ARCADIS Design & Consultancy for natural and built assets

Melville Opportunity LLC and Karakoram LLC

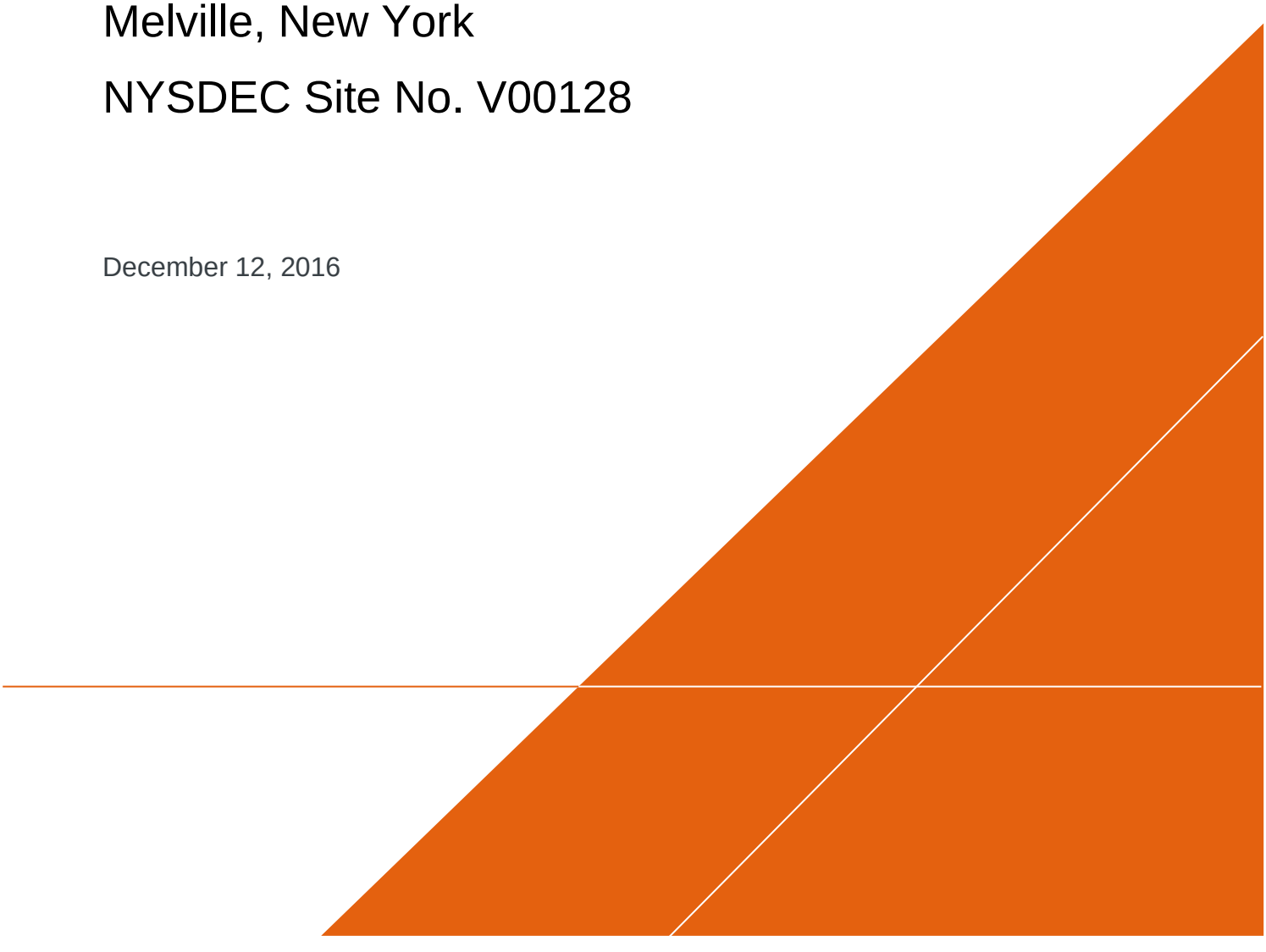
PERIODIC REVIEW REPORT

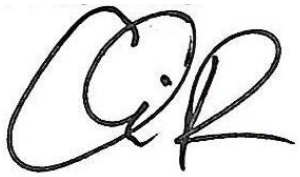
25 Melville Park Road

Melville, New York

NYSDEC Site No. V00128

December 12, 2016





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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.
- As part of the optimized ERD program, a revised groundwater monitoring program has been implemented which is sufficient for evaluating performance of the current in-situ reactive zones (IRZs).
- 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 aquifers 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 2015 and September 2016. The dissolved-phase VOC plume in the source area is present to a depth of approximately 90 ft bls. The non-aqueous phase liquid (NAPL) extent has been defined and generally extends 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 2015 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 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 generally effective at achieving each of the RAOs during the reporting period. CVOCs were detected at property boundary wells at concentrations slightly above the groundwater quality criteria; however, these concentrations are within the range of historical detections at these wells and are expected to be transient. The groundwater monitoring data are discussed in Section 6.2.1. 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.

3 IC/EC PLAN COMPLIANCE REPORT

ICs and ECs have been implemented at the Site to ensure achievement of the RAOs described in Section 2.3. 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 14, 2016. 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 e-mail 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 2015, March 2016, June 2016, and September 2016;
- Annual groundwater plume configuration monitoring was performed in December 2015;
- Annual water-level measurements were collected in March 2016;
- Quarterly NAPL gauging was performed in December 2015, March 2016, June 2016, and September 2016;
- Annual IAQ monitoring and sub-slab soil vapor monitoring were performed in March 2016; and,
- Quarterly VCS monitoring was performed in December 2015, March 2016, June 2016, and September 2016.

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 6 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 2015 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 6.2.1.

4.2 Water-Level Measurements

Arcadis collected water-level measurements from the hydraulic monitoring well network on March 16 and 17, 2016 (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 2015 through September 2016. NAPL was detected in well IW-18 at thicknesses ranging from a trace to 0.13 feet and was also sporadically detected in well IW-9 at trace thicknesses (0.01 feet) during this PRR reporting period. 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 5, 2016. Table 6 presents a summary of the March 2016 analytical data.

The 2016 sub-slab soil vapor sample data were similar to the 2015 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 240 and 76 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 3.6 and 6.8 $\mu g/m^3$, respectively. TCE was detected in the SE SS-A sample at a concentration of 8.9 $\mu g/m^3$.

2-butanone (methyl ethyl ketone) was detected in the SE Office Space indoor air quality sample at a concentration of 5.5 $\mu g/m^3$. PCE, trichloroethene (TCE), and cis-1,2-dichloroethene (cis-1,2-DCE) were detected in the SE Office Space indoor air quality sample or its associated duplicate sample at concentrations of 0.35, 0.33, and 0.41 $\mu g/m^3$, respectively. VOCs were not detected above the laboratory reporting limits in the SW Office Space indoor air quality sample.

Evaluating the 2016 sub-slab soil vapor data in conjunction with the 2016 indoor air quality data in the context of the NYSDOH decision matrices indicates that ongoing monitoring is warranted for PCE but that no further action is warranted for TCE and 1,1,1-TCA at the two sampling locations. Nonetheless, the site-related CVOCs will continue to be monitored on an annual basis.

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 2015 through September 2016 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. During the most recent injection event (August 2015), sulfate was added to the injection solution. Sulfate is expected to react with the reduced (ferrous) iron that is present in the target aquifer to produce reactive iron sulfides for promotion of abiotic degradation of the constituents of concern (COCs).

No carbon injection events were completed during the current reporting period. The 2015 PRR documents the emulsified vegetable oil (EVO)/sulfate injection that was completed during August 2015. 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 2015, March 2016, June 2016, and September 2016 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 2015, March 2016, June 2016, and September 2016. 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 included quarterly site visits to:

- 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 will be 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 2015, March 2016, June 2016, and September 2016.

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 2 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 2015 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. 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-28M and 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.
- 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-28M and MW-31 in the shallow zone and IW-18, MW-23 and MW-34 in the intermediate zone) are provided in Appendix C.
- CVOCs were detected at property boundary wells in the shallow and intermediate zones at concentrations slightly above the groundwater quality criteria; however, these concentrations are within the range of historical detections at these wells and are expected to be transient. The VOC concentrations in well MW-31 have consistently decreased since a spike in total molarity was

noted in December 2015 and March 2016. The VOC concentrations in well MW-34 are generally stable or decreasing since June 2016 when a slight increase in total molarity was noted. The downgradient IRZ is generally achieving its respective RAO.

- Groundwater samples were collected from off-site monitoring well ERM-MW-02 in June and September 2016 for the analysis of VOCs; in an e-mail dated May 20, 2016, the NYSDEC requested that a sample be collected from ERM-MW-02 during the June 2016 sampling event. The concentrations of vinyl chloride and cis-1,2-DCE in well ERM-MW-02 decreased when comparing the June 2016 and September 2016 data. The concentration of TCE in well ERM-MW-02 is generally stable when comparing the June 2016 and September 2016 data. The concentration of PCE in well ERM-MW-02 increased when comparing the June 2016 and September 2016 data but PCE was not detected in on-site wells that are located mid-plume (MW-23 and MW-28M) or near the property boundary (MW-16D, MW-31, and MW-34). The overall total molarity of the VOCs is decreasing since the peak in January 2016, which was the first time that Environmental Resources Management (ERM) sampled well ERM-MW-02 since December 2012.
- The optimized ERD program continues to be effective. The increase in total molarity at well ERM-MW-02, which peaked in January 2016, is likely related to the movement of degraded mass that was also observed at wells MW-31 and MW-34 at approximately the same time period (total molarity at both of those wells peaked in March 2016). The majority of mass that was detected at wells MW-31 and MW-34 was detected as ethane and ethene. Ethane, ethene and TOC will be added to the 2016 Quarter 4 analytical list for well ERM-MW-02 to help determine if the VOCs detected at well ERM-MW-02 represent breakthrough of undegraded mass, or if it is more representative of mass appearing at the property boundary that is primarily degraded, similar to what is observed at wells MW-31 and MW-34.
- CVOCs are significantly above baseline conditions at source area monitoring wells IW-17 (as of December 2014; well IW-17 was converted to an injection well in August 2015 and is no longer monitored for VOCs) and IW-18 (as of December 2015) which were targeted for enhanced NAPL dissolution as part of the mol-whey pilot test. These data indicate that enhanced NAPL dissolution and complete reductive dechlorination are occurring in the source area. 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 generally resulted in achievement of the RAOs for groundwater during the reporting period. As discussed above, the increased concentrations detected at select property boundary wells are expected to be transient. Additional sampling frequency and analytical parameters will be added to the upcoming sampling events to confirm the transience of the detections and 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 6.6 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 5.4, 2-butanone, TCE, cis-1,2-DCE, and PCE 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 (0.35 µg/m^3) is well below the NYSDOH guideline for PCE (30 µg/m^3); the detected TCE concentration (0.33 µg/m^3) is below the NYSDOH guideline for TCE (2 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. As discussed in Progress Reports, during the September 2015 monitoring event, it was observed that the majority of the injection wells are not open to their construction depth. In addition, during the August 2015 injection activities, the IW-11 well casing was observed to turn freely and reagent was observed in the well manhole. The injection well network will be further evaluated to develop an approach (e.g., well redevelopment) to ensure that all wells are screened appropriately and performing as intended.

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 5 and 6 herein.
- The timing of the next EVO injection will be based on an evaluation of the Quarter 4 2016 groundwater monitoring data in conjunction with the December 2015 through September 2016 groundwater monitoring data, but is anticipated to occur in 2017.
- 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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TABLES

Table 1
Remedy Effectiveness Summary for the Periodic Review Period of October 2015 to September 2016
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 EC 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 5 and 6 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 5 and 6 of this PRR. - Remediation of contaminated groundwater, which is the source of soil vapors, as described in Sections 5 and 6 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 slightly above SGVs at the downgradient property boundary as documented in Sections 5 and 6 of this PRR, however, those concentrations are expected to be transient as seen in other wells near the property boundary.
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 5 and 6 of this PRR. - NAPL handbailing removed all recoverable NAPL as documented in Sections 5 and 6 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 slightly above SGVs at the downgradient property boundary as documented in Sections 5 and 6 of this PRR, however, those concentrations are expected to be transient as seen in other wells near the property boundary.
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 5 and 6 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

