SCOBELL CHEMICAL-NYSDOT SITE

MONROE COUNTY

BRIGHTON, NEW YORK

INTERIM SITE MANAGEMENT PLAN

NYSDEC Site Number: 828076

Prepared for:

New York State Department of Environmental Conservation
Albany, New York

Prepared by:

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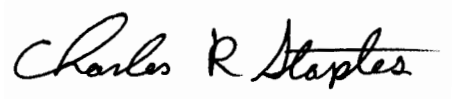
Revisions to Final Approved Site Management Plan:

Revision No.	Date Submitted	Summary of Revision	NYSDEC Approval Date
0	January 2024	Original	

JANUARY 2024

CERTIFICATION STATEMENT

I Charles Staples certify that I am currently a Qualified Environmental Professional as is defined in 6 NYCRR Part 375 and that this Interim Site Management Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).



_____ QEP

1/12/2024 DATE

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List of Acronyms

CAMP	Community Air Monitoring Plan
CFR	Code of Federal Regulation
COC	Certificate of Completion
CP	Commissioner Policy
DER	Division of Environmental Remediation
DUSR	Data Usability Summary Report
DNAPL	Dense Non-Aqueous Phase Liquid
EC	Engineering Control
ECL	Environmental Conservation Law
EWP	Excavation Work Plan
GWE&T	Groundwater Extraction and Treatment
HASP	Health and Safety Plan
IC	Institutional Control
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYCRR	New York Codes, Rules and Regulations
O&M	Operation and Maintenance
OM&M	Operation, Maintenance and Monitoring
OU	Operable Unit
P.E. or PE	Professional Engineer
PFAS	Per- and Polyfluoroalkyl Substances
PID	Photoionization Detector
PRR	Periodic Review Report
QAPP	Quality Assurance Project Plan
QEP	Qualified Environmental Professional
RAO	Remedial Action Objective
ROD	Record of Decision
RP	Remedial Party
RSO	Remedial System Optimization
SCG	Standards, Criteria and Guidelines

SCO	Soil Cleanup Objective
SMP	Site Management Plan
SPDES	State Pollutant Discharge Elimination System
SSDS	Sub-slab Depressurization System
SVI	Soil Vapor Intrusion
TCL	Target Compound List

ES EXECUTIVE SUMMARY

The following provides a brief summary of the controls implemented for the Site, as well as the inspections, monitoring, maintenance and reporting activities required by this Interim Site Management Plan (ISMP):

Site Identification:	Site No. 828076, Scobell Chemical-NYSDOT, 1 Rockwood Place, Brighton, NY

Institutional Controls per this ISMP:	1. The property may be used for industrial use;
	2.Institutional controls (ICs) for the Site are: • Require the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with DER-10 Part 375-1.8 (h)(3); • Allow the use and development of the controlled property for industrial uses as defined by Part 375-1.8(g), although land use is subject to local zoning laws, • Restrict the use of groundwater on-site as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or County DOH; • Requires any future buildings constructed at the site to have a sub-slab depressurization system, or a similar engineered system, to prevent the migration of vapors into the building from soil and groundwater; and • Require compliance with the Department approved ISMP. Off-site contamination will be addressed and included in the ISMP. Specifically, the ISMP would: • Identify contamination existing on an adjacent property; • State that groundwater should not be use as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or County DOH; and • State that an evaluation of potential exposure via soil vapor intrusion should be conducted if that land is developed.

Site Identification: Site No. 828076, Scobell Chemical-NYSDOT, 1 Rockwood Place, Brighton, NY

	3. All ECs must be inspected at a frequency and in a manner defined in the ISMP.	
Engineering Controls:	1. Cover system	
	2. Sub-slab depressurization systems (SSDS) to mitigate soil vapor in the neighboring community. The SSDSs are being monitored and maintained by the NYSDEC under a separate contract.	
Inspections:		Frequency
1. Cover inspection		Annually
Monitoring:		
1. Groundwater Monitoring Wells (See Appendix F for list of wells)		Annually
Maintenance:		
1. Cap Maintenance		As needed
2. Monitoring Well Maintenance		As needed
2. SSDS		As needed
Reporting:		
1. Periodic Review Report (Will include groundwater monitoring results)		Annually

Further descriptions of the above requirements are provided in detail in the latter sections of this Interim Site Management Plan.

1.0 INTRODUCTION

1.1 General

This Interim Site Management Plan (ISMP) is a required element of the remedial program for the Scobell Chemical-NYSDOT site located in Brighton, New York (hereinafter referred to as the "Site"). See Figure 1.1. The Site is currently in the New York State (NYS) Inactive Hazardous Waste Disposal Site Remedial Program, Site No. 828076, which is administered by New York State Department of Environmental Conservation (NYSDEC or Department).

The NYSDEC is currently evaluating remedial options for the site under the New York State Superfund Program. A figure showing the site location and boundaries is provided in Figure 1.2. The boundaries of the site as shown on Figure 1.2 are approximate, since the NYSDOT has not created deed for this property separate from the highway system.

Although the site has been partially remediated, some contamination remains at this site, which is hereafter referred to as "remaining contamination". Institutional and Engineering Controls (ICs and ECs) have been incorporated into the site remedy to control exposure to remaining contamination to ensure protection of public health and the environment. The NYSDEC requires compliance with this ISMP and all ECs and ICs placed on the site.

This ISMP was prepared to manage remaining contamination at the site and off-site until the NYSDEC determines it is not necessary. This plan has been approved by the NYSDEC, and compliance with this plan is required by the NYSDEC. This ISMP may only be revised with the approval of the NYSDEC.

It is important to note that:

- This ISMP details the site-specific implementation procedures that are required by the Record of Decision (ROD) and this ISMP.;
- Failure to comply with this ISMP is also a violation of Environmental Conservation Law, 6 NYCRR Part 375 (Site #828076), and thereby subject to applicable penalties.

All reports associated with the site can be viewed by contacting the NYSDEC or its successor agency managing environmental issues in New York State. A list of contacts for persons involved with the site is provided in Appendix A of this ISMP.

This ISMP was prepared by MACTEC Engineering and Geology, P.C. (MACTEC), on behalf of the NYSDEC, in accordance with the requirements of the NYSDEC's DER-10

("Technical Guidance for Site Investigation and Remediation"), dated May 2010, and the guidelines provided by the NYSDEC. This ISMP addresses the means for implementing the ICs and/or ECs that are required for the site.

1.2 Revisions

Revisions to this plan will be proposed in writing to the NYSDEC's project manager. The NYSDEC can also make changes to the ISMP or request revisions from the remedial party. Revisions will be necessary upon, but not limited to, the following occurring: a change in media monitoring requirements, upgrades to or shutdown of a remedial system, post-remedial removal of contaminated sediment or soil, or other significant change to the site conditions. The NYSDEC project manager will provide a notice of any approved changes to the ISMP, and append these notices to the ISMP that is retained in its files.

1.3 Notifications

Notifications will be submitted by the property owner to the NYSDEC, as needed, in accordance with NYSDEC's DER – 10 for the following reasons:

1. 60-day advance notice of any proposed changes in site use that are required under the terms of this ISMP, 6 NYCRR Part 375 and/or Environmental Conservation Law.
2. 7-day advance notice of any field activity associated with the remedial program.
3. 15-day advance notice of any proposed ground-intrusive activity pursuant to the Excavation Work Plan. If the ground-intrusive activity qualifies as a change of use as defined in 6 NYCRR Part 375, the above mentioned 60-day advance notice is also required.
4. Notice within 48 hours of any damage or defect to the foundation, structures or EC that reduces or has the potential to reduce the effectiveness of an EC, and likewise, any action to be taken to mitigate the damage or defect.
5. Notice within 48 hours of any non-routine maintenance activities.
6. Verbal notice by noon of the following day of any emergency, such as a fire; flood; or earthquake that reduces or has the potential to reduce the effectiveness of ECs in place at the site, with written confirmation within 7 days that includes a summary of actions taken, or to be taken, and the potential impact to the environment and the public.
7. Follow-up status reports on actions taken to respond to any emergency event requiring

ongoing responsive action submitted to the NYSDEC within 45 days describing and documenting actions taken to restore the effectiveness of the ECs.

Any change in the ownership of the site or the responsibility for implementing this ISMP will include the following notifications:

8. At least 60 days prior to the change, the NYSDEC will be notified in writing of the proposed change. This will include a certification that the prospective purchaser/Remedial Party has been provided with a copy of all approved work plans and reports, including this ISMP.
9. Within 15 days after the transfer of all or part of the site, the new owner's name, contact representative, and contact information will be confirmed in writing to the NYSDEC.

Table 1.1 below includes contact information for the above notifications. The information on this table will be updated as necessary to provide accurate contact information. A full listing of site-related contact information is provided in Appendix A.

Table 1.1: Notifications*

Name	**Contact Information**	**Required Notification****
Charlie Gregory, NYSDEC Project Manager	(518) 402-8246; Charles.Gregory@dec.ny.gov	All Notifications
Jeffrey Dyber, NYSDEC Remedial Bureau E, Section D Chief	(518) 402-9621; jeffrey.dyber@dec.ny.gov	All Notifications
Kelly Lewandowski, NYSDEC Site Control	518-402-9569; Kelly.Lewandowski@dec.ny.gov,	Notifications 1 and 8
Sally Rushford, NYSDOH Project Manager	518-402-5465; sally.rushford@health.ny.gov	Notifications 4, 6, and 7

* Note: Notifications are subject to change and will be updated as necessary.

** Note: Numbers in this column reference the numbered bullets in the notification list in this section.

2.0 SUMMARY OF PREVIOUS INVESTIGATIONS AND REMEDIAL ACTIONS

2.1 Site Location and Description

The site is located in the town of Brighton, Monroe County, New York and is currently identified as a portion of the NYSDOT property along New York State (NYS) Route 490 and 590 (Figure 1.1). Because it is part of the NYSDOT highway property, it does not currently have its own Section, Block, and Lot number on the Monroe County Tax Map. The site is an approximately 2-acre area and is bounded by a railway line to the north, NYS 590/490 interchange to the south and east, and commercial property to the west (see Figure 1.2). The boundaries of the site are more fully described in the Site drawing located in Appendix B. The owner(s) of the site parcel(s) at the time of issuance of this ISMP is:

New York State Department of Transportation

2.2 Physical Setting

2.2.1 Land Use

The Site consists of the following: an empty lot. The Site is zoned industrial and is currently vacant, contains no structures, is covered with grass and shrub growth, and is surrounded by a chain link fence.

The properties adjoining the Site and in the neighborhood surrounding the Site primarily include commercial properties. The properties immediately south and east of the Site consist of highways; the properties immediately north of the Site include a railway line and vacant land; and the properties to the west of the Site include commercial properties. Residential properties are located approximately 600 feet north of the Site.

2.2.2 Geology

The Site is located within the Erie-Ontario Lowlands Physiographic Province of NYS within which low plains with little relief characterize the province. The glaciated topography is an expression of nearly flat-lying sedimentary rock formations covered by glaciolacustrine deposits and till. Kame moraine deposits are found in the Pinnacle Hill located southwest of the Site. The bedrock structure is homoclinal with a gentle southerly dip into the Appalachian Basin. The bedrock is gently deformed with some scattered, small folds and faults (NYSDEC, 2002b).

The overburden at the Site consists of sandy fill (approximately 4 feet thick) and sandy/silty till to bedrock (overburden ranges from 5.5 to 15.5 feet thick). The site itself is covered with a 0.75 to 1 foot thick clay cap.

Bedrock in the area of the Site consists of Lockport Dolomite, made up of 3 members; Clinton Formation (six to eight feet thick in the vicinity of the Site), Penfield formation (49 to 58 feet thick in the vicinity of the Site), and the DeCew Formation (reportedly 12 feet thick). These are underlain by Rochester Shale (Gates Dolomite and Rochester Shale members are reportedly 150 feet thick).

The bedrock surface in the vicinity of the Site slopes down slightly to the north and northeast, with the Site being a bedrock high. Although the Bedrock bedding plane in Rochester generally dips one to two degrees to the south, Site data indicates that in the immediate vicinity of the Site, the bedding planes are fairly flat lying, with a possible slight dip to the north. Although Lockport Dolomite is fairly competent, the primary water bearing fractures likely exist along distinct bedding planes. The bedrock is also noted to have high angle vertical fractures/joints that trend primarily north to northeast. Bedrock tends to be more competent (i.e. less fracturing) with depth.

Well logs are included as Appendix C.

An interpreted geologic cross-section of the Site and area to the north is shown on Figure 2.1; the cross-section location (A to A') is shown on Figure 2.2. Site specific boring logs are provided in Appendix C.

2.2.3 Hydrogeology

Vertical hydraulic gradients at the Site are downward, from overburden to bedrock.

Overburden. Overburden groundwater at the Site is present from 2 to 9 feet below ground surface (bgs). This water is not present at all times of the year, and is interpreted as being primarily perched, either on intermediate surficial deposits, or on the till above bedrock. Most of the shallow overburden groundwater on-site flows to the south, towards the I-590 ramp, whereas shallow overburden groundwater off-site, to the north of the railroad tracks, flows to the northeast. Most of the wells installed in the overburden were observed to be dry during the December 2014 sampling events.

Bedrock. Shallow bedrock groundwater is present at approximately 17 feet bgs at the Site, and approximately 10 to 20 feet bgs across the study area from the Site to Blossom Avenue to the north.

Groundwater flow from the Site is interpreted to be predominantly to the north and northeast and primarily controlled by bedrock fracture patterns. Some shallow bedrock groundwater from the Site is interpreted to discharge to Grass Creek northeast of the Site.

Although hydraulic heads and interpreted groundwater contours indicate flow from the Site primarily to the east and northeast, contaminant concentrations in bedrock indicate groundwater flow is primarily in the northerly direction, with perhaps an easterly component at the Site. Although the bedding planes and bedding fractures in the Lockport Dolomite are relatively flat lying, previous lineament analysis conducted in the vicinity of the site indicated stress fractures striking in the north-northeast direction (Resolution Resources, Inc., 1999). Based on groundwater concentrations, and lineament analysis, it is interpreted the groundwater exhibits anisotropic flow, with flow direction controlled primarily by the stress fractures and flowing in a northerly direction, with some leaking to the east along bedding plane fractures. This resultant flow pattern would not be perpendicular to interpreted groundwater contours but include flows along primary and secondary fracture patterns. A conceptualized interpretation of this flow is shown on Figure 2.3.

Hydraulic conductivity (K) in shallow bedrock at and downgradient of the Site was estimated to range from 3.86×10^{-5} centimeters per second (cm/sec) to 9.74×10^{-4} cm/sec (NYSDEC, 2002b). Based on these K values, and an estimated bedrock porosity of 0.001, estimated bedrock seepage velocity ranges from one to ten feet per day. MACTEC calculated higher K values than those indicated previously (MACTEC, 2013a). Using the MACTEC 2013 K values, new seepage velocities were calculated for the area where bedrock groundwater is anticipated to be most contaminated. Estimated seepage velocities ranged from nine to 60 feet per day. This seepage velocity could be higher or lower based on actual bedrock conditions.

Groundwater monitoring well construction logs are provided in Appendix C.

2.3 Investigation and Remedial History

The following narrative provides a remedial history timeline and a brief summary of the available project records to document key investigative and remedial milestones for the Site. Full titles for each of the reports referenced below are provided in Section 8.0 - References.

The Site is the location of a former chemical repackaging company that operated at this location from the 1920s until 1986. During this time, assorted chemicals were purchased by the company in bulk and repackaged into smaller containers for resale. The Site had one main building, two smaller structures and four above ground storage tanks. The overall amount and type of materials handled is unclear; however, subsurface soil and groundwater contamination has resulted

from past operations.

In 1988 as part of a NYSDOT highway reconstruction project all of the site buildings were removed. During this project, the NYSDOT discovered contamination at the Scobell site including abandoned drums and contaminated structures, as well as soil and bedrock contamination. Drums, containing chlorinated VOCs, pesticides/herbicides, and toluene, were found in one of the warehouses. In addition, deteriorated containers, discolored soils, and stained asphalt were found across the Site. The NYSDOT excavated both soil and bedrock for off-site disposal from half of the property for the ability to finish the highway interchange reconstruction. As a result of the identified contamination, approximately 4640 cubic yards of soil was disposed off-Site at the "SCA Landfill in Niagara Falls, NY" (NYSDEC, 1988). In addition, approximately 1750 cubic yards of bedrock was excavated and identified as containing detectable concentrations of chlorinated compounds; the ultimate disposal location of this bedrock was not identified in the reviewed reports (NYSDEC, 1988). The remainder of the Site was placed on the NYS Registry of Inactive Hazardous Waste Disposal Sites. For this portion of the Site, the property was leveled with clean fill, a 9-inch to 1-foot clay cap was placed over the fill, followed by topsoil and seed, and the property was enclosed in a chain-link fence.

Several investigations have been conducted at the Site from the 1988 investigation by the NYSDOT to the present.

NYSDOT reports include (but are not limited to):

- Environmental Study Scobell Chemical Building (Erdman, Anthony, Associates, Consulting Engineers and Planners, 1988)
- 1988 Daily Interim Remedial Action (IRM) reports (NYSDOT, 1988)
- Communications on underdrain leachate collection system (NYSDEC, 1995)

NYSDEC reports include (but are not limited to):

- 1988 Weekly IRM reports (NYSDEC, 1988)
- 1999 fracture trace analysis (Resolution Resources, Inc., 1999)
- 1999 Remedial Investigation Report (revised report listed below)
- 1999 Feasibility Study Report, On-Site Operable Unit (1) (NYSDEC, 1999a)
- 1999 Record of Decision (NYSDEC, 1999b)

- 2002 Remedial Investigation Report (revised for Operable Unit 2) (NYSDEC, 2002a)
- 2002 Feasibility Study Report, Operable Unit #2, Off-Site (NYSDEC, 2002b)
- 2002 Record of Decision, Operable Unit #2 (NYSDEC, 2002c)
- 2011 Groundwater Sampling Results (TestAmerica, 2011).
- 2013 Data Gap Analysis Report (MACTEC, 2013a)
- 2013 Focused Feasibility Study Report (MACTEC, 2013b)
- 2013 Record of Decision Amendment (NYSDEC, 2013).
- 2017 Monitoring Well Sampling and Groundwater Installation report (MACTEC, 2017)
- 2020 Pre-Design Investigation Report (MACTEC, 2020a)
- 2022 October Long Term Monitoring Groundwater Sampling Report (MACTEC, 2023a)
- 2023 Pre-Design Investigation Report (MACTEC, 2023b).

Findings indicate the primary contaminants of concern (COCs) include TCE, tetrachloroethene (PCE), 1,1-dicloroethene (DCE), cis-1,2-DCE, vinyl chloride, 1,1,1-trichloroethane (1,1,1-TCA), benzene, toluene, and xylene.

Soil contamination was identified at the Site in exceedance of the Soil Cleanup Objectives (SCOs) for the protection of groundwater, however, only toluene and TCE were detected at concentrations exceeding the SCOs for industrial use. Maximum concentrations in soil and the only detections above industrial use were at IW-8 at a depth of 3 feet bgs with toluene at 24,000 mg/kg and TCE at 480 mg/kg.

The contaminant identified at the highest concentration at and downgradient of the Site in groundwater is TCE. The TCE has migrated to bedrock fractures below and downgradient of the Site, where it is present as a dense non aqueous phase liquid (DNAPL). This DNAPL appears to be present primarily in fractures located between approximately 425 and 430 feet above mean sea level (msl) (22 to 28 feet below ground surface) at the Site and was observed more than 300 feet downgradient of the Site (observed in MW-4D), where it is potentially located between 420 and 425 feet above msl (18 to 23 feet bgs at MW-4D). Droplets of DNAPL were observed in purge water from MW-3D and MW-4D in 1998 and in 2002 (the DNAPL was analyzed in 1998 and contained concentrations of TCE as high as 790,000 milligrams per liter [mg/l] and PCE as high as 6,900 mg/l) (NYSDEC, 2002b). Droplets of DNAPL were also observed in purge water in 2012

from MW-3D, MW-4D, and MW-11D (MACTEC, 2013a). This DNAPL is resulting in dissolved phase groundwater contamination (both overburden and bedrock) surrounding and downgradient of the identified DNAPL. Concentrations of site contaminants in groundwater were determined to decrease with distance downgradient from the Site, but were still present in groundwater at concentrations above the groundwater standards in monitoring wells 1,300 feet northeast (downgradient) of the Site (MW-7D).

The contamination in groundwater was determined to be volatilizing to soil vapor, resulting in detectable levels of soil vapor contamination at properties adjacent to the Site, as well as 500 feet north of the Site.

Previous investigations also indicated that groundwater contamination was discharging to surface water, resulting in the presence of TCE in Grass Creek, located north of the Site, at concentrations exceeding the surface water standard (NYSDEC, 2002b).

Feasibility Studies were completed for on-site Operable Unit (OU) 1 in 1999, and the off-site OU2 in 2002. The resulting RODs for OU1 (NYSDEC, 1999) and OU2 (NYSDEC, 2002a) included:

1) OU1:
    a. Soil Vapor Extraction for overburden soils;
    b. Groundwater Extraction for overburden and bedrock groundwater;
    c. Excavation for limited shallow soil contamination on the western border of the Site;
    d. Installation of a low-flow DNAPL recovery system;
    e. Deed restriction; and
    f. Implementation of a long-term monitoring program.
2) OU2:
    a. In-situ thermal treatment coupled with vapor extraction for the bedrock north of the Site (north of the railroad tracks);
    b. In-situ remediation technology (e.g., surfactant flushing or chemical oxidation) to treat contamination below the railroad tracks;
    c. Evaluation of additional remedial measures or property use restrictions for residual contamination;
    d. Downgradient groundwater extraction and treatment and/or in-situ treatment system post thermal treatment; and,
    e. Long-term monitoring.

The identified remedial alternatives selected for OU1 and OU2 were not implemented due to complications associated with property ownership at the time, lack of complete site characterization data, uncertainty related to the selected remedial actions, and the overall cost of implementation. As a result, the NYSDEC retained MACTEC to conduct a data gap investigation to better understand the extent of the source area, prepare a data gap report, and conduct a Focused Feasibility Study (FFS) to identify potential remedial alternatives that would be effective at remediating source area contamination given new available technology and considering the recent data that had been collected.

The FFS was completed by MACTEC in 2013 (MACTEC, 2013b), and as a result a ROD amendment was issued. The following describes the elements of the ROD Amendment and selected remedy relative to the original ROD documents.

- The OU1 low-flow DNAPL recovery system, OU2 in-situ thermal treatment (steam) and associated groundwater and vapor recovery and treatment, and OU2 in-situ remediation technology (e.g., surfactant flushing or injecting chemical oxidants) under and near the railroad tracks were replaced with in-situ chemical reduction of contaminants (pneumatic injections of zero valent iron [ZVI] used for costing purposes) throughout the area where DNAPL may be present. Under this component, an initial ZVI injection will occur along with a contingency for a targeted ZVI injection based on long-term monitoring.
- The OU1 soil concentrations of metals and pesticides did not exceed SCOs for industrial use; therefore, soil excavation was deemed not necessary. This component was replaced with an institutional control (IC) requirement (environmental easement) at the site. This IC will be used to: prevent residential and commercial use, maintain the existing clay cover, and require a Site Management Plan (SMP), including a soil excavation plan.
- The OU1 subsurface soil VOC concentrations detected at the time did not exceed SCOs for industrial use; therefore, soil vapor extraction was no longer deemed necessary. This component was replaced with requiring institutional controls at the site: environmental easement and associated SMP that requires potential future buildings constructed on the site be designed and constructed to address potential for soil vapor intrusion and demonstrate effectiveness of mitigation controls.

OU1 and OU2 overburden groundwater remedy components were replaced with long term monitoring, including installation of additional monitoring wells to better define the extent of contaminated overburden groundwater, to facilitate further evaluation of soil vapor intrusion off-

site, and monitor the effectiveness of the DNAPL treatment alternative and monitor downgradient natural attenuation.

Based on the amended ROD, a pilot test was conducted between 2015 and 2018, with 67,000 pounds of micro scale ZVI injections occurring in the most contaminated source area at the Site (northeast corner of the Site). Results of the pilot test indicated that although the ZVI resulted in the increased reduction of contaminant mass, the ZVI was pacified faster than anticipated (i.e., within six months) and was determined to not be a successful remedy for the DNAPL present at the site. ZVI was therefore not recommended for full scale treatment of the DNAPL source area (MACTEC, 2020a). The ZVI also reduced the hydraulic conductivity in the bedrock fractures in the area of injection, limiting the amount of water flowing through the bedrock.

Since ZVI is not recommended for full scale treatment, other options were being considered at the time of drafting this ISMP, including bioremediation and bioremediation with surfactant flushing.

2.4 Remedial Action Objectives

The Remedial Action Objectives (RAOs) for the Site as listed in the Record of Decision dated February 2013 are as follows:

Groundwater

RAOs for Public Health Protection

- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards.
- Prevent contact with, or inhalation of, volatiles from contaminated groundwater.

RAOs for Environmental Protection

- Restore ground water aquifer to pre-disposal/pre-release conditions, to the extent practicable.
- Prevent the discharge of contaminants to surface water.
- Remove the source of ground or surface water contamination.

Soil

RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.

- Prevent inhalation of or exposure from contaminants volatilizing from contaminants in soil.

RAOs for Environmental Protection

- Prevent migration of contaminants that would result in groundwater or surface water contamination.
- Prevent impacts to biota from ingestion/direct contact with soil causing toxicity or impacts from bioaccumulation through the terrestrial food chain.

Surface Water

RAOs for Public Health Protection

- Prevent ingestion of water impacted by contaminants.
- Prevent contact or inhalation of contaminants from impacted water bodies.
- Prevent surface water contamination which may result in fish advisories.

RAOs for Environmental Protection

- Restore surface water to ambient water quality criteria for the contaminant of concern.
- Prevent impacts to biota from ingestion/direct contact with surface water causing toxicity and impacts from bioaccumulation through the marine or aquatic food chain.

Sediment

RAOs for Public Health Protection

- Prevent direct contact with contaminated sediments.
- Prevent surface water contamination which may result in fish advisories.

RAOs for Environmental Protection

- Prevent releases of contaminant(s) from sediments that would result in surface water levels in excess of (ambient water quality criteria).
- Prevent impacts to biota from ingestion/direct contact with sediments causing toxicity or impacts from bioaccumulation through the marine or aquatic food chain.
- Restore sediments to pre-release/background conditions to the extent feasible.

Soil Vapor

RAOs for Public Health Protection

- Mitigate impacts to public health resulting from existing, or the potential for, soil vapor intrusion into buildings at a site.

2.5 Remaining Contamination

2.5.1 Soil

The Site is currently vacant and covered with a clay cap; there are currently no underground utilities present. Soil contamination remains on the Site below the clay cap. Concentrations of VOCs and metals exceed the unrestricted use SCOs. In addition, concentrations of select VOCs exceeded commercial use SCOs at several soil sample locations.

Two VOCs were detected in the soil samples collected in 2014 and 2015 exceeded the industrial use SCOs; toluene (max detection of 24,000 milligrams per kilogram (mg/kg) at 3 ft bgs at IW-008 compared to the SCO for industrial use of 1,000 mg/kg) and TCE (max detection of 480 mg/kg at 3 ft bgs at IW-008 compared to the SCO for industrial use of 400 mg/kg). This is similar to the results presented in the 1998 Remedial Investigation, where toluene was detected in five soil samples (four locations in 1988: locations 88-61 at 7 ft bgs, 88-89 at 1.5 to 3 ft bgs, 88-97 at 0 to 1.5 ft bgs, and 88-98 at 3 to 6 ft bgs; and one location in 1998: GP11 at 6 to 8 ft bgs) at concentrations exceeding their current SCOs for commercial use of 500 mg/kg. TCE was also detected in soil samples in 1988 and 1998, but at concentrations below the current SCO for commercial use of 200 mg/kg.

The identified remaining contamination appears to be in isolated locations; however, due to the general historic industrial use of the entire Site and the previous cleanup actions occurring in the 1980's, historic source areas were not clearly identified.

Soil and bedrock analytical results from the various investigations are included in Appendix D. Locations of soil samples from previous investigations are shown in Appendix D Figure D.1. Because the site was capped after the building was removed, soil sample results are assumed to represent existing conditions at the site after completion of remedial action.

2.5.2 Groundwater

Groundwater below and north of the Site is contaminated with VOCs, primarily chlorinated compounds, although several petroleum related VOCs are also present at concentrations above

Class GA Standards. Although there is periodically perched groundwater in the overburden at the Site, groundwater is primarily present in bedrock fractures. This contamination appears to be primarily from the top of the water table (approximately 17 feet bgs at the Site) to 35 feet bgs, and decreases with depth beyond 35 ft bgs.

In addition to dissolved phase contamination, TCE as a DNAPL has been identified within bedrock wells on the site in MW-3D, as well as off Site to the north at MW-4D. A source area of groundwater contamination has not been identified in the overburden.

Table 2.1 presents groundwater VOC analytical results from October 2022 compared to groundwater standards. Interpreted iso-concentration lines for the sum of the chlorinated compounds TCE, cis-1,2-DCE, and vinyl chloride for October 2022 data are presented on Figure 2.4. Based on the age of the plume and historic sampling results, the plume may have reached a steady state.

2.5.3 Surface Water and Sediment

There are no surface water bodies present at the Site; however, shallow bedrock groundwater discharges to grass creek, located approximately 300 ft northeast of the Site.

Chlorinated compounds were detected in both surface water and sediment samples collected from Grass Creek in December 2014. Sample locations are presented on Figure 2.2 Trans-1,2-DCE and TCE were the only detected VOCs in the sediment samples with listed guidance values; both compounds were only detected in one of the samples and at concentrations that fell into Class A sediments, which are considered low risk. TCE was the only compound with a listed guidance value detected in the surface water samples; detected concentrations were below the guidance value of 40 µg/L (NYS, 2008). Surface water and sediment sample results are presented in Tables 2.2 and 2.3, respectively.

2.5.4 Soil Vapor

Although VOCs are present in Site soil that have the potential to result in vapor intrusion, there are currently no structures on the property.

VOC contamination in groundwater has resulted in the presence of soil vapor contamination at the commercial property west of the Site, and at residential properties hydraulically downgradient from the site to the north. The identified contaminants include TCE and its breakdown products. This contamination was identified through soil vapor intrusion (SVI) sampling that was conducted at nearby properties from 2012 to 2022. A total of 12 properties and

23 structures were sampled. As a result of the SVI sampling, sub-slab depressurization systems (SSDS) were installed at one commercial building (two sections) and seven apartment buildings (Locations shown on Figure 2.5). The remaining buildings sampled were determined by the NYSDOH to require no further action.

The highest concentrations detected were in the adjacent commercial building, with concentrations of TCE as high as 800 micrograms per cubic meter (µg/M3) in the sub-slab soil vapor.

Because the SSDSs were installed on off-site properties and are monitored by the individual property owners (or by the NYSDEC call out contractor), tables showing concentrations are not included in this ISMP.

Although soil vapor sampling has not been conducted on the Site property, due to the identified soil and groundwater contamination at the Site, any future buildings constructed at the Site would require a SSDS.

3.0 INSTITUTIONAL AND ENGINEERING CONTROL PLAN

3.1 General

Since remaining contamination exists at the site, Institutional Controls (ICs) and Engineering Controls (ECs) are required to protect human health and the environment. This IC/EC Plan describes the procedures for the implementation and management of all IC/ECs at the site. The IC/EC Plan is one component of the ISMP and is subject to revision by the NYSDEC project manager.

This plan provides:

- A description of all IC/ECs on the site;
- The basic implementation and intended role of each IC/EC;
- A description of the key components of the ICs;
- A description of the controls to be evaluated during each required inspection and periodic review;
- A description of plans and procedures to be followed for implementation of IC/ECs, such as the implementation of the Excavation Work Plan (EWP) (as provided in Appendix E) for the proper handling of remaining contamination that may be disturbed during maintenance or redevelopment work on the site; and
- Any other provisions necessary to identify or establish methods for implementing the IC/ECs required by the site remedy, as determined by the NYSDEC project manager.

3.2 Institutional Controls

ICs are required by the ROD to: (1) implement, maintain and monitor Engineering Control systems; (2) prevent future exposure to remaining contamination; and, (3) limit the use and development of the site to industrial uses only. Adherence to these ICs on the site is required by the under this ISMP. ICs identified in this ISMP may not be discontinued without approval of the NYSDEC. The IC boundaries are represented by the Site boundaries shown on Figure 1.2. These ICs are:

- The property may be used for: industrial use;
- All ECs must be operated and maintained as specified in this ISMP;
- All ECs must be inspected at a frequency and in a manner defined in the ISMP;

- The use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the NYSDOH or the Monroe County Department of Health to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval to do so from the Department;
- Groundwater and other environmental or public health monitoring must be performed as defined in this ISMP;
- Data and information pertinent to site management must be reported at the frequency and in a manner as defined in this ISMP;
- All future activities that will disturb remaining contaminated material must be conducted in accordance with this ISMP;
- Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in this ISMP;
- Operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical component of the remedy shall be performed as defined in this ISMP;
- Access to the site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by this ISMP;
- The potential for vapor intrusion must be evaluated for any buildings developed in the area within the IC boundaries (considered the Site boundaries) noted on Figure 1.2, and any potential impacts that are identified must be monitored or mitigated;
- Vegetable gardens and farming on the site are prohibited; and
- An evaluation shall be performed to determine the need for further investigation and remediation should large scale redevelopment occur, if any of the existing structures are demolished, or if the subsurface is otherwise made accessible.

3.3 Engineering Controls

3.3.1 Cover

Exposure to remaining contamination at the site is prevented by a cover system placed over the site. This cover system is comprised of a minimum of 9 inches of clean clay and three inches of top soil. Figure 1.2 presents the location of the cover system (located over the entire Site). The

Excavation Work Plan (EWP) provided in Appendix E outlines the procedures required to be implemented in the event the cover system is breached, penetrated or temporarily removed. Procedures for the inspection of this cover are provided in the Monitoring and Sampling Plan included in Section 4.0 of this ISMP. Any work conducted pursuant to the EWP must also be conducted in accordance with the procedures defined in a Health and Safety Plan (HASP) and associated Community Air Monitoring Plan (CAMP) prepared for the site. Any disturbance of the site's cover system must be overseen by a qualified environmental professional as defined in 6 NYCRR Part 375, a Professional Engineer (PE) who is licensed and registered in New York State, or a qualified person who directly reports to a PE who is licensed and registered in New York State.

3.3.2 Sub-slab Depressurization Systems

Exposure to contaminated indoor air resulting from vapor intrusion of site related contaminants at eight off-site buildings has been mitigated with the installation of SSDSs. These systems were installed between 2012 and 2022 by the NYSDEC. The systems consist of multiple suction points in the basement slab or slab on grade and are attached to radon mitigation fans on the exterior of the buildings. The fans run continuously and do not require routine maintenance. These systems are monitored by the NYSDEC or the individual property owners and therefore do not require operation, maintenance, or reporting under this ISMP. Because these systems are located within private residential and commercial buildings and monitored by the owners, there are no inspection forms or formal documentation requirements. If the systems are determined to be non-operational, the property owners are responsible for calling the NYSDEC for maintenance (contact: Mohamed Sahraoui of the NYSDEC at tel. 518-402-9802).

In addition to the off-site SSDS, any future on-site buildings will also require the installation of an active SSDS, unless agreed upon otherwise by the NYSDEC and NYSDOH based on sampling results. A SSDS workplan presenting system details and specifications must be submitted for review and approval by the NYSDEC and NYSDOH. A subsequent construction completion report or equivalent document must be submitted for review and approval by the NYSDEC and NYSDOH following installation of the system and prior to occupancy of any future on-site buildings. If a SSDS is installed at the Site, additional information on operation, maintenance, and reporting requirements will be added to the ISMP.

Procedures for operating and maintaining the SSDS are documented in the Operation and Maintenance Plan (Section 5.0 of this SMP).

3.3.3 Criteria for Completion of Remediation/Termination of Remedial Systems

Generally, remedial processes are considered completed when monitoring indicates that the remedy has achieved the remedial action objectives identified by the decision document. The framework for determining when remedial processes are complete is provided in Section 6.4 of NYSDEC DER-10. Unless waived by the NYSDEC, confirmation samples of applicable environmental media are required before terminating any remedial actions at the site. Confirmation samples require Category B deliverables and a Data Usability Summary Report (DUSR).

As discussed below, the NYSDEC may approve termination of a groundwater monitoring program. When a remedial party receives this approval, the remedial party will decommission all site-related monitoring, injection and recovery wells as per the NYSDEC CP-43 policy.

The remedial party will also conduct any needed site restoration activities, such as clay cover repair. In addition, the remedial party will conduct any necessary restoration of vegetation coverage and trees, and will comply with NYSDEC and United States Army Corps of Engineers regulations and guidance. Also, the remedial party will ensure that no ongoing erosion is occurring on the site.

3.3.3.1 - Cover (or Cap)

A composite cover system is present and is a permanent control. The quality and integrity of this system will be inspected at defined, regular intervals in accordance with this ISMP in perpetuity.

3.3.3.2 - Sub-Slab Depressurization System

The active SSDSs at nearby properties will not be discontinued by the remedial party unless prior written approval is granted by the NYSDEC and the NYSDOH project managers. If monitoring data indicates that the SSDSs may no longer be required, a proposal to discontinue the SSDSs will be submitted to the NYSDEC and NYSDOH project managers.

3.3.3.3 - Monitoring Wells associated with Monitored Natural Attenuation

Groundwater monitoring activities to assess natural attenuation will continue, as determined by the NYSDEC project manager in consultation with NYSDOH project manager, until residual groundwater concentrations are found to be consistently below ambient water quality standards, the site SCGs, or have become asymptotic at an acceptable level over an extended period. In the event that monitoring data indicates that monitoring for natural attenuation may no longer be

required, a proposal to discontinue the monitoring will be submitted by the remedial party. Monitoring will continue until permission to discontinue is granted in writing by the NYSDEC project manager. If groundwater contaminant levels become asymptotic at a level that is not acceptable to the NYSDEC, additional source removal, treatment and/or control measures will be evaluated.

4.0 MONITORING AND SAMPLING PLAN

4.1 General

This Monitoring and Sampling Plan describes the measures for evaluating the overall performance and effectiveness of the remedy. This Monitoring and Sampling Plan may only be revised with the approval of the NYSDEC project manager. Details regarding the sampling procedures, data quality usability objectives, analytical methods, etc. for all samples collected as part of site management for the site are included in the Quality Assurance Project Plan and Program Field Activities Plan (MACTEC, 2020b) and Field Sampling Plan included in Appendix F. The Health and Safety Plan to be followed for the groundwater sampling is included in Appendix G.

This Monitoring and Sampling Plan describes the methods to be used for:

- Sampling and analysis of all appropriate media (e.g., groundwater, indoor air, soil vapor, soils);
- Assessing compliance with applicable NYSDEC standards, criteria and guidance (SCGs), particularly groundwater standards and Part 375 SCOs for soil; and
- Evaluating site information periodically to confirm that the remedy continues to be effective in protecting public health and the environment;

To adequately address these issues, this Monitoring and Sampling Plan provides information on:

- Sampling locations, protocol and frequency;
- Information on all designed monitoring systems;
- Analytical sampling program requirements;
- Inspection and maintenance requirements for monitoring wells;
- Monitoring well decommissioning procedures; and
- Annual inspection and periodic certification.

Reporting requirements are provided in Section 7.0 of this ISMP.

4.2 Site – wide Inspection

Site-wide inspections will be performed at a minimum of once per year. These periodic inspections must be conducted when the ground surface is visible (i.e. no snow cover). Site-wide

inspections will be performed by a qualified environmental professional as defined in 6 NYCRR Part 375, a PE who is licensed and registered in New York State, or a qualified person who directly reports to a PE who is licensed and registered in New York State. Modification to the frequency or duration of the inspections will require approval from the NYSDEC project manager. Site-wide inspections will also be performed after all severe weather conditions that may affect ECs or monitoring devices. During these inspections, an inspection form will be completed as provided in Appendix H – Site Management Forms. The form will compile sufficient information to assess the following:

- Compliance with all ICs, including site usage;
- An evaluation of the condition and continued effectiveness of ECs;
- General site conditions at the time of the inspection;
- Whether stormwater management systems, such as basins and outfalls, are working as designed;
- The site management activities being conducted including, where appropriate, confirmation sampling and a health and safety inspection; and
- Confirm that site records are up to date.

Inspections of all remedial components installed at the site will be conducted. A comprehensive site-wide inspection will be conducted and documented according to the ISMP schedule, regardless of the frequency of the Periodic Review Report. The inspections will determine and document the following:

- Whether ECs continue to perform as designed;
- If these controls continue to be protective of human health and the environment;
- Compliance with requirements of this ISMP;
- Achievement of remedial performance criteria; and
- If site records are complete and up to date.

Reporting requirements are outlined in Section 7.0 of this plan.

Inspections will also be performed in the event of an emergency. If an emergency, such as a natural disaster or an unforeseen failure of any of the ECs occurs that reduces or has the potential to reduce the effectiveness of ECs in place at the site, verbal notice to the NYSDEC project manager

must be given by noon of the following day. In addition, an inspection of the site will be conducted within 5 days of the event to verify the effectiveness of the IC/ECs implemented at the site by a qualified environmental professional, as defined in 6 NYCCR Part 375. Written confirmation must be provided to the NYSDEC project manager within 7 days of the event that includes a summary of actions taken, or to be taken, and the potential impact to the environment and the public.

4.3 Treatment System Monitoring

Monitoring of the SSDSs will be performed by the individual property owners, typically on an annual basis. The SSDSs are installed with a liquid manometer to gauge the vacuum created by the fan. If, upon inspection, there is no vacuum shown on the manometer, then the property owner will be responsible for contacting the installer or the NYSDEC to ensure applicable maintenance and repairs are conducted. Sampling and certification of these off-site SSDSs is not conducted under this ISMP.

4.4 Post-Remediation Media Monitoring and Sampling

Samples shall be collected from the groundwater monitoring wells on a routine basis. Sampling locations, required analytical parameters and schedule are provided in Table 4.1 – Remedial System Sampling Requirements and Schedule. Modification to the frequency or sampling requirements will require approval from the NYSDEC project manager.

4.4.1 Groundwater Sampling

Groundwater monitoring will be performed annually to assess the performance of the remedy. Modification to the frequency or sampling requirements will require approval from the NYSDEC project manager.

The network of monitoring wells has been installed to monitor upgradient, on-site and downgradient groundwater conditions at the site. Table 4.2 summarizes the wells identification number, as well as the purpose, location, depths, and screened intervals of the wells. As part of the groundwater monitoring, one upgradient well, nine on-site wells and 32 downgradient wells are sampled to evaluate the effectiveness of the remedial system. The remedial party will measure depth to the water table for each monitoring well in the network before sampling.

Monitoring well construction logs, if available are included in Appendix C of this document. Figure 2.2 shows the monitoring well locations and Figure 2.1 shows a conceptual cross section of the center of the groundwater Plume.

If biofouling or silt accumulation occurs in the on-site and/or off-site monitoring wells, the wells will be physically agitated/surged and redeveloped. Additionally, monitoring wells will be properly decommissioned and replaced if an event renders the wells unusable.

Repairs and/or replacement of wells in the monitoring well network will be performed based on assessments of structural integrity and overall performance.

The NYSDEC project manager will be notified prior to any repair or decommissioning of any monitoring well for the purpose of replacement, and the repair or decommissioning and replacement process will be documented in the subsequent Periodic Review Report. Well decommissioning without replacement will be done only with the prior approval of the NYSDEC project manager. Well abandonment will be performed in accordance with NYSDEC's guidance entitled "CP-43: Groundwater Monitoring Well Decommissioning Procedures." Monitoring wells that are decommissioned because they have been rendered unusable will be replaced in kind in the nearest available location, unless otherwise approved by the NYSDEC project manager.

The sampling frequency may only be modified with the approval of the NYSDEC project manager. This ISMP will be modified to reflect changes in sampling plans approved by the NYSDEC project manager.

Deliverables for the groundwater monitoring program are specified in Section 7.0 – Reporting Requirements.

4.4.2 Monitoring and Sampling Protocol

All sampling activities will be recorded in a field book and associated sampling log. Other observations (e.g., groundwater monitoring well integrity) will be noted on the sampling log. The sampling log will serve as the inspection form for the monitoring network. Additional detail regarding monitoring and sampling protocols are provided in the Quality Assurance Program Plan and Program Field Activities Plan (MACTEC, 2020b).

5.0 OPERATION AND MAINTENANCE PLAN

5.1 General

The site remedy does not currently rely on any mechanical systems, such as groundwater treatment systems or air sparge/soil vapor extraction systems to protect public health and the environment, with the exception of SSDSs installed off-site that are not maintained by the Site property owner. In addition, any future buildings constructed on the property will require the installation of an active SSDS, unless otherwise approved by the NYSDEC and NYSDOH.

Although not maintained by the Site property owner, this Operation and Maintenance Plan provides a brief description of the measures necessary to operate, monitor and maintain the mechanical components of the SSDSs at off-site properties. This Operation and Maintenance Plan:

- Includes the procedures necessary to allow individuals unfamiliar with the site to operate and maintain the off-site SSDSs;
- Will be updated periodically to reflect changes in site conditions.

5.2 Remedial System Performance Criteria

The SSDSs installed at off-site buildings are designed to create a minimum vacuum below the entire building footprint. The vacuum is created by a fan(s) installed on the exterior of the building that is designed to run uninterrupted. The fan is connected by PVC pipe to a suction point located in the basement or slab on grade floor. A liquid manometer is present on the pipe above the suction point that indicates the vacuum in inches of water column. Performance of the system is monitored by viewing the manometer and ensuring the vacuum observed is within the parameters marked on the manometer by the installer.

5.3 Operation and Maintenance of the SSDSs

The following sections provide a description of the operations and maintenance of the SSDSs.

5.3.1 System Start-Up and Testing

They SSDSs are design to run continuously. If the system(s) is shut down, it should be turned back on and the vacuum measurement on the liquid manometer observed. If the vacuum is below original design parameters, the building floor should be evaluated for new/unsealed cracks in the concrete or damaged pipes that could be short circuiting the

system. If the floor is sealed and the system components are in good repair, additional pressure field testing can be conducted across the basement floor to ensure the vacuum created meets design specifications.

The system testing described above will be conducted if, in the course of the SSDSs lifetime, the system goes down or significant changes are made to the system and the system must be restarted.

5.3.2 Routine System Operation and Maintenance

The SSDSs are designed to run continuously with little to no maintenance needs. The system(s) should be evaluated by the individual property owner at a minimum annually to ensure:

- The fan is running and the vacuum measurement on the liquid manometer is within design criteria.
- There are no new/unsealed cracks on the basement floor (or slab on grade floor).
- The system components (PVC pipes, floor seal, fan, couplings) are in good repair.
- The fan exhaust extends above the roofline and there are no new windows or other openings within 10 feet of the exhaust.

5.3.3 Non-Routine Operation and Maintenance

Non routine maintenance will be conducted in the event the system or system components are broken or damaged. If the SSDS fan is found to be non-functioning, it can be replaced by the installer without removing the rest of the system.

5.3.4 System Monitoring Devices

As stated above, the SSDS is installed with a liquid manometer to gauge the vacuum created by the fan. If, upon inspection, there is no vacuum shown on the manometer, then applicable maintenance and repairs will be conducted, as specified in the Operation and Maintenance Plan.

5.3.5 Fire Safety

The SSDSs connected to independent breakers within the buildings circuit breaker panel. If any electrical shorts occur, the breaker will trip to minimize the risk of fire. If the breaker is

tripped, the electrical wiring should be inspected for wear or breakage prior to reconnecting the breaker.

6.0 PERIODIC ASSESSMENTS/EVALUATIONS

6.1 Climate Change Vulnerability Assessment

Increases in both the severity and frequency of storms/weather events, an increase in sea level elevations along with accompanying flooding impacts, shifting precipitation patterns and wide temperature fluctuation, resulting from global climactic change and instability, have the potential to significantly impact the performance, effectiveness and protectiveness of a given site and associated remedial systems. Vulnerability assessments provide information so that the site and associated remedial systems are prepared for the impacts of the increasing frequency and intensity of severe storms/weather events and associated flooding.

This section provides a summary of vulnerability assessments that will be conducted for the site during periodic assessments, and briefly summarizes the vulnerability of the site and/or engineering controls to severe storms/weather events and associated flooding.

Because the Site and surrounding area is fairly flat and the surrounding properties urbanized, the Site is considered fairly resilient to climate change. The site is also not located in an area mapped by the Federal Emergency Management Administration as prone to flooding during either 100 of 500 year events. However, a vulnerability assessment will be conducted annually as part of the annual inspection. This assessment will include an evaluation of the following potential vulnerabilities:

- Site Drainage and Storm Water Management: The property is covered with the grass and shrubs. Rainwater primarily flows over the surface to the drainage along the edge of the railroad tracks along the north side of the property, to the drainage along the interstate to the south side of the property, or infiltrates into the ground. Some flow may also occur to the storm drains in the parking lot to the west. If these drainage ways become clogged/blocked, especially along the railroad tracks to the north or the parking lot to the west, extra water could permeate the clay cap, causing additional water to infiltrate through the

overburden contamination to groundwater at the Site. The vulnerability assessments should therefore include review of adjacent storm drains, especially along the tracks, for clogging.

- Erosion: The site is relatively flat and primarily covered with grass and shrubs and is therefore less susceptible to erosion. However, along the edge of the property to the south, the property slopes down to the highway. The vulnerability assessment should include evaluation of this slope to ensure erosion has not occurred that could result in greater erosion of the Site cap during severe rain events.

6.2 Green Remediation Evaluation

NYSDEC's DER-31 Green Remediation requires that green remediation concepts and techniques be considered during all stages of the remedial program including site management, with the goal of improving the sustainability of the cleanup and summarizing the net environmental benefit of any implemented green technology. This section of the ISMP provides a summary of any green remediation evaluations to be completed for the site during site management, and as reported in the Periodic Review Report (PRR, including:

- Land and/or ecosystems
    - No land or ecosystems will be disturbed during routine Site management activities.
- Water Usage
    - No water will be used as all engineering controls are passive.
- Waste Generation
    - Remaining contamination is covered by a clay cap which does not require operation or scheduled maintenance and, therefore, no waste will be generated. Groundwater generated during groundwater sampling will be treated on-site to minimize the need to transport and dispose of water off-site.

- Energy usage
    - There are no active systems on-site that use energy.
- Emissions
    - Trips to the Site for inspections will be combined with other activities, when possible, to limit the emissions produced.

6.2.1 Timing of Green Remediation Evaluations

For major remedial system components, green remediation evaluations and corresponding modifications will be undertaken as part of a formal Remedial System Optimization (RSO), or at any time that the NYSDEC project manager feels appropriate, e.g. during significant maintenance events or in conjunction with storm recovery activities.

Modifications resulting from green remediation evaluations will be routinely implemented and scheduled to occur during planned/routine operation and maintenance activities. Reporting of these modifications will be presented in the PRR.

6.2.2 Frequency of System Checks, Sampling and Other Periodic Activities

Transportation to and from the Site, use of consumables in relation to visiting the Site in order to conduct system checks and/or collect samples, and shipping samples to a laboratory for analyses have direct and/or inherent energy costs. The schedule and/or means of these periodic activities have been prepared so that these tasks can be accomplished in a manner that does not impact remedy protectiveness but reduces expenditure of energy or resources.

6.2.3 Metrics and Reporting

As discussed in Section 7.0 and as shown in Appendix H – Site Management Forms, information on energy usage, solid waste generation, transportation and shipping, water usage and land use and ecosystems will be recorded to facilitate and document consistent implementation of green remediation during site management and to identify corresponding benefits. A set of metrics has been developed.

7.0. REPORTING REQUIREMENTS

7.1 Site Management Reports

All site management inspection, maintenance and monitoring events will be recorded on the appropriate site management forms (Appendix H). These forms are subject to NYSDEC revision. All site management inspection, maintenance, and monitoring events will be conducted by a qualified environmental professional as defined in 6 NYCRR Part 375, a PE who is licensed and registered in New York State, or a qualified person who directly reports to a PE who is licensed and registered in New York State.

All applicable inspection forms and other records, including media sampling data and system maintenance reports, generated for the site during the reporting period will be provided in electronic format to the NYSDEC in accordance with the requirements of Table 7.1 and summarized in the Periodic Review Report.

Table7.1: Schedule of Interim Monitoring/Inspection Reports

Task/Report	Reporting Frequency*
Groundwater Monitoring and Site Inspection (reported with PRR)	Annually as part of PRR.
Periodic Review Report	Annually

* The frequency of events will be conducted as specified until otherwise approved by the NYSDEC project manager.

All interim monitoring/inspections reports will include, at a minimum:

- Date of event or reporting period;
- Name, company, and position of person(s) conducting monitoring/inspection activities;
- Description of the activities performed;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents noted (included either on the checklist/form or on an attached sheet);

- Type of samples collected (e.g., sub-slab vapor, indoor air, outdoor air);
- Copies of all field forms completed (e.g., well sampling logs, chain-of-custody documentation);
- Sampling results in comparison to appropriate standards/criteria;
- A figure illustrating sample type and sampling locations;
- Copies of all laboratory data sheets and the required laboratory data deliverables required for all points sampled (to be submitted electronically in the NYSDEC-identified format);
- Any observations, conclusions, or recommendations; and
- A determination as to whether contaminant conditions have changed since the last reporting event.

Routine maintenance event reporting forms will include, at a minimum:

- Date of event;
- Name, company, and position of person(s) conducting maintenance activities;
- Description of maintenance activities performed;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents noted (included either on the checklist/form or on an attached sheet); and
- Other documentation such as copies of invoices for maintenance work, receipts for replacement equipment, etc., (attached to the checklist/form).

Non-routine maintenance event reporting forms will include, at a minimum:

- Date of event;
- Name, company, and position of person(s) conducting non-routine maintenance/repair activities;
- Description of non-routine activities performed;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents (included either on the form or on an attached sheet); and
- Other documentation such as copies of invoices for repair work, receipts for replacement equipment, etc. (attached to the checklist/form).

Data will be reported in digital format as determined by the NYSDEC. Currently, data is to be supplied electronically and submitted to the NYSDEC EQuIS™ database in accordance with the requirements found at this link http://www.dec.ny.gov/chemical/62440.html.

7.2 Periodic Review Report

A Periodic Review Report (PRR) will be submitted to the NYSDEC project manager annually or at another frequency as may be required by the NYSDEC project manager. In the event that the site is subdivided into separate parcels with different ownership, a single Periodic Review Report will be prepared that addresses the site shown in Appendix B. The report will be prepared in accordance with NYSDEC's DER-10 and submitted within 30 days of the end of each certification period. Media sampling results will also be incorporated into the Periodic Review Report. The report will include:

- Identification, assessment and certification of all ECs/ICs required by the remedy for the site.
- Results of the required annual site inspections, fire inspections and severe condition inspections, if applicable.
- All applicable site management forms and other records generated for the site during the reporting period in the NYSDEC-approved electronic format, if not previously submitted.
- Identification of any wastes generated during the reporting period, along with waste characterization data, manifests, and disposal documentation.
- Data summary tables and graphical representations of contaminants of concern by media (groundwater, soil vapor, etc.), which include a listing of all compounds analyzed, along with the applicable standards, with all exceedances highlighted. These tables and figures will include a presentation of past data as part of an evaluation of contaminant concentration trends, including but not limited to:
  - Trend monitoring graphs that present groundwater contaminant levels from before the start of the remedy implementation to the most current sampling data;
  - A current plume map for sites with remaining groundwater contamination; and
  - A groundwater elevation contour map for each gauging event.

- Results of all analyses, copies of all laboratory data sheets, and the required laboratory data deliverables for all samples collected during the reporting period will be submitted in digital format as determined by the NYSDEC. Currently, data is supplied electronically and submitted to the NYSDEC EQuIS™ database in accordance with the requirements found at this link: http://www.dec.ny.gov/chemical/62440.html.
- A site evaluation, which includes the following:
  - The compliance of the remedy with the requirements of the site-specific ROD;
  - Any new conclusions or observations regarding site contamination based on inspections or data generated by the Monitoring and Sampling Plan for the media being monitored;
  - Recommendations regarding any necessary changes to the remedy and/or Monitoring and Sampling Plan;
  - An evaluation of trends in contaminant levels in the affected media to determine if the remedy continues to be effective in achieving remedial goals as specified by the ROD; and
  - The overall performance and effectiveness of the remedy.
- A quantitative and qualitative overview of a site's environmental impacts will be provided through the completion of the Summary of Green Remediation Metrics.
- A summary of the Green Remediation evaluation.

7.2.1 Certification of Institutional and Engineering Controls

Following the last inspection of the reporting period, a qualified environmental professional as defined in 6 NYCRR Part 375 and Professional Engineer licensed to practice and registered in New York State will prepare, and include in the Periodic Review Report, the following certification as per the requirements of NYSDEC DER-10:

"*For each institutional or engineering control identified for the site, I certify that all of the following statements are true:*

- *The inspection of the site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under my direction;*

- *The institutional control and/or engineering control employed at this site is unchanged from the date the control was put in place, or last approved by the Department;*
- *Nothing has occurred that would impair the ability of the control to protect the public health and environment;*
- *Nothing has occurred that would constitute a violation or failure to comply with any site management plan for this control;*
- *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;*
- *Use of the site is compliant with this ISMP;*
- *The engineering control systems are performing as designed and are effective;*
- *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*
- *The information presented in this report is accurate and complete.*

I certify that all information and statements in this certification form 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 am certifying as Remedial Party for the site."

"I certify that the New York State Education Department has granted a Certificate of Authorization to provide Professional Engineering services to the firm that prepared this Periodic Review Report."

The signed certification will be included in the Periodic Review Report.

The Periodic Review Report will be submitted, in electronic format, to the NYSDEC project manager and the NYSDOH project manager. The Periodic Review Report may also need to be submitted in hard-copy format if requested by the NYSDEC project manager.

7.3 Corrective Measures Work Plan

If any component of the remedy is found to have failed, or if the periodic certification cannot be provided due to the failure of an institutional or engineering control or failure to conduct

site management activities, a Corrective Measures Work Plan will be submitted to the NYSDEC project manager for approval. This plan will explain the failure and provide the details and schedule for performing work necessary to correct the failure. Unless an emergency condition exists, no work will be performed pursuant to the Corrective Measures Work Plan until it has been approved by the NYSDEC project manager.

8.0 REFERENCES

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NYSDEC, 1999b. Record of Decision, Scobell Chemical Site, Operable Unit #1. March 1999.

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Resolution Resources, Inc., 1999. Fracture Trace Analysis at the Scobell Chemical Site, Rochester, New York. Submitted by Resolution Resources, Inc. Submitted to Parsons Engineering Science, Inc. January 1999.

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TABLES

Table 2.1: 2022 VOC Results in Groundwater

			Location	EW-1		EW-2		IW-003		IW-005		MW-01	
			Sample Date	10/5/2022		10/4/2022		10/5/2022		10/4/2022		10/5/2022	
			Sample ID	828076-EW001030		828076-EW002030		828076-IW00303		828076-IW005030		828076-MW01030	
			Qc Code	FS		FS		FS		FS		FS	
Parameter	**GA**	**GV**		Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
VOCs (ug/L)													
1,1,1-Trichloroethane	5	NS		2500	U	1	U	1	U	10	U	100	U
1,1-Dichloroethane	5	NS		2500	U	**5**		1	U	**7.7**	J	100	U
1,1-Dichloroethene	5	NS		2500	U	1	U	1	U	10	U	**25**	J
1,2-Dichlorobenzene	3	NS		2500	U	**1.3**		1	U	10	U	100	U
1,2-Dichloroethane	0.6	NS		2500	U	**0.34**	J	1	U	10	U	100	U
1,2-Dichloropropane	1	NS		2500	U	**0.54**	J	1	U	10	U	100	U
1,4-Dichlorobenzene	3	NS		2500	U	**0.24**	J	1	U	10	U	100	U
2-Butanone	NS	50		13000	U	5	U	5	U	50	U	500	U
2-Hexanone	NS	50		13000	U	5	U	5	U	50	U	500	U
Acetone	NS	50		13000	U	5	U	5	U	50	U	500	U
Benzene	1	NS		2500	U	**2.1**		1	U	10	U	100	U
Bromodichloromethane	NS	50		2500	U	1	U	1	U	10	U	100	U
Carbon disulfide	NS	60		2500	U	1	U	1	U	**7.6**	J	100	U
Chlorobenzene	5	NS		2500	U	**0.83**	J	1	U	10	U	100	U
Chloroethane	5	NS		2500	U	1	U	1	U	10	U	100	U
Chloroform	7	NS		2500	U	1	U	**6.2**		10	U	100	U
cis-1,2-Dichloroethene	5	NS		**58000**		**52**		**6.9**		**46**		**11000**	
Cyclohexane	NS	NS		2500	U	1	U	1	U	10	U	100	U
Ethylbenzene	5	NS		2500	U	1	U	1	U	10	U	100	U
Isopropylbenzene	5	NS		2500	U	1	U	1	U	10	U	100	U
Methyl cyclohexane	NS	NS		2500	U	1	U	1	U	10	U	100	U
Tetrachloroethene	5	NS		2500	U	**0.92**	J	**0.74**	J	10	U	100	U
Toluene	5	NS		2500	U	1	U	1	U	**3**	J	100	U
trans-1,2-Dichloroethene	5	NS		2500	U	**3.2**		1	U	10	U	**47**	J
Trichloroethene	5	NS		**320000**		**22**		**57**		**81**		**250**	
Vinyl chloride	2	NS		2500	U	**14**		1	U	10	U	**55**	J
Xylene, o	5	NS		2500	U	1	U	1	U	10	U	100	U
Xylenes (m&p)	5	NS		5000	U	2	U	2	U	20	U	200	U
Dissolved Gases (ug/L)													
Ethane	NS	NS		**43**								**87**	
Ethene	NS	NS		**38**								**16**	
Methane	NS	NS		**1700**								**250**	
Iron (ug/L)													
Iron, Total	300	NS		**2890**								100	U
Iron, Ferric	NS	NS		**2790**								100	U
Iron, Ferrous	NS	NS		**100**								100	U
Wet Chemistry (mg/L)													
Sulfate	250	NS		**130**								**235**	
Nitrate as N	10	NS		1	U							1	U
Field Parameters													
Conductivity (microsiemens/centimeter)				0.95		2.61		0.48		0.4		2	
Dissolved Oxygen (mg/L)				0.7		0.8		0.1		0.1		0.31	
Oxidation Reduction Potential (milivolts)				-110		46		60		14		-230	
pH				7.2		6.7		8		9.6		7.1	

General Notes:
Bold result = analyte detected
Blank result - not analyzed
FS = field sample
FD = field duplicate
mg/L = milligrams per liter (ppm)
ug/L = micrograms per liter (ppb)
NS = No Standard/Guidance
U = analyzed but not detected
J = estimated value
GA = NYS Part 703 Groundwater Quality Standards
Yellow highlight indicates an exceedance of GA
GV = New York State Guidance Values
Gray highlight indicates an exceedance of GV

Table 2.1: 2022 VOC Results in Groundwater

			Location	MW-01D		MW-02D		MW-03D		MW-03D		MW-04D	
			Sample Date	10/5/2022		10/5/2022		10/4/2022		10/4/2022		10/6/2022	
			Sample ID	828076-MW1D036		828076-MW2D030		828076-MW3D030D		828076-MW3D030		828076-MW4D030	
			Qc Code	FS		FS		FD		FS		FS	
Parameter	**GA**	**GV**		Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
VOCs (ug/L)													
1,1,1-Trichloroethane	5	NS		1	U	250	U	1000	U	2000	U	5000	U
1,1-Dichloroethane	5	NS		1	U	250	U	1000	U	2000	U	5000	U
1,1-Dichloroethene	5	NS		1	U	**210**	J	**500**	J	2000	U	5000	U
1,2-Dichlorobenzene	3	NS		1	U	250	U	1000	U	2000	U	5000	U
1,2-Dichloroethane	0.6	NS		1	U	250	U	1000	U	2000	U	5000	U
1,2-Dichloropropane	1	NS		1	U	250	U	1000	U	2000	U	5000	U
1,4-Dichlorobenzene	3	NS		1	U	250	U	1000	U	2000	U	5000	U
2-Butanone	NS	50		5	U	1300	U	5000	U	10000	U	25000	U
2-Hexanone	NS	50		5	U	1300	U	5000	U	10000	U	25000	U
Acetone	NS	50		5	U	1300	U	5000	U	10000	U	25000	U
Benzene	1	NS		1	U	250	U	1000	U	2000	U	5000	U
Bromodichloromethane	NS	50		1	U	250	U	**300**	J	2000	U	5000	U
Carbon disulfide	NS	60		**1.4**		250	U	1000	U	2000	U	5000	U
Chlorobenzene	5	NS		1	U	250	U	1000	U	2000	U	5000	U
Chloroethane	5	NS		1	U	250	U	1000	U	2000	U	5000	U
Chloroform	7	NS		1	U	250	U	**1100**	J	**620**	J	**1400**	J
cis-1,2-Dichloroethene	5	NS		**13**		**18000**		**62000**		**45000**		**2400**	J
Cyclohexane	NS	NS		1	U	250	U	1000	U	2000	U	5000	U
Ethylbenzene	5	NS		1	U	250	U	1000	U	2000	U	5000	U
Isopropylbenzene	5	NS		1	U	250	U	1000	U	2000	U	5000	U
Methyl cyclohexane	NS	NS		1	U	250	U	1000	U	2000	U	5000	U
Tetrachloroethene	5	NS		**0.22**	J	250	U	**510**	J	**460**	J	**5000**	J
Toluene	5	NS		**0.45**	J	**58**	J	**240**	J	2000	U	5000	U
trans-1,2-Dichloroethene	5	NS		1	U	250	U	1000	U	2000	U	5000	U
Trichloroethene	5	NS		**270**		**82**	J	**170000**		**210000**		**650000**	
Vinyl chloride	2	NS		**0.27**	J	**2400**		**1500**		**1100**	J	5000	U
Xylene, o	5	NS		1	U	250	U	1000	U	2000	U	5000	U
Xylenes (m&p)	5	NS		2	U	500	U	2000	U	4000	U	10000	U
Dissolved Gases (ug/L)													
Ethane	NS	NS		**63**		**1000**						**3.6**	
Ethene	NS	NS		**1.1**		**3100**						1	U
Methane	NS	NS		**650**		**720**						**33**	
Iron (ug/L)													
Iron, Total	300	NS		**580**		**5660**						**830**	
Iron, Ferric	NS	NS		**560**		**4670**						**610**	
Iron, Ferrous	NS	NS		100	U	**990**						**220**	
Wet Chemistry (mg/L)													
Sulfate	250	NS		**2290**		**142**						**1290**	
Nitrate as N	10	NS		1	U	1	U					1	U
Field Parameters													
Conductivity (microsiemens/centimeter)				17.3		3.19		0.054		0.054		4.83	
Dissolved Oxygen (mg/L)				0.5		1.6		10.3		10.3		2.4	
Oxidation Reduction Potential (milivolts)				-330		-89		140		140		-190	
pH				7		7.1		7.7		7.7		7.2	

General Notes:
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GA = NYS Part 703 Groundwater Quality Standard
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Table 2.1: 2022 VOC Results in Groundwater

			Location	MW-04M		MW-04S		MW-05D		MW-06D		MW-07D	
			Sample Date	10/6/2022		10/6/2022		10/6/2022		10/6/2022		10/5/2022	
			Sample ID	828076-MW4M016		828076-MW4S016		828076-MW5D028		828076-MW6D065		828076-MW7D060	
			Qc Code	FS		FS		FS		FS		FS	
Parameter	**GA**	**GV**		Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
VOCs (ug/L)													
1,1,1-Trichloroethane	5	NS		10	U	10	U	500	U	2	U	1	U
1,1-Dichloroethane	5	NS		10	U	10	U	500	U	2	U	1	U
1,1-Dichloroethene	5	NS		10	U	**2**	J	**270**	J	**0.42**	J	1	U
1,2-Dichlorobenzene	3	NS		10	U	10	U	500	U	2	U	1	U
1,2-Dichloroethane	0.6	NS		10	U	10	U	500	U	2	U	1	U
1,2-Dichloropropane	1	NS		10	U	10	U	500	U	2	U	1	U
1,4-Dichlorobenzene	3	NS		10	U	10	U	500	U	2	U	1	U
2-Butanone	NS	50		50	U	50	U	2500	U	10	U	5	U
2-Hexanone	NS	50		50	U	50	U	2500	U	10	U	5	U
Acetone	NS	50		50	U	50	U	2500	U	10	U	5	U
Benzene	1	NS		10	U	10	U	500	U	**1.9**	J	**11**	
Bromodichloromethane	NS	50		10	U	10	U	**170**	J	2	U	1	U
Carbon disulfide	NS	60		10	U	10	U	500	U	2	U	**0.85**	J
Chlorobenzene	5	NS		10	U	10	U	500	U	2	U	1	U
Chloroethane	5	NS		10	U	10	U	500	U	2	U	1	U
Chloroform	7	NS		10	U	10	U	**540**		2	U	1	U
cis-1,2-Dichloroethene	5	NS		**770**		**810**		**38000**		**350**		**0.63**	J
Cyclohexane	NS	NS		10	U	10	U	500	U	**3.5**		**5.8**	
Ethylbenzene	5	NS		10	U	10	U	500	U	2	U	**0.45**	J
Isopropylbenzene	5	NS		10	U	10	U	500	U	2	U	1	U
Methyl cyclohexane	NS	NS		10	U	10	U	500	U	**1.8**	J	**2.3**	
Tetrachloroethene	5	NS		**16**		**23**		**5100**		**1.3**	J	1	U
Toluene	5	NS		10	U	10	U	500	U	2	U	**0.62**	J
trans-1,2-Dichloroethene	5	NS		**4.6**	J	**13**		**120**	J	**1.4**	J	1	U
Trichloroethene	5	NS		**1500**		**2600**		**98000**		**36**		**0.41**	J
Vinyl chloride	2	NS		10	U	**11**		**240**	J	**23**		1	U
Xylene, o	5	NS		10	U	10	U	500	U	2	U	**0.61**	J
Xylenes (m&p)	5	NS		20	U	20	U	1000	U	4	U	**0.31**	J
Dissolved Gases (ug/L)													
Ethane	NS	NS						**1.7**					
Ethene	NS	NS						**2.4**					
Methane	NS	NS						**44**					
Iron (ug/L)													
Iron, Total	300	NS						**3020**					
Iron, Ferric	NS	NS						**1180**					
Iron, Ferrous	NS	NS						**1840**					
Wet Chemistry (mg/L)													
Sulfate	250	NS						**217**					
Nitrate as N	10	NS						1	U				
Field Parameters													
Conductivity (microsiemens/centimeter)				2.86		1.61		1.45		3.73		22	
Dissolved Oxygen (mg/L)				1.8		1.8		0.56		0.6		0	
Oxidation Reduction Potential (milivolts)				25		-36		-80		130		120	
pH				6.7		6.9		7		7.7		7.6	

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Table 2.1: 2022 VOC Results in Groundwater

			Location	MW-07S		MW-08S		MW-12D		MW-12D		MW-13D	
			Sample Date	10/6/2022		10/5/2022		10/6/2022		10/6/2022		10/6/2022	
			Sample ID	828076-MW07S020		828076-MW8S020		828076-MW12D025		828076-MW12D025D		828076-MW13D030	
			Qc Code	FS		FS		FS		FD		FS	
Parameter	**GA**	**GV**		Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
VOCs (ug/L)													
1,1,1-Trichloroethane	5	NS		2.5	U	1	U	25	U	10	U	1	U
1,1-Dichloroethane	5	NS		2.5	U	1	U	25	U	10	U	1	U
1,1-Dichloroethene	5	NS		**0.83**	J	1	U	25	U	**3.9**	J	1	U
1,2-Dichlorobenzene	3	NS		2.5	U	1	U	25	U	10	U	1	U
1,2-Dichloroethane	0.6	NS		2.5	U	1	U	25	U	10	U	1	U
1,2-Dichloropropane	1	NS		2.5	U	1	U	25	U	10	U	1	U
1,4-Dichlorobenzene	3	NS		2.5	U	1	U	25	U	10	U	1	U
2-Butanone	NS	50		13	U	**1.4**	J	130	U	50	U	5	U
2-Hexanone	NS	50		13	U	**0.22**	J	130	U	50	U	5	U
Acetone	NS	50		**15**		5	U	130	U	50	U	5	U
Benzene	1	NS		2.5	U	1	U	25	U	10	U	1	U
Bromodichloromethane	NS	50		2.5	U	1	U	25	U	10	U	1	U
Carbon disulfide	NS	60		2.5	U	1	U	25	U	10	U	1	U
Chlorobenzene	5	NS		2.5	U	1	U	25	U	10	U	1	U
Chloroethane	5	NS		2.5	U	1	U	25	U	10	U	1	U
Chloroform	7	NS		2.5	U	1	U	25	U	10	U	1	U
cis-1,2-Dichloroethene	5	NS		**320**		1	U	**2300**		**2000**		**2.1**	
Cyclohexane	NS	NS		2.5	U	1	U	25	U	10	U	1	U
Ethylbenzene	5	NS		2.5	U	1	U	25	U	10	U	1	U
Isopropylbenzene	5	NS		2.5	U	1	U	25	U	10	U	1	U
Methyl cyclohexane	NS	NS		2.5	U	1	U	25	U	10	U	1	U
Tetrachloroethene	5	NS		**3.4**		1	U	25	U	10	U	**4.7**	
Toluene	5	NS		2.5	U	1	U	25	U	10	U	1	U
trans-1,2-Dichloroethene	5	NS		**2.4**	J	1	U	**8.5**	J	**6.9**	J	1	U
Trichloroethene	5	NS		**130**		1	U	**1000**		**970**		**5.7**	
Vinyl chloride	2	NS		**19**		1	U	**57**		**61**		1	U
Xylene, o	5	NS		2.5	U	1	U	25	U	10	U	1	U
Xylenes (m&p)	5	NS		5	U	2	U	50	U	20	U	2	U
Dissolved Gases (ug/L)													
Ethane	NS	NS						**13**					
Ethene	NS	NS						**1.6**					
Methane	NS	NS						**53**					
Iron (ug/L)													
Iron, Total	300	NS						**4140**					
Iron, Ferric	NS	NS						**3890**					
Iron, Ferrous	NS	NS						**250**					
Wet Chemistry (mg/L)													
Sulfate	250	NS						**141**					
Nitrate as N	10	NS						1	U				
Field Parameters													
Conductivity (microsiemens/centimeter)				1.06		2.95		3.21		3.21		1.2	
Dissolved Oxygen (mg/L)				1		0.4		0.2		0.2		0.6	
Oxidation Reduction Potential (milivolts)				-174		-4		140		140		170	
pH				7.4		7.1		7.1		7.1		6.6	

General Notes:
Bold result = analyte detected
Blank result - not analyzed
FS = field sample
FD = field duplicate
mg/L = milligrams per liter (ppm)
ug/L = micrograms per liter (ppb)
NS = No Standard/Guidance
U = analyzed but not detected
J = estimated value
GA = NYS Part 703 Groundwater Quality Standard
Yellow highlight indicates an exceedance of GA
GV = New York State Guidance Values
Gray highlight indicates an exceedance of GV

Table 2.1: 2022 VOC Results in Groundwater

			Location	MW-15D		MW-16D		MW-17D		MW-18D		MW-20D	
			Sample Date	10/4/2022		10/5/2022		10/6/2022		10/6/2022		10/6/2022	
			Sample ID	828076-MW15D030		828076-MW16D016		828076-MW17D020		828076-MW18D021		828076-MW20D021	
			Qc Code	FS		FS		FS		FS		FS	
Parameter	**GA**	**GV**		Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
VOCs (ug/L)													
1,1,1-Trichloroethane	5	NS		**0.68**	J	1	U	**0.26**	J	10	U	500	U
1,1-Dichloroethane	5	NS		**20**		**1.3**		**2.2**		10	U	500	U
1,1-Dichloroethene	5	NS		**0.65**	J	1	U	1	U	**2.2**	J	**110**	J
1,2-Dichlorobenzene	3	NS		2.5	U	**12**		1	U	10	U	500	U
1,2-Dichloroethane	0.6	NS		**1.8**	J	1	U	1	U	10	U	500	U
1,2-Dichloropropane	1	NS		**1.1**	J	**0.26**	J	1	U	10	U	500	U
1,4-Dichlorobenzene	3	NS		2.5	U	**1.7**		1	U	10	U	500	U
2-Butanone	NS	50		13	U	**1.1**	J	5	U	50	U	2500	U
2-Hexanone	NS	50		13	U	5	U	5	U	50	U	2500	U
Acetone	NS	50		13	U	**5.5**		5	U	50	U	2500	U
Benzene	1	NS		**3.4**		1	U	1	U	10	U	500	U
Bromodichloromethane	NS	50		2.5	U	1	U	1	U	10	U	**270**	J
Carbon disulfide	NS	60		2.5	U	1	U	1	U	10	U	500	U
Chlorobenzene	5	NS		2.5	U	**0.57**	J	1	U	10	U	500	U
Chloroethane	5	NS		2.5	U	1	U	1	U	10	U	500	U
Chloroform	7	NS		2.5	U	1	U	1	U	10	U	**880**	
cis-1,2-Dichloroethene	5	NS		**210**		**8.5**		**7.7**		**1300**		**30000**	
Cyclohexane	NS	NS		2.5	U	1	U	1	U	10	U	500	U
Ethylbenzene	5	NS		2.5	U	1	U	1	U	10	U	500	U
Isopropylbenzene	5	NS		2.5	U	1	U	1	U	10	U	500	U
Methyl cyclohexane	NS	NS		2.5	U	1	U	1	U	10	U	500	U
Tetrachloroethene	5	NS		2.5	U	1	U	**0.57**	J	**4.2**	J	**1300**	
Toluene	5	NS		2.5	U	1	U	1	U	10	U	500	U
trans-1,2-Dichloroethene	5	NS		**17**		**0.22**	J	1	U	**4.7**	J	500	U
Trichloroethene	5	NS		**9.4**		**0.58**	J	**6.4**		**210**		**68000**	
Vinyl chloride	2	NS		**290**		**4.6**		1	U	**140**		**690**	
Xylene, o	5	NS		2.5	U	1	U	1	U	10	U	500	U
Xylenes (m&p)	5	NS		5	U	2	U	2	U	20	U	1000	U
Dissolved Gases (ug/L)													
Ethane	NS	NS											
Ethene	NS	NS											
Methane	NS	NS											
Iron (ug/L)													
Iron, Total	300	NS											
Iron, Ferric	NS	NS											
Iron, Ferrous	NS	NS											
Wet Chemistry (mg/L)													
Sulfate	250	NS											
Nitrate as N	10	NS											
Field Parameters													
Conductivity (microsiemens/centimeter)				2.07		0.65		0.9		1.4		1.06	
Dissolved Oxygen (mg/L)				1.6		2.3		0.44		0.3		0.5	
Oxidation Reduction Potential (milivolts)				81		140		155.6		-147		-58.6	
pH				6.5		7.3		6.86		7.1		6.9	

General Notes:
Bold result = analyte detected
Blank result - not analyzed
FS = field sample
FD = field duplicate
mg/L = milligrams per liter (ppm)
ug/L = micrograms per liter (ppb)
NS = No Standard/Guidance
U = analyzed but not detected
J = estimated value
GA = NYS Part 703 Groundwater Quality Standard
Yellow highlight indicates an exceedance of GA
GV = New York State Guidance Values
Gray highlight indicates an exceedance of GV

Table 2.1: 2022 VOC Results in Groundwater

			Location	MW-20DD		MW-21D		MW-22D		MW-23D		MW-24D	
			Sample Date	10/6/2022		10/6/2022		10/6/2022		10/6/2022		10/6/2022	
			Sample ID	828076-MW20DD046		828076-MW21D021		828076-MW22D023		828076-MW23D021		828076-MW24D021	
			Qc Code	FS		FS		FS		FS		FS	
Parameter	**GA**	**GV**		Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
VOCs (ug/L)													
1,1,1-Trichloroethane	5	NS		10	U	20	U	100	U	2	U	2.5	U
1,1-Dichloroethane	5	NS		10	U	20	U	100	U	2	U	2.5	U
1,1-Dichloroethene	5	NS		10	U	**4.2**	J	**62**	J	**0.5**	J	**1.2**	J
1,2-Dichlorobenzene	3	NS		10	U	20	U	100	U	2	U	2.5	U
1,2-Dichloroethane	0.6	NS		10	U	20	U	100	U	2	U	2.5	U
1,2-Dichloropropane	1	NS		10	U	20	U	100	U	2	U	2.5	U
1,4-Dichlorobenzene	3	NS		10	U	20	U	100	U	2	U	2.5	U
2-Butanone	NS	50		50	U	100	U	500	U	10	U	13	U
2-Hexanone	NS	50		50	U	100	U	500	U	10	U	13	U
Acetone	NS	50		50	U	100	U	500	U	10	U	13	U
Benzene	1	NS		10	U	20	U	100	U	2	U	2.5	U
Bromodichloromethane	NS	50		10	U	20	U	**25**	J	2	U	2.5	U
Carbon disulfide	NS	60		**7.1**	J	20	U	100	U	2	U	2.5	U
Chlorobenzene	5	NS		10	U	20	U	100	U	2	U	2.5	U
Chloroethane	5	NS		10	U	20	U	100	U	**4.9**		2.5	U
Chloroform	7	NS		10	U	20	U	**68**	J	2	U	2.5	U
cis-1,2-Dichloroethene	5	NS		10	U	**2400**		**16000**		**97**		**570**	
Cyclohexane	NS	NS		10	U	20	U	100	U	2	U	2.5	U
Ethylbenzene	5	NS		10	U	20	U	100	U	2	U	2.5	U
Isopropylbenzene	5	NS		10	U	20	U	100	U	2	U	2.5	U
Methyl cyclohexane	NS	NS		10	U	20	U	100	U	2	U	2.5	U
Tetrachloroethene	5	NS		10	U	20	U	**610**		**5.3**		**1.9**	J
Toluene	5	NS		10	U	20	U	100	U	2	U	2.5	U
trans-1,2-Dichloroethene	5	NS		10	U	**6.8**	J	**42**	J	**1.9**	J	**3.5**	
Trichloroethene	5	NS		10	U	**110**		**17000**		**320**		**110**	
Vinyl chloride	2	NS		10	U	**430**		**110**		**4.5**		**5.8**	
Xylene, o	5	NS		10	U	20	U	100	U	2	U	2.5	U
Xylenes (m&p)	5	NS		20	U	40	U	200	U	4	U	5	U
Dissolved Gases (ug/L)													
Ethane	NS	NS											
Ethene	NS	NS											
Methane	NS	NS											
Iron (ug/L)													
Iron, Total	300	NS											
Iron, Ferric	NS	NS											
Iron, Ferrous	NS	NS											
Wet Chemistry (mg/L)													
Sulfate	250	NS											
Nitrate as N	10	NS											
Field Parameters													
Conductivity (microsiemens/centimeter)				28.3		1.2		1.4		0.81		1.05	
Dissolved Oxygen (mg/L)				0.1		0		0.3		0.3		1.2	
Oxidation Reduction Potential (milivolts)				160		130		-142		36		-47	
pH				6.8		7.3		7		7.1		7.1	

General Notes:
Bold result = analyte detected
Blank result - not analyzed
FS = field sample
FD = field duplicate
mg/L = milligrams per liter (ppm)
ug/L = micrograms per liter (ppb)
NS = No Standard/Guidance
U = analyzed but not detected
J = estimated value
GA = NYS Part 703 Groundwater Quality Standard
Yellow highlight indicates an exceedance of GA
GV = New York State Guidance Values
Gray highlight indicates an exceedance of GV

Table 2.1: 2022 VOC Results in Groundwater

			Location	MW-25D		MW-26D		MW-27D		MW-28D		MW-30S	
			Sample Date	10/5/2022		10/5/2022		10/5/2022		10/4/2022		10/5/2022	
			Sample ID	828076-MW25D020		828076-MW26D021		828076-MW27D025		828076-MW28D025		828076-MW30S11	
			Qc Code	FS		FS		FS		FS		FS	
Parameter	**GA**	**GV**		Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
VOCs (ug/L)													
1,1,1-Trichloroethane	5	NS		1	U	1	U	2	U	1	U	1	U
1,1-Dichloroethane	5	NS		1	U	1	U	**1.8**	J	**14**		1	U
1,1-Dichloroethene	5	NS		1	U	1	U	**0.47**	J	1	U	1	U
1,2-Dichlorobenzene	3	NS		1	U	1	U	2	U	**1.9**		1	U
1,2-Dichloroethane	0.6	NS		1	U	1	U	2	U	**1**		1	U
1,2-Dichloropropane	1	NS		1	U	1	U	2	U	**2.5**		1	U
1,4-Dichlorobenzene	3	NS		1	U	1	U	2	U	**0.49**	J	1	U
2-Butanone	NS	50		5	U	5	U	**4.6**	J	5	U	5	U
2-Hexanone	NS	50		5	U	5	U	10	U	5	U	5	U
Acetone	NS	50		5	U	5	U	10	U	**5.7**		5	U
Benzene	1	NS		1	U	1	U	2	U	**2.1**		1	U
Bromodichloromethane	NS	50		1	U	1	U	2	U	1	U	1	U
Carbon disulfide	NS	60		1	U	1	U	2	U	1	U	1	U
Chlorobenzene	5	NS		1	U	1	U	2	U	**0.51**	J	1	U
Chloroethane	5	NS		1	U	1	U	2	U	1	U	1	U
Chloroform	7	NS		1	U	1	U	2	U	1	U	1	U
cis-1,2-Dichloroethene	5	NS		**18**		**1.2**		**220**		**1.2**		1	U
Cyclohexane	NS	NS		1	U	1	U	2	U	1	U	1	U
Ethylbenzene	5	NS		1	U	1	U	2	U	1	U	1	U
Isopropylbenzene	5	NS		1	U	1	U	2	U	**0.21**	J	1	U
Methyl cyclohexane	NS	NS		1	U	1	U	2	U	**0.29**	J	1	U
Tetrachloroethene	5	NS		1	U	1	U	2	U	1	U	1	U
Toluene	5	NS		1	U	1	U	2	U	1	U	1	U
trans-1,2-Dichloroethene	5	NS		**0.59**	J	1	U	**0.48**	J	1	U	1	U
Trichloroethene	5	NS		**10**		**1.4**		**20**		**2.5**		1	U
Vinyl chloride	2	NS		**0.49**	J	1	U	**69**		**14**		1	U
Xylene, o	5	NS		1	U	1	U	2	U	1	U	1	U
Xylenes (m&p)	5	NS		2	U	2	U	4	U	2	U	2	U
Dissolved Gases (ug/L)													
Ethane	NS	NS				1	U						
Ethene	NS	NS				1	U						
Methane	NS	NS				**18**							
Iron (ug/L)													
Iron, Total	300	NS				**330**							
Iron, Ferric	NS	NS				**330**							
Iron, Ferrous	NS	NS				100	U						
Wet Chemistry (mg/L)													
Sulfate	250	NS				**88.6**							
Nitrate as N	10	NS				**0.6**	J						
Field Parameters													
Conductivity (microsiemens/centimeter)				4.48		3.04		0.99		1.56		5.58	
Dissolved Oxygen (mg/L)				0.9		0.4		0.3		0.2		0.75	
Oxidation Reduction Potential (milivolts)				32		-7		150		43		-85	
pH				7		7.1		6.9		6.5		7.2	

General Notes:
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ug/L = micrograms per liter (ppb)
NS = No Standard/Guidance
U = analyzed but not detected
J = estimated value
GA = NYS Part 703 Groundwater Quality Standard
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Gray highlight indicates an exceedance of GV

Table 2.1: 2022 VOC Results in Groundwater

			Location	MW-31S		MW-32D		MW-32S		MW-34S		MW-35S	
			Sample Date	10/4/2022		10/4/2022		10/4/2022		10/4/2022		10/4/2022	
			Sample ID	828076-MW31S013		828076-MW32D024		828076-MW32S014		828076-MW34S013		828076-MW35S014	
			Qc Code	FS		FS		FS		FS		FS	
Parameter	**GA**	**GV**		Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
VOCs (ug/L)													
1,1,1-Trichloroethane	5	NS		1	U	1	U	1	U	1	U	1	U
1,1-Dichloroethane	5	NS		1	U	1	U	1	U	1	U	1	U
1,1-Dichloroethene	5	NS		1	U	1	U	1	U	1	U	1	U
1,2-Dichlorobenzene	3	NS		1	U	1	U	1	U	1	U	1	U
1,2-Dichloroethane	0.6	NS		1	U	1	U	1	U	1	U	1	U
1,2-Dichloropropane	1	NS		1	U	1	U	1	U	1	U	1	U
1,4-Dichlorobenzene	3	NS		1	U	1	U	1	U	1	U	1	U
2-Butanone	NS	50		**8.7**		5	U	5	U	5	U	5	U
2-Hexanone	NS	50		**0.93**	J	5	U	5	U	5	U	5	U
Acetone	NS	50		**7.4**		5	U	5	U	5	U	5	U
Benzene	1	NS		1	U	**0.36**	J	**0.42**	J	1	U	1	U
Bromodichloromethane	NS	50		1	U	1	U	1	U	1	U	1	U
Carbon disulfide	NS	60		1	U	1	U	1	U	1	U	1	U
Chlorobenzene	5	NS		1	U	1	U	1	U	1	U	1	U
Chloroethane	5	NS		1	U	1	U	1	U	1	U	1	U
Chloroform	7	NS		1	U	1	U	1	U	1	U	1	U
cis-1,2-Dichloroethene	5	NS		1	U	**29**		**23**		**0.34**	J	1	U
Cyclohexane	NS	NS		1	U	1	U	1	U	1	U	1	U
Ethylbenzene	5	NS		1	U	1	U	1	U	1	U	1	U
Isopropylbenzene	5	NS		1	U	1	U	1	U	1	U	1	U
Methyl cyclohexane	NS	NS		1	U	1	U	1	U	1	U	1	U
Tetrachloroethene	5	NS		1	U	1	U	1	U	1	U	1	U
Toluene	5	NS		1	U	1	U	1	U	1	U	1	U
trans-1,2-Dichloroethene	5	NS		1	U	**0.49**	J	**0.36**	J	1	U	1	U
Trichloroethene	5	NS		1	U	**1.1**		**0.75**	J	1	U	1	U
Vinyl chloride	2	NS		1	U	**29**		**18**		1	U	1	U
Xylene, o	5	NS		1	U	1	U	1	U	1	U	1	U
Xylenes (m&p)	5	NS		2	U	2	U	2	U	2	U	2	U
Dissolved Gases (ug/L)													
Ethane	NS	NS											
Ethene	NS	NS											
Methane	NS	NS											
Iron (ug/L)													
Iron, Total	300	NS											
Iron, Ferric	NS	NS											
Iron, Ferrous	NS	NS											
Wet Chemistry (mg/L)													
Sulfate	250	NS											
Nitrate as N	10	NS											
Field Parameters													
Conductivity (microsiemens/centimeter)				2.33		2.8		2.73		1		1.28	
Dissolved Oxygen (mg/L)				0.31		0.6		0.4		0.3		0.2	
Oxidation Reduction Potential (milivolts)				-47		-44		-48		-61		4	
pH				7.1		7		6.9		7.2		7	

General Notes:
Bold result = analyte detected
Blank result - not analyzed
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FD = field duplicate
mg/L = milligrams per liter (ppm)
ug/L = micrograms per liter (ppb)
NS = No Standard/Guidance
U = analyzed but not detected
J = estimated value
GA = NYS Part 703 Groundwater Quality Standard
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Gray highlight indicates an exceedance of GV

Table 2.1: 2022 VOC Results in Groundwater

			Location		MW-38S		OB-01	
			Sample Date		10/4/2022		10/6/2022	
			Sample ID		828076-MW38S017		828076-OB01009	
			Qc Code		FS		FS	
Parameter	**GA**	**GV**			Result	Qualifier	Result	Qualifier
VOCs (ug/L)								
1,1,1-Trichloroethane	5	NS			1	U	2	U
1,1-Dichloroethane	5	NS			1	U	2	U
1,1-Dichloroethene	5	NS			1	U	**0.46**	J
1,2-Dichlorobenzene	3	NS			1	U	2	U
1,2-Dichloroethane	0.6	NS			1	U	2	U
1,2-Dichloropropane	1	NS			1	U	2	U
1,4-Dichlorobenzene	3	NS			1	U	2	U
2-Butanone	NS	50			5	U	10	U
2-Hexanone	NS	50			5	U	10	U
Acetone	NS	50			5	U	10	U
Benzene	1	NS			1	U	**0.46**	J
Bromodichloromethane	NS	50			1	U	2	U
Carbon disulfide	NS	60			**1.9**		2	U
Chlorobenzene	5	NS			1	U	2	U
Chloroethane	5	NS			1	U	2	U
Chloroform	7	NS			1	U	2	U
cis-1,2-Dichloroethene	5	NS			1	U	**230**	
Cyclohexane	NS	NS			1	U	2	U
Ethylbenzene	5	NS			1	U	2	U
Isopropylbenzene	5	NS			1	U	2	U
Methyl cyclohexane	NS	NS			1	U	2	U
Tetrachloroethene	5	NS			1	U	2	U
Toluene	5	NS			1	U	2	U
trans-1,2-Dichloroethene	5	NS			1	U	**7.5**	
Trichloroethene	5	NS			**0.32**	J	**85**	
Vinyl chloride	2	NS			1	U	**21**	
Xylene, o	5	NS			1	U	2	U
Xylenes (m&p)	5	NS			2	U	4	U
Dissolved Gases (ug/L)								
Ethane	NS	NS						
Ethene	NS	NS						
Methane	NS	NS						
Iron (ug/L)								
Iron, Total	300	NS						
Iron, Ferric	NS	NS						
Iron, Ferrous	NS	NS						
Wet Chemistry (mg/L)								
Sulfate	250	NS						
Nitrate as N	10	NS						
Field Parameters								
Conductivity (microsiemens/centimeter)					5.89		1.96	
Dissolved Oxygen (mg/L)					0.2		5.5	
Oxidation Reduction Potential (milivolts)					-277		160	
pH					7		6.7	

General Notes:
Bold result = analyte detected
Blank result - not analyzed
FS = field sample
FD = field duplicate
mg/L = milligrams per liter (ppm)
ug/L = micrograms per liter (ppb)
NS = No Standard/Guidance
U = analyzed but not detected
J = estimated value
GA = NYS Part 703 Groundwater Quality Standard
Yellow highlight indicates an exceedance of GA
GV = New York State Guidance Values
Gray highlight indicates an exceedance of GV

Table 2.2: 2014 Surface Water VOC Results

	Location	SW-100		SW-101	
	Field Sample ID	828076-SW100000		828076-SW101000	
	Field Sample Date	12/10/2014		12/10/2014	
	QC Code	FS		FS	
Parameter	**Criteria**	Result	Qualifier	Result	Qualifier
Volatile Organic Compounds (Results in ug/l)					
4-Methyl-2-pentanone	NA	**0.67**	**J**	**5**	**U**
Acetone	NA	**2.3**	**J**	**1.6**	**J**
Chloroform	NA	**0.8**	**J**	**0.37**	**J**
Cis-1,2-Dichloroethene	NA	**13**		**16**	
Trichloroethene	40	**5.9**		**7.8**	
Vinyl chloride	NA	**0.83**	**J**	**3**	

Notes:

Volatile Organic Compounds (VOCs) analyzed by USEPA Method 8260C (only detected compounds shown)

µg/l = micrograms per liter

Detections in bold

Criteria Surface Water = Ambient Water Quality Standards and guidance Values for Class C waters in New York.

NA = criteria not available

Qualifier: J = estimated value; N = presumtive identification; U = not detected

Table 2.3: 2014 Sediment VOC Results

	Location	SD-100		SD-100		SD-101	
	Field Sample ID	828076-SD100000		828076-SD100000DUP		828076-SD101000	
	Field Sample Date	12/10/2014		12/10/2014		12/10/2014	
	Qc Code	FS		FD		FS	
Parameter	**Class A SGV**	Result	Qualifier	Result	Qualifier	Result	Qualifier
Volatile Organic Compounds (Results in µg/kg)							
2-Butanone	NA	4.2	U	4.5	U	**22**	
Acetone	NA	4.2	U	4.5	U	**96**	
Carbon disulfide	NA	4.2	U	4.5	U	**3.1**	**J**
Cis-1,2-Dichloroethene	NA	**110**		**110**		9.3	U
trans-1,2-Dichloroethene	<1200	**0.85**	**J**	**0.85**	**J**	9.3	U
Trichloroethene	<1800	**33**		**38**		9.3	U
Vinyl chloride	NA	**20**		**18**		9.3	U
Percent Solids (percent)		**85.3**		**83.2**		**53.5**	

Notes:

Volatile Organic Compounds (VOCs) analyzed by USEPA Method 8260C (only detected compounds shown)

Units: µg/kg = micrograms per kilogram

Detections in bold

Criteria Sediments = Class A SGV = Class A Sediment Guidance Value (Class A sediments considered low risk).

NA = criteria not available

Qualifier: J = estimated value; N = presumtive identification; U = not detected

QC Code: FS = Field Sample; FD = Field Duplicate

Table 4.1: Post Remediation Sampling Requirements and Schedule:

Monitoring Well ID	Analytical Parameters		Sample Schedule
	VOCs	Monitored Natural Attenuation Parameters	
MW-1D	X	X	Annual
MW-01	X	X	Annual
MW-2			None
MW-2D	X	X	Annual
MW-3D	X	X	Annual
MW-4S	X		Annual
MW-4M	X		Annual
MW-4D	X	X	Annual
MW-5S			None
MW-5D	X	X	Annual
MW-6S			None
MW-6D	X		Annual
MW-7S	X		Annual
MW-7D	X		Annual
MW-8S	X		Annual
MW-8D			None
MW-9S			None
MW-9D			None
OB-1	X		Annual
MW-11D			None
MW-12D	X	X	Annual
MW-13D	X		Annual
MW-15D	X		Annual
MW-16			None
MW-16D	X		Annual
MW-17D	X		Annual
MW-18D	X		Annual
MW-20			None
MW-20D	X		Annual
MW-20DD	X		Annual
MW-21			None
MW-21D	X	X	Annual
MW-22D	X		Annual
MW-23			None
MW-23D	X		Annual
MW-24D	X		Annual
MW-25D	X		Annual
MW-26D	X		Annual
MW-27D	X	X	Annual
MW-28D	X		Annual
MW-30S	X		Annual
MW-31S	X		Annual
MW-32S	X		Annual
MW-32D	X		Annual
MW-33S	X		Annual
MW-34S	X		Annual
MW-35S	X		Annual
MW-36S			None
MW-37S	X		Annual
MW-38S	X		Annual
MW-39S	X		Annual
IW-1			None
IW-2			None

Table 4.1: Post Remediation Sampling Requirements and Schedule:

Monitoring Well ID	Analytical Parameters		Sample Schedule
	VOCs	Monitored Natural Attenuation Parameters	
IW-3			None
IW-4			None
IW-5	X		Annual
IW-6			None
IW-8			None
IW-9			None
EW-1	X	X	Annual
EW-2	X	X	Annual

Table 4.2: Well Characteristics

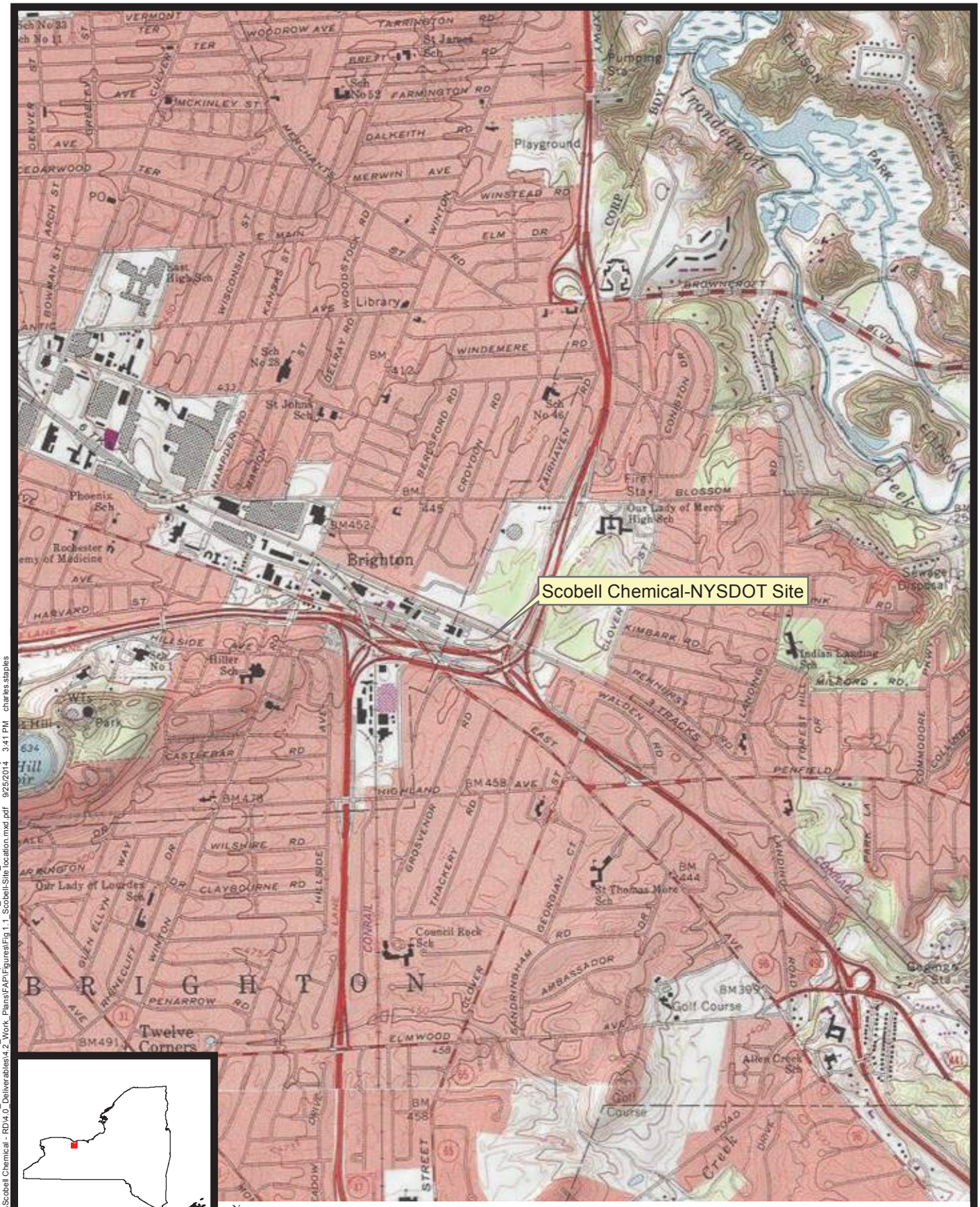
Monitoring Well ID	Well Location	Purpose	Northing	Easting	Ground Elevation (ft)	Casing Elevation (ft)	Riser Elevation (ft)	Depth to Rock (BGS)	Screen Monitored Depth (ft) (BGS)	Top of Screen Monitored Elevation	Bottom of Screen Monitored Elevation
MW-1D	Upgradient	Upgradient	1147127.8	1424706.9	455.14	N/A	457.56	16.00	36 to 46	419.14	409.14
MW-01	Downgradient	Center Plume	1148541.5	1425560.5	438.84	440.47	440.63	--	33.41	--	405.43
MW-2	On-Site	Not Sampled	1147272.5	1425193.3	453.73	456.18	455.94	10.70	6 to 11	447.73	442.73
MW-2D	On-Site	Source	1147282.4	1425194.4	453.59	N/A	456.14	11.10	26 to 36	427.59	417.59
MW-3D	On-Site	Source	1147364.0	1425018.5	452.15	454.72	454.42	7.50	26 to 36	426.19	416.19
MW-4S	Downgradient	Center Plume	1147636.9	1425192.3	443.64	N/A	446.29	11.70	4.5 to 14.5	439.14	429.14
MW-4M	Downgradient	Center Plume	1147626.1	1425201.4	443.73	446.24	Casing	11	13 to 21	430.73	422.73
MW-4D	Downgradient	Center Plume	1147621.7	1425204.5	443.63	445.99	445.88	11.70	25 to 35	418.63	408.63
MW-5S	Downgradient	Not Sampled	1147825.7	1425241.6	442.70	442.70	442.36	10.70	3 to 13	439.76	429.76
MW-5D	Downgradient	Center Plume	1147824.9	1425224.9	442.48	N/A	445.02	10.70	22.5 to 32.5	419.98	409.98
MW-6S	Downgradient	Not Sampled	1147613.0	1424959.3	443.10	445.57	445.10	6.00	12 to 25	431.10	418.10
MW-6D	Downgradient	Edge Plume	1147604.8	1424972.8	443.12	445.67	445.34	5.50	58 to 73	385.12	370.12
MW-7S	Downgradient	Center Edge Plume	1148143.9	1425500.5	440.81	443.25	443.07	8.00	12 to 25	428.81	415.81
MW-7D	Downgradient	Center Edge Plume	1148130.4	1425489.4	441.16	443.38	442.52	8.00	52 to 65	389.16	376.16
MW-8S	Cross Gradient	Cross Gradient	1147172.2	1426293.4	452.89	455.41	454.76	6.00	12.5 to 25	440.39	427.89
MW-8D	Cross Gradient	Not Sampled	1147187.9	1426286.9	453.25	455.08	454.51	6.00	64.5 to 78.5	388.75	374.75
MW-9S	Upgradient	Not Sampled	1146429.2	1425219.3	453.19	453.19	452.81	8.00	19 to 25	434.19	428.19
MW-9D	Upgradient	Not Sampled	1146415.0	1425227.2	453.27	453.27	452.94	8.00	68 to 78	385.27	375.27
OB-1	Downgradient	Center Edge Plume	1148583.0	1425879.3	436.85	439.78	439.58	6.50	4.5 to 9.5	432.35	427.35
MW-11D	On-Site	Not Sampled	1147290.6	1425044.0	453.46	455.34	Casing	9.6	14 to 27.5	439.46	425.96
MW-12D	Downgradient	Center Plume	1147527.9	1425112.0	444.41	446.44	Casing	12.5	15 to 36.2	429.41	408.21
MW-13D	Downgradient	Edge Plume	1147396.4	1425266.1	456.11	458.21	Casing	16	19 to 42	437.11	414.11
MW-15D	On-Site	Upgradient	1147228.8	1425068.8	454.10	456.13	Casing	11	13 to 35.9	441.10	418.20
MW-16	On-Site	Not Sampled	1147303.5	1424981.7	452.87	455.54	455.37	7.80	5 to 8	447.87	444.87
MW-16D	On-Site	Source Area	1147301.3	1424981.2	452.87	455.53	Casing	7.8	10 to 29	442.87	423.87
MW-17D	On-Site	Source Area	1147347.0	1425075.3	451.76	454.42	Casing	8.1	10 to 30	441.76	421.76
MW-18D	Downgradient	Edge Plume	1147521.8	1424984.0	445.25	447.06	Casing	11.3	13.3 to 28.3	431.95	416.95
MW-20	Downgradient	Not Sampled	1147658.5	1425336.9	444.04	446.39	446.17	14.50	8.7 to 13.7	435.34	430.34
MW-20D	Downgradient	Center Plume	1147663.7	1425340.7	444.05	446.21	Casing	12	14 to 31.5	430.05	412.55
MW-20DD	Downgradient	Center Plume	1147664.0	1425334.0	443.99	446.30	446.00	11.50	35.2 to 50.2	408.79	393.79
MW-21	Downgradient	Not Sampled	1147720.5	1425058.1	441.85	443.99	443.83	12.50	7 to 12	434.85	429.85
MW-21D	Downgradient	Center Plume	1147723.5	1425059.8	441.71	443.93	Casing	12.5	14.5 to 29.5	427.21	412.21
MW-22D	Downgradient	Center Plume	1147874.9	1425458.8	443.74	445.67	Casing	13.7	15.5 to 30.5	428.24	413.24
MW-23	Downgradient	Not Sampled	1148077.5	1425350.6	441.41	441.41	440.96	10.00	4.8 to 9.8	436.61	431.61
MW-23D	Downgradient	Center Plume	1148072.9	1425349.1	441.31	441.31	440.79	9.50	11.5 to 26.5	429.81	414.81
MW-24D	Downgradient	Center Edge Plume	1148246.8	1425749.7	442.91	445.54	Casing	8.2	9.5 to 25	433.41	417.91

Table 4.2: Well Characteristics

Monitoring Well ID	Well Location	Purpose	Northing	Easting	Ground Elevation (ft)	Casing Elevation (ft)	Riser Elevation (ft)	Depth to Rock (BGS)	Screen Monitored Depth (ft) (BGS)	Top of Screen Monitored Elevation	Bottom of Screen Monitored Elevation
MW-25D	Downgradient	Edge Plume	1148012.4	1426049.6	437.31	439.29	Casing	5	7 to 22	430.3	415.3
MW-26D	Downgradient	Center/Edge Plume	1147481.8	1425654.1	435.78	437.53	Casing	9	11 to 26	424.8	409.8
MW-27D	On-Site	Source Area	1147358.3	1425045.7	451.97	453.98	Casing	6	8.3 to 35.4	443.7	416.6
MW-28D	On-Site	Source Area	1147310.0	1425069.7	453.36	453.89	Casing	9	10.6 to 31.70	442.8	421.7
MW-30S	Downgradient	Side Plume	1149065.3	1426487.3	429.01	431.33	430.86	8.50	8.1 to 13.1	420.9	415.9
MW-31S	Downgradient	Side Plume	1149180.1	1425983.8	435.56	435.56	435.21	10.20	9.4 to 13.4	426.2	422.2
MW-32S	Downgradient	Center Plume	1149182.0	1425796.8	433.58	433.58	433.24	6.80	12 to 17	421.6	416.6
MW-32D	Downgradient	Center Plume	1149182.0	1425796.8	433.58	433.58	433.24	6.80	19.9 to 24.9	413.7	408.7
MW-33S	Downgradient	Center Plume	1148937.0	1425428.7	436.00	436.00	435.51	5.00	8.9 to 14.9	427.1	421.1
MW-34S	Downgradient	Clean Side Plume	1149125.1	1424929.3	439.65	439.65	439.25	7.00	9.9 to 14.9	429.8	424.8
MW-35S	Downgradient	Clean Side Plume	1148780.6	1424845.5	439.84	439.84	439.50	6.00	10.1 to 15.1	429.8	424.7
MW-36S	Downgradient	Not Sampled	1148397.5	1424648.5	440.78	440.78	440.23	9.00	10 to 15	430.8	425.8
MW-37S	Downgradient	Clean End Plume	1149894.3	1425385.6	423.56	423.56	423.23	5.00	5.7 to 15.7	418.6	408.6
MW-38S	Downgradient	Clean End Plume	1149878.5	1425786.8	423.66	423.66	423.38	7.50	8 to 18	415.7	405.7
MW-39S	Downgradient	Clean End Plume	1149756.0	1426184.2	426.95	426.95	426.63	13.50	6.8 to 16.8	420.2	410.2
IW-1	On-Site	Not Sampled	1147311.5	1424983.8	452.70	452.55	Casing	8	10 to 35.6	442.7	417.1
IW-2	On-Site	Not Sampled	1147339.1	1424994.5	452.56	452.25	Casing	7.5	9.9 to 36	442.7	416.6
IW-3	On-Site	Not Sampled	1147366.8	1425004.9	452.09	451.84	Casing	7.5	10 to 36.3	442.1	415.8
IW-4	On-Site	Not Sampled	1147299.3	1425011.6	453.01	452.69	Casing	8.5	10.5 to 36.2	442.5	416.8
IW-5	On-Site	Source Area	114732.8	1425023.0	452.99	452.74	Casing	9.2	11 to 35.3	442.0	417.7
IW-6	On-Site	Not Sampled	1147355.4	1425033.3	452.47	452.23	Casing	7.4	9.4 to 36	443.1	416.5
IW-8	On-Site	Not Sampled	1147316.4	1425051.2	453.2	453.09	Casing	9	10.6 to 31.7	442.6	421.5
IW-9	On-Site	Not Sampled	1147343.1	1425060.9	452.42	452.17	Casing	8	10 to 22	442.4	430.4
EW-1	On-Site	Source Area	1147336.6	1425095	--	452.5	451.63	8.9	24.6 to 33.6	427.9	418.9
EW-2	On-Site	Upgradient Source	1147242.8	1425069.2	--	453.7	453.22	8.9	25.2 to 34.7	428.02	418.52

Notes:
ft = feet
BGS = below ground surface
Horizontal Datum: NAD 83(2011) New York State Plane Coordinate System, West Zone
Vertical Datum: NAVD 88
Units: U.S. Survey Feet
-- = Unknown

FIGURES



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Prepared/Date: CRS 09/25/14
Checked/Date: BPN 09/25/14

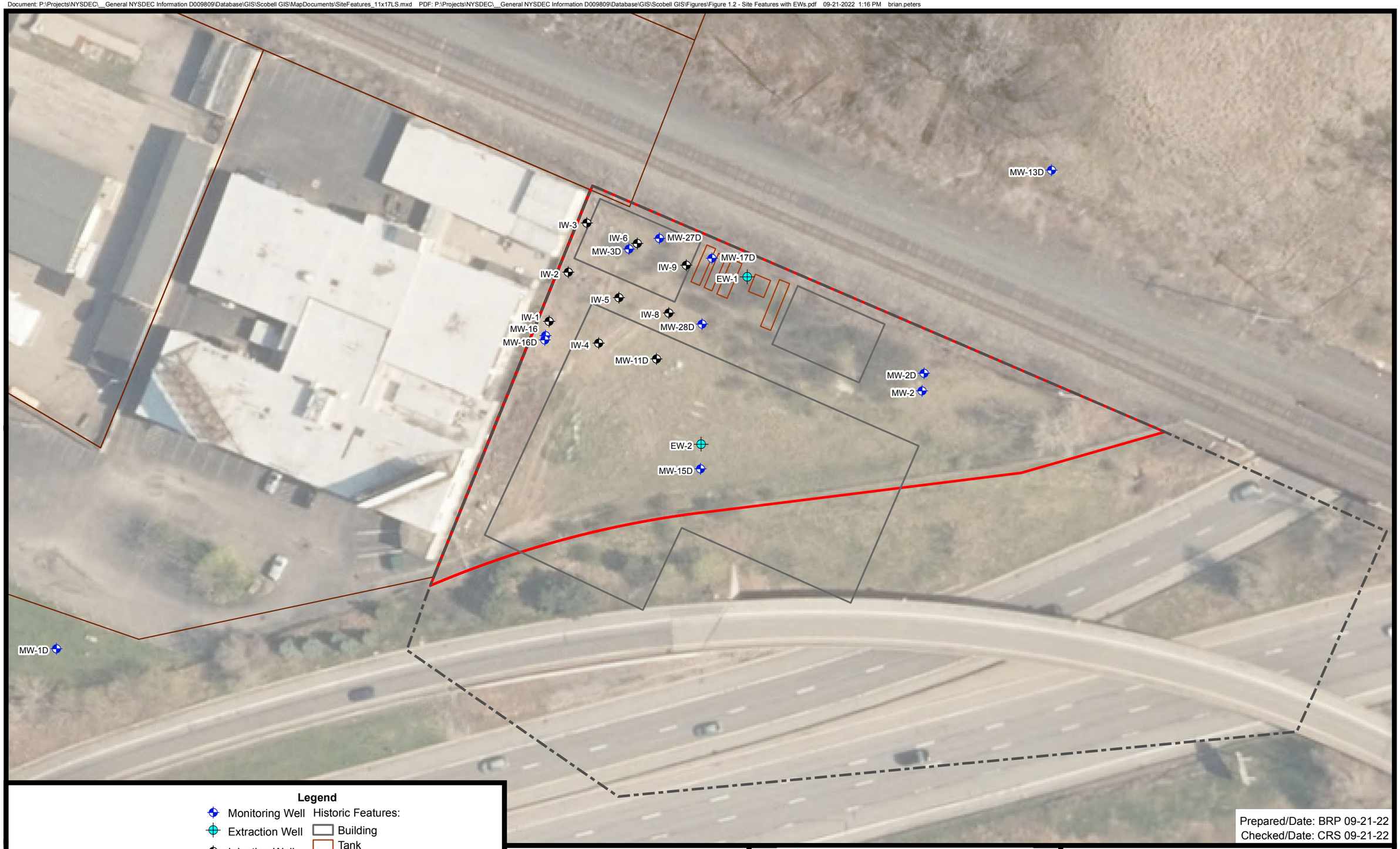
SCOBELL CHEMICAL-NYSDOT
SITE # 828076
BRIGHTON, NEW YORK

MACTEC

Site Location

Project 3617147328 Figure 1.1

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Legend

- Monitoring Well
- Extraction Well
- Injection Well
- Property Line
- Site Boundary

Historic Features:

- Building
- Tank
- Property Boundary

N

0 25 50 Feet

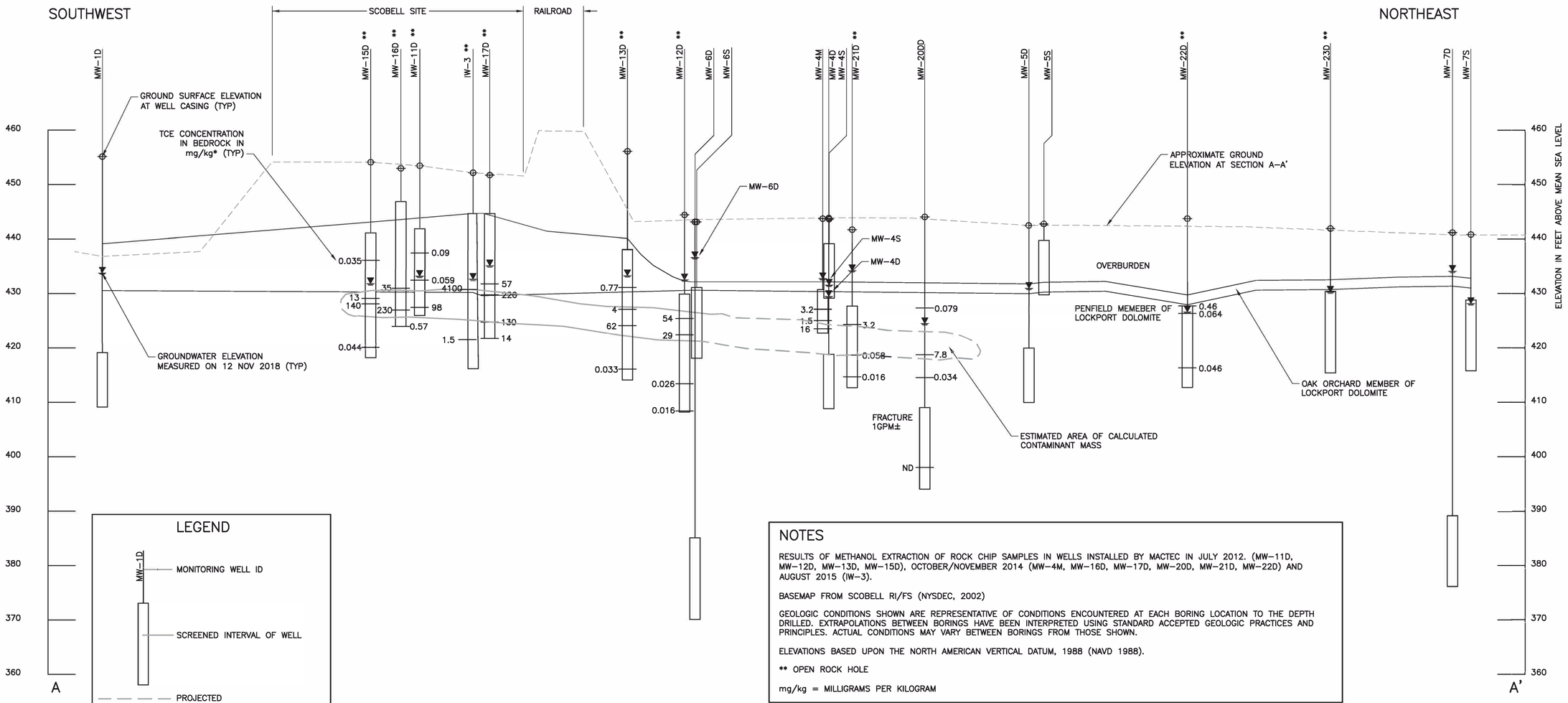
Prepared/Date: BRP 09-21-22
Checked/Date: CRS 09-21-22

SCOBELL CHEMICAL-
NYSDOT SITE # 828076
BRIGHTON, NEW YORK

MACTEC

Site Features

Project 3616216143 Figure 1.2



LEGEND

MW-1D — MONITORING WELL ID

SCREENED INTERVAL OF WELL

PROJECTED

NOTES

RESULTS OF METHANOL EXTRACTION OF ROCK CHIP SAMPLES IN WELLS INSTALLED BY MACTEC IN JULY 2012. (MW–11D, MW–12D, MW–13D, MW–15D), OCTOBER/NOVEMBER 2014 (MW–4M, MW–16D, MW–17D, MW–20D, MW–21D, MW–22D) AND AUGUST 2015 (IW–3).

BASEMAP FROM SCOBELL RI/FS (NYSDEC, 2002)

GEOLOGIC CONDITIONS SHOWN ARE REPRESENTATIVE OF CONDITIONS ENCOUNTERED AT EACH BORING LOCATION TO THE DEPTH DRILLED. EXTRAPOLATIONS BETWEEN BORINGS HAVE BEEN INTERPRETED USING STANDARD ACCEPTED GEOLOGIC PRACTICES AND PRINCIPLES. ACTUAL CONDITIONS MAY VARY BETWEEN BORINGS FROM THOSE SHOWN.

ELEVATIONS BASED UPON THE NORTH AMERICAN VERTICAL DATUM, 1988 (NAVD 1988).

