EA Engineering, P.C. and Its Affiliate
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19 April 2021

Mr. Joshua Haugh
Division of Environmental Remediation
New York State Department of Environmental Conservation
1130 N. Westcott Road
Schenectady, New York 12306-2014

RE: Remedial Investigation/Feasibility Study Letter Work Plan Addendum
Replacement Overburden Monitoring Wells
Contract/Work Assignment No: D009806-04
Admiral Cleaners, Watervliet, New York
Site No. 401075

Dear Mr. Haugh:

EA Engineering, P.C. and its affiliate EA Science and Technology (EA) has prepared this Addendum to the Letter Work Plan[1] to provide additional detail for the installation of replacement overburden monitoring wells for the remedial investigation (RI) at the Admiral Cleaners Site (Number [No.] 401075) (Site) in the City of Watervliet, Albany County, New York.

During the Phase III groundwater sampling event conducted in January 2021, EA planned to sample the newly installed bedrock monitoring wells and select overburden monitoring wells. While attempting to locate all the wells slated for sampling, EA found that five overburden monitoring wells had been damaged, some due to activities associated with IRM No. 1 (building demolition). Monitoring wells MW-06 and MW-05 were installed as temporary, 1-inch stick up wells located within the footprint of the building. The PVC casings were broken off at grade and debris seemed to have fallen into the wells. Re-development activities attempted at MW-05 and MW-06 during the week of 4 January 2021 were unsuccessful. MW-07, MW-03, and MW-04, located north of the former building were not located. The steel surface frame and casing for MW-07 was discovered damaged and no longer set in a concrete pad. The PVC casing of MW-07 could not be located. Similarly, EA could not locate MW-03 and MW-04. EA will attempt to locate MW-03 and MW-04 again while onsite with the drilling subcontractor Parratt-Wolff, Inc. of East Syracuse, New York, (Parratt-Wolff) the week of May 3. If the wells are found, they will either be redeveloped or abandoned depending on their condition. Original monitoring well construction details are summarized in **Attachment 1**.

Under this Addendum, EA will mobilize to the Site and install five 2-inch (in.) permanent overburden groundwater monitoring wells as presented and labeled in **Figure 1**. Parratt-Wolff will be responsible for contacting Dig Safely New York to identify subsurface utilities in the vicinity of monitoring well locations in addition to acquiring any permits required. The drilling and installation of monitoring wells will be supervised and documented by an EA field geologist.

Field activities will be completed in accordance with this Addendum and the Letter Work Plan[1] including Attachment A (EA's Generic Field Activities Plan); Attachment B (site-specific Health

[1] EA. 2018. *Remedial Investigation/Feasibility Study Letter Work Plan.* March

and Safety Plan [HASP]; and Attachment C (site-specific Quality Assurance Project Plan [QAPP]). according to the procedures described below.

## MONITORING WELL INSTALLATION

Parratt-Wolff will install five 2-in. overburden groundwater monitoring wells with total depths depending on bedrock elevations. It is anticipated that 10-15 ft of glacial till overburden overlies bedrock at the proposed locations. Borings will be advanced through overburden until competent bedrock is encountered. Soil cuttings generated during monitoring well installation activities will be containerized, handled, and disposed of as described below in the Investigation Derived Waste (IDW) section and as detailed in Section 3.4 of the site-specific HASP Addendum (Attachment B to the Letter Work Plan[1]). Wells will be screened from the top of bedrock, or refusal, with a 5-ft screen, consistent with the original overburden well construction (**Attachment 1**). A sand pack design consisting of medium sand (or equivalent) will be installed from the base of the well to 2 ft above the top of the screen. A minimum 2-ft bentonite seal will be installed above the sand pack. The remaining borehole annulus will be tremie grouted with a bentonite/cement grout mix to within 2 ft of the surface and completed with concrete as a flush mount curb box.