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-15 12/28/15 Shallow	IW-22 12/28/15 Shallow	MW-17 12/28/15 Shallow	MW-13 12/28/15 Shallow	MW-14 12/28/15 Shallow	MW-7 12/28/15 Shallow	MW-7 6/30/16 Shallow	MW-11 12/28/15 Shallow	MW-28M 12/28/15 Shallow	MW-28M 3/17/16 Shallow	MW-28M 6/30/16 Shallow	MW-28M 9/22/16 Shallow
Chloromethane	-		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Bromomethane	5		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Vinyl Chloride	2		<1	**90**	<1	**160**	<1	**200**	**220**	**0.65 J**	**0.62 J**	**0.45 J**	**0.28 J**	<1
Chloroethane	5		<5	**2.1 J**	<5	<5	<5	<5	<5	**3.4 J**	**7.4**	**6.8**	<5	<5
Methylene Chloride	5		<5	<5	<5	**0.55 J**	**0.58 J**	<5	<5	<5	<5	<5	<5	<5
Acetone	50		<10	<10	<10	**7.2 J**	**4.9 J**	<10	<10	<10	<10	<10	<10	<10
Carbon Disulfide	60		<5	<5	<5	<5	<5	<5	**0.58 J**	<5	<5	<5	<5	<5
1,1-Dichloroethene	5		<5	<5	<5	<5	<5	**1.9 J**	**0.93 J**	<5	<5	<5	<5	<5
1,1-Dichloroethane	5		<5	**2.9 J**	<5	**2.2 J**	<5	**1.2 J**	**2.2 J**	**2.1 J**	**5.7**	**2.8 J**	<5	<5
trans-1,2-Dichloroethene	5		<5	**1.6 J**	<5	**1.6 J**	<5	**3 J**	**15**	**1.3 J**	**2.3 J**	**2.4 J**	**0.3 J**	<5
cis-1,2-Dichloroethene	5		<5	**55**	<5	**100**	<5	**530 D**	**1100 D**	<5	**1.9 J**	**1.7 J**	**1.3 J**	**0.34 J**
Chloroform	7		<5	<5	<5	<5	**1.1 J**	<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	**6 J**	<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	**9.7**	<5	**0.56 J**	**0.73 J**	<5	<5	<5	<5	<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	<5	<5	<5	<5	<5	<5	**0.11 J**	<5	<5	<5
trans-1,3-Dichloropropene	0.4		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Bromoform	50		<5	<5	<5	<5	<5	<5	<5	<5	<5	<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		**0.71 J**	<5	<5	**0.57 J**	<5	<5	<5	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	5		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Toluene	5		<5	**3.5 J**	<5	**0.43 J**	<5	**8.8**	**31**	**2.7 J**	**0.96 J**	**0.72 J**	<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	**0.49 J**	**2.8 J**	**1.8 J**	<5	<5
Styrene	5		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Xylenes, Total	5		<5	**1.6 J**	<5	**0.66 J**	<5	**0.97 J**	**1.7 J**	**3.2 J**	**22**	**15**	**1.1 J**	<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:	MW-3 12/28/15 Shallow	MW-29 12/28/15 Shallow	MW-4 12/28/15 Shallow	MW-31 12/28/15 Shallow	MW-31 3/17/16 Shallow	MW-31 6/30/16 Shallow	MW-31 9/22/16 Shallow	IW-23 12/28/15 Intermediate	IW-18 12/28/15 Intermediate	MW-13D 12/28/15 Intermediate	IW-12 12/28/15 Intermediate	IW-13 12/28/15 Intermediate
Chloromethane	-		<5	<5	<5	<5	<5	<5	<5	<5	<2500	<5	<5	<5
Bromomethane	5		<5	<5	<5	<5	<5	<5	<5	<5	<2500	<5	<5	<5
Vinyl Chloride	2		**1.2**	**0.98 J**	<1	**21**	**16**	**5**	**2.6**	**95**	**2200**	**3.2**	**12**	<1
Chloroethane	5		<5	**1.3 J**	<5	**2.3 J**	**2.1 J**	<5	<5	**2.2 J**	<2500	**2.8 J**	<5	<5
Methylene Chloride	5		<5	<5	<5	<5	<5	<5	<5	<5	<2500	<5	<5	<5
Acetone	50		<10	<10	<10	<10	<10	<10	<10	<10	<5000	**3.6 J**	<10	<10
Carbon Disulfide	60		<5	<5	<5	<5	<5	<5	<5	<5	<2500	<5	<5	<5
1,1-Dichloroethene	5		<5	<5	<5	<5	<5	<5	<5	<5	**400 J**	<5	<5	<5
1,1-Dichloroethane	5		<5	**1.3 J**	<5	**5.5**	**3.4 J**	**2.7 J**	**1.4 J**	**6.4**	**500 J**	**10**	<5	<5
trans-1,2-Dichloroethene	5		<5	**0.93 J**	<5	**11**	**0.93 J**	**1.8 J**	**1.7 J**	**64**	**2000 J**	**36**	**2.1 J**	**0.43 J**
cis-1,2-Dichloroethene	5		**2 J**	**1.4 J**	<5	**11**	**1.4 J**	**0.88 J**	**1.4 J**	**120**	**250000**	**4 J**	**17**	**0.64 J**
Chloroform	7		<5	<5	<5	<5	<5	<5	<5	<5	<2500	<5	<5	<5
1,2-Dichloroethane	0.6		<5	<5	<5	<5	<5	<5	<5	<5	<2500	<5	<5	<5
Methyl Ethyl Ketone	50		<10	<10	<10	<10	<10	<10	<10	<10	<5000	<10	<10	<10
1,1,1-Trichloroethane	5		<5	<5	<5	<5	<5	<5	<5	<5	**270 J**	<5	<5	<5
Carbon Tetrachloride	5		<5	<5	<5	<5	<5	<5	<5	<5	<2500	<5	<5	<5
Bromodichloromethane	50		<5	<5	<5	<5	<5	<5	<5	<5	<2500	<5	<5	<5
1,2-Dichloropropane	1		<5	<5	<5	<5	<5	<5	<5	<5	<2500	<5	<5	<5
cis-1,3-Dichloropropene	0.4		<5	<5	<5	<5	<5	<5	<5	<5	<2500	<5	<5	<5
Trichloroethene	5		<5	<5	<5	<5	<5	<5	**0.33 J**	**1.9 J**	**3600**	**0.32 J**	**20**	<5
Dibromochloromethane	50		<5	<5	<5	<5	<5	<5	<5	<5	<2500	<5	<5	<5
1,1,2-Trichloroethane	1		<5	<5	<5	<5	<5	<5	<5	<5	<2500	<5	<5	<5
Benzene	1		<5	<5	<5	<5	<5	<5	<5	<5	<2500	<5	<5	**0.11 J**
trans-1,3-Dichloropropene	0.4		<5	<5	<5	<5	<5	<5	<5	<5	<2500	<5	<5	<5
Bromoform	50		<5	<5	<5	<5	<5	<5	<5	<5	<2500	<5	<5	<5
Methyl Isobutyl Ketone	-		<10	<10	<10	<10	<10	<10	<10	<10	<5000	<10	<10	<10
2-Hexanone	50		<10	<10	<10	<10	<10	<10	<10	<10	<5000	<10	<10	<10
Tetrachloroethene	5		<5	<5	<5	<5	<5	<5	<5	<5	**8200**	<5	**2 J**	<5
1,1,2,2-Tetrachloroethane	5		<5	<5	<5	<5	<5	<5	<5	<5	<2500	<5	<5	<5
Toluene	5		**1.1 J**	**0.33 J**	<5	**0.65 J**	**0.92 J**	<5	<5	**4.3 J**	<2500	**2.6 J**	**19**	**53**
Chlorobenzene	5		<5	<5	<5	<5	<5	<5	<5	<5	<2500	<5	<5	<5
Ethylbenzene	5		<5	**0.68 J**	<5	<5	**0.34 J**	<5	<5	**1.8 J**	<2500	**0.66 J**	<5	**0.41 J**
Styrene	5		<5	<5	<5	<5	<5	<5	<5	<5	<2500	<5	<5	<5
Xylenes, Total	5		<5	**5.8**	<5	**0.5 J**	**1.3 J**	<5	<5	**16**	**190 J**	**7.6**	<5	**1 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-23 12/28/15 Intermediate	MW-23 3/17/16 Intermediate	MW-23 6/30/16 Intermediate	MW-23 9/22/16 Intermediate	MW-16D 12/28/15 Intermediate	MW-16D 6/30/16 Intermediate	MW-16D 9/22/16 Intermediate	MW-34 12/28/15 Intermediate	MW-34 3/17/16 Intermediate	MW-34 6/30/16 Intermediate	MW-34 9/22/16 Intermediate	MW-35 12/28/15 Intermediate
Chloromethane	-		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Bromomethane	5		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Vinyl Chloride	2		**0.66 J**	**0.79 J**	**0.74 J**	**0.74 J**	<1	**3.7**	**1.1**	**3.5**	**9.5**	**14**	**16**	**6.9**
Chloroethane	5		**3.4 J**	**2.7 J**	**2.6 J**	**2.5 J**	<5	<5	<5	<5	<5	<5	**0.5 J**	<5
Methylene Chloride	5		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	**0.54 J**	<5
Acetone	50		**3.9 J**	<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	<5
1,1-Dichloroethene	5		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,1-Dichloroethane	5		**3.6 J**	**2.2 J**	**3.4 J**	**2.5 J**	<5	<5	<5	<5	<5	<5	**0.85 J**	**0.49 J**
trans-1,2-Dichloroethene	5		**18**	**15**	**24**	**27**	<5	**6.3**	**3.2 J**	**7.6**	**5.4**	**5.4**	**6.5**	**3 J**
cis-1,2-Dichloroethene	5		**0.93 J**	**1.9 J**	**1.8 J**	**1.9 J**	<5	**2.2 J**	**0.65 J**	**4.1 J**	**14**	**26**	**27**	**12**
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		**14**	<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	**0.6 J**	**0.24 J**	<5	<5	<5	<5	**0.3 J**	**1 J**	**3 J**	<5	<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	<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	<5	<5	<5	<5	<5	<5	<5	<5	<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	**0.37 J**	<5	<5	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	5		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Toluene	5		**18**	**68**	**63**	**4.1 J**	<5	<5	<5	**0.65 J**	**0.44 J**	**0.51 J**	**1 J**	<5
Chlorobenzene	5		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Ethylbenzene	5		**0.65 J**	**0.66 J**	**0.63 J**	**0.88 J**	<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		**6.2**	**5.4**	**6**	**6.7**	<5	<5	<5	<5	<5	**0.35 J**	<5 B	<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:	MW-35 3/17/16 Intermediate	ERM-MW-02 6/30/16 Intermediate	ERM-MW-02 9/22/16 Intermediate	MW-18D 12/28/15 Deep	MW-18D 6/30/16 Deep	FDW 12/28/15 Deep	MW-36* 12/28/15 Deep					
Chloromethane	-		<5	<5	<5	<5	<5	<5	<5					
Bromomethane	5		<5	<5	<5	<5	<5	<5	<5					
Vinyl Chloride	2		**0.79 J**	**7.9**	**2.5**	**150**	**81**	<1	<1					
Chloroethane	5		<5	<5	<5	**1.1 J**	**1.6 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	<5	<5	<5					
1,1-Dichloroethene	5		<5	<5	<5	**2.6 J**	<5	<5	<5					
1,1-Dichloroethane	5		<5	<5	<5	**13**	**12**	<5	<5					
trans-1,2-Dichloroethene	5		**1 J**	**4.3 J**	**1.3 J**	**11**	**7.1**	<5	<5					
cis-1,2-Dichloroethene	5		**1.2 J**	**73**	**28**	**350**	**82**	<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	**6.7**	**0.34 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		<5	**47**	**49**	**2.4 J**	**1.3 J**	**0.59 J**	<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	**0.74 J**	<5					
trans-1,3-Dichloropropene	0.4		<5	<5	<5	<5	<5	<5	<5					
Bromoform	50		<5	<5	<5	<5	<5	<5	<5					
Methyl Isobutyl Ketone	-		<10	<10	<10	<10	<10	<10	<10					
2-Hexanone	50		<10	<10	<10	<10	<10	<10	<10					
Tetrachloroethene	5		<5	**36**	**100**	<5	**0.35 J**	**2.2 J**	<5					
1,1,2,2-Tetrachloroethane	5		<5	<5	<5	<5	<5	<5	<5					
Toluene	5		<5	<5	<5	**1.5 J**	**0.63 J**	**0.91 J**	<5					
Chlorobenzene	5		<5	<5	<5	<5	<5	<5	<5					
Ethylbenzene	5		<5	<5	<5	**0.46 J**	<5	<5	<5					
Styrene	5		<5	<5	<5	<5	<5	<5	<5					
Xylenes, Total	5		<5	<5	<5	**4.4 J**	**1.4 J**	**0.52 J**	<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 12/28/15 Shallow	IW-17 12/29/15 Shallow	IW-17 3/17/16 Shallow	IW-17 6/29/16 Shallow	IW-17 9/22/16 Shallow	IW-1 12/29/15 Shallow	IW-3 3/17/16 Shallow	IW-3 6/29/16 Shallow	IW-3 9/22/16 Shallow	MW-13 12/28/15 Shallow
	UNITS											
CLASSICAL CHEMISTRY ANALYTES												
Total Organic Carbon	mg/L		51.2	380	243	112	22.6	1720	995	1130	1070	232
VOCs												
Tetrachloroethene	ug/L		<5	--	--	--	--	--	--	--	--	0.57 J
Trichloroethene	ug/L		<5	--	--	--	--	--	--	--	--	9.7
cis-1,2-Dichloroethene	ug/L		55	--	--	--	--	--	--	--	--	100
Vinyl Chloride	ug/L		90	--	--	--	--	--	--	--	--	160
LIGHT HYDROCARBONS												
Ethane	ug/L		--	--	--	--	--	--	--	--	--	--
Ethene	ug/L		--	--	--	--	--	--	--	--	--	--
Methane	ug/L		--	--	--	--	--	--	--	--	--	--
FIELD PARAMETERS												
pH	Standard Units		6.46	5.92	6.41	6.40	6.31	5.42	5.93	5.93	5.45	5.62

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 12/28/15 Shallow	MW-7 6/30/16 Shallow	MW-28M 12/28/15 Shallow	MW-28M 3/17/16 Shallow	MW-28M 6/30/16 Shallow	MW-28M 9/22/16 Shallow	MW-31 12/28/15 Shallow	MW-31 3/17/16 Shallow	MW-31 6/30/16 Shallow	MW-31 9/22/16 Shallow
	UNITS											
CLASSICAL CHEMISTRY ANALYTES												
Total Organic Carbon	mg/L		9.9	123	74.2	63.8	24.8	30.2	10.3	8.9	8.1	6
VOCs												
Tetrachloroethene	ug/L		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Trichloroethene	ug/L		0.56 J	0.73 J	<5	<5	<5	<5	<5	<5	<5	0.33 J
cis-1,2-Dichloroethene	ug/L		530 D	1100 D	1.9 J	1.7 J	1.3 J	0.34 J	11	1.4 J	0.88 J	1.4 J
Vinyl Chloride	ug/L		200	220	0.62 J	0.45 J	0.28 J	<1	21	16	5	2.6
LIGHT HYDROCARBONS												
Ethane	ug/L		--	--	44	29	22	0.082 J	620	840	420	240
Ethene	ug/L		--	--	0.24	<0.20	0.014 J	<0.20	11	1.5	2.4	2.7
Methane	ug/L		--	--	12000	16000	6600	22	19000	17000	12000	7300
FIELD PARAMETERS												
pH	Standard Units		5.71	5.70	6.56	6.50	6.52	6.16	6.61	6.59	6.74	6.48

