater;	Yes	- Prevention of contact with contaminated groundwater through implementation of the ICs and ECs recorded in the EE. - No changes to institutional or engineering controls during the reporting period as documented through IC/EC certifications. - Remediation of contaminated groundwater toward the remediation goals as documented in Sections 4 and 5 of this PRR. Specifically, o Operation of the downgradient IRZ is preventing the off-site migration of dissolved phase chlorinated solvents. o Operation of the source area IRZ is enhancing the removal of NAPL and treating dissolved phase chlorinated solvents. o NAPL hand bailing is physically removing NAPL, where present within existing monitoring wells.
The migration of chlorinated solvents from groundwater into indoor air through soil vapors; and,	Yes	- Operation of the VCS in accordance with its design objectives. Supporting data provided in Sections 4 and 5 of this PRR. - Remediation of contaminated groundwater, which is the source of soil vapors, as described in Sections 4 and 5 of this PRR. Specifically, o Operation of the source area IRZ is enhancing the removal of NAPL and treating dissolved phase chlorinated solvents. o NAPL hand-bailing is physically removing NAPL, where present within existing monitoring wells.
The migration of on-site groundwater contamination to off-site where additional exposures to contaminated groundwater are possible.	Yes	- Operation of the downgradient IRZ is preventing the off-site migration of contaminated groundwater. Concentrations are currently above SGVs at the downgradient property boundary as documented in Sections 4 and 5 of this PRR, however, the light hydrocarbons data collected at the property boundary wells indicate the groundwater is methanogenic and that complete dechlorination is occurring.
Environmental protection. Attaining to the extent practicable:		
Elimination of VOC source areas in groundwater, thereby removing the source of the dissolved groundwater plume;	Yes	- Operation of the source area IRZ has resulted in complete reductive dechlorination of CVOCs and has enhanced NAPL dissolution as documented in Sections 4 and 5 of this PRR. - NAPL hand bailing removed all recoverable NAPL as documented in Sections 4 and 5 of this PRR.
Ambient groundwater quality standards to be met at the downgradient property boundary, thereby preventing further impacts to off-site groundwater; and,	Yes	- Operation of the downgradient IRZ is preventing the off-site migration of contaminated groundwater. Concentrations are currently above SGVs at the downgradient property boundary as documented in Sections 4 and 5 of this PRR, however, the light hydrocarbons data collected at the property boundary wells indicate the groundwater is methanogenic and that complete dechlorination is occurring.
Ensure that indoor air quality continues to meet New York State Department of Health NYSDOH guidance values.	Yes	- The VCS operated continuosuly and in accordance with its design objectives during the reporting period. Supporting data provided in Sections 4 and 5 of this PRR.

Abbreviations

RAO - Remedial action objective
ICs - Institutional controls
ECs - Engineering controls
EE - Environmental easement
IRZ - In-situ Reactive Zone
NAPL - Non aqueous phase liquid
VCS - Vapor control system
PRR - Periodic review report
CVOCs - Chlorinated volatile organic compounds
SGVs - Standards and Guidance Values

Table 2
Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Monitoring Wells
25 Melville Park Road Site
Melville, New York

Compound (Units in ug/L)	NYSDEC TOGS (1.1.1) SGV (ug/L)	Sample ID: Sample Date: Zone:	MW-15 12/29/16 Shallow	IW-21 12/30/16 Shallow	IW-22 12/30/16 Shallow	IW-17 3/27/17 Shallow	IW-2 12/30/16 Shallow	MW-17 12/29/16 Shallow	MW-13 12/29/16 Shallow	MW-14 12/29/16 Shallow	IW-3 12/29/16 Shallow	MW-7 12/29/16 Shallow	MW-7 7/6/17 Shallow	MW-11 12/29/16 Shallow
Chloromethane	-		<5	<5	<5 J	<5	<5	<5	<5	<5	<5	<5	<5	<5
Bromomethane	5		<5	<5 J	<5 J	<5	<5 J	<5	<5	<5	<5	<5	<5	<5
Vinyl Chloride	2		<1	**0.89 J**	**6400 D**	**300**	<1	<1	**1200 D**	<1	**890 D**	**37**	**82**	<1
Chloroethane	5		<5	<5	**22**	**36**	<5	<5	**11**	<5	**2.6 J**	**2.5 J**	**1.4 J**	**3.1 J**
Methylene Chloride	5		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Acetone	50		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Carbon Disulfide	60		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	**0.25 J**
1,1-Dichloroethene	5		<5	<5	**7.3**	**0.67 J**	<5	<5	**0.46 J**	<5	**40**	<5	<5	<5
1,1-Dichloroethane	5		<5	<5	**71**	**10**	<5	<5	**16**	<5	**19**	**1.5 J**	**1.9 J**	**2.7 J**
trans-1,2-Dichloroethene	5		<5	<5	**77**	**5.9**	<5	<5	**2.6 J**	<5	**50**	**1.2 J**	**1.3 J**	**2.2 J**
cis-1,2-Dichloroethene	5		<5	**2.1 J**	**8500 D**	**140**	<5	<5	**700 D**	<5	**26000 D**	**30**	**110**	**0.56 J**
Chloroform	7		<5	<5	<5	<5	<5	<5	<5	**0.54 J**	<5	<5	<5	<5
1,2-Dichloroethane	0.6		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5 J	<5	<5
Methyl Ethyl Ketone	50		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
1,1,1-Trichloroethane	5		<5	<5	**14**	<5	<5	<5	<5	<5	<5	<5	<5	<5
Carbon Tetrachloride	5		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Bromodichloromethane	50		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5 J	<5	<5
1,2-Dichloropropane	1		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
cis-1,3-Dichloropropene	0.4		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Trichloroethene	5		**0.32 J**	**2 J**	**0.28 J**	**0.39 J**	<5	<5	<5	<5	**19**	**0.8 J**	**0.92 J**	<5
Dibromochloromethane	50		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	1		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Benzene	1		<5	<5	**0.23 J**	<5 B	<5	<5	<5	<5	<5	**0.11 J**	<5	<5
trans-1,3-Dichloropropene	0.4		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Bromoform	50		<5 J	<5 J	<5 J	<5	<5 J	<5 J	<5 J	<5 J	<5 J	<5	<5	<5 J
Methyl Isobutyl Ketone	-		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
2-Hexanone	50		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Tetrachloroethene	5		**1.2 J**	**0.45 J**	<5	<5	**0.3 J**	<5	<5	<5	**3.5 J**	<5	<5	<5
1,1,2,2-Tetrachloroethane	5		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Toluene	5		<5	**0.72 J**	**18**	**6.3**	<5	<5	**1.5 J**	<5	**1.8 J**	**2.6 J**	**2.9 J**	<5
Chlorobenzene	5		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Ethylbenzene	5		<5	<5	<5 B	**2.3 J**	<5	<5	**0.59 J**	<5	**0.68 J**	<5	<5	**0.75 J**
Styrene	5		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Xylenes, Total	5		<5	<5 B	**26**	**26**	<5	<5	**3.5 J**	<5	**3.3 J**	**1.6 J**	**2.2 J**	**2.3 J**

See footnotes on last page.

Table 2
Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Monitoring Wells
25 Melville Park Road Site
Melville, New York

ARCADIS Design & Consultancy for natural and built assets

Compound (Units in ug/L)	NYSDEC TOGS (1.1.1) SGV (ug/L)	Sample ID: Sample Date: Zone:	MW-28M 12/29/16 Shallow	MW-9 7/6/17 Shallow	MW-9 9/27/17 Shallow	MW-3 12/30/16 Shallow	MW-29 12/30/16 Shallow	MW-4 12/30/16 Shallow	MW-31 12/29/16 Shallow	MW-31 3/27/17 Shallow	MW-31 7/6/17 Shallow	MW-31 9/27/17 Shallow	IW-23 12/30/16 Intermediate	IW-18 12/29/16 Intermediate
Chloromethane	-		**0.67 J**	<5	<5	<5 J	<5 J	<5 J	<5	<5	<5	<5	<5	<2500
Bromomethane	5		<5	<5	<5	<5 J	<5 J	<5 J	<5	<5	<5	<5	<5 J	<2500
Vinyl Chloride	2		<1	**1.8**	**3.8**	**0.37 J**	**0.13 J**	<1	**5.1**	**8.3**	**16**	**27**	**64**	**2500**
Chloroethane	5		<5	<5	<5	<5	<5	<5	<5	**2.9 J**	**2.1 J**	**2.5 J**	**0.94 J**	<2500
Methylene Chloride	5		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<2500
Acetone	50		<10	<10	<10	<10	<10	<10	<10	<10 B	<10	**4.9 J**	<10	<5000
Carbon Disulfide	60		<5	**0.28 J**	<5	<5	<5	<5	<5	<5	**0.25 J**	<5	<5	<2500
1,1-Dichloroethene	5		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<2500
1,1-Dichloroethane	5		<5	<5	<5	<5	**0.7 J**	<5	**1.7 J**	**2.7 J**	**3.5 J**	**2.9 J**	**3.5 J**	**550 J**
trans-1,2-Dichloroethene	5		<5	<5	<5	<5	**1.2 J**	<5	**5.5**	**7.1**	**12**	**7.2**	**11**	<2500
cis-1,2-Dichloroethene	5		<5	**3.8 J**	**3.9 J**	**0.31 J**	**0.48 J**	<5	**3.4 J**	**2.6 J**	**13**	**24**	**39**	**230000**
Chloroform	7		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<2500
1,2-Dichloroethane	0.6		<5 J	<5	<5	<5	<5	<5	<5 J	<5	<5	<5	<5	<2500
Methyl Ethyl Ketone	50		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<5000
1,1,1-Trichloroethane	5		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	**570 J**
Carbon Tetrachloride	5		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<2500
Bromodichloromethane	50		<5 J	<5	<5	<5	<5	<5	<5 J	<5	<5	<5	<5	<2500
1,2-Dichloropropane	1		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<2500
cis-1,3-Dichloropropene	0.4		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<2500
Trichloroethene	5		<5	<5	<5	<5	<5	<5	**2 J**	<5	<5	<5	**0.31 J**	**140 J**
Dibromochloromethane	50		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<2500
1,1,2-Trichloroethane	1		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<2500
Benzene	1		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<2500
trans-1,3-Dichloropropene	0.4		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<2500
Bromoform	50		<5	<5	<5	<5 J	<5 J	<5 J	<5	<5	<5	<5	<5 J	<2500
Methyl Isobutyl Ketone	-		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<5000
2-Hexanone	50		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<5000
Tetrachloroethene	5		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<2500
1,1,2,2-Tetrachloroethane	5		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<2500
Toluene	5		<5	<5	**0.57 J**	<5	<5	<5	<5	<5	<5	<5	**2.6 J**	<2500
Chlorobenzene	5		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<2500
Ethylbenzene	5		<5	<5	<5	<5	<5 B	<5	<5	<5	<5	<5	<5 B	<2500
Styrene	5		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<2500
Xylenes, Total	5		<5	<5	<5	<5	<5 B	<5	<5	<5	<5	**0.46 J**	<5 B	**410 J**

See footnotes on last page.

Table 2
Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Monitoring Wells
25 Melville Park Road Site
Melville, New York

Compound (Units in ug/L)	NYSDEC TOGS (1.1.1) SGV (ug/L)	Sample ID: Sample Date: Zone:	IW-18 3/28/17 Intermediate	IW-18 7/6/17 Intermediate	IW-18 9/27/17 Intermediate	IW-8 12/30/16 Intermediate	MW-13D 12/29/16 Intermediate	IW-9 12/30/16 Intermediate	IW-12 12/30/16 Intermediate	IW-13 12/30/16 Intermediate	MW-23 12/29/16 Intermediate	MW-23 3/27/17 Intermediate	MW-23 7/6/17 Intermediate	MW-23 9/27/17 Intermediate
Chloromethane	-		<1000	<1000	<1000	<5	<5	<5	<5 J	<5 J	<5	<5	<5	<5
Bromomethane	5		<1000	<1000	<1000	<5 J	<5	<5 J	<5 J	<5 J	<5	<5	<5	<5
Vinyl Chloride	2		**2500**	**2800**	**4400**	<1	<1	**2.1**	**7.4**	**0.21 J**	**0.86 J**	**1.4**	**0.96 J**	**5.5**
Chloroethane	5		<1000	<1000	<1000	<5	<5	<5	<5	<5	**2.3 J**	**2 J**	**1 J**	<5
Methylene Chloride	5		<1000	<1000	<1000	<5	<5	<5	<5	<5	<5	<5	<5	<5
Acetone	50		<2000	<2000	<2000	<10	<10	<10	<10	<10	<10	<10 B	<10	<10
Carbon Disulfide	60		<1000	<1000	<1000	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,1-Dichloroethene	5		**320 J**	**430 J**	**390 J**	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,1-Dichloroethane	5		**440 J**	**480 J**	**630 J**	<5	<5	**1.4 J**	<5	<5	**2.1 J**	**1.7 J**	**1 J**	<5
trans-1,2-Dichloroethene	5		**71 J**	**67 J**	**69 J**	<5	**2.3 J**	**30 J**	**2.2 J**	**0.53 J**	**15**	**12**	**4.4 J**	**3.3 J**
cis-1,2-Dichloroethene	5		**220000 D**	**450000 D**	**300000 D**	<5	**0.96 J**	**18**	**9.5**	**0.95 J**	**1.6 J**	**2 J**	**1.6 J**	**4.1 J**
Chloroform	7		<1000	<1000	<1000	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,2-Dichloroethane	0.6		<1000	<1000	<1000	<5	<5	<5	<5	<5	<5	<5	<5	<5
Methyl Ethyl Ketone	50		<2000	<2000	<2000	<10	<10	<10	<10	<10	<10	<10	<10	<10
1,1,1-Trichloroethane	5		**360 J**	**610 J**	**160 J**	<5	<5	<5	<5	<5	<5	<5	<5	<5
Carbon Tetrachloride	5		<1000	<1000	<1000	<5	<5	<5	<5	<5	<5	<5	<5	<5
Bromodichloromethane	50		<1000	<1000	<1000	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,2-Dichloropropane	1		<1000	<1000	<1000	<5	<5	<5	<5	<5	<5	<5	<5	<5
cis-1,3-Dichloropropene	0.4		<1000	<1000	<1000	<5	<5	<5	<5	<5	<5	<5	<5	<5
Trichloroethene	5		<1000	**4700**	**250 J**	<5	<5	**4.4 J**	**23**	<5	<5	<5	<5	<5
Dibromochloromethane	50		<1000	<1000	<1000	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	1		<1000	<1000	<1000	<5	<5	<5	<5	<5	<5	<5	<5	<5
Benzene	1		<1000	<1000	<1000	<5	<5	<5	<5	<5	<5	<5	<5	<5
trans-1,3-Dichloropropene	0.4		<1000	<1000	<1000	<5	<5	<5	<5	<5	<5	<5	<5	<5
Bromoform	50		<1000	<1000	<1000	<5 J	<5 J	<5 J	<5 J	<5 J	<5 J	<5	<5	<5
Methyl Isobutyl Ketone	-		<2000	<2000	<2000	<10	<10	<10	<10	<10	<10	<10	<10	<10
2-Hexanone	50		<2000	<2000	<2000	<10	<10	<10	<10	<10	<10	<10	<10	<10
Tetrachloroethene	5		**25 J**	**12000**	<1000	**0.44 J**	<5	**1.5 J**	<5	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	5		<1000	<1000	<1000	<5	<5	<5	<5	<5	<5	<5	<5	<5
Toluene	5		**81 J**	**63 J**	**72 J**	<5	**0.54 J**	**1.5 J**	**0.25 J**	**4.5 J**	**2.9 J**	**0.55 J**	**24**	**8.9**
Chlorobenzene	5		<1000	<1000	<1000	<5	<5	<5	<5	<5	<5	<5	<5	<5
Ethylbenzene	5		<1000	<1000	<1000	<5	<5	**1.8 J**	<5	<5 B	**0.8 J**	**0.5 J**	**0.72 J**	**0.41 J**
Styrene	5		<1000	<1000	<1000	<5	<5	<5	<5	<5	<5	<5	<5	<5
Xylenes, Total	5		<1000 B	**460 J**	**300 J**	<5	**0.91 J**	**18**	<5	<5 B	**4.8 J**	<5 B	**1.7 J**	**1.4 J**

See footnotes on last page.

Table 2
Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Monitoring Wells
25 Melville Park Road Site
Melville, New York

Compound (Units in ug/L)	NYSDEC TOGS (1.1.1) SGV (ug/L)	Sample ID: Sample Date: Zone:	MW-30 12/30/16 Intermediate	MW-16D 12/30/16 Intermediate	MW-16D 3/27/17 Intermediate	MW-16D 7/6/17 Intermediate	MW-34 12/29/16 Intermediate	MW-34 3/27/17 Intermediate	MW-34 7/5/17 Intermediate	MW-34 9/27/17 Intermediate	MW-35 12/30/16 Intermediate	MW-37 7/5/17 Intermediate	MW-37 9/27/17 Intermediate	ERM-MW-02 12/29/16 Intermediate
Chloromethane	-		<5 J	<5 J	<5	<5	<5	<5	<5	<5	<5 J	<5	<5	<5
Bromomethane	5		<5 J	<5 J	<5	<5	<5	<5	<5	<5	<5 J	<5	<5	<5
Vinyl Chloride	2		**0.74 J**	<1	<1	<1	**4.2**	**31**	**5.6**	**16**	**2.7**	**41**	**42**	**27**
Chloroethane	5		<5	<5	<5	<5	<5	**1.3 J**	**0.94 J**	**1.6 J**	<5	**1.6 J**	**2.5 J**	<5
Methylene Chloride	5		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Acetone	50		<10	<10	<10 B	<10	<10	<10 B	<10	<10	<10	<10	<10	<10
Carbon Disulfide	60		<5	<5	<5	**0.29 J**	<5	<5	<5	<5	<5	<5	<5	<5
1,1-Dichloroethene	5		<5	<5	<5	<5	<5	<5	<5	<5	<5	**0.93 J**	**1.3 J**	<5
1,1-Dichloroethane	5		<5	<5	<5	<5	**0.9 J**	**0.89 J**	**0.66 J**	**1 J**	<5	**0.48 J**	<5	<5
trans-1,2-Dichloroethene	5		<5	**0.71 J**	<5	<5	**6.7**	**10**	**9.2**	**8.8**	**1.5 J**	**7.6**	**9.6**	**6.8**
cis-1,2-Dichloroethene	5		**1.8 J**	<5	<5	<5	**3.6 J**	**23**	**4.4 J**	**13**	**5.9**	**200**	**160**	**290**
Chloroform	7		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,2-Dichloroethane	0.6		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Methyl Ethyl Ketone	50		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
1,1,1-Trichloroethane	5		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Carbon Tetrachloride	5		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Bromodichloromethane	50		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,2-Dichloropropane	1		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
cis-1,3-Dichloropropene	0.4		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Trichloroethene	5		<5	<5	<5	<5	**0.6 J**	**2.1 J**	**0.66 J**	**1.2 J**	<5	**34**	**140**	**200**
Dibromochloromethane	50		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	1		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Benzene	1		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
trans-1,3-Dichloropropene	0.4		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Bromoform	50		<5 J	<5 J	<5	<5	<5 J	<5	<5	<5	<5 J	<5	<5	<5
Methyl Isobutyl Ketone	-		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
2-Hexanone	50		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Tetrachloroethene	5		<5	<5	<5	<5	<5	<5	<5	<5	<5	**5.2**	**7**	**130**
1,1,2,2-Tetrachloroethane	5		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Toluene	5		**0.87 J**	<5	<5	<5	**0.98 J**	**0.73 J**	**0.65 J**	**1 J**	<5	<5	<5	<5
Chlorobenzene	5		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Ethylbenzene	5		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Styrene	5		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Xylenes, Total	5		<5 B	<5	<5	<5	**0.55 J**	<5 B	**0.54 J**	**0.97 J**	<5	**0.88 J**	<5	<5

See footnotes on last page.