## MONITORING WELL DEVELOPMENT

The monitoring wells will be developed no sooner than 48 hours but no longer than 7 calendar days following installation. The monitoring wells will be developed using surging and pumping techniques. Monitoring well development will be considered complete when temperature, conductivity, and pH have stabilized and a turbidity of less than 50 nephelometric turbidity units (NTUs) has been achieved. At a minimum, development will remove 3-5 well volumes of water. One development volume is defined as (1) equivalent volume, plus (2) the amount of fluid lost during drilling, plus (3) the volume of water used in filter pack placement.

Development water will be containerized, handled, and disposed of as described below in the Investigation Derived Waste section and as detailed in Section 3.4 of the site-specific HASP Addendum (Attachment B to the Letter Work Plan[1]).

## GROUNDWATER SAMPLING

EA will complete one groundwater sampling event of the 5 newly installed overburden monitoring wells and three existing overburden wells upgradient, side gradient and down gradient of the UST excavation area (MW-09, MW-07R, and MW-12) to evaluate groundwater quality with respect to NYSDEC Ambient Water Quality Standards (AWQS) and to gather baseline groundwater data. These wells will be sampled for TCL VOCs by EPA Method 8260C and geochemical parameters. Geochemical parameters will include major anions via methods ASTM D516, SM 2320B and SM4500, total organic carbon (TOC) via method SM 5310B, and dissolved gasses (methane, ethane, ethene) via EPA Method RSK175.

Additionally, EA will collect samples from three select overburden wells for TCL VOCs by EPA Method 8260C and geochemical parameters. Geochemical parameters will include major anions via methods ASTM D516, SM 2320B and SM4500, total organic carbon (TOC) via method SM 5310B, and dissolved gasses (methane, ethane, ethene) via EPA Method RSK175. This groundwater sampling event will serve as a baseline event conducted prior to the addition of a substrate amendment to subsurface injection piping installed during Interim Remedial Measure (IRM) Number (No.) 2.

As outlined in the Phase III Field Investigations Letter Work Plan Addendum,[2] monitoring wells with previous detections of PCE in excess of NYSDEC AWQS and MW-13 will be sampled for PFAS via EPA Method 537, and 1,4-dioxane via EPA Method 8270 SIM. Overburden wells were unable to be sampled for PFAS and 1,4-dioxane during the January 2021 groundwater sampling event due to unidentified tubing remaining in the monitoring wells. The tubing found in the wells was removed in January 2021 in preparation for this sampling.

Groundwater samples will be collected using low flow methods in accordance with the Letter Work Plan.[1] Water quality parameters of pH, oxidation reduction potential, turbidity, dissolved oxygen, temperature, and conductivity will be recorded at regular intervals during purging. VOC samples will be analyzed by ALS Environmental and the remaining analytes (geochemical parameters, PFAS, and 1,4-dioxane) will be analyzed by NYSDEC call-out laboratory Eurofins Test America.

## DECONTAMINATION PROCEDURES AND INVESTIGATION DERIVED WASTE

Non-dedicated equipment and tools will be decontaminated prior to, between each drilling location, and prior to departure from site using steam cleaning methods. A temporary decontamination pad will be constructed onsite (e.g. plastic sheeting and hale bales). Investigation derived waste including personal protective equipment, solids and liquids generated during the well drilling, well development, decontamination, and well sampling activities, will be stored, handled, and disposed of in accordance with the Letter Work Plan.[1] Parratt-Wolff will also be required to contain and manage any liquids used for drilling to the extent practicable to prevent offsite runoff of IDW.

## HEALTH AND SAFETY CONSIDERATIONS

For work in the public right-of-way on 19th Street and the alleyway, traffic will be routed around the work area with 36-in. safety cones with connecting stanchions and "Men/Women Working" signs placed a minimum of 50 ft. prior to the work area. Equipment will be transported across the road with a minimum of two flaggers to direct traffic.

Additionally, EA will perform perimeter dust and vapor monitoring in accordance with the Community Air Monitoring Plan presented as a component of the Generic Field Activities Plan (Attachment A of the Letter Work Plan[1]).

Please feel free to contact me if you have any questions or concerns at (315) 565-6565.

Sincerely yours,

EA SCIENCE AND TECHNOLOGY

Emily Cummings

Emily Cummings
Project Manager

[2] EA. *Remedial Investigation/Feasibility Study Letter Work Plan Addendum; Phase III Field Investigations*. 29 December.