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-28 12/29/15 Intermediate	IW-29 12/29/15 Intermediate	IW-23 12/28/15 Intermediate	IW-11 3/17/16 Intermediate	IW-11 6/29/16 Intermediate	IW-11 9/22/16 Intermediate	IW-18 12/28/15 Intermediate	IW-18 3/17/16 Intermediate	IW-18 6/29/16 Intermediate	IW-18 9/22/16 Intermediate
	UNITS											
CLASSICAL CHEMISTRY ANALYTES												
Total Organic Carbon	mg/L		1120	2760	38.5	284	291	247	1230	1540	1220	1090
VOCs												
Tetrachloroethene	ug/L		--	--	<5	--	--	--	8200	--	--	--
Trichloroethene	ug/L		--	--	1.9 J	--	--	--	3600	--	--	--
cis-1,2-Dichloroethene	ug/L		--	--	120	--	--	--	250000	--	--	--
Vinyl Chloride	ug/L		--	--	95	--	--	--	2200	--	--	--
LIGHT HYDROCARBONS												
Ethane	ug/L		--	--	--	--	--	--	370	--	--	--
Ethene	ug/L		--	--	--	--	--	--	740	--	--	--
Methane	ug/L		--	--	--	--	--	--	14000	--	--	--
FIELD PARAMETERS												
pH	Standard Units		5.63	5.39	6.42	5.66	5.94	6.24	5.38	5.52	5.25	5.49

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 3/17/16 Intermediate	IW-27 6/29/16 Intermediate	IW-27 9/22/16 Intermediate	MW-13D 12/28/15 Intermediate	MW-23 12/28/15 Intermediate	MW-23 3/17/16 Intermediate	MW-23 6/30/16 Intermediate	MW-23 9/22/16 Intermediate	MW-16D 12/28/15 Intermediate	MW-34 12/28/15 Intermediate
	UNITS											
CLASSICAL CHEMISTRY ANALYTES												
Total Organic Carbon	mg/L		1250	855	519	18.2	177	127	76.5	69.8	2.5	14.9
VOCs												
Tetrachloroethene	ug/L		--	--	--	<5	<5	<5	<5	<5	0.37 J	<5
Trichloroethene	ug/L		--	--	--	0.32 J	<5	0.6 J	0.24 J	<5	<5	0.3 J
cis-1,2-Dichloroethene	ug/L		--	--	--	4 J	0.93 J	1.9 J	1.8 J	1.9 J	<5	4.1 J
Vinyl Chloride	ug/L		--	--	--	3.2	0.66 J	0.79 J	0.74 J	0.74 J	<1	3.5
LIGHT HYDROCARBONS												
Ethane	ug/L		--	--	--	--	88	110	140	100	--	80
Ethene	ug/L		--	--	--	--	0.51	0.25	2.3	0.16 J	--	1.3
Methane	ug/L		--	--	--	--	27000	23000	25000	23000	--	17000
FIELD PARAMETERS												
pH	Standard Units		6.44	6.42	6.51	6.41	6.34	6.44	5.70	6.12	6.66	6.54

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 3/17/16 Intermediate	MW-34 6/30/16 Intermediate	MW-34 9/22/16 Intermediate	MW-35 3/17/16 Intermediate						
	UNITS											
CLASSICAL CHEMISTRY ANALYTES												
Total Organic Carbon	mg/L		28.3	32.6	41.7	4.7						
VOCs												
Tetrachloroethene	ug/L		<5	<5	<5	<5						
Trichloroethene	ug/L		1 J	3 J	<5	<5						
cis-1,2-Dichloroethene	ug/L		14	26	27	1.2 J						
Vinyl Chloride	ug/L		9.5	14	16	0.79 J						
LIGHT HYDROCARBONS												
Ethane	ug/L		100	74	67	15						
Ethene	ug/L		3.4	3.3	3.7	2.3						
Methane	ug/L		14000	18000	19000	5700						
FIELD PARAMETERS												
pH	Standard Units		6.80	6.46	6.40	6.58						

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 16 and 17, 2016
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	50.65	68.50
MW-2	117.66	49.24	68.42
MW-3	118.06	49.93	68.13
MW-4	117.98	49.88	68.10
MW-5	118.27	50.30	67.97
MW-6	119.24	50.28	68.96
MW-7	117.53	49.28	68.25
MW-9	117.22	48.98	68.24
MW-10	117.68	49.51	68.17
MW-11	118.29	50.11	68.18
MW-13	117.46	49.01	68.45
MW-13D	117.48	49.19	68.29
MW-14	116.13	47.70	68.43
MW-15	116.85	48.40	68.45
MW-16D	117.49	49.61	67.88
MW-18D	118.10	49.80	68.30
MW-19D	117.31	49.16	68.15
MW-20D	117.68	49.00	68.68
MW-29	117.86	49.71	68.15
MW-30	117.67	49.50	68.17
MW-31	117.35	49.25	68.10
MW-32	117.57	49.21	68.36
MW-33	117.60	49.30	68.30
MW-34	118.03	50.01	68.02
MW-35	118.25	50.23	68.02
MW-36	117.39	49.40	67.99

NGVD 29 National Geodetic Vertical Datum of 1929.
bmp Below measuring point.

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)
12/28/15	NM	NM	NM	NM	NM	NM	51.82	51.69	ND	86.00	0.13	0.00
12/29/15	51.54	ND	ND	66.00	0.00	0.00	NM	NM	NM	NM	NM	NM
3/17/16	51.45	ND	ND	66.08	0.00	0.00	51.66	51.59	ND	86.02	0.07	0.00
6/29/16	52.84	ND	ND	67.85	0.00	0.00	53.23	53.16	ND	85.90	0.07	0.00
9/23/16	54.40	ND	ND	67.96	0.00	0.00	54.64	Trace	ND	85.88	Trace	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)
12/29/15	NM	NM	NM	NM	NM	NM	51.66	ND	ND	97.59	0.00	0.00
3/17/16	NM	NM	NM	NM	NM	NM	51.50	ND	ND	97.60	0.00	0.00
6/29/16	NM	NM	NM	NM	NM	NM	52.99	ND	ND	97.59	0.00	0.00
9/23/16	NM	NM	NM	NM	NM	NM	54.50	ND	ND	97.49	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)
12/29/15	51.41	ND	ND	66.96	0.00	0.00	51.37	ND	ND	68.70	0.00	0.00
3/17/16	51.26	ND	ND	66.90	0.00	0.00	51.22	ND	ND	68.60	0.00	0.00
6/29/16	52.72	ND	ND	67.00	0.00	0.00	52.72	ND	ND	68.67	0.00	0.00
9/23/16	54.27	ND	ND	66.93	0.00	0.00	54.29	ND	ND	68.60	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-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)
12/29/15	51.21	ND	ND	99.70	0.00	0.00	51.51	ND	NM	NM	0.00	NM
3/17/16	51.04	ND	ND	99.68	0.00	0.00	51.38	ND	NM	NM	0.00	NM
6/29/16	52.53	ND	ND	99.73	0.00	0.00	52.91	ND	NM	NM	0.00	NM
9/23/16	54.10	ND	ND	AM	0.00	0.00	54.45	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)
12/29/15	50.92	ND	ND	58.74	0.00	0.00	49.03	49.02	ND	88.91	0.01	0.00
3/16/16	NM	NM	NM	NM	NM	NM	48.85	ND	ND	88.80	0.00	0.00
3/17/16	50.80	ND	ND	58.75	0.00	0.00	NM	NM	NM	NM	NM	NM
6/29/16	52.31	ND	ND	58.71	0.00	0.00	50.33	ND	ND	88.90	0.00	0.00
9/23/16	53.83	ND	ND	58.74	0.00	0.00	51.90	51.89	ND	88.81	0.01	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)
12/29/15	49.18	ND	ND	57.90	0.00	0.00	48.77	ND	ND	57.47	0.00	0.00
3/16/16	49.01	ND	ND	57.90	0.00	0.00	48.62	ND	ND	57.43	0.00	0.00
6/29/16	50.54	ND	ND	57.90	0.00	0.00	50.16	ND	ND	57.45	0.00	0.00
9/23/16	52.09	ND	ND	57.90	0.00	0.00	51.70	ND	ND	57.46	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)
12/29/15	48.54	ND	ND	54.61	0.00	0.00	54.11	ND	ND	99.78	0.00	0.00
3/16/16	48.40	ND	ND	54.61	0.00	0.00	NM	NM	NM	NM	NM	NM
3/17/16	NM	NM	NM	NM	NM	NM	54.02	ND	ND	100.38	0.00	0.00
6/29/16	49.90	ND	ND	54.65	0.00	0.00	54.91	ND	ND	100.78	0.00	0.00
9/23/16	51.44	ND	ND	54.63	0.00	0.00	57.07	ND	ND	99.90	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

Compound (Units in ug/m^3)	Sample ID: Sample Date: Sample Type:	SS-5A 3/5/2016 Sub-Slab	SW Office Space 3/5/2016 Indoor Air	SE SS-A 3/5/2016 Sub-Slab	SE Office Space 3/5/2016 Indoor Air	DUP030516 3/5/2016 Indoor Air
Vinyl chloride		<0.40	<0.045	<0.40	<0.041	<0.042
cis-1,2-Dichloroethene		<0.61	<0.14	<0.61	**0.20**	**0.41**
Trichloroethene		<0.83	<0.19	**8.9**	<0.17	**0.33**
1,1-Dichloroethene		<0.61	<0.069	<0.61	<0.064	<0.065
trans-1,2-Dichloroethene		<3.1	<0.69	<3.1	<0.64	<0.65
1,1,1-Trichloroethane		**6.8**	<0.19	**3.6**	<0.18	<0.18
Tetrachloroethene		**76**	<0.24	**240**	**0.35**	**0.35**
1,1-Dichloroethane		<0.63	<0.14	<0.63	<0.13	<0.13
2-Butanone (Methyl Ethyl Ketone)		<2.3	<2.6	<2.3	**5.5**	**5.4**

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)
12/18/15	2:05 PM	-11.0	60.7	--	1,585	36.3	0.0	-8.0	61.9	--	2,173	49.8	0.0
3/24/16	9:05 AM	-10.5	69.7	--	1,546	35.4	0.0	-9.0	69.9	--	1,932	44.2	0.0
6/23/16	2:15 PM	-11.0	85.9	--	1,640	37.6	0.2	-9.0	85.5	--	1,905	43.6	0.1
9/20/16	2:15 PM	-11.0	79.1	--	1,634	37.4	0.0	-9.0	83.8	--	1,852	42.4	0.0

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.

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 (+/-)
12/18/15	2:05 PM	-15.0	6.4 [3]	--	--	--	--	--	--	-0.43	-0.17	-0.14	-0.05	-0.10	-0.01	29.70	(+)
3/24/16	9:05 AM	-15.0	5.3 [3]	--	--	--	--	--	--	-0.49	-0.18	-0.13	-0.07	-0.11	-0.03	30.10	(+)
6/23/16	2:15 PM	-15.0	5.0 [3]	--	--	--	--	--	--	-0.42	-0.17	-0.13	-0.07	-0.10	-0.01	29.87	(-)
9/20/16	2:15 PM	-15.0	5.0 [3]	--	--	--	--	--	--	-0.43	-0.18	-0.14	-0.05	-0.11	-0.003	30.10	(+)

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.