Table 2
Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Monitoring Wells
25 Melville Park Road Site
Melville, New York

Compound (Units in ug/L)	NYSDEC TOGS (1.1.1) SGV (ug/L)	Sample ID: Sample Date: Zone:	ERM-MW-02 3/27/17 Intermediate	ERM-MW-02 7/5/17 Intermediate	ERM-MW-02 9/27/17 Intermediate	MW-18D 12/29/16 Deep	MW-18D 7/6/17 Deep	FDW 12/29/16 Deep	MW-36* 12/30/16 Deep					
Chloromethane	-		<5	<5	<5	<5	<5	<5	<5 J					
Bromomethane	5		<5	<5	<5	<5	<5	<5	<5 J					
Vinyl Chloride	2		**57**	**45**	**27**	**120**	**56**	<1	<1					
Chloroethane	5		<5	**2 J**	**2 J**	**4.5 J**	**4.5 J**	<5	<5					
Methylene Chloride	5		<5	<5	<5	<5	<5	<5	<5					
Acetone	50		<10	<10	<10	<10	<10	<10	<10					
Carbon Disulfide	60		<5	<5	<5	<5	**0.48 J**	<5	<5					
1,1-Dichloroethene	5		**0.7 J**	**0.65 J**	<5	**0.49 J**	<5	<5	<5					
1,1-Dichloroethane	5		**0.34 J**	**0.26 J**	<5	**13**	**7.5**	<5	<5					
trans-1,2-Dichloroethene	5		**14**	**8**	**4.4 J**	**7.6**	**4.1 J**	<5	<5					
cis-1,2-Dichloroethene	5		**670 D**	**360**	**140**	**170**	**110**	<5	<5					
Chloroform	7		<5	<5	<5	<5	<5	<5	<5					
1,2-Dichloroethane	0.6		<5	<5	<5	<5	<5	<5	<5					
Methyl Ethyl Ketone	50		<10	<10	<10	<10	<10	<10	<10					
1,1,1-Trichloroethane	5		<5	<5	<5	**1.9 J**	**1.2 J**	<5	<5					
Carbon Tetrachloride	5		<5	<5	<5	<5	<5	<5	<5					
Bromodichloromethane	50		<5	<5	<5	<5	<5	<5	<5					
1,2-Dichloropropane	1		<5	<5	<5	<5	<5	<5	<5					
cis-1,3-Dichloropropene	0.4		<5	<5	<5	<5	<5	<5	<5					
Trichloroethene	5		**230**	**100**	**45**	**2.1 J**	**1.9 J**	<5	<5					
Dibromochloromethane	50		<5	<5	<5	<5	<5	<5	<5					
1,1,2-Trichloroethane	1		<5	<5	<5	<5	<5	<5	<5					
Benzene	1		<5	<5	<5	<5	<5	**0.71 J**	<5					
trans-1,3-Dichloropropene	0.4		<5	<5	<5	<5	<5	<5	<5					
Bromoform	50		<5	<5	<5	<5 J	<5	<5	<5 J					
Methyl Isobutyl Ketone	-		<10	<10	<10	<10	<10	<10	<10					
2-Hexanone	50		<10	<10	<10	<10	<10	<10	<10					
Tetrachloroethene	5		**46**	**13**	**1.9 J**	<5	<5	<5	<5					
1,1,2,2-Tetrachloroethane	5		<5	<5	<5	<5	<5	<5	<5					
Toluene	5		<5	<5	**0.25 J**	**0.73 J**	**0.3 J**	**0.83 J**	<5					
Chlorobenzene	5		<5	<5	<5	<5	<5	<5	<5					
Ethylbenzene	5		<5	<5	<5	<5	<5	<5	<5					
Styrene	5		<5	<5	<5	<5	<5	<5	<5					
Xylenes, Total	5		<5	<5	<5	**1.6 J**	**0.49 J**	<5	<5					

See footnotes on last page.

Table 2
Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Monitoring Wells
25 Melville Park Road Site
Melville, New York

ug/L	Micrograms per liter.
B	Non-detect due to associated blank contamination.
D	Detected at secondary dilution.
J	Estimated value.
FDW	Former Diffusion Well.
NYSDEC	New York State Department of Environmental Conservation.
TOGS	Technical and Operational Guidance Series.
SGV	Ambient Water Quality Standards and Guidance Values.
-	Not available.
*	Groundwater sample collected from 125 feet below land surface.
Bold	Indicates detection above laboratory Method Detection Limit.
	Compound concentration equal to or exceeds SGV.

Note: This table includes the current sampling event data and the previous sampling event data.

Table 3
Concentrations of TOC, VOCs, and Light Hydrocarbons in Groundwater Samples Collected from Monitoring Wells
25 Melville Park Road Site
Melville, New York

Parameters		Sample ID: Sample Date: Zone:	IW-22 12/30/16 Shallow	IW-17 12/29/16 Shallow	IW-17 3/27/17 Shallow	IW-17 9/27/17 Shallow	IW-1 12/30/16 Shallow	IW-3 12/29/16 Shallow	IW-3 3/27/17 Shallow	MW-13 12/29/16 Shallow	IW-6 7/6/17 Shallow	IW-6 9/27/17 Shallow
	UNITS											
CLASSICAL CHEMISTRY ANALYTES												
Total Organic Carbon	mg/L		104	92.9	214	798	325	1350	1470	85.4	50.8	387
VOCs												
Tetrachloroethene	ug/L		<5	--	<5	--	--	3.5 J	--	<5	--	--
Trichloroethene	ug/L		0.28 J	--	0.39 J	--	--	19	--	<5	--	--
cis-1,2-Dichloroethene	ug/L		8500 D	--	140	--	--	26000 D	--	700 D	--	--
Vinyl Chloride	ug/L		6400 D	--	300	--	--	890 D	--	1200 D	--	--
LIGHT HYDROCARBONS												
Ethane	ug/L		--	--	--	--	--	--	--	--	--	--
Ethene	ug/L		--	--	--	--	--	--	--	--	--	--
Methane	ug/L		--	--	--	--	--	--	--	--	--	--
FIELD PARAMETERS												
pH	Standard Units		6.58	6.23	6.28	5.68	6.07	5.55	5.74	6.44	6.06	5.86

See footnotes on last page.

Table 3
Concentrations of TOC, VOCs, and Light Hydrocarbons in Groundwater Samples Collected from Monitoring Wells
25 Melville Park Road Site
Melville, New York

Parameters		Sample ID: Sample Date: Zone:	MW-7 12/29/16 Shallow	MW-7 7/6/17 Shallow	MW-28M 12/29/16 Shallow	MW-28M 3/27/17 Shallow	MW-9 7/6/17 Shallow	MW-9 9/27/17 Shallow	MW-31 12/29/16 Shallow	MW-31 3/27/17 Shallow	MW-31 7/6/17 Shallow	MW-31 9/27/17 Shallow
	UNITS											
CLASSICAL CHEMISTRY ANALYTES												
Total Organic Carbon	mg/L		70.1	46.6	19.5	13.7	7.6	15.1	4.9	3.6	6.8	4.9
VOCs												
Tetrachloroethene	ug/L		<5	<5	<5	--	<5	<5	<5	<5	<5	<5
Trichloroethene	ug/L		0.8 J	0.92 J	<5	--	<5	<5	2 J	<5	<5	<5
cis-1,2-Dichloroethene	ug/L		30	110	<5	--	3.8 J	3.9 J	3.4 J	2.6 J	13	24
Vinyl Chloride	ug/L		37	82	<1	--	1.8	3.8	5.1	8.3	16	27
LIGHT HYDROCARBONS												
Ethane	ug/L		--	60	<0.20	--	2	7.4	260	230	460	280
Ethene	ug/L		--	17	<0.20	--	0.44	2	1.9	8.2	20	20
Methane	ug/L		--	13000	3.1	--	3400	6100	10000	10000	9400	7000
FIELD PARAMETERS												
pH	Standard Units		7.08	6.33	6.99	5.95	5.77	6.02	6.59	7.17	6.49	6.41

See footnotes on last page.

Table 3
Concentrations of TOC, VOCs, and Light Hydrocarbons in Groundwater Samples Collected from Monitoring Wells
25 Melville Park Road Site
Melville, New York

Parameters		Sample ID: Sample Date: Zone:	IW-27 3/28/17 Intermediate	IW-27 9/27/17 Intermediate	IW-28 12/30/16 Intermediate	IW-29 12/30/16 Intermediate	IW-23 12/30/16 Intermediate	IW-11 3/28/17 Intermediate	IW-11 7/6/17 Intermediate	IW-11 9/27/17 Intermediate	IW-18 12/29/16 Intermediate	IW-18 3/28/17 Intermediate
	UNITS											
CLASSICAL CHEMISTRY ANALYTES												
Total Organic Carbon	mg/L		487	425	165	1510	17.8	56.5	1640	601	856	793
VOCs												
Tetrachloroethene	ug/L		--	--	--	--	<5	--	--	--	<2500	25 J
Trichloroethene	ug/L		--	--	--	--	0.31 J	--	--	--	140 J	<1000
cis-1,2-Dichloroethene	ug/L		--	--	--	--	39	--	--	--	230000	220000 D
Vinyl Chloride	ug/L		--	--	--	--	64	--	--	--	2500	2500
LIGHT HYDROCARBONS												
Ethane	ug/L		--	--	--	--	--	--	--	--	240	--
Ethene	ug/L		--	--	--	--	--	--	--	--	960	--
Methane	ug/L		--	--	--	--	--	--	--	--	19000	--
FIELD PARAMETERS												
pH	Standard Units		7.00	5.97	6.77	6.70	6.82	6.42	5.16	6.16	5.81	4.76

See footnotes on last page.

Table 3
Concentrations of TOC, VOCs, and Light Hydrocarbons in Groundwater Samples Collected from Monitoring Wells
25 Melville Park Road Site
Melville, New York

Parameters		Sample ID: Sample Date: Zone:	IW-18 7/6/17 Intermediate	IW-18 9/27/17 Intermediate	MW-13D 12/29/16 Intermediate	MW-23 12/29/16 Intermediate	MW-23 3/27/17 Intermediate	MW-23 7/6/17 Intermediate	MW-23 9/27/17 Intermediate	MW-16D 12/30/16 Intermediate	MW-16D 7/6/17 Intermediate	MW-34 12/29/16 Intermediate
	UNITS											
CLASSICAL CHEMISTRY ANALYTES												
Total Organic Carbon	mg/L		993	1070	14	43.5	104	41.8	66.8	0.98 J	--	50.1
VOCs												
Tetrachloroethene	ug/L		12000	<1000	<5	<5	<5	<5	<5	<5	<5	<5
Trichloroethene	ug/L		4700	250 J	<5	<5	<5	<5	<5	<5	<5	0.6 J
cis-1,2-Dichloroethene	ug/L		450000 D	300000 D	0.96 J	1.6 J	2 J	1.6 J	4.1 J	<5	<5	3.6 J
Vinyl Chloride	ug/L		2800	4400	<1	0.86 J	1.4	0.96 J	5.5	<1	<1	4.2
LIGHT HYDROCARBONS												
Ethane	ug/L		--	220	--	120	100	78	70	--	0.12 J	82
Ethene	ug/L		--	1800	--	0.23	0.11 J	0.15 J	2	--	0.026 J	3.6
Methane	ug/L		--	23000	--	25000	27000	26000	24000	--	22	21000
FIELD PARAMETERS												
pH	Standard Units		5.19	5.59	7.31	7.04	6.29	6.16	6.26	5.63	--	6.90

See footnotes on last page.

Table 3
Concentrations of TOC, VOCs, and Light Hydrocarbons in Groundwater Samples Collected from Monitoring Wells
25 Melville Park Road Site
Melville, New York

Parameters		Sample ID: Sample Date: Zone:	MW-34 3/27/17 Intermediate	MW-34 7/5/17 Intermediate	MW-34 9/27/17 Intermediate	MW-37 7/5/17 Intermediate	MW-37 9/27/17 Intermediate	ERM-MW-02 12/29/16 Intermediate	ERM-MW-02 7/5/17 Intermediate	ERM-MW-02 9/29/17 Intermediate		
	UNITS											
CLASSICAL CHEMISTRY ANALYTES												
Total Organic Carbon	mg/L		163	37.8	35.8	5.4	5.0	6.2	--	--		
VOCs												
Tetrachloroethene	ug/L		<5	<5	<5	5.2	7	130	13	1.9 J		
Trichloroethene	ug/L		2.1 J	0.66 J	1.2 J	34	140	200	100	45		
cis-1,2-Dichloroethene	ug/L		23	4.4 J	13	200	160	290	360	140		
Vinyl Chloride	ug/L		31	5.6	16	41	42	27	45	27		
LIGHT HYDROCARBONS												
Ethane	ug/L		72	140	120	140	56	20	8.6	12		
Ethene	ug/L		19	24	16	94	34	3.9	21	14		
Methane	ug/L		17000	21000	22000	11000	13000	7600	3000	8200		
FIELD PARAMETERS												
pH	Standard Units		6.15	6.38	6.51	5.94	6.57	6.67	--	--		

mg/L	Milligrams per liter.
ug/L	Micrograms per liter.
--	Not analyzed.
NM	Not measured.
B	Non-detect due to associated blank contamination.
D	Detected at secondary dilution.
J	Estimated value.

Note: This table includes the current sampling event data and the previous sampling event data.

Table 4
Water-Level Measurements Collected from Monitoring Wells on March 27 and 28, 2017
25 Melville Park Road Site
Melville, New York

ARCADIS Design & Consultancy for natural and built assets

Well Designation	Elevation of Measuring Point (feet NGVD 29)	Depth to Water (feet bmp)	Water-Level Elevation (feet NGVD 29)
MW-1	119.15	54.27	64.88
MW-2	117.66	52.95	64.71
MW-3	118.06	53.53	64.53
MW-4	117.98	53.50	64.48
MW-5	118.27	53.91	64.36
MW-6	119.24	NA	NA
MW-7	117.53	52.90	64.63
MW-9	117.22	52.56	64.66
MW-10	117.68	53.09	64.59
MW-11	118.29	53.77	64.52
MW-13	117.46	52.62	64.84
MW-13D	117.48	52.85	64.63
MW-14	116.13	51.38	64.75
MW-15	116.85	52.01	64.84
MW-16D	117.49	53.29	64.20
MW-18D	118.10	53.51	64.59
MW-19D	117.31	52.89	64.42
MW-20D	117.68	52.82	64.86
MW-29	117.86	53.32	64.54
MW-30	117.67	53.17	64.50
MW-31	117.35	52.95	64.40
MW-32	117.57	52.91	64.66
MW-33	117.60	52.99	64.61
MW-34	118.03	53.69	64.34
MW-35	118.25	53.87	64.38
MW-36	117.39	52.92	64.47

NGVD 29 National Geodetic Vertical Datum of 1929.
bmp Below measuring point.
NA Not accessible.

Table 5
Fluid-Level Gauging Measurements in Monitoring Wells
25 Melville Park Road Site
Melville, New York

Well ID:	IW-17						IW-18					
Date	Depth to Water (ft btoc)	Depth to LNAPL (ft btoc)	Depth to DNAPL (ft btoc)	Total Depth (ft btoc)	LNAPL Thickness (ft)	DNAPL Thickness (ft)	Depth to Water (ft btoc)	Depth to LNAPL (ft btoc)	Depth to DNAPL (ft btoc)	Total Depth (ft btoc)	LNAPL Thickness (ft)	DNAPL Thickness (ft)
12/8/16	NM	NM	NM	NM	NM	NM	54.92	54.91	ND	85.84	0.01	0.00
12/9/16	54.66	ND	ND	68.00	0.00	0.00	NM	NM	NM	NM	NM	NM
3/27/17	55.12	ND	ND	68.21	0.00	0.00	NM	NM	NM	NM	NM	NM
3/28/17	NM	NM	NM	NM	NM	NM	55.20	55.19	ND	85.88	0.01	0.00
7/6/17	NM	NM	NM	NM	NM	NM	54.21	ND	ND	85.72	0.00	0.00
7/7/17	53.97	ND	ND	68.55	0.00	0.00	NM	NM	NM	NM	NM	NM
9/27/17	55.27	ND	ND	68.53	0.00	0.00	55.32	55.30	ND	85.85	0.02	0.00

See footnotes on last page.

Table 5
Fluid-Level Gauging Measurements in Monitoring Wells
25 Melville Park Road Site
Melville, New York

Well ID:	IW-19						IW-20					
Date	Depth to Water (ft btoc)	Depth to LNAPL (ft btoc)	Depth to DNAPL (ft btoc)	Total Depth (ft btoc)	LNAPL Thickness (ft)	DNAPL Thickness (ft)	Depth to Water (ft btoc)	Depth to LNAPL (ft btoc)	Depth to DNAPL (ft btoc)	Total Depth (ft btoc)	LNAPL Thickness (ft)	DNAPL Thickness (ft)
12/9/16	NM	NM	NM	NM	NM	NM	54.81	ND	ND	97.23	0.00	0.00
3/28/17	NM	NM	NM	NM	NM	NM	55.12	ND	ND	98.10	0.00	0.00
7/7/17	NM	NM	NM	NM	NM	NM	53.83	ND	ND	98.66	0.00	0.00
9/27/17	NM	NM	NM	NM	NM	NM	55.20	ND	ND	98.60	0.00	0.00

See footnotes on last page.