** OPEN ROCK HOLE

mg/kg = MILLIGRAMS PER KILOGRAM

SECTION A–A'

0 25 50 100
SCALE IN FEET (HORIZONTAL)

0 5 10 20
SCALE IN FEET (VERTICAL)

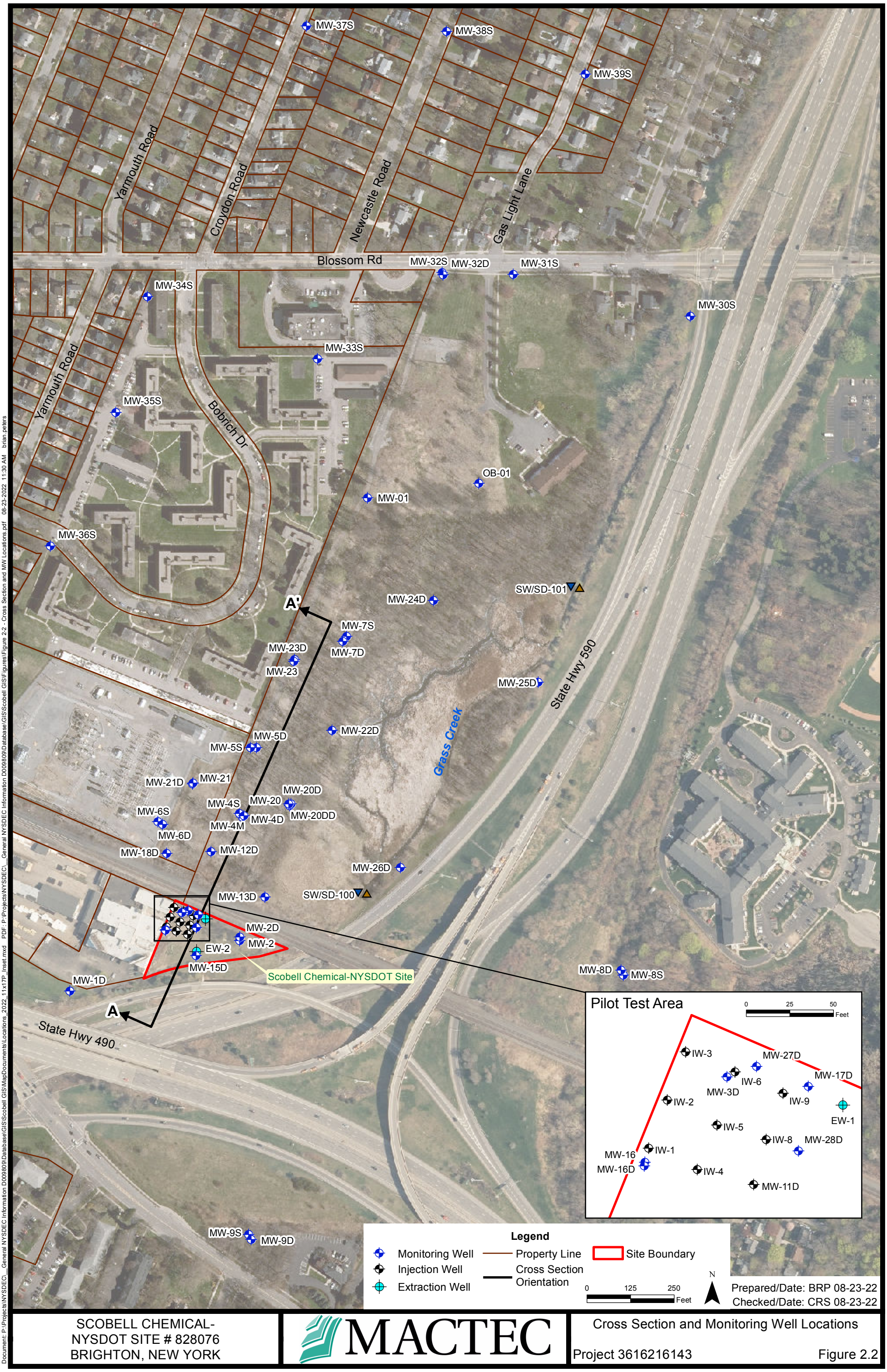
Prepared/Date: JVM 07/18/19
Checked/Date: CRS 07/18/19

PRE-DESIGN INVESTIGATION
SCOBELL CHEMICAL-NYSDEC SITE #828076
BRIGHTON, NEW YORK

MACTEC

GEOLOGIC CROSS SECTION
SECTION A-A'
Project 3616216143
Figure 2.1

Z:\Projects\nyssdec1\Scobell Chemical\VIG 2.2 PRE_INVESTIGATION\dwg.dwg Mon, 26 Aug 2019 – 9:41:am john.mckenzie



SCOBELL CHEMICAL-
NYSDOT SITE # 828076
BRIGHTON, NEW YORK

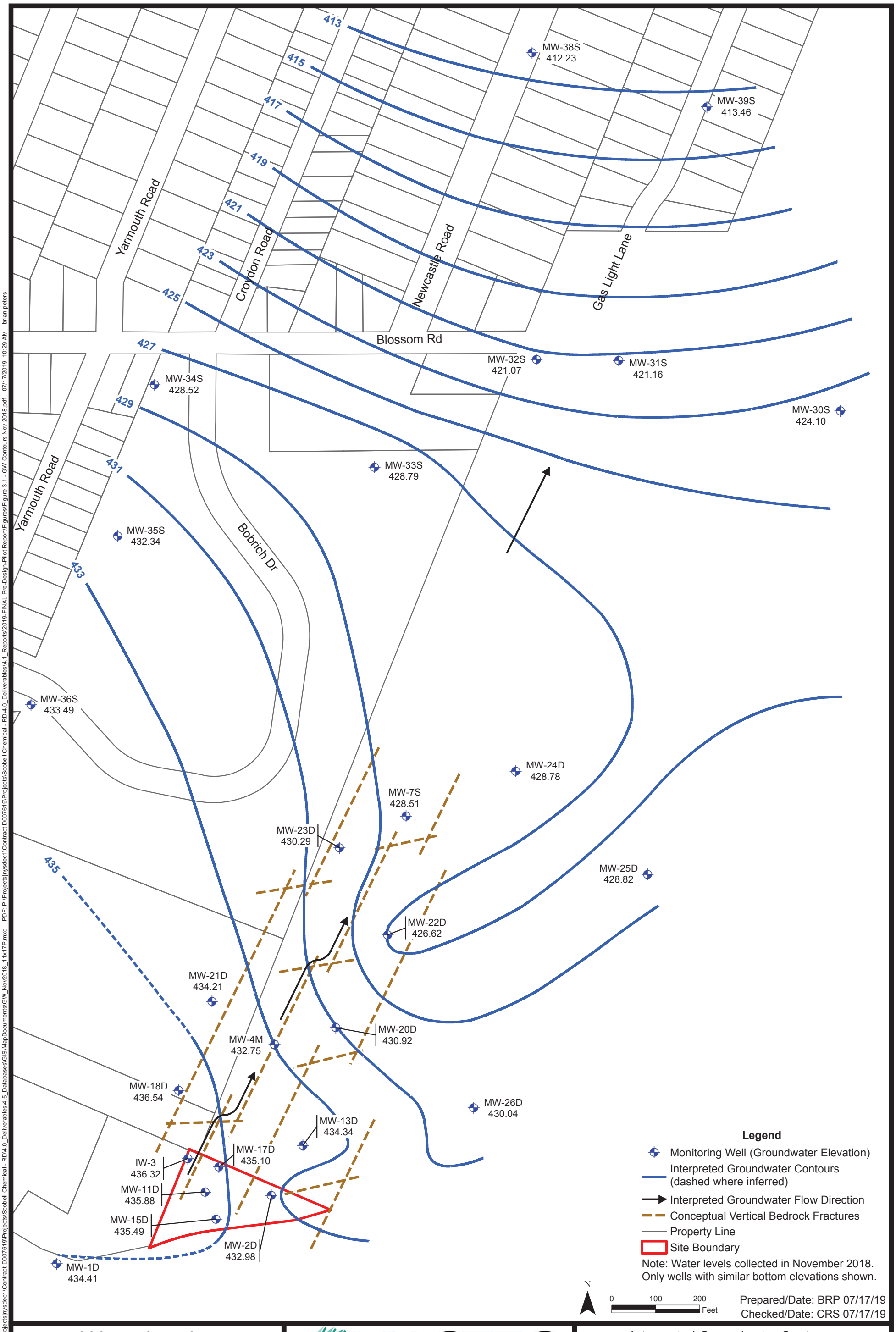
MACTEC

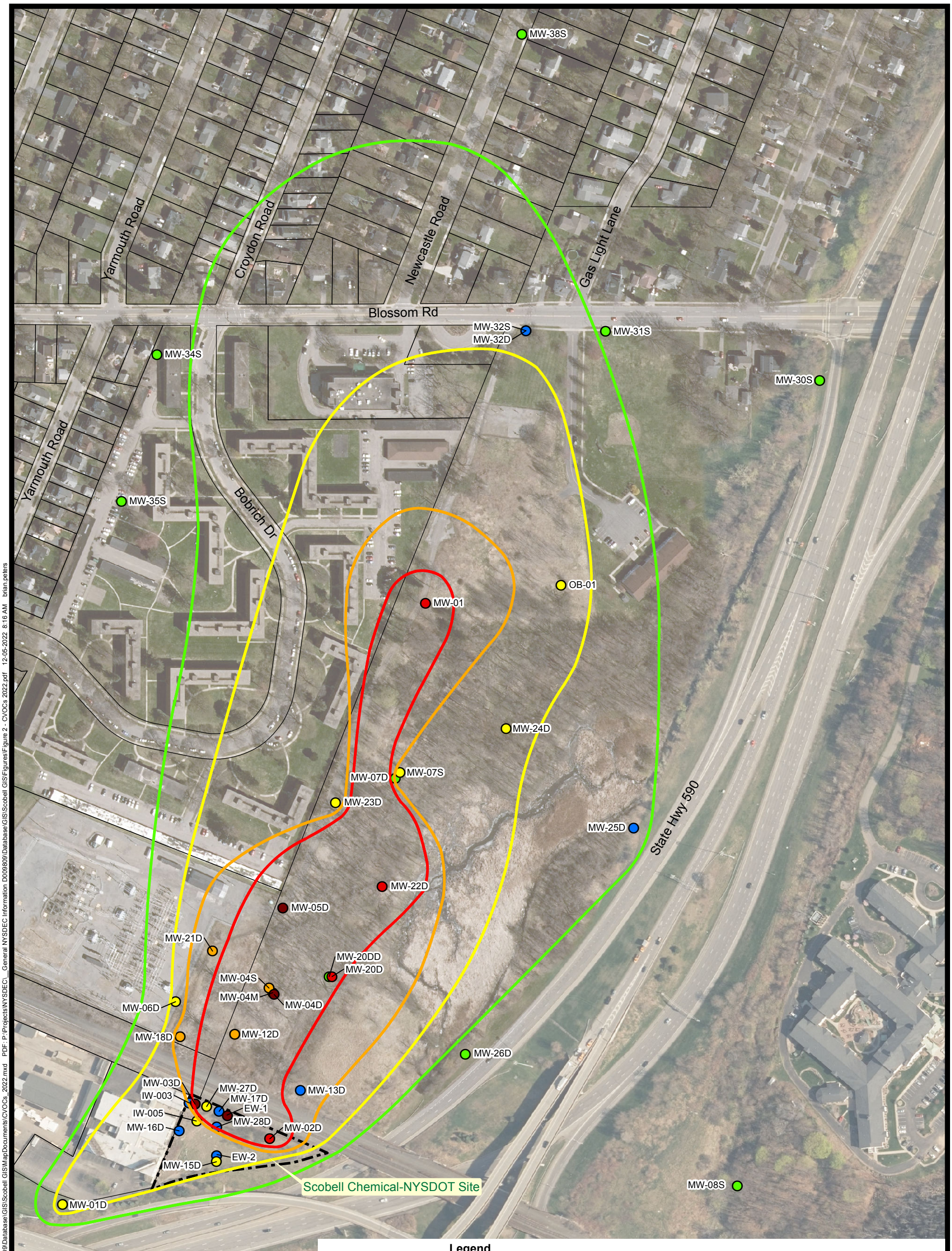
Cross Section and Monitoring Well Locations

Project 3616216143

Figure 2.2

Document: P:\Projects\NYSDEC__General NYSDEC Information D009809\Database\GIS\Scobell GIS\Figures\Figure 2-2 - Cross Section and MW Locations.pdf 08-23-2022 11:30 AM brian.peters
PDF: P:\Projects\NYSDEC__General NYSDEC Information D009809\Database\GIS\Scobell GIS\MapDocuments\Locations_2022_11x17P_Inset.mxd brian.peters


413
415
417
419
421
423
425
427
429
431
433
435
Yarmouth Road
Croydon Road
Newcastle Road
Gas Light Lane
Blossom Rd
Bobrich Dr
MW-38S
412.23
MW-39S
413.46
MW-32S
421.07
MW-31S
421.16
MW-30S
424.10
MW-34S
428.52
MW-33S
428.79
MW-35S
432.34
MW-36S
433.49
MW-24D
428.78
MW-7S
428.51
MW-23D
430.29
MW-25D
428.82
MW-22D
426.62
MW-21D
434.21
MW-20D
430.92
MW-4M
432.75
MW-18D
436.54
MW-26D
430.04
MW-13D
434.34
MW-17D
435.10
IW-3
436.32
MW-11D
435.88
MW-15D
435.49
MW-2D
432.98
MW-1D
434.41
Legend
Monitoring Well (Groundwater Elevation)
Interpreted Groundwater Contours (dashed where inferred)
Interpreted Groundwater Flow Direction
Conceptual Vertical Bedrock Fractures
Property Line
Site Boundary
Note: Water levels collected in November 2018. Only wells with similar bottom elevations shown.
N
0
100
200
Feet
Prepared/Date: BRP 07/17/19
Checked/Date: CRS 07/17/19
SCOBELL CHEMICAL-
NYSDOT SITE # 828076
BRIGHTON, NEW YORK
MACTEC
Interpreted Groundwater Contours
November 2018
Project 3617147328
Figure 2.3
Document: P:\Projects\nysdec1\Contract D007619\Projects\Scobell Chemical - RD\4.0_Deliverables\4.5_Databases\GIS\MapDocuments\GW_Nov2018_11x17P.mxd PDF: P:\Projects\nysdec1\Contract D007619\Projects\Scobell Chemical - RD\4.0_Deliverables\4.1_Reports\2019-FINAL Pre-Design-Pilot Report\Figures\Figure 3.1 - GW Contours Nov 2018.pdf 07/17/2019 10:29 AM brian.peters



Legend

- Not Sampled
- 0 to < 5 µg/L
- 5 to < 100 µg/L
- 100 to < 1,000 µg/L
- 1,000 to < 10,000 µg/L
- 10,000 to < 100,000 µg/L
- > 100,000 µg/L

2022 Isoconcentration
(dashed where inferred)

- 10,000 µg/L
- 1,000 µg/L
- 100 µg/L
- < 5 µg/L
- Property Line
- Site Boundary

Notes:
1. Only sampled wells are shown.
2. Concentrations represent sum of Tetrachloroethene, Trichlroethene, cis-1,2-Dichloroethene, and Vinyl Chloride.
3. Samples collected in October 2022

N

0 110 220 Feet

Prepared/Date: BRP 12-05-22
Checked/Date: CRS 12-05-22

SCOBELL CHEMICAL-
NYSDOT SITE # 828076
BRIGHTON, NEW YORK

MACTEC

2022 Interpreted Isoconcentration Lines

Project 3616216143

Figure 2.4

Document: P:\Projects\NYSDEC__General NYSDEC Information D009809\Database\GIS\Scobell GIS\Figures\Figure 2 - CVOCs 2022.pdf 12-05-2022 8:16 AM brian.peters
PDF: P:\Projects\NYSDEC__General NYSDEC Information D009809\Database\GIS\Scobell GIS\MapDocuments\CVOCs_2022.mxd

Blossom Rd

Building 1

Building 2

Building 3

Building 4

Bobrich Dr

Building 5

Elison Park Apartments

Building 6

Building 7

Building 9

Building 8

Building 12

Building 11

Building 10

State Hwy 590

Location 4

Location 1

Scobell Chemical-NYSDOT Site

State Hwy 490

N

0 100 200 Feet

Legend

Property Line

Site Boundary

SSDS Installation

Prepared/Date: CRS 01/12/18

Checked/Date: JPC 01/12/18

SCOBELL CHEMICAL-NYSDOT SITE
BRIGHTON, NEW YORK

MACTEC

SSDS INSTALLATION LOCATION

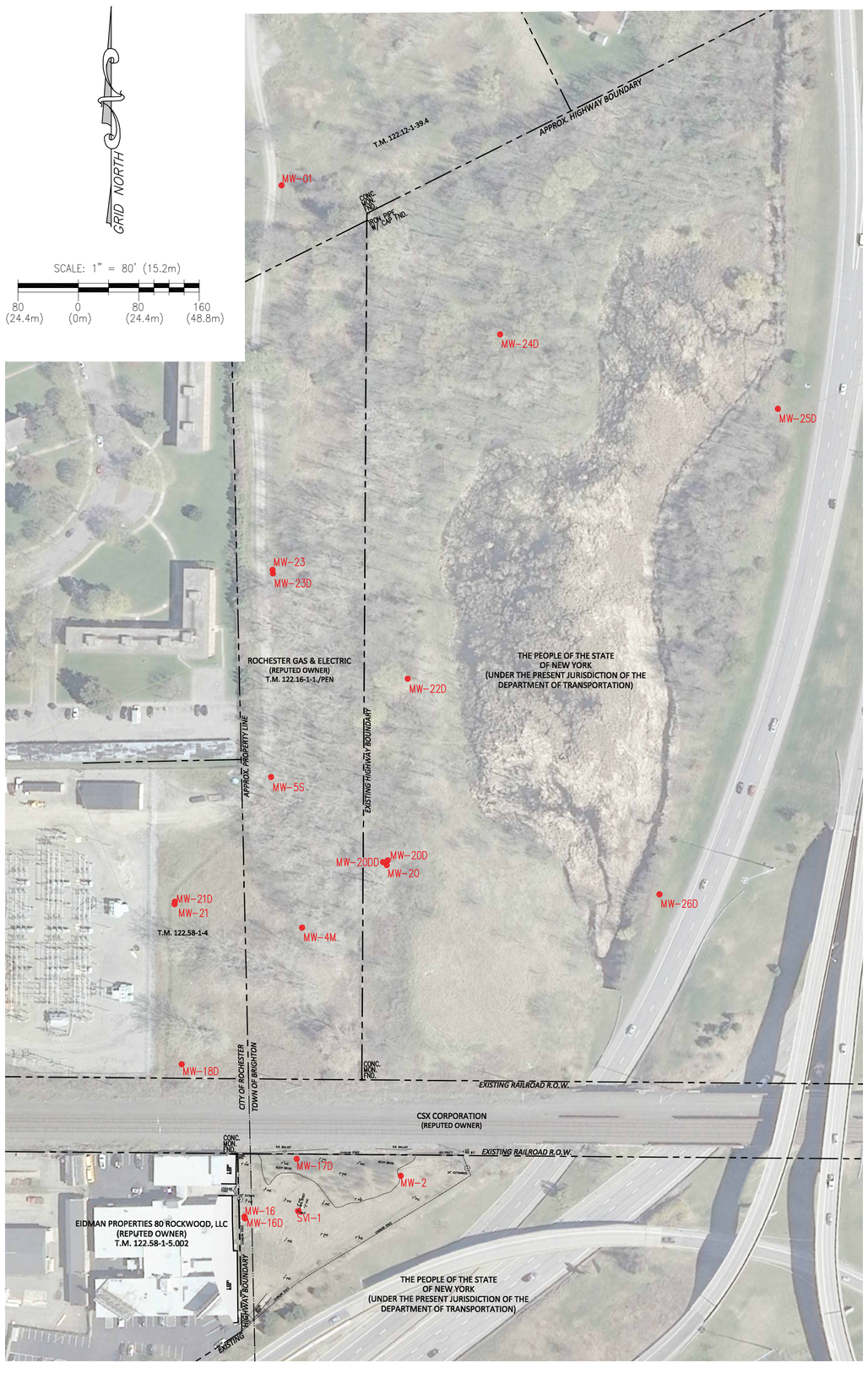
Project 3616216143 Figure 2.5

Document: P:\Projects\ysdec1\Contract D007619\Projects\Scobell Chemical - RD\4.0_Deliverables\4.5_Databases\GIS\MapDocuments\FAP_Figure2_11x17P.mxd PDF: P:\Projects\ysdec1\Contract D007619\Projects\Scobell Chemical - RD\4.0_Deliverables\4.1_Reports\Ellison Pk Bldg 6 SSDS Installation, Oct 2017\Fig 2_Scobell-Site location.mxd location.mxdt.pdf 1/12/2018 4:21 PM charles.staples

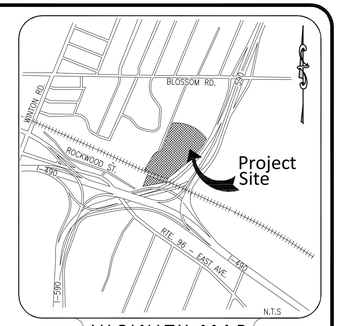
APPENDIX A – LIST OF SITE CONTACTS

Name	Phone/Email Address
Site Owner: New Yor State Department of Transportation: Contact- Thomas Finch,	NYS DOT, 585-272-3314; Thomas.Finch@dot.ny.gov
Qualified Environmental Professional: Charles Staples, MACTEC	207-450-9772; charles.staples@woodplc.com
NYSDEC DER Project Manager: Charlie Gregory	(518) 402-8246; Charles.Gregory@dec.ny.gov
NYSDEC DER Project Manager's Supervisor: Jeffrey Dyber, NYSDEC Remedial Bureau E, Section D Chief	(518) 402-9621; jeffrey.dyber@dec.ny.gov
NYSDEC Site Control: Kelly Lewandowski	518-402-9569; Kelly.Lewandowski@dec.ny.gov,
NYSDOH Project Manager: Sally Rushford	518-402-5465; sally.rushford@health.ny.gov

APPENDIX B – SITE SURVEY

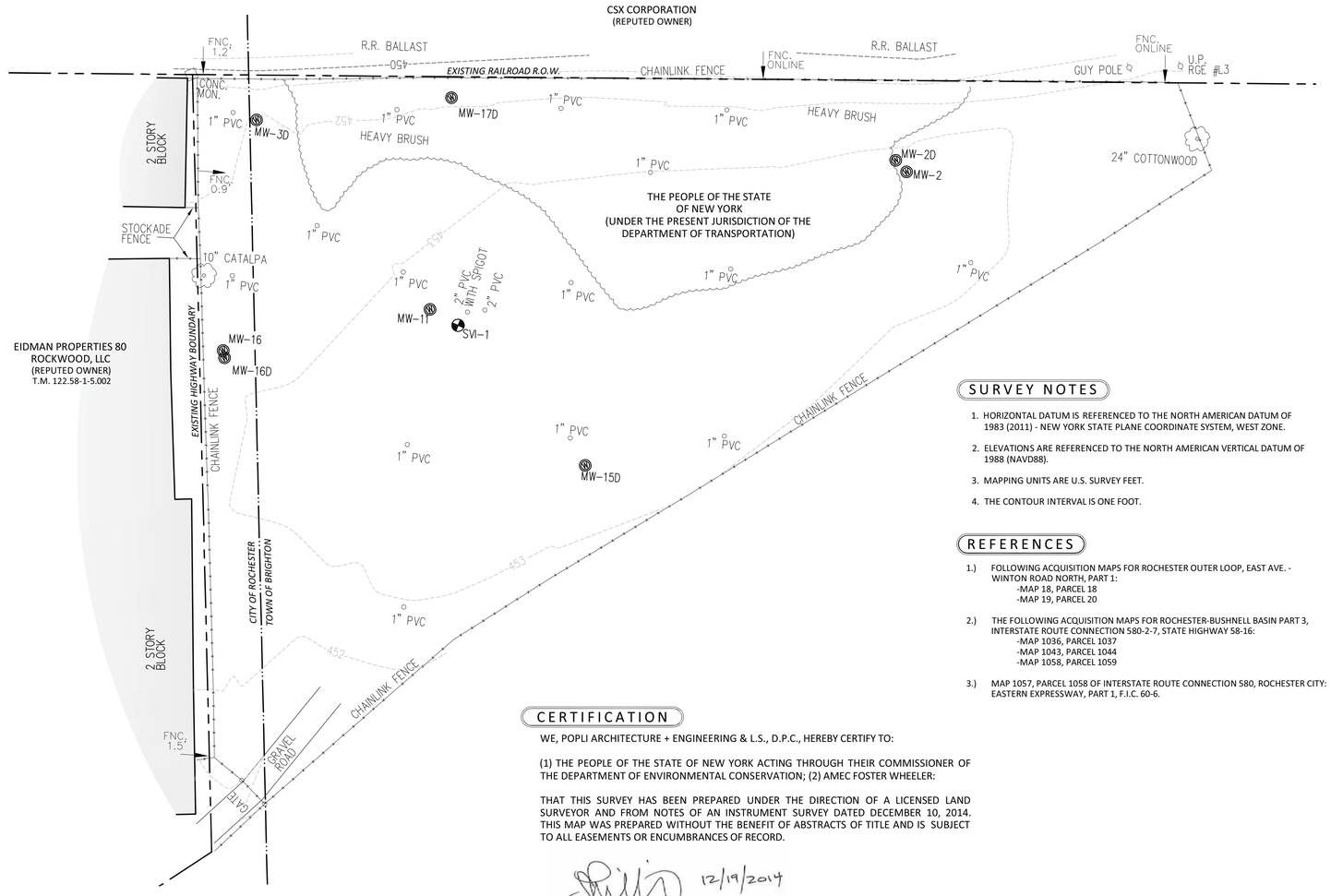


POINT ID	NORTHING	EASTING	GROUND ELEV.	CASING ELEV.	RISER ELEV.
SVI-1	1147282.7	1425050.2	453.71	455.48	455.02
MW-01	1148541.5	1425560.5	438.84	440.47	440.63
MW-2	1147272.5	1425193.3	453.73	456.18	455.94
MW-4M	1147626.1	1425201.4	443.73	446.24	N/A
MW-5S	1147825.7	1425241.6	442.70	442.70	442.36
MW-16	1147303.5	1424981.7	452.87	455.54	455.37
MW-16D	1147301.3	1424981.2	452.87	455.53	N/A
MW-17D	1147347.0	1425075.3	451.76	454.42	N/A
MW-18D	1147521.8	1424984.0	445.25	447.06	N/A
MW-20	1147658.5	1425336.9	444.04	446.39	446.17
MW-20D	1147663.7	1425340.7	444.05	446.21	N/A
MW-20DD	1147664.0	1425334.0	443.99	446.30	446.00
MW-21	1147720.5	1425058.1	441.85	443.99	443.83
MW-21D	1147723.5	1425059.8	441.71	443.93	N/A
MW-22D	1147874.9	1425458.8	443.74	445.67	N/A
MW-23	1148077.5	1425350.6	441.41	441.41	440.96
MW-23D	1148072.9	1425349.1	441.31	441.31	440.79
MW-24D	1148246.8	1425749.7	442.91	445.54	N/A
MW-25D	1148012.4	1426049.6	437.31	439.29	N/A
MW-26D	1147481.8	1425654.1	435.78	437.53	N/A



VICINITY MAP

SCALE: 1" = 20' (6m)
20 (6m) 0 (0m) 20 (6m) 40 (12.2m)



SURVEY NOTES

1. HORIZONTAL DATUM IS REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 (2011) - NEW YORK STATE PLANE COORDINATE SYSTEM, WEST ZONE.
2. ELEVATIONS ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
3. MAPPING UNITS ARE U.S. SURVEY FEET.
4. THE CONTOUR INTERVAL IS ONE FOOT.

REFERENCES

1.) FOLLOWING ACQUISITION MAPS FOR ROCHESTER OUTER LOOP, EAST AVE. - WINTON ROAD NORTH, PART 1:
-MAP 18, PARCEL 18
-MAP 19, PARCEL 20

2.) THE FOLLOWING ACQUISITION MAPS FOR ROCHESTER-BUSHNELL BASIN PART 3, INTERSTATE ROUTE CONNECTION 580-2-7, STATE HIGHWAY 58-16:
-MAP 1036, PARCEL 1037
-MAP 1043, PARCEL 1044
-MAP 1058, PARCEL 1059

3.) MAP 1057, PARCEL 1058 OF INTERSTATE ROUTE CONNECTION 580, ROCHESTER CITY: EASTERN EXPRESSWAY, PART 1, F.I.C. 60-6.

CERTIFICATION

WE, POPLI ARCHITECTURE + ENGINEERING & L.S., D.P.C., HEREBY CERTIFY TO:

(1) THE PEOPLE OF THE STATE OF NEW YORK ACTING THROUGH THEIR COMMISSIONER OF THE DEPARTMENT OF ENVIRONMENTAL CONSERVATION; (2) AMEC FOSTER WHEELER:

THAT THIS SURVEY HAS BEEN PREPARED UNDER THE DIRECTION OF A LICENSED LAND SURVEYOR AND FROM NOTES OF AN INSTRUMENT SURVEY DATED DECEMBER 10, 2014. THIS MAP WAS PREPARED WITHOUT THE BENEFIT OF ABSTRACTS OF TITLE AND IS SUBJECT TO ALL EASEMENTS OR ENCUMBRANCES OF RECORD.

12/19/2014

JEFFREY F. PHILLIPS, LS 50773
FOR: **POPLI DESIGN GROUP**
555 PENBROOKE DRIVE
PENFIELD, NY 14526
PHONE 585-364-1622

REVISIONS

STATE OF NEW YORK · JEFFREY FRANK PHILLIPS · 50773 · LICENSED LAND SURVEYOR

Unauthorized alteration or addition to a survey map bearing a licensed land surveyor's seal is a violation of section 7209, sub-division 2, of the New York State Education Law.

Only maps with the surveyor's embossed seal are genuine true and correct copies of the surveyor's original work and opinion.

The certifications herein are not transferable.

The location of underground improvements or encroachments are not always known and often must be estimated. If any underground improvements or encroachments exist or are known, the improvements or encroachments are not covered by this certificate.

POPLI DESIGN GROUP
555 Penbrooke Drive • Penfield, NY 14526
main: 585.388.2060 • fax: 585.388.2070

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TOPOGRAPHIC AND LOCATION SURVEY

FOR

NYSDEC SITE NO. 828076
FORMER SCOBELL CHEMICAL SITE

BEING A PORTION OF THE CURRENT NYSDOT RIGHT-OF-WAY
CITY OF ROCHESTER & TOWN OF BRIGHTON, COUNTY OF MONROE, STATE OF NEW YORK

DRAFTER:	SCALE:	DATE:	DRAWING NO.:
JFP	AS NOTED	12/19/2014	SU14056.06

APPENDIX C – MONITORING WELL BORINGS AND CONSTRUCTION LOGS

(MW-6S, MW-6D, MW-7S, MW-7D, MW-8S, MW-8D, MW-9S AND MW-9D BORING/WELL LOGS NOT FOUND)

PARSONS ENGINEERING SCIENCE, INC.
DRILLING RECORD

BORING/WELL NO. MW-1D Sheet 1 of 3

Contractor: North Star
Driller: Jeff Thew
Inspector: Dillman
Rig Type: CME-55

PROJECT NAME: Scobell Chemical Site
PROJECT NUMBER: 733128.00000

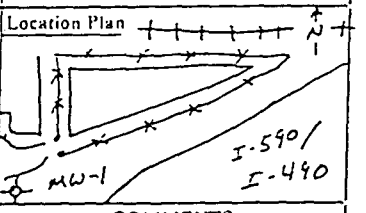
Location Description: Between parking lot and I-590/I-490 ramps

GROUNDWATER OBSERVATIONS

Water Level	23.50	23.19		
Date	6-29-98	7-9-98		
Time	12:20	8:04		
Meas. From	TOC	TOC		

Weather: Partly cloudy, light wind
Date/Time Start: June 16, 1998 5:30 PM
Date/Time Finish: June 19, 1998 1:40 PM

Location Plan



Sample Depth	Sample I.D.	SPT	% Rec.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
÷3						
÷2						
1						
0						
		5				
1		29	75%	0.0	0-0.3' Brown silty soil	
		49			0.3'-2' silt-fine sand, some gravel, trace coal, little coarse sand, rounded, Brown soil, gray rock, damp.	
2		39				
		19				
3		50/6"	100%	0.0	2-4' Brown silt-fine sand, some very coarse rounded sand, gravel at base. 3' boulder fill? No stain, no odor.	No analytical samples collected.
4						
		8				
5		22	60%	0.0	4-6' As above - silt-fine sand interbedded with gravel and coarse fill (cobbles, boulders).	
		19				
6		14				
		6				
		8	71%	0.0	6.5-8.5' Brown silt, little coarse rounded sand, trace clay, trace coal? Fill - cobbles & boulders	
8		50/2"				
		5				
9		50/3"	Poor	41?	8.5-10.5 as above	
10						
		10				
11		23	61%	5.5	10-11.4 as above, damp-moist	
		50/4.5"				
12						
		8				
13		18	50%	9.6	12-14 Tan fine Sand, some coarse gravel, moist-wet.	
		22				
14		21				
		51	45%	21.5	14-16' Coarse gravel, little fine-medium Sand, moist.	
15		25				
		22				
16		23				
		80/4"	50%		Coarse gray Gravel on bedrock. Auger refusal at 16' Roller bit drilled to 17.5'.	
17		RB				
		RB				
18		C-1				

SAMPLING METHOD
SS = SPLIT SPOON
A = AUGER CUTTINGS
GP = GEOPROBE - DIRECT PUSH

COMMENTS:
C-1 = core 1
Well screen set from 36-46 feet. See Well Construction Log for details

Contractor: North Star
Driller: Jeff Thew
Inspector: Dillman
Rig Type: CME-55

PARSONS ENGINEERING SCIENCE, INC.
DRILLING RECORD

BORING/WELL NO. MW-1D Sheet 2 of 3

PROJECT NAME: Scobell Chemical Site
PROJECT NUMB. 733128.00000

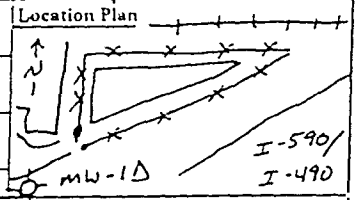
Location Description: Between parking lot and I-590/I-490 ramps.

GROUNDWATER OBSERVATIONS

Water Level				
Date				
Time				
Meas. From				

Weather: Clear, light breeze, 70's
Date/Time Start: June 16, 1998 5:30 PM
Date/Time Finish: June 19, 1998 1:40 PM

Location Plan



Sample Depth	Sample I.D.	SPT	% Rec.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		C-1				
19		C-1			17.5'-21' Gray crystalline Dolomite, scattered pinpoint vugular porosity, some fractures 17.5-19'. Some scale build up in fractures (solution/deposition). 19-21' competent dolomite.	
		C-1				
20		C-1				
		C-1				
21		C-1				
		C-2				
22		C-2	100		21'-24.6' Fossiliferous Dolomite, scattered vugular porosity and pinpoint porosity, some bedding plane fractures and stylolites. 22.2' thin mud filled fracture zone.	
		C-2				RQD = 83%
23		C-2				
		C-2				
24		C-2				
		C-2			24.6'-31' Dense Dolomite, a few stylolites, and fractures.	
25		C-2				
		C-2				
26		C-2				
		C-2				
27		C-2				
		C-2				
28		C-2				
		C-2				
[redacted]		C-2				
		C-2				
30		C-2				
		C-2				
31		C-2				
		C-3			31'-31.5' Gray Dolomite, some fossils, little porosity	
32		C-3	100		31.5'-32.5' Dense Dolomite	
		C-3			32.5'-33.2' Fossiliferous Dolomite, some pinpoint porosity	
33		C-3				RQD: 98%
		C-3				
34		C-3			33.2'-37.1' Dense gray Dolomite, few bedding plane fractures/stylolites	
		C-3				
35		C-3				
		C-3				
36		C-3				
		C-3				
37		C-3			37.1'-39.3' Fossiliferous Dolomite, crinoid stem pieces and broken shell fragments. Pinpoint and small vugular porosity.	
		C-3				
38		C-3				
		C-3				
39		C-3				

SAMPLING METHOD
SS = SPLIT SPOON
A = AUGER CUTTINGS
C = CORED

COMMENTS:
C-1, C-2, C-3 - core runs 1, 2, 3.
See Well Construction Log for well construction details.
Well screen set from 36-46 feet.

Contractor: North Star
Driller: Jeff Thew
Inspector: Dillman
Rig Type: CME-55

PARSONS ENGINEERING SCIENCE, INC.
DRILLING RECORD

PROJECT NAME: Scobell Chemical Site
PROJECT NUMB. 733128.00000

BORING/WELL NO. MW-10 Sheet 3 of 3

Location Description: Between parking lot and I 590/E-490 ramps

GROUNDWATER OBSERVATIONS

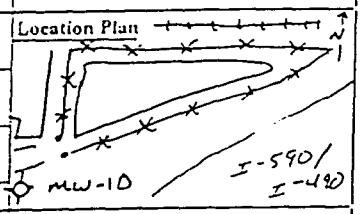
Water [redacted]				
[redacted]				
Time				
Meas. From				

Weather: Clear, light breeze, 70's

Date/Time Start: June 16, 1998 5:30 PM

Date/Time Finish: June 19, 1998 1:40 PM

Location Plan



Sample Depth	Sample I.D.	SPT	% Rec.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		C-3				
40		C-3			39.3-41' scattered fossil zones, trace pinpoint porosity in dolomite. stylolite at 41'.	
		C-3				
41		C-3				
		C-4				
42		C-4	100		41-41.3' as above	
		C-4			41.3'-41.7' fossil. terms dolomite - crinoids & shells	RQD = 98%
43		C-4			41.7-44.1' dense dolomite, a few bedded stylolites.	
		C-4				
44		C-4			44.1-44.3 fossiliferous lense, dolomite	
		C-4			44.3-44.5 stylolites/bedding plane fractures	
45		C-4			44.5-46' dense dolomite, few stylolites, thin fracture zone at 45.6'	
		C-4				
46		C-4				
47					Well boring terminated at 46 feet.	
48						
49						
[redacted]						
51						
52						
53						
54						
55						
56						
57						
58						
59						
60						

SAMPLING METHOD
SS = SPLIT SPOON
A = AUGER CUTTINGS
C = CORED

COMMENTS:
C-3, C-4 core runs 3 & 4.
See well construction Log for well installation information
Well screen set from 36-46 feet.

Contractor: North Star
Driller: Jeff Thew
Inspector: Dillman
Rig Type: CME-55

PARSONS ENGINEERING SCIENCE, INC.
DRILLING RECORD

BORING/WELL NO. MW-2D Sheet 1 of 2

PROJECT NAME: Scobell Chemical Site
PROJECT NUMBER: 733128.00000

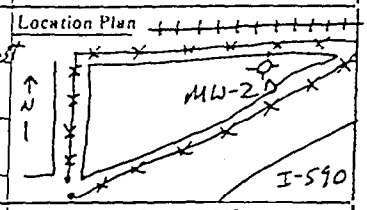
Location Description: East corner of site

GROUNDWATER OBSERVATIONS

Level	24.01	23.15		
Date	6-29-98	7-9-98		
Time	1:18	8:31		
Meas. From	TOC	TOC		

Weather: Partly cloudy, light wind, rain forecast
Date/Time Start: June 16, 1998 8:58 AM
Date/Time Finish: June 18, 1998 8:50 PM

Location Plan



Sample Depth	Sample I.D.	SPT	% Rec.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
+3						
+2						
+1						
0						
		3			0-6" silty brown soil	
1		6	60	0.0	6"-2' stiff brown clay, cover material	
		8				
2		14				
		5			2'-3.8' stiff silty Clay	
3		20	30	0.0		
		40			3.8'-4' Reddish Sand, fine-medium, cemented in spots.	
4		17				
	MW2C	7				
5		14	60	0.0	4'-6' Tan Silt, little sand, semistiff, damp	
		10				
6		15				NAPL Screen - Not detected
		14			6'-8' Tan Silt-fine Sand, trace gravel/ cobbles, rounded, reddish tan, moist-wet.	
		22	60	0.0		
		20				
8		17				
		7			8'-10' Tan-gray fine Sand, little gravel, poor recovery.	
9	MW-2D	10	20	0.0		
		9				
10		4				
		9			10-11.1' weathered bedrock - limestone-dolomite, trace black stain, slight odor, poor recovery.	
11		24	20	0.0		
		50/1"				
12		C-1				
		C-1				
13		C-1			11-16' Gray Dolomite, vertical and bedding plane fractures 11-14', some black stain on fracture faces. 14-16' not fractured. RQD 70%	RQD 70%
		C-1				
14		C-1				
		C-1				
15		C-1				
		C-1				
16		C-1				
		C-2				
17		C-2	92%			
		C-2			mud filled fractures	
18		C-2				

SAMPLING METHOD
SS = SPLIT SPOON
A = AUGER CUTTINGS
GP = GEOPROBE - DIRECT PUSH

COMMENTS:
C-1 - Core run #1
See well Construction Log for well construction information

Contractor: North Star
Driller: Jeff Thew
Inspector: Dillman
Rig Type: CME-55

PARSONS ENGINEERING SCIENCE, INC.
DRILLING RECORD

BORING/WELL NO. MW-2D Sheet 2 of 2

Location Description: East corner of site

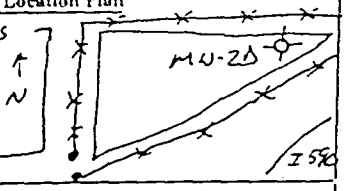
PROJECT NAME: Scobell Chemical Site
PROJECT NUMB. 733128.00000

GROUNDWATER OBSERVATIONS

Water				
Date				
Time				
Meas. From				

Weather: Partly Cloudy, light winds, low 70's
Date/Time Start: June 16, 1998 8:58 AM
Date/Time Finish: June 18, 1998 8:50 PM

Location Plan



Sample Depth	Sample I.D.	SPT	% Rec.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		C-2			Gray Dolomite, some bedding plane fractures 16-24'.	
19		C-2				
		C-2				
20		C-2			Lost circulation zone - heavily fractured.	
		C-2				
21		C-2				RQD 85%
		C-2				
22		C-2				
		C-2			Vug - dolomite crystals lining.	
23		C-2				
		C-2				
24		C-2			24-26' Gray Dolomite, pinpoint vugular porosity, one large crystal lined vug.	
		C-2				
25		C-2				
		C-2				
26		C-2			26-27.3' Fossiliferous gray Dolomite, vugular and pinpoint porosity. 2 fractures	
		C-3				
27		C-3	102%			
		C-3				
28		C-3			27.3-30.8 Dense gray Dolomite, no fractures or porosity developed	
		C-3				
		C-3				
		C-3				RQD 90%
30		C-3				
		C-3				
31		C-3			30.8-32.2' Fossiliferous Dolomite, pinpoint vugular porosity developed.	
		C-3				
32		C-3				
		C-3			32.2-33.8' Dense gray Dolomite, only 2 fractures.	
33		C-3				
		C-3				
34		C-3			33.8-36 Alternating lenses of dense Dolomite and fossiliferous Dolomite with pinpoint porosity.	
		C-3				
35		C-3				
		C-3				
36		C-3				
					Well boring terminated at 36 feet	
37						
38						
39						

SAMPLING METHOD
SS = SPLIT SPOON
A = AUGER CUTTINGS
C = CORED

COMMENTS:
C-2, C-3 core runs 2 & 3.
See Well Construction Log for well construction information.
Well screen set from 26-36 feet.

Contractor: North Star
Driller: Jeff Thew
Inspector: Dillman
Rig Type: CME-55

PARSONS ENGINEERING SCIENCE, INC.
DRILLING RECORD

BORING/WELL NO. MW-3D Sheet 1 of 2

PROJECT NAME: Scobell Chemical Site
PROJECT NUMBER: 733128.00000

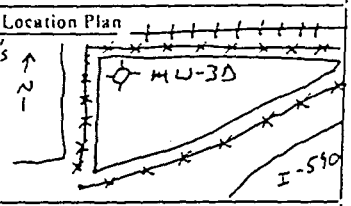
Location Description: North west corner of site

GROUNDWATER OBSERVATIONS

Level	21.12	19.97		
Date	6-29-98	7-9-98		
Time	1:12	8:09		
Meas. From	TOC	TOC		

Weather: Partly cloudy, light winds, low 70's
Date/Time Start: June 15, 1998 3:18 PM
Date/Time Finish: June 18, 1998 4:15 PM

Location Plan



Sample Depth	Sample I.D.	SPT	% Rec.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
+3						
+2						
1						
0						
		4			0-0.7' tan-brown stiff Clay.	
1		8	75	0.0	0.7-3' tan fine-coarse Sand, some cinders, coal, reddish rusty stain, no odor. Fill	
	T	10				
2	MW-3B	9				
	|	4				
3	|	7	80	0.0		
	T	4				
4	|	7			3-4' tan Silt-very fine Sand at bottom, no odor, no stain, damp-moist.	
	MW-3C	4				
5	|	7	85	0.0	4-7.5' tan-reddish tan Silt, little clay, moist, no odor.	
	|	14				
6	|	14				NAPL Screen - ND
	|	7				
	|	9	70	0.0		
	|	15			Refusal at 7.5'	
8		50/0				
		CORE-1			7.5-9.3' Dolomite, some fracturing both bedding plane and vertical. Rusty stain on fracture faces.	
9		C-1				
		C-1	92%			
10		C-1				
		C-1				
11		C-1			9.3-12.5' dark gray Dolomite, few bedding plane fractures. RQD-90%	RQD-90%
		C-1				
12		C-1			4" steel casing set to 12.5'	
		C-1				
13		C-2				
		C-2	100			
14		C-2				
		C-2				
15		C-2			12.5-16.5' Dolomite, some vertical and bedding plane fracturing, little iron staining on fracture faces. Fairly tight. Void at 15.8'-bit dropped	
		C-2				
16		C-2				
		C-2				
17		C-2			16.5-17.2' Dolomite, heavily fractured, some iron staining, some scale (redeposition)	
		C-2				
18		C-2				

SAMPLING METHOD
SS = SPLIT SPOON
A = AUGER CUTTINGS
GP = GEOPROBE - DIRECT PUSH

COMMENTS:
6-7.5' Grain size sample
Monitoring well screen set from 26-36 feet.
See well construction log.

Contractor: North Star
Driller: Jeff Thew
Inspector: Dillman
Rig Type: CME-55

PARSONS ENGINEERING SCIENCE, INC.
DRILLING RECORD

BORING/ WELL NO. MW-3D Sheet 2 of 2

PROJECT NAME: Scobell Chemical Site
PROJECT NUMB. 733128.00000

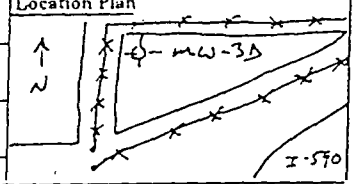
Location Description: Northwest corner of site.

GROUNDWATER OBSERVATIONS

Water				
Date				
Time				
Meas. From				

Weather: Partly sunny, warm.
Date/Time Start: June 15 1998 3:18 PM
Date/Time Finish: June 18, 1998 4:15 PM

Location Plan



Sample Depth	Sample I.D.	SPT	% Rec.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		C-2			17.8-19' Dolomite - some vertical and bedding plane fractures with some iron staining. Void at 18.5' - bit dropped.	
19		C-2				
		C-2				RQD 83% Run 2
20		C-2			19-20.5' Dolomite, trace fractures, vugular porosity, some recrystalized filling.	
		C-2				
21		C-3			20.5-22' Dolomite, gray, vugular and pinpoint porosity, thin cemented, sand lense,	
		C-3	92%			
22		C-3				
		C-3			22-30.5' dense Dolomite, very limited vugular and pinpoint porosity scattered, trace bedding plane fractures.	RQD 98% Run 3
23		C-3				
		C-3				
24		C-3				
		C-3				
25		C-3				
		C-3				
26		C-3				
		C-3				
27		C-3				
		C-3				
28		C-3				
		C-3				
29		C-3				
		C-3				
30		C-3				
		C-3				
31		C-4				
		C-4	100%		30.5-37.5' Gray Dolomite, some broken fossils (crinoid stems, shell fragments) 33-34', 34.4-37'. Pin point vugular porosity associated with fossil zones.	
32		C-4				
		C-4				RQD 96% Run 4
33		C-4				
		C-4				
34		C-4				
		C-4				
35		C-4				
		C-4				
36		C-4				
		C-4				
37		C-4				
		C-4				
38					Well Boring Terminated at 37.5 feet.	
39						

SAMPLING METHOD
SS = SPLIT SPOON
A = AUGER CUTTINGS
C = CORED

COMMENTS:
Monitoring well installed. Screened from 26-36 feet. See well construction log.

PARSONS ENGINEERING SCIENCE, INC.
DRILLING RECORD

BORING/WELL NO. MW-45 Sheet 1 of 2

Contractor: North Star
Driller: Jeff Thew
Inspector: Dillman
Rig Type: CME-55

PROJECT NAME: Scobell Chemical Site
PROJECT NUMBER: 733128.00000

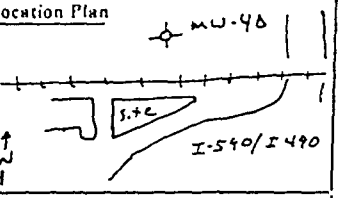
Location Description: North of railroad tracks in field.

GROUNDWATER OBSERVATIONS

Level	15.17	14.71		
Date	6-29-98	7-9-98		
Time	12:36	10:13		
Meas. From	TOC	TOC		

Weather: cloudy, windy, humid, 70's
Date/Time Start: June 22, 1998 5:25 PM
Date/Time Finish: June 24, 1998 7:00 PM

Location Plan



Sample Depth	Sample I.D.	SPT	% Rec.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
+3						
+2						
1						
0						
		4			0-6" Reddish brown Silt, pink gravel	
1		10	45	17.4		
		23			6"-3.3' Tan Silt to very fine Sand, some coarse sand-fine gravel, dry	
2		12				
		10				
3		18	70	10.3	3.3'-4' Brown Silt-medium sand, some coarse sand-fine gravel, trace black slag, Fill, disturbed.	
		12				
4		12				
		10				
5		16	Poor	NA	4'-6' As above	
		11				
6		8				
		10			6'-8' Tan Silt, little clay, trace coarse sand, moist.	
		40	65	4.6		
		50/3				
8					8'-11.2' Fine-medium Tan Sand, some coarse sand, little coarse rounded gravel, native, moist-wet.	
		16				
9		20	85	0.0		
		16				10-11' NAPL Screening Not Detected
10		40				
		6				
11		12	70	0.0	11.2'-11.4' Weathered Dolomite	
		50/4"				
12		C-1			11.5'-11.7' Pink/purple Sandstone, cobble in base of overburden.	
		C-1	62%			
13		C-1			11.7'-13.5' Fractured Dolomite, some vugular pinpoint porosity, iron stain in vugs and on fracture faces.	RQD 46%
		C-1				
14		C-1			13.5'-15' Dark gray crystalline, Dolomite, competent, not fractured.	
		C-1				
15		C-1				
		C-1				
16		C-1			16.5-18.3' Gray Dolomite, some fossils, scattered pinpoint porosity. Few bedding plane fractures.	
		C-1				
17		C-2				
		C-2	97%			
18		C-2				

SAMPLING METHOD
SS = SPLIT SPOON
A = AUGER CUTTINGS
GP = GEOPROBE - DIRECT PUSH

COMMENTS:
Geotech Sample 8-11'
C-1, C-2 core runs 1 and 2

Contractor: North Star
Driller: Jeff Thew
Inspector: Dillman
Rig Type: CME-55

PARSONS ENGINEERING SCIENCE, INC.
DRILLING RECORD

BORING/WELL NO. MW-4D Sheet 2 of 2

PROJECT NAME: Scobell Chemical Site
PROJECT NUMB. 733128.00000

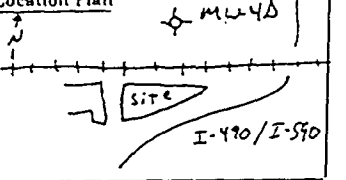
Location Description: North of railroad tracks in field.

GROUNDWATER OBSERVATIONS

Water				
Date				
Time				
Meas. From				

Weather: Sunny, warm, light wind
Date/Time Start: June 22, 1998 5:25 PM
Date/Time Finish: June 24, 1998 7:00 PM

Location Plan



Sample Depth	Sample I.D.	SPT	% Rec.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
	C-2				18.3-18.7' Gray Dolomite, few fossils	
19	C-2				18.7-19.3' Gray Dolomite with lenses of fossils.	
	C-2				19.3-20.8' Gray Dolomite, no fossils, few fractures	
20	C-2					
	C-2				20.8-21.8' Gray Dolomite, some fossils, scattered pinpoint porosity, stylolite.	RQD = 85%
21	C-2					
	C-2				21.7-25.7' Dense gray Dolomite, no fossils	
22	C-2					
	C-2					
23	C-2					
	C-2					
24	C-2					
	C-2					
25	C-2					
	C-2				25.7-26.9' Gray fossiliferous Dolomite, scattered pinpoint porosity.	
26	C-2					
	C-2					
27	C-3				26.9-27.3' Dense gray Dolomite	
	C-3					
28	C-3				27.3'-28.5' Gray Dolomite, some fossils grading to scattered fossils.	RQD = 95%
	C-3					
29	C-3					
	C-3				28.5'-36.5' Dense gray Dolomite, a few fractures, 2 stylolites.	
30	C-3					
	C-3					
31	C-3					
	C-3					
32	C-3					
	C-3					
33	C-3					
	C-3					
34	C-3					
	C-3					
35	C-3					
	C-3					
36	C-3					
	C-3					
37					Well boring terminated at 36.5 feet.	
38						
39						

SAMPLING METHOD
SS = SPLIT SPOON
A = AUGER CUTTINGS
C = CORED

COMMENTS:
See Well Construction Log for well construction details.
Well screen set from 25-35 feet
C-2, C-3 - Core runs 2 and 3.

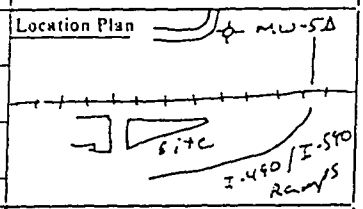
PARSONS ENGINEERING SCIENCE, INC.
DRILLING RECORD

BORING/WELL NO. MW-5A Sheet 1 of 2

Contractor: North Star
Driller: Jeff Thew
Inspector: Dillman
Rig Type: CME-55

PROJECT NAME: Scobell Chemical Site
PROJECT NUMBER: 733123.00000

Location Description: North of site. Near head in R&G driveway.

Location Plan: 

Weather: Hazy, Hot, Humid, light wind.
Date/Time Start: June 23, 1998 4:15 PM
Date/Time Finish: June 25, 1998 2:30 PM

UNDWATER OBSERVATIONS				
Level	13.98	13.09		
Date	6-29-98	7-9-98		
Time	12:49	9:54		
Meas. From	TOC	TOC		

Sample Depth	Sample I.D.	SPT	% Rec.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
+3						
+2						
+1						
0						
		6			0-3' Sand-fine, some gravel, Fill.	
1		50/4"	20	103		
2						
		12				
3		8	60	290	3'-6' Gray fine silt, little (some) clay, grading	
		6				
4		5			to tan fine sand.	
		5				
5		6	70	22.6		
		12				
6		12			6-8' Tan-reddish, very fine sand, damp.	
		18				
		26	65	0.0		
		20				
8		18			8-10.1' Fine Sand-silt, wet, grading to	NAPL Screening - Not Detected 8-10'
		10				
9		7	60	0.0	gray silt (8.5-9'), grading to	
		9				
10		12			gray clay (9-9.3'), grading to clayey	
		12	100	0.0	silt.	
11		50/2"			10.1'-10.7' Weathered dolomite in fine-medium	
		C-1			sand, wet.	
12		C-1				
		C-1			10.5'-14.2' Dense gray Dolomite, 2 healed vertical	
13		C-1			fractures, few horizontal fractures	RQD = 84%
		C-1			along stylolites. Lost circulation at	
14		C-1			~12.5'. Dense tan sandy lense (14.2-14.3')	
		C-1				
15		C-1			14.3'-15.5' Dolomite, some broken fossils, scattered	
		C-1			pinpoint porosity- core drilled hard.	
16		C-2			15.5-16' Dense gray Dolomite, thin fossil lense	
		C-2				
17		C-2			16-18 Fossiliferous Dolomite, crinoid stems	
		C-2			and broken shells, pinpoint porosity and	
18		C-2			scattered small vugular porosity, less 17.5-18'.	

SAMPLING METHOD
SS = SPLIT SPOON
A = AUGER CUTTINGS
GP = GEOPROBE - DIRECT PUSH

COMMENTS:
Geotech Samples 4-8' and 10-10.7'
C-1 - core run #1

Contractor: North Star
Driller: Jeff Thew
Inspector: Dillman
Rig Type: CME-55

PARSONS ENGINEERING SCIENCE, INC.
DRILLING RECORD

PROJECT NAME: Scobell Chemical Site
PROJECT NUMB. 733128.00000

BORING/WELL NO. MW-5D Sheet: 2 of 2

Location Description: North of site, near bend in RGE driveway.

GROUNDWATER OBSERVATIONS

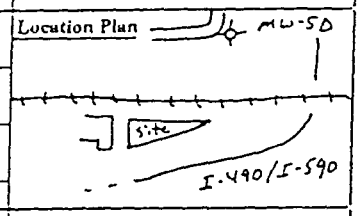
Water				
Date				
Time				
Meas. From				

Weather: Thunderstorms, rain.

Date/Time Start: June 23, 1998 4:15 PM

Date/Time Finish: June 25, 1998 2:30 PM

Location Plan



Sample Depth	Sample I.D.	SPT	% Rec.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		C-2			18-19.5 Gray Dolomite	
19		C-2			19.5-19.7' Bedding plane fracture, stylolites, thin fossil lense.	
		C-2				RQD = 97%
20		C-2			19.7-20.5, Gray Dolomite	
		C-2			20.5'-21.3' Gray Dolomite, fossil lenses, pinpoint porosity in fossil lenses	
21		C-2				
		C-2			21.3'-22.3' Dense gray Dolomite	
22		C-2			22.3'-23.1' Fossiliferous Dolomite, little pinpoint porosity.	
		C-2				
23		C-2			23.1-25.5' Gray Dolomite, dense. Thin lenses with broken fossils, no porosity. Few bedding plane fractures.	
		C-2				
24		C-2				
		C-2				
25		C-2				
		C-2				
26		C-3				
		C-3				
27		C-3				
		C-3				
28		C-3			25.5'-31.7' Dense gray Dolomite, a few fractures and stylolites	RQD = 90%
		C-3				
29		C-3				
		C-3				
30		C-3				
		C-3				
31		C-3			31.7'-32.5' Dense Dolomite, some fossils, no porosity.	
		C-3				
32		C-3				
		C-3				
33					Boring terminated at 32.5 feet.	
34						
35						
36						
37						
38						
39						

SAMPLING METHOD
SS = SPLIT SPOON
A = AUGER CUTTINGS
C = CORED

COMMENTS:
C-2, C-3 - Core runs 2 and 3.
Well screen set from 22.5-32.5 feet.
See Well Construction Log for well construction details.

amec

Project: Scovill Chemical
Location: Brighton NY
Client: NYSDEC 36121112336-02.1

Boring: MW-11D
File No.: SB-11D

Contractor: Empire Drilling
Operator: Bullwinkle
Logged By: J. Rumcliffe
Checked By: RCM 9/25/12
Date Start/Finish: 7/23/12 - 7/25/12
Boring Location: Scovill Chem.
Ref. Elevation[1]: Ground Surface TBD

Drilling Method: Auger, core
Bore Hole ID/OD: Bit Casing 4" Borehole 3 7/8
Auger ID/OD: 6 1/4" - 10"
Sampler: 2" Split Spoon
Hammer Wt./ Fall: Autohammer 140/30"
Water Level[3]: 22.15' TOC 7/31/12

Definitions:
S = Split Spoon Sample
U = Thin Wall Tube Sample
R = Rock Core Sample
V = Insitu Vane Shear Test
q_p = Unconfined Compressive Strength (psf)
woh = weight of 140 lb hammer
wor = weight of rods
wc = Water Content, percent
oc = Organic Content, percent

Page 1 of 2

Depth	Sample No.	Recovery	Time	Sample Description and Classification	Unified Classification	Analytical Collected (Y/N)	Elevation
	S1 0-2 4	1.5	1041	Brown to light brown fine sand and silt with a little medium to coarse sand and gravel. Dry.	SP/SM	N	
	8						
	19			PID = 0 ppm			
	25						
	S2 2-4 18	0.7	1049	Brown to light gray brown fine sand and silt with some broken up cobbles. Dry.			
	4				SP/SM	N	
	9						
	10			PID 26.7			
5	S3 4-6 8	0.4	1100	Brown fine sand and silt - poor recovery	-	N	
5	11						
	7			PID = 1.7			
	6						
	S4 6-8 8	1.1	1107	Brown fine sand and silt with a little medium to coarse sand and gravel - Moist, slight odor.	SP/SM		
	10						
	31						
	7			PID = 4700 ppm 828076-SB11D007 1110		(Y)	
	S5 8-9.6 1	0.9	1120	Brown to med dark gray fine sand and silt with a little medium to coarse sand and gravel. Strong odor Moist to very moist			
	2				SP/SM		
	41						
10	50/0.1			PID = 916 828076-SB11D-0009 1125		(Y)	
	S6 10-10.4 31	0.7	1126	Appears to have encountered rock at 9.6 BGS Dry dark gray to gray fine sand and silt with some medium to coarse sand and gravel. Moist. Auger refusal at 11.0' BGS		N (MS) (MD)	
	50/0.4						
15							

Notes

Stratification lines represent approximate boundaries between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

J Rumcliffe

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical			Boring ID: MW-11D
Project Location: Rochester, NY			Page No. 2
Project No.: 3612112226-02 Client: NYSDEC			2 of: 2
Boring Location: Brighton N>/.	Refusal Depth: 11'	Total Depth: 27.5	Bore Hole ID/OD: BR 3 7/8
Weather: Sunny 70-80°F,	Soil Drilled: 11'	Method: HSA/Core	Casing Size: 4"
Subcontractor: SJB Driller	P.I.D (eV): 10.6	Protection Level: D	Bit Type: Diamond
Driller: Anthony Jakoleczak	Date Started: 7/23/12	Date Completed: 7/25/12	Bit Size: H
Rig Type/Model: ATV 550x	Logged By: J. Rawcliffe	Checked By: RCM 9/26/12	Bit Use: —
Reference Elevation: Ground Surface TBD	Water Level: 22.15' TOC	Time: 7/31/12	Core Interval: 14-27.5

Depth (feet bgs)	Sample Number / PID	Penetration/ Recovery (feet)	Natural Core Breaks: Type/Dip	Natural Core Breaks: Surface Condition	Weathered Condition	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality: Rock Quality Description	Drill Rate (min/ft)	Color	Rock Description and Comments on Drilling	Graphic Log See Figure 2	Additional Remarks
14		3.5/3.1				6" 10" 11" 4.5"	84%	Good		Gray	R1 14-17.5 Gray to dark gray fine grained Limestone/with frequent horizontal subhorizontal breaks/fractures some weathering along fractures Driller reports numerous 1-2" voids MERC sample 15-16' 0450		0925 PID=0.0 ppm unable to collect GW sample. 0935
15	0												
16	0												
17													
18	0	5.0/5.2				6" 6" 5" 5"	35%	Poor			R2 17.5-22.5 828076-SB11D-015 Similar to above some silt seams at least one void some vertical fracturing (small scale.) Dirty fractures/seams 20-22.5. 828076-MW11D024/ 1140		1042 1054 MERC 20-21' 1115 51.35gm 828076-SB11D020
19													
20	0												
21	0	Temp		Spec Cond		DO		pH	ORP	Turb			
22		19.4		0.437		7.0		7.1	70	480			
23		5.0/5.0				5"	80%	Good			R3 22.5-27.5 light gray to gray fine grained limestone. Moderately frequent horizontal fractures/breaks some calcite layers and some dissolution cavities appears to be some layers that are fossiliferous moist void/dissolution 24-26' 50 ppm on fracture at ≈26.5' BGS 1230 - Stopped to collect GW sample but started pumping product. -- 1245 Checking with office Stopping boring. BOB ≈ 27.5' BGS		1147 Stopped 1215 MERC 24-26.5' 828076-SB11D024 1159 Stop
24	5.6 ppm					7"							
25	4.5 ppm					9"							
26	50 ppm					11"							
27													
28													
29													

NOTES:

J Rawcliffe

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Sinclair Chemical			Boring ID: MW-11D
Project Location: Rochester, NY			Page No. 1
Project No.: 3617147328.03	Client: NYSDEC		of: 1
Boring Location: 80 Rockwood Place	Refusal Depth: —	Total Depth: 35.5'	Bore Hole ID/OD: 4" ID
Weather: Overcast, 50-60°F, light breeze	Soil Drilled: —	Method: Core	Casing Size: 4"
Subcontractor: NorthStar/Geologic	P.I.D (eV): 10.6	Protection Level: D	Bit Type: Diamond H
Driller: Steve Lawrence	Date Started: 10/12/17	Date Completed: 10/12/17	Bit Size: H 3 7/8
Rig Type/Model: Truck mount-CME 55	Logged By: T. Rawcliffe	Checked By: C. Stoltz 1/17/18	Bit Use: —
Reference Elevation: Ground	Water Level: —	Time: —	Core Interval: —

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	Natural Core Breaks: Type/Dip	Natural Core Breaks: Surface Condition	Weathered Condition	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality: Rock Quality Description	Drill Rate (min/ft)	Color	Rock Description and Comments on Drilling	Graphic Log	Additional Remarks
~~25~~	~~25~~										Drilled MW-11D to ≈ 27' BGS on 7/25/12 Extended to ≈ 35' BGS for Fe injection - Borehole open to ≈ 24.5' BGS ≈ 2' of "mush" in borehole sump		~~26.5~~ 26.5' BGS
~~26~~	~~26~~												Core removed ≈ ~~27.5~~ BGS
27	~~27~~	R1 1023 4'/3.9	10/12/17			26.5'	3GS				Core barrel blocked after ≈ 0.2' recovered 1 piece of core coming in ~~stained~~ stained much with sheen, slightly coarser grained		PID = 12 ppm
28	~~28~~					11" 15"							4 ppm
29	~~29~~					20"	46" 47"	98%			Grey to light grey dolomitic limestone with traces of fossils, Bedding/Foliation slightly coarser grained generally horizontal with the minor folding		1 ppm 0.5
30	~~30~~	1105								Grey	minor vugs/ vesicles.		Bottom of recovery
31	~~31~~	1110 1105				18"	24"	1/8			Fractures are generally parallel to bedding/foliation		
32	~~32~~	R2 1110 5/2.3				42"		86%			Coarse grained with fossils some vesicles		1 ppm 0 ppm
33	33												
34	34												?
35	35	1155									Cored to 35.5' BGS		
36	36										Borehole open to 35.5' BGS Core recovered does not coincide with depth drilled. Cored ≈ 9' recovered ≈ 6.5'		

NOTES:

Jerry Rawcliffe

FIGURE 4.5
ROCK CORING LOG
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

SOIL BORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical			Boring ID: SB-12
Project Location: Rochester, NY			Page No. 1
Project No.: 3612112226 -02.xxxx	Client: NYSDEC		1 of: 3
Boring Location: Brighton NY	Refusal Depth: 13.0'	Total Depth: 36.2' BGS	Bore Hole ID/OD: OB 6¼"/10"
Weather: Partly Cloudy 80°F	Soil Drilled: 13.0'	Method: HSA / Core	Casing Size: BR 4" ID
Subcontractor: SJB Drilling	P.I.D (eV): 10.6	Protection Level: D	Sampler: NA
Driller: Anthony Jakobczak	Date Started: 7/24/12	Date Completed: 7/27/12	Sampler ID/OD: NA
Rig Type/Model: ATV 550 X	Logged By: J Rawcliffe	Checked By: RCM 9/26/12	Hammer Wt/Fall: NA
Reference Elevation: Ground Surface TBD	Water Level: 13.91' TOC	Time: 8/1/12 1258	Hammer Type: NA

Sample Information					Monitoring						
Depth (feet bgs) 0.0	Sample Number	Penetration/ Recovery (feet)	SPT Blows/6"	N Value	PID Field Scan	PID Headspace	Lab Tests Performed	Lab Sample ID	Sample Description and Classification	USCS Group Symbol	Remarks
2	NA	NA	NA	NA	0	NA	NA	NA	Topsoil - Brown to dark brown loamy fine sand and silt with trace medium to coarse sand, gravel and cobbles. Moist.	SP/SM	No samples collected / logging auger cuttings only.
4									0-5' Brown to dark brown fine sand and silt with some cobbles and little gravel and medium to coarse sand.		
6					0					SM/SP	
8									5-10 Similar to 0-5'		
10					0				Encountered more cobbles/boulders/bedrock at 10-10.5' BGS		
12					0				Refusal with augers at 13' BGS		
14									Drilled rock socket with tricone bit from 13-15' BGS.		
16											
18											
20											

NOTES:

J Rawcliffe

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical			Boring ID: SB-12D
Project Location: Rochester, NY			Page No. 2
Project No.: 3612112226-02 Client: NYSDEC			2 of: 3
Boring Location: Boylston NY	Refusal Depth: 13'	Total Depth: 36.2' BGS	Bore Hole ID/OD: OB10" BR4"
Weather: Cloudy, light rain/mist 80°	Soil Drilled: 13'	Method: HSA/Core	Casing Size: BR 4" steel
Subcontractor: SJB Driller	P.I.D (eV): 10.6	Protection Level: D	Bit Type: Diamond
Driller: Anthony Jakobczak	Date Started: 7/24/12	Date Completed: 7/27/12	Bit Size: 4
Rig Type/Model: ATV 550X	Logged By: J. Rawcliffe	Checked By: RCM 9/25/12	Bit Use: —
Reference Elevation: Ground Surface TBD	Water Level: 13.91' TOC	Time: 8/1/12 1258	Core Interval: 15'-36.2' BGS

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	Natural Core Breaks: Type/Dip	Natural Core Breaks: Surface Condition	Weathered Condition	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality: Rock Quality Description	Drill Rate (min/ft)	Color	Rock Description and Comments on Drilling	Graphic Log	Additional Remarks (PID)
											Rock socket from 13-15' BGS		
15	R1	7.0/5.9				22" (85)				Grey	R1 15-22		0905 Start
16						5"					15.3-15.6 Fracture zone multiple horizontal fractures.		PID=0
17						8"					17.4 Fracture/Break not weathered PID=0		Grey fine grained limestone/dolomite Horizontal bedding/foliation
18						20"	77%	6000			18 Horizontal Break PID=0		15'-15'6 Coarser fossiliferous some vugs.
19											18.2 Horizontal- 18.4 Fracture/Break PID=0		
20											19.1-19.2 Subhorizontal fractures/breaks PID=10.4ppm		19.4-20.9 Coarse grained fossiliferous some vugs.
21		Temp (OC) 16.5	Spec Cond (ms/cm) 0.003	DO (mg/L) 9.4			pH 8.3	ORP (mV) 84	Turb NTU >1000		20.9 Break at bottom of core MERC 48.29g GW 828076-MW12D021 (1030)		828076-SB12D019 (0955)
22	R2	5.0/4.9				9"					0928 Stop R2 22-27'		1035 Start
23						8"					22.2 Horiz. Fracture PID=10.1ppm ** 23 Horiz Fractu PID=0		MERC 828076-SB12D022 (1120) 51.15g
24						30"	91%	Excellent			23.6 Horiz Break/ Fracture PID=0 23.7, 23.9		
25						6"					22-22.6 Coarse grained fossiliferous numerous vugs Rest of recovery is much more competent fine grained limestone/dolomite with occational layers that are slightly coarser and contain small manor vugs.		GW-828076-MW12D027 MS/MSD (1145)
26		18.0	1.207		8.2		89	-138	650		26.4 Subhorizontal break PID=0 26.9 Break at bottom of core		1053 Stop
27	R3	5.0/5.3				20"					R3 27-32		1148 Start
28						25"	98%	Excellent			28.7 Horizontal break seam PID=0		MERC 31.4g) (See next page
29						7"					Grey limestone dolomite moderately fine grained very competent very few fossiliferous seems or vugs.		
30						11"					30.8 Horiz. break/fracture PID=0		1209 Stop

NOTES: * # Bot PID reading of greater than 1000 when breaking up rock for MERC sample

J Rawcliffe

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical			Boring ID: SB-12D
Project Location: Rochester, NY			Page No. 3
Project No.: 3612112226-02 Client: NYSDEC			3 of: 3
Boring Location: Brighton NY	Refusal Depth: 13'	Total Depth: 36.2' BGS	Bore Hole ID/OD: OB 10" BA 4"
Weather: Cloudy rain, humid, 80°	Soil Drilled: 13'	Method: HSA/Core	Casing Size: 4" ID
Subcontractor: SJB Driller	P.I.D (eV): 10.6	Protection Level: D	Bit Type: Diamond
Driller: Anthony Jakubczak	Date Started: 7/24/12	Date Completed: 7/27/12	Bit Size: 4
Rig Type/Model: ATV 550X	Logged By: J. Rawcliffe	Checked By: RCM 9/25/12	Bit Use: —
Reference Elevation: Ground Surface TBD	Water Level: 13.91' TOC	Time: 8/1/12 1258	Core Interval: 15- 36.2' BGS

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	Natural Core Breaks: Type/Dip	Natural Core Breaks: Surface Condition	Weathered Condition	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality: Rock Quality Description	Drill Rate (min/ft)	Color	Rock Description and Comments on Drilling	Graphic Log	Additional Remarks
											R3 27-32 (Cont)		
31	R3	Temp Cav 20.9	Steep	Clean	DO	plt		ORP	TURB		31.4 Horiz break/fracture PID=0 GW 828076-MW12D032 (1250)	MCC 828076-SB12D-031 (1230)	1148 Start
			0.439		5.5	9.0		-20	720		32.3 Bottom of core break	49.2 lbs	1209 Stop
32	R4	5.0 / 4.7								Gray	R4 32-37		1258 Start
33						4"					32.4 Rough horizontal break PID=0		
						30"	98%	Excellent					
34						11"					34.9 Horizontal break/fracture PID=0		
						8"					35.3		
35												MCC 828076-SB12D036 (1400) 30.1 lbs	
36											36 Horizontal break/fracture PID=0		
		19.4	0.321		5.0	9.0		28	810		36.16 Horizontal fracture/break possible weathering surface PID=0		1325 Stop
37									395		36.9 Bottom of core break.		
											Measured bottom of boring = 36.2' BGS		
											GW 828076-MW12D037 (1430)		

NOTES:

J Rawcliffe

SOIL BORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical		Boring ID: SB-13D
Project Location: Rochester, NY		Page No. 1
Project No.: 3612112226-02 Client: NYSDEC		1 of: 3
Boring Location: Brighton, NY	Refusal Depth: ~~16.8'~~ 17.0 BGS Total Depth: 41.2'	Bore Hole ID/OD: OB 6"/4"/10"
Weather: Partly cloudy 75-80°F	Soil Drilled: 16.8' BGS Method: HSA	Casing Size: BR 4" ID
Subcontractor: SJB Drilling	P.I.D (eV): 10.6 Protection Level: D	Sampler: NA
Driller: Anthony Jokubczak	Date Started: 7/24/12 Date Completed: 7/26/12	Sampler ID/OD: NA
Rig Type/Model: ATV 550X	Logged By: J Rawcliffe Checked By: RCM 7/25/12	Hammer Wt/Fall: NA
Reference Elevation: Ground Surface TBD	Water Level: 24.92 TOC Time: 8/1/12 1302	Hammer Type: NA

Sample Information					Monitoring						
Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	SPT Blows/6"	N Value	PID Field Scan	PID Headspace	Lab Tests Performed	Lab Sample ID	Sample Description and Classification	USCS Group Symbol	Remarks
0.0									Casing stickup ~2'		
2	NA	NA	NA	NA	0	NA	NA	NA	Surface soils are brown to dark brown fine sand and silt (loamy) with cobbles and a little medium to coarse sand and gravel. Moist. PID = 0 ppm		No samples collected logging auger cuttings only.
4											
6											
8					0				No change of sand 5-10' BGS PID = 0 ppm encountering cobbles with augers 0-10'.		
10									Started drilling smoother at 10.5-11' BGS (No cobbles) PID = 0 ppm		0930
12					0				Cuttings are dark brown fine sand and silt with traces of medium sand. Moist to very moist. Slightly cohesive.		
14											Estimated top of bedrock 16' BGS
16					0				Started encountering cobbles/boulders or bedrock at ~15-15.5' BGS. 17.0		
18									Encountered refusal with augers at ~~16.8'~~ 17.0 BGS PID 20.0 ppm (~~16.8'~~ 17.0) (2)		(2) Refusal at ~~16.8'~~ 17.0 BGS
									After removing auger plug and resetting augers - bottom of augers = 17.0' BGS		
									Drilled rock socket with tricone bit from 17-19' BGS.		

NOTES:

Jenny Rudloff

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical			Boring ID: SB-13D
Project Location: Rochester, NY			Page No. 2
Project No.: 3612112226-02.[illegible] Client: NYSDEC			2 of: 3
Boring Location:	Refusal Depth: 17	Total Depth: 41.2'	Bore Hole ID/OD: OB10"-BR4"
Weather: Partly cloudy 80-85° humid breezy	Soil Drilled: 16.8	Method: HSA/HCore	Casing Size: 4"
Subcontractor: SJB Driller	P.I.D (eV): 10.6	Protection Level: D	Bit Type: Diamond
Driller: Anthony Jakubczak	Date Started: 7/24/12	Date Completed: 7/26/12	Bit Size: H
Rig Type/Model: ATV 550X	Logged By: J. Rawcliffe	Checked By: RCM 9/25/12	Bit Use: —
Reference Elevation: Ground Surface TBD	Water Level: 24.92 TOC	Time: 8/1/12 1302	Core Interval: 19-41.2 BGS

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	Natural Core Breaks: Type/Dip	Natural Core Breaks: Surface Condition	Weathered Condition	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality: Rock Quality Description	Drill Rate (min/ft)	Color	Rock Description and Comments on Drilling	Graphic Log (see Photos of Core)	Additional Remarks
19	R1	2.5/2.0				4"	17%	Poor		Gray	R1 19-21.5 Dark gray limestone (Dolomite) Numerous horizontal breaks/fractures (along bedding?) One partial vertical seam at 20'. Driller reported voids near top and at bottom Iron stained fracture at 21. Iron stain at 20 fracture		0931 Start PID=0 No samples collected from R1 partial run. also. 0935 Stop
20													
21													
22	R2	5.0/4.9				5" 4" 5"					R2 21.5-26.5 22.5 Silty break/fractures 24 Vugs (voids holes) fossils 24.2 Silty break/fracture 25 Silty iron stained fracture 25.4 Silty iron stained fracture 26-26.5 Vuggy—fossils GW sample 828076-MW13D026 (1030) MERC 828076-SB13D025 (1020)		0946 Start PID=0 PID=0 0955 Stop
23						7" 5"	69%	Fair					
24						6" 8"							
25		Temp (°C)	Spec Cond (mS/cm)	DO (mg/L)		pH	ORP (mV)		TURB (NTU)				
26		15.2	0.970	6.4		7.0	86		38				
27	R3	5.0/5.2				5" 14" 9" 4"		Excellent			R3 26.5-31.5 Rock is much more competent. 27-27.3 Vuggy area break horiz. 28.2 Horizontal break/fracture 29 Slightly weathered fracture/break 29.4 " " " " 30.6+30.9 Horizontal breaks not weathered, All breaks/fractures are horizontal to subhorizontal Traces of some vertical fissures		1104 Start PID=0 MERC 828076-SB13D029 (1140) GW 828076-MW13D031 828076-MW13D031D PID=0 (1155)
28													
29						16" 9"	97%						
30		Temp	Spec Cond	DO		pH	ORP		TURB				
31		16.7	0.744	7.8		7.4	43		270				1116 Stop
32	R4	1.5/1.5				10" 5"	83%	Good			R4 31.5-33 32.3 Horiz. break/fracture PID=4.6 32.5 Fracture PID=47.5 ppm	MERC	1155 Start 828076-SB13D032 Blocked at 33' BGS 1205 Stop
33	R5	4.0/—				14" 7" 5"	79%	Good			R5 33-37' ~~34.5 Fracture PID=4.6 ppm~~ 34.9 Break/Fracture - Horizontal		1216 Start
34						12"							

NOTES:

J Rawcliffe

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical		Boring ID: SB-13D
Project Location: Rochester, NY		Page No. 3
Project No.: 3612112226-02 Client: NYSDEC		3 of: 3
Boring Location: Brighton N.Y.	Refusal Depth: 17.0 Total Depth: 41.2'	Bore Hole ID/OD: OB 10" BR 4"
Weather: Partly cloudy, 75-80°F	Soil Drilled: 16.8 Method: 1754/Core	Casing Size: 4".
Subcontractor: SJB Driller	P.I.D (eV): 10.6 Protection Level: D	Bit Type: Diamond
Driller: Anthony Jakobczak	Date Started: 7/24/12 Date Completed: 7/26/12	Bit Size: 4
Rig Type/Model: ATV 550X	Logged By: J. Rawcliffe Checked By: RCM 9/25/12	Bit Use: —
Reference Elevation: Ground Surface TBD	Water Level: 24.92 TOC Time: 8/1/12 1302	Core Interval: 19-41.2 BGS

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	Natural Core Breaks: Type/Dip	Natural Core Breaks: Surface Condition	Weathered Condition	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality: Rock Quality Description	Drill Rate (min/ft)	Color	Rock Description and Comments on Drilling	Graphic Log	Additional Remarks
35											RS (Cont) 33-37'		
											35.2 Break/fracture PID=0		
36		Temp (°C) 17.1	(mS/cm) Spec Cond 0.813	(mg/L) DO 6.6		pH 6.9		ORP (mV) 33	TURB NTU 57	Gray	36.6 Break/fracture slightly wavy PID=0 36.5 Break at bottom of recovery GW Sample 828076-MW13D036 (1340)		
37		5.0/5.0				5"					R6 37-42		1410 Start
						20"					37.5 Horiz. break + vertical seam		PID=0
38						5"							
						12"					39.2 Horiz. break No weathering		
39						16"	97%	Excellent			39.6 Break Horizontal along fractures/breaks		
40											40.6 Fracture/break Horiz.		
											Gray with frequent widespread rugs and fossiliferous layers.		PID=0
41		Temp 16.3		Spec Cond 0.691	DO 6.1	pH 7.2		ORP 76	TURB 870 160		41.2 Horizontal break bottom of core. GW Sample 828076-MW13D041 (1540)		MS/MSD 828076-SB13D040 50.42gm (1445)
42											PID=0 ppm of purge water No odors or sheens detected. Bottom of boring = 42' BGS Bottom of recovery 41.2' BGS		

NOTES:

JRawliff

SOIL BORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical		Boring ID: SB-15D
Project Location: Rochester, NY		Page No. 1
Project No.: 3612112226-02.[illegible] Client: NYSDEC		1 of: 3
Boring Location: Brighton NY	Refusal Depth: 11.0' Total Depth: 35'9" BGS	Bore Hole ID/OD: OB 6¼"-10"
Weather: Sunny, 75-80°F.	Soil Drilled: 11.0' Method: HSA/Core	Casing Size: BR 4" PD
Subcontractor: SJB Drilling	P.I.D (eV): 10.6 Protection Level: D	Sampler: 2" Split Spoon
Driller: Anthony Jakubczak	Date Started: 7/25/12 Date Completed: 7/30/12	Sampler ID/OD: —
Rig Type/Model: ATV-550X	Logged By: J Rawcliffe Checked By: RCM 9/25/12	Hammer Wt/Fall: 140/30
Reference Elevation: Ground Surface TBD	Water Level: 22.3' BGS Time: 8/1/12 1114	Hammer Type: Auto/Safety

Sample Information					Monitoring						
Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	SPT Blows/6"	N Value	PID Field Scan	PID Headspace	Lab Tests Performed	Lab Sample ID	Sample Description and Classification	USCS Group Symbol	Remarks
0.0											
1	S1	1.7/2.0	1 2 4 7	6	0 0	NA			light brown to light olive brown fine sand and silt with little to traces of medium to coarse sand and gravel. Dry.	SW/SM	
2											
3	S2	1.7/2.0	3 6 4 2	10	0 1.6 0.7				Brown to light brown fine sand with a little silt and traces of medium sand. Dry to slightly moist.	SW	
4											
5	S3	1.5/2.0	3 2 2 2	4	0.3 0 0.3				Brown fine sand with some silt and traces of medium sand. Moist.	SP/SM	
6											
7	~~S4~~ S4	1.6/2.0	4 3 3 2	6	0.6 0 0		*	*	Brown silt with some fine sand and traces of clay. Moist. 828076-SB15D-007 1340 VOC, %S, Solids	SM/ML	
8											
9	S5	0.8/2.0	3 4 5 4	9	0 0.3 0				Brown fine sand and silt ~~becoming~~ coarser with medium to coarse sand and gravel at bottom of recovery. Wet.	GW/SM	
10											
10	S6 10.9-11.0	0.1/0.1	26 50/0.1		1.4		*	*	Brown fine sand and silt with some medium to coarse sand and gravel. Rock fragments. Very moist to wet. 828076-SB15D-010 1430 VOC/%S Solids/TOC Refusal with augers at 11' BGS Drilling rock socket.	SW/SM	

NOTES:

J Rawcliffe

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical			Boring ID: SB-15D
Project Location: Rochester, NY			Page No. 2
Project No.: 3612112226-02.1 task Client: NYSDEC			2 of: 3
Boring Location: Brighton NY	Refusal Depth: 11.0	Total Depth: 35.9' BGS	Bore Hole ID/OD: OB 10"/8"&12
Weather: Sunny, 80°F	Soil Drilled: 11.0'	Method: HSA / Core	Casing Size: 4" ID
Subcontractor: SJB Driller	P.I.D (eV): 10.6	Protection Level: D	Bit Type: Diamond
Driller: Anthony Tukodzaki	Date Started: 7/25/12	Date Completed: 7/30/12	Bit Size: 4
Rig Type/Model: ATV	Logged By: J. Rawcliffe	Checked By: RCM 9/25/12	Bit Use: —
Reference Elevation: Ground Surface TBD	Water Level: 22.3' BGS	Time: 8/1/12 1114	Core Interval: 13-35.9

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	Natural Core Breaks: Type/Dip	Natural Core Breaks: Surface Condition	Weathered Condition	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality: Rock Quality Description	Drill Rate (min/ft)	Color	Rock Description and Comments on Drilling	Graphic Log	Additional Remarks
13	R1	3.0 / 2.8				7"				Gray/Dk Gray	R1 13-16' Core Run gravel limestone debris with overburden heading.		
14						6"					13-14 Horiz Fractures with vert fracture PID = 0.1 Some weathering		
						7"	53%	Fair			14.3 Horiz fractures weathered PID = 0.1-0.3		Borehole is taking all drilling water
15											14.9 Hor fracture 15.5-15.9 Horizontal breaks PID = 0.1		
16	R2	5.0 / 4.8				5"					R2 16-21 Occasional holes vuggy in frequent layers.		
17						6"					16.5 Horizontal breaks PID = 0.4		
											17.0 Horizontal fracture-break		MW2C 8280726-SB15D018 (1015) SG 1.62g
18						7"	58%	Fair			17.3-17.8' Horizontal fractures/breaks PID = 1.3 some weathering		
						5"					18.1-18.3 Horizontal fractures GW - 8280726-MW15D021 (1055)		
19						5"					19 Horizontal fracture partial vertical fracture and vesicles/vugs PID = 0.3-0.6		
		Temp (°C)	Spec Cond (mS/cm)				DO (mg/L)	pH	ORP (mV)	Turb (NTU)			
20		17.9	0.968			5"	6.9	7.3	49	14	19.5 Horiz fracture + 19.8, 19.9 20.4 Horizontal fracture some vertical cracks PID = 0.3-0.6 20.8 Bottom of core break		Stop 0935
21	R3	3.0 / 2.8				4"					R3 21-24 PID = 0		1058 Start
22						7"					21-21.4 Coupl Horz breaks 21.8 Horizontal fractures PID = 0.3 22'		
						6"					22.6 Horizontal fracture with vertical crack.		after Blocked (H) 3'
23						7"	71%	Fair			23.1, 23.2 Weathered horizontal fracture PID = 0.3 23.8 Bottom of core break.		Stop 1118
24	R4	3.0 / 2.4				5"					R4 24-26 Some voids vuggy areas.		1123
		Temp	Spec Cond			5"	DO	pH	ORP	Turb			
25		18.4	0.950			7"					24.3 Horizontal breaks 24.7 Horizontal fracture weathered PID = 0.5		
						11"	3.9	7.8	-12	34	25.3 Horizontal fracture weathered PID = 0.5		1126 Stop
26	R5	5.0 / 4.9				17"					R5 26-31 MW2C 8280726-SB15D026 (1300) SG 1.95		1205 Start
27						9"					26.1 weathered Hor. Fracture PID = 0.7 27.5 Horiz. break PID = 0-0.3 27.7 " "		Core Run gravel Few fossils or vuggy areas.
						5"	90%	Excellent					
28						6"					28.5 Horizontal fracture/break PID = 0.2 28.9 " "		1236 Stop

NOTES: Borehole is taking all drilling water.

JRawcliffe

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical			Boring ID: SB-15D
Project Location: Rochester, NY			Page No. 3
Project No.: 3612112226-02	Client: NYSDEC		3 of: 3
Boring Location: Brighton, NY	Refusal Depth: 11.0	Total Depth: 35.5'	Bore Hole ID/OD: OB10"/BW4"
Weather: Sunny, 80°F.	Soil Drilled: 11.0	Method: HSA/Core	Casing Size: 4.2" ID
Subcontractor: SJB Driller	P.I.D (eV): 10.6	Protection Level: D	Bit Type: Diamond
Driller: Anthony Jakubczak	Date Started: 7/25/12	Date Completed: 7/30/12	Bit Size: 4"
Rig Type/Model: ATV	Logged By: J. Rawcliffe	Checked By: RCM 9/25/12	Bit Use: —
Reference Elevation: Ground Surface TBD	Water Level: 22.3' BGS	Time: 8/1/12 1114	Core Interval: 13-35.9

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	Natural Core Breaks: Type/Dip	Natural Core Breaks: Surface Condition	Weathered Condition	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality: Rock Quality Description	Drill Rate (min/ft)	Color	Rock Description and Comments on Drilling	Graphic Log	Additional Remarks
											RS 26-31 (Cont.)		
29	RS	5.0/4.9									29.1 Horizontal break/fracture		
30		Temp (°C) 19.4	Spec Cond (mS/cm) .959		DO (mg/L) 3.9		pH 7.8	ORP (mV) 4	Turb (NTU) 173 108	Gray	29.6 Horizontal fracture/break PID=0 30.4 Bottom of core break		PID=1.8ppm on purge water.
31	R6	5.0/4.9				9"					R6 31-36 31.8 Horiz. Break PID=0		1323 Start
32						12"					32-32.6 Coarse grained fossils. 32.8 Horiz. break		
33						10"							
34						4"	100%	Excellent.			33.7 Horiz break/fracture along bedding PID=0 34 Horiz. break		MERC 828076-SB15D034 (1415) 50.5%
35		17.1	0.783		3.4	14"	7.7	18	350 250		34.8 Horiz. break/fracture PID=0 35-35.6 Minor fossils, vugs.		1349 Stop
36											GW 828076-MW15D036 (1515) Measured bottom depth ≈ 35.9' BGS		

NOTES:

JRawcliffe

SOIL BORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chem ~~AL Tech SMSA Data Gap Investigation~~ 361714.328.03			Boring ID: MW-2
Project Location: ~~Colonie, NY~~ Brighton NY			Page No. 1
Project No.: ~~361212256.02.****~~	Client: NYSDEC		of: 2
Boring Location: Scobell Plume East	Refusal Depth: 10.7'	Total Depth: 10.7' BGS	Bore Hole ID/OD: 8"
Weather: Mostly sunny 50-60°F	Soil Drilled: 10.7'	Method: HSA	Casing Size: 4 1/4"
Subcontractor: Geologic NY	P.I.D (eV): 10.6	Protection Level: D	Sampler: 2"x2" Split Spoons
Driller: Scott Breeds	Date Started: 10/24/14	Date Completed: 10/24/14	Sampler ID/OD: —
Rig Type/Model: Truck CME-55	Logged By: J. Rawcliffe	Checked By: TDL	Hammer Wt/Fall: 140/30"
Reference Elevation: Ground	Water Level: —	Time: —	Hammer Type: Hydraulic hoo hammer

Sample Information					Monitoring						
Depth (feet bgs) 0.0	Sample Number	Penetration/ Recovery (feet)	SPT Blows/6"	N Value	PID Field Scan	PID Headspace	Lab Tests Performed	Lab Sample ID	Sample Description and Classification	USCS Group Symbol	Remarks
1	S1	0.9/2.0	1/3/5/12	8	3.2 0.3 0.1	—	—	—	Top 0.3 Brown to dark brown fine sand and silt with traces of medium sand roots and other organic debris. Loamy topsoil. Bottom 0.6 Grayish brown silt and clay with traces of coarse material. Stiff ~~moist~~ slightly moist. Clayey Fill.	Fill	0910
2											
3	S2	0/2.0	8/14/12/12	31	—	—	—	—	No recovery	—	0915
4											
5	S3	1.5/2.0	3/4/4/5	8	0.3 0.5 0.4	—	—	—	Top 0.4 Olive brown to olive gray clay silt with traces of fine sand. Bottom 1.1 light brown to light olive brown silt and fine sand with traces of medium sand occasional gravel fragment. Black layer at ≈ 0.5' from top. Moist very coarse layering/stratification likely fill. No odors observed	ML SM	0920
6											
7	S4	1.6/2.0	6/7/6/7		0.3 0.4 0.3	—	VOCs	yes See remarks	Top 0.3 light olive gray silt moist stiff Bottom 1.3 Light olive brown fine sand and silt becomes more sandy with depth some pieces of gravel and traces of medium to coarse sand at bottom (0.5') of recovery. No odors detected	SM	0930 SB8076-MW02-07

NOTES:

FIGURE 4.4
SOIL BORING LOG
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

SOIL BORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical ~~AL Tech TMSA Data Gap Investigation~~			Boring ID: MW-2
Project Location: ~~Colonie~~, NY, Brighton			Page No. 2
Project No.:3612122256.02.****	Client: NYSDEC		of: 2
Boring Location: Scobell plume East	Refusal Depth: 10.7	Total Depth: 10.7	Bore Hole ID/OD: 8"
Weather: Partly cloudy 50-60°F, breezy	Soil Drilled: 10.7	Method: HSA	Casing Size: 4/4
Subcontractor: Geologic NY	P.I.D (eV): 10.0	Protection Level: D	Sampler: 2"x2' Split Spoon
Driller: Scott Breeds	Date Started: 10/24/14	Date Completed: 10/24/14	Sampler ID/OD: —
Rig Type/Model: Truck CME-55	Logged By: J. Ruwclotte	Checked By: T.DL.	Hammer Wt/Fall: 140lbs/30"
Reference Elevation: Ground	Water Level: —	Time: —	Hammer Type: Hydraulic Auto Hammer

Sample Information					Monitoring						
Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	SPT Blows/6"	N Value	PID Field Scan	PID Headspace	Lab Tests Performed	Lab Sample ID	Sample Description and Classification	USCS Group Symbol	Remarks
8	SS	0.5/2.0	9/10/14/14	24	0.5	—	—	—	Gray to olive gray gravel fragments in matrix of silty medium to coarse sand. Moist, massive. Appear to have pushed a piece of gravel.	GP/GM	0935
10	S10	0.7/0.7	11/50/0.2		0.4 0.3	—	See Remarks	yes	Top 0.3 Reddish brown to olive gray gravel with fine to medium sand and a little silt. Very moist. Bottom 0.4 Dark brown to black fine sand with little silt and lenses of m-coarse sand. Wet. Piece of rock in tip of sample.	GP SP	0945 828076-MW2010 also ms/msD. (VOCs + % Moisture)
11									Refusal at 10.7' BGS Monitoring well installed MW-2 (2" PVC)		1 vial MeOH 2 (2mL MeOH 10gm soil.
12											

NOTES:

FIGURE 4.4
SOIL BORING LOG
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: SCOBELL CHEMICAL			Boring ID: MW-4M
Project Location: ROCHESTER, NY			Page No. 1
Project No.: 3617147328	Client: NYSDEC		of: 1
Boring Location: MW-4M	Refusal Depth: —	Total Depth: 21'	Bore Hole ID/OD: 3"/3.8"
Weather: FLURRIES, WINDY, TEENS	Soil Drilled: 11'	Method: H.S.A.	Casing Size: 4"
Subcontractor: GEOLOGIC NY	P.I.D (eV): 10.6	Protection Level: D	Bit Type: DIA. IMPREG.
Driller: SCOTT BREEDS	Date Started: 11-18-14	Date Completed: 11-18-14	Bit Size: —
Rig Type/Model: ATV / CME-45	Logged By: T.D. LONGLEY	Checked By: C. Stygar	Bit Use: —
Reference Elevation: GROUND	Water Level: 14.41' B.T.O.C.	Time: 09:20 on 11-20-14	Core Interval: 13' TO 21'

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	Natural Core Breaks: Type/Dip	Natural Core Breaks: Surface Condition	Weathered Condition	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality: Rock Quality Description	Drill Rate (min/ft)	Color	Rock Description and Comments on Drilling	Graphic Log	Additional Remarks
											ON 11-17-14 SET CASING TO 13': IN ROCK - SOLNET 11'-13'		
13											CORED W/ AIR ROTARY		
14	R-1	5/4 80%		FRESH-NO OXIDATION	NONE	3.3'	60%	FAIR	6.8 min/ft	LT. GRAY TO GRAY	LOCKPORT DOLOMITE Fine-grained to 16', then med-grained to 18'		MOSTLY ALL MECHANICAL BREAKS
15											PIECES only 13.5' TO 13.8' - natural		
16											Breaks @: 14.05, 14.7, 14.95, 15.05, 15.3, 15.7, 15.95, 16.3, 16.4 > natural; 16.8 - natural; 2@ 16.85; ALL // w/ bedding; NO PID > BKg. of 0.9 ppm		MERC AT: • 16.6' • 18.7' • 20.2' (3 TOTAL)
17													
18													
19	R-2	NOT MEASURED		FRESH	NONE	2.9'	97%	EXCELLENT	4.3 min/ft	LT. GRAY	AS ABOVE: MED-GRAINED TO 19', Fine-grained below		SL. ELEVATED PID READINGS WHERE NOTED. 15:33 PICTURE OF CORE IN BOX
20											BREAKS AT: 18.1, 18.25, 18.7 - PID@10, 18.75, 18.95; 19.6 - PID@11; 20@ 20.2 - PID@ 16.0, 20.8, 21; V. SMALL VUGS 16' TO 19'		
21													
											T.D. @ 21'		
											THIS BORING CAVED AFTER IT WAS DRILLED.		
											ON 11-21-14, BOTTOM MEASURED AT 14.2' B.G.S.		

NOTES:

OPEN HOLE BEDROCK MONITORING WELL
DRILLED W/ HSA W/OUT SAMPLING TO BEDROCK

FIGURE 4.5
ROCK CORING LOG
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

SOIL BORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical ~~Alt Tech SMSA Data Gap Investigation~~			Boring ID: MW-160
Project Location: ~~Colonie, NY~~ Brighton, NY			Page No. 1
Project No.: ~~3612122256.02.****~~	Client: NYSDEC		of: 31
Boring Location: Scobell Property	Refusal Depth: 7.8	Total Depth: Soil 7.8/Rock 29'	Bore Hole ~~ID~~/OD: 8"
Weather: Overcast, Showers, 45-50°F	Soil Drilled: 7.8	Method: HSA	Casing Size: 4½" ID HSA
Subcontractor: Geologic NY	P.I.D (eV): 10.6	Protection Level: D	Sampler: 2"x2' Split Spoon
Driller: Scott Breeds	Date Started: 10/21/14	Date Completed: Soil 10/21/14 Rock 10/23/14	Sampler ID/OD: —
Rig Type/Model: Truck mounted CME 55	Logged By: J. Rawcliffe	Checked By: T.D.L.	Hammer Wt/Fall: 140/30"
Reference Elevation: Ground	Water Level: —	Time: —	Hammer Type: Hydraulic Auto hammer

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	SPT Blows/6"	N Value	PID Field Scan	PID Headspace	Lab Tests Performed	Lab Sample ID	Sample Description and Classification	USCS Group Symbol	Remarks
0.0									Rocksocket 7.8-10 (drilled with Tricone) Total cored depth 10 - 29' BGS		
1	S1	0.8/2.0	1/10/20/14	30	0.5	—	—	—	Top 0.4 Brown to dark brown fine sand and silt with roots and other organic debris loamy topsoil - Moist massive	Fill	10:10 Current background on PID = 0.5-0.7 ppm
2									0.4-0.8 Grayish brown to very dark brown fine to medium sand silt organic debris massive, dry to slightly moist.	SM	
3	S2	1.3/2.0	7/4/3/6	7	0.6	—	—	—	Top 0.5 Brown to dark brown fine to medium sand and silt. Trace of coarse sand and gravel at top and trace of clay at bottom. Moist. Bottom 0.8 Brown to light-brown fine sand and silt. Moist, massive	SM	
4											
5	S3	1.8/2.0	6/7/8/7	15	0.6	—	VOCs % Solids	(2) see remarks	Top 0.3 Very dark grayish brown fine to medium sand and silt with traces of clay and coarse sand (possible augerspl). Bottom 1.5' Brown to light reddish brown fine sand and silt. Top of interval firm ground with trace of clay bottom becomes sandy with traces of med-coarse sand. Moist-to very moist, mottled, massive	SM	(2) 8280076-MW-160-005 VOCs/% massive also collected duplicate
6											
7		1.3/1.8	6/7/6/50/0.3		0.6 / 1.8 / 5.5	—	VOCs % Solids	(3)	Brown to light-brown to reddish brown fine sand and silt with a little medium sand and traces of coarse sand and gravel ~~at bottom~~. Very moist to wet mottled. (3) Bottom is dark grayish brown fine sand and gravel (rock fragments). Slight odor.	SM	(3) 8280076-MW-160-007 GP VOCs/% Moisture

NOTES: Refusal at 7.8' BGS. Drilled rocksocket with tri-cone 7.8' - 10' BGS.

FIGURE 4.4
SOIL BORING LOG
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical			Boring ID: MW-160
Project Location: Rochester, NY 361714.238			Page No. 1
Project No.: ~~361211222~~	Client: NYSDEC		of: 2
Boring Location: Scobell property West side	Refusal Depth: 7.9	Total Depth: 29'	Bore Hole ID/OD: 5 1/2 / 4"
Weather: Partly-mostly cloudy 45-53°F Mayf	Soil Drilled: 7.9'	Method: HSA/Core	Casing Size: 4"
Subcontractor: ~~SJB Driller~~ Geologic	P.I.D (eV): 10.6	Protection Level: D	Bit Type: Diamond
Driller: Scott Breeds	Date Started: Rock 10/23/14	Date Completed: 10/23/14	Bit Size: HQ
Rig Type/Model: Truck-CME 55	Logged By: J. Rawcliffe	Checked By: T.D.L.	Bit Use: —
Reference Elevation: GROUND	Water Level: —	Time: —	Core Interval: 10-29

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	Natural Core Breaks: Type/Dip	Natural Core Breaks: Surface Condition	Weathered Condition	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality Description	Drill Rate (min/ft)	Color	Rock Description and Comments on Drilling	Graphic Log (Also See Photos)	Additional Remarks
10											Rock socket drilled to 10' BGS and cemented casing on 10/21/14		Total cored interval = 10-29' BGS
11	R1	4.8 / 5.0				4" / 10"	39" / 58"	Fair	~12.6 min/ft	Grey to LT. Grey	Gray to light gray dolomitic limestone fine textured, grained. Vertical Fracture. Foliation/layering generally flat with a little folding/deformation		Start 0918
12						4"					Top 1.6' of recovery is very fractured		1.1 ppm PID reading 0.6-0.7 ppm on all fractures
13						6"	67%				Breaks/Fractures coincide with foliation planes. No obvious weathering except at bottom of recovery		0.6 ppm Well developed fractures
14						4"					No obvious loss.		0.7 ppm
15						7"							Weathered dark fracture 0.6 ppm End 1021
16	R2	4.7 / 5.0				5" / 7"	57"	Fair	~10.7 min/ft	Gray to LT. Grey	Gray to light gray dolomitic limestone similar to R1. Fracture area with some slight weathered faces.		Start 1104
17						7"					Weathered fracture. Broken up area poss. fracture		0.9 ppm No odors or other elevated PID readings (0.3-0.7 ppm) = BKG.
18						5"					Horizontal and intersecting 30° fracture		
19						11"					Fracture area weathered slight iron staining. Infilled seams along deformed bedding plane		
20						6"					Break with possible slight weathering discolored ~~reddish~~ brind		1.1 ppm
											Horizontal seam/fracture		0.5 ppm End 1155
21	R3	3.9 / 5.0				7" / 5"	47" / 47"	Good	~10 min./ft.	Gray to LT. Grey	Gray to light gray dolomitic limestone fine to med. grained some coarser grained layers/shot seem to retain moisture		Start 1415 PID = 7.6 ppm more 20.6 BGS 1545
22						11"					21.2-21.5 Some fossils Fracture zone		PID = 4.0 ppm - 1.1 ppm
23						9"	89%				Fossilliferous/vuggy area around fracture 22.6 - 23.4' BGS		0.9 ppm
24						10"					Black infilled seam		Bottom of recovery (=23.9 BGS).
25													
											See Page 3 for Core Run #4		End 1505

NOTES: Had some problems with loosing air into formation at start of Run #3.

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical			Boring ID: MW-16D
Project Location: Rochester, NY 361714723			Page No. 1 2
Project No.: ~~361211222~~ (M)	Client: NYSDEC		of: 1 2
Boring Location: Scobell Plume cwm west	Refusal Depth: 29'	Total Depth: 29'	Bore Hole ID/OD: 3 7/8+
Weather: Partly sunny, 50-55°F, breezy	Soil Drilled: 7.9'	Method: HSA/Air Core	Casing Size: 4"
Subcontractor: (M) SJ Geologic	P.I.D (eV): 10.6	Protection Level: D	Bit Type: Diamond
Driller: Scott Breeds	Date Started: 10/23/14 (Rock)	Date Completed: 10/23/14	Bit Size: HQ
Rig Type/Model: Truck CME-55	Logged By: J. Rawcliffe	Checked By: T.D.L.	Bit Use: —
Reference Elevation: GROUND	Water Level: —	Time: —	Core Interval: 10-29

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	Natural Core Breaks: Type/Dip	Natural Core Breaks: Surface Condition	Weathered Condition	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality: Rock Quality Description	Drill Rate (min/ft)	Color	Rock Description and Comments on Drilling	Graphic Log (Also See Photos)	Additional Remarks
23											Cored 10'-29' BGS Rock socket 7.9-10' BGS		(M)
24											From previous run Similar to previous left in hole run light gray dolomitic limestone		
25													
26	R4	4.6 / 4.0				24"	57" / 55"	Excellent	~18.75 min/ft	Lt. Gray	with some fossil bearing layers Horizontal structure with some coarser layers that appear to retain moisture. Somewhat friable along seam		Start 1515 1.9 ppm 2.4 ppm more 26.3'
27						4"	93%				No weathering except at bottom of run slightly vuggy in fossil layers.		
28						16"					slightly fossiliferous		1.2 ppm 28.6'
29						7"					Possible weathering at bottom fracture		0.9 ppm more End 1630
30											Cored to 29' BGS recommend core to ≈ 28.6' BGS Completed as open hole bedrock monitoring well. 4" ID steel casing Cored borehole ≈ 3 15/16" Diameter		

NOTES:

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical			Boring ID: MW-17D
Project Location: Rochester, NY	361714732S-3		Page No. 1
Project No.: ~~361211226~~	Client: NYSDEC		of: 3 2
Boring Location: ~~MW~~ Scobell N, in plume	Refusal Depth: 8.1	Total Depth: 30' BGS	Bore Hole ~~ID~~/OD: 3 15/16"
Weather: Overcast 50° F light breeze	Soil Drilled: 8.1'	Method: HSA/Core	Casing Size: 4" steel
Subcontractor: ~~SJB Driller~~ Geologic	P.I.D (eV): 10.6	Protection Level: D	Bit Type: Diamond
Driller: Scott Breeds	Date Started: Core - 10/22/14	Date Completed: 10/22/14	Bit Size: HQ
Rig Type/Model: Truckmounted CME-55	Logged By: J. Rawcliffe	Checked By: T.D.L.	Bit Use: —
Reference Elevation: Ground	Water Level: —	Time: —	Core Interval: 10-30' BGS

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	Natural Core Breaks: Type/Dip	Natural Core Breaks: Surface Condition	Weathered Condition	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality Description	Drill Rate (min/ft)	Color	Rock Description and Comments on Drilling	Graphic Log	Additional Remarks
10											Rock sucked to 10' BGS		R1 10-15' BGS
11	R1	4.7/5.0				4" 9" 8"	37" / 57"		4.5 min./ft	Gray to light gray	Gray to light gray dolomitic limestone. fine to medium grained with generally flat (horizontal) bedding/fracture planes. (See photo.) weathered fractures		Start 0905 PID: 1.3 Lost drill water return at ≈ 11' BGS
12							65%						
13						10"		Fair					
14						6"					weathered fracture PID readings 0.8 - 1.3 ppm BKG = 0.7 ppm		
15													End 0929 out of water.
16	R2	4.9/5.0					32" / 59"		3.6 min./ft.	Gray to Lt. Gray	Run #2 15-20' BGS Broken up area slight washing		Start 1057 Higher angle
17						9"					Slightly clevated PID readings never to these or from no odors detected. muddy fracture		PID = 1.8
18						4" 5"	54%	Fair					
19						8"					Weathered (slight iron staining) fractures/beds		1720 19.5-20
20						6"					slightly muddy fractures		MERC 1300 5.5 ppm End 1115
21	R3	5.1/5.0				12"	61" / 61"		6.2 min./ft.	Gray	Gray dolomitic limestone becomes larger grained with some vugs at ≈ 21'-24' Vuggy zones		Start 1134 PID = 78 ppm (MERC) 1300
22						30"	100%						10.8 ppm
23											Strong odor from chips at 21' large vuggy area		6.5 ppm
24						19"		Excellent					
25													1205 End
26	R4	See next page for R4											

NOTES:

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical			Boring ID: MW-17D
Project Location: Rochester, NY 3617147325			Page No. 2 of 2
Project No.: ~~3612112226~~	Client: NYSDEC		
Boring Location: Scobell plume area N	Refusal Depth: 8.1'	Total Depth: 30'	Bore Hole ~~ID~~/OD: 3 15/16"
Weather: Overcast 50°F, light breeze	Soil Drilled: 8.1'	Method: HSA	Casing Size: 4" ID Steel
Subcontractor: ~~SJB Driller~~ Geologic	P.I.D (eV): 10.6	Protection Level: D	Bit Type: Diamond
Driller: Scott Breeds	Date Started: 10/22/14 (Rock)	Date Completed: 10/22/14	Bit Size: HQ
Rig Type/Model: Truck-CME 55	Logged By: J. Rawcliffe	Checked By: TDL	Bit Use: —
Reference Elevation: Ground	Water Level: 19.95	Time: 1615 10/22	Core Interval: 10-30' BGS

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	Natural Core Breaks: Type/Dip	Natural Core Breaks: Surface Condition	Weathered Condition	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality: Rock Quality Description	Drill Rate (min/ft)	Color	Rock Description and Comments on Drilling	Graphic Log	Additional Remarks
20													~~1515 Start~~
21													
22				See		Page			2				
23													
24													
25													
26	R4	4.9'/5.0				6" 14"	52% 59%				Grey dolomitic limestone. Bedding fracture planes 0-5° Fine to medium grained. Rough Fracture →		1515 Start PID = 25 ppm 26 ppm
27				→		16"	88%	Good	~5 min./ft.	Grey	All fractures/breaks have some PID readings but no obvious weathering - generally fairly flat and smooth fires		52 ppm MERC 27' 1625
28													
29						16"							41 ppm 1705 MERC 29.5'
30											See Photo.		24 ppm 1540 End
31											Bottom of boring = 30' BGS		

NOTES:

SOIL BORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scotsell Chemical ~~AL Tech SMSA Data Gap Investigation~~ 361714.7328-03			Boring ID: MW-170
Project Location: ~~Colonie, NY~~ Brighton, NY			Page No. 1
Project No.: ~~3612122256.02.****~~	Client: NYSDEC		of: 3 1
Boring Location:	Refusal Depth: 8.1'	Total Depth: 30'BGS	Bore Hole ID/OD: 10"00
Weather: Overcast, 40-50°F.	Soil Drilled: 8.1'	Method: HSA	Casing Size: 4 1/4" HSA/6 1/4" HSA
Subcontractor: Geologic NY	P.I.D (eV): 10.6	Protection Level: D	Sampler: 2" OD split spoon x 2'
Driller: Scott Reeds	Date Started: 10/20/14	Date Completed: ~~Soil 10/20/14~~ Rock 10/22/14	Sampler ID/OD: —
Rig Type/Model: Truckmounted	Logged By: JKR	Checked By: T.D.C.	Hammer Wt/Fall: 140/30"
Reference Elevation: GROUND	Water Level: —	Time: —	Hammer Type: Safety/Hammer - Hydraulic.

Sample Information					Monitoring				Sample Description and Classification	USCS Group Symbol	Remarks
Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	SPT Blows/6"	N Value	PID Field Scan	PID Headspace	Lab Tests Performed	Lab Sample ID			
0.0									Drilled rock socket 8.1'-10' BGS and cemented 4" casing on 10/20/14		
1	S1	1.3/2.0	1/5/25/18	30	0.1	—	—	—	Top 0.4 Brown to dark brown fine sand and silt with roots & organics loamy topsoil.		
2									0.4-0.8 Brown to dark reddish brown silt with traces of sand.	Fill	
									0.8-1.3' Brown to reddish brown sand and gravel. dry		
3	S2	0.3/2.0	5/3/4/4	7	0.3	—	—	—	0.4' of Brown to light brown sand and gravel. Moist to dry No odors.	Fill	
4											
5	S3	1.6/2.0	3/5/7/9	12	0.2	—	—	—	Top 0.6 Dark brown silty fine sand with organics	Possible infill	
									Bottom 1.0 Brown to ~~red~~ light reddish brown fine sand with silt. Moist, No odors	SM	
6											
7	S4	1.7/2.0	6/6/6/6	12	0.3 51 780	—	VOCs 9 Metals	⊗	Top 0.7 Brown to light brown to light reddish brown fine sand and silt, moist, slightly mottled, massive	Sand SM	@ 1435 (SB50076-MW-170-07)
									0.7-1.2 Brown to reddish brown silt with some clay and a little fine sand. Moist to very moist.	ML	
8									1.2-1.7' Very dark brown to black fine to coarse sand and silt. Hints of gravel possible ash strong odor very moist to wet.	SM	some staining from rock in bottom layer.
9	S5	0.1/0.1	50/0.1	—	—				Some rock in tip of spoon with 0.5' of slop from inside of augers		
10									Crumbly silt-like material just on top of rock in tip of spoon has an odor and PID = 100 ppm.	CP	No sample collected.
									Refusal at 8.1' BGS		
									See pages 2 thru 3 for log of rock core.		
									RR tracks		
									MW-170 MW-30		N
									Bushley		

NOTES:

FIGURE 4.4
SOIL BORING LOG
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

SOIL BORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: SCOBELL CHEMICAL			Boring ID: MW-18D
Project Location: ROCHESTER, NY			Page No. 1
Project No.: 3617147328	Client: NYSDEC		of: 1
Boring Location: MW-18D	Refusal Depth: 11.3	Total Depth: 11.3	Bore Hole ID/OD: 4.25"/7.5"
Weather: OVERCAST/SHOWERS 40's	Soil Drilled: 11.3	Method: H.S.A.	Casing Size: —
Subcontractor: GEOLOGIC NY	—	Protection Level: D	Sampler: 2" split spoon
Driller: STEVE LARAMIE	Date Started: 11-6-14	Date Completed: 11-6-14	Sampler ID/OD: 1.5"/2"
Rig Type/Model: TRUCK/CME-55	Logged By: T.D. LONGLEY	Checked By: C. Stylos	—
Reference Elevation: GROUND	Water Level: —	Time: —	—

Depth (feet bgs) 0.0	Sample Number	Penetration/ Recovery (feet)	Blows/6"		PID (ppm) NA	Sample Description and Classification	USCS Group Symbol	Remarks
1								
2						HAND DUG TO 4.5': FILL TO ~3" THEN Native/Re-worked soils TO 4.5'		
3						Went to 6" to collect first split-spoon		
4								
5								
6								
7	S-1	2/1.5	3 2 3 6	—	Bkg.	brown (10YR 4/3) SILT, well sorted, mod. stiff, wet, alluvium, sl. plastic	ML	
8								
9	S-2	2/1.5	8 8 7 10	—	—	as Above: stiff & mottled SILT to clayey SILT w/ V.F. sandy lenses	ML	DUE TO RAIN, PID NOT USED BELOW S-1
10								
11	S-3	1.3/0.6	14 21 50/0.3	—	—	TILL - Saturated: no observations of contamination - w/ gravel	SM	
12						B.O.B. @ 11.3' Refusal TRI-core to 13.3' for 2' Rock-socket & place 4" casing to 13.3' in grout		

NOTES:
THIS LOCATION WAS LATER EXTENDED TO BECOME AN OPEN HOLE BEDROCK MONITORING WELL

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: SCOBELL CHEMICAL			Boring ID: MW-18D
Project Location: ROCHESTER, NY			Page No. 1
Project No.: 3617147328	Client: NYSDEC		of: 1
Boring Location: MW-18D	Refusal Depth: —	Total Depth: 28.3'	Bore Hole ID/OD: 3"/3.8"
Weather: OVERCAST, WINDY, 40's	Soil Drilled: 11.3	Method: H.S.A.	Casing Size: 4"
Subcontractor: GEOLOGIC NY	P.I.D (eV): 10.6	Protection Level: D	Bit Type: DIA. IMPREG.
Driller: STEVE LARAMIE	Date Started: 11-12-14	Date Completed: 11-13-14	Bit Size: —
Rig Type/Model: ~~TRUCK/CME-55~~ 75	Logged By: T.D. LONGLEY	Checked By: C. Shyley	Bit Use: —
Reference Elevation: GROUND	Water Level: 12.71' B.T.O.C.	Time: 11:30 on 11-19-14	Core Interval: 13.3'-28.3'

ATV CME-45 RIG: drilling/coring w/ air

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	Natural Core Breaks: Type/Dip	Natural Core Breaks: Surface Condition	Weathered Condition	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality: Rock Quality Description	Drill Rate (min/ft)	Color	Rock Description and Comments on Drilling	Graphic Log	Additional Remarks
13.3											CORED W/ AIR ROTARY CASING SET TO 13.3' on 11-6-14		
14.3	R-1	3.7/3.4 92%		SL. TO MOD. → FRESH	SL. TO MOD.	3.3'	89%	GOOD	12.3 min/ft	GRAY	GRAY LOCKPORT DOLOMITE V. SOFT & MUDDY at 15', 16.5', 17' BREAKS @: 14.3 — PID @ 5.2 ppm 14.4 — PID @ 8.5 ppm 16.2 — PID Bkg. VUGGY OPENINGS TOP @ 15'; NONE BELOW FRAC @ 14.9 produces muddy water		TOP of Rock @ 11.3' MERC @ 15' Muddy water return during drilling of R-1
15.3													
16.3													
17													
17.3	R-2	5/5 100% (RECOVER REST. NEXT RUN)		SL/mod → FRESH	SL. → NONE	5'	100%	EXCELLENT	9.8 min/ft	GRAY	GRAY DOLOMITE 20'-24': COARSE-GRAINED W/ CORAL BREAKS @: 17.5 — Natural w/ mod. OXIDATION 18.8 18.9 19.4 20.2 21.6 21.65 Appear mechanical		3.6 ppm PID @ 17.5' & 2.8 ppm @ 18.9' MERC @ 17.5'
18.3													
19.3													
20.3													
21.3													
22'													END ON 11-12-14 START on 11-13-14
22.3	R-3	5/4.6 92%		FRESH	NONE	4.6' (Get rest next run)	92% (100%)	EXCELLENT	7.2 min/ft	GRAY	AS ABOVE TRACE TO FEW V. SMALL VUGS W/ CORAL; FEW carboniferous thin ribbons BREAKS @: PID RESPONSE 22.35 — 2.4 ppm 22.5 — 2.6 ppm 25.1 — Bkg. 0.8 26.3 — Bkg. 0.8 ALL APPEAR MECHANICAL		09:21 PICTURE OF BOX 1 13.3' TO 24' MERC @ 22.5'
23.3													
24.3													
25.3													
26.3													
27'													
27.3	R-4	1.3/1.8		FRESH	NONE	1.3	100%	EX.	8.4 M/ft	GRAY	GRAY DOLOMITE: FRESH W/ common V. SMALL VUGS; CORAL: med.-grained		09:52: 2 PICTURES OF BOTH BOXES
28.3											B.O.B. @ 28.3' @ 09:29 11/13/14		
29.3													

NOTES:

OPEN-HOLE BEDROCK MONITORING WELL

FIGURE 4.5
ROCK CORING LOG
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

SOIL BORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: SCOBELL CHEMICAL			Boring ID: MW-20
Project Location: ROCHESTER, NY			Page No. 1
Project No.: 3617147328.03	Client: NYSDEC		of: 1
Boring Location: MW-20	Refusal Depth: 14.5'	Total Depth: 14.5'	Bore Hole ID/OD: 4.25"/7.5"
Weather: CLOUDY/OVERCAST, MID 60's	Soil Drilled: 14.5'	Method: HSA	Casing Size: —
Subcontractor: GEOLOGIC NY	—	Protection Level: D	Sampler: 2" SPLIT SPOON
Driller: SCOTT BRIDDS	Date Started: 10-28-14	Date Completed: 10-29-14	Sampler ID/OD: 1.5"/2"
Rig Type/Model: TRUCK CME-55	Logged By: T.D. LONGLEY	Checked By: C. STYER	—
Reference Elevation: GROUND	Water Level: 8.5' bgs	Time: 10:33 10/28/14	—

Sample Information					Monitoring						
Depth (feet bgs) 0.0	Sample Number	Penetration/ Recovery (feet)	Blows/6"		NA			PID (ppmv)	Sample Description and Classification	USCS Group Symbol	Remarks
1	S-1	2/0.9	1 9 7 7					Bkg.	Black topsoil over cobble, over Lt. brn. SILT & F. SAND (well sorted), v. stiff, dry, non-plastic; TILL	ML	
3	S-2	2/1.2	10 12 12 16					Bkg.	Lt. brn. F. SAND, little silt, little gravel, well graded, med. dense, dry; TILL-looking	SM	
5	S-3	2/0.3	9 8 13 16					Bkg.	As above; v. little return		
7	S-4	2/1.6	23 19 19 17					Bkg.	As above to 0.6; then Lt. yellowish brn. (10YR 6/4) F. SAND, little silt, v. well sorted, dense, dry; strat. alluvium	SM	
9	S-5	2/1.5	10 10 8 10					Bkg.	As above to 0.5'; then grayish brn. to gray w/ depth (10YR 5/1) SILT & V.F. SAND, v. well sorted, wet below 0.5', v. stiff, non-plastic, diatoms; STRAT. ALLUVIUM	ML	
11 12	S-6	2/0	5 6 6 8					—	NO RECOVERY	—	
13 14	S-7	2/1.5	4 4 4/5					Bkg.	Dk. gray (10YR 4/1) SILT & CLAY, uniform, med. stiff, moist, SL. plastic; STRATIFIED w/ 1"-2" lense of silty v. F. Sand, 0.2' up from bottom; stratified alluvium	ML	
	S-8	0.5/0.1	11 50/0					Bkg.	Brn. F. SAND, tr. silt/gravel, damp, non-plastic	SM	
15 16									T.D. @ 14.5' on Rock		

↑ PIEZOMETRIC ZONE — DRY on 11-17-14

NOTES:
Bkg. = background PID readings
THIS WAS FITTED WITH AN OVERBURDEN PVC WELL

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: SCOBELL CHEMICAL			Boring ID: MW-20D
Project Location: ROCHESTER, NY			Page No. 1
Project No.: 3617147328	Client: NYSDEC		of: 2
Boring Location: MW-20D	Refusal Depth: —	Total Depth: 31.5'	Bore Hole ID/OD: 3"/3.8"
Weather: PTLY. SUNNY, 50's	Soil Drilled: 12'	Method: H.S.A.	Casing Size: 4"
Subcontractor: GEOLOGIC NY	P.I.D (eV): 10.6	Protection Level: D	Bit Type: DIA. IMPREG.
Driller: STEVE LARAMIE	Date Started: 11-5-14	Date Completed: 11-5-14	Bit Size: —
Rig Type/Model: TRUCK / CME-55	Logged By: T.D. LONGLEY	Checked By: C. SHOCK	Bit Use: —
Reference Elevation: GROUND	Water Level: DRY	Time: on 11-17-14	Core Interval: 14'-31.5'

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	~~Natural~~ Core Breaks: Type/Dip	Core Breaks: Surface Condition	Weathered Condition	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality: Rock Quality Description	Drill Rate (min/ft)	Color	Rock Description and Comments on Drilling	Graphic Log	Additional Remarks
14'											DRILLED 2' Rock socket from 12'-14' on 10-29-14 & SET 4" casing w/ grout: cored on 11-5-14 w/ air		
15	R-1	2.5/2.3 88%		FRESH	NONE	2.3'	88%	GOOD	6.4 min/ft	LT. TO DK. GRAY	LOCKPORT DOLOMITE: Fine-grained 14.2' TO 15.4': Rest is coarse: corral fossils common & V. small vugs Breaks at: 14.25 PID 0.6 15.55 - PID of 1.7 ppm 15.8 PID 0.6		Bottom of R-1 May have 1- natural break
16	16.5'												
17	R-2	5/4.8 96%		FRESH	FRESH	4.4'	88%	GOOD	4.4 min./ft	LT.-TO-DK. GRAY	AS ABOVE SL. VUGGY, fossils, ALT. Fine 2 c. grained zones SL. alteration @ 16.5' TO 16.75' Breaks at: 16.7 16.75 All appear to 17.4 drill breaks except 18 V. TOP: LARGE VUG 18.4 at 18.4': NO PID 19.7 Responses > 0.6 ppm 20.1 20.3 20.8 20.9, 21.3 V. broken @ bottom		MERC @ 16.7' DRILLER NOTE: 18' TO 18.5' poss. FRAC. (VUG HERE) VUG AT 18.4' 1.5 ± 1" x 0.5" x 0.5" DEEP
18													
19													
20													
21													
22	R-3	5/5 100%		FRESH	FRESH	5'	100%	EXCELLENT	4.6 min/ft	LT. TO DK. GRAY	As Above: LOCKPORT DOLOMITE Breaks at: 22.6 NO PID Response > 0.6 23 TO 0.8 ppm 24.6 25.3 Except for 1.4 ppm @ 25.3 25.4 Mostly drill breaks noted		14:14 TOOK PICTURE of R-1 & R-2 in BOX 1 MERC @ 25.3' 15:00 COLLECT picture of Box 1 (INCLUDES R-1, R-2, R-3)
23													
24													
25													
26													
	26.5'												
27													
28													

NOTES:

FIGURE 4.5
ROCK CORING LOG
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: SCOBELL CHEMICAL			Boring ID: MW-20D
Project Location: ROCHESTER, NY			Page No. 2
Project No.: 3617147328	Client: NYSDEC		of: 2
Boring Location: MW-20D	Refusal Depth: —	Total Depth: 31.5'	Bore Hole ID/OD: 3"/3.8"
Weather: PTLY. SUNNY, 50's	Soil Drilled: 12'	Method: HSA	Casing Size: 4"
Subcontractor: GEOLOGIC NY	P.I.D (eV): 10.6	Protection Level: D	Bit Type: DIA. IMPREG.
Driller: STEVE LAWMIE	Date Started: 11-5-14	Date Completed: 11-5-14	Bit Size: —
Rig Type/Model: TRUCK/CME-55	Logged By: T.D. LONGLEY	Checked By: C. Stapley	Bit Use: —
Reference Elevation: GROUND	Water Level: —	Time: —	Core Interval: 14' TO 31.5'

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	~~Natural~~ Core Breaks: Type/Dip	Core Breaks: Surface Condition	Weathered Condition	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality: Rock Quality Description	Drill Rate (min/ft)	Color	Rock Description and Comments on Drilling	Graphic Log	Additional Remarks
28											AS ABOVE VUGGY @ 30.3		
29											BREAKS AT:		
30	R-4	5/4.9 98%		FRESH	NONE OBSERVED	4.9	98%	EXCELLENT	6.8 min./ft	LIGHT/DK. GRAY	27.1 27.15 27.45 28 28.3 29.55 29.9 — PID @ 1.7 ppm (heated?) } PID Reading @ 0.6 TO 0.8 ppm		MERC @ 29.9'
31	31.5'												
32											B.O.B. @ 31.5' OPEN-HOLE BEDROCK MONITORING WELL		

NOTES:

FIGURE 4.5
ROCK CORING LOG
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: SCOBELL CHEMICAL			Boring ID: MW-20DD
Project Location: ROCHESTER, NY			Page No. 1
Project No.: 3617147328	Client: NYSDEC		of: 4
Boring Location: MW-20DD	Refusal Depth: —	Total Depth: 68.5'	Bore Hole ID/OD: 3"/3.8"
Weather: MOSTLY OVERCAST, 50's	Soil Drilled: 11.5'	Method: H.S.A.	Casing Size: 4"
Subcontractor: GEOLOGIC NY	P.I.D (eV): 10.6	Protection Level: D	Bit Type: DIA. IMPREG.
Driller: STEVE LARAMIE	Date Started: 11-10-14	Date Completed: 11-11-14	Bit Size: —
Rig Type/Model: TRUCK / CME-55	Logged By: T.D. LONGLEY	Checked By: C.J. [illegible]	Bit Use: —
Reference Elevation: GROUND	Water Level: 14' bgs	Time: 07:27 11-11-14	Core Interval: 13.5'-68.5'

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	~~Natural~~ Core Breaks: Type/Dip	Core Breaks: Surface Condition	Weathered Condition	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality: Rock Quality Description	Drill Rate (min/ft)	Color	Rock Description and Comments on Drilling	Graphic Log	Additional Remarks
13.5											Casing set 2' into rock on 10-29-14 CORED W/ AIR ROTARY, HQ WIRELINE		
14.5 15.5 16.5 17.5 18.5	R-1	5/4 80%		FRESH FRESH	NONE OBSERVED EXCEPT @ 16'	3.55'	71%	FAIR	5.4 min./ft	LT-TO-DK GRAY (5Y 4/1)	LT. TO DK. gray (5Y 4/1) Lockport DOLOMITE: fine-grained 14.1' to 15.25', the rest being C. grained w/ coral fossils, & common v. small vugs Breaks @: 14.1 — natural 15.25 — drill break 48 ft — natural w/ oxidation/rusty 16.6 17.2 17.4 } drill breaks 1-vertical, non-penetrating 14.1' to 15.25'		No PID Readings > Bkg. at any break in R-1 12:21 PICTURE OF R-1
19.5 20.5 21.5 22.5 23.5	R-2	5/5 100%		SL. FRESH	SL. FRESH	~5'	100%	Excellent	5.2 min./ft	GRAY TO DK. GRAY	as ABOVE CRYSTALLINE DOLOMITE W/ V. FEW VUGS throughout run-2 Breaks at: 18.55 — only natural looking break 18.5 19.45 20.7 22.25 22.45 23.1 } all appear as drilling breaks		HAVE communication w/ MW-20D during drilling of R-2
24.5 25.5 26.5	R-3	5/4.9 98%		FRESH	NONE OBS.	~4.9'	98%	Excellent	7.4 min./ft	GRAY TO DK. GRAY	AS ABOVE Breaks @ 24.1 24.4 NO anomalous PID Readings on any breaks - all look fresh - mechanical?		