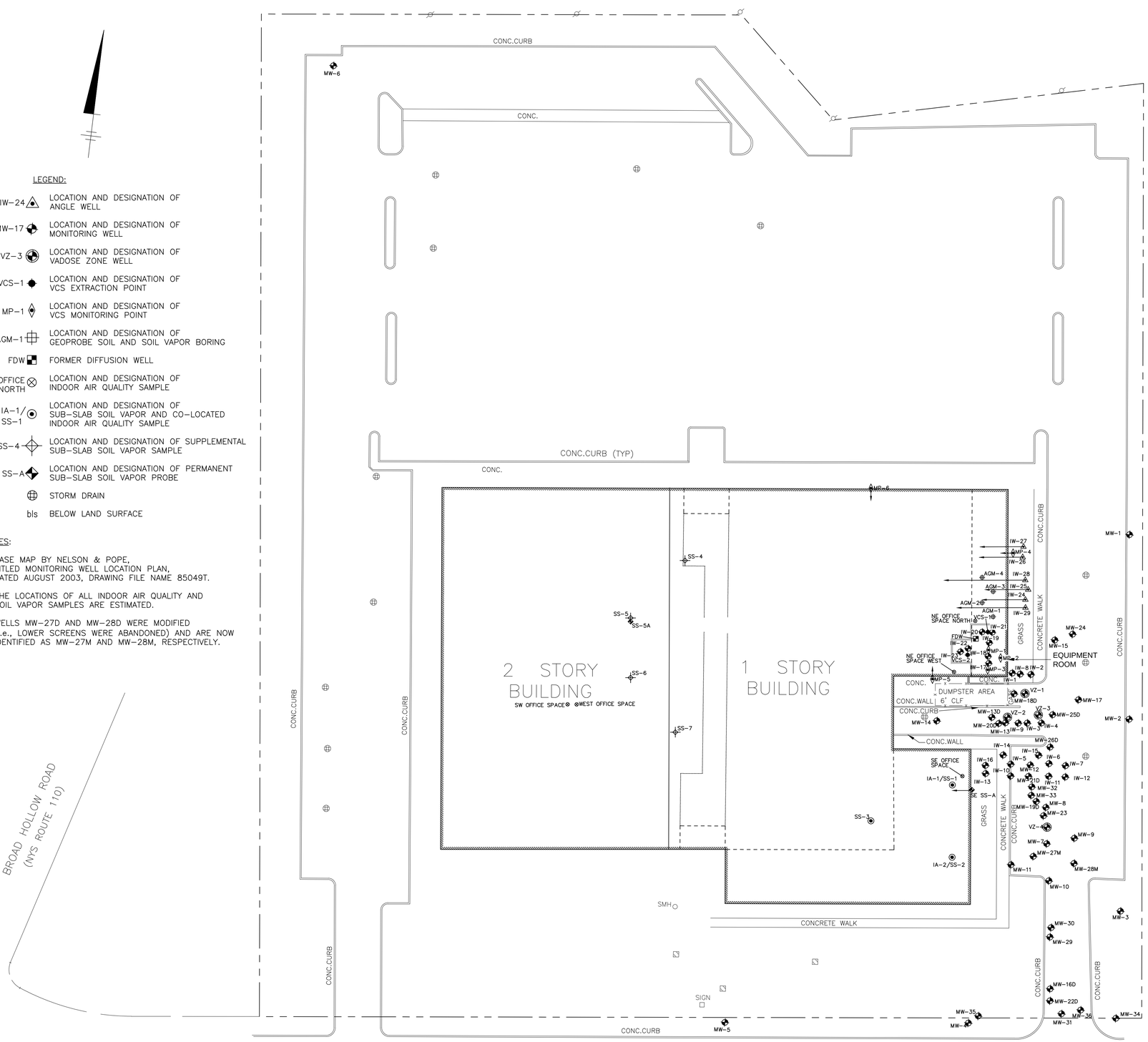
1. The distances provided for MP-1 through MP-4 are relative to VCS-1. The distances provided for MP-5 and MP-6 are relative to VCS-2.
2. Per NYSDEC approval, the vapor phase treatment was bypassed prior to the June 14, 2007 monitoring event.
3. Pressure measured at new barb installed mid-point of stack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

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	MW-25D	Total Gallons Recovered
NAPL Recovered Between December 2015 and September 2016 (Gallons)	0	0	0	6.6	0	0	0	0	0	0	6.6

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

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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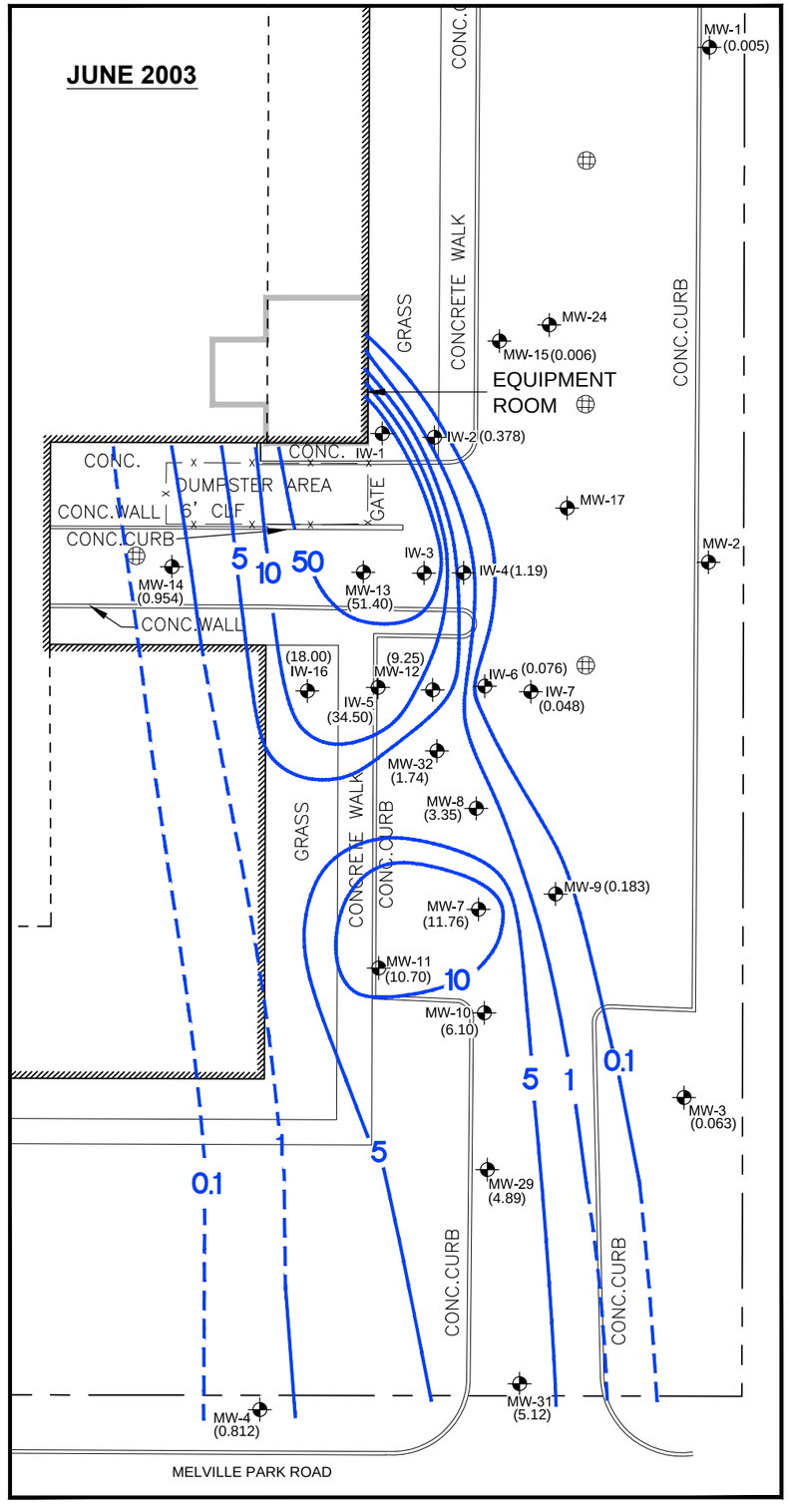

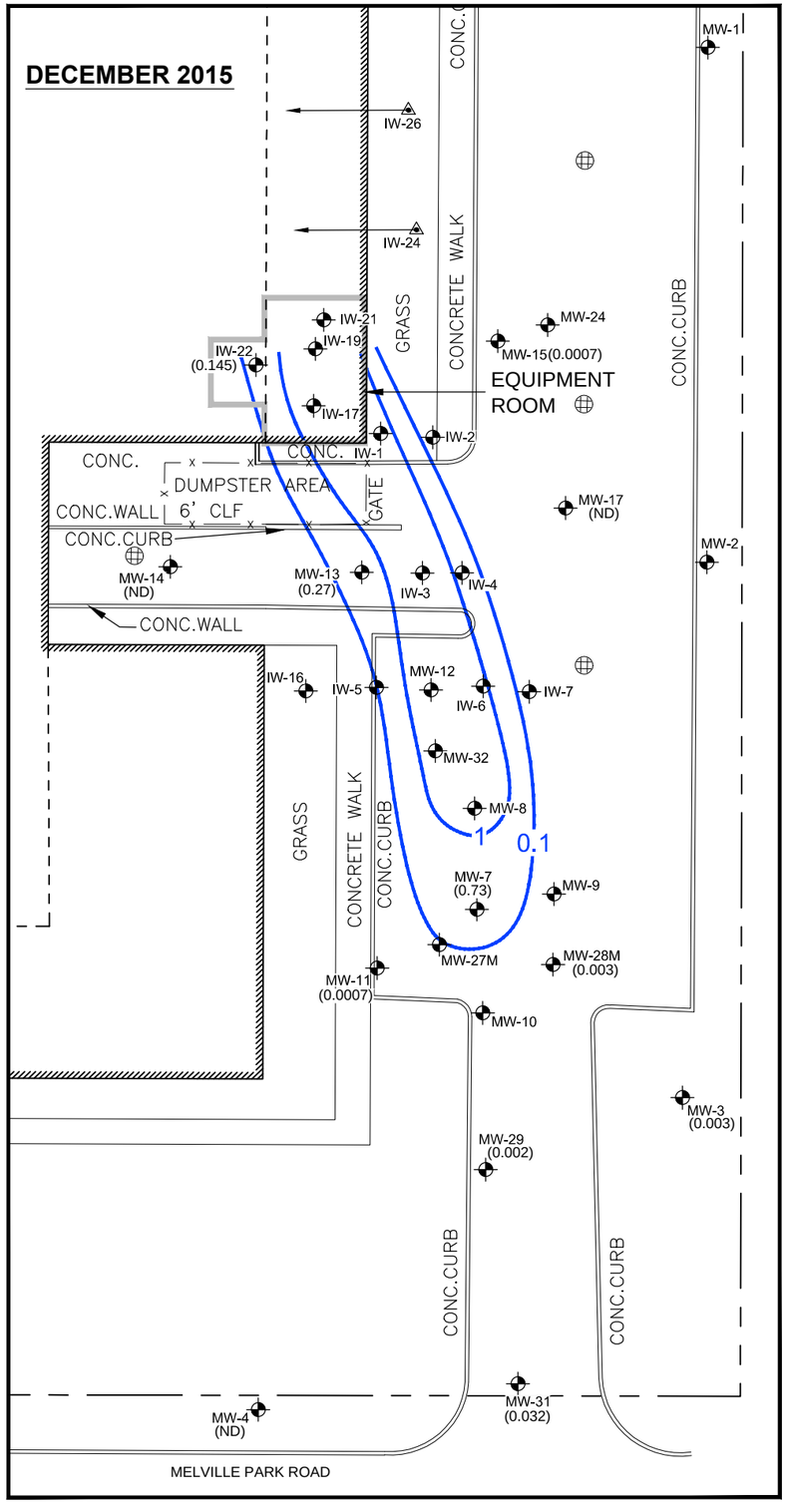

LEGEND:

MW–7 (0.73)	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

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 2015

ARCADIS Design & Consultancy for natural and built assets

FIGURE 2

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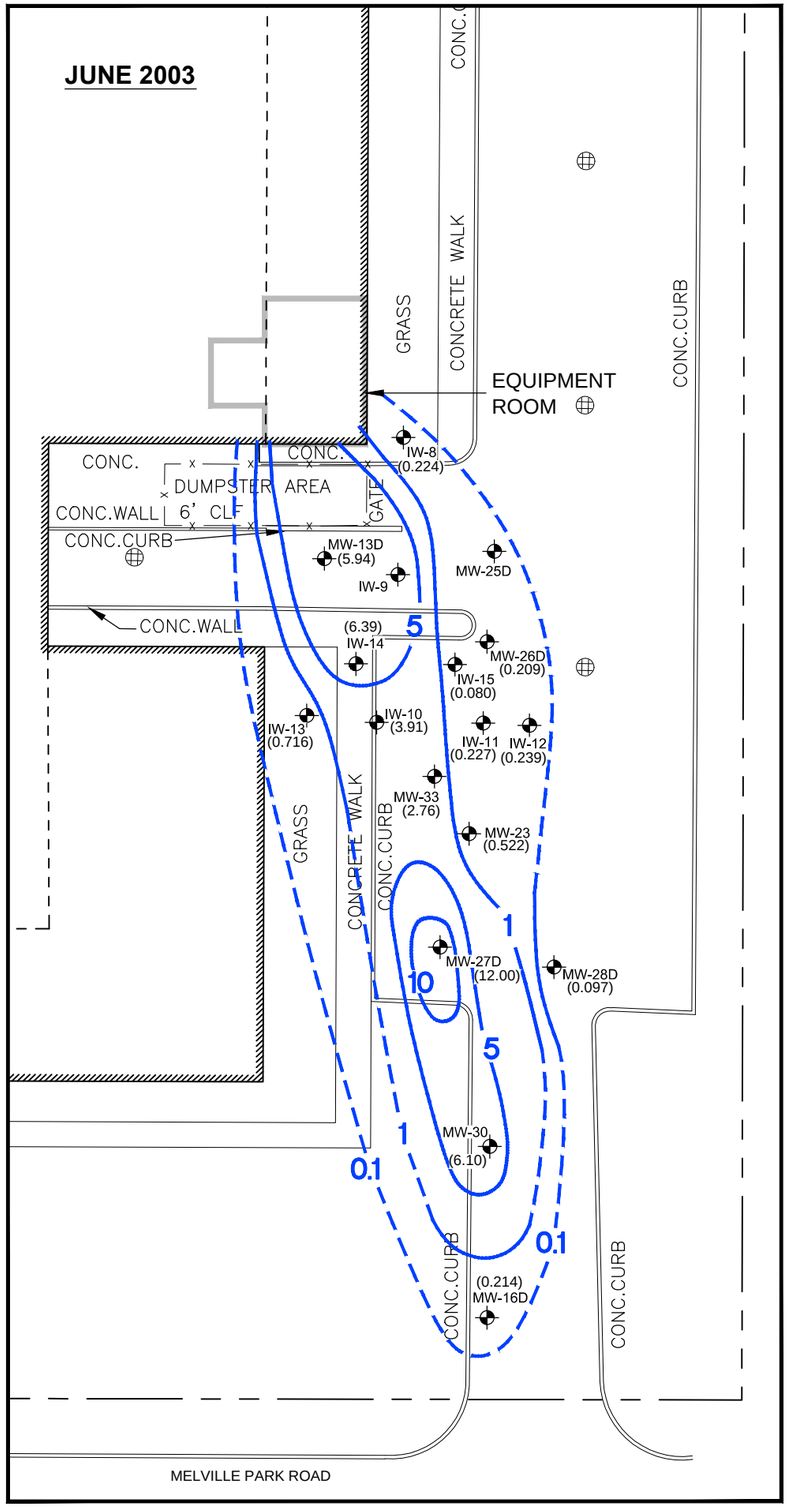