Table 5
Fluid-Level Gauging Measurements in Monitoring Wells
25 Melville Park Road Site
Melville, New York

Well ID:	IW-21						IW-22					
Date	Depth to Water (ft btoc)	Depth to LNAPL (ft btoc)	Depth to DNAPL (ft btoc)	Total Depth (ft btoc)	LNAPL Thickness (ft)	DNAPL Thickness (ft)	Depth to Water (ft btoc)	Depth to LNAPL (ft btoc)	Depth to DNAPL (ft btoc)	Total Depth (ft btoc)	LNAPL Thickness (ft)	DNAPL Thickness (ft)
12/8/16	54.49	ND	ND	66.88	0.00	0.00	54.52	ND	ND	68.59	0.00	0.00
3/28/17	54.85	ND	ND	66.90	0.00	0.00	54.89	ND	ND	68.64	0.00	0.00
7/7/17	53.71	ND	ND	66.89	0.00	0.00	53.82	ND	ND	68.67	0.00	0.00
9/27/17	55.09	ND	ND	66.93	0.00	0.00	55.09	ND	ND	68.64	0.00	0.00

See footnotes on last page.

Table 5
Fluid-Level Gauging Measurements in Monitoring Wells
25 Melville Park Road Site
Melville, New York

Well ID:	IW-23						Former Diffusion Well					
Date	Depth to Water (ft btoc)	Depth to LNAPL (ft btoc)	Depth to DNAPL (ft btoc)	Total Depth (ft btoc)	LNAPL Thickness (ft)	DNAPL Thickness (ft)	Depth to Water (ft btoc)	Depth to LNAPL (ft btoc)	Depth to DNAPL (ft btoc)	Total Depth (ft btoc)	LNAPL Thickness (ft)	DNAPL Thickness (ft)
12/8/16	54.33	ND	ND	99.60	0.00	0.00	54.71	ND	NM	NM	0.00	NM
3/28/17	54.64	ND	ND	99.60	0.00	0.00	54.99	ND	NM	NM	0.00	NM
7/7/17	53.51	ND	ND	99.67	0.00	0.00	53.87	ND	NM	NM	0.00	NM
9/27/17	54.83	ND	ND	AM	0.00	0.00	55.19	ND	NM	NM	0.00	NM

See footnotes on last page.

Table 5
Fluid-Level Gauging Measurements in Monitoring Wells
25 Melville Park Road Site
Melville, New York

Well ID:	IW-1						IW-9					
Date	Depth to Water (ft btoc)	Depth to LNAPL (ft btoc)	Depth to DNAPL (ft btoc)	Total Depth (ft btoc)	LNAPL Thickness (ft)	DNAPL Thickness (ft)	Depth to Water (ft btoc)	Depth to LNAPL (ft btoc)	Depth to DNAPL (ft btoc)	Total Depth (ft btoc)	LNAPL Thickness (ft)	DNAPL Thickness (ft)
12/8/16	NM	NM	NM	NM	NM	NM	52.14	ND	ND	88.80	0.00	0.00
12/9/16	54.09	ND	ND	58.72	0.00	0.00	NM	NM	NM	NM	NM	NM
3/27/17	NM	NM	NM	NM	NM	NM	52.44	ND	ND	88.90	0.00	0.00
3/28/17	54.45	ND	ND	58.78	0.00	0.00	NM	NM	NM	NM	NM	NM
7/7/17	53.29	ND	ND	58.76	0.00	0.00	51.32	ND	ND	88.86	0.00	0.00
9/27/17	54.51	ND	ND	58.70	0.00	0.00	52.62	52.60	ND	88.89	0.02	0.00

See footnotes on last page.

Table 5
Fluid-Level Gauging Measurements in Monitoring Wells
25 Melville Park Road Site
Melville, New York

Well ID:	MW-13						IW-3					
Date	Depth to Water (ft btoc)	Depth to LNAPL (ft btoc)	Depth to DNAPL (ft btoc)	Total Depth (ft btoc)	LNAPL Thickness (ft)	DNAPL Thickness (ft)	Depth to Water (ft btoc)	Depth to LNAPL (ft btoc)	Depth to DNAPL (ft btoc)	Total Depth (ft btoc)	LNAPL Thickness (ft)	DNAPL Thickness (ft)
12/8/16	52.31	ND	ND	57.90	0.00	0.00	51.94	ND	ND	57.50	0.00	0.00
3/27/17	52.62	ND	ND	57.90	0.00	0.00	52.45	ND	ND	57.55	0.00	0.00
7/7/17	51.53	ND	ND	57.93	0.00	0.00	51.02	ND	ND	60.00	0.00	0.00
9/27/17	52.68	ND	ND	57.90	0.00	0.00	54.42	ND	ND	60.13	0.00	0.00

See footnotes on last page.

Table 5
Fluid-Level Gauging Measurements in Monitoring Wells
25 Melville Park Road Site
Melville, New York

Well ID:	MW-15						IW-25					
Date	Depth to Water (ft btoc)	Depth to LNAPL (ft btoc)	Depth to DNAPL (ft btoc)	Total Depth (ft btoc)	LNAPL Thickness (ft)	DNAPL Thickness (ft)	Depth to Water (ft btoc)	Depth to LNAPL (ft btoc)	Depth to DNAPL (ft btoc)	Total Depth (ft btoc)	LNAPL Thickness (ft)	DNAPL Thickness (ft)
12/8/16	51.68	ND	ND	54.63	0.00	0.00	NM	NM	NM	NM	NM	NM
12/9/16	NM	NM	NM	NM	NM	NM	NM	ND	ND	99.21	0.00	0.00
3/27/17	52.01	ND	ND	54.61	0.00	0.00	NM	NM	NM	NM	NM	NM
3/28/17	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
7/7/17	50.92	ND	ND	54.50	0.00	0.00	56.71	ND	ND	98.96	0.00	0.00
9/27/17	52.20	ND	ND	54.62	0.00	0.00	58.22	ND	ND	AM	0.00	0.00

See footnotes on last page.

DNAPL Dense Non-Aqueous Phase Liquid.
LNAPL Light Non-Aqueous Phase Liquid.
ft btoc Feet below top of casing.
ft btoc Feet.
ND Not detected.
NM Not measured.

Table 6
Concentrations of Volatile Organic Compounds in Generally Co-Located Sub-Slab Soil Vapor Samples and Indoor Air Quality Samples
25 Melville Park Road Site
Melville, New York

ARCADIS Design & Consultancy for natural and built assets

Compound (Units in ug/m^3)	Sample ID: Sample Date: Sample Type:	SS-5A 3/18/2017 Sub-Slab	SW Office Space 3/18/2017 Indoor Air	SE SS-A 3/18/2017 Sub-Slab	SE Office Space 3/18/2017 Indoor Air	DUP031817 3/18/2017 Indoor Air
Vinyl chloride		<0.41	<0.041	<0.98	**0.17**	**0.20**
cis-1,2-Dichloroethene		<0.64	<0.13	<1.5	<0.13	<0.13
Trichloroethene		<0.87	<0.17	**14**	**1.3**	**1.5**
1,1-Dichloroethene		<0.64	<0.064	<1.5	<0.067	<0.064
trans-1,2-Dichloroethene		<3.2	<0.64	<7.6	<0.67	<0.64
1,1,1-Trichloroethane		**7.7**	<0.18	**6.9**	**0.85**	**0.99**
Tetrachloroethene		**110**	**0.25**	**460**	**1.2**	**1.2**
1,1-Dichloroethane		<0.66	<0.13	<1.5	<0.14	**0.14**
2-Butanone (Methyl Ethyl Ketone)		<2.4	<2.4	**6.3**	**5.8**	**7.7**

ug/m^3 Micrograms per cubic meter.
Bold Indicates detection above laboratory Reported Detection Limit.

Table 7
Summary of Vapor Control System Operating Data
25 Melville Park Road Site
Melville, New York

Date	Time	VCS-1 Extraction Well Parameters						VCS-2 Extraction Well Parameters					
		Wellhead Vacuum (in. W.C.)	Wellhead Temperature (°F)	Wellhead Relative Humidity (%)	Air Velocity (fpm)	Air Flow Rate (cfm)	PID Measured Concentration (ppmv)	Wellhead Vacuum (in. W.C.)	Wellhead Temperature (°F)	Wellhead Relative Humidity (%)	Air Velocity (fpm)	Air Flow Rate (cfm)	PID Measured Concentration (ppmv)
12/16/16	2:10 PM	-10.5	59.2	--	1,437	32.9	0.0	-10.0	60.2	--	2,302	52.7	0.0
3/29/17	12:55 PM	-11.0	65.6	--	1,690	38.7	0.0	-8.0	65.5	--	1,973	45.2	0.0
7/3/17	2:40 PM	-11.0	79.5	--	1,445	33.1	0.3	-9.0	78.6	--	1,815	41.6	0.0
9/29/17	1:50 PM	-11.0	66.7	--	1,650	37.8	0.5 (4)	-9.0	67.7	--	2,220	50.8	0.5 (4)

Notes and Abbreviations:

°F	degrees Fahrenheit
cfm	cubic feet per minute
fpm	feet per minute
ft	feet
in. Hg	inches of mercury
in. W.C	inches of water column
NYSDEC	New York State Department of Environmental Conservation
OM&M	operation, maintenance, and monitoring
PID	photoionization detector
ppmv	parts per million by volume
VCS	Vapor Control System
--	Measurement not taken.

1. The distances provided for MP-1 through MP-4 are relative to VCS-1. The distances provided for MP-5 and MP-6 are relative to VCS-2.
2. Per NYSDEC approval, the vapor phase treatment was bypassed prior to the June 14, 2007 monitoring event.
3. Pressure measured at new barb installed mid-point of stack effluent.
4. Background PID measurement was 0.3 ppmv.

Table 7
Summary of Vapor Control System Operating Data
25 Melville Park Road Site
Melville, New York

Date	Time	Blower Parameters				Stack Parameters				Induced Vacuum Measurements						Barometric Pressure	
		Influent Vacuum (in. W.C.)	Effluent Vacuum (in. W.C.)	Effluent Temperature (°F)	Effluent Relative Humidity (%)	Discharge Temperature (°F)	Air Velocity (fpm)	Air Flow Rate (cfm)	PID Measured Concentration [2] (ppmv)	MP-1 [1] (10 ft) (in. W.C.)	MP-2 [1] (17 ft) (in. W.C.)	MP-3 [1] (25 ft) (in. W.C.)	MP-4 [1] (45 ft) (in. W.C.)	MP-5 [1] (25 ft) (in. W.C.)	MP-6 [1] (100 ft) (in. W.C.)	Ambient (in. Hg)	Rise/Fall (+/-)
12/16/16	2:10 PM	-16.0	5.3 [3]	--	--	--	--	--	--	-0.38	-0.15	-0.11	-0.05	-0.09	-0.02	30.13	(-)
3/29/17	12:55 PM	-15.0	5.0 [3]	--	--	--	--	--	--	-0.40	-0.17	-0.12	-0.07	-0.08	-0.02	30.10	(-)
7/3/17	2:40 PM	-15.0	5.0 [3]	--	--	--	--	--	--	-0.35	-0.11	-0.07	-0.07	-0.13	-0.02	29.93	(-)
9/29/17	1:50 PM	-15.0	4.5 [3]	--	--	--	--	--	--	-0.43	-0.19	-0.14	-0.07	-0.10	-0.05	29.80	(-)

Notes and Abbreviations:

°F	degrees Fahrenheit
cfm	cubic feet per minute
fpm	feet per minute
ft	feet
in. Hg	inches of mercury
in. W.C	inches of water column
NYSDEC	New York State Department of Environmental Conservation
OM&M	operation, maintenance, and monitoring
PID	photoionization detector
ppmv	parts per million by volume
VCS	Vapor Control System
--	Measurement not taken.

1. The distances provided for MP-1 through MP-4 are relative to VCS-1. The distances provided for MP-5 and MP-6 are relative to VCS-2.
2. Per NYSDEC approval, the vapor phase treatment was bypassed prior to the June 14, 2007 monitoring event.
3. Pressure measured at new barb installed mid-point of stack effluent.
4. Background PID measurement was 0.3 ppmv.

Table 8
Summary of NAPL Recovery Efforts
25 Melville Park Road Site
Melville, New York

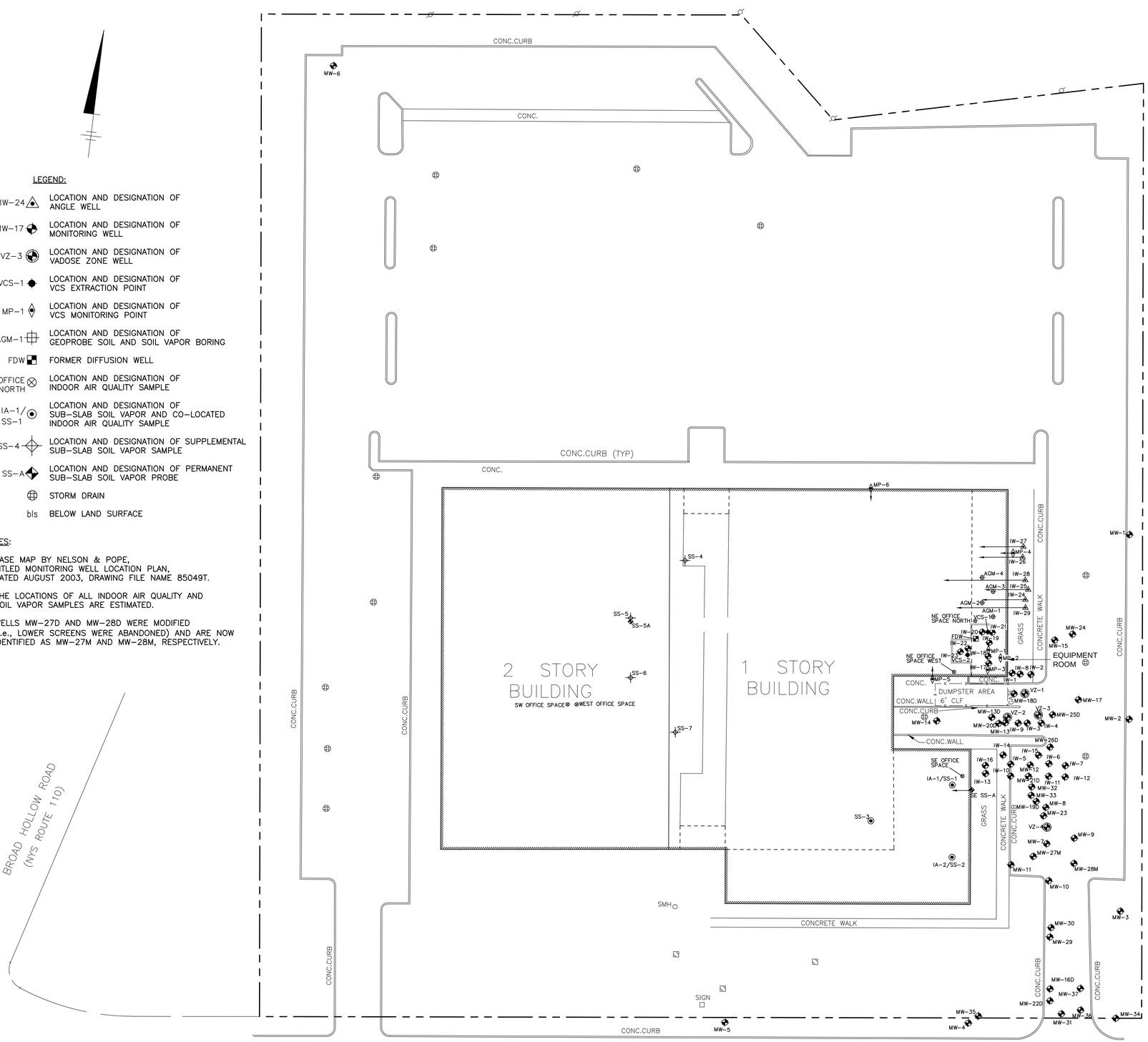
Well ID:	IW-1	IW-3	IW-9	IW-18	IW-19	IW-20	IW-22	IW-25	MW-13	Total Gallons Recovered
NAPL Recovered Between December 2016 and September 2017 (Gallons)	0	0	0.25	0.25	0	0	0	0	0	0.5

NAPL: Non-Aqueous Phase Liquid.

Notes:

Total Gallons Recovered represents a combination of NAPL and water.