NOTES:

FIGURE 4.5
ROCK CORING LOG
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: SCOBELL CHEMICAL			Boring ID: MW-20DD
Project Location: ROCHESTER, NY			Page No. 2
Project No.: 3617147328	Client: NYSDEC		of: 4
Boring Location: MW-20DD	Refusal Depth: —	Total Depth: 68.5	Bore Hole ID/OD: 3"/3.8"
Weather: OVERCAST, 50's	Soil Drilled: 11.5	Method: H.S.A.	Casing Size: 4"
Subcontractor: GEOLOGIC NY	P.I.D (eV): 10.6	Protection Level: D	Bit Type: DIA. IMPREG.
Driller: STEVE LARAMIE	Date Started: 11-10-14	Date Completed: 11-11-14	Bit Size: —
Rig Type/Model: TRUCK / CME-55	Logged By: T.D. LOWALEY	Checked By: C. Shyler	Bit Use: —
Reference Elevation: GROUND	Water Level: —	Time: —	Core Interval: 13.5' - 68.5'

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	Natural Core Breaks: Type/Dip	Natural Core Breaks: Surface Condition	Weathered Condition	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality: Rock Quality Description	Drill Rate (min/ft)	Color	Rock Description and Comments on Drilling	Graphic Log	Additional Remarks
26.5													
27.5	R-3			FRESH	NONE	4.9'	78%	EX.	7.4 min/ft	GRAY TO DK. GRAY	Breaks: Core is fine-to-coarse grained w/ corrm, ? 27.3 27.6 27.95 28.1 28.35 few/common v. small vugs throughout, esp. in corrm sections		
28.5													
29.5													
30.5	R-4	5/5 100%		FRESH	NONE	5/5	100%	EXCELLENT	8 min/ft	LT. TO DK. GRAY	LOCKPORT DOLOMITE: mostly fine-grained; tr. organics in v. thin varves. Breaks at: 28.9 29.5 29.65 29.7 29.85 30.5 31.85 32.75 all appear as fresh drilling breaks. NO ANOMALOUS PID RESPONSES		No vugs since ~27' but now thin, wavy organic-rich varves
31.5													
32.5													
33.5													
34.5													
35.5	R-5	5/5 100%		FRESH	NONE	5'	100%	EXCELLENT	9.2 min/ft	GRAY	FINE-GRAINED DOLOSTONE. Breaks @: 29.1 29.55 30.4 30.6 31.05 31.7 31.8 32.1 32.55 32.6. NO weathering or oxidation observed on any break surfaces. NO PID Readings > 2.0 ppm		07:42 Took 2 pictures of first 2 boxes of MW-20DD (on 11-11-14). END on 11-10-14
36.5													
37.5													
38.5													
39.5													
40.5	R-6	5/5 100%		FRESH	NONE	5'	100%	EXCELLENT	11.2 min/ft.	GRAY	Breaks at: 39.6 40.35 40.75 41.05 41.9 42.4. NO ANOMALOUS PID RESPONSES		Breaks appear to occur in softer zones. START 11-11-14
41.5													
42.5													

NOTES:

FIGURE 4.5
ROCK CORING LOG
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: SCOBELL CHEMICAL			Boring ID: MW-20 DD
Project Location: ROCHESTER, NY			Page No. 3
Project No.: 3617147328	Client: NYSDEC		of: 4
Boring Location: MW-20 DD	Refusal Depth: —	Total Depth: 68.5'	Bore Hole ID/OD: 3"/3.8"
Weather: OVERCAST, 50's	Soil Drilled: 11.5'	Method: H.S.A.	Casing Size: 4"
Subcontractor: GEOLOGIC NY	P.I.D (eV): 10.6	Protection Level: D	Bit Type: DIA. IMPREG.
Driller: STEVE LARAMIE	Date Started: 11-10-14	Date Completed: 11-11-14	Bit Size: —
Rig Type/Model: TRUCK / CME-55	Logged By: T.D. LONGLEY	Checked By: C. SNYDER	Bit Use: —
Reference Elevation: GROUND	Water Level: —	Time: —	Core Interval: 13.5'-68.5'

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	Natural Core Breaks: Type/Dip	Natural Core Breaks: Surface Condition	Weathered Condition	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality: Rock Quality Description	Drill Rate (min/ft)	Color	Rock Description and Comments on Drilling	Graphic Log	Additional Remarks
42.5													
43.5													
44.5	R-7	3.3/3.15 95%		FRESH	NONE	~3.1'	~94%	EXCELLENT	4.7 min./ft	GRAY	Breaks at: 44.2, 44.55, 44.7, 45.4, 45.7, 46.55 — All appear as drill breaks. NO OBVIOUS FRACS. NO ANOMALOUS PID Readings. 46.9-47': SOFT W/ INC. WATER RETURN (DRILLER). CORE BLOCK @ 46.8'		STRONG HYDROGEN SULFIDE ODOR FROM R-7 TO BOTTOM
45.5													
46.5													
46.8													
47.5	R-8	—		FRESH	NONE	~1.6	94%	EXCELLENT	5.9 min/ft	GRAY	FEW SMALL VUGS 47' TO 47.3'. 7 FRACTURES IN R-8. NO ANOMALOUS PID readings. 46.9' TO 47' SOFT: INCREASE H2O RETURN		MERC @ 47'. 12:09 picture of Box 3 (31'-47')
48.5													
49.5	R-9	5/5 100%		FRESH	NONE OBSERVED	5'	100%	EXCELLENT	5.2 min/ft	GRAY	Breaks @: 49.3, 49.6, 49.9, 50.1, 51.2, 52.4, 53.05 — SANDY DOLOSTONE - CRYSTALLINE - W/ Few carboniferous wavy lenses. All appear mechanical. No vugs: 53.3 TO 53.5 - very broken - did not come out of core barrell easily		STRONG H_2S throughout R-9 - ODOR
50.5													
51.5													
52.5													
53.5													
54.5	R-10	5/5 100%		FRESH	NONE	5'	100%	Excellent	NOT measured	GRAY	FINE SANDY DOLOSTONE - CRYSTALLINE. Driller note: INCREASE IN water return IN R-10. Breaks @: 54.2, 54.5, 55.7, 56.65, 56.8 — All appear as drilling breaks: fresh & fun weathered faces. No vugs. Few carboniferous wispy Lenses		High Hydrogen Sulfide odor during R-10. NO anomalous PID responses. 15:11 picture of Box 4
55.5													
56.5													
57.5													
58.5													

NOTES:

FIGURE 4.5
ROCK CORING LOG
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: SCOBELL CHEMICAL			Boring ID: MW-20 DD
Project Location: ROCHESTER, NY			Page No. 4
Project No.: 3617147328	Client: NYSDEC		of: 4
Boring Location: MW-20 DD	Refusal Depth: —	Total Depth: 68.5'	Bore Hole ID/OD: 3"/3.8"
Weather: CLEARING, 50-60's	Soil Drilled: 11.5'	Method: H.S.A.	Casing Size: 4"
Subcontractor: GEOLOGIC NY	P.I.D (eV): 10.6	Protection Level: D	Bit Type: DIA. IMPREG.
Driller: STEVE LARAMIE	Date Started: 11-10-14	Date Completed: 11-11-14	Bit Size: —
Rig Type/Model: TRUCK / CME-55	Logged By: T.D. LONGLEY	Checked By: C. Stryker	Bit Use: —
Reference Elevation: GROUND	Water Level: —	Time: —	Core Interval: 13.5'-68.5'

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	Natural Core Breaks: Type/Dip	Natural Core Breaks: Surface Condition	Weathered Condition	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality: Rock Quality Description	Drill Rate (min/ft)	Color	Rock Description and Comments on Drilling	Graphic Log	Additional Remarks
58.5'											As Above		
59.5'	R-11	5/4.95 ~100%		FRESH	NONE	4.95'	99%	EXCELLENT	7.8 min/ft	GRAY	Breaks @: 59.7, 60.95, 61.9 > all fresh & unweathered		
60.5'											NO PID responses above Bkg.		
61.5'											HARDER w/ depth		
62.5'													
63.5'													
64.5'	R-12	5/4.7 94%		FRESH	NONE	4.7	94%	EXCELLENT	8.2 min/ft	GRAY	Breaks @: 64.35, 65.5, 65.65, 66.7, 67.9 > all fresh faces - no anomalous PID responses		09:29 on 11-12-14 picture of Box 5 core/ Bottom of Boring
65.5'													
66.5'													
67.5'													
68.5'													
											T.D. @ 68.5'		
											INSTALLED PVC WELL IN THE BEDROCK BORING - SEE WELL CONSTRUCTION DIAGRAM		

NOTES:

FIGURE 4.5
ROCK CORING LOG
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

SOIL BORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: SCOBELL CHEMICAL			Boring ID: MW-21
Project Location: ROCHESTER, NY			Page No. 1
Project No.: 3617147328	Client: NYSDEC		of: 1
Boring Location: MW-21	Refusal Depth: ~~12.5~~	Total Depth: 12.5	Bore Hole ID/OD: 4.25"/7.5"
Weather: PTLY. SUNNY, LOW 50's	Soil Drilled: 12.5	Method: HSA	Casing Size: —
Subcontractor: GEOLOGIC NY	—	Protection Level: D	Sampler: 2" SPLIT SPOON
Driller: MICKEY MARSHALL	Date Started: 10-31-14	Date Completed: 10-31-14	Sampler ID/OD: 1.5"/2"
Rig Type/Model: TRUCK/CME-55	Logged By: T.D. LONGLEY	Checked By: C. Stapler	—
Reference Elevation: GROUND	Water Level: —	Time: —	—

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	Blows/6"	Monitoring NA PID (ppm)	Sample Description and Classification	USCS Group Symbol	Remarks
0.0							
1	S-1	2/1	3 5 21 11	Bkg.	dk. brn. to black SAND & SILT, fr. gravel, organic-rich, well graded, med. dense, damp; fill over mucky soil		
2							
3	S-2	2/0	10 7 4 9	—	No recovery: gravel caught in spoon tip		
4							
5	S-3	2/1	4 4 5 24	Bkg.	brn. (7.5 YR 4/3) FINE SAND, fr. gravel, silt, well sorted, loose, moist to wet, non-plastic: Ablation Till?	SP	
6							
7	S-4	2/1	14 15 12 20	Bkg.	as above: TILL, wet	SW	
8							
9	S-5	2/1.1	58 16 23 16	Bkg.	Till As Above Brown (10YR 5/3) SAND, little gravel, fr. silt; sand is well graded, dense, wet.	SM	
10							
11	S-6	2/0.8	8 12 7 6	Bkg.	brn. (7.5YR 5/3) SANDY Till as above, saturated: very bottom may be stratified sand	SM	
12							
	SN	0.5/as	50/0.5"	23.0	w/ broken rock, saturated, mottled, sheen on rock w/ degraded fuel odor		
13					bottom @ ~ 12.5' bgs		
14							

NOTES: drill exploration w/ 4.25" Augers: set well in boring w/ 4.25" Augers & 2" PVC WELL COMPLETION

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: SLOBELL CHEMICAL			Boring ID: MW-21D
Project Location: ROCHESTER, NY			Page No. 1
Project No.: 3617147328	Client: NYSDEC		of: 1
Boring Location: MW-21D	Refusal Depth: —	Total Depth: 29.5'	Bore Hole ID/OD: 3"/3.8"
Weather: PTLY. SUNNY, BREEZY, 50's	Soil Drilled: 14.5'	Method: HSA	Casing Size: 4"
Subcontractor: GEOLOGIC, NY	P.I.D (eV): 10.6	Protection Level:	Bit Type: DIA. IMPREG.
Driller: STEVE LARAMIE	Date Started: 11-4-14	Date Completed: 11-4-14	Bit Size: —
Rig Type/Model: TRUCK / CME 55	Logged By: T.D. LANGLEY	Checked By: C. Stylas	Bit Use: —
Reference Elevation: GROUND	Water Level: 8.9' bgs	Time: 13:00 / 11-4-14	Core Interval: 14.5' - 29.5'

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	Natural Core Breaks: Type/Dip	Natural Core Breaks: Surface Condition	Weathered Condition	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality: Rock Quality Description	Drill Rate (min/ft)	Color	Rock Description and Comments on Drilling	Graphic Log	Additional Remarks
14	14.5'										CORED USING AIR ROTARY		Drill w/ 6.25" HSA To Top of Rock on 10-31-14. Drilled Rock Socket 12.5' To 14.5'; SET 4" Casing IN Socket same Day. Come Back to core on 11-4-14. MERC. Samples @ 17.2' 23.3' 28.1' Driller noted poss. Frac. @ 24.3' 13:42 took 2 pictures of CORE
15	R-1	2/1.6 80%		FRESH	NONE	1.6'	80%	GOOD	5 min/ft	LT. GRAY (5Y 6/1)	LT. GRAY LOCKPORT DOLOMITE: Breaks at: 0.5', 0.6, 1.1, 1.4: all fresh, possible drilling breaks PID response on breaks: 2.0, 9.0, 50, 270 ppm		
16													
16.5'													
17	R-2	5/5 100%	SL.	SL.	SL.	5'	100%	EXCELLENT	6.8 min./ft	LT. GRAY TO GRAY (5Y 5/1)	LOCKPORT DOLOMITE - VUGGY @ 16' TO 17.4'		
18											BREAKS: NATURAL - 0.7; ALL APPEAR DRILLING BREAKS: 0.8, 0.9, 1.0, 1.75, 2.15, 2.25, 4.0, 4.3		
19											PID RESPONSE: 0.8, 4.1, 9.1, 1.4, 1.5, 6.9, 12.2, 3.3, 2.5		
20											1" BAND @ 19.2' RETAINS WATER		
21													
21.5'													
22	R-3	5/4.9' 98%		FRESH	FRESH	4.9'	98%	EXCELLENT	5.8 min./ft	LT. GRAY	AS ABOVE: FRESH & UNWEATHERED		
23											BREAKS @: 23.3, 24.5, 24.9, 25.7, 24.2 } NO ELEVATED PID ABOVE 0.4 ppm		
24											ALL BREAKS ARE FRESH & APPEAR AS DRILLING BREAKS - NO OXIDATION/WEATHERING OBSERVED		
25													
26													
26.5'													
27	R-4	3/3 100%		FRESH	FRESH	3'	100%	EXCELLENT	7 min./ft	LT. GRAY	BECOMING HARDER W/ DEPTH		
28											BREAKS @: 27.3, 27.8, 28.1, 28.2, 28.6, 29 } NO PID ABOVE 0.4		
29											NATURAL BED-PLANE FRACTURES		

NOTES:

TOTAL DEPTH @ 29.5': DRILLED 2' ROCK SOCKET (12.5' TO 14.5') ON 10-31-14 W/ 5 5/8" ROLLER BIT

OPEN HOLE BEDROCK MONITORING WELL

FIGURE 4.5
ROCK CORING LOG
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

SOIL BORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: SCOBELL CHEMICAL			Boring ID: MW-22D
Project Location: ROCHESTER, NY			Page No. 1
Project No.: 3617147328	Client: 03 NYSDEC		of: 1
Boring Location: MW-22D	Refusal Depth: ~13.7	Total Depth: 30.5	Bore Hole ID/OD: 4.25"/7.5"
Weather: PTLY. SUNNY, MID 40's	Soil Drilled: 13.7	Method: HSA	Casing Size: —
Subcontractor: GEOLOGIC NY	—	Protection Level: D	Sampler: 2" SPLIT SPOON
Driller: MICKEY MARSHALL	Date Started: 10-30-14	Date Completed: 10-30-14	Sampler ID/OD: 1.5"/2"
Rig Type/Model: ATV CME 45	Logged By: T.D. LONGLEY	Checked By: C. Stapler	—
Reference Elevation: GROUND	Water Level: —	Time: —	—

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	Blows 6"	Monitoring NA	Monitoring PID (ppmv)	Sample Description and Classification	USCS Group Symbol	Remarks
0.0								
1	S-1	1.5/0.8	1			Dk. brn. topsoil, SILT, organics, f. sand, & stone 1" to 2.5", dry, well sorted, soft; over broken rock		Bkg. = Background PID readings
2			3					
			12		Bkg.			
			4/0.3					
3	S-2	3/0.2	50/0"			Broken rock @ ~1' to 2.5" moved rig to go by stone obstruction		
4			25"					
			8		Bkg.			
			7					
5	S-3	3/0.4	15			Brown (10YR 4/3) SILT & F. SAND, well sorted, stiff, dry, non-plastic: Alluvium	ML	
6			8					
			6		Bkg.			
			5					
7	S-4	2/1	11			top 4" crushed stone, over dk. yellowish brn. (10YR 4/6) F. SAND, LITTLE SILT, v. well sorted, med. dense, dry/damp, non-plastic; Alluvium?	SM	
8			12					
			11		Bkg.			
			10					
9	S-5	2/1.1	2			Reddish brn (5YR 4/4) SILT & F. SAND, tr. gravel/cobble, well sorted, dense, damp/dry, non-plastic; TILL?	ML	
10			21					
			26		Bkg.			
			32					
11	S-6	1/0.8	46			Lt. brn. to Lt. pinkish gray F. SAND, tr. SILT, Little rounded gravel, well graded, v. dense, dry: TILL	SW	
12			50/0.4		Bkg.			
13	S-7	1.7/0.8	6			As above: TILL	SW	
14			25					
			42		Bkg.			
			50/0.2					
15	S-8	0/0	50/0.0		—	Spoon bouncing on top of rock @ ~13.7'		
16								

NOTES:

- LATER INSTALLED AN OPEN HOLE BEDROCK WELL FROM 15.5' TO 30.5'
- USED 6.25" HSA TO DRILL TO TOP OF ROCK, ROLLER-BIT & SOCKET & SET 4" DIA. CASING TO 15.5'; CORED ROCK ON 11-4 & 11-5-14

SOIL BORING LOG

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: SCOBELL CHEMICAL			Boring ID: MW-22D
Project Location: ROCHESTER, NY			Page No. 1
Project No.:	Client:		of: 1
Boring Location: MW-22D	Refusal Depth: —	Total Depth: 30.5'	Bore Hole ID/OD: 3"/3.8"
Weather: PTLY SUNNY, 50's	Soil Drilled: 13.5'	Method: H.S.A.	Casing Size: 4"
Subcontractor: GEOLOGIC NY	P.I.D (eV): 10.6	Protection Level: D	Bit Type: DIA. IMPREG.
Driller: STEVE LARAMIE	Date Started: 11-4-14	Date Completed: 11-5-14	Bit Size: —
Rig Type/Model: TRUCK / CME 55	Logged By: T.D. LONGLEY	Checked By: C.S.	Bit Use: —
Reference Elevation: GROUND	Water Level: 15.9'	Time: 11-5-14 07:38	Core Interval: 15.5'-30.5'

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	Natural Core Breaks: Type/Dip	Natural Core Breaks: Surface Condition	Weathered Condition	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality: Rock Quality Description	Drill Rate (min/ft)	Color	Rock Description and Comments on Drilling	Graphic Log	Additional Remarks
15.5'											CORED USING AIR ROTARY		
16	R-1	5/5 100%		V.S. FRESH	NONE OBSERVED	5'	100%	EXCELLENT	7.6 min./ft	GRAY-TO-DK. GRAY (5Y 4/1 TO 5/1)	LT. TO DK. GRAY LOCK POINT DOLOMITE Fine-grained 16' TO 17.5': Rest is coarse-grained VUGS AT 15.5' TO 16' & 18.5' TO 20' BREAKS AT: 16.2', 16.6, 17.4, 19.1, 19.2, 19.7 (maybe only Natural Frac.) } NO PID > 0.3 ppm		MERC SAMPLE @ 17.4', 16.2'
17													
18													
19				FRESH									
20													END on 11-4-14
21	R-2	5/5 100%		FRESH	NONE OBSERVED	5'	100%	EXCELLENT	6.8 min./ft	AS ABOVE	As Above = finer-grained 9 Breaks @: 20.6, 21.5, 23.1, 23.4, 23.5, 24, 24.7, 24.95, 25.1 } NO PID > 0.9 ppm NO natural-looking FRACTURES: all are // w/ bedding		START on 11-5-14 NO OBSERVED FRACS. IN R-2 BY DRILLER 09:16 & 09:17 2 PICTURES OF R-1 & R-2 IN BOX
22													
23													
24													
25													
26	R-3	5/5 100%		FRESH	NONE OBSERVED	5'	100%	EXCELLENT	8 min./ft	GRAY TO DK. GRAY (5Y 4/1)	As ABOVE: nothing unusual BREAKS AT: 26.3, 27.1, 27.2, 27.3, 27.45, 27.5, 27.65, 28.1, 29.1, 29.3, 30.4 NO PID RESPONSE ABOVE BKg. of 0.6/1.0 ALL APPEAR AS drilling breaks - ALL FRESH, ALL // W/ bedding of nearly horizontal		NO VOIDS: alternating HARD-SOFT Zones (driller) MERC @ 27.4' 10:42 PICTURE OF R-3
27													
28													
29													
30													
30.5'													

NOTES: SET CASING IN 2' Rock socket (13.5' TO 15.5') on 10-30-14
ROLLER CONE Socket W/ 5 5/8" bit.
OPEN HOLE BEDROCK MONITORING WELL

FIGURE 4.5
ROCK CORING LOG
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

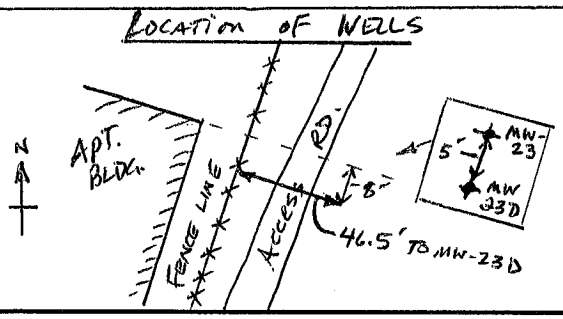
SOIL BORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: SCOBELL CHEMICAL			Boring ID: MW-23
Project Location: ROCHESTER, NY			Page No. 1
Project No.: 3617147326.03	Client: NYSDEC		of: 1
Boring Location: MW-23	Refusal Depth: ~10'	Total Depth: 9.8'	Bore Hole ID/OD: 4.25"/7.5"
Weather: OVERCAST, 60's	Soil Drilled: 9.8'	Method: H.S.A.	Casing Size: —
Subcontractor: GEOLOGIC N.Y	—	Protection Level: D	Sampler: 2" SPLIT SPOON
Driller: SCOTT BREEDS	Date Started: 11-28-14	Date Completed: 11-28-14	Sampler ID/OD: 1.5"/2"
Rig Type/Model: TRUCK CME-55	Logged By: T.D. LONGLEY	Checked By: C. STYLER	—
Reference Elevation: GROUND SURFACE	Water Level: DRY	Time: 11-18-14 @ 15:40	—

Depth (feet bgs) 0.0	Sample Number	Penetration/ Recovery (feet)	Blows/6"	Monitoring NA PID (ppm)	Sample Description and Classification	USCS Group Symbol	Remarks
1	S-1	2/1.5	1	Bkg.	Lt. brn. SILT, tr sand, tr. gravel/stone, med. dense, dry, non-plastic	ML	DRILLED W/ WELL MW-23D AS A PAIR: OVERBURDEN/ BEDROCK
2			4				
			10				
			12				
3	S-2	2/1	8	Bkg.	blackish brn. SILT, V. stiff, mottled w/ reddish oxidized stains	ML	
			12				
4			10				
			9				
5	S-3	2/0.5	5	Bkg.	As above; V. STIFF	ML	
			26				
6			44/0.5				
7	S-4	2/1.5	~~15~~ 26	Bkg.	Lt. brn. fine SAND, tr. SILT, tr. f. gravel, poorly graded, v. dense, damp/dry, non-plastic; stratified alluvium or ablation till?	SM	
			44/0.3				
8							
9	S-5	2/1.6	10	Bkg.	brn. fine SAND, very well sorted, v. dense, damp/dry, non-plastic; stratified alluvium; bottom 0.2' is powdered rock	SP/SM	
			19				
			38				
10			36				
11	S-6	0.4/0	50/0.4	—	dk. gray rock pieces, no soil; ~9.8' is top of rock surface		
12							

LOCATION OF WELLS



NOTES: A 2" PVC MONITORING WELL WAS INSTALLED IN THIS BORING

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: SCOBELL CHEMICAL			Boring ID: MW-23D
Project Location: ROCHESTER, NY			Page No. 1
Project No.: 3617147328	Client: NYSDEC		of: 1
Boring Location: MW-23D	Refusal Depth: —	Total Depth: 26.5	Bore Hole ID/OD: 3"/3.8"
Weather: CLOUDY, FLURRIES, 28°	Soil Drilled: 9.5'	Method: H.S.A.	Casing Size: 4"
Subcontractor: GEOLOGIC NY	P.I.D (eV): 10.6	Protection Level: D	Bit Type: DIA. IMPREG.
Driller: STEVE LARAMIE	Date Started: 11-13-14	Date Completed: 11-14-14	Bit Size: —
Rig Type/Model: TRUCK / CME-55	Logged By: T.D. LONGLEY	Checked By: C. Stygler	Bit Use: —
Reference Elevation: GROUND	Water Level: 11.15' B.T.O.C	Time: 15:40 11-18-14	Core Interval: 11.5'-26.5'

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	~~Natural~~ Core Breaks: Type/Dip	Core Breaks: Surface Condition	Weathered Condition	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality: Rock Quality Description	Drill Rate (min/ft)	Color	Rock Description and Comments on Drilling	Graphic Log	Additional Remarks
											CASING SET ON 10-28-14 IN 2' Rock Socket. AIR-CORED IN BEDROCK		
11.5											Rock surface at 9'		
12.5	R-1	1/0.75 75%		SL.	SL.	0.5'	50%	FAIR	9 min/ft	GRAY	LOCKPORT DOLOMITE: BREAKS @ 0.3' W/ SL. OXIDATION & at BOTTOM		NO PID > Bkg.
13.5	R-2	5/4.9 98%	SL. OXIDATION IN BREAKS W/ general SL. oxidation to 15'		SLIGHT	3.75	75%	FAIR TO GOOD	7.4 min/ft	GRAY	GRAY DOLOMITE BREAKS @: 13.1 13.65 13.9 14.5 15 15.2 16.1 16.4 16.7 ALL APPEAR NATURAL W/ V. SL. OXIDATION: NO PID RESPONSE > Background V. Small Vugs 12.5' to 17.5' W/ SL. OXIDATION LARGE 1" VUG @ 16.5		
14.5													
15.5													
16.5													
17.5													END OF 11-13-14 START ON 11-14-14
18.5	R-3	5/5 100%	NO TO SLIGHT OXIDATION TO 24': Then FRESH		SLIGHT	4.7'	94%	EXCELLENT	8 min/ft	GRAY	AS ABOVE BREAKS AT: 18.4 18.65 19.25 20.3 20.7 20 21.6 20.2 ALL Except 20.2 Appear Natural W/ NO-to-SL. OXIDATION: Muddy water Return NO PID Responses > Bkg. SL. overall oxidation to 24'		DRILLER NOTES possible FRACS. @ 21' & 22.5' 08:56 picture of Box 1 (11.5' to 22.5')
19.5													
20.5													
21.5													
22.5													
23.5	R-4	4/4 100%	SL. FRESH FRESH		SL. TO NONE	3.7'	93%	EXCELLENT	10.5 min/ft	GRAY	GRAY Lockport Dolomite: fine-grained V. FEW-TO-NO VUGS BREAKS @: 22.9 23.4 23.6 23.7 24.1 24.5 25.1 26.2 26.25 FEW, Faint carbon ribbons Natural Breaks; NO OXIDATION ON CORE: FRESH ROCK; HARD TO DISTINGUISH NATURAL & DRILL BREAKS		NO PID > Bkg. 10:02 PICTURE OF BOX 2 (22.5'-26.5') 11:32 PICTURE OF R-4
24.5													
25.5													
26.5													

NOTES: T.D. @ 26.5'

OPEN HOLE BEDROCK MONITORING WELL

FIGURE 4.5
ROCK CORING LOG
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

SOIL BORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: SCOBELL CHEMICAL			Boring ID: MW-24D
Project Location: ROCHESTER, NY			Page No. 1
Project No.: 3617147328	Client: NYSDEC		of: 1
Boring Location: MW-24D	Refusal Depth: ~8.2'	Total Depth: 8.2'	Bore Hole ID/OD: 4.25"/7.5"
Weather: RAIN, 30's	Soil Drilled: 8.2'	Method: H.S.A.	Casing Size: —
Subcontractor: GEOLOGIC NY	—	Protection Level: D	Sampler: 2" SPLIT SPOON
Driller: STEVE LARAMIE	Date Started: 11-7-14	Date Completed: 11-7-14	Sampler ID/OD: 1.5"/2"
Rig Type/Model: ATV/CME-45	Logged By: T.D. LONGLEY	Checked By: C. Stapler	—
Reference Elevation: GROUND	Water Level: —	Time: —	—

Sample Information					Monitoring						
Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	Blows/6"		NA			PID (ppm)	Sample Description and Classification	USCS Group Symbol	Remarks
0.0											
1	S-1	2/0.8	WOH					—	dk. brown gravelly SILT & SAND, w/ slag - FILL	—	DUE TO RAIN, did not use PID.
2			2								
			4								
			2								
3	S-2	3/0.6	2					—	all FILL - slag, black to red, w/ glass, gravel, sand, silt.	—	
4			3								
			4								
			4								
5	S-3	3/0.3	7					—	reddish brn. Sand, tr. silt, little gravel - FILL	—	
6			9								
			8								
			17								
7	S-4	2/1.3	17					—	yellow brn. Sandy TILL: w/ some sorting of SAND, tr. gravel & silt, native - ABLATION/BASAL TILL(?)	SM	
			25								
8			44								
			39								
			50/0.2						Rock chips & powder		
9									HIT REFUSAL at 8.2'		
									THIS LOCATION WAS LATER INSTALLED AS AN OPEN HOLE MONITORING WELL		

NOTES: Sampled w/ 4.25" HSA. - Then drilled w/ 6.25" HSA TO TOP of Rock & drilled 2" - Rock Socket 8' TO 10' & grout 4" Steel casing TO 10' TO CORE at later date - socket set @ 8' TO 9.5'

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: SCOBELL CHEMICAL			Boring ID: MW-24D
Project Location: ROCHESTER, NY			Page No. 1
Project No.: 3617147328	Client: NYSDEC		of: 1
Boring Location: MW-24D	Refusal Depth: —	Total Depth: 25'	Bore Hole ID/OD: 3"/3.8"
Weather: PTLY. SUNNY, FLURRIES, 20'S	Soil Drilled: 9.5'	Method: H.S.A.	Casing Size: 4"
Subcontractor: GEOLOGIC NY	P.I.D (eV): 10.6	Protection Level: D	Bit Type: DIA. IMPREG.
Driller: STEVE LARAMIE/SCOTT BREED	Date Started: 11-17-14	Date Completed: 11-18-14	Bit Size: —
Rig Type/Model: ATV/CME-45	Logged By: T.D. LONGLEY	Checked By: C. Styles	Bit Use: —
Reference Elevation: GROUND	Water Level: 17.27' B.T.O.C	Time: 11-20-14 @ 10:42	Core Interval: 9.5' to 25'

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	Natural Core Breaks: Type/Dip	Natural Core Breaks: Surface Condition	Weathered Condition	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality: Rock Quality Description	Drill Rate (min/ft)	Color	Rock Description and Comments on Drilling	Graphic Log	Additional Remarks
9.5											SET CASING ON 11-17-14 TO 9.5' CORED WITH AIR ROTARY		
10.5	R-1	4.6/4.6 100%		SL.	SL. AT FRACS.; OTHERWISE FRESH	3.75'	83%	GOOD	7 min/ft	LT. GRAY	LT. GRAY TO GRAY LOCK PORT DOLOMITE BREAKS AT: 9.6, 9.8, 9.9, 10.0, 10.1, 10.3, 10.7, 10.8, 11.3, 11.35, 12.05, 13.1, 13.8 — PID IS AT Bkg. OR SL. ELEVATED due to hot CORE causing INTERFERENCE		
11.5													
12.5				FRESH									
13.5				SL.							18.9 ppm; otherwise as above		MERC AT 14.2'
14.1													END 11-17-14
14.5													START 11-18-14
15.5	R-2	4.5/3.8 84%	0.0 0.0 0.0	FRESH	NONE	~3.1'	69%	FAIR	6.2 min/ft	LT. GRAY TO GRAY	Dolomite very broken at top 14.1' TO 15.2' W/ SLight to FRESH SURFACES PID up. TO 5.8 ppm w/ Bkg. = 1.5 ppm but CORE IS HOT & STEAMING, SO could be moisture response. Breaks @: 15.4, 15.85, 2@16.15, 16.5, 16.75, 16.8, 17.1, 17.4, 17.75, 18' } many appear mechanical		Breaks 11 to bedding planes: approx. horizontal PID STOPS WORKING PROPERLY - may be DIRTY BULB
16.5													
17.5													
18.5	18.6												
19.5	R-3	5/4.2 84%		FRESH TO SL.	SLIGHT TO NONE	3.8	76%	GOOD	5.6 min/ft	LT. GRAY TO GRAY	Dolomite: Fine-TO-MED- GRAINED, CRYSTALLINE, W/ bedding breaks Breaks @: 19.25, 19.7, 19.8, 20.7, 20.85, 21.2, 21.3, 4@21.7, 22.35, 22.65, 22.7		10:17 PICTURE OF BOX 1 (9.5' to 21') MERC @ 21.7'
20.5													
21.5													
22.5													
23.5	23.6												
24.5	R-4 25'	1.4/1.7 121%		FRESH	NONE	0.65	46%	POOR	13.8 min/ft	GRAY	AS ABOVE: TOP 1.3 IS V. Broken ~9 Breaks: all are FRESH & may BE MECHANICAL		10:58 picture of BOX 2
25.5											T.D. @ 25'		

NOTES:

OPEN HOLE BEDROCK MONITORING WELL

FIGURE 4.5
ROCK CORING LOG
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: SCOBELL CHEMICAL			Boring ID: MW-25D
Project Location: ROCHESTER, NY			Page No. 1
Project No.: 3617147328	Client: NYSDEC		of: 1
Boring Location: MW-25D	Refusal Depth: —	Total Depth: 22	Bore Hole ID/OD: 3"/3.8"
Weather: CLOUDY, FLURRIES, 20's	Soil Drilled: 5'	Method: H.S.A.	Casing Size: 4"
Subcontractor: GEOLOGIC NY	P.I.D (eV): 10.6	Protection Level: D	Bit Type: DIA. IMPREG.
Driller: SCOTT BREEDS	Date Started: 11-20-14	Date Completed: 11-20-14	Bit Size: —
Rig Type/Model: TRUCK / CME-55	Logged By: T.D. LONGLEY	Checked By: C. STYLES	Bit Use: —
Reference Elevation: GROUND	Water Level: 10.8' B.T.O.C.	Time: 16:00 on 11-21-14	Core Interval: 7' TO 22'

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	Core Breaks: Type/Dip	Core Breaks: Surface Condition	Weathered Condition	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality: Rock Quality Description	Drill Rate (min/ft)	Color	Rock Description and Comments on Drilling	Graphic Log	Additional Remarks
7											ROCK SOCKET 5'-7': CASING SET ON 11-19-14 W/ GROUT CORED W/ AIR ROTARY		
8 9 10 11 12	R-1	5/4.6 92%	MOD. SLIGHT FRESH	MOD. SLIGHT	4.3'	86%	GOOD	NOT MEASURED	LT. GRAY TO GRAY	LOCKPORT DOLOMITE MED-TO-COARSE GRAINED W/ MANY CORAL SECTIONS & COMMON SMALL VUGS ALL NATURAL-LOOKING BREAKS AT: 7.6, 7.8 } OXIDIZED ZONE SEEN IN OTHER BORINGS 8.85 9.3 9.65 9.75 10.5 10.8 11.1 ALL BREAKS W/ SL. OXIDATION OBSERVED		MERC AT 7.6' NO PID > BKG. MERC AT 10.7' TO 10.8' HOLE MAKES WATER
13 14 15 16 17	R-2	5/5.25 100% +	FRESH	NONE	5.25'	100% +	EXCELLENT	3.5 min/ft	LT. GRAY TO GRAY	AS ABOVE: CORAL TO 12.5'; THEN, MOSTLY FINE-GRAINED BELOW BREAKS AT: 12.6 14.65 14.85 14.95 16 16.6 ALL W/ FRESH FACES & NO OXIDATION NO PID > BKG. OCCASIONAL THIN CARBON LENSES & COMMON V.F. VUGS		BETWEEN R-1 & R-2 16:12 PICTURE OF BOX 1 (7' TO 17')
18 19 20 21 22	R-3	5/4.75 95%	FRESH	NONE	4.75'	95%	EXCELLENT	3 min/ft	LT. GRAY TO GRAY	LOCKPORT DOLOMITE BREAKS AT: 19 19.85 20.2 21.5 UBIQUITOUS VUGS THROUGHOUT BUT SMALLER BELOW 18.5' CORAL ZONES FEW, THIN WISPY CARBON LENSES		08:59 PICTURE OF BOX 2 (17' TO 22') ON 11-21-14

NOTES: T.D. @ 22'

OPEN HOLE BEDROCK MONITORING WELL
DRILLED W/ HSA W/OUT SAMPLING TO BEDROCK

FIGURE 4.5
ROCK CORING LOG
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: SCOBELL CHEMICAL			Boring ID: MW-26D
Project Location: ROCHESTER, NY			Page No. 1
Project No.: 3617147328	Client: NYSDEC		of: 1
Boring Location: MW-26D	Refusal Depth: —	Total Depth: 26'	Bore Hole ID/OD: 3"/3.8"
Weather: PTLY. SUNNY, 30'S	Soil Drilled: 9'	Method: H.S.A.	Casing Size: 4"
Subcontractor: GEOLOGIC NY	P.I.D (eV): 10.6	Protection Level: D	Bit Type: DIA. IMPREG
Driller: SCOTT BREEDS	Date Started: 11-21-14	Date Completed: 11-21-14	Bit Size: —
Rig Type/Model: ATV/CME-45	Logged By: T.D. LONGLEY	Checked By: C. Stapler	Bit Use: —
Reference Elevation: GROUND	Water Level: 8.04' B.T.O.C.	Time: 07:00 on 11-22-14	Core Interval: 11' TO 26'

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	~~Natural~~ Core Breaks: Type/Dip	Core Breaks: Surface Condition	Weathered Condition	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality: Rock Quality Description	Drill Rate (min/ft)	Color	Rock Description and Comments on Drilling	Graphic Log	Additional Remarks
											SET CASING ON 11-20-14 TO 11' CORED W/ AIR ROTARY		
11											SAND & GRAVEL TO 5'; 5' TO 9' IS Broken & Weathered Rock/FILL		
12	R-1	5/3.7 74%		FRESH	KNOWN	3.3	66%	FAIR	7.2 min/ft	GRAY	LOCKPORT DOLOMITE BREAKS AT: 11.35 ALL APPEAR NATURAL 11.4 12.2 12.5 — ONLY OXIDATION OBSERVED 13 14.4 VUGGY 11' TO 11.5' & 14' TO 16'; SMALL W/ CORAL		COMMUNICATION W/ STREAM TO WEST @ 12' TO 12.5': LOTOF BUBBLES & SILT IN STREAM MERC AT 12.5' 10:57: PICTURE OF R-1
13				SLIGHT	SL.								
14				FRESH	NONE								
15													
16													
17	R-2	4/5 125% (picked up core from R-1)		FRESH	NONE	5'	125% EXCELLENT	EXCELLENT	6.4 min/ft	GRAY	AS ABOVE BREAKS AT: 16.2' ~ 19.4' COMMON, SMALL VUGS & CORAL THROUGHOUT RUN NO PID READINGS > BKG.		MERC AT 16.2' 11:41 PICTURE OF ~11' TO 20'
18													
19													
20													
21	R-3	4/3.9 98%		FRESH	NONE	3.6'	90%	GOOD TO EXCELLENT	DID NOT MEASURE	GRAY	LOCKPORT DOLOMITE BREAKS AT: 20.75 NO PID > BKG. 20.85 20.95 21.15 NO VUGS BELOW 20' 21.7 22.05 V. OCCASIONAL CARBON RIBBON 22.2		12:40 PICTURE OF R-3 IN BOX 2 (20'-24') MERC AT 20.8' BUBBLING IN STREAM CEASES IN R-3
22													
23													
24													
25	R-4	2/1.95 98%		FRESH	NONE	1.95	98%	EXCELLENT	DID NOT MEASURE	GRAY	LOCKPORT DOLOMITE FINE-grained NO VUGS NO BREAKS		13:02 PICTURE OF R-4
26													

NOTES:

T.D. @ 26'

OPEN HOLE BEDROCK MONITORING WELL
DRILLED W/ HSA W/OUT SAMPLING TO BEDROCK

FIGURE 4.5
ROCK CORING LOG
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

SOIL BORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical		Boring ID: IW-1
Project Location: Brighton, NY		Page No. 1
Project No.: 3617147328.03	Client: NYSDEC	of: 3
Boring Location: IW-1 West near fence	Refusal Depth:	Total Depth: 35.6 / 36'	Bore Hole ID/OD: 6"/10"
Weather: Sunny 70-75°F, breeze	Soil Drilled: 8.0	Method: HSA	Casing Size: 6 1/4"
Subcontractor: Geologic	—	Protection Level. D	Sampler: NA
Driller: Scott Breeds	Date Started: 7/31/15	Date Completed: 8/5/15	Sampler ID/OD: NA
Rig Type/Model: CME-55 Truckmount	Logged By: J. Rawcliffe	Checked By: ICD	
Reference Elevation:	Water Level: 18.91 TOC	Time: 8/6/15 1330	

TOC = 0.1' BGS

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	SPT Blows/6"	N Value	PID (ppm)	Lab Sample (Y/N)	Sample Description and Classification	USCS Group Symbol	Remarks
1	NA	NA	NA	NA	0.1	NA	0 ≈ 4' Dark brown to very dary brown fine sand and silt with some medium to coarse sand and a trace of gravel. Some organic debris (wood) Moist	Fill	No samples collected logged soil cuttings only
2					0.1				
3					1.5				
4					0.4				
5					0.5				
6					0.4		4-6 Brown to dark brown fine sand and silt with some to a little medium to coarse sand and gravel. Moist to very moist.	SP/SM	
7					0.4				
8					0.8		6-8 Brown to dark brown fine to coarse sand and silt with some gravel and cobbles. Becomes very moist to wet.	SM/SP	
9	0415				0.2		Bedrock at ≈ 8.0' BGS		
	0430				0.5		Rock at 8.7' and PID spiked to ≈65 ppm.		Start chatter BR with Tricone and air.
10	0435				65		Rock at this location must be much more weathered soft as it drilled quickly compared to IW-6 which took ≈ 1 hr/2 ft.		
					14				
					9		IW-1 20 min/2 ft.		
					5				

pDR Conc = 0.006 mg/m³
TWA = 0.011

NOTES: located north of MW-16/16B ≈ 10' near fence by Kennel/Buildings.

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical			Boring ID: IW-1
Project Location: Brighton, NY			Page No. 2
Project No.: 3617147328.03	Client: NYSDEC		of: 3
Boring Location: Near MW-16/ Canal Road	Refusal Depth: —	Total Depth: 36 (35.6')	Bore Hole ID/OD: 4"
Weather: Partly Sunny, 70-80°F, Humid	Soil Drilled: 8.0	Method: Air Hammer	Casing Size: —
Subcontractor: Cascade	P.I.D (eV): 10.6	Protection Level: D	Bit Type: Button Bit
Driller: Scott Breeds	Date Started: 8/4/15	Date Completed: 8/5/15	Bit Size: 3 7/8-4"
Rig Type/Model: CME-55, Truck mount	Logged By: J. Rumcliffe	Checked By: ICD	
Reference Elevation:	Water Level: 18.91' TOC	Time: 8/6/15-1330	Core Interval: NA

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality: Rock Quality Description	Drill Rate (min/ft)	Rock Description and Comments on Drilling	Graphic Log	Additional Remarks
11		NA	NA	NA	NA		1450 Start air hammer at IW-1 Rock socket to 10'- drill out quick then start air hammer bedrock.		
12									
13									Fracture zone 13.5-14
14									
15							PID = 0 - 0.8 ppm		
16									
17									
18									Fracture zone 18.5-19
19							Air is blowing out from MW-16D as IW-1 is drilled		
20							Air from MW-16D: PID = 6.8-8.1 PID = 0.2 - 1.1		
21									1330
22									
23									
24									
25									
26							PID = 0.1 - 0.6		1550

NOTES:

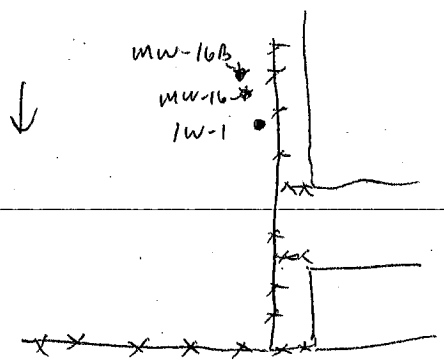
ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

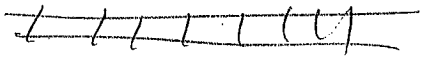
Project Name: Scobell Chemical		Boring ID: IW-1
Project Location: Brighton, NY		Page No. 3
Project No.: 3617147328.03	Client: NYSDEC	of: 3
Boring Location: Near MW-16/Kennel Fence	Refusal Depth: —	Total Depth: 36' (35.6')
Weather: Sunny, 70, breeze	Soil Drilled: 8.0	Method: Air hammer
Subcontractor: Geologic	P.I.D (eV): 10.6	Protection Level: D
Driller: Scott Breeds	Date Started: 8/4/15	Date Completed: 8/5/15
Rig Type/Model: CME-55, Truck mount	Logged By: J. Rawcliffe	Checked By: ICD
Reference Elevation:	Water Level: 18.91' TOC	Time: 8/6/15 1330

Bore Hole ID/OD:	4"
Casing Size:	4" ID
Bit Type:	Button bit
Bit Size:	3-7/8 - 4"
Core Interval:	NA.

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality: Rock Quality Description	Drill Rate (min/ft)	Rock Description and Comments on Drilling	Graphic Log	Additional Remarks
27	NA	NA	NA	NA	NA	NA			Had issues clearing hole as there is no air/water returns. Rods stuck. Got tools out of hole at the end of the day.
28									
29									
30							PID on discharge 0.8 - 1.2 ppm		
31							8/5/15 1140 Reached 31'		
32									
33									
34									
35									
36							Measured bottom of boring = 35.6' BGS		1210 Reached depth 36'
37									



NOTES:



SOIL BORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical		Boring ID: FW-2
Project Location: Brighton, NY		Page No. 1
Project No.: 3617147328.03	Client: NYSDEC	of: 5
Boring Location: Source Area West Side	Refusal Depth: 7.5	Total Depth: 36'	Bore Hole ID/OD: 6"/10"
Weather: Sunny, breezy, 80-85°F	Soil Drilled: 7.5	Method: HSA/Tricone	Casing Size: 6 1/4
Subcontractor: Geologic	—	Protection Level: D	Sampler: NA
Driller: Scott Breeds	Date Started: 7/30/15	Date Completed: 8/4/15	Sampler ID/OD: NA
Rig Type/Model: CME-55 Truck Mount	Logged By: T. Rancifer	Checked By: ICD 12/28/15	
Reference Elevation:	Water Level: 18.57' TOC	Time: 8/6/15 11:50	

TOC = 0.3' BGS

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	SPT Blows/6"	N Value	PID (ppm)	Lab Sample (Y/N)	Sample Description and Classification	USCS Group Symbol	Remarks
1	NA	NA	NA	NA	—	NA			—
2					/				
3					/				
4					1				
5					/				
6					/				
7					/		Top of Bedrock ≈ 7.5' BGS		
8					1.7		Drilled with Tricone to 9.9' for rock socket to set casing in.		Drilled with air and Tricone adding water to keep down dust. 1340
9									
10							Grouted 4" steel casing into rock socket from ≈ 7.5' to 9.9' BGS.		
11									
12									

NOTES: Located near fence ~~out~~ just outside area where dogs have outside access

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical		Boring ID: IW-2
Project Location: Brighton, NY		Page No. 2
Project No.: 3617147328.03	Client: NYSDEC	of: 5
Boring Location: Next to Kennel Fence	Refusal Depth: —	Total Depth: 36'	Bore Hole ~~ID~~ (OD): 4"
Weather: Partly sunny 70-80°F, breezy	Soil Drilled: 7.5'	Method: Core	Casing Size: NA
Subcontractor: Geologic	P.I.D (eV): 10.6	Protection Level: D	Bit Type: Diamond
Driller: Steve Laramee	Date Started: 8/4/15	Date Completed: 8/4/15	Bit Size: 4"
Rig Type/Model: CME-45C, Trailer Mount	Logged By: J. Rame(ltr)	Checked By: ICD 12/28/15	
Reference Elevation:	Water Level: 18.57' TOC	Time: 8/6/15 1150	Core Interval: 9.9-36'

TOC = 0.3' BGS

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality: Rock Quality Description	Drill Rate (min/ft)	Rock Description and Comments on Drilling	Graphic Log	Additional Remarks
9						NA	Start core run at 9.9' BGS		
10	R1 9.9-11'	1.1 / 1.1	7.5	58%	Fair		Grey fine grained Dolomitic limestone. Horizontal bedding with most beds. Fractures along bedding planes. Bedding fracture. Slightly Fossiliferous		PID 0.5 1570
11									
12	R2 11-16	5.0 / 4.7	7.5 / 4 / 6 / 4 / 7	76%	Good		Rock generally similar to above. "Weathered fracture" "(Brownish grind around fracture faces)." "Weathered fractures"		PID=0 0.2 ppm 0.1 Void at 12.5' 0.1-0.2' 0.4 ppm
13									
14			9				"Weathered fractures"		Void at 13.8'
15			5				Some small vugs. Broken up rock poss. fracture zone - rock appears brownish discolored		0.1 ppm 0.0 ppm
16									1545
	R3	16-21	5.5				Top is similar to above fine grained dolomitic limestone		Void at 16.5' PID=3.1
17									

NOTES:

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical			Boring ID: MW-2
Project Location: Brighton, NY			Page No. 3
Project No.: 3617147328.03	Client: NYSDEC		of: 5
Boring Location: Next to Kennel Road	Refusal Depth: —	Total Depth: 36'	Bore Hole ID (OD): 4"
Weather: Partly sunny 70-80°F, breezy	Soil Drilled: 7.5'	Method:	Casing Size: NA
Subcontractor: Geologic	P.I.D (eV): 10.6	Protection Level: D	Bit Type: Diamond
Driller: Steve Lavarnee	Date Started: 8/4/15	Date Completed: 8/4/15	Bit Size: 4"
Rig Type/Model: CME-45C, Trailer mount	Logged By: J. Rawcliffe	Checked By: ICD 12/28/15	
Reference Elevation:	Water Level: 18.57' TOC	Time: 8/6/15 1150	Core Interval: 9.9-36'

TOC = 0.3' BGS

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality: Rock Quality Description	Drill Rate (min/ft)	Rock Description and Comments on Drilling	Graphic Log	Additional Remarks
18	R3 (Cont) 16-21	5.0 / 4.8	4, 8, 11	50%	Fair	NA	Gray generally fine grained dolomitic limestone (bedstone) with some coarser grained layers which tends to be fossiliferous. Brownish discolored (weathered) look some/Mac 1650 (55.30gm B28076-IW002-019 Coarse-grained fossiliferous area.		All air/water being lost down hole at end of R2 3.6 9.5 8.1 Rock has an oily/sheeny look 4.7
21									1620
22	R4 21-26	5.0 / 5.1	13", 18", 4", 25"	100%	Excellent		Vuggy, fossiliferous zone relatively coarse-grained. large vug. large slightly angled fracture 50°. Slightly finer-grained with small vugs. Coarse grained fossiliferous with horizontal fractures. Finer-grained vuggy zone.		8/5/15 Start 0735 6.5 ppm PID = 17.4 ppm 4.5 ppm 2.1 ppm
23									
24									

NOTES:

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical		Boring ID: IW-2
Project Location: Brighton, NY		Page No. 4
Project No.: 3617147328.03	Client: NYSDEC	of: 5
Boring Location:	Refusal Depth: —	Total Depth: 36	Bore Hole ID/(OD) 4"
Weather: Partly cloudy 70°F, breeze	Soil Drilled: 7.5'	Method: Core	Casing Size: NA
Subcontractor: Geologic	P.I.D (eV): 10.6	Protection Level: D	Bit Type: Diamond
Driller: Steve/Cameron	Date Started: 8/4/15	Date Completed: 8/4/15	Bit Size: 4"
Rig Type/Model: CME-45C, Trailer mount	Logged By: J. Rawcliffe	Checked By: CO 12/28/15	
Reference Elevation:	Water Level: 18.57' TOC	Time: 8/6/15 1150	Core Interval: 9.9-36

TOC = 0.3' BGS

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality: Rock Quality Description	Drill Rate (min/ft)	Rock Description and Comments on Drilling	Graphic Log	Additional Remarks
									8/5/15
26	R4 (cont)	5.0 / 5.1		100%		NA	Grey fine grained dolomitic limestone (sucrosic) horizontal bedding with some small vugs.		0520
27	R5 (26-31)	5.0 / 5.0	26	93%	Excellent		Generally fine grained grey dolomite/limestone with some coarse grained fossiliferous layers. Slightly coarse grained layer 28.2 Fractures/breaks along 28.6 bedding plane		1320 828076-IW002028 44 ppm 57 ppm MEK 51.14 gm
30			30				Coarse grained fossiliferous area with some to a lot of small vugs. (29.9-29.4)		
31							Mechanical Break		PID = 0.4
32	R6 (31-36)	5.0 / 4.5	5 / 17.5				Fine grained Dolomite/limestone Horizontal bedding. 31.4 Fractures/ 31.6 Breaks		0805 PID = 4.6 ppm 2.2 ppm Calcite More single from fracture faces at 31.4 + 31.6 51.03 gm 1020 828076-IW002032
33							(32.7-33.2) Coarse grained, fossiliferous, some vugs		

NOTES: pDR-1000AN readings 1035 Conc = 0.004 mg/m3 TWA = 0.013 mg/m3

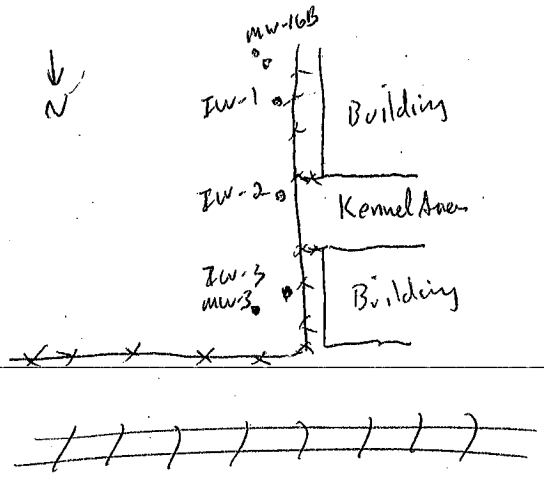
ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical		Boring ID: IW-2
Project Location: Brighton, NY		Page No. 5
Project No.: 3617147328.03	Client: NYSDEC	of: 5
Boring Location:	Refusal Depth: —	Total Depth: 36'	Bore Hole ID (OD): 4"
Weather: Partly sunny, 70, breezy	Soil Drilled: 7.5'	Method: Core (Air/water)	Casing Size: NA
Subcontractor: Geologic	P.I.D (eV): 10.6	Protection Level: D	Bit Type: Diamond
Driller: Steve Hammer	Date Started: 8/4/15	Date Completed: 8/4/15	Bit Size: 3 7/8"-4"
Rig Type/Model: CME-45C, Trailer Mount	Logged By: T. Rawcliffe	Checked By: ICD 12/28/15	
Reference Elevation:	Water Level: 18.57' TOC Time: 8/6/15 1150		Core Interval: 9.9-36'

TOC = 0.3' BGS

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality: Rock Quality Description	Drill Rate (min/ft)	Rock Description and Comments on Drilling	Graphic Log	Additional Remarks
						NA	Fracture or mechanical break — 33.1'		PID = 1.5 ppm
34		5.0 / 4.9	33	94%	Excellent		Gray dolomite limestone (sandstone) mostly fine grained with some coarse grained fossiliferous areas. 33.7 - 34.4 Coarser grained fossiliferous, small vugs.		
35							Slightly coarser grained few very small vugs, fossiliferous.		
36							Mechanical Fracture/break at end of run →		0.2 ppm
									0950



NOTES:

SOIL BORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical		Boring ID: IW-3
Project Location: Brighton, NY		Page No. 1
Project No.: 3617147328.03	Client: NYSDEC	of: 5
Boring Location: Source Area NW corner	Refusal Depth: 7.5	Total Depth: 36.3'
Weather: Partly cloudy 80-85°F, lightning	Soil Drilled: 7.5	Method: HSA
Subcontractor: Geologic		Protection Level: D
Driller: Scott Breeds	Date Started: 7/29/15	Date Completed: 8/3/15
Rig Type/Model: CME-55 / Truck Mount	Logged By: J. Rawcliffe	Checked By: ICD 12/29/15
Reference Elevation:	Water Level: 18.94' TOC	Time: 8/6/15 1245

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	SPT Blows/6"	N Value	PID (ppm)	Lab Sample (Y/N)	Sample Description and Classification	USCS Group Symbol	Remarks
							TOC = 0.5' BGS		
1	NA	NA	NA	NA	0	NA	0-1 Dark brown sand and silt with roots and other organic debris, loamy topsoil	FILL	No split spoons collected. Logged auger cuttings
2					6		1-6' Brown to reddish brown fine sandy silt with a little medium to coarse sand. Moist.		
3					0				
4					0		6-7.5' Similar to above but very moist to wet.		
5					0				
6					0			SM	
7					0		Top of bedrock 7.5' BGS		
8					0.4		Started drilling with Tricone and air		PID 0.4-1.4 at TOC discharge.
					0.6		1ft soil cut 7.8-8.1		
9					1.4		8.1' Bulk into rock.		PID 0.1 to 1.5 ppm on air rock chip discharge
					0.8		Bottom of socket = 10' BGS		
10					0.6		7/31/15 Grouted 4" ID steel casing into rock socket. (≈8-10')		DataRam Dust Meter
									CONC = 0.011 mg/m3
									TWA = 0.011 mg/m3

NOTES:

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical			Boring ID: MW-3
Project Location: Brighton, NY			Page No. 2 of: 5
Project No.: 3617147328.03	Client: NYSDEC		
Boring Location: NW corner near MW-3	Refusal Depth: —	Total Depth: 36.3' BGS	Bore Hole ID (OD): 4"
Weather: Mostly cloudy 75-Breezy	Soil Drilled: 7.5'	Method: Core	Casing Size: NA
Subcontractor: Geologic	P.I.D (eV): 10.6	Protection Level: D	Bit Type: Diamond
Driller: Steve Vandamme	Date Started: 8/3/15	Date Completed: 8/3/15	Bit Size: 3 7/8"/4" H
Rig Type/Model: CME 45C, track mounted	Logged By: J. Rawcliffe	Checked By: LD 12/28/15	
Reference Elevation:	Water Level: 18.94' TOC	Time: 8/6/15 1245	Core Interval: 10.2 - 36.5'

TOC = 0.5' AGS

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality: Rock Quality Description	Drill Rate (min/ft)	Rock Description and Comments on Drilling	Graphic Log	Additional Remarks
10						NA	Cleaned out grout with rollerbit 10.2' BGS Start coring with air/water - water to keep down		
11	R1	10.2 1.3 1.0	8"	67%	Fair		Gray dolomite/limestone with dark lobed bedding planes. some fossil near bottom of recovery. Mechanical —	0.0 0.0	closed. weathered 1215
12									
13		11.5							
14	R2		4"				High angle fractures 55-65° Fossiliferous Bedding is horizontal with some black layers very thin		PID 0
15			4"				Mech. —		0 Discharge air/water = 0.9 ppm
16		5.0 4.8					low angle 15° fracture →		PID = 0
17							Mechanical along bedding planes		0
18			11"	40%	Poor				0 housing and into formation 11.5 →
19							Breaks along bedding planes some possible weathering rinds		
20									0
21									0
22			4"				High angle fractures No obvious weathered fractures or elevated PID readings		0
23		16.5'							1310
24	R3	5.0 4.7	4" 6"				Generally horizontal fractures/breaks along bedding plane		

NOTES:

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical		Boring ID: IW-3
Project Location: Brighton, NY		Page No. 3
Project No.: 3617147328.03	Client: NYSDEC	of: 5
Boring Location: NW Corner near MW-7	Refusal Depth: —	Total Depth: 36.3' BGS	Bore Hole ID/OD: 4"
Weather: Mostly cloudy, 75°F, breeze	Soil Drilled: 7.5	Method: HSA/Core	Casing Size: N/A Steel 4"
Subcontractor: Geologic	P.I.D (eV): 10.6	Protection Level: D	Bit Type: Diamond
Driller: Steve Laramee	Date Started: 8/3/15	Date Completed: 8/3/15	Bit Size: 3 7/8-4"/ H
Rig Type/Model: CME 45C trailer mount	Logged By: J. Ramcliffe	Checked By: I.D 12/28/15	
Reference Elevation:	Water Level: 18.94' TOC	Time: 8/6/15 1245	Core Interval: 10.2-36.5'

TOC = 0.5' AGS

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality: Rock Quality Description	Drill Rate (min/ft)	Rock Description and Comments on Drilling	Graphic Log	Additional Remarks
18	R3 (Cont.)		7"			NA	High angle fracture 17-18'		
			4"				Some fossils		1.2 ppm
			4"						Cone = 0.008 mg/m³
		5.0	4"						TWA = 0.013
19		4.8	5"	81%	Good				1.6 ppm
									3.2 ppm
							0.2' void at 19.5' Area is lowhead up less slight odor		1420 8280761W003021
									8.6 ppm
			12"						50.9 gm/50 ml
20									12.5 ppm Merc = 20.5"
							Vugs and fossils at ~20.5'		PID = 450 ppm
							Strong organic odor from rock core		
21									43 ppm
									1350
	R4								PID = 8.1
22			18"				Vuggy area with lots of calcite in valley and calcite crystals.		
			6"						
		5.0	10"				No obvious weathered fracture faces.		
23		4.9	11"	100%	Excellent		Generally fractures/breaks along horizontal bedding planes.		2.5 ppm
									1.2 ppm
24									
			14"						5.1 ppm
							Small vuggy area		
25									
							Becomes quite competent		0.1 ppm

NOTES:

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical		Boring ID: MW-3
Project Location: Brighton, NY		Page No. 4
Project No.: 3617147328.03	Client: NYSDEC	of: 5
Boring Location:	Refusal Depth: —	Total Depth: 36.3' BGS	Bore Hole ID/OD: 4"
Weather: Mostly cloudy, 75°F, breezy	Soil Drilled: 7.5'	Method: Core	Casing Size: Steel 4"
Subcontractor: Geologic	P.I.D (eV):	Protection Level: D	Bit Type: Diamond
Driller: Steve Lawrence	Date Started: 8/3/15	Date Completed: 8/3/15	Bit Size: 3 7/8-4" / H
Rig Type/Model: CME-45C trailer	Logged By: J. Rawcliffe	Checked By: ICD	
Reference Elevation:	Water Level: 18.54' TOC	Time: 8/6/15 1245	Core Interval: 10.2-36.5

TOC = 0.5' BGS

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality: Rock Quality Description	Drill Rate (min/ft)	Rock Description and Comments on Drilling	Graphic Log	Additional Remarks
26	R4	5.0 / 4.9		100%		NR	Very uniform dolomitic sandstone/ limestone		1450
27	R5	26.5	6"				Fine grained grey dolomitic limestone, horizontal bedding with occasional fractures/breaks along bedding. Fossils		PID 11 ppm 39 ppm
28		5.0 / 5.0	29"	92%	Excellent		Fossiliferous zone some small vugs		Dust Meter pDR-1000 AN R9982 Conc = 0.004 TWA = 0.013 mg/m3
29									
30			10"						33 ppm
31		31.5	10"						11 ppm 25 ppm 1550
32	R6		8"				Grey fine to medium grained dolomitic limestone, minor fossiliferous areas, horizontal bedding with mild folding deformation.		3 ppm
33		5.0 / 4.9	25"	93%	Excellent				

29.5' Meas. 828076-1W003030 57.24 1720

NOTES:

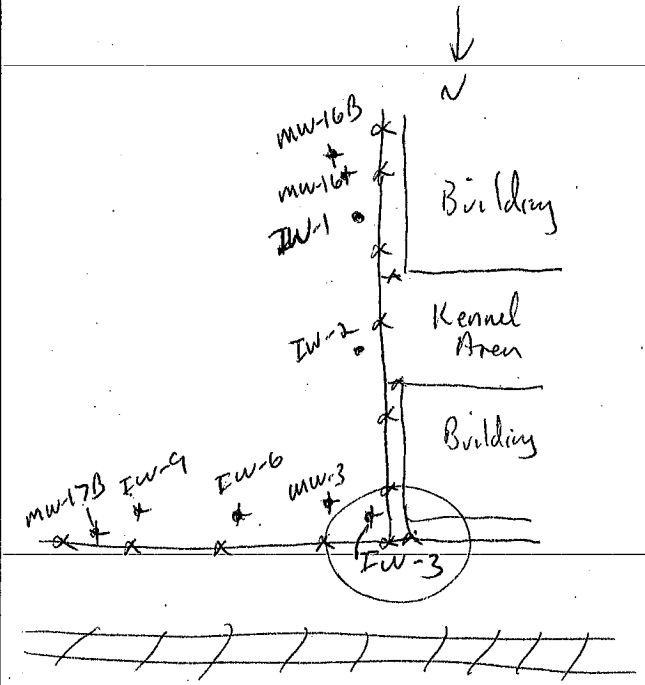
ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical			Boring ID: IW-3
Project Location: Brighton, NY			Page No. 5
Project No.: 3617147328.03	Client: NYSDEC		of: 5
Boring Location:	Refusal Depth: —	Total Depth: 36.3' BGS	Bore Hole ID/OD: 4"
Weather: Mostly Cloudy 75 Breeze	Soil Drilled: 7.5'	Method: HSA / Core	Casing Size: 4" ID Steel
Subcontractor: Geologic	P.I.D (eV): 10.6	Protection Level: D	Bit Type: Diamond
Driller: Steve Lammers	Date Started: 8/3/15	Date Completed: 8/3/15	Bit Size: 3 7/8-4" / H
Rig Type/Model: CME-45C/Driller	Logged By: J. Rauchliffe	Checked By: ICO 12/28/15	
Reference Elevation:	Water Level: 18.54' TOC	Time: 8/6/15 1245	Core Interval: 10.2-36.5

TOC = 0.5' AGS

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality: Rock Quality Description	Drill Rate (min/ft)	Rock Description and Comments on Drilling	Graphic Log	Additional Remarks
34	R6 (Cont)	5.0 / 4.9	12"	93%	Excellent	NA	Cont. from previous page.		3ppm
35							Fossiliferous (a lithology)		4ppm 6ppm
36		36.5	9"						Bottom of recovery
37									



NOTES:

SOIL BORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical		Boring ID: IW-4
Project Location: Brighton, NY		Page No. 1
Project No.: 3617147328.03	Client: NYSDEC	of: 3
Boring Location: 1/2 way between MW-11 + MW16	Refusal Depth: —	Total Depth: ~~36~~ 36.2 ags	Bore Hole ID/OD: 6"/10"
Weather: Sunny 75-85°F, breeze	Soil Drilled: 8.5'	Method: HSA	Casing Size: 6 1/4"
Subcontractor: Geologic		Protection Level: D	Sampler: NA
Driller: Scott Breeds	Date Started: 7/31/15	Date Completed: 8/5/15	Sampler ID/OD: NA
Rig Type/Model: CME-55 / Trailmount	Logged By: J. Rawcliffe	Checked By: ICD 12/28/15	
Reference Elevation:	Water Level: 17.82' TOC	Time: 8/6/15 1345	

TOC = 0.1' AGS

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	SPT Blows/6"	N Value	PID (ppm)	Lab Sample (Y/N)	Sample Description and Classification	USCS Group Symbol	Remarks
1	~~NA~~	~~NA~~	~~NA~~	~~NA~~	0.4	~~NA~~	0-2 Brown fine to coarse sand and silt with some gravel. Dry to moist	Fill	
					1.8				
2					0.9				
					7.8				
3					12		2-6 Brown to dark brown fine to coarse sand and gravel with some silt and cobble. Moist.	Fill	Some odors
					190				Breathing zone 1.5-5.5
4					240				
					500				
5					75				B.Z. = 1-5 ppm
					19				
6					28				
					60				B.Z = 0.9-6.5 ppm
7					45		6-8.5 Olive to olive brown fine sand and silt with some to a little medium to coarse sand and gravel. Very moist to wet.	SM/SP	Strong odor on soils
					150				no sustained reading
8					110		Bedrock at 8.5' BGS		over 5 ppm in B.Z.
									pDR RF=2 Conc=0.002 mg/m³ TWA=0.008
9					4.5		Drilled 8.5-10.5 rock socket - drilled quite quickly (softer/weathered rock?)		8.5-9 BZ 0-3.8 ppm
					3.8				
10					4.9				9-10.5 BZ = 0-1.9
					2.9				1230
11							Grouted 4" ID steel casing into rock socket. (8.5-10.5' BGS)		

NOTES:

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical			Boring ID: IW-4
Project Location: Brighton, NY			Page No. 2
Project No.: 3617147328.03	Client: NYSDEC		of: 3
Boring Location: Between MW-11 / MW-16B	Refusal Depth: —	Total Depth: 36.2'	Bore Hole ID/OD: 4"
Weather: Sunny 75-85°F, breeze	Soil Drilled: 8.5'	Method: HSA, Air Hammer	Casing Size: 4" ID Steel
Subcontractor: Geologic	P.I.D (eV): 10.6	Protection Level:	Bit Type: Air hammer bit w/ guide
Driller: Scott Breeds	Date Started: 8/5/15	Date Completed: 8/5/15	Bit Size: 4" OD
Rig Type/Model: CME-55, Truck mount	Logged By: J. Ramcliffe	Checked By: ICD 12/28/15	BR Air
Reference Elevation:	Water Level: 17.82' TOC	Time: 8/6/15 1315	~~Core~~ Interval: 11-36.5' BGS

TOC = 0.1' AGS

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality: Rock Quality Description	Drill Rate (min/ft)	Rock Description and Comments on Drilling	Graphic Log	Additional Remarks
10			NA	NA	NA				
11							Cleaned out to 11' BGS		1400
12	R1	11-16					Soft area around 12'		
13									BZ PID = 0-0.8 ppm
14									
15							14.5-15.5 Soft fracture zone lost return of air/water		
16									1420
17	R2	16-21							
18							Possible soft fracture zone 18-18.5		
19									little to no air/water return.
20							Poss. soft fracture zone 19.5-20		Discharge = 0.2-0.8 ppm
21							Soft area 20.7-21'		1445
22	R3	21-26					No obvious fractures or soft areas		
23									
24							PID at wellhead = 0.4-1.8 ppm		
25									

Graphic Log: ↑ Air hammer — no core for visual Graphic Log

NOTES:

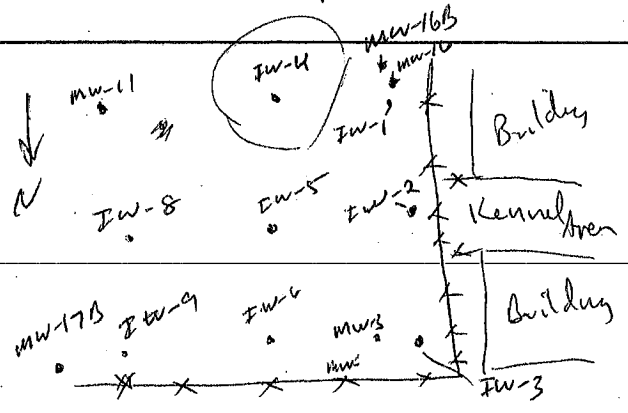
ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical			Boring ID: IW-4
Project Location: Brighton, NY			Page No. 3
Project No.: 3617147328.03	Client: NYSDEC		of: 3
Boring Location: Between MW-11 and MW-16S	Refusal Depth: —	Total Depth: 36.2'	Bore Hole ID/OD: ≈4" ID
Weather: Sunny, 70-75, breezy	Soil Drilled: 8.5'	Method: Air Hammer	Casing Size: —
Subcontractor: Geologic	P.I.D (eV): 10.6	Protection Level: D	Bit Type: Button/Air
Driller: Scott Breeds	Date Started: 8/5/15	Date Completed: 8/5/15	Bit Size: 4" OD
Rig Type/Model: CME-55, Truck Mount	Logged By: J. Rawcliffe	Checked By: ICD 12/28/15	
Reference Elevation:	Water Level: 17.82' TOC	Time: 8/6/15	Core Interval: 11-36.5

TOC = 0.1' AGS

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality: Description	Drill Rate (min/ft)	Rock Description and Comments on Drilling	Graphic Log	Additional Remarks
26	R3 21-26	5'					No obvious soft areas or fractures		1510
27	R4 26-31						No obvious soft areas or fractures observed.		
28									
29									
30							No elevated PID readings.		
31									Started getting a little air/water return 1540
32	R5 31-36'						No obvious fractures or soft areas		
33							Very little return on air/water		
34									Lost ≈50 gallons downhole.
35							PID = 0.1 - 0.4 ppm		
36									1610



NOTES:

ROCK CORING LOG

SOIL BORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical		Boring ID: IW-5
Project Location: Brighton, NY		Page No. 1
Project No.: 3617147328.03	Client: NYSDEC	of: 1
Boring Location: Out of grid between 160 & 170	Refusal Depth: 9.2	Total Depth: 11.2	Bore Hole ID/OD: 6 / 10"
Weather: Sunny, 70-75°F, hazy	Soil Drilled: 9.2	Method: HSA / TriCone	Casing Size: 6" HSA
Subcontractor: Geologic		Protection Level: D	Sampler: NA
Driller: Scott Breeds	Date Started: 8/4/15	Date Completed: 8/4/15	Sampler ID/OD: NA
Rig Type/Model: CME-55, Track mount	Logged By: J. Ramelli	Checked By: CD 12/28/15	
Reference Elevation:	Water Level: —	Time: —	

Sample Information							Sample Description and Classification	USCS Group Symbol	Remarks
Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	SPT Blows/6"	N Value	PID (ppm)	Lab Sample (Y/N)			
1	NA	NA	NA	NA	0.8	NA	0-2.5 Brown to dark brown fine sand and silt with some medium to coarse sand and a little gravel. Moist.		Cleared 5 ppm on exhaust (with background) BZ = 0.4-6.8
2					12				
					90				Logged auger cuttings no split spoons collected.
3					200		2.5-6		
					190		~~2.5~~ Very dark brown fine to coarse sand and silt with little to some gravel and cobbles. Very moist, organic odor		
4					400				
					160				
5					95				
6					250		6-7.5 Brown silty fine sand with a little medium to coarse sand and gravel Very moist to wet		
7					100				Took grab sample from ~7.5 BGS.
					440				
8					990		7.5-8.2 Very dark brown to dark grayish brown fine sand and silt with a little medium to coarse sand and gravel.		
~~9~~	GR						~~Top of bedrock 8.2' BGS~~ Very Moist, Wet, organic odor		
9.2	(GR)						8.2-8.7 Cobble		
							8.7-9.2 More soil		
10					(990)		9.2' Top of bedrock.		Drilling with air/water
							PID on discharge = 3.8-6.5 ppm		BZ = 0.2-0.9
11									
							10.5-11.2 PID discharge 0.8-1.5 ppm		
12							BZ = 0.2-0.6 ppm		
							Drilled rock socket from 9.2' to 11.2' and grouted in 4" steel casing. (12/21/15 - Well has not been completed beyond rock socket. GR)		

NOTES:

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical			Boring ID: IW-5
Project Location: Rochester NY			Page No. 1
Project No.: 3617147328.05	Client: NYSDEC		of: 2
Boring Location: 80 Richmond	Refusal Depth: —	Total Depth: 35.3'	Bore Hole ID/OD: 4" ID
Weather: Sunny 70°F	Soil Drilled: ≈7' 11/2015	Method: Coring	Casing Size: 4" ID
Subcontractor: NorthStar.	P.I.D (eV): 10.6	Protection Level: D	Bit Type: Diamond H
Driller: Steve/Jammie	Date Started: 10/10/17	Date Completed: 10/11/17	Bit Size: 3 7/8" H
Rig Type/Model: Truckmount CME-55	Logged By: J. Rawcliffe	Checked By: C. Snyder 11/7/18	Bit Use: —
Reference Elevation: Ground	Water Level: 16.15' BGS	Time: 10/11/17 0945	Core Interval: —

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	Natural Core Breaks: Type/Dip	Natural Core Breaks: Surface Condition	Weathered Condition	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality: Rock Quality Description	Drill Rate (min/ft)	Color	Rock Description and Comments on Drilling	Graphic Log	Additional Remarks
10													
11													1340 Installed core barrel in pre-installed casing grouted into rock.
12	R1	5.0/4.5				6"					Grout → PID=1.2 slight blank (iron)		R1 11-16'
13						6"	59%				Gray to light gray fine grained dolomitic limestone. Fractures/bedding generally horizontal with some minor folding.		Cored 5' Recovered 4.5'
14						9"	32/54"			Gray	Fracture or mech break along foliation plane.		Minor weathering Horizontal fracture
15						5"					Fracture or break along foliation		Fracture ≈ 5°
16						6"					Fracture with black iron PID=0		- Iron in fracture 1500
17	R2	5.0/4.8				5"							1515 R2
18						4"					Fractures/breaks are horizontal to subhorizontal along bedding/ foliation planes		
19						9"	48/58	83%					
20						6"				Gray	No obvious weathering or staining except for iron ≈ 19'		PID=0.2 Traces of iron (reddish)
21						5"					vesicles in core		
22	R3	5.0/5.0				8"							1540
23						4"					Recovered an additional 0.6' prior to starting Run #3		
24						7"							1612
25						19"					Light gray limestone with some fossiliferous areas and a large area of significant vesicles (≈23-24')		16 ppm - odor
26						20"	59/60	98%					9 ppm slight odor.
						20"					Horizontal fracture along fossil/burrow		
											Horizontal fracture/break		1640

NOTES:

Jerry Rawcliffe

FIGURE 4.5
ROCK CORING LOG
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical			Boring ID: IW-5
Project Location: Rochester, NY			Page No. 2
Project No.: 3617/47328.03	Client:		of: 2
Boring Location: 80 Rockwood Place	Refusal Depth: —	Total Depth: ~~36~~ 35.3'	Bore Hole ID/OD: #42
Weather: Sunny 70's	Soil Drilled: —	Method: Core	Casing Size: 4" ID
Subcontractor: NorthStar / Geologic	P.I.D (eV): 10.6	Protection Level: D	Bit Type: Diamond H
Driller: Steve Lamarche	Date Started: 10/10/17	Date Completed: 10/11/17	Bit Size: 3 7/8 H
Rig Type/Model: Truckmount CME-55	Logged By: J. Rawcliffe	Checked By: C. Stopler 11/7/18	Bit Use: —
Reference Elevation: Ground	Water Level: 16.5' BGS	Time: 10/11/17 0945	Core Interval: —

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	Natural Core Breaks: Type/Dip	Natural Core Breaks: Surface Condition	Weathered Condition	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality: Rock Quality Description	Drill Rate (min/ft)	Color	Rock Description and Comments on Drilling	Graphic Log	Additional Remarks
27	R4	1700 5.0/4.8				10"							
28						19"	47" / 58	81%			Horizontal fracture weathered rind Fossiliferous with vesicles. Gray to light gray dolomitic limestone with fossil layers.		10 ppm 40 ppm plus odor
29						7"				Gray			
30		10/10/17 1725				11"					Fossiliferous minor vesicles Fossiliferous layer with some vesicles		16 ppm w/ odor 6 ppm 1 ppm
31													10/10/17
32	R5	0810 5.0/4.3	10/11/17			12"							10/11/17
33						5"					slight weathered rind		9 ppm slight odor 6 ppm
34						15"	51" / 52"	98%		Gray	Fractures are near horizontal along bedding/foliation plane		minor vesicles 5 ppm
35						15"					Fossiliferous with some vesicles (holes).		3 ppm
36						4"							
											Cored to 36' BGS Borehole open to 35.3' BGS		

NOTES:

Jerry Rawcliffe

FIGURE 4.5
ROCK CORING LOG
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

SOIL BORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical		Boring ID: IW-6
Project Location: Brighton, NY		Page No. 1
Project No.: 3617147328.03	Client: NYSDEC	of: 5
Boring Location: Between MW-3/MW-17B	Refusal Depth: —	Total Depth: 36'
Weather: Sunny, warm, 80-85°F, breeze	Soil Drilled: 7.4'	Method: HSA
Subcontractor: Geologic		Protection Level: D
Driller: Scott Breeds	Date Started: 7/30/15	Date Completed: 8/4/15
Rig Type/Model: CME-55, Truck mount	Logged By: J. Rauchfuss	Checked By: ICD 12/28/15
Reference Elevation:	Water Level: 18.79' TOC	Time: 8/6/15 0920
		Bore Hole ID/OD: 10"
		Casing Size: 6"/4" ID
		Sampler: NA
		Sampler ID/OD: NA

TOC = 0.1' AGS

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	SPT Blows/6"	N Value	PID (ppm)	Lab Sample (Y/N)	Sample Description and Classification	USCS Group Symbol	Remarks
	NA	NA	NA	NA	0.1	N/A	0-3' Dark brown fine sand and silt with a little medium to coarse sand and gravel. (Loamy topsoil) Moist.	Fill	No samples logging auger cuttings.
1					0.2				
2					0.1				
3					0.3				
4					0.3		3-5 Very dark brown silt with some fine sand and a little medium to coarse sand Moist becomes very moist with more silt at depth	Fill	
5					0.2				
					0.4				
6					1.2		5-6 Brown to dark brown fine sand and silt with a little medium to coarse sand and gravel		R9982 DataRam
					0.5				
7					12.5		6-7.4 Brown fine sand and silt with some cobbles and a little medium to coarse sand and gravel. Moist to very moist.	SM/SP	Conc = 0.008 TWA = 0.011
					50				
8					33		Bedrock at 7.4' BGS		Breathing zone is 0.1 - 2.5 ppm.
					1.8				
9					2.1				
					3.1				
					7.6		Bottom of Rock socket 9.4' BGS		
					1.7				
							7/31/15 Grouted 4" ID steel casing into rock socket. (7.4-9.4' BGS)		

NOTES:

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical		Boring ID: IW-6
Project Location: Brighton, NY		Page No. 2
Project No.: 3617147328.03	Client: NYSDEC	of: 5
Boring Location: Between MW-3 / MW-17B	Refusal Depth: —	Total Depth: 36'
Weather: Partly sunny, 70-75°F	Soil Drilled: 7.4'	Method: Diamond bit core
Subcontractor: Geologic	P.I.D (eV): 10.6	Protection Level: D
Driller: Steve Swanner	Date Started: 8/4/15	Date Completed: 8/4/15
Rig Type/Model: CME-45C / Trailer	Logged By: J. Rawcliffe	Checked By: ICO 12/28/15
Reference Elevation:	Water Level: 18.75' TOC	Time: 8/6/15 0920

Bore Hole ID/OD: 3 7/8
Casing Size: 4" steel (ID)
Bit Type: Diamond
Bit Size: 3 7/8-4" / H
Core Interval: 9.5-36'

TOC = 0.1' AGS

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality: Rock Quality Description	Drill Rate (min/ft)	Rock Description and Comments on Drilling	Graphic Log	Additional Remarks
	9.5					NA		0910	Start R1 9.5' BGS
10	R1	1.5/1.5	4"	22%	Poor		Gray to dark gray dolomitic limestone sandstone. slightly fossiliferous. General horizontal bedding with fractures breaks along bedding planes. Planes are mildly folded Some near vertical breaks. Poss weathering.	0940	0.2 ppm 1.3 0.3 Vertical break/fracture 0.6 11.0 0940
11	11.0								
	R2 11-16'	5.0/4.9	10"				Similar to above slightly fossiliferous		PID
12			6"				Weathered Fractures		0.6 ppm 0.4 ppm
			6"						0.4 ppm
			9.5"				Possible weathering		
13				74%					0.6 ppm
			5"						
14					Fair				
							Weathered fracture/		0.4 Void at 14.8' BGS
15			7"						?? 2.7 ppm 1.5 ppm
16								1015	
	R3	16-21'					coarse grained with light and dark layers. Some small vugs.		PID 0.6 1.2
17			6"						

NOTES:

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical			Boring ID: IW-6
Project Location: Brighton, NY			Page No. 3
Project No.: 3617147328.03	Client: NYSDEC		of: 5
Boring Location: Between MW-3 / MW-17B	Refusal Depth: —	Total Depth: 36'	Bore Hole ID (OD): 4"
Weather: Partly sunny 70-75°F, breezy	Soil Drilled: 7.4'	Method: Coring	Casing Size: 4" ID Steel
Subcontractor: Geologic	P.I.D (eV): 10.6	Protection Level: D	Bit Type: Diamond
Driller: Steve Harrameer	Date Started: 8/4/15	Date Completed: 8/4/15	Bit Size: 3 7/8-4" / 17
Rig Type/Model: CME-45C, trailer mount	Logged By: J. Rawcliffe	Checked By: KD 12/28/15	
Reference Elevation:	Water Level: 18.79' TOC	Time: 8/6/15 0920	Core Interval: 9.5-36'

TOC = 0.1' AGS

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality: Rock Quality Description	Drill Rate (min/ft)	Rock Description and Comments on Drilling	Graphic Log	Additional Remarks
18	R3 16-21'	5.0 / 5.0	5" 8" 11" 11" 4"	75%	Good	NA	Gray Dolomitic limestone (sandstone) Slightly fossiliferous. Some minor vuggy areas. Weathered fracture. Weathered fracture. 828076-IW036020 51.94g 1050. More 19-20'. Minor vugs. Weathered fracture. Slight organic odor near bottom of run.		1.1; 6.9; 18.5 small void; 18.8; 19' small void lost return at 19'; 2.4; 1.1; PID = 11.5 ppm; 1040
23	R4 21-26	5.0 / 5.0	9" 20" 8" 5" 18"	100%	Excellent		Fossiliferous. Weathered fracture. Large vugs - vuggy zone. 828076-IW036023 1120. More 51.24g 22-23'. Slight angled fracture 5-10°. Rock becomes finer grained at ~24'.		PID = 2.3 ppm; 16 ppm; 10 ppm; 8 ppm; 3.3 ppm; 1.1 ppm; 0.9 ppm

NOTES:

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical			Boring ID: IW-6
Project Location: Brighton, NY			Page No. 4
Project No.: 3617147328.03	Client: NYSDEC		of: 5
Boring Location: Between MW-3, MW-17D	Refusal Depth: —	Total Depth: 36'	Bore Hole ID/(OD): 4"
Weather: Partly cloudy 70-75, breezy	Soil Drilled: 7.4'	Method: Coring	Casing Size: 4" ID Steel
Subcontractor: Cologic	P.I.D (eV):	Protection Level: D	Bit Type: Diamond
Driller: Steve Heverriver	Date Started: 8/4/15	Date Completed: 8/4/15	Bit Size: 3⅞-4" / H
Rig Type/Model: CME-45C, Trailer mount	Logged By: J. Rawcliffe	Checked By: ICD 12/28/15	
Reference Elevation:	Water Level: 18.79' TOC	Time: 8/6/15 0920	Core Interval: 9.5-36'

TOC = 0.1' AGS

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality: Rock Quality Description	Drill Rate (min/ft)	Rock Description and Comments on Drilling	Graphic Log	Additional Remarks
26	R4 25-26			100%		NA	small vugs		20 ppm 1110
27	R5 26-31	5.0/5.0	7, 17, 5, 17	93%	Excellent		Generally Gray fine grained dolomitic limestone (sandstone) with a few fossiliferous areas. Occasional horizontal fractures/breaks along bedding plane. Some minor folding of bedding planes. also some small vugs; coarser grained area-fossilic. Becomes lighter colored very fine grained 29.5-31'		1150 1.7 ppm 0 ppm 0.1 ppm 1.8 ppm 0.2 0.4 0.2 17 ppm 1230
32	R6 31-36	5.0/4.4	4, 6, 25	91% / ~~25~~	Excellent		Slight angle fracture 5-10% Similar to above fine grained few fractures		1240 PID = 0.9
33									

NOTES:

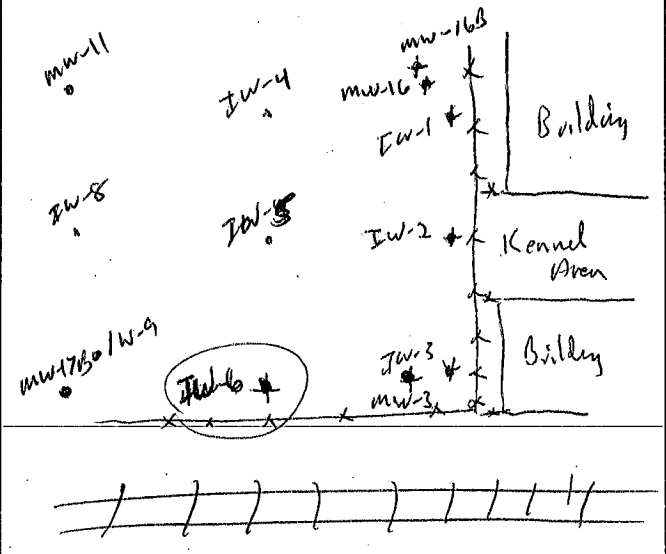
ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical		Boring ID: IW-6
Project Location: Brighton, NY		Page No. 5
Project No.: 3617147328.03	Client: NYSDEC	of: 5
Boring Location:	Refusal Depth: —	Total Depth: 35.5'
Weather: Partly cloudy 75-80°F, breezy	Soil Drilled: 7.4'	Method: Core
Subcontractor: Cascade	P.I.D (eV): 10.6	Protection Level: D
Driller: Steve Lammel	Date Started: 8/4/15	Date Completed: 8/4/15
Rig Type/Model: CME-45C, Trailer mount	Logged By: J. Rawcliffe	Checked By: [illegible] 12/28/15
Reference Elevation:	Water Level: 18.79' TOC	Time: 8/6/15 0920

Bore Hole ID/OD: 4"
Casing Size: 4" ID Steel
Bit Type: Diamond
Bit Size: 3 7/8-4"
Core Interval: 9.5-36'

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality: Description	Drill Rate (min/ft)	Rock Description and Comments on Drilling	Graphic Log	Additional Remarks
	R6	31-36				NA	Break/Fracture		PID readings gave suspect because drilling water reads 100-120 ppm
				91%			Coarser grained layer with fossils		
34		5.0	15"				Generally grey fine grained dolomitic limestone with some coarse fossiliferous layers/areas.		
		4.5		15=			Horizontal bedding with slight folding		
35					Excellent		Tiny vugs associated with fossil areas		Merc 34-35.5
							Coarser grained layer w/ fossils — Merc	6.1	50.67g
							Break/Fracture		8280076-IW0360035 1330
36			4"	4=					Bottom of borehole = 35.5'
							Bottom of Boring 36' bottom of recovery = 35.5' BCS		1315



NOTES:

IW-8

SOIL BORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical			Boring ID: IW-8
Project Location: Brighton, NY			Page No. 1
Project No.: 3617147328.03	Client: NYSDEC		of: 1
Boring Location: Southern	Refusal Depth: 9'	Total Depth: 11'	Bore Hole ID/OD: 10"
Weather: Mostly Cloudy 75°F, breeze	Soil Drilled: 9	Method: HSA/Tricone	Casing Size: 6"/4" HSA
Subcontractor: Geologic		Protection Level: D	Sampler: NA
Driller: Scott Brands	Date Started: 8/3/15	Date Completed: 8/3/15	Sampler ID/OD: NA
Rig Type/Model: CME-55 Truckmount	Logged By: J. Rowcliffe	Checked By: ICO 1/18/16	
Reference Elevation:	Water Level: —	Time: —	

Sample Information							Sample Description and Classification	USCS Group Symbol	Remarks
Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	SPT Blows/6"	N Value	PID (ppm)	Lab Sample (Y/N)			
1	NA	NA	NA	NA	1.9	NA	0-3 Dark brown fine to medium sand and silt with some to a little c sand and gravel Moist		logging auger cuttings only No samples collected
2					7				
3					10				
4					12				3-4' grab sample of cuttings.
5					450		3-6 Very dark brown to black fine sand and silt with a little medium to coarse sand and gravel some wood fragments. Very moist		
6					1000				
7					4000		6-9' Very dark brown to black fine sand and silt with a little medium sand and lenses of coarse sand and gravel.		Breathing Zone = 0-0.8 ppm
8					9999				
9							Very moist to wet, strong organic odor, possible sheen Bedrock at ≈ 9.0' BGS		
							Setup to start Tricone with air/water. Discharge on air/water from borehole 40-65 ppm. Drilled rock socket to 11' BGS using air and a tri-cone bit. and grouted in 4" steel casing. (Well has not been completed beyond 11' BGS as of 11/24/15 DR.)		BZ = 0-2.9 ppm BZ = 0-0.8 ppm

NOTES:

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical			Boring ID: IW-8
Project Location: Rochester, NY			Page No. 1
Project No.: 3617147328.03	Client: NYSDEC		of: 2
Boring Location: 80 Rockwood Place	Refusal Depth: —	Total Depth: 35.7' BGS	Bore Hole ID/~~OD~~: 4"
Weather: Overcast, 60°F, light rain	Soil Drilled: —	Method: Core	Casing Size: 4" ID
Subcontractor: North Star / Geologic	P.I.D (eV): 10.6	Protection Level: D	Bit Type: Diamond 17
Driller: Steve Laramie.	Date Started: 10/11/17	Date Completed: 10/12/17	Bit Size: 3 7/8 17
Rig Type/Model: CME-55 Truck	Logged By: J. Rundlett	Checked By: C. Styles 11/12/18	Bit Use: —
Reference Elevation:	Water Level: 16.1' BGS	Time: 10/12/17 1040	Core Interval: —

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	Natural Core Breaks: Type/Dip	Natural Core Breaks: Surface Condition	Weathered Condition	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality: Rock Quality Description	Drill Rate (min/ft)	Color	Rock Description and Comments on Drilling	Graphic Log	Additional Remarks
10											Overburden drilled and casing set in August 2015. Initial depth to grout = 9.2' BGS		
11	R1	1315 5'/4.3'				10" 10" 7" 4"	41"				Black carbonaceous pass; iron.		PID = 25 ppm
12							52"	79%			Gray to light gray with some brownish weathered areas. Weathered with vertical crack		5 ppm
13	10	5-15.5								Gray	Dolomitic limestone with some minor fossiliferous areas. Weathered with small vug. 10-15° fracture weathered		fossils 1 ppm 0.2
14						10"					host water at ≈12.5' BGS.		0.4
15		1340									Weathered with pass iron staining.		0.2
16	R2	1400 5'/4.7'				4"					Weathered fracture —		
17						9"					Gray dolomitic limestone		0.2 ppm
18	15	5-20.5				7"	32" 56	57%			vertical and Weathered with pass. iron staining		No odors detected. 0.1
19											High angle 20° Weathered coarse grained Slight weathering		0
20						6" 6"					Coarse grained fossil. with vesicles →		0.1
		1420											
21	R3	1430 5/4.7				5" 5" 5"	47"				Fracture with minor weathering, slight angle 5-10°.		0 27 ppm
22	20	5-25.5				12"	56	84%			Paired fracture with odor - near horizontal		81 ppm 15 ppm
23						9"							6 ppm
24						11"					Fossiliferous area with vesicles		1 ppm
25											Major void with vuggs		3 3 ppm
													5 ppm

NOTES: 1445
1610 Recovered another 0.5' of core from hole. Fairly fine grained competent

FIGURE 4.2
ROCK CORING LOG
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Sedsell Chemical			Boring ID: IW-8
Project Location: Rochester, NY			Page No. 2
Project No.: 3617147328/03	Client: NYSDEC		of: 2
Boring Location: 80 Richmond Place	Refusal Depth: —	Total Depth: 35.7' BGS	Bore Hole ID/~~OD~~: 4"
Weather: Overcast 60°F light rain	Soil Drilled: —	Method: Core	Casing Size: 4" ID
Subcontractor: NorthStar / Geologic	P.I.D (eV): 10.6	Protection Level: D	Bit Type: Diamond bit
Driller: Steve Lemmie	Date Started: 10/11/17	Date Completed: 10/17/17	Bit Size: 3 7/8 bit
Rig Type/Model: CME-55 Truck	Logged By: J. Rawcliffe	Checked By: C. Stolz 1/17/18	Bit Use: —
Reference Elevation: Ground	Water Level: 16.1' BGS	Time: 10/17/17 1040	Core Interval: —

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	Natural Core Breaks: Type/Dip	Natural Core Breaks: Surface Condition	Weathered Condition	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality: Rock Quality Description	Drill Rate (min/ft)	Color	Rock Description and Comments on Drilling	Graphic Log	Additional Remarks
													See photos.
26	R4	1612 5/4.5				8"				Grey	Grey fine grained dolomite limestone with some fossiliferous areas. Fractures are subhorizontal generally along bedding/foliation. Slightly coarse-grained areas		3ppm
27						14"							
						9"	47" / 54"						13ppm
28													
						11"		87%					25ppm
29													3ppm
						5"							5ppm
30		1634											5ppm
31	R5	1640 5/4.3				8"					Coarse grained fossiliferous areas with large pieces of calcite infilling		1ppm
32						13"	42" / 52"						1
33						7"		81%					1
													3ppm
34													0.4
						14"					Coarse grained areas with minor vesicles.		
35		1720	10/11/17										
36	R6	0832 0835 0.2 / 1.3	10/12/17			14"		100%			Only cored a couple more feet and then retrieved core using new liner. Cored 0.2 Recovered 1.3		Calcite/fossil vesicles and fossils - relatively coarse grained (See photo's). PID = 0.0 ppm

NOTES:

Jen Rawcliffe

FIGURE 4.5
ROCK CORING LOG
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

IW-9

SOIL BORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical			Boring ID: IW-9
Project Location: Brighton, NY			Page No. 1
Project No.: 3617147328.03	Client: NYSDEC		of: 1
Boring Location: Middle of grid	Refusal Depth: 8'	Total Depth: 10'	Bore Hole ID/OD: 6"/10"
Weather: Mostly cloudy 75°F, breeze	Soil Drilled: 8/3/15 8.0	Method: HSA	Casing Size: 6"/4" ID
Subcontractor: Geologic		Protection Level: D	Sampler: NA
Driller: Scott Breeds.	Date Started: 8/3/15	Date Completed: 8/3/15	Sampler ID/OD: NA
Rig Type/Model: CME-55 Truck Mount	Logged By: J. Rawcliffe	Checked By: JCD 1/13/16	
Reference Elevation:	Water Level: 18.39' TOC	Time: 0915 12/10/15	

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	SPT Blows/6"	N Value	PID (ppm)	Lab Sample (Y/N)	Sample Description and Classification	USCS Group Symbol	Remarks
1	NA	NA	NA	NA	0.8	NA	0-3 Dark brown to very dark brown fine sand and silt with some medium to coarse sand and gravel. Moist.		No spoons collected logged cuttings only
					2.7				
2					14				
					43				
3					25		3-5 Brown to dark brown fine sandy silt with some to a little medium to coarse sand and gravel. Very moist to wet. Odor of cuttings		
4					86				
5					108				
6					80		5-8 Becomes very dark brown silt with some to a little fine to coarse sand and a little gravel. Very moist to wet. Organic odor.		Doubled jar sample from ≈ 6-8'
					105				
7					49				
8					96				1120 light rain
9							Bedrock at ≈ 8' BGS 8-9' PID on discharge = 4-20 ppm 9-9.5 Discharge = 4-12 ppm BZ = 0-2.4 ppm.		BZ = 0.4-2.5 ppm
10							Rock socket to ≈ 10' BGS Grouted 4" steel casing into rock socket.		
							8/27/15 Geologic set up on IW-9 to extend bedrock borehole to depth (target depth 35-40' BGS). Had to shut down drilling with air due to vapor migration into More Glass Studio.		
							(IW-9 was drilled to ≈ 25' with tricone and air prior to shut down of operations. JR 12/2-1/15)		

NOTES:

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical			Boring ID: IW-9
Project Location: Rochester, NY			Page No. 1
Project No.: 3617147328.05	Client: NYSDEC		of: 1
Boring Location: 80 Rodewald Place	Refusal Depth: —	Total Depth: 34.9	Bore Hole ID/~~OD~~: 4"
Weather: Overcast, 60°F, clear rain	Soil Drilled: —	Method: Core	Casing Size: 4" ID
Subcontractor: NorthStar (Geologic)	P.I.D (eV): 10.6	Protection Level: D	Bit Type: Diamond
Driller: Steve Lawrence	Date Started: 10/11/17	Date Completed: 10/11/17	Bit Size: 4"
Rig Type/Model: Truck mounted CME 55	Logged By: J. Rowell, PG	Checked By: C. Strobel 1/17/18	Bit Use: —
Reference Elevation: Ground	Water Level: 16.15 BGS	Time: 10/11/17 1250	Core Interval: —

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	Natural Core Breaks: Type/Dip	Natural Core Breaks: Surface Condition	Weathered Condition	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality: Rock Quality Description	Drill Rate (min/ft)	Color	Rock Description and Comments on Drilling	Graphic Log	Additional Remarks
28											Borehole previously advanced to ~28.5' with air hammer (August 2015). Reaming out hole with 3 7/8" core barrel.		
29	R1	5/3.4				4"					Grey to light grey dolomitic limestone. Fine grained with some coarser grained fossiliferous areas. (left ~1.8' in hole.) Foliation/bedding is near horizontal. Fractures trends generally along foliation planes.		coarser grained
30						5"	24/41 = 71%			Grey			
31						9"							20 ppm
32						11"							1 ppm
33		1150				27"					Fossiliferous area		
34	R2	2/3.2				11"	38/38 = 100%				Fossiliferous area		PID=0
35													
36											Bottom of coring = 35.5' BGS. Borehole open to 34.9' BGS		

NOTES:

Jerry Rowell

FIGURE 4.5
ROCK CORING LOG
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

SOIL BORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical			Boring ID: MW-305
Project Location: Brighton/Rochester, NY			Page No. 1
Project No.: 3617147328	Client: NYSDEC		of: 1
Boring Location: On Ramp 590	Refusal Depth: 8.5'	Total Depth: 13.5'	Bore Hole ID/OD: 4"
Weather: Sunny, 40°, calm	Soil Drilled: 8.5'	Method: HSA/4" case/core	Casing Size: 4"
Subcontractor: Geologic	P.I.D (eV): 10.6	Protection Level: D	Sampler: NA
Driller: Steve Lawrence	Date Started: 11/9/15	Date Completed: 11/9/15	Sampler ID/OD: NA
Rig Type/Model: CME Trailer	Logged By: J. Rawcliffe	Checked By: RMB	Hammer Wt/Fall: 140lb/30"
Reference Elevation:	Water Level: 4.94 BGS	Time: 11/12/15	Hammer Type: Auto hammer

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	SPT Blows/6"	N Value	PID Field Scan	PID Headspace	Lab Tests Performed	Lab Sample ID	Sample Description and Classification	USCS Group Symbol	Remarks
0.0											
1	NA	NA	NA	NA	1.5	—	NA	NA	Topsoil - Dark brown silt with fine sand and little m-c sand (loamy).	Fill	
2									Brown to dark brown silty fine sand with traces of coarser material. Encountered some cobbles at ≈2.5-3' BGS	SP/SM (Fill?)	Cobbles at ≈3' BGS
3					0.9						
4											
5					1.4				Gravel/Cobbles at 5-6'	SP (Fill?)	
6											
7									Brown to dark brown fine sand with some silt and traces of m-coarse sand Moist. Quite uniform material from 3-8.5'. Becoming more moist with depth. Refusal with cuttings at 8-8.5'	SP	
8					2.6						No wet soils on bottom of auger. at 8-8.5' BGS
					1.8					8-8.5'	
9									1415 Start 5' core run ≈8.5'		Installing 4" casing to seat in rock and core for coring.
10									Gray dolomitic limestone generally horizontal bedding with occasional angled 30-40° or high angle fractures.		
11											Borehole did not appear to take much water although lots of water was lost thru the water swivel
12											
13					5.4	Pass	Wet/Odor				
14									Bottom of boring ≈13.3' Cored to 13.5' BGS		
15											

Stickup 2.8'
1511 7.14' TOC

NOTES:

FIGURE 4.4
SOIL BORING LOG
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

SOIL BORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical			Boring ID: MW-31S
Project Location: Brighton/Rochester, NY			Page No. 1
Project No.: 3617147328	Client: NYSDEC		of: 1
Boring Location: 1275' Blossom Village	Refusal Depth: 10.2	Total Depth: 14.9'	Bore Hole ID/OD: 4"
Weather: Overast, 40-50°F	Soil Drilled: 10.2	Method: HSA/Casing/Core	Casing Size: 4"
Subcontractor: Geologic	P.I.D (eV): 10.6	Projection Level: D	Sampler: Splitspoon
Driller: Steve Laramie	Date Started: 11/10/15	Date Completed: 11/10/15	Sampler ID/OD: 1.45/2"
Rig Type/Model: CME-45C - Trailer	Logged By: J. Rawcliffe	Checked By: RMB	Hammer Wt/Fall: 140lb/30"
Reference Elevation:	Water Level: 12.7' BGS	Time: 1215	Hammer Type: Auto Hamer

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	SPT Blows/6"	N Value	PID Field Scan	PID Headspace	Lab Tests Performed	Lab Sample ID	Sample Description and Classification	USCS Group Symbol	Remarks
0.0											
1	—		NA	NA	0.9	—	—	—	0 ≈ 1 Dark brown loamy topsoil silt and fine sand with trace organics and coarser sand.	Fill	
2					2.1				Becomes brown to dark yellow brown fine sand and silt with a little m-c sand. Very moist.		
3											
4					1.8						
5	—										
6	S1	1.4/2.0			10.3		—	—	Brown to dark yellow brown fine sand with some silt and a trace to little fine to coarse sand. Very moist at to moist becomes less moist and more sandy at bottom.	SP/SM	Bag Headspace PID creeps up slowly as high as 15ppm 6.0 with moisture filter.
7	—								Cobble ≈ 7-7.5' very little recovery with spoon fine sand with a little m-c sand and silt. Moist to slightly moist some rock fragments.		
8	S2	0.2/2.0								SP	
9	—										
10									Top of Bedrock ≈ 10.2' BGS		
11	19"		10.5-10.6	Vuggy					Cored 5' Recovered 4.3' Void at 13' (12.8-13.1') est. Borehole open to 14.7'		Start Core Run 1055
12	7"				0.2 (Drilling)				Vuggy area 10.5-10.6' BGS		
13	4"		VOID		0.6				Generally Horizontal bedding and fracture planes Large fracture 12.8-13.1 with light brown weathering rind on both faces (est 0.05-0.1' thick on either face. Trace of vertical fracture 13.1-13.4' BGS.		≈13' Hit a void 1130 and lost water.
14	5"				0.4				14.4' Bottom of recovered.		Getting no return on water
15	4"								Bottom of boring = 14.7' BGS.		≈1145 Completed Core Run to ≈15' BGS
16											

NOTES:

43" / 54" = 80% = RQD

FIGURE 4.4
SOIL BORING LOG
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

SOIL BORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical			Boring ID: MW-32S
Project Location: Brighton/Rochester, NY			Page No. 1
Project No.: 3617147328	Client: NYSDEC		of: 2
Boring Location: Blossom Rd Entry to RG1E	Refusal Depth: 7'	Total Depth: 25.2'BGS	Bore Hole ~~ID~~/OD: 4"
Weather: Mostly cloudy, windy, 45-53	Soil Drilled: 7'	Method: HSA/Casing/Core	Casing Size: 4" ID
Subcontractor: Geologic	P.I.D (eV): 10.6	Protection Level: D	Sampler: NA Core 3 7/8"
Driller: Steve Burnie	Date Started: 11/18/15	Date Completed: 11/19/15	Sampler ID/OD: N/A
Rig Type/Model: CME-45S Trailer	Logged By: J. Rawcliffe	Checked By: RMS	Hammer Wt/Fall: 140lb/30"
Reference Elevation:	Water Level: 13.0'BGS	Time: 11/19/15 0800	Hammer Type: Safety Autohammer

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	SPT Blows/6"	N Value	PID Field Scan	PID Headspace	Lab Tests Performed	Lab Sample ID	Sample Description and Classification	USCS Group Symbol	Remarks
0.0											
1	—	—	NA	NA	0.2	—	—	—	0-1.5 Dark brown loamy topsoil - f-m sand and silt with a little gravel.	Fill	
2					0.0				Encountering cobbles at ≈3.5'		
3									Brown		
4									Appears to be fine to coarse sand and gravel with a little silt.	SP	
5											PID = 0.1 - 0.6 ppm on discharge air/water/soil
6											6.8' Refusal with drive point and 4" casing
7							5"		Coarse grained fossiliferous		
8	Run #1				0.1		8"		Brown weathered		1510 Start core run
					0.1				Brownish weathered		
9	RQD = 68%				0.2		7"		Gray fine grained dolomitic limestone, well developed bedding/layering has banded appearance. Bedding planes near horizontal very slightly deformed with breaks/fractures along bedding planes		
					0.1		7"				
10					0.1		9"				
11					0.1		6"				
					0.1		4"				1550
12	Run #2				0.0		9"				1618
					0.0		6"		Muddy infilled fracture Coarse banded horizontal bedding similar to Run #1		
13					0.1		5"		Fracture near horizontal + vertical		
	RQD = 72%				0.1		9"		- Coarser grained area		
14									- Vertical Break/Fracture		
					0.0		5"				
15							7"		Higher angle fracture/break 20-30°		
					0.0				- Broken up zone		
16							12"				1711 End of Day

NOTES:

FIGURE 4.4
SOIL BORING LOG
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

SOIL BORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical			Boring ID: MW-32S
Project Location: Brighton/Rochester, NY			Page No. 2
Project No.: 3617147328	Client: NYSDEC		of: 2
Boring Location: Blossard Entrance	Refusal Depth: 7'	Total Depth: 25.2' BGS	Bore Hole ID/OD: 4"
Weather: Mostly cloudy 45°F, breezy	Soil Drilled: 7'	Method: HSA/Casing/Core	Casing Size: 4"
Subcontractor: Geologic	P.I.D (eV): 10.6	Protection Level: D	Sampler: Core N 3/4
Driller: Steve Laramie	Date Started: 11/18/15	Date Completed: 11/19/15	Sampler ID/OD: —
Rig Type/Model: CME-45S Trailer	Logged By: J. Rawcliffe	Checked By: RMSD	Hammer Wt/Fall: 140lb/30"
Reference Elevation:	Water Level: 1.30 BGS	Time: 11/19/15 0800	Hammer Type: Autoseiety/Donut

Sample Information					Monitoring						
Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	SPT Blows/6"	N Value	PID Field Scan	PID Headspace	Lab Tests Performed	Lab Sample ID	Sample Description and Classification	USCS Group Symbol	Remarks
0.0											
	Run #3								Core Fine grained Dolomitic limestone well developed horizontal bedding planes. Some low angle "deformation" structures with occasional conjugate fractures. Usually fractures/breaks are horizontal along bedding planes (5°)		0804 Start Run #3
17					0.1	9=					PID = 0.2-0.4 ppm on air/water discharge
18					0.0	5= 7=			Possible weathering		
19		RQD = 79%				9=			Coarse grained		
20					0.0	17.5=					
21					0.1						PID = 0.2-0.3 ppm
					0.1						0856
22	Run #4				0.0				Horizontal Breaks along bedding		0923
23					0.1				Fracture zone - Bedding and low angle deformation Trace high angle fractures		PID = 0.3-0.4 ppm
24					0.0						
					0.0				Bedding plane breaks/fractures. No evident weathering.		
25					0.1						
									Bottom of boring = 25.2' BGS		

NOTES:

FIGURE 4.4
SOIL BORING LOG
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

SOIL BORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical			Boring ID: MW-335
Project Location: Brighton/Rochester, NY			Page No. 1
Project No.: 3617147328	Client: NYSDEC		of: 1
Boring Location: S of Blossom Estates	Refusal Depth: 5'	Total Depth: 14.9'	Bore Hole ID/OD: 4"
Weather: Overcast, light rain 50-55	Soil Drilled: 5'	Method: HSA/Casing/Core	Casing Size: 4"
Subcontractor: Geologic	P.I.D (eV): 10.6	Protection Level: D	Sampler: NA
Driller: Steve Kavanaugh	Date Started: 11/12/15	Date Completed: 11/13/15	Sampler ID/OD: NA
Rig Type/Model: CME-45B Trailer	Logged By: J. Rawcliffe	Checked By: RMS	Hammer Wt/Fall: 140/30"
Reference Elevation:	Water Level: ~~5.0' BGS~~ 6.16' BGS 11/12/15	Time:	Hammer Type: Safety Hammer

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	SPT Blows/6"	N Value	PID Field Scan	PID Headspace	Lab Tests Performed	Lab Sample ID	Sample Description and Classification	USCS Group Symbol	Remarks
0.0											
1			—	—	0.2				0-0.3' Asphalt		
2									0.3-5 Brown fine to coarse sand and gravel with a little silt (FILL)	Fill	
3					0.3						
4					0.1						
5									Encountered something hard at 5'	SW/GP	Encountered something very hard at ≈5.1' BGS
6		5"			0.0				5-5.6 Gray to light gray horizontal bedding vuggy	USGS	Core Run 1
7		4"			0.0				Void at 5.6-6.2' BGS		
8		5"			0.0			6.9	Weathered/weathering rind on either side of void. Mostly subhorizontal fractures with some high angled 20-35° fractures/cracks.	1000	RQD = 60%
9		4"			0.0				Horizontal to subhorizontal fractures with no visible weathering	1114	
10		5"			0.0			8.9			
11		5"			0.0					1207	
12		4"			0.0				slightly vuggy Gray finegrained dolomitic limestone with slightly deformed generally horizontal bedding and occasional fractures along bedding		
13					0.0				Some minor fossil area.		
14					0.0						
15					0.0			14.9	new vertical rock crack. Bottom of boring = 14.9' BGS		
16											

NOTES:

FIGURE 4.4
SOIL BORING LOG
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

SOIL BORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical			Boring ID: MW-34S
Project Location: Brighton/Rochester, NY			Page No. 1
Project No.: 3617147328	Client: NYSDEC		of: 1
Boring Location:	Refusal Depth: 7.0 BGS	Total Depth: 15.2' BGS	Bore Hole ID/OD: 4"
Weather: Cloudy, 45-50°, windy	Soil Drilled: 7.0	Method: Hand/Casing/Core	Casing Size: 4"
Subcontractor: Geologic	P.I.D (eV): 10.6	Protection Level: D	Sampler: NA
Driller: Steve Iwaniec	Date Started: 11/13/15	Date Completed: 11/16/15	Sampler ID/OD: NA
Rig Type/Model: CME-45S trailer	Logged By: J. Rauschert	Checked By: RMB	Hammer Wt/Fall: 140lb/30"
Reference Elevation:	Water Level: 11.1' BGS	Time: 11/17/15 0800	Hammer Type: Auto safety hammer

Sample Information					Monitoring						
Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	SPT Blows/6"	N Value	PID Field Scan	PID Headspace	Lab Tests Performed	Lab Sample ID	Sample Description and Classification	USCS Group Symbol	Remarks
0.0											
			NA		0.0				0-1 Dark Brown loamy topsoil		Soft dig to 4'
1					0.0				1-2.5 Brown to dark yellow brown fine to coarse sand with some silt and gravel. Moist (Fill)	Fill	
2					0.0						
3					0.0				2.5-4 Brown to dark brown fine to coarse sand with some gravel and silt. Moist, lots of tree roots.	SP	Start driving 4" casing at 4' BGS
4					0.0						
5									4-7 Not much in the way of cuttings Brown fine to coarse sand with a little silt and gravel.		
6					0.0						
7									Refusal with casing at 7'		
8					0.0				Tri cone to 7.5' - Start core run at 7.5' Grayish brown fine to medium grained dolomitic limestone weathered appearance at top becoming less weathered with depth.		11/13/15 Core 1300 7.5-8.5' then run out of water stop for the week.
9	11/13/15 11/16/15				0.0				Horizontal bedding with fractures/breaks along bedding and frequent vertical breaks/fractures.		11/16/15 Resume core at 8.5' using air/water.
10					0.0				Weathered brownish tree rings		
11		5" 4"			0.0				Fossil fissures slightly vuggy		
12		6"			0.0				Gray dolomitic limestone fine grained some minor fossils		
13		4" 5"			0.0				Horizontal bedding with breaks/fractures along bedding planes.		
14		4"			0.0						
15		4"			0.0				Bottom of Boring - 15' BGS 15.2'		
		REC	33%								

NOTES:

FIGURE 4.4
SOIL BORING LOG
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

SOIL BORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical			Boring ID: MW-35S
Project Location: Brighton/Rochester, NY			Page No. 1
Project No.: 3617147328	Client: NYSDEC		of: 1
Boring Location: West side parking lot.	Refusal Depth: 6'	Total Depth: 15'	Bore Hole ~~ID/OD~~: 4"OD 3"BR
Weather: Sunny, cool	Soil Drilled: 6'	Method: HSA/Casing/Core	Casing Size: 4"
Subcontractor: Geologic	P.I.D (eV): 10.6	Protection Level: D	~~Sampler~~: Core 3"
Driller: Steve Laramie	Date Started: 11/17/15	Date Completed: 11/18/15	Sampler ID/OD: —
Rig Type/Model: CME-45B Trailer	Logged By: J. Rawcliffe	Checked By: RMB	Hammer Wt/Fall: 140lbs/30"
Reference Elevation:	Water Level: 7.6'BGS	Time: 11/18/15 0735	Hammer Type: Auto Safety

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	SPT Blows/6"	N Value	PID Field Scan	PID Headspace	~~Lab Tests Performed~~	Lab Sample ID	Sample Description and Classification	USCS Group Symbol	Remarks
0.0											
1					0.0				0-0.2' Asphalt.		
2					0.1				0.2-2' Brown f-c sand with gravel and a little silt (Subgrade Fill)	Fill	
3					0.0						
4					0.0				Start encountering cobbles at 3.4'BGS		Discharge air/water/soil = 0.5-0.9 ppm
5									Estimate Brown f-c sand and gravel with some cobbles and silt.		
6									Fossils		Drove 4" casing to refusal at 6' 1628 Start Core Run at 6'
7					0.0		7"		weathered (brownish) with minor vugs		
8		RQD = 73%			0.1		5"		weathered (brownish) slight weathered minor vuggy area		1638 Stop to Pick up
9					0.0		5"		50-10° fracture with ew weathered face.		1645 Resume core Discharge air/water = 0.5-1.0 ppm.
10					0.2		5"		Generally horizontal to subhorizontal breaks/ fractures along bedding planes. Some slightly higher angle fractures 5-15° Fine to medium grained dolomitic limestone		
11					0.1		6"		10-15° Fracture		
					0.0		4"		- Weathered zone		11.2' 1656 11/17/15
							7"		Some vuggy areas minor fossil/fossil areas/layers.		
12					0				Numerous breaks/fractures horizontal to subhorizontal parallel to bedding plane. Rock becoming finer grained.		11/18/15 0800 Rock becomes harder by 12'BGS
13					0				Fossiliferous		
14					0				Fossiliferous		
15					0.1						
					0				No obvious weathering or weathering rind around fractures.		
					0						0828
					0				Bottom of boring = 15'BGS		

NOTES:

FIGURE 4.4
SOIL BORING LOG
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

SOIL BORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical			Boring ID: MW-36S
Project Location: Brighton/Rochester, NY			Page No. 1
Project No.: 3617147328	Client: NYSDEC		of: 1
Boring Location: South Bobrich Drive	Refusal Depth: 9' BGS	Total Depth: 15' BGS	Bore Hole ID/OD: 4"
Weather: Sunny, cool 30-40°F.	Soil Drilled: 9'	Method: HSA/Casing/Core	Casing Size: 4"
Subcontractor: Geologic	P.I.D (eV): 10.6	Protection Level: D	Sampler: NA
Driller: Steve Hammie	Date Started: 11/17/15	Date Completed: 11/17/15	Sampler ID/OD: NA
Rig Type/Model: CME-45S Trailer	Logged By: J. Rawcliffe	Checked By: RWB	Hammer Wt/Fall: 140lbs/30"
Reference Elevation:	Water Level: 7.85' BGS	Time: 11/18/15	Hammer Type: Auto sder hammer

Sample Information					Monitoring						
Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	SPT Blows/6"	N Value	PID Field Scan	PID Headspace	Lab Tests Performed	~~Lab Sample ID~~	Sample Description and Classification	USCS Group Symbol	Remarks
0.0											
1					0.0				0-1.0 Dark brown fine to coarse sand and silt with trace gravel and organics	(Fill)	Loamy topsoil
2					0.2				1-2 Brown to dark yellow brown fine to coarse sand and gravel with a little silt	(Fill)	
3					0.1				2-5 Brown to dark yellow brown, fine to coarse sand and gravel with some cobbles and a little silt. Moist.	SP/GP	
4					0.0						
5					0.0						
6											
7					0.0				5-9 Brown to dark yellow brown fine to coarse sand with a little gravel and silt. Moist.	SP	
8					0.0						
9											
	R1	Core 4.0/4.0	9-13.6				7"		9-Slight brownish mottling		1115
10					0.1		5"		Generally Greyish Light grey fine grained dolomitic limestone with horizontal bedding and fracturing/breaks along bedding. Occasional stylolites and fractures (10°) and some high angle cracks (80°)		
11					0.1		4"				
12					0.1		10"		3-Minor wags		
13	RQD=81%				0.1		7"		-Broad with weathered break and mottling around.		
							6"				
14							5"				1148
							7"		3 > Fossiliferous layers		1158
15					0.0						
					0.1		7"				
16					0.1				Bottom of boring = 15.0' BGS		Water at 6.5' BGS.

NOTES:

FIGURE 4.4
SOIL BORING LOG
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical-NYSDOT Site 828076			Boring ID: MW-37S
Project Location: Rochester, NY			Page No. 1
Project No.: 3617147328.05 Client: NYSDEC			of: 2
Boring Location: Rochester NY	Refusal Depth: 5'	Total Depth: 16.5	Bore Hole ~~ID~~/OD: 8"/3 7/8"
Weather: Overcast-chance showers	Soil Drilled: 5'	Method: HSA/Core	Casing Size: 4 1/4 ID
Subcontractor: Geologic	P.I.D (eV): 10.6	Protection Level: D	Bit Type: Diamond
Driller: Steve Lawrence	Date Started: 6/5/17	Date Completed: 6/6/17	Bit Size: NX
Rig Type/Model: CME 45S Trailer	Logged By: J. Rawcliffe	Checked By: TDL 6/21/17	Bit Use: —
Reference Elevation: GROUND	Water Level: 7.1' BGS	Time: 1630	Core Interval: 5 — 16.5' BGS

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	Natural Core Breaks: Type/Dip	Natural Core Breaks: Surface Condition	Weathered Condition	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality: Rock Quality Description	Drill Rate (min/ft)	Color	Rock Description and Comments on Drilling	Graphic Log	Additional Remarks
5											0-0.4 Dark brown loamy topsoil, with organics, grass roots. 0.4-5.0 Brown fine sand and silt with traces of gravel and med-coarse sand. Encountered bedrock at 5.0' BGS		PID=0
6	R1	3.5/1.9	-	-		14"			-	-	Cored 3.5' rec 1.9' Gray to brownish gray dolomitic limestone. Quite dense/hard with near vertical fractures with weathered fracture faces.		PID=0 5" 5" PID=0 4" 6/5/17
7						14"/23" = 61%	Fair 61%	Fair					
8													
9	R2	3.0/2.9	-	-		14"			-	-	Weathered → Brown (weathered) to gray to light gray fine grained dolomitic limestone. Predominant foliation/bedding in near horizontal. Dense/hard - cored very slowly (See photos)		6/6/17 Start 10:48 PID=0 5" PID=0.0 Weathered PID=0.3 Weathered PID=0.1 4" End 16:50
10						14"/35-11 = 40%	Poor 40%	Poor					
11													

NOTES: Located at #98 Croydon Street.

J Rawcliffe

FIGURE 4.5
ROCK CORING LOG
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical-NYSDOT Site 828076			Boring ID: MW-37S
Project Location: Rochester, NY			Page No. 2
Project No.: 3617147328.05 Client: NYSDEC			of: 2
Boring Location: Rochester NY	Refusal Depth: 5' BGS	Total Depth: 16.5' BGS	Bore Hole ~~ID~~/OD: 8" - 3 7/8"
Weather: Overcast 60 - 65°F	Soil Drilled: 5'	Method: HSA/Core	Casing Size: 4"/4 1/2"
Subcontractor: Geologic	P.I.D (eV): 10.6	Protection Level: D	Bit Type: Diamond
Driller: Steve Kwarsnie	Date Started: 6/5/17	Date Completed: 6/6/17	Bit Size: NX
Rig Type/Model: CME 45S Trailer	Logged By: J. Rawcliffe	Checked By: TDL 6/21/17	Bit Use: —
Reference Elevation: GROUND	Water Level: 7.1' BGS	Time: 1630	Core Interval: 5 — 16.5' BGS

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	Natural Core Breaks: Type/Dip	Natural Core Breaks: Surface Condition	Weathered Condition	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality: Rock Quality Description	Drill Rate (min/ft)	Color	Rock Description and Comments on Drilling	Graphic Log	Additional Remarks
11											See Page 1		
12	R3	5.0 / 4.8	—	—	—	5"			— / 5'	—	Gray dolomitic limestone fine grained foliation/bedding ≈ 0-5° some higher angle breaks fractures some brownish weathered fractures (See photos)		R3 weathered Start 1222 0.2 ppm 0.3 ppm
13						7"							Weathered PID = 19.8 ppm No odors detected. 0.2
14						5"					Muddy		0.4
15						5"					Bedding / fracture angle becomes steeper ≈ 5-10°		0.2 ~~END 1346~~ 0.4
16					27 1/2"	5" / 27 1/2"	= 47%	POOR			Muddy		0.3 END 1346
											Bottom of boring = 16.5' Installed 2" well 10' screen ≈ 15.8-5.8' BGS		

NOTES:

J Rawcliffe

FIGURE 4.5
ROCK CORING LOG
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical-NYSDOT Site 828076			Boring ID: MW-38S
Project Location: Rochester, NY			Page No. 1
Project No.: 3617147738.05	Client: NYSDEC		of: 1
Boring Location: Rochester NY	Refusal Depth: 7.5	Total Depth: 18.5	Bore Hole ~~ID~~/OD: 4"/3 7/8
Weather: Mostly sunny 65°F light breeze	Soil Drilled: 7.5	Method: Hyd/Core/Tricone	Casing Size: 4".
Subcontractor: Cascade	P.I.D (eV): 10.6	Protection Level: D	Bit Type: Diamond/Tricone
Driller: Steve Baranie	Date Started: 6/7/17	Date Completed: 6/8/17	Bit Size: NX / 3"
Rig Type/Model: CME 45S Trailer	Logged By: J. Rundell	Checked By: TDL 6/21/17	Bit Use: —
Reference Elevation: GROUND	Water Level: 11.4' BGS	Time: 6/8/17 0748	Core Interval: —

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	Natural Core Breaks: Type/Dip	Natural Core Breaks: Surface Condition	Weathered Condition	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality: Rock Quality Description	Drill Rate (min/ft)	Color	Rock Description and Comments on Drilling	Graphic Log	Additional Remarks
1	NA	—	—	—	—	—	—	—	—	—	0-0.3 Dark brown topsoil/clay with organics 0.3-3.5 Brown fine sandy silt with stones of medium to coarse sand. Appear to have encountered bedrock at 3.5' BGS Drove casing to 6.5' BGS no bedrock but a boulder. Tricored to 7.5' and set casing Top of bedrock ≈ 7.5' BGS		PID = 0.0
7													Tricone mucks
7.5													
8											Cored 2.5' recovered 0.8' Grey to light grey dolomitic limestone, with near horizontal bedding/fracture planes. Extremely slow drilling - core barrel seems to be fine. going to switch to tricone to try and increase drill rate.		1235 Start R1 7.5 0 ppm mechanical
8.5													
9													
9.5													
10													1325 END
12											Resumed drilling with small diameter tricone (3"OD).		1350 Resume drilling with Tricone
14											15-15.5' Hit soft areas - pulled bit out as it was jamming in hole. Bit missing 2 rollers. - will fish out in AM.		
16													
18											6/8/17 Resumed drilling with new small diameter tricone (3") Drilled to ≈ 18.5' BGS with tricons. Borehole open to 18.2' BGS		
20											Installed 10' well screen from ≈ 8.2-18.2' BGS.		

NOTES: Located at 90-100 Newcastle Street.

Jerry Rundell

FIGURE 4.5
ROCK CORING LOG
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical-NYSDOT Site 828076		Boring ID: MW-39S
Project Location: Rochester, NY		Page No. 1
Project No.: 3617147328.05 Client: NYSDOC		of: 1
Boring Location: Rochester NY Coachlight Lane	Refusal Depth: 13.7	Total Depth:	Bore Hole ~~ID~~/OD: 4"/3 7/8
Weather: Sunny 65-70°F, light breeze	Soil Drilled: 13.5	Method: HSA	Casing Size: 4"
Subcontractor: Cascade	P.I.D (eV): 10.6	Protection Level: D	Bit Type: Tricone
Driller: Steve Hamme	Date Started: 6/8/17	Date Completed: 6/9/17	Bit Size: 3 7/8
Rig Type/Model: CME 45S Trailer	Logged By: J. Rawcliffe	Checked By: TDL 6/21/17	Bit Use: —
Reference Elevation: GROUND	Water Level: 11.26' BGS	Time: 6/10/17	Core Interval: —

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	Natural Core Breaks: Type/Dip	Natural Core Breaks: Surface Condition	Weathered Condition	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality: Rock Quality Description	Drill Rate (min/ft)	Color	Soil/Rock Description and Comments on Drilling	Graphic Log	Additional Remarks
	NA	NA	—	—	—	—	—	—	—	—	0-0.4 Dark brown loamy topsoil.		PID=0.0
											0.4-4.3 Yellowish brown fine sand, silt. Augered with 3 7/8 ID augers to 10'. Refusal with augers at 10'.		
											Brown to yellow brown fine sand and silt. Moist.		PID=0.0
											Drove 4" Casing to 13.5' (No refusal) Cleaned out with Tricone		Borehole drilled with TRI-CONE ROLLER BIT
											Appear to be on bedrock at 13.5-13.7' BGS (weathered rock?)		
											Advance borey with 3 7/8" Tricone In Brown to light brown (weathered) dolomitic limestone based on rock chips.		
											14.2-14.7' Broken up rubble fracture zone		Borehole is making water
											14.7-16.2 Brown colored dolomitic limestone (based on rock chips). rock is more competent.		
											16.2 Rock chips becoming grey to light grey colored.		
											16.5-17.8' Rough drilling possible rubble/fracture zone Rock chips appear brown to reddish brown.		Drilling with air compressor with some water for dust suppression
											Drilled to 18' BGS borehole open to ≈17.9' BGS.		After 14' only using air as borehole is making water.
											Installed 10' screen (0.01" slot) from 6.8-16.8' BGS.		