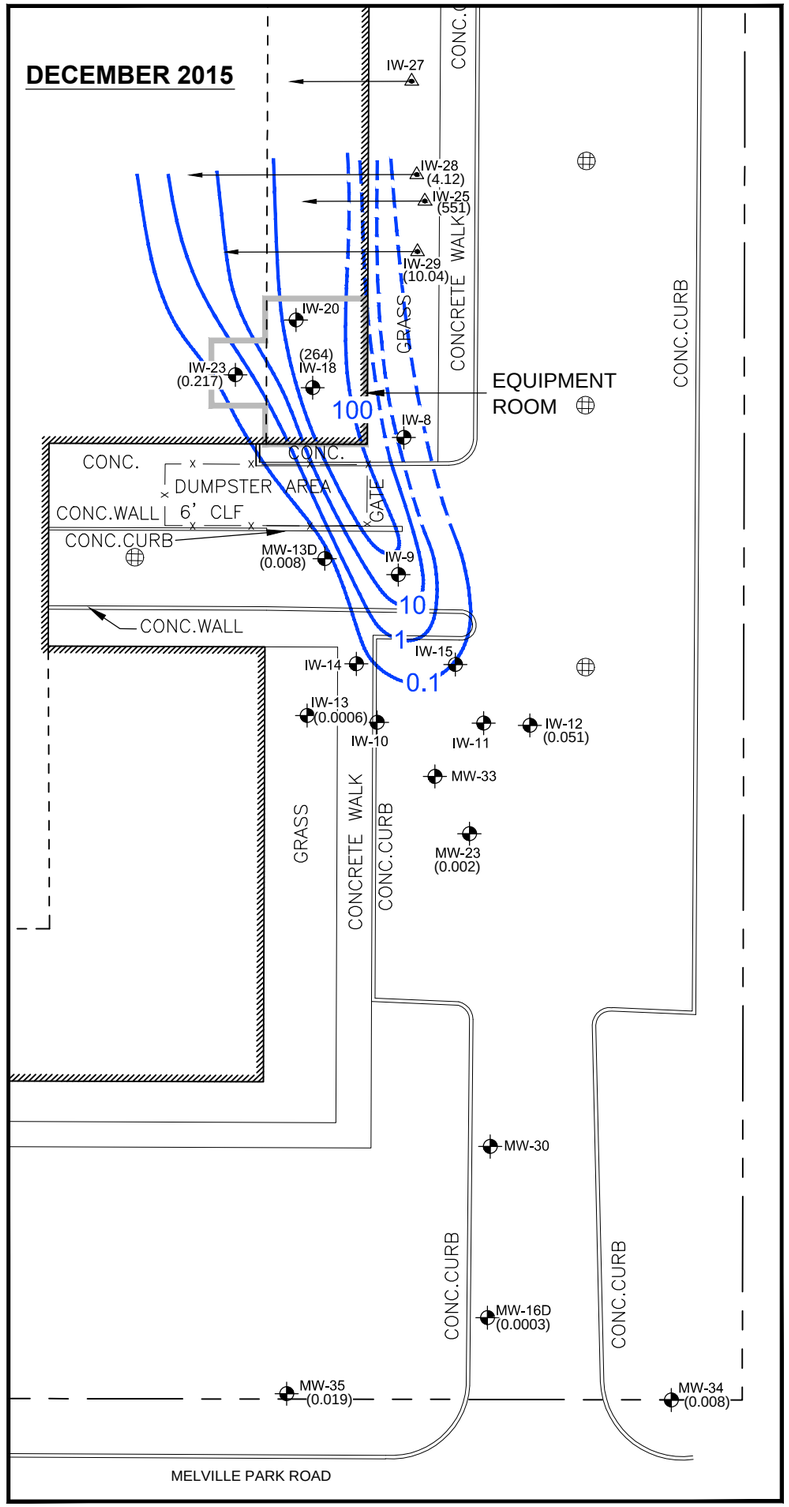

LEGEND:

MW–13D (0.008)	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.
4. IW-25 DATA WAS COLLECTED IN DECEMBER 2011.
5. IW-28 AND IW-29 DATA WERE COLLECTED IN MAY 2015.

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 2015

ARCADIS Design & Consultancy for natural and built assets

FIGURE 3

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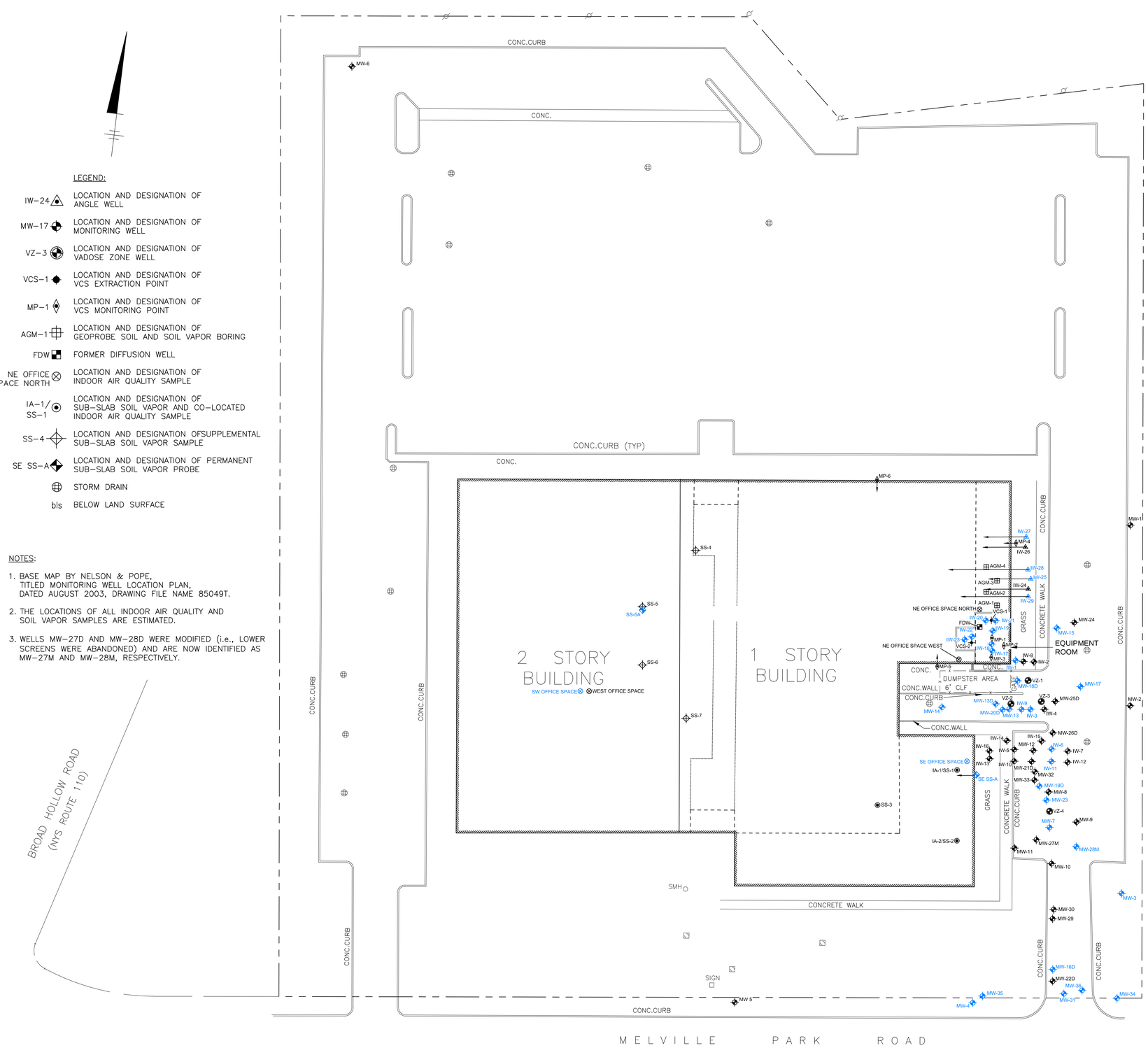

Well Designation	Well Diameter (inches)	Screened Interval (feet bls)	Total Depth (feet bls)	Vertical Zone Designation
IW-1	2	45 to 60	60	Shallow Zone
IW-2	2	45 to 60	60	Shallow Zone
IW-3	2	45 to 60	60	Shallow Zone
IW-4	2	45 to 60	60	Shallow Zone
IW-5	2	45 to 60	60	Shallow Zone
IW-6	2	45 to 60	60	Shallow 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

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

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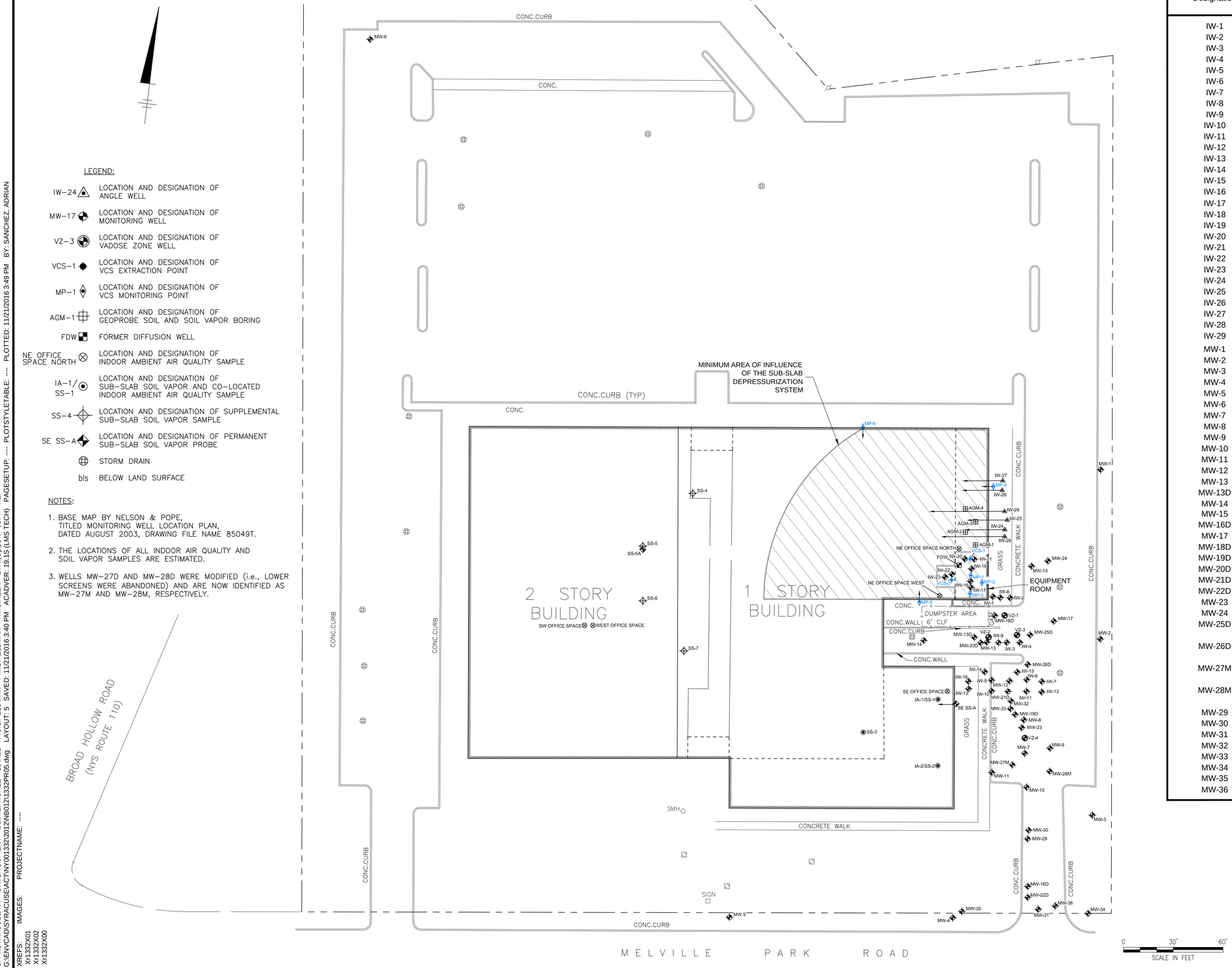

Well Designation	Well Diameter (inches)	Screened Interval (feet bls)	Total Depth (feet bls)	Vertical Zone Designation
IW-1	2	45 to 60	60	Shallow Zone
IW-2	2	45 to 60	60	Shallow Zone
IW-3	2	45 to 60	60	Shallow Zone
IW-4	2	45 to 60	60	Shallow Zone
IW-5	2	45 to 60	60	Shallow Zone
IW-6	2	45 to 60	60	Shallow 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
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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
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MW-23	2	70 to 85	85	Intermediate Zone
MW-24	2	45 to 60	60	Shallow Zone
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MW-26D	4	35 to 50	85	Abandoned
	4	70 to 85	85	Abandoned
MW-27M [3]	4	40 to 55	90	Shallow Zone
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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

25 MELVILLE PARK ROAD
MELVILLE, NEW YORK

VAPOR RECOVERY WELL AND INDUCED VACUUM MONITORING POINT LOCATIONS

ARCADIS Design & Consultancy for natural and built assets

FIGURE 5

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LEGEND:

IW–24	LOCATION AND DESIGNATION OF ANGLE WELL
MW–1 (68.20)	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
68.50	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

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 16 AND 17, 2016.