FIGURES



Well Designation	Well Diameter (inches)	Screened Interval (feet bls)	Total Depth (feet bls)	Vertical Zone Designation
IW-1	2	45 to 60	60	Shallow Zone
IW-2	2	45 to 60	60	Shallow Zone
IW-3	2	45 to 60	60	Shallow Zone
IW-4	2	45 to 60	60	Shallow Zone
IW-5	2	45 to 60	60	Shallow Zone
IW-6	2	45 to 60	60	Shallow Zone
IW-7	2	45 to 60	60	Shallow Zone
IW-8	2	75 to 90	90	Intermediate Zone
IW-9	2	75 to 90	90	Intermediate Zone
IW-10	2	75 to 90	90	Intermediate Zone
IW-11	2	75 to 90	90	Intermediate Zone
IW-12	2	75 to 90	90	Intermediate Zone
IW-13	2	75 to 90	90	Intermediate Zone
IW-14	2	60 to 75	75	Intermediate Zone
IW-15	2	60 to 75	75	Intermediate Zone
IW-16	2	45 to 60	60	Shallow Zone
IW-17	2	50 to 70	70	Shallow Zone
IW-18	2	70 to 100	100	Intermediate Zone
IW-19	2	50 to 70	70	Shallow Zone
IW-20	2	70 to 100	100	Intermediate Zone
IW-21	2	50 to 70	70	Shallow Zone
IW-22	2	50 to 70	70	Shallow Zone
IW-23	2	70 to 100	100	Intermediate Zone
IW-24	2	56 to 75	75	Shallow Zone
IW-25	2	77 to 97	97	Intermediate Zone
IW-26	2	56 to 75	75	Shallow Zone
IW-27	2	77 to 97	97	Intermediate Zone
IW-28	2	69 to 95	95	Intermediate Zone
IW-29	2	68 to 95	95	Intermediate Zone
MW-1	4	40 to 60	60	Shallow Zone
MW-2	4	40 to 60	60	Shallow Zone
MW-3	4	40 to 60	60	Shallow Zone
MW-4	4	40 to 60	60	Shallow Zone
MW-5	4	40 to 60	60	Shallow Zone
MW-6	4	40 to 60	60	Shallow Zone
MW-7	2	40 to 60	60	Shallow Zone
MW-8	2	40 to 60	60	Shallow Zone
MW-9	2	40 to 60	60	Shallow Zone
MW-10	2	40 to 60	60	Shallow Zone
MW-11	2	40 to 60	60	Shallow Zone
MW-12	2	46.5 to 56.5	56.5	Shallow Zone
MW-13	2	48 to 58	58	Shallow Zone
MW-13D	2	80 to 90	90	Intermediate Zone
MW-14	2	46 to 56	56	Shallow Zone
MW-15	2	48.5 to 58.5	58.5	Shallow Zone
MW-16D	2	79.5 to 89.5	89.5	Intermediate Zone
MW-17	2	50 to 60	60	Shallow Zone
MW-18D	4	133 to 143	143	Deep Zone
MW-19D	4	160 to 170	170	Deep Zone
MW-20D	4	175 to 185	185	Deep Zone
MW-21D	4	50 to 160	160	Abandoned
MW-22D	4	48 to 138	138	Abandoned
MW-23	2	70 to 85	85	Intermediate Zone
MW-24	2	45 to 60	60	Shallow Zone
MW-25D	4	40 to 55	90	Abandoned
	4	75 to 90	90	Abandoned
MW-26D	4	35 to 50	85	Abandoned
	4	70 to 85	85	Abandoned
MW-27M (3)	4	40 to 55	90	Shallow Zone
	4	75 to 90	90	Abandoned
MW-28M (3)	4	40 to 55	90	Shallow Zone
	4	75 to 90	90	Abandoned
MW-29	2	45 to 60	60	Shallow Zone
MW-30	4	75 to 90	90	Intermediate Zone
MW-31	4	60 to 70	70	Shallow Zone
MW-32	4	45 to 60	60	Shallow Zone
MW-33	4	70 to 85	85	Intermediate Zone
MW-34	4	70 to 80	80	Intermediate Zone
MW-35	4	70 to 80	80	Intermediate Zone
MW-36	2	115 to 135	135	Deep Zone
MW-37	2	87.5 to 97.5	97.5	Intermediate Zone

25 MELVILLE PARK ROAD
MELVILLE, NEW YORK

SITE PLAN

ARCADIS Design & Consultancy for natural and built assets

FIGURE 1

CITY:SYRACUSE-NY DIV/GROUP:ENV DB:A.SANCHEZ LD:ALS PIC:S.FELDMAN PM:S.FELDMAN TM:C.KEEN LYR:(Opt)ON=*;OFF=*REF*
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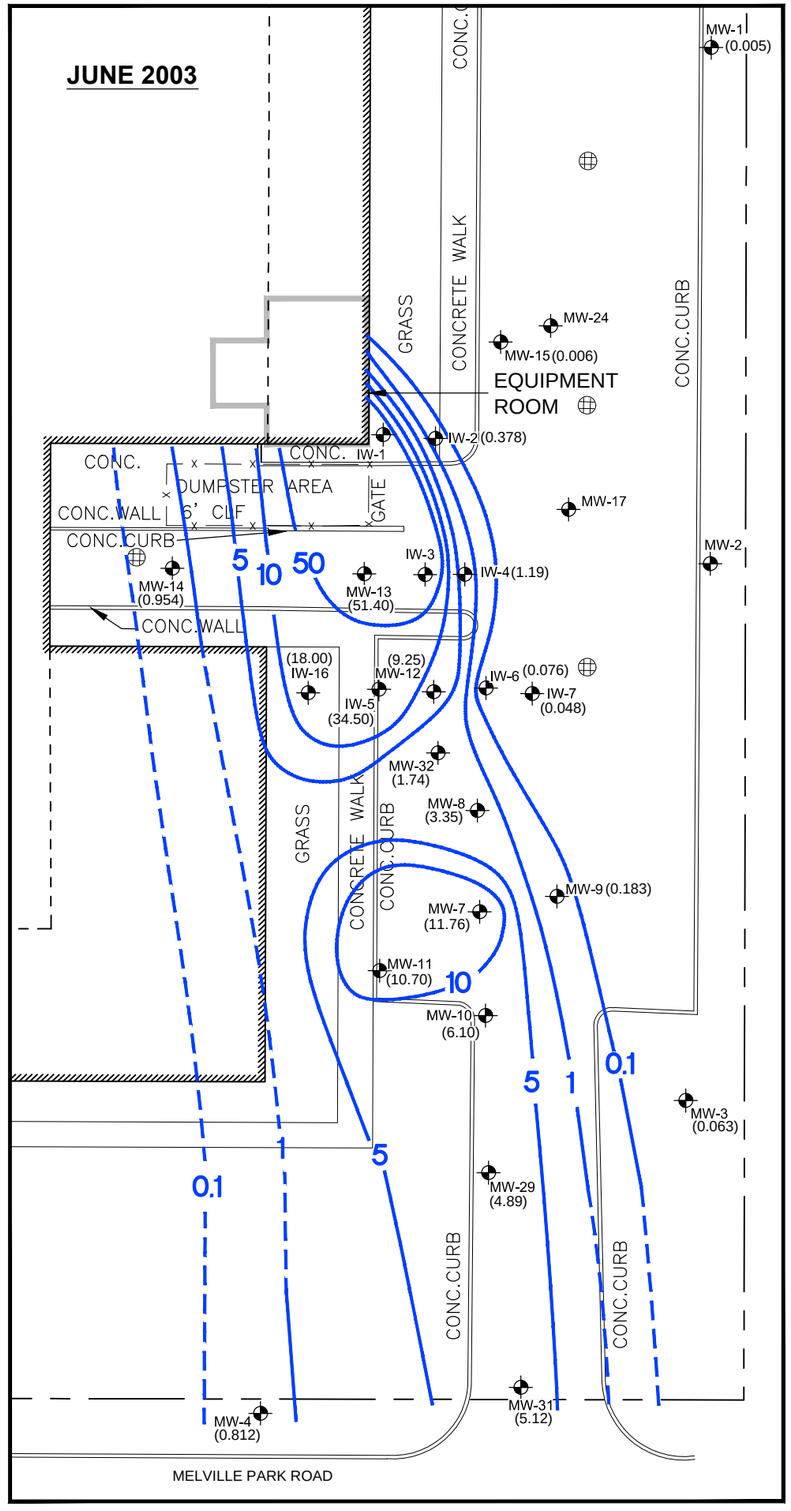
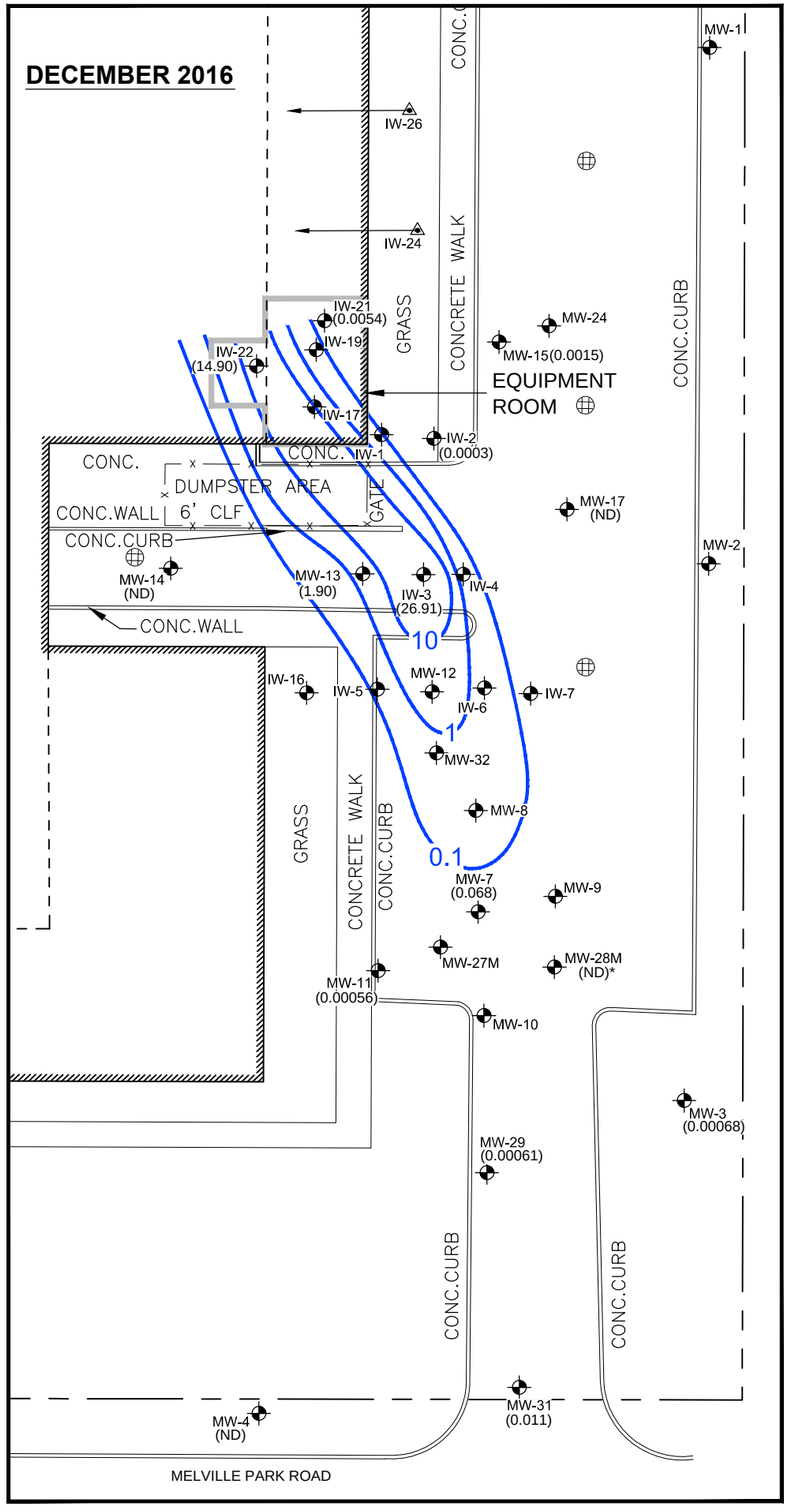
X\1332X00





LEGEND:

MW–7 (0.068)	LOCATION AND DESIGNATION OF MONITORING WELL AND ASSOCIATED TOTAL CVOC CONCENTRATION (mg/L)
IW–24	LOCATION AND DESIGNATION OF ANGLE WELL
	STORM DRAIN
1	LINE OF EQUAL TOTAL CVOC CONCENTRATION (mg/L) (DASHED WHERE INFERRED)
ND	CVOCs NOT DETECTED ABOVE LABORATORY REPORTING LIMIT
mg/L	MILLIGRAMS PER LITER
CVOC	CHLORINATED VOLATILE ORGANIC COMPOUND
*	MW-28M PDB WAS POTENTIALLY NOT SUBMERGED DUE TO DECREASING TREND IN GROUNDWATER ELEVATION

NOTE:

1. BASE MAP BY NELSON & POPE, TITLED MONITORING WELL LOCATION PLAN, DATED AUGUST 2003, DRAWING FILE NAME 85049T.
2. TOTAL CVOCs REFERS TO THE SUM OF PCE, TCE, CIS-1,2-DCE, AND VC.
3. WELLS MW-27D AND MW-28D WERE MODIFIED (i.e., LOWER SCREENS WERE ABANDONED) AND ARE NOW IDENTIFIED AS MW-27M AND MW-28M, RESPECTIVELY.

0 30' 60'

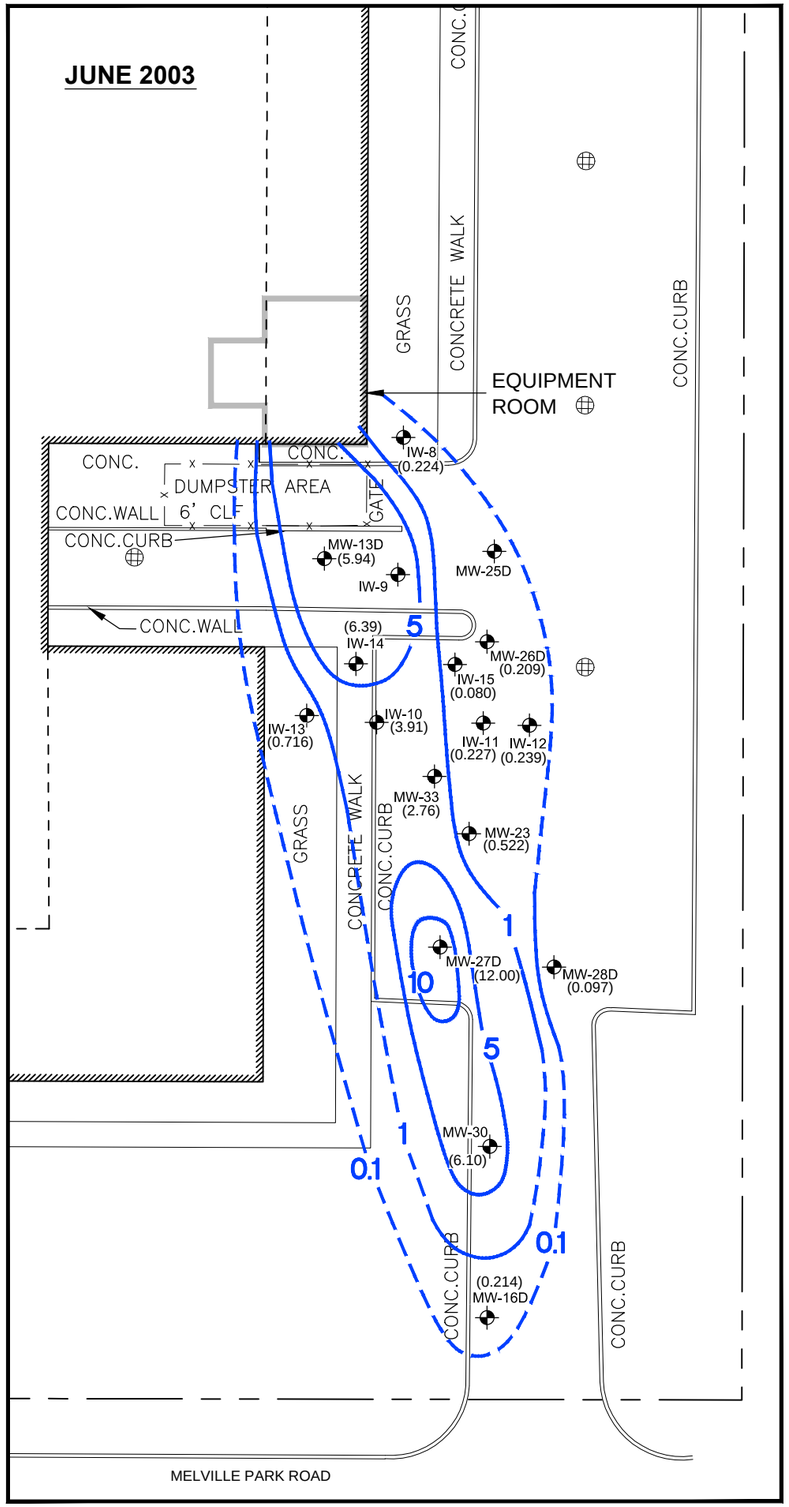
SCALE IN FEET

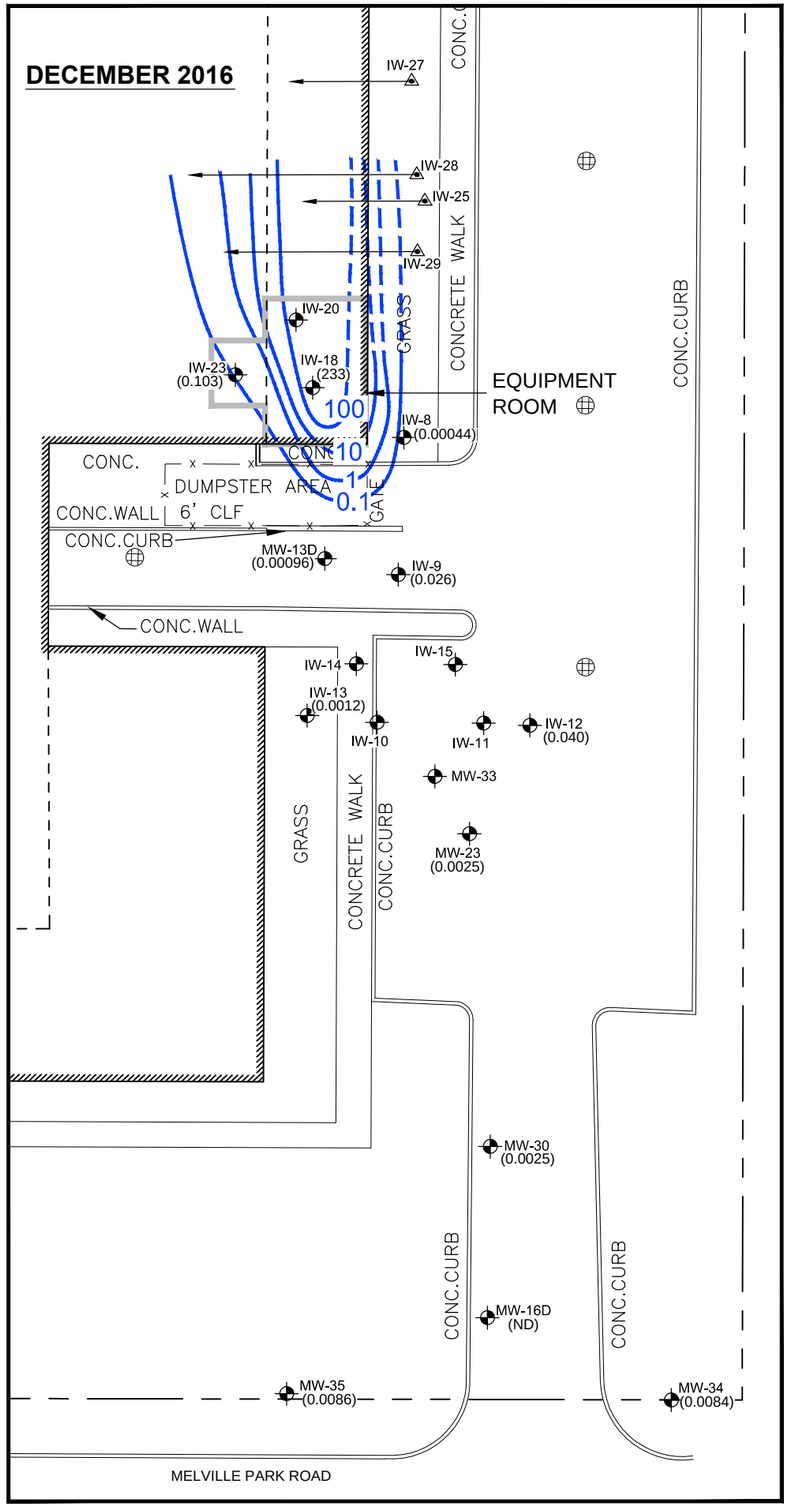
25 MELVILLE PARK ROAD
MELVILLE, NEW YORK

DISTRIBUTION OF TOTAL CVOCs IN THE SHALLOW AQUIFER ZONE (45-70 FT BLS) JUNE 2003 VERSUS DECEMBER 2016

ARCADIS Design & Consultancy for natural and built assets

FIGURE 2





LEGEND:

MW-13D (0.00096)	LOCATION AND DESIGNATION OF MONITORING WELL AND ASSOCIATED TOTAL CVOC CONCENTRATION (mg/L)
IW-25	LOCATION AND DESIGNATION OF ANGLE WELL
	STORM DRAIN
10	LINE OF EQUAL TOTAL CVOC CONCENTRATION (mg/L) (DASHED WHERE INFERRED)
ND	CVOCs NOT DETECTED ABOVE LABORATORY REPORTING LIMIT
mg/L	MILLIGRAMS PER LITER
CVOC	CHLORINATED VOLATILE ORGANIC COMPOUND

NOTE:

1. BASE MAP BY NELSON & POPE, TITLED MONITORING WELL LOCATION PLAN, DATED AUGUST 2003, DRAWING FILE NAME 85049T.
2. NAPL WAS DETECTED ABOVE A TRACE IN WELL IW-18 IN DECEMBER 2015.
3. TOTAL CVOCs REFERS TO THE SUM OF PCE, TCE, CIS-1,2-DCE, AND VC.