NOTES: Located at 38 Coachlight Lane

J Rawcliffe

FIGURE 4.5
ROCK CORING LOG
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical			Boring ID: MW-27D
Project Location: Rochester, NY			Page No. 1
Project No.: 3617147328	Client: NYSDEC		of: 2
Boring Location: Rockwood Place	Refusal Depth: 6'	Total Depth:	Bore Hole ID/OD: 4"
Weather: Partly cloudy, snow, 15°F, breezy	Soil Drilled: 6'	Method: HSA, core	Casing Size: Steel 4" ID
Subcontractor: Northstar Drilling	P.I.D (eV): 10.6	Protection Level: D	Bit Type: NX Diamond
Driller: Steve Laramie	Date Started: 12/12/17	Date Completed: 12/14/17	Bit Size: Nx
Rig Type/Model: Trackmount CME-45B	Logged By: J. Rawcliffe	Checked By: MAL 1/2/18	Bit Use: —
Reference Elevation:	Water Level: 17.4' BGS	Time: 12/19/17 0840	Core Interval: ≈ 6.5-35.4

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	Natural Core Breaks: Type/Dip	Natural Core Breaks: Surface Condition	Weathered Condition	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality: Rock Quality Description	Drill Rate (min/ft)	Color	Rock Description and Comments on Drilling	Graphic Log	Additional Remarks
											0-2' Brown silty clay. 2-5' Brown to light brown sand and silt. 5' Encountered some rubble (Fill). 5-6' Very dark brown sandy silt, wet.		PID = 10.6 ppm PID = 36 ppm
7		—	—	—	—	—	—	—	—	—	Grey dolomitic limestone fine grained with brownish weathered fractures. Foliation plane ≠ horizontal (bedding)		core barrel dropped from 6.5-6.4'. PID = 7.6 PID = 10.1
8													
9													
10		2.3 / 2.3	—	—	—	6" 8"	50%	Fair	—	—	Weathered fracture Weathered fracture Vertical fracture		1555 12/13/17 PID = 28 ppm 7 ppm 7 ppm 26 ppm 1540
11													
12		5.0 / 4.7	—	—	—	6" 8" 5"	83%	Good	—	—	Weathered fracture Fractures with brown weathering rind		1550 PID = 0.2 - 0.4 ppm
13													
14						7"	83%	Poor					
15						10"							
16						11"					Weathered fracture face		1630
17		5.0 / 4.7	—	—	—	5" 4"			—	—	Fractures are generally horizontal and have a brownish weathering rind. Vesicles with some fossils		PID = 0.2 0915 12/14/17 0.6 ppm 0940 0950
18						9"	89%	Good					
19						16" 4"							PID = 7 ppm

NOTES:

FIGURE 4.5
ROCK CORING LOG
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical			Boring ID: MW-27D
Project Location: Rochester NY			Page No. 2
Project No.: 3607147325	Client: NYS DEC		of: 2
Boring Location: Rockwood Place	Refusal Depth: ≈6'	Total Depth:	Bore Hole ID/OD: 4"
Weather: Partly sunny, 15°F, light wind-snow	Soil Drilled: ≈6'	Method: HSA, core	Casing Size: 4" ID
Subcontractor: Nothnagle Drilling	P.I.D (eV): 10.6	Protection Level: D	Bit Type: Diamond
Driller: Steve Laramie	Date Started: 12/12/17	Date Completed: 12/14/17	Bit Size: NX
Rig Type/Model: Truck mount CME-45B	Logged By: J. Rawcliffe	Checked By: MAL 1/2/18	Bit Use: —
Reference Elevation:	Water Level: 17.4' BGS	Time: 12/19/17 @ 840	Core Interval: 6.5-35.4

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	Natural Core Breaks: Type/Dip	Natural Core Breaks: Surface Condition	Weathered Condition	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality: Rock Quality Description	Drill Rate (min/ft)	Color	Rock Description and Comments on Drilling	Graphic Log	Additional Remarks
20		5.0 / 4.7	-	-	-	5"	94%	Good	-	-	Fossiliferous Gray Dolomitic Limestone		PID = 10 ppm
						7"					Fossils with some vesicles (Holes)		30 ppm
21													50 ppm
													2.5 ppm 1010
22		5.0 / 4.4	-	-	-	7"	97%	Excellent	-	-	Fossils with many vesicles		1020
						15"							0.4 ppm
23						4"					Fractures generally horizontal no obvious weathering rinds		0.2
24						25"					Vesicles with fossils		0.1
25											Fossils with minor vesicles		
26						6"							8.0 ppm 1050
27		5.0 / 5.2	-	-	-	20"	97%	Excellent	-	-			1110
						18"							
28													0.2 ppm
29						10"					Coarse grained fossil area		0.1
30						5"					Possible weathered fractures		0.3
31						0"							0.2 ppm 1150
32		3.8 / 4.2	-	-	-	33"	96%	Excellent	-	+	Gray Fine grained dolomitic limestone		
33													
34						4"					Coarse grained with some vesicles		0.2 ppm
35						12"					Coarse grained with vesicles and fossils		0.2 ppm

NOTES:

Bottom of Boring = 35.4' BGS

FIGURE 4.5
ROCK CORING LOG
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical			Boring ID: MW-28D
Project Location: Rochester, NY			Page No. 1
Project No.: 3617147328.03	Client: NYS DEC		of: 2
Boring Location: Rockwood Place	Refusal Depth: 9'	Total Depth: 31.7'	Bore Hole ID/OD: 4"
Weather: Partly sunny, 15°F, 5-10 mph breeze	Soil Drilled: 9'	Method: HSA, Core	Casing Size: 4" ID
Subcontractor: Northstar	P.I.D (eV): 10.6	Protection Level: D	Bit Type: Diamond
Driller: Steve Hovarnie	Date Started: 12/14/17	Date Completed: 12/15/17	Bit Size: NX
Rig Type/Model: Trackmount CME-45B	Logged By: J. Rawlings	Checked By: MAL 1/2/18	Bit Use: —
Reference Elevation:	Water Level: 17.7' BGS	Time: 12/14/17 0815	Core Interval: 10.6 - 31.7

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	Natural Core Breaks: Type/Dip	Natural Core Breaks: Surface Condition	Weathered Condition	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality: Rock Quality Description	Drill Rate (min/ft)	Color	Rock Description and Comments on Drilling	Graphic Log	Additional Remarks
9											0-2' Brown sandy, clay/silt. 2-6' Brown to dark brown sandy clay with rubble (concrete). 6-9' - Dark brown to very dark brown sandy silt. Wet.		PID = 38 ppm
10											Roller bit to 10.6'. Fractured 9.6-9.8' BGS Installed 4" steel casing and grouted in place.		
11	-	-	6"	-	-	-	-	-	-	-	Weathered, stained fractures		PID = 0.4 ppm
12			6"										1550 12/14/17 0830 12/15/17
13		4.4	9"								Horizontal fractures with brown weathering rind		PID = 0.2 ppm
14		4.2	8"	-	-	44"	85%	Good	-	-	Gray fine grained Dolomitic Limestone		
15			13"								Horizontal and vertical fractures with some weathering		0.1
16			5"										0.2 ppm
			9"										0.1
17													0940 0950
18		5.0	7"										0.2 ppm
19		4.7		-	-	37"	66%	Fair	-	-	Vertical fracture with iron staining above ~~fracture~~		0.2
20			14"								Fracture zone with weathering iron staining		
21			6"								Coarse grained with some vesicles and fossils		0.2
			4"								Coarse grained fossils		0.3 ppm
22			6"								Horizontal fracture with brownish weathering rind		0.2 1055 12/15/17

NOTES:

FIGURE 4.5
ROCK CORING LOG
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical			Boring ID: MW-28D
Project Location: Rochester, NY			Page No. 2
Project No.: 3617147318203	Client: NYSDEC		of: 2
Boring Location: Rockwood Place	Refusal Depth: 9'	Total Depth: 31.7'	Bore Hole ~~ID/OD~~: 4"
Weather: Partly sunny	Soil Drilled: 9'	Method: HSA, Core	Casing Size: 4" ID
Subcontractor: Northstar Drilling	P.I.D (eV): 10.6	Protection Level: D	Bit Type: Diamond
Driller: Steve Lavarnie	Date Started: 12/14/17	Date Completed: 12/18/17	Bit Size: NX
Rig Type/Model: Truck mount CME 45B	Logged By: J. Rawcliffe	Checked By: MKL 1/2/18	Bit Use: —
Reference Elevation:	Water Level: 17.7' BGS	Time: 12/19/17 0815	Core Interval: 10.6 - 31.7

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	Natural Core Breaks: Type/Dip	Natural Core Breaks: Surface Condition	Weathered Condition	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality: Rock Quality Description	Drill Rate (min/ft)	Color	Rock Description and Comments on Drilling	Graphic Log	Additional Remarks
22											Gray Dolomitic Limestone Fine grained —		
23	21.5 - 26.9	5.1' / 5.1	—	—	—	18" / 16"	99%	Excellent	—	—	Coarse grained with some fossils and shell vesicles (holes) / Coarse grained with fossils vugs/holes with minor calcite infilling / subhorizontal fracture		PID=0.2ppm
24													
25						4" / 10"					Subhorizontal fracture with a slight weathered rind / Fine grained with horizontal foliation/bedding		0.2 / 0.2
26						8"							1.1 ppm 12/18/17 1035
27			-	-	-	5"		↓			Gray fine grained with some minor fossils Horizontal foliation/bedding		11.8 ppm 1040 / 1120 / 1130
28	26.9					12"					Gray to brownish gray fine grained with some minor fossils		14.5 ppm
29		5.0' / 4.0	-	—	-	12" / 13"	97%	Excellent	-	-	Brownish weathering rind		1.1 ppm
30											Coarse grained with fossils		0.2 ppm
31						5" / 5"					Fine grained		0.2 ppm
32	31.9												1525
33											Bottom of boring ≈ 31.7' BGS		
34													
35													
36													

NOTES:

FIGURE 4.5
ROCK CORING LOG
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical			Boring ID: IW-5
Project Location: Rochester NY			Page No. 1
Project No.: 3617147328.05	Client: NYSDEC		of: 2
Boring Location: 80 Richmond	Refusal Depth: —	Total Depth: 35.3'	Bore Hole ID/OD: 4" ID
Weather: Sunny 70°F	Soil Drilled: ≈7' 11/2015	Method: Coring	Casing Size: 4" ID
Subcontractor: NorthStar.	P.I.D (eV): 10.6	Protection Level: D	Bit Type: Diamond H
Driller: Steve/Jammie	Date Started: 10/10/17	Date Completed: 10/11/17	Bit Size: 3 7/8" H
Rig Type/Model: Truckmount CME-55	Logged By: J. Rawcliffe	Checked By: C. Snyder 11/7/18	Bit Use: —
Reference Elevation: Ground	Water Level: 16.15' BGS	Time: 10/11/17 0945	Core Interval: —

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	Natural Core Breaks: Type/Dip	Natural Core Breaks: Surface Condition	Weathered Condition	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality: Rock Quality Description	Drill Rate (min/ft)	Color	Rock Description and Comments on Drilling	Graphic Log	Additional Remarks
10													
11													1340 Installed core barrel in pre-installed casing grouted into rock.
12	R1	5.0/4.5				6"					Grout → PID=1.2 slight blank (iron)		R1 11-16'
13						6"	59%				Gray to light gray fine grained dolomitic limestone. Fractures/bedding generally horizontal with some minor folding.		Cored 5' Recovered 4.5'
14						9"	32/54"			Gray	Fracture or mech break along foliation plane.		Minor weathering Horizontal fracture
15						5"					Fracture or break along foliation		Fracture ≈ 5°
16						6"					Fracture with black iron PID=0		- Iron in fracture 1500
17	R2	5.0/4.8				5"							1515 R2
18						4"					Fractures/breaks are horizontal to subhorizontal along bedding/ foliation planes		
19						9"	48/58	83%					
20						6"				Gray	No obvious weathering or staining except for iron ≈ 19'		PID=0.2 Traces of iron (reddish)
21						5"					vesicles in core		
22	R3	5.0/5.0				8"							1540
23						4"					Recovered an additional 0.6' prior to starting Run #3		
24						7"							1612
25						19"					Light gray limestone with some fossiliferous areas and a large area of significant vesicles (≈23-24')		16 ppm - odor
26						20"	59/60	98%					9 ppm slight odor.
						20"					Horizontal fracture along fossil/burrow		
											Horizontal fracture/break		1640

NOTES:

Jerry Rawcliffe

FIGURE 4.5
ROCK CORING LOG
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical			Boring ID: IW-5
Project Location: Rochester, NY			Page No. 2
Project No.: 3617/47328.03	Client:		of: 2
Boring Location: 80 Rockwood Place	Refusal Depth: —	Total Depth: ~~36~~ 35.3'	Bore Hole ID/OD: #42
Weather: Sunny 70's	Soil Drilled: —	Method: Core	Casing Size: 4" ID
Subcontractor: NorthStar / Geologic	P.I.D (eV): 10.6	Protection Level: D	Bit Type: Diamond H
Driller: Steve Lamarche	Date Started: 10/10/17	Date Completed: 10/11/17	Bit Size: 3 7/8 H
Rig Type/Model: Truckmount CME-55	Logged By: J. Rawcliffe	Checked By: C. Stopler 11/7/18	Bit Use: —
Reference Elevation: Ground	Water Level: 16.5' BGS	Time: 10/11/17 0945	Core Interval: —

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	Natural Core Breaks: Type/Dip	Natural Core Breaks: Surface Condition	Weathered Condition	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality: Rock Quality Description	Drill Rate (min/ft)	Color	Rock Description and Comments on Drilling	Graphic Log	Additional Remarks
27	R4	1700 5.0/4.8				10"							
28						19"	47" / 58	81%			Horizontal fracture weathered rind Fossiliferous with vesicles. Gray to light gray dolomitic limestone with fossil layers.		10 ppm 40 ppm plus odor
29						7"				Gray			
30		10/10/17 1725				11"					Fossiliferous minor vesicles Fossiliferous layer with some vesicles		16 ppm w/ odor 6 ppm 1 ppm
31													10/10/17
32	R5	0810 5.0/4.3	10/11/17			12"							10/11/17
33						5"					slight weathered rind		9 ppm slight odor 6 ppm
34						15"	51" / 52"	98%		Gray	Fractures are near horizontal along bedding/foliation plane		minor vesicles 5 ppm
35						15"					Fossiliferous with some vesicles (holes).		3 ppm
36						4"							
											Cored to 36' BGS Borehole open to 35.3' BGS		

NOTES:

Jerry Rawcliffe

FIGURE 4.5
ROCK CORING LOG
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical			Boring ID: IW-8
Project Location: Rochester, NY			Page No. 1
Project No.: 3617147328.03	Client: NYSDEC		of: 2
Boring Location: 80 Rockwood Place	Refusal Depth: —	Total Depth: 35.7' BGS	Bore Hole ID/~~OD~~: 4"
Weather: Overcast, 60°F, light rain	Soil Drilled: —	Method: Core	Casing Size: 4" ID
Subcontractor: North Star / Geologic	P.I.D (eV): 10.6	Protection Level: D	Bit Type: Diamond 17
Driller: Steve Laramie.	Date Started: 10/11/17	Date Completed: 10/12/17	Bit Size: 3 7/8 17
Rig Type/Model: CME-55 Truck	Logged By: J. Rundlett	Checked By: C. Styles 11/12/18	Bit Use: —
Reference Elevation:	Water Level: 16.1' BGS	Time: 10/12/17 1040	Core Interval: —

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	Natural Core Breaks: Type/Dip	Natural Core Breaks: Surface Condition	Weathered Condition	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality: Rock Quality Description	Drill Rate (min/ft)	Color	Rock Description and Comments on Drilling	Graphic Log	Additional Remarks
10											Overburden drilled and casing set in August 2015. Initial depth to grout = 9.2' BGS		
11	R1	1315 5'/4.3'				10" 10" 7" 4"	41"				Black carbonaceous pass; iron.		PID = 25 ppm
12							52"	79%			Gray to light gray with some brownish weathered areas. Weathered with vertical crack		5 ppm
13	10	5-15.5								Gray	Dolomitic limestone with some minor fossiliferous areas. Weathered with small vug. 10-15° fracture weathered		fossils 1 ppm 0.2
14						10"					host water at ≈12.5' BGS.		0.4
15		1340									Weathered with pass iron staining.		0.2
16	R2	1400 5'/4.7'				4"					Weathered fracture —		
17						9"					Gray dolomitic limestone		0.2 ppm
18	15	5-20.5				7"	32" 56	57%			vertical and Weathered with pass. iron staining		No odors detected. 0.1
19											High angle 20° Weathered coarse grained Slight weathering		0
20						6" 6"					Coarse grained fossil. with vesicles →		0.1
		1420											
21	R3	1430 5/4.7				5" 5" 5"	47"				Fracture with minor weathering, slight angle 5-10°.		0 27 ppm
22	20	5-25.5				12"	56	84%			Paired fracture with odor - near horizontal		81 ppm 15 ppm
23						9"							6 ppm
24						11"					Fossiliferous area with vesicles		1 ppm
25											Major void with vuggs		3 3 ppm
													5 ppm

NOTES: 1445
1610 Recovered another 0.5' of core from hole. Fairly fine grained competent

FIGURE 4.2
ROCK CORING LOG
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Sedsell Chemical			Boring ID: IW-8
Project Location: Rochester, NY			Page No. 2
Project No.: 3617147328/03	Client: NYSDEC		of: 2
Boring Location: 80 Richmond Place	Refusal Depth: —	Total Depth: 35.7' BGS	Bore Hole ID/~~OD~~: 4"
Weather: Overcast 60°F light rain	Soil Drilled: —	Method: Core	Casing Size: 4" ID
Subcontractor: NorthStar / Geologic	P.I.D (eV): 10.6	Protection Level: D	Bit Type: Diamond bit
Driller: Steve Lemmie	Date Started: 10/11/17	Date Completed: 10/17/17	Bit Size: 3 7/8 bit
Rig Type/Model: CME-55 Truck	Logged By: J. Rawcliffe	Checked By: C. Stolz 1/17/18	Bit Use: —
Reference Elevation: Ground	Water Level: 16.1' BGS	Time: 10/17/17 1040	Core Interval: —

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	Natural Core Breaks: Type/Dip	Natural Core Breaks: Surface Condition	Weathered Condition	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality: Rock Quality Description	Drill Rate (min/ft)	Color	Rock Description and Comments on Drilling	Graphic Log	Additional Remarks
													See photos.
26	R4	1612 5/4.5				8"				Grey	Grey fine grained dolomite limestone with some fossiliferous areas. Fractures are subhorizontal generally along bedding/foliation. Slightly coarse-grained areas		3ppm
27						14"							
						9"	47" / 54"						13ppm
28													
						11"		87%					25ppm
29													3ppm
						5"							5ppm
30		1634											5ppm
31	R5	1640 5/4.3				8"					Coarse grained fossiliferous areas with large pieces of calcite infilling		1ppm
32						13"	42" / 52"						1
33						7"		81%					1
													3ppm
34													0.4
						14"					Coarse grained areas with minor vesicles.		
35		1720	10/11/17										
36	R6	0832 0835 0.2 / 1.3	10/12/17			14"		100%			Only cored a couple more feet and then retrieved core using new liner. Cored 0.2 Recovered 1.3		Calcite/fossil vesicles and fossils - relatively coarse grained (See photo's). PID = 0.0 ppm

NOTES:

Jen Rawcliffe

FIGURE 4.5
ROCK CORING LOG
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical			Boring ID: IW-9
Project Location: Rochester, NY			Page No. 1
Project No.: 3617147328.05	Client: NYSDEC		of: 1
Boring Location: 80 Rodewald Place	Refusal Depth: —	Total Depth: 34.9	Bore Hole ID/~~OD~~: 4"
Weather: Overcast, 60°F, clear rain	Soil Drilled: —	Method: Core	Casing Size: 4" ID
Subcontractor: NorthStar (Geologic)	P.I.D (eV): 10.6	Protection Level: D	Bit Type: Diamond
Driller: Steve Lawrence	Date Started: 10/11/17	Date Completed: 10/11/17	Bit Size: 4"
Rig Type/Model: Truck mounted CME 55	Logged By: J. Rowell, PG	Checked By: C. Strobel 1/17/18	Bit Use: —
Reference Elevation: Ground	Water Level: 16.15 BGS	Time: 10/11/17 1250	Core Interval: —

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	Natural Core Breaks: Type/Dip	Natural Core Breaks: Surface Condition	Weathered Condition	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality: Rock Quality Description	Drill Rate (min/ft)	Color	Rock Description and Comments on Drilling	Graphic Log	Additional Remarks
28											Borehole previously advanced to ~28.5' with air hammer (August 2015). Reaming out hole with 3 7/8" core barrel.		
29	R1	5/3.4				4"					Grey to light grey dolomitic limestone. Fine grained with some coarser grained fossiliferous areas. (left ~1.8' in hole.) Foliation/bedding is near horizontal. Fractures trends generally along foliation planes.		coarser grained
30						5"	24/41 = 71%			Grey			
31						9"							20 ppm
32						11"							1 ppm
33		1150				27"					Fossiliferous area		
34	R2	2/3.2				11"	38/38 = 100%				Fossiliferous area		PID=0
35													
36											Bottom of coring = 35.5' BGS. Borehole open to 34.9' BGS		

NOTES:

Jerry Rowell

FIGURE 4.5
ROCK CORING LOG
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Sinclair Chemical			Boring ID: MW-11D
Project Location: Rochester, NY			Page No. 1
Project No.: 3617147328.03	Client: NYSDEC		of: 1
Boring Location: 80 Rockwood Place	Refusal Depth: —	Total Depth: 35.5'	Bore Hole ID/OD: 4" ID
Weather: Overcast, 50-60°F, light breeze	Soil Drilled: —	Method: Core	Casing Size: 4"
Subcontractor: NorthStar/Geologic	P.I.D (eV): 10.6	Protection Level: D	Bit Type: Diamond H
Driller: Steve Lawrence	Date Started: 10/12/17	Date Completed: 10/12/17	Bit Size: H 3 7/8
Rig Type/Model: Truck mount-CME 55	Logged By: T. Rawcliffe	Checked By: C. Stoltz 1/17/18	Bit Use: —
Reference Elevation: Ground	Water Level: —	Time: —	Core Interval: —

Depth (feet bgs)	Sample Number	Penetration/ Recovery (feet)	Natural Core Breaks: Type/Dip	Natural Core Breaks: Surface Condition	Weathered Condition	Rock Quality: Total 4" Core	Rock Quality: RQD (%)	Rock Quality: Rock Quality Description	Drill Rate (min/ft)	Color	Rock Description and Comments on Drilling	Graphic Log	Additional Remarks
~~25~~	~~25~~										Drilled MW-11D to ≈ 27' BGS on 7/25/12 Extended to ≈ 35' BGS for Fe injection - Borehole open to ≈ 24.5' BGS ≈ 2' of "mush" in borehole sump		~~26.5~~ 26.5' BGS
~~26~~	~~26~~												Core removed ≈ ~~27.5~~ BGS
27	~~27~~	R1 1023 4'/3.9	10/12/17			26.5'	3GS				Core barrel blocked after ≈ 0.2' recovered 1 piece of core coming in ~~stained~~ stained much with sheen, slightly coarser grained		PID = 12 ppm
28	~~28~~					11" 15"							4 ppm
29	~~29~~					20"	46" 47"	98%			Grey to light grey dolomitic limestone with traces of fossils, Bedding/Foliation slightly coarser grained generally horizontal with the minor folding		1 ppm 0.5
30	~~30~~	1105								Grey	minor vugs/ vesicles.		Bottom of recovery
31	~~31~~	1110 1105				18"	24"	1/8			Fractures are generally parallel to bedding/foliation		
32	~~32~~	R2 1110 5/2.3				42"		86%			Coarse grained with fossils some vesicles		1 ppm 0 ppm
33	33												
34	34												?
35	35	1155									Cored to 35.5' BGS		
36	36										Borehole open to 35.5' BGS Core recovered does not coincide with depth drilled. Cored ≈ 9' recovered ≈ 6.5'		

NOTES:

Jerry Rawcliffe

FIGURE 4.5
ROCK CORING LOG
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

SOIL BORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical			Boring ID: BW-01
Project Location: Rochester NY			Page No. 1
Project No.: 3616216413.03	Client: NYSDEC		of: 3
Boring Location: 22' E of MW-17D	Refusal Depth: 8.8'	Total Depth: 34.4'	Bore Hole OD: 6"
Weather: Partly sunny, 40-45°F, light breeze	Soil Drilled: 8.8'	Drilling Method: HSA/Core/Rock	Casing Size: HSA 4 1/4" ID
Subcontractor: Nothnagle	Rock Drilled: 25.6'	Protection Level: D	Sampler: S.S. 2'
Driller: Thom Mangefriedh	Date Started: 4/4/22	Date Completed: 4/6/22	Sampler ID/OD: 2"/1 3/8"
Rig Type/Model: CME- Truck Mount	Logged By: T. Rawcliffe	Checked By: CRS-6/29/22	
Reference Elevation: 452.1 ft msl (ground)	Water Level: ≈17.6' BGS	Time: 4/8/22 1245	

Drilling Information					Sample Information			Sample Description and Classification	USCS Classification	Remarks
Depth (feet bgs)	Sample Number	Penetration (ft) / Recovery (ft)	Blow Counts	N Value	PID Field Screening (ppm)	PID Head Space Reading (ppm)	Analytical Sample Depth (ft)			
0 to 4								Soft drlg to ≈0.8' encountered concrete. - 0-0.8 Brown to dark brown loamy topsoil organics and roots. 0.8-2.2' Concrete.		Cannot move location based on geophysics Augering at ≈50° to North.
4-6	S1	1.5/2.0	2 5 10 12	15	58 217 850	—	(4) DUP	Brown to light brown silt with traces of fine sand. Some layering with wet areas and some gray lenses. Fill or glacial lacustrine silt.	Fill/CL/ML	B30076-EW01005 B30076-EW01W5D
6-8.8'								Moist to wet, medium dense Encountered bedrock at ≈8.8' BGS Installed steel casing to ≈9' BGS 1300 Start coring at BW-1		soil sample collected with hand auger 5-5.5' 4/6/22 1630 PID = 1050 ppm

NOTES: Water lost to formation = 4970 gallons - Based on hydrant water meter readings - 400 gallons to tank - 5% leakage (JB)

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical			Boring ID: EW-01
Project Location: Rochester, NY			Page No. 2
Project No.: 3616216143	Client: NYSDEC		of: 3
Boring Location: 22'E of MW-17D	Top of Rock: ≈8.5'	Total Depth: 34.4	Casing Type: Steel Temporary
Weather: Partly sunny, 40-45°F, light breeze	Casing Depth: 29'	Drilling Method: HSA, Core, Tricone	Casing Size: 6" ID
Subcontractor: Nothnagle	Rock Drilled: 25.6	Protection Level: D	
Driller: Thom Mangofreda	Date Started: 4/4/22	Date Completed: 4/6/22	Core Barrel Type: 5' Steel
Rig Type/Model: CME-75 Trucksmount	Logged By: J. Rawcliffe	Checked By: CRS 6/29/22	Core Size: HQ
Reference Elevation: 452.1	Water Level: ≈17.6' BGS	Time: 4/8/22 1245	Core Length: 9'

Depth (feet bgs)	Run Number	Run Length (ft) / Recovery (ft)	Penetration Rate (ft/min)	RQD (%)	Fracture Depth (feet)	Fracture Type	Fracture Angle	Sample Description and Classification	Lithologic Type	Remarks (See photos of core) 4/4/22
10	R1	9-14 5.0/4.1		50%	See Notes. Photos	—	—	Weathered top of rock → light gray to light brown fine grained dolomitic limestone with numerous horizontal fractures along foliation (bedding) plane. Horizontal fracture with small vertical break. Stained fracture (Horizontal)	0.2 0.9 0.2 0.5 0.5 0.2	Start R1 1300 6" 5 1/2" 7" 6" End R1 1340
14	R2	14-19 5.0/5.2		58%			20° 75° 90°	Fracture 20° Fractures generally horizontal to subhorizontal. Modified Healed Fracture Weathered breaks/fractures with stone in filling Weathered fracture with small high angle break attached minor voids/vesicles 3-Broken area with vertical fracture	6" 4.5" 4.5" 6" 5.5" 11"	4/5/22 Start R2 0550 PID 0.2-1.5 along fracture very spiky and inconsistent No obvious odors. 0912 END R2
19	R3	19-24 5.0/4.9		98%			4" 4" 5.5" 4" 11" 18"	vertical appears mechanical 3.6 ppm weathered stained 13 ppm - Organic/chemical odor - fracture area (21') weathered 1.3 ppm Fractures subhorizontal 1.2 ppm Fossiliferous with vesicles 1.4 ppm		Start R3 0932 Trouble getting core barrel down angled hole; Reamed to 18' Restart R3 1212 END R3 1229
25								Reamed out with 6" Tricone to 24' 1400 Complete reamy pulling tools.		
27										

NOTES: Had trouble getting core barrel down angled hole to start Run 3. Going to have to ream as we go.

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Sinbell Chemical			Boring ID: BW-01
Project Location: Rochester, NY			Page No. 3
Project No.: 3616216143.03 Client: NYSDEC			of: 3
Boring Location: 27' E of MW-17D	Top of Rock: 8.8'	Total Depth: 34.4	Casing Type: Steel - temporary
Weather: Mostly sunny, 55-60°F, light breeze	Casing Depth: 9'	Drilling Method: HSA, Core Barrel	Casing Size: 6"
Subcontractor: Nothnagle	Rock Drilled: 25.6	Protection Level: D	
Driller: Thom Mangafriedis	Date Started: 4/4/22	Date Completed: 4/6/22	Core Barrel Type: 5' Steel
Rig Type/Model: CME-75 Truck mount	Logged By: J. Rawcliffe	Checked By: 6/29/22	Core Size: HQ
Reference Elevation: 452.1	Water Level: ≈17.6' BGS	Time: 4/8/22 1245	Core Length: 9'

Depth (feet bgs)	Run Number	Run Length (ft) / Recovery (ft)	Penetration Rate (ft/min)	RQD (%)	Fracture Depth (feet)	Fracture Type	Fracture Angle	Sample Description and Classification	Lithologic Type	Remarks
	R-4	24-29								Start R-4 1410
-25		5.0 / 3.5		94%			10°	1.2 ppm Gray fine grained fractures sub horizontal along bedding plane. Trace of fossils in top 0.4'		
							6°	4.4 ppm		
								5.4 ppm		
							7.5			
-26					26			116 ppm. Pried open fresh crack and got 90 ppm. Trace of high angle plane at ≈26'		
							10.5			
-27					27			5.1 ppm		
							5.5			
-28								Not recovered(?)		
-29								1450 Reaming with 6" Tri-cone.		End R-4 1430
	R5	29-34					2.5			4/6/22 Start R5 0832
-30		5.0 / 5.2						0.4 ppm		No elevated PID readings or odors noted in breaks/fractures
				98%			26.5	Fossiliferous layer with small vesicles/voids		
-31								Gray fine grained with fossiliferous layers, sub horizontal layering/bedding with breaks along bedding/foliation plane.		
-32								0.2 ppm		
							21"			
-33										
								Slightly fossiliferous with vesicles.		
							6"	0.4 ppm		
-34										End R5 0852
-35										

NOTES: For more detail of rock core see photos.
Water lost during drilling = 4470 gallons

SOIL BORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical			Boring ID: EW-02
Project Location: Rochester/Brighton NY			Page No. 1
Project No.: 3616226143	Client: NYSDEC		of: 4
Boring Location: 213' North of MW-15D	Refusal Depth: 10.4	Total Depth:	Bore Hole OD: OB 6½/BR 6"
Weather: Rain, 50°F, breezy	Soil Drilled: 10.4'	Drilling Method: HSA, Core Barrel	Casing Size: 6" ID Steel
Subcontractor: Northeagle	Rock Drilled: 25'	Protection Level: D Modified	Sampler: 2"x2' Split Spoon
Driller: Thom Mangufiela	Date Started: 4/7/22	Date Completed: 4/8/22	Sampler ID/OD: 2"OD
Rig Type/Model: CME-75, Truck mount	Logged By: T. Rawcliffe	Checked By: CRS 6/29/22	
Reference Elevation: 453.7 ft msl (casing)	Water Level: ≈17.3' BGS	Time: 4/8/22 ~~1244~~ 0730	

Drilling Information					Sample Information					
Depth (feet bgs)	Sample Number	Penetration (ft) / Recovery (ft)	Blow Counts	N Value	PID Field Screening (ppm)	PID Head Space Reading (ppm)	Analytical Sample Depth (ft)	Sample Description and Classification	USCS Classification	Remarks
0-3.5								0-3.5 Brown clay/silt with some organic material at the surface becomes mixed with a little to some of fine to medium sand and gravel with depth. Moist to very moist.	Fill	
3.5'-5.5'	S1	2.0/1.4	2 2 1 4		0.1 0.1	-	(1)	3.5-5.5 Brown to dark brown silt with some clay a little fine to medium sand and traces of coarse sand and gravel along some lenses. Very moist, layered/stratified appearance, possible fill material. but no obvious man made materials.	Fill/SM/CL	S28076-EW02004 (ms/msD) 0820
8'-10'					1.8		(4)	8-10 Soils become greyish brown to grey silty sand with a little ~~grad~~ gravel. Wet. PID=1.8ppm. Collected sample from auger when pulled.		S28076-EW02009 0900 8-10'
10.4'								Encountered bedrock with augers at ≈10.4' BGS		

NOTES: Water lost to formation ≈ 4460 gallons.

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical			Boring ID: BW-02
Project Location: Rochester/Brighton NY			Page No. 2
Project No.: 3616216143.03 Client: NYSDEC			of: 4
Boring Location: 213' N of MW-15D	Top of Rock: 10.4'	Total Depth:	Casing Type: Steel
Weather: Rain, 50°F, breeze	Casing Depth: 10.5'	Drilling Method: HQ core Tri Cone	Casing Size: 6" ID
Subcontractor: Northeastern	Rock Drilled: 25'	Protection Level: D Modified	
Driller: Thom Mangan/Erik	Date Started: 4/7/22	Date Completed: 4/8/22	Core Barrel Type: Steel 5'
Rig Type/Model: CME-75 Truck mount	Logged By: J Rauch/LH	Checked By: CRS 6/29/22	Core Size: HQ
Reference Elevation: 453.7 ft msl	Water Level: 417.3' BGS	Time: 4/8/22 1240	Core Length:

Drilling Information				Sample Quality						
Depth (feet bgs)	Run Number	Run Length (ft) / Recovery (ft)	Penetration Rate (ft/min)	RQD (%)	Fracture Depth (feet)	Fracture Type	Fracture Angle	Sample Description and Classification	Lithologic Type	Remarks
11	R1 10.5-15.5	5.0/4.6		61%				Fine grained brown to grey dolomitic limestone. Top 10.5-13' has a brown weathered appearance. Fractures are sub horizontal with slightly folded appearance along Brown weathered fracture. Foliation/bedding plane. 8.5" Brown weathered fracture 10" Black silty filled fracture Fossil shells noted 4" Rotary borehole to 15.5-1020		Start R1 0925 Lost water by 12' BGS No elevated PID readings 0.4-1.8 ppm nothing significant. End 0952
16	R2 15.5-20.5	5.0/4.7		35%				Vertical crack connecting horizontal fractures Brown weathered look Fractured generally along sub-horizontal foliation/bedding plane 6" 4" 6" Muddy horizontal Angled fracture 4" Muddy horizontal fracture Mechanical		Start R2 1102 No elevated PID readings 0.4-1.6 ppm No odors. End R2 1123
21								Reaming with 5 7/8 Tri cone 15.5-20.5'		

NOTES: See photos of core for more detail

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

Project Name: Scobell Chemical			Boring ID: EW-02
Project Location: Rochester/Brighton, NY			Page No. 3
Project No.: 3616021641 3.03	Client: NYSDEC		of: 4
Boring Location: ≈13' N of MW-15D	Top of Rock: 10.4'	Total Depth:	Casing Type: Steel
Weather: Rain, 50°F, breeze	Casing Depth: 10.5'	Drilling Method: HQ core, Tri Cone	Casing Size: 6"
Subcontractor: Nothnagle	Rock Drilled: 25'	Protection Level: D-Mod	
Driller: Thom Manganiello	Date Started: 4/7/22	Date Completed: 4/8/22	Core Barrel Type: 5' Steel
Rig Type/Model: CME-75, Truckmount	Logged By: J. Rawcliffe	Checked By: CRS 6/29/22	Core Size: HQ
Reference Elevation: 453.7' msl	Water Level: ≈17.3' BGS	Time: 4/8/22 1240	Core Length:

Drilling Information				Sample Quality				Sample Description and Classification	Lithologic Type	Remarks
Depth (feet bgs)	Run Number	Run Length (ft) / Recovery (ft)	Penetration Rate (ft/min)	RQD (%)	Fracture Depth (feet)	Fracture Type	Fracture Angle			
-21	R3	20.5 - 25.5					4"	Gray fine grained dolomitic limestone with fossils.		Start R3 1218
		5.0 / 5.0					4	Fossiliferous Foliation/bedding sub horizontal		
-22				26%			7.5			
							4"	Fossils slight wavy bed appearance		
-23							4"			
							10°	Some high angle foliation/ fracture traces		
-24										Possibly contaminated fracture ≈ 25'003
							9"	Fossiliferous with vesicles/voids 6ppm slight odor		
-25							6			End R3 1240
-26	R4	25.5 - 30.5					4"	Fossiliferous with some vesicles		Start R4 1343
		5.0 / 3.9					11"	Break or fracture along bedding plane		1400 Clear core block.
-27				99%			13.5°			No reported PID readings or odors.
							9			
-28							11	Sub horizontal break		
-29							7	Fossils small vesicles		
-30								Driller thinks he left ≈ 0.9' in hole.		1428 End R4 ~~1304~~
-31										

NOTES:

ROCK CORING LOG

MACTEC
511 Congress Street, Portland Maine 04101

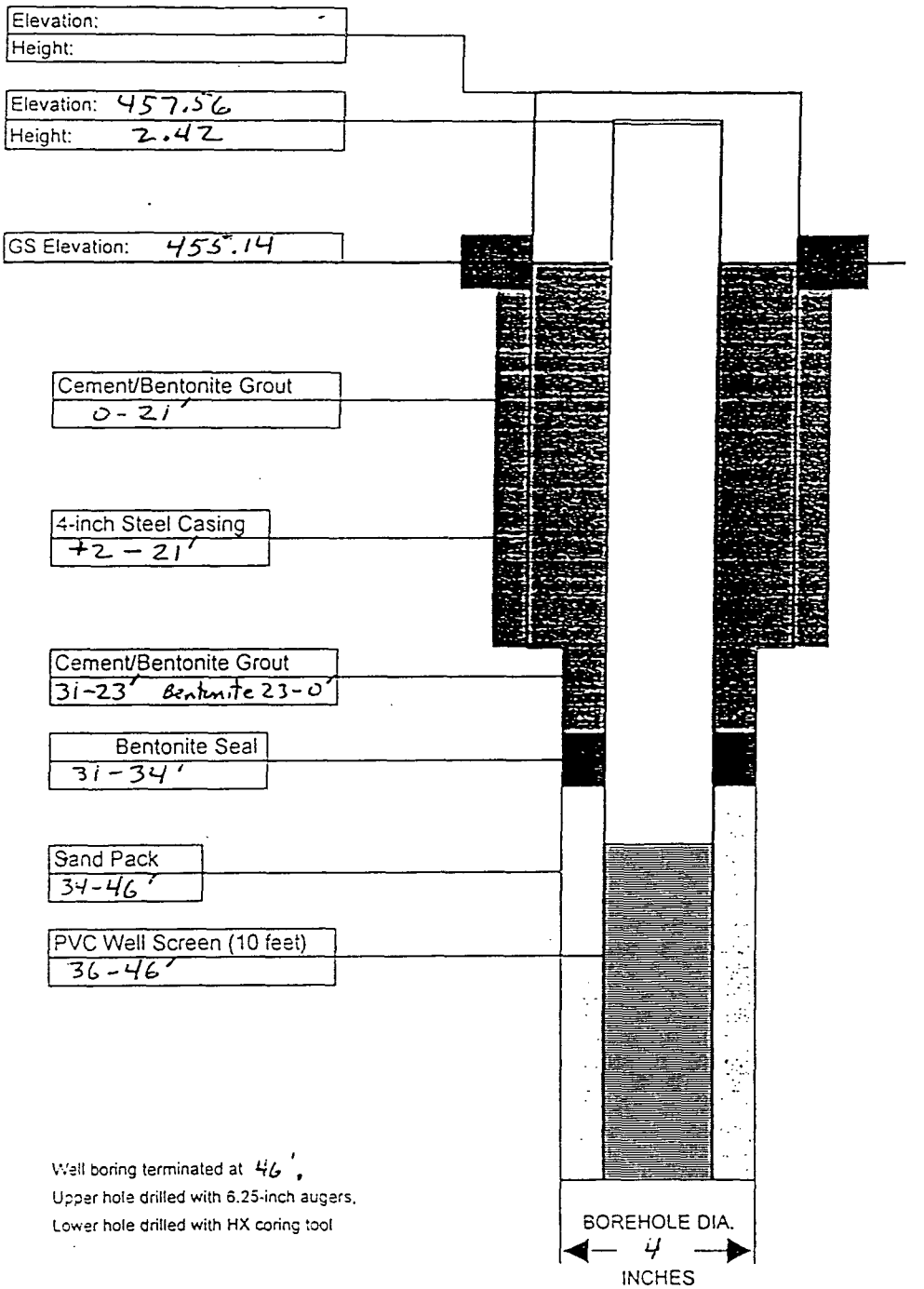
Project Name: Scobell Chemical			Boring ID: BW-02
Project Location: Rochester/Brighton, NY			Page No. 4
Project No.:	Client:		of: 4
Boring Location: ≈13' N of MW-15D	Top of Rock: 10.4	Total Depth: 35.6'	Casing Type: Steel
Weather: Partly sunny 45°F, breezy	Casing Depth: 10.5	Drilling Method: HQ Core Tricone	Casing Size: 6" ID
Subcontractor: Northeagle	Rock Drilled: 25'	Protection Level: Mod D	
Driller: Thom Mangafrida	Date Started: 4/7/22	Date Completed: 4/8/22	Core Barrel Type: Steel
Rig Type/Model: CME-75 Truck Mount	Logged By: T. Rawcliffe	Checked By: CRS 6/29/22	Core Size: HQ
Reference Elevation: 453.7 ft msl	Water Level: ≈17.3' BGS	Time: 4/8/22 1240	Core Length: 10.5 - 35.5

Drilling Information				Sample Quality						
Depth (feet bgs)	Run Number	Run Length (ft) / Recovery (ft)	Penetration Rate (ft/min)	RQD (%)	Fracture Depth (feet)	Fracture Type	Fracture Angle	Sample Description and Classification	Lithologic Type	Remarks
-31	R5 30.5 - 35.5	5.0 / 5.0		93%			4.5'	Sub horizontal break		Start R5 0809
							8°	Fracture/break at top of Fossiliferous and no weathering		No elevated PID readings or odors.
-32							21.5'	Fossiliferous with vesicles		
-33								Gray - Fine grained dolomitic limestone with Fossiliferous layers.		
-34							9°	Sub horizontal fracture; no weathering		
								Poss. fracture along foliation/bedding plane		
-35							13°	Fossiliferous with vesicles		End R5 0824
-36								Break at bottom of core		
								Reaming to 35.5 with 5 7/8" Tricone bit.		
-37								Cleaned out with Tricone		
-38								to 35.6' BGS		

NOTES: Water lost to formation during drilling ≈ 4460 gallons ± Based of meter readings at hydrant - 5% leakage. (25)

BEDROCK WELL CONSTRUCTION LOG

WELL NO.:	MW-1D	FACILITY/SITE NAME:	SCOBELL CHEMICAL
PROJ. NO.:	733128	CLIENT:	NYSDEC
INSPECTOR:	OILLMAN	DRILLING CONTACTOR:	NORTH STAR
DATE START:	June 16, 1998	DATE END:	June 19, 1998
LOCATION:	Between parking lot on I-590	DRILLING METHOD:	Hollow-stem augers/HX coring



Well boring terminated at 46'.
Upper hole drilled with 6.25-inch augers.
Lower hole drilled with HX coring tool

PROTECTIVE CASING	
Material:	Steel
Diameter:	4-inches
Depth BGS:	2 feet
Water Tight Seal:	
Flushmount:	NO
Weep hole:	Yes

GUARD POSTS	
Material:	N/A
No. & Size:	N/A

SURFACE PAD	
Composition:	Concrete

RISER PIPE	
Material:	PVC
Schedule:	SCH 40
Joint Type:	THREADED
O-ring:	RUBBER
Diameter:	2.0 INCHES

GROUT	
Amt cement:	94 lbs
Amt bentonite:	3 lbs
Amt water:	6.5 gal
Tremied:	yes, Bentonite
Interval:	23-31', 23-0'

SEAL	
Material:	BENTONITE
Type:	CHIPS
Amount Used:	
Interval:	31-34'

FILTER PACK	
Material:	SILICA SAND
Brand Name:	MORIE
Amount Used:	1.3 bags
Grain Size Dist.:	#1
Interval:	34-46
Tremied:	NO

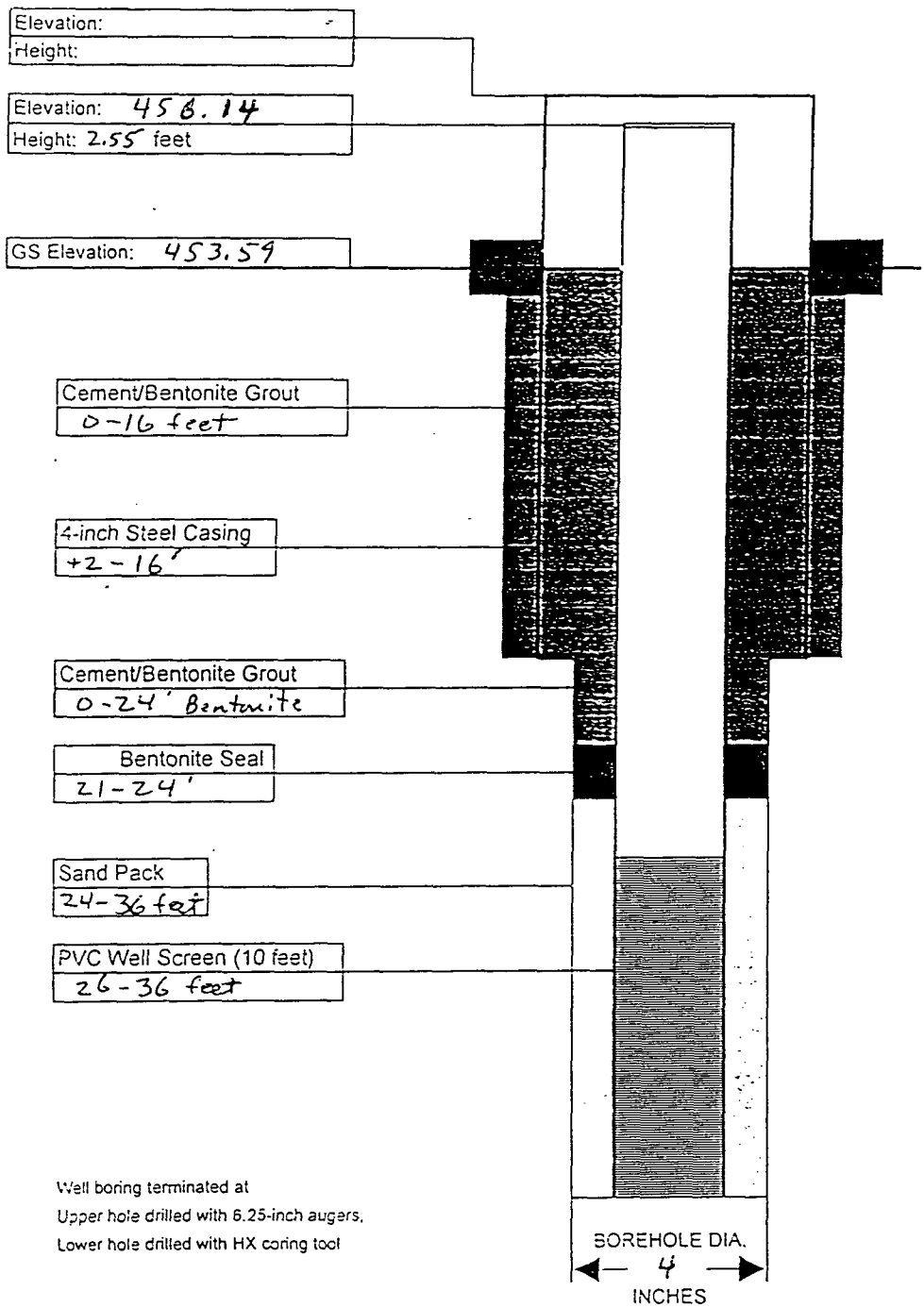
SCREEN	
Material:	PVC
Diameter:	2.0 INCHES
Slot Size & Type:	0.01" / MACHINE SLOT
Interval BGS:	36-46'

SUMP	
Interval BGS:	N/A
Bottom Cap:	YES

BACKFILL PLUG	
Material:	N/A
Setup/Hydration Time:	N/A

BEDROCK WELL CONSTRUCTION LOG

WELL NO.:	MW-2D	FACILITY/SITE NAME:	SCOBELL CHEMICAL
PROJ. NO.:	733128	CLIENT:	NYSDEC
INSPECTOR:	DILLMAN	DRILLING CONTACTOR:	NORTH STAR
DATE START:	June 16, 1998	DATE END:	June 18, 1998
LOCATION:	East corner of site	DRILLING METHOD:	Hollow-stem augers/HX coring



Well boring terminated at
Upper hole drilled with 6.25-inch augers,
Lower hole drilled with HX coring tool

PROTECTIVE CASING	
Material:	Steel
Diameter:	4-inches
Depth BGS:	2 feet
Water Tight Seal:	
Flushmount:	NO
Weep hole:	Yes

GUARD POSTS	
Material:	N/A
No. & Size:	N/A

SURFACE PAD	
Composition:	Concrete

RISER PIPE	
Material:	PVC
Schedule:	SCH 40
Joint Type:	THREADED
O-ring:	RUBBER
Diameter:	2.0 INCHES

GROUT	
Amt cement:	
Amt bentonite:	2 bags chips
Amt water:	
Tremied:	
Interval:	

SEAL	
Material:	BENTONITE
Type:	CHIPS
Amount Used:	
Interval:	

FILTER PACK	
Material:	SILICA SAND
Brand Name:	MORIE
Amount Used:	
Grain Size Dist.:	#1
Interval:	24-36 feet
Tremied:	NO

SCREEN	
Material:	PVC
Diameter:	2.0 INCHES
Slot Size & Type:	0.01" / MACHINE SLOT
Interval BGS:	26-36 feet

SUMP	
Interval BGS:	N/A
Bottom Cap:	YES

BACKFILL PLUG	
Material:	N/A
Setup/Hydration Time:	N/A

PARSONS ENGINEERING SCIENCE, INC.

rockwell.xls

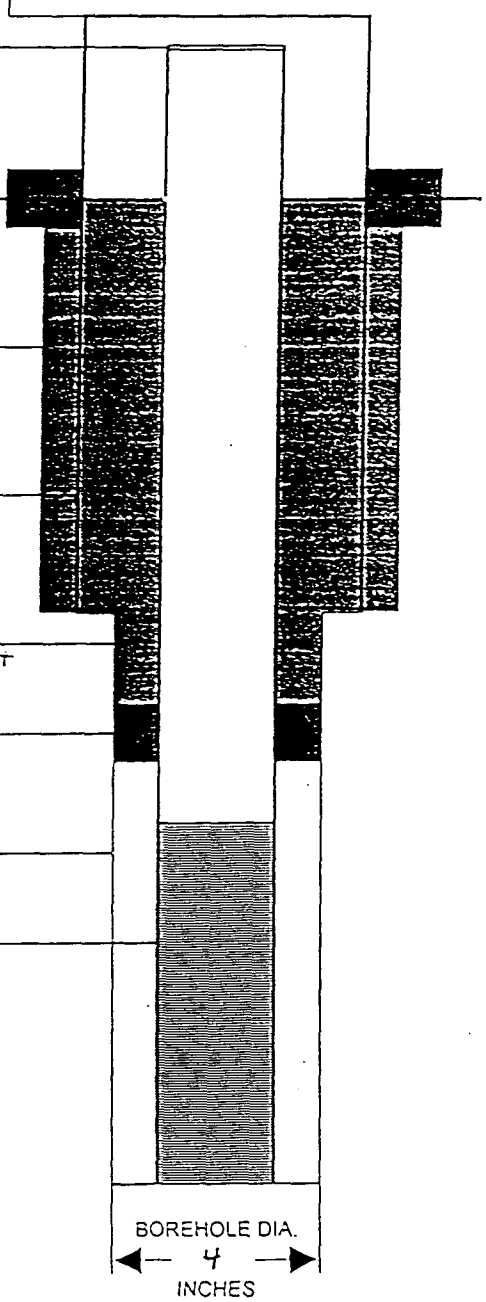
BEDROCK WELL CONSTRUCTION LOG

WELL NO.:	MW-3D	FACILITY/SITE NAME:	SCOBELL CHEMICAL
PROJ. NO.:	733128	CLIENT:	NYSDEC
INSPECTOR:	DILLMAN	DRILLING CONTACTOR:	NORTH STAR
DATE START:	June 15, 1998	DATE END:	JUNE 15, 1998
LOCATION:	North west corner of site	DRILLING METHOD:	Hollow-stem augers/HX coring

Elevation:
Height:

Elevation: 454.71
Height: 2.52 feet

GS Elevation: 452.19



Cement/Bentonite Grout
0-12.5 feet

4-inch Steel Casing
+2 - 12.5

Cement/Bentonite Grout
20.2-12' Bentonite 3-12', 0-3' grout

Bentonite Seal
20.2 - 23.5

Sand Pack
23.5 - 37.5

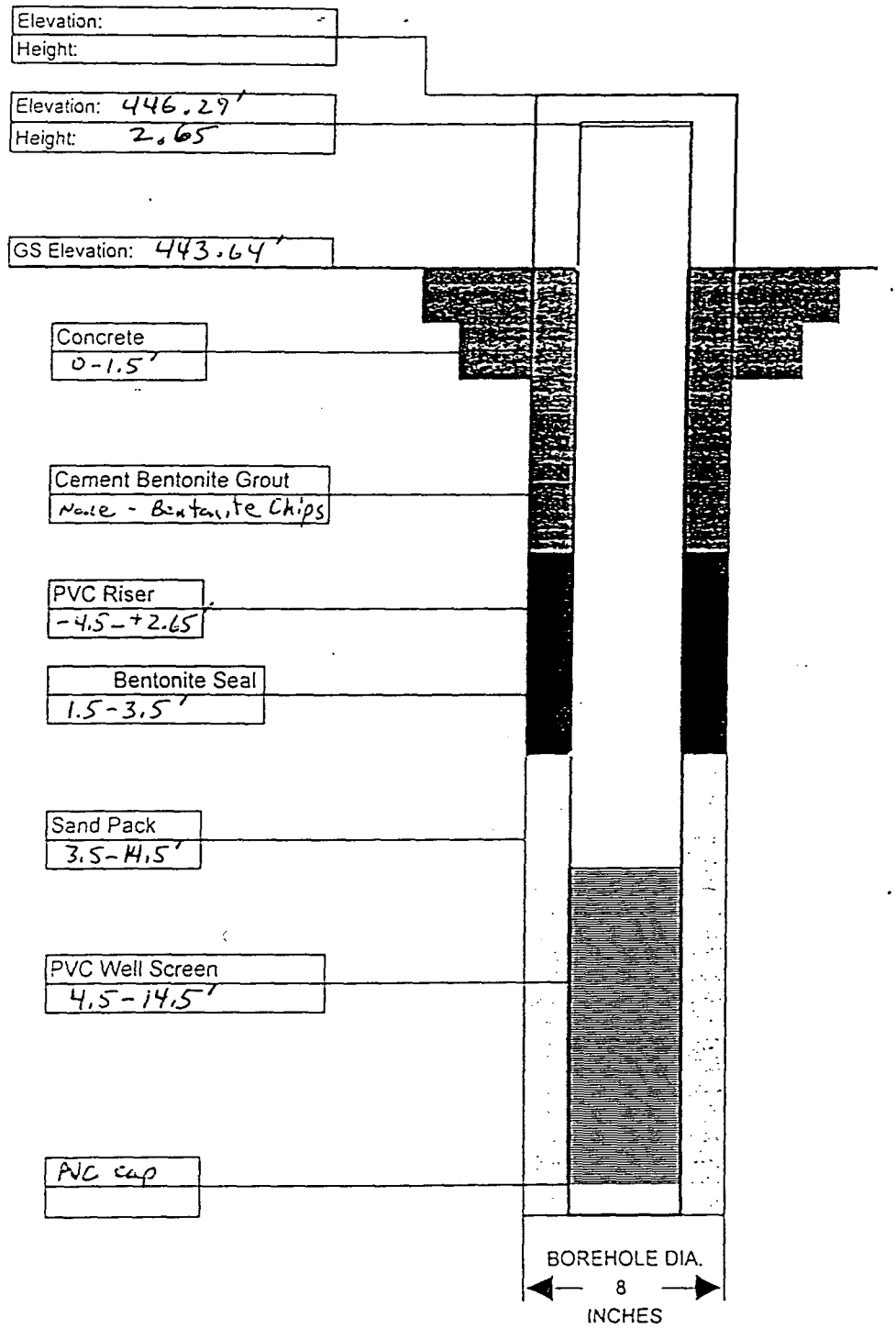
PVC Well Screen (10 feet)
26-36 feet

Well boring terminated at 37.5 feet
Upper hole drilled with 6.25-inch augers,
Lower hole drilled with HX coring tool

PROTECTIVE CASING	
Material:	Steel
Diameter:	4-inches
Depth BGS:	2 feet
Water Tight Seal:	
Flushmount:	NO
Weep hole:	Yes
GUARD POSTS	
Material:	N/A
No. & Size:	N/A
SURFACE PAD	
Composition:	Concrete
RISER PIPE	
Material:	PVC
Schedule:	SCH 40
Joint Type:	THREADED
O-ring:	RUBBER
Diameter:	2.0 INCHES
GROUT	
Amt cement:	94 lbs
Amt bentonite:	3 lbs
Amt water:	6.5 gal
Tremied:	YES, Bentonite
Interval:	0-3', 12-20.2', 3-12'
SEAL	
Material:	BENTONITE
Type:	CHIPS
Amount Used:	1/3 bag
Interval:	20.2 - 23.5 feet
FILTER PACK	
Material:	SILICA SAND
Brand Name:	MORIE
Amount Used:	1.5 bags
Grain Size Dist.:	#1
Interval:	23.5 - 37.5
Tremied:	NO
SCREEN	
Material:	PVC
Diameter:	2.0 INCHES
Slot Size & Type:	0.01" / MACHINE SLOT
Interval BGS:	26-36'
SUMP	
Interval BGS:	N/A
Bottom Cap:	YES
BACKFILL PLUG	
Material:	N/A
Setup/Hydration Time:	N/A

OVERBURDEN WELL CONSTRUCTION LOG

WELL NO.:	MW-4S	FACILITY/SITE NAME:	SCOBELL CHEMICAL
PROJ. NO.:	733128	CLIENT:	NYSDEC
INSPECTOR:	DILLMAN	DRILLING CONTACTOR:	NORTH STAR
DATE START:	June 23, 1998	DATE END:	June 23, 1998
LOCATION:	North of tracks on RGE property.	DRILLING METHOD:	Auger



PROTECTIVE CASING	
Material:	Steel
Diameter:	4-6 inch
Depth BGS:	2
Water Tight Seal:	N/A
Flushmount:	NO
Weep hole:	Yes
GUARD POSTS	
Material:	N/A
No. & Size:	N/A
SURFACE PAD	
Composition:	Concrete
Size:	N/A
RISER PIPE	
Material:	PVC
Schedule:	SCH 40
Joint Type:	THREADED
O-ring:	RUBBER
Diameter:	2.0 INCHES
GROUT	
Amt cement:	
Amt bentonite:	
Amt water:	
Tremied:	
Interval:	
SEAL	
Material:	BENTONITE
Type:	GRANULAR
Amount Used:	N/A
Interval:	1.5-3.5'
FILTER PACK	
Material:	SILICA SAND
Brand Name:	MORIE
Amount Used:	N/A
Grain Size Dist.:	#1
Interval:	3.5-14.5'
Tremied:	NO
SCREEN	
Material:	PVC
Diameter:	2.0 INCHES
Slot Size & Type:	0.01" / MACHINE SLOT
Interval BGS:	4.5-14.5'
SUMP	
Interval BGS:	
Bottom Cap:	YES
BACKFILL PLUG	
Material:	N/A
Setup/Hydration Time:	N/A

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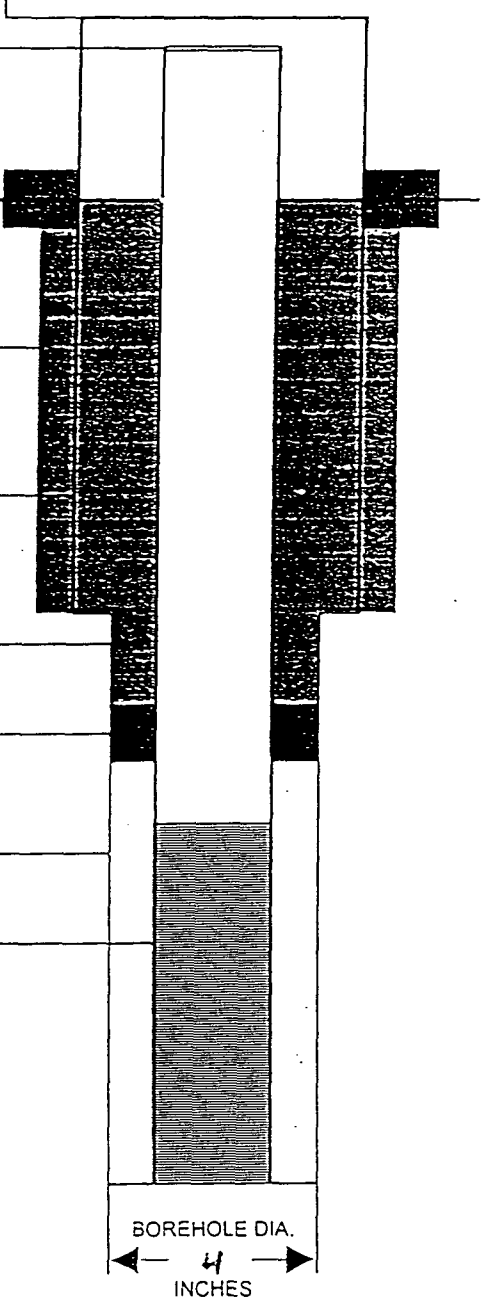
BEDROCK WELL CONSTRUCTION LOG

WELL NO.:	MW-4D	FACILITY/SITE NAME:	SCOBELL CHEMICAL
PROJ. NO.:	733128	CLIENT:	NYSDEC
INSPECTOR:		DRILLING CONTACTOR:	NORTH STAR
DATE START:	June 22, 1998	DATE END:	June 24, 1998
LOCATION:		DRILLING METHOD:	Hollow-stem augers/HX coring

Elevation: -
Height:

Elevation: 446.17
Height: 2.33

GS Elevation: 443.84



Cement/Bentonite Grout
0-16.5 feet

4-inch Steel Casing
0-16.5 feet

Cement/Bentonite Grout
0-20'

Bentonite Seal
20-23 feet

Sand Pack
23-36.5

PVC Well Screen (10 feet)
25-35 feet

Well boring terminated at 36.5 feet.
Upper hole drilled with 6.25-inch augers.
Lower hole drilled with HX coring tool

PROTECTIVE CASING	
Material:	Steel
Diameter:	4-inches
Depth BGS:	2.3'
Water Tight Seal:	
Flushmount:	NO
Weep hole:	Yes

GUARD POSTS	
Material:	N/A
No. & Size:	N/A

SURFACE PAD	
Composition:	Concrete

RISER PIPE	
Material:	PVC
Schedule:	SCH 40
Joint Type:	THREADED
O-ring:	RUBBER
Diameter:	2.0 INCHES

GROUT	
Amt cement:	94 lbs
Amt bentonite:	3 lbs
Amt water:	6.5 gal
Tremied:	yes
Interval:	0-20'

SEAL	
Material:	BENTONITE
Type:	CHIPS
Amount Used:	≈1/3 bag
Interval:	20-23'

FILTER PACK	
Material:	SILICA SAND
Brand Name:	MORIE
Amount Used:	
Grain Size Dist.:	#1
Interval:	23-36.5'
Tremied:	NO

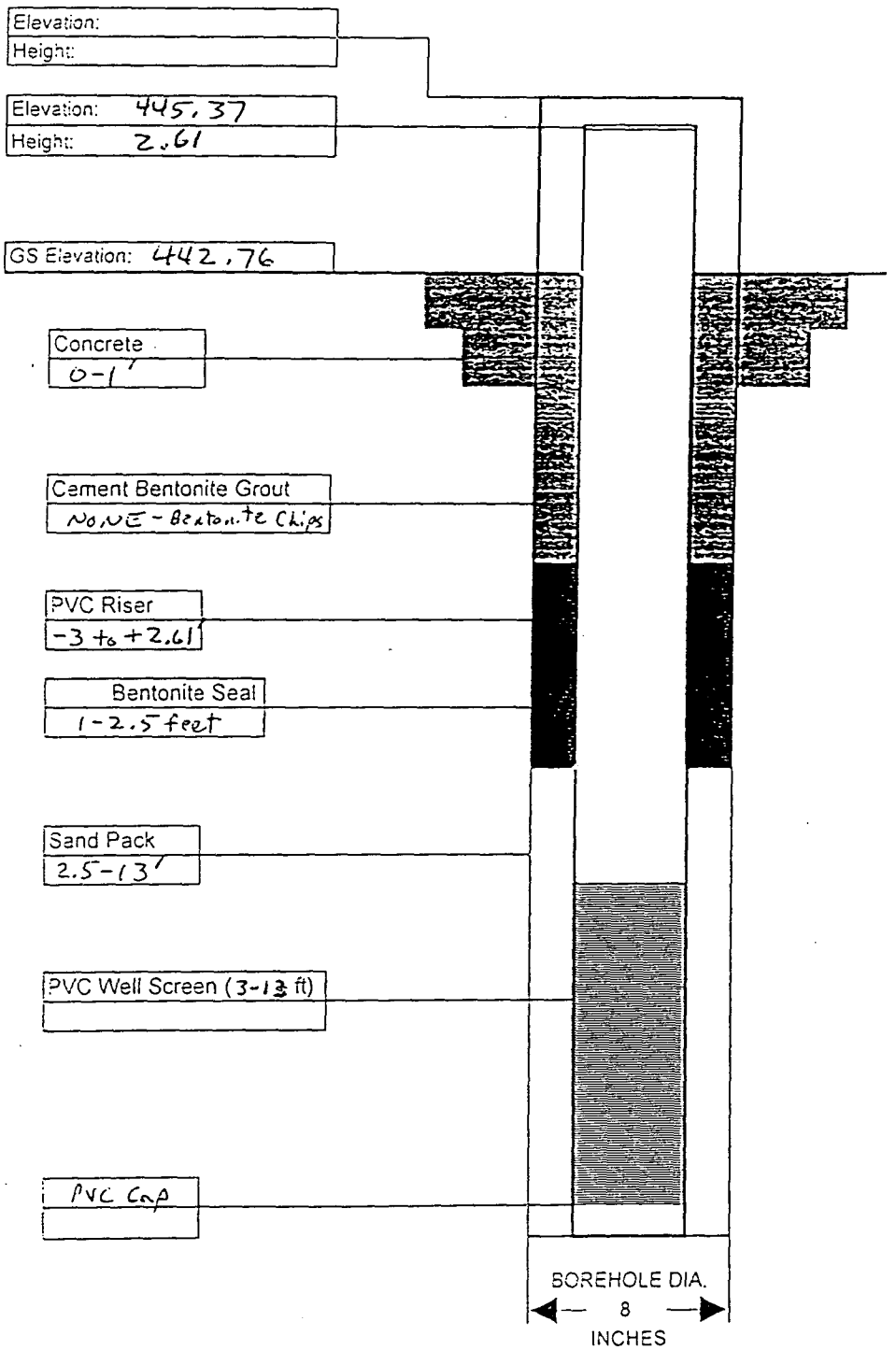
SCREEN	
Material:	PVC
Diameter:	2.0 INCHES
Slot Size & Type:	0.01" / MACHINE SLOT
Interval BGS:	25-35'

SUMP	
Interval BGS:	N/A
Bottom Cap:	YES

BACKFILL PLUG	
Material:	N/A
Setup/Hydration Time:	N/A

OVERBURDEN WELL CONSTRUCTION LOG

WELL NO.:	MW-55	FACILITY/SITE NAME:	SCOBELL CHEMICAL
PROJ. NO.:	733128	CLIENT:	NYSDEC
INSPECTOR:	DILLMAN	DRILLING CONTACTOR:	NORTH STAR
DATE START:	June 24, 1998	DATE END:	June 24, 1998
LOCATION:	North of site on RGE property near driveway	DRILLING METHOD:	Auger



PROTECTIVE CASING	
Material:	Steel
Diameter:	4-6 inch
Depth BGS:	2 feet
Water Tight Seal:	N/A
Flushmount:	NO
Weep hole:	Yes

GUARD POSTS	
Material:	N/A
No. & Size:	N/A

SURFACE PAD	
Composition:	Concrete
Size:	N/A

RISER PIPE	
Material:	PVC
Schedule:	SCH 40
Joint Type:	THREADED
O-ring:	RUBBER
Diameter:	2.0 INCHES

GROUT	
Amt cement:	
Amt bentonite:	
Amt water:	
Tremied:	
Interval:	

SEAL	
Material:	BENTONITE
Type:	GRANULAR
Amount Used:	N/A
Interval:	1-2.5 feet

FILTER PACK	
Material:	SILICA SAND
Brand Name:	MORIE
Amount Used:	N/A
Grain Size Dist.:	#1
Interval:	2.5-13'
Tremied:	NO

SCREEN	
Material:	PVC
Diameter:	2.0 INCHES
Slot Size & Type:	0.01" / MACHINE SLOT
Interval BGS:	3-13'

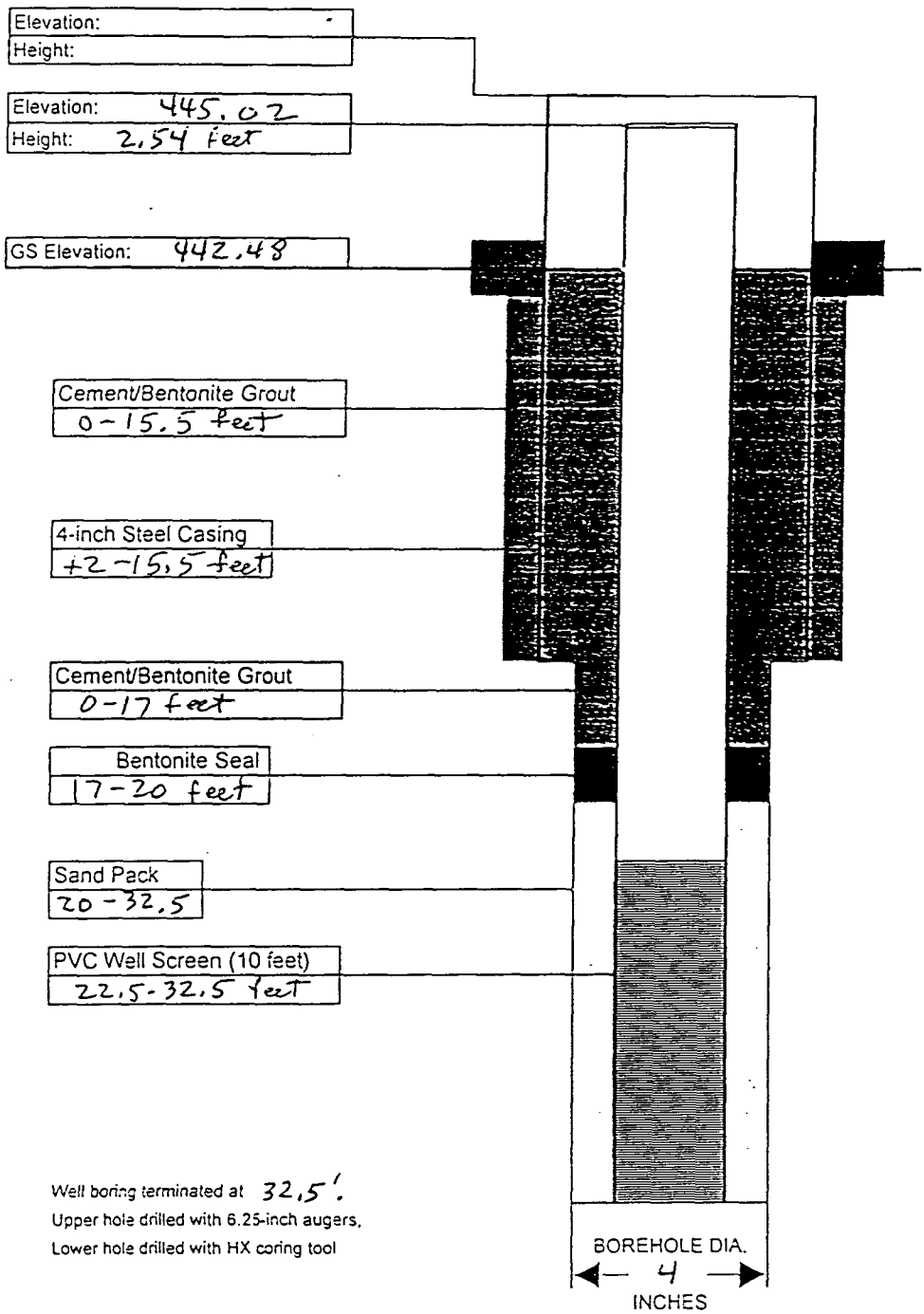
SUMP	
Interval BGS:	
Bottom Cap:	YES

BACKFILL PLUG	
Material:	N/A
Setup/Hydration Time:	N/A

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BEDROCK WELL CONSTRUCTION LOG

WELL NO.:	MW-5D	FACILITY/SITE NAME:	SCOBELL CHEMICAL
PROJ. NO.:	733128	CLIENT:	NYSDEC
INSPECTOR:	DILLMAN	DRILLING CONTACTOR:	NORTH STAR
DATE START:	June 23, 1998	DATE END:	June 25, 1998
LOCATION:	North of site on RGE near driveway.	DRILLING METHOD:	Hollow-stem augers/HX coring



PROTECTIVE CASING	
Material:	Steel
Diameter:	4-inches
Depth BGS:	2 feet
Water Tight Seal:	
Flushmount:	NO
Weep hole:	Yes

GUARD POSTS	
Material:	N/A
No. & Size:	N/A

SURFACE PAD	
Composition:	Concrete

RISER PIPE	
Material:	PVC
Schedule:	SCH 40
Joint Type:	THREADED
O-ring:	RUBBER
Diameter:	2.0 INCHES

GROUT	
Amt cement:	94 lbs
Amt bentonite:	3 lbs
Amt water:	6.5 gal
Tremied:	0-17 feet
Interval:	YES

SEAL	
Material:	BENTONITE
Type:	GRANULAR
Amount Used:	≈ 1/3 bag
Interval:	17-20 feet

FILTER PACK	
Material:	SILICA SAND
Brand Name:	MORIE
Amount Used:	
Grain Size Dist.:	#1
Interval:	20-32.5
Tremied:	NO

SCREEN	
Material:	PVC
Diameter:	2.0 INCHES
Slot Size & Type:	0.01" / MACHINE SLOT
Interval BGS:	22.5-32.5 feet

SUMP	
Interval BGS:	N/A
Bottom Cap:	YES

BACKFILL PLUG	
Material:	N/A
Setup/Hydration Time:	N/A

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rockwell.xls

WELL/PIEZOMETER CONSTRUCTION DIAGRAM
STICKUP

LOCATION ID: MW-20

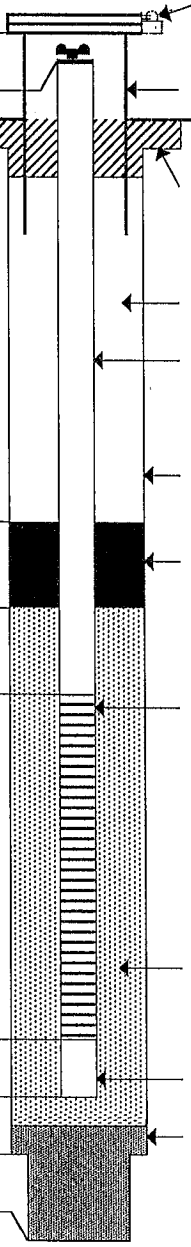
Project Name: SCOBELL CHEMICAL
Project Location: ROCHESTER, NY
Project Number: 3617147328 Task Number 0.3
Subcontractor: GEOLOGIC NY Drilling Method: HSA
Development Method: dry Development Date: —
Bucking Posts/Ballards: NO
Notes: STICK UP CASING

Date Started: 10-28-14 Date Completed: 10-29-14
Logged By: T.D. LONGLEY
Checked By: C. Stark Checked Date: 2.21.14

Measuring Point Information

Measuring Point (MP) Type: Top Of Riser
MP Elevation (ft): 446.17

Item	Depth BMP (ft)	Elevation (ft)
Stickup	+2.4	446.39
Riser Pipe (Top)	+2.18	446.17
Ground Surface Elevation	0	444.0
Top of Well Seal	3	441.0
Top of Sand Pack	7	437.0
Top of Screen	8.7	435.3
Base of Screen	13.7	430.3
End Cap	13.7	
Drilled Depth	13.7	
Bottom of Exploration	13.7	
Bedrock Surface	14.5	429.5



Description	
Lock Identification	#0344
Stickup Casing Type:	STEEL
Stickup Casing Diameter:	4"
Surface Seal Type:	CONCRETE
Backfill/Grout Type:	CUTTINGS
Riser Pipe Type:	SCH 40 PVC
Riser Pipe ID:	2"
Borehole Diameter:	~7"
Type of Seal:	HOLE PLUG BENT.
Screen Type:	SCH 40 PVC
Screen ID:	2"
Screen Slot Size:	0.030"
Screen Length:	5'
Filter/Sand Pack Type:	#1 SAND
Sump:	
Fallback/Backfill:	0.8 FALLBACK

NOT TO SCALE

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FIGURE 4.7
WELL/PIEZOMETER CONSTRUCTION DIAGRAM - STICKUP
NYSDEC QUALITY ASSURANCE PROJECT PLAN

WELL/PIEZOMETER CONSTRUCTION DIAGRAM
STICKUP

LOCATION ID: MW - 30 DD

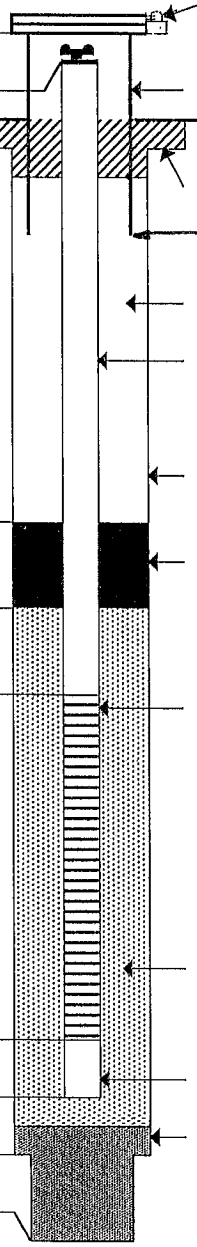
Project Name: SCOBELL CHEMICAL
Project Location: ROCHESTER, NY
Project Number: 3617147328 Task Number 0.3
Subcontractor: GEOLOGIC NY Drilling Method: HSA & AIR CORE
Development Method: PUMP & SURGE Development Date: 11-17-14
Bucking Posts/Ballards: NO
Notes: STICK-UP PROTECTIVE CASING

Date Started: 11-13-14 Date Completed: 11-13-14
Logged By: T.D. LONGLEY
Checked By: Checked Date:

Measuring Point Information

Measuring Point (MP) Type: Top Of Riser
MP Elevation (ft): 446.00

Item	Depth BMP (ft)	Elevation (ft)
Stickup	2.4	446.30
Riser Pipe (Top)	~2.0	446.00
Ground Surface Elevation	0'	443.99
Top of Well Seal	~9	435.0
Top of Sand Pack	33.9	410.1
Top of Screen	35.2	408.8
Base of Screen	50.2	339.8
End Cap	50.2	339.8
Drilled Depth	68.5'	375.5
Bottom of Exploration	68.5'	375.5
Bedrock Surface	11.5'	432.5



Description	
Lock Identification	0344
Stickup Casing Type:	STEEL
Stickup Casing Diameter:	4"
Surface Seal Type:	CONCRETE
Bottom Casing	13.5'
Backfill/Grout Type:	CONCRETE
Riser Pipe Type:	SCH 40 PVC
Riser Pipe ID:	2"
Borehole Diameter:	~3.8" IN ROCK
Type of Seal:	BENTONITE
Screen Type:	SCH 40 PVC
Screen ID:	2"
Screen Slot Size:	0.010"
Screen Length:	15'
Filter/Sand Pack Type:	#1 SAND (50.9' TO 33.9')
Sump:	SAND 68.5'-54.4' BENT. 54.4'-50.9'
Fallback/Backfill:	

NOT TO SCALE

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FIGURE 4.7
WELL/PIEZOMETER CONSTRUCTION DIAGRAM - STICKUP
NYSDEC QUALITY ASSURANCE PROJECT PLAN

WELL/PIEZOMETER CONSTRUCTION DIAGRAM
STICKUP

LOCATION ID: MW-21

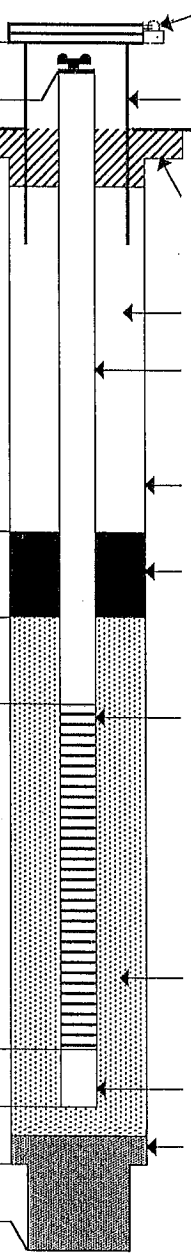
Project Name: SCOBELL CHEMICAL
Project Location: ROCHESTER, NY
Project Number: 3617147328 Task Number 0.3
Subcontractor: GEOLOGIC NY Drilling Method: HSA
Development Method: PUMP & SURGE Development Date: 11/20/14
Bucking Posts/Ballards: NO
Notes: STICK up CASING

Date Started: 10-31-14 Date Completed: 10-31-14
Logged By: T.D. LONGLEY
Checked By: C. Stapler Checked Date: 2-2-15

Measuring Point Information

Measuring Point (MP) Type: Top Of Riser
MP Elevation (ft): 443.83

Item	Depth BMP (ft)	Elevation (ft)
Stickup		443.9
Riser Pipe (Top)		443.83
Ground Surface Elevation	0	441.85
Top of Well Seal	3	423.4
Top of Sand Pack	5.8	436.1
Top of Screen	7	434.9
Base of Screen	12	429.9
End Cap	12	429.9
Drilled Depth	12.5	429.4
Bottom of Exploration	12.5	429.4
Bedrock Surface	12.5	429.4



Description	
Lock Identification	
Stickup Casing Type:	STEEL
Stickup Casing Diameter:	4"
Surface Seal Type:	CONCRETE
Backfill/Grout Type:	CUTTINGS/CONCRETE
Riser Pipe Type:	SCH 40 PVC
Riser Pipe ID:	2"
Borehole Diameter:	~ 11"
Type of Seal:	HOLE PLUG. BENT.
Screen Type:	SCH 40 PVC
Screen ID:	2"
Screen Slot Size:	0.010"
Screen Length:	5'
Filter/Sand Pack Type:	#1 SAND
Sump:	
Fallback/Backfill:	12' TO 12.5' CAVE

NOT TO SCALE

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FIGURE 4.7
WELL/PIEZOMETER CONSTRUCTION DIAGRAM - STICKUP
NYSDEC QUALITY ASSURANCE PROJECT PLAN

Flush Mount

WELL/PIEZOMETER CONSTRUCTION DIAGRAM
STICKUP

LOCATION ID: MW-23

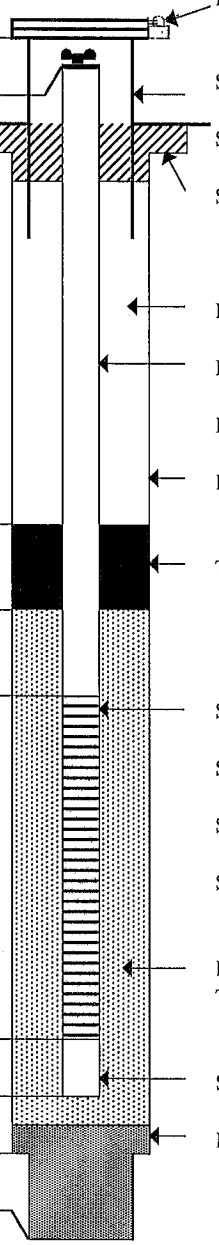
Project Name: SCOBELL CHEMICAL
Project Location: ROCHESTER, NY
Project Number: 3617147328 Task Number 03
Subcontractor: GEOLOGIC NY Drilling Method: HSA
Development Method: DRY Development Date: –
Bucking Posts/Ballards: NO
Notes: FLUSH-TO-GROUND WELL CASING

Date Started: 10-28-14 Date Completed: 10-28-14
Logged By: T.D. LONGLEY
Checked By: C. Stogner Checked Date: 2.2.14

Measuring Point Information

Measuring Point (MP) Type: Top Of Riser
MP Elevation (ft): 440.96

Item	Depth BMP (ft)	Elevation (ft)	Description	
Stickup	FLUSH	441.41	Lock Identification	NO LOCK: 5/8" ALLEN SCREWS
Riser Pipe (Top)		440.96	Stickup Casing Type:	ALUMINUM/STEEL
Ground Surface Elevation	0'	441.41	Stickup Casing Diameter:	6"
			Surface Seal Type:	CONCRETE
			Backfill/Grout Type:	HOLE PLUG
			Riser Pipe Type:	SCH 40 PVC
			Riser Pipe ID:	2"
			Borehole Diameter:	~7"
Top of Well Seal	1	440.4		
			Type of Seal:	HOLE PLUG BENTONITE
Top of Sand Pack	3	438.4		
Top of Screen	4.8'	436.6		
			Screen Type:	SCH 40 PVC
			Screen ID:	2"
			Screen Slot Size:	0.020
			Screen Length:	10'
			Filter/Sand Pack Type:	#1 SAND
Base of Screen	9.8'	431.6		
End Cap	9.8'	431.6	Sump:	
Drilled Depth	9.8'	431.6	Fallback/Backfill:	N/A
Bottom of Exploration	9.8'	431.6		
Bedrock Surface	9.8'	431.6		



NOT TO SCALE

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FIGURE 4.7
WELL/PIEZOMETER CONSTRUCTION DIAGRAM - STICKUP
NYSDEC QUALITY ASSURANCE PROJECT PLAN

WELL/PIEZOMETER CONSTRUCTION DIAGRAM
STICKUP

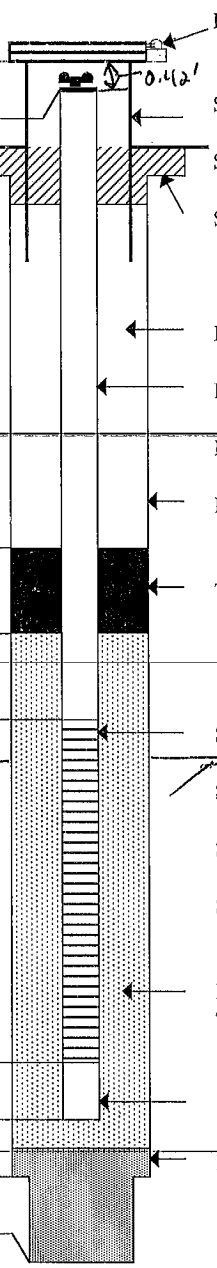
LOCATION ID: MW-30S

Project Name:	Scobell Chemical	Date Started:	11/9/15
Project Location:	Rochester/Brighton, NY	Date Completed:	11/10/15
Project Number:	3617147328	Logged By:	J. Rawcliffe
Task Number	05	Checked By:	RMB
Subcontractor:	Geologic	Checked Date:	12/21/15
Drilling Method:	HSA/Casing/Core		
Development Method:	Pump + surge	Development Date:	11/19/15
Bucking Posts/Ballards:	NA		
Notes:			

Measuring Point Information

Measuring Point (MP) Type:	Top Of Riser
MP Elevation (ft):	430.86

Item	Depth BMP (ft)	Elevation (ft)	Description	
Stickup	2.3' AGS	431.33	Lock Identification	
Riser Pipe (Top)	1.88' AGS	430.86	Stickup Casing Type:	Steel 3"
Ground Surface Elevation		429.01	Stickup Casing Diameter:	3"
			Surface Seal Type:	Concrete
			Backfill/Grout Type:	Sealed with bentonite chips
			Riser Pipe Type:	Sch 40 PVC
			Riser Pipe ID:	2"
Top of Well Seal	1.0 ~~5.4~~' BGS	428.01	Borehole Diameter:	4"
Top of Sand Pack	5.9' BGS	▽ 4.94' BGS = 11/12/15	Type of Seal:	1/4 Hole Bentonite Chips 3/8"
Top of Screen	8.1' BGS	420.91	Screen Type:	Sch 40 PVC
	8.5'		Screen ID:	2"
DTW 11/12/15		424.07'	Screen Slot Size:	0.01"
			Screen Length:	5'
			Filter/Sand Pack Type:	#0 Silica sand
Base of Screen	13.1' BGS	415.91		
End Cap	13.2' BGS	415.81	Sump:	
Drilled Depth	13.5' BGS	415.51	Fallback/Backfill:	—
Bottom of Exploration	13.5' BGS	415.51		
Bedrock Surface	8.5' BGS	420.51		



NOT TO SCALE

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FIGURE 4.7
WELL/PIEZOMETER CONSTRUCTION DIAGRAM - STICKUP
NYSDEC QUALITY ASSURANCE PROJECT PLAN

WELL/PIEZOMETER CONSTRUCTION DIAGRAM FLUSHMOUNT

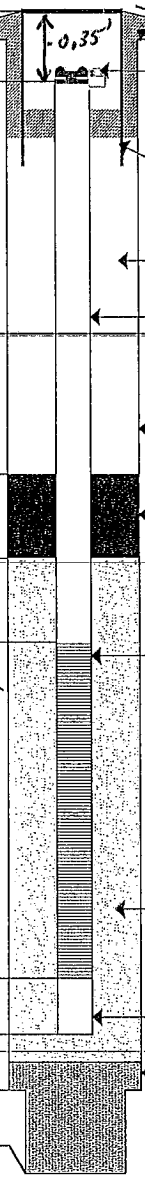
LOCATION ID: MW-315

Project Name: Scohell Chemical
Project Location: Brighton/Rochester, NY
Project Number: 36171473278 Task Number .05
Subcontractor: Geologic Drilling Method: HSA/4" Casing/Core
Development Method: Pump + surge RB Development Date: 11/19/15
Bucking Posts/Ballards: NA
Notes:

Date Started: 11/10/15 Date Completed: 11/10/15
Logged By: J. Rawcliffe
Checked By: RMB Checked Date: 12/21/15

Measuring Point Information
Measuring Point (MP) Type: Top Of Riser
MP Elevation (ft): 435.21

Item	Depth BMP (ft)	Elevation (ft)
Surface Casing Elevation		435.56
Ground Surface Elevation		435.56
Riser Pipe (Top)	0.35' BGS	435.21
Top of Well Seal	1.0' BGS	434.56
Top of Sand Pack	7.7' BGS	427.86
Top of Screen	9.1' TOR / 9.45' BGS	426.46
	10.2' BGS	
DTW 422.65' 11/12/15	WL=12.91' BGS (12.56 TOR) 11/12/15 1235	
Base of Screen	14.0' TOR / 14.45' BGS	421.11
End Cap	14.1' TOR / 14.55' BGS	421.01
Drilled Depth	15.0' BGS	420.56
Bottom of Exploration	15.0' BGS	420.56
Bedrock Surface	10.2' BGS	425.36



Slope Away
Surface Seal Type: Concrete
Lock Identification: —
Stickup Casing Diameter: 8" (Aluminum + Poly)
Backfill/Grout Type:
Riser Pipe Type: Sch 40 PVC
Riser Pipe ID: 2"
Borehole Diameter: 4"
Type of Seal: Holeplug 3/8" Bentonite Chips
Screen Type: Sch 40 PVC
Screen ID: 2"
Screen Slot Size: 0.01"
Screen Length: 5'
Filter/Sand Pack Type: #0 Silica Sand
Sump: ≈0.1' slip cap sump.
Fallback/Backfill: —

NOT TO SCALE

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FIGURE 4.8
WELL/PIEZOMETER CONSTRUCTION DIAGRAM - FLUSHMOUNT
NYSDEC QUALITY ASSURANCE PROJECT PLAN

WELL/PIEZOMETER CONSTRUCTION DIAGRAM
FLUSHMOUNT

LOCATION ID: MW-32

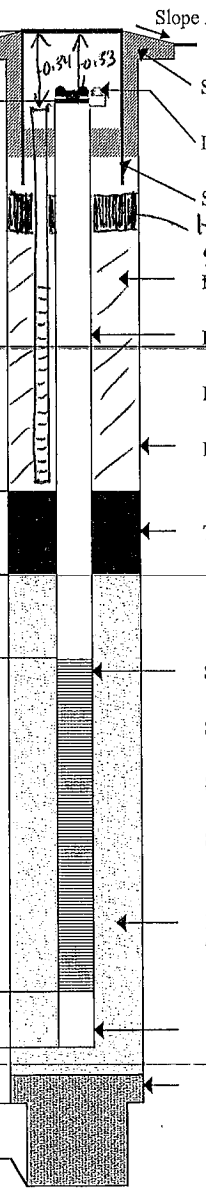
Project Name: Scobell Chemical
Project Location: Brighton/Rochester, NY
Project Number: 3617147328 Task Number: 105
Subcontractor: Geologic Drilling Method: HSA/Casing/Core
Development Method: Pump+surge Development Date: 11/20/15
Bucking Posts/Ballards: NA
Notes:

Date Started: 11/18/15 Date Completed: 11/19/15
Logged By: J. Rawcliffe
Checked By: RMB Checked Date: 12/21/15

Measuring Point Information

Measuring Point (MP) Type: Top Of Riser
MP Elevation (ft): 433.24

Item	Depth BMP (ft)	Elevation (ft)
Surface Casing Elevation		433.58
Ground Surface Elevation		433.58
Riser Pipe (Top)	1" 0.34' BGS 2" 0.33' BGS	433.24
MW-32S Sch 40 PVC 1" ID 0.01" slot screen 5' in length		
Top of screen	12.0' BGS	421.58
Base of 1" screen	17.0' BGS	416.58
Top of Well Seal	17.2' BGS	416.38
Top of Sand Pack	19.0' BGS	414.58
Top of Screen	19.95' BGS	413.63
Base of Screen	24.95' BGS	408.63
End Cap	25.05' BGS	408.53
Drilled Depth	25.2' BGS	408.38
Bottom of Exploration	25.2' BGS	408.38
Bedrock Surface	6.8' BGS	426.78



Surface Seal Type: Concrete
Lock Identification:
Stickup Casing Diameter: 8"
Hole Plug Bentonite Chips 3/8"
Sandpack Backfill/~~Grout Type~~: #0 Silica Sand
Riser Pipe Type: Sch 40 PVC
Riser Pipe ID: 2"
Borehole Diameter: 4"
Type of Seal: ~~Hole Plug~~ Coated Bentonite Chips Pellets 3/8"
Screen Type: Sch 40 PVC
Screen ID: 2"
Screen Slot Size: 0.01"
Screen Length: 5'
Filter/Sand Pack Type: #0 Silica Sand
Sump:
Fallback/Backfill: —

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FIGURE 4.8
WELL/PIEZOMETER CONSTRUCTION DIAGRAM - FLUSHMOUNT
NYSDEC QUALITY ASSURANCE PROJECT PLAN

WELL/PIEZOMETER CONSTRUCTION DIAGRAM
FLUSHMOUNT

LOCATION ID: MW-33S

Project Name: Scobell Chemical
Project Location: Brighton/Rochester, NY
Project Number: 36171473.28 Task Number .05
Subcontractor: Geologic Drilling Method: HSA/Casing/Core
Development Method: Pump + surge RMB Development Date:
Bucking Posts/Ballards: NA
Notes:

Date Started: 11/12/15 Date Completed: 11/12/15
Logged By: J. Rawcliffe
Checked By: ~~RMB~~ RMB Checked Date: 12/21/15

Measuring Point Information

Measuring Point (MP) Type: Top Of Riser
MP Elevation (ft): 435.51

Item	Depth BMP (ft)	Elevation (ft)	Description
Surface Casing Elevation		436.0	Slope Away
Ground Surface Elevation		436.0	
Riser Pipe (Top)	0.53' BGS	435.51	Surface Seal Type: Concrete
			Lock Identification:
			Stickup Casing Diameter: 8" Aluminum + plastic
			Backfill/Grout Type: —
WL = 6.11' TOR 11/16/15 1250 (m)			Riser Pipe Type: Sch 40 PVC
			Riser Pipe ID: 2"
			Borehole Diameter: 4"
Top of Well Seal	2.5' BGS 1.97' TOR	433.5	Type of Seal: ~~Hole plug~~ 3/8" Bentonite chips
Top of Sand Pack	6.9' BGS 6.47' TOR	5.0' ~~BGS~~	
Top of Screen	8.4' TOR / 8.9' BGS	427.1	Screen Type: Sch 40 PVC
DTW			Screen ID: 2"
			Screen Slot Size: 0.01"
			Screen Length: 6'
			Filter/Sand Pack Type: #0 Silica sand
Base of Screen	14.9' TOR / 14.83' BGS	421.17	
End Cap	14.4' TOR / 14.9 BGS	421.1	Sump: 0.1' slip cap sump
Drilled Depth	15.0' BGS	421.0	Fallback/Backfill:
Bottom of Exploration	15.0' BGS	421.0	
Bedrock Surface	≈5'	≈431	

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FIGURE 4.8
WELL/PIEZOMETER CONSTRUCTION DIAGRAM - FLUSHMOUNT
NYSDEC QUALITY ASSURANCE PROJECT PLAN

WELL/PIEZOMETER CONSTRUCTION DIAGRAM FLUSHMOUNT

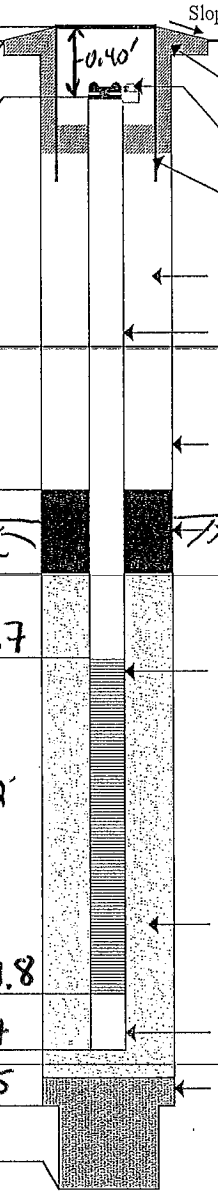
LOCATION ID: MW-34S

Project Name: Scobell Chemical
Project Location: Brighton/Rochester, NY
Project Number: 36171473.28 Task Number .05
Subcontractor: Geologic Drilling Method: HSA/Casing/Core
Development Method: Pump + surge RB Development Date:
Bucking Posts/Ballards: NA
Notes:

Date Started: 11/13/15 Date Completed: 11/16/15
Logged By: J. Rawcliffe
Checked By: RMB Checked Date: 12/21/15

Measuring Point Information
Measuring Point (MP) Type: Top Of Riser
MP Elevation (ft): 439.25

Item	Depth BMP (ft)	Elevation (ft)	Description
Surface Casing Elevation		439.65	
Ground Surface Elevation		439.65	Slope Away
Riser Pipe (Top)	0.4' BGS	439.25	Surface Seal Type: Concrete
			Lock Identification:
			Stickup Casing Diameter: 8" (Aluminum + Poly)
			Backfill/Grout Type: Native material
			Riser Pipe Type: Sch 40 PVC
			Riser Pipe ID: 2"
			Borehole Diameter: 4"
Top of Well Seal	5.6' BGS	434.05	
Top of Sand Pack	7.9' BGS	7'	Type of Seal: Hydrated Bentonite Chip 3/8"
Top of Screen	9.55' TOR / 9.95' BGS	429.7	Screen Type: Sch 40 PVC
			Screen ID: 2"
DTW	WL = 10.73' TOR 11/17/15 0800	428.52'	Screen Slot Size: 0.01"
			Screen Length: 5'
			Filter/Sand Pack Type: #0 Silica Sand
Base of Screen	14.45' TOR / 14.85' BGS	424.8	
End Cap	14.55' TOR / 14.95' BGS	424.7	Sump:
Drilled Depth	15' BGS	424.65	Fallback/Backfill:
Bottom of Exploration	15.2' BGS	424.45	
Bedrock Surface	7'	432.65	



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FIGURE 4.8
WELL/PIEZOMETER CONSTRUCTION DIAGRAM - FLUSHMOUNT
NYSDEC QUALITY ASSURANCE PROJECT PLAN

WELL/PIEZOMETER CONSTRUCTION DIAGRAM
FLUSHMOUNT

LOCATION ID: MW-35S

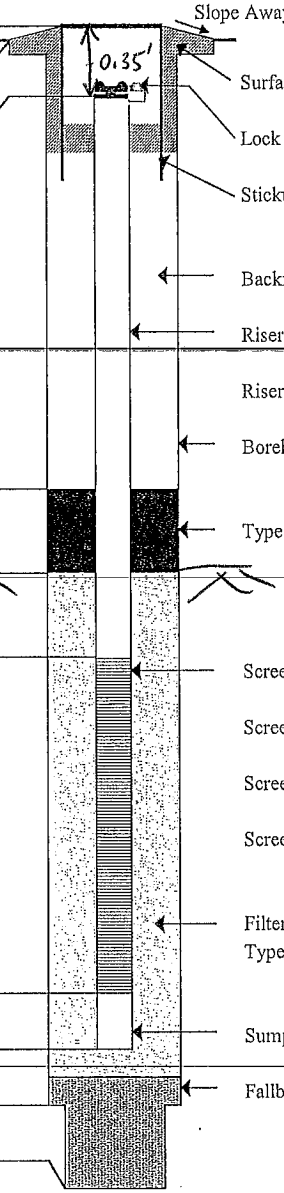
Project Name: Scobell Chemical
Project Location: Brighton/Rochester, NY
Project Number: 36171473.28 Task Number .05
Subcontractor: Geologic Drilling Method: HSA/Casing/Core
Development Method: Pump+Surge Development Date: 11/20/15
Bucking Posts/Ballards: NA
Notes:

Date Started: 11/17/15 Date Completed: 11/18/15
Logged By: J. Rawcliffe
Checked By: RMB Checked Date: 12/2/15

Measuring Point Information

Measuring Point (MP) Type: Top Of Riser
MP Elevation (ft): 439.50

Item	Depth BMP (ft)	Elevation (ft)
Surface Casing Elevation		439.84
Ground Surface Elevation		439.84
Riser Pipe (Top)	0.35' BGS	439.50
Top of Well Seal	≈2.0' BGS	437.84
Top of Sand Pack	6.0' BGS	433.84
Top of Screen	10.1' BGS	429.74
Base of Screen	15.1' BGS	424.74
End Cap	15.2' BGS	424.64
Drilled Depth	15.2' BGS	424.64
Bottom of Exploration	15.2' BGS	424.64
Bedrock Surface	6' BGS	433.84



Description

- Surface Seal Type: Concrete.
- Lock Identification: —
- Stickup Casing Diameter: 8"
- Backfill/Grout Type: Bent. chips
- Riser Pipe Type: Sch 40 PVC
- Riser Pipe ID: ~~Sch 4~~ 2"
- Borehole Diameter: 4"OB/3"BR
- Type of Seal: Bentonite Chip 3/8" (1ft+plug)
- Screen Type: Sch 40 PVC
- Screen ID: 2"
- Screen Slot Size: 0.01"
- Screen Length: 5'
- Filter/Sand Pack Type: #0 Silica Sand
- Sump: ≈0.1' slip cap
- Fallback/Backfill: —

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FIGURE 4.8
WELL/PIEZOMETER CONSTRUCTION DIAGRAM - FLUSHMOUNT
NYSDEC QUALITY ASSURANCE PROJECT PLAN

WELL/PIEZOMETER CONSTRUCTION DIAGRAM
FLUSHMOUNT

LOCATION ID: MW-36S

Project Name: Scobell Chemical
Project Location: Brighton/Rochester, NY
Project Number: 36171473.28 Task Number .05
Subcontractor: Geologic Drilling Method: HSA/Casing/Core
Development Method: Pump+Surge Development Date: 11/20/15
Bucking Posts/Ballards: NA
Notes:

Date Started: 11/17/15 Date Completed: 11/17/15
Logged By: J. Rawcliffe
Checked By: RMB Checked Date: 12/21/15

Measuring Point Information
Measuring Point (MP) Type: Top Of Riser
MP Elevation (ft): 440.23

Item	Depth BMP (ft)	Elevation (ft)	Description
Surface Casing Elevation		440.78	
Ground Surface Elevation		440.78	Slope Away
Riser Pipe (Top)	0.54' BGS	440.23	Surface Seal Type: Concrete
			Lock Identification: —
			Stickup Casing Diameter: 8"
			Backfill/Grout Type: Bentonite chips
			Riser Pipe Type: Sch 40 PVC
			Riser Pipe ID: 2"
			Borehole Diameter: 4"OB/3"BR
Top of Well Seal	2.5' BGS	438.28	
	7.85' BGS 11/18/15		Type of Seal: Hydrated Bentonite chips 3/8"
Top of Sand Pack	8.0' BGS		
Top of Screen	10' BGS		Screen Type: Sch 40 PVC
		430.78	Screen ID: 2"
DTW		432.93	Screen Slot Size: 0.01"
			Screen Length: 5'
			Filter/Sand Pack Type: #0 Silica Sand
Base of Screen	15.0' BGS	425.78	
End Cap	15.1' BGS	425.68	Sump: Slip cap = 0.1'
Drilled Depth	15.1' BGS	425.68	Fallback/Backfill: —
Bottom of Exploration	15.1' BGS	425.68	
Bedrock Surface	9.0' BGS	431.78	

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FIGURE 4.8
WELL/PIEZOMETER CONSTRUCTION DIAGRAM - FLUSHMOUNT
NYSDEC QUALITY ASSURANCE PROJECT PLAN

WELL/PIEZOMETER CONSTRUCTION DIAGRAM
FLUSHMOUNT

LOCATION ID: MW-37S

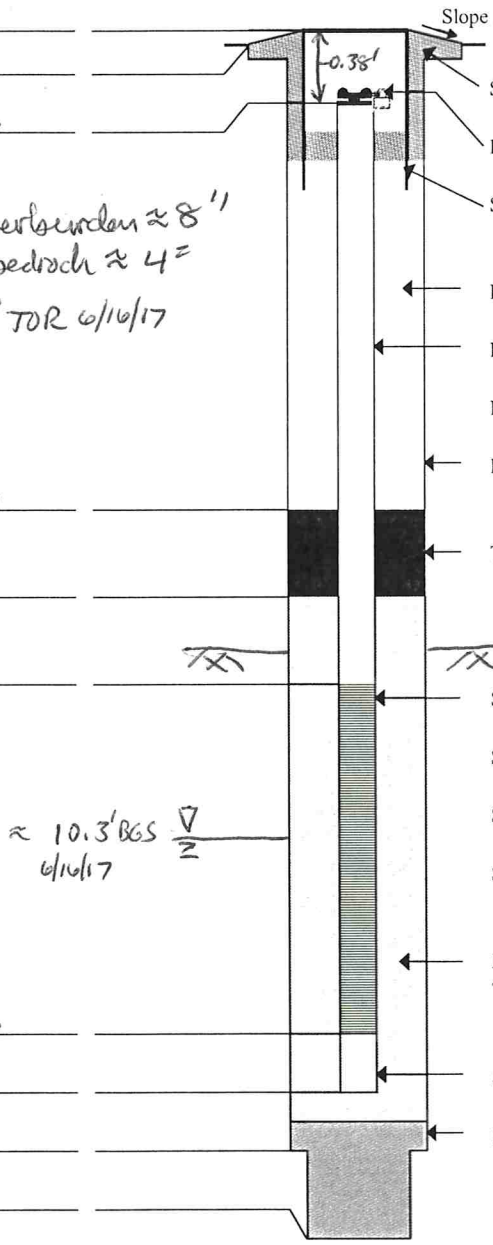
Project Name:	Scobell Chemical -NYSDOT Site 828076	Date Started:	6/6/17
Project Location:	Rochester, NY	Date Completed:	6/7/17
Project Number:	36171473.28	Logged By:	J. Rawcliffe
Task Number	05	Checked By:	MHL
Subcontractor:	Geologic	Checked Date:	6/22/17
Drilling Method:	HSA/HX core		
Development Method:	Pump + surge		
Development Date:	6/7 - 6/16/17		
Bucking Posts/Ballards:	NA		
Notes:	Located at 98 Croydon Street		

Measuring Point Information

Measuring Point (MP) Type: Top Of Riser

MP Elevation (ft):

Item	Depth BMP (ft)	Elevation (ft)	Description
Surface Casing Elevation	Flush 0		
Ground Surface Elevation			
Riser Pipe (Top)	0.38' BGS		
Top of Well Seal	2.0' BGS		
Top of Sand Pack	4.0' BGS		
Top of Screen	5.7' BGS		
Base of Screen	15.7' BGS		
End Cap	15.9' BGS		
Drilled Depth	16.5' BGS		
Bottom of Exploration	16.5' BGS		
Bedrock Surface	5' BGS		



Surface Seal Type: Cement

Lock Identification:

Stickup Casing Diameter: 0 - Flush mount

Backfill/Grout Type: #0 Sand/Native

Riser Pipe Type: Sch 40 PVC

Riser Pipe ID: 2"

Borehole Diameter: 4" (HX core)
8" HSA Overburden

Type of Seal: Bentonite chips (Enviroplug - medium)

Screen Type: Sch 40 PVC

Screen ID: 2"

Screen Slot Size: 0.01"

Screen Length: 10'

Filter/Sand Pack Type: US Silica Industrial Quartz sand NJ #0

Sump:

Fallback/Backfill: 0.6'

Borehole diameter in overburden ≈ 8"
Borehole diameter in bedrock ≈ 4"
Depth to water = 9.89' TOR 6/16/17

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JRawcliffe

FIGURE 4.8
WELL/PIEZOMETER CONSTRUCTION DIAGRAM - FLUSHMOUNT
NYSDEC QUALITY ASSURANCE PROJECT PLAN

WELL/PIEZOMETER CONSTRUCTION DIAGRAM
FLUSHMOUNT

LOCATION ID: MW-38S

Project Name: Scobell Chemical -NYSDOT Site 828076
Project Location: Rochester, NY
Project Number: ~~B~~617147328 Task Number .05
Subcontractor: Geologic Drilling Method: HSA/HX core/ Tricone (3")
Development Method: Pump and surge Development Date: 6/8-6/16/17
Bucking Posts/Ballards: NA
Notes: located at #90 - #100 Newcastle Street

Date Started: 6/7/17 Date Completed: 6/8/17
Logged By: J. Rawcliffe
Checked By: MW Checked Date: 6/22/17

Measuring Point Information
Measuring Point (MP) Type: Top Of Riser
MP Elevation (ft):

Item	Depth BMP (ft)	Elevation (ft)	Description
Surface Casing Elevation	Flush (0)		Slope Away
Ground Surface Elevation			
Riser Pipe (Top)	0.29' BGS		Surface Seal Type: Cement
			Lock Identification:
			Stickup Casing Diameter: 8" Flush mount Aluminum casing
			Backfill/Grout Type: #0 sand/native
			Riser Pipe Type: Sch 40 PVC
			Riser Pipe ID: 2"
			Borehole Diameter: Overburden 6" HSAs BR - 3" Tricone
Top of Well Seal	3.8' BGS		Type of Seal: Bentonite chips Enviroplug medium
Top of Sand Pack	6.0' BGS		
			7.5' BGS
Top of Screen	8.2' BGS		Screen Type: Sch 40 PVC slotted
		≈10.6' BGS 6/16/17	Screen ID: 2"
			Screen Slot Size: 0.01"
			Screen Length: 10'
			Filter/Sand Pack Type: US Silica Industrial Quartz Sand NJ #0
Base of Screen	18' BGS		
End Cap	18.2' BGS		Sump:
Drilled Depth	18.5' BGS		Fallback/Backfill: 0.3'
Bottom of Exploration	18.5' BGS		
Bedrock Surface	7.5' BGS		

Overburden drilled with 3¼" ID HSAs to 6"
Set 4" Casing
Initial BR drilling used 3" OD Tricone
Completed with newer 3" OD Tricone

WL = 10.28' TOR 6/16/17

0.29'

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FIGURE 4.8
WELL/PIEZOMETER CONSTRUCTION DIAGRAM - FLUSHMOUNT
NYSDEC QUALITY ASSURANCE PROJECT PLAN

WELL/PIEZOMETER CONSTRUCTION DIAGRAM
FLUSHMOUNT

LOCATION ID: MW-39S

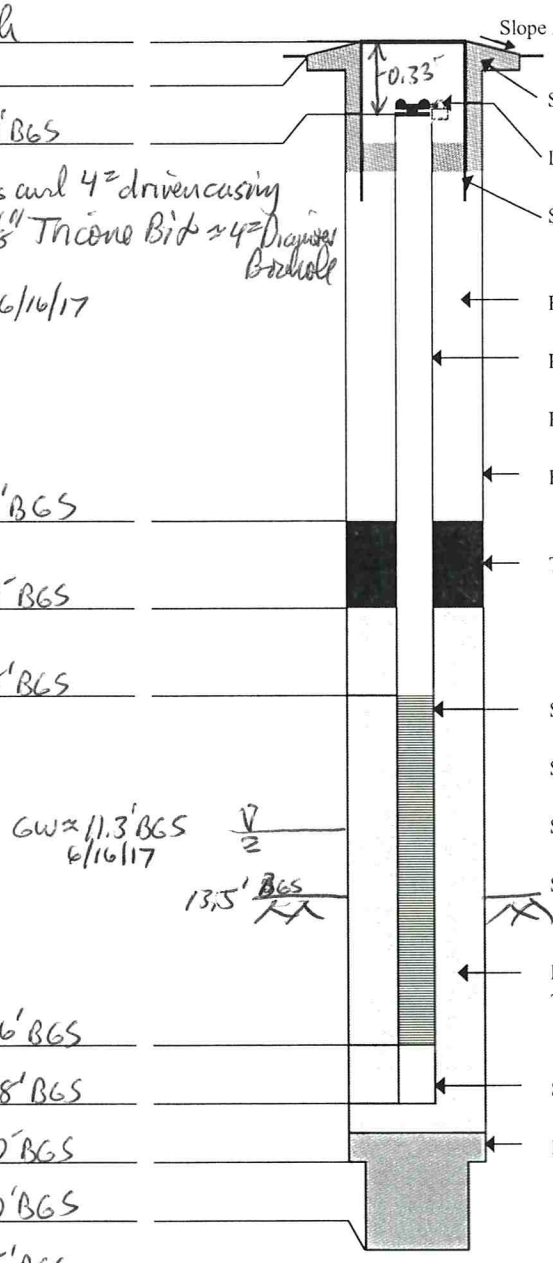
Project Name:	Scobell Chemical -NYSDOT Site 828076	Date Started:	6/8/17 Date Completed: 6/9/17
Project Location:	Rochester, NY	Logged By:	J. Rawcliffe
Project Number:	~~36~~17147328 Task Number .05	Checked By:	MJH Checked Date: 6/22/17
Subcontractor:	Geologic	Drilling Method:	HSA/4"Casing/3⅞" Tricone
Development Method:	Pump and surge	Development Date:	6/9-6/16/17
Bucking Posts/Ballards:	NA		
Notes:	Located at 38 Gaslight Lane		

Measuring Point Information

Measuring Point (MP) Type: Top Of Riser

MP Elevation (ft):

Item	Depth BMP (ft)	Elevation (ft)	Description
Surface Casing Elevation	Flush		
Ground Surface Elevation			
Riser Pipe (Top)	0.33' BGS		
OB borehole 3¼" HSAs and 4" driven casing BR drilled with 3⅞" Tricone Bit ≈ 4" Diameter Borehole			
GW = 10.93' TOR 6/16/17			
Top of Well Seal	3.9' BGS		
Top of Sand Pack	6.4' BGS		
Top of Screen	6.8' BGS		
GW ≈ 11.3' BGS 6/16/17			
13.5' BGS			
Base of Screen	16.6' BGS		
End Cap	16.8' BGS		
Drilled Depth	18.0' BGS		
Bottom of Exploration	18.0' BGS		
Bedrock Surface	≈13.5' BGS		



Surface Seal Type:	Cement
Lock Identification	
Stickup Casing Diameter:	Flushmount 8" diameter Aluminum
Backfill/Grout Type:	#0 sand and native
Riser Pipe Type:	Sch 40 PVC
Riser Pipe ID:	2"
Borehole Diameter:	4-6" in overburden 3⅞" in bedrock
Type of Seal:	Bentonite chips Enviroplug - medium
Screen Type:	Sch 40 PVC slotted
Screen ID:	2"
Screen Slot Size:	0.01"
Screen Length:	10'
Filter/Sand Pack Type:	US Silica Industrial Quartz sand NJ #0
Sump:	
Fallback/Backfill:	17.5'

NOT TO SCALE

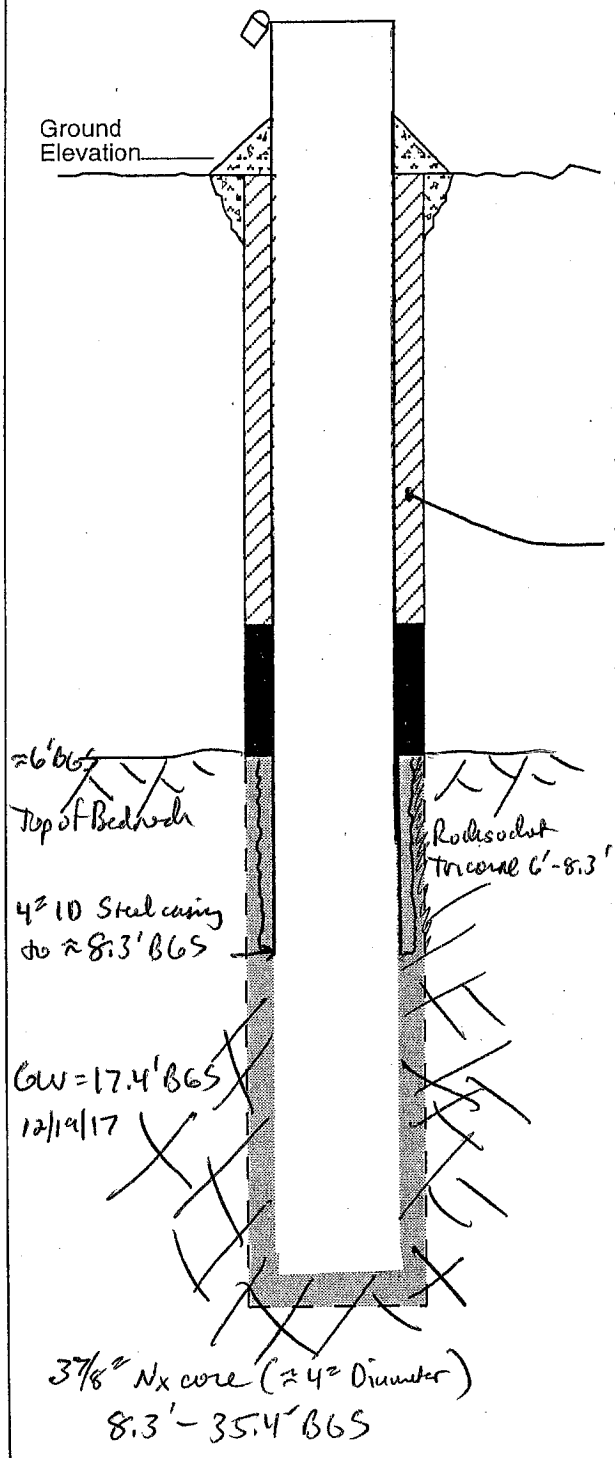
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FIGURE 4.8
WELL/PIEZOMETER CONSTRUCTION DIAGRAM - FLUSHMOUNT
NYSDEC QUALITY ASSURANCE PROJECT PLAN

MONITORING WELL CONSTRUCTION DIAGRAM

Project: Scotwell Chemical ~~AOC~~ MW-27D
Project No.: 361714732803
Boring No.: –
Date Installed: 12/14/17
Field Technician: Jerry Rawcliffe

Driller: Steve Laramie, Northstar
Drilling Method: HSA (overburden) Core (bedrock)
Development Method: Pump and surge.



Stick-up of Casing Above Ground Surface: 2.0'

Type of Surface Seal/Other Protection: Grout

Type of Surface Casing: NA - 4" casing grouted into bedrock

ID of Surface Casing: 4" ID

Diameter of Borehole: 10" overburden / 4" bedrock

Riser Pipe ID: NA - Open Hole bedrock

Type of Riser Pipe: NA

Type of Backfill: Cement/bentonite grout

Depth of Top of Seal: NA

Type of Seal: NA

Depth of Top of Sand: NA

Depth of Top of Screen: NA

Type of Screen: Open hole bedrock - 4" borehole

Slot Size x Length: NA

ID of Screen: NA

Type of Sandpack: NA

Depth of Bottom of ~~Screen~~ Grouted casing = 8.3' BGS

Depth of Sediment Sump with Plug: NA

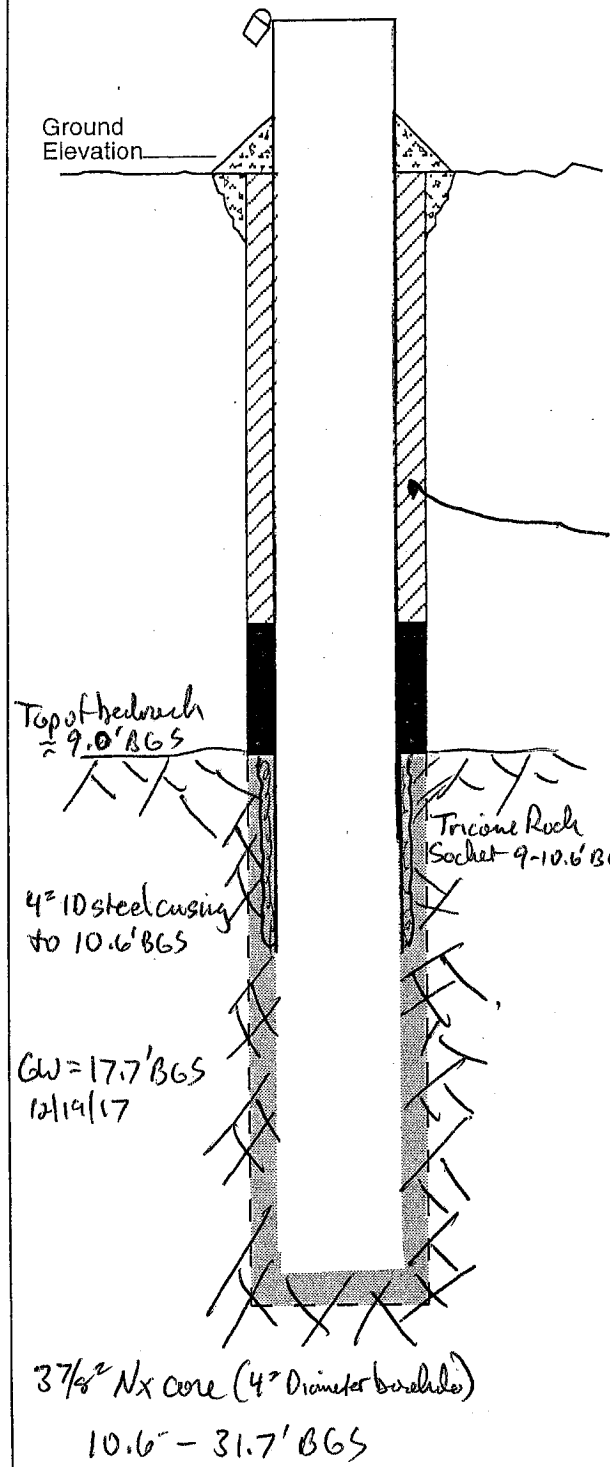
Depth of Bottom of Borehole: 35.4' BGS

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2002040a L3

MONITORING WELL CONSTRUCTION DIAGRAM

Project: Scobell Chemical AOC: MW-28D Driller: Steve Hammie - Northstar
Project No.: 3617147328.03 Boring No.: — Drilling Method: HSA (overburden) Core (Bedrock)
Date Installed: 12/18/17 Development Method: Pump and surge
Field Technician: Jerry Rawcliffe



Stick-up of Casing Above Ground Surface: _____

Type of Surface Seal/Other Protection: Grout

Type of Surface Casing: NA - 4" ID steel casing grouted into bedrock.

ID of Surface Casing: 4" ID

Diameter of Borehole: 10" - overburden / 4" bedrock

Riser Pipe ID: NA - Open hole bedrock

Type of Riser Pipe: NA

Type of Backfill: Cement/bentonite grout

Depth of Top of Seal: NA

Type of Seal: NA

Depth of Top of Sand: NA

Depth of Top of Screen: NA

Type of Screen: Open hole bedrock = 4" borehole

Slot Size x Length: NA

ID of Screen: NA

Type of Sandpack: NA

Depth of Bottom of ~~Screen~~ Grouted Casing = 10.6' BGS

Depth of Sediment Sump with Plug: NA

Depth of Bottom of Borehole: 31.7' BGS

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2002040a L3

WELL/PIEZOMETER CONSTRUCTION DIAGRAM
FLUSHMOUNT

LOCATION ID: EW-01

Project Name: Scobell Chemical
Project Location: Rochester/Brighton, NY
Project Number: 361621614 3 Task Number .03
Subcontractor: Nothnagle Drilling Drilling Method: HSA, Core, Tri Cone
Development Method: Pump and surge Development Date:
Bucking Posts/Ballards: NA

Date Started: 4/4/22 Date Completed: 4/6/22
Logged By: Jerry Rawcliffe
Checked By: CRS Checked Date: 6/29/22

Notes: Overburden drilled with 4¼" ID augers, 6" ID temporary casing set, rock cored with HQ core, then reamed with 5⅞" tri cone bit. ≈4970 gallons lost to formation during drilling

Measuring Point Information

Measuring Point (MP) Type: Top Of Riser
MP Elevation (ft): 451.63

Item	Depth BMP (ft)	Elevation (ft)	Description
Surface Casing Elevation	+0.9	452.5	
Ground Surface Elevation	+0.5	452.1	Slope Away
Riser Pipe (Top)	0	451.63	Surface Seal Type: Flushmount
			Lock Identification: NA
			Stickup Casing Diameter: 18-inch
WL = 17.6' BGS 4/8/22			Backfill/Grout Type: Some cave in - cement/bentonite grout
			Riser Pipe Type: Sch 40 PVC
			Riser Pipe ID: 4"
Top of Well Seal	6.0 BGS	446.1	Borehole Diameter: OB - 6½" BR - 5⅞"
BR - 8.4' BGS			Type of Seal: Bentonite chip (Hole plug 3/8")
Top of Sand Pack	11.7' BGS	440.4	
Top of Screen	24.6' BGS	427.5	Screen Type: Sch 40 PVC, wire wrapped
			Screen ID: 4"
			Screen Slot Size: 0.02"
			Screen Length: 20'
			Filter/Sand Pack Type: #0 Filpro Silica Filter media
Base of Screen	33.9' BGS	418.2	
End Cap	34.4' BGS	417.7	Sump: 0.5'
Drilled Depth	34.6' BGS	417.9	Fallback/Backfill: NA
Bottom of Exploration	34.6' BGS	417.9	
Bedrock Surface	8.4' BGS	443.2	

NOT TO SCALE

EW-01 Drilled at 6-7° Angle dipping North.

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FIGURE 4.8
WELL/PIEZOMETER CONSTRUCTION DIAGRAM - FLUSHMOUNT
NYSDEC QUALITY ASSURANCE PROJECT PLAN

WELL/PIEZOMETER CONSTRUCTION DIAGRAM
FLUSHMOUNT

LOCATION ID: EW-02

Project Name: Scobell Chemical
Project Location: Rochester/Brighton, NY
Project Number: 3616216143 Task Number .03
Subcontractor: Nothnagle Drilling Drilling Method: HSA, Core, Tri Cone
Development Method: Pump and surge Development Date:
Bucking Posts/Ballards: NA

Date Started: 4/7/22 Date Completed: 4/8/22
Logged By: Jerry Rawcliffe
Checked By: CRS Checked Date: 6/29/22

Notes: Overburden drilled with 4½" ID HSA augers, 6" ID temporary steel casing set, rock cored with HQ core, then reamed with 5 7/8" OD tricone bit. ≈ 4460 gallons lost to formation during drilling

Measuring Point Information

Measuring Point (MP) Type: Top Of Riser
MP Elevation (ft): 453.22

Item	Depth BMP (ft)	Elevation (ft)	Description
Surface Casing Elevation	+0.5	453.7	Slope Away
Ground Surface Elevation	+0.5	453.7	Flushmount
Riser Pipe (Top)	0	453.22	Surface Seal Type:
			Lock Identification: NA
			Stickup Casing Diameter: 18-inch
WL = 18.9' BGS 4/8/22 1240			Backfill/Grout Type: Cement bentonite Grout
			Riser Pipe Type: Sched. 40 PVC
			Riser Pipe ID: 4"
			Borehole Diameter: 6½" OB, 5 7/8" BR
Top of Well Seal	8.9' BGS	444.8	
	10.4' BGS		10.4' BGS Type of Seal: Bentonite chip (Holeplug 3/8")
Top of Sand Pack	12.6' BGS	441.1	
Top of Screen	25.2' BGS	428.5	Screen Type: Sch 40 PVC wire wrapped.
			Screen ID: 4"
			Screen Slot Size: 0.02"
			Screen Length: 20'
			Filter/Sand Pack Type: #0 Filpro - Quartz filtration media.
Base of Screen	34.7' BGS	419.0	
End Cap	35.2' BGS	418.5	Sump:
Drilled Depth	35.6' BGS	418.9	Fallback/Backfill: NA
Bottom of Exploration	35.6' BGS	418.9	
Bedrock Surface	10.4' BGS	443.3	

NOT TO SCALE

EW-02 Drilled at ≈ 5° angle dipping west.