0 30' 60'
SCALE IN FEET

25 MELVILLE PARK ROAD
MELVILLE, NEW YORK

CONFIGURATION OF THE WATER TABLE AND GROUNDWATER FLOW DIRECTION MARCH 2016

ARCADIS Design & Consultancy for natural and built assets

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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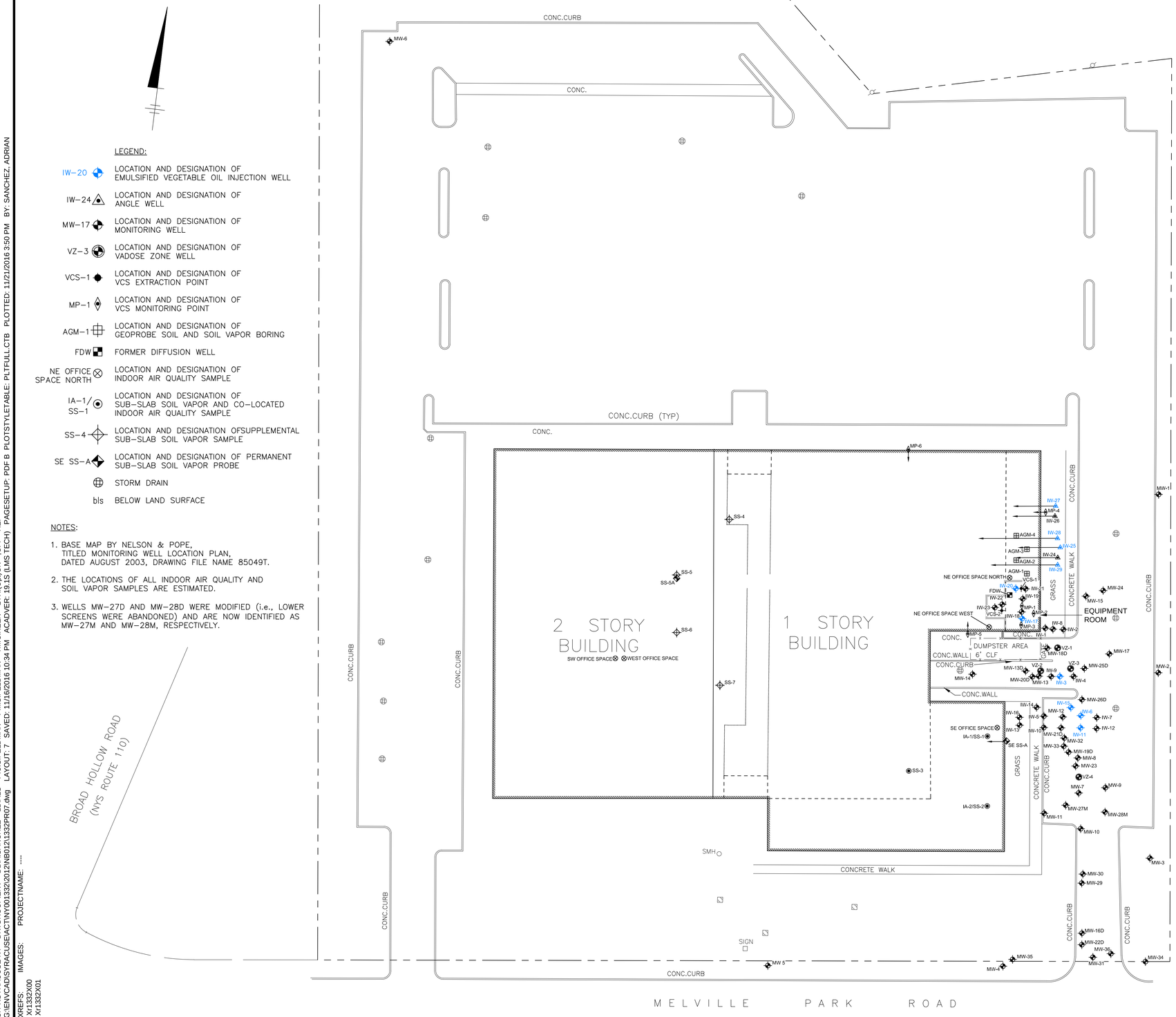

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IW-11	2	75 to 90	90	Intermediate Zone
IW-12	2	75 to 90	90	Intermediate Zone
IW-13	2	75 to 90	90	Intermediate Zone
IW-14	2	60 to 75	75	Intermediate Zone
IW-15	2	60 to 75	75	Intermediate Zone
IW-16	2	45 to 60	60	Shallow Zone
IW-17	2	50 to 70	70	Shallow 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

25 MELVILLE PARK ROAD
MELVILLE, NEW YORK

OPTIMIZED ERD INJECTION WELL LOCATIONS

ARCADIS Design & Consultancy for natural and built assets

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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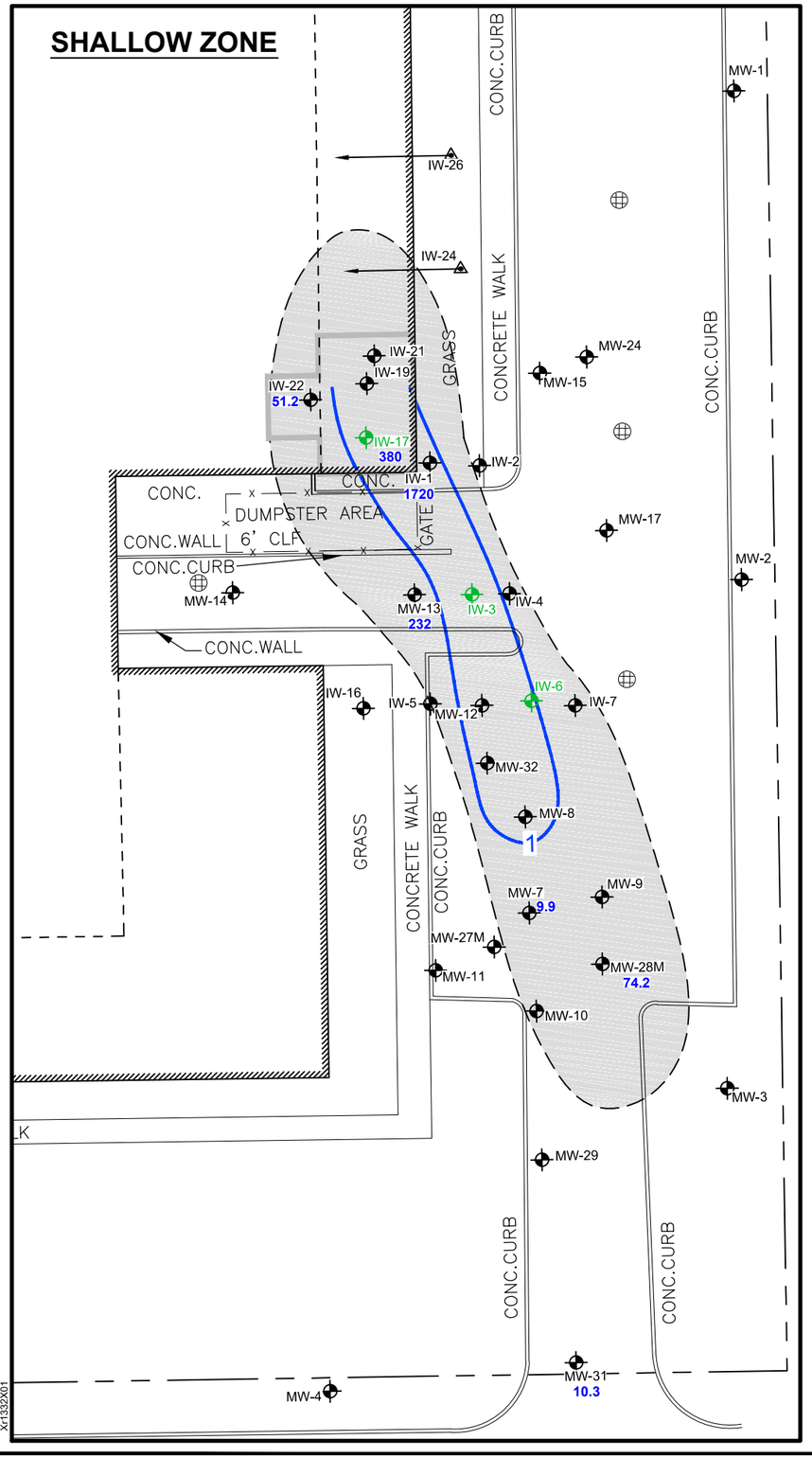
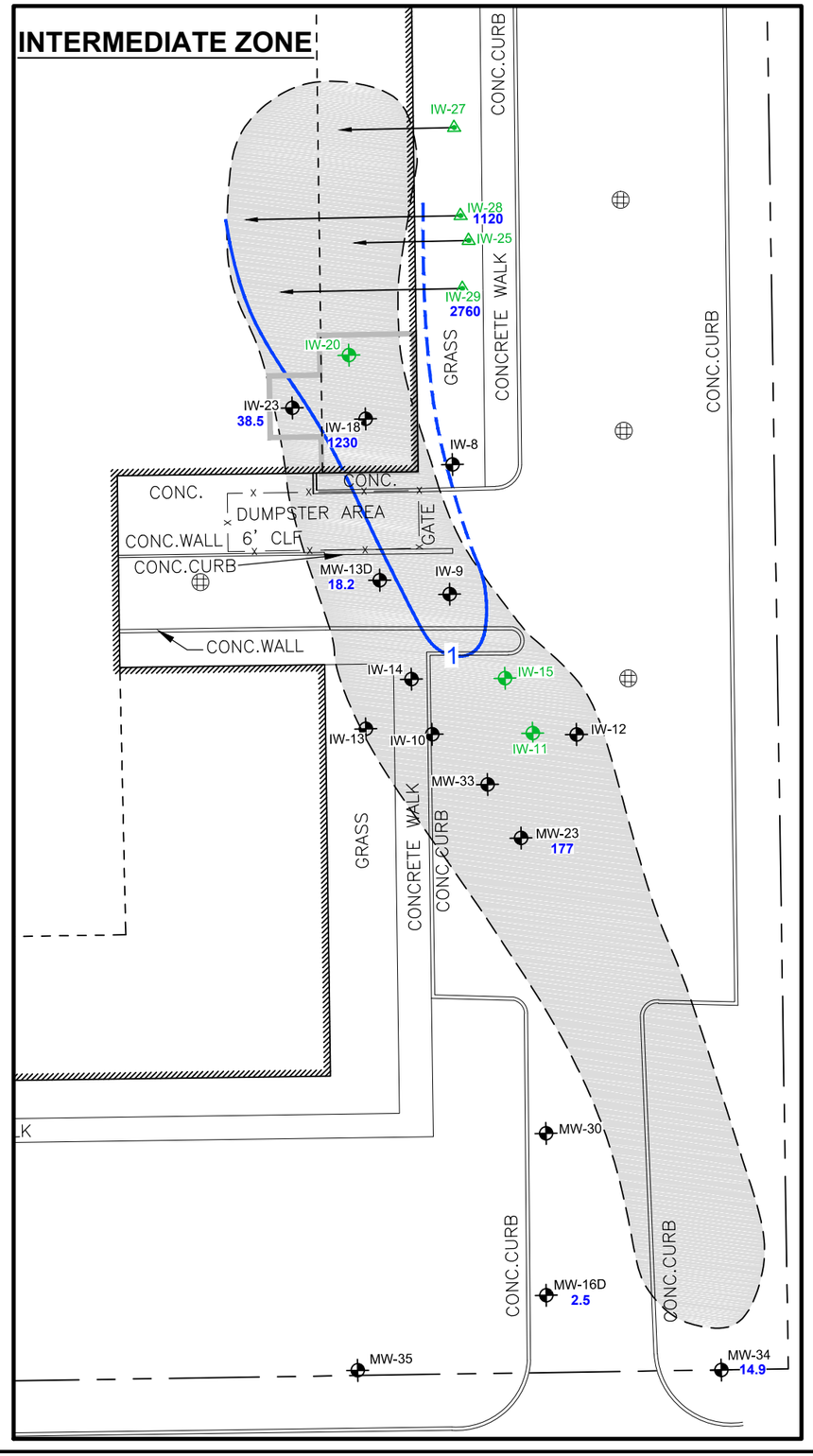
X11332X01





LEGEND:

MW-7 9.9	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 2015

ARCADIS Design & Consultancy for natural and built assets

FIGURE 8

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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Xr1332X00
Xr1332X01

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 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 ERD injection was completed using an approximately 2.7% solution of emulsified vegetable oil 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.