EA ENGINEERING, P.C.

Donald F. Conan, P.E., P.G.
Contract Manager

Attachment 1: Well Construction Details

cc: F. DeSantis, EA
C. Schroer, EA

# Figures

| 401075-MW-07R | |
|---|---|
| **Analyte** | **Result (µg/L)** |
| Cis-1,2-DCE | **1500 D** |
| PCE | **11000 D** |
| TCE | **1600 D** |
| VC | (< 27) U |

| 401075-MW-02 | |
|---|---|
| **Analyte** | **Result (µg/L)** |
| Cis-1,2-DCE | 2.1 |
| PCE | **28** |
| TCE | 1.4 |
| VC | (< 0.13) U |

| 401075-MW-07 | |
|---|---|
| **Analyte** | **Result (µg/L)** |
| Cis-1,2-DCE | **160** |
| PCE | **23** |
| TCE | **29** |
| VC | (< 0.13) U |

| 401075-MW-10 | |
|---|---|
| **Analyte** | **Result (µg/L)** |
| Cis-1,2-DCE | 2 |
| PCE | 2.8 |
| TCE | 0.39 J |
| VC | (< 0.13) U |

| 401075-MW-11 | |
|---|---|
| **Analyte** | **Result (µg/L)** |
| Cis-1,2-DCE | 0.31 J |
| PCE | 0.54 J |
| TCE | (< 0.2) U |
| VC | (< 0.13) U |

| 401075-MW-09 | |
|---|---|
| **Analyte** | **Result (µg/L)** |
| Cis-1,2-DCE | **5.6** |
| PCE | **32** |
| TCE | 3.4 |
| VC | (< 0.13) U |

| 401075-MW-03 | |
|---|---|
| **Analyte** | **Result (µg/L)** |
| Cis-1,2-DCE | 3.9 |
| PCE | **8.9** |
| TCE | 1.5 |
| VC | (< 0.13) U |

| 401075-MW-01 | |
|---|---|
| **Analyte** | **Result (µg/L)** |
| Cis-1,2-DCE | **110 D** |
| PCE | **440 D** |
| TCE | **77 D** |
| VC | (< 1.3) U |

| 401075-MW-04 | |
|---|---|
| **Analyte** | **Result (µg/L)** |
| Cis-1,2-DCE | **69** |
| PCE | **9.4** |
| TCE | 2.7 |
| VC | (< 0.13) U |

| 401075-MW-05 | |
|---|---|
| **Analyte** | **Result (µg/L)** |
| Cis-1,2-DCE | **740 D** |
| PCE | **51 D** |
| TCE | **26 D** |
| VC | **2.9 JD** |

| 401075-MW-08 | |
|---|---|
| **Analyte** | **Result (µg/L)** |
| Cis-1,2-DCE | 0.36 J |
| PCE | 1.5 |
| TCE | (< 0.2) U |
| VC | (< 0.13) U |

| 401075-MW-12 | |
|---|---|
| **Analyte** | **Result (µg/L)** |
| Cis-1,2-DCE | (< 0.15) U |
| PCE | 1.9 |
| TCE | (< 0.2) U |
| VC | (< 0.13) U |

| 401075-MW-15 | |
|---|---|
| **Analyte** | **Result (µg/L)** |
| Cis-1,2-DCE | (< 0.15) U |
| PCE | 1.8 |
| TCE | (< 0.2) U |
| VC | (< 0.13) U |
| Chloroform | **12** |

| 401075-MW-06 | |
|---|---|
| **Analyte** | **Result (µg/L)** |
| Cis-1,2-DCE | **16000 D** |
| PCE | (< 27) U |
| TCE | **180 D** |
| VC | **41 JD** |
| 1,1-DCE | **22 JD** |
| Trans-1,2-DCE | **27 JD** |

| 401075-MW-17 | |
|---|---|
| **Analyte** | **Result (µg/L)** |
| Cis-1,2-DCE | (< 0.15) U |
| PCE | (< 0.27) U |
| TCE | (< 0.2) U |
| VC | (< 0.13) U |

| 401075-MW-14 | |
|---|---|
| **Analyte** | **Result (µg/L)** |
| Cis-1,2-DCE | 0.47 J |
| PCE | 3.5 |
| TCE | (< 0.2) U |
| VC | (< 0.13) U |

| 401075-MW-16 | |
|---|---|
| **Analyte** | **Result (µg/L)** |
| Cis-1,2-DCE | (< 0.15) U |
| PCE | (< 0.27) U |
| TCE | (< 0.2) U |
| VC | (< 0.13) U |