MACTEC
511 Congress Street, Portland Maine 04101

FIGURE 4.8
WELL/PIEZOMETER CONSTRUCTION DIAGRAM - FLUSHMOUNT
NYSDEC QUALITY ASSURANCE PROJECT PLAN

PARSONS ENGINEERING SCIENCE, INC.
WELL DEVELOPMENT OBSERVATIONS

SITE NAME: Scobell Chemical Site
PROJECT NUMBER: 733128

WELL NUMBER: MW-1D
WEATHER:
DATE: June 29, 1998
TIME: 1:58 PM

DEVELOPER: Dillman of Parsons ES
of

DESCRIPTION OF WELL

Total Depth: 46
Diameter: 2"
Screen Depth: 36-46
Development Method: Grundfos Pump

GROUNDWATER PURGING

Initial Static Water Level: 23.50 DTW (TOC)

One Well Volume:

					3 Volumes
2-Inch Casing:	25.5	Feet of Water x 0.16 Gallons/Foot =	4	Gallons	12
3-Inch Casing:		Feet of Water x 0.36 Gallons/Foot =		Gallons	
4-Inch Casing:		Feet of Water x 0.65 Gallons/Foot =		Gallons	

Volume of groundwater purged: 40 Gallons
Purging Device: Grundfos Pump
Purge Water Disposition (e.g., contained): contained in drums

FIELD MEASUREMENTS

Time	Temp. (Degrees C)	pH	Conductivity (uS/cm)	Turbidity (NTUs)	Comments
1:58					Began pumping - problem generator
2:39					Resume pumping - new generator
2:47					5 gal purged, sulfur odor
3:10					4 gal purged - well dry, let recharge
3:37					5 gal. purged - sulfur odor
4:30					5 gal pumped
5:04					5 gal pumped
5:34					5 gal pumped
6:13					6 gal pumped
6:36					5 gal purged (TOTAL 40 gal)
					See next page for
					monitoring readings

PARSONS ENGINEERING SCIENCE, INC.
WELL DEVELOPMENT OBSERVATIONS

SITE NAME: Scobell Chemical Site
PROJECT NUMBER: 733128

WELL NUMBER: MW-1D
WEATHER:
DATE: June 29, 1998
TIME: 1:58 PM

DEVELOPER: Dillman of Parsons ES
of

DESCRIPTION OF WELL

Total Depth: 46
Diameter: 2"
Screen Depth: 36-46
Development Method: Grundfos Pump

GROUNDWATER PURGING

Initial Static Water Level: 23.50 DTW (TOC)
One Well Volume:

					3 Volumes
2-Inch Casing:	25.5	Feet of Water x 0.16 Gallons/Foot =	4	Gallons	12
3-Inch Casing:		Feet of Water x 0.36 Gallons/Foot =		Gallons	
4-Inch Casing:		Feet of Water x 0.65 Gallons/Foot =		Gallons	

Volume of groundwater purged: 40 Gallons
Purging Device: Grundfos
Purge Water Disposition (e.g., contained): contained in drums

FIELD MEASUREMENTS

Time	Temp. (Degrees C)	pH	Conductivity (uS/cm)	Turbidity (NTUs)	Comments	Redox (mV)
4:41	15.3	6.89	8600	6.8	3.10 (DO)	-243
4:59	15.4	6.92	8340	14	1.08	-299.4
5:14	15.1	6.55	8240	15.5	0.69	-309.8
5:30	14.8	6.90	7890	9	0.64	-307.7
5:45	14.6	6.94	6800	5	0.78	-314.1
6:07	14.7	6.93	7460	22	0.75	-301.3
6:22	14.8	6.73	7330	13.3	0.49	-316.1
6:36	14.3	6.90	7400	5.4	0.63	-304.5

PARSONS ENGINEERING SCIENCE, INC.
WELL DEVELOPMENT OBSERVATIONS

SITE NAME: Scobell Chemical Site
PROJECT NUMBER: 733128

WELL NUMBER: MW-2D
DATE: June 30, 1998
WEATHER: Heavy rain, lightning
TIME:

DEVELOPER: Dillman of Parsons ES
of

DESCRIPTION OF WELL
Total Depth: 36'
Diameter: 2"
Screen Depth: 26-36'
Development Method: Grundfos Pump/Bailing

GROUNDWATER PURGING
Initial Static Water Level: 23.91 DTW (TOC)
One Well Volume:

					3 Volumes
2-Inch Casing:	15.09	Feet of Water x 0.16 Gallons/Foot =	2.4	Gallons	7.2
3-Inch Casing:		Feet of Water x 0.36 Gallons/Foot =		Gallons	
4-Inch Casing:		Feet of Water x 0.65 Gallons/Foot =		Gallons	

Volume of groundwater purged: 45 Gallons
Purging Device: Grundfos Pump/Bailing
Purge Water Disposition (e.g., contained): contained in drums

FIELD MEASUREMENTS

Time	Temp. (Degrees C)	pH	Conductivity (uS/cm)	Turbidity (NTUs)	Comments
11:35					Begin Pumping
11:50					5 gal. pumped
12:18					5 gal pumped
12:33					5 gal pumped
1:00					5 gal pumped odor
1:28					5 gal pumped odor
1:54					5 gal pumped
2:05					storms - shut down
4:05					Resume pumping, pump shutoff
6:00					Begin Hand Bailing
6:05					5 gal bailed
6:18					5 gal bailed
6:40					5 gal bailed
6:56					5 gal bailed (Total 45)

PARSONS ENGINEERING SCIENCE, INC.
WELL DEVELOPMENT OBSERVATIONS

SITE NAME: Scobell Chemical Site
PROJECT NUMBER: 733128

WELL NUMBER: MW-2D
DATE: June 30, 1998
WEATHER: Heavy rain, lightning
TIME:

DEVELOPER: Dillman of
of

DESCRIPTION OF WELL
Total Depth: 36' Diameter: 2"
Screen Depth: 26-36'
Development Method: Grundfos Pump / Bailing

GROUNDWATER PURGING
Initial Static Water Level: 23.91 DTW (Toc)
One Well Volume:

					3 Volumes
2-Inch Casing:	15.09	Feet of Water x 0.16 Gallons/Foot =	2.4	Gallons	7.2
3-Inch Casing:		Feet of Water x 0.36 Gallons/Foot =		Gallons	
4-Inch Casing:		Feet of Water x 0.65 Gallons/Foot =		Gallons	

Volume of groundwater purged: 45 Gallons
Purging Device: Grundfos Pump / Bailing
Purge Water Disposition (e.g., contained): Contained in drums

FIELD MEASUREMENTS

Time	Temp. (Degrees C)	pH	Conductivity (uS/cm)	Turbidity (NTUs)	Comments		
11:35		7.7	85		Began pumping		
12:01	12.7	7.7	859		2.13 (DO)	-23.2	
12:15	15.3	7.01	927		2.08	-36.1	
12:30	13.3	6.83	894		2.45	-16.2	
12:56	13.8	6.85	863	25	0.0	-14.7	
1:22	15.6	7.00	876	105	2.91	-56.1	
1:32	14.1	6.98	878	65	1.61	-34.1	
1:46	14.1	6.96	895	27	1.35	-28.5	
2:06	13.7	6.96	844	30.5	1.62		
2:15	13.7	6.98			1.07	-30.6	
6:10	12.1	7.05	845	turbid	2.88	-34.4	Hand Bailed
6:18	11.6	7.72	833	turbid	3.42	-41.9	
6:30	12.6	7.26	824	turbid	3.28	-99.8	
6:40	11.9	7.19	792	turbid	4.62	-45.2	
6:55	11.7	7.17	794	gray-turbid	4.94	-31.5	

PARSONS ENGINEERING SCIENCE, INC.
WELL DEVELOPMENT OBSERVATIONS

SITE NAME: Scobell Chemical Site
PROJECT NUMBER: 733128

WELL NUMBER: MW-3D
WEATHER:
DATE: July 2, 1998
TIME:

DEVELOPER: Dillman of Parsons ES
of

DESCRIPTION OF WELL

Total Depth: 37.5'
Diameter: 2"
Screen Depth: 26-36
Development Method: Bailing / Pumping

GROUNDWATER PURGING

Initial Static Water Level: 20.61 BTW (TOC)

One Well Volume:

					3 Volumes
2-Inch Casing:	19.89	Feet of Water x 0.16 Gallons/Foot =	3.2	Gallons	9.6
3-Inch Casing:		Feet of Water x 0.36 Gallons/Foot =		Gallons	
4-Inch Casing:		Feet of Water x 0.65 Gallons/Foot =		Gallons	

Volume of groundwater purged: = 5.5 Gallons
Purging Device: Bailer / Grundfos
Purge Water Disposition (e.g., contained): contained in drums

FIELD MEASUREMENTS

Time	Temp. (Degrees C)	pH	Conductivity (uS/cm)	Turbidity (NTUs)	Comments
1:30					began bailing
1:41					4.5 gal, well depleted
					water had chemical odor
2:03					began pumping
2:05					water to surface, depleted
					very slow recovery
3:40	13.8	7.70	2450	cloudy	DO - 4.02, Redox -238.4
3:57		7.71	2520	52 F	DO - 5.60, Redox -244
4:05					bail another gallon of water
↳	12.3	7.66	3050	94	DO - 3.78, Redox 254.
					DO readings unreliable -
					aeration of samples
					Total removed = 5.5 gal.

PARSONS ENGINEERING SCIENCE, INC.
WELL DEVELOPMENT OBSERVATIONS

SITE NAME: Scobell Chemical Site
PROJECT NUMBER: 733128

WELL NUMBER: MW-4D
WEATHER: Cloudy, rain, high 60's
DATE: July 1, 1998
TIME:

DEVELOPER: Dillman of Parsons ES
of

DESCRIPTION OF WELL

Total Depth: 36.5'
Diameter: 2"
Screen Depth: 35-25'
Development Method: Bailing

GROUNDWATER PURGING

Initial Static Water Level: 15.32 BTW (TOC)

One Well Volume:

					3 Volumes
2-Inch Casing:	19.68	Feet of Water x 0.16 Gallons/Foot =	3.1	Gallons	9.45
3-Inch Casing:		Feet of Water x 0.36 Gallons/Foot =		Gallons	
4-Inch Casing:		Feet of Water x 0.65 Gallons/Foot =		Gallons	

Volume of groundwater purged: 24 Gallons
Purging Device: Bailer
Purge Water Disposition (e.g., contained): contained in drums

FIELD MEASUREMENTS

Time	Temp. (Degrees C)	pH	Conductivity (uS/cm)	Turbidity (NTUs)	Comments
9:05					Begin bailing
9:20					7.5 gal bailed, 4" DNAPL
					brown, oily, strong odor, in
					bailer
9:25					9 gal bailed (TOTAL)
9:50					4 gal bailed, more
					DNAPL near bottom of well
					= 4" in bailer, = 2" in next
					bailer.
11:35 7/2/98					5 gal strong odor, gray-silver, slight sheen
11:43					2.5 gal DNAPL - brown oily
12:15					3.5 gal 6" DNAPL in bailer
					TOTAL 24 gallons
Parameters not measured due to DNAPL.					

PARSONS ENGINEERING SCIENCE, INC.
WELL DEVELOPMENT OBSERVATIONS

SITE NAME: Scobell Chemical Site
PROJECT NUMBER: 733128

WELL NUMBER: MW-45 WEATHER:
DATE: July 1, 1998 July 2, 1998 TIME:

DEVELOPER: Dillman of Parsons ES
of

DESCRIPTION OF WELL

Total Depth: 14.5 Diameter: 2"
Screen Depth: 4.5-14.5'
Development Method: Bailing / Grundfos Pump

GROUNDWATER PURGING

Initial Static Water Level: 12.22 DTW (TOC) 6-29-98

One Well Volume: 3 Volumes

2-Inch Casing:	5.28	Feet of Water x 0.16 Gallons/Foot =	.84	Gallons	2.5
3-Inch Casing:		Feet of Water x 0.36 Gallons/Foot =		Gallons	
4-Inch Casing:		Feet of Water x 0.65 Gallons/Foot =		Gallons	

Volume of groundwater purged: 49 Gallons
Purging Device: Bailer / Grundfos Pump
Purge Water Disposition (e.g., contained): Contained in drums

FIELD MEASUREMENTS

Time	Temp. (Degrees C)	pH	Conductivity (uS/cm)	Turbidity (NTUs)	Comments	Redox
9:40	10.7	6.93			1.17 (DO)	+163.0
9:46	10.7	6.90			0.99	+ 161
9:51	10.7	6.90	591	6	1.01	+ 155.6
9:57	10.7	6.86	586		0.93	+ 148.2
10:02	10.7	6.88	594	5.7	0.93	+ 138.2
10:07	10.7	6.93	591	6	0.93	+ 140.1
10:11	10.8	6.99	587		0.93	+ 134
10:17	10.8	6.97	587	5	0.94	+ 135.1

PARSONS ENGINEERING SCIENCE, INC.
WELL DEVELOPMENT OBSERVATIONS

SITE NAME: Scobell Chemical Site
PROJECT NUMBER: 733128

WELL NUMBER: MW-4S
WEATHER:
DATE: July 1, 1998, July 2, 1998
TIME:

DEVELOPER: Dillman of Parsons ES
of

DESCRIPTION OF WELL

Total Depth: 14.5
Diameter: 2"
Screen Depth: 4.5-14.5'
Development Method: Bailing / Grundfos Pump

GROUNDWATER PURGING

Initial Static Water Level: 12.22 DTW (TOC) 6-29-98

One Well Volume:

					3 Volumes
2-Inch Casing:	5.28	Feet of Water x 0.16 Gallons/Foot =	.84	Gallons	2.5
3-Inch Casing:		Feet of Water x 0.36 Gallons/Foot =		Gallons	
4-Inch Casing:		Feet of Water x 0.65 Gallons/Foot =		Gallons	

Volume of groundwater purged: 49 Gallons
Purging Device: Bailer / Grundfos Pump
Purge Water Disposition (e.g., contained): Contained in drums

FIELD MEASUREMENTS

Time	Temp. (Degrees C)	pH	Conductivity (uS/cm)	Turbidity (NTUs)	Comments
6:37 PM					Began Bailing
6:54 PM					5 gal. - turbid, brown, no odor
8:38-8:47 AM					4 gal. - no DNAPL bailed
9:30					begin pumping
9:35					5 gal
9:41					4 gal
9:47					5 gal
9:52					4 gal
9:58					5+ gal
10:02					4 gal
10:08					5 gal
10:13					4 gal
10:18 AM					5 gal (TOTAL 49 gal)

PARSONS ENGINEERING SCIENCE, INC.
WELL DEVELOPMENT OBSERVATIONS

SITE NAME: Scobell Chemical Site
PROJECT NUMBER: 733128

WELL NUMBER: MW-5S
DATE: July 1, 1998
WEATHER: cloudy, rain, high 60's
TIME:

DEVELOPER: Dillman of Parsons ES
of

DESCRIPTION OF WELL

Total Depth: 13
Screen Depth: 13-3'
Development Method: Bailing/Grundfos Pump
Diameter: 2"

GROUNDWATER PURGING

Initial Static Water Level: 13.49 (DTW - TOC) 6-29-98

One Well Volume:

					3 Volumes
2-Inch Casing:	2.51	Feet of Water x 0.16 Gallons/Foot =	.4	Gallons	1.2
3-Inch Casing:		Feet of Water x 0.36 Gallons/Foot =		Gallons	
4-Inch Casing:		Feet of Water x 0.65 Gallons/Foot =		Gallons	

Volume of groundwater purged: 43 Gallons
Purging Device: Bailer/Grundfos pump
Purge Water Disposition (e.g., contained): contained in drums

FIELD MEASUREMENTS

Time	Temp. (Degrees C)	pH	Conductivity (uS/cm)	Turbidity (NTUs)	Comments
5:10	13.5	6.84	674		0.27 (DO)
5:15	13.5	6.83	659	8	0.63
5:22	13.5	6.87	651	3.6	0.19
5:34	13.8	6.95	653	4	0.17
5:40	13.2	7.0	656	3.9	0.30
5:45	13.0	6.99	647	6	0.12
5:51	12.9	7.02	651	4	0.16
5:56	13.0	7.00			0.13
6:01	12.9	7.02	639	4.6	0.15

PARSONS ENGINEERING SCIENCE, INC.
WELL DEVELOPMENT OBSERVATIONS

SITE NAME: Scobell Chemical Site
PROJECT NUMBER: 733128

WELL NUMBER: MW-5S
WEATHER: cloudy, rain, high 60's
DATE: July 1, 1998
TIME:

DEVELOPER: Dillman of Parsons ES
of

DESCRIPTION OF WELL

Total Depth: 13
Diameter: 2"
Screen Depth: 13-3'
Development Method: Bailing / Grundfos pump

GROUNDWATER PURGING

Initial Static Water Level: 13.49 OTW (TOC) 6-29-98

One Well Volume: 3 Volumes

2-Inch Casing:	2.51	Feet of Water x 0.16 Gallons/Foot =	.4	Gallons	1.2
3-Inch Casing:		Feet of Water x 0.36 Gallons/Foot =		Gallons	
4-Inch Casing:		Feet of Water x 0.65 Gallons/Foot =		Gallons	

Volume of groundwater purged: 43 Gallons
Purging Device: Grundfos Pump / Bailer
Purge Water Disposition (e.g., contained): contained in drums

FIELD MEASUREMENTS

Time	Temp. (Degrees C)	pH	Conductivity (uS/cm)	Turbidity (NTUs)	Comments
4:08					Begin bailing
4:22					5 gal. bailed
4:31					5 gal. bailed, turbid
4:50					begin pumping
5:04					5 gal. pumped
5:14					5 gal. pumped
5:26					5 gal pumped
5:36					4 gal pumped, no color
5:47					5 gal pumped
5:50					4 gal pumped
6:03					5 gal pumped (Total 43 gal)

PARSONS ENGINEERING SCIENCE, INC.
WELL DEVELOPMENT OBSERVATIONS

SITE NAME: Scobell Chemical Site
PROJECT NUMBER: 733128

WELL NUMBER: MW-5D
DATE: July 1, 1998
WEATHER: cloudy, rain, high 60's
TIME:

DEVELOPER: Dillman of Parsons ES
of

DESCRIPTION OF WELL

Total Depth: 32.5 Diameter: 2"
Screen Depth: 22.5-32.5
Development Method: Bailing / Grundfos Pump

GROUNDWATER PURGING

Initial Static Water Level: 13.65 DTW (TOC)
One Well Volume:

					3 Volumes
2-Inch Casing:	24	Feet of Water x 0.16 Gallons/Foot =	3.84	Gallons	11.5
3-Inch Casing:		Feet of Water x 0.36 Gallons/Foot =		Gallons	
4-Inch Casing:		Feet of Water x 0.65 Gallons/Foot =		Gallons	

Volume of groundwater purged: 57 Gallons
Purging Device: Bailer / Grundfos Pump
Purge Water Disposition (e.g., contained): contained in drums

FIELD MEASUREMENTS

Time	Temp. (Degrees C)	pH	Conductivity (uS/cm)	Turbidity (NTUs)	Comments
8:20					5 gal bailed
8:30					5 gal bailed
8:37					5 gal bailed, odor
8:46					5 gal bailed
1:37					complete development with pump
1:37					5 gal pumped
1:50					5 gal pumped
1:59					4 gal. pumped
2:08					5 gal pumped
2:16					4 gal pumped
2:26					5 gal pumped
2:35					4 gal. pumped
2:46					Surged well
2:45					5 gal pumped TOTAL 57 gal

PARSONS ENGINEERING SCIENCE, INC.
WELL DEVELOPMENT OBSERVATIONS

SITE NAME: Scobell Chemical Site
PROJECT NUMBER: 733128

WELL NUMBER: MW-5D
WEATHER: Cloudy, rain, high 60's
DATE: July 1, 1998
TIME:

DEVELOPER: Dillman of Parsons ES
Bailing / Grundfos Pump of

DESCRIPTION OF WELL

Total Depth: 32.5 Feet
Diameter: 2"
Screen Depth: 22.5 - 32.5
Development Method: Bailing / Grundfos

GROUNDWATER PURGING

Initial Static Water Level: 13.65 DTW (TOC)

One Well Volume:

					3 Volumes
2-Inch Casing:	24	Feet of Water x 0.16 Gallons/Foot =	3.84	Gallons	11.5
3-Inch Casing:		Feet of Water x 0.36 Gallons/Foot =		Gallons	
4-Inch Casing:		Feet of Water x 0.65 Gallons/Foot =		Gallons	

Volume of groundwater purged: 57 Gallons
Purging Device: Bailer / Grundfos Pump
Purge Water Disposition (e.g., contained): Contained in drums

FIELD MEASUREMENTS

Time	Temp. (Degrees C)	pH	Conductivity (uS/cm)	Turbidity (NTUs)	Comments	Redox
1:40	12.3	7.12	690		2.20 (DO)	-14.9
1:47	12.6	7.03	666		1.40	-24.1
1:56	12.6	6.99	657		1.03	-41.1
2:06	12.7	6.97	659	4.5	1.31	-49.6
2:14	12.7	7.02	656		0.62	-60.4
2:20	12.6	7.04	648	5.2	0.80	-70.9
2:32	12.6	7.08	655	13	0.67	-90.5
2:40					surged well	
2:41	12.6	7.10	653	84	0.54	-98.8
2:49	12.8	7.11	665	40	0.47	-99.4

WELL DEVELOPMENT RECORD

MACTEC
511 Congress Street, Portland Maine 04101

PROJECT NAME		LOCATION ID	PAGE
Scobell Chemical		MW-11D	1 OF 1
PROJECT NUMBER		START TIME	START DATE
3612112226 -02.mnt		1720	7/31/12
WELL INSTALLATION DATE	WELL DEVELOPMENT DATE	END TIME	END DATE
7/25/12	7/31/12	1730	8/1/12

WELL DIAMETER (INCHES): ☐ 1-IN. ☐ 2-IN. ☒ 4-IN. ☐ 6-IN. ☐ 8-IN. ☐ OTHER

CASING DIAMETER (INCHES): ☒ 4-IN. ☐ 6-IN. ☐ 8-IN. ☐ 10-IN. ☐ 12-IN. ☐ OTHER

MEASUREMENT POINT (MP): ☐ TOP OF RISER (TOR) NA ☒ TOP OF CASING (TOC) ☐ OTHER

INITIAL WELL DEPTH (BMP)	28.25 FT	FINAL WELL DEPTH (BMP)	28.25 FT	SCREEN LENGTH	NA OPEN HOLE Bedrock. FT	PROT. CASING STICKUP (AGS)	2.10 FT
INITIAL DTW (BMP)	22.15 FT	SEDIMENT REMOVED (final well depth - initial well depth)	— FT	SCREENED INTERVAL (BMP)	CORED 14 TO 27.5	TOC/TOR DIFFERENCE	NA FT
WATER COLUMN (initial well depth - initial depth to water)	6.1 FT	DTW AFTER DEVELOP. (BMP)	21.27 FT	PUMPING DEPTH (BMP)	27.4 FT	PID AMBIENT AIR	< 0.1 PPM
CALCULATED GAL/VOL (column X well diameter squared X 0.041)	4.0 GAL	FINAL RECOVERY DEPTH (BMP)	22.15 FT	APPROXIMATE RECHARGE RATE	— FT/MIN	PID WELL MOUTH	12.9 PPM
TOTAL VOL. PURGED (mL per minute X total minutes X 0.00026 gal/mL)	18 GAL	FINAL RECOVERY TIME (elapsed)	— MIN	FLUIDS LOST DURING DRILLING	≈ 150 GAL	END OF WELL DEVELOPMENT SAMPLE TAKEN?	Y ☐ N ☒

FIELD PARAMETERS

TIME	DTW (ft BMP)	PURGE RATE (mL/min)	TEMP. (°C)	SP. CONDUCTANCE (mS/cm)	pH (units)	DISS. O_2 (mg/L)	TURBIDITY (ntu)	REDOX (mv)	VOLUME PURGED (gal)	TOTAL GALLONS	COMMENTS
1745	22.15	Start pumping									1755 Purge dry at 4.5 gallons
	28.1		14.7	6.603	7.2	2.7	93	5	—	5	
8/1/12 1040	27.55		—	—	—	—	—	—	2.5	10	8/1/12 1040
1101	28.2		—	—	—	—	—	—	3.8	15	
1721	21.45		—	—	—	—	—	—	4.5	18	

EQUIPMENT DOCUMENTATION

☒	DEDICATED SUBMERSIBLE	☒	WATER LEVEL METER
☐	SURGE BLOCK	☒	PID YSI 556 MPS (Mini Rae 2000)
☐	BAILER ☐ 2" ☐ ____	☒	WQ METER YSI 556 MPS
☐	GRUNDFOS ☐ 2" ☐ 4"	☒	TURB. METER Hach 2100P
☐	OTHER	☐	OTHER
		☐	OTHER
		☐	OTHER

WELL DEVELOPMENT CRITERIA

	Y	N
Well water clear to the unaided eye?		☒
Sediment thickness remaining in well <1.0% of screen length?	☒	
Total water removed = a minimum of 5x calculated well volumes plus 5x drilling fluids lost?		☒
Turbidity < 5NTUs?		☒
10% change in field parameters?		☒

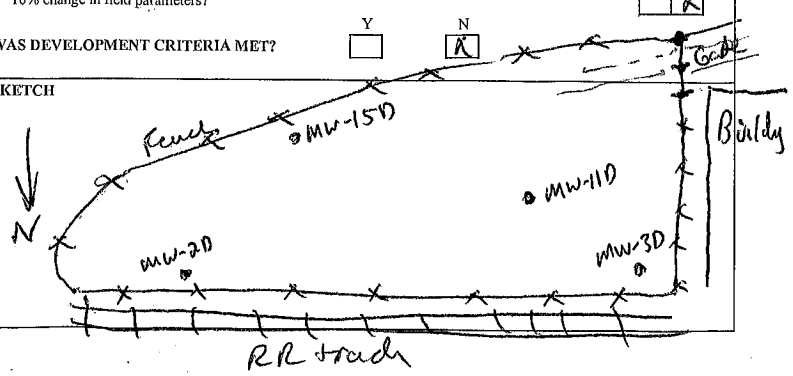
WAS DEVELOPMENT CRITERIA MET? Y ☐ N ☒

ADDITIONAL OBSERVATIONS

PURGE WATER CONTAINERIZED: Y ☒ N ☐

NUMBER OF GALLONS GENERATED: 18

SKETCH



NOTES

Well Developer Signature: Jerry Rawcliffe
Checked By: RCM 9/25/12

Print Name: Jerry Rawcliffe
Date: 8/1/12

WELL DEVELOPMENT RECORD

MACTEC
511 Congress Street, Portland Maine 04101

PROJECT NAME: Scobell Chemical		LOCATION ID: MW-12D	PAGE: 1 OF 1
PROJECT NUMBER: 3612112226 -02.000		START TIME: 1200	START DATE: 7/31/12
WELL INSTALLATION DATE: 7/27/12	WELL DEVELOPMENT DATE: 7/31/12	END TIME: 1650	END DATE: 7/31/12

WELL DIAMETER (INCHES): ☐ 1-IN. ☐ 2-IN. ☒ 4-IN. ☐ 6-IN. ☐ 8-IN. ☐ OTHER

CASING DIAMETER (INCHES): ☒ 4-IN. ☐ 6-IN. ☐ 8-IN. ☐ 10-IN. ☐ 12-IN. ☐ OTHER

MEASUREMENT POINT (MP): ☐ TOP OF RISER (TOR) NA ☒ TOP OF CASING (TOC) ☐ OTHER

INITIAL WELL DEPTH (BMP)	37.95 FT	FINAL WELL DEPTH (BMP)	37.95 FT	SCREEN LENGTH	NA OPEN HOLE BEDROCK Cored FT	PROT. CASING STICKUP (AGS)	2.0 FT
INITIAL DTW (BMP)	14.35 FT	SEDIMENT REMOVED (final well depth - initial well depth)	— FT	SCREENED INTERVAL (BMP)	17.0 TO 37.95	TOC/TOR DIFFERENCE	NA FT
WATER COLUMN (initial well depth - initial depth to water)	23.6 FT	DTW AFTER DEVELOP. (BMP)	34.95 FT	PUMPING DEPTH (BMP)	37.9' FT	PID AMBIENT AIR	< 0.1 PPM
CALCULATED GAL/VOL (column X well diameter squared X 0.041)	15.5 GAL	FINAL RECOVERY DEPTH (BMP)	13.91 FT	APPROXIMATE RECHARGE RATE	— FT/MIN	PID WELL MOUTH	3.8 PPM
TOTAL VOL. PURGED (mL per minute X total minutes X 0.00026 gal/mL)	50 GAL	FINAL RECOVERY TIME (elapsed)	— MIN	FLUIDS LOST DURING DRILLING	~100 GAL	END OF WELL DEVELOPMENT SAMPLE TAKEN?	Y ☐ N ☒

FIELD PARAMETERS

TIME	DTW (ft BMP)	PURGE RATE (mL/min)	TEMP. (°C)	SP. CONDUCTANCE (mS/cm)	pH (units)	DISS. O_2 (mg/L)	TURBIDITY (ntu)	REDOX (mv)	VOLUME PURGED (gal)	TOTAL GALLONS	COMMENTS
1219	14.34	Start purge									Very Hydrogen Sulfide odor
1225	25.35	3225	13.0	5.29	9.0	0.8	42	-255		5 gallons	
1232	29.95	2760	12.7	5.09	8.7	0.5	50	-262		10	
1247	34.78	1290	14.6	3.20	8.5	4.2	140	-234	1	15	
1319	34.75	600	15.6	3.58	8.4	5.6	33	-233		20	
1345	36.25	740	13.8	3.48	8.8	8.1	62	-233		25	pumped dry @ 1337 let recharge
1434	32.65	1930	13.8	3.58	8.6	3.8	64	-230		30	Tubing wet 90 deep over 1425 Resume purge
1456	36.91	880	14.2	3.20	8.3	6.9	23	-210	2	35	
1526	37.85	645	16.7	2.63	8.3	6.4	110	-185		40	pumped dry, recharging
1612	34.55	1075	14.2	2.84	9.3	5.4	25	-206		45	1554 – 29.5' w/ no Resume pumping
1643	34.45	625	14.1	3.04	7.9	6.5	16	-200	3	50	

EQUIPMENT DOCUMENTATION

- ☒ DEDICATED SUBMERSIBLE
- ☐ SURGE BLOCK
- ☐ BAILER ☐ 2" ☐ ____
- ☐ GRUNDFOS ☐ 2" ☐ 4"
- ☐ OTHER

- ☑ WATER LEVEL METER
- ☑ PID MiniRae
- ☑ WQ METER YSI 556 MPS
- ☑ TURB. METER Hach 2100P
- ☐ OTHER
- ☐ OTHER
- ☐ OTHER

WELL DEVELOPMENT CRITERIA

	Y	N
Well water clear to the unaided eye?	☒	☐
Sediment thickness remaining in well <1.0% of screen length?	☒	☐
Total water removed = a minimum of 5x calculated well volumes plus 5x drilling fluids lost?	☐	☒
Turbidity < 5NTUs?	☐	☒
10% change in field parameters?	☐	☒

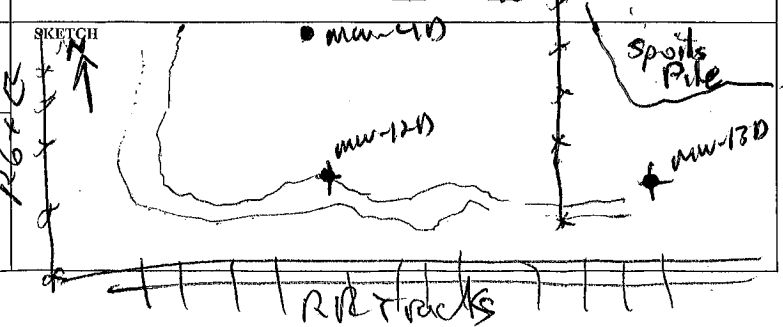
WAS DEVELOPMENT CRITERIA MET? Y ☐ N ☒

ADDITIONAL OBSERVATIONS

PURGE WATER CONTAINERIZED: Y ☒ N ☐

NUMBER OF GALLONS GENERATED: 50

SKETCH



NOTES: Moderately low recharge - Hydrogen Sulfide (rotten eggs) odor.

Well Developer Signature: Jerry Rawcliffe
Checked By: RCW 07/25/12

Print Name: Jerry Rawcliffe
Date: 7/31/12

WELL DEVELOPMENT RECORD

MACTEC
511 Congress Street, Portland Maine 04101

PROJECT NAME	LOCATION ID	PAGE
Scobell Chemical	MW-13D	1 OF 1
PROJECT NUMBER 3612112226 -02.	START TIME 0845	START DATE 7/31/12
WELL INSTALLATION DATE 7/26/12 / WELL DEVELOPMENT DATE 7/31/12	END TIME 1150	END DATE 7/31/12

WELL DIAMETER (INCHES): [ ] 1-IN. [ ] 2-IN. [X] 4-IN. [ ] 6-IN. [ ] 8-IN. [ ] OTHER

CASING DIAMETER (INCHES): [X] 4-IN. [ ] 6-IN. [ ] 8-IN. [ ] 10-IN. [ ] 12-IN. [ ] OTHER

MEASUREMENT POINT (MP): [ ] TOR-OF RISER (TOR) N/A [X] TOP OF CASING (TOC) [ ] OTHER

INITIAL WELL DEPTH (BMP)	43.2 FT	FINAL WELL DEPTH (BMP)	43.2 / 26.11 FT	SCREEN LENGTH	OPEN HOLE BR NA FT	PROT. CASING STICKUP (AGS)	2.10 FT
INITIAL DTW (BMP)	26.16 FT	SEDIMENT REMOVED (final well depth - initial well depth)	— FT	SCREENED INTERVAL (BMP)	Cored 19 TO 41.2	TOC/TOR DIFFERENCE	NA FT
WATER COLUMN (initial well depth - initial depth to water)	17' FT	DTW AFTER DEVELOP. (BMP)	26.11 FT	PUMPING DEPTH (BMP)	43' FT	PID AMBIENT AIR	< 0.1 PPM
CALCULATED GAL/VOL (column X well diameter squared X 0.041)	11.2 GAL	FINAL RECOVERY DEPTH (BMP)	24.92 FT	APPROXIMATE RECHARGE RATE	— FT/MIN	PID WELL MOUTH	< 0.1 PPM
TOTAL VOL. PURGED (mL per minute X total minutes X 0.00026 gal/mL)	50 GAL	FINAL RECOVERY TIME (elapsed)	8/1/12 — MIN	FLUIDS LOST DURING DRILLING	≈200 GAL	END OF WELL DEVELOPMENT SAMPLE TAKEN?	Y [ ] N [X]

FIELD PARAMETERS

TIME	DTW (ft BMP)	PURGE RATE (mL/min)	TEMP. (°C)	SP. CONDUCTANCE (mS/cm)	pH (units)	DISS. O_2 (mg/L)	TURBIDITY (ntu)	REDOX (mv)	VOLUME PURGED (gal)	TOTAL GALLONS	COMMENTS
0857	26.16	Start purging									Water has odor no elevated PID
0910	28.23	840	14.1	1.494	6.6	2.1	13	55	—	5 gallons	
0948	25.75	690	14.7	1.534	6.9	2.2	14	56	—	10 gallons	switched batteries
1002	26.04	1380	14.2	1.546	6.9	2.2	14	63	1.3	15	
1014	26.11	1610	14.0	1.536	7.0	2.3	14	69	—	20	
1025	26.11	1760	13.1	1.547	7.0	2.1	16	60	—	25	Many gallons to drum, 100% Reserve pumping
1103	26.05	1940	13.4	1.557	7.0	2.0	6.8	31	2.7	30	
1114	26.09	1760	13.1	1.560	6.9	1.9	4.2	46	—	35	
1124	26.11	1940	13.3	1.559	6.9	1.9	3.1	58	—	40	
1134	26.11	1940	13.1	1.564	7.0	1.9	4.8	46	4.0	45	
1146	26.11	1610	13.4	1.558	7.1	2.1	4.9	40	4.5	50	

EQUIPMENT DOCUMENTATION

- [X] DEDICATED SUBMERSIBLE
- [ ] SURGE BLOCK
- [ ] BAILER [ ] 2" [ ] ____
- [ ] GRUNDFOS [ ] 2" [ ] 4"
- [ ] OTHER

- [X] WATER LEVEL METER
- [X] PID MiniRae 2000
- [X] WQ METER YSI 556 MPS
- [ ] TURB. METER Hach 2100P
- [ ] OTHER
- [ ] OTHER
- [ ] OTHER

WELL DEVELOPMENT CRITERIA

	Y	N
Well water clear to the unaided eye?	[X]	[ ]
Sediment thickness remaining in well <1.0% of screen length?	[X]	[ ]
Total water removed = a minimum of 5x calculated well volumes plus 5x drilling fluids lost?	[ ]	[X]
Turbidity < 5NTUs?	[X]	[ ]
10% change in field parameters?	[X]	[ ]

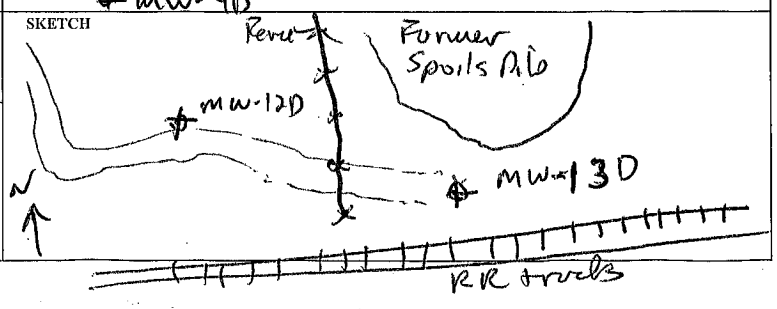
WAS DEVELOPMENT CRITERIA MET? Y [ ] N [X] ← MW-40

ADDITIONAL OBSERVATIONS

PURGE WATER CONTAINERIZED: Y [X] N [ ]

NUMBER OF GALLONS GENERATED: 50

SKETCH



NOTES: Slight odor no water

Well Developer Signature: Jerry Rawcliffe
Print Name: Jerry Rawcliffe
Checked By: RCM 9/25/12
Date: 7/31/12

WELL DEVELOPMENT RECORD

MACTEC
511 Congress Street, Portland Maine 04101

PROJECT NAME		LOCATION ID	PAGE
Scobell Chemical		MW-15D	1 OF 1
PROJECT NUMBER		START TIME	START DATE
3612112226 -02.xxx		1445	7/30/12
WELL INSTALLATION DATE	WELL DEVELOPMENT DATE	END TIME	END DATE
7/30/12	7/30/12	1745	7/30/12

WELL DIAMETER (INCHES): [ ] 1-IN. [ ] 2-IN. [X] 4-IN. [ ] 6-IN. [ ] 8-IN. [ ] OTHER

CASING DIAMETER (INCHES): [X] 4-IN. [ ] 6-IN. [ ] 8-IN. [ ] 10-IN. [ ] 12-IN. [ ] OTHER

MEASUREMENT POINT (MP): [ ] TOP OF RISER (TOR) (NA) [X] TOP OF CASING (TOC) [ ] OTHER

INITIAL WELL DEPTH (BMP)	38.0 FT	FINAL WELL DEPTH (BMP)	38.0 FT	SCREEN LENGTH	OPEN HOLE Bedrock FT	PROT. CASING STICKUP (AGS)	2.1 FT
INITIAL DTW (BMP)	20.5' FT	SEDIMENT REMOVED (final well depth - initial well depth)	— FT	SCREENED INTERVAL (BMP)	13 TO 38'	TOC/TOR DIFFERENCE	NA FT
WATER COLUMN (initial well depth - initial depth to water)	18' FT	DTW AFTER DEVELOP. (BMP)	30.96 FT	PUMPING DEPTH (BMP)	35.5' FT	PID AMBIENT AIR	< 0.1 PPM
CALCULATED GAL/VOL (column X well diameter squared X 0.041)	11.8 GAL	FINAL RECOVERY DEPTH (BMP)	24.30 ~~24.30~~ 8/1/12 FT	APPROXIMATE RECHARGE RATE	— FT/MIN	PID WELL MOUTH	4.3 PPM
TOTAL VOL. PURGED (mL per minute X total minutes X 0.00026 gal/mL)	80 GAL	FINAL RECOVERY TIME (elapsed)	— MIN	FLUIDS LOST DURING DRILLING	≈250 GAL	END OF WELL DEVELOPMENT SAMPLE TAKEN?	Y [ ] N [X]

FIELD PARAMETERS

TIME	DTW (ft BMP)	PURGE RATE (mL/min)	TEMP. (°C)	SP. CONDUCTANCE (mS/cm)	pH (units)	DISS. O_2 (mg/L)	TURBIDITY (ntu)	REDOX (mv)	VOLUME PURGED (gal)	TOTAL GALLONS	COMMENTS
1538	27.80		17.2	0.848	7.5	4.4	>1000	13	4	60	
1605	29.39	1350	17.1	0.901	7.5	5.9	43	-14	5	60	
1645	30.26	950 ml/min	16.16	1.009	7.4	6.2	20	-34	—	70	
1730	30.96	840 ml/min	16.2	1.111	7.4	6.2	19	-42	6.8	80	

EQUIPMENT DOCUMENTATION

- [X] DEDICATED SUBMERSIBLE
- [ ] SURGE BLOCK
- [ ] BAILER [ ] 2" [ ] ____
- [ ] GRUNDFOS [ ] 2" [ ] 4"
- [X] OTHER Whale pump

- [✓] WATER LEVEL METER
- [✓] PID Mini Rae
- [✓] WQ METER YSI
- [✓] TURB. METER Hach 2100P
- [ ] OTHER
- [ ] OTHER
- [ ] OTHER

WELL DEVELOPMENT CRITERIA

	Y	N
Well water clear to the unaided eye?	X	
Sediment thickness remaining in well <1.0% of screen length?	X	
Total water removed = a minimum of 5x calculated well volumes plus 5x drilling fluids lost?		X
Turbidity < 5NTUs?		X
10% change in field parameters?		X

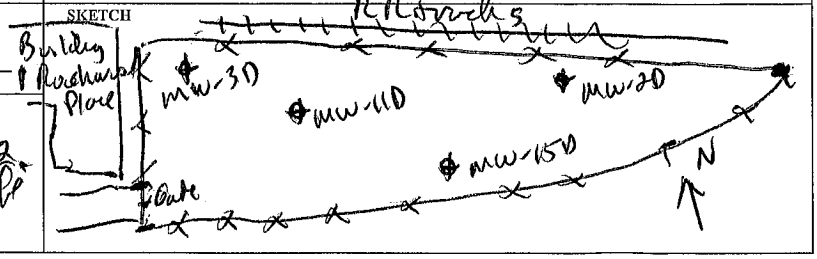
WAS DEVELOPMENT CRITERIA MET? Y [ ] N [X]

ADDITIONAL OBSERVATIONS

PURGE WATER CONTAINERIZED: Y [X] N [ ]

NUMBER OF GALLONS GENERATED: 80

SKETCH



NOTES: Open hole bedrock well - 4" steel casing grouted 2' into rock on 7/26/12. Cored 7/30/12.

Well Developer Signature: Jerry Rawlsville
Print Name: Jerry Rawlsville
Checked By: RCB 9/25/12
Date: 7/30/12

WELL DEVELOPMENT RECORD

MACTEC
511 Congress Street, Portland Maine 04101

PROJECT NAME	SCOBELL CHEMICAL
PROJECT NUMBER	3617147328.03
WELL INSTALLATION DATE	10-23-14
WELL DEVELOPMENT DATE	11-3-14
LOCATION ID	MW-16D
PAGE	1 OF 1
START TIME	N/R
START DATE	11-3-14
END TIME	N/R
END DATE	11-3-14

WELL DIAMETER (INCHES) ☐ 1-IN. ☐ 2-IN. ☐ 4-IN. ☐ 6-IN. ☐ 8-IN. ☑ OTHER ~3.8"

CASING DIAMETER (INCHES) ☑ 4-IN. ☐ 6-IN. ☐ 8-IN. ☐ 10-IN. ☐ 12-IN. ☐ OTHER

MEASUREMENT POINT (MP) ☐ TOP OF RISER (TOR) ☐ TOP OF CASING (TOC) ☐ OTHER

INITIAL WELL DEPTH (BMP)	FT	FINAL WELL DEPTH (BMP)	FT	SCREEN LENGTH	FT	PROT. CASING STICKUP (AGS)	FT
INITIAL DTW (BMP)	FT	SEDIMENT REMOVED (final well depth - initial well depth)	FT	SCREENED INTERVAL (BMP)	TO	TOC/TOR DIFFERENCE	FT
WATER COLUMN (initial well depth - initial depth to water)	FT	DTW AFTER DEVELOP. (BMP) NOT MEASURED	FT	PUMPING DEPTH (BMP)	FT	PID AMBIENT AIR	PPM
CALCULATED GAL/VOL (column X well diameter squared X 0.041)	GAL	FINAL RECOVERY DEPTH (BMP)	FT	APPROXIMATE RECHARGE RATE	FT/MIN	PID WELL MOUTH	PPM
TOTAL VOL. PURGED (mL per minute X total minutes X 0.00026 gal/mL)	GAL	FINAL RECOVERY TIME (elapsed)	MIN	FLUIDS LOST DURING DRILLING	GAL	END OF WELL DEVELOPMENT SAMPLE TAKEN?	Y ☐ N ☐

FIELD PARAMETERS

TIME	DTW (ft BMP)	PURGE RATE (mL/min)	TEMP. (°C)	SP. CONDUCTANCE (mS/cm)	pH (units)	DISS. O_2 (mg/L)	TURBIDITY (ntu)	REDOX (mv)	VOLUME PURGED (gal)	TOTAL GALLONS	COMMENTS
THIS IS AN OPEN HOLE BEDROCK MONITORING WELL.											
DRILLERS ON 11-3-14 DEVELOPED THIS WELL BY USING A WHALE PUMP & HOSE											
ASSEMBLY TO ALTERNATELY SURGE & PUMP. DRILLERS SAID THEY PUMPED/SURGED											
UNTIL THE WELL PRODUCED "GOOD WATER QUALITY."											
ALL DEVELOPMENT WATER WAS DRUMMED FOR OFF-SITE DISPOSAL.											
DRILLING CREW FROM GEOLOGIC NY; STEVE LARAMIE & JOHN WINKS											

EQUIPMENT DOCUMENTATION

- ☐ DEDICATED SUBMERSIBLE
- ☐ SURGE BLOCK
- ☐ BAILER ☐ 2" ☐ ____
- ☐ GRUNDFOS ☐ 2" ☐ 4"
- ☑ OTHER WHALE PUMP

- ☐ WATER LEVEL METER
- ☐ PID ____
- ☐ WQ METER ____
- ☐ TURB. METER ____
- ☐ OTHER ____
- ☐ OTHER ____
- ☐ OTHER

WELL DEVELOPMENT CRITERIA

	Y	N
Well water clear to the unaided eye?	☑	
Sediment thickness remaining in well <1.0% of screen length?		
Total water removed = a minimum of 5x calculated well volumes plus 5x drilling fluids lost?		
Turbidity < 5NTUs?		
10% change in field parameters?		

WAS DEVELOPMENT CRITERIA MET? Y ☐ N ☐

ADDITIONAL OBSERVATIONS

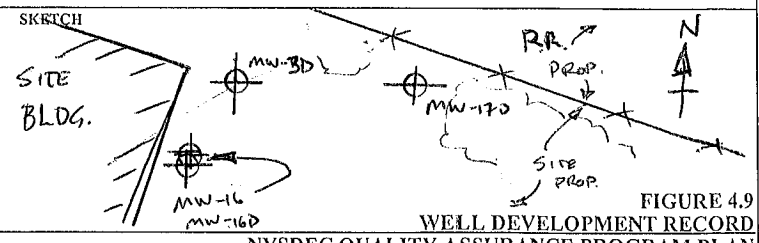
PURGE WATER CONTAINERIZED Y ☑ N ☐

NUMBER OF GALLONS GENERATED ~55 GAL.

NOTES BY DRILLERS

Checked C. Styles 2-2-15

SKETCH



Well Developer Signature: Print Name:

Checked By: Date:

FIGURE 4.9
WELL DEVELOPMENT RECORD
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

WELL DEVELOPMENT RECORD

MACTEC
511 Congress Street, Portland Maine 04101

PROJECT NAME: SCOBELL CHEMICAL	LOCATION ID: MW-17D
PROJECT NUMBER: 3617147328.03	PAGE: 1 OF 1
WELL INSTALLATION DATE: 10-22-14	START TIME: N/R
WELL DEVELOPMENT DATE: 11-3-14	START DATE: 11-3-14
	END TIME: N/R
	END DATE: 11-3-14

WELL DIAMETER (INCHES): ☐ 1-IN. ☐ 2-IN. ☐ 4-IN. ☐ 6-IN. ☐ 8-IN. ☑ OTHER ~3.8"

CASING DIAMETER (INCHES): ☑ 4-IN. ☐ 6-IN. ☐ 8-IN. ☐ 10-IN. ☐ 12-IN. ☐ OTHER

MEASUREMENT POINT (MP): ☐ TOP OF RISER (TOR) ☐ TOP OF CASING (TOC) ☐ OTHER

INITIAL WELL DEPTH (BMP)	FT	FINAL WELL DEPTH (BMP)	FT	SCREEN LENGTH	FT	PROT. CASING STICKUP (AGS)	FT
INITIAL DTW (BMP)	FT	SEDIMENT REMOVED (final well depth - initial well depth)	FT	SCREENED INTERVAL (BMP)	TO	TOC/TOR DIFFERENCE	FT
WATER COLUMN (initial well depth - initial depth to water)	FT	DTW AFTER DEVELOP. (BMP)	FT	PUMPING DEPTH (BMP)	FT	PID AMBIENT AIR	PPM
CALCULATED GAL/VOL (column X well diameter squared X 0.041)	GAL	FINAL RECOVERY DEPTH (BMP)	FT	APPROXIMATE RECHARGE RATE	FT/MIN	PID WELL MOUTH	PPM
TOTAL VOL. PURGED (mL per minute X total minutes X 0.00026 gal/mL)	GAL	FINAL RECOVERY TIME (elapsed)	MIN	FLUIDS LOST DURING DRILLING	GAL	END OF WELL DEVELOPMENT SAMPLE TAKEN?	Y ☐ N ☐

NOT MEASURED

FIELD PARAMETERS

TIME	DTW (ft BMP)	PURGE RATE (mL/min)	TEMP. (°C)	SP. CONDUCTANCE (mS/cm)	pH (units)	DISS. O_2 (mg/L)	TURBIDITY (ntu)	REDOX (mv)	VOLUME PURGED (gal)	TOTAL GALLONS	COMMENTS
	THIS IS AN OPEN HOLE BEDROCK MONITORING WELL.										
	DRILLERS ON 11-3-14 DEVELOPED THIS WELL USING A WHALE PUMP & HOSE										
	ASSEMBLY TO SURGE & PUMP. DRILLERS STATED THEY PUMPED & SURGED										
	APPROX. 55 GALLONS (DRUMMED) AND THAT THERE WAS A SHEEN ON										
	THE WATER AND SOME MATERIAL THAT STUCK TO THE TUBING.										

EQUIPMENT DOCUMENTATION

- ☐ DEDICATED SUBMERSIBLE
- ☐ SURGE BLOCK
- ☐ BAILER ☐ 2" ☐ ____
- ☐ GRUNDFOS ☐ 2" ☐ 4"
- ☑ OTHER WHALE PUMP
- ☐ WATER LEVEL METER
- ☐ PID ____
- ☐ WQ METER ____
- ☐ TURB. METER ____
- ☐ OTHER ____
- ☐ OTHER ____
- ☐ OTHER ____

WELL DEVELOPMENT CRITERIA

	Y	N
Well water clear to the unaided eye?	✓	
Sediment thickness remaining in well <1.0% of screen length?		
Total water removed = a minimum of 5x calculated well volumes plus 5x drilling fluids lost?		
Turbidity < 5NTUs?		
10% change in field parameters?		

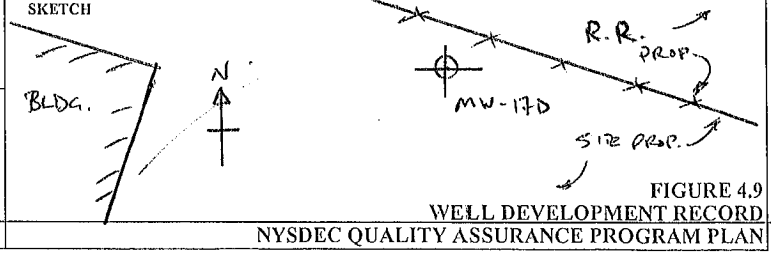
WAS DEVELOPMENT CRITERIA MET? Y ☐ N ☐

ADDITIONAL OBSERVATIONS

PURGE WATER CONTAINERIZED: Y ☑ N ☐

NUMBER OF GALLONS GENERATED: ~55 GAL.

SKETCH



NOTES: BY DRILLERS

Checked C. Stapler 2-2-15

Well Developer Signature: Print Name:

Checked By: Date:

FIGURE 4.9
WELL DEVELOPMENT RECORD
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

WELL DEVELOPMENT RECORD

MACTEC
511 Congress Street, Portland Maine 04101

PROJECT NAME	SCOBELL CHEMICAL
PROJECT NUMBER	3617147328.03
WELL INSTALLATION DATE	11-13-14
WELL DEVELOPMENT DATE	11-19-14
LOCATION ID	MW-18D
PAGE	1 OF 1
START TIME	11:44
START DATE	11-19-14
END TIME	12:25
END DATE	11-19-14

WELL DIAMETER (INCHES): ☐ 1-IN. ☐ 2-IN. ☐ 4-IN. ☐ 6-IN. ☐ 8-IN. ☑ OTHER — 3.8": OPEN-HOLE BEDROCK WELL (13.3' to 28.3')

CASING DIAMETER (INCHES): ☑ 4-IN. ☐ 6-IN. ☐ 8-IN. ☐ 10-IN. ☐ 12-IN. ☐ OTHER

MEASUREMENT POINT (MP): ☐ TOP OF RISER (TOR) ☑ TOP OF CASING (TOC) ☐ OTHER

INITIAL WELL DEPTH (BMP)	29.85 FT (muddy)	FINAL WELL DEPTH (BMP)	NM FT	~~SCREEN~~ OPEN-HOLE LENGTH	15 FT	PROT. CASING STICKUP (AGS)	NM FT
INITIAL DTW (BMP)	12.71 FT	SEDIMENT REMOVED (final well depth - initial well depth)	NM FT	~~SCREENED~~ OPEN-HOLE INTERVAL (BMP)	13.3 TO 28.3 BGS	TOC/TOR DIFFERENCE	— FT
WATER COLUMN (initial well depth - initial depth to water)	~17 FT	DTW AFTER DEVELOP. (BMP)	12.9 FT	PUMPING DEPTH (BMP)	~29 FT	PID AMBIENT AIR	NM PPM
CALCULATED GAL/VOL (column X well diameter squared X 0.041)	~11 GAL	FINAL RECOVERY DEPTH (BMP)	NM FT	APPROXIMATE RECHARGE RATE	NM FT/MIN	PID WELL MOUTH	NM PPM
TOTAL VOL. PURGED (mL per minute X total minutes X 0.00026 gal/mL)	55 GAL	FINAL RECOVERY TIME (elapsed)	NM MIN	FLUIDS LOST DURING DRILLING	NM GAL	END OF WELL DEVELOPMENT SAMPLE TAKEN?	Y ☐ N ☑

FIELD PARAMETERS

TIME	DTW (ft BMP)	PURGE RATE (mL/min)	TEMP. (°C)	SP. CONDUCTANCE (mS/cm)	pH (units)	DISS. O_2 (mg/L)	TURBIDITY (ntu)	REDOX (mv)	VOLUME PURGED (gal)	TOTAL GALLONS	COMMENTS
11:44	Pump is turned on - pump directly into DRUM: PID @ drum bung = 6.8 ppm										
12:25	Pump is turned OFF @ 55 gallons: V = 12.9' B.T.O.C.; NTU = 47.7										
	Alternately SURGE & pump w/ whale pump ASSEMBLY										
			CONSIDER DEVELOPED								

EQUIPMENT DOCUMENTATION

- ☐ DEDICATED SUBMERSIBLE
- ☐ SURGE BLOCK
- ☐ BAILER ☐ 2" ☐ ____
- ☐ GRUNDFOS ☐ 2" ☐ 4"
- ☑ OTHER WHALE PUMP
- ☑ WATER LEVEL METER
- ☑ PID ____
- ☐ WQ METER ____
- ☑ TURB. METER ____
- ☐ OTHER ____
- ☐ OTHER ____
- ☐ OTHER ____

WELL DEVELOPMENT CRITERIA

	Y	N
Well water clear to the unaided eye?	☑	
Sediment thickness remaining in well <1.0% of screen length?	☑	
Total water removed = a minimum of 5x calculated well volumes plus 5x drilling fluids lost?		
Turbidity < 5NTUs?		☑
10% change in field parameters?		☑

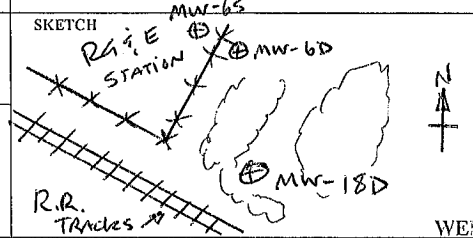
WAS DEVELOPMENT CRITERIA MET? Y ☐ N ☐

ADDITIONAL OBSERVATIONS

PURGE WATER CONTAINERIZED: Y ☑ N ☐

NUMBER OF GALLONS GENERATED: 55 GAL.

SKETCH



NOTES

Well Developer Signature: Thomas D. Longley
Print Name: Thomas D. Longley
Checked By: C. Stapley
Date: 2-2-15

FIGURE 4.9
WELL DEVELOPMENT RECORD
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

WELL DEVELOPMENT RECORD

MACTEC
511 Congress Street, Portland Maine 04101

PROJECT NAME	SCOBELL CHEMICAL
PROJECT NUMBER	3617147328.03
WELL INSTALLATION DATE	11-5-14
WELL DEVELOPMENT DATE	11-17-14
LOCATION ID	MW-20D
PAGE	1 OF 1
START TIME	11:56
START DATE	11-17-14
END TIME	12:48
END DATE	11-17-14

WELL DIAMETER (INCHES): ☐ 1-IN. ☐ 2-IN. ☐ 4-IN. ☐ 6-IN. ☐ 8-IN. ☑ OTHER 3.8" OPEN HOLE BEDROCK WELL

CASING DIAMETER (INCHES): ☑ 4-IN. ☐ 6-IN. ☐ 8-IN. ☐ 10-IN. ☐ 12-IN. ☐ OTHER

MEASUREMENT POINT (MP): ☐ TOP OF RISER (TOR) ☐ TOP OF CASING (TOC) ☐ OTHER

INITIAL WELL DEPTH (BMP)	NM FT	FINAL WELL DEPTH (BMP)	NM FT	~~SCREEN~~ WELL LENGTH	14'-31.5' BGS ~~FT~~	PROT. CASING STICKUP (AGS)	NM FT
INITIAL DTW (BMP)	NM FT	SEDIMENT REMOVED (final well depth - initial well depth)	NM FT	SCREENED INTERVAL (BMP)	TO	TOC/TOR DIFFERENCE	~~NM~~ FT
WATER COLUMN (initial well depth - initial depth to water)	~15 FT	DTW AFTER DEVELOP. (BMP)	NM FT	PUMPING DEPTH (BMP)	~31' BGS FT	PID AMBIENT AIR	NM PPM
CALCULATED GAL/VOL (column X well diameter squared X 0.041)	~10 GAL	FINAL RECOVERY DEPTH (BMP)	NM FT	APPROXIMATE RECHARGE RATE	NM FT/MIN	PID WELL MOUTH	NM PPM
TOTAL VOL. PURGED (mL per minute X total minutes X 0.00026 gal/mL)	30 GAL	FINAL RECOVERY TIME (elapsed)	NM MIN	FLUIDS LOST DURING DRILLING	NM GAL	END OF WELL DEVELOPMENT SAMPLE TAKEN?	Y ☐ N ☑

FIELD PARAMETERS

TIME	DTW (ft BMP)	PURGE RATE (mL/min)	TEMP. (°C)	SP. CONDUCTANCE (mS/cm)	pH (units)	DISS. O_2 (mg/L)	TURBIDITY (ntu)	REDOX (mv)	VOLUME PURGED (gal)	TOTAL GALLONS	COMMENTS
11:56	WHALE Pump	is TURNED ON:	VERY	MUDDY	& REMOVING	MUD FROM	HOLE				
12:05	Pump OFF	AFTER ~5.5 GALS.:	RECHARGE	NOT	ABLE TO	keep up w/	pump	RATE			
12:08	Pump ON:	☑ =	15.68'	B.T.O.C.	prior TO	TURNING	ON	pump:	PID =	82 ppm	on purge water
12:12	Pump OFF @	10 GALS.	TOTAL	PUMPED							
12:24	Pump ON										
12:31	Pump OFF	@ 20	GALLONS	TOTAL							
12:41	Pump ON										
12:48	Pump OFF:	30 GALLONS	TOTAL	PURGED:	NTU =	45.2					
			DEVELOPMENT	COMPLETED							

EQUIPMENT DOCUMENTATION

- ☐ DEDICATED SUBMERSIBLE
- ☐ SURGE BLOCK
- ☐ BAILER ☐ 2" ☐ ____
- ☐ GRUNDFOS ☐ 2" ☐ 4"
- ☑ OTHER WHALE Pump

- ☑ WATER LEVEL METER
- ☑ PID ____
- ☐ WQ METER ____
- ☑ TURB. METER ____
- ☐ OTHER ____
- ☐ OTHER ____
- ☐ OTHER ____

WELL DEVELOPMENT CRITERIA

	Y	N
Well water clear to the unaided eye?	☑	☐
Sediment thickness remaining in well <1.0% of screen length?	☐	☐
Total water removed = a minimum of 5x calculated well volumes plus 5x drilling fluids lost?	☐	☐
Turbidity < 5NTUs?	☐	☑
10% change in field parameters?	☐	☐

WAS DEVELOPMENT CRITERIA MET? Y ☐ N ☐

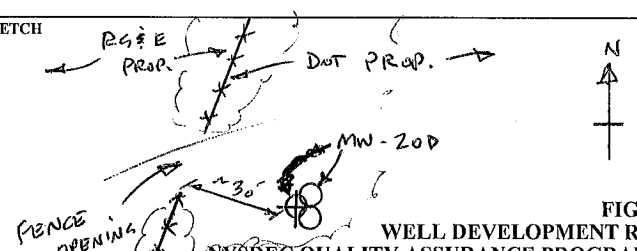
ADDITIONAL OBSERVATIONS

PURGE WATER CONTAINERIZED: Y ☑ N ☐

NUMBER OF GALLONS GENERATED: 30 GALS.

NOTES

SKETCH



Well Developer Signature: Thomas D. Longley
Checked By: C. Stapp
Print Name: Thomas D. Longley
Date: 2-2-15

FIGURE 4.9
WELL DEVELOPMENT RECORD
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

WELL DEVELOPMENT RECORD

MACTEC
511 Congress Street, Portland Maine 04101

PROJECT NAME: SCOBELL CHEMICAL	LOCATION ID: MW-20DD
PROJECT NUMBER: 3617147328.03	START TIME: 10:05
WELL INSTALLATION DATE: 11-11-14	END TIME: 11:45
WELL DEVELOPMENT DATE: 11-17-14	START DATE: 11-17-14 / END DATE: 11-17-14
	PAGE: 1 OF 1

WELL DIAMETER (INCHES): ☐ 1-IN. ☑ 2-IN. ☐ 4-IN. ☐ 6-IN. ☐ 8-IN. ☐ OTHER — 2" PVC WELL IN 3.8" BEDROCK BORING

CASING DIAMETER (INCHES): ☑ 4-IN. ☐ 6-IN. ☐ 8-IN. ☐ 10-IN. ☐ 12-IN. ☐ OTHER

MEASUREMENT POINT (MP): ☐ TOP OF RISER (TOR) ☑ TOP OF CASING (TOC) ☐ OTHER

INITIAL WELL DEPTH (BMP)	NM FT	FINAL WELL DEPTH (BMP)	~52.6' NM FT	SCREEN LENGTH	15 FT	PROT. CASING STICKUP (AGS)	2.4 FT
INITIAL DTW (BMP)	21.04 FT	SEDIMENT REMOVED (final well depth - initial well depth)	NM FT	SCREENED INTERVAL (BMP)	37.6 TO 52.6	TOC/TOR DIFFERENCE	~0.3 FT
WATER COLUMN (initial well depth - initial depth to water)	~31 FT	DTW AFTER DEVELOP. (BMP)	NM FT	PUMPING DEPTH (BMP)	~52 FT	PID AMBIENT AIR	NM PPM
CALCULATED GAL/VOL (column X well diameter squared X 0.041)	5 GAL	FINAL RECOVERY DEPTH (BMP)	NM FT	APPROXIMATE RECHARGE RATE	NM FT/MIN	PID WELL MOUTH	NM PPM
TOTAL VOL. PURGED (mL per minute X total minutes X 0.00026 gal/mL)	~50 GAL	FINAL RECOVERY TIME (elapsed)	NM MIN	FLUIDS LOST DURING DRILLING	NM GAL	END OF WELL DEVELOPMENT SAMPLE TAKEN?	Y ☐ N ☑

FIELD PARAMETERS

TIME	DTW (ft BMP)	PURGE RATE (mL/min)	TEMP. (°C)	SP. CONDUCTANCE (mS/cm)	pH (units)	DISS. O_2 (mg/L)	TURBIDITY (ntu)	REDOX (mv)	VOLUME PURGED (gal)	TOTAL GALLONS	COMMENTS
10:05	TURN ON PUMP: ALTERNATELY SURGE & PUMP TO AT DIFFERENT DEPTHS										
10:13	PUMP OFF:		10 GALLONS PUMPED: VERY DARK WATER: SWL = 22.6' B.T.O.C.								
10:35	PUMP ON		: V. DARK WATER & HIGH HYDROGEN SULFIDE ODOR								
10:42	Pump OFF		AT 10+ GALLONS: 20 TOTAL								
10:49	Pump ON										
10:56	Pump OFF:		AT 10+ GALLONS: 30 TOTAL GALLONS: NTU = 29.7								
11:16	Pump ON:		PID = 412 ppm AT DEVELOPMENT BUCKET								
11:22	Pump OFF:		40 GALLONS TOTAL: NTU = 13.3								
11:38	Pump ON										
11:45	Pump OFF:		50 GALLONS TOTAL: NTU = 9.51								
			DEVELOPMENT COMPLETED								

EQUIPMENT DOCUMENTATION

- ☐ DEDICATED SUBMERSIBLE
- ☐ SURGE BLOCK
- ☐ BAILER ☐ 2" ☐ ____
- ☐ GRUNDFOS ☐ 2" ☐ 4"
- ☑ OTHER WHALE PUMP

- ☑ WATER LEVEL METER
- ☑ PID ____
- ☐ WQ METER ____
- ☑ TURB. METER ____
- ☐ OTHER ____
- ☐ OTHER ____
- ☐ OTHER ____

WELL DEVELOPMENT CRITERIA

	Y	N
Well water clear to the unaided eye?	☑	☐
Sediment thickness remaining in well <1.0% of screen length?	☐	☐
Total water removed = a minimum of 5x calculated well volumes plus 5x drilling fluids lost?	☐	☐
Turbidity < 5NTUs?	☐	☑
10% change in field parameters?	☐	☐

WAS DEVELOPMENT CRITERIA MET? Y ☐ N ☑

ADDITIONAL OBSERVATIONS

PURGE WATER CONTAINERIZED: Y ☑ N ☐

NUMBER OF GALLONS GENERATED: 50 GALS

NOTES: NM = NOT MEASURED
WATER CLEARED UP SIGNIFICANTLY DURING DEVELOP.

Well Developer Signature: T. D. Lorylay
Checked By: C. Stogsdill

Print Name: Thomas D. Lorylay
Date: 2-2-15

SKETCH

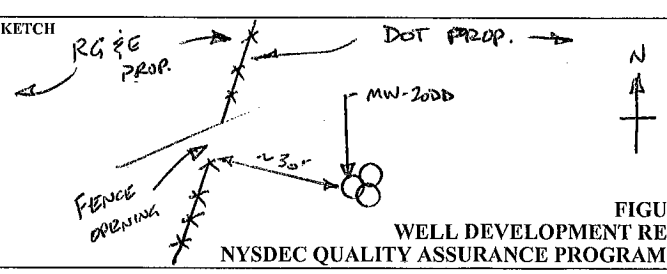


FIGURE 4.9
WELL DEVELOPMENT RECORD
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

WELL DEVELOPMENT RECORD

MACTEC
511 Congress Street, Portland Maine 04101

PROJECT NAME	Scobell Chemical
PROJECT NUMBER	3617147328.03
WELL INSTALLATION DATE	10-31-14
WELL DEVELOPMENT DATE	11-20-14

LOCATION ID	MW-21
PAGE	1 OF 1
START TIME	NM
START DATE	11-20-14
END TIME	NM
END DATE	11-20-14

WELL DIAMETER (INCHES): ☐ 1-IN. ☑ 2-IN. ☐ 4-IN. ☐ 6-IN. ☐ 8-IN. ☐ OTHER

CASING DIAMETER (INCHES): ☑ 4-IN. ☐ 6-IN. ☐ 8-IN. ☐ 10-IN. ☐ 12-IN. ☐ OTHER

MEASUREMENT POINT (MP): ☐ TOP OF RISER (TOR) ☐ TOP OF CASING (TOC) ☐ OTHER

INITIAL WELL DEPTH (BMP)	~11' BGS FT	FINAL WELL DEPTH (BMP)	FT	SCREEN LENGTH	FT	PROT. CASING STICKUP (AGS)	FT
INITIAL DTW (BMP)	NM FT	SEDIMENT REMOVED (final well depth - initial well depth)	FT	SCREENED INTERVAL (BMP)	TO NM	TOC/TOR DIFFERENCE	FT
WATER COLUMN (initial well depth - initial depth to water)	NM FT	DTW AFTER DEVELOP. (BMP)	FT	PUMPING DEPTH (BMP)	FT	PID AMBIENT AIR	PPM
CALCULATED GAL/VOL (column X well diameter squared X 0.041)	NM GAL	FINAL RECOVERY DEPTH (BMP)	FT	APPROXIMATE RECHARGE RATE	FT/MIN	PID WELL MOUTH	PPM
TOTAL VOL. PURGED (mL per minute X total minutes X 0.00026 gal/mL)	~25 GAL	FINAL RECOVERY TIME (elapsed)	MIN	FLUIDS LOST DURING DRILLING	GAL	END OF WELL DEVELOPMENT SAMPLE TAKEN?	Y ☒ N ☑

FIELD PARAMETERS

TIME	DTW (ft BMP)	PURGE RATE (mL/min)	TEMP. (°C)	SP. CONDUCTANCE (mS/cm)	pH (units)	DISS. O_2 (mg/L)	TURBIDITY (ntu)	REDOX (mv)	VOLUME PURGED (gal)	TOTAL GALLONS	COMMENTS
	STEVE LARAMIE USED WHALE PUMP TO DEVELOP THIS WELL:										
	PURGED ~ 25 TOTAL GALLONS										
	REMOVED SEDIMENT, WATER CLEAR TO EYE & APPEARED SED.-FREE										
	PUMPED WELL DRY NUMEROUS TIMES WHILE SURGING W/ PUMP:										
				Consider developed							

EQUIPMENT DOCUMENTATION

- ☐ DEDICATED SUBMERSIBLE
- ☐ SURGE BLOCK
- ☐ BAILER ☐ 2" ☐ ____
- ☐ GRUNDFOS ☐ 2" ☐ 4"
- ☑ OTHER Whale pump
- ☐ WATER LEVEL METER
- ☐ PID ____
- ☐ WQ METER ____
- ☐ TURB. METER ____
- ☐ OTHER ____
- ☐ OTHER ____
- ☐ OTHER ____

WELL DEVELOPMENT CRITERIA

	Y	N
Well water clear to the unaided eye?	☑	
Sediment thickness remaining in well <1.0% of screen length?		
Total water removed = a minimum of 5x calculated well volumes plus 5x drilling fluids lost?		
Turbidity < 5NTUs?		
10% change in field parameters?		

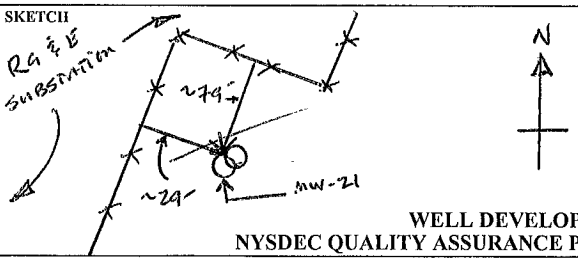
WAS DEVELOPMENT CRITERIA MET? Y ☐ N ☐

ADDITIONAL OBSERVATIONS

PURGE WATER CONTAINERIZED: Y ☑ N ☐

NUMBER OF GALLONS GENERATED: ____

SKETCH



NOTES

Well Developer Signature: Thomas D. Longley
Print Name: Thomas D. Longley
Checked By: C. Stapleton
Date: 2-2-15

FIGURE 4.9
WELL DEVELOPMENT RECORD
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

WELL DEVELOPMENT RECORD

MACTEC
511 Congress Street, Portland Maine 04101

PROJECT NAME		LOCATION ID	PAGE
SCOBELL CHEMICAL		MW-21D	1 OF 1
PROJECT NUMBER		START TIME	START DATE
3617 147 328.03		14:02	11-19-14
WELL INSTALLATION DATE	WELL DEVELOPMENT DATE	END TIME	END DATE
11-4-14	11-19-14	15:43	11-19-14

WELL DIAMETER (INCHES): ☐ 1-IN. ☐ 2-IN. ☐ 4-IN. ☐ 6-IN. ☐ 8-IN. ☑ OTHER 3.8": OPEN-HOLE BEDROCK WELL

CASING DIAMETER (INCHES): ☑ 4-IN. ☐ 6-IN. ☐ 8-IN. ☐ 10-IN. ☐ 12-IN. ☐ OTHER

MEASUREMENT POINT (MP): ☐ TOP OF RISER (TOR) ☑ TOP OF CASING (TOC) ☐ OTHER

INITIAL WELL DEPTH (BMP)	31.4 FT	FINAL WELL DEPTH (BMP)	NM FT	~~SCREEN~~ OPEN-HOLE LENGTH	14.5 TO 29.5 15' FT BGS	PROT. CASING STICKUP (AGS)	NM FT
INITIAL DTW (BMP)	10.75 FT	SEDIMENT REMOVED (final well depth - initial well depth)	NM FT	SCREENED INTERVAL (BMP)	14.5 TO 29.5 BGS	TOC/TOR DIFFERENCE	— FT
WATER COLUMN (initial well depth - initial depth to water)	20.65 FT	DTW AFTER DEVELOP. (BMP)	NM FT	PUMPING DEPTH (BMP)	~20 FT BGS	PID AMBIENT AIR	NM PPM
CALCULATED GAL/VOL (column X well diameter squared X 0.041)	~18 GAL	FINAL RECOVERY DEPTH (BMP)	NM FT	APPROXIMATE RECHARGE RATE	NM FT/MIN	PID WELL MOUTH	NM PPM
TOTAL VOL. PURGED (mL per minute X total minutes X 0.00026 gal/mL)	~55 GAL	FINAL RECOVERY TIME (elapsed)	NM MIN	FLUIDS LOST DURING DRILLING	NM GAL	END OF WELL DEVELOPMENT SAMPLE TAKEN?	Y ☐ N ☑

FIELD PARAMETERS

TIME	DTW (ft BMP)	PURGE RATE (mL/min)	TEMP. (°C)	SP. CONDUCTANCE (mS/cm)	pH (units)	DISS. O_2 (mg/L)	TURBIDITY (ntu)	REDOX (mv)	VOLUME PURGED (gal)	TOTAL GALLONS	COMMENTS
14:02	Pump is turned on										
14:13	Pump is off = well is dewatered										
14:17	▽	= 27.5'	B.T.O.C.								
14:25	▽	= 22'	B.T.O.C.								
14:34	▽	= 17'	B.T.O.C.								
14:50	▽	= 13'	B.T.O.C.								
14:52	Turn on Pump										
15:00	NTU of DEVEL. water = 35.3				units						
15:02	Pump OFF										
15:33	Pump ON: ▽	= 14'	B.T.O.C.								
15:37	NTU of DEVEL. water = 13.2				units						
15:43	Pump off: Well goes dry			: 620 ppm	w/ PID	at drum Bung: NTU = 8.02 units: Consider developed					

EQUIPMENT DOCUMENTATION

- ☐ DEDICATED SUBMERSIBLE
- ☐ SURGE BLOCK
- ☐ BAILER ☐ 2" ☐ ____
- ☐ GRUNDFOS ☐ 2" ☐ 4"
- ☑ OTHER Whale Pump

- ☑ WATER LEVEL METER
- ☑ PID ____
- ☐ WQ METER ____
- ☑ TURB. METER ____
- ☐ OTHER ____
- ☐ OTHER ____
- ☐ OTHER ____

WELL DEVELOPMENT CRITERIA

	Y	N
Well water clear to the unaided eye?	☑	
Sediment thickness remaining in well <1.0% of screen length?		
Total water removed = a minimum of 5x calculated well volumes plus 5x drilling fluids lost?		
Turbidity < 5NTUs?		☑
10% change in field parameters?		

WAS DEVELOPMENT CRITERIA MET? Y ☐ N ☐

ADDITIONAL OBSERVATIONS

PURGE WATER CONTAINERIZED: Y ☑ N ☐

NUMBER OF GALLONS GENERATED: ~50/55

NOTES

Well Developer Signature: Thomas D. Longley
Checked By: C.J. 2/9/15
Print Name: Thomas D. Longley
Date: 2-2-15

SKETCH

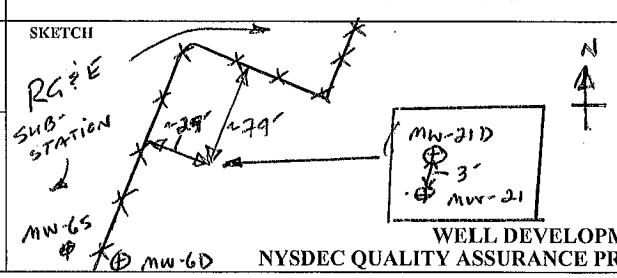


FIGURE 4.9
WELL DEVELOPMENT RECORD
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

WELL DEVELOPMENT RECORD

MACTEC
511 Congress Street, Portland Maine 04101

PROJECT NAME	SCOBELL CHEMICAL
PROJECT NUMBER	3617147328.03
WELL INSTALLATION DATE	11-5-14
WELL DEVELOPMENT DATE	11-17-14
LOCATION ID	MW-22D
PAGE	1 OF 1
START TIME	08:28
START DATE	11-17-14
END TIME	09:43
END DATE	11-17-14

WELL DIAMETER (INCHES): ☐ 1-IN. ☐ 2-IN. ☐ 4-IN. ☐ 6-IN. ☐ 8-IN. ☑ OTHER 3.8"

CASING DIAMETER (INCHES): ☑ 4-IN. ☐ 6-IN. ☐ 8-IN. ☐ 10-IN. ☐ 12-IN. ☐ OTHER

MEASUREMENT POINT (MP): ☐ TOP OF RISER (TOR) ☑ TOP OF CASING (TOC) ☐ OTHER

INITIAL WELL DEPTH (BMP)	33.5 FT	FINAL WELL DEPTH (BMP)	NM FT	SCREEN LENGTH	— FT	PROT. CASING STICKUP (AGS)	NM FT
INITIAL DTW (BMP)	17.28 FT	SEDIMENT REMOVED (final well depth - initial well depth)	NM FT	SCREENED INTERVAL (BMP)	— TO —	TOC/TOR DIFFERENCE	— FT
WATER COLUMN (initial well depth - initial depth to water)	16.22 FT	DTW AFTER DEVELOP. (BMP)	17.27 FT	PUMPING DEPTH (BMP)	~33 FT	PID AMBIENT AIR	0.0 PPM
CALCULATED GAL/VOL (column X well diameter squared X 0.041)	10.6 GAL	FINAL RECOVERY DEPTH (BMP)	— FT	APPROXIMATE RECHARGE RATE	NM FT/MIN	PID WELL MOUTH	NM PPM
TOTAL VOL. PURGED (~~ml per minute X total minutes X 0.00026 gal/mL~~)	30 GAL	FINAL RECOVERY TIME (elapsed)	— MIN	FLUIDS LOST DURING DRILLING	NM GAL	END OF WELL DEVELOPMENT SAMPLE TAKEN?	Y ☐ N ☑

FIELD PARAMETERS

TIME	DTW (ft BMP)	PURGE RATE (mL/min)	TEMP. (°C)	SP. CONDUCTANCE (mS/cm)	pH (units)	DISS. O_2 (mg/L)	TURBIDITY (ntu)	REDOX (mv)	VOLUME PURGED (gal)	TOTAL GALLONS	COMMENTS
0844	TURNED ON WHALE PUMP ; Water Level Stays At							17.37'	during pumping		
0851	TURNED OFF PUMP AT 10 GALLONS ; High Hydrogen Sulfide odor to										
	Development Water										
0916	Pump on Again ; alternately surge then pump @ AT							DIFFERENT			Depths, too
0923	Pump off ; 10 Gallons additional (20 gal. total)							▽ Stays At	17.37'	during pumping	
0937	Pump on										
0943	Pump off ; 10 Gallons ; 30 Gallons total ; NTU =								3.14		
0944	▽ = 17.27' B.T.O.C.										
			Development Completed								

EQUIPMENT DOCUMENTATION

- ☐ DEDICATED SUBMERSIBLE
- ☐ SURGE BLOCK
- ☐ BAILER ☐ 2" ☐ ____
- ☐ GRUNDFOS ☐ 2" ☐ 4"
- ☑ OTHER Whale Pump

- ☑ WATER LEVEL METER
- ☑ PID ____
- ☐ WQ METER ____
- ☑ TURB. METER #M024-15
- ☐ OTHER ____
- ☐ OTHER ____
- ☐ OTHER ____

WELL DEVELOPMENT CRITERIA

	Y	N
Well water clear to the unaided eye?	☑	☐
Sediment thickness remaining in well <1.0% of screen length?	☐	☐
Total water removed = a minimum of 5x calculated well volumes plus 5x drilling fluids lost?	☐	☑
Turbidity < 5NTUs?	☐	☐
10% change in field parameters?	☑	☐

WAS DEVELOPMENT CRITERIA MET? Y ☐ N ☐ YES FOR NTU.

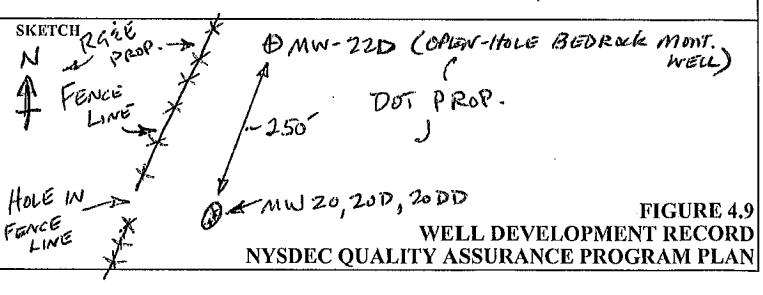
ADDITIONAL OBSERVATIONS

PURGE WATER CONTAINERIZED: Y ☑ N ☐

NUMBER OF GALLONS GENERATED: ~30 GALS.

NOTES: NM = NOT MEASURED

SKETCH



Well Developer Signature: Thomas D. Longley
Print Name: Thomas D. Longley
Checked By: C. Stanley
Date: 2-2-15

FIGURE 4.9
WELL DEVELOPMENT RECORD
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

WELL DEVELOPMENT RECORD

MACTEC
511 Congress Street, Portland Maine 04101

PROJECT NAME: SCOBELL CHEMICAL		LOCATION ID: MW-23D	PAGE: 1 OF 1
PROJECT NUMBER: 3617147328.03		START TIME: 15:58	START DATE: 11-18-14
WELL INSTALLATION DATE: 11-14-14	WELL DEVELOPMENT DATE: 11-18-14/11-19-14	END TIME: 17:05	END DATE: 11-19-14

WELL DIAMETER (INCHES): ☐ 1-IN. ☐ 2-IN. ☐ 4-IN. ☐ 6-IN. ☐ 8-IN. ☑ OTHER 3.8" OPEN-HOLE BEDROCK WELL

CASING DIAMETER (INCHES): ☑ 4-IN. ☐ 6-IN. ☐ 8-IN. ☐ 10-IN. ☐ 12-IN. ☐ OTHER (~6" FLUSH PROTECTIVE COVER)

MEASUREMENT POINT (MP): ☐ TOP OF RISER (TOR) ☑ TOP OF CASING (TOC) ☐ OTHER

INITIAL WELL DEPTH (BMP)	~~35.8~~ H.15 FT	FINAL WELL DEPTH (BMP)	NM FT	SCREEN LENGTH	— FT	PROT. CASING STICKUP (AGS)	FLUSH FT
INITIAL DTW (BMP)	11.15 FT	SEDIMENT REMOVED (final well depth - initial well depth)	NM FT	SCREENED INTERVAL (BMP)	— TO —	TOC/TOR DIFFERENCE	NM FT
WATER COLUMN (initial well depth - initial depth to water)	~15 FT	DTW AFTER DEVELOP. (BMP)	NM FT	PUMPING DEPTH (BMP)	~26 FT	PID AMBIENT AIR	NM PPM
CALCULATED GAL/VOL (column X well diameter squared X 0.041)	~10 GAL	FINAL RECOVERY DEPTH (BMP)	NM FT	APPROXIMATE RECHARGE RATE	NM FT/MIN	PID WELL MOUTH	NM PPM
TOTAL VOL. PURGED (mL per minute X total minutes X 0.00026 gal/mL)	~55 GAL	FINAL RECOVERY TIME (elapsed)	NM MIN	FLUIDS LOST DURING DRILLING	NM GAL	END OF WELL DEVELOPMENT SAMPLE TAKEN?	Y ☐ N ☑

FIELD PARAMETERS

TIME	DTW (ft BMP)	PURGE RATE (mL/min)	TEMP. (°C)	SP. CONDUCTANCE (mS/cm)	pH (units)	DISS. O_2 (mg/L)	TURBIDITY (ntu)	REDOX (mv)	VOLUME PURGED (gal)	TOTAL GALLONS	COMMENTS
15:58	Pump is TURNED ON : PID = 28 ppm AT DRUM BUNG										
16:07	Pump is OFF @ ~10 GALS.										
16:25	PUMP is ON : PID = 68 ppm AT DRUM BUNG										
16:45	▽	@ 19.1'	B.T.O.C. & FALLING						: Water is muddy/murkey		
17:05	▽	@ ~23'	B.T.O.C. : DRUM IS FULL : TURN OFF PUMP at ~55 GALLONS								
		SURGED Pump DURING PUMPING PROCESS									
		DEVEL. COMPLETED FOR 11-18-14 : COME BACK ON NEXT DAY									
11-19-14	▽	= 11.15'	B.T.O.C.								
08:16	Pump is ON										
08:21	NTU => 1000										
08:39	PID @ DRUM = 54 ppm, NTU = >1000										
09:03	FILLED 2nd DRUM : NTU => 1000 : TALK w/ C. STAPLES: OK on THIS WELL for DEVELOP.										

EQUIPMENT DOCUMENTATION

- ☐ DEDICATED SUBMERSIBLE
- ☐ SURGE BLOCK
- ☐ BAILER ☐ 2" ☐ ____
- ☐ GRUNDFOS ☐ 2" ☐ 4"
- ☑ OTHER WHALE Pump

- ☑ WATER LEVEL METER
- ☑ PID ____
- ☐ WQ METER ____
- ☑ TURB. METER ____
- ☐ OTHER ____
- ☐ OTHER ____
- ☐ OTHER ____

WELL DEVELOPMENT CRITERIA

	Y	N
Well water clear to the unaided eye?		
Sediment thickness remaining in well <1.0% of screen length?		
Total water removed = a minimum of 5x calculated well volumes plus 5x drilling fluids lost?		
Turbidity < 5NTUs?		
10% change in field parameters?		

WAS DEVELOPMENT CRITERIA MET? Y ☐ N ☐

ADDITIONAL OBSERVATIONS

PURGE WATER CONTAINERIZED: Y ☑ N ☐

NUMBER OF GALLONS GENERATED: 2 DRUMS ~55x2 = 110

NOTES: MW-23 IS DRY

Well Developer Signature: Thomas D. Longley
Print Name: Thomas D. Longley
Checked By: C. Staples
Date: 2/2/15

SKETCH

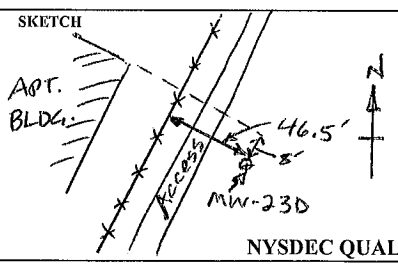


FIGURE 4.9
WELL DEVELOPMENT RECORD
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

WELL DEVELOPMENT RECORD

MACTEC
511 Congress Street, Portland Maine 04101

PROJECT NAME	SCOBELL CHEMICAL
PROJECT NUMBER	3617147328.03
WELL INSTALLATION DATE	11-18-14
WELL DEVELOPMENT DATE	11-20-14

LOCATION ID	MW-24D
PAGE	1 OF 1
START TIME	1014
START DATE	11-20-14
END TIME	11:28
END DATE	11-20-14

WELL DIAMETER (INCHES): ☐ 1-IN. ☐ 2-IN. ☐ 4-IN. ☐ 6-IN. ☐ 8-IN. ☑ OTHER 3.8": OPEN-HOLE BEDROCK WELL

CASING DIAMETER (INCHES): ☑ 4-IN. ☐ 6-IN. ☐ 8-IN. ☐ 10-IN. ☐ 12-IN. ☐ OTHER

MEASUREMENT POINT (MP): ☐ TOP OF RISER (TOR) ☑ TOP OF CASING (TOC) ☐ OTHER

INITIAL WELL DEPTH (BMP)	27.75' FT	FINAL WELL DEPTH (BMP)	NM FT	~~SCREEN~~ OPEN-HOLE LENGTH	15.5 FT	PROT. CASING STICKUP (AGS)	~2.7 FT
INITIAL DTW (BMP)	17.27 FT	SEDIMENT REMOVED (final well depth - initial well depth)	NM FT	~~SCREENED~~ OPEN-HOLE INTERVAL (BMP)	9.5 TO 25' BGS	TOC/TOR DIFFERENCE	— FT
WATER COLUMN (initial well depth - initial depth to water)	10.48 FT	DTW AFTER DEVELOP. (BMP)	NM FT	PUMPING DEPTH (BMP)	~27 FT	PID AMBIENT AIR	~~0.0~~ 1.6 PPM
CALCULATED GAL/VOL (column X well diameter squared X 0.041)	6.2 GAL	FINAL RECOVERY DEPTH (BMP)	NM FT	APPROXIMATE RECHARGE RATE	NM FT/MIN	PID WELL MOUTH	2.6 PPM
TOTAL VOL. PURGED (mL per minute X total minutes X 0.00026 gal/mL)	~45 GAL	FINAL RECOVERY TIME (elapsed)	NM MIN	FLUIDS LOST DURING DRILLING	NM GAL	END OF WELL DEVELOPMENT SAMPLE TAKEN?	Y ☐ N ☑

FIELD PARAMETERS

TIME	DTW (ft BMP)	PURGE RATE (mL/min)	TEMP. (°C)	SP. CONDUCTANCE (mS/cm)	pH (units)	DISS. O_2 (mg/L)	TURBIDITY (ntu)	REDOX (mv)	VOLUME PURGED (gal)	TOTAL GALLONS	COMMENTS
10:48	Pump is on;	PID @ well head = 2.6 ppm ; at Drum Bung = 6.2 ppm ; Bkg = 1.6 ppm									
11:13	NTU of Water = 598 units										
11:22	NTU of water = 592 units ; Staying TURBID ; surging & pumping w/ whale Pump										
11:28	Pump OFF ; NTU > 500 units ; Call OFFICE ; may come back at later time to continue										
		(NEVER DID Go Back FOR ADDITIONAL DEVELOPMENT)									

EQUIPMENT DOCUMENTATION

- ☐ DEDICATED SUBMERSIBLE
- ☐ SURGE BLOCK
- ☐ BAILER ☐ 2" ☐ ____
- ☐ GRUNDFOS ☐ 2" ☐ 4"
- ☑ OTHER whale pump

- ☑ WATER LEVEL METER
- ☑ PID
- ☐ WQ METER
- ☑ TURB. METER
- ☐ OTHER
- ☐ OTHER
- ☐ OTHER

WELL DEVELOPMENT CRITERIA

	Y	N
Well water clear to the unaided eye?		
Sediment thickness remaining in well <1.0% of screen length?		
Total water removed = a minimum of 5x calculated well volumes plus 5x drilling fluids lost?		
Turbidity < 5NTUs?		
10% change in field parameters?		

WAS DEVELOPMENT CRITERIA MET? Y ☐ N ☐

ADDITIONAL OBSERVATIONS

PURGE WATER CONTAINERIZED: Y ☑ N ☐

NUMBER OF GALLONS GENERATED: ~45

NOTES

Well Developer Signature: [signature]
Checked By: [signature]

Print Name: Thomas D. Langley
Date: 2-2-15

SKETCH

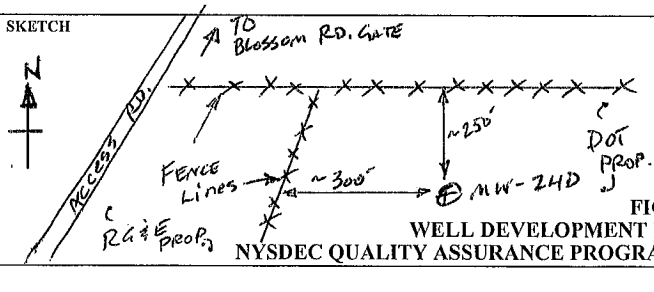


FIGURE 4.9
WELL DEVELOPMENT RECORD
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

WELL DEVELOPMENT RECORD

MACTEC
511 Congress Street, Portland Maine 04101

PROJECT NAME	SCOBELL CHEMICAL
PROJECT NUMBER	3617147328.03
WELL INSTALLATION DATE	11-20-14
WELL DEVELOPMENT DATE	11-21-14

LOCATION ID	MW-25D
PAGE	1 OF 1
START TIME	15:57
START DATE	11-21-14
END TIME	16:35
END DATE	11-21-14

WELL DIAMETER (INCHES): ☐ 1-IN. ☐ 2-IN. ☐ 4-IN. ☐ 6-IN. ☐ 8-IN. ☑ OTHER 3.8": OPEN-HOLE BEDROCK WELL

CASING DIAMETER (INCHES): ☑ 4-IN. ☐ 6-IN. ☐ 8-IN. ☐ 10-IN. ☐ 12-IN. ☐ OTHER

MEASUREMENT POINT (MP): ☐ TOP OF RISER (TOR) ☐ TOP OF CASING (TOC) ☐ OTHER

INITIAL WELL DEPTH (BMP)	23.8 FT	FINAL WELL DEPTH (BMP)	~~24.1~~ ~~10.85~~ FT	OPEN-HOLE ~~SCREEN~~ LENGTH	15 FT	PROT. CASING STICKUP (AGS)	2.1 FT
INITIAL DTW (BMP)	10.8 FT	SEDIMENT REMOVED (final well depth - initial well depth)	0.3 N/A FT	OPEN-HOLE ~~SCREENED~~ INTERVAL (~~BMP~~) BGS	7' TO 22'	TOC/TOR DIFFERENCE	— FT
WATER COLUMN (initial well depth - initial depth to water)	13 FT	DTW AFTER DEVELOP. (BMP)	10.85 FT	PUMPING DEPTH (BMP)	22 FT	PID AMBIENT AIR	NM PPM
CALCULATED GAL/VOL (column X well diameter squared X 0.041)	~7.7 GAL	FINAL RECOVERY DEPTH (BMP)	10.85 FT	APPROXIMATE RECHARGE RATE	NM FT/MIN	PID WELL MOUTH	NM PPM
TOTAL VOL. PURGED (mL per minute X total minutes X 0.00026 gal/mL)	NM GAL	FINAL RECOVERY TIME (elapsed)	5 MIN	FLUIDS LOST DURING DRILLING	NM GAL	END OF WELL DEVELOPMENT SAMPLE TAKEN?	Y ☐ N ☑

FIELD PARAMETERS

TIME	DTW (ft BMP)	PURGE RATE (mL/min)	TEMP. (°C)	SP. CONDUCTANCE (mS/cm)	pH (units)	DISS. O_2 (mg/L)	TURBIDITY (ntu)	REDOX (mv)	VOLUME PURGED (gal)	TOTAL GALLONS	COMMENTS
15:57	Pump is TURNED ON : Water Level HOLDING STEADY AT 11' B.T.O.C. during development										
16:06	NTU of DEVELOPMENT WATER = 46.9 units ; PID = 1.2 ppm (Bkg.)										
	SURGE & Pump, SURGE & pump, ETC. w/ Whale pump throughout										
16:17	NTU = 31.2 units										
16:25	▽ = 11.1' B.T.O.C. : Still pumping, surging, etc.										
16:35	NTU = 4.51 units : ▽ = 11.1' B.T.O.C.										
	TURN Pump OFF: CONSIDER DEVELOPED										
16:40	▽ = 10.85' B.T.O.C. : B.O.B. = 24.1' BELOW T.O.C.										

EQUIPMENT DOCUMENTATION

- ☐ DEDICATED SUBMERSIBLE
- ☐ SURGE BLOCK
- ☐ BAILER ☐ 2" ☐ ____
- ☐ GRUNDFOS ☐ 2" ☐ 4"
- ☑ OTHER WHALE Pump

- ☑ WATER LEVEL METER
- ☑ PID ____
- ☐ WQ METER ____
- ☑ TURB. METER ____
- ☐ OTHER ____
- ☐ OTHER ____
- ☐ OTHER ____

WELL DEVELOPMENT CRITERIA

	Y	N
Well water clear to the unaided eye?	☑	☐
Sediment thickness remaining in well <1.0% of screen length?	☑	☐
Total water removed = a minimum of 5x calculated well volumes plus 5x drilling fluids lost?	☐	☐
Turbidity < 5NTUs?	☑	☐
10% change in field parameters?	☐	☐

WAS DEVELOPMENT CRITERIA MET? Y ☐ N ☐

ADDITIONAL OBSERVATIONS

PURGE WATER CONTAINERIZED: Y ☐ N ☑

NUMBER OF GALLONS GENERATED: >50Gal.

SKETCH

LOCATION IS WEST OF South ON-RAMP FOR 590 from BLOSSOM RD.

NOTES

Well Developer Signature: Thomas D. Longley
Checked By: CKM Date: 11-21-14

Print Name: Thomas D. Longley
Date: 2.2.14

FIGURE 4.9
WELL DEVELOPMENT RECORD
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

WELL DEVELOPMENT RECORD

MACTEC
511 Congress Street, Portland Maine 04101

PROJECT NAME	SCOBELL CHEMICAL
PROJECT NUMBER	3617147328.03
WELL INSTALLATION DATE	11/21/14
WELL DEVELOPMENT DATE	11/22/14

LOCATION ID	MW-26D
PAGE	1 OF 1
START TIME	07:12
START DATE	11-22-14
END TIME	07:45
END DATE	11-22-14

WELL DIAMETER (INCHES): ☐ 1-IN. ☐ 2-IN. ☐ 4-IN. ☐ 6-IN. ☐ 8-IN. ☑ OTHER 3.8" OPEN-HOLE BEDROCK WELL

CASING DIAMETER (INCHES): ☑ 4-IN. ☐ 6-IN. ☐ 8-IN. ☐ 10-IN. ☐ 12-IN. ☐ OTHER

MEASUREMENT POINT (MP): ☐ TOP OF RISER (TOR) ☑ TOP OF CASING (TOC) ☐ OTHER

INITIAL WELL DEPTH (BMP)	27.67 FT	FINAL WELL DEPTH (BMP)	NM FT	~~SCREEN~~ OPEN-HOLE LENGTH	15 FT	PROT. CASING STICKUP (AGS)	1.7 FT
INITIAL DTW (BMP)	8.04 FT	SEDIMENT REMOVED (final well depth - initial well depth)	NM FT	~~SCREENED~~ OPEN-HOLE INTERVAL (~~BMP~~ BGS)	11 TO 26	TOC/TOR DIFFERENCE	— FT
WATER COLUMN (initial well depth - initial depth to water)	~19 FT	DTW AFTER DEVELOP. (BMP)	NM FT	PUMPING DEPTH (~~BMP~~ BGS)	26 FT	PID AMBIENT AIR	NM PPM
CALCULATED GAL/VOL (column X well diameter squared X 0.041)	~11.6 GAL	FINAL RECOVERY DEPTH (BMP)	NM FT	APPROXIMATE RECHARGE RATE	NM FT/MIN	PID WELL MOUTH	NM PPM
TOTAL VOL. PURGED (mL per minute X total minutes X 0.00026 gal/mL)	~50 GAL	FINAL RECOVERY TIME (elapsed)	NM MIN	FLUIDS LOST DURING DRILLING	NM GAL	END OF WELL DEVELOPMENT SAMPLE TAKEN?	Y ☐ N ☑

FIELD PARAMETERS

TIME	DTW (ft BMP)	PURGE RATE (mL/min)	TEMP. (°C)	SP. CONDUCTANCE (mS/cm)	pH (units)	DISS. O_2 (mg/L)	TURBIDITY (ntu)	REDOX (mv)	VOLUME PURGED (gal)	TOTAL GALLONS	COMMENTS
07:12	TURN ON PUMP										
07:17	▽ = 8.13' B.T.O.C.				& holding STEADY						
07:31	▽ = 8.11' B.T.O.C.										
07:40	NTU OF DEVELOPMENT WATER =				3.82 units						
07:45	NTU OF DEVEL. WATER =				3.86 units						
	TURN OFF PUMP : CONSIDER DEVELOPED										

EQUIPMENT DOCUMENTATION

- ☐ DEDICATED SUBMERSIBLE
- ☐ SURGE BLOCK
- ☐ BAILER ☐ 2" ☐ ____
- ☐ GRUNDFOS ☐ 2" ☐ 4"
- ☑ OTHER WHALE Pump

- ☑ WATER LEVEL METER
- ☑ PID ____
- ☐ WQ METER ____
- ☑ TURB. METER ____
- ☐ OTHER ____
- ☐ OTHER ____
- ☐ OTHER ____

WELL DEVELOPMENT CRITERIA

	Y	N
Well water clear to the unaided eye?	☑	☐
Sediment thickness remaining in well <1.0% of screen length?	☐	☐
Total water removed = a minimum of 5x calculated well volumes plus 5x drilling fluids lost?	☐	☐
Turbidity < 5NTUs?	☑	☐
10% change in field parameters?	☐	☐

WAS DEVELOPMENT CRITERIA MET? Y ☐ N ☐

ADDITIONAL OBSERVATIONS

PURGE WATER CONTAINERIZED: Y ☐ N ☑

NUMBER OF GALLONS GENERATED: >40

NOTES

SKETCH

Location is West of South on-Ramp for 590 from Blossom Rd.

Well Developer Signature: Thomas D. Longley
Checked By: C. Stygler

Print Name: Thomas D. Longley
Date: 2-2-15

FIGURE 4.9
WELL DEVELOPMENT RECORD
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

WELL DEVELOPMENT RECORD

MACTEC
511 Congress Street, Portland Maine 04101

PROJECT NAME	SCOBELL CHEMICAL
PROJECT NUMBER	3617147328.03
WELL INSTALLATION DATE	11-18-14
WELL DEVELOPMENT DATE	11-20-14

LOCATION ID	MW-4M
PAGE	1 OF 1
START TIME	09:23
START DATE	11-20-14
END TIME	10:07
END DATE	11-20-14

WELL DIAMETER (INCHES): ☐ 1-IN. ☐ 2-IN. ☐ 4-IN. ☐ 6-IN. ☐ 8-IN. ☑ OTHER 3.8": OPEN-HOLE BEDROCK WELL

CASING DIAMETER (INCHES): ☑ 4-IN. ☐ 6-IN. ☐ 8-IN. ☐ 10-IN. ☐ 12-IN. ☐ OTHER

MEASUREMENT POINT (MP): ☐ TOP OF RISER (TOR) ☑ TOP OF CASING (TOC) ☐ OTHER

INITIAL WELL DEPTH (BMP)	~21 (SOFT) FT	FINAL WELL DEPTH (BMP)	17.8 bgs FT	~~SCREEN~~ OPEN-HOLE LENGTH	8 FT	PROT. CASING STICKUP (AGS)	NM FT
INITIAL DTW (BMP)	14.41 FT	SEDIMENT REMOVED (final well depth - initial well depth)	— FT	~~SCREENED~~ OPEN-HOLE INTERVAL (~~BMP~~ BGS)	13' TO 21'	TOC/TOR DIFFERENCE	— FT
WATER COLUMN (initial well depth - initial depth to water)	~6.6 FT	DTW AFTER DEVELOP. (BMP)	NM FT	PUMPING DEPTH (BMP)	SEE BELOW FT	PID AMBIENT AIR	NM PPM
CALCULATED GAL/VOL (column X well diameter squared X 0.041)	~4 GAL	FINAL RECOVERY DEPTH (BMP)	NM FT	APPROXIMATE RECHARGE RATE	NM FT/MIN	PID WELL MOUTH	NM PPM
TOTAL VOL. PURGED (mL per minute X total minutes X 0.00026 gal/mL)	NM GAL	FINAL RECOVERY TIME (elapsed)	NM MIN	FLUIDS LOST DURING DRILLING	NM GAL	END OF WELL DEVELOPMENT SAMPLE TAKEN?	Y ☐ N ☑

FIELD PARAMETERS

TIME	DTW (ft BMP)	PURGE RATE (mL/min)	TEMP. (°C)	SP. CONDUCTANCE (mS/cm)	pH (units)	DISS. O_2 (mg/L)	TURBIDITY (ntu)	REDOX (mv)	VOLUME PURGED (gal)	TOTAL GALLONS	COMMENTS
0923	PUMP IS TURNED ON										
0934	PUMP OFF: LET RECHARGE										
0945	PUMP IS ON: PID @ well head = 6.3 ppm: PID at ~~well~~ DRUM BUNG = 25 ppm										
1000	NTU OF DEVEL. WATER = 93.0 units										
10:07	NTU OF DEVEL. WATER = 24.1 units										
	HOLE only open TO 17.8' bgs, B.O.B. = 21', So Have = 3.2' OF CAVE: DRILLERS TO Work on This										
11-21-14 15:35	Depth to cave = 14.2' B.G.S.: STILL CAVING: ▽ = 12.1' BGS.										
				UNSTABLE BEDROCK HOLE							
Note open hole with cave in.											

EQUIPMENT DOCUMENTATION

- ☐ DEDICATED SUBMERSIBLE
- ☐ SURGE BLOCK
- ☐ BAILER ☐ 2" ☐ ____
- ☐ GRUNDFOS ☐ 2" ☐ 4"
- ☑ OTHER Whale Pump

- ☑ WATER LEVEL METER
- ☑ PID ____
- ☐ WQ METER ____
- ☑ TURB. METER ____
- ☐ OTHER ____
- ☐ OTHER ____
- ☐ OTHER ____

WELL DEVELOPMENT CRITERIA

	Y	N
Well water clear to the unaided eye?		
Sediment thickness remaining in well <1.0% of screen length?		
Total water removed = a minimum of 5x calculated well volumes plus 5x drilling fluids lost?		
Turbidity < 5NTUs?		
10% change in field parameters?		

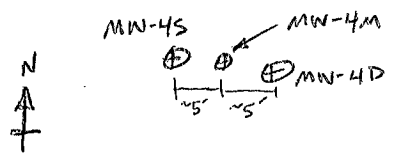
WAS DEVELOPMENT CRITERIA MET? Y ☐ N ☐

ADDITIONAL OBSERVATIONS

PURGE WATER CONTAINERIZED: Y ☑ N ☐

NUMBER OF GALLONS GENERATED: ~55

SKETCH



NOTES

Well Developer Signature: Thomas D. Longley
Print Name: Thomas D. Longley
Checked By: C. Stoyles
Date: 2-2-15

FIGURE 4.9
WELL DEVELOPMENT RECORD
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

WELL DEVELOPMENT RECORD

MACTEC
511 Congress Street, Portland Maine 04101

PROJECT NAME: Scobell Chemical		LOCATION ID: mw-32D	PAGE: 1 OF 1
PROJECT NUMBER: 3617147328.05		START TIME: 1345	START DATE: 11/20/15
WELL INSTALLATION DATE: 11/19/15	WELL DEVELOPMENT DATE: 11/20/15	END TIME: 1620	END DATE: 11/20/15

WELL DIAMETER (INCHES): ☐ 1-IN. ☒ 2-IN. ☐ 4-IN. ☐ 6-IN. ☐ 8-IN. ☐ OTHER

CASING DIAMETER (INCHES): ☒ 4-IN. ☐ 6-IN. ☐ 8-IN. ☐ 10-IN. ☐ 12-IN. ☐ OTHER

MEASUREMENT POINT (MP): ☒ TOP OF RISER (TOR) ☐ TOP OF CASING (TOC) ☐ OTHER

INITIAL WELL DEPTH (BMP)	24.70 FT	FINAL WELL DEPTH (BMP)	24.70 FT	SCREEN LENGTH	5 FT	PROT. CASING STICKUP (AGS)	0 FT
INITIAL DTW (BMP)	15.54 FT	SEDIMENT REMOVED (final well depth - initial well depth)	— FT	SCREENED INTERVAL (BMP)	19.7 TO 24.7	TOC/TOR DIFFERENCE	0.33 FT
WATER COLUMN (initial well depth - initial depth to water)	9.16 FT	DTW AFTER DEVELOP. (BMP)	— FT	PUMPING DEPTH (BMP)	24.7 FT	PID AMBIENT AIR	0 PPM
CALCULATED GAL/VOL (column X well diameter squared X 0.041)	1.5 GAL	FINAL RECOVERY DEPTH (BMP)	— FT	APPROXIMATE RECHARGE RATE	≈300 ml/min FT/MIN	PID WELL MOUTH	0.1 PPM
TOTAL VOL. PURGED (mL per minute X total minutes X 0.00026 gal/mL)	10.5 GAL	FINAL RECOVERY TIME (elapsed)	— MIN	FLUIDS LOST DURING DRILLING	— GAL	END OF WELL DEVELOPMENT SAMPLE TAKEN?	Y ☐ N ☒

FIELD PARAMETERS

TIME	DTW (ft BMP)	PURGE RATE (mL/min)	TEMP. (°C)	SP. CONDUCTANCE (mS/cm)	pH (units)	DISS. O_2 (mg/L)	TURBIDITY (ntu)	REDOX (mv)	VOLUME PURGED (gal)	TOTAL GALLONS	COMMENTS
1438	15.72	Have purged 4 gallons with whalepump - Start purge with Geopump									
1445	16.82	350	—	—	—	—	>1000	—		4.5	
1455	17.15	300	—	—	—	—	290	—		6	
1505	17.13	300	—	—	—	—	170	—		6.5	
1520	17.10	300	—	—	—	—	76	—		7.3	
1530	16.98	270	—	—	—	—	42	—		8.0	
1545	16.95	280	—	—	—	—	24	—		9.1	
1600	16.98	290	—	—	—	—	11	—		10.2	
1605	16.67	150	—	—	—	—	9.5	—		10.5	

EQUIPMENT DOCUMENTATION

- ☐ DEDICATED SUBMERSIBLE
- ☐ SURGE BLOCK
- ☐ BAILER ☐ 2" ☐ ____
- ☐ GRUNDFOS ☐ 2" ☐ 4"
- ☒ OTHER whalepump/Geopump

- ☒ WATER LEVEL METER
- ☒ PID MiniRae 2000
- ☐ WQ METER
- ☒ TURB. METER HACH-2100Q
- ☐ OTHER
- ☐ OTHER
- ☐ OTHER

ADDITIONAL OBSERVATIONS

PURGE WATER CONTAINERIZED: Y ☒ N ☐

NUMBER OF GALLONS GENERATED: 10.5

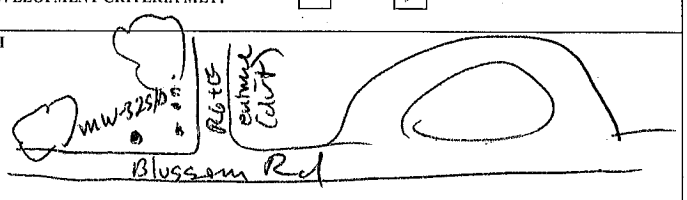
WELL DEVELOPMENT CRITERIA

	Y	N
Well water clear to the unaided eye?	☒	☐
Sediment thickness remaining in well <1.0% of screen length?	☒	☐
Total water removed = a minimum of 5x calculated well volumes plus 5x drilling fluids lost?	☐	—
Turbidity < 5NTUs?	☐	☒
10% change in field parameters?	—	—

WAS DEVELOPMENT CRITERIA MET? Y ☐ N ☒

NOTES

SKETCH



Well Developer Signature: Jerry Rawcliffe
Checked By: RMB

Print Name: Jerry Rawcliffe
Date: 12/22/15

FIGURE 4.9
WELL DEVELOPMENT RECORD
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

WELL DEVELOPMENT RECORD

MACTEC
511 Congress Street, Portland Maine 04101

PROJECT NAME: Sackett Chemical		LOCATION ID: MW-32S	PAGE: 1 OF 1
PROJECT NUMBER: 3617147308.05		START TIME: 1320	START DATE: 11/20/15
WELL INSTALLATION DATE: 11/19/15	WELL DEVELOPMENT DATE: 11/20/15	END TIME: 1435	END DATE: 11/20/15

WELL DIAMETER (INCHES): [X] 1-IN. [ ] 2-IN. [ ] 4-IN. [ ] 6-IN. [ ] 8-IN. [ ] OTHER

CASING DIAMETER (INCHES): [X] 4-IN. [ ] 6-IN. [ ] 8-IN. [ ] 10-IN. [ ] 12-IN. [ ] OTHER

MEASUREMENT POINT (MP): [X] TOP OF RISER (TOR) [ ] TOP OF CASING (TOC) [ ] OTHER

INITIAL WELL DEPTH (BMP)	16.70 FT	FINAL WELL DEPTH (BMP)	16.70 FT	SCREEN LENGTH	5 FT	PROT. CASING STICKUP (AGS)	0 FT
INITIAL DTW (BMP)	13.09 FT	SEDIMENT REMOVED (final well depth - initial well depth)	— FT	SCREENED INTERVAL (BMP)	11.7 TO 16.7	TOC/TOR DIFFERENCE	0.34 FT
WATER COLUMN (initial well depth - initial depth to water)	3.61 FT	DTW AFTER DEVELOP. (BMP)	— FT	PUMPING DEPTH (BMP)	16.7 FT	PID AMBIENT AIR	0.0 PPM
CALCULATED GAL/VOL (column X well diameter squared X 0.041)	0.15 GAL	FINAL RECOVERY DEPTH (BMP)	— FT	APPROXIMATE RECHARGE RATE	400 ml/min FT/MIN	PID WELL MOUTH	0.1 PPM
TOTAL VOL. PURGED (mL per minute X total minutes X 0.00026 gal/mL)	5 GAL	FINAL RECOVERY TIME (elapsed)	— MIN	FLUIDS LOST DURING DRILLING	— GAL	END OF WELL DEVELOPMENT SAMPLE TAKEN?	Y [ ] N [X]

FIELD PARAMETERS

TIME	DTW (ft BMP)	PURGE RATE (mL/min)	TEMP. (°C)	SP. CONDUCTANCE (mS/cm)	pH (units)	DISS. O_2 (mg/L)	TURBIDITY (ntu)	REDOX (mv)	VOLUME PURGED (gal)	TOTAL GALLONS	COMMENTS
1335	13.09	Start	purge with Geopump								
1350	13.32	400	—	—	—	—	9.7	—	—	—	
1405	13.36	320	—	—	—	—	9.9	—	—	2	
1425	13.34	380	—	—	—	—	2.6	—	—	4	
1435	13.31	380	—	—	—	—	1.6	—	—	5	

EQUIPMENT DOCUMENTATION

[ ] DEDICATED SUBMERSIBLE
[ ] SURGE BLOCK
[ ] BAILER [ ] 2" [ ] ____
[ ] GRUNDFOS [ ] 2" [ ] 4"
[X] OTHER Whale/Geopump

[X] WATER LEVEL METER
[X] PID MiniRae 2000
[ ] WQ METER
[X] TURB. METER HACH 2100Q
[ ] OTHER
[ ] OTHER
[ ] OTHER

WELL DEVELOPMENT CRITERIA

	Y	N
Well water clear to the unaided eye?	✓	
Sediment thickness remaining in well <1.0% of screen length?	✓	
Total water removed = a minimum of 5x calculated well volumes plus 5x drilling fluids lost?		—
Turbidity < 5NTUs?	✓	
10% change in field parameters?		—

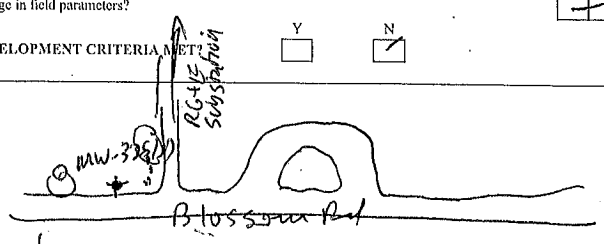
WAS DEVELOPMENT CRITERIA MET? Y [ ] N [X]

ADDITIONAL OBSERVATIONS

PURGE WATER CONTAINERIZED: Y [X] N [ ]

NUMBER OF GALLONS GENERATED: 5

SKETCH



NOTES

Jerry Ruchtie
Well Developer Signature:
Checked By: RMB

Jerry Ruchtie
Print Name:
Date: 12/2/15

FIGURE 4.9
WELL DEVELOPMENT RECORD
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

WELL DEVELOPMENT RECORD

MACTEC
511 Congress Street, Portland Maine 04101

PROJECT NAME: Scobell Chemical		LOCATION ID: MW-33S	PAGE: 1 OF 1
PROJECT NUMBER: 3617147328.05		START TIME: 1200	START DATE: 11/20/15
WELL INSTALLATION DATE: 11/12/15	WELL DEVELOPMENT DATE: 11/20/15	END TIME: 1310	END DATE: 11/20/15

WELL DIAMETER (INCHES): ☐ 1-IN. ☒ 2-IN. ☐ 4-IN. ☐ 6-IN. ☐ 8-IN. ☐ OTHER

CASING DIAMETER (INCHES): ☐ 4-IN. ☐ 6-IN. ☐ 8-IN. ☐ 10-IN. ☐ 12-IN. ☒ OTHER 4"OB 3" BR

MEASUREMENT POINT (MP): ☒ TOP OF RISER (TOR) ☐ TOP OF CASING (TOC) ☐ OTHER

INITIAL WELL DEPTH (BMP)	14.4 FT	FINAL WELL DEPTH (BMP)	14.4 FT	SCREEN LENGTH	6 FT	PROT. CASING STICKUP (AGS)	0 FT
INITIAL DTW (BMP)	6.33 FT	SEDIMENT REMOVED (final well depth - initial well depth)	— FT	SCREENED INTERVAL (BMP)	8.4 TO 14.4	TOC/TOR DIFFERENCE	0.53 FT
WATER COLUMN (initial well depth - initial depth to water)	8.07 FT	DTW AFTER DEVELOP. (BMP)	— FT	PUMPING DEPTH (BMP)	14.4 FT	PID AMBIENT AIR	0.0 PPM
CALCULATED GAL/VOL (column X well diameter squared X 0.041)	1.3 GAL	FINAL RECOVERY DEPTH (BMP)	— FT	APPROXIMATE RECHARGE RATE	500-1000 ml/min FT/MIN	PID WELL MOUTH	0.1 PPM
TOTAL VOL. PURGED (mL per minute X total minutes X 0.00026 gal/mL)	15 GAL	FINAL RECOVERY TIME (elapsed)	— MIN	FLUIDS LOST DURING DRILLING	— GAL	END OF WELL DEVELOPMENT SAMPLE TAKEN?	Y ☐ N ☒

FIELD PARAMETERS

TIME	DTW (ft BMP)	PURGE RATE (mL/min)	TEMP. (°C)	SP. CONDUCTANCE (mS/cm)	pH (units)	DISS. O_2 (mg/L)	TURBIDITY (ntu)	REDOX (mv)	VOLUME PURGED (gal)	TOTAL GALLONS	COMMENTS
1150	6.33	- Purge ≈ 7 gallons with whale pump - purged 5 gallons previously with Geopump - Switch to Geopump								12	
1245	7.32	500	—	—	—	—	54	—		~~8~~ 13	
1300	7.35	550	—	—	—	—	11	—	—		
1305	7.18	400	—	—	—	—	5.4	—	—	15	

EQUIPMENT DOCUMENTATION

- ☒ DEDICATED SUBMERSIBLE (Whale)
- ☐ SURGE BLOCK
- ☐ BAILER ☐ 2" ☐ ——
- ☐ GRUNDFOS ☐ 2" ☐ 4"
- ☒ OTHER Geopump

- ☒ WATER LEVEL METER
- ☒ PID Minirae 2000
- ☐ WQ METER
- ☒ TURB. METER HACH 2100Q
- ☐ OTHER
- ☐ OTHER
- ☐ OTHER

ADDITIONAL OBSERVATIONS

PURGE WATER CONTAINERIZED: Y ☒ N ☐

NUMBER OF GALLONS GENERATED: 15

NOTES

Well Developer Signature: Jerry Rawcliff
Checked By: RMB
Print Name: Jerry Rawcliff
Date: 12/22/15

WELL DEVELOPMENT CRITERIA

	Y	N
Well water clear to the unaided eye?	☒	
Sediment thickness remaining in well <1.0% of screen length?	☒	
Total water removed = a minimum of 5x calculated well volumes plus 5x drilling fluids lost?	—	
Turbidity < 5NTUs?		☒
10% change in field parameters?	—	

WAS DEVELOPMENT CRITERIA MET? — Y ☐ N ☒

SKETCH

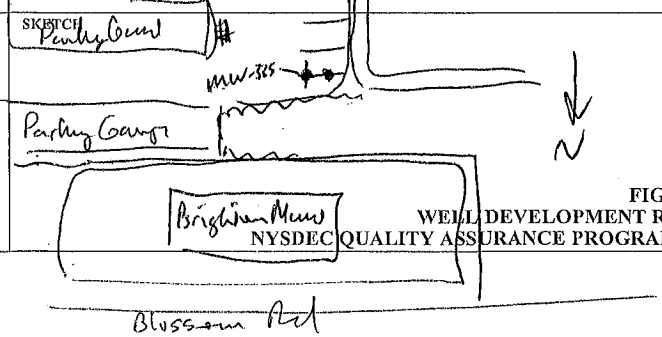


FIGURE 4.9
WELL DEVELOPMENT RECORD
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

WELL DEVELOPMENT RECORD

MACTEC
511 Congress Street, Portland Maine 04101

PROJECT NAME: Sartwell Chemical	LOCATION ID: MW-34S
PROJECT NUMBER: 3617147328.05	START TIME: 1635
WELL INSTALLATION DATE: 11/16/15	END TIME: 1740
WELL DEVELOPMENT DATE: 11/19/15	PAGE: 1 OF 1
	START DATE: 11/19/15
	END DATE: 11/19/15

WELL DIAMETER (INCHES): ☐ 1-IN. ☒ 2-IN. ☐ 4-IN. ☐ 6-IN. ☐ 8-IN. ☐ OTHER

CASING DIAMETER (INCHES): ☒ 4-IN. ☐ 6-IN. ☐ 8-IN. ☐ 10-IN. ☐ 12-IN. ☐ OTHER

MEASUREMENT POINT (MP): ☒ TOP OF RISER (TOR) ☐ TOP OF CASING (TOC) ☐ OTHER

INITIAL WELL DEPTH (BMP)	14.55 FT	FINAL WELL DEPTH (BMP)	— FT	SCREEN LENGTH	5 FT	PROT. CASING STICKUP (AGS)	0 FT
INITIAL DTW (BMP)	10.65 FT	SEDIMENT REMOVED (final well depth - initial well depth)	FT	SCREENED INTERVAL (BMP)	9.55 TO 14.55	TOC/TOR DIFFERENCE	0.40 FT
WATER COLUMN (initial well depth - initial depth to water)	3.9 FT	DTW AFTER DEVELOP. (BMP)	— FT	PUMPING DEPTH (BMP)	14.55' FT	PID AMBIENT AIR	0.0 PPM
CALCULATED GAL/VOL (column X well diameter squared X 0.041)	0.62 GAL	FINAL RECOVERY DEPTH (BMP)	— FT	APPROXIMATE RECHARGE RATE	200-300 ml/min FT/MIN	PID WELL MOUTH	0.1 PPM
TOTAL VOL. PURGED (mL per minute X total minutes X 0.00026 gal/mL)	6 GAL	FINAL RECOVERY TIME (elapsed)	— MIN	FLUIDS LOST DURING DRILLING	— GAL	END OF WELL DEVELOPMENT SAMPLE TAKEN?	Y ☐ N ☒

FIELD PARAMETERS

TIME	DTW (ft BMP)	PURGE RATE (mL/min)	TEMP. (°C)	SP. CONDUCTANCE (mS/cm)	pH (units)	DISS. O_2 (mg/L)	TURBIDITY (ntu)	REDOX (mv)	VOLUME PURGED (gal)	TOTAL GALLONS	COMMENTS
1637	10.65	Setup submble pump and purge dry ~ 1 Gallon						—	—	1	Start purge with whale pump
1646	11.97	560 ml/min	—	—	—	—		—	—		Start purge w/ Geopump
1655	12.95	560	—	—	—	—	940	—	—	3	
1702	13.22	~~350~~	—	—	—	—	71000	—	—	3.5	Reduce rate
1715	12.91	350	Getting recharge at 350 ml/min				36	—	—	5	
1728	12.93	350	—	—	—	—	6.0	—	—	≥6	

EQUIPMENT DOCUMENTATION

- ☒ DEDICATED SUBMERSIBLE (whale)
- ☐ SURGE BLOCK
- ☐ BAILER ☐ 2" ☐ ____
- ☐ GRUNDFOS ☐ 2" ☐ 4"
- ☒ OTHER Geo pump

- ☒ WATER LEVEL METER
- ☒ PID MiniRae 2000
- ☐ WQ METER
- ☒ TURB. METER HACH 2100Q
- ☐ OTHER
- ☐ OTHER
- ☐ OTHER

WELL DEVELOPMENT CRITERIA

	Y	N
Well water clear to the unaided eye?	☒	
Sediment thickness remaining in well <1.0% of screen length?	☒	
Total water removed = a minimum of 5x calculated well volumes plus 5x drilling fluids lost?	—	
Turbidity < 5NTUs?		☒
10% change in field parameters?	—	

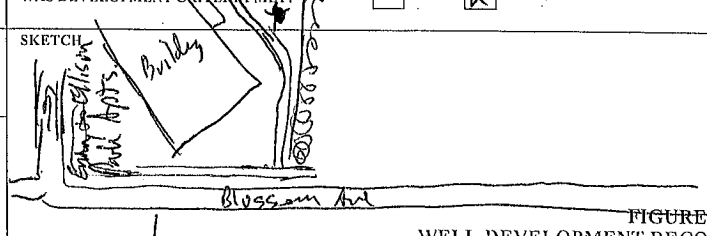
WAS DEVELOPMENT CRITERIA MET? ☐ Y ☒ N

ADDITIONAL OBSERVATIONS

PURGE WATER CONTAINERIZED: Y ☒ N ☐

NUMBER OF GALLONS GENERATED: 6

SKETCH



NOTES

Jerry Rawcliffe
Well Developer Signature:
Checked By: RMB

Jerry Rawcliffe, TG
Print Name:
Date: 12/22/15

FIGURE 4.9
WELL DEVELOPMENT RECORD
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

WELL DEVELOPMENT RECORD

MACTEC

511 Congress Street, Portland Maine 04101

PROJECT NAME: Scobell Chemical -NYSDOT Site 828076		LOCATION ID: MW-37S	PAGE: 1 OF 1
PROJECT NUMBER: 3617147328		START TIME: 1750	START DATE: 6/7/17
WELL INSTALLATION DATE: 6/6/17	WELL DEVELOPMENT DATE: 6/7, 6/8, 6/9, 6/16/17	END TIME: ~~6/7/17~~ 1800	END DATE: 6/16/17

WELL DIAMETER (INCHES): ☐ 1-IN. ☒ 2-IN. ☒ 4-IN. ☐ 6-IN. ☐ 8-IN. ☐ OTHER

CASING DIAMETER (INCHES): ☒ 4-IN. ☐ 6-IN. ☐ 8-IN. ☐ 10-IN. ☐ 12-IN. ☐ OTHER

MEASUREMENT POINT (MP): ☒ TOP OF RISER (TOR) ☐ TOP OF CASING (TOC) ☐ OTHER

INITIAL WELL DEPTH (BMP)	15.5 FT	FINAL WELL DEPTH (BMP)	15.5 FT	SCREEN LENGTH	10.0 FT	PROT. CASING STICKUP (AGS)	0 FT
INITIAL DTW (BMP)	8.35 FT	SEDIMENT REMOVED (final well depth - initial well depth)	0 FT	SCREENED INTERVAL (BMP)	15.5 TO 5.5	TOC/TOR DIFFERENCE	0.38 FT
WATER COLUMN (initial well depth - initial depth to water)	7.15 FT	DTW AFTER DEVELOP. (BMP)	15.25 FT	PUMPING DEPTH (BMP)	15.5 FT	PID AMBIENT AIR	0.0 PPM
CALCULATED GAL/VOL (column X well diameter squared X 0.041)	1.1 GAL	FINAL RECOVERY DEPTH (BMP)	15.5 FT	APPROXIMATE RECHARGE RATE	15 ml/min FT/MIN	PID WELL MOUTH	0.0 PPM
TOTAL VOL. PURGED (mL per minute X total minutes X 0.00026 gal/mL)	10.4 GAL	FINAL RECOVERY TIME (elapsed)	5-6 hours MIN	FLUIDS LOST DURING DRILLING	~~NA~~ 200 GAL	END OF WELL DEVELOPMENT SAMPLE TAKEN?	Y ☐ N ☑

FIELD PARAMETERS

TIME	DTW (ft BMP)	PURGE RATE (mL/min)	TEMP. (°C)	SP. CONDUCTANCE (mS/cm)	pH (units)	DISS. O_2 (mg/L)	TURBIDITY (ntu)	REDOX (mv)	VOLUME PURGED (gal)	TOTAL GALLONS	COMMENTS
1811	15.3	~	—	—	—	—	>1000	—	2	2	Purged dry recved 0.2' in 11 min.
6/8/17 0730	9.96 15.5	140-650	~	~	~	~	>1000	—	1.5	3.5	Purged dry with Geopump
1330	10.43 15.5	500	✓	✓	✓	—	>1000	—	0.8	4.3	"
1814	10.55	650	—	—	—	—	38	—	0.7	5	"
6/9/17 0733	9.59	500	~	~	~	~	>1000	—	1.5	6.5	"
1304	10.32	500	—	—	—	—	165	—	1.5	8.0	
6/16/17 1205 1211	9.89 12.45	400	14.6	0.747	7.2	4.0	11.6	199	0.5	8.5	
1217 1729	14.69 10.23	400 240	14.2	0.774	7.2	4.1	28.5	185	0.6	9.1	1219 Purged dry 1.3gal
1735	11.80	240	15.5	0.791	7.3	5.7	11.3	46	0.4	9.5	
1740	13.10	240	15.8	0.735	7.3	5.1	46	46	0.3	9.8	
1745	14.08	240	15.7	0.733	7.2	5.0	41	45	0.3	10.1	
1750	15.25	220	15.7	0.765	7.3	5.1	70	44	0.3	10.4	Purged dry at 1751

EQUIPMENT DOCUMENTATION

- ☐ DEDICATED SUBMERSIBLE
- ☐ SURGE BLOCK
- ☐ BAILER ☐ 2" ☐ ____
- ☐ GRUNDFOS ☐ 2" ☐ 4"
- ☒ OTHER Geopump

- ☑ WATER LEVEL METER
- ☑ PID MiniRae 2000
- ☑ WQ METER YSI 556 MPS
- ☑ TURB. METER HACH 2100Q
- ☐ OTHER
- ☐ OTHER
- ☐ OTHER

WELL DEVELOPMENT CRITERIA

	Y	N
Well water clear to the unaided eye?	☑	☐
Sediment thickness remaining in well <1.0% of screen length?	☑	☐
Total water removed = a minimum of 5x calculated well volumes plus 5x drilling fluids lost?	☐	☑
Turbidity < 5NTUs?	☐	☑
10% change in field parameters?	☑	☐

WAS DEVELOPMENT CRITERIA MET? Y ☐ N ☑

ADDITIONAL OBSERVATIONS

PURGE WATER CONTAINERIZED: Y ☒ N ☐

NUMBER OF GALLONS GENERATED: 10.4

SKETCH



NOTES

Well Developer Signature: Jerry Rawcliffe

Print Name: Jerry Rawcliffe

Checked By: [signature]

Date: 6/22/17

FIGURE 4.9
WELL DEVELOPMENT RECORD
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

WELL DEVELOPMENT RECORD

MACTEC

511 Congress Street, Portland Maine 04101

PROJECT NAME: Scobell Chemical -NYSDOT Site 828076		LOCATION ID: MW-38S	PAGE: 1 OF 1
PROJECT NUMBER: 3617147328		START TIME: 1725	START DATE: 6/8/17
WELL INSTALLATION DATE: 6/8/17	WELL DEVELOPMENT DATE: 6/8/17 – 6/16/17	END TIME: 1415	END DATE: 6/16/17

WELL DIAMETER (INCHES): ☐ 1-IN. ☒ 2-IN. ☒ 4-IN. ☐ 6-IN. ☐ 8-IN. ☐ OTHER

PROTECTIVE CASING DIAMETER (INCHES): ☐ 4-IN. ☐ 6-IN. ☒ 8-IN. ☐ 10-IN. ☐ 12-IN. ☐ OTHER

MEASUREMENT POINT (MP): ☒ TOP OF RISER (TOR) ☐ TOP OF CASING (TOC) ☐ OTHER

INITIAL WELL DEPTH (BMP) TOR	17.9 FT	FINAL WELL DEPTH (BMP)	17.9 FT	SCREEN LENGTH	10 FT	PROT. CASING STICKUP (AGS)	0 FT
INITIAL DTW (BMP)	10.28 FT	SEDIMENT REMOVED (final well depth - initial well depth)	0 FT	SCREENED INTERVAL (BMP)	7.9 TO 17.9	TOC/TOR DIFFERENCE	0.29 FT
WATER COLUMN (initial well depth - initial depth to water)	7.62 FT	DTW AFTER DEVELOP. (BMP)	10.30 FT	PUMPING DEPTH (BMP)	17.8 FT	PID AMBIENT AIR	0.0 PPM
CALCULATED GAL/VOL (column X well diameter squared X 0.041)	1.2 GAL	FINAL RECOVERY DEPTH (BMP)	11.30 FT	APPROXIMATE RECHARGE RATE	0.5-1 GPM ~~ET MIN~~	PID WELL MOUTH	0.0 PPM
TOTAL VOL. PURGED (mL per minute X total minutes X 0.00026 gal/mL)	55 GAL	FINAL RECOVERY TIME (elapsed)	0.5 MIN	FLUIDS LOST DURING DRILLING	NA GAL	END OF WELL DEVELOPMENT SAMPLE TAKEN?	Y ☐ N ☒

Dry Ped with air some water for dust suppression

FIELD PARAMETERS

TIME	DTW (ft BMP)	PURGE RATE (mL/min)	TEMP. (°C)	SP. CONDUCTANCE (mS/cm)	pH (units)	DISS. O_2 (mg/L)	TURBIDITY (ntu)	REDOX (mv)	VOLUME PURGED (gal)	TOTAL GALLONS	COMMENTS
1725											
1736	10.28	0.56GPM	—	—	—	—	421	—	5	5	Pump too large cant measure WL
1747	—	0.56GPM	—	—	—	—	117	—	~~105~~	10	
1759	11.41	0.4GPM	—	—	—	—	53	—	05	15	
6/9/17 0805	—	0.5	—	—	—	—	77	—	5	20	Cant measure WL with pump in well Surged
0815	—	0.5	—	—	—	—	23.1	—	5	25	
0816	—	0.5	—	—	—	—	15.8	—	5	30	
1326	—	0.5	—	—	—	—	25.2	—	5	35	Surged
1336	—	0.4	—	—	—	—	21.3	—	5	40	
1349	11.38	0.4	—	—	—	—	9.37	—	5	45	
1234 → 6/16/17 1250	11.25 11.56	500 ml	14.6	2.978	6.9	2.37	9.2	-69	1.2	46.2	Hyd Sulfide odor
1301	11.52	480	14.5	4.375	6.9	1.71	5.5	-208	1.3	47.5	
1310	11.53	480	14.9	4.980	6.9	1.26	0.97	-262	1.2	48.7	
1321	11.53	480	14.4	5.222	6.9	0.85	0.42	-268	1.3	50	
1339	11.53	480	14.3	5.389	6.9	0.66	0.25	-277	2.2	52.2	
1351	11.53	480	14.9	5.449	6.9	0.57	0.24	-274	1.3	53.5	
1402		480	14.4	5.473	6.9	0.65	0.33	-266	1.5	55	

EQUIPMENT DOCUMENTATION

- ☐ DEDICATED SUBMERSIBLE
- ☐ SURGE BLOCK
- ☐ BAILER ☐ 2" ☐ ____
- ☐ GRUNDFOS ☐ 2" ☐ 4"
- ☒ OTHER Whale (Geopump)

- ☑ WATER LEVEL METER
- ☑ PID Mini Rae 2000
- ☑ WQ METER YSI 556 MPS
- ☑ TURB. METER HACH 2100Q
- ☐ OTHER
- ☐ OTHER
- ☐ OTHER

WELL DEVELOPMENT CRITERIA

	Y	N
Well water clear to the unaided eye?	☑	☐
Sediment thickness remaining in well <1.0% of screen length?	☑	☐
Total water removed = a minimum of 5x calculated well volumes plus 5x drilling fluids lost?	☑	☐
Turbidity < 5NTUs?	☑	☐
10% change in field parameters?	☐	☐

WAS DEVELOPMENT CRITERIA MET? Y ☑ N ☐

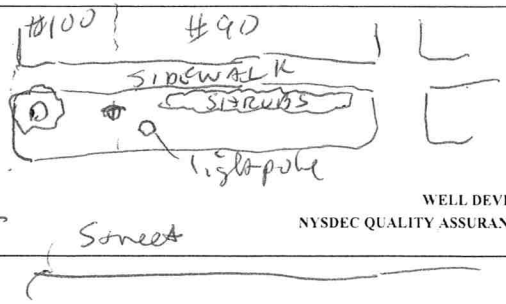
ADDITIONAL OBSERVATIONS

PURGE WATER CONTAINERIZED: Y ☑ N ☐

NUMBER OF GALLONS GENERATED: 55

NOTES: Strong rotten egg (Hyd Sulfide) odor.