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, 2015 to September 23, 2016

	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 Opportunity LLC and Karakoram LLC

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

11-30-2016
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 2 Huntington Quadrangle, Suite 1S10
print name print business address Melville, NY

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

Christina Berardi Tuohy

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

12/12/16

Date

Stamp
(Required for PE)

STATE OF NEW YORK
CHRISTINA BERARDI TUOHY
078743
LICENSED PROFESSIONAL ENGINEER

ARCADIS Design & Consultancy for natural and built assets

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 17, 2016

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 9, 2016 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 17, 2016

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 LLC and Karakoram LLC
By: Raymond Sohmer, Property Director

Melville Opportunity LLC and Karakoram LLC (Print Name)

Melville Opportunity LLC and Karakoram LLC (Signature)

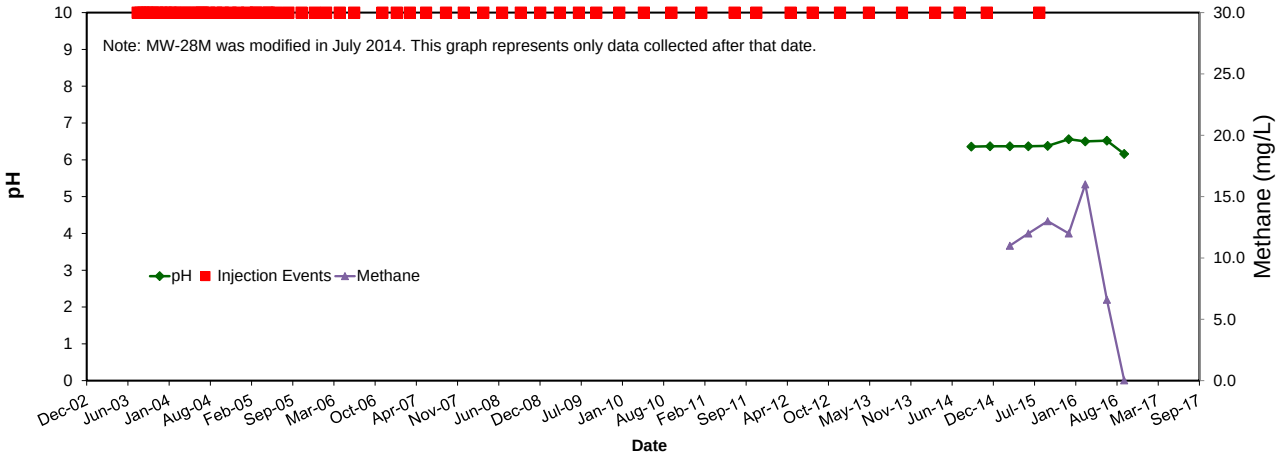
11-30-2016

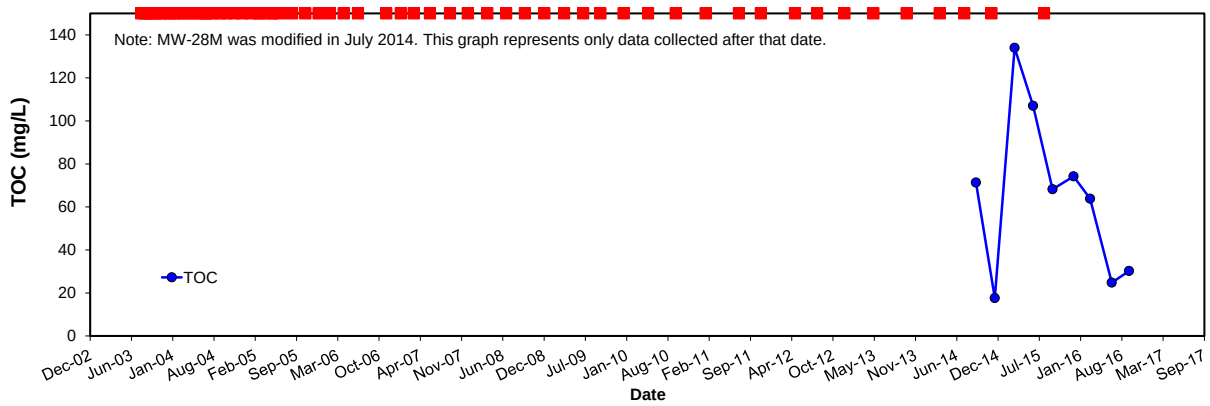
Signature Date

APPENDIX C

IRZ Performance Data Trend Plots

Figure C-1. Degradation Trends for Shallow Zone Monitoring Well MW-28M





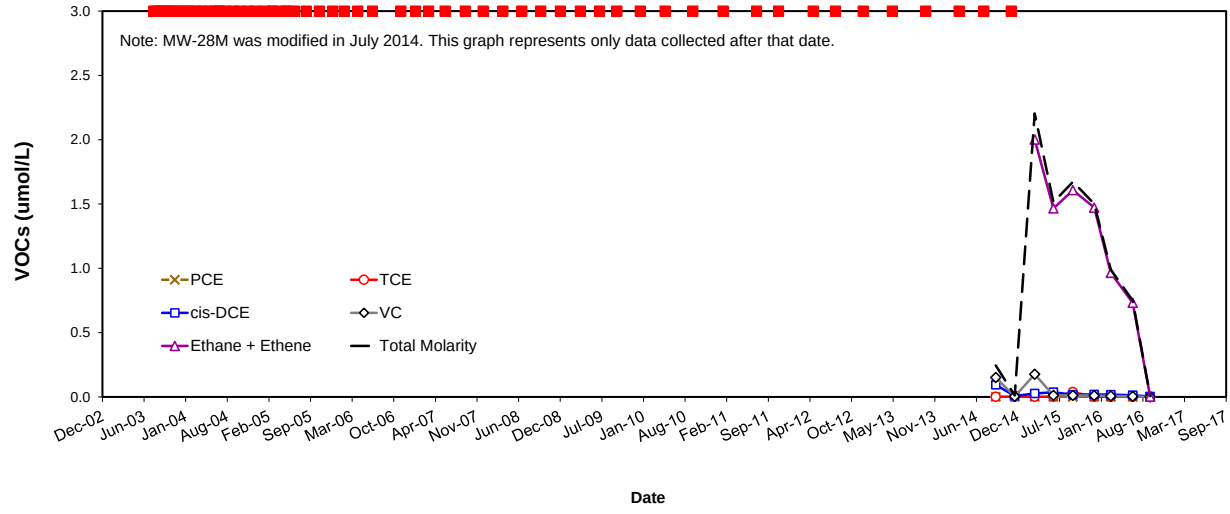
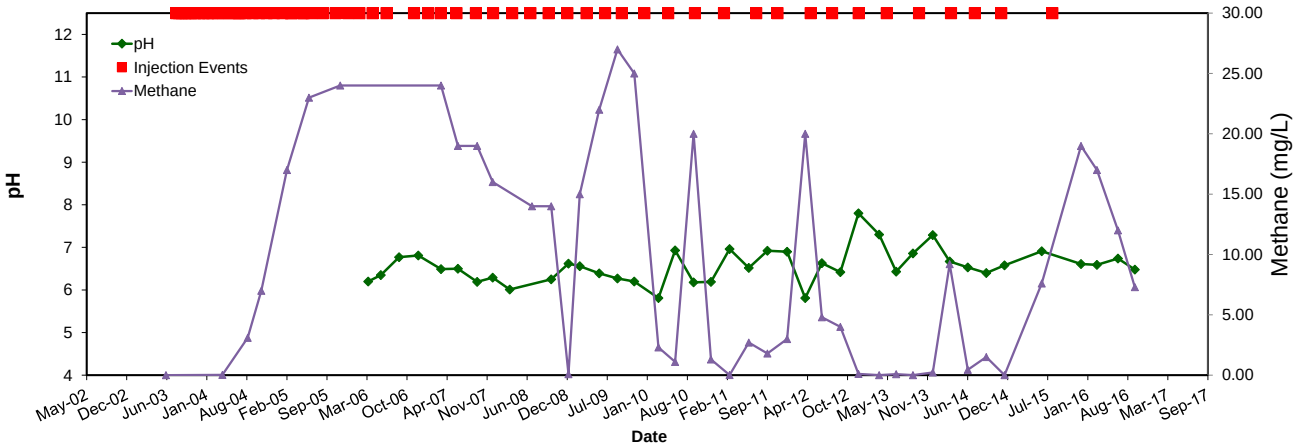
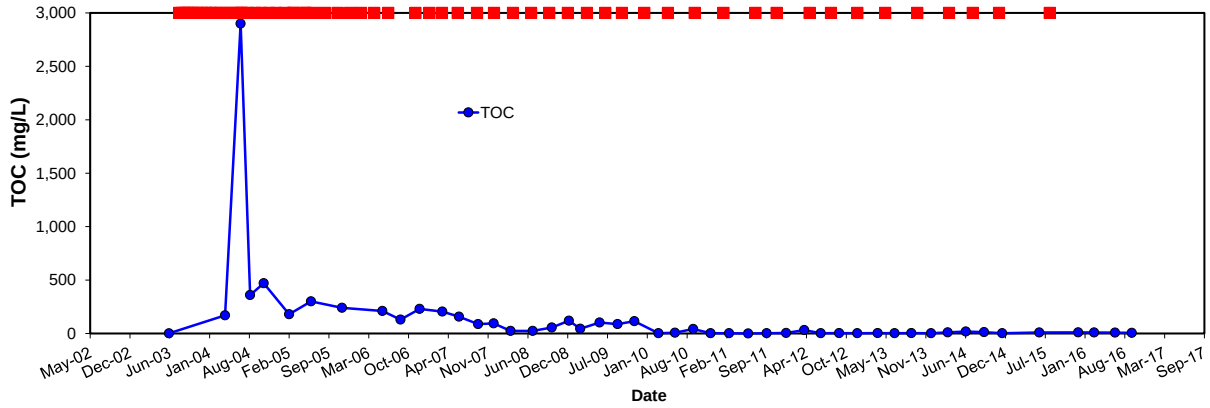


Figure C-2. Degradation Trends for Shallow Zone Downgradient Compliance Monitoring Well MW-31





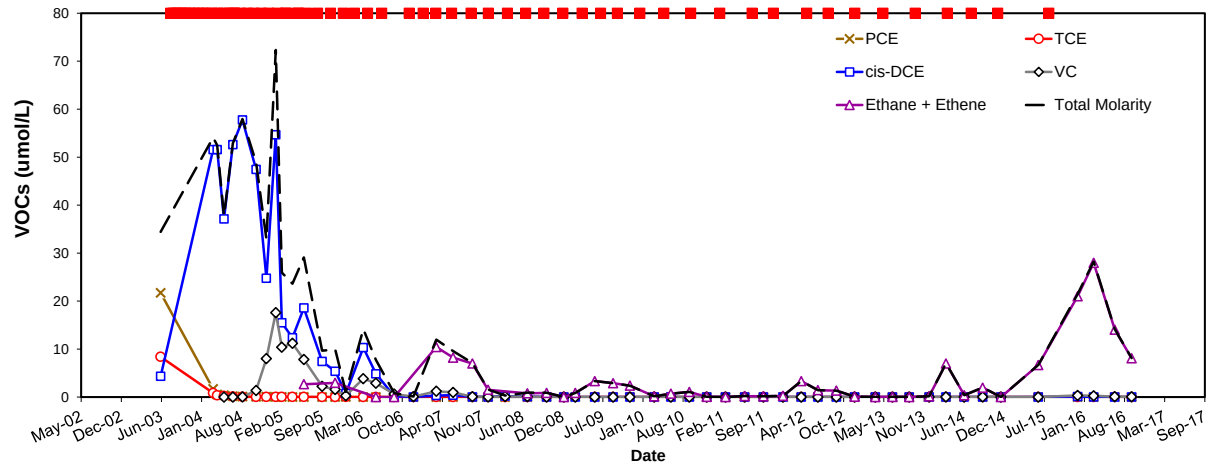
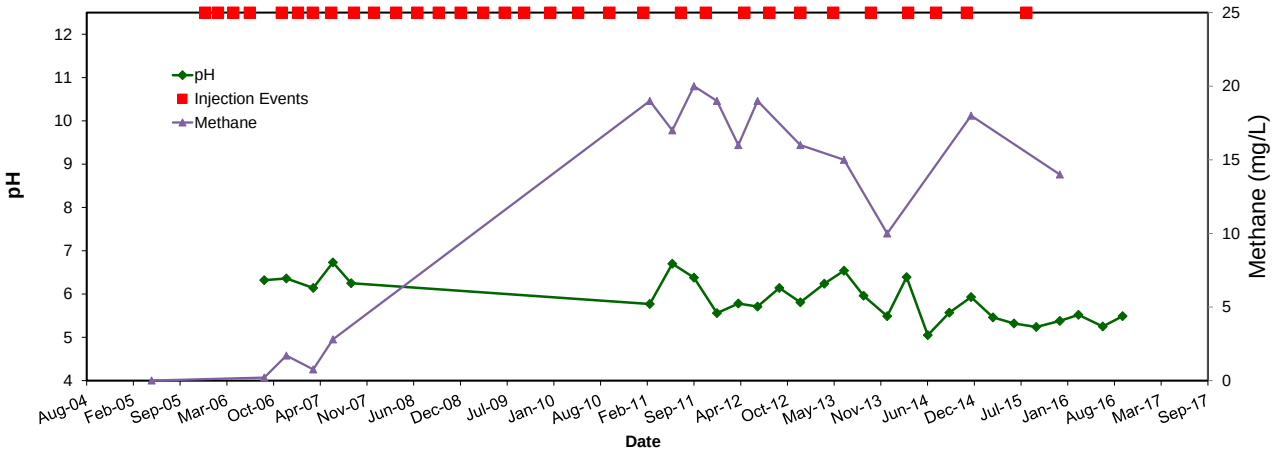
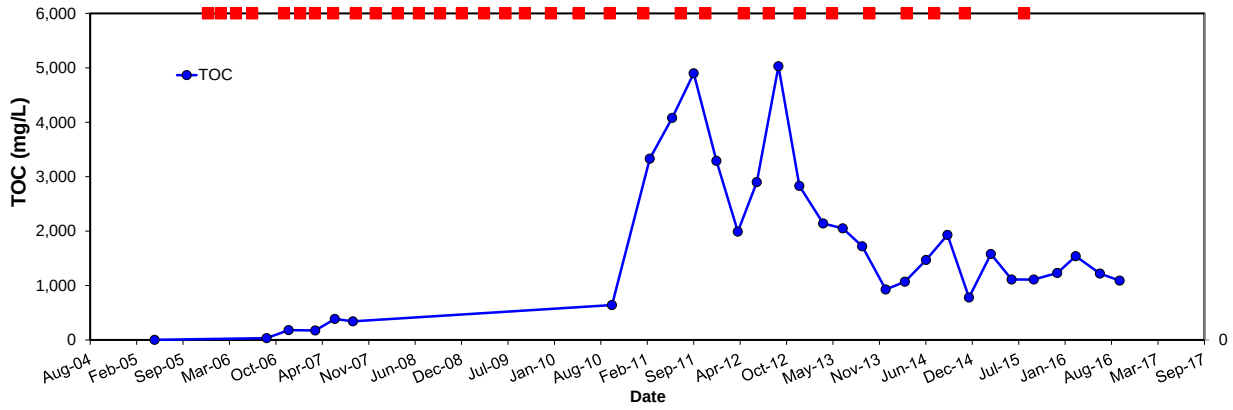