0 30' 60'

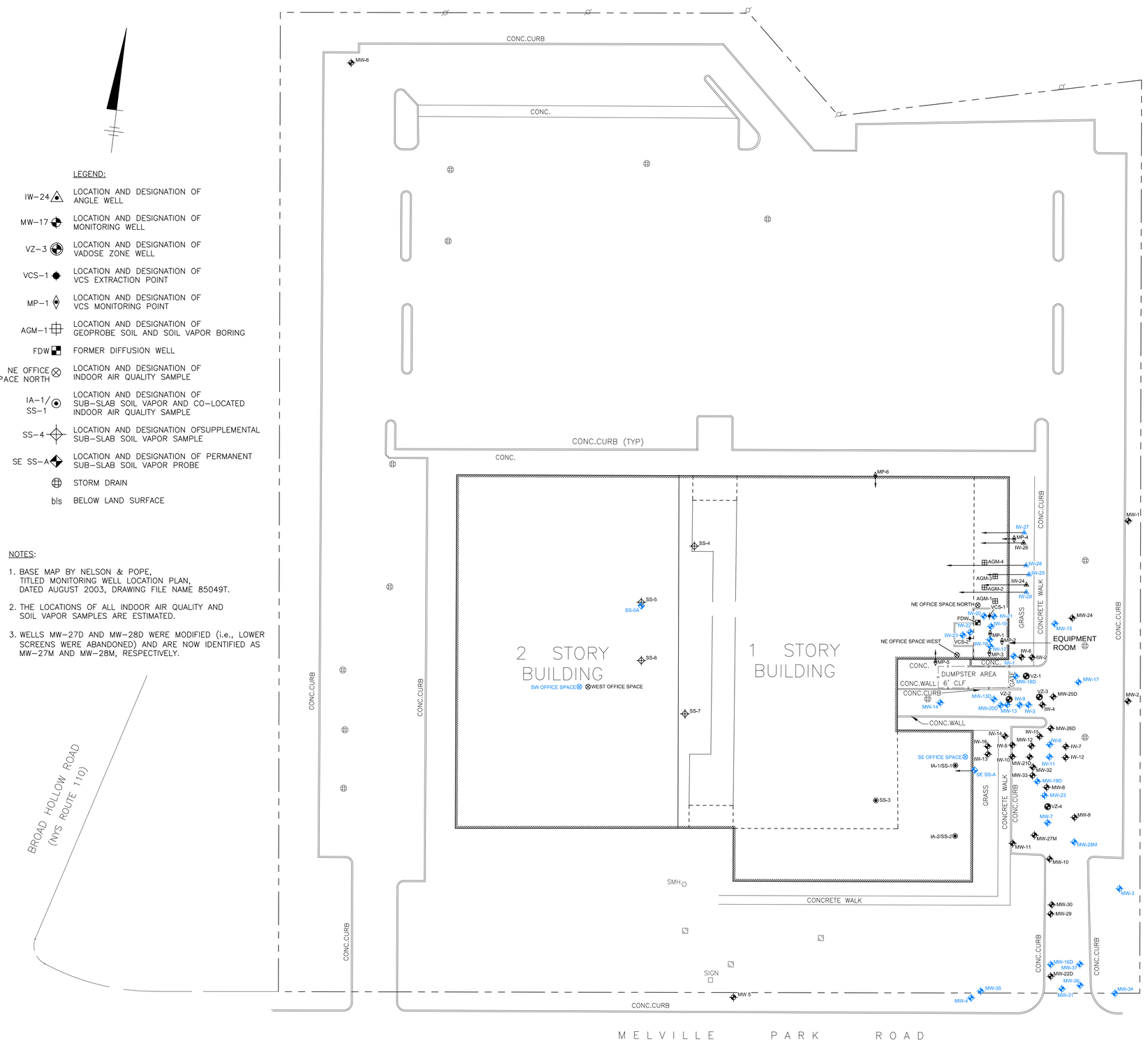
SCALE IN FEET

25 MELVILLE PARK ROAD
MELVILLE, NEW YORK

DISTRIBUTION OF TOTAL CVOCs IN THE INTERMEDIATE AQUIFER ZONE (70-100 FT BLS) JUNE 2003 VERSUS DECEMBER 2016

ARCADIS Design & Consultancy for natural and built assets

FIGURE 3



Well Designation	Well Diameter (inches)	Screened Interval (feet bls)	Total Depth (feet bls)	Vertical Zone Designation
IW-1	2	45 to 60	60	Shallow Zone
IW-2	2	45 to 60	60	Shallow Zone
IW-3	2	45 to 60	60	Shallow Zone
IW-4	2	45 to 60	60	Shallow Zone
IW-5	2	45 to 60	60	Shallow Zone
IW-6	2	45 to 60	60	Shallow Zone
IW-7	2	45 to 60	60	Shallow Zone
IW-8	2	75 to 90	90	Intermediate Zone
IW-9	2	75 to 90	90	Intermediate Zone
IW-10	2	75 to 90	90	Intermediate Zone
IW-11	2	75 to 90	90	Intermediate Zone
IW-12	2	75 to 90	90	Intermediate Zone
IW-13	2	75 to 90	90	Intermediate Zone
IW-14	2	60 to 75	75	Intermediate Zone
IW-15	2	60 to 75	75	Intermediate Zone
IW-16	2	45 to 60	60	Shallow Zone
IW-17	2	50 to 70	70	Shallow Zone
IW-18	2	70 to 100	100	Intermediate Zone
IW-19	2	50 to 70	70	Shallow Zone
IW-20	2	70 to 100	100	Intermediate Zone
IW-21	2	50 to 70	70	Shallow Zone
IW-22	2	50 to 70	70	Shallow Zone
IW-23	2	70 to 100	100	Intermediate Zone
IW-24	2	56 to 75	75	Shallow Zone
IW-25	2	77 to 97	97	Intermediate Zone
IW-26	2	56 to 75	75	Shallow Zone
IW-27	2	77 to 97	97	Intermediate Zone
IW-28	2	69 to 95	95	Intermediate Zone
IW-29	2	68 to 95	95	Intermediate Zone
MW-1	4	40 to 60	60	Shallow Zone
MW-2	4	40 to 60	60	Shallow Zone
MW-3	4	40 to 60	60	Shallow Zone
MW-4	4	40 to 60	60	Shallow Zone
MW-5	4	40 to 60	60	Shallow Zone
MW-6	4	40 to 60	60	Shallow Zone
MW-7	2	40 to 60	60	Shallow Zone
MW-8	2	40 to 60	60	Shallow Zone
MW-9	2	40 to 60	60	Shallow Zone
MW-10	2	40 to 60	60	Shallow Zone
MW-11	2	40 to 60	60	Shallow Zone
MW-12	2	46.5 to 56.5	56.5	Shallow Zone
MW-13	2	48 to 58	58	Shallow Zone
MW-13D	2	80 to 90	90	Intermediate Zone
MW-14	2	46 to 56	56	Shallow Zone
MW-15	2	48.5 to 58.5	58.5	Shallow Zone
MW-16D	2	79.5 to 89.5	89.5	Intermediate Zone
MW-17	2	50 to 60	60	Shallow Zone
MW-18D	4	133 to 143	143	Deep Zone
MW-19D	4	160 to 170	170	Deep Zone
MW-20D	4	175 to 185	185	Deep Zone
MW-21D	4	50 to 160	160	Abandoned
MW-22D	4	48 to 138	138	Abandoned
MW-23	2	70 to 85	85	Intermediate Zone
MW-24	2	45 to 60	60	Shallow Zone
MW-25D	4	40 to 55	90	Abandoned
	4	75 to 90	90	Abandoned
MW-26D	4	35 to 50	85	Abandoned
	4	70 to 85	85	Abandoned
MW-27M (3)	4	40 to 55	90	Shallow Zone
	4	75 to 90	90	Abandoned
MW-28M (3)	4	40 to 55	90	Shallow Zone
	4	75 to 90	90	Abandoned
MW-29	2	45 to 60	60	Shallow Zone
MW-30	4	75 to 90	90	Intermediate Zone
MW-31	4	60 to 70	70	Shallow Zone
MW-32	4	45 to 60	60	Shallow Zone
MW-33	4	70 to 85	85	Intermediate Zone
MW-34	4	70 to 80	80	Intermediate Zone
MW-35	4	70 to 80	80	Intermediate Zone
MW-36	2	115 to 135	135	Deep Zone
MW-37	2	87.5 to 97.5	97.5	Intermediate Zone

25 MELVILLE PARK ROAD
MELVILLE, NEW YORK

GROUNDWATER, NAPL, INDOOR AIR QUALITY, AND SUB SLAB SOIL VAPOR MONITORING POINT LOCATIONS

ARCADIS Design & Consultancy for natural and built assets

FIGURE 4

CITY:SYRACUSE-NY DIV/GROUP:ENV DB:A.SANCHEZ LD:ALS PIC:S.FELDMAN PM:S.FELDMAN TM:C.KEEN LYR:(Opt)ON=*;OFF=*REF*
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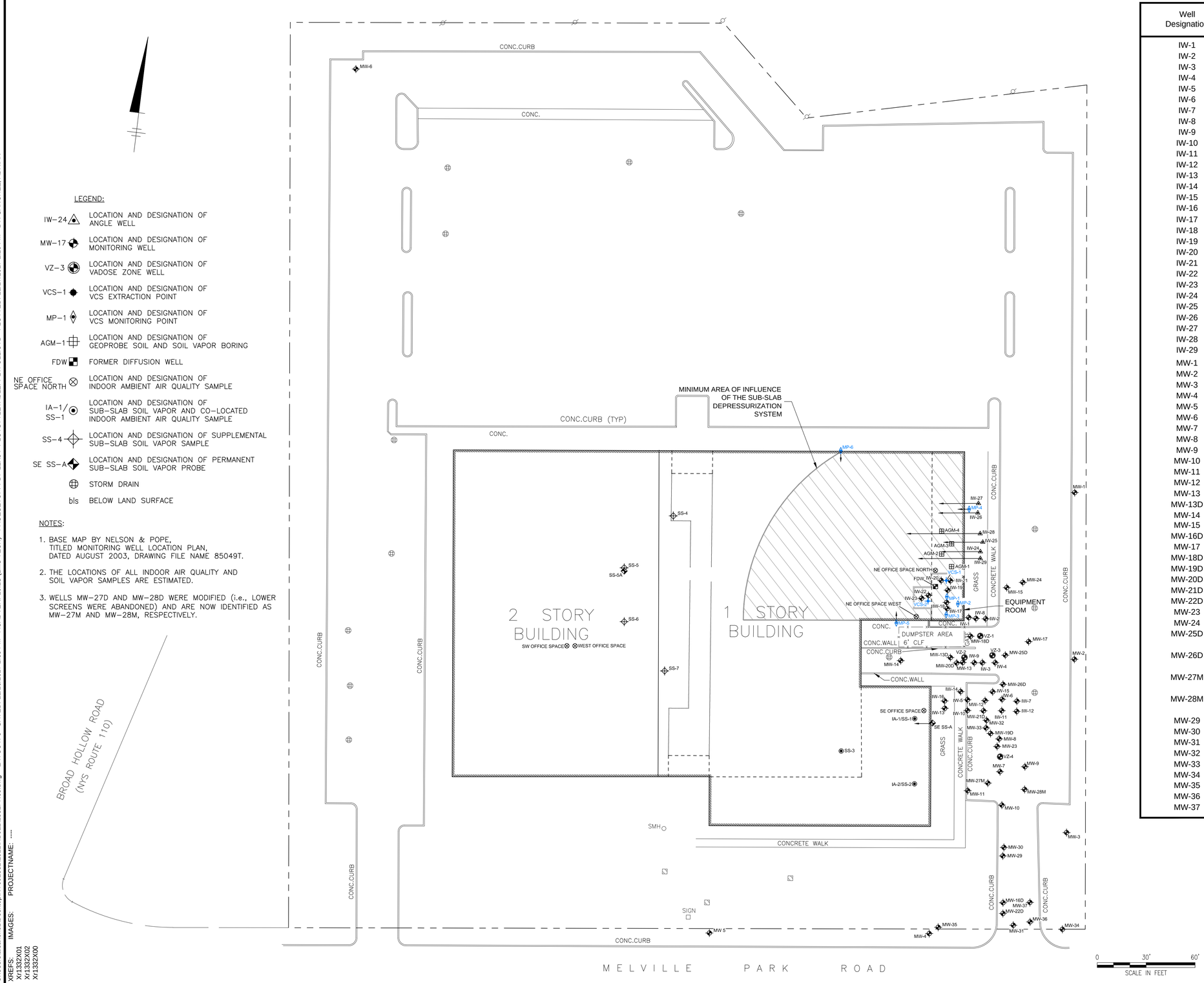

Well Designation	Well Diameter (inches)	Screened Interval (feet bls)	Total Depth (feet bls)	Vertical Zone Designation
IW-1	2	45 to 60	60	Shallow Zone
IW-2	2	45 to 60	60	Shallow Zone
IW-3	2	45 to 60	60	Shallow Zone
IW-4	2	45 to 60	60	Shallow Zone
IW-5	2	45 to 60	60	Shallow Zone
IW-6	2	45 to 60	60	Shallow Zone
IW-7	2	45 to 60	60	Shallow Zone
IW-8	2	75 to 90	90	Intermediate Zone
IW-9	2	75 to 90	90	Intermediate Zone
IW-10	2	75 to 90	90	Intermediate Zone
IW-11	2	75 to 90	90	Intermediate Zone
IW-12	2	75 to 90	90	Intermediate Zone
IW-13	2	75 to 90	90	Intermediate Zone
IW-14	2	60 to 75	75	Intermediate Zone
IW-15	2	60 to 75	75	Intermediate Zone
IW-16	2	45 to 60	60	Shallow Zone
IW-17	2	50 to 70	70	Shallow Zone
IW-18	2	70 to 100	100	Intermediate Zone
IW-19	2	50 to 70	70	Shallow Zone
IW-20	2	70 to 100	100	Intermediate Zone
IW-21	2	50 to 70	70	Shallow Zone
IW-22	2	50 to 70	70	Shallow Zone
IW-23	2	70 to 100	100	Intermediate Zone
IW-24	2	56 to 75	75	Shallow Zone
IW-25	2	77 to 97	97	Intermediate Zone
IW-26	2	56 to 75	75	Shallow Zone
IW-27	2	77 to 97	97	Intermediate Zone
IW-28	2	69 to 95	95	Intermediate Zone
IW-29	2	68 to 95	95	Intermediate Zone
MW-1	4	40 to 60	60	Shallow Zone
MW-2	4	40 to 60	60	Shallow Zone
MW-3	4	40 to 60	60	Shallow Zone
MW-4	4	40 to 60	60	Shallow Zone
MW-5	4	40 to 60	60	Shallow Zone
MW-6	4	40 to 60	60	Shallow Zone
MW-7	2	40 to 60	60	Shallow Zone
MW-8	2	40 to 60	60	Shallow Zone
MW-9	2	40 to 60	60	Shallow Zone
MW-10	2	40 to 60	60	Shallow Zone
MW-11	2	40 to 60	60	Shallow Zone
MW-12	2	46.5 to 56.5	56.5	Shallow Zone
MW-13	2	48 to 58	58	Shallow Zone
MW-13D	2	80 to 90	90	Intermediate Zone
MW-14	2	46 to 56	56	Shallow Zone
MW-15	2	48.5 to 58.5	58.5	Shallow Zone
MW-16D	2	79.5 to 89.5	89.5	Intermediate Zone
MW-17	2	50 to 60	60	Shallow Zone
MW-18D	4	133 to 143	143	Deep Zone
MW-19D	4	160 to 170	170	Deep Zone
MW-20D	4	175 to 185	185	Deep Zone
MW-21D	4	50 to 160	160	Abandoned
MW-22D	4	48 to 138	138	Abandoned
MW-23	2	70 to 85	85	Intermediate Zone
MW-24	2	45 to 60	60	Shallow Zone
MW-25D	4	40 to 55	90	Abandoned
	4	75 to 90	90	Abandoned
MW-26D	4	35 to 50	85	Abandoned
	4	70 to 85	85	Abandoned
MW-27M [3]	4	40 to 55	90	Shallow Zone
	4	75 to 90	90	Abandoned
MW-28M [3]	4	40 to 55	90	Shallow Zone
	4	75 to 90	90	Abandoned
MW-29	2	45 to 60	60	Shallow Zone
MW-30	4	75 to 90	90	Intermediate Zone
MW-31	4	60 to 70	70	Shallow Zone
MW-32	4	45 to 60	60	Shallow Zone
MW-33	4	70 to 85	85	Intermediate Zone
MW-34	4	70 to 80	80	Intermediate Zone
MW-35	4	70 to 80	80	Intermediate Zone
MW-36	2	115 to 135	135	Deep Zone
MW-37	2	87.5 to 97.5	97.5	Intermediate Zone