SKETCH



Well Developer Signature: Jerry Rawcliffe
Checked By: Michael W. Lyons

Print Name: Jerry Rawcliffe Michael W. Lyons
Date: 6/22/17

FIGURE 4.9
WELL DEVELOPMENT RECORD
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

WELL DEVELOPMENT RECORD

MACTEC

511 Congress Street, Portland Maine 04101

PROJECT NAME: Scobell Chemical -NYSDOT Site 828076		LOCATION ID: MW-395	PAGE: 1 OF 1
PROJECT NUMBER: 3617147328		START TIME: 1440	START DATE: 6/9/17
WELL INSTALLATION DATE: 6/9/17	WELL DEVELOPMENT DATE: 6/9/17 + 6/16/17	END TIME: 1720	END DATE: 6/16/17

WELL DIAMETER (INCHES): ☐ 1-IN. ☒ 2-IN. ☒ 4-IN. ☐ 6-IN. ☐ 8-IN. ☐ OTHER

CASING DIAMETER (INCHES): ☐ 4-IN. ☐ 6-IN. ☒ 8-IN. ☐ 10-IN. ☐ 12-IN. ☐ OTHER: Flushmount

MEASUREMENT POINT (MP): ☒ TOP OF RISER (TOR) ☐ TOP OF CASING (TOC) ☐ OTHER

INITIAL WELL DEPTH (BMP)	16.8 FT	FINAL WELL DEPTH (BMP)	16.8 FT	SCREEN LENGTH	10 FT	PROT. CASING STICKUP (AGS)	0 FT
INITIAL DTW (BMP)	10.93 FT	SEDIMENT REMOVED (final well depth - initial well depth)	0 FT	SCREENED INTERVAL (BMP)	6.8 TO 16.8	TOC/TOR DIFFERENCE	0.33 FT
WATER COLUMN (initial well depth - initial depth to water)	5.87 FT	DTW AFTER DEVELOP. (BMP)	11.23 FT	PUMPING DEPTH (BMP)	16.5 FT	PID AMBIENT AIR	0 PPM
CALCULATED GAL/VOL (column X well diameter squared X 0.041)	0.94 GAL	FINAL RECOVERY DEPTH (BMP)	16.8 FT	APPROXIMATE RECHARGE RATE	1 GPM FT/MIN	PID WELL MOUTH	1.0 PPM
TOTAL VOL. PURGED (mL per minute X total minutes X 0.00026 gal/mL)	55 GAL	FINAL RECOVERY TIME (elapsed)	2 min MIN	FLUIDS LOST DURING DRILLING	NA GAL	END OF WELL DEVELOPMENT SAMPLE TAKEN?	Y ☐ N ☑

Drilled with air-water for dust suppression

FIELD PARAMETERS

TIME	DTW (ft BMP)	PURGE RATE (mL/min)	TEMP. (°C)	SP. CONDUCTANCE (mS/cm)	pH (units)	DISS. O_2 (mg/L)	TURBIDITY (ntu)	REDOX (mv)	VOLUME PURGED (gal)	TOTAL GALLONS	COMMENTS
1443											Unable to measure WL with pump in well.
1450	–	0.7	–	–	–	–	254	–	5	5	
1459	–	0.55	–	–	–	–	226	–	5	10	
1508	–	0.55	–	–	–	–	160	–	5	15	
1515	–	0.7	–	–	–	–	236	–	5	20	
6/16 1431 1443	11.13	Surge/purge 0.8	–	–	–	–	85	–	10	30	Resume development 6/16/17
1457	–	0.7	–	–	–	–	7.8	–	10	40	
1505	–	0.63	–	–	–	–	4.5	–	5	45	
1555 1611	11.23 11.28	Resume purge with Geopump 500 mL	14.2	0.797	7.1	4.9	2.4	9	2	47	
1626	11.28	500 mL	14.1	0.797	7.1	4.7	1.4	22	2	49	
1642	11.28	490 mL	14.4	0.796	7.1	4.7	0.8	28	2	51	
1658	11.28	500 mL	14.3	0.798	7.1	4.7	0.5	33	2	53	
1714	11.28	500 mL	14.3	0.797	7.1	4.6	0.4	35	2	55	Ending development.

EQUIPMENT DOCUMENTATION

- ☐ DEDICATED SUBMERSIBLE
- ☐ SURGE BLOCK
- ☐ BAILER ☐ 2" ☐ ____
- ☐ GRUNDFOS ☐ 2" ☐ 4"
- ☒ OTHER: Whale/Geopump

- ☑ WATER LEVEL METER
- ☑ PID: MiniRae 2000
- ☑ WQ METER: YSI 556 MPS
- ☑ TURB. METER: HACH 2100Q
- ☐ OTHER
- ☐ OTHER
- ☐ OTHER

WELL DEVELOPMENT CRITERIA

	Y	N
Well water clear to the unaided eye?	☑	
Sediment thickness remaining in well <1.0% of screen length?	☑	
Total water removed = a minimum of 5x calculated well volumes plus 5x drilling fluids lost?	☑	
Turbidity < 5NTUs?	☑	
10% change in field parameters?		☐

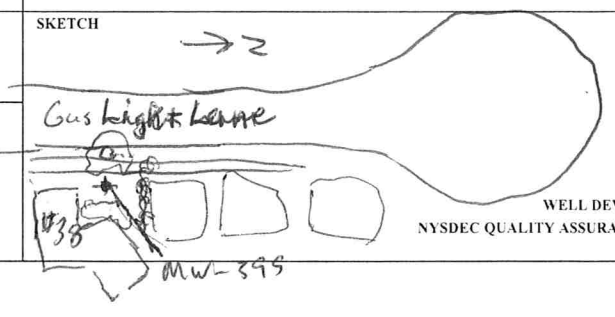
WAS DEVELOPMENT CRITERIA MET? Y ☑ N ☐

ADDITIONAL OBSERVATIONS

PURGE WATER CONTAINERIZED: Y ☑ N ☐

NUMBER OF GALLONS GENERATED: 55

SKETCH



NOTES

Well Developer Signature: Jerry Rauchliff

Checked By: MWG

Print Name: Jerry Rauchliff

Date: 6/22/17

FIGURE 4.9
WELL DEVELOPMENT RECORD
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

WELL DEVELOPMENT RECORD

MACTEC
511 Congress Street, Portland Maine 04101

PROJECT NAME: Scobell ~~AL Tech MRA~~ Chemical		LOCATION ID: MW-27D	PAGE: 1 OF 1
PROJECT NUMBER: 3617147328 ~~3612122222.06.01~~		START TIME: 1045	START DATE: 12/19/17
WELL INSTALLATION DATE: 12/14/17	WELL DEVELOPMENT DATE: 12/19/17	END TIME: 1145	END DATE: 12/19/17

WELL DIAMETER (INCHES): ☐ 1-IN. ☐ 2-IN. ☒ 4-IN. ☐ 6-IN. ☐ 8-IN. ☐ OTHER: OPENHOLE Bedrock

CASING DIAMETER (INCHES): ☐ 4-IN. ☐ 6-IN. ☐ 8-IN. ☐ 10-IN. ☐ 12-IN. ☐ OTHER: NA

MEASUREMENT POINT (MP): ☐ TOP OF RISER (TOR) ☒ TOP OF CASING (TOC) ☐ OTHER

INITIAL WELL DEPTH (BMP)	37.4 FT	FINAL WELL DEPTH (BMP)	37.4 FT	SCREEN LENGTH	1 FT	PROT. CASING STICKUP (AGS)	2.0 FT
INITIAL DTW (BMP)	19.41 FT	SEDIMENT REMOVED (final well depth - initial well depth)	— FT	SCREENED INTERVAL (BMP)	19.4 TO 37.4	TOC/TOR DIFFERENCE	NA FT
WATER COLUMN (initial well depth - initial depth to water)	17.99 FT	DTW AFTER DEVELOP. (BMP)	19.45 FT	PUMPING DEPTH (BMP)	≈37' FT	PID AMBIENT AIR	0 PPM
CALCULATED GAL/VOL (column X well diameter squared X 0.041)	12.2 GAL	FINAL RECOVERY DEPTH (BMP)	— FT	APPROXIMATE RECHARGE RATE	— FT/MIN	PID WELL MOUTH	21 PPM
TOTAL VOL. PURGED (mL per minute X total minutes X 0.00026 gal/mL)	90 GAL	FINAL RECOVERY TIME (elapsed)	— MIN	FLUIDS LOST DURING DRILLING	UNK GAL	END OF WELL DEVELOPMENT SAMPLE TAKEN?	Y ☐ N ☒

FIELD PARAMETERS

TIME	DTW (ft BMP)	PURGE RATE ~~(mL/min)~~ GPM	TEMP. (°C)	SP. CONDUCTANCE (mS/cm)	pH (units)	DISS. O_2 (mg/L)	TURBIDITY (ntu)	REDOX (mv)	VOLUME PURGED (gal)	TOTAL GALLONS	COMMENTS
1054	19.41	—	—	—	—	—	—	—	0	0	
1058	20.15	1.9 GPM	—	—	—	—	—	—	5	5	
1100	20.26	1.9	—	—	—	—	—	—	5	10	water has a slight pink color (dye)
1106	20.31	1.9	—	—	—	—	—	—	10	20	
1111	20.33	1.9	—	—	—	—	—	—	10	30	
1117	20.33	1.9	—	—	—	—	—	—	10	40	Surged well
1123	20.34	1.9	—	—	—	—	—	—	10	50	
1129	20.34	1.9	—	—	—	—	—	—	10	60	
1134	20.35	1.9	—	—	—	—	—	—	10	70	
1140	20.39	1.9 GPM	—	—	—	—	—	—	10	80	
									10	90	

EQUIPMENT DOCUMENTATION

- ☑ DEDICATED SUBMERSIBLE
- ☐ SURGE BLOCK
- ☐ BAILER ☐ 2" ☐ ____
- ☐ GRUNDFOS ☐ 2" ☐ 4"
- ☐ OTHER

- ☑ WATER LEVEL METER
- ☐ PID ____
- ☐ WQ METER ____
- ☐ TURB. METER ____
- ☐ OTHER ____
- ☐ OTHER ____
- ☐ OTHER

WELL DEVELOPMENT CRITERIA

	Y	N
Well water clear to the unaided eye?	☒	☐
Sediment thickness remaining in well <1.0% of screen length?	☒	☐
Total water removed = a minimum of 5x calculated well volumes plus 5x drilling fluids lost?	☐	☐
Turbidity < 5NTUs?	☐	☐
10% change in field parameters?	☐	☐

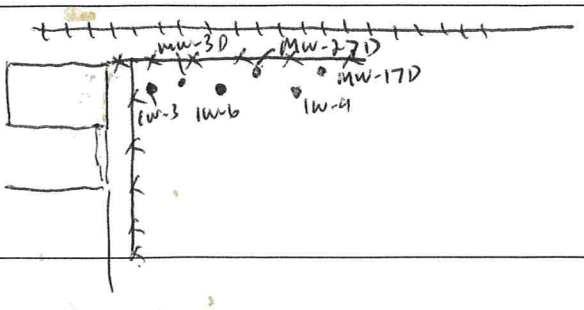
WAS DEVELOPMENT CRITERIA MET? Y ☐ N ☒

ADDITIONAL OBSERVATIONS

PURGE WATER CONTAINERIZED: Y ☑ N ☐

NUMBER OF GALLONS GENERATED: 90

SKETCH



NOTES

Well Developer Signature: Jerry Rawcliffe
Print Name: Jerry Rawcliffe
Checked By: MHL 1/2/18
Date: 12/19/17

WELL DEVELOPMENT RECORD

MACTEC
511 Congress Street, Portland Maine 04101

PROJECT NAME: Scobell Chemical ~~AlliTech MPA~~	LOCATION ID: MW-280
PROJECT NUMBER: 361714732S-03 ~~3612122222.06.01~~	PAGE: 1 OF 1
WELL INSTALLATION DATE: 12/15/17	START TIME: 0825
WELL DEVELOPMENT DATE: 12/19/17	START DATE: 12/19/17
	END TIME: 1040
	END DATE: 12/19/17

WELL DIAMETER (INCHES): ☐ 1-IN. ☐ 2-IN. ☑ 4-IN. ☐ 6-IN. ☐ 8-IN. ☐ OTHER: Open hole bedrock

CASING DIAMETER (INCHES): ☐ 4-IN. ☐ 6-IN. ☐ 8-IN. ☐ 10-IN. ☐ 12-IN. ☐ OTHER: NA

MEASUREMENT POINT (MP): ☐ TOP OF RISER (TOR) ☑ TOP OF CASING (TOC) ☐ OTHER

INITIAL WELL DEPTH (BMP)	32.2' FT	FINAL WELL DEPTH (BMP)	32.2 FT	SCREEN LENGTH	NA FT	PROT. CASING STICKUP (AGS)	0.5 FT
INITIAL DTW (BMP)	18.22 FT	SEDIMENT REMOVED (final well depth - initial well depth)	— FT	SCREENED INTERVAL (BMP)	18.2 TO 32.2	TOC/TOR DIFFERENCE	NA FT
WATER COLUMN (initial well depth - initial depth to water)	14' FT	DTW AFTER DEVELOP. (BMP)	— FT	PUMPING DEPTH (BMP)	32' FT	PID AMBIENT AIR	0 PPM
CALCULATED GAL/VOL (column X well diameter squared X 0.041)	9.5 GAL	FINAL RECOVERY DEPTH (BMP)	— FT	APPROXIMATE RECHARGE RATE	— FT/MIN	PID WELL MOUTH	54. PPM
TOTAL VOL. PURGED (mL per minute X total minutes X 0.00026 gal/mL)	40 GAL	FINAL RECOVERY TIME (elapsed)	— MIN	FLUIDS LOST DURING DRILLING	UNK GAL	END OF WELL DEVELOPMENT SAMPLE TAKEN?	Y ☐ N ☑

FIELD PARAMETERS

TIME	DTW (ft BMP)	PURGE RATE ~~(mL/min)~~ GPM	TEMP. (°C)	SP. CONDUCTANCE (mS/cm)	pH (units)	DISS. O_2 (mg/L)	TURBIDITY (ntu)	REDOX (mv)	VOLUME PURGED (gal)	TOTAL GALLONS	COMMENTS
0841	29.2	0.36	—	—	—	—	—	—	10	10	
0916	29.55	0.36	—	—	—	—	—	—	10	20	
0950	29.65	0.36	—	—	—	—	—	—	10	30	water clear with pink tinge
1030	29.67	0.36	—	—	—	—	—	—	10	40	
											Well purged dry repeatedly but recovers quite quickly.

EQUIPMENT DOCUMENTATION

- ☑ DEDICATED SUBMERSIBLE
- ☐ SURGE BLOCK
- ☐ BAILER ☐ 2" ☐ ____
- ☐ GRUNDFOS ☐ 2" ☐ 4"
- ☐ OTHER

- ☑ WATER LEVEL METER
- ☐ PID ____
- ☐ WQ METER ____
- ☐ TURB. METER ____
- ☐ OTHER ____
- ☐ OTHER ____
- ☐ OTHER ____

WELL DEVELOPMENT CRITERIA

	Y	N
Well water clear to the unaided eye?	✓	
Sediment thickness remaining in well <1.0% of screen length?		—
Total water removed = a minimum of 5x calculated well volumes plus 5x drilling fluids lost?		—
Turbidity < 5NTUs?		—
10% change in field parameters?		—

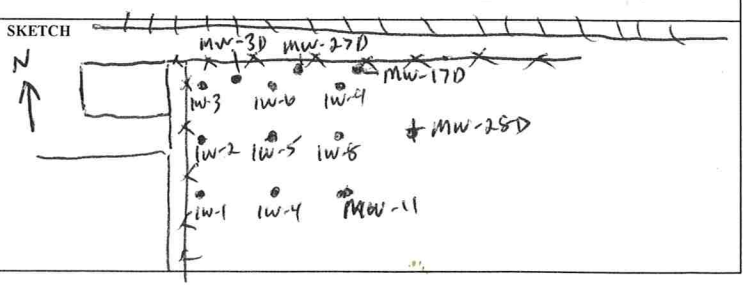
WAS DEVELOPMENT CRITERIA MET? Y ☐ N ☑

ADDITIONAL OBSERVATIONS

PURGE WATER CONTAINERIZED: Y ☑ N ☐

NUMBER OF GALLONS GENERATED: 40

SKETCH



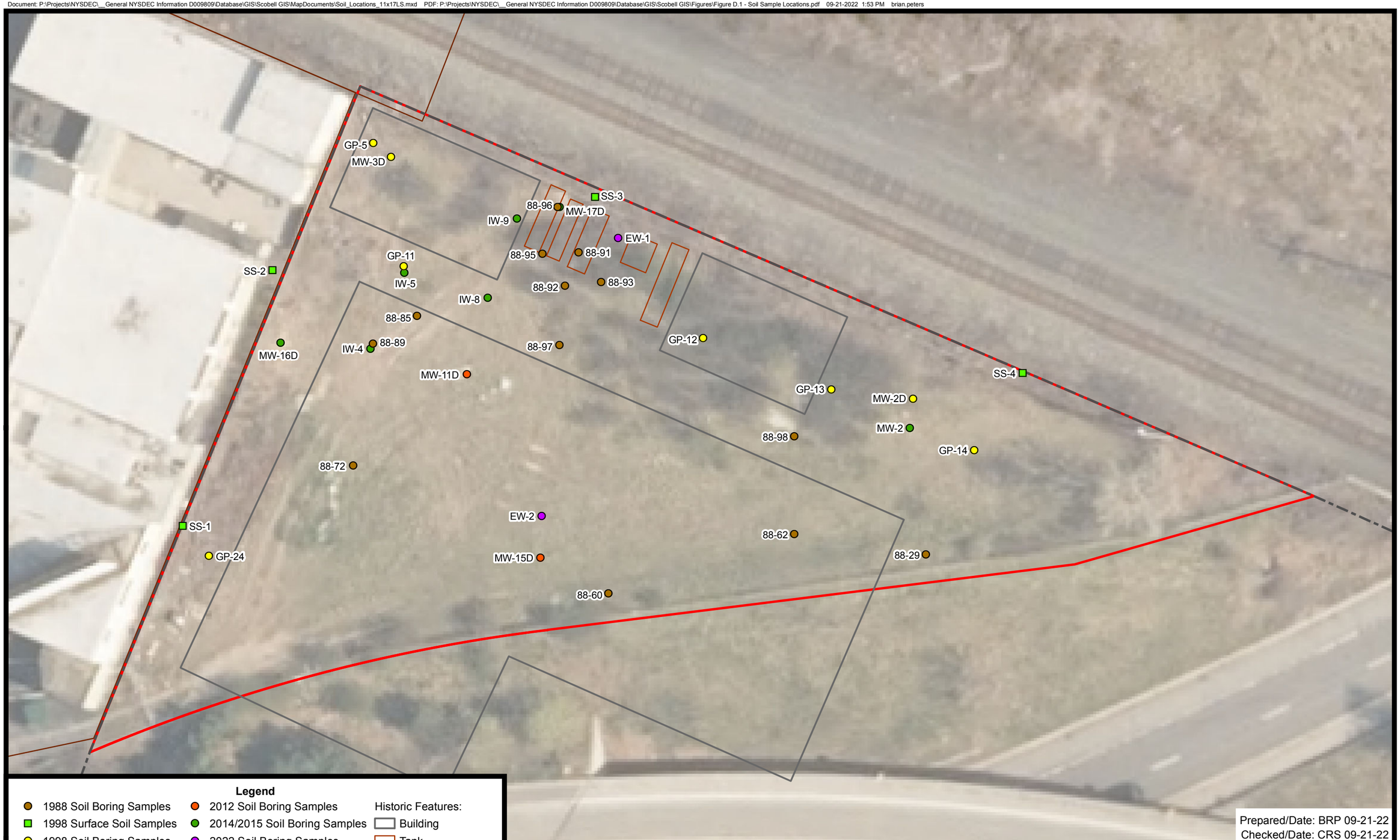
NOTES

Well Developer Signature: Jerry Rudloff
Checked By: MVL 1/2/18

Print Name: Terry Ruschhaupt
Date: 12/19/17

APPENDIX D – PREVIOUS SOIL SAMPLE RESULTS

Document: P:\Projects\NYSDEC__General NYSDEC Information D009809\Database\GIS\Scobell GIS\MapDocuments\Soil_Locations_11x17LS.mxd PDF: P:\Projects\NYSDEC__General NYSDEC Information D009809\Database\GIS\Scobell GIS\Figures\Figure D.1 - Soil Sample Locations.pdf 09-21-2022 1:53 PM brian.peters



Legend

- 1988 Soil Boring Samples
- 1998 Surface Soil Samples
- 1998 Soil Boring Samples
- 2012 Soil Boring Samples
- 2014/2015 Soil Boring Samples
- 2022 Soil Boring Samples
- Property Line
- Site Boundary

Historic Features:

- Building
- Tank
- Property Boundary

N

0 15 30 Feet

Prepared/Date: BRP 09-21-22
Checked/Date: CRS 09-21-22

SCOBELL CHEMICAL-
NYSDOT SITE # 828076
BRIGHTON, NEW YORK

MACTEC

Soil Sample Locations

Project 3616216143 Figure D.1

Table 2.1
DATA SUMMARY FROM PREVIOUS SAMPLING/INVESTIGATIONS

DATA SUMMARY OF 1988 NYSDOT SOIL DATA SAMPLE LOCATIONS WITH THE HIGHEST SOIL CONCENTRATIONS									
Sample Location (Depth)		Toluene (ppm)	TCE (ppm)	PCE (ppm)	1,2-DCE (ppm)	Pest (ppm)	Herb (ppm)	EP Toxicity(mg/L)	
								Cr	Pb
88-29	(12"-36")	5.73		0.254	3.65				
	(36"-60")	30.1		6.06	6.03				
	(60"-104.4")	<0.020		<0.010	<0.01				
88-30	(36"-60")						12.9 (MCPP)		
88-60	(0-18")	0.0635	0.207		0.0555				
	(18"-36")	2.84	0.118		76.1				
	(84"-108")	22.6	3.84		1.63				
88-61	(0-18")	0.849	34.3		5.8				
	(18"-36")	14.1	6.4		1				
	(84"-107)	525	116		5				
88-62	(0-18")				6.25				
	(18"-36")				1.11				
	(84"-102")				2.4				
88-71	(Surface) "A"							8.32	
	(18"-36") "B"								12.2
88-72	(Surface) "A"	0.601		0.181				758	
	(12"-36")	0.515		0.0569					
	(36"-60")	<5		<5					
	(72"-80.4")	266	1.05	4.25					
88-73	(Surface) "A"							11.1	5.64
88-75	(Surface)							11.1	
88-76	(Surface)							15.3	
	(0-18")								4.87
88-85	(0-18")	47.4	22.4	16.4					
	(18"-36")	51.6	13	9.38					
88-89	(0-18")	19.3	1.38	36					
	(18"-36")	530	6.32	73.6					
88-91	(0-18")	334							
88-92	(0-18")	126							

DATA SUMMARY OF 1988 NYSDOT SOIL DATA SAMPLE LOCATIONS WITH THE HIGHEST SOIL CONCENTRATIONS									
Sample Location (Depth)		Toluene (ppm)	TCE (ppm)	PCE (ppm)	1,2-DCE (ppm)	Pest (ppm)	Herb (ppm)	EP Toxicity(mg/L)	
								Cr	Pb
	(18"-36")	74.9							
88-93	(0-18")	411							
88-93	(18"-36")	93.1							
88-95	(Surface)	<2.5							
	(0-18")	<5							
	(18"-36")	64							
88-96	(Surface)	0.037							
	(0-18")	14.2							
	(18"-36")	73.2							
88-97	(0-18")	574	1.92						
	(18"-36")	139	<2.5						
88-98	(Surface)	<0.025							
	(0-18")	37							
	(18"-36")	364							
	(36"-76")	989							

Summary of Sample Results from 5/92 Surface Water-Sediment Sampling from Grass Creek Drainage System			
sample	cis-1,2-DCE (ppb)	TCE (ppb)	vinyl chloride (ppb)
surface water #3	310	140	6
surface water #4	63	42	1

5/95 GROUNDWATER SAMPLE COLLECTED FROM OPEN EXCAVATION AT BLOSSOM VILLAGE APARTMENTS (~1/2 MILE to the N-NE)	
TCE	1,2-DCE
62 ppb	17 ppb

WATER SAMPLES TAKEN FROM LEACHATE HOLDING TANK							
Date Sample Collected	Methylene Chloride (ppb)	1,2-DCE (ppb)	1,2-DCA (ppb)	TCA (ppb)	TCE (ppb)	PCE (ppb)	Toluene (ppb)
4/10/89	32.8	1,360	122	31.8	224	302	150
7/6/92	36.2	9.5	21.7	93.4	435	114	<1.0

TABLE 5.2
SUMMARY OF SURFACE SOIL ANALYTICAL RESULTS
SCOBELL CHEMICAL OU#1 SITE INVESTIGATION

SURFACE SOIL SUMMARY DATA DETECTED COMPOUNDS		SAMPLE ID:	SS01	SS02	SS03	Dup of SS03 SS103	SS04
		DEPTH:	0-0.5'	0-0.5'	0-0.5'	0-0.5'	0-0.5'
		LAB ID:	E0820-01	E0820-02	E0820-03	E0820-05	E0820-05
		SOURCE:	MITKEM	MITKEM	MITKEM	MITKEM	MITKEM
		SDG:	E0820	E0820	E0820	E0820	E0820
		MATRIX:	SOIL	SOIL	SOIL	SOIL	SOIL
		SAMPLED:	35942	35942	35942	35942	35942
		VALIDATED:	08/12/98	08/12/98	08/12/98	08/12/98	08/12/98
CAS NO.	COMPOUND	UNITS:					
	VOLATILES						
100-41-4	Ethylbenzene	ug/Kg	16 UJ	3 J	13 UJ	14 UJ	13 UJ
127-18-4	Tetrachloroethene	ug/Kg	16 U	13 UJ	13 U	14 UJ	1 J
108-88-3	Toluene	ug/Kg	16 U	13 UJ	13 U	2 J	13 U
79-01-6	Trichloroethene	ug/Kg	16 U	1 J	13 U	14 UJ	13 U
1330-20-7	Xylene (total)	ug/Kg	16 UJ	20 J	3 J	5 J	13 UJ
	PESTICIDES						
72-54-8	4,4'-DDD	ug/Kg	17 JN	50 JN	150 JN	89 JN	8.3 J
72-55-9	4,4'-DDE	ug/Kg	5.4 JN	55 JN	98 J	110 J	5.1 JN
50-29-3	4,4'-DDT	ug/Kg	130 J	400 J	1500 J	1400 J	41 J
60-57-1	Dieldrin	ug/Kg	5.3 JN	41 J	43 UJ	44 UJ	4.2 UJ
1031-07-8	Endosulfan sulfate	ug/Kg	3.6 UJ	20 JN	43 UJ	44 UJ	4.2 UJ
72-20-8	Endrin	ug/Kg	4.5 JN	130 J	43 UJ	44 UJ	4.2 UJ
7421-93-4	Endrin aldehyde	ug/Kg	3.6 UJ	24 JN	43 UJ	44 UJ	4.2 UJ
53494-70-5	Endrin ketone	ug/Kg	6.7 JN	8.4 JN	43 UJ	44 UJ	4.2 UJ
1024-57-3	Heptachlor epoxide	ug/Kg	1.9 UJ	2 UJ	22 UJ	23 UJ	2.6 J
72-43-5	Methoxychlor	ug/Kg	110 JN	50 JN	67 JN	230 UJ	9.5 J
5103-71-9	alpha-Chlordane	ug/Kg	2.1 JN	63 J	22 UJ	23 UJ	14 J
319-86-8	delta-BHC	ug/Kg	1.9 UJ	2 UJ	22 UJ	23 UJ	2.4 JN
5103-74-2	gamma-Chlordane	ug/Kg	4.6 JN	24 JN	22 UJ	23 UJ	9.8 JN
	METALS						
7429-90-5	Aluminum	mg/Kg	8780 J	7790 J	5000 J	5210 J	7950 J
7440-36-0	Antimony	mg/Kg	1.1 J	0.45 UJ	0.5 UJ	0.5 UJ	0.46 UJ
7440-38-2	Arsenic	mg/Kg	16.8 J	44.5 J	11.8 J	11.2 J	7.4 J
7440-39-3	Barium	mg/Kg	321 J	557 J	546 J	543 J	75.7 J
7440-41-7	Beryllium	mg/Kg	0.47 J	0.7 J	0.33 J	0.34 J	0.21 J
7440-43-9	Cadmium	mg/Kg	33.3 J	10 J	3.5 J	3.7 J	0.7 J
7440-70-2	Calcium	mg/Kg	14900 J	11100 J	13200 J	20300 J	5410 J
7440-47-8	Chromium	mg/Kg	164 J	120 J	89.3 J	102 J	36.1 J
7440-48-4	Cobalt	mg/Kg	10.8 J	10.2 J	9.7 J	9.5 J	4.7 J
7440-50-8	Copper	mg/Kg	195 J	1110 J	216 J	202 J	48.4 J
7439-89-6	Iron	mg/Kg	13200 J	17000 J	22700 J	48500 J	20300 J
7439-92-1	Lead	mg/Kg	668 J	627 J	316 J	573 J	30.4 J
7439-95-4	Magnesium	mg/Kg	14300 J	6200 J	3510 J	3220 J	2960 J
7439-96-5	Manganese	mg/Kg	590 J	539 J	303 J	301 J	134 J
7439-97-6	Mercury	mg/Kg	0.41 J	0.94 J	0.9 J	0.75 J	0.11 UJ
7440-02-0	Nickel	mg/Kg	215 J	76.4 J	44.1 J	40.9 J	13.7 J
7440-09-7	Potassium	mg/Kg	831 U	901 U	1000 U	1020 J	916 U
7782-49-2	Selenium	mg/Kg	7.9 J	2.1 J	2.9 J	3.2 J	1.3 J
7440-22-4	Silver	mg/Kg	0.42 UJ	2.8 J	2 J	158 J	0.46 UJ
7440-23-5	Sodium	mg/Kg	166 J	196 J	195 J	110 J	45.8 U
7440-62-2	Vanadium	mg/Kg	30.3 J	27.8 J	16.9 J	17.3 J	21.1 J
7440-66-6	Zinc	mg/Kg	2020 J	2320 J	836 J	877 J	108 J

GP-1 to GP-4 were collected off-site

TABLE 5.3
SUMMARY OF SUBSURFACE SOIL ANALYTICAL RESULTS
SCOBELL CHEMICAL SITE INVESTIGATION

SUBSURFACE SOIL SUMMARY DATA DETECTED COMPOUNDS		SAMPLE ID:	NYSDEC	GP01C	GP01F	GP02E	GP02F	GP03D	GP03F
		DEPTH:	Rec.	4-5.5'	11-12'	7.5-9'	10.5-11.5'	4-8'	10-12'
		LAB ID:	Soil	E0764-01	E0764-02	E0764-03	E0764-04	E0764-05	E0764-06
		SOURCE:	Cleanup	MITKEM	MITKEM	MITKEM	MITKEM	MITKEM	MITKEM
		SDG:	Objective	E0764	E0764	E0764	E0764	E0764	E0764
		MATRIX:	(TAGM 4046)	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		SAMPLED:		5/15/98	5/15/98	5/15/98	5/15/98	5/15/98	5/15/98
		VALIDATED:		8/12/98	8/12/98	8/12/98	8/12/98	8/12/98	8/12/98
CAS NO.	COMPOUND	UNITS:							
	VOLATILES								
67-64-1	Acetone	ug/Kg	200	11 U	11 U	11 U	11 U	13 U	11 U
71-43-2	Benzene	ug/Kg	60	11 U	11 U	11 U	11 U	13 U	11 U
78-93-3	2-Butanone	ug/Kg	300	11 U	11 U	11 U	11 U	13 U	11 U
75-15-0	Carbon disulfide	ug/Kg	2700	11 U	11 U	11 U	11 U	13 U	11 U
67-66-3	Chloroform	ug/Kg	300	11 U	11 U	11 U	11 U	13 U	11 U
75-35-3	1,1-Dichloroethane	ug/Kg	200	11 U	11 U	11 U	11 U	13 U	11 U
107-06-2	1,2-Dichloroethane	ug/Kg	100	3 J	2 J	2 J	1 J	12 J	5 J
75-35-4	1,1-Dichloroethene	ug/Kg	400	11 U	11 U	11 U	11 U	13 U	11 U
540-59-0	1,2-Dichloroethene (total)	ug/Kg	300	11 U	11 U	21	110	110	22
100-41-4	Ethylbenzene	ug/Kg	5500	11 U	11 U	11 U	11 U	13 U	11 U
75-09-2	Methylene chloride	ug/Kg	100	2 J	1 J	1 J	11 U	5 J	1 J
127-18-4	Tetrachloroethene	ug/Kg	1400	2 J	11 U	11 U	11 U	8 J	4 J
108-88-3	Toluene	ug/Kg	1500	8 J	3 J	4 J	1 J	28	9 J
71-55-6	1,1,1-Trichloroethane	ug/Kg	800	11 U	11 U	11 U	11 U	1 J	11 U
79-01-6	Trichloroethene	ug/Kg	700	3 J	11 U	8 J	59	220	52
1330-20-7	Xylene (total)	ug/Kg	1200	11 U	11 U	11 U	11 U	13 U	11 U
	SEMIVOLATILES								
83-32-9	Acenaphthene	ug/Kg	50000	5000					
208-96-8	Acenaphthylene	ug/Kg	41000	420 J					
120-12-7	Anthracene	ug/Kg	50000	13000					
56-55-3	Benzo[a]anthracene	ug/Kg	224	20000					
50-32-8	Benzo[a]pyrene	ug/Kg	61	28000					
205-99-2	Benzo[b]fluoranthene	ug/Kg	1100	28000					
191-24-2	Benzo[g,h,i]perylene	ug/Kg	50000	5600					
207-08-9	Benzo[k]fluoranthene	ug/Kg	1100	9300					
86-74-8	Carbazole	ug/Kg	NS	3700 J					
218-01-9	Chrysene	ug/Kg	400	20000					
53-70-3	Dibenz[a,h]anthracene	ug/Kg	14	1900 J					
132-64-9	Dibenzofuran	ug/Kg	6200	3600 J					
206-44-0	Fluoranthene	ug/Kg	50000	43000					
86-73-7	Fluorene	ug/Kg	50000	5500					
193-39-5	Indeno[1,2,3-cd]pyrene	ug/Kg	3200	5900					
91-57-6	2-Methylnaphthalene	ug/Kg	36400	2200 J					
95-48-7	2-Methylphenol	ug/Kg	100	3900 U					
106-44-5	4-Methylphenol	ug/Kg	900	3900 U					
91-20-3	Naphthalene	ug/Kg	13000	3600 J					
85-01-8	Phenanthrene	ug/Kg	50000	44000					
129-00-0	Pyrene	ug/Kg	50000	41000					
117-81-7	bis(2-Ethylhexyl)phthalate	ug/Kg	50000	3900 U					
	PESTICIDES								
309-00-2	Aldrin	ug/Kg	41	5.2	2.8 J	1.9 U	1.9 U	2.1 U	2.1 J
72-54-8	4,4'-DDD	ug/Kg	2900	3.9 U	3.6 U	3.7 U	3.8 U	4.1 U	3.7 U
72-55-9	4,4'-DDE	ug/Kg	2100	3.9 U	3.6 U	5.8 JN	3.8 U	4.1 U	3.7 U
50-29-3	4,4'-DDT	ug/Kg	2100	4.7 JN	98	3.7 U	3.8 U	10 JN	3.7 U
60-57-1	Dieldrin	ug/Kg	44	3.9 U	3.6 U	3.7 U	3.8 U	4.1 U	3.7 U
959-98-8	Endosulfan I	ug/Kg	900	2 U	41	1.9 U	2.4 J	2.1 U	1.9 U
33213-65-9	Endosulfan II	ug/Kg	900	3.9 U	11 J	3.7 U	3.8 U	4.1 U	3.7 U
72-20-8	Endrin	ug/Kg	100	3.9 U	3.6 U	3.7 U	3.8 U	4.5 J	3.7 U
53494-70-5	Endrin ketone	ug/Kg	NA	37	3.6 U	3.7 U	3.8 U	7.9 JN	7.3
1024-57-3	Heptachlor epoxide	ug/Kg	20	6.6 J	1.9 U	1.9 U	1.9 U	2.1 U	1.9 U
72-43-5	Methoxychlor	ug/Kg	**	120 JN	19 U	19 U	19 U	67 JN	31 JN
5103-71-9	alpha-Chlordane	ug/Kg	540	2 U	1.9 U	1.9 U	1.9 U	2.1 U	1.9 U
319-85-7	beta-BHC	ug/Kg	200	2 U	1.9 U	1.9 U	1.9 U	2.1 U	1.9 U
319-86-8	delta-BHC	ug/Kg	300	10 JN	1.9 U	2.3 JN	1.9 U	3.9 JN	2.5 JN
5103-74-2	gamma-Chlordane	ug/Kg	540	2 U	1.9 U	1.9 U	1.9 U	2.1 U	1.9 U
	METALS								
7429-90-5	Aluminum	mg/Kg	SB	4880	2330	5760	2280	10300	1100
7440-36-0	Antimony	mg/Kg	SB	0.54 J	0.34 UJ	0.45 UJ	0.38 UJ	0.39 J	0.4 UJ
7440-38-2	Arsenic	mg/Kg	SB	3.8	2.2	2.9	1.5 J	4.1	1.8 J
7440-39-3	Barium	mg/Kg	SB	44.9	18.5 J	39.8 J	24.3 J	95.6	8.6 J
7440-41-7	Beryllium	mg/Kg	SB	0.26 J	0.12 J	0.23 J	0.12 J	0.47 J	0.1 U
7440-43-9	Cadmium	mg/Kg	SB	0.66 J	0.17 J	0.59 J	0.25 J	0.42 J	0.28 J
7440-70-2	Calcium	mg/Kg	SB	34500	59000	59400	29100	4590	121000
7440-47-8	Chromium	mg/Kg	SB	6.9	4	8.9	3.8	21.3	3.1
7440-48-4	Cobalt	mg/Kg	SB	4.3 J	2.7 J	4.9 J	2.1 J	9.1 J	1.4 J
7440-50-8	Copper	mg/Kg	SB	60 J	10.7 J	24.1 J	8 J	18.8 J	4.1 J
7439-89-6	Iron	mg/Kg	SB	12500	8080	11700	6760	20800	4690
7439-92-1	Lead	mg/Kg	SB	87.8 J	0.34 U	22.4 J	0.38 U	10 J	0.4 U
7439-95-4	Magnesium	mg/Kg	SB	11100	22800	13000	9070	4440	63400
7439-96-5	Manganese	mg/Kg	SB	322	501	483	157	351	255
7439-97-6	Mercury	mg/Kg	SB	0.12 UJ	0.09 UJ	0.11 UJ	0.09 UJ	0.1 UJ	0.1 UJ
7440-02-0	Nickel	mg/Kg	SB	7.4 J	3.9 J	9 J	4.4 J	20.6 J	1.4 J
7440-09-7	Potassium	mg/Kg	SB	1170	671 U	899 U	764 U	3130	794 U
7782-49-2	Selenium	mg/Kg	SB	1.1 U	0.84 U	1.1 U	0.95 U	0.95 U	0.99 U
7440-22-4	Silver	mg/Kg	SB	0.42 UJ	0.34 UJ	2.5 J	0.38 UJ	0.38 UJ	0.4 UJ
7440-23-5	Sodium	mg/Kg	SB	42 U	33.6 U	44.9 U	38.2 U	37.9 U	134 J
7440-28-0	Thallium	mg/Kg	SB	0.83 U	0.5 U	0.67 U	0.57 U	0.57 U	0.6 U
7440-62-2	Vanadium	mg/Kg	SB	12.8	8.4	13.1	8.3 J	23.8	4 J
7440-66-6	Zinc	mg/Kg	SB	199 J	35.1 J	109 J	154 J	702 J	81.4 J

TABLE 5.3 (cont.)
SUMMARY OF SUBSURFACE SOIL ANALYTICAL RESULTS
SCOBELL CHEMICAL SITE INVESTIGATION

SUBSURFACE SOIL SUMMARY DATA DETECTED COMPOUNDS		SAMPLE ID:	NYSDEC	GP04E	GP04G	GP05B	GP05D	GP11B	GP11D
		DEPTH:	Rec.	8-9.5'	12-13'	0-4'	8-7.5'	1-3'	6-8'
		LAB ID:	Soil	E0764-07	E0764-08	E0743-02	E0743-01	E0743-06	E0743-05
		SOURCE:	Cleanup	MITKEM	MITKEM	MITKEM	MITKEM	MITKEM	MITKEM
		SDG:	Objective	E0764	E0764	E0743	E0743	E0743	E0743
		MATRIX:	(TAGM 4046)	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		SAMPLED:		5/15/98	5/15/98	5/13/98	5/13/98	5/13/98	5/13/98
		VALIDATED:		8/12/98	8/12/98	8/12/98	8/12/98	8/12/98	8/12/98
CAS NO.	COMPOUND	UNITS:							
	VOLATILES								
67-64-1	Acetone	ug/Kg	200	12 U	12 U	7 J	3 J	2 J	62000 U
71-43-2	Benzene	ug/Kg	60	12 U	12 U	12 U	11 U	6 J	62000 U
78-93-3	2-Butanone	ug/Kg	300	12 U	12 U	12 U	11 U	12 U	62000 U
75-15-0	Carbon disulfide	ug/Kg	2700	12 U	12 U	12 U	11 U	1 J	62000 U
67-66-3	Chloroform	ug/Kg	300	12 U	12 U	12 U	7 J	5 J	62000 U
75-35-3	1,1-Dichloroethane	ug/Kg	200	12 U	12 U	12 U	11 U	3 J	62000 U
107-06-2	1,2-Dichloroethane	ug/Kg	100	3 J	12 U	12 U	11 U	12 U	62000 U
75-35-4	1,1-Dichloroethene	ug/Kg	400	12 U	12 U	12 U	11 U	2 J	62000 U
540-59-0	1,2-Dichloroethene (total)	ug/Kg	300	2 J	31	12 U	11 U	460 J	62000 U
100-41-4	Ethylbenzene	ug/Kg	5500	12 U	12 U	12 U	11 U	12 U	62000 U
75-09-2	Methylene chloride	ug/Kg	100	2 J	12 U	3 J	4 J	19	62000 U
127-18-4	Tetrachloroethene	ug/Kg	1400	2 J	12 U	2 J	6 J	16000	45000 J
108-88-3	Toluene	ug/Kg	1500	7 J	2 J	2 J	6 J	120	680000
71-55-6	1,1,1-Trichloroethane	ug/Kg	800	12 U	12 U	12 U	11 U	140	5500 J
79-01-6	Trichloroethene	ug/Kg	700	56	49	12 U	6 J	61000	120000
1330-20-7	Xylene (total)	ug/Kg	1200	12 U	12 U	12 U	5 J	8 J	11000 J
	SEMIVOLATILES								
83-32-9	Acenaphthene	ug/Kg	50000						160 J
208-96-8	Acenaphthylene	ug/Kg	41000						820 U
120-12-7	Anthracene	ug/Kg	50000						820 U
56-55-3	Benzo[a]anthracene	ug/Kg	224						87 J
50-32-8	Benzo[a]pyrene	ug/Kg	61						820 U
205-99-2	Benzo[b]fluoranthene	ug/Kg	1100						820 U
191-24-2	Benzo[g,h,i]perylene	ug/Kg	50000						820 U
207-08-9	Benzo[k]fluoranthene	ug/Kg	1100						820 U
86-74-8	Carbazole	ug/Kg	NS						820 U
218-01-9	Chrysene	ug/Kg	400						94 J
53-70-3	Dibenz[a,h]anthracene	ug/Kg	14						820 U
132-64-9	Dibenzofuran	ug/Kg	6200						130 J
206-44-0	Fluoranthene	ug/Kg	50000						400 J
86-73-7	Fluorene	ug/Kg	50000						130 J
193-39-5	Indeno[1,2,3-cd]pyrene	ug/Kg	3200						820 U
91-57-6	2-Methylnaphthalene	ug/Kg	36400						1200
95-48-7	2-Methylphenol	ug/Kg	100						820 U
106-44-5	4-Methylphenol	ug/Kg	900						820 U
91-20-3	Naphthalene	ug/Kg	13000						5300
85-01-8	Phenanthrene	ug/Kg	50000						540 J
129-00-0	Pyrene	ug/Kg	50000						320 J
117-81-7	bis(2-Ethylhexyl)phthalate	ug/Kg	50000						100 J
	PESTICIDES								
309-00-2	Aldrin	ug/Kg	41	2 UJ	2 U	2 U	2.2 U	2.1 U	2.1 U
72-54-8	4,4'-DDD	ug/Kg	2900	3.9 UJ	4 U	4.1 J	4.2 U	32	11
72-55-9	4,4'-DDE	ug/Kg	2100	3.9 UJ	4 U	3.9 U	4.2 U	18 JN	4.9
50-29-3	4,4'-DDT	ug/Kg	2100	3.9 UJ	4 U	40	4.2 U	52 J	30
60-57-1	Dieldrin	ug/Kg	44	3.9 UJ	4 U	6.5 JN	4.2 U	30 JN	4.1 U
959-98-8	Endosulfan I	ug/Kg	900	2 UJ	2 U	2 U	2.2 U	2.1 U	2.1 U
33213-65-9	Endosulfan II	ug/Kg	900	3.9 UJ	4 U	3.9 U	4.2 U	4.1 U	4.1 U
72-20-8	Endrin	ug/Kg	100	3.9 UJ	4 U	3.9 U	4.2 U	9.8 JN	4.1 U
53494-70-5	Endrin ketone	ug/Kg	NA	3.9 UJ	4 U	5.8 JN	4.2 U	23	4.1 U
1024-57-3	Heptachlor epoxide	ug/Kg	20	2 UJ	2 U	2 U	2.2 U	7.3 J	2.1 U
72-43-5	Methoxychlor	ug/Kg	**	20 UJ	20 U	26 JN	22 U	91 JN	21 U
5103-71-9	alpha-Chlordane	ug/Kg	540	2 UJ	2 U	2.9 J	2.2 U	17	4.4
319-85-7	beta-BHC	ug/Kg	200	2 UJ	2 U	2 U	2.2 U	2.3 JN	2.1 U
319-86-8	delta-BHC	ug/Kg	300	11 J	2 U	2 U	2.2 U	5.5 JN	2.1 U
5103-74-2	gamma-Chlordane	ug/Kg	540	2 UJ	2 U	2 U	2.2 U	9.3 J	2.5 J
	METALS								
7429-90-5	Aluminum	mg/Kg	SB	6220	7360	7230	21700	25600	13900
7440-36-0	Antimony	mg/Kg	SB	0.44 UJ	0.39 UJ	1.2 J	1.9 J	2 J	1.1 J
7440-38-2	Arsenic	mg/Kg	SB	2.5	2.7	6	13.3	8	4.6
7440-39-3	Barium	mg/Kg	SB	51.4	65.1	103	88.8	461	64
7440-41-7	Beryllium	mg/Kg	SB	0.28 J	0.35 J	0.21 J	0.67 J	4.6	0.33 J
7440-43-9	Cadmium	mg/Kg	SB	0.22 U	0.27 J	0.66 J	0.43 J	3.3 J	0.24 U
7440-70-2	Calcium	mg/Kg	SB	59300	64600	28800	27600	129000	2570
7440-47-8	Chromium	mg/Kg	SB	12.4	13.2	27.2	66.8	139	33
7440-48-4	Cobalt	mg/Kg	SB	5.8 J	7.3 J	2.6 J	6.4 J	4.3 J	4.4 J
7440-50-8	Copper	mg/Kg	SB	22.3 J	16.9 J	260 J	1350 J	2980 J	193 J
7439-89-6	Iron	mg/Kg	SB	14100	16300	22900	54600	20000	26900
7439-92-1	Lead	mg/Kg	SB	1.4 J	0.39 U	178 J	37.2 J	126 J	14.5 J
7439-95-4	Magnesium	mg/Kg	SB	13400	12900	11300	18700	12900	3110
7439-96-5	Manganese	mg/Kg	SB	392	479	244 J	359 J	873 J	282 J
7439-97-6	Mercury	mg/Kg	SB	0.1 UJ	0.11 UJ	0.24 J	0.11 UJ	0.68 J	0.11 UJ
7440-02-0	Nickel	mg/Kg	SB	10.7 J	12.6 J	8.3 J	29.6	16.4	15.4
7440-09-7	Potassium	mg/Kg	SB	1580	1710	771 U	908 U	837 U	866 U
7782-49-2	Selenium	mg/Kg	SB	1.1 U	0.96 U	1.5	2.8	2.6	1.5
7440-22-4	Silver	mg/Kg	SB	0.44 UJ	0.39 UJ	0.98 J	1.2 J	3.4 J	1.2 J
7440-23-5	Sodium	mg/Kg	SB	44.1 U	38.6 U	499 J	45.4 U	41.8 U	43.3 U
7440-28-0	Thallium	mg/Kg	SB	0.66 U	0.58 U	0.58 U	0.86 J	0.63 U	0.65 U
7440-62-2	Vanadium	mg/Kg	SB	17.7	20.3	18.5	68.5	25.1	30.1
7440-66-6	Zinc	mg/Kg	SB	38.9 J	156 J	77.3 J	304 J	471 J	250 J

TABLE 5.3 (cont.)
SUMMARY OF SUBSURFACE SOIL ANALYTICAL RESULTS
SCOBELL CHEMICAL SITE INVESTIGATION

SUBSURFACE SOIL SUMMARY DATA DETECTED COMPOUNDS		SAMPLE ID: DEPTH: LAB ID: SOURCE: SDG: MATRIX: SAMPLED: VALIDATED:	NYSDEC Rec. Soil Cleanup Objective (TAGM 4046)	Dup of GP11D GP101D 6-8' E0743-07 MITKEM E0743 SOIL 5/13/98 8/12/98	GP12C 5-6' E0743-09 MITKEM E0743 SOIL 5/13/98 8/12/98	GP12E 8-9' E0743-08 MITKEM E0743 SOIL 5/13/98 8/12/98	GP13D 6.5-8' E0757-03 MITKEM E0757 SOIL 5/14/98 8/12/98	GP13E 8-9' E0757-04 MITKEM E0757 SOIL 5/14/98 8/12/98	GP14D 7-8' E0757-01 MITKEM E0757 SOIL 5/14/98 8/12/98
CAS NO.	COMPOUND	UNITS:							
	VOLATILES								
67-64-1	Acetone	ug/Kg	200	73000 U	3000 U	2800 U	53	22 U	22 U
71-43-2	Benzene	ug/Kg	60	73000 U	3000 U	2800 U	12 U	11 U	11 U
78-93-3	2-Butanone	ug/Kg	300	73000 U	3000 U	2800 U	9 J	11 U	3 J
75-15-0	Carbon disulfide	ug/Kg	2700	73000 U	3000 U	2800 U	5 J	11 U	11 U
67-66-3	Chloroform	ug/Kg	300	73000 U	3000 U	2800 U	12 U	11 U	11 U
75-35-3	1,1-Dichloroethane	ug/Kg	200	73000 U	3000 U	2800 U	12 U	11 U	11 U
107-06-2	1,2-Dichloroethane	ug/Kg	100	73000 U	3000 U	2800 U	6 J	3 J	6 J
75-35-4	1,1-Dichloroethene	ug/Kg	400	73000 U	3000 U	2800 U	12 U	11 U	11 U
540-59-0	1,2-Dichloroethene (total)	ug/Kg	300	73000 U	3000 U	2800 U	12 U	11 U	11 U
100-41-4	Ethylbenzene	ug/Kg	5500	73000 U	470 J	2800 U	12 U	11 U	11 U
75-09-2	Methylene chloride	ug/Kg	100	73000 U	3000 U	2800 U	12 U	11 U	11 U
127-18-4	Tetrachloroethene	ug/Kg	1400	69000 J	3000 U	2800 U	1 J	11 U	11 U
108-88-3	Toluene	ug/Kg	1500	1100000	44000	34000	32	4 J	4 J
71-55-6	1,1,1-Trichloroethane	ug/Kg	800	13000 J	3000 U	2800 U	12 U	11 U	11 U
79-01-6	Trichloroethene	ug/Kg	700	200000	3000 U	2800 U	6 J	1 J	1 J
1330-20-7	Xylene (total)	ug/Kg	1200	16000 J	4300	2000 J	12 U	11 U	11 U
	SEMIVOLATILES								
83-32-9	Acenaphthene	ug/Kg	50000		410 U	380 U			
208-96-8	Acenaphthylene	ug/Kg	41000		410 U	380 U			
120-12-7	Anthracene	ug/Kg	50000		410 U	380 U			
56-55-3	Benzo[a]anthracene	ug/Kg	224		410 U	380 U			
50-32-8	Benzo[a]pyrene	ug/Kg	61		410 U	380 U			
205-99-2	Benzo[b]fluoranthene	ug/Kg	1100		410 U	380 U			
191-24-2	Benzo[g,h,i]perylene	ug/Kg	50000		410 U	380 U			
207-08-9	Benzo[k]fluoranthene	ug/Kg	1100		410 U	380 U			
86-74-8	Carbazole	ug/Kg	NS		410 U	380 U			
218-01-9	Chrysene	ug/Kg	400		410 U	380 U			
53-70-3	Dibenz[a,h]anthracene	ug/Kg	14		410 U	380 U			
132-64-9	Dibenzofuran	ug/Kg	6200		410 U	380 U			
206-44-0	Fluoranthene	ug/Kg	50000		410 U	380 U			
86-73-7	Fluorene	ug/Kg	50000		410 U	380 U			
193-39-5	Indeno[1,2,3-cd]pyrene	ug/Kg	3200		410 U	380 U			
91-57-6	2-Methylnaphthalene	ug/Kg	36400		320 J	110 J			
95-48-7	2-Methylphenol	ug/Kg	100		670	220 J			
106-44-5	4-Methylphenol	ug/Kg	900		660	280 J			
91-20-3	Naphthalene	ug/Kg	13000		1200	410			
85-01-8	Phenanthrene	ug/Kg	50000		410 U	380 U			
129-00-0	Pyrene	ug/Kg	50000		410 U	380 U			
117-81-7	bis(2-Ethylhexyl)phthalate	ug/Kg	50000		410 U	120 J			
	PESTICIDES								
309-00-2	Aldrin	ug/Kg	41	2.1 U	2.1 U	1.9 U	2 U	2 U	2 U
72-54-8	4,4'-DDD	ug/Kg	2900	9.9 J	4 U	3.8 U	3.9 U	3.8 U	3.8 U
72-55-9	4,4'-DDE	ug/Kg	2100	4.6	4 U	3.8 U	3.9 U	3.8 U	3.8 U
50-29-3	4,4'-DDT	ug/Kg	2100	27	4 U	3.8 U	3.9 U	3.8 U	3.8 U
60-57-1	Dieldrin	ug/Kg	44	4.1 U	4 U	3.8 U	3.9 U	3.8 U	3.8 U
959-98-8	Endosulfan I	ug/Kg	900	2.1 U	2.1 U	1.9 U	2 U	2 U	2 U
33213-65-9	Endosulfan II	ug/Kg	900	4.1 U	4 U	3.8 U	3.9 U	3.8 U	3.8 U
72-20-8	Endrin	ug/Kg	100	4.1 U	4 U	3.8 U	3.9 U	3.8 U	3.8 U
53494-70-5	Endrin ketone	ug/Kg	NA	4.1 U	4 U	3.8 U	3.9 U	3.8 U	3.8 U
1024-57-3	Heptachlor epoxide	ug/Kg	20	2.1 U	2.1 U	1.9 U	2 U	2 U	2 U
72-43-5	Methoxychlor	ug/Kg	**	21 U	21 U	19 U	20 U	20 U	20 U
5103-71-9	alpha-Chlordane	ug/Kg	540	2.8	2.1 U	1.9 U	2 U	2 U	2 U
319-85-7	beta-BHC	ug/Kg	200	2.1 U	2.1 U	1.9 U	2 U	2 U	2 U
319-86-8	delta-BHC	ug/Kg	300	2.1 U	2.1 U	1.9 U	2 U	2 U	2 U
5103-74-2	gamma-Chlordane	ug/Kg	540	2.8 JN	2.1 U	1.9 U	2 U	2 U	2 U
	METALS								
7429-90-5	Aluminum	mg/Kg	SB	13800	11100	4070	6740	5780	7650
7440-36-0	Antimony	mg/Kg	SB	0.94 J	0.82 J	0.33 UJ	0.44 UJ	0.37 UJ	0.41 UJ
7440-38-2	Arsenic	mg/Kg	SB	7.3	5.1	9.8	3.5	3	4
7440-39-3	Barium	mg/Kg	SB	57.2	58.4	21.4 J	23.9 J	24 J	44.6 J
7440-41-7	Beryllium	mg/Kg	SB	0.39 J	0.46 J	0.2 J	0.21 J	1.4	0.37 J
7440-43-9	Cadmium	mg/Kg	SB	0.22 U	0.23 U	0.42 J	1.6 J	0.22 U	0.23 U
7440-70-2	Calcium	mg/Kg	SB	2390	2480	17700	1950	5390	1590
7440-47-8	Chromium	mg/Kg	SB	52.3	12.5	7.6	17.4	20.3	11.5
7440-48-4	Cobalt	mg/Kg	SB	5.4 J	6 J	5.2 J	6.8 J	4.9 J	5.7 J
7440-50-8	Copper	mg/Kg	SB	244 J	20.4 J	16.2 J	13.5	28.8	20.4
7439-89-6	Iron	mg/Kg	SB	27200	22000	12800	13700	15500	16000
7439-92-1	Lead	mg/Kg	SB	19.3 J	12.9 J	6.3 J	12.2 J	8.8 J	10 J
7439-95-4	Magnesium	mg/Kg	SB	3080	3340	8600	1760	2270	2280
7439-96-5	Manganese	mg/Kg	SB	324 J	424 J	710 J	76.4 J	86.1 J	349 J
7439-97-6	Mercury	mg/Kg	SB	0.1 UJ	0.12 UJ	0.09 UJ	0.09 UJ	0.09 UJ	0.11 UJ
7440-02-0	Nickel	mg/Kg	SB	16.9	14.1	11.2	132	57.9	12.2
7440-09-7	Potassium	mg/Kg	SB	833 U	728 U	668 U	880 UJ	744 UJ	828 UJ
7782-49-2	Selenium	mg/Kg	SB	1 U	0.91 U	0.84 U	1.1 U	0.93 U	1 U
7440-22-4	Silver	mg/Kg	SB	0.84 J	0.36 UJ	0.33 UJ	0.44 UJ	0.37 UJ	0.41 UJ
7440-23-5	Sodium	mg/Kg	SB	41.7 U	36.4 U	33.4 U	44 U	37.2 U	41.4 U
7440-28-0	Thallium	mg/Kg	SB	0.83 J	0.7 J	0.5 U	0.66 U	0.61 J	0.62 U
7440-62-2	Vanadium	mg/Kg	SB	29.3	26.2	14.3	17.7	17.4	18.2
7440-66-6	Zinc	mg/Kg	SB	256 J	87.5 J	231 J	117 J	108 J	46.1 J

TABLE 5.3 (cont.)
SUMMARY OF SUBSURFACE SOIL ANALYTICAL RESULTS
SCOBELL CHEMICAL SITE INVESTIGATION

SUBSURFACE SOIL SUMMARY DATA DETECTED COMPOUNDS		SAMPLE ID:	NYSDEC	GP14E	GP24D	GP24E
		DEPTH:	Rec.	8-10'	7-8'	8-10'
		LAB ID:	Soil	E0757-02	E0743-03	E0743-04
		SOURCE:	Cleanup	MITKEM	MITKEM	MITKEM
		SDG:	Objective	E0757	E0743	E0743
		MATRIX:	(TAGM 4046)	SOIL	SOIL	SOIL
		SAMPLED:		5/14/98	5/13/98	5/13/98
		VALIDATED:		8/12/98	8/12/98	8/12/98
CAS NO.	COMPOUND	UNITS:				
	VOLATILES					
67-64-1	Acetone	ug/Kg	200	11 U	13	11 J
71-43-2	Benzene	ug/Kg	60	11 U	12 U	12 U
78-93-3	2-Butanone	ug/Kg	300	11 U	12 U	12 U
75-15-0	Carbon disulfide	ug/Kg	2700	11 U	12 U	12 U
67-66-3	Chloroform	ug/Kg	300	11 U	12 U	12 U
75-35-3	1,1-Dichloroethane	ug/Kg	200	11 U	12 U	12 U
107-06-2	1,2-Dichloroethane	ug/Kg	100	10 J	12 U	12 U
75-35-4	1,1-Dichloroethene	ug/Kg	400	11 U	12 U	12 U
540-59-0	1,2-Dichloroethene (total)	ug/Kg	300	1 J	12 U	12 U
100-41-4	Ethylbenzene	ug/Kg	5500	11 U	12 U	6 J
75-09-2	Methylene chloride	ug/Kg	100	11 U	4 J	4 J
127-18-4	Tetrachloroethene	ug/Kg	1400	11 U	12 U	2 J
108-88-3	Toluene	ug/Kg	1500	3 J	2 J	8 J
71-55-6	1,1,1-Trichloroethane	ug/Kg	800	11 U	12 U	12 U
79-01-6	Trichloroethene	ug/Kg	700	1 J	12 U	6 J
1330-20-7	Xylene (total)	ug/Kg	1200	11 U	12 U	3 J
	SEMIVOLATILES					
83-32-9	Acenaphthene	ug/Kg	50000	380 U		400 U
208-96-8	Acenaphthylene	ug/Kg	41000	380 U		400 U
120-12-7	Anthracene	ug/Kg	50000	380 U		400 U
56-55-3	Benzo[a]anthracene	ug/Kg	224	380 U		90 J
50-32-8	Benzo[a]pyrene	ug/Kg	61	380 U		73 J
205-99-2	Benzo[b]fluoranthene	ug/Kg	1100	380 U		150 J
191-24-2	Benzo[g,h,i]perylene	ug/Kg	50000	380 U		400 U
207-08-9	Benzo[k]fluoranthene	ug/Kg	1100	380 U		57 J
86-74-8	Carbazole	ug/Kg	NS	380 U		400 U
218-01-9	Chrysene	ug/Kg	400	380 U		120 J
53-70-3	Dibenz[a,h]anthracene	ug/Kg	14	380 U		400 U
132-64-9	Dibenzofuran	ug/Kg	6200	380 U		400 U
206-44-0	Fluoranthene	ug/Kg	50000	380 U		250 J
86-73-7	Fluorene	ug/Kg	50000	380 U		400 U
193-39-5	Indeno[1,2,3-cd]pyrene	ug/Kg	3200	380 U		400 U
91-57-6	2-Methylnaphthalene	ug/Kg	36400	380 U		400 U
95-48-7	2-Methylphenol	ug/Kg	100	380 U		400 U
106-44-5	4-Methylphenol	ug/Kg	900	380 U		400 U
91-20-3	Naphthalene	ug/Kg	13000	380 U		67 J
85-01-8	Phenanthrene	ug/Kg	50000	380 U		220 J
129-00-0	Pyrene	ug/Kg	50000	380 U		250 J
117-81-7	bis(2-Ethylhexyl)phthalate	ug/Kg	50000	76 J		440
	PESTICIDES					
309-00-2	Aldrin	ug/Kg	41	1.9 U	2.1 U	2 U
72-54-8	4,4'-DDD	ug/Kg	2900	3.8 U	4 U	4 U
72-55-9	4,4'-DDE	ug/Kg	2100	3.8 U	4 U	4 U
50-29-3	4,4'-DDT	ug/Kg	2100	3.8 U	4 U	4 U
60-57-1	Dieldrin	ug/Kg	44	3.8 U	4 U	4 U
959-98-8	Endosulfan I	ug/Kg	900	1.9 U	2.1 U	3.5 JN
33213-65-9	Endosulfan II	ug/Kg	900	3.8 U	4 U	4 U
72-20-8	Endrin	ug/Kg	100	3.8 U	4 U	4 U
53494-70-5	Endrin ketone	ug/Kg	NA	3.8 U	4 U	4 U
1024-57-3	Heptachlor epoxide	ug/Kg	20	1.9 U	2.1 U	2 U
72-43-5	Methoxychlor	ug/Kg	**	19 U	21 U	20 U
5103-71-9	alpha-Chlordane	ug/Kg	540	1.9 U	2.1 U	2 U
319-85-7	beta-BHC	ug/Kg	200	1.9 U	2.1 U	2 U
319-86-8	delta-BHC	ug/Kg	300	1.9 U	2.1 U	2 U
5103-74-2	gamma-Chlordane	ug/Kg	540	1.9 U	2.1 U	2 U
	METALS					
7429-90-5	Aluminum	mg/Kg	SB	5170	9100	8660
7440-36-0	Antimony	mg/Kg	SB	0.37 UJ	0.43 UJ	0.37 UJ
7440-38-2	Arsenic	mg/Kg	SB	3.7	3	4
7440-39-3	Barium	mg/Kg	SB	35.5 J	55	30.7 J
7440-41-7	Beryllium	mg/Kg	SB	0.23 J	0.43 J	0.26 J
7440-43-9	Cadmium	mg/Kg	SB	0.28 J	0.24 U	0.68 J
7440-70-2	Calcium	mg/Kg	SB	8430	2970	25300
7440-47-8	Chromium	mg/Kg	SB	6.6	12.9	8.9
7440-48-4	Cobalt	mg/Kg	SB	4.2 J	5.9 J	3.9 J
7440-50-8	Copper	mg/Kg	SB	13.9	17.4 J	36.2 J
7439-89-6	Iron	mg/Kg	SB	13900	18100	16400
7439-92-1	Lead	mg/Kg	SB	4.4 J	9.5 J	8.6 J
7439-95-4	Magnesium	mg/Kg	SB	4070	2780	15500
7439-96-5	Manganese	mg/Kg	SB	443 J	567 J	392 J
7439-97-6	Mercury	mg/Kg	SB	0.09 UJ	0.1 UJ	0.12 UJ
7440-02-0	Nickel	mg/Kg	SB	8.4	13.4	9.5
7440-09-7	Potassium	mg/Kg	SB	745 UJ	863 U	747 U
7782-49-2	Selenium	mg/Kg	SB	0.93 U	1.1 U	0.93 U
7440-22-4	Silver	mg/Kg	SB	0.37 UJ	0.68 J	0.42 J
7440-23-5	Sodium	mg/Kg	SB	37.3 U	43.2 U	37.4 U
7440-28-0	Thallium	mg/Kg	SB	0.87 J	1.1 J	0.56 U
7440-62-2	Vanadium	mg/Kg	SB	14.3	22.9	18.4
7440-66-6	Zinc	mg/Kg	SB	34.4 J	41 J	286 J

Conentration exceeds cleanup objectives
NA - Not available
SB - Site Background
U - Not detected
J - Estimated value
N - Presumptive evidence

TABLE 5.3 (Con't)

SUMMARY OF SUBSURFACE SOIL ANALYTICAL RESULTS
SCOBELL CHEMICAL SITE INVESTIGATION

SUBSURFACE SOIL SUMMARY DATA DETECTED COMPOUNDS		SAMPLE ID:	NYSDEC	MW-2C	MW-2D	MW-3B	MW-3C
		DEPTH:	Rec.			1-3'	3-6'
		LAB ID:	Soil	E0937-03	E0937-03DL	E0937-05	E0937-02
		SOURCE:	Cleanup	MITKEM	MITKEM	MITKEM	MITKEM
		SDG:	Objective	E0937	E0937	E0937	E0937
		MATRIX:	(TAGM 4046)	SOIL	SOIL	SOIL	SOIL
		SAMPLED:		6/16/98	6/16/98	6/15/98	6/15/98
		VALIDATED:		8/12/98	8/12/98	8/12/98	8/12/98
CAS NO.	COMPOUND	UNITS:					
	VOLATILES						
67-66-3	Chloroform	ug/Kg	300	12 U	12 U	52	51
100-41-4	Ethylbenzene	ug/Kg	5500	2 J	12 U	5 J	7 J
75-09-2	Methylene chloride	ug/Kg	100	15	13	45	36
127-18-4	Tetrachloroethene	ug/Kg	1400	12 U	1 J	2 J	12 U
108-88-3	Toluene	ug/Kg	1500	12 U	1 J	6 J	8 J
79-01-6	Trichloroethene	ug/Kg	700	12 U	12 U	3 J	12 U
1330-20-7	Xylene (total)	ug/Kg	1200	10 J	5 J	24	43
	PESTICIDES						
50-29-3	4,4'-DDT	ug/Kg	2100	4.1 UJ	4 UJ	21 J	4.1 UJ
60-57-1	Dieldrin	ug/Kg	44	4.1 UJ	4 UJ	4.2 JN	4.1 UJ
1031-07-8	Endosulfan sulfate	ug/Kg	1000	4.1 UJ	4 UJ	4.3 J	4.1 UJ
5103-71-9	alpha-Chlordane	ug/Kg	540	2.1 UJ	2 UJ	2.5 J	2.1 UJ
	METALS						
7429-90-5	Aluminum	mg/Kg	SB	9830 J	5440 J	5700 J	8790 J
7440-36-0	Antimony	mg/Kg	SB	0.36 UJ	0.43 UJ	2 J	0.36 UJ
7440-38-2	Arsenic	mg/Kg	SB	4	2.9	9.1	3.9
7440-39-3	Barium	mg/Kg	SB	51.9 J	32.6 J	87.4 J	49.7 J
7440-41-7	Beryllium	mg/Kg	SB	0.43 J	0.29 J	0.25 J	0.3 J
7440-43-9	Cadmium	mg/Kg	SB	0.52 J	0.66 J	2.8 J	0.6 J
7440-70-2	Calcium	mg/Kg	SB	1150 J	1220 J	19600 J	744 J
7440-47-8	Chromium	mg/Kg	SB	15.9 J	7.9 J	30.9 J	22.1 J
7440-48-4	Cobalt	mg/Kg	SB	6.3 J	3.9 J	2.4 J	3 J
7440-50-8	Copper	mg/Kg	SB	12.1	18.9	413	320
7439-89-6	Iron	mg/Kg	SB	17100 J	11600 J	20300 J	18400 J
7439-92-1	Lead	mg/Kg	SB	14.3 J	9.5 J	246 J	55 J
7439-95-4	Magnesium	mg/Kg	SB	2910 J	1820 J	6990 J	2030 J
7439-96-5	Manganese	mg/Kg	SB	285 J	212 J	214 J	245 J
7439-97-6	Mercury	mg/Kg	SB	0.05 UJ	0.06 UJ	0.1 J	0.06 UJ
7440-02-0	Nickel	mg/Kg	SB	13.8	9.7	20.7	10.6
7782-49-2	Selenium	mg/Kg	SB	0.89 UJ	1.1 UJ	2.3 J	0.98 J
7440-23-5	Sodium	mg/Kg	SB	305 J	604 J	460 J	162 J
7440-62-2	Vanadium	mg/Kg	SB	21	12.7	15.8	18
7440-66-6	Zinc	mg/Kg	SB	30.7 J	29.6 J	180 J	62.8 J

NA - Not available
SB - Site background
U - Not detected
J - Estimated value
N - Presumptive evidence

Table 2: Detected VOCs in Bedrock

Location ID	SB-11D		SB-11D		SB-11D		SB-12D		SB-12D	
Depth (ft bgs)	16		21		26		19		22	
Elevation (ft MSL)	438		432		427		425		422	
Sample Location Note (PID reading)	fracture (<0.1 ppm)		fracture (<0.1 ppm)		fracture (50 ppm)		fracture (10.4 ppm)		fracture (>1000 ppm)	
Sample ID	828076-SB11D016		828076-SB11D021		828076-SB11D026		828076-SB12D019		828076-SB12D022	
Sample Date	7/25/2012		7/25/2012		7/25/2012		7/27/2012		7/27/2012	
Parameter	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
1,1-Dichloroethane	**0.052**		0.049	U	0.049	U	0.052	U	0.049	U
1,2-Dichlorobenzene	**0.046**	J	0.049	U	0.049	U	0.052	U	0.049	U
1,2-Dichloroethane	**0.029**	J	0.049	U	0.049	U	0.052	U	0.049	U
1,2-Dichloropropane	**0.034**	J	0.049	U	0.049	U	0.052	U	0.049	U
Acetic acid, methyl ester	**0.13**		0.049	U	**0.044**	J	**0.14**		**0.044**	J
Benzene	**0.034**	J	0.049	U	0.049	U	0.052	U	0.049	U
Cis-1,2-Dichloroethene	**0.92**		**0.058**		**0.3**		**1.3**		**0.067**	
Cyclohexane	0.05	UJ	0.049	UJ	0.049	UJ	0.052	UJ	0.049	UJ
Ethyl benzene	**0.054**		0.049	U	0.049	U	0.052	U	0.049	U
Isopropylbenzene	**0.021**	J	0.049	U	0.049	U	0.052	U	0.049	U
Methyl cyclohexane	**0.04**	J	0.049	U	**0.023**	J	0.052	U	0.049	U
Tetrachloroethene	**0.23**		0.049	U	**0.19**		**0.27**		**0.89**	
Toluene	**0.25**		0.049	U	**0.05**		0.052	U	0.049	U
Trichloroethene	**0.09**		**0.059**		**98**		**54**		**29**	
Vinyl chloride	**0.29**		**0.029**	J	0.049	U	0.052	U	0.049	U
Xylenes, Total	**0.2**		0.097	U	0.099	U	0.1	U	0.098	U

Notes:
Bedrock Samples analyzed using Methanol Extraction Rock Chip (MERC) Method.
Samples analyzed for VOCs by USEPA Method 8260B
ppm = PID reading in parts per million
Results in miligrams per kilogram (only detected compounds shown) (detections in bold)
ft bgs = feet below ground surface
ft MSL = feet above mean sea level
Location Note = if sample collected at a fracture and photoionization reading in parts per million (ppm)
Qualifier:
J = estimated value
U = compound not detected at concentration above reporting limit.

Table 2: Detected VOCs in Bedrock

Location ID	SB-12D		SB-12D		SB-13D		SB-13D		SB-13D	
Depth (ft bgs)	31		36		25		29		32	
Elevation (ft MSL)	413		408		431		427		424	
Sample Location Note (PID reading)	fracture (0.1 ppm)		fracture (0.1 ppm)		fracture (<0.1 ppm)		fracture (<0.1 ppm)		fracture (47 ppm PID)	
Sample ID	828076-SB12D031		828076-SB12D036		828076-SB13D025		828076-SB13D029		828076-SB13D032	
Sample Date	7/27/2012		7/27/2012		7/26/2012		7/26/2012		7/26/2012	
Parameter	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
1,1-Dichloroethane	0.051	U	0.05	U	0.05	U	0.06	U	0.048	U
1,2-Dichlorobenzene	0.051	U	0.05	U	0.05	U	0.06	U	0.048	U
1,2-Dichloroethane	0.051	U	0.05	U	0.05	U	0.06	U	0.048	U
1,2-Dichloropropane	0.051	U	0.05	U	0.05	U	0.06	U	0.048	U
Acetic acid, methyl ester	0.051	U	0.05	U	0.05	U	**0.031**	J	0.048	U
Benzene	0.051	U	**0.018**	J	0.05	U	0.06	U	0.048	U
Cis-1,2-Dichloroethene	0.051	U	0.05	U	**0.27**		**0.56**		**0.85**	
Cyclohexane	**0.12**	J	**0.36**	J	0.05	UJ	0.06	UJ	0.048	UJ
Ethyl benzene	**0.024**	J	**0.078**		0.05	U	0.06	U	0.048	U
Isopropylbenzene	**0.029**	J	**0.035**	J	0.05	U	0.06	U	0.048	U
Methyl cyclohexane	**0.51**		**1.2**		0.05	U	0.06	U	0.048	U
Tetrachloroethene	0.051	U	0.05	U	**0.018**	J	0.06	U	**0.5**	
Toluene	0.051	U	**0.15**		0.05	U	0.06	U	**0.058**	
Trichloroethene	**0.026**	J	**0.016**	J	**0.77**		**4**		**62**	
Vinyl chloride	0.051	U	0.05	U	0.05	U	0.06	U	0.048	U
Xylenes, Total	0.1	U	**0.67**		0.099	U	0.12	U	0.097	U

Notes:
Bedrock Samples analyzed using Methanol Extraction Rock Chip (MERC) Method.
Samples analyzed for VOCs by USEPA Method 8260B
ppm = PID reading in parts per million
Results in miligrams per kilogram (only detected compounds shown) (detections in bold)
ft bgs = feet below ground surface
ft MSL = feet above mean sea level
Location Note = if sample collected at a fracture and photoionization reading in parts per million (ppm)
Qualifier:
J = estimated value
U = compound not detected at concentration above reporting limit.

Table 2: Detected VOCs in Bedrock

Location ID	SB-13D		SB-15D		SB-15D		SB-15D		SB-15D	
Depth (ft bgs)	40		18		25		26		34	
Elevation (ft MSL)	416		436		429		428		420	
Sample Location Note (PID reading)	fracture (<0.1 ppm)		fracture (0.5 ppm)		non fracture (0.5 ppm)		fracture (8.7 ppm)		fracture (<0.1 ppm)	
Sample ID	828076-SB13D040		828076-SB15D018		828076-SB15D025		828076-SB15D026		828076-SB15D034	
Sample Date	7/26/2012		7/30/2012		7/30/2012		7/30/2012		7/30/2012	
Parameter	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
1,1-Dichloroethane	0.05	U	0.048	U	0.049	U	0.05	U	0.049	U
1,2-Dichlorobenzene	0.05	U	0.048	U	0.049	U	0.05	U	0.049	U
1,2-Dichloroethane	0.05	U	0.048	U	0.049	U	0.05	U	0.049	U
1,2-Dichloropropane	0.05	U	0.048	U	0.049	U	0.05	U	0.049	U
Acetic acid, methyl ester	0.05	U	0.048	U	**0.027**	J	**0.041**	J	0.049	U
Benzene	0.05	U	0.048	U	0.049	U	0.05	U	0.049	U
Cis-1,2-Dichloroethene	0.05	U	**0.35**		**5**		**0.85**		0.049	U
Cyclohexane	**0.016**	J	0.048	UJ	0.049	UJ	**0.016**	J	0.049	UJ
Ethyl benzene	0.05	U	**0.026**	J	0.049	U	0.05	U	0.049	U
Isopropylbenzene	0.05	U	0.048	U	0.049	U	0.05	U	0.049	U
Methyl cyclohexane	**0.03**	J	0.048	U	0.049	U	**0.023**	J	0.049	U
Tetrachloroethene	0.05	U	0.048	U	0.049	U	**0.4**		0.049	U
Toluene	0.05	U	**0.055**		0.049	U	**0.11**		0.049	U
Trichloroethene	**0.033**	J	**0.035**	J	**13**		**140**		**0.044**	J
Vinyl chloride	0.05	U	**0.073**		**0.042**	J	0.05	U	0.049	U
Xylenes, Total	0.099	U	**0.016**	J	0.099	U	0.1	U	0.099	U

Notes:
Bedrock Samples analyzed using Methanol Extraction Rock Chip (MERC) Method.
Samples analyzed for VOCs by USEPA Method 8260B
ppm = PID reading in parts per million
Results in miligrams per kilogram (only detected compounds shown) (detections in bold)
ft bgs = feet below ground surface
ft MSL = feet above mean sea level
Location Note = if sample collected at a fracture and photoionization reading in parts per million (ppm)
Qualifier:
J = estimated value
U = compound not detected at concentration above reporting limit.

Table 3: Detected VOCs in Soil

		Location	SB-11D		SB-11D		S-15D		SB-15D	
		Sample ID	828076-SB11D-007		828076-SB11D-009		828076-SB15D-007		828076-SB15D-010	
		Depth (ft bgs)	7		9		7		10	
		Sample Date	7/23/2012		7/23/2012		7/25/2012		7/25/2012	
Analysis	**Parameter**	**Criteria**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
SW8260B	1,1-Dichloroethane	0.27	2.2	U	**0.0015**	J	0.0052	U	**0.0011**	J
SW8260B	1,2-Dichlorobenzene	1.1	**0.67**	J	**0.023**		0.0052	U	**0.0014**	J
SW8260B	Benzene	0.06	2.2	U	**0.0012**	J	0.0052	U	**0.0016**	J
SW8260B	Carbon disulfide	NA	2.2	U	**0.0039**	J	0.0052	U	**0.0063**	
SW8260B	Cis-1,2-Dichloroethene	0.25	2.2	U	**0.0028**	J	0.0052	U	0.0044	U
SW8260B	Cyclohexane	NA	2.2	UJ	**0.0011**	J	0.0052	U	**0.0013**	J
SW8260B	Ethyl benzene	1	2.2	U	**0.001**	J	0.0052	U	0.0044	U
SW8260B	Isopropylbenzene	NA	2.2	U	**0.0039**	J	0.0052	U	0.0044	U
SW8260B	Methyl cyclohexane	NA	2.2	U	**0.005**		0.0052	U	**0.0021**	J
SW8260B	Tetrachloroethene	1.3	2.2	U	0.0043	U	**0.024**		**0.0042**	J
SW8260B	Toluene	0.7	**170**		**0.11**		0.0052	U	**0.0095**	
SW8260B	Trichloroethene	0.47	2.2	U	0.0043	U	**0.02**		**0.0078**	
SW8260B	Vinyl chloride	0.02	2.2	U	**0.0039**	J	0.0052	U	0.0044	U
SW8260B	Xylenes, Total	0.26	**5.9**		**0.0042**	J	0.01	U	**0.0042**	J

Notes:
Samples analyzed for VOCs by USEPA Method 8260B
Results in miligrams per kilogram (only detected compounds shown)
(detections in bold)
ft bgs = feet below ground surface
Qualifier:
J = estimated value
U = compound not detected at concentration above reporting limit.
Criteria = NYCRR Part 375 - Soil Cleanup Objectives for the protection of groundwater
Highlighted cell exceeds criteria
NA = criteria not available

Table 5.3: Bedrock VOC Results

					Location	IW-002		IW-002		IW-002		IW-002		IW-003		IW-003	
					Sample Depth (ft bgs)	18.5		18.5		28		31.5		20.5		29.5	
					Media	BED		BED		BED		BED		BED		BED	
					Sample Date	8/4/2015		8/4/2015		8/5/2015		8/5/2015		8/3/2015		8/3/2015	
					Sample ID	828076-IW002019		828076-IW002019D		828076-IW002028		828076-IW002032		828076-IW003021		828076-IW003030	
		Criteria			Qc Code	FS		FD		FS		FS		FS		FS	
Parameter (VOCs)	**Casno**	**PG**	**COMM**	**IND**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
Acetic acid, methyl ester	79-20-9	NA	NA	NA		0.47	UJ	0.47	UJ	20	UJ	0.49	UJ	61	UJ	0.25	UJ
Carbon disulfide	75-15-0	NA	NA	NA	mg/kg	0.47	UJ	0.47	UJ	20	UJ	0.49	UJ	61	UJ	0.25	UJ
cis-1,2-Dichloroethene	156-59-2	0.25	500	1000	mg/kg	**0.061**	J	**0.052**	J	9.8	UJ	**0.016**	J	**18**	J	0.25	UJ
Methyl cyclohexane	108-87-2	NA	NA	NA	mg/kg	0.47	UJ	0.47	UJ	20	UJ	0.49	UJ	61	UJ	0.25	UJ
Methylene chloride	75-09-2	0.05	500	1000	mg/kg	0.24	UJ	0.24	UJ	9.8	UJ	0.25	UJ	61	UJ	0.25	UJ
Tetrachloroethene	127-18-4	1.3	150	300	mg/kg	**0.013**	J	0.24	UJ	**1.6**	J	0.25	UJ	61	UJ	0.25	UJ
Toluene	108-88-3	0.7	500	1000	mg/kg	**0.04**	J	**0.086**	J	9.8	UJ	**0.12**	J	**11**	J	**0.058**	J
Trichloroethene	79-01-6	0.47	200	400	mg/kg	**1**	J	**0.93**	J	**240**	J	**5.7**	J	**4100**	J	**1.2**	J
Vinyl chloride	75-01-4	0.02	13	27	mg/kg	0.24	UJ	0.24	UJ	9.8	UJ	0.25	UJ	61	UJ	0.25	UJ
Xylene, o	95-47-6	1.6	500	1000	mg/kg	0.24	UJ	0.24	UJ	9.8	UJ	0.25	UJ	61	UJ	0.25	UJ
Xylenes (m&p)	179601-23-1	1.6	500	1000	mg/kg	0.24	UJ	0.24	UJ	9.8	UJ	0.25	UJ	120	UJ	0.49	UJ

See Table 5.1 for Notes
(Standards shown for comparison purposes only)

Table 5.3: Bedrock VOC Results

						Location	IW-006		IW-006		IW-006		MW-04M		MW-04M		MW-04M	
						Sample Depth (ft bgs)	19		22		34		17		19		20	
						Media	BED		BED		BED		BED		BED		BED	
						Sample Date	8/4/2015		8/4/2015		8/4/2015		11/21/2014		11/21/2014		11/21/2014	
						Sample ID	828076-IW006020		828076-IW006023		828076-IW006035		828076-MW4M017		828076-MW4M019		828076-MW4M020	
		Criteria			Qc Code		FS		FS		FS		FS		FS		FS	
Parameter (VOCs)	**Casno**	**PG**	**COMM**	**IND**	**Units**		Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
Acetic acid, methyl ester	79-20-9	NA	NA	NA			0.48	UJ	0.98	UJ	0.5	UJ	0.25	U	0.25	U	0.25	U
Carbon disulfide	75-15-0	NA	NA	NA	mg/kg		0.48	UJ	0.98	UJ	0.5	UJ	0.25	U	0.25	U	0.25	U
cis-1,2-Dichloroethene	156-59-2	0.25	500	1000	mg/kg		**0.036**	J	**0.14**	J	0.25	UJ	**0.21**	J	**0.13**	J	**1**	
Methyl cyclohexane	108-87-2	NA	NA	NA	mg/kg		0.48	UJ	0.98	UJ	0.5	UJ	**0.026**	J	0.25	U	**0.023**	J
Methylene chloride	75-09-2	0.05	500	1000	mg/kg		0.24	UJ	0.49	UJ	0.25	UJ	0.25	U	0.25	U	0.25	U
Tetrachloroethene	127-18-4	1.3	150	300	mg/kg		0.24	UJ	**0.082**	J	0.25	UJ	0.25	U	0.25	U	**0.27**	
Toluene	108-88-3	0.7	500	1000	mg/kg		**0.024**	J	**0.034**	J	**0.022**	J	**0.018**	J	0.25	U	**0.028**	J
Trichloroethene	79-01-6	0.47	200	400	mg/kg		**0.16**	J	**11**	J	**0.33**	J	**3.2**		**1.5**		**16**	
Vinyl chloride	75-01-4	0.02	13	27	mg/kg		0.24	UJ	0.49	UJ	0.25	UJ	0.25	U	0.25	U	0.25	U
Xylene, o	95-47-6	1.6	500	1000	mg/kg		0.24	UJ	0.49	UJ	0.25	UJ	0.25	U	0.25	U	0.25	U
Xylenes (m&p)	179601-23-1	1.6	500	1000	mg/kg		0.24	UJ	0.49	UJ	0.25	UJ	0.5	U	0.5	U	0.5	U

See Table 5.1 for Notes
(Standards shown for comparison purposes only)

Table 5.3: Bedrock VOC Results

					Location	MW-16D		MW-16D		MW-16D		MW-17D		MW-17D		MW-17D	
					Sample Depth (ft bgs)	21		26		29		20		21		27	
					Media	BED		BED		BED		BED		BED		BED	
					Sample Date	10/26/2014		10/26/2014		10/26/2014		10/24/2014		10/24/2014		10/24/2014	
					Sample ID	828076-MW16D02		828076-MW16D02		828076-MW16D02		828076-MW17D02		828076-MW17D02		828076-MW17D027	
		Criteria			Qc Code	FS		FS		FS		FS		FS		FS	
Parameter (VOCs)	**Casno**	**PG**	**COMM**	**IND**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
Acetic acid, methyl ester	79-20-9	NA	NA	NA		0.53	U	2	U	0.098	U	0.99	U	0.11	U	2	U
Carbon disulfide	75-15-0	NA	NA	NA	mg/kg	0.27	U	0.99	U	0.049	U	0.5	U	**0.022**	J	1	U
cis-1,2-Dichloroethene	156-59-2	0.25	500	1000	mg/kg	**0.72**		**1.4**		0.049	U	**0.28**	J	**0.23**		**1.7**	
Methyl cyclohexane	108-87-2	NA	NA	NA	mg/kg	0.27	U	0.99	U	0.049	U	0.5	U	0.053	U	1	U
Methylene chloride	75-09-2	0.05	500	1000	mg/kg	0.27	U	0.99	U	0.049	U	0.5	U	0.053	U	1	U
Tetrachloroethene	127-18-4	1.3	150	300	mg/kg	0.27	U	**0.86**	J	0.049	U	0.5	U	**0.39**		**2.3**	
Toluene	108-88-3	0.7	500	1000	mg/kg	0.27	U	0.99	U	0.049	U	0.5	U	**0.29**		1	U
Trichloroethene	79-01-6	0.47	200	400	mg/kg	**35**		**230**		**0.57**		**57**		**220**		**130**	
Vinyl chloride	75-01-4	0.02	13	27	mg/kg	0.27	U	0.99	U	0.049	U	0.5	U	0.053	U	1	U
Xylene, o	95-47-6	1.6	500	1000	mg/kg	0.27	U	0.99	U	0.049	U	0.5	U	**0.02**	J	1	U
Xylenes (m&p)	179601-23-1	1.6	500	1000	mg/kg	0.53	U	2	U	0.098	U	0.99	U	**0.047**	J	2	U

See Table 5.1 for Notes
(Standards shown for comparison purposes only)

Table 5.3: Bedrock VOC Results

					Location	MW-17D		MW-17D		MW-18D		MW-18D		MW-18D		MW-20D	
					Sample Depth (ft bgs)	27		30		15		18		23		17	
					Media	BED		BED		BED		BED		BED		BED	
					Sample Date	10/24/2014		10/24/2014		11/14/2014		11/14/2014		11/15/2014		11/7/2014	
					Sample ID	28076-MW17D027		28076-MW17D030		28076-MW18D015		28076-MW18D018		28076-MW18D023		28076-MW20D017	
		Criteria			**Qc Code**	FD		FS		FS		FS		FS		FS	
Parameter (VOCs)	**Casno**	**PG**	**COMM**	**IND**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
Acetic acid, methyl ester	79-20-9	NA	NA	NA		2	U	0.21	U	0.25	U	0.25	U	0.25	U	0.25	U
Carbon disulfide	75-15-0	NA	NA	NA	mg/kg	1	U	0.11	U	0.25	U	0.25	U	0.25	U	0.25	U
cis-1,2-Dichloroethene	156-59-2	0.25	500	1000	mg/kg	**1.6**		0.11	U	**0.33**		**0.45**		0.25	U	**0.056**	J
Methyl cyclohexane	108-87-2	NA	NA	NA	mg/kg	1	U	0.11	U	0.25	U	0.25	U	**0.022**	J	0.25	U
Methylene chloride	75-09-2	0.05	500	1000	mg/kg	1	U	0.11	U	0.25	U	0.25	U	0.25	U	0.25	U
Tetrachloroethene	127-18-4	1.3	150	300	mg/kg	**2.2**		0.11	U	**0.028**	J	**0.078**	J	0.25	U	**0.01**	J
Toluene	108-88-3	0.7	500	1000	mg/kg	1	U	0.11	U	0.25	U	**0.029**	J	0.25	U	0.25	U
Trichloroethene	79-01-6	0.47	200	400	mg/kg	**130**		**14**		**0.78**		**37**		0.25	U	**0.079**	J
Vinyl chloride	75-01-4	0.02	13	27	mg/kg	1	U	0.11	U	**0.019**	J	0.25	U	0.25	U	0.25	U
Xylene, o	95-47-6	1.6	500	1000	mg/kg	1	U	0.11	U	0.25	U	0.25	U	0.25	U	0.25	U
Xylenes (m&p)	179601-23-1	1.6	500	1000	mg/kg	2	U	0.21	U	0.5	U	0.5	U	0.5	U	0.5	U

See Table 5.1 for Notes
(Standards shown for comparison purposes only)

Table 5.3: Bedrock VOC Results

					Location	MW-20D		MW-20D		MW-20DD		MW-21D		MW-21D		MW-21D	
					Sample Depth (ft bgs)	25		30		47		17		23		28	
					Media	BED		BED		BED		BED		BED		BED	
					Sample Date	11/7/2014		11/7/2014		11/13/2014		11/6/2014		11/6/2014		11/6/2014	
					Sample ID	328076-MW20D02		328076-MW20D03		28076-MW20DD04		328076-MW21D01		328076-MW21D02		328076-MW21D028	
		Criteria			Qc Code	FS		FS		FS		FS		FS		FS	
Parameter (VOCs)	**Casno**	**PG**	**COMM**	**IND**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
Acetic acid, methyl ester	79-20-9	NA	NA	NA		0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
Carbon disulfide	75-15-0	NA	NA	NA	mg/kg	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
cis-1,2-Dichloroethene	156-59-2	0.25	500	1000	mg/kg	**1.3**		0.25	U	0.25	U	**0.056**	J	0.25	U	0.25	U
Methyl cyclohexane	108-87-2	NA	NA	NA	mg/kg	**0.027**	J	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
Methylene chloride	75-09-2	0.05	500	1000	mg/kg	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
Tetrachloroethene	127-18-4	1.3	150	300	mg/kg	**2.2**		0.25	U	0.25	U	**0.9**		0.25	U	0.25	U
Toluene	108-88-3	0.7	500	1000	mg/kg	**0.019**	J	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
Trichloroethene	79-01-6	0.47	200	400	mg/kg	**7.8**		**0.034**	J	0.25	U	**3.2**		**0.058**	J	**0.016**	J
Vinyl chloride	75-01-4	0.02	13	27	mg/kg	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
Xylene, o	95-47-6	1.6	500	1000	mg/kg	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
Xylenes (m&p)	179601-23-1	1.6	500	1000	mg/kg	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

See Table 5.1 for Notes
(Standards shown for comparison purposes only)

Table 5.3: Bedrock VOC Results

					Location	MW-22D	
					Sample Depth (ft bgs)	16	
					Media	BED	
					Sample Date	11/7/2014	
					Sample ID	828076-MW22D016	
		Criteria			**Qc Code**	FS	
Parameter (VOCs)	**Casno**	**PG**	**COMM**	**IND**	**Units**	Result	Qualifier
Acetic acid, methyl ester	79-20-9	NA	NA	NA		0.25	U
Carbon disulfide	75-15-0	NA	NA	NA	mg/kg	0.25	U
cis-1,2-Dichloroethene	156-59-2	0.25	500	1000	mg/kg	**0.13**	J
Methyl cyclohexane	108-87-2	NA	NA	NA	mg/kg	0.25	U
Methylene chloride	75-09-2	0.05	500	1000	mg/kg	0.25	U
Tetrachloroethene	127-18-4	1.3	150	300	mg/kg	0.25	U
Toluene	108-88-3	0.7	500	1000	mg/kg	0.25	U
Trichloroethene	79-01-6	0.47	200	400	mg/kg	**0.46**	
Vinyl chloride	75-01-4	0.02	13	27	mg/kg	0.25	U
Xylene, o	95-47-6	1.6	500	1000	mg/kg	0.25	U
Xylenes (m&p)	179601-23-1	1.6	500	1000	mg/kg	0.5	U

See Table 5.1 for Notes
(Standards shown for comparison purposes only)

Table 5.2: Soil VOC Results

					Location	IW-004		IW-005		IW-008		IW-009		MW-02	
					Sample Depth (ft bgs)	3.5		7.5		3		6		7	
					Media	Soil		Soil		Soil		Soil		Soil	
					Sample Date	8/4/2015		8/4/2015		8/3/2015		8/3/2015		10/24/2014	
					Sample ID	828076-IW004004		828076-IW005008		828076-IW008004		828076-IW009007		828076-MW02007	
		Criteria			Qc Code	FS		FS		FS		FS		FS	
Parameter (VOCs)	**Casno**	**PG**	**COMM**	**IND**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
1,1,1-Trichloroethane	71-55-6	0.68	500	1000	mg/kg	**0.078**	J	**3.5**	J	**20**	J	0.62	UJ	0.047	U
1,1-Dichloroethane	75-34-3	0.27	240	480	mg/kg	0.15	UJ	1.4	UJ	**0.71**	J	0.62	UJ	0.047	U
1,2,3-Trichlorobenzene	87-61-6	NA	NA	NA	mg/kg	**0.02**	J	1.4	UJ	3.5	UJ	0.62	UJ	0.047	U
1,2-Dichlorobenzene	95-50-1	1.1	500	1000	mg/kg	**0.43**	J	1.4	UJ	**1.1**	J	0.62	UJ	0.047	U
1,4-Dichlorobenzene	106-46-7	1.8	130	250	mg/kg	**0.13**	J	1.4	UJ	**0.51**	J	0.62	UJ	0.047	U
2-Butanone	78-93-3	0.12	500	1000	mg/kg	0.31	UJ	2.8	UJ	7	UJ	1.2	UJ	0.24	U
Acetic acid, methyl ester	79-20-9	NA	NA	NA	mg/kg	0.15	UJ	1.4	UJ	3.5	UJ	**0.18**	J	0.094	U
Acetone	67-64-1	0.05	500	1000	mg/kg	0.31	UJ	2.8	UJ	7	UJ	1.2	UJ	0.24	U
Benzene	71-43-2	0.06	44	89	mg/kg	**0.035**	J	1.4	UJ	**0.97**	J	0.62	UJ	0.047	U
Carbon tetrachloride	56-23-5	0.76	22	44	mg/kg	**0.28**	J	1.4	UJ	3.5	UJ	0.62	UJ	0.047	U
Chlorobenzene	108-90-7	1.1	500	1000	mg/kg	0.15	UJ	1.4	UJ	**0.72**	J	0.62	UJ	0.047	U
cis-1,2-Dichloroethene	156-59-2	0.25	500	1000	mg/kg	**0.45**	J	**21**	J	**18**	J	0.62	UJ	0.047	U
Cyclohexane	110-82-7	NA	NA	NA	mg/kg	0.15	UJ	1.4	UJ	3.5	UJ	**0.35**	J	0.047	U
Ethylbenzene	100-41-4	1	390	780	mg/kg	**0.023**	J	**3.1**	J	**12**	J	**3.6**	J	0.047	U
Isopropylbenzene	98-82-8	NA	NA	NA	mg/kg	0.15	UJ	**3.1**	J	**6**	J	**4.3**	J	0.047	U
Methyl cyclohexane	108-87-2	NA	NA	NA	mg/kg	**0.03**	J	**2.8**	J	**2.6**	J	**3.3**	J	0.047	U
Tetrachloroethene	127-18-4	1.3	150	300	mg/kg	**2.7**	J	**19**	J	**23**	J	**0.087**	J	0.047	U
Toluene	108-88-3	0.7	500	1000	mg/kg	**0.44**	J	**570**	J	**24000**	J	**280**	J	0.047	U
Trichloroethene	79-01-6	0.47	200	400	mg/kg	**0.51**	J	**17**	J	**480**	J	0.62	UJ	0.047	U
Vinyl chloride	75-01-4	0.02	13	27	mg/kg	**0.036**	J	1.4	UJ	3.5	UJ	0.62	UJ	0.047	U
Xylene, o	95-47-6	1.6	500	1000	mg/kg	**0.078**	J	**4.2**	J	**12**	J	**6.8**	J	0.047	U
Xylenes (m&p)	179601-23-1	1.6	500	1000	mg/kg	**0.083**	J	**12**	J	**26**	J	**12**	J	0.094	U
Percent Solids	HLA0046	NA	NA	NA	percent	**84.2**		**85.9**		**80.5**		**79.3**		**82.5**	

See Table 5.1 for Notes

Created by: KMS 5/28/19
Checked by: CRS 6/28/19

Table 5.2: Soil VOC Results

					MW-02		MW-16D		MW-16D		MW-16D		MW-17D	
				Sample Dep	10		5		5		7		7	
					Soil		Soil		Soil		Soil		Soil	
				Sa	10/24/2014		10/21/2014		10/21/2014		10/21/2014		10/20/2014	
					828076-MW02010		828076-MW16D005		828076-MW16D005		828076-MW16D007		828076-MW17D007	
		Criteria			FS		FS		FD		FS		FS	
Parameter (VOCs)	**Casno**	**PG**	**COMM**	**IND**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
1,1,1-Trichloroethane	71-55-6	0.68	500	1000	0.068	U	0.0044	U	0.005	U	0.0039	U	0.21	U
1,1-Dichloroethane	75-34-3	0.27	240	480	0.068	U	0.0044	U	0.005	U	0.0039	U	0.21	U
1,2,3-Trichlorobenzene	87-61-6	NA	NA	NA	0.068	U	0.0044	U	0.005	U	0.0039	U	0.21	U
1,2-Dichlorobenzene	95-50-1	1.1	500	1000	0.068	U	0.0044	U	0.005	U	0.0039	U	0.21	U
1,4-Dichlorobenzene	106-46-7	1.8	130	250	0.068	U	0.0044	U	0.005	U	0.0039	U	0.21	U
2-Butanone	78-93-3	0.12	500	1000	0.34	U	0.0044	U	0.005	U	**0.0018**	J	1	U
Acetic acid, methyl ester	79-20-9	NA	NA	NA	0.14	U	0.0044	U	**0.005**	J	0.0039	U	0.42	U
Acetone	67-64-1	0.05	500	1000	0.34	U	0.0044	U	0.005	U	**0.0099**		1	U
Benzene	71-43-2	0.06	44	89	0.068	U	0.0044	U	0.005	U	0.0039	U	0.21	U
Carbon tetrachloride	56-23-5	0.76	22	44	0.068	U	0.0044	U	0.005	U	0.0039	U	0.21	U
Chlorobenzene	108-90-7	1.1	500	1000	0.068	U	0.0044	U	0.005	U	0.0039	U	0.21	U
cis-1,2-Dichloroethene	156-59-2	0.25	500	1000	0.068	U	0.0044	U	0.005	U	0.0039	U	0.21	U
Cyclohexane	110-82-7	NA	NA	NA	0.068	U	0.0044	U	0.005	U	0.0039	U	0.21	U
Ethylbenzene	100-41-4	1	390	780	0.068	U	0.0044	U	0.005	U	0.0039	U	**0.24**	
Isopropylbenzene	98-82-8	NA	NA	NA	0.068	U	0.0044	U	0.005	U	0.0039	U	**0.41**	
Methyl cyclohexane	108-87-2	NA	NA	NA	0.068	U	0.0044	U	0.005	U	0.0039	U	**0.14**	J
Tetrachloroethene	127-18-4	1.3	150	300	0.068	U	0.0044	U	0.005	U	**0.0011**	J	0.21	U
Toluene	108-88-3	0.7	500	1000	**0.031**	J	**0.0012**	J	**0.0011**	J	**0.00095**	J	0.21	U
Trichloroethene	79-01-6	0.47	200	400	**0.016**	J	0.0044	U	0.005	U	**0.0012**	J	0.21	U
Vinyl chloride	75-01-4	0.02	13	27	0.068	U	0.0044	U	0.005	U	0.0039	U	0.21	U
Xylene, o	95-47-6	1.6	500	1000	0.068	U	0.0044	U	0.005	U	0.0039	U	0.21	U
Xylenes (m&p)	179601-23-1	1.6	500	1000	0.14	U	0.0087	U	0.0099	U	0.0078	U	0.42	U
Percent Solids	HLA0046	NA	NA	NA	**84.9**		**83.9**		**83.9**		**85.5**		**81.5**	

See Table 5.1 for Notes

APPENDIX E – EXCAVATION WORK PLAN (EWP)

E-1 NOTIFICATION

At least 15 days prior to the start of any activity that is anticipated to encounter remaining contamination or breach or alter the site's cover system, the site owner or their representative will notify the NYSDEC contacts listed in the table below. Table E-1 includes contact information for the above notification. The information on this table will be updated as necessary to provide accurate contact information. A full listing of site-related contact information is provided in Appendix A.

Table E-1: Notifications*

NYSDEC DER Project Manager: Charlie Gregory	(518) 402-8246; Charles.Gregory@dec.ny.gov
NYSDEC DER Project Manager's Supervisor: Jeffrey Dyber, NYSDEC Remedial Bureau E, Section D Chief	(518) 402-9621; jeffrey.dyber@dec.ny.gov
NYSDEC Site Control: Kelly Lewandowski	518-402-9569; Kelly.Lewandowski@dec.ny.gov,

* Note: Notifications are subject to change and will be updated as necessary.

This notification will include:

- A detailed description of the work to be performed, including the location and areal extent of excavation, plans/drawings for site re-grading, intrusive elements or utilities to be installed below the soil cover, estimated volumes of contaminated soil to be excavated, any modifications of truck routes, and any work that may impact an engineering control;
- A summary of environmental conditions anticipated to be encountered in the work areas, including the nature and concentration levels of contaminants of concern, potential presence of grossly contaminated media, and plans for any pre-construction sampling;
- A schedule for the work, detailing the start and completion of all intrusive work;
- A summary of the applicable components of this EWP;
- A statement that the work will be performed in compliance with this EWP, 29 CFR 1910.120 and 29 CFR 1926 Subpart P;
- A copy of the contractor's health and safety plan (HASP), in electronic format;
- Identification of disposal facilities for potential waste streams; and
- Identification of sources of any anticipated backfill, along with all required chemical testing results.

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E-2 SOIL SCREENING METHODS

Visual, olfactory and instrument-based (e.g. photoionization detector) soil screening will be performed during all excavations into known or potentially contaminated material (remaining contamination) or a breach of the cover system. A qualified environmental professional as defined in 6 NYCRR Part 375, a PE who is licensed and registered in New York State, or a qualified person who directly reports to a PE who is licensed and registered in New York State will perform the screening. Soil screening will be performed when invasive work is done and will include all excavation and invasive work performed during development, such as excavations for foundations and utility work, after issuance of the COC.

Soils will be segregated based on previous environmental data and screening results into material that requires off-site disposal and material that requires testing to determine if the material can be reused on-site as soil beneath a cover or if the material can be used as cover soil. Further discussion of off-site disposal of materials and on-site reuse is provided in Section E-6 and E-7 of this Appendix.

E-3 SOIL STAGING METHODS

Soil stockpiles will be continuously encircled with a berm and/or silt fence. Hay bales will be used as needed near catch basins, surface waters and other discharge points.

Stockpiles will be kept covered at all times with appropriately anchored tarps. Stockpiles will be routinely inspected and damaged tarp covers will be promptly replaced.

Stockpiles will be inspected at a minimum once each week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the site and available for inspection by the NYSDEC.

E-4 MATERIALS EXCAVATION AND LOAD-OUT

A qualified environmental professional as defined in 6 NYCRR Part 375, a PE who is licensed and registered in New York State, or a qualified person who directly reports to a PE who is licensed and registered in New York State will oversee all invasive work and the excavation and load-out of all excavated material.

The owner of the property and remedial party (if applicable) and its contractors are responsible for safe execution of all invasive and other work performed under this Plan.

The presence of utilities and easements on the site will be investigated by the qualified environmental professional. It will be determined whether a risk or impediment

to the planned work under this ISMP is posed by utilities or easements on the site. A site utility stakeout will be completed for all utilities prior to any ground intrusive activities at the site.

Loaded vehicles leaving the site will be appropriately lined, tarped, securely covered, manifested, and placarded in accordance with appropriate Federal, State, local, and NYSDOT requirements (and all other applicable transportation requirements).

A truck wash will be operated on-site, as appropriate. The qualified environmental professional will be responsible for ensuring that all outbound trucks will be washed at the truck wash before leaving the site until the activities performed under this section are complete. Truck wash waters will be collected and disposed of off-site in an appropriate manner.

Locations where vehicles enter or exit the site shall be inspected daily for evidence of off-site soil tracking.

The qualified environmental professional will be responsible for ensuring that all egress points for truck and equipment transport from the site are clean of dirt and other materials derived from the site during intrusive excavation activities. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to site-derived materials. Material accumulated from the street cleaning and egress cleaning activities will be disposed off-site at a permitted landfill facility in accordance with all applicable local, State, and Federal regulations.

E-5 MATERIALS TRANSPORT OFF-SITE

All transport of materials will be performed by licensed haulers in accordance with appropriate local, State, and Federal regulations, including 6 NYCRR Part 364. Haulers will be appropriately licensed and trucks properly placarded.

Material transported by trucks exiting the site will be secured with tight-fitting covers. Loose-fitting canvas-type truck covers will be prohibited. If loads contain wet material capable of producing free liquid, truck liners will be used.

A materials transport plan describing the trucking routes and indicated on mapping will be provided to the NYSDEC for approval prior to the start of excavation activities. All trucks loaded with site materials will exit the vicinity of the site using only these approved truck routes. The approved route will be the most appropriate route and take into account: (a) limiting transport through residential areas and past sensitive sites; (b) use of city mapped truck routes; (c) prohibiting off-site queuing of trucks entering the facility; (d) limiting total distance to major highways; (e) promoting safety in access to highways; and (f) overall safety in transport; (g) community input.

Trucks will be prohibited from stopping and idling in the neighborhood outside the project site.

Egress points for truck and equipment transport from the site will be kept clean of dirt and other materials during site remediation and development.

Queuing of trucks will be performed on-site in order to minimize off-site disturbance. Off-site queuing will be prohibited.

E-6 MATERIALS DISPOSAL OFF-SITE

All material excavated and removed from the site will be treated as contaminated and regulated material and will be transported and disposed off-site in a permitted facility in accordance with all local, State and Federal regulations. If disposal of material from this site is proposed for unregulated off-site disposal (i.e. clean soil removed for development purposes), a formal request with an associated plan will be made to the NYSDEC project manager. Unregulated off-site management of materials from this site will not occur without formal NYSDEC project manager approval.

Off-site disposal locations for excavated soils will be identified in the pre-excavation notification. This will include estimated quantities and a breakdown by class of disposal facility if appropriate, (e.g. hazardous waste disposal facility, solid waste landfill, petroleum treatment facility, C&D debris recovery facility). Actual disposal quantities and associated documentation will be reported to the NYSDEC in the Periodic Review Report. This documentation will include, but will not be limited to: waste profiles, test results, facility acceptance letters, manifests, bills of lading and facility receipts.

Non-hazardous historic fill and contaminated soils taken off-site will be handled consistent with 6 NYCRR Parts 360, 361, 362, 363, 364 and 365. Material that does not meet Unrestricted SCOs is prohibited from being taken to a New York State C&D debris recovery facility (6 NYCRR Subpart 360-15 registered or permitted facility).

E-7 MATERIALS REUSE ON-SITE

'Reuse on-site' means reuse on-site of material that originates at the site and which does not leave the site during the excavation. Material reuse on-site will comply with the requirements of NYSDEC DER-10 Section 5.4(e)4.

Prior to the reuse of materials on-site, a reuse plan will be submitted for approval to the NYSDEC. The following topics should be covered in the materials re-use plan:

- Procedure for determining if reuse is appropriate;
- Sampling (methods and analytical);
- Stockpile segregation scheme for on-site reuse; and
- Size of stockpiles, location (figure).

The qualified environmental professional as defined in 6 NYCRR part 375 will ensure that procedures defined for materials reuse in this ISMP are followed and that unacceptable material (i.e. contaminated) does not remain on-site. Contaminated on-site material, including historic fill and contaminated soil, that is acceptable for reuse on-site will be placed below the demarcation layer or impervious surface, and will not be reused within a cover soil layer, within landscaping berms, or as backfill for subsurface utility lines.

Proposed materials for reuse on-site must be sampled for full suite analytical parameters including per- and polyfluoroalkyl substances (PFAS) and 1,4-dioxane. The sampling frequency will be in accordance with DER-10 Table 5.4(e)10 unless prior approval is obtained from the NYSDEC project manager for modification of the sampling frequency. The analytical results of soil/fill material testing must meet the site use criteria presented in NYSDEC DER-10 Appendix 5 – Allowable Constituent Levels for Imported Fill or Soil for all constituents listed, and the NYSDEC Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances June 2021 guidance values. Approvals for modifications to the analytical parameters must be obtained from the NYSDEC project manager prior to the sampling event.

Soil/fill material for reuse on-site will be segregated and staged as described in Sections E-2 and E-3 of this EWP. The anticipated size and location of stockpiles will be provided in the 15-day notification to the NYSDEC project manager. Stockpile locations will be based on the location of site excavation activities and proximity to nearby site features. Material reuse on-site will comply with requirements of NYSDEC DER-10 Section 5.4(e)4. Any modifications to the requirements of DER-10 Section 5.4(e)4 must be approved by the NYSDEC project manager.

Any demolition material proposed for reuse on-site will be sampled for asbestos and the results will be reported to the NYSDEC for acceptance. Concrete crushing or processing on-site will not be performed without prior NYSDEC approval. Organic matter (wood, roots, stumps, etc.) or other solid waste derived from clearing and grubbing of the site will not be reused on-site.

E-8 FLUIDS MANAGEMENT

All liquids to be removed from the site, including but not limited to, excavation dewatering, decontamination waters and groundwater monitoring well purge and development waters, will be handled, transported and disposed off-site at a permitted facility in accordance with applicable local, State, and Federal regulations. Dewatering, purge and development fluids will not be recharged back to the land surface or subsurface of the site, and will be managed off-site, unless prior approval is obtained from NYSDEC.

Discharge of water generated during large-scale construction activities to surface waters (i.e. a local pond, stream or river) will be performed under a SPDES permit.

E-9 COVER SYSTEM RESTORATION

After the completion of soil removal and any other invasive activities the cover system will be restored in a manner that complies with the Record of Decision. The existing cover system is comprised of a minimum of 9 to 12 inches of clay and 3 inches of clean soil. Although not currently present, a demarcation layer, consisting of orange snow fencing material will be placed under the new cover to provide a visual reference to the top of the remaining contamination zone, the zone that requires adherence to special conditions for disturbance of remaining contaminated soils defined in this ISMP. If the type of cover system changes from that which exists prior to the excavation (i.e., a soil cover is replaced by asphalt), this will constitute a modification of the cover element of the remedy and the upper surface of the remaining contamination. A figure showing the modified surface will be included in the subsequent Periodic Review Report and in an updated ISMP.

E-10 BACKFILL FROM OFF-SITE SOURCES

A plan for using backfill from off-site sources shall be submitted to the NYSDEC for approval prior to placement of material. This plan shall describe all methods for the import, handling and

placement of backfill material from off-site. The requirements for backfill used at the site shall be consistent with the backfill requirements provided in DER-10.

The plan should contain the following:

- Source area approval process
  - Sources of backfill material
- Source area background check
- DOT Certification
  - Chemical sampling
- Analytes
- Frequency
  - Imported Soil Chemical Quality Standards
- Applicability of protection of groundwater SCOs
- Applicability of protection of ecological resources SCOs
- Stockpile procedures for imported backfill material
  - Size of stockpiles, cover, etc.

All materials proposed for import onto the site will be approved by the qualified environmental professional, as defined in 6 NYCRR Part 375, and will be in compliance with provisions in this ISMP prior to receipt at the site. A Request to Import/Reuse Fill or Soil form, which can be found at http://www.dec.ny.gov/regulations/67386.html, will be prepared and submitted to the NYSDEC project manager allowing a minimum of 5 business days for review.

Material from industrial sites, spill sites, other environmental remediation sites, or potentially contaminated sites will not be imported to the site.

All imported soils will meet the backfill and cover soil quality standards established in 6 NYCRR 375-6.7(d) and DER-10 Appendix 5 for commercial use (assuming potential future commercial use of the property). Soils that meet 'general' fill requirements under 6 NYCRR Part 360.13, but do not meet backfill or cover soil objectives for this site, will not be imported onto the site without prior approval by NYSDEC project manager. Soil

material will be sampled for the full suite of analytical parameters, including PFAS and 1, 4-dioxane. Solid waste will not be imported onto the site.

Trucks entering the site with imported soils will be securely covered with tight fitting covers. Imported soils will be stockpiled separately from excavated materials and covered to prevent dust releases.

E-11 STORMWATER POLLUTION PREVENTION

Barriers and hay bale checks will be installed and inspected once a week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the site and available for inspection by the NYSDEC. All necessary repairs shall be made immediately.

Accumulated sediments will be removed as required to keep the barrier and hay bale check functional.

All undercutting or erosion of the silt fence toe anchor shall be repaired immediately with appropriate backfill materials.

Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.

Erosion and sediment control measures identified in the ISMP shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters.

Silt fencing or hay bales will be installed around the entire perimeter of the construction area.

E-12 EXCAVATION CONTINGENCY PLAN

If underground tanks or other previously unidentified contaminant sources are found during post-remedial subsurface excavations or development related construction, excavation activities will be suspended until sufficient equipment is mobilized to address the condition. The NYSDEC project manager will be promptly notified of the discovery.

Sampling will be performed on product, sediment and surrounding soils, etc. as necessary to determine the nature of the material and proper disposal method. Chemical analysis will be performed for a full list of analytes [TAL metals, TCL volatiles and semi-volatiles (including 1,4-dioxane), TCL pesticides and PCBs, and PFAS], unless the site history and previous sampling results provide sufficient justification to limit the list of analytes. In this case, a reduced list of analytes will be proposed to the NYSDEC project manager for approval prior to sampling. Any tanks will be closed as per NYSDEC regulations and guidance.

Identification of unknown or unexpected contaminated media identified by screening during invasive site work will be promptly communicated by phone within two hours to NYSDEC's Project Manager. Reportable quantities of petroleum product will also be reported to the NYSDEC spills hotline. These findings will be also included in the Periodic Review Report.

E-13 COMMUNITY AIR MONITORING PLAN

Prior to the start of excavation activities a Community Air Monitoring Plan (CAMP) that is in conformance with DER-10 will be required, specifically Appendix 1A and 1B. The CAMP, at a minimum, should include:

- Details of the perimeter air monitoring program;
- Action levels to be used;
- Air monitoring methods;

- Analytes measured and instrumentation to be used;
- A figure of the location(s) of all air monitoring instrumentation. A figure showing specific locations must be presented for monitoring stations based on generally prevailing wind conditions, with a note that the exact locations to be monitored on a given day will be established based on the daily wind direction.

Air sampling station locations based on prevailing wind conditions will be adjusted on a daily or more frequent basis based on actual wind directions to provide an upwind and at least two downwind monitoring stations.

Exceedances of action levels listed in the CAMP will be reported to NYSDEC and NYSDOH Project Managers the same day, or next business day if after hours, along with the reason for the exceedance, what was done to correct the exceedance, and if the corrective action was effective.

E-14 ODOR CONTROL PLAN

This odor control plan is capable of controlling emissions of nuisance odors off-site. Specific odor control methods to be used on a routine basis will be included in the site notification. If nuisance odors are identified at the site boundary, or if odor complaints are received, work will be halted and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. NYSDEC and NYSDOH will be notified of all odor events and of any other complaints about the project. Implementation of all odor controls, including the halt of work, is the responsibility of the remedial party's Remediation Engineer, and any measures that are implemented will be discussed in the Periodic Review Report.

All necessary means will be employed to prevent on- and off-site nuisances. At a minimum, these measures will include: (a) limiting the area of open excavations and size of soil stockpiles; (b) shrouding open excavations with tarps and other covers; and (c) using foams to cover exposed odorous soils. If odors develop and cannot be otherwise controlled, additional means to eliminate odor nuisances will include: (d) direct load-out of soils to

trucks for off-site disposal; (e) use of chemical odorants in spray or misting systems; and, (f) use of staff to monitor odors in surrounding neighborhoods.

If nuisance odors develop during intrusive work that cannot be corrected, or where the control of nuisance odors cannot otherwise be achieved due to on-site conditions or close proximity to sensitive receptors, odor control will be achieved by sheltering the excavation and handling areas in a temporary containment structure equipped with appropriate air venting/filtering systems.

E-15 DUST CONTROL PLAN

Particulate monitoring must be conducted according to the Community Air Monitoring Plan (CAMP). If particulate levels at the site exceed the thresholds listed in the CAMP or if airborne dust is observed on the site or leaving the site, the dust suppression techniques listed below will be employed. The remedial party will also take measures listed below to prevent dust production on the site.

A dust suppression plan that addresses dust management during invasive on-site work will include, at a minimum, the items listed below:

- Dust suppression will be achieved using a dedicated on-site water truck for road wetting. The truck will be equipped with a water cannon capable of spraying water directly onto off-road areas including excavations and stockpiles.
- Clearing and grubbing of larger sites will be done in stages to limit the area of exposed, unvegetated soils vulnerable to dust production.
- Gravel will be used on roadways to provide a clean and dust-free road surface.
- On-site roads will be limited in total area to minimize the area required for water truck sprinkling.

E-16 OTHER NUISANCES

A plan for rodent control will be developed and utilized by the contractor prior to and during site clearing and site grubbing, and during all remedial work.

A plan will be developed and utilized by the contractor for all remedial work to ensure compliance with local noise control ordinances.

APPENDIX F – FIELD SAMPLING PLAN

MACTEC

engineering and constructing a better tomorrow

August 30, 2022

Mr. Charles Gregory
Project Manager
Division of Environmental Remediation
Remedial Bureau E, 12th Floor
New York State Department of Environmental Conservation
625 Broadway
Albany, New York 12233-7016

Subject: **Field Activities Plan: Long Term Monitoring Groundwater Sampling**
Scobell Chemical-NYSDOT Site. NYSDEC Site 828076
MACTEC Engineering and Geology, P. C., Project No. 3616216143

Dear Mr. Gregory:

MACTEC Engineering and Geology, P.C. (MACTEC), under contract to the New York State Department of Environmental Conservation (NYSDEC) is submitting this Field Activities Plan (FAP) to perform Long Term Monitoring (LTM) groundwater sampling at the Scobell Chemical-New York State (NYS) Department of Transportation (NYSDOT) site (Site) under the interim Site Management Plan (SMP). The Site is listed as Class 2 hazardous waste Site No. 828076 in the Registry of Hazardous Waste Sites in New York State (Figure 1).

OBJECTIVES

The proposed work outlined in this FAP consists of monitoring site contaminants in groundwater. The purpose of the sampling is to assess groundwater conditions at and in the vicinity of the Site and monitor remediation effects of the remedial actions performed to date at the Site. Analytical results of the samples collected will be compared to the results of previous sampling events to document changes to groundwater quality. Long term monitoring (LTM) of groundwater is included as part of the remedy listed in the Record of Decision Amendment (ROD) (NYSDEC, 2013).

BACKGROUND

The Scobell Chemical –NYSDOT Site is currently owned by the New York State Department of Transportation (NYSDOT) and is located at 1 Rockwood Place in a mixed commercial, industrial, and residential area in the northern section of the Town of Brighton and immediately east of the City of Rochester boundary. The Site occupies approximately 2 acres, contains no structures, is covered with grass and scrub growth, and is surrounded by a chain link fence. The Site borders the NYS Highway 590 and 490 exchange, with Highway 590 bordering the east and south sides of the Site. Commercial/industrial property borders the Site to the west. A small surface water drainage ditch parallels the New York Central Railroad Line that is present immediately north of the property. Grass Creek is located north of the Site beyond the railroad line. The nearest residential area is located along Blossom Road approximately 600 feet north of the Site.

The Site is the location of a former chemical repackaging company that operated at this location from the 1920s until 1986. During this time, assorted chemicals were purchased by the company in bulk and repackaged into smaller containers for resale. The Site had one main building, two smaller structures and four above ground storage tanks. The overall amount and type of materials handled is unclear; however, subsurface soil and groundwater contamination, primarily volatile organic compounds (VOCs), including trichloroethene and it's breakdown products and toluene, has resulted from past operations.

In 1988 as part of a NYSDOT highway reconstruction project all of the site buildings were removed. During this project, the NYSDOT discovered contamination at the Scobell site including abandoned drums and contaminated structures, as well as soil and bedrock contamination. Drums, containing chlorinated VOCs, pesticides/herbicides, and toluene, were found in one of the warehouses. In addition, deteriorated containers, discolored soils, and stained asphalt were found across the Site. As a result of the contamination, the NYSDOT excavated both soil and bedrock for off-site disposal from half of the property for the ability to finish the highway interchange reconstruction. The remainder of the Site was capped with 9 to12 inches of clay and 3-inches of topsoil and placed on the NYS Registry of Inactive Hazardous Waste Disposal Sites.