MW-04R
MW-05R
MW-22
MW-06R
MW-21
MW-13 (Dry)
19th Street

| Detected Compound | NYSDEC AWQS (µg/L) |
|---|---|
| Cis-1,2-Dichloroethene (Cis-1,2-DCE) | 5 |
| Tetrachloroethene (PCE) | 5 |
| Trichloroethene (TCE) | 5 |
| Vinyl Chloride (VC) | 2 |
| 1,1-Dichloroethene (1,1-DCE) | 5 |
| Trans-1,2-Dichloroethene (Trans-1,2-DCE) | 5 |

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

## Legend

- Proposed MW Locations
- Results Exceed AWQS
- Phase III Bedrock Wells
- Phase I Monitoring Wells
- Phase II Monitoring Wells
- Admiral Cleaners Site Boundary
- Site Location

0 12.5 25 Feet

N

| NOTE: |
|---|
| Bold and shaded values indicate that the analyte was detected greater than the applicable Guidance Values. Results presented on figure are from October 2018 sampling event |
| PFOS = Perfluorooctanesulfonic acid |
| PFOA = Perfluorooctanoic acid |
| J = Result is estimated concentration. |
| µg/L = Microgram(s) per liter |
| ng/L = Nanogram(s) per liter |

**Figure 1**
**Replacement Monitoring Wells**

Admiral Cleaners
Watervliet, Albany County, NY

Map Date: 4/19/2021
Projection: NAD 1983 State Plane New York East FIPS 3101 Feet

NEW YORK STATE OF OPPORTUNITY Department of Environmental Conservation

G:\Projects\State&Local\NYSDEC - D009806\Work Assignments\1602504 Admiral-Cleaners-RI-FS\06 GIS\01 MXD\Replacement WellsIFig-1 Replacement Well Locs.mxd