25 MELVILLE PARK ROAD
MELVILLE, NEW YORK

VAPOR RECOVERY WELL AND INDUCED VACUUM MONITORING POINT LOCATIONS

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FIGURE 5

CITY:SYRACUSE-NY DIV/GROUP:ENV DB:A.SANCHEZ LD:ALS PIC:S.FELDMAN PM:S.FELDMAN TM:C.KEEN LYR:(Opt)ON=*;OFF=*REF*
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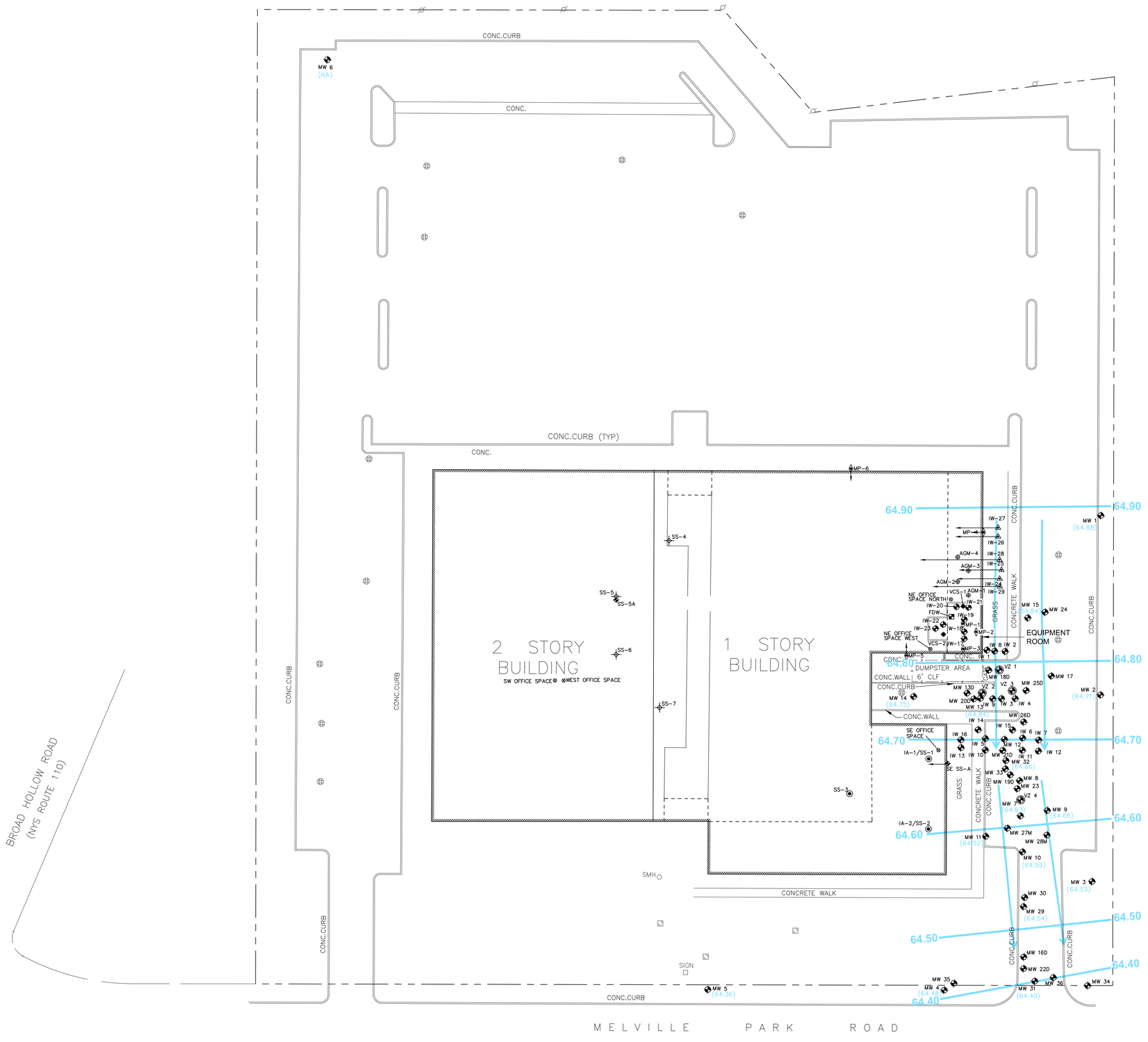
X11332X02
X11332X00



LEGEND:

IW–24	LOCATION AND DESIGNATION OF ANGLE WELL
MW–1 (64.88)	LOCATION AND DESIGNATION OF MONITORING WELL AND WATER–LEVEL ELEVATION (FT RMSL)
VZ–3	LOCATION AND DESIGNATION OF VADOSE ZONE WELL
VCS–1	LOCATION AND DESIGNATION OF VCS EXTRACTION POINT
MP–1	LOCATION AND DESIGNATION OF VCS MONITORING POINT
AGM–1	LOCATION AND DESIGNATION OF GEOPROBE SOIL AND SOIL VAPOR BORING
FDW	FORMER DIFFUSION WELL
NE OFFICE SPACE NORTH	LOCATION AND DESIGNATION OF INDOOR AIR QUALITY SAMPLE
IA–1/ SS–1	LOCATION AND DESIGNATION OF SUB–SLAB SOIL VAPOR AND CO–LOCATED INDOOR AIR QUALITY SAMPLE
SS–4	LOCATION AND DESIGNATION OF SUPPLEMENTAL SUB–SLAB SOIL VAPOR SAMPLE
SE SS–A	LOCATION AND DESIGNATION OF PERMANENT SUB–SLAB SOIL VAPOR PROBE
	STORM DRAIN
bls	BELOW LAND SURFACE
64.90	LINE OF EQUAL WATER–LEVEL ELEVATION IN FEET RELATIVE TO MEAN SEA LEVEL (FT RMSL) (DASHED WHERE INFERRED)
	DIRECTION OF HORIZONTAL COMPONENT OF GROUNDWATER FLOW
NA	NOT ACCESSIBLE

NOTES:

1. BASE MAP BY NELSON & POPE, TITLED MONITORING WELL LOCATION PLAN, DATED AUGUST 2003, DRAWING FILE NAME 85049T.
2. THE LOCATIONS OF ALL INDOOR AIR QUALITY AND SOIL VAPOR SAMPLES ARE ESTIMATED.
3. ELEVATIONS ARE RELATIVE TO THE NATIONAL GEODETIC VERTICAL DATUM (NGVD) OF 1929.
4. WELLS MW–27D AND MW–28D WERE MODIFIED (I.E., LOWER SCREENS WERE ABANDONED) AND ARE NOW IDENTIFIED AS MW–27M AND MW–28M, RESPECTIVELY.
5. CONTOUR INTERVAL IS 0.10 FEET.
6. WATER–LEVEL ELEVATIONS MEASURED ON MARCH 27 AND 28, 2017.

0 30' 60'
SCALE IN FEET

25 MELVILLE PARK ROAD
MELVILLE, NEW YORK

CONFIGURATION OF THE WATER TABLE AND GROUNDWATER FLOW DIRECTION MARCH 2017

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FIGURE 6

CITY:SYRACUSE-NY DIV/GROUP:ENV DB:A.SANCHEZ LD:ALS PIC:S.FELDMAN PM:S.FELDMAN TM:C.KEEN LYR:(Opt)ON=*;OFF=*REF*
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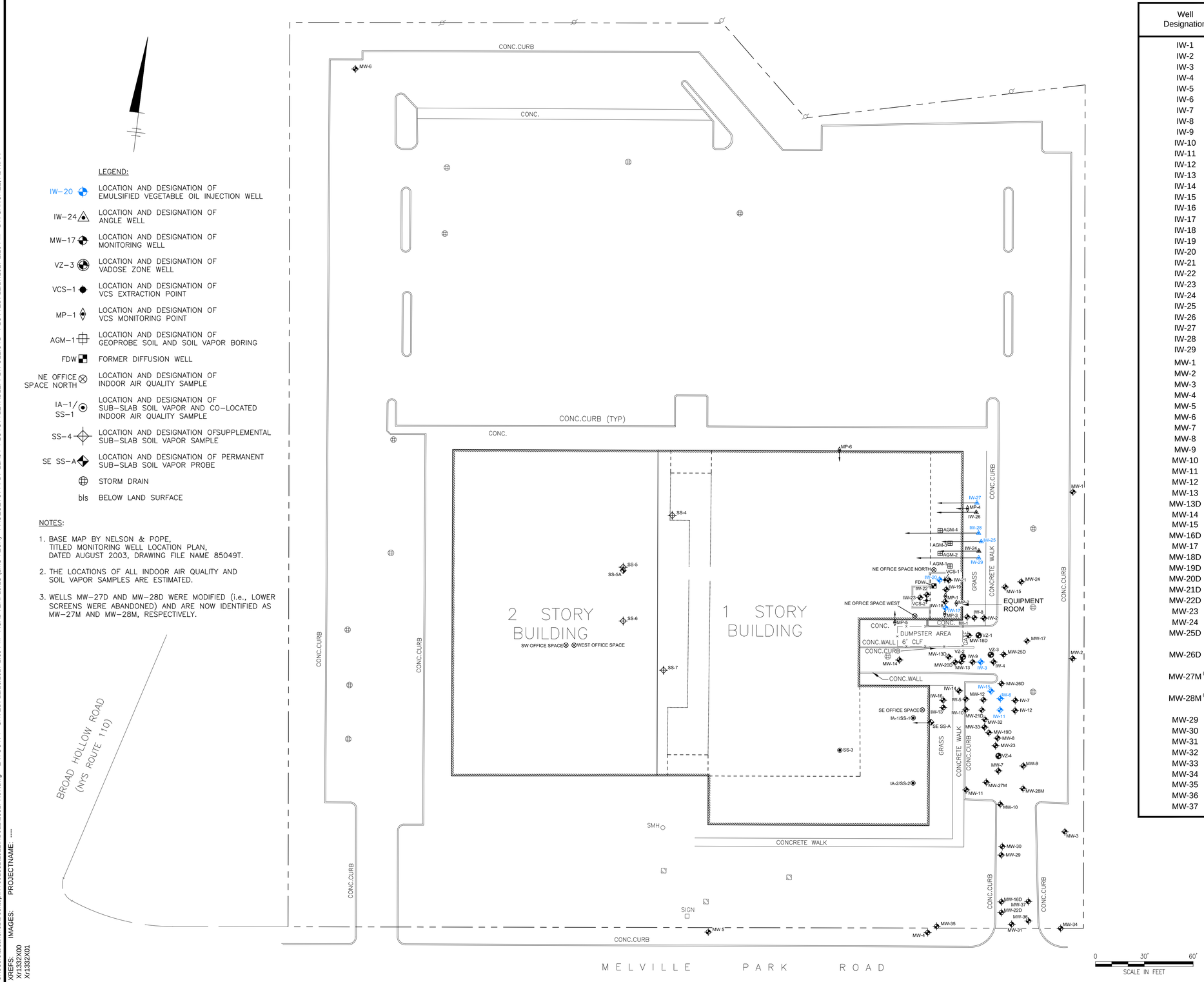

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IW-5	2	45 to 60	60	Shallow Zone
IW-6	2	45 to 60	60	Shallow Zone
IW-7	2	45 to 60	60	Shallow Zone
IW-8	2	75 to 90	90	Intermediate Zone
IW-9	2	75 to 90	90	Intermediate Zone
IW-10	2	75 to 90	90	Intermediate Zone
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IW-23	2	70 to 100	100	Intermediate Zone
IW-24	2	56 to 75	75	Shallow Zone
IW-25	2	77 to 97	97	Intermediate Zone
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MW-6	4	40 to 60	60	Shallow Zone
MW-7	2	40 to 60	60	Shallow Zone
MW-8	2	40 to 60	60	Shallow Zone
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	4	75 to 90	90	Abandoned
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	4	75 to 90	90	Abandoned
MW-29	2	45 to 60	60	Shallow Zone
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MW-32	4	45 to 60	60	Shallow Zone
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MW-35	4	70 to 80	80	Intermediate Zone
MW-36	2	115 to 135	135	Deep Zone
MW-37	2	87.5 to 97.5	97.5	Intermediate Zone

25 MELVILLE PARK ROAD
MELVILLE, NEW YORK

OPTIMIZED ERD INJECTION WELL LOCATIONS

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FIGURE 7

CITY:SYRACUSE-NY DIV/GROUP:ENV DB:A.SANCHEZ LD:ALS PIC:S.FELDMAN PM:S.FELDMAN TM:C.KEEN LYR:(Opt)ON=*;OFF=*REF*
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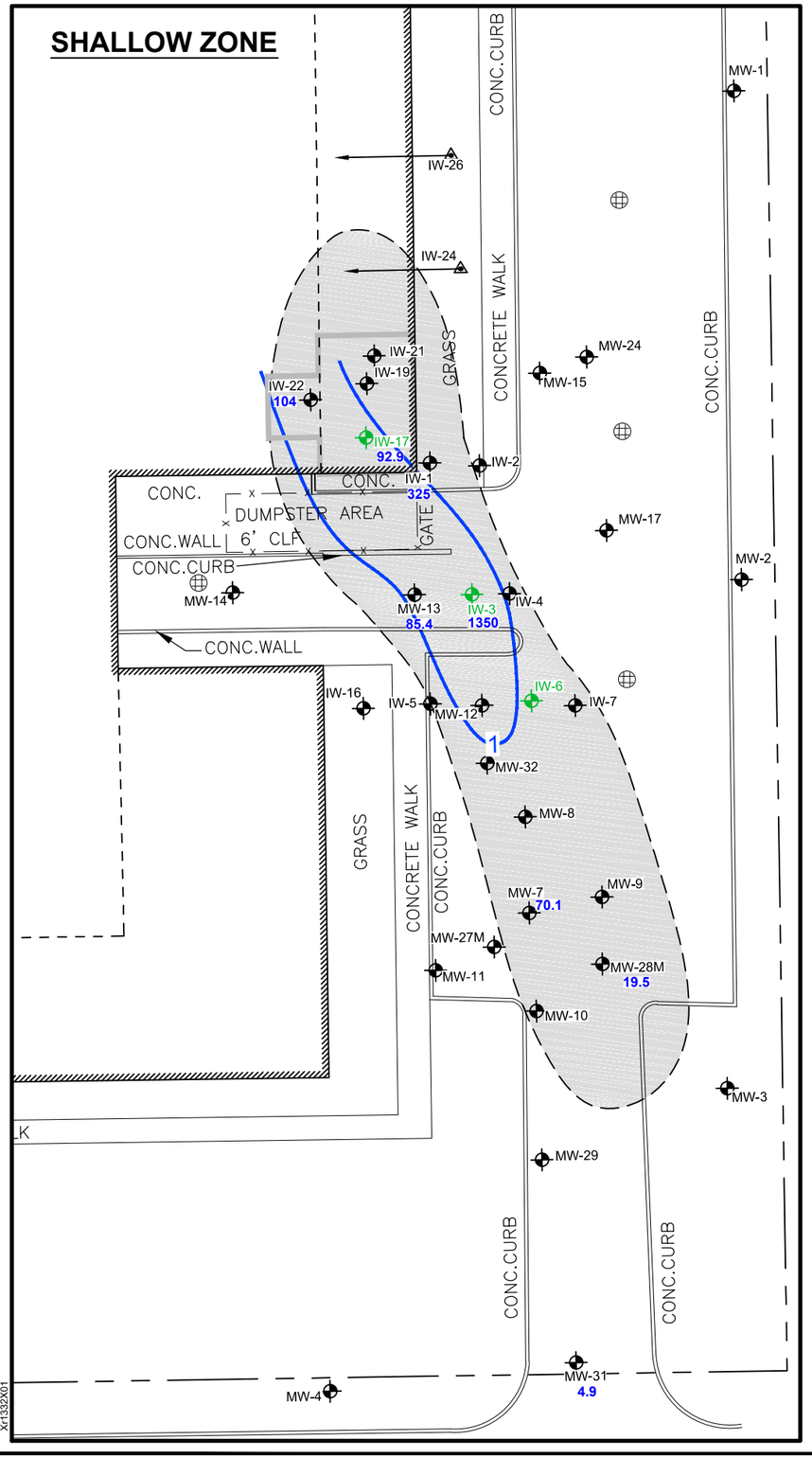
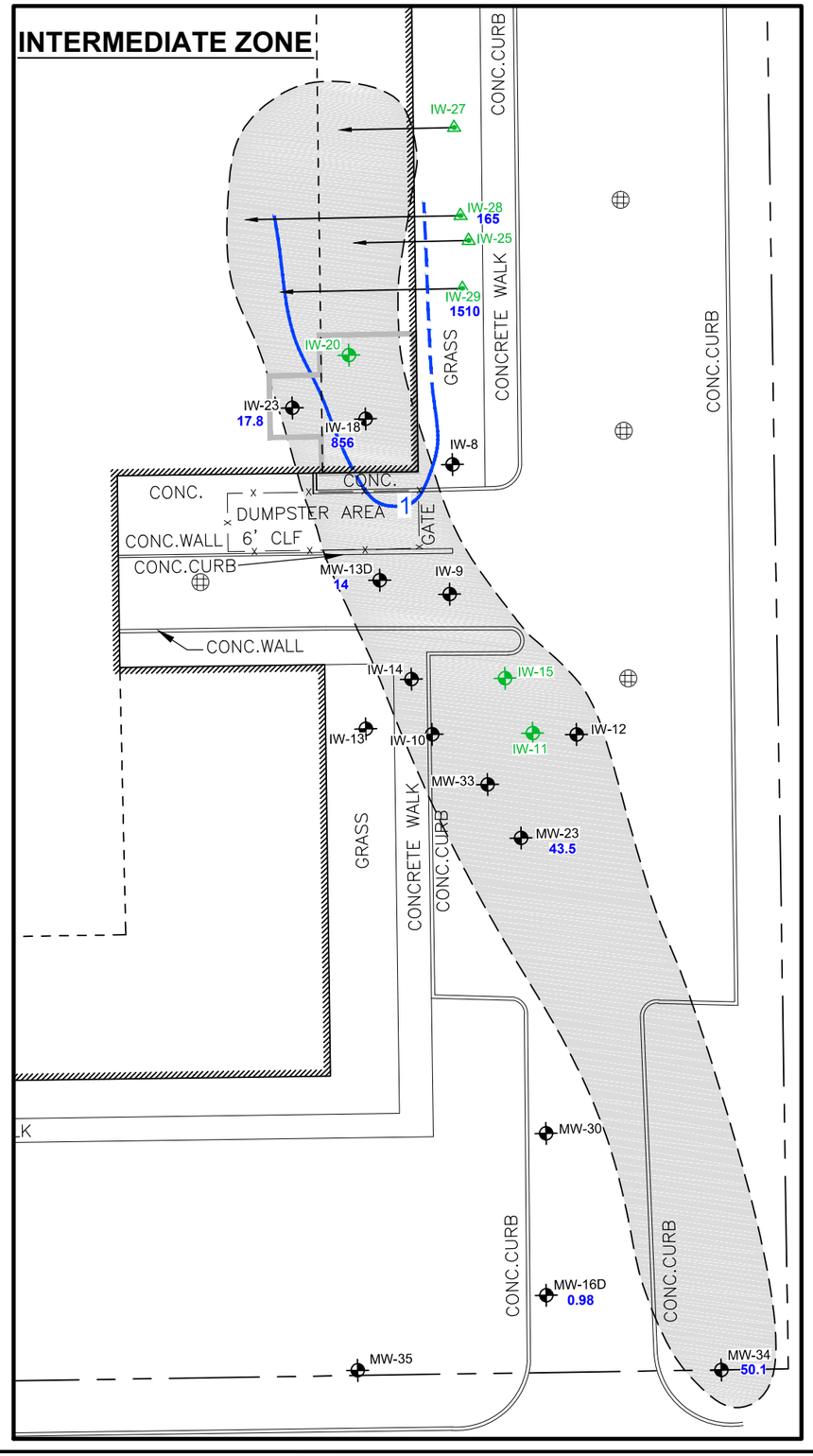
X11332X01





LEGEND:

MW-7 70.1	LOCATION AND DESIGNATION OF MONITORING WELL AND ASSOCIATED TOC VALUE (mg/L)
IW-26	LOCATION AND DESIGNATION OF ANGLE WELL
	LOCATION AND DESIGNATION OF INJECTION WELL
	STORM DRAIN
	APPROXIMATE FOOTPRINT OF TOC CONCENTRATIONS GREATER THAN 20 mg/L
mg/L	MILLIGRAMS PER LITER
TOC	TOTAL ORGANIC CARBON
1	APPROXIMATE EXTENT OF TOTAL CVOC CONCENTRATIONS EXCEEDING 1 mg/L
CVOC	CHLORINATED VOLATILE ORGANIC COMPOUND

0 30' 60'

APPROXIMATE SCALE IN FEET

25 MELVILLE PARK ROAD
MELVILLE, NEW YORK

ESTIMATED TOTAL ORGANIC CARBON FOOTPRINT GREATER THAN 20 mg/L IN DECEMBER 2016

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FIGURE 8

APPENDIX A

Summary of Historic Reagent Injection Methodology

APPENDIX A

SUMMARY OF HISTORIC REAGENT INJECTION METHODOLOGY

This appendix provides a summary of primary/major injection methodologies implemented since the inception of the in-situ reactive zone (IRZ) program at the site:

- August 2003 through November 2004 – Injection into downgradient injection wells IW-5, IW-6, IW-10, IW-11, IW-13, IW-14, IW-15, and IW-16. Injections were generally completed using a gravity feed system from an on-site mixing tank or bulk tanker delivery. Injection volumes were typically low and ranged from between 150 gallons to 300 gallons per wells. The injection solution strength typically ranged from 10 to 20 percent by volume. The injection frequency ranged from weekly to monthly. Sodium bicarbonate was occasionally added to the injection solution as a buffering agent.