Several remedial investigations and remedial actions/pilot studies have occurred to date, including the original building and chemical removal actions and the injection of 67,000 pounds of zero valent iron into bedrock fractures in an approximate 90-foot by 90-foot area in the northeast corner of the Site. In addition, the NYSDEC has installed soil vapor extraction systems at several off-site properties as an Interim Remedial Measure implemented to address the migration of solvent vapor contamination.

The Amended ROD issued in 2013 that outlined the approved remedial approach for the Site (NYSDEC, 2013) included:

- Institutional Controls in the form of an environmental easement for the controlled property
- An SMP.

Site management includes LTM of groundwater.

The proposed groundwater sampling described in this FAP is part of the groundwater LTM program and includes the collection and analysis of groundwater from monitoring wells located both on and off-site (wells within the network were installed over several years and during different remedial programs).

Upon completion of sampling, a report will be prepared that evaluates contaminant concentrations and trends. Sampling and reporting will be conducted following NYSDEC DER-10 (NYSDEC, 2010).

FIELD OPERATIONS

Companion documents to this FAP that will govern the execution of the field exploration activities include MACTEC's Program Quality Assurance Plan (QAPP) (MACTEC, 2020a) and Health and Safety Plan (HASP) (MACTEC, 2020b). In addition to these program documents, Appendix G of the SMP contains the site-specific HASP associated with the proposed Site activities.

Health and Safety

The Site-specific HASP is provided as Appendix G of the SMP. Based on past activities conducted at the Site, MACTEC anticipates that the fieldwork will be conducted in Level D personal protection. Specific investigation activities and required level of personal protection are set forth in the Site-specific HASP. Criteria for upgrading or downgrading the specified level of protection are also provided in the Site-specific HASP. Additional health and safety requirements are set forth in the Program HASP (MACTEC, 2020b). Should conditions pose a threat to those present on-Site, and/or should Site conditions warrant an upgrade from Level D, as defined by the HASP, work will stop and the situation will be re-evaluated by the NYSDEC and MACTEC.

Site Access

The NYSDEC will be responsible for notifying property owners and gaining Site access so that existing wells can be sampled.

SITE ACTIVITIES

The following subsections describe the proposed field activities. The list of site wells is included in Table 1. The sample IDs and analytical program are provided in Table 2. Sampling locations are shown on Figure 2.

Scope of Work

The planned activities are as follows:

- Conduct a well inventory and collect a synoptic round of water level measurements in the 42 Site monitoring wells being sampled, as indicated in Tables 1 and 2. Not all of the existing wells will be sampled.
- Collect groundwater samples from 42 Site monitoring wells and analyze the samples for target compound list (TCL) VOC and analyze samples from 11 wells for monitored natural attenuation (MNA) parameters, to observe any changes in MNA parameters. Samples will be collected as indicated in Table 2.

Procedures

Synoptic Water Level Measurements. Prior to well sampling, a well inventory and synoptic water

levels will be collected from the Site wells following Standard Operating Procedure (SOP) S2 in the Program QAPP (MACTEC, 2020a) (Appendix H of the SMP provides a monitoring well inventory form).

Groundwater Sampling. Groundwater samples will be collected from 42 Site monitoring wells. The monitoring wells to be sampled are listed in Table 2. Monitoring wells will be sampled using low-flow sampling procedures as per Standard Operating Procedure (SOP) S3 in the Program QAPP (MACTEC, 2020a).

Field measurements for pH, temperature, specific conductivity, oxidation reduction potential, and dissolved oxygen will be collected through a flow through cell from each monitoring well during pre-sample purging. Turbidity will be measured separately with a turbidity meter. Field measurements and monitoring well sampling activities will be documented using a Low Flow Groundwater Data Record (SOP S3 - MACTEC, 2020a).

Analytical Methods. Groundwater samples will be collected and submitted to the analytical laboratory under Chain of Custody Procedures (SOP S8-MACTEC, 2020a) for the following laboratory analysis:

- VOCs by United States Environmental Protection Agency (USEPA) Method 8260C for all samples
- MNA Parameters for seven select wells:
    - Alkalinity by Standard Method 2320B
    - Sulfate by Method 9056A
    - Nitrate by Method 9056A
    - Chloride by Method 9056A
    - Sulfide by Standard Method 4500S2 F
    - Calcium, Iron, manganese, and magnesium by USEPA Method 6010C
    - Ethene, ethane, methane, and Carbon Dioxide by USEPA Method RSK-175
    - Total organic carbon by Standard Method 5310C/415.1

Laboratory results will be reported in a Category A deliverable. Tentatively identified compounds will not be reported for the VOC groundwater samples. SOPs listed above are included in Attachment 1.

Decontamination

Use of dedicated sampling equipment will be used during this field effort. Wash-water that may be necessary to clean water level indicators will be discharged to the ground in a controlled manner.

Purge Water

Contaminated groundwater that is purged during monitoring well sampling will be containerized and treated on-site using a portable granular activated carbon unit and allowed to infiltrate into the ground in a pervious area of the Site.

Disposable Sampling Equipment/Personal Protective Equipment

Used disposable sampling equipment and personal protection equipment will be double bagged in polyethylene trash bags and sealed with twist ties. The disposable equipment will be disposed of as nonhazardous municipal solid waste.

REPORTING

MACTEC will present the findings of the LTM groundwater sampling activities in a groundwater sampling report to the NYSDEC, which will include discussion of the work performed, supporting field documents, tabulated data results, and figures. The tabulated groundwater data will include comparison to the Class GA groundwater standards and guidance values in the Technical and Operational Guidance Series 1.1.1 (NYSDEC, 1998).

A Category A chemist review report of the data for completeness will be included as an attachment to the report. The Category A chemist review includes the following evaluations:

- Lab Report Narrative Review
- Data Package Completeness and chain of custody records
- Sample Preservation and Holding Times
- Quality Control (QC) Blanks

- Laboratory Control Samples
- Matrix Spike/Matrix Spike Duplicates
- Surrogate Spikes (if applicable)
- Field Duplicates
- Reporting Limits
- Electronic Data Qualification and Verification

Raw data checks, calculation checks, and transcription verifications will be performed only if QC issues are noted during the review that require further evaluation. Upon completion of the Category A review, an EQUIS EDD will be submitted.

SCHEDULE

Sampling will be conducted as per the schedule outlined in the SMP.

If you have any questions or concerns, please feel free to call us at 207-775-5401.

Sincerely,
MACTEC Engineering and Geology, P.C.

Jerry Rawcliffe
Senior Geologist

Charles R. Staples, PG
Project Manager

REFERENCES

MACTEC, 2020a. Quality Assurance Program Plan and Field Activities Plan. Prepared for the New York State Department of Environmental Conservation, Albany, New York. April 2020.

MACTEC, 2020b. Program Health and Safety Plan. Prepared for the New York State Department of Environmental Conservation, Albany, New York. February 2020.

NYSDEC, 2013. Decision Document - Record of Decision Amendment. Prepared by the New York State Department of Environmental Conservation. March 2013.

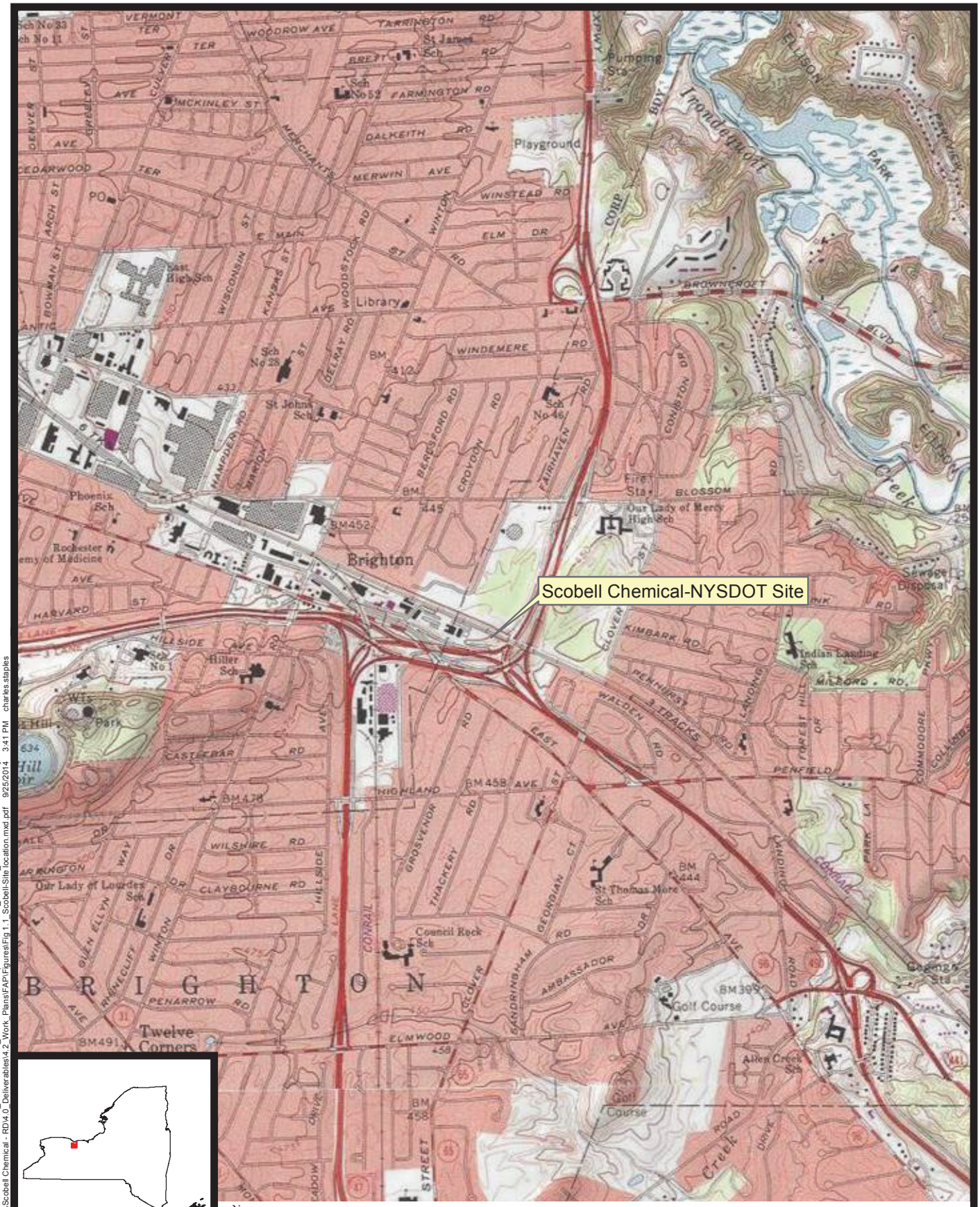
New York State Department of Environmental Conservation (NYSDEC), 2010. "DER-10, Technical Guidance for Site Investigation and Remediation"; May 2010.

NYSDEC, 1998. Technical and Operational Guidance Series (TOGs) 1.1.1. "Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations". June 1998

LIST OF ACRONYMS AND ABBREVIATIONS

FAP	Field Activities Plan
HASP	Health and Safety Plan
LTM	Long Term Monitoring
MACTEC	MACTEC Engineering & Geology, P.C.
MNA	monitored natural attenuation
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation
NYSDOT	New York State Department of Transportation
QAPP	Quality Assurance Program Plan
QC	quality control
ROD	Record of Decision
Site	Scobell Chemical-NYSDOT site
SMP	Site Management Plan
SOP	Standard Operating Procedure
TCL	Target Compound List
µg/L	microgram(s) per liter
USEPA	United States Environmental Protection Agency
VOC	volatile organic compound

FIGURES



Service Layer Credits: Copyright:© 2011 National Geographic Society, i-cubed

Prepared/Date: CRS 09/25/14
Checked/Date: BPN 09/25/14

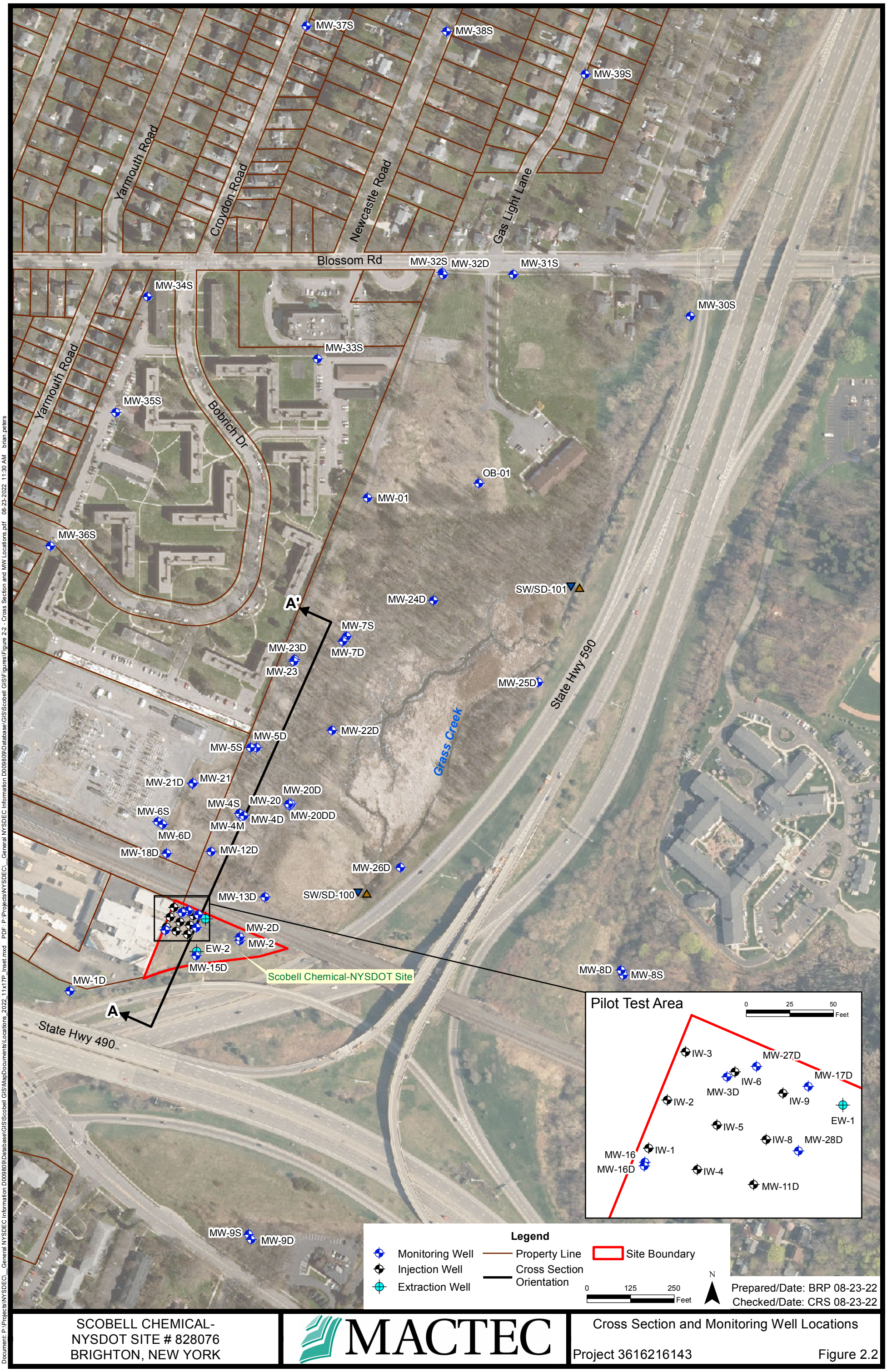
SCOBELL CHEMICAL-NYSDOT
SITE # 828076
BRIGHTON, NEW YORK

MACTEC

Site Location

Project 3617147328 Figure 1.1

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ysdec1\Contract D007619\Projects\Scobell Chemical - RD\4.0_Deliverables\4.5_Databases\GISMapDocuments\Site_Location_8.5x11P.mxd PDF: P:\Projects
ysdec1\Contract D007619\Projects\Scobell Chemical - RD\4.0_Deliverables\4.2_Work_Plans\FAP\Figures\Fig 1.1_Scobell-Site location.mxd 9/25/2014 3:41 PM charles.staples



SCOBELL CHEMICAL-
NYSDOT SITE # 828076
BRIGHTON, NEW YORK

MACTEC

Cross Section and Monitoring Well Locations

Project 3616216143

Figure 2.2

Document: P:\Projects\NYSDEC__General NYSDEC Information D009809\Database\GIS\Scobell GIS\Figures\Figure 2-2 - Cross Section and MW Locations.pdf 08-23-2022 11:30 AM brian.peters
PDF: P:\Projects\NYSDEC__General NYSDEC Information D009809\Database\GIS\Scobell GIS\MapDocuments\Locations_2022_11x17P_Inset.mxd brian.peters

TABLES

Monitoring Well ID	Part of Long Term Monitoring Sampling	Northing	Easting	Ground Elevation (ft)	Casing Elevation (ft)	Riser Elevation (ft)	Depth to Rock (BGS)	Screen Monitored Depth (ft) (BGS)	Top of Screen Monitored Elevation	Bottom of Screen Monitored Elevation
OB-1	Yes	1148583.0	1425879.3	436.85	439.78	439.58	6.50	4.5 to 9.5	432.35	427.35
MW-01	Yes	1148541.5	1425560.5	438.84	440.47	440.63	--	33.41	--	405.43
MW-1D	Yes	1147127.8	1424706.9	455.14	N/A	457.56	16.00	36 to 46	419.14	409.14
MW-2	No	1147272.5	1425193.3	453.73	456.18	455.94	10.70	6 to 11	447.73	442.73
MW-2D	Yes	1147282.4	1425194.4	453.59	N/A	456.14	11.10	26 to 36	427.59	417.59
MW-3D	Yes	1147364.0	1425018.5	452.15	454.72	454.42	7.50	26 to 36	426.19	416.19
MW-4S	Yes	1147636.9	1425192.3	443.64	N/A	446.29	11.70	4.5 to 14.5	439.14	429.14
MW-4M	Yes	1147626.1	1425201.4	443.73	446.24	Casing	11	13 to 21	430.73	422.73
MW-4D	Yes	1147621.7	1425204.5	443.63	445.99	445.88	11.70	25 to 35	418.63	408.63
MW-5S	No	1147825.7	1425241.6	442.70	442.70	442.36	10.70	3 to 13	439.76	429.76
MW-5D	Yes	1147824.9	1425224.9	442.48	N/A	445.02	10.70	22.5 to 32.5	419.98	409.98
MW-6S	No	1147613.0	1424959.3	443.10	445.57	445.10	6.00	12 to 25	431.10	418.10
MW-6D	Yes	1147604.8	1424972.8	443.12	445.67	445.34	5.50	58 to 73	385.12	370.12
MW-7S	Yes	1148143.9	1425500.5	440.81	443.25	443.07	8.00	12 to 25	428.81	415.81
MW-7D	Yes	1148130.4	1425489.4	441.16	443.38	442.52	8.00	52 to 65	389.16	376.16
MW-8S	Yes	1147172.2	1426293.4	452.89	455.41	454.76	6.00	12.5 to 25	440.39	427.89
MW-8D	No	1147187.9	1426286.9	453.25	455.08	454.51	6.00	64.5 to 78.5	388.75	374.75
MW-9S	No	1146429.2	1425219.3	453.19	453.19	452.81	8.00	19 to 25	434.19	428.19
MW-9D	No	1146415.0	1425227.2	453.27	453.27	452.94	8.00	68 to 78	385.27	375.27
MW-11D	Yes	1147290.6	1425044.0	453.46	455.34	Casing	9.6	14 to 27.5	439.46	425.96
MW-12D	Yes	1147527.9	1425112.0	444.41	446.44	Casing	12.5	15 to 36.2	429.41	408.21
MW-13D	Yes	1147396.4	1425266.1	456.11	458.21	Casing	16	19 to 42	437.11	414.11
MW-15D	Yes	1147228.8	1425068.8	454.10	456.13	Casing	11	13 to 35.9	441.10	418.20
MW-16	No	1147303.5	1424981.7	452.87	455.54	455.37	7.80	5 to 8	447.87	444.87
MW-16D	Yes	1147301.3	1424981.2	452.87	455.53	Casing	7.8	10 to 29	442.87	423.87
MW-17D	Yes	1147347.0	1425075.3	451.76	454.42	Casing	8.1	10 to 30	441.76	421.76
MW-18D	Yes	1147521.8	1424984.0	445.25	447.06	Casing	11.3	13.3 to 28.3	431.95	416.95
MW-20	No	1147658.5	1425336.9	444.04	446.39	446.17	14.50	8.7 to 13.7	435.34	430.34
MW-20D	Yes	1147663.7	1425340.7	444.05	446.21	Casing	12	14 to 31.5	430.05	412.55
MW-20DD	Yes	1147664.0	1425334.0	443.99	446.30	446.00	11.50	35.2 to 50.2	408.79	393.79
MW-21	No	1147720.5	1425058.1	441.85	443.99	443.83	12.50	7 to 12	434.85	429.85
MW-21D	Yes	1147723.5	1425059.8	441.71	443.93	Casing	12.5	14.5 to 29.5	427.21	412.21
MW-22D	Yes	1147874.9	1425458.8	443.74	445.67	Casing	13.7	15.5 to 30.5	428.24	413.24
MW-23	No	1148077.5	1425350.6	441.41	441.41	440.96	10.00	4.8 to 9.8	436.61	431.61
MW-23D	Yes	1148072.9	1425349.1	441.31	441.31	440.79	9.50	11.5 to 26.5	429.81	414.81
MW-24D	Yes	1148246.8	1425749.7	442.91	445.54	Casing	8.2	9.5 to 25	433.41	417.91
MW-25D	Yes	1148012.4	1426049.6	437.31	439.29	Casing	5	7 to 22	430.3	415.3
MW-26D	Yes	1147481.8	1425654.1	435.78	437.53	Casing	9	11 to 26	424.8	409.8
MW-27D	Yes	1147358.3	1425045.7	451.97	453.98	Casing	6	8.3 to 35.4	443.7	416.6
MW-28D	Yes	1147310.0	1425069.7	453.36	453.89	Casing	9	10.6 to 31.70	442.8	421.7
MW-30S	Yes	1149065.3	1426487.3	429.01	431.33	430.86	8.50	8.1 to 13.1	420.9	415.9
MW-31S	Yes	1149180.1	1425983.8	435.56	435.56	435.21	10.20	9.4 to 13.4	426.2	422.2
MW-32S	Yes	1149182.0	1425796.8	433.58	433.58	433.24	6.80	12 to 17	421.6	416.6
MW-32D	Yes	1149182.0	1425796.8	433.58	433.58	433.24	6.80	19.9 to 24.9	413.7	408.7
MW-33S	Yes	1148937.0	1425428.7	436.00	436.00	435.51	5.00	8.9 to 14.9	427.1	421.1
MW-34S	Yes	1149125.1	1424929.3	439.65	439.65	439.25	7.00	9.9 to 14.9	429.8	424.8
MW-35S	Yes	1148780.6	1424845.5	439.84	439.84	439.50	6.00	10.1 to 15.1	429.8	424.7
MW-36S	No	1148397.5	1424648.5	440.78	440.78	440.23	9.00	10 to 15	430.8	425.8
MW-37S	Yes	1149894.3	1425385.6	423.56	423.56	423.23	5.00	5.7 to 15.7	418.6	408.6
MW-38S	Yes	1149878.5	1425786.8	423.66	423.66	423.38	7.50	8 to 18	415.7	405.7
MW-39S	Yes	1149756.0	1426184.2	426.95	426.95	426.63	13.50	6.8 to 16.8	420.2	410.2

IW-1	No	1147311.5	1424983.8	452.70	452.55	Casing	8	10 to 35.6	442.7	417.1
IW-2	No	1147339.1	1424994.5	452.56	452.25	Casing	7.5	9.9 to 36	442.7	416.6
IW-3	No	1147366.8	1425004.9	452.09	451.84	Casing	7.5	10 to 36.3	442.1	415.8
IW-4	No	1147299.3	1425011.6	453.01	452.69	Casing	8.5	10.5 to 36.2	442.5	416.8
IW-5	Yes	114732.8	1425023.0	452.99	452.74	Casing	9.2	11 to 35.3	442.0	417.7
IW-6	No	1147355.4	1425033.3	452.47	452.23	Casing	7.4	9.4 to 36	443.1	416.5
IW-8	No	1147316.4	1425051.2	453.2	453.09	Casing	9	10.6 to 31.7	442.6	421.5
IW-9	No	1147343.1	1425060.9	452.42	452.17	Casing	8	10 to 22	442.4	430.4
EW-1	Yes	1147336.6	1425095	--	452.5	451.63	8.9	24.6 to 33.6	427.9	418.9
EW-2	Yes	1147242.8	1425069.2	--	453.7	453.22	8.9	25.2 to 34.7	428.02	418.52

Notes: 42

ft = feet

BGS = below ground surface

Horizontal Datum: NAD 83(2011) New York State Plane Coordinate System, West Zone

Vertical Datum: NAVD 88

Units: U.S. Survey Feet

-- = Unknown

Table 2: Proposed Sample Identification and Analyses

					Water Samples			
Site Type	**Media**	**Location ID**	**Indicated Sample Depth (feet bgs)**	**Sample ID**	**VOCs 8260B**	**DUP**	**MS/MD**	**MNA Parameters**
Monitoring Well	groundwater	EW-1	30	828076-EW001030	1			1
Monitoring Well	groundwater	EW-2	30	828076-EW002030	1			1
Monitoring Well	groundwater	IW-5	30	828076-IW005030	1			
Monitoring Well	groundwater	OB-01	9	828076-OB01009	1			
Monitoring Well	groundwater	MW-01	30	828076-MW01030	1			1
Monitoring Well	groundwater	MW-1D	36	828076-MW1D036	1			1
				828076-MW1D036MS	1		1	
				828076-MW1D036MD	1		1	
Monitoring Well	groundwater	MW-2D	30	828076-MW2D030	1			1
Monitoring Well	groundwater	MW-3D	30	828076-MW3D030	1			1
				828076-MW3D030D	1	1		1
Monitoring Well	groundwater	MW-4S	13	828076-MW4S013	1			
Monitoring Well	groundwater	MW-4M	18	828076-MW4M018	1			
Monitoring Well	groundwater	MW-4D	30	828076-MW4D030	1			1
Monitoring Well	groundwater	MW-5D	28	828076-MW5D028	1			1
Monitoring Well	groundwater	MW-6D	65	828076-MW6D065	1			
Monitoring Well	groundwater	MW-7S	20	828076-MW7S020	1			
Monitoring Well	groundwater	MW-7D	60	828076-MW7D060	1			
Monitoring Well	groundwater	MW-8S	20	828076-MW8S020				
Monitoring Well	groundwater	MW-12D	25	828076-MW12D025	1			1
				828076-MW12D025D	1	1		
				828076-MW12D025MS	1		1	
				828076-MW12D025MD	1		1	
Monitoring Well	groundwater	MW-13D	30	828076-MW13D030	1			
Monitoring Well	groundwater	MW-15D	30	828076-MW15D030	1			
Monitoring Well	groundwater	MW-16D	25	828076-MW16D025	1			
Monitoring Well	groundwater	MW-17D	25	828076-MW17D025	1			
Monitoring Well	groundwater	MW-18D	21	828076-MW18D021	1			
Monitoring Well	groundwater	MW-20D	21	828076-MW20D021	1			
Monitoring Well	groundwater	MW-20DD	46	828076-MW20D046	1			
Monitoring Well	groundwater	MW-21D	21	828076-MW21D021	1			1
Monitoring Well	groundwater	MW-22D	23	828076-MW22D023	1			
Monitoring Well	groundwater	MW-23D	21	828076-MW23D021	1			
Monitoring Well	groundwater	MW-24D	21	828076-MW24D021	1			
Monitoring Well	groundwater	MW-25D	20	828076-MW25D020	1			
Monitoring Well	groundwater	MW-26D	21	828076-MW26D021	1			
Monitoring Well	groundwater	MW-27D	30	828076-MW-27D030	1			1
Monitoring Well	groundwater	MW-28D	25	828076-MW-28D025	1			
Monitoring Well	groundwater	MW-30S	11	828076-MW-30S011	1			
Monitoring Well	groundwater	MW-31S	13	828076-MW31S013	1			
Monitoring Well	groundwater	MW-32S	14	828076-MW32S014	1			
Monitoring Well	groundwater	MW-32D	23	828076-MW32D023	1			
Monitoring Well	groundwater	MW-33S	13	828076-MW33S013	1			
				828076-MW33S013D	1	1		
Monitoring Well	groundwater	MW-34S	13	828076-MW34S013	1			
Monitoring Well	groundwater	MW-35S	14	828076-MW35S014	1			
				828076-MW35S014MS	1		1	
				828076-MW35S014MD	1		1	
Monitoring Well	groundwater	MW-37S	14	828076-MW37S014	1			
Monitoring Well	groundwater	MW-38S	17	828076-MW38S017	1			
Monitoring Well	groundwater	MW-39S	15	828076-MW39S015	1			
TOTAL SAMPLES					50	3	6	12

NOTES:

Sample ID: 828076 = NYSDEC Site No.;the last 3 digit indicate sample depth bgs;

8260B VOCs = Target Compound List Volatile Organic Compounds

Field Quality Control samples (duplicates [D], matrix spike [MS], matrix spiked duplicates[MD]) will be collected at a frequency of 5% (1:20 samples)
(Quality control samples indicated by "D", "MS", "MD" at end of Sample ID)

bgs = below ground surface

Monitored Natural Attenuation Parameters (MNA) = Nitrate, Sulfate, Chloride by USEPA Method 9056A, ethene, ethane, and methane by RSK 175, T
Alkalinity by USEPA Method 2320B, Sulfide by Standard Method 4500S2 F, calcium, iron, manganese, and magnesium will be analyzed by USEF
In addition, oxygen and reduction/oxidation potential and pH will be measured in the field.

Prepared By: CRS 8/23/2022
Checked By: BP 8/30/2022

ATTACHMENT 1

Standard Operating Procedures
(MACTEC, 2020a)

SOP # S2

STANDARD OPERATIONG PROCEDURE #S2

WATER LEVEL MEASUREMENT AND MONITORING WELL CONDITION EVALUATION PROCEDURES

April 20, 2020

NYSDEC Program QAPP – D009809

Revision 0

APPROVED:

Charles R Staples

_____	April 27, 2020
Charles Staples, PG, Program Technical Lead	Date
Review	Date
_____	_____
_____	_____
_____	_____

WATER LEVEL MEASUREMENT AND MONITORING WELL CONDITION EVALUATION PROCEDURES

1.0 PURPOSE

This Standard Operating Procedure (SOP) was prepared to direct field personnel in the methods for measuring water levels in and evaluating the condition of monitoring wells during field investigations at hazardous and non-hazardous waste sites. The objective of water level measurements is to gain accurate measurements (to within 0.01 feet [ft]) of the depth of ground water for use during well installation, use in preparation of groundwater elevation contour maps, slug tests, packer tests, and pumping tests.

Deviation from this procedure in planning or in the execution of planned activities must be approved by the project manager and documented in the field logbook and/or field data record.

2.0 PROCEDURE

2.1 Responsibilities

Project Manager

The project manager (PM) is responsible for determining the appropriate water level measurement procedures based on the sampling program objectives

Field Operations Lead

The field operations lead (FOL) is responsible for periodic observation of field activities and review of field generated documentation associated with this SOP. The FOL is also responsible for implementation of corrective action (i.e. retraining personnel, additional review of work plans and SOPs, variances to QC sampling requirements, issuing non-conformances, etc.) if problems occur.

Field Personnel

Field personnel assigned to water level measurement activities are responsible for completing tasks according to specifications outlined in this SOP and other appropriate procedures. All staff are responsible for reporting deviations from procedures to the PM or FOL and documenting the deviation in the field logbook and/or field data record.

2.2 Preparation

Office preparation

1. Review pertinent information with regards to well construction, development, and sampling information on the wells to be measured, if available.

2. Assemble appropriate logbooks and field data records to complete the field assignment.
3. Make copies of field data records with water level measurements and the description of monitoring well conditions from the previous sampling event, if available.

Equipment Selection and Sampling Considerations

The following list of equipment may be utilized during water level measurements. Site-specific conditions may warrant the use of additional or deletion of items from this list.

- Electronic water level indicators – graduated with an engineer's scale at 0.01 ft intervals
- Tap water or Deionized water
- Alconox®, Liquinox® or other non-phosphate concentrated laboratory grade soap
- Pump sprayer
- Pint sized squeeze bottles
- Any necessary personal protective equipment (gloves, eyewear, Tyvek® suits)
- Air monitoring instruments as required (PID or FID as specified in HASP)
- Field logbook
- Monitoring well inventory and/or water level field data records (FDRs) (site specific as needed)
- Well keys
- Previous measurement data (if available)
- Oil/water interface probe (if necessary)
- Engineer's rule
- Additional weight on tape if required

2.3 Field Procedures

Site-specific conditions may warrant the use of stringent air monitoring and potentially more significant decontamination scenarios.

- Record the condition of the well (protective casing, concrete collar, lock in place, etc.) on the FDR.
- Check that the water level tape has no obvious kinks or damage. If multiple water level meters are to be used, they should be checked for consistency by comparing readings from all meters used at one easily accessible monitoring well.
- Don appropriate PPE for the task and site conditions. Stand upwind of the well; unlock and open the well. If a vented cap is present, conduct well mouth air screening from the vent. If a non-vented well cap is present, remove the cap and screen the well mouth immediately. Record all

pertinent air monitoring results (sustained, dissipating, background, odor) on the FDR and in the field logbook.

- Identify the previous measuring point marking or notch on the riser or casing (if present). Record this location in the field logbook and on the FDR. It is important to always include the measuring point reference with the water level measurement (*e.g.* 7.15 feet below top of PVC riser [TOR]).
- Using a previously decontaminated water level indicator, turn on the meter, check the audible indicator, reel the electronic probe into the well riser (with the increments visible) slowly until the meter sounds, grasp the tape with hand, withdraw the tape and lower it again slowly until the sound is again audible. Check the depth to water on the tape and make a mental note of the depth to within 0.01 feet. Lower the probe again slowly and repeat the measurement for accuracy. If the measurement varies, repeat until a consistent measurement has been determined. It is not uncommon for a well to be under vacuum/pressure and for water in the well to rise or drop after the cap has been opened until the water reaches equilibrium with atmospheric pressure. A one-foot error is the most common measurement type during water level measurements. Be sure to read the depth correctly on the tape.
- Record the depth to water from the measuring point on the FDR. Make sure to include the measuring point reference with the water level measurement.
- Procedures utilized during water level measurements where free phase petroleum products are floating on the water table should be modified to include the use of the oil/water interface probe. The procedures during the use of this probe should be implemented similarly and by manufacturers' specifications. Using this type of probe, the thickness of the product can be determined.
- When measuring the depth to the bottom of the well, care must be taken to accurately determine the true depth to bottom as the graduated tape on a water level indicator will vary with manufacturer. At the start of the field program, using an engineer’s rule, measure from the 1-ft graduated mark on the tape to the 0-ft setpoint on the probe. For some manufactures (e.g. Heron Instruments) the 0-ft setpoint is the bottom of the probe and depth to bottom measurements can be directly recorded from the graduated tape. Pin style water level indicators (e.g. Solinst) typically have a 0-ft setpoint that is halfway up the metallic probe. For these style probes the offset from the bottom of the probe to the point of the pin must be measured and then added to depth to bottom measurements from the graduated tape.

Decontaminate the probe and tape. Refer to the **Field Equipment Decontamintion** for guidance.

3.0 ATTACHMENTS

Water Level Measurement and Monitoring Well Condition Field Data Record

SOP # S3

MACTEC STANDARD OPERATING PROCEDURE #S3

LOW FLOW GROUNDWATER SAMPLING PROCEDURES

April 20, 2020

New York State Department of Environmental Conservation

Program QAPP – D009809

Revision 0

APPROVED:

Charles R Staples

April 27, 2020

Charles Staples, PG, Program Technical Lead — Date

Reviewed — Date

_____ _____

_____ _____

_____ _____

LOW FLOW GROUNDWATER SAMPLING

1.0 PURPOSE

The following steps outline the purging and sample collection activities for low-flow sampling. Data will be recorded on the Low Flow Groundwater Field Data Record (FDR). Construction of monitoring wells may vary; therefore, this SOP may not be applicable to all situations.

This procedure is not intended to obviate the need for professional judgment to accommodate unforeseen circumstances. Deviation from this procedure should be documented in the field logbook and/or field data record.

2.0 REFERENCES

U.S. Environmental Protection Agency (EPA), 2017. Low Stress (low flow) Purging and Sampling Procedure for the Collection of Groundwater Samples from monitoring Wells (Revision 4). EQASOP-GW4. Effective date July 30, 1996, Revised September 19, 2017.

3.0 PROCEDURE

This section contains both the responsibilities and procedures involved with sampling environmental monitoring wells. Proper procedures are necessary to ensure the quality and integrity of the samples.

3.1 Responsibilities

Project Manager

The project manager (PM) is responsible for ensuring that sample collection activities are conducted in accordance with this SOP and any other appropriate procedures based on the sampling objectives.

Field Operations Lead

The field operations lead (FOL) is responsible for periodic observation of field activities and review of field generated documentation associated with this SOP. The FOL is also responsible for implementation of corrective action (i.e. retraining personnel, additional review of work plans and SOPs, variances to QC sampling requirements, issuing non-conformances, etc.) if problems occur.

Field Personnel

Field personnel assigned to sampling activities are responsible for completing tasks according to specifications outlined in this SOP and other appropriate procedures. All staff are responsible for reporting deviations from procedures to the PM or FOL and documenting the deviation in the field logbook.

3.2 Preparation

Office Preparation

- Review pertinent information with regards to well construction, development, and sampling information on the wells to be tested, if available.
- Determine target depth for location of the pump intake. Target depth should be the portion of the screened interval that intersects the zone of highest K. If the zone of highest K is unknown, or if the screen is placed within homogenous material, then the target depth shall be the midpoint of the saturated screen length. Primary flow zones should be identified in wells with screen lengths longer than 10 ft.
- Assemble appropriate logbooks and field data records to complete the field assignment.
- Make copies of field data records from the last sampling event.

Equipment Selection

Sampling pumps and water quality probes may vary depending on the well diameter, groundwater constituents and depth to groundwater, but generally, sampling will consist of the following equipment:

- Pump (e.g., peristaltic, bladder, submersible, or inertial) capable of a flow rate between 50 and 500 ml/minute and appropriate power supply. The pump type will principally depend on the depth to water and well diameter. Peristaltic pumps are effective only for wells where the depth to water is less than about 25 ft. Bladder pumps and submersible pumps are most commonly used for wells with depths to water greater than 25 ft. Inertial pumps are only recommended for narrow diameter wells that cannot be sampled using a bladder or peristaltic pump.
- Water quality parameter probes and flow-through cell (e.g., YSI) for measuring pH, temperature, conductivity (and/or specific conductance), dissolved oxygen (DO) and oxidation/reduction potential (ORP) of groundwater
- Turbidity meter (e.g. Hach)
- Calibration solutions for the water quality parameter probes
- Graduated water level indicator (accurate to 0.01 ft)
- Tubing, connections and tools as appropriate
- Graduated cylinder
- Watch or stopwatch
- Purge water container (e.g. 5-gallon bucket or carboy)
- Low flow groundwater sampling record (**example Attached**)
- Personal protection equipment (PPE)
- Decontamination supplies (e.g., DI water, Liquinox® soap, paper towels)
- Sample containers and cooler (provided by the laboratory)

- Ice for sample preservation
- Clean plastic sheeting
- Paper towels.

3.3 Field Procedures

Water quality parameter measurements shall be made using instrumentation and a flow through cell. Water quality parameter instruments will be calibrated daily as per the manufacturer's instructions. Equipment information (make, model, and serial number) and calibration readings shall be recorded on the field instrument calibration record (**example attached**).

Sampling will be conducted using the following procedure:

1. Don appropriate PPE.
2. Measure and record the depth to water and depth to the bottom of the well. Care should be taken to minimize disturbance of the water column within the well during pre-sample measurements.
3. If a submersible pump is used, decontaminate pump prior to use (if pumps are dedicated then this applies to the initial effort only) (**Equipment Decontamination SOP Table A-1**). Attach appropriate length of dedicated tubing or mark the tubing at the appropriate point so that when the pump and tubing are lowered into the well, and the mark is at the top of the well riser, the pump will be located at the target depth within the screened interval.
4. Carefully lower the pump to the predetermined target depth. Start the pump at a purge rate low enough to achieve 0.3 ft of drawdown or less based on historical data. If sampling the well for the first time, start the pump at the lowest possible setting (or approximately 100-ml per minute) and slowly increase the speed until discharge occurs. Check water level. Adjust pump speed until there is little (i.e., less than 0.3 ft) or no drawdown, if possible. If stabilized drawdown cannot be achieved, use the no-purge method described later in this section.
5. Monitor and record pumping rate and water levels every 3 to 5 minutes (or as appropriate) during purging. Appropriate measurement frequency may be calculated using the flow rate and the time required to purge a volume equivalent to that in the sample tubing and flow through cell. Record any adjustments to pumping rates on the FDR.
6. During purging and sampling the tubing should remain filled with water.
7. If there is visible turbidity in the discharge water, continue purging until the turbidity clears up, if possible, before connecting to the flow through cell. Connect the discharge tubing to the flow through cell. The flow through cell cannot be used for turbidity measurements. Turbidity should be measured prior to entering the flow through cell through the use of an inline tee fitting. Purging is considered complete and sampling may begin when the field parameters have stabilized, or the purge time has

exceeded 2 hours. Stabilization is considered to be achieved when three consecutive readings, taken at 3 to 5-minute intervals, are within the following limits:

- Turbidity (+/- 10% for values >10 NTUs. If turbidity is greater than 10 and does not stabilize, continue purging well for up to two hours, collect sample and document on the FDR and in field logbook. Collection of a filtered sample for metals analysis may be necessary if turbidity is greater than 50 NTUs.)
- DO (+/- 10% for values greater than 0.5 milligram per liter (mg/L). If three dissolved oxygen values are < 0.5 mg/L, then DO is considered stabilized)
- Specific conductivity (+/- 3%)
- Temperature (+/- 3°)
- pH (± 0.1 unit)
- ORP (± 10 millivolts)

8. To ensure the sample is representative of formation water, the final purge volume must be greater than the volume of the well drawdown (calculated by multiplying the height of the drop in water level by the radius of the well casing squared times pie) plus the volume of the sample tubing.
9. If there is excessive drawdown in the well such that water levels do not stabilize while pumping, the well can be sampled using the no-purge method. For this method, the well is purged until dry and the well allowed to recharge as much as possible. The sample is then collected from the recharged water.
10. To collect the analytical sample, disconnect the tubing from the flow through cell. Water samples for laboratory analyses must not be collected after water has passed through the flow through assembly. Fill sample containers directly from the tubing without alterations to the pumping rate (pumping rate may be lowered for the collection of VOC samples to avoid splashing or overfilling).
11. The volatile organic compound (VOC) fraction shall be collected first. The VOC sample container shall be filled without air space within the container. The VOC container should not be overfilled to avoid diluting the sample preservative. The vial should be 90% filled, and then topped off using water added incrementally from the container cap.
    - Samples will be labelled and handled consistent with the procedures in the QAPP and **Chain of Custody SOP (Table A-1)**.
12. Subsequent sampling efforts should duplicate the pump intake depth and final purge rate from the initial sampling event (use final pump dial setting information).
13. If using non-dedicated equipment, remove the pump from the well and decontaminate by flushing with the decontamination fluid specified in the **Equipment Decontamination SOP (Table A-1)**, or the site-specific FAP. Typically, decontamination will consist of flushing the pump with potable water and Alconox® followed by flushing with deionized water.

14. Complete remaining calculation and entries on the Low flow Groundwater FDR after sampling is completed at each well. Include any observations made during sampling such as color, odor, etc., in the field logbook and FDR.
15. Secure the well cap, compression plug, and lock.

4.0 ATTACHMENTS

Low Flow Groundwater Sampling Record

Field Instrument Calibration Record

Information Handout: Low Flow Groundwater Field Parameter Data

LOW FLOW GROUNDWATER SAMPLING RECORD

MACTEC

511 Congress Street
Suite 200
Portland, Maine 04101

PROJECT NAME		LOCATION ID	DATE
PROJECT NUMBER		START TIME	END TIME
SAMPLE ID	SAMPLE TIME	SITE NAME/INSTALLATION	PAGE OF

WELL DIAMETER (IN.) ☐ 1 ☐ 2 ☐ 4 ☐ 6 ☐ 8 ☐ OTHER _____

TUBING ID (INCHES) ☐ 1/8 ☐ 1/4 ☐ 3/8 ☐ 1/2 ☐ 5/8 ☐ OTHER _____

MEASUREMENT POINT (MP) ☐ TOP OF RISER (TOR) ☐ TOP OF CASING (TOC) ☐ OTHER _____

WELL INTEGRITY

	YES	NO	N/A
CAP			
CASING			
LOCKED			
COLLAR			

INITIAL DTW (BMP)	FT	**FINAL DTW (BMP)**	FT	**PROT. CASING STICKUP (AGS)**	FT	**TOC/TOR DIFFERENCE**	FT
WELL DEPTH (BMP)	FT	**SCREEN INTERVAL**	FT	**PID AMBIENT AIR**	NA PPM	**REFILL TIMER SETTING**	NA SEC
WATER COLUMN	FT	**DRAWDOWN VOLUME** (final DTW- initial DTW X well diam. squared X 0.041)	GAL	**PID WELL MOUTH**	NA PPM	**DISCHARGE TIMER SETTING**	NA SEC
CALCULATED GAL/VOL (water column X well diameter^2 X 0.041)	GAL	**TOTAL VOL. PURGED** (mL per minute X total minutes X 0.00026 gal/mL)	GAL	**DRAWDOWN/ TOTAL PURGED**		**PRESSURE TO PUMP**	NA PSI

FIELD PARAMETERS WITH PROGRAM STABILIZATION CRITERIA (AS LISTED IN THE QAPP)

TIME	DTW (FT)	PURGE RATE (mL/min)	TEMP. (^{o}C) ±3%	SP. CONDUCTANCE (mS/cm) ±3%	DISS. O_2 (mg/L) ±10% or 3 values <0.5 mg/L	pH (units) ±0.1	REDOX (mv) ±10 mv	TURBIDITY (ntu) ±10% and <10 ntu or 3 values <5 ntu	PUMP INTAKE DEPTH (ft)	COMMENTS
	BEGIN PURGING									

FINAL STABILIZED FIELD PARAMETERS (rounded to appropriate significant figures)

TEMP.: nearest degree (ex. 10.1 = 10)
COND.: 3 significant figure max (ex. 1.686 = 1.69)
pH: nearest tenth (ex. 5.53 = 5.5)
DO: nearest tenth (ex. 3.51 = 3.5)
TURB: 3 SF max, nearest tenth (6.19 = 6.2, 101 = 101)
ORP: 2 SF (44.1 = 44, 191 = 190)

EQUIPMENT DOCUMENTATION

TYPE OF PUMP
- ☐ PERISTALTIC
- ☐ SUBMERSIBLE
- ☐ BLADDER _____
- ☐ WATTERA
- ☐ OTHER _____
- ☐ OTHER _____

DECON FLUIDS USED
- ☐ ALCONOX
- ☐ DEIONIZED WATER
- ☐ POTABLE WATER
- ☐ NITRIC ACID
- ☐ HEXANE
- ☐ METHANOL
- ☐ OTHER _____

TUBING/PUMP/BLADDER MATERIALS
- ☐ SILICON TUBING
- ☐ HDPE TUBING
- ☐ LDPE TUBING
- ☐ OTHER _____
- ☐ OTHER _____

- ☐ S. STEEL PUMP MATERIAL
- ☐ PVC PUMP MATERIAL
- ☐ GEOPROBE SCREEN
- ☐ OTHER _____
- ☐ OTHER _____
- ☐ OTHER _____

EQUIPMENT USED
- ☐ WL METER _____
- ☐ PID _____
- ☐ WQ METER _____
- ☐ TURB. METER _____
- ☐ PUMP _____
- ☐ OTHER _____
- ☐ FILTERS NO. ____ TYPE _____

ANALYTICAL PARAMETERS

	PARAMETER	METHOD NUMBER	ANALYTE LIST	FIELD FILTERED	PRESERVATION METHOD	VOLUME REQUIRED	QC COLLECTED
☐							
☐							
☐							
☐							
☐							
☐							
☐							
☐							

PURGE OBSERVATIONS

PURGE WATER CONTAINERIZED — YES ☐ NO ☐

NUMBER OF GALLONS GENERATED _____

NO-PURGE METHOD UTILIZED — YES ☐ NO ☐

NOTES

Sampler Signature: Print Name:

Checked By: Date:

DEVIATIONS FROM THE WORK PLAN

REV. 3/29/2019

FIELD INSTRUMENT CALIBRATION RECORD

PROJECT NAME: _____ TASK NO: _____ DATE: _____
PROJECT NUMBER: _____ MACTEC CREW: _____
PROJECT LOCATION: _____ SAMPLER NAME: _____
WEATHER CONDITIONS (AM): _____ SAMPLER SIGNATURE: _____
WEATHER CONDITIONS (PM): _____ CHECKED BY: _____ DATE: _____

MULTI-PARAMETER WATER QUALITY METER

METER TYPE _____
MODEL NO. _____
UNIT ID NO. _____

AM CALIBRATION
Start Time _____/End Time_____

POST CALIBRATION CHECK
Start Time _____/End Time_____

	Units	Standard Value	Meter Value	*Acceptance Criteria (AM)	Standard Value	Meter Value	*Acceptance Criteria (PM)
pH (4)	SU	4.0		+/- 0.1 pH Units			
pH (7)	SU	7.0		+/- 0.1 pH Units	7.0		+/- 0.3 pH Units
pH (10)	SU	10.0		+/- 0.1 pH Units			
Redox	+/- mV	240		+/- 10 mV	240		+/- 10 mV
Conductivity	mS/cm	1.413		+/- 0.5 % of standard	1.413		+/- 5% of standard
DO (saturated)	%	100		+/- 2% of standard			
DO (saturated)	mg/L[1] (see Chart 1)			+/- 0.2 mg/L			+/- 0.5 mg/L of standard
DO (<0.1)	mg/L	<0.1		< 0.5 mg/L			
Temperature	°C						
Baro. Press.	mmHg						

TURBIDITY METER

METER TYPE _____
MODEL NO. _____
UNIT ID NO. _____

	Units	Standard Value	Meter Value	Standard Value	Meter Value	*Acceptance Criteria (PM)
<0.1 Standard	NTU	<0.1		<0.1		+/- 0.3 NTU of stan.
20 Standard	NTU	20		20		+/- 5% of standard
100 Standard	NTU	100		100		+/- 5% of standard
800 Standard	NTU	800		800		+/- 5% of standard

PHOTOIONIZATION DETECTOR

METER TYPE _____
MODEL NO. _____
UNIT ID NO. _____

Background	ppmv	<0.1		<0.1		within 5 ppmv of BG
Span Gas	ppmv	100		100		+/- 10% of standard

O_2-LEL 4 GAS METER

METER TYPE _____
MODEL NO. _____
UNIT ID NO. _____

Methane	%	50		50		+/- 10% of standard
O_2	%	20.9		20.9		+/- 10% of standard
H_2S	ppmv	25		25		+/- 10% of standard
CO	ppmv	50		50		+/- 10% of standard

OTHER METER

METER TYPE _____
MODEL NO. _____
UNIT ID NO. _____

See Notes Below for Additional Information

☐ Equipment calibrated within the Acceptance Criteria specified for each of the parameters listed above.
☐ Equipment (not) calibrated within the Acceptance Criteria specified for each of the parameters listed above**.

MATERIALS RECORD

		Cal. Standard Lot Number	Exp. Date
		pH (4)	
Deionized Water Source:	Portland FOS	pH (7)	
Lot#/Date Produced:		pH (10)	
Trip Blank Source:	Laboratory provided	ORP	
Sample Preservatives Source:	Laboratory provided	Conductivity	
Disposable Filter Type:	in-line 0.45µm cellulose	<0.1 Turb. Stan.	
Calibration Fluids / Standard Source:		20 Turb. Stan.	
- DO Calibration Fluid (<0.1 mg/L)	Portland FOS	100 Turb. Stan.	
- Other		800 Turb. Stan.	
- Other		PID Span Gas	
- Other		O_2-LEL Span Gas	
		Other	

NOTES:

* = Unless otherwise noted, calibration procedures and acceptance criteria are in general accordance with USEPA Region 1 SOPs for Field Instrument Calibration (EQASOP-FieldCalibrat) and Low Stress Purging and Sampling (EQASOP-GW001), each dated 1/19/2010. Additonal acceptance criteria obtained from instrument specific manufacturer recommendations.
** = If meter reading is not within acceptance criteria, clean/replace probe and re-calibrate, or use calibrated back-up meter if available. If project requirements necessitate use of the instrument, clearly document any deviations from acceptance criteria on all data sheets and log book entries.
1 = DO Saturated standard value is calculated based on Oxygen Solubility at Indicated Pressure Chart from the USEPA Region 1 SOP for Field Instrument Calibration (EQASOP-FieldCalibrat), dated 1/19/2010.

MACTEC
511 Congress Street, Portland Maine 04101

FIELD INSTRUMENT CALIBRATION RECORD

MACTEC

NYSDEC Field Programs

Information Handout: Low Flow Groundwater Field Parameter Data

March 2017, Revised April 2020

INTRODUCTION

This sheet provides information related to field data collection during low flow groundwater sampling including: temperature, pH, turbidity, conductivity, dissolved oxygen (DO), and oxidation/reduction potential (ORP). The goal of this handout is to provide a general understanding of the data being collected to assist staff with identify situations where data may not be accurate due to improper instrument calibration or instrument error.

Documents containing additional information are provided as attachments including:

- USEPA Region 1 Standard Operating Procedure Calibration of Field Instruments (Attachment 1)
- USEPA Region 1 Low Stress (Low Flow) Purging And Sampling Procedure For The Collection Of Groundwater Samples From Monitoring Wells (Attachment 2)
- instrument information pamphlets provided by Pine Environmental (Attachment 3), and
- a link to the USGS National Field Manual website.

GENERAL CONSIDERATIONS FOR FIELD EVENTS

- Review NYSDEC Program QAPP SOPs and Project Field Activities Plan (FAP)
- Record field data on appropriate Field Data Record (FDR)
- Avoid storing equipment/instruments for long periods in extreme cold or hot conditions that might occurred in parked car in the field
- Calibrate instruments in controlled environment (room temp if possible).
- Do not get turbidity meters wet. All other equipment is typically more water resistant but is not waterproof. Care should be taken to protect all equipment during rain events.
- Record field parameter results as displayed on the instrument. Significant figures and rounding will be applied later during data summary process.
- For questions regarding equipment contact the Field Operations Lead or Bruce Cunningham 207 828-3657 if equipment is obtained from Field Operations Support group in Portland (FOS).

LOW FLOW GROUNDWATER FIELD DATA

Instruments used for low flow groundwater sampling that are currently provided by the FOS group in Portland, Maine include:

- YSI 556 Multiparameter System
- HACH 2100P Turbidimeter or HACH 2100Q
- Water level indicator

Instructions on instrument calibration, maintenance and operation which are provided by Pine Environmental Services are included in Attachment 3.

Temperature

Units: Temperature should be measured in degrees Celsius (°C).

Calibration – Thermometers are not calibrated by field staff, they are checked against a NIST Thermometer annually. Record of annual calibration filed in Portland FOS with Bruce Cunningham. If the instrument readings are questionable it can be checked with ice water which should be register approximately 0 °C

Other considerations: Some field parameters are corrected based on temperature (pH, dissolved oxygen, and specific conductance). So it is important that the temperature is correct.

Typical measurements: Average groundwater temperatures in the Northeast range from approximately 5.5 °C in Maine to 11 °C in southern New York. Seasonal temperatures vary by as much as ± 10 °C in shallow wells and less in deeper wells.

pH

Units: pH is measured in pH standard units (SU) on a scale of 0-14. The pH (power of hydrogen) scale measures the concentration of hydrogen ions in solution.

Calibration – pH will be calibrated prior to mobilization to the field and daily once prior to conducting field activities and once after sampling is complete. pH will be calibrated with 2 or 3 solutions (based on project requirements) covering the expected range. Typically pH 4 and pH 7 (and pH 10 if a third solution is required) will be used. Acceptance criteria is ± 0.1 for the AM check and ± 0.3 at pH 7 for the PM check. Rinse and dry the probe between solution checks.

Maintenance and Corrective Actions: pH is measured through the glass bulb located on the end of the probe. Do not touch the glass bulb with fingers. Oily film or scratches on the bulb will interfere with the design characteristics of the glass membrane and affect pH measurements. Do not use the instrument if the bulb is broken or scratched or if the electrode body is cracked, broken or the internal electrode has been damaged. If necessary, the probe can be replaced either through FOS or the rental company.

Typical measurements: Most groundwater in the US has pH ranging from 6 to 8.5 SU and surface water ranges from 6.5 to 8.5 SU. The pH of distilled water is usually around 5.6 SU due to dissolved CO2 and the formation of carbonic acid.

Oxidation/Reduction Potential (ORP)

Units: ORP (also referred to as redox potential [Eh]) is a measure of the intensity of electron activity between two electrodes. ORP is measured in millivolts (mV).

Calibration: ORP will be calibrated prior to mobilization to the field and daily prior to conducting field activities. The instrument should be allowed to stabilize before running daily calibrations and should be adjusted for temperature according to the manufactures specifications. Our typical calibration solution has a value of 240 mV with an acceptance criteria of ±10 mV.

Maintenance and Corrective Actions: If calibration readings are not within acceptance criteria the electrodes may need to be cleaned. Cleaning instructions are provided in the YSI technical notes or contact Bruce Cunningham for assistance. Alternatively new calibration solutions may be needed.

Typical measurements: ORP will vary from site to site and within sites depending on a variety of factors including dissolved chemicals (metals and other compounds), and pH. In general, positive values indicate an oxidizing environment and negative values indicate a reducing environment.

Redox conditions can affect the presence of dissolved chemicals in water. Iron (ferrous iron) and dissolved manganese are often present in reducing conditions and hexavalent chromium (Cr6) might be found in oxidizing conditions.

Specific Conductance (conductivity)

Units: Conductivity is measured in Siemens (S) and distance. Field data records typically use millisiemens per centimeter (mS/cm), but instruments may provide data in other converted forms (10^6 µS/cm = 10^3 mS/cm = 1 S/cm). mho may also be used as a unit of measure for conductivity; this is numerically the same S.

Calibration: Conductivity will be calibrated prior to mobilization to the field and daily once prior to conducting field activities and once after sampling is completed. Daily calibration is a check against a standard of known concentration. Acceptance criteria for conductivity is ± 0.5% for the AM check and ± 5% for the post sampling check.

Maintenance and Corrective Actions: If calibration readings are not within the acceptance criteria, the electrodes may need to be cleaned. Contact Bruce Cunningham if equipment was obtained from FOS and he will provide instructions as appropriate.

Because the actual conductivity of a solution changes with temperature, conductivity measurements are automatically normalized to 25°C by the field instrument.

Typical measurements:

Distilled Water: 0.0005 mS/cm
Deionized water: 0.00001 – 0.001 mS/cm
Tap Water: 0.5 – 0.8 mS/cm
Drinking water: 0.05 – 0.5 mS/cm
Groundwater: 0.05 – 50 mS/cm
Surface Water: 0.01 – 4 mS/cm
Sea water: 50 mS/cm

Dissolved Oxygen

Units: Instrumentation will report DO values as either percent saturation or ppm (mg/L) units. Field data should be reported in mg/L.

Calibration: DO instrument calibration check will be conducted prior to mobilization to the field and daily once prior to conducting field activities and once after sampling is complete. Calibration checks are conducted using an oxygen saturated solution and DO free solution (if require for the field program).

Calibration for DO must be adjusted based on air pressure (mmHg) and temp (°C). Use Pressure and Temperature Chart to determine saturated solution concentration (Attachment 4). Air pressure readings can be obtained from **http://weather.noaa.gov/.** Barometric pressure is often in inches Hg which can be converted to mm by multiplying inches by 25.4.

Acceptance criteria:
DO saturation solution ± 2% (0.2 mg/L) AM calibration and ± 5% (0.5 mg/L) PM calibration.
Zero solution: < 5% (0.5 mg/L) both AM and PM.

Maintenance and Corrective Actions: The DO sensor should not be allowed to dry out and should be kept moist during storage. Method performance can be negatively affected by the following:
• calibration drift
• a loose, wrinkled, or damaged membrane
• air bubbles in the electrolyte solution
• loose-fitting O-rings and membranes
• damaged, dirty, or otherwise contaminated electrodes under the membrane.

If there is a problem with the membrane, follow instructions that are included with the instrument on how to repair or replace the membrane or contact Bruce Cunningham at FOS with questions.

Typical measurements: Groundwater DO can range from near saturation (approximately 14 mg/L) in locations where the water table is near the ground surface to <2 mg/L. Although low DO could be the result of many factors, it may indicate reducing groundwater conditions due to:

- proximity to wetlands
- landfills
- VOC plumes

Turbidity

Units: Turbidity is a measure of how light is scattered or absorbed and is measured in NTU (Nephelometric Turbidity Units).

Calibration: Initial instrument calibration is completed by the manufacturer or FOS. Check standards should be run daily prior to use in the field with commercial reference standards. Acceptance criteria is ± 5%. Check standard vials should be cleaned prior to use.

Maintenance and Corrective Actions: Dirty or scratched vials/cell or air bubbles can give false results. It is important to make sure the sample vial is clean. If there are visible scratches replace the sample vial.

Typical measurements: Clean drinking water has turbidity <5 NTU. Turbidity <50 NTU may not be visually noticeable.

Additional Information:

Additional documents that provide useful include:

- USEPA Region 1 Standard Operating Procedure Calibration of Field Instruments; Quality Assurance Unit, USEPA Region I, 11 Technology Drive, North Chelmsford, MA 01863. Jan 2010.
- USEPA Region 1 Low Stress (Low Flow) Purging And Sampling Procedure For The Collection Of Groundwater Samples From Monitoring Wells (Revision 4). EQASOP-GW4. Effective date July 30, 1996, Revised September 19, 2017.
- Various information provided by instrument manufacturers **http://www.fieldenvironmental.com/assets/files/Manuals/YSI%20556%20MPS%20Manual.pdf; https://www.ysi.com/parameters/dissolved-oxygen?Dissolved-Oxygen-1**
- USGS National Field Manual for the Collection of Water-Quality Data, **http://water.usgs.gov/owq/FieldManual/**

SOP # S8

MACTEC STANDARD OPERATING PROCEDURE #S8

CHAIN OF CUSTODY PROCEDURES

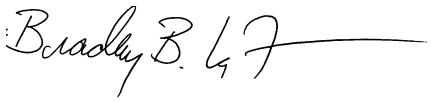
April 20, 2020

New York State Department of Environmental Conservation

Program QAPP – D009809

Revision 0

APPROVED:



April 27,2020

Bradley LaForest, NRCC-EAC, Project Manager — Date

Reviewed — Date

_____ _____

_____ _____

_____ _____

CHAIN OF CUSTODY PROCEDURES

1.0 PURPOSE

The purpose of this Standard Operating Procedure (SOP) is to describe the chain of custody (COC) procedures and sample handling considerations when collecting environmental samples at a site. This SOP also describes a tiered approach that should be used to assist with field decisions. This procedure applies to all MACTEC personnel and subcontractors who collect or otherwise handle samples of environmental samples and should be reviewed by all on-site personnel prior to implementation of field activities.

This procedure is not intended to obviate the need for professional judgment to accommodate unforeseen circumstances. Deviation from this procedure in planning or in the execution of planned activities must be approved by the project manager.

2.0 REFERENCES

American Society for Testing and Materials. 1996. Standard Guide for Sampling Chain-of-Custody Procedures. D 4840-95.

3.0 DEFINITIONS

COC Record – legal documentation of custody of sample materials and instructions for analytical laboratory.

Custody – physical possession or control. A sample is under custody if it is in possession or under control so as to prevent tampering or alteration of its characteristics.

Sample Label – a record attached to samples to ensure legal documentation of traceability.

4.0 PROCEDURES

Field data sheets and COC records must be completed by the appropriate sampling personnel for each sample. The objectives of the MACTEC COC program are to ensure:

- Samples are uniquely identified.
- samples are collected for all scheduled analyses.
- the correct samples are analyzed for requested analyses and are traceable to their records.
- descriptions of important sample characteristics and field observations are recorded.
- samples are protected from loss and/or are identified if damaged.
- alteration of samples (e.g., filtration, preservation) is documented.
- a forensic record of sample integrity is established.

- sample security is maintained; and
- relevant field information is recorded including location, sample number, date and time, identification of field samples, and individuals collecting the samples.

Field data records (FDRs), sample labels and COC forms are used to document identification and handling of samples from the time of collection through the completion of chemical analysis. In some projects, analytical data may be used in litigation. Accountability of the history of a sample must be available to demonstrate that the data are a true representation of the environment. The COC record is used as evidence in legal proceedings to demonstrate that a sample was not tampered with or altered in any way that may bias the analytical accuracy of the laboratory results. It is extremely important that COC records be complete, accurate and consistent.

4.1 Responsibilities

Project Manager

The project manager (PM) shall provide the Quality Assurance Program Plan (QAPP) and is responsible for the overall compliance with this SOP.

Field Operations Lead

The field operations lead (FOL) shall ensure that the samples are correctly collected, labeled, tracked by chain-of-custody, and stored until they are delivered directly to the shipper or laboratory (i.e., on-site or off-site).

Field Personnel

Field personnel (sample collectors) shall ensure the samples are correctly collected, labeled, tracked by chain-of-custody, and stored until they are delivered directly to the FOL or laboratory (i.e. on-site or off-site). The sample collector shall maintain custody of the samples until they are relinquished to the FOL or laboratory. The sample collector shall be responsible for informing the FOL of sampling conditions and if any of the samples are potentially hazardous. Appropriate comments should be made on the COC form to inform the laboratory of potentially hazardous samples which will provide a more efficient testing method.

4.2 COC Protocol Consideration

The COC protocol followed by the sampling personnel involves the following steps:

- recording sampling locations, sample bottle identification, and specific sample collection procedures on the appropriate field data records.
- using pre-prepared sample labels that contain all information necessary for effective sample tracking; and
- completing standard COC forms to establish analytical sample custody in the field before sample shipment.

Sample Custody

Sample custody procedures are designed to ensure that sample integrity is maintained from collection to final disposition. A critical aspect of sound sample collection and analysis protocols is the maintenance of strict COC procedures as described in this SOP. COC procedures include tracking and documentation during sample collection, shipment, and laboratory processing. A sample is considered to be in an individual's custody if it is (1) in the physical possession of the responsible party; (2) in view of the responsible party after being in their possession (3) secured to prevent tampering; or (4) placed in a designated, secure area that is controlled and restricted by the responsible party.

Custody will be documented throughout all sampling activities on the COC record for each day of sampling. This record will accompany the samples from the site to the laboratory. FOLs or other designated personnel are required to sign, date, and note on the record the time when relinquishing samples from their custody. Any discrepancies will be noted at this time. Samples will be shipped to subcontract laboratories via overnight air courier (e.g. FedEx or other approved shipping carrier). Shipping tracking numbers will be used as custody documentation during this time and will be retained as part of the permanent sample custody documentation. In some cases, samples may be hand delivered to the laboratory; hand delivery will be noted on the COC form. The subcontractor laboratory is responsible for sample custody once samples are received.

Sample Labels

Each sample container will be affixed with a self-sticking, waterproof, adhesive label. Each contracted laboratory will provide sample labels for every sample container. Each label shall be completed with a pen of indelible ink and contain the following information:

- Client Name: MACTEC
- Site Name: "Site Name" for the sampling event
- Client Sample ID: 828133-SD30, for example
- Date collected: (month/day/year)
- Sample Time given as military time (for example: 1400)
- Name/Initials of Collector: MACTEC Field Sampler
- Analytical method/analyte request (for example, VOCs - 8260)
- Preservative: (for example – None, HNO3, H2SO4, NaOH, HCl, Na2S2O3, or Other)

COC Record

COC forms will be used to document the integrity of all samples to maintain a record of sample collection, transfer of samples between personnel, shipment of samples, and receipt of samples at the laboratory, COC forms will be filled out for each sample/analysis at each sampling location. The COC forms shall include the following information:

- Project name and project number if applicable.
- Project PM contact information.
- Name and address of laboratory to receive the samples.

- COC control number.
- Sample type, sample method.
- Location ID, sample ID.
- Sample collection date and time.
- Matrix code.
- Analyses requested.
- Field QC for matrix spike (MS)/matrix spike duplicate (MSD), if applicable.
- Container type, size and number.
- Preservatives used.
- Data deliverable type.
- Field sampling personnel names and initials.
- Turn-around-time for laboratory analysis; and,
- Comments to the laboratory, if applicable.

The FOL will perform the following duties:

- Receive the samples from the sample collector(s).
- Check sample labels against the FDRs or other sample collection documentation.
- Complete the COC entry for each sample.
- Sign and enter the date and time relinquished to the shipper; and,
- Prepare the samples for shipment from the field to the laboratory.

The FOL will sign the "Sampled By" and "Relinquished By" fields on the COC record, marking the date and time custody is transferred to the shipping agency or other authorized person (e.g. courier or laboratory).

Any corrections to the COC form entries will be made by a single-line strike mark through the incorrect item, and then entering the correct entry adjacent to the strikeout item. Corrections will be initialed and dated by the person making the change.

The original COC will be sealed in a plastic bag and taped to inside lid of the shipping container (e.g. sample cooler). A copy of the COC will be sent to the PM as a scanned image or picture if equipment is unavailable for scanning. Any hard copies (e.g. carbonless copy paper duplicate records) will be retained by the FOL and placed in the project files upon completion of the field program.

Overnight Sample Storage

In some cases, samples that cannot be shipped immediately to a laboratory must be temporarily stored on ice in a secured location or in a MACTEC controlled sample refrigerator until arrangements can be made for delivery. A temperature blank must accompany samples.

January 2024

APPENDIX G – SITE SPECIFIC HEALTH AND SAFETY PLAN

Site-Specific Health and Safety Plan
Short Form

Site: Scobell Chemical---Site No. 828076 Job #/Task # 3616216143.03

Street Address: 1 Rockwood Ave, Brighton, NY

Proposed Date(s) of Investigation: 10/4/21-7/15/22

Prepared by: Ben Paulus Date: 9/29/21

*Approved by: Chuck Staples Date: 10/1/21

Site Description: **(attach map)** Scobell Chemical Site currently consists of a vacant parcel surrounded by highways, rail lines, and a commercial property. Historic practices at the property resulted in the contamination of site media with trichloroethene (TCE), tetrachloroethene (PCE), 1,1-dicloroethene (DCE), cis-1,2-DCE, vinyl chloride, 1,1,1-trichloroethane (TCA), benzene, toluene, and xylene. TCE has been detected as a product (DNAPL) in bedrock fractures at the Site.

Comments: Conduct groundwater sampling for MNA parameters and bacterial count. Conduct oversight of subsurface geophysics, bedrock extraction well installation, and 24 hour pumping test.

*Approval also serves as certification of a Hazard Assessment as required by 29 CFR 1910.132

Overall Project Characterization "Color" (See SMARTool Form):

☐ Green ☐ Yellow ☑ Orange 1 ☐ Orange 2 ☐ Orange 3 ☐ Red

Tasks:

Wood	Sub	Task Description	AHA Attached?
☐	☑	Geophysical Survey	☐
☑	☐	Groundwater Sampling	☑
☐	☑	Bedrock Well Installation	☑
☑	☑	Groundwater Pumping Test	☑

High Hazard Activities:

Wood	Sub	Activity	Wood	Sub	Activity
☐	☐	Confined space entry	☐	☑	Operating drill rig
☐	☐	Entering excavations	☐	☐	Operating other heavy equipment
☐	☐	Hot work	☐	☐	Using aerial lift
☐	☐	Lockout/tagout	☐	☐	Working from scaffolding
☐	☐	Operating forklift	☐	☐	Working at heights >6 feet

Stand up for Safety:

The above tasks could expose Wood E&IS employees and subcontractors to hazards associated with the following Stand up for Safety Initiatives:

- ☑ Driving
- ☐ Dropped Objects
- ☐ Energy Isolation (Lockout/Tagout)
- ☐ Working at Height

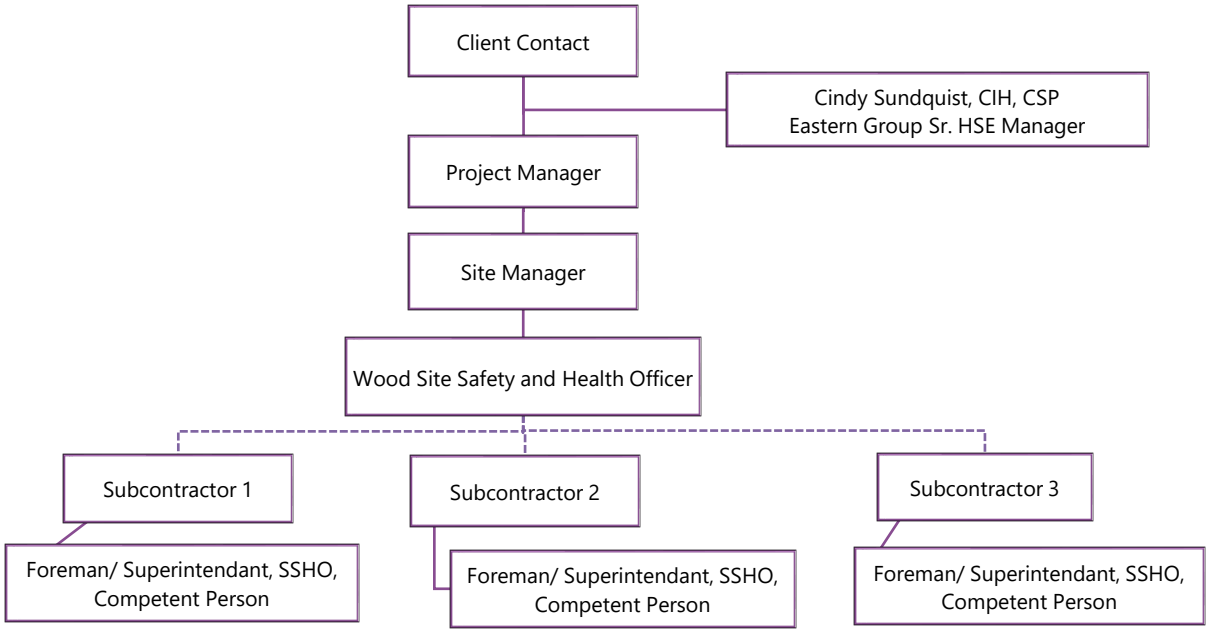
Life Saving Rules:

The following Wood Life Saving Rules potentially apply to the work being conducted at the site:

Site-Specific Health and Safety Plan
Short Form

- [ ] **Bypassing Safety Controls** - Obtain authorization before overriding or disabling safety controls
- [ ] **Confined Space** - Obtain authorization before entering a confined space
- [x] **Driving** - Follow safe driving rules
- [ ] **Energy Isolation** - Verify isolation and zero energy before work begins
- [ ] **Hot Work** - Control flammables and ignition sources
- [ ] **Line of Fire** - Keep yourself and others out of the line of fire
- [ ] **Safe Mechanical Lifting** - Plan lifting operations and control the area
- [ ] **Work Authorization** - Work with a valid permit when required
- [ ] **Working at Height** - Protect yourself against a fall when working at height

Project Organization Chart:



Dates of Required Training and Medical Surveillance:

Add additional training topics, as required. **Verify training in online training database: LINK**

Name:	Jerry Rawcliffe	Ben Paulus			
Job duties:	**Site Manager**	**SSHO**			
	Dates	**Dates**	**Dates**	**Dates**	**Dates**
Medical Surveillance	10/1/18	7/12/2021			
-Exam Type (A3, B, C)	C	B			
40-Hour Initial	5/1/85	8/10/2016			
8-Hour Supervisor[2]	3/19/19	7/5/2021			
8-Hour Refresher	7/5/2021	7/5/2021			
First Aid[1]	2/13/20	5/15/2010			
CPR[1]	7/24/17	05/15/2010			
Hazard Communication	10/1/18	6/20/2021			
Fire Extinguisher					

Site-Specific Health and Safety Plan
Short Form

Name:	Jerry Rawcliffe	Ben Paulus			
Job duties:	**Site Manager**	**SSHO**			
	Dates	**Dates**	**Dates**	**Dates**	**Dates**
Working in the Field during COVID-19 outbreak					

[1] At least one worker must be trained in First Aid/CPR

[2] Required for Site Manager and Site Health and Safety Officer

[3] **Medical Surveillance Exam A has no respiratory clearance so can only be used for Level D PPE.** . Exam A (basic HAZWOPER), Exam B (respirator & HAZWOPER under 40 years old), Exam C (respirator & HAZWOPER over 40 years old), Exam E (DOT), Exam F (asbestos monitoring), Exam G (lead monitoring) etc. **Contact HSE Coordinator or Cindy Sundquist to determine type of exam employee received.**

Site-Specific Health and Safety Plan
Short Form

Goals/Targets:

The following goals/targets have been established for the project:

- [x] Zero OSHA Recordable Incidents
- [ ] Weekly HSE Inspections (documented Project Safety Checklist)
- [ ] 1 Leadership (PM) HSSE Inspections
- [ ] 1 HEART observations per week
- [ ]

Meetings:

The following meetings will be held at the site:

Meeting	Lead by		Frequency				
	Wood	Sub	Initial	Daily	Weekly	Monthly	As Needed
[x] Project Kick-off [1]	[x]	[ ]	[x]	[ ]	[ ]	[ ]	[ ]
[x] Tailgate [2]	[ ]	[ ]	[ ]	[x]	[ ]	[ ]	[ ]
[ ] Safety Committee [1]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
[ ] Incident Reviews [1]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[x]
[x] E&IS Monthly Safety Topics [1]	[x]	[ ]	[ ]	[ ]	[ ]	[x]	[ ]
[ ] HSSE Closeout Meetings [1]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[x]
[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

[1] Attended by subcontractor management representative
[2] Attended by all subcontractor employees and supervisors.

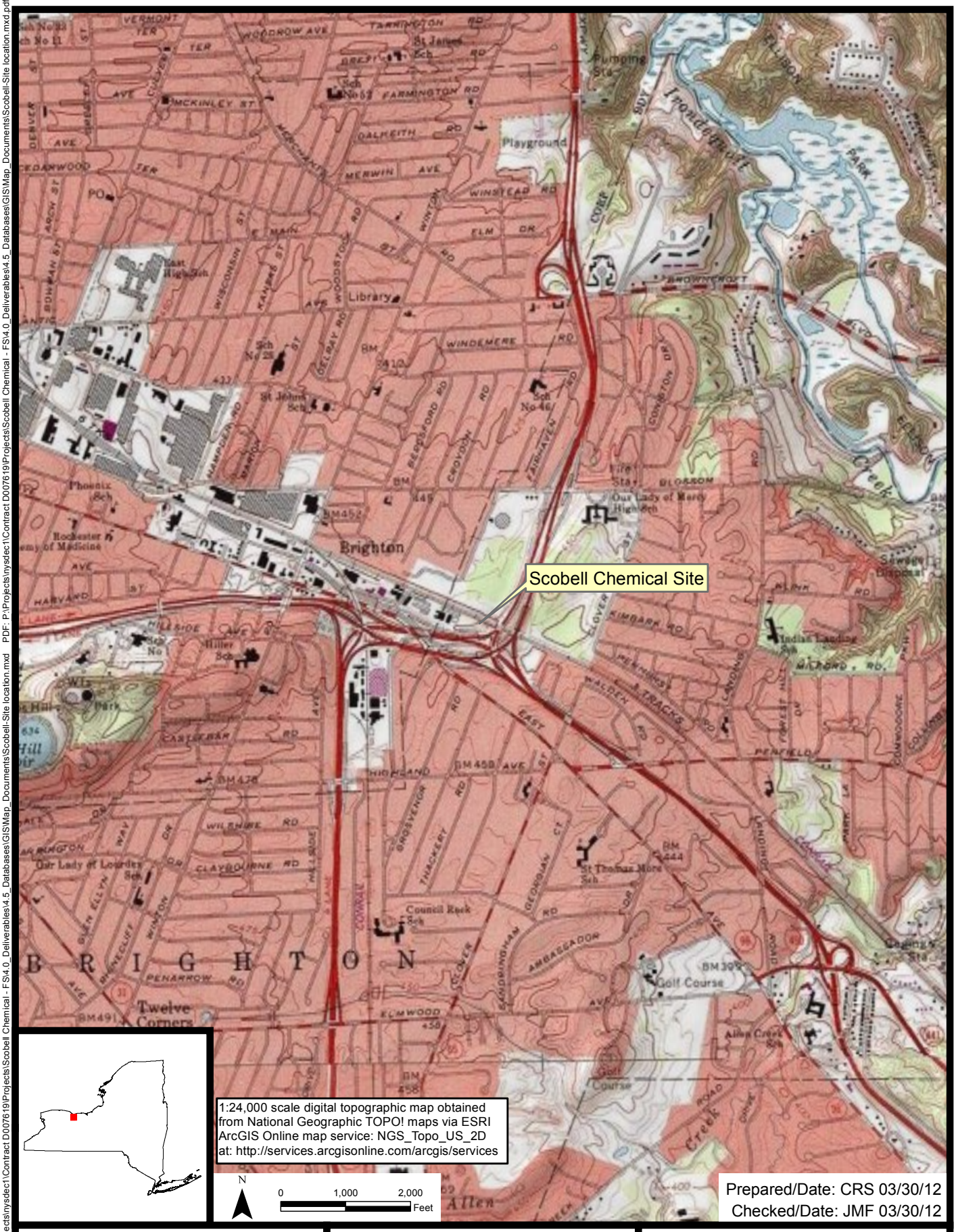
Inspections:

Regular inspections will be conducted by Wood E&IS and/or subcontractor personnel. Inspections will be documented, and corrective actions established for all findings. Corrective actions will be tracked to closure. HEART observations will be entered into the HEART database.

Inspection Type	Lead by		Frequency			
	Wood	Sub	Daily	Weekly	Monthly	Before Use
[x] HSE (Visual)	[x]	[x]	[x]	[ ]	[ ]	[ ]
[x] HSE (Documented)	[x]	[x]	[ ]	[x]	[ ]	[ ]
[ ] Leadership HSE (e.g., PM)	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
[ ] Scaffolding	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
[ ] Excavations	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
[x] Heavy Equipment	[x]	[x]	[x]	[ ]	[ ]	[ ]
[x] PPE	[x]	[ ]	[x]	[ ]	[ ]	[ ]
[x] Tools/Equipment	[x]	[ ]	[x]	[ ]	[ ]	[ ]
[x] HEART/Observations	[x]	[ ]	[ ]	[x]	[ ]	[ ]
[ ] PoWRA	[ ]	[ ]	[x]	[ ]	[ ]	[ ]
[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

INSERT SITE MAP(s) HERE

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DATA GAP WORK PLAN
SCOBELL, CHEMICAL
BRIGHTON, NEW YORK

MACTEC

SITE LOCATION
Project 3612-11-2226
Figure 1.1

Site-Specific Health and Safety Plan
Short Form

Journey Management Plan:

A Journey Management Plan will be developed to address non-routine/non-commute type travel to and from the project site. Considerations will include anticipated weather, work duration prior to travel, travel route, etc. See the Vehicle Travel – Journey Management Plan AHA.

JOURNEY MANAGEMENT PLANNING		
All projects with a field component must have a journey management plan completed for each work location. Complete the below as accurately as possible with your knowledge of the project, site location, time of year, etc. If there are significant changes to the scope of the project, or the conditions of travel, the plan must be updated, or new journey management plan must be completed. ***Not required for city or urban driving***		
	Points	**List Control Measures**
1. How many total hours will the driver have been on duty at the end of the journey? Note: Maximum 14 duty hours permitted. (12+ hours = 10 pts)		
2. Will the overall journey distance exceed 120 miles/~200km? (Yes = 10 pts)	10	Pull over every two hrs or as needed
3. Will the journey require driving in wet, flooded, icy, and/or snowy roads? (Yes = 10 pts)		
4. Will the journey require driving in conditions that limit visibility (dark, fog, snow, hail, etc.)? (Yes = 10 pts)	10	Possible driving into dark – will pull over as needed
5. Will the journey require driving overnight (after 9pm - 5am)? (Yes = 10 pts)765		
6. Is the driver familiar with the route for this journey? (No = 5 pts)		Yes.
7. How many hours of sleep has the driver had in the past 24 hours? (If < 8 hrs = 5 pts)		8 hrs
8. Will there be a passenger in the vehicle during the journey? (No = 5 pts)	5	
9. Is heavy traffic congestion expected during the journey? (Yes = 5 pts)		
10. Was a pre-trip inspection performed (walk around, towing, load securement, etc.)? (No = 5 pts)		Yes
11. Is the vehicle towing a heavy or oversized load OR permit required? (Yes = 5 pts)		
12. Will the driver encounter unpaved or mountainous road conditions? (Yes = 5 pts)		
13. In case of emergency, will the driver have suitable means of communication? (No= 5 pts)		
14. Are there elevated security risks associated with this journey? (Yes = 5 pts)		
15. Is there an elevated risk of striking an animal on the roadway during this journey? (Yes = 5 pts)		
TOTAL	25	**Low Risk = 0-25 pts, Medium Risk = 30-55 pts requires mitigation, High = 60 or more requires Management Approval**
Workers must also establish a check in/check out system for any project where there is significant driving and where they will not be returning to the office at the end of the day. This process should be documented.		

Known or Suspected Contaminants (include PELs/TLVs): LINK to COC Library

Contaminants of Concern (COC) (Attach Fact Sheets*)	Maximum Concentrations		PEL/TLV**
	Soil (mg/kg)	Water/Groundwater (µg/l)	
tetrachloroethene (PCE)	46	1,200	25 ppm/ 100ppm STEL/ 200ppm C
Trichloroethene (TCE)	300	980,000	10 ppm/ 25ppm STEL/ 200ppm C
Vinyl chloride (VC)	Unknown	640	1 ppm
1,1,1-trichloroethane (TCA)	13	unknown	350 ppm/ 450 ppm STEL
Cis-1,2-dichloroethene (cis1,2-DCE)	0.460	2,100	200 ppm
toluene	1,100	470	20 ppm/ 150 ppm STEL/ 300 ppm C
Benzene	unknown	46	0.5 ppm/ 2.5 ppm STEL

*Workers must be made aware of the signs, symptoms, and first aid for each COC. Information is located on the COC fact sheets.
**See (LINK) for OSHA PELs and ACGIH TLVs

Air Monitoring Action Levels:

PID/FID Reading[1]	Detector Tube[1]	Dust Meter[1]	LEL[2]/O_2[1]	Action
Any readings above bkg	<0.5 ppm			Monitor with vinyl chloride draeger tube- level D
< 5 ppm	<0.5 ppm	<1.5 mg/M^3		Continue working @level D PPE
≥ 5 ppm	<0.5 ppm	<1.5 mg/M^3		Move up wind, re-evaluate site protocols prior to further action for MACTEC personnel. – Stop Work
≥ 10 ppm	≥0.5 ppm	≥15 mg/M^3	>10% LEL	Stop work. Evacuate area. Consider return with ventilation system and spark proof/intrinsically safe equipment.
			<19.5% O_2	Stop work and evacuate area.

[1] Sustained readings measured in the breathing zone
[2] Readings at measured at the source (borehole, well, etc.)

AHAs:

Check and attach all that apply (add applicable AHAs not already listed) **(LINK to AHA Library):**

Activity Specific AHAs:

- [x] Mobilization/Demobilization and Site Preparation
- [x] Vehicle Travel – Journey Management Plan
- [x] Field Work - General
- [ ] Field Work - Oversight
- [x] Decontamination
- [x] Utility Clearance Activities
- [x] Groundwater Sampling
- [x] Soil Sampling
- [x] Drilling Operations

Hazard Specific AHAs:

- [x] Insect Stings and Bites
- [ ] Gasoline
- [x] Working with Preservatives (Acids)
- [ ] General PPE Use
- [x] COVID-19 related AHAs (3)
- [x] Pumping Test
- [ ]
- [ ]
- [ ]

Review of AHAs and Point of Work Risk Assessments

Supervisors shall conduct a daily tailgate meeting, specifying the applicable AHAs and ensure that everyone involved in the work acknowledges the AHA or daily renewal forms applicable to their work.

The work area shall be inspected for any additional hazards prior to initiating work. Where additional hazards are present, the hazards and controls shall be identified prior to initiating the work and documented on the AHA and the Point of Work Risk Assessment (PoWRA) form.

If there is a change or deviation from the planned activity, you must stop the job and re-evaluate the risk assessment and the precautions taken. Any changes to the work described in the AHA shall require a review by a Qualified Person.

- PoWRA Form (printable): LINK
- PoWRA electronic version: LINK
- PoWRA electronic version QR Code:

PPE and Monitoring Instruments:

Initial Level of PPE *

☑ Level D ☐ Modified Level D ☐ Level C * Cannot use Short Form HASP for Level B or A or Confined Space Entry work

Standard PPE

☑ Hard Hat ☑ Safety boots ☑ Safety glasses ☑ High visibility vest/clothing

Eye and Face Protection

☐ Face shield ☐ Vented goggles ☐ Unvented goggles ☐ Indirect vented goggles

Hearing Protection

☐ None ☑ Ear plugs ☐ Ear Muffs ☐ Ear plugs and muffs

Respiratory Protection

☐ None ☑ Upgrade Only ☐ Dust mask ☐ Full Face APR ☐ Half Face APR

Cartridge Type: e.g., MSA GMC Change Cartridges: e.g., Daily/Twice Daily

Protective Clothing

☑ Work uniform ☐ White uncoated Tyvek® ☐ Poly-coated Tyvek® ☐ Saranex®

☐ Boot covers ☐ Reflective vest/clothing ☐ Chaps or Snake Legs ☐ Other: _____

Hand Protection

☐ None ☐ Cotton gloves ☐ Leather gloves ☐ Glove liners ☐ Cut-resistant gloves ☐ Other: _____

☑ Outer Gloves: List Type: Nitrile ☐ Inner Gloves: List Type: Vinyl

Monitoring Instruments Required*

Periodic monitoring shall be conducted when the possibility of an IDLH condition or flammable atmosphere has developed or when there is indication that exposures may have risen over permissible exposure limits or published exposure levels since prior monitoring. Situations where it shall be considered whether the possibility that exposures have risen are as follows:

- When work begins on a different portion of the site.
- When contaminants other than those previously identified are being handled.
- When a different type of operation is initiated (e.g., drum opening as opposed to exploratory well drilling.)
- When employees are handling leaking drums or containers or working in areas with obvious liquid contamination (e.g., a spill or lagoon.)

☑ LEL/O2 Meter ☑ PID: ☑ 10.0/10.6 eV Lamp ☐ 11.7 eV Lamp ☐ FID ☐ Hydrogen Sulfide meter ☐ Carbon Monoxide meter

☑ Dräger Pump (or equivalent) ☑ Dust Meter: ☐ Respirable dust ☐ Total dust ☐ Other: _____

List Tubes: Vinyl chloride _____

*Monitoring instruments will be calibrated daily in accordance with manufacturer's instructions. Results will be recorded in the field logbook.

Chemicals Brought to the Site:

List all chemicals brought to the site (e.g., preservatives, decon solutions, calibration gases, gasoline, etc.).

Product Identifier: (Note: Name listed below must match name on label and SDS)	**SDS Attached?**
ISOBTYLENE	☑
HCL	☑
CALIBRATION SOLUTIONS (YSI)-PH 4, PH 7, DO, ORP, 1413 SPECIFIC COND.	☑
LIQUINOX	☑
METHANOL	☑
NITRIC ACID	☑
SULFURIC ACID	☑
	☐

Chemicals will be kept in their original containers. If transferred to another container, aside from day use by one individual, the new container will be clearly labeled with the name of the chemical (product identifier), signal word, hazard statement, pictogram(s), precautionary statement, and name, address and telephone number of the chemical manufacturer, importer or other responsible party.

Work Zones:

The work zones will be defined relative to the location of the work activity. The Exclusion Zone is considered the area within a 10-foot diameter of the sampling location. The Contamination Reduction Zone is considered to be the area with in a 20-foot diameter of the sampling location. The Decontamination Zone is to be located upwind of the work area. Work zones will be maintained through the use of:

☐ Warning Tape
☑ Cones and Barriers
☐ Visual Observations

Decontamination Procedures and Equipment:

Note: See Decontamination AHA for further information

Level D Decontamination Procedures

Decontamination Solution:	Detergent and Water
Station 1: Equipment Drop	Deposit equipment used on-site (tools, sampling devices and containers, monitoring instruments, radios, etc. on plastic drop cloths. Segregation at the drop reduces the probability of cross contamination. During hot weather operations, a cool-down station may be set up within this area.
Station 2: Outer Boots, and Gloves Wash and Rinse (if worn)	Scrub outer boots, and outer gloves decon solution or detergent water. Rinse off using copious amounts of water.
Station 3: Outer Boot and Glove Removal (if worn)	Remove outer boots and gloves. Deposit in plastic bag.
Station 4: Inner glove removal	Remove inner gloves and place in plastic bag.
Station 5: Field Wash	Hands and face are thoroughly washed. Shower as soon as possible.

Modified Level D and Level C PPE Decontamination Procedures

Decontamination Solution:	Detergent and Water
Station 1: Equipment Drop	Deposit equipment used on-site (tools, sampling devices and containers, monitoring instruments, radios, etc. on plastic drop cloths. Segregation at the drop reduces the probability of cross contamination. During hot weather operations, a cool-down station may be set up within this area.
Station 2: Outer Garment, Boots, and Gloves Wash and Rinse	Scrub outer boots, outer gloves, and splash suit with decon solution or detergent water. Rinse off using copious amounts of water.
Station 3: Outer Boot and Glove Removal	Remove outer boots and gloves. Deposit in container with plastic liner.
Station 4: Canister or Mask (Level C only) Change	If worker leaves exclusion zone to change canister (or mask), this is the last step in the decontamination procedure. Worker's canister is exchanged, new outer gloves and boot covers are donned, joints are taped, and worker returns to duty.
Station 5: Boot, Gloves and Outer Garment Removal	Boots, chemical resistant splash suit, and inner gloves are removed and deposited in separate containers lined with plastic.
Station 6: Face Piece Removal (Level C only)	Facepiece is removed. Avoid touching face with fingers. Facepiece is deposited on plastic sheet.
Station 7: Field Wash	Hands and face are thoroughly washed. Shower as soon as possible.

Site Communication:

- [x] Verbal
- [ ] Two-way radio
- [x] Cellular telephone
- [x] Hand signals
  - Hand gripping throat _____ Out of air, can't breathe
  - Grip partner's wrist or both hands around waist _____ Leave area immediately
  - Hands on top of head _____ Need assistance
  - Thumbs up _____ OK, I am all right, I understand
  - Thumbs down _____ No, negative
- [ ] Horn
- [ ] Siren
- [ ] Other: _____

EMERGENCY CONTACTS

NAME	TELEPHONE NUMBERS		DATE OF PRE-EMERGENCY NOTIFICATION (if applicable)
Fire Department:	911		
Hospital:	585-341-6880		
WorkCare (Early case management)	1-888-449-7787		
Police Department:	911		
	Office	**Cell**	
Site Health And Safety Officer: Ben Paulus	Office: 207-880-2398	Cell: 207-880-2398	
Client Contact: Charles Gregory	Office: 518-402-9814	Cell:	
Project Manager: Chuck Staples	Office:207-828-3571	Cell: (207) 450-9772	
*Eastern and LA Group Sr. HSE Manager: Cindy Sundquist	207-828-3309	207-650-7593 (Cell) 207-892-4402 (Home)	
Corporate SVP of HSE: Vlad Ivensky	610-877-6144	484-919-5175 (Cell) 215-947-0393 (Home)	
EPA/DEP (if applicable):			
Other: Ambulance	911		

*See Incident Flow Chart for additional Group HSE Manager's Contact Information

Emergency Equipment:

The following emergency response equipment is required for this project and shall be readily available:

- ☑ Field First Aid Kit (including bloodborne pathogen kit/supplies)
- ☑ Fire Extinguisher (ABC type)
- ☐ Eyewash (Note: 15 minutes of free-flowing fresh water)
- ☐ Other: _____

Emergency Procedures:

- The SSHO (or alternate) should be immediately notified via the on-site communication system. The HSO assumes control of the emergency response.
- The SSHO notifies the Project Manager and client contact of the emergency.
- If the emergency involves an injury to a Wood employee, the HSE Coordinator or Site Manager are to implement the Wood Early Injury Case Management program. See procedures and Flow Diagram below:

- If applicable, the SSHO shall notify off-site emergency responders (e.g. fire department, hospital, police department, etc.) and shall inform the response team as to the nature and location of the emergency on-site.
- If applicable, the SSHO evacuates the site. Site workers should move to the predetermined evacuation point (See Site Map).
- For small fires, flames should be extinguished using the fire extinguisher but only if trained within the past year. Use the **PASS** method (**P**ull the pin, **A**im at the base of the fire, **S**queeze the trigger, use a **S**weeping motion to put out the fire) when extinguishing fires. Large fires should be handled by the local fire department.
- In an unknown situation or if responding to toxic gas emergencies, appropriate PPE (e.g., level C or B PPE - if available), should be donned. If appropriate PPE is unavailable, site workers should evacuate and call in emergency personnel.
- For chemical spills, follow the job specific AHA and SDS for spill containment and spill handling procedures.
- If chemicals are accidentally spilled or splashed into eyes or on skin, use eyewash bottle/station for the eyes and wash affected area. Site worker should shower as soon as possible after incident.
- If the emergency involves toxic gases, workers will back off and reassess. Prior to re-entering the work zone, the area must be determined to be safe, that the required PPE and air monitoring equipment is available. Entry is prohibited if PPE or air monitoring equipment is inadequate.
- An injured worker shall be decontaminated appropriately.
- Within 24 hours after any emergency response, the initial Incident Analysis Report shall be completed and submitted to the Group Sr. HSE Manager. If the injury involves vehicles or overhead/underground utilities, also complete the Vehicle Incident Report (VIR) and Ground Disturbance Report (GDR), respectively. When the use of drugs or alcohol cannot be ruled out as a factor in the incident, contact P&O to determine if post accident drug testing is required.

Wood E&IS Early Injury Case Management Program

NON-EMERGENCY INCIDENT	EMERGENCY INCIDENT
Steps 1 & 2 must be completed before seeking medical attention other than local first aid. 1. Provide first-aid as necessary. Report the situation to your immediate supervisor AND HSE coordinator (all incidents with the apparent starting event should be reported immediately but no later than within 1 hour of occurrence). 2. Injured employee:	1. Provide emergency first aid. Supervisor on duty must immediately call 911 or local emergency number; no employee may respond to outside queries without prior authorization. Any outside media calls concerning this incident must be referred immediately to external communications manager, Lauren Gallagher 602-757-3211. 2. Once medical attention is sought and provided, the supervisor must:
Call WorkCare 24/7 Hotline* (888) II-XPRTS or (888) 449-7787	
WorkCare will assess the situation and determine whether the incident requires further medical	WorkCare will be responsible for performing the following:

attention. During this process, WorkCare will perform the following: • Explain the process to the caller. • Determine the nature of the concern. • Provide appropriate medical advice to the caller. • Determine appropriate path forward with the caller. • Maintain appropriate medical confidentiality. • Help caller to execute path forward, including referral to the appropriate local medical facility. • Send an email notification to the Corporate HSE Department.	• Contact the treating physician. • Request copies of all medical records from clinic. • Send an email update to the Corporate HSE Department.

3. IMMEDIATELY after contacting WorkCare send a brief email notification AND inform verbally (direct contact is required) ONE of HSE corporate representatives on the following page.

4. Make all other local notifications and client notifications.

5. Review and follow client and E&IS post-incident alcohol and drug testing requirements.
   - E&IS Canada Post-Incident D&A Info
   - E&IS U.S. Post-Incident D&A Info

6. WITHIN 24 HOURS - Local Supervisor, HSE Coordinator, Project HSE Officer and any applicable safety committees to complete preliminary investigation, using the **Incident Analysis Report Form**, and supporting forms for **Vehicle Incident** or **Ground Disturbance** and provide to Corporate HSE Department.

7. Corporate Loss Prevention Manager to complete Worker's Compensation Insurance notifications as needed.

8. Corporate HSE to conduct further incident notifications, investigation, include in statistics, classify, and develop lessons learned materials.

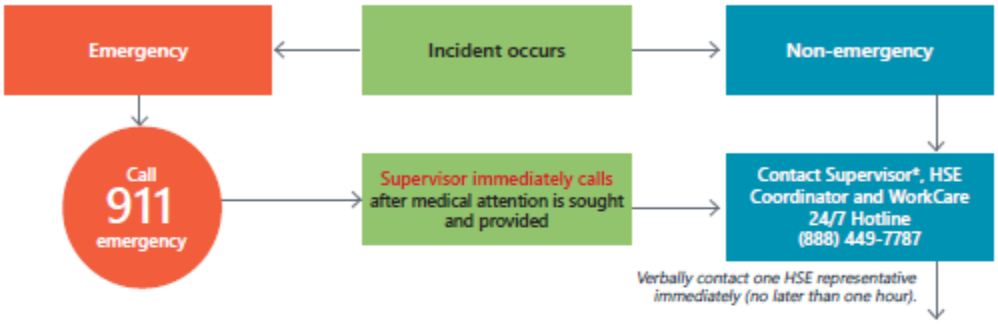
* - **NOTE: Step 2 is only applicable to the North-American operations and to incidents involving E&IS personnel. High potential near misses, workplace violence/harassment and security incidents, subcontractors' incidents, regulatory inspections, spills and property damages above $1,000 should be reported immediately, following directions from Step 3.**

Site Specific Emergency Procedures are as follows:

INCIDENT FLOW CHART

Incident flow chart

Call immediately



Name/E-Mail	Region	Contact Information
US West		
Bruce Voss bruce.voss@woodplc.com	Cathedral City, CA	951.897.6381 (cell)
Chad Barnes chad.barnes@woodplc.com	Phoenix, AZ	480.495.9846 (cell)
US East		
Cindy Sundquist cynthia.sundquist@woodplc.com	Portland, ME	207.650.7593 (cell)
Kirby Lastinger Kirby.lastinger@woodplc.com	Southeast Region, US East	863-2724775 (cell)
Michele Barnhart Michele.Barnhart@woodplc.com	Central Region, US East	919.491.7710 (cell)
Jeff Tweeddale jeff.tweeddale@woodplc.com	Northeast Region, US East	860-670-5908 (cell)
Canada		
Philip Neville philip.neville@woodplc.com	St Catharines, ON	905.380.4465 (cell)
Tim Kihn tim.kihn@woodplc.com	Edmonton, AB	780.717.5058 (cell)
Lori Dowling lori.dowling@woodplc.com	Prince George, BC	250.564.3243 (office)
Remediation		
Greg Ertel Gregory.ertel@woodplc.com	Rochester, NY	585-465-0557 (cell)
Loss Prevention		
Karla St. John karla.stjohn@woodplc.com	Minneapolis, MI	612-750-1341 (cell)
Vlad Ivensky (can call 24/7) vladimir.ivensky@woodplc.com	Plymouth Meeting, PA	484.919.5175 (cell) 215.947.0393 (home)

High potential near misses, unsafe work refusals, workplace violence/harassment and security incidents, subcontractor incidents, regulatory inspections, spills, and property damage should be reported immediately to one of the above HSE Representatives.

*Supervisor Responsible For:

- D&A Testing Coordination as per client and Wood E&IS requirements, Local/Client Notifications, and Completing Initial IAR within 24 hours and forwarding to Corporate HSE.

E&IA, North America | Rev. January 2021

Field Team Review:

I acknowledge that I understand the requirements of this HASP, and agree to abide by the procedures and limitations specified herein. I also acknowledge that I have been given an opportunity to have my questions regarding the HASP and its requirements answered prior to performing field activities. Health and safety training and medical surveillance requirements applicable to my field activities at this site are current and will not expire during on-site activities.

Name: _____ Date: _____

Name: _____ Date: _____

Name: _____ Date: _____

Name: _____ Date: _____

Name: _____ Date: _____

Routes to Emergency Medical Facilities:

HOSPITAL(for immediate emergency treatment):

Facility Name: Primary: Highland Hospital

Address: 1000 South Avenue, Rochester, NY

Telephone Number: 585-473-2200

DIRECTIONS TO PRIMARY HOSPITAL (attach map):

bing Maps

A 1 Rockwood St, Rochester, NY 14610

B 1000 South Ave, Rochester, NY 14620

Route: 3.4 mi, 8 min

Highland Hospital
1000 South Ave
Rochester, NY14620
Emergency Department
(585)341-6880

On the go? Use m.bing.com to find maps, directions, businesses, and more

A	**1 Rockwood St, Rochester, NY 14610**	**A–B: 3.4 mi** 8 min
	1. Depart **Rockwood St** toward RT-96 / East Ave	49 ft
	2. Turn **right** onto **RT-96 / East Ave**	0.3 mi
	3. Turn **left** onto **S Winton Rd / CR-98** *Wendy's on the corner*	30 ft
	4. Take ramp **right** for **I-490 W**	1.8 mi
	5. At exit **17**, take ramp **right** for **Goodman St** toward **Inner Loop**	0.2 mi
	6. Turn **left** onto **S Goodman St**	0.6 mi
	7. Turn **right** onto **Rockingham St**	0.4 mi
	8. Turn **left** onto **South Ave**	384 ft
B	9. Arrive at **1000 South Ave, Rochester, NY 14620** *If you reach Bellevue Dr, you've gone too far*	

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CLINIC (for non-emergency medical treatment)

Facility Name: Rochester Urgent Care

Address: 2701 Culver Rd, Rochester, NY14622

Telephone Number: 585-266-4000

DIRECTIONS TO CLINIC (attach map):

bing Maps

A **1 Rockwood St, Rochester, NY 14610**

B **2701 Culver Rd, Rochester, NY 14622**

Route: **6.2 mi, 9 min**

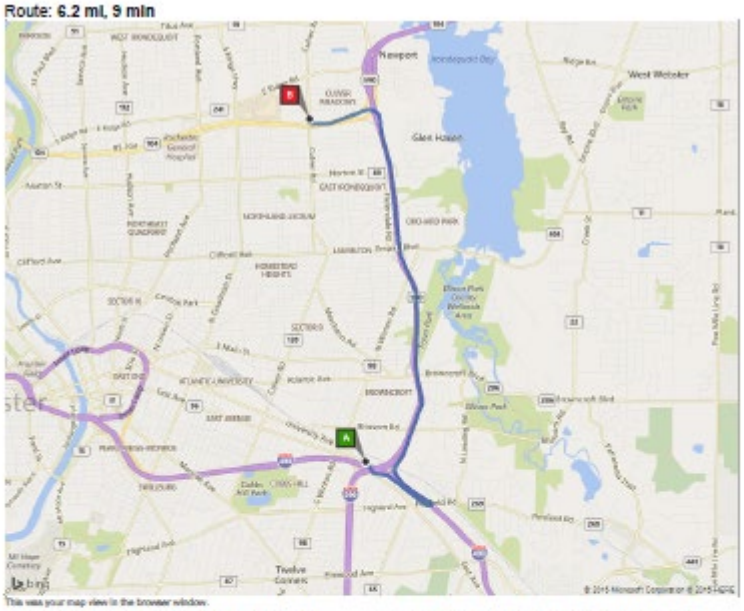
Rochester Urgent Care
2701 Culver Rd
Rochester, NY 14622
Hours M-F 0900am-0830pm
S-Sun 0800a-0730pm
(585)266-4000

On the go? Use **m.bing.com** to find maps, directions, businesses, and more

A	**1 Rockwood St, Rochester, NY 14610**	**A–B: 6.2 mi** 9 min
	1. Depart **Rockwood St** toward RT-96 / East Ave	49 ft
	2. Turn **left** onto **RT-96 / East Ave**	0.2 mi
	3. Take ramp **left** and follow signs for **I-490 East**	0.5 mi
	4. At exit **22**, take ramp **right** and follow signs for **Penfield Rd**	0.1 mi
	5. Bear **left** onto **Penfield Rd / CR-269**	522 ft
	6. Take ramp **left** and follow signs for **I-490 West**	0.4 mi
	7. At exit **21**, take ramp **right** and follow signs for **RT-590 North**	3.9 mi
	8. At exit **10A**, take ramp **right** and follow signs for **RT-104 West**	0.8 mi
	9. Take ramp **right** for **Culver Rd** toward **Sea Breeze**	0.2 mi
	10. Turn **right** onto **Culver Rd / CR-120**	259 ft
B	11. Arrive at **2701 Culver Rd, Rochester, NY 14622** *The last intersection is RT-104* *If you reach Brower Rd, you've gone too far*	

These directions are subject to the Microsoft® Service Agreement and for informational purposes only. No guarantee is made regarding their completeness or accuracy. Construction projects, traffic, or other events may cause actual conditions to differ from these results. Map and traffic data © 2015 NAVTEQ™.

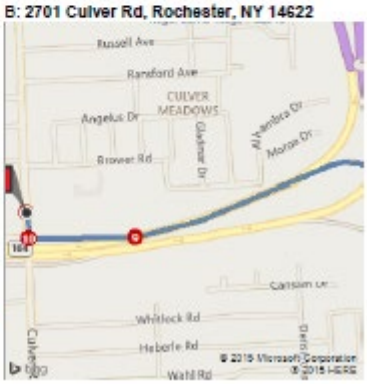
Route: 6.2 mi, 9 min



A: 1 Rockwood St, Rochester, NY 14610



B: 2701 Culver Rd, Rochester, NY 14622



Wood HSSE Management System "Blue Book:"

The Wood HSSE management system is defined by the HSSE Management System Standard -the Blue Book. It consists of fifteen elements that set mandatory minimum standards for the management of HSSE across Wood. These minimum standards define how Wood leads, plans and organizes itself to ensure HSSE risks are controlled and to deliver continuous improvement in HSSE performance. The Blue Book is supported by Wood HSSE standards, procedures, guidelines and tools which provide further direction and advice on how to comply with the Blue Book's requirements.

Wood's core ***Vision*** is to:

Inspire with ingenuity, partner with agility, create new possibilities...

The Wood ***Values*** are:

- ***Care*** -Working safely, with integrity, respecting and valuing each other and our communities
- ***Commitment*** - Consistently delivering to all our stakeholders
- ***Courage*** - Pushing the boundaries to create smarter, more sustainable solutions

The Wood HSSE management system helps translate our Vision and Values into action by:

- Providing structure and consistency in the way we manage HSSE
- Focusing our attention on risk management, ensuring compliance and undertaking assurance activities
- Supporting the development of a positive HSSE culture which in turn supports the management system
- Providing a framework for continuous improvement

Refer to the Wood "Blue Book" for additional information (LINK).

Wood E&IS HSE Management System Manual and California IIPP):

The Wood E&IS Health, Safety, Security and Environment (HSSE) Management System Manual and California Injury and Illness Prevention Plan (IIPP) describes the HSSE system and tools developed & implemented at Wood E&IS. The manual addresses HSSE requirements for offices, laboratories and projects, including those of various duration, scale, location, and jurisdiction.

Wood E&IS's Safety philosophy as it pertains to all work conducted whether in the office, laboratory or in the field is:

- All incidents and injuries can be prevented.
- Management and staff are responsible for preventing injuries and occupational illnesses.
- Occupational safety and health are part of every employee's total job performance.
- Working safely is a condition of employment.
- All workplace hazards can be safeguarded.
- Training employees to work safely is essential and is the responsibility of management/supervision.
- Prevention of personal injuries and incidents and protection of environment is good business.

These principles tie into the Wood plc Health, Safety, Security and Environment (HSSE) Policy Statement:

Our HSSE Policy

At Wood, we care for our people and the environment. We ensure that our people have a safe, healthy and secure workplace; this is a fundamental right. This policy explains how we provide this.

We will:

- Care for our people.
- Identify and manage hazards to eliminate or mitigate resultant risks.
- Prevent injury, ill-health, pollution and loss resulting from our activities.
- Be responsible in our approach to protecting the environment and minimising our impacts.
- Deliver continual improvement in our health, safety, security and environmental performance.

Name Robin Watson
Position **Chief Executive**
Date 01 January 2021

We do this by:

- Ensuring we have exemplary HSSE leadership and management.
- Having effective, efficient and applied HSSE management systems.
- Understanding and complying with all legal, industry and other external requirements.
- Establishing and attaining clear HSSE objectives.
- Learning lessons from our incidents and preventing reoccurrence.
- Engaging with our people on HSSE issues.
- Working with our customers, regulators and others to promote continuous improvement.
- Training our people to be competent and safe in undertaking their roles.
- Helping our supply chain and partners to meet our own policy obligations.
- Promoting a positive HSSE culture that drives HSSEA improvement.
- Encouraging anyone to stop a job if they perceive any HSSE shortfall.

We commit ourselves to this Policy.

A metaphor for protection - pulls together our HSSE processes and procedures to drive a simplistic and consistent message to our workforce around HSSE.

Aligned with our values, the three elements of the shield are:

- Prepare: It takes commitment to prepare.
- Engage: It takes care to engage.
- Intervene: It takes courage to intervene.

The Safety Shield seeks to educate, inform, monitor, improve and recognize our employees.

wood.
Safety Shield
Prepare. Engage. Intervene.

Six Safety Essentials:

The Six Safety Essentials are designed to support the safe execution of work in all our operating locations with the development of a "common set of behaviors" that we can all share. Wood, in our goal to be recognized as a world-class leader in HSSE safety must strive to ensure our daily overall consistency of HSE standards, leadership and performance.

When performing work at the site, the Wood **Six Safety Essentials** will be followed:

- Always Take Care
- Follow the Rules
- Do a Risk Assessment
- You Must Intervene
- Manage Any Change
- Wear the Correct PPE



Wood Nine Life Saving Rules:

The Life Saving Rules are Wood's minimum standard - it is an expectation that everyone must comply with the rules. Everyone needs to understand that:

- You must comply with the Life Saving Rules because non-compliance could result in serious injury or fatality to you or your colleagues
- If you breach a Life Saving Rule you may be subject to disciplinary action.

Supervisors and Managers must understand that:

- Breaking the Life Saving Rules will not be tolerated - no matter how urgent or important a task is.
- You have a duty to ensure that people undertaking a task have the right instruction, equipment and training to comply with the Life Saving Rules.



Bypassing Safety Controls

Confined Space

Driving

Energy Isolations

Hot Work

Line of Fire

Safe Mechanical Lifting

Work Authorization

Working at Height

Stand Up for Safety:

Wood's Stand up for Safety initiative focuses on four hazards that were identified by analyzing Wood's HSE incidents and High Potential events. These are four are areas of primary concern and are hazards that Wood employees face collectively as a global business. These four hazardous areas are:

- Dropped objects
- Driving
- Working at Height
- Process Safety

Extra attention will be paid to these four key areas if applicable when working on the project site.

HEART:

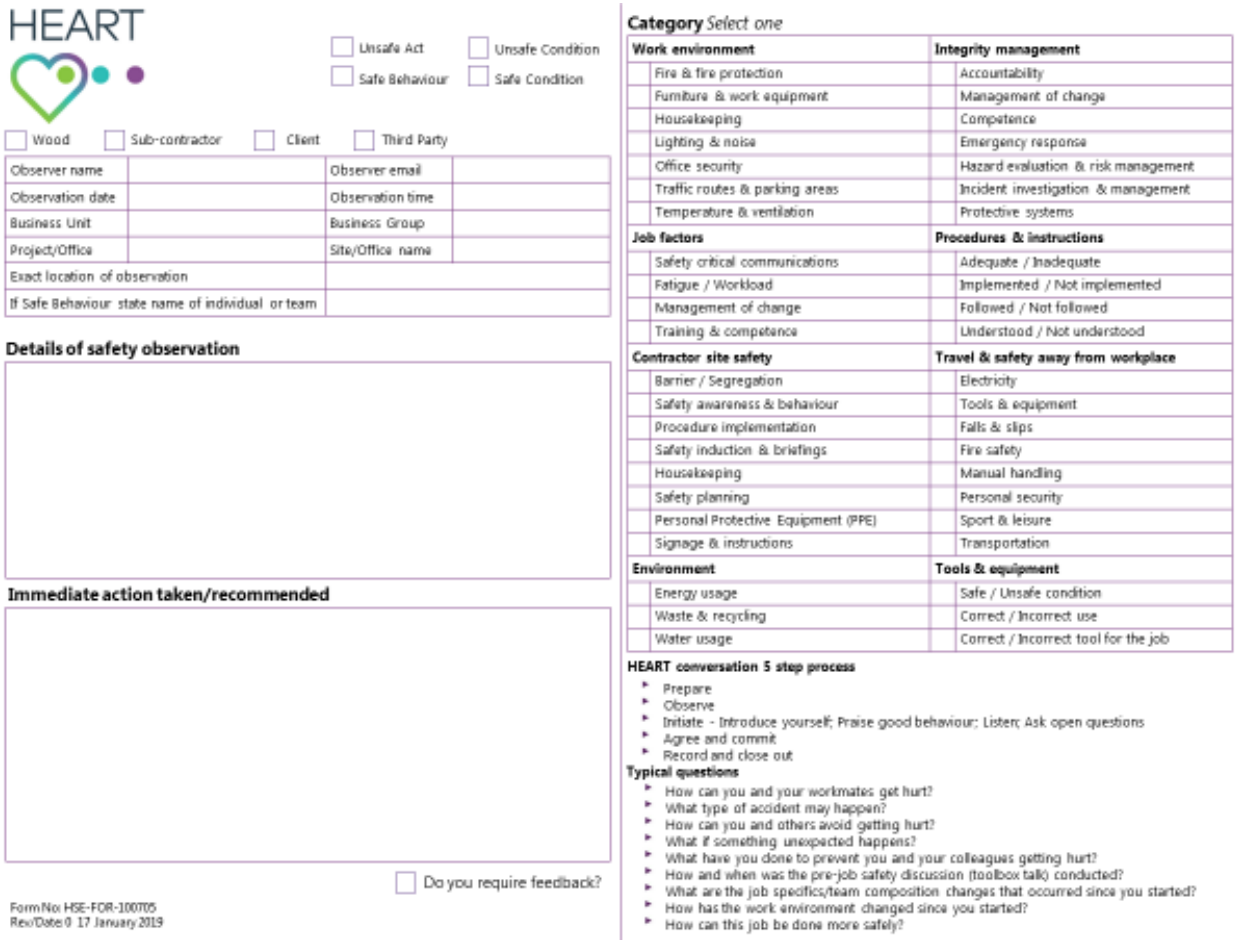
HEART

HEART is the corporate observation reporting system that all Wood employees are to use to report safety or environmental observations.

To enter a HEART observation, use the following link: https://cfapps.Woodfw.com/HEART/

HEART is also accessible from mobile devices. Click here for instructions on how to access HEART from a mobile device.

A manual HEART observation form can be accessed from here.



HEART

☐ Unsafe Act ☐ Unsafe Condition
☐ Safe Behaviour ☐ Safe Condition

☐ Wood ☐ Sub-contractor ☐ Client ☐ Third Party

Observer name		Observer email	
Observation date		Observation time	
Business Unit		Business Group	
Project/Office		Site/Office name	
Exact location of observation			
If Safe Behaviour state name of individual or team			

Details of safety observation

Immediate action taken/recommended

☐ Do you require feedback?

Form No: HSE-FOR-100705
Rev/Date: 0 17 January 2019

Category *Select one*

Work environment		**Integrity management**	
	Fire & fire protection		Accountability
	Furniture & work equipment		Management of change
	Housekeeping		Competence
	Lighting & noise		Emergency response
	Office security		Hazard evaluation & risk management
	Traffic routes & parking areas		Incident investigation & management
	Temperature & ventilation		Protective systems
Job factors		**Procedures & instructions**	
	Safety critical communications		Adequate / Inadequate
	Fatigue / Workload		Implemented / Not implemented
	Management of change		Followed / Not followed
	Training & competence		Understood / Not understood
Contractor site safety		**Travel & safety away from workplace**	
	Barrier / Segregation		Electricity
	Safety awareness & behaviour		Tools & equipment
	Procedure implementation		Falls & slips
	Safety induction & briefings		Fire safety
	Housekeeping		Manual handling
	Safety planning		Personal security
	Personal Protective Equipment (PPE)		Sport & leisure
	Signage & instructions		Transportation
Environment		**Tools & equipment**	
	Energy usage		Safe / Unsafe condition
	Waste & recycling		Correct / Incorrect use
	Water usage		Correct / Incorrect tool for the job

HEART conversation 5 step process

- Prepare
- Observe
- Initiate - Introduce yourself; Praise good behaviour; Listen; Ask open questions
- Agree and commit
- Record and close out

Typical questions

- How can you and your workmates get hurt?
- What type of accident may happen?
- How can you and others avoid getting hurt?
- What if something unexpected happens?
- What have you done to prevent you and your colleagues getting hurt?
- How and when was the pre-job safety discussion (toolbox talk) conducted?
- What are the job specifics/team composition changes that occurred since you started?
- How has the work environment changed since you started?
- How can this job be done more safely?

Tailgate Safety Meeting Form

Check One:

☐ Initial Kickoff Safety Meeting ☐ Regular/Daily Tailgate Safety Meeting ☐ Unscheduled Tailgate Safety Meeting

Date: _____ Site: _____

Site Manager: _____ Site Health and Safety Officer: _____
Print *Print*

Planned Activities: _____

Order of Business

Topics Discussed (Check all that apply)

- ☐ Scope of Work
- ☐ Site History/Site Layout
- ☐ Personnel Responsibilities
- ☐ Training Requirements
- ☐ Hazard Analysis of Work Tasks (chemical, physical, biological and energy health hazard effects)
- ☐ Applicable SOPs (e.g., Hearing Conservation Program, Safe Driving, etc.)
- ☐ Safe Work Practices
- ☐ Engineering Controls
- ☐ Chemical Hazards and Controls
- ☐ Signs and symptoms of over exposure to site chemicals
- ☐ Medical Surveillance Requirements
- ☐ Action Levels
- ☐ Monitoring Instruments and Personal Monitoring
- ☐ Perimeter Monitoring, Type and Frequency
- ☐ PPE Required/PPE Used
- ☐ Define PPE Levels, Donning, Doffing Procedures
- ☐ Decontamination Procedures for Personnel and Equipment
- ☐ Physical Hazards and Controls (e.g., overhead utility lines)
- ☐ Anticipated Weather (snow, high winds, rain)
- ☐ Temperature Extremes (heat or cold stress symptoms and controls)
- ☐ Biological Hazards and Controls (e.g., poison ivy, spiders)
- ☐ Site Control (visitor access, buddy system, work zones, security, communications)
- ☐ Sanitation and Illumination
- ☐ Logs, Reports, Recordkeeping
- ☐ Incident Reporting Procedures
- ☐ Near Misses/Hazard ID including worker suggestions to correct and work practices to avoid similar occurrences
- ☐ General Emergency Procedures (e.g., locations of air horns and what 1 or 2 blasts indicate)
- ☐ General Emergency Response Procedures (e.g., earthquake response, typhoon response, etc.)
- ☐ Medical Emergency Procedures (e.g., exposure control precautions, location of first aid kits, etc.)
- ☐ Route to Hospital and Medical Care Provider Visit Guidelines
- ☐ Site/Regional Emergency Response Procedures (e.g., exposure control precautions, location of first aid kits, etc.)
- ☐ Hazardous Materials Spill Procedures

PPE required for the tasks to be conducted: _____

Required Permits: _____

Site Access or other issues: _____

Tailgate Safety Meeting Form

Safety Suggestions by Site Workers: _____

Action Taken on Previous Suggestions: _____

Injuries/Incidents/Personnel Changes since last meeting: _____

Observations of unsafe work practices/conditions that have developed since previous meeting: _____

Location of (or changes in the locations of) evacuation routes/safe refuge areas: _____

Additional Comments: _____

Attendee signatures below indicate acknowledgment of the information and willingness to abide by the procedures discussed during this safety meeting

Name (Print)	Company	Signature

Meeting Conducted by: _____ Title: _____
Print

Signature: _____ Time: _____
Print

PPE Selection Guidelines

When selecting the appropriate PPE for the job, consider the following:

- **Safety glasses** – general eye protection – source of hazard, typically coming from straight on, required at most sites
- **Tinted Safety Glasses** – same as above, but when working in direct sunlight. May need two both tinted and untinted if working in both sunlight and shade/overcast skies.
- **Safety goggles** – needed for splash hazard, more severe eye exposures coming from all directions. Non-vented or indirect venting for chemical splash, non-vented for hazardous gases or very fine dust, vented for larger particulates coming from all directions.
- **Face shield** – needed to protect face from cuts, burns, chemicals (corrosives or chemicals with skin notation), etc.
- **Safety boots** – needed if danger of items being dropped on foot that could injure foot
- **Hard hat** – danger from items falling on head or bumping head against objects – any overhead work, tools, equipment, etc. that is above the head and could fall on head of item fails, or falls off work platform. Any work around low hanging equipment or structures. Typically required at most sites as a general PPE
- **Thin, chemical protective inner gloves** (e.g., thin Nitrile, PVC – do not use latex – many people are allergic to latex) –needed to protect hands from incidental contact with low risk contamination at very low concentrations (ppb or low ppm concentrations in groundwater or soil) or used in combination with outer gloves as a last defense against contamination. Need to specify type
- **Outer gloves** – thicker gloves (e.g., Nitrile, Butyl, Viton, etc.) – used when potential for high concentrations of contaminants (e.g., floating product, percent ranges of contaminant, opening drums, handling pure undiluted chemicals, etc.). Need to specify type.
- **Leather gloves, leather palm, cotton** – good in protecting hands against cuts – no protection from chemicals. May be used in combination with chemical protective gloves.
- **Boot Covers –** when there is contamination in surface soils or waking surface in general. When safety boots need protection from contact with contaminants.
- **White (uncoated) Tyveks** – protect clothing from getting dirty, good for protection against solid, non-volatile chemicals (e.g., asbestos, metals) – no chemical protection.
- **Polycoated Tyveks** – least protective of chemical protective clothing. Used when some risk of contamination getting on skin or clothing. Usually, lower ppm ranges of contaminants.
- **Saranex** – Greater protection against contamination than Polycoated Tyveks. Used to protect against PCBs or higher concentrations of contaminants in the soil or groundwater.
- **Other Chemical protective clothing** – if significant risk of dermal exposure, contact H&S to determine best kind.
- **Long sleeved shirts, long pants** – if working in areas with poison ivy/oak/sumac, poisonous insects, etc. and no chemicals exposure. May want to use uncoated Tyveks for work in areas where poisonous plants are known to be to protect clothing.
- **Cartridge Respirator (Level C PPE)** – Need to calculate change schedule (contact Division EH&S Manager for this) to determine length of use. To be able to use cartridge respirators, need to know contaminants, estimate levels to be encountered in the breathing zone, need to ensure that cartridge will be effective against COCs, and need to be able to monitor for COCs using PID, FID, Dräger tubes, etc.. If can't do any of these, then Level B PPE is probably going to be needed.
- **High Visibility Vest** – needed for any road work (within 15 feet of a road) or when working on a site with vehicular traffic or working around heavy equipment. Needed if work tasks would take employee concentration away from movement of vehicles and workers would have to rely on the other driver's ability to see the employee in order not to hit them. This includes heavy equipment as well as cars and trucks, on public roads or the jobsite. Not needed if wearing Polycoated Tyveks – as they are already high visibility.
- **Reflective Vest** – see above, but for use at night.
- **Hearing Protection** – needed if working at noise levels above 85 dBA on a time weighted average. If noise measurements are not available, use around noisy equipment, or in general, if you have to raise your voice to be heard when talking to someone standing two feet away.
- **Protective Chaps –** required when using a machete or chain saw or any other cut hazard to legs.

Incident Report Forms

CONTAMINANT FACT SHEET

Chemical Name:
Tetrachloroethene

CAS Number: 127-18-4

Synonyms:
tetrachloroethylene
Perchloroethylene (Perc)

HEALTH HAZARD DATA

Color: colorless

Physical State: Solid ; Liquid X ; Gas

Odor: chloroform-like

Odor Threshold: 47 ppm

Vapor Density: 6.8 g/L

Ionization Potential (IP): 9.32 eV

IDLH: 150 ppm

Carcinogen: OSHA ; IARC ; NTP X ; ACGIH X ; NIOSH X

Skin absorbable: yes __ no X

Skin corrosive: yes __ no X

Signs/Symptoms of Acute Exposure:
Irritation of eyes, nose, and throat; nausea; flushing of the face and neck; vertigo; dizziness; incoherence; headache; sleepiness, and skin irritation

Source	TWA (units)	STEL (units)	C (units)
OSHA PEL	100 ppm		200 ppm
ACGIH TLVs	25 ppm	100 ppm	
NIOSH RELs	Lowest Feasible		

AIR MONITORING

Type	Brand/Model No.	Calibrations Method/Media	Relative Response or Conversion Factor	Meter Specific Action Level
PID	RAE 10.6 eV	Isobutylene 100 ppm	1.58	9 ppm
PID	HNu 10.2 eV	Isobutylene 100 ppm	0.86	9 ppm
Detecor Tube	Drager 8101 501	2 - 40 ppm		12.5 ppm

Checked by: Cindy Sundquist Date: 3/19/10

PERSONAL PROTECTIVE EQUIPMENT

Recommended Protective Clothing Materials:

Suits: Teflon, Viton, CPF3, Barricade, Responder, Trellchem, Tychem

Gloves: Viton, Teflon, and Polyvinyl Alcohol (do not use in (water)

Boots: Nitrile Rubber

Service Limit Concentration (ppm): 1000

MUC 1/2 Mask APR=TWA x 10= 90 ppm

MUC Full-Face APR=TWA x 10= 90 ppm

FIRE/REACTIVITY DATA

Flash Point: NA

LEL/UEL: NA / NA

Fire Extinguishing Media:

Dry Chemical X ; Foam X

Water Spray X ; CO_2 X

Incompatibilities:
Strong oxidizers, chemically-active metals, caustic soda, sodium hydroxide, and potash

2003 by MACTEC Engineering & Consulting, Inc.

Note: The recommended protective clothing materials assumes that potential for direct contact (by splashing, dust inhalation, or other means) with the contaminants exists. Professional judgment and knowledge of on-site hazards should be used in selecting PPE appropriate to the concentration of the contaminant (trace vs percentage) to which the individual is likely to be exposed.