# Attachment 1

## Table 8 Soil Boring, Monitoring Well, and Soil Vapor Point Construction Details

| | **Location ID** | MW-01/SV-01 | MW-02/SV-02 | MW-03/SV-03 | MW-04/SV-04 | SB-07/MW-05 | SB-14/MW-06 | SB-05/MW-07 | SB-01 | SB-02 | SB-03 | SB-04 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Location Type** | Monitoring Well, Soil Vapor Point | Monitoring Well, Soil Vapor Point, Soil Boring | Monitoring Well, Soil Vapor Point, Soil Boring | Monitoring Well, Soil Vapor Point, Soil Boring | Monitoring Well, Soil Boring | Monitoring Well, Soil Boring | Monitoring Well, Soil Boring | Soil Boring | Soil Boring | Soil Boring | Soil Boring |
| | **Install Date** | 5/2/2018 | 5/1/2018 | 5/1/2018 | 5/1/2018 | 5/2/2018 | 5/2/2018 | 5/1/2018 | 4/30/2018 | 5/2/2018 | 4/30/2018 | 5/1/2018 |
| **Soil Boring Details** | | | | | | | | | | | | |
| Location Description | | Outdoor; West side of building; with SVP-01 | Outdoor; Northwest portion of grass parcel; with SVP-02 | Outdoor; Northeast portion of grass parcel | Outdoor; Southeast portion of grass parcel. | Indoor; Northeast corner of building | Indoor; center of building | Outdoor; Center of grass parcel. | Indoor: in front of dry cleaning machine. | Indoor; Northwestern corner of building, behind dry cleaning machine. | Indoor; In front of dry cleaning machine. | Outdoor; North of building's back door. |
| Depth to Refusal | ft bgs | 8.75 | 10 | 13 | 10 | 11 | 11 | 13 | 9 | 8 | 12 | 12 |
| Primary Soil Types | | Primarily Clay, some fine sand, silt, and gravel. Shale bedrock | Clay, pulverized shale fragments | Sand and Clay, some gravel | Clay, sand, silt, trace gravel | Clay, some sand and silt, trace gravel | Clay, trace sand and gravel | Clay, some sand and gravel | Clay, trace pebbles | Clay, trace fine sand | Clay, trace pebbles and shale gravel | Clay, trace pebbles |
| Max PID reading | ppm | 42.8 | 0.5 | 1.6 | 0 | 124 | 369 | 60 | 314.5 | 170 | 666 | 6.5 |
| Depth Interval of Max PID reading | ft bgs | 3-4 | 5-10 | 10-13 | NA | 4-5 | 10-11 | 6-7 | 2-3 | 5-6 | 8-8.5 | 11-12 |
| Additional Location Notes | | -- | -- | -- | -- | MW-05 installed at SB-07 location. | Installed monitoring well at SB-14 instead of at planned MW-06 location. | MW-07 installed at SB-05 location. | -- | Drill rod encountered metal obstruction beneath concrete slab; moved location to NW corner of building. | -- | -- |
| **Monitoring Well Construction Details** | | | | | | | | | | | | |
| PCV Casing (1 inch diameter) | ft bgs | 0 - 2.68 | 0 - 4.41 | 0 - 5.59 | 0 - 4.55 | 0 - 6.85 | 0 - 6.56 | 0 - 1.32 | | | | |
| PCV Screen | ft bgs | 2.68 - 7.68 | 4.41 - 9.41 | 5.59 - 10.59 | 4.55 - 9.55 | 6.85 - 11.85 | 6.56 - 11.56 | 1.32 - 6.32 | | | | |
| Cement Grout Annular Backfill | ft bgs | 0 - 0.5 | 0 - 2 | 0 - 3.5 | 0 - 2.5 | 0 - 4.5 | 0 - 4.5 | 0 - 1 | | | | |
| Sand Pack | ft bgs | 0.5 - 7.68 | 2 - 9.41 | 3.5 - 10.59 | 2.5 - 9.55 | 4.5 - 11.85 | 4.5 - 11.56 | 1 - 6.32 | | | | |
| DTW at Well Development | ft bgs | 7.19 | 7.28 | 6.49 | 6.12 | 7.5 | 7.5 | 4.01 | | | | |
| DTB at Well Development | ft bgs | 7.64 | 9.35 | 10.54 | 9.53 | 11.8 | 7.91 | 6.3 | | | | |
| Headspace PID during Well Development | ppm | 0 | 0.8 | 0 | 0 | 48.5 | 57.1 | 0 | | | | |
| **Soil Vapor Point Construction Details** | | | | | | | | | | | | |
| Stainless Steel Tubing (0.25 inch diameter) | ft bgs | 0 - 7 | 0 - 8.5 | 0 - 7.5 | 0 - 9.5 | | | | | | | |
| Steel screen | ft bgs | 7 - 7.5 | 8.5 - 9 | 7.5 - 8 | 9.5 - 10 | | | | | | | |
| Surface Sand | ft bgs | 0 - 0.75 | 0 - 1 | NA | 0 - 0.5 | | | | | | | |
| Bentonite | ft bgs | 0.75 - 6 | 1 - 7.5 | 0 - 6 | 0.5 - 8.25 | | | | | | | |
| Glass Beads | ft bgs | 6 - 7.5 | 7.5 - 9 | 6 - 7.5 | 8.25 - 10 | | | | | | | |

NOTES:
ft bgs = Feet below ground surface
ppm = Parts per million
PVC = Polyvinyl chloride
DTW = Depth to water
DTW = Depth to bottom