- December 2004 through March 2005 – Same injection wells as previous operating period; however, the injection methodology is modified with a new strategy aimed at minimizing pH decline through the addition of a more dilute organic carbon solution through larger injection volumes, a decrease in injection solution strength, and a decrease in injection frequency. The use of sodium bicarbonate is discontinued. Injection volumes ranged between 500 and 1500 gallons and the injection solution strength between 2 and 5 percent by volume. Injections were completed bi-monthly.

- May 2005 through October 2005 – The injection methodology was further tailored to reduce pH fluctuations and expand on the concepts that began in December 2004. This involved increasing the injection volumes further and reducing the concentration of molasses. The revised injection volumes ranged between approximately 5,000 to 10,000 gallons per well and the injection concentration ranged between 1 and 2 percent by volume. In addition, injection wells IW-5 and IW-10 were omitted from the injection program due to the larger radius of influence achieved with the revised injection volumes. Finally, the injection methodology was revised to a semi-automated constant feed in-line mixing process to accommodate the larger injection volumes.

- December 2005 through March 2008 – Incorporation of source area injection wells IW-26 and IW-27 at injection volumes of approximately 10,000 gallons per well. The downgradient injection methodology generally stayed the same.

- June 2008 to present – Removal of source area injection well IW-26 and replacement with injection well IW-24 at 10,000 gallons injection volume. The revision was made after data confirmed that the area of aquifer between these two wells was remediated. All other injection methodology generally stayed the same.

- May 2010 – A single injection of a 10 percent by volume molasses/whey blend was completed at injection well IW-20 as a pilot test in an effort to accelerate the rate of remediation within the source area. Specifically, it is believed that the injection of a high concentration, high protein, based electron donor containing cheese whey will enhance the rate of parent compound (PCE) dissolution into the dissolved phase, making it available for treatment in the dissolved phase. The molasses/whey solution pH was neutralized with sodium hydroxide to minimize the decrease in pH that typically accompanies high solution strength injections. The solution was also spiked with

a bromide tracer to track the downgradient migration of the molasses/whey blend. Post injection monitoring of the pilot test is currently on going.

- April 2012 – With NYSDEC approval (NYSDEC 2012), removal of downgradient western injection wells IW-13, IW-14, and IW-16 from the injection program. In addition, it was recommended the injection frequency at source area intermediate injection well IW-27 be reduced to an every six to eight month injection schedule. Results of the May 2010 bromide injection data and VOC data from western downgradient monitoring wells indicated that the injection into the western injection wells were no longer required. Subsequent groundwater monitoring for VOCs at IW-13 and IW-16 indicates that VOCs are at or near MCLs for all compounds and confirms their removal from the injection program. Subsequent TOC monitoring at injection well IW-27 indicated that the proposed reduction to the injection frequency was too long. Injections into IW-27 were returned to every four months beginning in August 2012.

- August 2015 - In accordance with the NYSDEC-approved Site Management Plan (SMP) Addendum (Arcadis 2015), an optimized enhanced reductive dechlorination (ERD) injection was completed using an approximately 2.7% solution of emulsified vegetable oil (EVO) that included a sodium bicarbonate buffer. In addition to the sodium bicarbonate buffer, sulfate (in the form of Epsom salts) was also added to the injection solution. As described in the NYSDEC-approved SMP Addendum, two new angle injection wells were installed (IW-28 and IW-29) to improve coverage of the source area that had been identified beneath the northeast portion of the building. An optimized ERD injection network consisting of six additional injection wells (IW-3, IW-17, IW-20, IW-25 and newly installed IW-28 and IW-29) as well as four previous injection wells (IW-6, IW-11, IW-15 and IW-27) were used for the injection. The injection volumes added to each well varied from 5,900 gallons to 15,000 gallons.

- May/June 2017 - A second injection of EVO in the source area injection wells and an injection of molasses in the downgradient injection wells was implemented. Consistent with the first optimized ERD program reagent injection in August 2015, a longer lasting electron donor in the form of a commercially available EVO product was injected into an expanded well network that was installed to cover the entirety of the suspected source area. The EVO included sodium bicarbonate as an amendment to minimize a potential decrease in pH due to potential formation of volatile fatty acids during fermentation of the carbon. EVO was introduced into injection wells IW-3, IW-17, IW-20, IW-25, IW-27, IW-28, and IW-29. Molasses was introduced into injection wells IW-6, IW-11, IW-13, and IW-15. At the request of the NYSDEC, well IW-13 was added to this injection.

APPENDIX B

Site Management Certification Forms

Enclosure 2

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Site Management Periodic Review Report Notice
Institutional and Engineering Controls Certification Form

Site Details **Box 1**

Site No. **V00128**

Site Name 25 Melville Park Road

Site Address: 25 Melville Park Road Zip Code: 11747-
City/Town: Melville
County: Suffolk
Site Acreage: 6.0

Reporting Period: September 23, 2016 to September 23, 2017

	YES	NO
1. Is the information above correct?	☒	☐
If NO, include handwritten above or on a separate sheet.		
2. Has some or all of the site property been sold, subdivided, merged, or undergone a tax map amendment during this Reporting Period?	☐	☒
3. Has there been any change of use at the site during this Reporting Period (see 6NYCRR 375-1.11(d))?	☐	☒
4. Have any federal, state, and/or local permits (e.g., building, discharge) been issued for or at the property during this Reporting Period?	☐	☒
If you answered YES to questions 2 thru 4, include documentation or evidence that documentation has been previously submitted with this certification form.		
5. Is the site currently undergoing development?	☐	☒

Box 2

	YES	NO
6. Is the current site use consistent with the use(s) listed below? Commercial and Industrial	☒	☐
7. Are all ICs/ECs in place and functioning as designed?	☒	☐

IF THE ANSWER TO EITHER QUESTION 6 OR 7 IS NO, sign and date below and DO NOT COMPLETE THE REST OF THIS FORM. Otherwise continue.

A Corrective Measures Work Plan must be submitted along with this form to address these issues.

Signature of Owner, Remedial Party or Designated Representative Date

SITE NO. V00128

Box 3

Description of Institutional Controls

Parcel	Owner	Institutional Control
268-1-4	BP Moby Holdings, LLC Melville Opportunity LLC and Karakoram LLC	Ground Water Use Restriction Soil Management Plan Landuse Restriction Building Use Restriction Monitoring Plan Site Management Plan O&M Plan IC/EC Plan

· Require compliance with the approved Site Management Plan (SMP).
· Restrict the use of groundwater beneath the Site as a source of potable or process water, without necessary water quality treatment as determined by the Suffolk County Department of Health Services (SCDHS).
· Limit the use and development of the property to commercial or industrial uses only.
· Require the property owner to complete and submit to the NYSDEC an annual certification to ensure that the Institutional Controls (ICs) are still in place.
· All Engineering Controls (ECs) must be operated and maintained as specified in the SMP.
· All ECs on the Controlled Property (the Site) must be inspected and certified at a frequency and in a manner defined in the SMP.
· Data and information pertinent to Site Management for the Controlled Property must be reported at the frequency and in a manner defined in the SMP.
· On-Site environmental monitoring devices, including but not limited to, injection wells, groundwater monitoring wells, VCS extraction and monitoring points, and soil vapor probes, must be protected and replaced, as necessary, or properly abandoned, as directed by the NYSDEC, to ensure continued functioning in the manner specified in the SMP.

Box 4

Description of Engineering Controls

Parcel	Engineering Control
268-1-4	Groundwater Treatment System Vapor Mitigation Cover System

· Downgradient and source area Insitu Reactive Zone (IRZs) that involve the delivery of organic carbon (i.e., dilute molasses solution) to the subsurface through a network of injection wells.
· Non Aqueous Phase Liquid (NAPL) recovery that involves the manual removal of NAPL from the monitoring well network by hand bailing.
· A Vapor Control System (VCS) in the northeast portion of the building consisting of extraction points VCS-1 and VCS-2 and induced vacuum monitoring points MP-1 through MP-6.
In addition to the VCS, the heating, ventilation, and air conditioning (HVAC) system is operated to maintain a positive pressure within the building to help prevent the potential migration of vapors into indoor air.
· Groundwater, NAPL, sub-slab soil vapor, and indoor air monitoring must be performed as defined in the SMP.

Box 5

Periodic Review Report (PRR) Certification Statements

1. I certify by checking "YES" below that:

   a) the Periodic Review report and all attachments were prepared under the direction of, and reviewed by, the party making the certification;

   b) to the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program, and generally accepted engineering practices; and the information presented is accurate and compete.

YES	NO
☒	☐

2. If this site has an IC/EC Plan (or equivalent as required in the Decision Document), for each Institutional or Engineering control listed in Boxes 3 and/or 4, I certify by checking "YES" below that all of the following statements are true:

   (a) the Institutional Control and/or Engineering Control(s) employed at this site is unchanged since the date that the Control was put in-place, or was last approved by the Department;

   (b) nothing has occurred that would impair the ability of such Control, to protect public health and the environment;

   (c) access to the site will continue to be provided to the Department, to evaluate the remedy, including access to evaluate the continued maintenance of this Control;

   (d) nothing has occurred that would constitute a violation or failure to comply with the Site Management Plan for this Control; and

   (e) if a financial assurance mechanism is required by the oversight document for the site, the mechanism remains valid and sufficient for its intended purpose established in the document.

YES	NO
☒	☐

IF THE ANSWER TO QUESTION 2 IS NO, sign and date below and DO NOT COMPLETE THE REST OF THIS FORM. Otherwise continue.

A Corrective Measures Work Plan must be submitted along with this form to address these issues.

Signature of Owner, Remedial Party or Designated Representative

Date

IC CERTIFICATIONS
SITE NO. V00128

Box 6

SITE OWNER OR DESIGNATED REPRESENTATIVE SIGNATURE

I certify that all information and statements in Boxes 1,2, and 3 are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

I Raymond Sohmer (print name) at Philips International Holding Corp. 295 Madison Avenue, NY, NY 10017 (print business address),

am certifying as Property Director/Managing Agent for Owner (Owner or Remedial Party)

for the Site named in the Site Details Section of this form.

Philips International Holding Corp.
as agent for Melville Opprotunity LLC and Karakoram LLC

Signature of Owner, Remedial Party, or Designated Representative Rendering Certification

11-2-2017
Date

IC/EC CERTIFICATIONS

Box 7

Professional Engineer Signature

I certify that all information in Boxes 4 and 5 are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

I Christina Berardi Tuohy at Arcadis, Two Huntington Quadrangle, Suite 1S10
print name print business address Melville, NY 11747

am certifying as a Professional Engineer for the Melville Opportunity LLC + Karakoram LLC
(Owner or Remedial Party)

STATE OF NEW YORK
CHRISTINA BERARDI TUOHY
078743
LICENSED PROFESSIONAL ENGINEER

Christina Berardi Tuohy
Signature of Professional Engineer, for the Owner or Remedial Party, Rendering Certification

Stamp (Required for PE)

11/30/17
Date

Linda Greenfield
Melville Opportunity LLC and Karakoram LLC
c/o Philips International Holding Corp.
295 Madison Avenue, 2nd Floor
New York, NY 10017

Arcadis of New York, Inc.
Two Huntington Quadrangle
Suite 1S10
Melville
New York 11747
Tel 631 249 7600
Fax 631 249 7610
www.arcadis.com

Subject:
25 Melville Park Road Heating, Ventilation, and Air Conditioning (HVAC) System Certification Statement, 25 Melville Park Road, Melville, New York

ENVIRONMENT

Date:
October 2, 2017

Contact:
Christina Berardi Tuohy, P.E.

Phone:
(631) 391-5213

Email:
ChristinaBerardi.Tuohy
@arcadis.com

Our ref:
NY001332.2012.M0012

Dear Ms. Greenfield:

Pursuant to the New York State Department of Environmental Conservation (NYSDEC) approved Site Management Plan for the subject property and the August 18, 2017 letter from the NYSDEC titled *Reminder Notice: Site Management Periodic Review Report and IC/EC Certification Submittal*, certification of the institutional controls (ICs) and engineering controls (ECs) are required to be completed by the property owner, remedial party, or designated representative on an annual basis. Furthermore, all ECs require certification by a professional engineer licensed in New York State.

Arcadis of New York, Inc. (Arcadis), has agreed to provide the necessary professional engineering services to fulfill the above requirements for the current Periodic Review Report period. However, since Arcadis does not operate or maintain the positive pressure HVAC system, please provide an authorized company signature certifying operation of the HVAC system in accordance with the requirements described below. A certification page is provided on Page 3 of this letter.

Please do not hesitate to contact me with any questions.

Sincerely,

Arcadis of New York, Inc.
Christina Berardi Tuohy

Christina Berardi Tuohy, P.E.
Senior Engineer

Copies:

Raymond Sohmer, Philips International Holding Corp.
Scott Furman, Sive Paget & Riesel, P.C.

Linda Greenfield
October 2, 2017

Certification Statement

I hereby certify that the HVAC system was operated and maintained in accordance with the requirements set forth in the Record of Decision dated March 31, 2004 during the reporting period. Specifically, the HVAC system:

- Operated to maintain a positive pressure within the building to help prevent the potential migration of vapors into indoor air.
- Remained unchanged since the date the EC was put in-place or was last approved by the NYSDEC.

PHILIPS INTERNATIONAL HOLDING CORP AS AGENT FOR MELVILLE OPPORTUNITY & KARAKORAM LLC

Melville Opportunity LLC and Karakoram LLC (Print Name)

BY: RAYMOND STUMER, PRESIDENT DIRECTOR

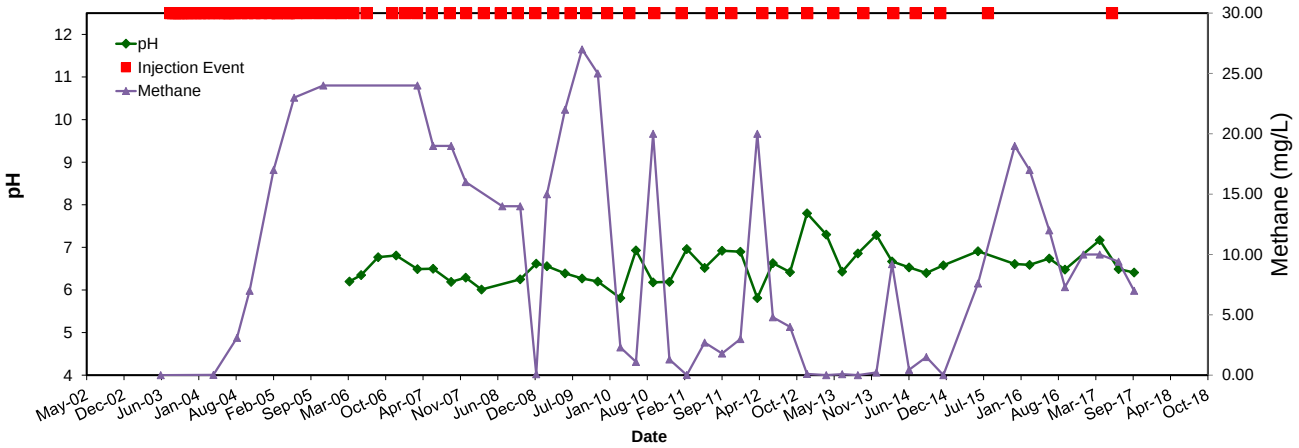
Melville Opportunity LLC and Karakoram LLC (Signature)

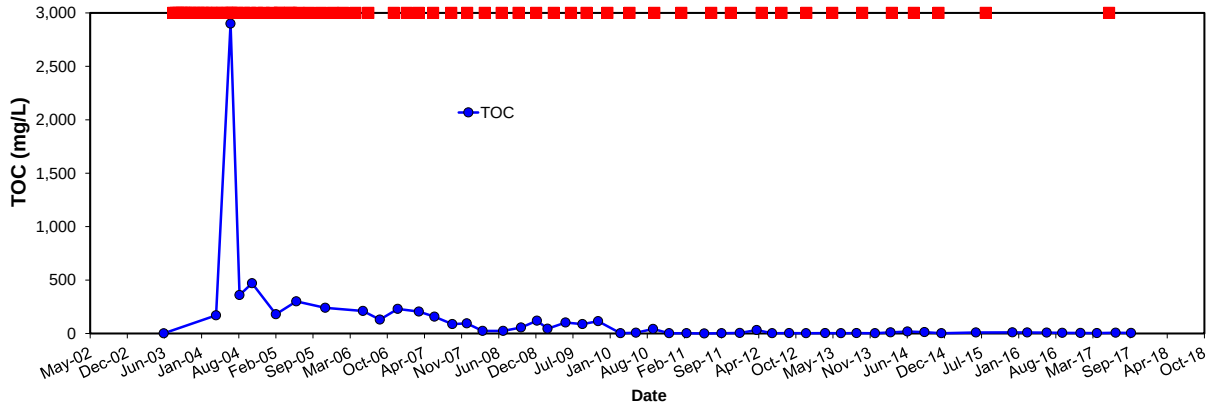
Signature Date 11/8/2017

APPENDIX C

IRZ Performance Data Trend Plots

Figure C-1. Degradation Trends for Shallow Zone Downgradient Compliance Monitoring Well MW-31