CONTAMINANT FACT SHEET

Chemical Name: Trichloroethene

CAS Number: 67-64-1

Synonyms: Ethylene trichloride, TCE Trichloroethylene, Trilene

HEALTH HAZARD DATA

Color: Colorless

Physical State: Solid ____ Liquid X ____ Gas ____

Odor: Chloroform-like

Odor Threshold 82 ppm

Vapor Density: 4.5 g/L

Ionization Potential (IP): 9.69 eV

IDLH: 1000 ppm

Carcinogen: OSHA ____ IARC ____ NTP ____ ACGIH ____ NIOSH X

Skin absorbable: NO

Skin corrosive: NO

Signs/Symptoms of Acute Exposure:

Irritant to eyes and skin, headache, nausea, vomiting, dermatitis, vertigo, visual disturbance, fatigue, giddiness, sleepiness

Source	TWA (units)	STEL (units)	C (units)
OSHA PELs	100 ppm		200 ppm
ACGIH TLVs	10 ppm	25 ppm	
NIOSH RELs	25 ppm		

AIR MONITORING

Type	Brand/Model No.	Calibrations Method/Media	Relative Resonse or Conversion Factor	Meter Specific Action Level
PID	Micro tip 10.6 eV	Isobutylene 100 ppm	1.82	9.1 ppm
Detector Tube	Drager 6828541	2 – 50 ppm		5 ppm

Checked by: Date:

PERSONAL PROTECTIVE EQUIPMENT

Recommended Protective Clothing Materials:

Suits Viton, PE/EVAL, Tychem, Barricade, Trellchem, Teflon, Responder

Gloves Teflon, Viton, Polyvinyl Alcohol (do not use in water)

Boots Teflon, Viton

Service Limit Concentration (ppm): 1000

MUC 1/2 Mask APR = TWA x 10 = 91 ppm

MUC Full-Face APR = TWA x *50 = 606 ppm

*If quantitative fit testing is conducted, otherwise, use protection factor of 10

FIRE/REACTIVITY DATA

Flash Point: Unknown

LEL/UEL: 8%/10.5%

Fire Extinguishing Media:

Dry Chemical X Foam X

Water Spray X CO_2 X

Incompatibilities:

Strong caustics and alkalis, chemically-active metals(urch as barium, lithium, sodium, magnesium, titanium, and eryllium)

CONTAMINANT FACT SHEET

Chemical Name:
Vinyl Chloride
CAS Number: 75-01-4
Synonyms:
Chloroethene, chloroethylene, ethylene monochloride, VC, monochloroethene

HEALTH HAZARD DATA

Color: Colorless

Physical State:
Solid
Liquid X below 7^0 F
Gas X

Odor: pleasant

Odor Threshold: 10-20 ppm

Vapor Density: 2.15 g/L
Vapor Pressure 3.3 atm
Ionization Potential (IP): 9.99 eV

IDLH: Not Determined

Carcinogen:
OSHA X
IARC X
NTP X
ACGIH X
NIOSH X

Skin absorbable: yes ___ no X
Skin corrosive: yes ___ no X

Signs/Symptoms of Acute Exposure:
Weakness, abdominal pain, frostbite paleness or blueness of extremeties

Source	TWA (units)	STEL (units)	C (units)
OSHA PELs	1.0 ppm		5.0 ppm
ACGIH TLVs	1.0 ppm		
NIOSH RELs	Lowest Feasible		

AIR MONITORING

Type	Brand/Model No.	Calibrations Method/Media	Relative Response or Conversion Factor	Meter Specific Action Level
PID	10.6eV	Isobutylene 100 ppm	0.51	0.5 ppm*
PID	HNu 10.2eV	Isobutylene 100 ppm	0.32	0.32 ppm*
PID	HNu 11.7 eV	Isobutylene 100 ppm	0.78	0.78 ppm*
Detector Tube	Drager 6728061	0.5 - 3 ppm		0.5 ppm

Checked by: Cindy Sundquist Date: 4/19/10

PERSONAL PROTECTIVE EQUIPMENT

Recommended Protective Clothing Materials:
Suits: Tychem, Teflon
Gloves: Teflon, Tychem; Nitrile Rubber
Boots: Nitrile Rubber, Teflon

Service Limit Concentration (ppm): N/A

MUC 1/2 Mask APR = TWA x 10 = N/A*
MUC Full-Face APR = TWA x 10 = N/A*

* Upgrade to Level B ppe. No Level C.

FIRE/REACTIVITY DATA

Flash Point: NA

LEL/UEL: 3.6% / 33%

Fire Extinguishing Media:
Dry Chemical X Foam X
Water Spray X CO_2 X

Incompatibilities:
Copper, oxidizers, aluminum, peroxides, iron, steel (polymerizes in air, sunlight, or heat unless stabilized by inhibitors). Attacks iron and steel in presence of moisture.

2003 by MACTEC Engineering & Consulting, Inc.

Note: The recommended protective clothing materials assumes that potential for direct contact (by splashing, dust inhalation, or other means) with the contaminant exists. Professional judgement and knowledge of on-site hazards should be used in selecting PPE appropriate to the concentration of the contaminant (trace vs percentage) to which the individual is likely to be exposed.

CONTAMINANT FACT SHEET

Chemical Name:
1,1,1-Trichloroethane

CAS Number: 71-55-6

Synonyms:
Methyl chloroform; chlorothene

HEALTH HAZARD DATA

Color: Colorless

Physical State: Solid ___ Liquid X Gas ___

Odor: Chloroform-like

Odor Threshold: 100 ppm

Vapor Density: 5.5 g/L

Vapor Pressure 100 mmHg

Ionization Potential (IP): 11.00 eV

IDLH: 700 ppm

Carcinogen: OSHA ___ IARC ___ NTP ___ ACGIH ___ NIOSH ___

Skin absorbable: yes __ no X

Skin corrosive: yes X no ___

Signs/Symptoms of Acute Exposure:
Skin irritation, headaches, dizziness, nausea, vomiting, diarrhea

Source	TWA (units)	STEL (units)	C (units)
OSHA PEL	350 ppm		
ACGIH TLVs	350 ppm	450 ppm	
NIOSH RELs			350 ppm

AIR MONITORING

Type	Brand/Model No.	Calibrations Method/Media	Relative Response or Conversion Factor	Meter Specific Action Level
PID	11.7eV	Isobutylene 100 ppm	1	175 ppm

Checked by: Cindy Sundquist Date: 4/19/10

PERSONAL PROTECTIVE EQUIPMENT

Recommended Protective Clothing Materials:

Suits: Tychem, Teflon, Viton

Gloves: Teflon, Viton, PE/EVAL; Polyvinyl alchohol (Do not use in water)

Boots: Teflon, Viton

Service Limit Concentration (ppm): 1000
1

MUC 1/2 Mask APR=TWA x 10= 1000 ppm

MUC Full-Face APR=TWA x 10= 1000 ppm

FIRE/REACTIVITY DATA

Flash Point: NA

LEL/UEL: 7.5% / 12.5%

Fire Extinguishing Media:

Dry Chemical	X	Foam	X
Water Spray		CO_2	X

Incompatibilities:
Strong caustics; strong oxidizers; chemically active metals such as: zinc, aluminum, magnesium powders, sodium, and potassium; water

2003 by MACTEC Engineering & Consulting, Inc.

Note: The recommended protective clothing materials assumes that potential for direct contact (by splashing, dust inhalation, or other means) with the contaminants exists. Professional judgment and knowledge of on-site hazards should be used in selecting PPE appropriate to the concentration of the contaminant (trace vs percentage) to which the individual is likely to be exposed.

ATTACHMENT A

CONTAMINANT FACT SHEET

CONTAMINANT FACT SHEET

Chemical Name:
Cis -1,2-Dichloroethylene

CAS Number: 540-59-0

Synonyms:
Acetylene dichloride,
cis -Acetylene dichloride,
trans-Acetylene dichloride,

HEALTH HAZARD DATA

Color: Colorless

Physical State: Solid ___ Liquid X Gas ___

Odor: Chloroform-like

Odor Threshold: 0.08-17 ppm

Vapor Density: 3.35 g/L

Ionization Potential (IP): 9.65 eV

IDLH: 1000 ppm

Carcinogen: OSHA ___ IARC ___ NTP ___ ACGIH ___ NIOSH ___

Skin absorbable: yes ___ no X

Skin corrosive: yes ___ no X

Signs/Symptoms of Acute Exposure:
Irritant to eyes and respiratory system,
CNS, depression

Source	TWA (units)	STEL (units)	C (units)
OSHA PELs	200 ppm		
ACGIH TLVs	200 ppm		
NIOSH RELs	200 ppm		

AIR MONITORING

Type	Brand/Model No.	Calibrations Method/Media	Relative Response or Conversion Factor	Meter Specific Action Level
PID	Microtip 10.6eV	Isobutylene 100 ppm	1.25	125 ppm

Checked by: Emmet C. Sundquist Date: 6/12/08

PERSONAL PROTECTIVE EQUIPMENT

Recommended Protective Clothing Materials:

Suits: Teflon, Viton, PE/EVAL, Barricade, CPF3, Tychem Responder

Gloves: Viton, Teflon, Polyvinyl Alcohol (do not use in water)

Boots: Teflon, Viton

Service Limit Concentration (ppm): 1000

MUC 1/2 Mask APR = TWA x 10 = 1000 ppm

MUC Full-Face APR = TWA x 10 = 1000 ppm

FIRE/REACTIVITY DATA

Flash Point: 36-39 ° F

LEL/UEL: 5.6% / 12.8%

Fire Extinguishing Media:

Dry Chemical X Foam X

Water Spray X CO_2 X

Incompatibilities:
Strong oxidizers, strong alkalis, potassium hydroxide, copper

2003 by MACTEC Engineering & Consulting, Inc.

Note: The recommended protective clothing materials assumes that potential for direct contact (by splashing, dust inhalation, or other means) with the contaminant exists. Professional judgement and knowledge of on-site hazards should be used in selecting PPE appropriate to the concentration of the contaminant (trace vs percentage) to which the individual is likely to be exposed.

ATTACHMENT A

CONTAMINANT FACT SHEET

MACTEC

CONTAMINANT FACT SHEET

Chemical Name:
Toluene
CAS Number: 108-88-3
Synonyms:
Methylbenzene, Methyl
Benzol, Phenyl Methane
Toluol

HEALTH HAZARD DATA

Color: Colorless

Physical State: Solid ___ Liquid X Gas ___

Odor: Sweet Pungent

Odor Threshold: 0.16 - 37 ppm

Vapor Density: 3.7 g/L

Ionization Potential (IP): 8.82 eV

IDLH: 500 ppm

Carcinogen: OSHA X; IARC ___; NTP ___; ACGIH ___; NIOSH X

Skin absorbable: yes X no ___

Skin corrosive: yes ___ no X

Signs/Symptoms of Acute Exposure:
Irritant to eyes and nose, dizziness, fatigue, confusion, weakness, headache dilated pupils, dermatitis, lacrimation nervousness

Source	TWA (units)	STEL (units)	C (units)
OSHA PELs	200 ppm		300 ppm
ACGIH TLVs	20 ppm		
NIOSH RELs	100 ppm	150 ppm	

AIR MONITORING

Type	Brand/Model No.	Calibrations Method/Media	Relative Response or Conversion Factor	Meter Specific Action Level
PID	HNU 95 eV	Isobutylene 100 ppm	1.02	51 ppm
PID	HNU 10.2 eV	Isobutylene 100 ppm	0.928	46.4 ppm
PID	HNU 11.7 eV	Isobutylene 100 ppm	1.14	57 ppm

Checked by: Emmet F. Curtis Date: 12/5/03

PERSONAL PROTECTIVE EQUIPMENT

Recommended Protective Clothing Materials:

Suits: Teflon, Viton, CPF3, PE/EVAL, Barricade, Responder, Tychem Trellchem

Gloves: Viton, Teflon; Polyvinyl alcohol (do not use in water)

Boots: Teflon, Viton

Service Limit Concentration (ppm): 1000

MUC 1/2 Mask APR = TWA x 10 = 250 ppm
MUC Full-Face APR = TWA x 10 = 250 ppm

FIRE/REACTIVITY DATA

Flash Point: 40° F

LEL/UEL: 1.1% / 7.1%

Fire Extinguishing Media:
Dry Chemical X; Foam X
Water Spray X; CO_2 X

Incompatibilities:
Strong oxidizers

2012 by AMEC Environment & Infrastructure, Inc.

Note: The recommended protective clothing materials assumes that potential for direct contact (by splashing, dust inhalation, or other means) with the contaminants exists. Professional judgment and knowledge of on-site hazards should be used in selecting PPE appropriate to the concentration of the contaminant (trace vs percentage) to which the individual is likely to be exposed.

ATTACHMENT A

CONTAMINANT FACT SHEET

MACTEC

CONTAMINANT FACT SHEET

Chemical Name:
Benzene
CAS Number: 71-43-2
Synonyms:
Phenyl hydride
Benzol

HEALTH HAZARD DATA

Color: Colorless

Physical State: Solid ___ Liquid ___ Gas ___

Odor: Aromatic

Odor Threshold: 34-119 ppm

Vapor Density: 2.7 g/L

Ionization Potential (IP): 9.24 eV

IDLH: 500 ppm

Carcinogen: OSHA X; IARC ___; NTP ___; ACGIH X; NIOSH X

Skin absorbable: yes X no ___

Skin corrosive: yes X no ___

Signs/Symptoms of Acute Exposure:
Irritant to eyes, skin, nose, headache nausea, staggered gait.

Source	TWA (units)	STEL (units)	C (units)
OSHA PELs	1.0 ppm	5.0 ppm	
ACGIH TLVs	0.5 ppm	2.5 ppm	
NIOSH RELs	0.1 ppm	1.0 ppm	

AIR MONITORING

Type	Brand/Model No.	Calibrations Method/Media	Relative Response or Conversion Factor	Meter Specific Action Level
PID	Microtip 10.6eV	Isobutylene 100 ppm	1.18	0.118
PID	Hnu 10.2 eV	Isobutylene 100 ppm	1.0	0.1
FID	Foxboro OVA 128	Methane	1.5	0.15

Checked by: Lynne W. Clem Date:12/5/03

PERSONAL PROTECTIVE EQUIPMENT

Recommended Protective Clothing Materials:

Suits: Viton, Teflon, Barricade CPF3, Responder, Tychem

Gloves: Viton, Teflon, Polyvinyl Alcohol (PVA) (Do not use in water)

Boots: Teflon

Service Limit Concentration (ppm): 1000

MUC 1/2 Mask APR = TWA x 10 = 2.5 ppm

MUC Full-Face APR = TWA x 10 = 2.5 ppm

FIRE/REACTIVITY DATA

Flash Point: 12 ° F

LEL/UEL: 1.2 / 7.8%

Fire Extinguishing Media:

Dry Chemical X; Foam X; Water Spray X; CO_2 X

Incompatibilities:
Strong oxidizers, fluorides, perchlorates, nitric acid

2012 by AMEC Environment & Infrastructure, Inc.

Note: The recommended protective clothing materials assumes that potential for direct contact (by splashing, dust inhalation, or other means) with the contaminant exists. Professional judgement and knowledge of on-site hazards should be used in selecting PPE appropriate to the concentration of the contaminant (trace vs percentage) to which the individual is likely to be exposed.

AHA - Decontamination
Activity Description

Activity/Work Task:	Decontamination		
Project Location:	**Varies**		
Project Number:	**NYSDEC Superfund Program**		
Date Prepared:	**11/15/19**	**Date Accepted:**	**2/13/2020**
Prepared by (Name/Title):	Nate Vogan / Senior Geologist		
Reviewed by (Name/Title):	Jeff Tweeddale / CSP		

This AHA involves the following:

- Establishing site specific measures for decontaminating tools and work equipment used on site

This AHA is not an exhaustive summary of all hazards associated with the Site. Refer to the site HASP for additional requirements. Contractor to follow general site safety controls for Slips Trips and Falls, Biological hazards, cuts lacerations and pinch points, and emergency procedures.

Overall Risk Assessment Code (RAC) (Use highest code): **L**

Risk Assessment Code (RAC) Matrix

Severity	Probability				
	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M
Critical	E	H	H	M	L
Marginal	H	M	M	L	L
Negligible	M	L	L	L	L

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (See above)

"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.

RAC Chart

- **E = Extremely High Risk**
- **H = High Risk**
- **M = Moderate Risk**
- **L = Low Risk**

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
PPE (Safety glasses, safety goggles/face shield, gloves, steel toe work boots, high visibility safety vest, hearing protection.)	**Competent / Qualified Personnel:** See site specific HASP Name – Position/Employer **Training requirements:** Site specific HASP Orientation Toolbox safety meeting Task kick-off meeting	Daily inspection of equipment per manufacturer's instructions. Tag tools that are defective and remove from service. Inspect power cord sets prior to use. Inspect all PPE prior to use

AHA - Decontamination
Activity Description

Job Steps	Hazards	Controls	RAC
1. Establish Decontamination Station	1A) Materials Handling	1A) Materials Handling ▪ Use proper lifting techniques ▪ Use mechanical aids, if available, to move heavy items.	L
2. Decontamination / Steam cleaning.	2A) Struck by steam/hot water/pressure washing	2A) Struck by steam/hot water ▪ Workers not directly engaged in steam cleaning operations must stay clear. ▪ Workers using steam cleaning equipment must be trained on operation and safety devices/procedures using the owners/operators manual. ▪ Use face shield **and** safety glasses or goggles, if steam cleaning. ▪ Stay out of the splash/steam radius. ▪ Pressure washer must have dead man switch. ▪ Do not direct steam at anyone. ▪ Do not hold objects with your feet or hands. ▪ Ensure that direction of spray minimizes spread of contaminants of concern. ▪ Use shielding as necessary.	L
	2B) Exposure to contaminants	2B) Exposure to contaminants ▪ Conduct air monitoring (see HASP). ▪ Wear proper PPE (see HASP). ▪ See SDSs for hazards associated with the decon solutions used (if other than water alone us used).	L
	2C) Slips/Trips/Falls	2C) Slips/Trips/Falls ▪ Be cautious as ground/plastic can become slippery ▪ Use boots or boot covers with good traction	L
3. Vehicle Decontamination	3A) Vehicle traffic in and out of the CRZ	3A) Large Vehicle Traffic ▪ Always wear a hard hat, steel toe boots, and a high visibility vest (unless Tyveks are used and are high visibility). ▪ Vehicle drivers are not to exit the vehicle in the CRZ. ▪ Identify an individual to communicate with vehicle drivers and maintain order ▪ Trucks will be lined with plastic and kept out of direct contact with any contaminated materials during loading. Wear PPE when removing plastic lining from truck beds. ▪ If not in the vehicle, obtain eye contact with the driver, so he is aware of your presence and location in the CRZ. ▪ If you are driving the vehicle, be aware of personnel in the CRZ and maintain communication with the identified personnel.	L

AHA - Decontamination
Activity Description

Job Steps	Hazards	Controls	RAC
	3B) Exposure to contaminants	3B) Exposure to contaminants ▪ Use safety glasses or goggles, Polycoated Tyvek or rain gear (if level of contamination poses dermal hazard or to keep work clothes dry), high visibility vest (if high visibility Tyveks are not used) hard hats, steel toe boots, and gloves while cleaning contaminated materials. ▪ Do not doff PPE until decontamination of the vehicle is complete and a decontamination certificate has been issued by the HSO. ▪ Conduct air monitoring (see HASP). ▪ See SDSs for hazards associated with the decon solutions (if other than water alone is used).	L
	3C) Slips/Trips/Falls	3C) Slips/Trips/Falls ▪ Be cautious as ground/plastic can become slippery ▪ Use boots or boot covers with good traction	L
4. Equipment and Sample Decontamination	4A) Chemical exposure when handling contaminated sample jars and equipment	4A) Chemical exposure ▪ Wear PPE as outlined in the HASP. ▪ Refer to SDS for specific hazards associated with decon solutions ▪ Monitor breathing zone for contaminants ▪ Monitor breathing zone for decon solutions (e.g., methanol, hexane, etc.) if appropriate (see HASP)	L
	4B) Materials Handling related injuries	4B) Materials Handling related injuries ▪ Use proper lifting techniques when lifting heavy equipment ▪ Use two person lift for heavy coolers	L
5. Personal Decontamination	4C) Exposure to contaminants	4C) Exposure to contaminants ▪ Avoid bringing contaminated materials via shoes and clothing into the CRZ by examining such prior to exiting the EZ. ▪ Removal of PPE will be performed by the following tasks in the listed order: ▪ Gross boot wash and rinse and removal ▪ Outer glove removal ▪ Suit removal ▪ Respirator removal (if worn). ▪ Inner glove removal ▪ Contaminated PPE is to be placed in the appropriate, provided receptacles. ▪ Respirators will be removed and decontaminated at a specified location within the CRZ by a designated technician, then placed in storage bag. ▪ Employees will wash hands, face, and any other exposed areas with soap and water. ▪ Portable eyewash stations and showers will be available should employees come into direct contact with contaminated materials. ▪ See SDSs for hazards associated with the decontamination solutions used. ▪ Decon solutions will be disposed of according to the work plan.	L

AHA – Drilling Operations
Activity Description

Activity/Work Task:	Drilling Operation		
Project Location:	**Varies**		
Project Number:	**NYSDEC Superfund Program**		
Date Prepared:	**11/15/2019**	**Date Accepted:**	**2/13/2020**
Prepared by (Name/Title):	Nate Vogan / Senior Geologist		
Reviewed by (Name/Title):	Jeff Tweeddale / CSP		

Overall Risk Assessment Code (RAC) (Use highest code) **H**

Risk Assessment Code (RAC) Matrix

Severity	Probability				
	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M
Critical	E	H	H	M	L
Marginal	H	M	M	L	L
Negligible	M	L	L	L	L

This AHA involves the following:

- Establishing site specific measures for overseeing drilling

This AHA is not an exhaustive summary of all hazards associated with the Site. Refer to the site HASP for additional requirements. Contractor to follow general site safety controls for Slips Trips and Falls, Biological hazards, cuts lacerations and pinch points, and emergency procedures.

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (See above)

"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.

RAC Chart

- **E = Extremely High Risk**
- **H = High Risk**
- **M = Moderate Risk**
- **L = Low Risk**

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
PPE (Hard Hat, safety glasses, gloves, steel toe work boots, high visibility safety vest, hearing protection)	**Competent / Qualified Personnel:** See site specific HASP Name – Position/Employer **Training requirements:** Site specific HASP Orientation Toolbox safety meeting Task kick-off meeting	Daily inspection of equipment per manufacturer's instructions. Inspect all PPE prior to use Inspect rig before service

AHA – Drilling Operations
Activity Description

Job Steps	Hazards	Controls	RAC
1. Drive drilling rig onto site	1A) Malfunction of vehicle/equipment	1A) Drivers shall perform a pre-operational check of equipment, read and be familiar with any operator's manual. ▪ Report all needed repairs promptly. ▪ Operators shall not use defective/unsafe equipment.	L
	1B) Vehicle accident while mobilizing drill rig to site	1B) Vehicle accident while mobilizing drill rig to site ▪ All drivers shall be properly licensed. ▪ Supervisors shall verify that drivers are capable and qualified on each type of equipment before allowing the equipment to be used unsupervised. ▪ Keep wind shields, windshield wipers, side mirrors and side windows clean ▪ Drivers shall conduct a pre-operation vehicle safety check ▪ Drivers shall plan ahead to minimize or eliminate the need for backing. Always check to the rear before backing and use an observer when available. If an observer is not available, the driver shall walk around the vehicle to make sure rear is clear prior to backing. ▪ Seat belts (if present) shall be worn when driving by driver and passengers. ▪ Choose the safest location possible to park equipment. Avoid parking in blind spots of other equipment. ▪ Driver is to be sure the back-up alarm is working ▪ Adjust vehicle speed for load and weather. Tire chains should be utilized as dictated by weather conditions. ▪ Operators should always check and be sure of load height. ▪ When operating a vehicle off the roadway, be aware of possible hidden objects in the grass and unstable terrain. ▪ The mast shall always be in a lowered position when moving the drill rig. ▪ Never allow anyone between truck and trailer when backing to hook trailer ▪ Make sure tilt beds or ramps are secured before putting trailer in use ▪ Perform periodic checks of equipment on long trips to assure the load is secure. ▪ Do not leave equipment unattended with the engine running. Shut off engine and set the parking brake when equipment is not in use.	L
2. Mounting and dismounting equipment	2A) Fall while mounting and dismounting equipment	2A) When mounting and dismounting equipment, use steps and handhold. Do not jump from vehicle.	L
3. Loading/unloading of equipment	3A) Crush and pinch points created when loading/unloading equipment	3A) Crush and pinch points created when loading/unloading equipment ▪ Be aware of crushing and pinching hazards when loading, unloading and fastening down equipment. ▪ Make sure cargo is properly loaded, secured and covered using only approved chain and load binders. Check for loose material on bed and trailer. Secure loose material. ▪ Wear protective equipment consistent with the hazard (hard hats, safety glasses, leather gloves, safety shoes, etc.) ▪ Hook/unhook on stable ground with the trailer secure.	L

AHA – Drilling Operations
Activity Description

Job Steps	Hazards	Controls	RAC
4. Rig equipment operation.	4A) Crushing injuries, slip trips and falls, material under stress, power equipment operations, utility lines, overhead loads, flying particles, rope or cable blocks, equipment limitations, lifting and pinch points	4A) Rig equipment operation. ▪ Before use, inspect cable, chain or wire for wear and replace if necessary. ▪ Observe OSHA guidelines for use of cable clamps, safety latches, chains and slings. ▪ Know rated capacity of chain, cable or wire rope being used and never exceed the rating. ▪ Avoid overloading and sudden jerks. ▪ Wear appropriate personal protective equipment with the hazard, including hard hats, safety glasses, leather gloves and safety shoes. ▪ Check loads to be lifted for balance and have the rigging inspected to ensure a safe and balanced condition exists. ▪ Do not allow employees to stand or work under suspended loads. ▪ Awkward loads shall have taglines attached to control the load. ▪ Review signals and operator communications with crew. Only one person shall direct the operator. ▪ Review the area for utility lines, tree limbs and other overhead hazards. Work no closer than 10 feet to active overhead power lines. Follow OSHA guidelines. ▪ Personnel working tag lines shall review the area for slipping, tripping and falling hazards. If not possible to eliminate the hazards, take precautions to avoid them.	**M**
5. Stabilize rig with hydraulic jack/pads	5A) Crushing injuries, slip, trip, fall hazards and potential back injuries.	5A) Crushing injuries, slip, trip, fall hazards and potential back injuries. ▪ Use proper lifting techniques. ▪ Ensure jack is rated for weight/operation with safe limits ▪ Assure that area is clear of personnel and obstacles. ▪ Place pads under jacks to prevent them from sinking into the ground.	**M**

AHA – Drilling Operations
Activity Description

Job Steps	Hazards	Controls	RAC
6. Start/operate drill rig	6A) Moving machinery parts, buried and overhead utilities, drill rod stacking, lifting, winching, cathead operations, moving equipment, noise, adverse weather conditions, animals, slippery surfaces, uneven terrain, poisonous plants/snakes/insects and overhead hazards	6A) Moving machinery parts, buried and overhead utilities, drill rod stacking, lifting, winching, cathead operations, moving equipment, noise, adverse weather conditions, animals, slippery surfaces, uneven terrain, poisonous plants/snakes/insects and overhead hazards ▪ Wear appropriate personal protective equipment consistent with the hazard (hard hat, safety glasses, leather gloves, safety shoes, etc.) ▪ Avoid contact with rotating equipment ▪ When cathead is in use, assure a safe travel path for the rope by using proper techniques. Avoid standing on the rope. ▪ Observe and stay clear (minimum of 10 feet for nominal system voltage, utility lines, rated 50kV and an additional 0.4 inch for each kV over 50kV or twice the length of the line insulator, but never less than 10 feet) of overhead utility lines. - In transit with no load and boom lowered, the equipment clearance shall be a minimum of 4 feet for voltage less than 50kV and 10 feet for voltages over 50kV up to and including 345kV and 16 feet for voltages up to and including 750kV. - A person shall be designated to observe clearance of the equipment and give timely warning for all operations where it is difficult for the operator to maintain the desired clearance by visual means. - Have underground utility lines properly located and marked prior to drilling. ▪ Employees on foot must use extreme caution to stay clear of operating equipment. Always establish eye contact with the operator before approaching the equipment. ▪ Be aware of drop-offs, uneven ground and potential hidden objects which may cause loss of control when maneuvering drill rigs or create unstable drill set-ups. In heavily wooded area, scout to locate hidden objects. ▪ Drill rod stacking must not exceed a length of 1.5 times the height of the tower. ▪ Be aware of poisonous plants, insects, snakes, animals and animal waste products and carcasses. Wear long sleeve shirts, gloves, and high top boots when hazards cannot be avoided. Proper first aid supplies, insect repellents shall accompany field crews. ▪ Be alert to conditions that can lead to slippery surfaces. Examples: high groundwater resulting in muddy soils brought to the surface by augers and the utilization of bentonite drilling fluid. ▪ Inspect all cables and clamps prior to winching operation. Stand clear of winching operations. ▪ Use proper lifting techniques. Get help or use lifting equipment. ▪ Suspend drilling operations during electrical storms ▪ Be aware of overhead hazards which may come in contact with the drill rig, when moving or setting up equipment. ▪ Complete a daily operations checklist to ensure that equipment is working properly. Make special note of emergency kill switches.	**M**

AHA – Drilling Operations
Activity Description

Job Steps	Hazards	Controls	RAC
	6B) Contaminated soils, buried power or gas lines, landfills and containment of spills	6A) Contaminated soils, buried power or gas lines, landfills and containment of spills ▪ During drilling operations, always be aware of the possibility of encountering potentially hazardous materials, such as petroleum hydrocarbons, herbicides, pesticides, chemical manufacturing by-products or solid waste materials. ▪ In the event that any unknown or questionable materials are encountered, then the drilling operations are to be suspended immediately until further instructions are received from supervision. ▪ Do not handle any suspected contaminated materials unless trained to do so and proper protective methods are followed. ▪ During drilling operations, always be aware of the possibility of striking an unlocated or improperly located gas or power line. ▪ In the event a buried utility line is struck, drilling operations are to be suspended **immediately**. - If the utility line is electric, keep personnel at least 10 feet from all metal surfaces connected with the drill rig. - If the utility is gas, then the area is to be evacuated and secured. Immediate notification to the utility company is MANDATORY. ▪ In the event of a gas or oil spill, the proper authorities are to be contacted immediately so that containment operations can be implemented.	**H**
7. Attach auger to drill	7A) Auger coming loose from drill	7A) Auger coming loose from drill Insert a holding pin in auger ▪ Insert a holding pin in auger ▪ Use personal protective equipment such as leather gloves, safety glasses, hard hat and safety shoes. ▪ Be aware of hand and finger positions when inserting holding pin	**L**
8. Start drill by lever operations	8A) Operation of wrong lever	8A) Label levers as to their operation and review equipment manual.	**L**
9. Maintain proper auger drill speed with down hole pressure speed.	9A) Unstable rig from improper speed of auger	9A) Use of trained drill rig personnel and follow equipment manual specification.	**L**
10. When auger has dug into ground unhook pin and insert another auger on top of the previous auger	10A) Auger coming loose (reference item #7)	10A) Insert another catch pin into newly installed auger (reference item #7)	**L**
11. Insert PVC pipe into hollow stem auger in 10 foot sections	11A) Reference Hazard item #6a	11A) Reference Control item #6A	**M**
12. Install filter pack (50 pound bags of sand) into hole (by pouring) to filter water into screen	12A) Back injuries, slips and falls	12A) Proper lifting procedures, team lifting and use of mechanical devices. Wear proper foot wear and maintain area in good housekeeping condition. Use approved dust masks for silica exposure.	**M**
13. Reverse auger after each five foot section of sand is installed	13A) Reference hazard item #4	14A) Reference Control item #4	**M**

AHA – Drilling Operations
Activity Description

Job Steps	Hazards	Controls	RAC
14. Install Bentonite seal on top of sand (3 foot) to seal up area above sand.	14A) Reference hazard item #12	14B) Reference control item #12	M
15. Remove auger	15A) Auger falling	15A) Insert auger- maintain auger at ground surface to prevent auger from falling into hole.	M
16. Release auger tension and remove pins. Remove auger from hole.	16A) Reference hazard item #4	16A) Reference control item #4	M
17. Lower drill head attached to auger remaining in bore hole attach with a pin	17A) Reference hazard in item #4	17A) Reference control in item #4	M
18. Decontamination of drill equipment-usually pressure water	18A) Contamination of personnel and environment	18A) See AHA - Decontamination	L
19. Mix grout on site and fill/place in hole between the well pipe and bore hole wall	19A) Reference hazard item #12	19A) Reference control item #12	M
20. Cut PVC pipe off at determined height with a hand saw	20A) cutting of hand with hand saw	20A) Be aware of where hands are placed prior and during cutting with hand saw	M
21. Install a protective cover and fill with grout.	21A) Reference hazard item #12	21A) Reference control item #12	M
22. Driving drilling rig offsite.	22A) Reference item # 1	22A) Reference item #1.	M

AHA – Field Work – General Sampling / Oversight

Activity/Work Task:	Field Work – General Sampling / Oversight		
Project Location:	**Various**		
Contract Number:	**NYSDEC Superfund Program**		
Date Prepared:	**11/13/2019**	**Date Accepted:**	**2/13/2020**
Prepared by (Name/Title):	Nate Vogan, Senior Geologist		
Reviewed by (Name/Title):	Jeff Tweeddale / CSP		

Overall Risk Assessment Code (RAC-Residual) Use highest code: **M**

Risk Assessment Code (RAC) Matrix

Severity \ Probability	Almost certain	Likely	Possible	Unlikely	Rare
Catastrophic	E	E	E	H	M
Major	E	H	H	M	L
Serious	H	H	M	L	VL
Minor	M	M	L	L	VL
Negligible	L	VL	VL	VL	VL

Notes: (Field Notes, Review Comments, etc.)

This AHA involves the following:

- Establishing site specific measures general environmental sampling or engineering oversight.

This AHA is not an exhaustive summary of all hazards associated with the Site. Refer to the site specific HASP or client information for additional requirements, and emergency procedures.
Workers to follow general site safety controls for Hazard signage/PPE, Housekeeping, Slips Trips and Falls, Biological hazards, Mobile equipment, Confined spaces, Fall hazards, Electrical, and any active operating equipment or construction activities.

Step 1: Review each **"Hazard"** to identify Probability and Severity (Refer to Risk Register)

"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Almost certain, Likely, Possible, Unlikely, Rare.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Major, Serious, Minor or Negligible

Step 2: Identify the RAC-Inherent as E, H, M, L or VL for each "Hazard" on AHA, **before controls are applied.**

Step 3: Identify the RAC-Residual as E, H, M, L or VL for each "Hazard" on AHA, **after controls are applied.**

Step 4: Annotate the overall highest RAC-Residual at the top of AHA.

E = Extremely High Risk
H = High Risk
M = Moderate Risk
L = Low Risk
VL = Very Low Risk



MANAGEMENT OF CHANGE: If there is a change or deviation from the planned activity, you must stop the job and re-evaluate the risk assessment and the precautions taken. Any changes to work described in this AHA shall require review by a Qualified Person.

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
PPE (Safety glasses, gloves, steel toe work boots, high visibility safety vest) Hard hats and hearing protection required on a site specific equipment/activity.	**Competent / Qualified Personnel:** See site specific HASP Name – Position/Employer **Training requirements:** HAZCOM Site specific HASP Orientation	Inspect all PPE prior to use Daily inspection of equipment per manufacturer's instructions. Tag tools that are defective and remove from service.

AHA – Field Work – General Sampling / Oversight

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
	Toolbox safety meeting Task kick-off meeting	

Job Steps	Hazards	RAC Inherent	Controls	RAC Residual
1. Prepare for site visit	N/A	VL	▪ Obtain and review HASP prior to site visit, if possible ▪ Determine PPE needs – bring required PPE to the site, if not otherwise being provided at the site (e.g., steel toed boots) ▪ Determine training and medical monitoring needs and ensure all required Health and Safety training and medical monitoring has been received and is current ▪ Complete site specific/ client required training ▪ Ensure all workers are fit for duty (alert, well rested, and mentally and physically fit to perform work assignment) ▪ First aid kits shall be available at the work site and on each transport vehicle. ▪ Familiarize yourself with route to the site ▪ Check weather forecast. Pack appropriate clothing and other items (e.g., sunscreen) for anticipated weather conditions ▪ Verify that subsurface utilities have been identified.	VL
2. Mobilization – Traveling to the site by vehicle	Traffic accident, struck by vehicle or materials, driver fatigue	M	▪ See AHA for Vehicle Travel – Journey Management Plan	L
3. Communication	Safety, crew unity	M	Talk to each other. ▪ Let other crewmembers know when you see a hazard. ▪ Avoid working near known hazard trees (trees that are rotten, dead, damaged, etc.). ▪ Always know the wherabouts of fellow crewmembers. ▪ Carry a radio and spare batteries or cell phone. ▪ Review Emergency Evacuation Procedures (see below).	L
4. Walking and working in the field	4A) Falling down, twisted ankles and knees, poor footing	M	Always watch your footing.	L

AHA – Field Work – General Sampling / Oversight

Job Steps	Hazards	RAC Inherent	Controls	RAC Residual
			▪ Slow down and use extra caution around logs, rocks, and animal holes. ▪ Extremely steep slopes (>50%) can be hazardous under wet or dry conditions; consider an alternate route. ▪ Wear laced boots with a minimum 8" high upper and non-skid Vibram-type soles for ankle support and traction.	
	4B) Falling objects	L	Protect head agains falling objects. ▪ Wear your hardhat for protection from falling limbs and pinecones, and from tools and equipment carried by other crewmembers. ▪ Stay out of the woods during extremely high winds.	VL
	4C) Damage to eyes	M	Protect eyes: ▪ Watch where you walk, especially around trees and brush with limbs sticking out. ▪ Exercise caution when clearing limbs from tree trunks. Advise wearing eye protection. ▪ Ultraviolet light from the sun can be damaging to the eyes; look for sunglasses that specify significant protection from UV-A and UV-B radiation. If safety glasses require, use one's with tinted lenses	L
	4D) Bee and wasp stings	M	See AHA for Insect Stings and Bites	L
	4E) Ticks and infected mosquitos	M	See AHA for Insect Stings and Bites	L
	4F) Lifting Injuries (e.g., Back Injuries)	H	Lifting Injuries (e.g., Back Injuries) ▪ Site personnel will be instructed on proper lifting techniques. ▪ Perform warm-up excercises before starting work. ▪ **DO NOT EXCEED THE MACTEC E&G LIFTING LIMIT OF 50 POUNDS.** ▪ Use two people to lift, lower, or carry equipment or materials heavier than 50 pounds. ▪ Mechanical devices should be used to reduce manual handling of materials.	M

AHA – Field Work – General Sampling / Oversight

Job Steps	Hazards	RAC Inherent	Controls	RAC Residual
			▪ Drive the field vehicle as close to the point that the heavy equipment/material will be used as long as the area is safe to drive into and you do not create hazards to you, your co-worker, or the vehicle.	
	4G) Slips/Trips/Falls	M	Slips/Trips/Falls ▪ Maintain work areas safe and orderly; unloading areas should be on even terrain; mark or repair possible tripping hazards. ▪ Site SHSO inspect the entire work area to identify and mark hazards. ▪ Be aware of work area conditions that can cause slip hazards such as ponding of water on concrete surfaces. Ponding of water on smooth surfaces, such as concrete, coupled with the warm or freezing weather conditions has the potential to cause slippery condiitons such as growth of scum or ice, as applicable. Adding a layer of clean fill to the surface may prevent the growth of scum, and/or create a non-slippery walking surface.	L
	4H) Vehicular Traffic	E	Vehicular Traffic ▪ Spotters will be used when backing up trucks and heavy equipment and when moving equipment. ▪ High visibility vests will be worn when workers are exposed to vehicular traffic at the site or on public roads.	M
	4I) Overhead Hazards	H	Overhead Hazards ▪ Personnel will be required to wear hard hats that meet ANSI Standard Z89.1. ▪ All ground personnel will stay clear of suspended loads. ▪ All equipment will be provided with guards, canopies or grills to protect the operator from falling or flying objects. ▪ All overhead hazards will be identified prior to commencing work operations.	M
	4J) Dropped Objects	M	Dropped Objects ▪ Steel toe boots meeting ANSI Standard Z41 will be worn.	L
	4K) Noise	M	Noise	L

AHA – Field Work – General Sampling / Oversight

Job Steps	Hazards	RAC Inherent	Controls	RAC Residual
			▪ Hearing protection will be worn with a noise reduction rating capable of maintaining personal exposure below 85 dBA (ear muffs or plugs); all equipment will be equipped with manufacturer's required mufflers. Hearing protection shall be worn by all personnel working in or near heavy equipment.	
	4L) Eye Injuries	M	Eye Injuries ▪ Safety glasses meeting ANSI Standard Z87 will be worn.	L
	4M) Heavy Equipment (overhead hazards, spills, struck by or against)	E	Heavy Equipment ▪ Equipment will have seat belts. ▪ Operators will wear seat belts when operating equipment. ▪ Do not operate equipment on grades that exceed manufacturer's recommendations. ▪ Equipment will have guards, canopies or grills to protect from flying objects. ▪ Ground personnel will stay clear of all suspended loads. ▪ Ground personnel will wear high visibility vests ▪ Spill and absorbent materials will be readily available. ▪ Drip pans, polyethylene sheeting or other means will be used for secondary containment. ▪ Ground personnel will stay out of the swing radius of excavators. ▪ Eye contact with operators will be made before approaching equipment. ▪ Operator will acknowledge eye contact by removing his hands from the controls. ▪ Equipment will not be approached on blind sides. All equipment will be equipped with backup alarms and use spotters when significant physical movement of equipment occurs on-site, (i.e., other than in place excavation or truck loading).	M
	4N) Struck by vehicle/equipment	E	Struck by vehicle/equipment ▪ Be aware of heavy equipment operations. ▪ Keep out of the swing radius of heavy equipment.	M

AHA – Field Work – General Sampling / Oversight

Job Steps	Hazards	RAC Inherent	Controls	RAC Residual
			▪ Ground personnel in the vicinity of heavy equipment operations will be within the view of the operator at all times and will wear high visibility vests. ▪ Ground personnel will be aware of the counterweight swing and maintain an adequate buffer zone. ▪ Ground personnel will not stand directly behind heavy equipment when it is in operation. ▪ Drivers will keep workers on foot in their vision at all times, if you lose sight of someone, Stop!	
	4O) Struck/cut by tools	**M**	Struck/cut by tools ▪ Cut resistant work gloves will be worn when dealing with sharp objects. ▪ All hand and power tools will be maintained in safe condition. ▪ Guards will be kept in place while using hand and power tools.	**L**
	4P) Caught in/on/between	**M**	Caught in/on/between ▪ Workers will not position themselves between equipment and a stationary object. ▪ Workers will not wear long hair down (place in pony-tail and tuck into shirt) or jewelry if working with tools/machinery.	**L**
	4Q) Contact with Electricity/Lightning	**H**	Contact with Electricity/Lighting ▪ All electrical tools and equipment will be equipped with GFCI. ▪ Electrical extension cords will be of the “Hard” or “Extra Hard” service type. ▪ All extension cords shall have a three-blade grounding plug. ▪ Personnel shall not use extension cords with damaged outer covers, exposed inner wires, or splices. ▪ Electrical cords shall not be laid across roads where vehicular traffic may damage the cord without appropriate guarding. ▪ All electrical work will be conducted by a licensed electrician. ▪ All utilities will be marked prior to excavation activities. ▪ All equipment will stay a minimum of 10 feet from overhead energized electrical lines (50 kV). This distance will increase by 4	**M**

AHA – Field Work – General Sampling / Oversight

Job Steps	Hazards	RAC Inherent	Controls	RAC Residual
			inches for each 10 kV above 50 kV. Rule of Thumb: Stay 10 feet away from all overhead powerlines known to be 50 kV or less and 35 feet from all others.) ▪ The SSHO shall halt outdoor site operations whenever lightning is visible, outdoor work will not resume until 30 minutes after the last sighting of lightning.	
	4R) Equipment failure	M	Equipment failure ▪ All equipment will be inspected before use. If any safety problems are noted, the equipment should be tagged and removed from service until repaired or replaced.	L
	4S) Hand & power tool usage, cuts, burns, etc.	E	Hand & power tool usage ▪ Inspect the tool daily. ▪ Remove broken or damaged tools from service. ▪ Use the tool for its intended purpose. ▪ Use in accordance with manufacturers instructions.	M
	4T) Burns and Exposure to Exhaust from Portable Propane Torch Use	H	Portable propane torch usage ▪ Read the manual to become familiar with the propane torch and follow all safety precautions. Don PPE (safety glasses, heavy leather gloves) before using the torch. ▪ Inspect the propane cylinder and the torch tip to ensure there are no defects, damage, etc. ▪ Assemble the torch kit per instruction manual. The torch is designed to be used with the small propane cylinder, do not attempt to attach the torch to any other gas cylinder. ▪ Do not use the torch in areas where gasoline or other liquids having flammable vapors are stored or used. ▪ Do not smoke while igniting or operating the propane torch. ▪ Have an ABC type fire extinguisher readily accessible to the work area. ▪ Be sure the torch tip has a tight seal to the cylinder. If you smell gas, do not try to light the torch. Check the seal between the cylinder and	M

AHA – Field Work – General Sampling / Oversight

Job Steps	Hazards	RAC Inherent	Controls	RAC Residual
			torch. Do not attempt to light the torch until the seal is secure and no gas is leaking. ▪ To ignite the torch flame, first position the point of the torch tip away from you. ▪ If the unit requires a striker to ignite the torch, only use the striker provided with the unit. Never use a match or lighter to ignite torch. ▪ Do not place hand or any part of your body in the path of the flame while lighting or operating the propane torch. ▪ Never leave an ignited torch unattended while in operation. When not in use, the torch tip must be removed from the propane cylinder. ▪ Be aware of the weather conditions. On bright sunny days, the torch flame may be barely visible. On windy days, the wind may carry the torch's heat back towards you. ▪ The torch can produce combustion products such as carbon monoxide. Do not breathe in the exhaust. Propane vapors are heavier than air and can accumulate in low or confined areas. Use the torch only in a well ventilated area. ▪ Heating a surface may cause heat to be conducted to adjoining surfaces that may be combustible or become pressurized when heated. Always check to make sure no unintended parts or materials are being heated. ▪ Torch will be extremely hot, allow the torch to cool before touching it to remove it from the cylinder. ▪ Never store a torch that is still hot. ▪ When cooled, disconnect the torch from the cylinder for storage, and store them in a safe manner to prevent damage.	
5. Environmental health considerations	5A) Heat Stress	**H**	Take precautions to prevent heat stress ▪ Remain constantly aware of the four basic factors that determine the degree of heat stress (air temperature, humidity, air movement, and heat radiation) relative to the surrounding work environmental heat load. ▪ Know the signs and symptoms of heat exhaustion, heat cramps, and heat stroke. Heat stroke is a true medical emergency requiring immediate emergency response action.	**M**

AHA – Field Work – General Sampling / Oversight

Job Steps	Hazards	RAC Inherent	Controls	RAC Residual
			▪ **NOTE:** The severity of the effects of a given environmental heat stress is decreased by reducing the work load, increasing the frequency and/or duration of rest periods, and by introducing measures which will protect employees from hot environments. ▪ Maintain adequate water intake by drinking water periodically in small amounts throughout the day (flavoring water with citrus flavors or extracts enhances palatability). ▪ Allow approximately 2 weeks with progressive degrees of heat exposure and physical exertion for substantial acclimatization. ▪ Acclimatization is necessary regardless of an employee's physical condition (the better one's physical condition, the quicker the acclimatization). Tailor the work schedule to fit the climate, the physical condition of employees, and mission requirements. ▪ A reduction of work load markedly decreases total heat stress. ▪ Lessen work load and/or duration of physical exertion the first days of heat exposure to allow gradual acclimatization. ▪ Alternate work and rest periods. More severe conditions may require longer rest periods and electrolyte fluid replacement.	
	5B) Wet Bulb Globe Temperature (WBGT) Index	**H**	WBGT ▪ Curtail or suspend physical work when conditions are extremely severe (see attached Heat Stress Index). ▪ Compute a Wet Bulb Globe Temperature Index to determine the level of physical activity (take WBGT index measurements in a location that is similar or closely approximates the environment to which employees will be exposed).	**M**
		H	**WBGT THRESHOLD VALUES FOR INSTITUTING PREVENTIVE MEASURES** 80-90 °F — Fatigue possible with prolonged exposure and physical activity. 90-105 °F — Heat exhaustion and heat stroke possible with prolonged exposure and physical activity. 105-130 °F — Heat exhaustion and heat stroke are likely with prolonged heat exposure and physical activity.	**M**

AHA – Field Work – General Sampling / Oversight

Job Steps	Hazards	RAC Inherent	Controls	RAC Residual
	5C) Cold Extremes	H	Take precautions to prevent cold stress injuries ▪ Cover all exposed skin and be aware of frostbite. While cold air will not freeze the tissues of the lungs, slow down and use a mask or scarf to minimize the effect of cold air on air passages. ▪ Dress in layers with wicking garments (those that carry moisture away from the body – e.g., cotton) and a weatherproof slicker. A wool outer garment is recommended. ▪ Take layers off as you heat up; put them on as you cool down. ▪ Wear head protection that provides adequate insulation and protects the ears. ▪ Maintain your energy level. Avoid exhaustion and over-exertion which causes sweating, dampens clothing, and accelerates loss of body heat and increases the potential for hypothermia. ▪ Acclimate to the cold climate to minimize discomfort. ▪ Maintain adequate water/fluid intake to avoid dehydration.	M
	5D) Wind	H	4A) Effects of the wind ▪ Wind chill greatly affects heat loss (see attached Wind Chill Index). ▪ Avoid marking in old, defective timber, especially hardwoods, during periods of high winds due to snag hazards.	M
	5E) Thunderstorms	H	4B) Thunderstorms ▪ Monitor weather channels to determine if electrical storms are forcased. ▪ Plan ahead and identify safe locations to be in the event of a storm. (e.g., sturdy building, vehicle, etc.) ▪ Suspend all field work at the first sound of thurnder. You should be in a safe place when the time between the lightning and thunder is less than 30 seconds. ▪ Only return to work 30 minutes after the after the last strike or sound of thunder	M
6. Check and calibrate industrial hygiene and other field instruments	6A) Exposure to Calibration Gases/Chemicals due to: Use of damaged instruments.	M	Verify proper operation of the instrument prior to calibration. ▪ Calibrate instruments in an area with adequate ventilation and follow the manufacturer's recommendations.	VL

AHA – Field Work – General Sampling / Oversight

Job Steps	Hazards	RAC Inherent	Controls	RAC Residual
and equipment as required and as recommended by the manufacturer			▪ Wear appropriate PPE to conduct calibrations as specified in the instrument manual.	
	6B) Exposure to Site contaminants due to: ▪ Improper instrument calibration; ▪ Misinterpretation of calibration results; ▪ Improper instrument repair; ▪ Improper use of instrument due to lack of training.	**H**	Calibrate the instrument in accordance with the manufacturer's recommendations (see instrument manual) using the applicable calibration standard and calibration procedure. ▪ Perform calibrations at a frequency recommended by the manufacturer. Be aware of the instrument's limitations (e.g., detection limit, maximum sensitivity) and the conditions (e.g., humidity) that may affect correct operation or accuracy of that equipment. Possible sources of error that may affect the correct calibration of the instrument. ▪ Use only calibration materials recommended by the manufacturer for calibration. Do not use substitutions. ▪ Confirm that the connections between the instrument and the calibration gas/material is leak-free. ▪ Record all instrument calibrations in the field logbook. Include the instrument ID (type/manufacture/serial number/lamp eV, etc.), calibration gas used (chemical and concentration), and instrument result. ▪ Do not attempt to repair instrument. Return to the vendor for replacement. Report any damaged or malfunctioning instrument to the vendor. ▪ All personnel must be familiar with operation of the instrument and understand: – Theroy of its operation including any alarms and their setpoints – Materials the instrument can and cannot detect, – Instrument's limitations – The expected responses to calibration gases/materials – Interfering gases/chemicals and their affects on the instrument readings – When re-zeroing is appropriate	**M**

AHA – Field Work – General Sampling / Oversight

Heat Index Chart

% Relative Humidity

Temperature	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
110	108	112	117	123	130											
105	102	105	108	113	117	122	130									
100	97	98	102	104	107	110	115	120	126	132						
95	91	93	95	96	98	100	104	106	109	113	119	124	130			
90	86	87	88	90	91	92	95	97	98	100	103	106	110	114	117	121
85	81	82	83	84	85	86	87	88	89	90	92	94	96	97	100	102
80	76	77	78	78	79	79	80	81	82	83	84	85	86	87	88	89

Legend	
80-89 degrees	Fatigue is possible with prolonged exposure and/or physical activity.
90-104 degrees	Sunstroke, heat cramps and heat exhaustion are possible with prolonged exposure and/or physical activity.
105-129 degrees	Sunstroke, heat cramps and heat exhaustion are likely. Heat stroke is possible with prolonged exposure and/or physical activity.
130+ degrees	Heatstroke/sunstroke is highly likely with continued exposure.

Wind Chill Chart

Wind (mph) \ Temperature (°F)	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
Calm																		
5	36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63
10	34	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72
15	32	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77
20	30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81
25	29	23	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84
30	28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87
35	28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89
40	27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91
45	26	19	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93
50	26	19	12	4	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-88	-95
55	25	18	11	4	-3	-11	-18	-25	-32	-39	-46	-54	-61	-68	-75	-82	-89	-97
60	25	17	10	3	-4	-11	-19	-26	-33	-40	-48	-55	-62	-69	-76	-84	-91	-98

Frostbite Times: 30 minutes | 10 minutes | 5 minutes

$$\text{Wind Chill (°F)} = 35.74 + 0.6215T - 35.75(V^{0.16}) + 0.4275T(V^{0.16})$$

Where, T= Air Temperature (°F) V= Wind Speed (mph)

Effective 11/01/01

AHA – Field Work – General Sampling / Oversight

FIELD ACKNOWLEDGEMENT OF PERSON(S) CARRYING OUT WORK

NAME(S):	SIGNED:	DATE:
SITE SUPERVISOR:	SIGNED:	DATE:

Note: For tasks/activities that extend beyond a single day, use attached DAILY TAILGATE FORM.

AHA – Field Work – General Sampling / Oversight

AHA DAILY RENEWAL		
Date:	Weather:	
Changes noted:		
Site Supervisor (Print & Sign):		
Name(s):		
Date:	Weather:	
Changes noted:		
Site Supervisor (Print & Sign):		
Name(s):		
Date:	Weather:	
Changes noted:		
Site Supervisor (Print & Sign):		
Name(s):		

AHA - Insect Stings and Bites

Activity/Work Task:	Insect Stings and Bites		
Project Location:	**Various**		
Project Number:	**NYSDEC Superfund Program**		
Date Prepared:	**11/15/19**	**Date Accepted:**	**2/13/2020**
Prepared by (Name/Title):	Nate Vogan / Senior Geologist		
Reviewed by (Name/Title):	Jeff Tweeddale / CSP		

This AHA involves the following:

- Establishing site specific measures for dealing with insect stings and bites

This AHA is not an exhaustive summary of all hazards associated with the Site. Refer to the site HASP for additional requirements. Contractor to follow general site safety controls for Slips Trips and Falls, Biological hazards, cuts lacerations and pinch points, and emergency procedures.

Overall Risk Assessment Code (RAC) (Use highest code)	L

Risk Assessment Code (RAC) Matrix

Severity	Probability				
	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M
Critical	E	H	H	M	L
Marginal	H	M	M	L	L
Negligible	M	L	L	L	L

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (See above)

"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.

RAC Chart

- **E = Extremely High Risk**
- **H = High Risk**
- **M = Moderate Risk**
- **L = Low Risk**

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
PPE (Safety glasses, gloves (HASP), steel toe work boots, and long pants.)	**Competent / Qualified Personnel:** See site specific HASP Name – Position/Employer **Training requirements:** Site Specific HASP Orientation Toolbox safety meeting Task kick-off meeting	Daily inspection of equipment per manufacturer's instructions. Tag tools that are defective and remove from service. Inspect all PPE prior to use

AHA - Insect Stings and Bites

Job Steps	Hazards	Controls	RAC
1. Traveling/working in areas with potential Tick Bites –Example outdoor wooded areas or fields.	1. Lyme Disease, Rocky Mountain Spotted Fever, etc.	▪ Spray clothing with insect repellant as a barrier. ▪ Wear light colored clothing that fits tightly at the wrists, ankles, and waist. ▪ Each outer garment should overlap the one above it. ▪ Cover trouser legs with high socks or boots. ▪ Tuck in shirt tails. ▪ Search the body on a regular basis, especially hair and clothing; ticks generally do not attach for the first couple of hours. ▪ If a tick becomes attached, pull it by grasping it as close as possible to the point of attachment and pull straight out with gentle pressure. Wash skin with soap and water then cleanse with rubbing alcohol. Place the tick in an empty container for later identification, if the victim should have a reaction. Record dates of exposure and removal. ▪ Do not try to remove the tick by burning with a match or covering it with chemical agents. ▪ If you can not remove the tick, or the head detaches, seek propmt medical help. ▪ Watch for warning signs of illness: a large red spot on the bite area; fever, chills, headache, joint and muscle ache, significant fatigue, and facial paralysis are reactions that may appear within two weeks of the attack. Symptoms specific to Lyme disease include: confusion, short-term memory loss, and disorientation.	L
2. Working/traveling in areas with potential bee and wasp stings- Example wooded areas and fields	2. Allergic reactions, painful stings	▪ Be alert to hives in brush or in hollow logs. Watch for insects travelling in and out of one location. ▪ If you or anyone you are working with is known to have allergic reactions to bee stings, tell the rest of the crew and your supervisor. Make sure you carry emergency medication with you at all times. ▪ Wear long sleeve shirts and trousers; tuck in shirt.. Bright colors and metal objects may attract bees. ▪ If you are stung, cold compresses may bring relief. ▪ If a stinger is left behind, scrape it off the skin. Do not use a tweezers as this squeezes the venom sack, worsening the injury. ▪ If the victim develops hives, asthmatic breathing, tissue swelling, or a drop in blood pressure, seek medical help immediately. Give victim antihistime, (Benadryl, chlo-amine tabs).	L
3. Traveling/working in areas of potential Mosquito Bites- Example- Woods, fields, near bodies of water and etc.	3. Skin irritation, encephalitis	▪ Wear long sleeves and trousers. ▪ Avoid heavy scents. ▪ Use insect repellants. DEET can be applied directly to the skin or clothing. If using Permethrin based repellants, do not apply directly to skin, apply to clothing only. ▪ Carry after-bite medication to reduce skin irritation.	L

AHA - Soil Sampling
Activity Description

Activity/Work Task:	Soil Sampling			Overall Risk Assessment Code (RAC) (Use highest code)	**H**
Project Location:	**Various**			**Risk Assessment Code (RAC) Matrix**	
Contract Number:	**NYSDEC Superfund Program**				
Date Prepared:	**11/15/19**	**Date Accepted:**	**2/13/2020**		
Prepared by (Name/Title):	Nate Vogan / Senior Geologist				
Reviewed by (Name/Title):	Jeff Tweeddale / CSP				

Severity	Probability				
	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	**E**	**E**	**H**	**H**	**M**
Critical	**E**	**H**	**H**	**M**	**L**
Marginal	**H**	**M**	**M**	**L**	**L**
Negligible	**M**	**L**	**L**	**L**	**L**

Notes: (Field Notes, Review Comments, etc.)

This AHA involves the following:

- Establishing site specific measures for general soil sampling

This AHA is not an exhaustive summary of all hazards associated with the Site. Refer to the site HASP for additional requirements. Contractor to follow general site safety controls for Slips Trips and Falls, Biological hazards, cuts lacerations and pinch points, and emergency procedures.

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (See above)

"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.

RAC Chart

- **E = Extremely High Risk**
- **H = High Risk**
- **M = Moderate Risk**
- **L = Low Risk**

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
PPE (hard hat, safety glasses, gloves, steel toe work boots, high visibility safety vest, hearing protection)	**Competent / Qualified Personnel:** Name – Position/Employer **Training requirements:** List specific certification (as applicable) Site Specific HASP Orientation Toolbox safety meeting Task kick-off meeting	Daily inspection of equipment per manufacturer's instructions. Tag tools that are defective and remove from service. Inspect power cord sets prior to use. Inspect all PPE prior to use

Job Steps	Hazards	Controls	RAC

AHA - Soil Sampling
Activity Description

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements	
1. Prepare for sampling event	1A) Chemical exposure	1A) Chemical Exposure ▪ Read site specific HASP and determine air monitoring and PPE needs.	**M**
2. Carrying equipment to site location	2A) Back or muscle strain	2A) Back or muscle strain ▪ Use proper lifting techniques when lifting pumps or generators ▪ Use mechanical aids if available ▪ Use 2 person lift for heavy items	**M**
3. Calibrate monitoring equipment	1A) Exposure to calibration gases	3A) Exposure to calibration gases ▪ Review equipment manuals ▪ Calibrate in a clean, well ventilated area	**L**
4. Preparing sampling location	4A) Contact with poisonous plants or the oil from poisonous plants	4A) Contact with poisonous plants or the oil from those plants: ▪ Look for signs of poisonous plants and avoid. ▪ Wear PPE as described in the HASP. ▪ Do not touch anything part of your body/clothing. ▪ Always wash gloves before removing them. ▪ Discard PPE in accordance with the HASP.	**L**
	4B) Contact with biting insects (i.e., spiders, bees, etc.)	4B) Contact with stinging/biting insects ▪ Discuss the types of insects expected at the Site and be able to identify them. ▪ Look for signs of insects in and around the well. ▪ Wear Level of PPE as described in the HASP. At a minimum, follow guidelines in the AHA “Insects Stings and Bites.” ▪ If necessary, wear protective netting over your head/face. ▪ Avoid contact with the insects if possible. ▪ Inform your supervisor and the Site Health and Safety Supervisor if you have any allergies to insects and insect bites. Make sure you have identification of your allergies with you at all times and appropriate response kits if applicable. ▪ Get medical help immediately if you are bitten by a black widow or brown recluse, or if you have a severe reaction to any spider bite or bee sting.	**L**
	4C) Exposure to hazardous Inhalation and contact with hazardous substances (VOC contaminated soil); flammable atmospheres.	4C) Exposure to hazardous substances ▪ Wear PPE as identified in HASP. ▪ Review hazardous properties of site contaminants with workers before sampling operations begin ▪ Monitor breathing zone air in accordance with HASP to determine levels of contaminants present. ▪ When decontaminating equipment wear additional eye/face protection over the safety glasses such as a face shield.	**L**

AHA - Soil Sampling
Activity Description

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements	
	4D) Back strain due to lifting or moving equipment to sampling locations	4D) Back strain ▪ Use mechanical aids when possible, if mechanical aids are not available, use two person lifts for heavy items. ▪ Use proper lifting techniques	**M**
	4E) Foot injuries from dropped equipment	4E) Foot Injuries ▪ Be aware when moving objects, ensure you have a good grip when lifting and carrying objects. ▪ Do not carry more than you can handle safely ▪ Wear steel toed boots	**M**
5. Collecting soil samples	5A) Working around drill rigs	5A) See AHA – Drilling Operations	**M**
	5B) Encountering underground or overhead utilities	5B) Have all utilities located.	**H**
	5C) Fire/Explosion/Contamination hazard from refueling generators	5C) Fire/Explosion/Contamination hazard from refueling generators ▪ Turn the generator off and let it cool down before refueling ▪ Segregate fuel and other hydrocarbons from samples to minimize contamination potential ▪ Transport fuels in approved safety containers. The use of containers other than those specifically designed to carry fuel is prohibited ▪ See AHA for Gasoline use	**M**
	5D) Electrocution	5D) Electrocution ▪ A ground fault circuit interrupter (GFCI) device must protect all AC electrical circuits. ▪ Use only correctly grounded equipment. Never use three-pronged cords which have had the third prong broken off. ▪ Make sure that the electrical cords from generators and power tools are not allowed to be in contact with water ▪ Do not stand in wet areas while operating power equipment ▪ Always make sure all electrically-powered sampling equipment is in good repair. Report any problems so the equipment can be repaired or replaced. ▪ When unplugging a cord, pull on the plug rather than the cord. ▪ Never do repairs on electrical equipment unless you are both authorized and qualified to do so.	**M**
	5E) Exposure to contaminants	5E) Exposure to Contaminants ▪ Stand up wind when sampling ▪ Monitor breathing zone with appropriate monitoring equipment (see HASP) ▪ Wear chemical resistant PPE as identified in HASP ▪ See section 4C) under Safe Practices above	**L**

AHA - Soil Sampling
Activity Description

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements	
	5F) Exposure to preservatives	5F) Exposure to preservatives ▪ Work in a well ventilated area, upwind of samples ▪ Wear chemical resistant PPE as identified in HASP ▪ Review MSDSs	**M**
	5G) Slips/trips/falls	5G) Slips/trips/falls ▪ Ground can become wet/muddy ▪ Wear good slip resistant footwear	**L**
	5H) Lifting Injury	5H) Lifting injury ▪ Use proper lifting techniques when carrying quantities of samples ▪ Use proper ergonomics when hand digging for samples	**M**
	5I) Eye injury	5I) Eye Injury ▪ Wear eye protection when using picks or similar devices to loosen soil	**M**
	5J) Fire	5J) Fire ▪ When using gas powered auger, maintain fire watch whenever fueling or otherwise handling gasoline ▪ See AHA - Gasoline	**L**
6. Soil sampling using floor corer	6A) Back injury	6A) Back Injury ▪ Use proper lifting techniques when moving floor corer and generator ▪ Use mechanical aids if available ▪ Use two person lift for heavy items.	**M**
	6B) Electric Shock	6B) Electric Shock ▪ Use electric cords free from defects ▪ Keep cords out of water ▪ Ensure all electrical equipment is properly grounded ▪ Use GFCI	**M**
	6C) Hearing	6C) Hearing ▪ Wear hearing protection	**L**
	6D) Fire	6D) Fire ▪ When using generator, maintain fire watch whenever refueling or otherwise handling gasoline ▪ See AHA - Gasoline	**M**
	6E) Contamination	6E) Contamination ▪ Use appropriate PPE for the contaminants of concern (see HASP). ▪ Minimize sample contact ▪ Label sample in accordance with procedures ▪ Monitor breathing zone levels.	**L**

AHA - Utility Clearance
Activity Description

Activity/Work Task:	Utility Clearance and Survey		
Project Location:	Various		
Project Number:	**NYSDEC Superfund Program**		
Date Prepared:	11/18/19	**Date Accepted:**	**2/13/2020**
Prepared by (Name/Title):	Nate Vogan / Senior Geologist		
Reviewed by (Name/Title):	Jeff Tweeddale / CSP		

Overall Risk Assessment Code (RAC) (Use highest code)	**H**

Risk Assessment Code (RAC) Matrix

Severity	**Probability**				
	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	**E**	**E**	**H**	**H**	**M**
Critical	**E**	**H**	**H**	**M**	**L**
Marginal	**H**	**M**	**M**	**L**	**L**
Negligible	**M**	**L**	**L**	**L**	**L**

This AHA involves the following:

- Establishing site specific measures for the locating of utilities before drilling, excavating, or other intrusive activities

This AHA is not an exhaustive summary of all hazards associated with the Site. Refer to the site HASP for additional requirements. Contractor to follow general site safety controls for Slips Trips and Falls, Biological hazards, cuts lacerations and pinch points, and emergency procedures.

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (See above)

"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.

RAC Chart

- **E = Extremely High Risk**
- **H = High Risk**
- **M = Moderate Risk**
- **L = Low Risk**

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
PPE (Hard Hat, safety glasses, gloves, steel toe work boots, high visibility safety vest)	**Competent / Qualified Personnel:** See site specific HASP Name – Position/Employer **Training requirements:** List specific certification (as applicable) Site Specific HASP Orientation Toolbox safety meeting Task kick-off meeting	Daily inspection of equipment per manufacturer's instructions. Tag tools that are defective and remove from service. Inspect power cord sets prior to use. Inspect all PPE prior to use

AHA - Utility Clearance
Activity Description

Job Steps	Hazards	Controls	RAC
1. Pre-planning	1a) Property Access ▪ Animal bites ▪ Dangerous social areas/ violent neighborhoods ▪ Lost ▪ Electrocution	Ensure communications with the property owner. Request pets and animals to be confined during the survey: ▪ Maintain communications via two way radios or cell phones. ▪ Learn animal posturing including how to identify rabid animals. ▪ Contract security as appropriate for safety and equipment theft. ▪ Be prepared with a map and compass as necessary. ▪ Be aware of overhead and underground utilities. Ensure Dig-Safe has been contacted. ▪ When working with electrical equipment avoid wet surfaces and exposed connections.	L
	1b) Utilities Not Cleared (damage to utilities, worker injury)	Utilities Not Cleared: ▪ Provide sufficient time and budget to ensure that utilities have been adequately located, prior to the start of up of work. ▪ Contact One Call Utility identifier organization at least 6 days prior to the project start date. ▪ Cite or have subcontractor cite a start date of at least 3 working days prior to actual planned start date (provides window to inspect locations prior to job start-up. ▪ Verify via emails or phone that all utilities have visited the site and marked their respective utilities. ▪ If subcontractor calls One Call organization, require them to forward all e-mail responses from member utilities as they receive them. ▪ If verification cannot be done remotely, send worker to site to inspect ground for markings (cheaper to identify issues prior to mobilization to the site). ▪ Document all phone communications with driller about utility clearance issues and requests (e-mail the conversation highlights or document in a field notebook – it becomes part of the file record) ▪ Call any member utilities that have not responded indicating they have cleared or marked-out utilities. Place the call morning of ticket start date (e.g., 3 days prior to actual start date). Document the phone conversations in notes or e-mails to the file. ▪ If town services (e.g., sanitary sewer, storm sewer, water) aren't listed as a One Call member, contact the town office to schedule mark-out, obtain copies of utility networks, and identify the appropriate town contacts. ▪ If town maps have lateral connections to private lots marked and /or if we are drilling along road right-of way opposite developed properties, identify the	H

AHA - Utility Clearance
Activity Description

Job Steps	Hazards	Controls	RAC
		locations of the lateral connections. This may mean contacting abutters and asking to look in basements for location of pipes. If possible, do this during a site visit prior to field start. If not, it should occur during the first day of work so any issues can be identified and decisions made on the risk of proceeding. ▪ Walk all planned locations with the subcontractor, prior to start of excavation/drilling to identify marked utilities and note any uncertainties. Field Lead should call PM and relay any issues. Document this inspection in the field book and note subcontractor's responses to any AMEC concerns.	
	1c) Locating Utilities on Private Property	Locating Utilities on Private Property: ▪ Hire private utility locater company ▪ Locate underground utilities by ground penetrating radar, electromagnetic, deep metal detector, pipe transmitter, vibracator, etc ▪ Review locations with property owner, member of operations and maintenance. ▪ Check as built drawings when available. Be aware possible drawing error or construction drawings may not be representative of actual locations. ▪ Use field clues such as manhole covers, repaved areas, depressions, disturbed areas, signs and postings, etc. as indications of access to utilities or recently installed/moved utilities.	**H**
	1d) Lack of Reliable Data on Utility Locations	Lack of Reliable Data on Utility Locations: ▪ If the surveys are not providing reliable data, plan to use non-destructive means to drill/excavate e.g., soil vacuum, water jet, air knife and/or hand tools. ▪ Use caution and proper PPE when using hand tools (hand augers, posthole diggers, shovels, steel rods, etc.). ▪ Involve the project manager, technical lead and/or office manager to make a decision to proceed or move the location	**H**
	1e) Working Near Live Utilities	Working Near Live Utilities: ▪ If live utilities are known to be present near drilling/excavation location, if possible, move drilling/excavation to another location. ▪ Lockout/Tagout utilities, if possible. ▪ Use non-destructive means to drill/excavate (see # 1D) until safe to proceed.	**H**
2. Walking Around Site Identifying Utility Clearances.	2a) Slips/Trips/Falls	Slips/Trips/Falls ▪ Keep work area free of excess material and debris ▪ Remove all trip hazards by keeping materials/objects organized and out of walkways ▪ Keep work surfaces dry when possible ▪ Wear appropriate PPE (see HASP) including non-slip rubber boots if working on wet or slick surfaces	**L**

AHA - Utility Clearance
Activity Description

Job Steps	Hazards	Controls	RAC
		▪ Install rough work surface covers where possible ▪ Stay aware of footing and do not run	
	2b) Heat/Cold Stress	Heat/Cold Stress: ▪ Take breaks if feeling faint or overexerted ▪ Consume adequate food/beverages (water, sports drinks) ▪ If possible, adjust work schedule to avoid temperature extremes	L
	2c) Biological Hazards: Insects, Snakes, Wildlife, Vegetation	Biological Hazards: Insects, Snakes, Wildlife, Vegetation ▪ Inspect work areas when arrive at site to identify hazard(s) ▪ Use insect repellant if observe mosquitoes/gnats ▪ Survey site for presence of biological hazards and maintain safe distance ▪ Wear appropriate PPE including leather gloves, long sleeves and pants, and snake chaps as warranted by site conditions	L
	2d) Traffic (including pedestrian)	Traffic (including pedestrian): ▪ Notify attendant or site owner/manager of work activities and location ▪ Use cones, signs, flags or other traffic control devices ▪ Wear appropriate PPE including high visibility clothing such as reflective vest ▪ Inspect area behind vehicle prior to backing and use spotter	M
	2e) Back strain due to lifting, pulling or tugging equipment	Back strain: ▪ Use mechanical aids when possible, if mechanical aids are not available, use two person lifts for heavy items. ▪ Use proper lifting techniques	L

AHA - Vehicle Travel – Journey Management Plan

Activity/Work Task:	Vehicle Travel – Journey Management Plan		
Project Location:	**Various**		
Contract Number:	**NYSDEC Superfund Program**		
Date Prepared:	**2/18/19**	**Date Accepted:**	**2/13/2020**
Prepared by (Name/Title):	Cindy Sundquist / CSP, CIH		
Reviewed by (Name/Title):	Jeff Tweeddale / CSP		

Overall Risk Assessment Code (RAC-Residual) Use highest code: **H**

Risk Assessment Code (RAC) Matrix

Severity \ Probability	Almost certain	Likely	Possible	Unlikely	Rare
Catastrophic	E	E	E	H	M
Major	E	H	H	M	L
Serious	H	H	M	L	VL
Minor	M	M	L	L	VL
Negligible	L	VL	VL	VL	VL

Notes: (Field Notes, Review Comments, etc.)

This AHA involves the following:

- Establishing site specific measures for driving a car or truck to or from the site.

This AHA is not an exhaustive summary of all hazards associated with the Site. Refer to the project HASP or client information for additional requirements, and emergency procedures.
Workers to follow general site safety controls for Hazard Signage/PPE, Housekeeping, Slips Trips and Falls, Biological hazards, Mobile equipment, Confined spaces, Fall hazards, Electrical, and any active operating equipment or construction activities.

Step 1: Review each **"Hazard"** to identify Probability and Severity (Refer to Risk Register)

"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Almost certain, Likely, Possible, Unlikely, Rare.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Major, Serious, Minor or Negligible

Step 2: Identify the RAC-Inherent as E, H, M, L or VL for each "Hazard" on AHA, **before controls are applied.**

Step 3: Identify the RAC-Residual as E, H, M, L or VL for each "Hazard" on AHA, **after controls are applied.**

Step 4: Annotate the overall highest RAC-Residual at the top of AHA.

E = Extremely High Risk
H = High Risk
M = Moderate Risk
L = Low Risk
VL = Very Low Risk

MANAGEMENT OF CHANGE: If there is a change or deviation from the planned activity, you must stop the job and re-evaluate the risk assessment and the precautions taken. Any changes to work described in this AHA shall require review by a Qualified Person.

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
Safe Vehicle – Inspect prior to accepting Roadside safety kit (High vis safety vest, reflective markers)	**Competent / Qualified Personnel:** See site specific HASP (Name – Position/Employer) **Training requirements:** Current Driver's license	Daily inspection of equipment per manufacturer's instructions.

AHA - Vehicle Travel – Journey Management Plan

Job Steps	Hazards	RAC Inherent	Controls	RAC Residual
1. Prepare for travel	Distractions - loss of focus	VL	▪ Ensure you have all materials with you necessary to conduct work effort. ▪ Determine training and medical monitoring needs and ensure all required Health and Safety training and medical monitoring has been received and is current. ▪ Ensure all workers are fit for duty (alert, well rested, and mentally and physically fit to perform work assignment). ▪ Determine if trip is considered Non-Routine: o Driving on business makes up <50% of the driver's daily job; o The route is variable and not part of the driver's daily or weekly drive plan; o Trips during darkness in excess of 20 miles (32 km); o Environmental or visibility hazards require a reduction in vehicle operating speed; o The terrain could reasonably be anticipated to impact the shifting of loads and/or require the use of 4-wheel drive; and o Security concerns warrant higher level of caution. ▪ If non-routine, complete a Journey Management Plan ▪ Plan route. Adjust based on driving conditions. Consider: o Communications o Other Wood E&IS vehicles on same route ("convoy") o Emergency plans o Meeting point(s) o Fuel / food / rest points o Review rules and procedures (driving, remote work, lone worker) o Other ▪ If renting vehicle, select best vehicle type for road and travel conditions (e.g., AWD or 4WD if snow/ice, larger vehicle if wildlife encouners are a possibility, etc. ▪ Evaluate weather conditions prior to starting trip. Postpone trip if possible, If travel during bad weather required, adjust route to avoid backroads as much as possible. ▪ Ensure that a copy of the current insurance certificates and incident reporting procedures/forms are available during travel. ▪ If long trip, notify others of your estimated arrival time so they can follow up if you don't arrive on time.	VL

	Driver Fatigue	H	▪ Get pleanty of rest prior to starting trip
			▪ Consider Wood policy on driving and work (duty) hours limitations when planning trip:
			  ○ Maximum driving time between breaks – 4.5 hours followed by 30 minute break
			  ○ Maximum duty hours within a rolling 24-hour period – 14 duty hours
			  ○ Maximum driving hours within a single rolling 24-hour period – 10 hours total, excluding communting time (11 hours including commuting time)
			  ○ Off duty period in a rolling 7-day period - Minimum of a continuous 24 hour break
			▪ Comply with the Jurisdictional P&O Work-Week Schedule Procedures and do not exceed the legislated maximum hours of work, rest periods, and/or Agency Approvals for excess hours of work for the specific activity/project.
			▪ Comply with the E&IS HSE Fatigue Management Procedures (CAN: HSE-PRO-100387, US Fatigue Management Procedure HSE-PRO-100xxx)
			▪ Consider alternatives (e.g., other modes of transportation such as by air, staying over at site location an extra day, breaking up trip by staying at hotel at halfway point, etc.)
			▪ Avoid driving after dark
				M

	Vehicle defects	L	Inspect vehicle for defects such as: ▪ Inadequate fluids (e.g., fuel, antifreeze, oil, windshield washer) ▪ Worn/flat tires ▪ Windshield wipers loose, worn, or torn ▪ Oil puddles under vehicle ▪ Headlights, brake lights, turn signals not working ▪ Exterior or interior damage (e.g., scratches, dents)	L
	Insufficient emergency equipment, unsecured loads	M	▪ Ensure vehicle has first aid kit and that all contents are current (if first aid kits are not provided at the site). ▪ Ensure vehicle is equipped with warning flashers and/or flares and that the warning flashers work. ▪ Cell phones are recommended to call for help in the event of an emergency. ▪ Vehicles carrying tools must have a safety cage in place; all tools must be properly secured. ▪ Valuables shall be removed from the vehicle overnight if possible. ▪ Ensure parking cones are present, if applicable.	L

2. Operating vehicles	Collisions, unsafe driving conditions	**H**	▪ Drive defensively! ▪ Each operator shall observe all traffic laws, including established speed limits. ▪ Do not use cruise control during inclement (wet/icy) road conditions. ▪ Do not eat or use tobacco products (e.g. smoking or e-cigarettes) in the vehicle. ▪ Avoid any distracting or potentially distracting activities while operating a vehicle, including but not limited to; the use of any device that requires the use of headphones; reaching for items under the seat, in the back seat or in the glove box. ▪ Pets are prohibited to ride in a company vehicle. ▪ Non-E&IS employees are prohibited from operating Company vehicles. ▪ Non-E&IS employees are prohibited from riding in E&IS vehicles unless their presence is required for the conduct of business for E&IS or its client; nonwork riders (e.g., hitch hikers, girl friend, mother-in-law) allowed in vehicles, unless authorized on a case-by-case basis. ▪ Seat belts must be used at all times by all occupants when the vehicle is in gear. ▪ Drive at safe speed for road conditions. ▪ Maintain adequate following distance. ▪ Pull over and stop if you have to look at a map or use a cell phone. ▪ Cellular telephones are prohibited from use by the operator while driving or even when stopped at stop lights, including texting, emailing including the use of BlueTooth devices or car microphone/speakers. ▪ Mount global positioning satellite (GPS) navigating devices within the vehicle as to not obstruct the driver's view of the roadway and attached so that it will not injure any of the vehicle's occupants in the event of a sudden stop. Window mounting of navigation devices is prohibited. ▪ The use of GPS enabled smartphones is allowed as long as the device is mounted, directions setup prior to driving, has an audio feature, is not adjusted while driving. ▪ Try to park so that you don't have to back up to leave. ▪ If backing is required, walk around vehicle to identify any hazards (especially low level hazards that may be difficult to see when in the vehicle) that might be present. Use a spotter if necessary.	**M**
3.	Intersections	**H**	▪ Proceed carefully through intersections ▪ Ensure that cross traffic has stopped before proceeding, especially if the light has just turned green. Look out for drivers running red lights! ▪ When merging into traffic or turning, ensure vehicles in front have merged/turned (and not stopped) prior to proceeding.	**M**

4.	Dusty, winding, narrow roads	H	▪ Go slow around corners, occasionally clearing the windshield.	M
5.	Rocky or one-lane roads	H	▪ Stay clear of gullies and trenches, drive slowly over rocks. ▪ Yield right-of-way to oncoming vehicles---find a safe place to pull over.	M
6.	Stormy weather	H	▪ Inquire about conditions before leaving the office. ▪ Be aware of oncoming storms.	M
7.	When angry or irritated	H	▪ Attitude adjustment; change the subject or work out the problem before driving the vehicle. Let someone else drive.	M
8.	Turning around on narrow roads	H	▪ Safely turn out with as much room as possible. ▪ Know what is ahead and behind the vehicle. ▪ Use a spotter if available.	M
9.	Sick or medicated	H	▪ Let others on the crew know you do not feel well. ▪ Let someone else drive.	L
10.	On wet or slick roads	H	▪ Drive slow and safe.	M
11.	Animals on road	H	▪ Drive slowly, watch for other animals nearby. ▪ Be alert for animals darting out of wooded areas	H
12.	Vehicle accident	H	▪ Employees should follow Wood E&IS vehicle operation policy and be aware of all stationary and mobile vehicles.	H
13. Parking	Striking other vehicles, objects	▪ H	▪ Choose parking spot that is away from other vehicles, if possible. ▪ Choose a spot that will allow the driver to drive forward when leaving the site. ▪ Back into parking spots, or pull through when parking in perpendicular parking spaces (drive forward into angle/herring bone type parking spots). ▪ The vehicle gear must be placed in park and parking brakes engaged, when required. ▪ When two or more occupants are in a Company vehicle, one occupant will act as a spotter and safely stand outside the vehicle, to guide the vehicle into and out of a parking spot to ensure it does not hit another vehicle, pedestrian, barrier or any other object.	M
14. Leaving parking spaces	Striking other vehicles, objects	H	▪ Walk around the vehicle before leaving and identify hazards (low lying objects, location of other vehicles or pedestrians, other vehicles with drivers that may be leaving at the same time, etc. ▪ If backing is unavoidable, use a spotter if a second person is available; if no spotter available, back slowly, checking for other vehicles, pedestrians, etc. ▪ Keep alert!	M
15. Driving back from the job site	See hazards listed for “Operating vehicles” Key Work Step	H	▪ See safe work practices for “Operating vehicles” Key Work Step	M
16. Parking at office	Striking other vehicles, objects	H	▪ See safe work practices for “Striking other vehicles, objects” Hazard/Potential Hazard for “Parking at job site” Key Work Step	M

17. End travel	Vehicle defects	H	▪ Inspect vehicle. ▪ Repair or initiate repair of all vehicle deficiencies that occurred due to the trip.	M

AHA - Vehicle Travel – Journey Management Plan

FIELD ACKNOWLEDGEMENT OF PERSON(S) CARRYING OUT WORK

NAME(S):	SIGNED:	DATE:
SITE SUPERVISOR:	SIGNED:	DATE:

Note: For tasks/activities that extend beyond a single day, use attached DAILY RENEWAL form or FLRA.

AHA DAILY RENEWAL		
Date:	Weather:	
Changes noted:		
Site Supervisor (Print & Sign):		
Name(s):		
Date:	Weather:	
Changes noted:		
Site Supervisor (Print & Sign):		
Name(s):		
Date:	Weather:	
Changes noted:		
Site Supervisor (Print & Sign):		
Name(s):		

AHA - Working with Preservatives
Activity Description

Activity/Work Task:	Working with Preservatives			Overall Risk Assessment Code (RAC) (Use highest code)	L
Project Location:	**Various**				
Project Number:	**NYSDEC Superfund Program**				
Date Prepared:	**11/18/19**	**Date Accepted:**	**2/13/2020**		
Prepared by (Name/Title):	Nate Vogan / Senior Geologist				
Reviewed by (Name/Title):	Jeff Tweeddale / CSP				

Risk Assessment Code (RAC) Matrix

Severity	Probability				
	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M
Critical	E	H	H	M	L
Marginal	H	M	M	L	L
Negligible	M	L	L	L	L

This AHA involves the following:

- Establishing site specific measures for working with sample preservatives
- To the extent practicable, sampling containers should be pre-preserved by the laboratory. Some exceptions may apply (e.g. hexane wipe sampling for PCBs)

This AHA is not an exhaustive summary of all hazards associated with the Site. Refer to the site HASP for additional requirements.

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (See above)

"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.

RAC Chart

- **E = Extremely High Risk**
- **H = High Risk**
- **M = Moderate Risk**
- **L = Low Risk**

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
PPE (safety glasses, splash goggles, chemical resistant gloves), ventilate if necessary First aid kit with eye wash or water for eye wash available if needed	**Competent / Qualified Personnel:** See site specific HASP Name – Position/Employer **Training requirements:** HAZCOM PPE Site Specific HASP Orientation Toolbox safety meeting Task kick-off meeting	Daily inspection of equipment per manufacturer's/suppliers instructions. Inspect all PPE prior to use Check preservative expiration dates prior to use

AHA - Working with Preservatives
Activity Description

Job Steps	Hazards	Controls	RAC
1. Opening the box of ampoules (e.g. hexane for wipe sampling)	1A) Cuts or punctures with a knife	1A) Cuts or punctures with a knife ▪ Wear Cut resistant gloves ▪ Use appropriate techniques when handling a knife. ▪ Always cut away from you.	L
	1B) Broken ampoules in the box. Cuts from the broken glass.	1B) Broken ampoules in the box. Cuts from the broken glass. ▪ Wear safety glasses and cut resitant gloves. ▪ Dispose of the preservative and broken glass by approved methods.	L
	1C) Broken ampoules in the box. Breathing fumes.	1C) Broken ampoules in the box. Breathing fumes. ▪ Wear safety glasses and protective gloves. ▪ Always work in a well-ventilated area.	L
2. Breaking top of glass ampoule (e.g. hexane for wipe sampling)	2A) Cuts from the broken glass.	2A) Cuts from the broken glass ▪ Wear safety glasses (or splash goggles) and protective gloves. ▪ Use a paper towel to wrap ampoule in to snap the top or use an ampoule breaker. ▪ Always point the ampoule away from you when you snap off the top.	L
	2B) Skin contact chemical burns.	2B) Skin contact chemical burns. ▪ Wear safety glasses (splash goggles) and protective gloves. ▪ Fumes may come into contact with the perspiration on your skin and rehydrate to form an acid. ▪ If your skin itches, flush affected area for 15 minutes with water.	L
	2C) Eye contact	2C) Eye contact ▪ Wear safety glasses (splash goggles). ▪ If preservative splashes in the eyes, flush eyes for 15 minutes with water. Seek medical advice.	L
	2D) Breathing fumes	2D) Breathing fumes ▪ HNO3 and HCL have high vapor pressure. Always work in a well-ventilated area.	L
3. Sampling using pre-preserved containers	3A) Chemical reaction	3A) Chemical reaction ▪ Wear safety glasses and protective gloves. Acid may react with high alkaline sample and fizz (releases CO2).	L
	3B) Eye contact	3B) Eye contact ▪ Wear safety glasses (spalsh goggles). ▪ If acid splashes in the eyes, flush eyes for 15 minutes with water. Seek medical advice.	L
	3C) Skin contact chemical burns.	3C) Skin contact chemical burns. ▪ Wear safety glasses and protective gloves.	L
4. Ampoule disposal	4A) Cuts from the broken glass.	4A) Cuts from the broken glass. ▪ Wear safety glasses and protective gloves. ▪ Place used ampoules in an empty, non-reactive container in the field and dispose by approved methods (e.g. municipal solid waste).	L

AHA - Working with Preservatives
Activity Description

Activity/Work Task:	**Mobilization/Demobilization and Site Preparation**		Substantial / High Risks:	Highest RAC: (residual)	**M**
Project Location:					
Contract Number:					
Date Prepared:	**9/18/19**	**Date Accepted:**			
Prepared by (Name/Title):	Cindy Sundquist Eastern Group Senior HSE Manager				
Reviewed by (Name/Title):					

Risk Assessment Code (RAC) Matrix

Severity \ Probability	Almost certain	Likely	Possible	Unlikely	Rare
Catastrophic	H	H	S	S	M
Critical	H	S	S	M	L
Marginal	S	M	M	L	L
Negligible	M	L	L	L	L

Notes: (Field Notes, Review Comments, etc.)

This AHA involves the following:

- Establishing site specific measures for the specified activity
- **BOLD hazards correspond to Substantial or High Risk**.

This AHA is not an exhaustive summary of all hazards associated with the Site. Refer to the project HASP or client information for additional requirements, and emergency procedures.

Workers to follow general site safety controls for Hazard Signage/PPE, Housekeeping, Slips Trips and Falls, Biological hazards, Mobile equipment, Confined spaces, Fall hazards, Electrical, and any active operating equipment or construction activities.

Step 1: Review each **"Hazard"** to identify Probability and Severity (Refer to Project HSE Risk Characterization Form)

- **"Probability"** is the likelihood to cause an incident, near miss, or accident and identified as: Almost certain, Likely, Possible, Unlikely, Rare.
- **"Severity"** is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal or Negligible

Step 2: Identify the RAC-Inherent as H, S, M, or L for each "Hazard" on AHA, ***before* controls are applied.**

Step 3: Identify the RAC-Residual as H, S, M, or L for each "Hazard" on AHA, ***after* controls are applied.**

Step 4: Annotate the overall highest RAC-Residual at the top of AHA.

Risk Categories
H = High Risk
S = Substantial Risk
M = Moderate Risk
L = Low Risk



MANAGEMENT OF CHANGE: If there is a change or deviation from the planned activity, you must stop the job and re-evaluate the risk assessment and the precautions taken. Any changes to work described in this AHA shall require review by a Qualified Person.

Check all Life Saving Rules that apply:								
☐ Bypassing Safety Controls	☐ Confined Space	☑ Driving	☐ Energy Isolation
☐ Hot Work	☑ Line of Fire	☐ Work Authorization	☐ Safe Mechanical Lifting	☐ Working at Height

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
When initially entering the Site, the following PPE must be donned:	**Competent / Qualified Personnel:** Name – Position/Employer	• Daily inspection of equipment per manufacturer's instructions. Tag tools that are defective and remove from service. • Inspect power cord sets prior to use.

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
• Work uniform or work clothes • Hard hat* • Safety glasses* • Steel-toed boots* • Gloves* • Reflective vests* *Mandatory PPE for all Honeywell projects	**Training Requirements:** • HAZWOPER (40-hour, 8-hour Refresher, Supervisory, if applicable) • Site-Specific HASP Orientation • Toolbox safety meeting • Task kick-off meeting	• Inspect all PPE prior to use.

Job Steps	Hazards	RAC Inherent	Controls	RAC Residual
1. Prepare for Site Visit	1a) N/A	**L**	Prior to leaving for site: ▪ Obtain and review HASP prior to site visit, if possible ▪ Determine PPE needs – bring required PPE to the site, if not otherwise being provided at the site (e.g., steel toed boots) ▪ Determine training and medical monitoring needs and ensure all required Health and Safety training and medical monitoring has been received and is current ▪ Ensure all workers are fit for duty (alert, well rested, and mentally and physically fit to perform work assignment) ▪ If respiratory protection is required/potentially required, ensure that training and fit-testing has occurred within the past year. ▪ Familiarize yourself with route to the site	**L**
2. Driving to the Site	See Vehicle Travel – Journey Management Plan AHA	**S**	See Vehicle Travel – Journey Management Plan AHA (note: Driving hazards are not counted towards the overall risk assessment code for the task)	**Exempt**
3. Gain permission to enter site	4a) Hostile landowner, livestock, pets	**S**	Hostile landowner, livestock, pets ▪ Talk to land owner, be courteous and diplomatic ▪ Ensure all animals have been secured away from work area	**M**
4. Mobilization/ Demobilization of Equipment and Supplies	4a) Struck by Heavy Equipment / Vehicles	**H**	Struck by heavy equipment: ▪ Be aware of heavy equipment operations. ▪ Keep out of the swing radius of heavy equipment. ▪ Ground personnel in the vicinity of heavy equipment operations will be within the view of the operator at all times ▪ Employees shall wear a high visibility vest or T-shirt (reflective vest required if working at night).	**M**

Job Steps	Hazards	RAC Inherent	Controls	RAC Residual
			▪ Ground personnel will be aware of the counterweight swing and maintain an adequate buffer zone. ▪ Ground personnel will not stand directly behind heavy equipment when it is in operation.	
	4b) Struck by Equipment / Supplies	**M**	Struck by Equipment/Supplies: ▪ Workers will maintain proper space around their work area, if someone enters it, stop work. ▪ When entering another worker's work space, give a verbal warning so they know you are there.	**L**
	4c) Overexertion Unloading / Loading Supplies	**S**	Overexertion Unloading/Loading Supplies: ▪ Train workers on proper body mechanics, do not bend or twist at the waist while exerting force or lifting. ▪ Tightly secure all loads to the truck bed to avoid load shifting while in transit.	**M**
	4d) Overexertion Unloading / Loading Supplies	**S**	Caught in/on/between: ▪ Do not place yourself between two vehicles or between a vehicle and a fixed object.	**M**
	4e) Slip/Trip/Fall	**M**	Slip/Trip/Fall: ▪ Mark all holes and low spots in area with banner tape. Instruct personnel to avoid these areas. ▪ Drivers will maintain 3 point contact when mounting/dismounting vehicles/equipment. ▪ Drivers will check surface before stepping, not jumping down.	**L**
	4f) Vehicle accident	**S**	Vehicle accident**:** (note: Driving hazards are not counted towards the overall risk assessment code for the task) ▪ Employees should follow Wood E&IS Operation of Company Vehicles procedure and be aware of all stationary and mobile vehicles.	**Exempt**
5. Site Preparation	Slip/Trip/Fall	**M**	Slip/Trip/Fall: ▪ Mark all holes and low spots in area with banner tape. Instruct personnel to avoid these areas	**L**
6. Installation of soil erosion and sediment controls	6a) Overexertion	**S**	Overexertion: ▪ Workers will be trained in the proper method of placing erosion controls. ▪ Do not bend and twist at the waist while lifting or exerting force.	**M**

Job Steps	Hazards	RAC Inherent	Controls	RAC Residual
	6b) Struck by Equipment / Supplies	**M**	Struck by Equipment/Supplies: ▪ Workers will maintain proper space around their work area, if someone enters it, stop work. ▪ When entering another worker's work space, give a verbal warning so they know you are there.	**L**
7. Driving back from the jobsite	See Vehicle Travel – Journey Management Plan AHA	**S**	See Vehicle Travel – Journey Management Plan AHA (note: Driving hazards are not counted towards the overall risk assessment code for the task)	**Exempt**

FIELD ACKNOWLEDGEMENT OF PERSON(S) CARRYING OUT WORK

		SIGNED:	DATE:
NAME(S):			

SITE SUPERVISOR: _____ SIGNED: _____ DATE: _____

BY SIGNING – You Acknowledge that:

- I have read and understand all job steps, hazards and controls associated with today's work.
- Further, I WILL stop any job I think is unsafe.
- I have completed a site-specific HASP Orientation
- I have participated in a daily tailgate safety meeting

For tasks/activities that extend beyond a single day, use DAILY RENEWAL form or Point of Work Risk Assessment (PoWRa).

Applicable Procedures / Safe Work Practices (SWP) and Forms for Critical Hazards
(Instruction: Complete and append forms, as applicable)

Hazard	Procedure	SWP	Guidance / Form
Driving	Operation of Company Vehicles	SWP-Journey Management Planning	Required for non-routine or high-risk journeys.

Attached Guidance / Forms / Checklists

- Journey Management Plan Form

AHA DAILY RENEWAL

Date:	Weather:	
Changes noted:		
Site Supervisor (Print & Sign):		
Name(s):		
Date:	Weather:	
Changes noted:		
Site Supervisor (Print & Sign):		
Name(s):		
Date:	Weather:	
Changes noted:		
Site Supervisor (Print & Sign):		
Name(s):		

Check one
Initial Report: ☐
Update: ☐
Final Report: ☐ ___

INCIDENT ANALYSIS REPORT (IAR)

Amec Foster Wheeler E&I
Confidential - Privileged

Incident Potential Severity
Letter: Select One
Number: Select One
Investigation Level: Select One
Severity Matrix (LINK)

Group: Select One Group HSE Manager: ____ Incident Review Panel Team (if applicable): ____

Incident Date: _____ Report Date: _____

Section 1 – General Information

Employee Name: ____ Sex: ☐ M ☐ F Date of Birth: ____ Age Range: Select One

Job Position: Select One Hire Date: ____ Time employee began work: _____ Time of incident: ____ ☐ am | ☐ pm

Business Line: Select One Department Number: ____ Project Manager: ____

Project Name: ____ Project Number: ____ Client: ____

Office where employee works from: ____ Immediate Supervisor: ____ Hours employee worked during last 7 days: ____ hrs

Location: Select One Is this a Company controlled work site: ☐ Yes ☐ No Incident Assigned to: Select One

Location description: ____

Section 2 – Incident Type - Process (**mark at least ONE BOLD TYPE** and all that apply)

☐ **Fatality** ☐ **Environmental** ☐ **Injury/Illness Incident** If Injury/illness: Select One

☐ **Security** ☐ **Near Miss/Hazard ID** ☐ **Property Damage** If Damage: Select One ☐ 3rd Party?

☐ Hospitalization ☐ **Regulatory Inspection** ☐ **Notice of Violation or Citation** ☐ Agency Reportable

☐ Motor Vehicle Incident Involving Injury ☐ Other (describe): ___

Outcome/Result: Select One If "other", specify: ___ Source of Hazard: Select One If "other", specify: ___

Immediate Cause: Select One

A. If **injury/illness**: Indicate the part of the body: Select One If "other", specify: ___

Indicate body part location: Select One If "other", specify: ___

Injury Type: Select One If "other" specify: ___ Illness Type: Select One If "other", specify: ___

☐ Bleeding? Select One If yes, "First Aider" name: ___ ☐ Contact with blood/infectious material? Select One

Exposure Control Precautions taken by First Aider (check all that apply):

☐ None (If none, contact WorkCare) ☐ Gloves ☐ Previous HBV Immunization
☐ Immediate Personal Hygiene ☐ One-way CPR valve ☐ Recommended for HBV Immunization
☐ Eye protection ☐ Face mask ☐ Other (describe): ____

☐ Blood contaminated work area / surface? If contaminated, describe cleanup/disposal: ___

☐ Medical treatment provided (i.e. prescriptions, referrals, etc.). If medical treatment, describe: ___

☐ Physical limitations received from physician? If limitations, describe: ___ ☐ Modified Work Offer provided.

☐ Second medical opinion? If second opinion, describe: ___

☐ Workers Compensation claim filed? If filed, claim number: ___

B. If **property damage**: describe what happened and estimate ($) of damage to all objects involved? ___

C. If **environmental**: Environmental incident category: ☐ Pollution Event ☐ Non-conformance

Was Regulatory Action Taken: Select One If "Yes" describe: ___

Type of pollution event: Select One Type of substance: Select One Name, CAS#, physical state: ___

Quantity: ___ Substance Unit: Select One Source of release: Select One If "other", specify: ___

Duration of Breach: Select One Receiving Environment: Select One If "other", specify: ___

Level of Non-conformance: Select One Describe Non-conformance: ___

D. If **security**: Security Incident Type: Select One If Physical: Select One If Criminal: Select One If Intellectual: Select One

E. If an **inspection by a regulatory agency**, what agency, who were the inspectors, inspector contact information? ___

Section 3 – Incident Description

Attach and number additional pages, as needed, to ensure all details related to the incident are captured.

A. List the names of all persons involved in the incident, and employer information: ___

B. List the names of any witnesses, their employer, and a local/company telephone number or address: ___

C. Name of Employee's supervisor: ___ Contact phone number for supervisor: ___

D. What specific job/task or action was the employee(s) doing just prior to the incident: ___

E. Was a tool or equipment involved? ☐ Yes ☐ No What was it: ___ Last Inspection Date: ___Defects: ___

F. Explain in **detail** what happened: ___

G. Explain in **detail** what object or substance directly harmed the employee: ___

H. What were the weather conditions at time of incident?: ___

I. What was the lighting like at time of incident? Bright ☐ Shadows ☐ Dark ☐ Other: ___

J. List any damaged equipment or property (other than motor vehicles). Provide model and serial number **and** estimated costs to repair/replace damaged equipment or property, if applicable: ___

Section 4 - Incident Analysis

A. Was a Health and Safety Plan (HASP) or Activity Hazard Analysis (AHA) completed for the work being performed? ☐ Yes ☐ No
If "yes", Who prepared the document?: ___

B. Who and when was the last manager (Project, Unit, etc.) at the site of the incident?: ___

C. When and what safety training **directly related** to the incident has the person(s) involved had?: ___

D. List attached documentation (HASP acknowledgement forms, kickoff/daily/weekly meetings, inspections, photographs): ___

Section 5 - Incident Investigation Results and Corrective Actions

This section to be completed by the Group HSE Manager/IRP with support from location where incident occurred, in accordance with A-Z List of Accident Causes and Glossary of A-Z Causes (click links).

Causal Factors (Acts or Omissions / Conditions)

(Attach and number any additional pages as needed to completely address this section)

	IMMEDIATE CAUSE	IMMEDIATE CAUSE SUB-TYPE	DESCRIPTION
1	Select One	_____	_____
2	Select One	_____	_____
3	Select One	_____	_____
4	Select One	_____	_____

Root Cause(s) Analysis - The below items represents major root cause categories which have been determined to be Less Than Adequate (LTA). A more detailed determination of the root cause will be facilitated, if needed, by the applicable Group HSE Manager / IRP.

	ROOT CAUSE TYPE	ROOT CAUSE SUB-TYPE	DESCRIPTION
1	Select One	_____	_____

2	Select One	____	____
3	Select One	____	____
4	Select One	____	____

Amec Foster Wheeler Safety Rules and Safety Essentials

Safety Rules **Select all applicable breaches of rules or** ☐ None		**Safety Essentials** **Select all applicable breaches of behavioral expectations or** ☐ None	
☐ Permit to Work ☐ Ground Disturbance ☐ Driving ☐ Confined Spaces ☐ Working At Height	☐ Lifting Operations ☐ Energy Isolations ☐ Pressure Testing ☐ Plant and Equipment ☐ Housekeeping	☐ Always Take Care ☐ Follow the Rules ☐ Do a Risk Assessment	☐ You Must Intervene ☐ Manage Any Change ☐ Wear the Correct PPE

Corrective Actions

Root Cause #	**Corrective Actions Taken** (Attach additional pages as needed to completely address this section)	**Responsible Person**	**Proposed Completion Date**	**Closed on Date**	**Verified by and Date Verified**
____	___	___	___	___	___
____	___	___	___	___	___
____	___	___	___	___	___
____	___	___	___	___	___
____	___	___	___	___	___

Section 6 - Notifications, Certification & Approvals

Check the appropriate boxes indicating the applicable reports have been made to the following applicable organizations:

Auto Insurance Carrier was called ☐ Group HSE Manager Notified ☐

WorkCare was called ☐ Post-incident Drug/Alcohol Testing Performed ☐

Incident Report prepared by: ___

Employee (s): ___	Date: ___	Employee's Supervisor: ___	Date: ___
HSE Coordinator/Project/Unit Manager: ___	Date: ___	Group HSE Manager: ___	Date: ___

VEHICLE INCIDENT REPORT (VIR)
Amec Foster Wheeler E&I
Confidential - Privileged

Section 1 - General Information Date of Incident: _____

Time incident occurred: _____ ☐ am | ☐ pm | Illumination: ☐ Dark ☐ Dusk ☐ Light | Road Condition: ☐ Dry ☐ Wet ☐ Icy/snow

Were police summoned to scene? ☐ Yes ☐ No Police Department and Location: _____

Report #; _____ Officer's Name: _____ Officer's Badge Number: _____

Section 2 - Company Driver and Vehicle

Driver's name: _____ D/L #: _____ State: _____

Driver's home office address: _____ Driver's Phone #: _____

Company Vehicle #: _____ Year: _____ Model: _____ License #: _____ State: _____

Company car?: ☐ Yes ☐ No Personal Vehicle?: ☐ Yes ☐ No Rental Vehicle?: ☐ Yes ☐ No

If rental, rented from: _____

Passenger/Witness Name(s): _____ Address: _____ Telephone: _____

Passenger/Witness Name(s): _____ Address: _____ Telephone: _____

Damage to vehicle: _____

Was an employee injured?: ☐ Yes ☐ No If yes, please describe: _____

Injuries to others?: ☐ Yes ☐ No If yes, please describe: _____

Vehicle was being used for: Company business ☐ Yes ☐ No Personal business ☐ Yes ☐ No

Towed?: ☐ Yes ☐ No If yes, by whom?: _____ To Where?: _____

Section 3 - Other Driver and Vehicle Information

Driver's Name: _____ D/L # : _____ State: _____

Current address: _____ City: _____ State: _____

Telephone: _____ Work: _____ Cell: _____

Registered Owner's Name: _____ Address: _____ City: _____ State: _____

(verify registration document)

The Other Vehicle: Make: _____ Model: _____ Year: _____ License #: _____ State: _____

Insurance company name: _____ Address: _____ Phone #: _____

Policy No.: _____ Contact Person: _____ Phone #: _____

Passenger/Witness Name(s): _____ Address: _____ Telephone: _____

Passenger/Witness Name(s): _____ Address: _____ Telephone: _____

Damage: (*Make note of pre-existing damage and take pictures if possible – you may attach additional pages if necessary):* _____

Injuries to other driver/passengers: _____

Section 4 – Approvals (signatures required)

Form completed by (please print): _____ Date: _____

Signature: _____

Office/Project Manager (please print): _____ Date: _____

Signature: _____

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Things to Do First In The Event Of a Motor Vehicle Incident

GENERAL INFORMATION

1. Do not decide on your own whether a particular incident is "covered" by insurance. Should there be any doubt, it is always preferable to report an occurrence, as this allows underwriters, the Risk Management Department and insurance adjusters to determine if a covered loss has taken place.

2. Policy Conditions do require that all losses and occurrences, which may result in a claim be promptly reported.

3. Do not admit liability or offer your opinion of liability to anyone.

4. Complete this IAR/VIR form promptly and forward with all applicable supporting documentation. It is essential both division and location information be provided.

5. For automobile collisions within the **United States**, please indicate on the IAR form that you have contacted Zurich at:

Zurich Insurance Company
1-800-987-3373 or
1-877-928-4531
24 hours a day, 7 days a week

6. For automobile collisions within **Canada**, please indicate on the IAR form that you have contacted Zurich at:

Crawford Adjusters Canada
Claims Alert
1-888-218-2346
24 hours a day, 7 days a week

7. Information on the use of rental and personal vehicles at work and insurance are at the links for **Canada** and **US**.

The more details you have the better but, don't delay reporting if you don't have all of the information - that may be obtained later. A Zurich trained operator will answer your call and ask for all relevant information regarding the incident. The initial information required includes:

- Your division,
- Office location and division contact name – advise that you are an AMEC Company
- Name, drivers license and phone number of the driver involved in the loss
- Description of the vehicle which he/she was driving (i.e., year, make, model, license plate number, serial number)
- Date, time and location of incident
- Passenger information (if applicable)
- Third party information (i.e., name, phone number, address, vehicle information, insurance information)
- If any injuries occurred (if applicable)
- Police information
- Witness information (if applicable)

Call 911 if there are serious injuries!

If you are injured or think you were injured, **contact your supervisor and call WorkCare at 888-449-7787**. Your supervisor will notify your HSE Coordinator and your Group HSE Manager. For additional instructions on what to do, go to Amec Foster Wheeler's HSE website at:

http://ee.amecnet.com/she/sheweb/incident_reporting.htm

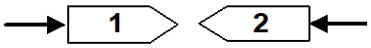
1. Call for an officer if the incident occurred on public property (streets, highways or roads). Disputes often arise between the parties involved as to who was at fault; therefore, a police report is important. If an officer is unable to attend the scene of the collision, a counter police report may be filed at most stations. Insurance companies rely on police reports to determine liability.
2. Complete the Incident Investigation Report and the Vehicle Incident Report forms. It is important that both these forms are completed in detail. Include a diagram of the incident on the provided sheet. Incomplete information may lead to delays in processing associated claims and in helping to prevent this type of incident from occurring again.
3. Give only information that is required by the authorities or as directed by Amec Foster Wheeler contractual requirements.
4. Sign only those statements required by the authorities or as directed by Amec Foster Wheeler contractual requirements. Do not sign away your or the company's rights.

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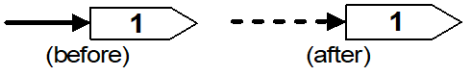
Vehicle Incident Diagram

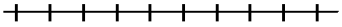
This or a similar diagram must be completed with all VIRs

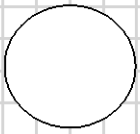
Instructions:

1. Number each vehicle and show directions 

2. Use a solid line to show path before incident and use a dotted line to show path after incient



3. Show pedestrian/non-motorist by: 
4. Show railroad by: 
5. Indicate north by arrow as: 
6. Show street or highway names or numbers
7. Show signs, signals, warning and traffic controls.



Indicate North
by Arrow

Prepared by: _____ **Date:** _____

GROUND DISTURBANCE INCIDENT REPORT (GDR)

Amec Foster Wheeler E&I

Section 1 – General Information

Employee Name: _____ Time of incident: _____ ☐ am | ☐ pm Time Reported:_____ ☐ am | ☐ pm Report Date: _____

Project Name: _____ Project Number: _____ Client: _____

List of All Parties Present

Name	Company	Telephone No.	Role
____	____	____	____
____	____	____	____
____	____	____	____
____	____	____	____
____	____	____	____

Describe the chronological description of the incident and response:____

Section 2 – Date and Location of Event

A. *Date of Event: (MM/DD/YYYY)

B. ***Country** ***State** ***County** **City**

C. **Street address** **Nearest Intersection**

D. *Right of Way where event occurred

E. Public: ☐ City Street ☐ State Highway ☐ County Road ☐ Interstate Highway ☐ Public-Other

F. Private: ☐ Private Business ☐ Private Land Owner ☐ Private Easement

G. ☐ Pipeline ☐ Power /Transmission Line ☐ Dedicated Public Utility Easement

☐ Federal Land ☐ Railroad ☐ Data not collected ☐ Unknown/Other

List attached documentation (Public Utility Locates, Private Utility Locates, Copy of notifications submitted to Owner or other utility Owners, photographs): _____

Section 3 – Affected Facility Information

***What type of facility operation was affected?**

☐ Cable Television ☐ Electric ☐ Natural Gas ☐ Liquid Pipeline ☐ Sewer (Sanitary Sewer)

☐ Steam ☐ Telecommunications ☐ Water ☐ Unknown/Other

***What type of facility was affected?**

☐ Distribution ☐ Gathering ☐ Service/Drop ☐ Transmission ☐ Unknown/Other

Was the facility part of a joint trench?

☐ Unknown ☐ Yes ☐ No

Was the facility owner a member of One-Call Center?

☐ Unknown ☐ Yes ☐ No

Section 4 – Excavation Information

***Type of Excavator**

☐ Contractor ☐ County ☐ Developer ☐ Farmer ☐ Municipality ☐ Occupant
☐ Railroad ☐ State ☐ Utility ☐ Data not collected ☐ Unknown/Other

***Type of Excavation Equipment**

☐ Auger ☐ Backhoe/Trackhoe ☐ Boring ☐ Drilling ☐ Directional Drilling
☐ Explosives ☐ Farm Equipment ☐ Grader/Scraper ☐ Hand Tools ☐ Milling Equipment
☐ Probing Device ☐ Trencher ☐ Vacuum Equipment ☐ Data Not Collected ☐ Unknown/Other

***Type of Work Performed**

☐ Agriculture ☐ Cable Television ☐ Curb/Sidewalk ☐ Bldg. Construction ☐ Bldg. Demolition
☐ Drainage ☐ Driveway ☐ Electric ☐ Engineering/Survey ☐ Fencing
☐ Grading ☐ Irrigation ☐ Landscaping ☐ Liquid Pipeline ☐ Milling
☐ Natural Gas ☐ Pole ☐ Public Transit Auth. ☐ Railroad Maint. ☐ Road Work
☐ Sewer (San/Storm) ☐ Site Development ☐ Steam ☐ Storm Drain/Culvert ☐ Street Light
☐ Telecommunication ☐ Traffic Signal ☐ Traffic Sign ☐ Water ☐ Waterway Improvement
☐ Data Not Collected ☐ Unknown/Other

Section 5 – Pre-Excavation Notification

***Was the One-Call Center notified?**

☐ Yes ☐ No If Yes, which One-Call Center? Ticket number:

Was Private Contract Locator used?

☐ Yes ☐ No

Section 6 – Locating and Marking

***Type of Locator**

☐ Utility Owner ☐ Contract Locator ☐ Data Not Collected

***Were facility marks visible in the area of excavation?**

☐ Yes ☐ No ☐ Data Not Collected

***Were facilities marked correctly?**

☐ Yes ☐ No ☐ Data Not Collected

What technology was used to locate utilities?

☐ Maps ☐ Active(transmitter+receiver) ☐ Passive (receiver only) ☐ GPR
☐ Acoustic ☐ Magnetic ☐ Infrared ☐ Unknown/Other

What Factors affected the ability to locate services?

☐ Soil Type:_____ ☐ Non-Grounded ☐ Common Bonded ☐ Depth
☐ Electromagnetic interference ☐ Parallel facilities ☐ Congested facilities ☐ Unknown/Other

Section 7 – Excavator Downtime

Did Excavator incur down time?

☐ Yes ☐ No

If yes, how much time?

☐ Unknown ☐ Less than 1 hour ☐ 1 hour ☐ 2 hours ☐ 3 or more hours Exact Value _____If

Estimated cost of down time?

☐ Unknown ☐ $0 ☐ $1 to 500 ☐ $501 to 1,000 ☐ $1,001 to 2,500 ☐ $2,501 to 5,000
☐ $5,001 to 25,000 ☐ $25,001 to 50,000 ☐ $50,001 and over Exact Value _____

Section 8 – Description of Damage

***Was there damage to a facility?**
☐ Yes ☐ No (i.e. near miss)
***Did the damage cause an interruption in service?**
☐ Yes ☐ No ☐ Data Not Collected ☐ Unknown/Other
If yes, duration of interruption
☐ Unknown ☐ Less than 1 hour ☐ 1 to 2 hrs ☐ 2 to 4 hrs ☐ 4 to 8 hrs ☐ 8 to 12 hrs ☐ 12 to 24 hrs
☐ 1 to 2 days ☐ 2 to 3 days ☐ 3 or more days ☐ Data Not Collected Exact Value _____
Approximately how many customers were affected?
☐ Unknown ☐ 0 ☐ 1 ☐ 2 to 10 ☐ 11 to 50 ☐ 51 or more Exact Value _____
Estimated cost of damage / repair/restoration
☐ Unknown ☐ $0 ☐ $1 to 500 ☐ $501 to 1,000 ☐ $1,001 to 2,500 ☐ $2,501 to 5,000
☐ $5,001 to 25,000 ☐ $25,001 to 50,000 ☐ $50,001 and over Exact Value _____
Number of people injured
☐ Unknown ☐ 0 ☐ 1 ☐ 2 to 9 ☐ 10 to 19 ☐ 20 to 49 ☐ 50 to 99
☐ 100 or more Exact Value _____
Number of fatalities
☐ Unknown ☐ 0 ☐ 1 ☐ 2 to 9 ☐ 10 to 19 ☐ 20 to 49 ☐ 50 to 99
☐ 100 or more Exact Value _____

Was there a Product Release?
Product Release: ☐ No ☐ Yes ☐ N/A Type: ____ **If Yes, Incident Type is Environmental Report.**
Volume: ____ Spill Controls: ____
Repair Process: ____

Section 9 – Description of the Root Cause Link to GDR Root Cause Tip Card

Please choose one

One-Call Notification Practices Not Sufficient
☐ No notification made to the One-Call Center
☐ Notification to one-call center made, but not sufficient
☐ Wrong information provided to One Call Center

Locating Practices Not Sufficient
☐ Facility could not be found or located
☐ Facility marking or location not sufficient
☐ Facility was not located or marked
☐ Incorrect facility records/maps

Excavation Practices Not Sufficient
☐ Failure to maintain marks
☐ Failure to support exposed facilities
☐ Failure to use hand tools where required
☐ Failure to test-hole (pot-hole)
☐ Improper backfilling practices
☐ Failure to maintain clearance
☐ Other insufficient excavation practices

Miscellaneous Root Causes
☐ One-Call Center error
☐ Abandoned facility
☐ Deteriorated facility
☐ Previous damage
☐ Data Not Collected
☐ Other

Provide explanation of selected root cause/s:____

Section 10 - Notifications, Certification & Approvals

Check the appropriate boxes indicating the applicable reports have been made to the following applicable organizations:

One Call was called ☐ **Spills Reporting Agency Notified ☐**

Emergency Responders (Fire) was called ☐ **Post-incident Drug/Alcohol Testing Performed**

List of All Agencies Contacted

Name/Agency	Phone #	Date	Time

Incident Report prepared by: ____

Employee (s): ____	Date: ____	Employee's Supervisor: ____	Date: ____
HSE Coordinator/Project/Unit Manager: ____	Date: ____	Group HSE Manager:____	Date: ____

APPENDIX H
SITE MANAGEMENT FORMS

Summary of Green Remediation Metrics for Site Management

Site Name: _____ Site Code: _____

Address: _____ City: _____

State: _____ Zip Code: _____ County: _____

Initial Report Period (Start Date of period covered by the Initial Report submittal)

Start Date: _____

Current Reporting Period

Reporting Period From: _____ To: _____

Contact Information

Preparer's Name: _____ Phone No.: _____

Preparer's Affiliation: _____

I. Energy Usage: Quantify the amount of energy used directly on-site and the portion of that derived from renewable energy sources.

	Current Reporting Period	**Total to Date**
Fuel Type 1 (e.g. natural gas (cf))		
Fuel Type 2 (e.g. fuel oil, propane (gals))		
Electricity (kWh)		
Of that Electric usage, provide quantity:		

Derived from renewable sources (e.g. solar, wind)		
Other energy sources (e.g. geothermal, solar thermal (Btu))		

Provide a description of all energy usage reduction programs for the site in the space provided on Page 3.

II. Solid Waste Generation: Quantify the management of solid waste generated on-site.

	Current Reporting Period (tons)	**Total to Date (tons)**
Total waste generated on-site		
OM&M generated waste		
Of that total amount, provide quantity:		
Transported off-site to landfills		
Transported off-site to other disposal facilities		
Transported off-site for recycling/reuse		
Reused on-site		

Provide a description of any implemented waste reduction programs for the site in the space provided on Page 3.

III. Transportation/Shipping: Quantify the distances travelled for delivery of supplies, shipping of laboratory samples, and the removal of waste.

	Current Reporting Period (miles)	**Total to Date (miles)**
Standby Engineer/Contractor		

Laboratory Courier/Delivery Service		
Waste Removal/Hauling		

Provide a description of all mileage reduction programs for the site in the space provided on Page 3. Include specifically any local vendor/services utilized that are within 50 miles of the site.

IV. Water Usage: Quantify the volume of water used on-site from various sources.

	Current Reporting Period (gallons)	**Total to Date (gallons)**
Total quantity of water used on-site		
Of that total amount, provide quantity:		
Public potable water supply usage		
Surface water usage		
On-site groundwater usage		
Collected or diverted storm water usage		

Provide a description of any implemented water consumption reduction programs for the site in the space provided on Page 3.

V. Land Use and Ecosystems: Quantify the amount of land and/or ecosystems disturbed and the area of land and/or ecosystems restored to a pre-development condition (i.e. Green Infrastructure).

	Current Reporting Period (acres)	**Total to Date (acres)**
Land disturbed		
Land restored		

Provide a description of any implemented land restoration/green infrastructure programs for the site in the space provided on Page 3.

Description of green remediation programs reported above (Attach additional sheets if needed)
Energy Usage:
Waste Generation:
Transportation/Shipping:
Water usage:
Land Use and Ecosystems:
Other:

CERTIFICATION BY CONTRACTOR

I, _____ (**Name**) do hereby certify that I am _____ (**Title**) of the Company/Corporation herein referenced and contractor for the work described in the foregoing application for payment. According to my knowledge and belief, all items and amounts shown on the face of this application for payment are correct, all work has been performed and/or materials supplied, the foregoing is a true and correct statement of the contract account up to and including that last day of the period covered by this application.

_____

Date **Contractor**

Water Level Monitoring and Monitoring Well Inspection Checklist
Scobell Chemical-NYSDOT Site

Inspection Date/Initials:	**Reviewed by (signature and date):**

Location ID	Riser Pipe/Casing Elevation (msl)	Measurement Reference Point on Riser Marked (Y/N)	TOC-TOR Difference (ft.)	Depth to Water (ft.) (TOR)	Depth to BOW (ft.) (TOR)	Well ID Clearly Labeled (Y/N)	Well Lock/Cap (G/F/P)	Protective Casing (G/F/P)	Water in Annular Space (Y/N)	Concrete Pad (G/F/P)	Well Riser/Cap (G/F/P)	Well Obstruction (Y/N)	Comments
OB-1	439.58												
MW-1D	457.56												
MW-01	440.63												
MW-2	455.94												
MW-2D	456.14												
MW-3D	454.42												
MW-4S	446.29												
MW-4M	446.24												
MW-4D	445.88												
MW-5S	442.36												
MW-5D	445.02												
MW-6S	445.10												
MW-6D	445.34												
MW-7S	443.07												
MW-7D	442.52												
MW-8S	454.76												
MW-8D	454.51												
MW-9S	452.81												
MW-9D	452.94												
MW-11D	455.34												
MW-12D	446.44												
MW-13D	458.21												
MW-15D	456.13												
MW-16	455.37												
MW-16D	455.53												
MW-17D	454.42												
MW-18D	447.06												
MW-20	446.17												
MW-20D	446.21												
MW-20DD	446.00												
MW-21	443.83												
MW-21D	443.93												
MW-22D	445.67												
MW-23	440.96												
MW-23D	440.79												
MW-24D	445.54												
MW-25D	439.29												
MW-26D	437.53												
MW-27D	453.98												
MW-28D	453.89												
MW-30S	430.86												
MW-31S	435.21												
MW-32S	433.24												
MW-32D	433.24												
MW-33S	435.51												

Water Level Monitoring and Monitoring Well Inspection Checklist
Scobell Chemical-NYSDOT Site

Inspection Date/Initials:	**Reviewed by (signature and date):**

Location ID	Riser Pipe/Casing Elevation (msl)	Measurement Reference Point on Riser Marked (Y/N)	TOC-TOR Difference (ft.)	Depth to Water (ft.) (TOR)	Depth to BOW (ft.) (TOR)	Well ID Clearly Labeled (Y/N)	Well Lock/Cap (G/F/P)	Protective Casing (G/F/P)	Water in Annular Space (Y/N)	Concrete Pad (G/F/P)	Well Riser/Cap (G/F/P)	Well Obstruction (Y/N)	Comments
MW-34S	439.25												
MW-35S	439.50												
MW-36S	440.23												
MW-37S	423.23												
MW-38S	423.38												
MW-39S	426.63												
IW-1	452.55												
IW-2	452.25												
IW-3	451.84												
IW-4	452.69												
IW-5	452.74												
IW-6	452.23												
IW-8	453.09												
IW-9	452.17												
EW-1	451.63												
EW-2	453.22												

Notes:

MW= Monitoring Well	Poor or notable observations require input into "Comments"	Y = Yes N = No
msl = mean sea level	ft. = feet	G = Good F = Fair
TOC = Top of Casing	BOW = bottom of well	P = Poor
TOR = top of riser	Vertical Datum is NAVD88.	

SITE INSPECTION FORM

I. SITE INFORMATION	
Site Name: Scobell Chemical-NYSDOH Site	**Date of Inspection:**
Location: 1 Rockwood Place, Rochester, NY	**NYSDEC Site No.:** 828076
Inspector (Firm/Individual):	**Weather/Temperature:**

Attachments: Sample results ☐	Annotated site map ☐	Other _____

Item	Condition			Comments
	Good	Needs Maintenance	N/A	
II. GENERAL SITE CONDITIONS				
Warning/instruction signs				
Litter				
Vandalism				
Vegetative infestation				
Site drainage swales				
III. ACCESS CONTROLS				
Fencing				
Gates				
Locks				
IV. SOIL COVER SYSTEM				
Vegetative cover				
Clay layer (exposed/animal burros?)				
V. GROUNDWATER MONITORING WELLS				
Flush mount well covers				
Lockable J plugs/locks				
Overburden casings/seal				
Functionality				

VI. OVERALL OBSERVATIONS

DAILY INSPECTION REPORT

Report No. Date:

NYSDEC
Division of Environmental Remediation

NEW YORK STATE | Department of Environmental Conservation

NYSDEC Contract No.
D009806-26
NYSDEC PM:
Consultant PM:
Consultant Site Inspectors:

Weather Conditions				
General Description		AM		PM
Temperature		AM		PM
Wind		AM		PM

Health & Safety
If any box below is checked "Yes", provide explanation under "Health & Safety Comments".

Were there any changes to the Health & Safety Plan?	Yes ☐	No ☐	NA ☐
Were there any exceedances of the perimeter air monitoring reported on this date?	Yes ☐	No ☐	NA ☐
Were there any nuisance issues reported/observed on this date?	Yes ☐	No ☐	NA ☐

Health & Safety Comments

Additional measures and checklist in place to account for Covid-19, checklist included below.

Summary of Work Performed	Arrived at site:		Departed Site:	

Equipment/Material Tracking
If any box below is checked "Yes", provide explanation under "Material Tracking Comments".

Were there any vehicles which did not display proper D.O.T numbers and placards?	Yes ☐	No ☐	NA ☒
Were there any vehicles which were not tarped?	Yes ☐	No ☐	NA ☒
Were there any vehicles which were not decontaminated prior to exiting the work site?	Yes ☐	No ☐	NA ☒

Personnel and Equipment

Individual	Company	Trade	Total Hours

Equipment Description	Contractor/Vendor	Quantity	Used

Material Description	Imported/ Delivered to Site	Exported off Site	Waste Profile (If Applicable)	Source or Disposal Facility (If Applicable)	Daily Loads	Daily Weight (tons)*

Equipment/Material Tracking Comments:

Report No. Date:

Visitors to Site			
Name	**Representing**	**Entered Exclusion/CRZ Zone**	
		Yes ☐	**No** ☐
		Yes ☐	**No** ☐
		Yes ☐	**No** ☐

Site Representatives	
Name	**Representing**

Project Schedule Comments

Issues Pending

Interaction with Public, Property Owners, Media, etc.

Report No. Date:

Site Photographs (Descriptions Below)	
1.	2.
Comments	
Site Inspector(s):	**Date:**

Report No. Date:

DAILY HEALTH CHECKLIST

Is social distancing being practiced?	Yes ☐	No ☐
Were personal protective gloves, masks, and eye protection being used, where required?	Yes ☐	No ☐
Are sanitizing wipes, wash stations or spray available?	Yes ☐	No ☐
Have any workers/visitors been excluded based on close contact with individuals diagnosed with COVID-19, or are symptomatic (fever, chills, cough/shortness of breath)?	Yes ☐	No ☐
Comments:		

REMEDIAL ACTIVITIES AT PROPERTIES

1. Have anyone at this location been tested and confirmed to have COVID-19?	Yes ☐	No ☐
2. Is anyone at this location isolated or quarantined for COVID-19?	Yes ☐	No ☐
3. Has anyone at this location had contact with anyone known to have COVID-19 in the past 14 days?	Yes ☐	No ☐
4. Does anyone at this locaton have any symptoms of a respiratory infection (e.g., cough, sore throat, fever, or shortness of breath)?	Yes ☐	No ☐
If Yes to any of 1-4 above: • If it is critical that service/entry be carried out immediately, advise occupants that as a precaution and for our own protection, project personnel will be donning appropriate PPE* (including respiratory protection) - and do so prior to entry.	Yes ☐	No ☐
Comments:		

NUISANCE CHECKLIST

Were there any community complaints related to work on this date?	Yes ☐	No ☐	N/A☐
Were there any odors detected on this date?	Yes ☐	No ☐	N/A☐
Was noise outside specification and/or above background on this date?	Yes ☐	No ☐	N/A☐
Any visible dust observed beyond the work perimeter on this date?	Yes ☐	No ☐	N/A☐
Comments:			