**Table 8 Soil Boring, Monitoring Well, and Soil Vapor Point Construction Details**

| | **Location ID** | SB-06 | SB-08 | SB-09 | SB-10 | SB-11 | SB-11A | SB-12 | SB-13 | SB-15 | MW-06 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Location Type** | Soil Boring | Soil Boring | Soil Boring | Soil Boring | Soil Boring | Soil Boring | Soil Boring | Soil Boring | Soil Boring | Soil Boring |
| | **Install Date** | 5/2/2018 | 5/1/2018 | 5/1/2018 | 5/1/2018 | 5/1/2018 | 5/1/2018 | 5/1/2018 | 4/30/2018 | 5/2/2018 | 5/2/2018 |
| | | | | | | | | | | | |
| Location Description | | Indoor; Northern half of building, near former restrooms. | Outdoor; Northeast portion of grass parcel | Outdoor; In driveway behind 611 19th St. | Outdoor; Center of northern part of alleyway. | Outdoor; In center of sourthern party of alleyway. | Outdoor; In center of sourthern party of alleyway. | Outdoor; In front of building on sidewalk. | Indoor; Southwestern corner of building. | Indoor; Adjacent to garage door. | Indoor; Near center portion of eastern wall |
| Depth to Refusal | ft bgs | 9.5 | 9.5 | 10 | 9.5 | 6 | 3.66 | 9 | 12.5 | 7.5 | 7 |
| Primary Soil Types | | Clay, some sand, trace gravel | Clay, sand, gravel | Clay, little sand and gravel | Clay, sand, silt, trace gravel | Clay with gravel | Clay with gravel | Clay with gravel | Clay, some fine sand and pebbles | Clay with trace fine sand and gravel | Sand and clay |
| Max PID reading | ppm | 325 | 74.3 | 0.1 | 0.2 | 0.3 | -- | 1.2 | 0.4 | 0 | 16.5 |
| Depth Interval of Max PID reading | ft bgs | 8-9 | 7-8 | 0-1 | 5-6 | 1-4 | -- | 8-9 | 0-9 | NA | 7 |
| | | -- | -- | -- | -- | Encountered refusal at 6 ft bgs, attenmpted another soil boring ~ 10 ft north at SB-11A, encountered refusal at 3.66 ft bgs. Soil samples collected from both borings. | | -- | -- | -- | Encountered refusal above the water table; monitoring well not installed here, but soil boring location retained MW-06 name for consistency. |
| **Monitoring Well Construction Details** | | | | | | | | | | | |
| PCV Casing (1 inch diameter) | ft bgs | | | | | | | | | | |
| PCV Screen | ft bgs | | | | | | | | | | |
| Cement Grout Annular Backfill | ft bgs | | | | | | | | | | |
| Sand Pack | ft bgs | | | | | | | | | | |
| DTW at Well Development | ft bgs | | | | | | | | | | |
| DTB at Well Development | ft bgs | | | | | | | | | | |
| Headspace PID during Well Development | ppm | | | | | | | | | | |
| **Soil Vapor Point Construction Details** | | | | | | | | | | | |
| Stainless Steel Tubing (0.25 inch diameter) | ft bgs | | | | | | | | | | |
| Steel screen | ft bgs | | | | | | | | | | |
| Surface Sand | ft bgs | | | | | | | | | | |
| Bentonite | ft bgs | | | | | | | | | | |
| Glass Beads | ft bgs | | | | | | | | | | |

NOTES:
ft bgs = Feet Below Ground Surface
ppm = Parts Per Million
PVC = Polyvinyl Chloride
DTW = Depth to Water
DTW = Depth to Bottom