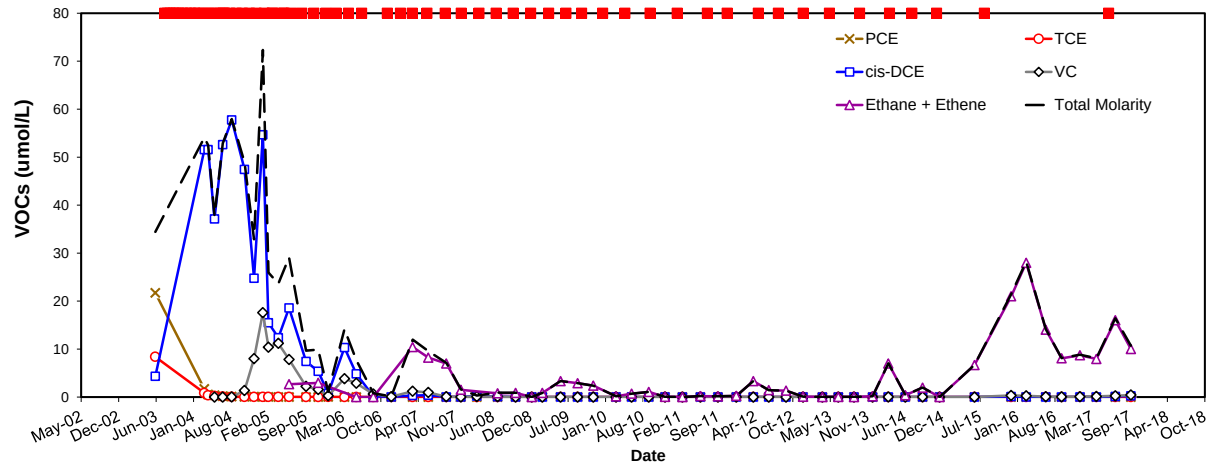
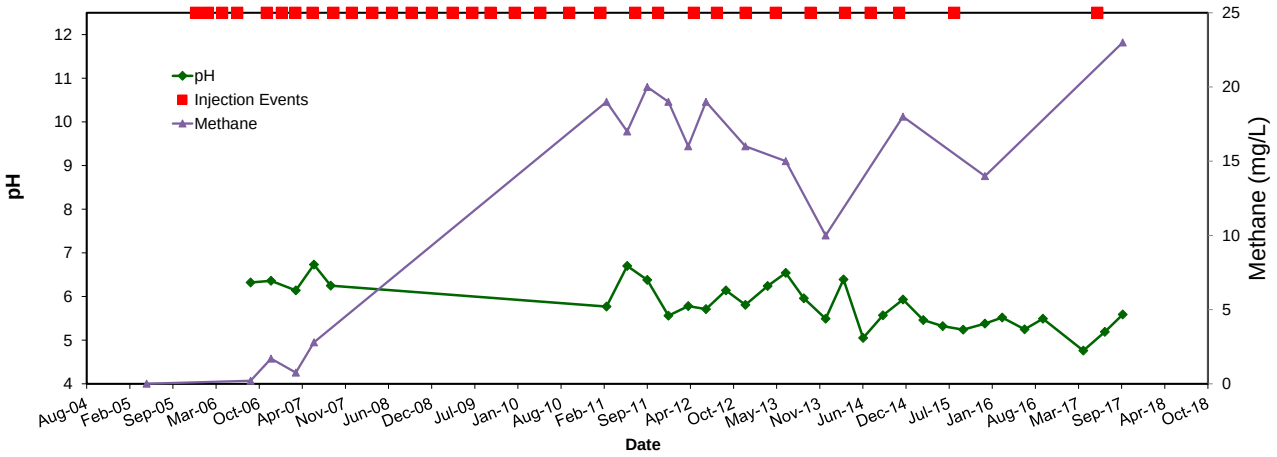
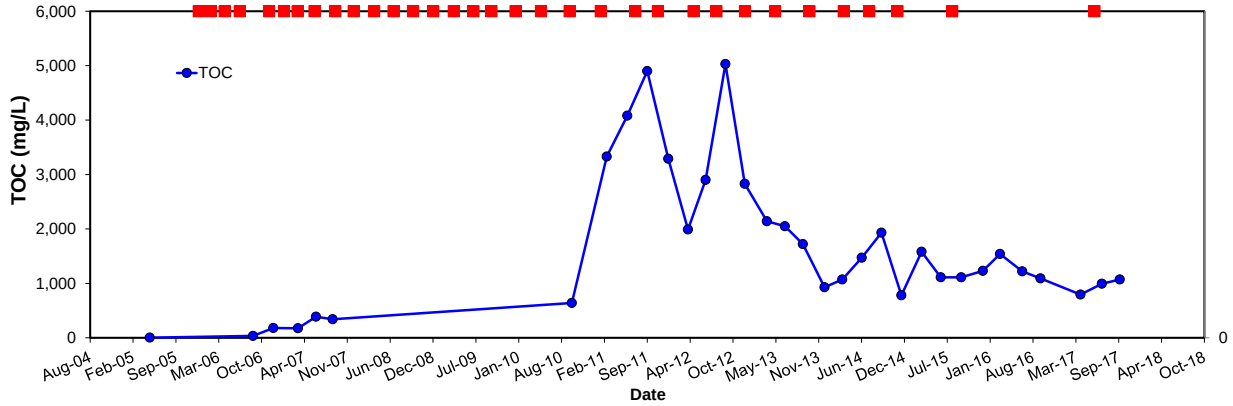


Figure C-2. Degradation Trends for Intermediate Zone Monitoring Well IW-18





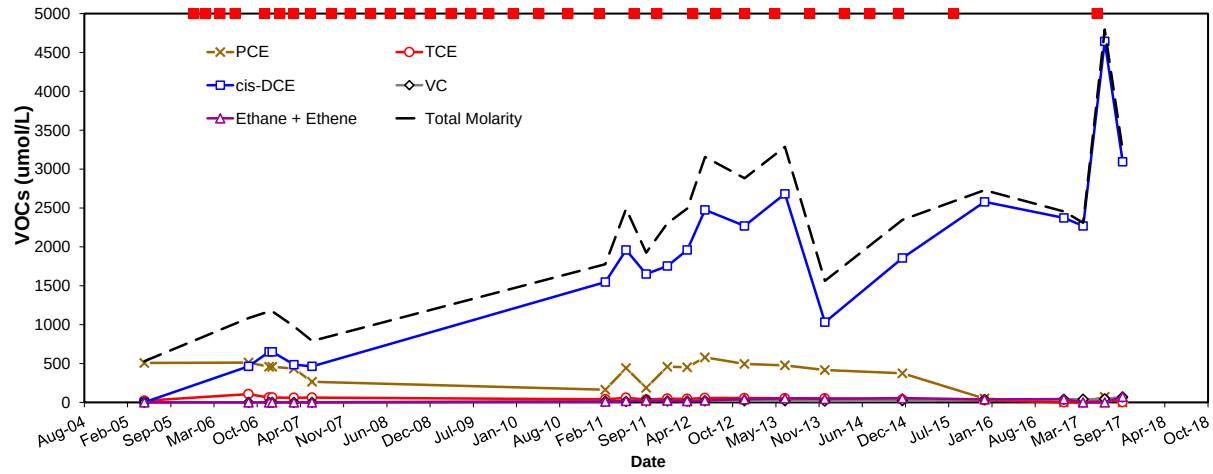
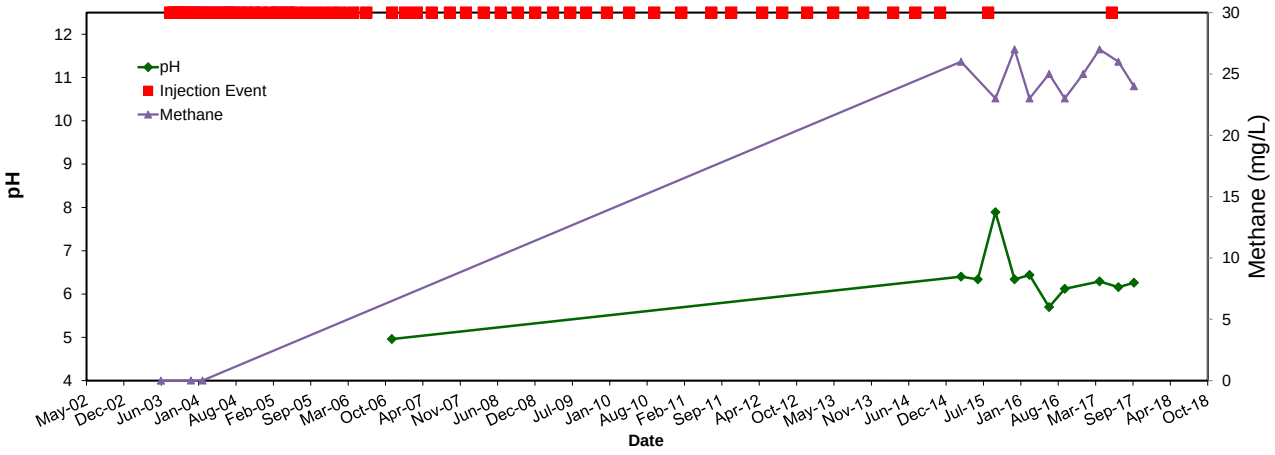
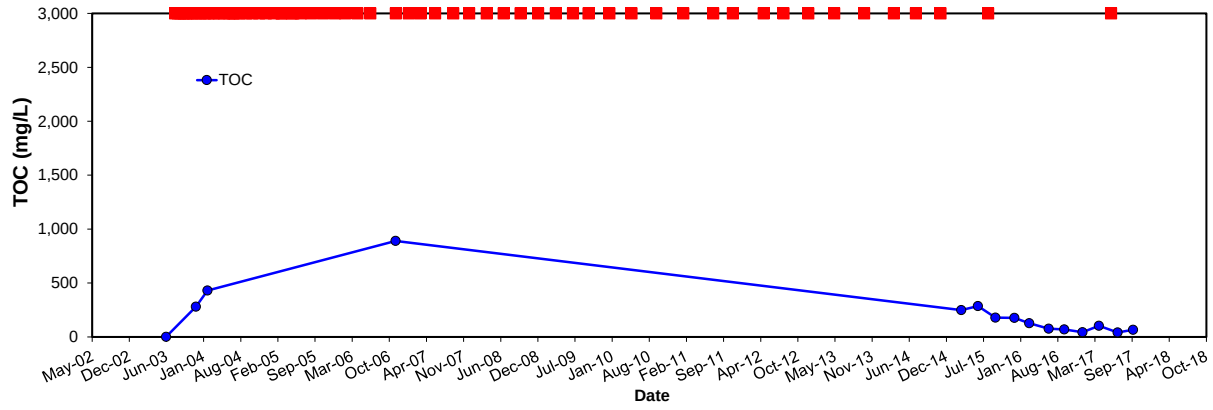


Figure C-3. Degradation Trends for Intermediate Zone Monitoring Well MW-23





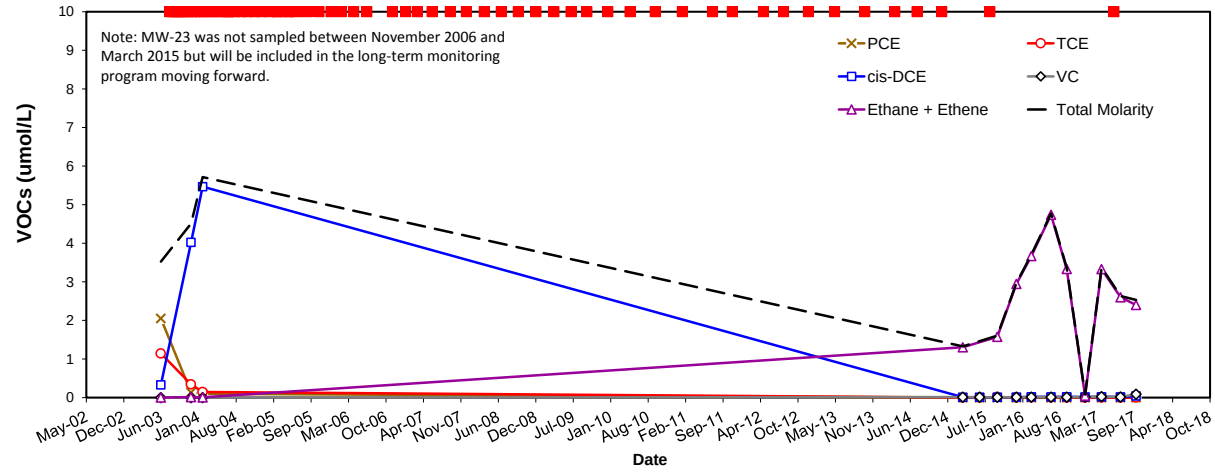
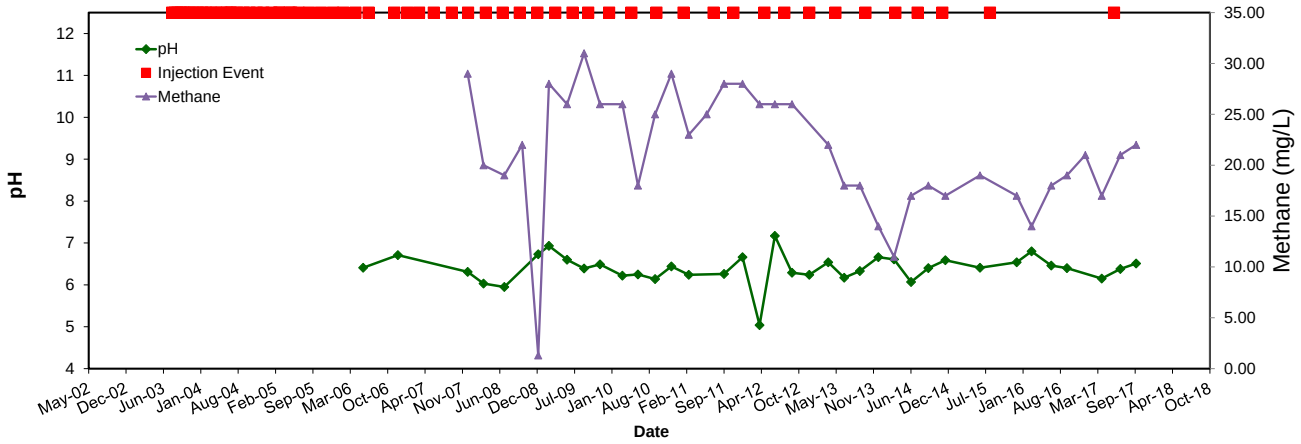
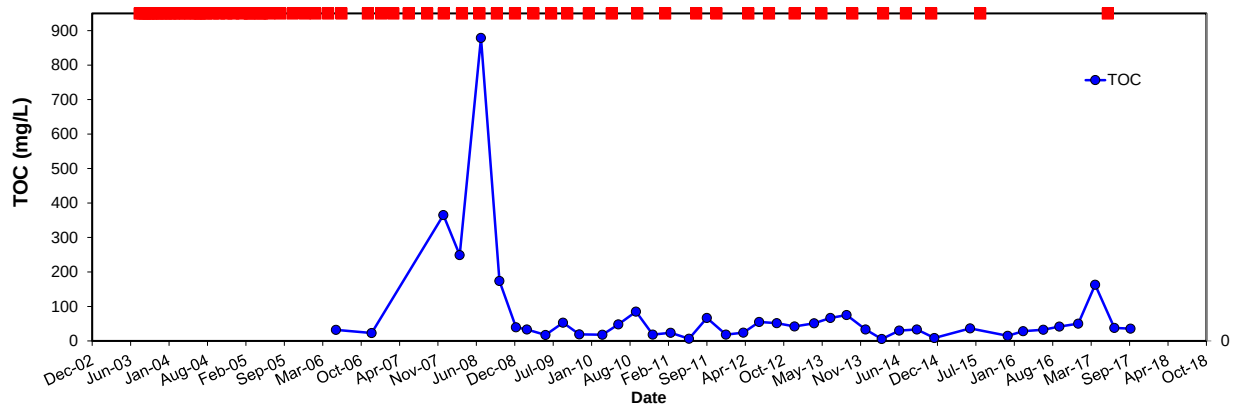
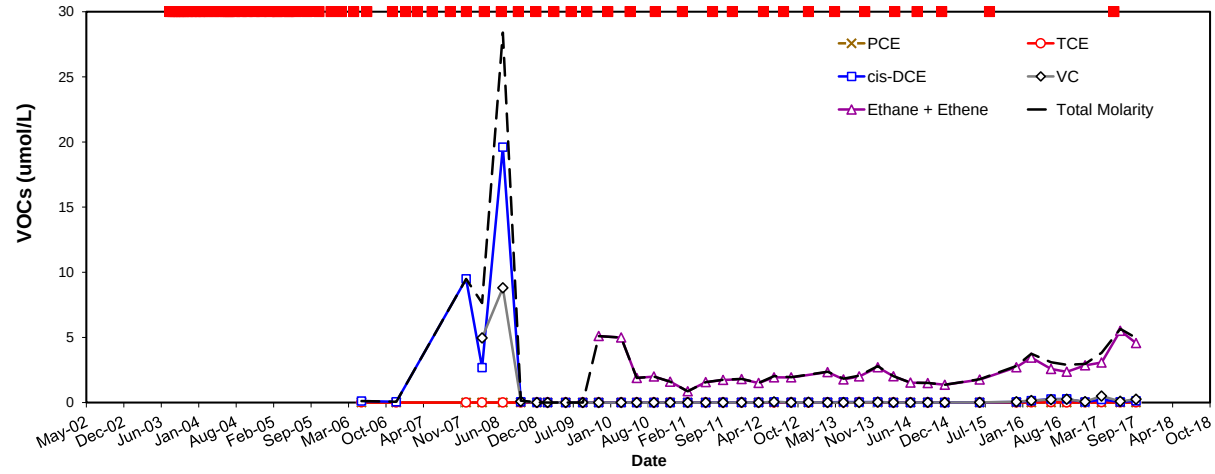


Figure C-4. Degradation Trends for Intermediate Zone Downgradient Compliance Monitoring Well MW-34







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