Figure C-3. Degradation Trends for Intermediate Zone Monitoring Well IW-18





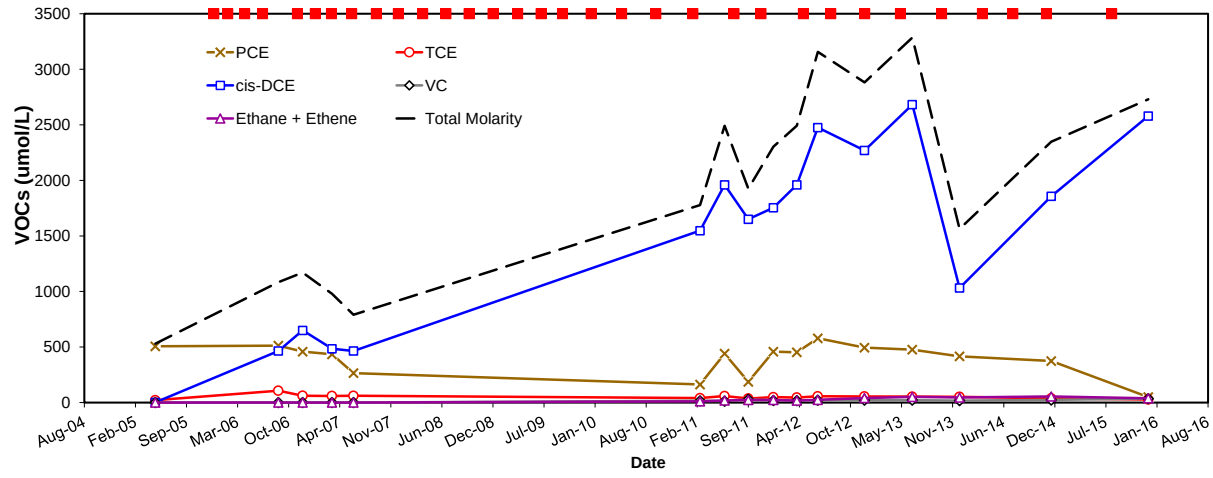
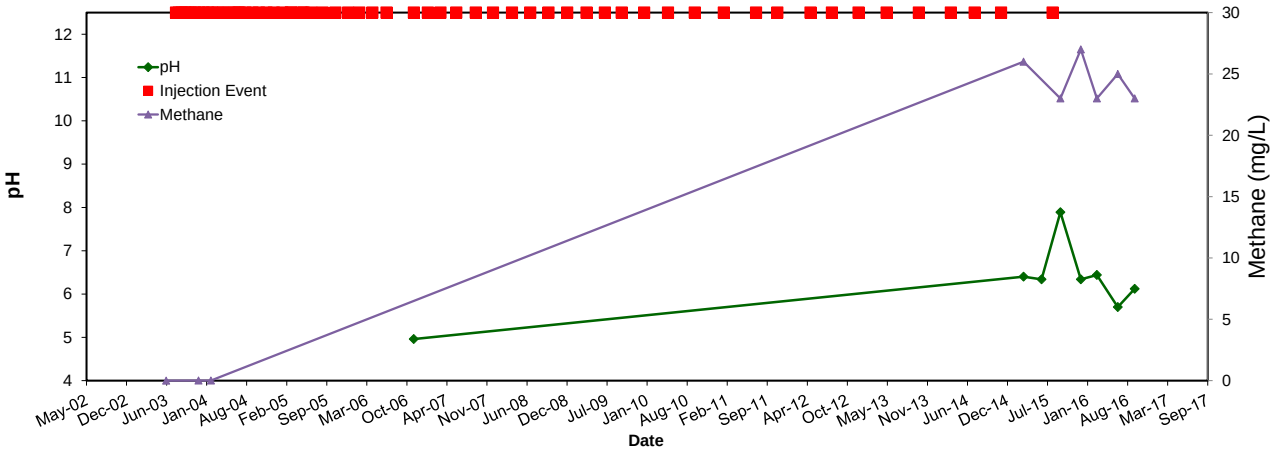
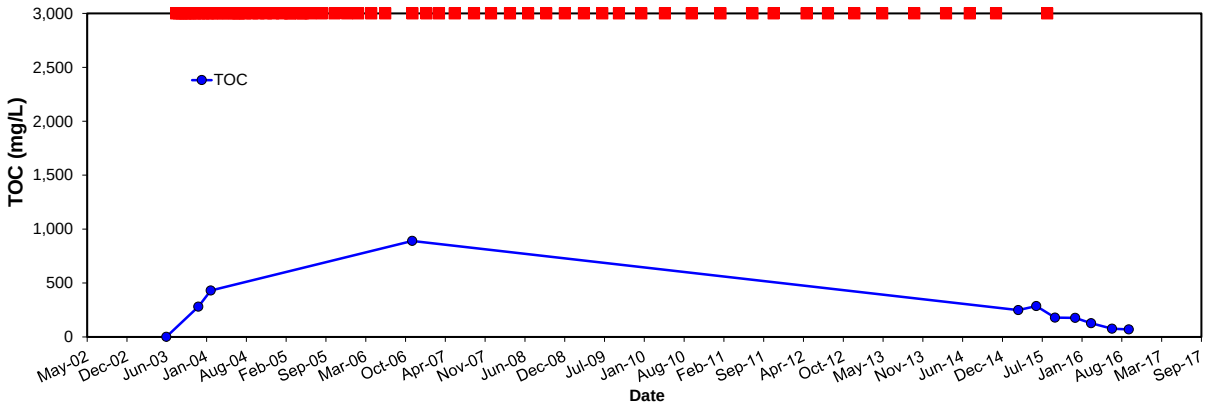


Figure C-4. Degradation Trends for Intermediate Zone Monitoring Well MW-23





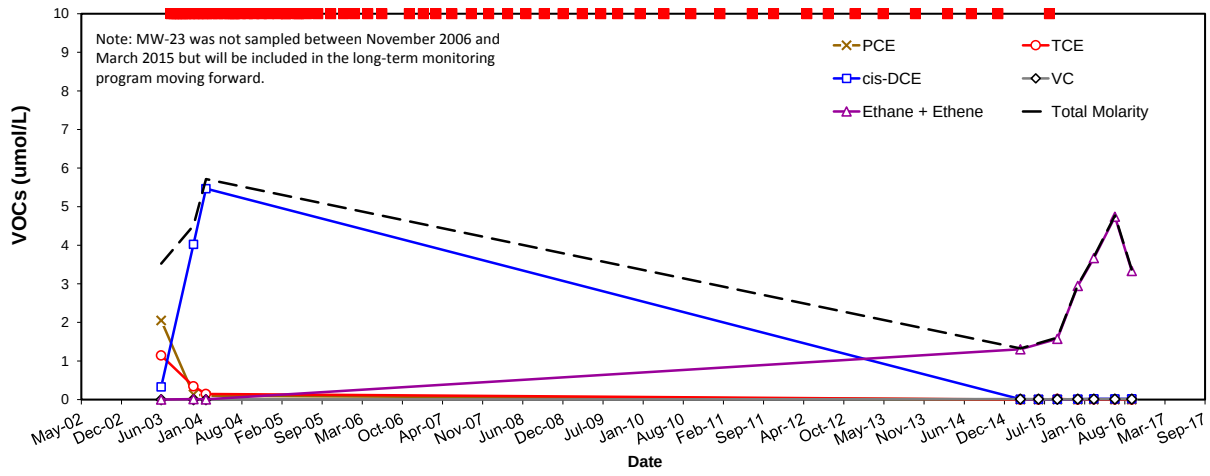
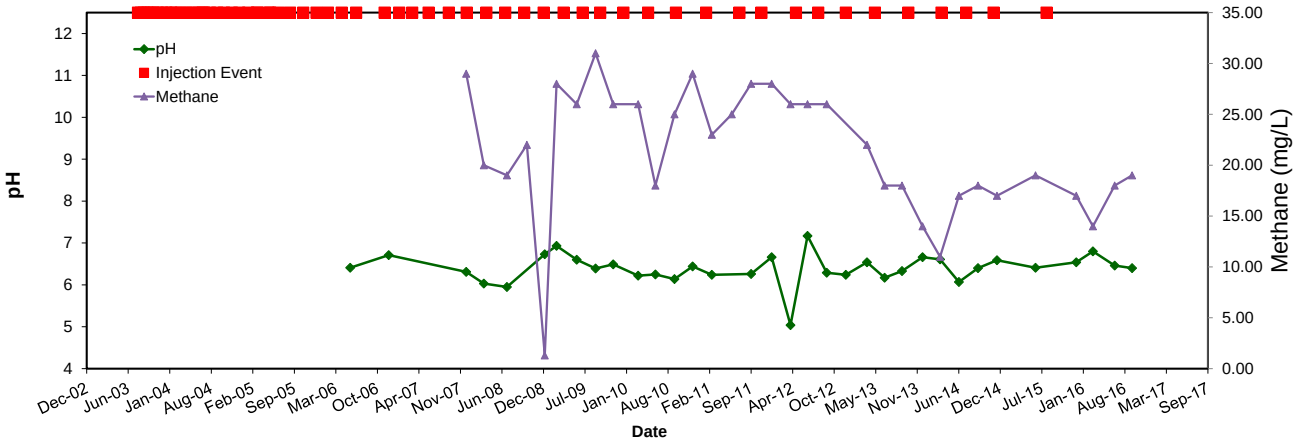
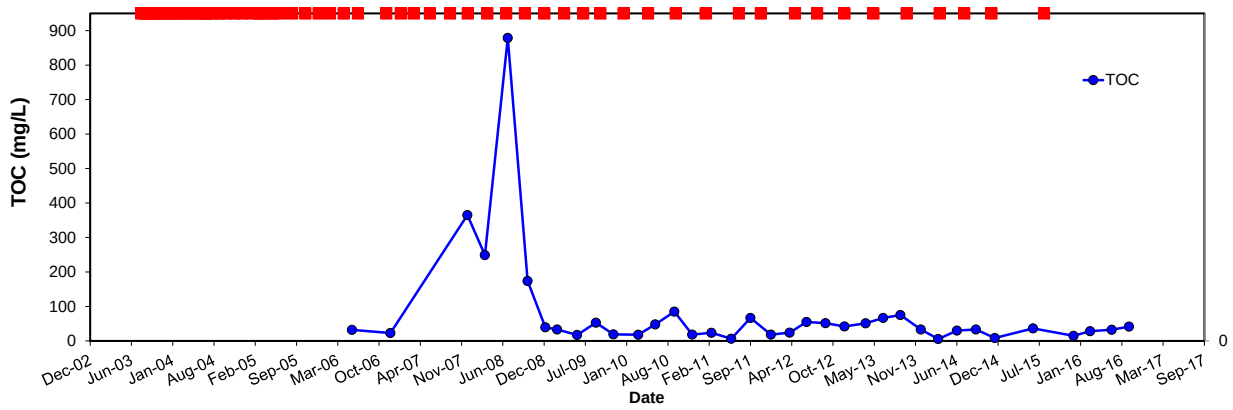
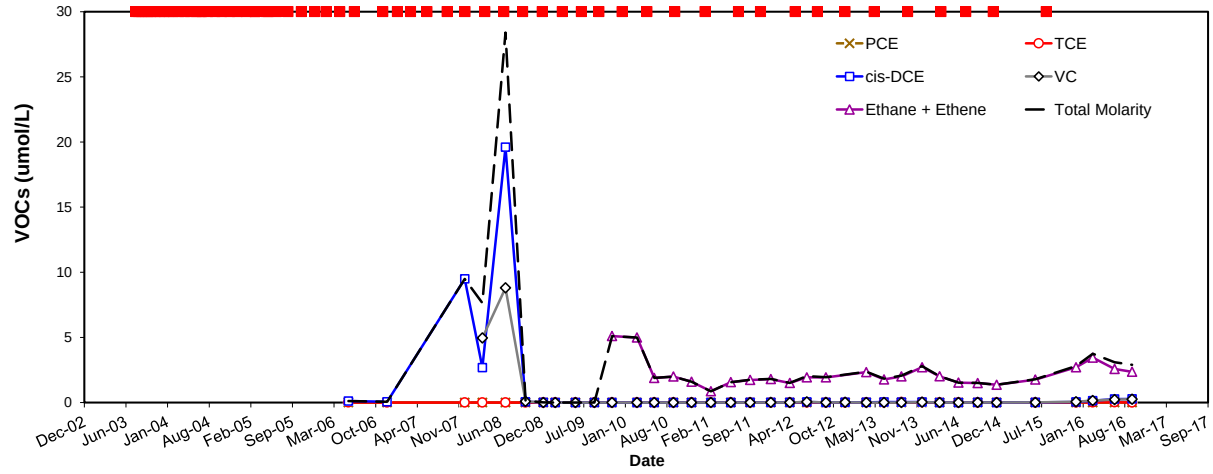


Figure C-5. Degradation Trends for Intermediate Zone Downgradient Compliance Monitoring Well MW-34







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