**Table 5 Phase II Soil Boring and Groundwater Monitoring Well Construction Details**

| | Location ID | MW-07R | MW-08 | MW-09 | MW-10 | MW-11 | MW-12 | MW-13 | MW-14 | MW-15 | MW-16 | MW-17 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Location Description | Soil Boring and Monitoring Well | Soil Boring and Monitoring Well | Soil Boring and Monitoring Well | Soil Boring and Monitoring Well | Soil Boring and Monitoring Well | Soil Boring and Monitoring Well | Soil Boring and Monitoring Well | Soil Boring and Monitoring Well | Soil Boring and Monitoring Well | Soil Boring and Monitoring Well | Soil Boring and Monitoring Well |
| | Install Date | 9/28/2018 | 9/28/2018 | 9/28/2018 | 9/28/2018 | 9/28/2018 | 9/28/2018 | 9/27/2018 | 9/27/2018 | 9/26/2018 | 9/27/2018 | 9/27/2018 |
| **Soil Boring Details** | | | | | | | | | | | | |
| Depth to Refusal | ft bgs | 15 | 10 | 9 | 15 | 13 | 7 | 5 | 6 | 11 | 5.5 | 7.5 |
| Surface Conditions | | Vegetated | Vegetated | Vegetated | Vegetated | Vegetated | Concrete | Concrete | Concrete | Concrete | Concrete | Concrete |
| Primary Soil Types (top to bottom of soil boring) | | Glacial till and fill material; dry, stiff clay; plastic, moist clay; fine pulverized shale | Glacial till; dry, stiff clay; shale gravel and brittle silty clay; fine pulverized shale | Dry, stiff clay; shale gravel and brittle silty clay; fine pulverized shale | Glacial till; dry, stiff clay; plastic, moist clay; dry stiff clay; fine pulverized shale | Glacial till and fill material; dry stiff clay; moist, stiff clay; fine pulverized shale | Slightly moist, stiff clay; fine pulverized shale | Glacial till and stiff, dry clay; fine pulverized shale | slightly moist, stiff clay; shale gravel; fine pulverized shale | Stiff, moist clay; shale gravel; fine pulverized shale | Glacial till and fill material; stiff, dry clay; shale gravel; pulverized shale | Glacial till and fill material; dry stiff clay; slightly moist, stiff clay; shale gravel; pulverized shale |
| Max PID reading | ppm | > 15000 | 365 | 12.6 | 0.6 | 0.6 | 12 | 14.5 | 0.1 | 1.4 | 0.1 | 0.0 |
| Depth Interval of Max PID reading | ft bgs | 14-15 | 5-6 | 1-2 | 5-6 | 9-10 | 6-7 | 4-5 | 3-4 | 10-11 | 4-6 | -- |
| Sample Interval | ft bgs | 8.5-9 and 14.5-15 | 5-5.5 | 5-5.5 | 12-12.5 | 10.5-11 | 0.2-1 | 4.5-5 | 5-6 | 10-11 | 5-5.5 | 5-5.7 |
| **Monitoring Well Construction Details** | | | | | | | | | | | | |
| Monitoring Well Diameter | in. | 2 | 1 | 2 | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 1 |
| PVC Casing | ft bgs | 0-5 | 0-5 | 0-5 | 0-5 | 0-8 | 0-2 | 0-2 | 0-3 | 0-5 | 0-2.5 | 0-3 |
| PVC Screen | ft bgs | 5-12 | 5-10 | 5-10 | 5-15 | 8-13 | 2-7 | 2-5 | 3-6 | 5-10 | 2.5-5.5 | 3-8 |
| Stick up or Flush Mount | -- | Flush | Flush | Flush | Flush | Flush | Flush | Flush | Flush | Flush | Flush | Flush |
| Grout Interval | ft bgs | 0-1 | -- | 0-1 | -- | -- | -- | N/A | 0-1 | 0-1 | 0-0.5 | 0-1 |
| Bentonite Seal Interval | ft bgs | 3-1 | -- | 1-3 | -- | -- | -- | 1.2-0 | 1-2 | 1-3 | 0.5-1.5 | 1-2 |
| Sand Pack Interval | ft bgs | 13-3 | Prepacked Screen | 3-10 | Prepacked Screen | Prepacked Screen | Prepacked Screen | 1.2-5 | 2-6 | 3-10 | 1.5-5.5 | 2-8 |
| DTW at Well Development | ft bgs | 6.97 | 6.2 | 5.61 | 7.06 | 8.15 | 5.06 | Dry | 4.89 | 4.89 | 6.19 | 3.14 |
| DTB at Well Development | ft bgs | 10.89 | 9.05 | 9.25 | 13.71 | 11.79 | 6.11 | 4.42 | 5.72 | 9.31 | 7.7 | 4.7 |

NOTES:
ft bgs = Feet below ground surface
ppm = Parts per million
PVC = Polyvinyl chloride
DTW = Depth to water
DTW = Depth to bottom